DRINKING WATER FACILITIES PLAN

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City of LaBelle, FL

December 2024

CERTIFICATION BY ENGINEER

The information contained in this report is true and correct to the best of my knowledge, the report was prepared in accordance with generally accepted engineering principles, and I and my designees have discussed the recommendations, costs, and funding approach with the City of LaBelle (City) or the City's delegated representative(s). This Drinking Water Facilities Plan was prepared to meet the requirements of the Florida Drinking Water State Revolving Fund (DWSRF) Program under Chapter 62-552, F.A.C. and this certification pertains only to the planning analysis presented in this report. Certification for design and construction of the proposed facilities shall be completed under a separate DWSRF project.

This item has been electronically signed and sealed by Justin F. deMello, PE on December 3, 2024 using a digital signature.

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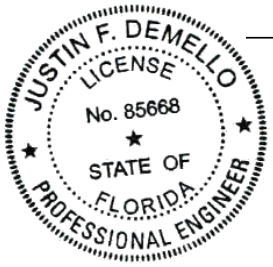

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LIST OF ACRONYMS

AAD Average annual day
AADD Average annual day demand
° C Degrees Celsius
° F Degrees Fahrenheit
3MRAD Three Month Rolling Average Daily F Flow
AADF Average Annual Daily Flow
ac-ft Acre feet
ADF Average daily flow
BMAP Basin Management Action Plan
CDBG Community Development Block Grant
CFR Code of Federal Regulations
CIP Capital Improvement Program
CM Construction Management
CT Contact Time
CWA Critical Wildlife Area
CWA Clean Water Act
D Day
DEP Department of Environmental Protection
DU Dwelling Unit
DW Drinking Water
DWS Drinking Water Standards
EDU Equivalent Dwelling Unit
EPA Environmental Protection Agency
ERC Equivalent residential connection
EST Estimated
F Fahrenheit
F.S. Florida Statute
FAC/ Florida Administrative Code
FDEP Florida Department of Environmental Protection
FDOT Florida Department of Transportation
FL Florida
FP Facilities Plan
Ft Feet
FWC Florida Fish and Wildlife Conservation Commission
FY Fiscal Year
GAO Government Accountability Office
GPCD Gallons per Capita per Day
GPD Gallons per Day
GPM Gallons per minute
GST Ground Storage Tank
GW Groundwater
HP Horsepower
HUD Department of Housing and Urban Development
ID Identification
IPR Indirect Potable Reuse
K Potassium
kW Kilo watt
kWh Kilo Watt hours
lb. Pound
LCCA Life Cycle Cost Analysis
LF Linear feet
MADD Monthly Average Daily Demand

(ADD) Average Day Demand
(MDD) Max Day Demand
(PHD) Peak Hour Demand
(FFD) Fire Flow Demand
MCC Motor Control Center
MCLs Maximum Contaminant Levels
MDD Maximum Daily Demand
MEPS Mechanical, Electrical, Plumbing, and Structural
MG Million Gallons
mg/L Milligrams per Liter
MGD Million Gallons per Day
MHI Median Household Income
MORs Monthly Operation Reports
MPN Most Probable Number
N Nitrogen
NAVD88 North American Vertical Datum of 1988
NPDES National Pollutant Discharge Elimination System
NPV Net Present Value
O&M Operations and Maintenance
OFW Outstanding Florida Water
OMB Office of Management and Budget
OPC Opinion of Probable Cost
OSTDS Onsite Sewage Treatment & Disposal System
OSWTS Onsite Wastewater Treatment System
P Phosphorous
PBTS Performance Based Treatment Systems
PER Preliminary Engineering Report
pH Hydrogen Ion Concentration
PHF Peak Hour Flow
PDF Peak Day Flow
Plan Alternative Analysis Plan
POC Point of Connection
PVC Polyvinylchloride (pipe)
RAO Rural Area of Opportunity
RD Rural Development
Report Preliminary Engineering Report
RO Reverse Osmosis
RUS Rural Utilities Service
SCADA Supervisory Control and Data Acquisition
SPPW Single Payment Present Worth
SRF State Revolving Fund
SW Surface Water
SWIM Surface Water Improvement Management
TPC Total Permitted Capacity
UFA Upper Floridian Aquifer
USDA United States Department of Agriculture
USDW Underground Source of Drinking Water
USPW Uniform Series Present Worth
UV Ultraviolet Light
WEP Water and Environmental Programs
WK Weeks
WMD Water Management District
WTF Water Treatment Facility
WUP Water Use Permit
Y, Yrs. Years

SUMMARY OF FINDINGS AND RECOMMENDATIONS

Facilities Plan Intent:

This Facilities Plan was prepared for the City of LaBelle in a collaborative effort by City Staff and Woodard & Curran, Inc. (Woodard & Curran) to meet the needs of the City and the requirements of the Florida Drinking Water State Revolving Fund (SRF) program. The City developed this Drinking Water Facilities Plan to evaluate utility needs related to drinking water production, storage, and distribution to include improved resiliency, health and safety, reliability, O&M efficiencies, and a 20 year Census growth. This Facilities Plan is a planning-level document that defines project needs and costs to allow the City to secure grant and low-interest funds for the design and construction of the recommended alternative.

The Facilities Plan is intended to represent the City's drinking water needs over a 20-year planning period. For this Facility Plan, proposed CIP projects will be placed in service by 2026. The plan assumes a planning period through 2046. The planning area includes the City of LaBelle's utility service area and contiguous lands located in Hendry County as shown in Figure 1-1. The recommendations resulting from this study are consistent with both the City's and the County's Local Comprehensive Plans.

In summary, the facilities plan intent is to:

- Describe existing water facilities, available service area characteristics, and environmental conditions.
- Establish design criteria for the planning period of 20 years.
- Identify and evaluate three (3) alternatives for each proposed project to satisfy the 20-year planning year needs.
- Identify a preferred alternative for each project.
- Describe the recommended facilities and associated estimated cost.
- Identify potential adverse environmental impacts and propose mitigating measures.

Findings:

LaBelle's drinking water production, treatment, and distribution systems are described in the most recent *FDEP Sanitary Survey Inspection* (Appendix A). Generally, the City's drinking water is close to or exceeding the equipment design life. The population projection for the 2026-2046 planning period were evaluated 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. More specifically, when completing the population projection, the City analyzed its proposed developments with approved and pending Developer Agreements, as well as those with Developer Agreements in progress, along with general population growth projections from historic population trends. The LaBelle drinking water utility service area was evaluated to see how the projected growth would impact drinking water demand and how the City should proceed with infrastructure improvements, to include drinking water storage through the planning period ending in 2046.

Much of the drinking water infrastructure is close to exceeding or has exceeded its design life. Projected growth within the utility service area will result in a greater water demand over the next 20 years. Regulatory requirements for drinking water have increased and are expected to require updated technology related to regulatory compliance.

In summary, much of the critical infrastructure is old. Growth within the water utility is primarily driven by an ongoing septic to sewer initiative and planned development within the utility service area.

Recommendations:

Our life cycle cost analyses (LCCA) of the drinking water infrastructure suggests that it is advantageous for the City to implement the following capital improvements within three years:

1. Water source and treatment, including new backup generators, transfer switches, and surge protectors for both existing supply well pumps, new reverse osmosis cartridges and treatment vessels at the Membrane Water Treatment Facility to increase the plant's capacity to treat water, two new propane-driven pumps at the Treatment Facility, and improvements/expansions to chemical storage building, storage, and pumping elements.

2. New water distribution and storage upgrades, including:

    a. A new water storage tank to provide redundancy for maintenance and to increase total system storage capacity to meet industry standards and F.A.C. 62-555.320 (19)(a)

    b. New transmission and distribution mains along State Route 80 and Helms Road to provide looping to increase reliability and redundancy, to improve water pressure, and water quality.

    c. New water mains in Zone B area to increase the diameter of undersized mains and maintain adequate pressure and fire protection in this area.

    d. A valve replacement program that will identify and replace non-functional mainline gate valves.

3. A commercial meter replacement program to increase reliability of system information and metering data to support financial stability.

The selected alternatives for water system improvement described in this Facility Plan and their associated opinion of probable costs are shown in Table ES-1-1. The total capital cost of the recommended projects is estimated to be $26.8 million in 2024 dollars. Detailed opinions of probable cost for each project are included in Appendix B.

Table ES-1-1: Selected Plan Proposed Costs

Selected Alternatives Opinion of Probable Capital Cost			
	Project 1 – Source & Treatment Upgrades	**Project 2 – Distribution and Storage Upgrades**	**Project 3 – Large Commercial Service and Production Meter Upgrades**
Construction Base Cost (2024)	$2,794,000	$17,473,000	$185,000
Construction Contingency 10%	$279,000	$1,747,000	$19,000
Engineering, Permitting and Design 10%	$279,000	$1,747,000	$19,000
Engineering Services During Construction 8%	$224,000	$1,398,000	$0
Fiscal, Legal and Administration 3%	$84,000	$524,000	$6,000
Land Acquisition	$0	$100,000	$0
Construction Escalation to mid-point of construction (end of 2026 7%)	$530,000	$3,217,000	$33,000
Total Opinion of Capital Costs	**$4,190,000**	**$26,206,000**	**$262,000**

The FDEP SRF program is intended to be the financing source for the project. A Drinking Water SRF Business Plan (Business Plan) has been prepared to explain the financial impact on the users of the drinking water system. The Business Plan is shown in Appendix D and demonstrates rate sufficiency for this CIP. This determination based on the latest rate study and current rate structure.

In summary, recommended capital improvements will support system reliability, redundancy, water quality, water pressure, source water protection, proactive operations, and maintenance activities, and address potential regulatory requirements.

1. INTRODUCTION

This document is provided to meet the planning requirements for the Drinking Water State Revolving Fund (DWSRF) program for the purpose of obtaining funding for new water infrastructure within the City of LaBelle, Florida (City). This report presents estimated costs for three alternatives for each of three projects, as required by FDEP DWSRF. These projects are proposed to be in service over a 20-year planning period.

1.1 Background

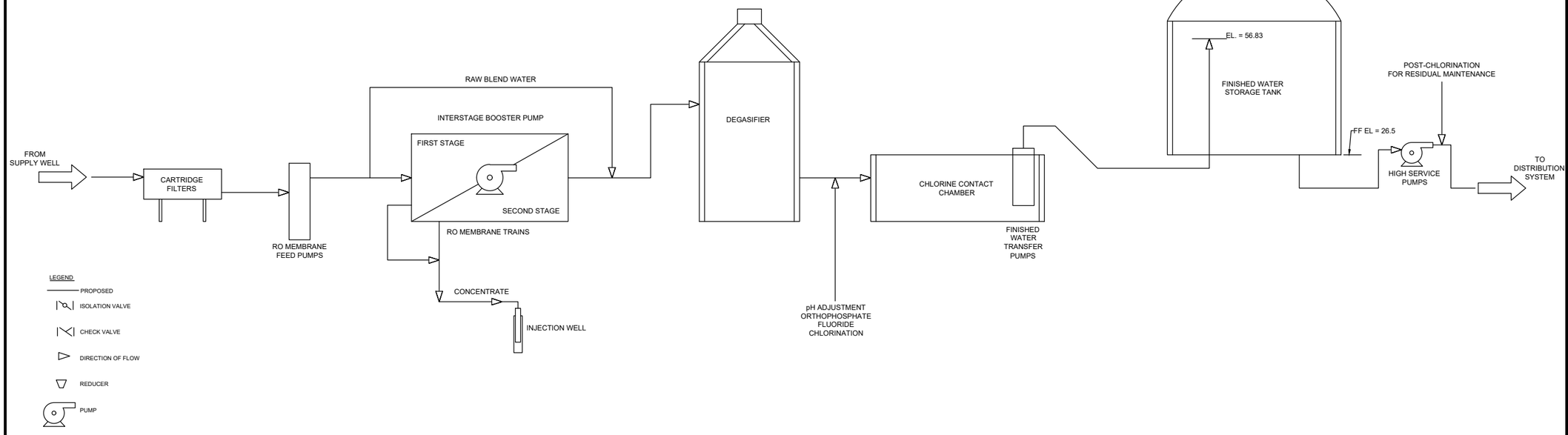
The City of LaBelle is located in Hendry County, Florida. The City extracts groundwater from the Upper Floridan Aquifer (UFA) and treats the water with reverse osmosis, pH adjustment, degasification, and disinfection with chlorine prior to distribution. The City has a single potable water treatment facility which includes on-site finished water storage and high service pumps. The City has one distribution pressure zone. The City's distribution system is classified as a community water system with EPA Public Water System ID FL5260050. The City's water system serves 1,910 residential and 469 commercial users, for a total of 2,379 service connections (October 2021 meter counts).

The City has two existing wells, Well 2 and Well 3, that feed the Membrane Water Treatment Facility. Each well is equipped with an 8" submersible pump with a design flow rate of 1,500 gpm (2.16 MGD). Well production data indicate peak average daily withdrawal rates of 830 gpm (1.20 MGD) and 790 gpm (1.14 MGD) for Well 2 and Well 3, respectively. The maximum instantaneous flow rate of each well is approximately 1,500 gpm (2.16 MGD).

The Membrane Water Treatment Facility's process consists of cartridge filtration, reverse osmosis demineralization, degasification, and disinfection with chlorine. Treated water is blended with filtered raw water prior to degasification. Orthophosphate and hydrofluorosicilic acid are also added to finish water prior to distribution for corrosion control and fluoride addition, respectively. See Figure 1-1 for a process flow diagram of the existing water system.

In 2022, the City's average and maximum daily treatment plant outputs were 0.65 MGD and 0.84 MGD, respectively.

PLOT SCALE: 10::



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CLIENT INFO:

CITY OF LABELLE
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LABELLE DRINKING WATER FACILITY PLAN

JOB NO:	0234532.02
DATE:	MARCH 2023
SCALE:	N/A
DESIGNED BY:	E. BARKOVIC
DRAWN BY:	E. BARKOVIC
CHECKED BY:	M. ELSNER
FILENAME:	FIGURE 1-1 - WATER SYST*.dwg

DRAWING TITLE:

EXISTING WATER SYSTEM PROCESS FLOW DIAGRAM

DRAWING NO:

FIG. 1-1

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1.2 Need For Projects

1.2.1 Project 1 – Source and Treatment Upgrades

1.2.1.1 New Backup Generation Equipment at Production Well

The City's two existing wells withdraw water from the Upper Floridian Aquifer. At least one well must remain working to meet daily demands and fill the City's finished water storage tank.

The City currently lacks reliable backup power at its supply wells to maintain operation during power grid outages or other electrical grid failures. The City also needs a portable generator to supply power to the supply wells during emergencies in the event one of the stationary generators is damaged due to a lightning strike or power surge, which has historically been an issue for the City.

1.2.1.2 Membrane Water Treatment Facility Upgrades

There are two existing reverse osmosis (RO) skids installed at the Membrane Water Treatment Facility. Each of the existing membrane skids has a capacity of 0.75 MGD. A single RO skid is not able to treat the maximum daily flow when the other RO skids is out of service, which happens regularly for maintenance. The skids can be upgraded to include additional membrane units to increase the total skid capacity however a third skid should also be considered to provide adequate redundancy. The existing treatment cartridges also have membranes nearing the end of their expected service life. The City lacks sufficient redundancy in its reverse osmosis treatment to maintain operations during maintenance activities and during equipment failures.

Additionally, the City has experienced broader electrical equipment and variable-frequency drive failures during lightning strikes at the facility. These strikes have interrupted variable-frequency drive operation in electrically-driven pumps at the plant and supply wells and rendered all electrical pumping equipment temporarily unusable. The City would like to have a completely non-electric pumping capacity in place at the plant so that it can continue to transfer water between its chlorine contact chamber (clearwell) and finished water storage tank, and to pump from its finished water storage tank into its system, during lighting strike outages. The high service pumps, clearwell pumps, and concentrate deep well injection pumps should be rehabilitated or replaced as they are all at the end of their useful life.

Many of the chemical storage tanks at the Membrane Water Treatment Facility are nearing the end of their design lives and may be at risk of failure. Additionally, the chemical metering pumps for each of the treatment chemicals were sized for the existing RO skid capacity and will not be suitable to provide the required chemical metering flow for the increased flow rate through the RO skids. Chemical metering, storage and building upgrades are recommended.

Sodium hypochlorite at the plant is stored in a building, but other treatment chemicals are housed in an outdoor canopy area. The City has experienced weather-related damage to the storage and pumping infrastructure under the canopy and would like to avoid future issues by fully enclosing the chemical storage and metering infrastructure in a building. Additionally, each chemical storage area under the canopy shares a common floor drain where chemicals might mix in the event of a spill of multiple chemicals. The drain ultimately discharges to a septic leaching field rather than separate detention basins. This poses a safety

and environmental risk and the drainage for each chemical should be isolated and routed to a code-compliant detention area rather than a leaching field.

1.2.2 Project 2 – Distribution and Storage Upgrades

1.2.2.1 Helms Road Storage Tank

The City has identified a need for additional water storage to aid in the City's water distribution operation. The City operates only one storage tank, which currently controls all logic for water pumped based on water elevation in that tank. This logic is interrupted during tank maintenance, requiring staff to operate the system in hand mode 24/7 during maintenance activities.

An additional storage tank is required for storage of the water produced by the proposed well as part of Project 1.

Additionally, F.A.C. 62-555.320 (19)(a) requires the total useful finished-water storage capacity connected to a water system to be (at minimum) 25 percent of the water system's maximum-day water demand in addition to any design fire-flow demand. Based on the City's 2022 Membrane Water Treatment Facility production data, the current annual average day demand (AADD) has been approximately 0.65 MGD and the maximum day demand (MDD) has been approximately 0.80 MGD. Using the current population of 5,041, it is estimated that the average daily usage is approximately 129 gallons per capita per day. At a projected 2046 population of 6,206, the average day demand is estimated to be 0.80 MGD using the 129 gallons per capita per day (GPCD) average water usage from previous treatment plant production data. Assuming maximum day demand grows at the same rate, the estimated 2046 MDD is expected to be 0.98 MGD.

The fire flow demand is based on providing a flow rate of 2,000 gallons per minute for two hours. To maintain storage for 25% of the maximum day demand plus fire flow, the City must have a total storage volume of approximately 485,000 gallons as shown in the equation below:

$$Minimum\ Storage\ Capacity = 25\%\ of\ Max\ Day\ Demand + Fire\ Flow\ Demand$$

$$Minimum\ Storage\ Capacity = 980{,}000\ Gal\ x\ 25\% + \left(2{,}000\ GPM \times \frac{60\ min}{hr}\right) x\ 2\ hrs$$

$$Minimum\ Storage\ Capacity = 485{,}000\ gallons$$

The City would like to maintain adequate storage capacity during an outage of this tank during maintenance. Currently, the City has no back up water storage tank. Without the tank online, the City cannot provide adequate water volume and pressure to customers. For redundancy and resiliency purposes, the proposed tank will therefore be 1,000,000 gallons.

1.2.2.2 State Route 80 & Helms Road Water Main Extension

The western part of the system has many existing dead-ends around East Cowboy Way and Ben Moore Drive. These dead ends cause water age concerns and limit operational reliability in the event of a main break. Additionally, this area lacks required fire flow availability in the Fort Denaud area and has many older and smaller existing pipelines along East Cowboy Way that create pressure issues. New water mains in this area will reduce water age concerns by creating multiple complete pipe loops.

1.2.2.3 Zone B Water Main

The City is developing a project to install a sewage collection system in an area called "Zone B" which is currently on septic systems. This area is approximately enclosed by E Hickpochee Ave in the South, E Fort Thompson Ave in the East, Hickory Street in the West, and the Caloosahatchee Canal in the North. Potable water distribution in this area is comprised of 2" and 4" mains; the City would like to replace these pipes with larger-diameter pipe during the sewer installation to minimize the number of required excavations. The existing 2" and 4" pipes cause a lack of fire flow availability in this area to meet Insurance Services Organization guidelines. These small diameter pipes have maximum velocities that are too high, and they cannot deliver adequate fire flow during fire events within American Water Works Association guidelines.

1.2.2.4 Valve Replacement Program

The City has many malfunctioning gate valves across the distribution system. No system-wide valve exercising program has been performed to identify the full extent of inoperable and leaking valves within the distribution system. The large number of inoperable valves and the lack of specific knowledge of inoperable valve locations presents a maintenance risk to the City. Inoperable valves may prevent the City from mitigating losses during water main breaks and may require the City to shut down water service to larger areas when pressure losses from such main breaks cannot be adequately contained by valve closures. It is estimated that 30% of the system's 464 gate valves are failing, for a total of 140 gate valves.

1.2.3 Project 3 – Large Commercial Service and Production Meter Replacement Program

The City has several large commercial meters which have started to fail and are becoming less accurate. The City loses revenue from major water system customers due to these inaccuracies and would benefit from consistent accurate metering. The City also has many production meters at its treatment plant and well sources that have aged past their typical replacement dates. These meters provide the City with necessary data to manage their system and provide effective and efficient treatment. Inaccurate metering within the system causes direct revenue losses for both drinking water and wastewater enterprise funds. While most of the commercial service meters in the City are 5/8", the largest deficiencies in billed demand come from 58 commercial meters, 1.5" and above. Scope of Study

This Facilities Plan:

- Describes existing water facilities, available service area characteristics, and environmental conditions.
- Establishes design criteria for the planning period of 20 years.
- Identifies and evaluates three (3) alternatives for each proposed project to satisfy the 20-year planning year needs.
- Identifies a preferred alternative for each project.
- Describes the recommended facilities and associated estimated cost.
- Identifies potential adverse environmental impacts and propose mitigating measures.

1.3 Facilities Planning Overview

This facilities plan outlines the water system facilities needed for a 20-year planning period. Strategies were developed within the plan to meet estimated system needs, and the planning basis for subsequent design and construction is provided. Additionally, the existing and projected demographic characteristics, topographic, and institutional features of the planning area and their impact on the water system needs are also examined.

The 20-year planning period for the purpose of this work begins in the year 2026 and extends through the year 2046. Three alternatives were identified for each project and evaluated with a recommendation for the most feasible alternative for meeting the City's needs.

1.4 Sanitary Survey Inspection Findings

During the City's November 28th, 2022 sanitary survey inspection by FDEP, the following possible violations of Florida Administrative Codes were observed in the City's drinking water system:

1. Excessive corrosion around the High Service Pumps.
2. Nylon plug on raw sample tap on Well UFA-2.
3. Well UFA-3 had a leak around casing.
4. 6 wells have been taken out of operation for more than six months (Wells AAE6983, AAH9205, AAH9250, AAH9252, AAH9251, AAC5589). Disinfection of wells and bacteriological surveys and Evaluations of Wells will be required before wells are placed back into service. The wells must be maintained according to current code while still connected to the system until they are abandoned or physically disconnected from the system.
5. Approximately 75% of systems isolation valves are inoperable.
6. Fire flow analysis indicates inadequate flow to meet customer demand.
7. As a result of one of the two Supply Wells (#3) being out of service, 3 months of 100% of permitted capacity from the alternate well (#2) was exceeded. In one of the three months, (August 2021) three days exceeded 136%. TDS issues prevail in supply well #3.

Project 2 described herein will address possible violation 5 above. The remaining six possible violations fall under the scope of operations and maintenance work and are therefore not within the purview of this Facility Plan and are not eligible for DWSRF funding.

The November 28th, 2022 sanitary survey inspection is included as Appendix A.

1.5 Reference Standards and Guidelines

This Report has been organized such that it is compatible with the Facilities Planning guidance document published by the Florida Department of Environmental Protection (FDEP) in 2000 and modified in 2017. Technical requirements in the Florida Administrative Code (FAC) were referenced for the alternatives analysis and recommendations.

2. EXISTING AND FUTURE CONDITIONS

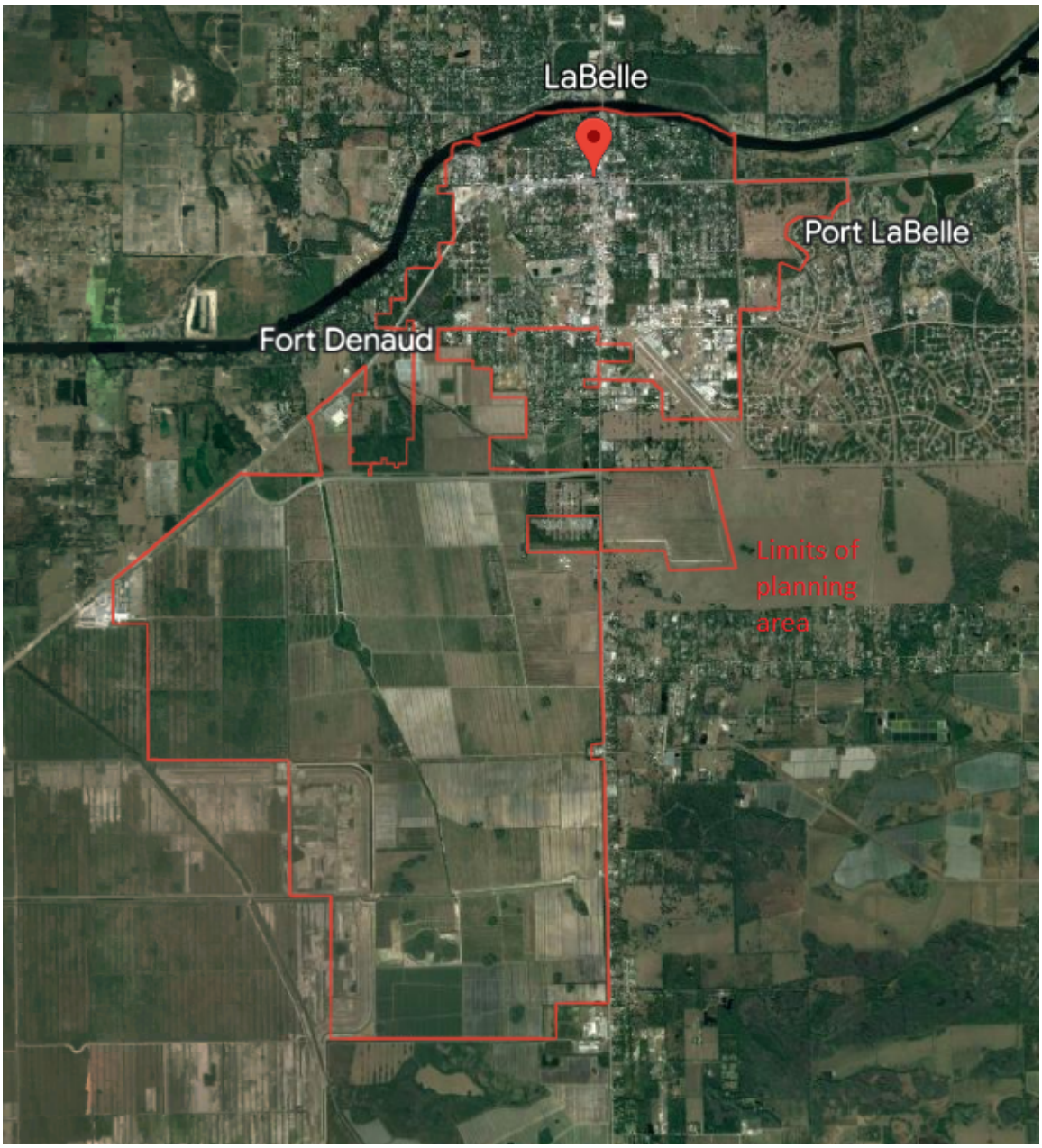
This section describes the existing physical, organizational, environmental, and demographic conditions within the planning area. This information is used to establish the existing conditions, project future development, and assess needs within the planning area related to the future water management requirements. This section describes the existing condition and limitations of the drinking water system. The current water demand is outlined and used in conjunction with demographic projections to estimate the future water demand of the system during the planning period.

2.1 Description of Planning Area

2.1.1 Planning Area

The planning area is located within the City Limits of LaBelle, Florida consisting of approximately 9,270 acres. The City of LaBelle is located in northwestern Hendry County, about 32 miles east of Fort Myers and 92 miles west of West Palm Beach. The City of LaBelle is the county seat of Hendry County and provides urban and commercial amenities for surrounding communities in Hendry and Glades counties. The Caloosahatchee River traverses the northern boundary of the City of LaBelle. The City of LaBelle is within the South Florida Water Management District (SFWMD) and Coastal Heartland National Estuary Program area. Two major state roads, State Road (SR) 80 and State Road 29, divide the City. The planning area is depicted in Figure 2-1 below.

Figure 2-1: Planning Area



Source: Google Earth

2.1.2 Climate

Located in South Florida, the City is within the boundary of Hendry County, Florida. The City's climate is characterized as hot and humid for five months out of the year, from May through October. The City has an average daily high temperature above 87 degrees Fahrenheit during the hot season. The cool season lasts for approximately three months, December through early March. The City has an average low of 52 degrees Fahrenheit during the cool season.

Table 2-1: Summary of Climate Averages

	LaBelle, Florida	United States
Rainfall (in)	40.1	38.1
Snowfall (in)	0.0	27.8
Precipitation (days)	136.3	106.2
Average July High (deg F)	91	85.8
Average Jan. Low (Deg F)	52	21.7
Elevation (feet)	13	2,443

2.1.3 Topography & Drainage

The topography within 2 miles of LaBelle is mostly flat, with a maximum elevation change of 23 feet and an average elevation above sea level of 12 feet. The geographical coordinates of LaBelle are 26.762 deg latitude, -81.438 deg longitude. The area within 2 miles of LaBelle is covered by artificial surfaces (60%), cropland (26%), and herbaceous vegetation (14%).

According to the United States Fish and Wildlife Service National Wetlands Inventory, the planning area consists of Freshwater Emergent Wetlands, Freshwater Forested/Shrub Wetland, Lakes, and Riverine. Average Elevation of the City is 13ft above sea level with only moderate variations in elevation. The drainage of the planning area is comprised of the following:

- 91.2% of soils are characterized as somewhat poorly drained, poorly drained, or very poorly drained.
- 1.2% of soil is well drained.

The following section lists detailed information on specific types of soils and drainage class within the planning area.

2.1.4 Geology, Soils, Physiography

The United States Department of Agriculture Natural Resources Conservation Service Soil Survey denotes that planning area is composed of twenty-nine different types of soils, as provided in Table 2-3. Approximately 50% of the land area is composed of soils that are classified as moderately high, high, and very high capacity to transmit water. 30% of the planning area is classified as moderately low to moderately high capacity to transmit water. The remaining percentage is classified as low to moderately low capacity to transmit water.

The most predominant soil types found in the planning area are characterized as sandy and sandy loamy. The surface to ten inches below, upper horizons, of soils in the planning area are classified as 91.7%

sand/fine sand, 5.7% as fine sand loamy, and .2% muck. See Appendix F for the Custom Soil Resource Report.

Table 2-2: Soil Types within the Planning Area

Soil Type	Drainage Class	% of AOI
1) Cypress Lake sand, 0-2% slopes	Poorly drained	10.3
2)Pineda sand, limestone substratum	Poorly drained	5.4
4)Oldsmar sand, 0-2% slopes	Poorly drained	6.0
6)Wabasso sand, 0-2% slopes	Poorly drained	8.4
7)Immokalee sand, 0-2% slopes	Poorly drained	18.7
8)Malabar sand, 0-2% slopes	Poorly drained	3.9
9)Riviera fine sand, 0-2% slopes	Poorly drained	1.9
10)Pineda-Pineda, wet, fine sand, 0-2%slopes	Poorly drained	0.0
14)Wabasso sand, limestone substratum, 0-2% slopes	Poorly drained	7.3%
15)Myakka sand, 0-2% slopes	Poorly drained	0.4%
17)Basinger sand, 0-2% slopes	Poorly drained	3.8%
18) Pompano sand, 0-2% slopes	Poorly drained	3.2%
19) Gator muck, frequently ponded 0-1% slopes	Very poorly drained	0.8%
20) Okeelanta muck	Very poorly drained	0.1%
21)Holopaw sand, 0-2% slopes	Poorly drained	7.3%
22) Valkaria sand	Poorly drained	1.0%
27)Riviera sand, limestone substratum	Poorly drained	6.3%
28)Cypress Lake sand, frequently ponded, 0-1% slopes	Very poorly drained	0.9%
29)Oldsmar sand, limestone substratum	Poorly drained	3.8%
32)Riviera sand, frequently ponded, 0-1% slopes	Very poorly drained	0.7%
34)Chobee fine sandy loan, limestone substratum, depressional	Very poorly drained	0.5%
37) Tuscawilla fine sand, 0-2% slopes	Very poorly drained	0.5%
39)Udifluvents	Very poorly drained	0.1%
45)Pahokee muck, drained, 0-1% slopes	Very poorly drained	0.1%
47)Udorthents	Well drained	1.2%
49)Aquents, organic substratum	Poorly drained	0.2%
53)Adamsville fine sand, 0-2% slopes	Somewhat poorly drained	1.6%
57)Chobee fine sandy loam, frequently ponded, 0-1% slopes	Very poorly drained	5.2%
62)Pineda sand, depressional	Very poorly drained	0.1%
99)Water	N/A	N/A

2.1.5 Surface and Ground Water Hydrology

The Caloosahatchee River flows through the City of LaBelle City Limits and is identified within the Florida Department of Environmental Protection Caloosahatchee River Basin Management Action Plan (BMAP). The Caloosahatchee River and Estuary Watershed is located in Southwest Florida in Charlotte, Glades, Hendry, and Lee Counties. The river runs from Lake Okeechobee through a series of locks to San Carlos Bay. The freshwater segment of the Caloosahatchee is from Lake Okeechobee to the Franklin Lock (S-79). The marine segment extends from the Franklin Lock to Shell Point, adjacent to San Carlos Bay, with Pine Island Sount to the northwest and Estero Bay to the southeast. The Caloosahatchee River and Estuary Watershed is comprised of 3 subwatersheds and 27 basins.

Because the river and estuary have been exposed to hydrologic, land use, and other anthropogenic modifications, the water quality in the estuary and surrounding tributaries to the Caloosahatchee River has been degraded. FDEP adopted TMDLs for total nitrogen (TN) and total phosphorus (TP) for waterbodies in the watershed.

The source of drinking water for the planning area is the Upper Floridan Aquifer (UFA). The UFA is typically composed of limestone and dolomite and has high flows near the center of the state where the planning area is located.

2.1.6 Water Uses

The UFA is used as the source of drinking water for the City's utility service area. Surface water in the planning area is used for recreational purposes such as boating and fishing.

2.1.7 Source Water Protection

In 2020, an assessment of potential contamination to the source water was completed as part of the Source Water Assessment and Protection Program (SWAPP) with FDEP under the Safe Drinking Water Act (SDWA). The source water protection area is the area encompassed within a five-year groundwater travel time, defined as the area from which water will drain to a well pumping at the average daily permitted rate for a five-year period. In this area all potential sources of contamination were identified and given a susceptibility score and a concern level. Per the 2023 SWAPP, there are 3 unique potential sources of contamination within the protection areas for the potable water wells operated by the City. Table 2-3 provides the list of potential contamination sources. The potential sources of contamination have a low concern level. The 2023 SWAPP results for the City can be found in Appendix G.

Table 2-3: Summary of Potential Source Water Contamination Sources

Facility Type	Facility Class	Status	Name	Susceptibility Score	Concern Level
Petroleum Storage Tank	Local Government	Open	LaBelle City Well #2	2.77	Low
Petroleum Storage Tank	Local Government	Open	LaBelle City Well #3	2.77	Low
Petroleum Storage Tank	Local Government	Open	LaBelle City Well #2	2.77	Low

2.1.8 Wetlands

According to the United States Fish and Wildlife Service National Wetlands Inventory, the planning area consists of Freshwater Emergent Wetlands, Freshwater Forested/Shrub Wetland, Lakes, and Riverine. It is not anticipated that the proposed project will have any negative effect on wetlands because all proposed upgrades will be done outside of any wetland's boundaries or in existing right-of-way. See Figure 2-2 below.

Wetlands

LaBelle, FL

Legend

- LaBelle City Limits
- Freshwater Emergent Wetland
- Freshwater Forested/ Shrub Wetland
- Freshwater Pond
- Riverine

N

0 0.090.17 0.34 0.51 0.68 Miles

Woodard & Curran

Project #: 0234532.03
Map Created: September 2023

2.1.9 Environmentally Sensitive Land

According to the United States Department of Agriculture Natural Resources Conservation Service, 86.2% of the planning area consists of farmland of unique importance, defined as land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. The remainder of soils within the planning area is classified as not prime farmland. Table 2-5 below provides a summary of information on the farmland of unique importance within the planning area.

Table 2-4: Farmland of Unique Importance

Soil Type	Percentage	Acreage
1) Cypress Lake sand, 0-2% slopes	10.3%	949.6
2) Pineda sand, limestone substratum	5.4%	501.3
4) Oldsmar sand, 0-2% slopes	6.0%	552.4
6) Wabasso sand, 0-2% slopes	8.4%	777.8
7) Immokalee sand, 0-2% slopes	18.7%	1,724.9
8) Malabar sand, 0-2% slopes	3.9%	355.8
9) Riviera fine sand, 0-2% slopes	1.9%	179.9
10) Pineda-Pineda, wet, fine sand, 0-2%slopes	0.0%	1.9
14) Wabasso sand, limestone substratum, 0-2% slopes	7.3%	673
15) Myakka sand, 0-2% slopes	0.4%	39.9
17) Basinger sand, 0-2% slopes	3.8%	350.5
19) Gator muck, frequently ponded 0-1% slopes	0.8%	70.3
20) Okeelanta muck	0.1%	9.7
21) Holopaw sand, 0-2% slopes	7.3%	670.3
22) Valkaria sand	1.0%	97
27) Riviera sand, limestone substratum	6.3%	581.5
29) Oldsmar sand, limestone substratum	3.8%	352.4
32) Riviera sand, frequently ponded, 0-1% slopes	0.7%	68.7
45) Pahokee muck, drained, 0-1% slopes	0.1%	10.1
TOTAL:	**80.2%**	**7,966.5**

2.1.10 Plant and Animal Communities

The United States Fish and Wildlife Service IPaC list includes (12) different species of birds, reptiles, flowering plants, and insects within the planning area. No critical habitats were found within the planning area. Species are classified as candidate, proposed threatened, threatened, or endangered. Table 2-6 below shows the endangered species located in the planning area and the status of each one. Because the proposed project is to take place in previously disturbed areas, the project is not likely to adversely affect resources protected by the Endangered Species Act of 1973. According to the USFWS Consistency Letter dated July 22, 2024, the City of LaBelle proposed project is unlikely to have any detrimental effects to federally listed species or critical habitat and no effect on the species listed below.

The final critical habitat has been identified for the Florida Bonneted Bat, West Indian Manatee, and the Everglade Black Rail bird. According to USFWS Clearence Letter, the proposed project location does not overlap with these species' critical habitat areas. The final USFWS Consistency Letter and Official Species List can be found in Appendix H.

Table 2-5: Endangered Species List within Planning Area

Category	Species Common Name	Species Scientific Name	Status
Mammals	Florida Bonneted Bat	Eumops floridanus	Endangered
	Florida Panther	Puma (=Felis) concolor coryi	Endangered
	Puma Mountain Lion	Puma (=Felis) concolor	Threatened
	Tricolored Bat	Perimyotis subflavus	Proposed Endangered
	West Indian Manatee	Trichechus manatus	Threatened
Birds	Crested Caracara	Caracara plancus audubonii	Threatened
	Eastern Black Rail	Laterallus jamaicensis ssp. jamaicensis	Threatened
	Everglade Snail Kite	Rostrhamus sociabilis plumbeus	Endangered
	Florida Scrub-jay	Aphelocoma coerulescens	Threatened
Reptiles	American Alligator	Alligator mississippiensis	Threatened
	Eastern Indigo Snake	Drymarchon couperi	Threatened
Insects	Monarch Butterfly	Danaus plexippus	Candidate

2.1.11 Archeological & Historical Sites

According to the National Register of Historic Places Catalog, there is one historical site within the City Limits of LaBelle. The proposed project will not have an impact on known historical or archeological sites.

- Name: Caldwell Home Place
- Reference Number: 03000009
- State: Florida
- County: Hendry
- Address:160 Curry Street
- Area of Significance: Entertainment/ Recreation; Architecture

2.1.12 Floodplains

Flood zones for the planning area are designated in Figure 2-3. Most of the proposed planning area is within a Zone X floodplain with minimal to moderate flood hazard. All flood zones in the planning area are categorized as Zone A, Zone AE, or Zone X. The Federal Emergency Management Agency (FEMA) defines Zone A and Zone AE as areas subject to inundation by the one percent (1%) annual chance flood event, base flood elevations or flood depths have been determined for Zone AE. All proposed improvements will be designed and constructed above the 500-Year Floodplain.

FEMA Floodplain

LaBelle, FL

Legend

- LaBelle City Limits
- Effective
- Political Jurisdictions
- Profile Baselines
- Cross-Sections
- Base Flood Elevations
- Levees
- Coastal Transects
- Transect Baselines

General Structures

- Flood Structure
- Bridge
- Dam, Weir, Jetty
- Other Structures
- River Mile Markers
- Limit of Moderate Wave Action

Flood Hazard Boundaries

- Limit Lines
- SFHA / Flood Zone Boundary
- Flowage Easement Boundary

Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- Area with Risk Due to Levee
- Primary Frontal Dunes

N

0 0.13 0.25 0.5 0.75 1 Miles

Woodard & Curran

Project #: 0234532.03
Map Created: September 2023

2.1.13 Air Quality

Hendry County Air Quality Index was rated "Good" for most days out of the year. According to Florida Department of Environmental Protection (FDEP), Hendry County is classified as an area of attainment with respect to the National Ambient Air Quality Standards for Ozone.

Emissions from construction vehicles during construction are the only effect on air quality that is anticipated. Construction is anticipated to last twenty-four (24) months. Project activities will be monitored by the FDEP. There are no anticipated long-term environmental consequences in regard to air quality.

2.1.14 Managerial Capacity

As the utility owner, the City of LaBelle has the sole responsibility and authority to build, operate, and maintain the water system.

2.1.15 Operation & Maintenance Program

City of LaBelle staff maintain and operate its water system. As needed repairs or rehabilitation of the proposed treatment equipment, storage equipment, and water mains are performed by local contractors. The City's Membrane Water Treatment Plant is operated continuously with regular operator visits. WTP operational parameters include reverse osmosis filtration rates and finished water discharge pumping target pressures. Well pump operations and tank levels are also monitored and adjusted for optimization as demand trends change.

2.2 Socio-Economic Conditions

2.2.1 Population and Anticipated Growth

The City of LaBelle has population estimates from the U.S. Census Bureau (USCB) and the University of Florida's Bureau of Economic Business Research (BEBR). The population projection in this report for the 2026-2046 planning period is based on both data sets.

- BEBR reports that LaBelle has an average population growth of 0.9% between 2013 and 2022 as shown in Table 2-6.
- U.S. Census Bureau (USCB) reports LaBelle has an average population growth of 0.9% per year, using 2000, 2010 and 2020 data as shown in Table 2-7: U.S. Census Population Growth 2000 Through 20208.

Table 2-6: Bureau of Economic and Business Research City of LaBelle Population Growth

BEBR Data*		
Year	Population Estimate (LaBelle FL)	% Growth
2013	4,669	-
2014	4,708	0.84%
2015	4,792	1.78%
2016	4,807	0.31%
2017	4,951	3.00%
2018	5,025	1.49%
2019	5,108	1.65%
2020	5,151	0.84%
2021	5,019	-2.56%
2022	5,041	0.44%
	Average Population Growth (per year)	0.87%

*Data from Bureau of Economic and Business Research

Table 2-7: U.S. Census Population Growth 2000 Through 2020

U.S. Census Data*		
Year	Population (LaBelle FL)	% Growth/Decade
2000	4,210	-
2010	4,640	10.21%
2020	4,966	7.03%
	Average population Growth (per year)	0.86%

*Data gathered by the U.S. Census Bureau

An average growth rate of 0.9% per year over the next 20 years was used for population projection based on the two sets of population trend data analyzed. According to BEBR, the population in LaBelle in 2022 was 5,041 people. A 0.9% per year growth rate over the next 23 years puts the population of LaBelle at 6,206 people in the year 2046. This amounts to 23% total growth from 2022 to 2046. A 23% growth in system demand as well was assumed to result from the 23% population growth, from 0.65 to 0.80 MGD during the maximum demand day.

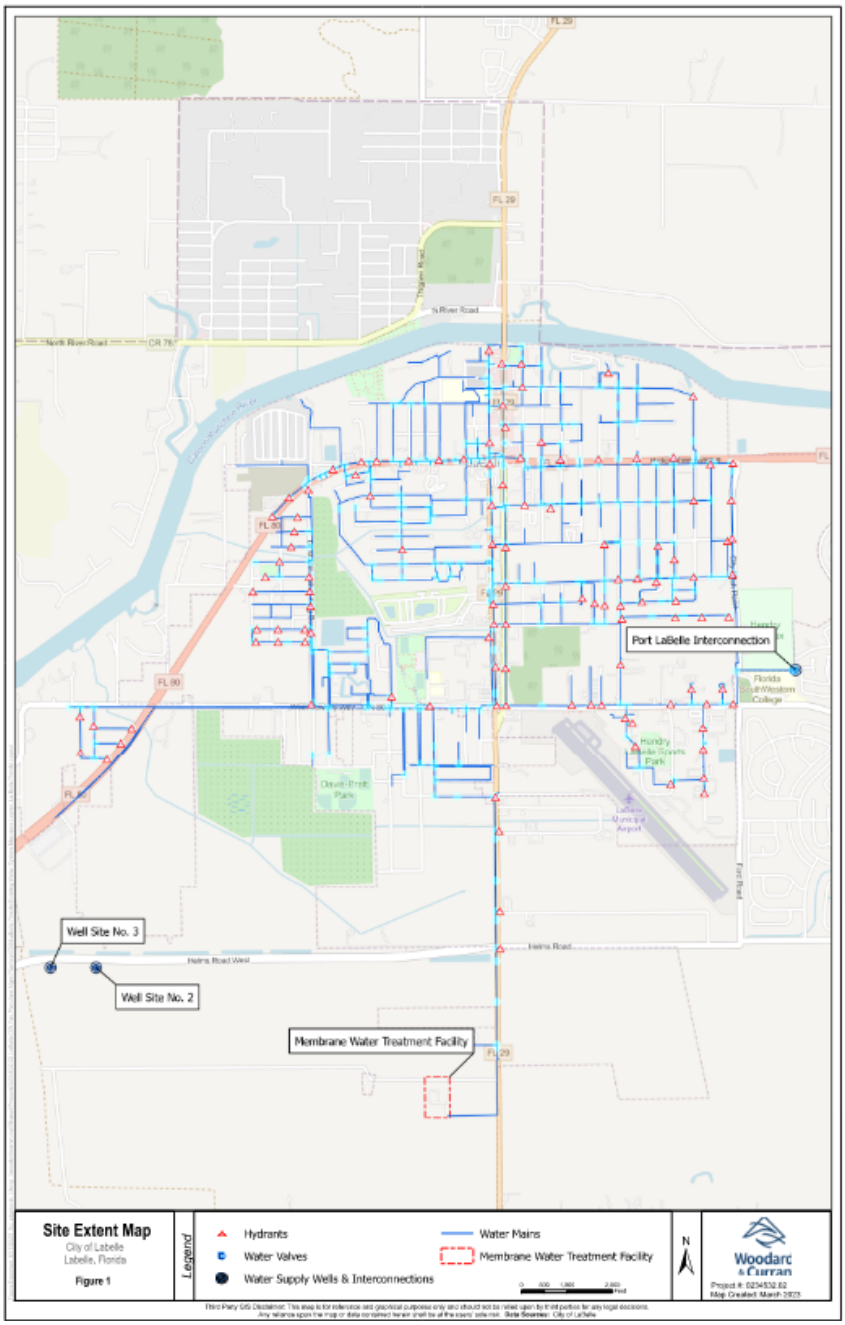
2.2.2 Planned Developments

There is one planned development that has an approved developer's agreement in LaBelle. It is an RV park being developed by SWJR Land Development, LLC. The proposed RV park will be located across several parcels along State Route 80 with an address at 7551 W St Rd 80, Labelle FL 33935. The developer's agreement requires the City to provide 62,339 gallons per day of potable water.

2.3 Description of Existing Water System

The LaBelle potable water system includes one water treatment facility, referred to as the Membrane Water Treatment Facility. The drinking water infrastructure is classified as Category V, Class C plants by FAC 62-699. The Florida Department of Environmental Protection (FDEP) has established the permitted capacity of the treatment plant as 1.5 MGD on an average annual daily basis, but it currently treats less than 1 MGD during maximum day demand conditions. Two wells drilled into the Upper Floridian Aquifer (UFA) supply raw water to the Membrane Water Treatment Facility. This treatment facility disinfects the water and serves the distribution system which consists of a single pressure zone. Figure 2-4 shows an overview map of the existing water distribution system. The public water system has one interconnection to Port LaBelle in the east of the system, used only during emergencies. The service area generally covers the downtown and adjacent residential subdivisions. The system serves the incorporated area of the city and portions of the unincorporated county (outside of city limits).

Figure 2-4: Water Distribution Map



2.3.1 Membrane Water Treatment Facility

The Membrane Water Treatment Facility is located on US 29, just south of Jim Kutzy Road in LaBelle, FL. This treatment facility is fed by two raw water wells (Well No. 2 and 3). The wells each have a design point of 1,500 gpm @ 321 ft TDH. Both wells produce a daily average of 305 gpm, but have outputted a total daily flow up to 800 gpm. However, the wells are capable of producing a continuous 1,500 gpm flow if needed. The wells operate in a lead-backup configuration, with one well typically operating at a time.

Treatment consists of cartridge filtration, reverse osmosis demineralization, degasification, pH adjustment, and disinfection with chlorine. Treated water is blended with filtered raw water prior to degasification. Orthophosphate and hydrofluorosicilic acid are also added for corrosion control and fluoridation, respectively.

2.3.2 SCADA

The City of LaBelle currently has a SCADA system that can operate the Membrane Water Treatment Facility automatically using local instrumentation. This allows the treatment facility to operate continuously when operators are not present. The SCADA system currently reads and records well flow data, treatment facility raw and finished water flow data, and various other pieces of process data (e.g., chlorination parameters, finished water storage levels, booster pump statuses, cartridge filter statuses, and injection well activity).

2.3.3 Water Distribution Piping

LaBelle's water distribution system consists of approximately 49 miles of water mains, ranging from 0.75-inch to 12-inch in diameter. Most of the water mains are 6 to 8-inch in diameter PVC, with some ductile, cast iron, and HDPE pipe. The system has one interconnection with Port LaBelle, but this interconnection is for use during emergencies only. See Table 2-9 for a summary of the distribution system pipes by diameter. Various pipes throughout the system are undersized for the required flow capacity. Many mains are older than their design lifespan and many pipes have dead-ends that can result in increased water age.

Table 2-8: Distribution System Pipe Diameter

Diameter (in)	Length of Pipe (ft)	Length of Pipe (mi)	Percent of System
2	85,900	16.27	32.9%
3	3,800	0.71	1.5%
4	28,800	5.45	11.0%
6	73,200	13.86	28.0%
8	32,700	6.20	12.5%
10	19,100	3.62	7.3%
12	17,700	3.35	6.8%
Total	**261,200**	**49.47**	**100.00%**

2.3.4 Performance of Existing Water System

The existing Membrane Water Treatment Facility has adequately and consistently treated the UFA source water. The City's demand will grow over the 20-year planning horizon such that the existing water storage is insufficient to meet requirements, therefore the various water system modifications described in this report are required.

The City is dependent on the operation of at least one well and two reverse osmosis treatment skids to provide water service to customers on both an average demand and maximum demand day. The City is currently unable to meet its maximum day demand with only one reverse osmosis skid, leaving the City vulnerable to supply shortages when the reverse osmosis systems require maintenance. The City also has only a single finished water storage tank in place and lacks any redundancy in finished water storage.

The City of LaBelle has approximately 2,379 potable water connections serving an estimated 5,950 people as provided in the 2020 BEBR. An annual 0.87% population growth is expected to occur within the existing service area. Based on daily finished water flow totalizations from January 2021 to April 2022, the average monthly total finished water flow rate into the system is 19,846,000 gal with an average day of 661,533 gal. and a maximum day of 841,800 gal.

3. DEVELOPMENT OF ALTERNATIVES

The following groups of projects were evaluated as part of this Facilities Plan:

Source Water and Treatment: The condition and capacity of the existing source water wells were evaluated along with new sources for quality, quantity, and redundancy improvements.

While the existing reverse osmosis treatment units are relatively new, components of the existing equipment are approaching the end of their design life and require replacement. Many treatment components are considered short lived assets (10 to 15 years) and therefore require continual renewal and replacement. The two existing reverse osmosis treatment trains could each be upgraded to treat 1.125 MGD if additional treatment cartridges were provided or a third treatment skid could be added to provide adequate system redundancy.

Additionally, new backup generator infrastructure at the City's well sources would improve the City's ability to consistently supply raw water to the treatment plant. New treatment infrastructure upgrades would allow the City to continue to meet non-RO treatment goals for the increased reverse osmosis treatment capacity at the plant.

Water Storage and Distribution: A 1,000,000-gallon ground storage tank containing finished water is located adjacent to the Membrane Water Treatment Facility. Current storage capacity is approximately 34% of ADF. The City should consider additional redundancy storage as part of the Facilities Plan.

Another area of concern is the four high service pumps, motors, and motor controllers at the ground storage tank; currently all pumps are on an electric service with limited emergency fuel options.

The water distribution system has pipes dating back to the 1940's and many are beyond their useful life. The City's GIS database shows many pipes that are undersized and limit the City's ability to provide adequate pressure and fire protection for customers. Many pipes terminate at dead ends. The City's mains have many inoperable valves.

The City has commercial service meters for high-demand customers that are faulty and may be limited the realized revenue of the water system. The City also has many primary process meters that are faulty and affect the quality of the data the City retains about its water operations.

Project Alternatives Listing: An evaluation of the City's treatment facilities and distribution system was conducted to develop alternatives to address the water system challenges within the 20-year planning period.

The evaluation resulted in the following three projects, with three alternatives for each, as follows:

Project 1 – Source and Treatment Upgrades

i. Alternative 1 – Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Installation of Additional Cartridges on the Existing Reverse Osmosis Skids

ii. Alternative 2 – Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Replacement of the Existing Reverse Osmosis Skids with New, Larger Reverse Osmosis Skids

iii. Alternative 3 – Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Replacement of the Existing Reverse Osmosis Skids with New Ultrafiltration Membrane Skids

Project 2 – Distribution and Storage Upgrades

i. Alternative 1 – Construction of a New Concrete Ground Storage Tank and Pump Station, Construction of the State Route 80 and Zone B Water Mains, and Execution of a Valve Replacement Program

ii. Alternative 2 – Construction of a Pedosphere Elevated Storage Tank, Construction of the State Route 80 and Zone B Water Mains, and Execution of a Valve Replacement Program

iii. Alternative 3 – Construction of a Fluted Column Elevated Storage Tank, Construction of the State Route 80 and Zone B Water Mains, and Execution of a Valve Replacement Program

Project 3 – Large Commercial Service Meter and Production Meter Replacement Program

i. Alternative 1 – Replacement of Commercial Service and Production Meters 1.5" and Above and Replacement of All AMI Endpoints

ii. Alternative 2 – Replacement of Commercial Service and System Production 1.5" and Above and Replacement of All AMI Endpoints at End of Life

iii. Alternative 3 – Maintain Existing Commercial Service and Production Meters 1.5" and Above

Each of the projects and their alternatives are described in further detail in the following subsections. Each project is accompanied by a construction cost estimate and a life cycle cost analysis for each alternative. The cost estimates, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the projects and resulting feasibility depend on actual labor and materials costs, competitive market conditions, actual site conditions, final project scopes, implementation schedule, continuity of personnel and engineering, and other variable factors. As a result, the final project costs may vary from the estimate presented here. All costs are presented in 2024 dollars.

The life cycle cost analysis is important for comparing the alternatives on an equivalent basis over the project life. Average service lives were established based on values provided in Florida Administrative Code Rule 25-30.140(2)a), assuming a class C, small utility. As of the end of January 2024, the nominal local government discount rate is 3.1%.

See Appendix B for an itemized breakdown of capital and life cycle costs for each selected alternative.

3.1 Project 1 – Source and Treatment Upgrades

3.1.1 Project 1 Alternative 1 – Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Additional Cartridges on Existing Reverse Osmosis Skids

The first alternative to address needed redundancy and minimize ongoing maintenance expenses for the City's treatment process is to add cartridges to the existing reverse osmosis skids. The City has two reverse osmosis skids that are only partially filled with treatment cartridges. Currently, the skids can each treat approximately 0.75 MGD which is below the design flow of the supply wells. This alternative would add additional cartridges to each reverse osmosis skid to bring the capacity of each skid up to a flow sufficient to treat 1.125 MGD when one skid is offline. This alternative also includes replacement of the membranes on the existing cartridges, which are nearing the end of their useful lifespan. Because removing cartridges during construction will limit the facilities ability to treat water, the addition of a third treatment skid may be required during design to ensure the facility can provide uninterrupted water service and provide additional system redundancy.

Additionally, new propane-driven pumps will be added. The first set will transfer water between the treatment plant's chlorine contact chamber and its finished water storage tank. The first set of pumps will have a design point of 1,050 gpm @ 39 ft TDH. The second set of pumps would pump from the finished water storage tank into the system. The second set of pumps will have a design point of 1,850 gpm @ 140 ft TDH. There are available spaces in both the chlorine contact chamber transfer pump area and the finished water high service pump area for these new propane-driven pumps. All existing transfer and high service pumps are electrically driven and will require rehabilitation and/or replacement. The City would like to have propane-driven pumps to maintain service in the event of a variable-frequency drive failure on its electrical pumps caused by the frequent lighting strikes in the area.

This alternative also includes installation of new generators, transfer switches, surge protectors and improved lightning protection system at its two existing well sources to improve water source reliability.

This alternative also includes refurbishment of the existing chemical storage canopy into a full chemical storage building. The existing chemical storage canopy will be retrofitted to be a fully-enclosed masonry-built chemical storage building. The building dimensions will be approximately 55'x22'. The building will be designed such that each chemical has its own secondary containment area and chemicals will no longer drain to a leaching field. HVAC and electrical elements will be added to the building. It includes replacement of the existing end-of-life chemical storage and pumping infrastructure for each of the chemicals use in at the facility. New level sensors will be provided for each tank. Chemical metering pumps and tanks will be upsized compared to the existing pumps and tanks to allow them to treat the larger flow rate, and support longer outages or distribution system impacts.

The proposed chemical storage and pumping elements are tabulated in Table 3-1.

Table 3-1: Chemical Storage and Metering Pump Parameters at Membrane Water Treatment Facility

Chemical	Chemical Storage Tanks	Chemical Metering Pump(s)	Level Sensors
Sodium Hypochlorite	Two 2,000-gallon bulk tanks One 75-gallon day tank	Two 6.0 gph duplex pump skids (4.0 gph existing)	Two ultrasonic
Sulfuric Acid	One 500-gallon bulk tank One 30-gallon day tank	One 1.5 gph duplex pump skid (1.0 gph existing)	One ultrasonic
Orthophosphate	One 275-gallon bulk tank One 10-gallon day tank	One 0.65 gph duplex pump skid (0.42 gph existing)	One ultrasonic
Sodium Hydroxide	One 1,550-gallon bulk tank One 40-gallon day tank	One 3.0 gph duplex pump skid (2.0 gph existing)	One ultrasonic
Hydrofluorosilicic Acid	One 240-gallon bulk tank One 35-gallon day tank	One 0.65 gph duplex pump skid (0.42 gph existing)	One ultrasonic
Antiscalant	One 55-gallon bulk tank One 25-gallon day tank	One 0.65 gph duplex pump skid (0.42 gph existing)	One ultrasonic

3.1.2 Project 1 Alternative 2 – Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Replace Existing Reverse Osmosis Skids with New, Larger Reverse Osmosis Skids

The second alternative to add redundancy to the City's treatment process is to replace the existing reverse osmosis skids with larger skids. This alternative would bring the capacity of each skid up to a flow sufficient to treat all flow from a single well. This will give the City full redundancy in its reverse osmosis operations.

Two propane pumps, new generator equipment at the well sources, and chemical storage and pumping equipment are included in this alternative, like Project 1 Alternative 1.

3.1.3 Project 1 Alternative 3 – Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Replace Existing Reverse Osmosis Skids with New Ultrafiltration Membrane Skids

The third alternative to add redundancy to the City's treatment process is to replace the existing reverse osmosis skids with two new ultrafiltration membrane skids, each with a higher treatment capacity than the existing reverse osmosis skids. Each new ultrafiltration membrane skid would be sized to treat all flow from a single well. This will give the City full redundancy in its treatment operations.

Two propane pumps, new generator equipment at the well sources, and chemical storage and pumping equipment are included in this alternative, like Project 1 Alternative 1.

3.1.4 Project 1 Alternatives Cost Comparison

A capital cost comparison of the three Source and Treatment Upgrade alternatives is presented in **Error! Reference source not found.**.

See Appendix B for an itemized breakdown of capital and life cycle costs for the selected alternative.

Table 3-2: Project 1 Source and Treatment Upgrades Alternatives - Capital & Operations Cost Comparison

Item No.	Cost Item	Alternative 1 – Expand Existing RO Skid & Replace Existing Filters (and Other Upgrades)	Alternative 2 – New Larger RO Skid (and Other Upgrades)	Alternative 3 – Replace RO Skid with New Ultra Filtration Skid (and Other Upgrades)
CAPITAL COST SUMMARY				
1	Capital Base Cost	$2,794,000	$3,809,000	$4,424,000
2	Contingency (10%)	$279,000	$381,000	$442,000
3	Engineering, Permitting, and Design (10%)	$279,000	$381,000	$442,000
4	Engineering Services During Construction (8%)	$224,000	$305,000	$354,000
5	Legal and Administration (3%)	$84,000	$114,000	$133,000
	Total Opinion of Capital Cost	$3,660,000	$4,990,000	$5,795,000
ANNUAL OPERATIONS AND MAINTENANCE COST SUMMARY				
	Operations & Maintenance	$56,000	$76,000	$88,000

3.1.4.1 Life Cycle Cost Analysis

Error! Reference source not found. provide information on the 20-year life cycle cost analysis (LCCA) for the three proposed alternatives for this project. **Error! Reference source not found.** shows that Alternative 1 has the lowest total life cycle cost.

Table 3-3: Project 1 LCCA Summary

Alternative	Initial Capital Cost*	Replacement Cost**	Lifetime O&M Cost**	Salvage Value**	Total 20-Year Life Cycle Cost (2023 Dollars)
Alternative 1 – Expand Existing RO Skid & Replace Existing Filters (and Other Upgrades)	$3,660,000	$843,000	$719,000	$2,000	$5,220,000
Alternative 2 – New Larger RO Skid (and Other Upgrades)	$4,990,000	$1,529,000	$884,000	$2,000	$7,401,000
Alternative 3 – Replace RO Skid with New Ultra Filtration Skid (and Other Upgrades)	$5,795,000	$1,944,000	$984,000	$2,000	$8,721,000

*Includes added 10% contingency, 15% engineering, permitting, design, and 3% legal and administrative expenses.

**Replacement costs for replacements needed during 20-year planning period. Salvage value at the end of the 20-year planning period. Net present value O&M costs over 20-year planning period.

3.2 Project 2 – Distribution and Storage Upgrades

3.2.1 Project 2 Alternative 1 – New Concrete Ground Storage Tank and Pump Station, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program

The first alternative to improve the distribution and storage infrastructure in the system is to provide a new 1,000,000-gallon concrete ground storage tank and pump station. The concrete ground storage tank would be filled by the existing high service pumps at the Membrane Water Treatment Facility. A new high service pump station is proposed to pressurize the water stored in the ground storage tank prior to entering the distribution system. The pump station would have two (2) 100 HP pumps and two (2) 50 HP pumps.

The new concrete ground storage tank would be located on an existing City-owned parcel, whose final location would be determined following modeling analyses during construction. Based on modelling results, the City may need to purchase a property more suitable for storage tank location. The tank site would have several additional miscellaneous work elements, including fencing, gates, yard piping, hydrants, an emergency backup generator, a new electrical service connection, a driveway, and SCADA instrumentation.

This alternative will also include new water mains to improve looping in the City's distribution system and provide connectivity for the proposed pumps. This alternative includes three sections of ductile iron transmission main along State Route 80, in the following quantities and locations:

- 14,000 linear feet of 12" main on Helms Road, from State Route 29 to State Route 80
- 4,700 linear feet of 12" main on State Route 80, from Helms Road West to Ben Moore Drive, connecting to an existing dead-end previously installed between East Cowboy Way and Ben Moore Drive.
- 5,000 linear feet of 12" main on State Route 80, from East Cowboy Way to Miller Avenue.

New water mains will be added in Zone B as part of this alternative to improve fire flow availability by providing new 8" ductile iron water main. The existing Zone B 2" and 4" mains would be abandoned in place or removed, as required. Approximately 15,000 linear feet of new 8" pipe is proposed. Customers' service lines would be replaced with new taps, corporation stops, meter boxes, service lateral pipe, and curb stops.

The City will also address their deficient distribution valves by performing a valve exercising program to catalogue all the City's valves and identify the valves that are failing. The failing valves would then be removed and replaced. It is estimated that 140 valves will be replaced.

3.2.2 Project 2 Alternative 2 – New Pedosphere Elevated Storage Tank, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program

The second alternative to improve the distribution and storage infrastructure in the system is to provide a new 1,000,000-gallon pedosphere elevated storage tank. The pedosphere elevated storage tank would be filled by the system pressure provided by the high service pumps at the Membrane Water Treatment Facility.

The new pedosphere elevated storage tank would be located on an existing City-owned parcel, whose final location and height would be determined following modeling analyses during the design phase. Based on modelling results, the City may need to purchase a property more suitable for storage tank location. The tank site would have several additional miscellaneous work elements, including fencing, gates, yard piping, hydrants, altitude valve, an emergency backup generator, a new electrical service connection, a driveway, and SCADA instrumentation.

This alternative will also include the same water mains and valve exercising program as in Project 2 Alternative 1.

3.2.3 Project 2 Alternative 3 – New Fluted Column Elevated Storage Tank, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program

The third alternative to improve storage redundancy and maintain adequate storage during a tank outage is to provide a new 1,000,000-gallon fluted column elevated storage tank. The fluted column elevated storage tank would be filled by the system pressure provided by the high service pumps at the Membrane Water Treatment Facility.

The new fluted column elevated storage tank would be located on an existing City-owned parcel, whose final location and height would be determined following modeling analyses during construction. Based on modelling results, the City may need to purchase a property more suitable for storage tank location. The

tank site would have several additional miscellaneous work elements, including fencing, gates, yard piping, hydrants, altitude valve, an emergency backup generator, a new electrical service connection, a driveway, and SCADA instrumentation.

This alternative will also include the same water mains and valve exercising program as in Project 2 Alternative 1.

3.2.4 Project 2 Alternatives Cost Comparison

A capital cost comparison of the three Distribution and Storage alternatives is presented in Table 3-4.

See Appendix B for an itemized breakdown of capital and life cycle costs for the selected alternative.

Table 3-4: Project 2 Distribution and Storage Upgrades Cost Comparison

Item No.	Cost Item	Alternative 1 - New Concrete Ground Storage Tank and Pump Station, Water Mains, and Valve Program	Alternative 2 - New Pedosphere Elevated Storage Tank, Water Mains, and Valve Program	Alternative 3 - New Fluted Column Elevated Storage Tank, Water Mains, and Valve Program
CAPITAL COST SUMMARY				
1	Capital Base Cost	$16,437,000	$17,473,000	$19,388,000
2	Contingency (10%)	$1,644,000	$1,747,000	$1,939,000
3	Engineering, Permitting, and Design (10%)	$1,644,000	$1,747,000	$1,939,000
4	Engineering Services During Construction (8%)	$1,315,000	$1,398,000	$1,551,000
5	Legal and Administration (3%)	$493,000	$524,000	$582,000
	Total Opinion of Capital Cost	$21,553,000	$22,889,000	$25,399,000
ANNUAL OPERATIONS AND MAINTENANCE COST SUMMARY				
	Operations & Maintenance	$329,000	$349,000	$388,000

3.2.4.1 Life Cycle Cost Analysis

Table 3-5 provide information on the 20-year life cycle cost analysis (LCCA) for the three proposed alternatives for this project. Table 3-5 shows that Alternative 2 has the lowest total life cycle cost.

Table 3-5: Project 2 LCCA Summary

Alternative	Initial Capital Cost*	Replacement Cost**	Lifetime O&M Cost**	Salvage Value**	Total 20-Year Life Cycle Cost (2023 Dollars)
Alternative 1 – New Concrete Ground Storage Tank and Pump Station, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program	$21,533,000	$258,000	$9,489,000	$5,531,000	$25,749,000
Alternative 2 – New Pedosphere Elevated Storage Tank, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program	$23,836,000	$123,000	$5,928,000	$6,051,000	$23,836,000
Alternative 3 – New Fluted Column Elevated Storage Tank, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program	$25,399,000	$31,000	$7,842,000	$7,068,000	$26,204,000

*Includes added 10% contingency, 15% engineering, permitting, design, and 3% legal and administrative expenses.

**Replacement costs for replacements needed during 20-year planning period. Salvage value at the end of the 20-year planning period. Net present value O&M costs over 20-year planning period.

3.3 Project 3 – Large Commercial Service and Production Meter Replacement Program

3.3.1 Project 3 Alternative 1 – Replace Commercial Service Meters, AMI Endpoints, and Production Meters 1.5" and Above

The first alternative to correct the City's deficient commercial service meters is to identify and replace the commercial service and production meters 1.5" and to replace the AMI endpoints at each meter at the same time. Each meter would be upgraded to a newer model, along with any required advanced metering infrastructure (AMI) for remote meter reading. This includes up to 100 commercial service meters with their AMI endpoints and 4 production meters.

3.3.2 Project 3 Alternative 2 – Replace All Commercial Service and Production Meters 1.5" and Above, Replace AMI Endpoints at End of Life

The second alternative to correct the City's deficient commercial service meters is to identify and replace the commercial service and production meters 1.5" and to replace the AMI endpoints at each meter five years later when the endpoints reach the end of their useful life. Each meter would be upgraded to a newer model, along with any required advanced metering infrastructure (AMI) for remote meter reading. This includes up to 100 commercial service meters and AMI endpoints and 4 production meters.

3.3.3 Project 3 Alternative 3 – Maintain Existing Commercial Service and Production Meters 1.5" and Above

The third alternative is to do nothing and maintain the existing commercial service meters. This may cause continued revenue losses from inaccurate meter readings on large customers.

3.3.4 Project 3 Alternatives Cost Comparison

A capital cost comparison of the three alternatives for commercial service and production meter replacement program is presented in Table 3-6.

See Appendix B for an itemized breakdown of capital and life cycle costs for the selected alternative.

Table 3-6: Project 3 Large Commercial Service and Production meter Replacement Program Cost Comparison

Item No.	Cost Item	Alternative 1 - Replace Commercial Service and Production Meters 1.5" and Above, Replace All AMI Endpoints	Alternative 2 - Replace All Commercial Service and Production Meters 1.5" and Above, Replace AMI Endpoints at End of Life	Alternative 3 - Maintain Existing Commercial Service and Production Meters 1.5" and Above
CAPITAL COST SUMMARY				
1	Capital Base Cost	$185,000	$191,000	-
2	Contingency (10%)	$19,000	$19,000	-
3	Engineering, Permitting, and Design (10%)	$19,000	$19,000	-
4	Engineering Services During Construction (0%)	$0	$0	-
5	Legal and Administration (3%)	$6,000	$6,000	-
	Total Opinion of Capital Cost	$229,000	$235,000	-
ANNUAL OPERATIONS AND MAINTENANCE COST SUMMARY				
	Operations & Maintenance	$4,000	$4,000	$34,800

3.3.4.1 Life Cycle Cost Analysis

Table 3-7 provide information on the 20-year life cycle cost analysis (LCCA) for the three proposed alternatives for this project. Table 3-7 shows that Alternative 1 has the lowest total life cycle cost.

Table 3-7: Project 3 LCCA Summary

Alternative	Initial Capital Cost*	Replacement Cost**	Lifetime O&M Cost**	Salvage Value**	Total 20-Year Life Cycle Cost (2023 Dollars)
Alternative 1 - Replace Commercial Service and Production Meters 1.5" and Above, Replace All AMI Endpoints	$229,000	$158,500	$55,500	$0	$443,000
Alternative 2 – Replace All Commercial Service and Production Meters 1.5" and Above, Replace AMI Endpoints at End of Life	$235,000	$162,700	$57,300	$0	$455,000
Alternative 3 – Maintain Existing Commercial Service and Production Meters 1.5" and Above	$0	$0	$513,000	$0	$513,000

*Includes added 10% contingency, 15% engineering, permitting, design, and 3% legal and administrative expenses.

**Replacement costs for replacements needed during 20-year planning period. Salvage value at the end of the 20-year planning period. Net present value O&M costs over 20-year planning period.

Asset Management: FDEP-SRF encourages and rewards any utility that engages in the SRF program, to implement an active asset management plan. FDEP-SRF definition; "Asset management plan" means a systematic management technique for utility systems that focuses on the long-term life cycle of the assets and their sustained performance, rather than on short-term, day-to-day aspects of the assets. This plan includes the identification of and costs for rehabilitating, repairing, or replacing all assets as well as the schedule to do so. Subsection 62-552.700(7), F.A.C., provides details on the contents of the plan.

4. SELECTED ALTERNATIVES

This section of the report presents the recommended alternatives for each of the three proposed projects in Section 3. An investigation into environmental impacts and cost estimates of the recommended plans are also included in this section.

4.1 Project 1 Selected Alternative

The recommended alternative for improving system production and treatment capacity is Alternative 1 – Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Additional Cartridges on Existing Reverse Osmosis Skids. Adding cartridges to the existing reverse osmosis treatment skids, providing construction flexibility of adding a new treatment skid and providing improved backup generators at the well sources will improve redundancy and give the City the ability to operate with any one piece of source or treatment equipment out of service for regular maintenance. Improving the chemical storage and pumping at the site will preemptively prevent failures for equipment at end of life, remove safety and environmental risks with the existing containment and drainage in the chemical storage canopy, and provide more resilience to the chemical storage area.

4.1.1 Conceptual-Level Projected Cost for the Recommended Project 1 Alternative

The conceptual-level Opinion of Probable Cost (OPC) for the overall recommended plan is $3.66M in 2024 dollars and is summarized in Table 4-1. Cost details are presented in Appendix B.

Table 4-1: Conceptual Level Cost Estimate Summary Recommended Project 1 Alternative

Item No.	Cost Item	Alternative 1 – Expand Existing RO Skid & Replace Existing Filters (and Other Upgrades)
CAPITAL COST SUMMARY		
1	Capital Base Cost	$2,794,000
2	Contingency (10%)	$279,000
3	Engineering, Permitting, and Design (10%)	$279,000
4	Engineering Services During Construction (8%)	$224,000
5	Legal and Administration (3%)	$84,000
	Total Opinion of Capital Cost	**$3,660,000**
ANNUAL O&M COST SUMMARY		
	Annual O&M Cost	$56,000

4.2 Project 2 Selected Alternative

The recommended alternative for improving system production and treatment capacity is Alternative 2 – New Pedosphere Elevated Storage Tank, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program. This alternative has the lowest life cycle cost among the alternatives.

4.2.1 Conceptual-Level Projected Cost for the Recommended Project 2 Alternative

The conceptual-level Opinion of Probable Cost (OPC) for the overall recommended plan is $22.89M in 2024 dollars and is summarized in Table 4-2. Cost details are presented in Appendix B.

Table 4-2: Conceptual Level Cost Estimate Summary Recommended Project 2 Alternative

Item No.	Cost Item	Alternative 2 – New Pedosphere Elevated Storage Tank, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program
CAPITAL COST SUMMARY		
1	Capital Base Cost	$17,473,000
2	Contingency (10%)	$1,747,000
3	Engineering, Permitting, and Design (10%)	$1,747,000
4	Engineering Services During Construction (8%)	$1,398,000
5	Legal and Administration (3%)	$524,000
	Total Opinion of Capital Cost	**$22,889,000**
ANNUAL O&M COST SUMMARY		
	Annual O&M Cost	$349,000

4.3 Project 3 Selected Alternative

The recommended alternative for improving service and production meter and improving revenue collection is Alternative 1 – Replace Commercial Service + Production Meters (>1.5"), Replace All AMI Endpoints. This alternative has the lowest life cycle cost among the alternatives.

4.3.1 Conceptual-Level Projected Cost for the Recommended Project 3 Alternative

The conceptual-level Opinion of Probable Cost (OPC) for the overall recommended plan is $229,000 in 2024 dollars and is summarized in Table 4-3. Cost details are presented in Appendix B.

Table 4-3: Conceptual Level Cost Estimate Summary Recommended Project 3 Alternative

Item No.	Cost Item	Alternative 1 - Replace Commercial Service and Production Meters 1.5" and Above, Replace All AMI Endpoints
CAPITAL COST SUMMARY		
1	Capital Base Cost	$185,000
2	Contingency (10%)	$19,000
3	Engineering, Permitting, and Design (10%)	$19,000
4	Engineering Services During Construction (0%)	$0
5	Legal and Administration (3%)	$6,000
	Total Opinion of Capital Cost	**$229,000**
ANNUAL O&M COST SUMMARY		
	Annual O&M Cost	$4,000

5. IMPLEMENTATION AND COMPLIANCE

5.1 Public Meeting

A public meeting was held August 8, 2024, after advertising in the Okeechobee Newspaper. Resolution 2024-14 to approve this Drinking Water Facilities Plan and submit to the FDEP passed at the meeting. A copy of Resolution 2024-15, the legal advertisement affidavit, and certified meeting minutes are provided in Appendix J.

5.2 Regulatory Agency Review

To qualify for a subsidized loan from the SRF, various government agencies must be satisfied with the way that the City of LaBelle is proposing to address their wastewater system challenges. Copies of the Facilities Plan adopted by the City of LaBelle are being sent to the FDEP-SRF for review and comments. The FDEP-SRF staff will distribute this Facilities Plan to Local, State and Federal Agencies via the "State Clearing House Process" for their review and comment.

5.3 Financial Planning

The FDEP-SRF program is expected to be the financing source for the project. A capital financing plan (CFP) is included with this Facilities Plan, which provides the financial impact on the users of the system. The CFP is shown in Appendix D and demonstrates that water and sewer operating expenses; existing debt service obligations; and proposed project debt service associated with the selected plan. The CFP also evaluates the current utility rates, existing approved annual increases, and water and sewer impact fees. The CFP is based on the current utility rates and the rate ordinance that the City adopted with a consumer price index (CPI) increase annually, as well as water and sewer impact fees. Copies of the current water and sewer rate documents are provided in Appendix I that support the CFP.

5.4 Project Implementation

The City of LaBelle has the sole responsibility and authority to implement the recommended facilities. The City intends to implement this Facility Plan on the following schedule, contingent upon permitting and funding authority review timelines. The City is prepared to begin design immediately.

5.4.1 Implementation Schedule

Pre-Design Administration

August 2024 SAHFI Loan Application Submittal (already completed)

November 2024 SAHFI Loan Agreement Execution

Project 1 – Source and Treatment Upgrades

December 2024 Design Kickoff

March 2025 Preliminary Site Investigations and Schematic Design Deliverable

July 2025 60% Design Deliverable

March 2025 FDEP Permit Review Submittal & Planning-Level Submittal for SAHFI Review

July 2025 Deadline for Submittal of Planning-Level Documents for SAHFI Review

September 2025 FDEP Approval of Permit Submittal

November 2025 Anticipated SAHFI Approval of Planning-Level Documents

January 2026 Final Design Deliverable

January 2026 Submittal of Final Design Documents for SAHFI Review

March 2026 Bid Document Delivery for City Review

May 2026 Deadline Submittal of Final Design Documents for SAHFI Review

July 2026 Anticipated SAHFI Approval of Final Design Documents

August 2026 Project Bidding

<u>Project 2 – Distribution and Storage Upgrades</u>

December 2024 Design Kickoff

March 2025 Preliminary Site Investigations and Schematic Design Deliverable

July 2025 60% Design Deliverable

March 2025 FDEP Permit Review Submittal & Planning-Level Submittal for SAHFI Review

July 2025 Deadline for Submittal of Planning-Level Documents for SAHFI Review

September 2025 FDEP Approval of Permit Submittal

November 2025 Anticipated SAHFI Approval of Planning-Level Documents

January 2026 Final Design Deliverable

January 2026 Submittal of Final Design Documents for SAHFI Review

March 2026 Bid Document Delivery for City Review

May 2026 Deadline Submittal of Final Design Documents for SAHFI Review

July 2026 Anticipated SAHFI Approval of Final Design Documents

August 2026 Project Bidding

Project 3 – Large Commercial Service and Production Meter Replacement Program

(Note Project 3 is not eligible for SAHFI funding)

July 2025 Perform meter inventory to identify all meters 1.5" and larger

December 2025 Develop meter inventory, replacement plan, and cost estimate documents

February 2026 Submittal of Final Design Documents for FDEP Funding Review

December 2026 Meter Replacements Complete, Installed, and Integrated

The first alternative to correct the City's deficient commercial service meters is to identify and replace the commercial service and production meters 1.5" and to replace the AMI endpoints at each meter at the same time. Each meter would be upgraded to a newer model, along with any required advanced metering infrastructure (AMI) for remote meter reading. This includes up to 100 commercial service meters with their AMI endpoints and 4 production meters.

5.5 Compliance

1. Maintenance and operation of all facilities proposed herein will be the full responsibility of the City of LaBelle as the wholesale provider.
2. All proposed water system elements will be designed to meet Florida and federal requirements, including FDEP 62-550 Drinking Water Standards, Monitoring, and Reporting and EPA Part 141 National Primary Drinking Water Regulations.
3. Environmental aspects of the proposed facilities are satisfactory.
4. Recommended facilities are consistent with the City of LaBelle's master planning direction.

APPENDIX A: FDEP SANITARY SURVEY INSPECTION

FLORIDA DEPARTMENT OF Environmental Protection

South District
PO Box 2549
Fort Myers FL 33902-2549
SouthDistrict@FloridaDEP.gov

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

November 28, 2022

Julie Wilkins
City of Labelle
481 West Hickpochee Ave
Labelle, FL 33935
juliewilkins@citylabelle.com

Re: Warning Letter
City of Labelle
Facility ID: 5260050
Hendry County - PW

Dear Ms. Wilkins:

A Sanitary Survey inspection was conducted at your facility on August 30, 2022. During this inspection, possible violations of Chapter 403 and 373 Florida Statutes, and Chapter 62-555, Florida Administrative Code were observed.

During the inspection Department personnel noted the following:

- Excessive corrosion around the High Service Pumps.
- Nylon plug on raw sample tap on Well UFA-2.
- Well UFA-3 had a leak around casing.
- 6 wells have been taken out of operation for more than six months (Wells AAE6983, AAH9205, AAH9250, AAH9252, AAH9251. AAC5589). Disinfection of Wells and Bacteriological Surveys and Evaluations of Wells will be required before wells are placed back into service. The wells must be maintained according to current code while still connected to the system until they are abandoned or physically disconnected from the system.
- Approximately 75% of systems isolation valves are inoperable.
- Fire flow analysis indicates inadequate flow to meet customer demand.
- As a result of one of the two Supply Wells (#3) being out of service, 3 months of 100% of permitted capacity from the alternate well (#2) was exceeded. In one of the three months, (August 2021) three days exceeded 136%. TDS issues prevail in supply well #3.

Violations of Florida Statutes or administrative rules may result in liability for damages and restoration, and the judicial imposition of civil penalties, pursuant to Section 403 Florida Statutes.

Please contact Dessy Owiti, at (239) 344-5637 or Dessy.Owiti@FloridaDEP.gov, within **15 days** of receipt of this Warning Letter to arrange a meeting to discuss this matter. The Department is interested in receiving any facts you may have that will assist in determining whether any violations have occurred. You may bring anyone with you to the meeting that you feel could help resolve this matter.

Please be advised that this Warning Letter is part of an agency investigation, preliminary to agency action in accordance with Section 120.57(5), Florida Statutes. We look forward to your cooperation in completing the investigation and resolving this matter.

Sincerely,

Jennifer L. Carpenter

Jennifer L. Carpenter
Acting Director of District Management
South District Office
Florida Department of Environmental Protection

Enclosure: Sanitary Survey

cc: Joe Thomas, jthomas@woodardcurran.com
Troy Kepley, tkepley@woodardcurran.com
Gary Hull, ghull@citylabelle.com

Florida Department of Environmental Protection

South District Public Water System Sanitary Survey Inspection Report

Water system: City of Labelle	**System PWS #:** 5260050	**Survey date:** 08/30/2022
Facility type class: Community - (2C)	Source type: Ground	4-Log approved: No
Facility address: 2500 SR-29 S, Labelle, FL 33935		
Facility phone(s): 863-674-4406	Facility email/fax:	
Facility contact: Troy Kepley	Facility contact phone(s): 239-340-3737	
Facility contact email/fax: Tkepley@woodardcurran.com		
Owner name: Julie Wilkins	Company name: Mayor of City of Labelle	
Owner/Corp address: 481 West Hickpochee Ave	City: Labelle	State: FL Zip: 33935
Owner/Corp phone(s): 863-675-2872	Owner e-contact(s): juliewilkins@citylabelle.com	
Operator name: Joseph Thomas	Certification: B 12173	
Operator phone(s): 863-673-4406	Operator email/fax: JThomas@woodardcurran.com	
On-site Rep: Operator	**Immediate Action Required?** Yes	Inspection recap given? Yes

GENERAL INFORMATION

Number of Service Connections 2,380
Population Served 5,950
Plant Design Capacity 999,999 MGD
Average Day (from MORs) 637,858 GPD
Max. Day (from MORs) 780,695 GPD
Total Storage Capacity 1,500,000 MGD
Comments:

OPERATION & MAINTENANCE

Certified Operator: (•) Yes ( ) No ( ) Not required
Plant visits conducted by: Operator
O&M Log: (•) Yes ( ) No O&M Manual: (•) Yes ( ) No
Visitation Frequency
Hrs/day: *Required* 6 *Actual* 8
Hrs/wk: *Required* *Actual*
Days/wk: *Required* 7 *Actual* 7
Non-consecutive Days? ( ) Yes ( ) No (•) N/A
MORs submitted regularly? (•) Yes ( ) No ( ) N/A
Data missing from MORs? ( ) Yes (•) No ( ) N/A

CHLORINATION (Disinfection)

Type: Hypo-Chlorination
Capacity 1,000 x 2 Unit gpd ( ) Total (•) Each
Chlorine Feed Rate 20-25 gpd
Avg. Amount of Cl_2 gas used N/A
Chlorine Residuals: Plant 1.0 Remote .7
Remote tap location City Maintance Shop
Injection Points before storage and after clearwell
Booster Pump Info
Comments:

AERATION (Gases, Fe, & Mn Removal)

Type Degasifier Conventional Capacity 1750 gpm
Aerator Condition Good
Visible Algae Growth ( ) Yes (•) No
Protective Screen Condition
Comments:
Sulfuric acid added as a pH adjuster for maximum hydrogen sulfide removal.

RAW WATER SOURCE

[✓] GROUND; Number of Wells 2
[ ] SURFACE/UDI; Source
[ ] PURCHASED from PWS ID #
[ ] Emergency Water Source
Emergency Water Capacity

AUXILIARY POWER SOURCE

(•) Yes ( ) None ( ) Not Required
Source Generator
Capacity of Standby (kW) 650
Switchover: (•) Automatic ( ) Manual
Standby Plan: (•) Yes ( ) No
Hrs Operated Under Load 4 hr / month
What equipment does it operate?
[ ] Well pumps
[✓] High Service Pumps
[✓] Treatment Equipment
Satisfy 1/2 max-day demand? (•) Yes ( ) No ( ) Unk
Comments:
Wells have their own generators, 100 kW each and runs 1 hr/ week under load.

DISTRIBUTION SYSTEM

Flow Measuring Device Flow Meter
Meter Size & Type 10" Magnetic
Meter tested w/i 5 yrs? (•) Yes ( ) No ( ) Unk ( ) N/A
Backflow Prevention : (•) Yes ( ) No
Cross-connections
Cross-connection Control Program: (•) Yes ( ) No ( ) N/A
Coliform Sampling Plan: (•) Yes ( ) No
Stage 2 DBPs Sampling Plan: (•) Yes ( ) No ( ) N/A
Lead & Copper Sampling Plan: (•) Yes ( ) No ( ) N/A
Comments:
Well 2 - Rosemount Meter

SERVICE AREA CHARACTERISTICS:

Municipal/City

Food Service: ( ) Yes (•) No ( ) N/A

Water System: City of Labelle

PWS ID # 5260050
Survey Date 08/30/2022

OTHER TASTE/ODOR CONTROL PROCESSES
Explain:

AMMONIATION
Capacity _____ (gal) Injection Points before storage
Comments:

CORROSION CONTROL
Capacity _____ (gal) Injection Points transfer line
Chemicals Used Orthophosphate
Comments:
2 gal/day

COAGULATION (Turbidity Removal)
Chemicals Used _____
Is settling OK? ○ Yes ○ No
Comments:

SOFTENING (Ca/Mg Hardness Removal)

Chemical Precipitation Process:
Chemicals Used:
Lime

Is settling OK? ◉ Yes ○ No
Excessive carry-over? ○ Yes ◉ No
Secondary Precipitation ○ Yes ◉ No
Recarbonation Type CO2 for pH adjustment
Sludge Recirculation Used ○ Yes ◉ No
Comments:

Ion Exchange Process:
Capacity _____ (gal)
Grade of Salt for Regeneration _____
Backwash Effluent Destination _____
Comments:

STABILIZATION
Effluent S.I. _____
Is pH control done? ○ Yes ○ No
Chemical Used _____
Injection Point _____
pH Range of Effluent _____

SUBPART H/UDI TURBIDITY METERS
Each filter has a turbidity meter ○ Yes ○ No
Combined turbidity meter probe Point(s):

Last time calibrated _____
Comments:

FILTRATION (Suspended Solids Removal)
Type Sand Separator for raw water located at the plant
Size _____ No. of Units _____
Length of Filter Runs _____
Type of Filter Media _____
Is media visible? ○ Yes ○ No
Clean after BW? ○ Yes ○ No
Filter Rate _____ BW Rate _____
Filter Capacity _____
Cracks/Cementation/Channeling ○ Yes ○ No
Effluent Stability _____
Algae Growth ○ Yes ○ No
Turbidity in clearwell? ○ Yes ○ No
Comments:

REVERSE OSMOSIS (Dissolved Solids Removal)
Pressure 160 (psi)
No. of Modules 22x2 Permeate Cap. 521
Blend Rate (GPM) 10% raw
Chemicals Used Anti-Scalant
Waste-to-product Ratio 75% Recovery
Pre-treatment Spiral Filters and Anti Scalant
Effluent Quality: TDS (mg/L) 500-600
Waste Disposal Site Deep Injection Well
IW Permit # & Expir. Date 329487-001-UC/1X
Comments:
1.5 MG Tank is used to hold concentrate from RO.
Caustic acid pH adjuster no longer in use.

FLUORIDATION
Chemical Used Hydrofluorosilicic Strength 23.6%
Corrosion Noted ○ Yes ◉ No
Plugging Noted ○ Yes ◉ No
High Level Ventilation (acid) ○ Yes ○ No
Acid carboys/day tank vented outside ◉ Yes ○ No
Designated Electrical Outlet (acid) ◉ Yes ○ No
Analytical Testing Equipment ◉ Yes ○ No
Anti-siphon Valves ◉ Yes ○ No
Residual Range .7-.8
Point of Application Transfer Line
Emergency Eyewash ◉ Yes ○ No
Comments:

Water System: City of Labelle

PWS ID # 5260050
Survey Date 08/30/2022

STORAGE FACILITIES

Tank Type	Ground								
Capacity MG	1								
Material	Concrete								
By-pass Piping	Yes								
Gravity Drain	Yes								
PRV/ARV	N/A								
Protected Openings	Yes								
Pressure Gauge	N/A								
Sight Glass or Level Indicator	L.I.								
Fittings for Sight Glass	N/A								
Access Padlocked	Yes								
Last Inspection Date (for tanks with access manholes)	2/04/2020								
On/Off Pressure									
Height to Bottom of Elevated Tank	N/A								
Height to Max. Water Level	27 ft								

Comments:

HIGH SERVICE (HSP), BACKWASH (BWP), TRANSFER (TP) and OTHER (OP) PUMPS

Pump Purpose	High Service	High Service	High Service	High Service	Transfer	Transfer	High Service	High Service	
Pump Number	1	2	3	4	@ Clearwell	@ Clearwell	RO Pump	RO Pump	
Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Submersible	Submersible	Centrifugal	Centrifugal	
Capacity (gpm)	600	600	600	600	1200	1200	695-1042	695-1042	
Motor HP	50	50	100	100	30	30	150	150	
Date Installed	2014	2014	2014	2014	2017	2017			

Comments:

Water System: City of Labelle

PWS ID # 5260050
Survey Date 08/30/2022

GROUND WATER SOURCE

Well Name (System Identification)		**UFA - 2**	UFA - 3		
Florida Well ID		**AAO4474**	AAO4473		
Year Drilled		**2013**	2013		
Depth Drilled		697'	632'		
Length (outside casing)		470'	451'		
Diameter (outside casing)		24"	24'		
Is inundation of well possible?		○Yes ◉No	○Yes ◉No	○Yes ○No	○Yes ○No
6' X 6' X 4" Concrete Pad		◉Yes ○No	◉Yes ○No	○Yes ○No	○Yes ○No
PUMP	Type	Submersible	Submersible		
	Rated Capacity (gpm)	UNK	1800		
	Motor Horsepower	200	200		
Well casing 12" above grade?		◉Yes ○No	◉Yes ○No	○Yes ○No	○Yes ○No
Well Casing Sanitary Seal		◉Yes ○No	◉Yes ○No	○Yes ○No	○Yes ○No
Raw Water Sampling Tap		◉Yes ○No	◉Yes ○No	○Yes ○No	○Yes ○No
Above Ground Check Valve		◉Yes ○No	◉Yes ○No	○Yes ○No	○Yes ○No
Fence/Housing		◉Yes ○No	◉Yes ○No	○Yes ○No	○Yes ○No
Well Vent Protection		◉Yes ○No	◉Yes ○No	○Yes ○No	○Yes ○No

COMMENTS:

TREATMENT PROCESSES IN USE:

Sand Separator, Aeration (degasifier tower), Reverse Osmosis, Corrosion control with Orthophosphate, and Fluoridation

Is additional treatment needed? ○ Yes ◉ No
If so, for control of what deficiencies?

MONITORING VIOLATIONS	MCL VIOLATIONS

MONITORING COMMENTS:

Water System: City of Labelle

PWS ID # 5260050
Survey Date 08/30/2022

DEFICIENCIES:

Deficiency	Rule Reference	Corrective Action	Severity	Corrected
Excessive corrosion around the High Service Pumps. See photos 8, 9, 10, 11, 12, & 13	62-555.350(2) F.A.C.	Sand and paint or contact the Department if replacement is necessary.	Minor	
Nylon plug on raw sample tap on Well UFA-2. See photo 22.	62-555.320(8)(b)2 F.A.C.	Cut off or remove the plug on raw sample tap on well.	Minor	
Well UFA-3 had a leak around casing. See photos 18, 19, & 20.	62-555.350(2) F.A.C.	Provide proper seal around the casing.	Minor	
6 wells have been taken out of operation for more than six months (Wells AAE6983, AAH9205, AAH9250, AAH9252, AAH9251. AAC5589). Disinfection of Wells and Bacteriological Surveys and Evaluations of Wells will be required before wells are placed back into service. The wells must be maintained according to current code while still connected to the system until they are abandoned or physically disconnected from the system.	62-555.315(6) F.A.C.	Please provide photos for the 6 wells that are currently out of operation for review.	Minor	
Approximately 75% of systems isolation valves are inoperable.	62-555.350(2) F.A.C.	Please repair or replace isolation valves in system.	SNC	
Fire flow analysis indicate inadequate flow to meet customer demand.	62-555.348(3) F.A.C. and 62-555.320(6) F.A.C.	Water produced to meet any fire-flow must meet demand.	SNC	
As a result of one of the two Supply Wells (#3) being out of service, 3 months of 100% of permitted capacity from the alternate well (#2) was exceeded. In one of the three months, (August 2021) three days exceeded 136%.	62-555.350(4) F.A.C.	No supplier of water shall operate any drinking water treatment plant at a capacity greater than the plant's permitted operating capacity except with the Department's prior approval. Submit a rerate or expansion permit application with the Department, requesting a increase flow. Include the well permit issued by South Florida Water Management District showing the maximum Gallons per day (GPD) allocated flow.	SNC	

Any deficiency marked with an asterisk (*) is a repeat violation.

ADDITIONAL COMMENTS:

The system was permitted for 1,500,000 GPD in 2014. As discussed in the 2014 meeting held between City of Labelle and the Department of Environmental Protection personnel, the Design Capacity for Public Water System (PWS 5260050) has been reduced to 999,999 gallons per day (GPD). The plant category and class has been reclassified as 2C.

The Department recommends City of Labelle to hire more staff. Currently has 3 operators.

Inspector: Vanessa Kraft Digitally signed by Vanessa Kraft Date: 2022.11.17 09:16:07 -05'00'

Approved by: Dessy Owiti Digitally signed by Dessy Owiti Date: 2022.11.18 08:10:20 -05'00'

I certify that these photos represent the true
on-site conditions observed
and have not been altered in any way.

Vanessa Kraft

City of Labelle (5260050)
Photos by Vanessa Kraft on 08/30/2022

Photo 1: View of first train in RO system.

Photo 2: View of second train in RO system.

Photo 3: View of sand separator.

Photo 4: View of degasifier.

Photo 5: View of clearwell and transfer pumps.

Photo 6: View of chlorine tank 1.

Photo 7: View of chlorine tank 2.

Photo 8: View of high service pumps.

Photo 9: View of corrosion on pipes.

Photo 10: View of corrosion on pipes.

Photo 11: View of corrosion on pipes.

Photo 12: View of corrosion on pipes.

Photo 13: View of corrosion at base of pump.

Photo 14: View of ground storage tank.

Photo 15: View of 16,000-Gal lime slurry storage tank and control panel.

Photo 16: View of CO2 storage Tank and power panel.

Photo 17: View of Well UFA – 3.

Photo 18: View of well casing leaking.

Photo 19: View of wet concrete from leak at well casing.

Photo 20: View of leaking well casing.

Photo 21: View of Well UFA – 2.

Photo 22: View of plug on raw sample tap.

APPENDIX B: COST BREAKDOWNS FOR ALL ALTERNATIVES

Project 1 Alternative 1 Conceptual Cost Estimate

Source and Treatment Upgrades - Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Additional Cartridges on Existing Reverse Osmosis Skids

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
Reverse Osmosis Upgrades							
1	New Reverse Osmosis Cartridge Products	EA	$ 25,000	20	$ 500,000	$ 100,000	$ 1,016,000
2	New Membranes for Existing Reverse Osmosis Cartridges	LS	$ 275,000	1	$ 275,000	$ 55,000	$ 559,000
New Pumps							
3	100 HP Propane-Driven Centrifugal High Service Pump and Motor 1,850 gpm @ 140 ft TDH	EA	$ 120,000	1	$ 120,000	$ 40,800	$ 265,000
4	30 HP Propane-Driven Vertical-Turbine Chlorine Contact Chamber Vertical Turbine Pump and Motor 1,050 gpm @ 39 ft TDH	EA	$ 40,000	1	$ 40,000	$ 13,600	$ 88,000
5	10" Ductile Iron Pipe for New Pumps	LF	$100	40	$ 4,000	$ 2,800	$ 4,000
6	10" Check Valve for New Pumps	EA	$ 2,820	2	$ 5,640	$ 2,256	$ 7,000
7	10"x6" Flanged Eccentric Reducer for New Pumps	EA	$ 1,200	2	$ 2,400	$ 960	$ 3,000
8	6" Ductile Iron Restrained Coupling Adapter	EA	$ 1,000	4	$ 4,000	$ 1,600	$ 5,000
9	Structural Pad for New Pump (Assumed 15' x 8' x 12")	EA	$ 5,000	1	$ 5,000	$ 3,500	$ 5,000
10	Instrumentation	LS	$ 45,000	1	$ 45,000	$ 9,000	$ 91,000
11	SCADA Implementation	LS	$ 5,000	1	$ 5,000	$ 1,000	$ 10,000
Well Generator Upgrades							
12	100 kW Generator	EA	$ 50,000	2	$ 100,000	$ 34,000	$ 221,000
13	Transfer Switches for 100 kW Generator	EA	$ 2,000	2	$ 4,000	$ 1,360	$ 9,000
14	Surge Protectors for 100 kW Generator	EA	$ 1,000	2	$ 2,000	$ 680	$ 4,000
15	Instrumentation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
16	SCADA Implementation	LS	$ 1,000	1	$ 1,000	$ 200	$ 2,000
17	Testing Allowance	LS	$ 2,000	1	$ 2,000	$ 800	$ 3,000
Chemical Storage and Pumping Upgrades							
18	Sodium Hypochlorite - 2,000-Gallon Bulk Tank	EA	$ 6,000	2	$ 12,000	$ 2,400	$ 24,000
19	Sodium Hypochlorite - 75-Gallon Day Tank	EA	$ 500	1	$ 500	$ 100	$ 1,000
20	Sodium Hypochlorite - 6.0 gal/hour Duplex Pump Skid	EA	$ 5,000	2	$ 10,000	$ 2,000	$ 21,000
21	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
22	Sulfuric Acid - 500-Gallon Bulk Tank	EA	$ 1,200	1	$ 1,200	$ 240	$ 3,000
23	Sulfuric Acid - 30-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
24	Sulfuric Acid - 1.5 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
25	Sulfuric Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
26	Orthophosphate - 275-Gallon Bulk Tank	EA	$ 1,000	1	$ 1,000	$ 200	$ 2,000
27	Orthophosphate - 10-Gallon Day Tank	EA	$ 200	1	$ 200	$ 40	$ -
28	Orthophosphate - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
29	Orthophosphate - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
30	Sodium Hydroxide - 1,550-Gallon Bulk Tank	EA	$ 1,800	1	$ 1,800	$ 360	$ 3,000
31	Sodium Hydroxide - 40-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
32	Sodium Hydroxide - 3.0 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
33	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
34	Hydrofluorosilicic Acid - 240-Gallon Bulk Tank	EA	$ 900	1	$ 900	$ 180	$ 2,000
35	Hydrofluorosilicic Acid - 35-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
36	Hydrofluorosilicic Acid - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
37	Hydrofluorosilicic Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
38	Antiscalant - 55-Gallon Bulk Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
39	Antiscalant - 25-Gallon Day Tank	EA	$ 300	1	$ 300	$ 60	$ -
40	Antiscalant - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
41	Antiscalant - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
42	New Chemical Storage Building with Secondary Containment	EA	$ 1,100,000	1	$ 1,100,000	$ 440,000	$ 1,424,000
Other Construction Costs							
43	Mobilization/Demobilization (5%)	5%	$ 114,000	1	$ 114,000		$ 114,000
44	Insurance and Bonds (3%)	3%	$ 68,000	1	$ 68,000		$ 68,000
45	General Conditions	5%	$ 114,000	1	$ 114,000		$ 114,000
46	Overhead & Profit	10%	$ 227,000	1	$ 227,000		$ 227,000
SUBTOTAL					**$ 2,794,000**	$ 718,784	**$ 4,354,000.00**
NON-CONSTRUCTION COSTS							
47	Contingency	10%	$ 279,400	1	$ 279,000		$ 279,000
48	Engineering, Permitting, and Design	10%	$ 279,400	1	$ 279,000		$ 279,000
49	Engineering Services During Construction	8%	$ 223,520	1	$ 224,000		$ 224,000
50	Legal and Administration	3%	$ 83,820	1	$ 84,000		$ 84,000
TOTAL					**$ 3,660,000**		**$ 5,220,000.00**

Project 1 Alternative 2 Conceptual Cost Estimate
Source and Treatment Upgrades - Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Replace Existing Reverse Osmosis Skids with New, Larger Reverse Osmosis Skids

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
Reverse Osmosis Upgrades							
1	Demolish Existing Reverse Osmosis Skids	EA	$ 50,000	2	$ 100,000	$ 20,000	$ 203,000
2	New 1.5 MGD Reverse Osmosis Membrane Skid	EA	$ 750,000	2	$ 1,500,000	$ 300,000	$ 3,048,000
New Pumps							
3	100 HP Propane-Driven Centrifugal High Service Pump and Motor 1,850 gpm @ 140 ft TDH	EA	$ 120,000	1	$ 120,000	$ 40,800	$ 265,000
4	30 HP Propane-Driven Vertical-Turbine Chlorine Contact Chamber Vertical Turbine Pump and Motor 1,050 gpm @ 39 ft TDH	EA	$ 40,000	1	$ 40,000	$ 13,600	$ 88,000
5	10" Ductile Iron Pipe for New Pumps	LF	$100	40	$ 4,000	$ 2,800	$ 4,000
6	10" Check Valve for New Pumps	EA	$ 2,820	2	$ 5,640	$ 2,256	$ 7,000
7	10"x6" Flanged Eccentric Reducer for New Pumps	EA	$ 1,200	2	$ 2,400	$ 960	$ 3,000
8	6" Ductile Iron Restrained Coupling Adapter	EA	$ 1,000	4	$ 4,000	$ 1,600	$ 5,000
9	Structural Pad for New Pump (Assumed 15' x 8' x 12")	EA	$ 5,000	1	$ 5,000	$ 3,500	$ 5,000
10	Instrumentation	LS	$ 45,000	1	$ 45,000	$ 9,000	$ 91,000
11	SCADA Implementation	LS	$ 5,000	1	$ 5,000	$ 1,000	$ 10,000
Well Generator Upgrades							
12	100 kW Generator	EA	$ 50,000	2	$ 100,000	$ 34,000	$ 221,000
13	Transfer Switches for 100 kW Generator	EA	$ 2,000	2	$ 4,000	$ 1,360	$ 9,000
14	Surge Protectors for 100 kW Generator	EA	$ 1,000	2	$ 2,000	$ 680	$ 4,000
15	Instrumentation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
16	SCADA Implementation	LS	$ 1,000	1	$ 1,000	$ 200	$ 2,000
17	Testing Allowance	LS	$ 2,000	1	$ 2,000	$ 800	$ 3,000
Chemical Storage and Pumping Upgrades							
18	Sodium Hypochlorite - 2,000-Gallon Bulk Tank	EA	$ 6,000	2	$ 12,000	$ 2,400	$ 24,000
19	Sodium Hypochlorite - 75-Gallon Day Tank	EA	$ 500	1	$ 500	$ 100	$ 1,000
20	Sodium Hypochlorite - 6.0 gal/hour Duplex Pump Skid	EA	$ 5,000	2	$ 10,000	$ 2,000	$ 21,000
21	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
22	Sulfuric Acid - 500-Gallon Bulk Tank	EA	$ 1,200	1	$ 1,200	$ 240	$ 3,000
23	Sulfuric Acid - 30-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
24	Sulfuric Acid - 1.5 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
25	Sulfuric Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
26	Orthophosphate - 275-Gallon Bulk Tank	EA	$ 1,000	1	$ 1,000	$ 200	$ 2,000
27	Orthophosphate - 10-Gallon Day Tank	EA	$ 200	1	$ 200	$ 40	$ -
28	Orthophosphate - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
29	Orthophosphate - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
30	Sodium Hydroxide - 1,550-Gallon Bulk Tank	EA	$ 1,800	1	$ 1,800	$ 360	$ 3,000
31	Sodium Hydroxide - 40-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
32	Sodium Hydroxide - 3.0 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
33	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
34	Hydrofluorosilicic Acid - 240-Gallon Bulk Tank	EA	$ 900	1	$ 900	$ 180	$ 2,000
35	Hydrofluorosilicic Acid - 35-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
36	Hydrofluorosilicic Acid - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
37	Hydrofluorosilicic Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
38	Antiscalant - 55-Gallon Bulk Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
39	Antiscalant - 25-Gallon Day Tank	EA	$ 300	1	$ 300	$ 60	$ -
40	Antiscalant - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
41	Antiscalant - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
42	New Chemical Storage Building with Secondary Containment	EA	$ 1,100,000	1	$ 1,100,000	$ 440,000	$ 1,424,000
Other Construction Costs							
43	Mobilization/Demobilization (5%)	5%	$ 155,000	1	$ 155,000		$ 155,000
44	Insurance and Bonds (3%)	3%	$ 93,000	1	$ 93,000		$ 93,000
45	General Conditions	5%	$ 155,000	1	$ 155,000		$ 155,000
46	Overhead & Profit	10%	$ 310,000	1	$ 310,000		$ 310,000
SUBTOTAL					**$ 3,809,000**		**$ 6,220,000.00**
NON-CONSTRUCTION COSTS							
47	Contingency	10%	$ 380,900	1	$ 381,000		$ 381,000
48	Engineering, Permitting, and Design	10%	$ 380,900	1	$ 381,000		$ 381,000
49	Engineering Services During Construction	8%	$ 304,720	1	$ 305,000		$ 305,000
50	Legal and Administration	3%	$ 114,270	1	$ 114,000		$ 114,000
TOTAL					**$ 4,990,000**		**$ 7,401,000.00**

Project 1 Alternative 3 Conceptual Cost Estimate
Source and Treatment Upgrades - Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Replace Existing Reverse Osmosis Skids with New Ultrafiltration Membrane Skids

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
Reverse Osmosis Upgrades							
1	Demolish Existing Reverse Osmosis Skids	EA	$ 50,000	2	$ 100,000	$ 20,000	$ 203,000
2	New 1.5 MGD Ultrafiltration Membrane Skid	EA	$ 1,000,000	2	$ 2,000,000	$ 400,000	$ 4,063,000
New Pumps							
3	100 HP Propane-Driven Centrifugal High Service Pump and Motor 1,850 gpm @ 140 ft TDH	EA	$ 120,000	1	$ 120,000	$ 40,800	$ 265,000
4	30 HP Propane-Driven Vertical-Turbine Chlorine Contact Chamber Vertical Turbine Pump and Motor 1,050 gpm @ 39 ft TDH	EA	$ 40,000	1	$ 40,000	$ 13,600	$ 88,000
5	10" Ductile Iron Pipe for New Pumps	LF	$100	40	$ 4,000	$ 2,800	$ 4,000
6	10" Check Valve for New Pumps	EA	$ 2,820	2	$ 5,640	$ 2,256	$ 7,000
7	10"x6" Flanged Eccentric Reducer for New Pumps	EA	$ 1,200	2	$ 2,400	$ 960	$ 3,000
8	6" Ductile Iron Restrained Coupling Adapter	EA	$ 1,000	4	$ 4,000	$ 1,600	$ 5,000
9	Structural Pad for New Pump (Assumed 15' x 8' x 12")	EA	$ 5,000	1	$ 5,000	$ 3,500	$ 5,000
10	Instrumentation	LS	$ 45,000	1	$ 45,000	$ 9,000	$ 91,000
11	SCADA Implementation	LS	$ 5,000	1	$ 5,000	$ 1,000	$ 10,000
Well Generator Upgrades							
12	100 kW Generator	EA	$ 50,000	2	$ 100,000	$ 34,000	$ 221,000
13	Transfer Switches for 100 kW Generator	EA	$ 2,000	2	$ 4,000	$ 1,360	$ 9,000
14	Surge Protectors for 100 kW Generator	EA	$ 1,000	2	$ 2,000	$ 680	$ 4,000
15	Instrumentation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
16	SCADA Implementation	LS	$ 1,000	1	$ 1,000	$ 200	$ 2,000
17	Testing Allowance	LS	$ 2,000	1	$ 2,000	$ 800	$ 3,000
Chemical Storage and Pumping Upgrades							
18	Sodium Hypochlorite - 2,000-Gallon Bulk Tank	EA	$ 6,000	2	$ 12,000	$ 2,400	$ 24,000
19	Sodium Hypochlorite - 75-Gallon Day Tank	EA	$ 500	1	$ 500	$ 100	$ 1,000
20	Sodium Hypochlorite - 6.0 gal/hour Duplex Pump Skid	EA	$ 5,000	2	$ 10,000	$ 2,000	$ 21,000
21	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
22	Sulfuric Acid - 500-Gallon Bulk Tank	EA	$ 1,200	1	$ 1,200	$ 240	$ 3,000
23	Sulfuric Acid - 30-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
24	Sulfuric Acid - 1.5 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
25	Sulfuric Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
26	Orthophosphate - 275-Gallon Bulk Tank	EA	$ 1,000	1	$ 1,000	$ 200	$ 2,000
27	Orthophosphate - 10-Gallon Day Tank	EA	$ 200	1	$ 200	$ 40	$ -
28	Orthophosphate - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
29	Orthophosphate - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
30	Sodium Hydroxide - 1,550-Gallon Bulk Tank	EA	$ 1,800	1	$ 1,800	$ 360	$ 3,000
31	Sodium Hydroxide - 40-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
32	Sodium Hydroxide - 3.0 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
33	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
34	Hydrofluorosilicic Acid - 240-Gallon Bulk Tank	EA	$ 900	1	$ 900	$ 180	$ 2,000
35	Hydrofluorosilicic Acid - 35-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
36	Hydrofluorosilicic Acid - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
37	Hydrofluorosilicic Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
38	Antiscalant - 55-Gallon Bulk Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
39	Antiscalant - 25-Gallon Day Tank	EA	$ 300	1	$ 300	$ 60	$ -
40	Antiscalant - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
41	Antiscalant - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
42	New Chemical Storage Building with Secondary Containment	EA	$ 1,100,000	1	$ 1,100,000	$ 440,000	$ 1,424,000
Other Construction Costs							
43	Mobilization/Demobilization (5%)	5%	$ 180,000	1	$ 180,000		$ 180,000
44	Insurance and Bonds (3%)	3%	$ 108,000	1	$ 108,000		$ 108,000
45	General Conditions	5%	$ 180,000	1	$ 180,000		$ 180,000
46	Overhead & Profit	10%	$ 360,000	1	$ 360,000		$ 360,000
SUBTOTAL					**$ 4,424,000**		**$ 7,350,000.00**
NON-CONSTRUCTION COSTS							
47	Contingency	10%	$ 442,400	1	$ 442,000		$ 442,000
48	Engineering, Permitting, and Design	10%	$ 442,400	1	$ 442,000		$ 442,000
49	Engineering Services During Construction	8%	$ 353,920	1	$ 354,000		$ 354,000
50	Legal and Administration	3%	$ 132,720	1	$ 133,000		$ 133,000
TOTAL					**$ 5,795,000**		**$ 8,721,000.00**

Project 2 Alternative 1 Conceptual Cost Estimate
Distribution and Storage Upgrades - New Concrete Ground Storage Tank and Pump Station, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
New Concrete Ground Storage Tank and Pump Station							
1	1,000,000-Gallon Concrete Ground Storage Tank	EA	$ 1,500,000	1	$ 1,500,000	$ 1,800,000	$ 1,399,000
2	Aerator for 500,000-gal Tank	EA	$ 81,000	2	$ 162,000	$ 64,800	$ 210,000
3	Tank Coating	LS	$ 700,000	1	$ 700,000	$ 280,000	$ 906,000
4	12" Ductile Iron Yard Piping	LF	$ 400	350	$ 140,000	$ 98,000	$ 149,000
5	Yard Piping Valve & Fitting Allowance	LS	$ 10,000	1	$ 10,000	$ 4,000	$ 13,000
6	High Service Pumps	EA	$ 75,000	4	$ 300,000	$ 200,000	$ 447,000
7	Variable-Frequency Drives for High Service Pumps	EA	$ 150,000	4	$ 600,000	$ 300,000	$ 712,000
8	Pump Canopy	EA	$ 85,000	1	$ 85,000	$ 59,500	$ 91,000
9	Pump Pads	EA	$ 15,000	2	$ 30,000	$ 22,200	$ 31,000
10	Pump Station Instrumentation	LS	$ 70,000	1	$ 70,000	$ 14,000	$ 142,000
11	Pump Station & Tank SCADA Implementation	LS	$ 7,000	1	$ 7,000	$ 1,400	$ 14,000
12	Instrumentation	LS	$ 70,000	1	$ 70,000	$ 14,000	$ 142,000
13	SCADA Implementation	LS	$ 7,000	1	$ 7,000	$ 1,400	$ 14,000
14	Hydrant Assembly	EA	$ 5,700	1	$ 5,700	$ 4,560	$ 6,000
15	Chain Link Fence + Gate	LF	$ 70	400	$ 28,000	$ 11,200	$ 36,000
16	Gas Generator	EA	$ 15,000	1	$ 15,000	$ 6,000	$ 19,000
17	Electrical Site Work	LS	$ 30,000	1	$ 30,000	$ 10,200	$ 66,000
18	Electrical Building	LS	$ 600,000	1	$ 600,000	$ 420,000	$ 637,000
19	Uninterruptible Power Supply	EA	$ 1,500	1	$ 1,500	$ 600	$ 2,000
20	Driveway (Asphalt)	SY	$ 55	1000	$ 55,000	$ 22,000	$ 71,000
21	Crushed Stone (Tank Washdown)	CY	$ 40	250	$ 10,000	$ 4,000	$ 13,000
22	Concrete Energy Blocks (Tank Washdown)	EA	$ 75	15	$ 1,125	$ 788	$ 1,000
23	Site Clearing + Grading	LS	$ 65,000	1	$ 65,000	$ 45,500	$ 69,000
24	Loam and Seed Disturbed Area	SY	$ 3	9000	$ 27,000	$ 10,800	$ 35,000
25	Testing Allowance	LS	$ 15,000	1	$ 15,000	$ 6,000	$ 19,000
State Route 80 & Helms Road Water Main							
26	12" Ductile Iron Water Main (Helms Road)	LF	$ 250	14000	$ 3,500,000	$ 2,450,000	$ 3,717,000
27	12" Ductile Iron Water Main	LF	$ 250	9,700	$ 2,425,000	$ 1,697,500	$ 2,576,000
28	Gate Valves	EA	$ 3,000	47	$ 141,000	$ 56,400	$ 183,000
29	Hydrant Assembly	EA	$ 5,700	47	$ 267,900	$ 214,320	$ 274,000
30	Fittings	LS	$ 592,500	1	$ 592,500	$ 237,000	$ 767,000
31	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
32	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
Zone B Water Main							
33	8" Ductile Iron Water Main	LF	$ 200	15,000	$ 3,000,000	$ 2,100,000	$ 3,186,000
34	Gate Valves	EA	$ 1,500	19	$ 28,500	$ 11,400	$ 37,000
35	Hydrant Assembly	EA	$ 5,700	19	$ 108,300	$ 86,640	$ 111,000
36	Fittings	LS	$ 300,000	1	$ 300,000	$ 120,000	$ 388,000
37	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
38	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
Valve Exercise & Replacement Program							
39	Valve Exercise Program	LS	$ 17	464	$ 7,733		$ 8,000
40	Replace Failing Valves (Quantity Estimated, to be Validated by Exercise Program)	EA	$ 3,000.00	140	$ 420,000	$ 168,000	$ 544,000
Other Construction Costs							
41	Mobilization/Demobilization (5%)	5%	$ 770,000	1	$ 770,000		$ 770,000
42	Insurance and Bonds (3%)	3%	$ 462,000	1	$ 462,000		$ 462,000
43	General Conditions	5%	$ 770,000	1	$ 770,000		$ 770,000
44	Overhead & Profit	10%	$ 1,540,000	1	$ 1,540,000		$ 1,540,000
SUBTOTAL					**$ 16,437,000**	$ 10,547,000	**$ 20,653,000.00**
NON-CONSTRUCTION COSTS							
45	Contingency	10%	$ 1,644,000	1	$ 1,644,000		$ 1,644,000
46	Engineering, Permitting, and Design	10%	$ 1,644,000	1	$ 1,644,000		$ 1,644,000
47	Engineering services during construction	8%	$ 1,315,000	1	$ 1,315,000		$ 1,315,000
48	Legal and Administration	3%	$ 493,000	1	$ 493,000		$ 493,000
TOTAL					**$ 21,533,000**		**$ 25,749,000.00**

Project 2 Alternative 2 Conceptual Cost Estimate
Distribution and Storage Upgrades - New Pedosphere Elevated Storage Tank, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
New Pedesphere Elevated Storage Tank							
1	1,000,000-Gallon Pedesphere Elevated Storage Tank	EA	$ 3,000,000	1	$ 3,000,000	$ 3,600,000	$ 2,798,000
2	Tank Coating	LS	$ 100,000	1	$ 100,000	$ 40,000	$ 129,000
3	12" PVC Yard Piping	LF	$ 225	250	$ 56,250	$ 39,375	$ 60,000
4	Yard Piping Valve & Fitting Allowance	LS	$ 10,000	1	$ 10,000	$ 4,000	$ 13,000
5	Instrumentation	LS	$ 15,000	1	$ 15,000	$ 3,000	$ 30,000
6	SCADA Implementation	LS	$ 2,500	1	$ 2,500	$ 500	$ 5,000
7	Hydrant Assembly	EA	$ 5,700	1	$ 5,700	$ 4,560	$ 6,000
8	Chain Link Fence + Gate	LF	$ 70	400	$ 28,000	$ 11,200	$ 36,000
9	Electrical Site Work	LS	$ 5,000	1	$ 5,000	$ 1,700	$ 11,000
10	Uninterruptible Power Supply	EA	$ 1,500	1	$ 1,500	$ 600	$ 2,000
11	Driveway (Asphalt)	SY	$ 55	1000	$ 55,000	$ 18,700	$ 121,000
12	Crushed Stone (Tank Washdown)	CY	$ 40	200	$ 8,000	$ 3,200	$ 10,000
13	Concrete Energy Blocks (Tank Washdown)	EA	$ 75	15	$ 1,125	$ 788	$ 1,000
14	Site Clearing + Grading	LS	$ 25,000	1	$ 25,000	$ 17,500	$ 26,000
15	Loam and Seed Disturbed Area	SY	$ 3	5000	$ 15,000	$ 6,000	$ 19,000
16	Testing Allowance	LS	$ 15,000	1	$ 15,000	$ 6,000	$ 19,000
State Route 80 & Helms Road Water Main							
17	12" Ductile Iron Water Main (Helms Road)	LF	$ 250	14000	$ 3,500,000	$ 2,450,000	$ 3,717,000
18	12" Ductile Iron Water Main (SR80)	LF	$ 250	9,700	$ 2,425,000	$ 1,697,500	$ 2,576,000
19	Gate Valves	EA	$ 3,000	47	$ 141,000	$ 56,400	$ 183,000
20	Hydrant Assembly	EA	$ 5,700	47	$ 267,900	$ 214,320	$ 274,000
21	Fittings	LS	$ 592,500	1	$ 592,500	$ 237,000	$ 767,000
22	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
23	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
Zone B Water Main							
24	8" Ductile Iron Water Main	LF	$ 200	15,000	$ 3,000,000	$ 2,100,000	$ 3,186,000
25	Gate Valves	EA	$ 1,500	19	$ 28,500	$ 11,400	$ 37,000
26	Hydrant Assembly	EA	$ 5,700	19	$ 108,300	$ 86,640	$ 111,000
27	Fittings	LS	$ 300,000	1	$ 300,000	$ 120,000	$ 388,000
28	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
29	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
Valve Exercise & Replacement Program							
30	Valve Exercise Program	LS	$ 17	464	$ 7,733		$ 8,000
31	Replace Failing Valves (Quantity Estimated, to be Validated by Exercise Program)	EA	$ 3,000.00	140	$ 420,000	$ 168,000	$ 544,000
Other Construction Costs							
32	Mobilization/Demobilization (5%)	5%	$ 710,000	1	$ 710,000		$ 710,000
33	Insurance and Bonds (3%)	3%	$ 426,000	1	$ 426,000		$ 426,000
34	General Conditions	5%	$ 710,000	1	$ 710,000		$ 710,000
35	Overhead & Profit	10%	$ 1,421,000	1	$ 1,421,000		$ 1,421,000
SUBTOTAL					**$ 17,473,000**	$ 10,903,000	**$ 18,420,000.00**
NON-CONSTRUCTION COSTS							
36	Contingency	10%	$ 1,747,000	1	$ 1,747,000		$ 1,747,000
37	Engineering, Permitting, and Design	10%	$ 1,747,000	1	$ 1,747,000		$ 1,747,000
38	Engineering services during construction	8%	$ 1,398,000	1	$ 1,398,000		$ 1,398,000
39	Legal and Administration	3%	$ 524,000	1	$ 524,000		$ 524,000
TOTAL					**$ 22,889,000**		**$ 23,836,000.00**

Project 2 Alternative 3 Conceptual Cost Estimate
Distribution and Storage Upgrades - New Fluted Column Elevated Storage Tank, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
New Pedesphere Fluted Column Storage Tank							
1	1,000,000-Gallon Fluted Column Elevated Stora	EA	$ 4,500,000	1	$ 4,500,000	$ 5,400,000	$ 4,198,000
2	Tank Coating	LS	$ 100,000	1	$ 100,000	$ 40,000	$ 129,000
3	12" PVC Yard Piping	LF	$ 225	250	$ 56,250	$ 39,375	$ 60,000
4	Yard Piping Valve & Fitting Allowance	LS	$ 10,000	1	$ 10,000	$ 4,000	$ 13,000
5	Instrumentation	LS	$ 15,000	1	$ 15,000	$ 3,000	$ 30,000
6	SCADA Implementation	LS	$ 2,500	1	$ 2,500	$ 500	$ 5,000
7	Hydrant Assembly	EA	$ 5,700	1	$ 5,700	$ 4,560	$ 6,000
8	Chain Link Fence + Gate	LF	$ 70	400	$ 28,000	$ 11,200	$ 36,000
9	Gas Generator	EA	$ 5,000	1	$ 5,000	$ 2,000	$ 6,000
10	Electrical Site Work	LS	$ 5,000	1	$ 5,000	$ 1,700	$ 11,000
11	Uninterruptible Power Supply	EA	$ 1,500	1	$ 1,500	$ 600	$ 2,000
12	Driveway (Asphalt)	SY	$ 55	1000	$ 55,000	$ 22,000	$ 71,000
13	Crushed Stone (Tank Washdown)	CY	$ 40	200	$ 8,000	$ 3,200	$ 10,000
14	Concrete Energy Blocks (Tank Washdown)	EA	$ 75	15	$ 1,125	$ 788	$ 1,000
15	Site Clearing + Grading	LS	$ 65,000	1	$ 65,000	$ 45,500	$ 69,000
16	Loam and Seed Disturbed Area	SY	$ 3	9000	$ 27,000	$ 10,800	$ 35,000
17	Testing Allowance	LS	$ 15,000	1	$ 15,000	$ 6,000	$ 19,000
State Route 80 & Helms Road Water Main							
18	12" Ductile Iron Water Main (Helms Road)	LF	$ 250	14000	$ 3,500,000	$ 2,450,000	$ 3,717,000
19	12" Ductile Iron Water Main	LF	$ 250	9,700	$ 2,425,000	$ 1,697,500	$ 2,576,000
20	Gate Valves	EA	$ 3,000	47	$ 141,000	$ 56,400	$ 183,000
21	Hydrant Assembly	EA	$ 5,700	47	$ 267,900	$ 214,320	$ 274,000
22	Fittings	LS	$ 592,500	1	$ 592,500	$ 237,000	$ 767,000
23	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
24	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
Zone B Water Main							
25	8" Ductile Iron Water Main	LF	$ 200	15,000	$ 3,000,000	$ 2,100,000	$ 3,186,000
26	Gate Valves	EA	$ 1,500	19	$ 28,500	$ 11,400	$ 37,000
27	Hydrant Assembly	EA	$ 5,700	19	$ 108,300	$ 86,640	$ 111,000
28	Fittings	LS	$ 300,000	1	$ 300,000	$ 120,000	$ 388,000
29	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
30	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
Valve Exercise & Replacement Program							
31	Valve Exercise Program	LS	$ 17	464	$ 7,733		$ 8,000
32	Replace Failing Valves (Quantity Estimated, to be Validated by Exercise Program)	EA	$ 3,000.00	140	$ 420,000	$ 168,000	$ 544,000
Other Construction Costs							
33	Mobilization/Demobilization (5%)	5%	$ 788,000	1	$ 788,000		$ 788,000
34	Insurance and Bonds (3%)	3%	$ 473,000	1	$ 473,000		$ 473,000
35	General Conditions	5%	$ 788,000	1	$ 788,000		$ 788,000
36	Overhead & Profit	10%	$ 1,576,000	1	$ 1,576,000		$ 1,576,000
SUBTOTAL					**$ 19,388,000**	$ 12,741,000	**$ 20,193,000.00**
NON-CONSTRUCTION COSTS							
37	Contingency	10%	$ 1,939,000	1	$ 1,939,000		$ 1,939,000
38	Engineering, Permitting, and Design	10%	$ 1,939,000	1	$ 1,939,000		$ 1,939,000
39	Engineering services during construction	8%	$ 1,551,000	1	$ 1,551,000		$ 1,551,000
40	Legal and Administration	3%	$ 582,000	1	$ 582,000		$ 582,000
TOTAL					**$ 25,399,000**		**$ 26,204,000.00**

Project 3 Alternative 1 Conceptual Cost Estimate
Large Commercial Service Meter and System Meter Replacement Program - Replace Commercial Service Meters, AMI Endpoints, and Production Meters 1.5" and Above

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
1	Replace Commercial Service Meters	EA	$ 2,000	58	$ 116,000	$ 34,800	$ 250,000
2	Replace System Meters	EA	$ 10,000.00	4	$ 40,000	$ 12,000	$ 86,000
3	Replace All AMI Endpoints	EA	$ 500.00	58	$ 29,000	$ 8,700	$ 63,000
SUBTOTAL					**$ 185,000**	$ 56,000	**$ 399,000.00**
NON-CONSTRUCTION COSTS							
3	Contingency	10%	$ 19,000	1	$ 19,000		$ 19,000
4	Engineering, Permitting, and Design	10%	$ 19,000	1	$ 19,000		$ 19,000
5	Engineering Services During Construction	0%	$ -	1	$ -		$ -
6	Legal and Administration	3%	$ 6,000	1	$ 6,000		$ 6,000
TOTAL					**$ 229,000**		**$ 443,000.00**

Project 3 Alternative 2 Conceptual Cost Estimate
Large Commercial Service Meter and System Meter Replacement Program - Replace All Commercial Service and Production Meters 1.5" and Above, Replace AMI Endpoints at End of Life

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
1	Replace Commercial Service Meters	EA	$ 2,000	58	$ 116,000	$ 34,800	$ 250,000
2	Replace Remaining AMI Endpoint After 5 Years	EA	$ 600	58	$ 34,800	$ 10,440	$ 75,000
3	Replace System Meters	EA	$ 10,000.00	4	$ 40,000	$ 12,000	$ 86,000
SUBTOTAL					**$ 191,000**	$ 57,000	**$ 411,000.00**
NON-CONSTRUCTION COSTS							
4	Contingency	10%	$ 19,000	1	$ 19,000		$ 19,000
5	Engineering, Permitting, and Design	10%	$ 19,000	1	$ 19,000		$ 19,000
6	Engineering Services During Construction	0%	$ -	1	$ -		$ -
7	Legal and Administration	3%	$ 6,000	1	$ 6,000		$ 6,000
TOTAL					**$ 235,000**		**$ 455,000.00**

Project 3 Alternative 3 Conceptual Cost Estimate
Large Commercial Service Meter and System Meter Replacement Program - Maintain Existing Commercial Service and System Meters 1.5" and Above

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
N/A			$ -		$ -	$ -	$ -
SUBTOTAL					$ -		$ -
NON-CONSTRUCTION COSTS							
1	Estimated Revenue Losses from Service Metering Failure	EA	$ -	58	$ -	$ 696,000	$ 513,000
TOTAL					$ -		**$ 513,000**

APPENDIX C: FIGURES SHOWING PROJECT SCOPES

Drinking Water Facilities Plan Proposed Projects & FEMA Flood Zones

City of LaBelle, Florida

N

Project 2: Zone B Water Main

Project 2: State Route 80 Water Main Extension

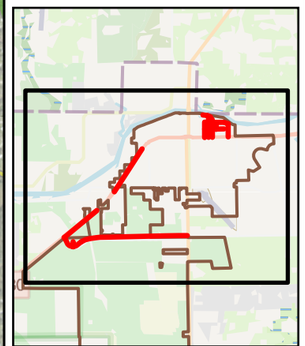
Project 2: Storage Tank

Project 2: Helms Road Finished Water Main

Project 1: Existing Well Site No. 2 Generator Upgrades

Project 1: Existing Well Site No. 3 Generator Upgrades

Project 1: Membrane Water Treatment Facility Upgrades



Legend

- Hydrants
- Water Valves
- Water Supply Wells
- Finished Water Main
- Raw Water Main
- Proposed Finished Water Main
- City Limits

Flood Zone

- 100-year flood
- 500-year flood

0 1,000 2,000 Feet

1 IN = 2,000 FT

Woodard & Curran

Project #:0234532.02
Map Created: April 2024

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:** City of LaBelle

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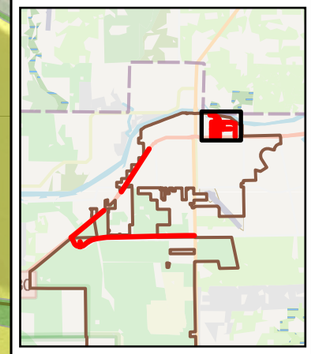
Drinking Water Facilities Plan Proposed Projects & FEMA Flood Zones

City of LaBelle, Florida

N

Project 2:
Zone B Water Main



Legend

- Hydrants
- Water Valves
- Water Supply Wells
- Finished Water Main
- Raw Water Main
- Proposed Finished Water Main
- City Limits

Flood Zone

- 100-year flood
- 500-year flood

0 150 300 Feet

1 IN = 300 FT

Woodard & Curran

Project #:0234532.02
Map Created: April 2024

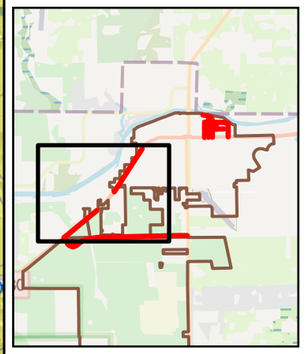
Drinking Water Facilities Plan Proposed Projects & FEMA Flood Zones

City of LaBelle, Florida

N

Project 2: State Route 80 Water Main Extension

Project 2: Helms Road Finished Water Main



Legend

- Hydrants
- Water Valves
- Water Supply Wells
- Finished Water Main
- Raw Water Main
- Proposed Finished Water Main
- City Limits

Flood Zone

- 100-year flood
- 500-year flood

0 500 1,000 Feet

1 IN = 1,000 FT

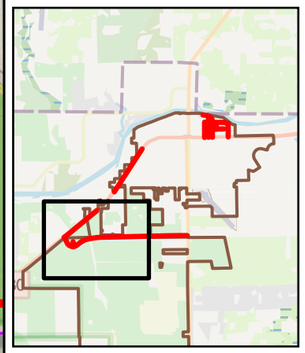
Woodard & Curran

Project #:0234532.02
Map Created: April 2024

Drinking Water Facilities Plan Proposed Projects & FEMA Flood Zones

City of LaBelle, Florida

N



Project 2: Helms Road Finished Water Main

Project 2: Storage Tank

Project 1: Existing Well Site No. 2 Generator Upgrades

Project 1: Existing Well Site No. 3 Generator Upgrades

Legend

- Hydrants
- Water Valves
- Water Supply Wells
- Finished Water Main
- Raw Water Main
- Proposed Finished Water Main
- City Limits

Flood Zone

- 100-year flood
- 500-year flood

0 400 800 Feet

1 IN = 800 FT

Woodard & Curran

Project #:0234532.02
Map Created: April 2024

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APPENDIX D: BUSINESS PLAN

DRINKING WATER STATE REVOLVING FUND BUSINESS PLAN

Sponsor Name: City of LaBelle, Florida System Population: 5,065

DWSRF Project #: PWS ID#:

Contact Person and Title: Julie Wilkins, Mayor Telephone: (863) 675-2872

Mailing Address: 481 West Hickpochee Avenue City: LaBelle State: FL Zip: 33935

Contact for Finance Plan (if different): Telephone:

Mailing Address: City: State: Zip:

e-mail: juliewilkins@citylabelle.com Fax:

Source Type: ☒ Ground Water ☐ Purchase Water

☐ Surface Water ☐ Surface/Ground Combined

The Drinking Water State Revolving Fund Program (DWSRF), authorized by the 1996 amendments to the Safe Drinking Water Act, provides financial assistance to public water systems (PWS). To obtain this assistance, project sponsors must demonstrate Capacity Development or demonstrate how the assistance will ensure these requirements are met. The term Capacity Development takes into consideration three vital areas of a public water system: Technical, Managerial, and Financial capabilities.

FINANCIAL

A financial capability demonstration (and certification) is required well before the evaluation of the actual loan or grant application. This demonstration is necessary to ensure that the system has the financial capability to repay the loan, if applicable, and to adequately operate and maintain the system. Financial capability also includes funding future capital improvements that may be required. Please see Rule 62-552.700(4) in Chapter 62-552, F.A.C. for further details.

It is expected that the revenues to be dedicated to repaying a loan will be generated either from water and sewer utility operations or from water utility operations alone. If the source of revenues will not be from such enterprises, this set of worksheets alone will not satisfy the Department's needs. (Please contact the Department for further guidance if dedicated revenues will be generated externally to such utilities.)

The following worksheets have been developed to identify the minimum information needed. The completed worksheets should be used in disclosing DWSRF project financing to the public during the required dedicated revenue hearing. The worksheets can serve to identify the impacts of the SRF project on residential users and how the project fits into the project sponsor's overall capital improvement program for the water and sewer utility (or water utility, as appropriate). Supplemental capital financing documentation may be submitted with these worksheets and may be presented at the required dedicated revenue hearing.

The revenues being dedicated to repayment of the DWSRF loan are:	Water & Sewer Utility Rate Revenues
What is the frequency of water system billing?	monthly
How often are system rates reviewed for adequacy?	annually
When was the last time rates were reviewed?	2023
What resources and guidance does the water system use for setting water user rates, fees or charges?	AWWA
What is your water system bond rating?	
Is a rate increase necessary as a result of this project?	yes
What is the Median Household Income (MHI) for the entire system?	$49,371

Which, if any, of the following activities must be undertaken to implement the DWSRF project?

Acquire privately held land?	Yes ☐	No ☒
Acquire land held by another public water system entity?	Yes ☐	No ☒
Enter into inter-local or inter-project sponsoring agency's agreements?	Yes ☐	No ☒
Does the system have an annual budget with a separate reserve account for equipment replacement and/or capital improvement?	Yes ☒	No ☐
Does the system have a capital improvement plan? How many years does it cover? ____	Yes ☒	No ☐
Does the system have a governing board of directors?	Yes ☐	No ☐
Does the water system employ the services of a professional engineer?	Yes ☒	No ☐
Are there procedures for billing and collection?	Yes ☒	No ☐

Does the system have audited financial statements? Yes ☒ No ☐

Are there standard purchasing procedures that provide controls over expenditures? Yes ☒ No ☐

What year will construction be completed and repayments begin (for the first project)? FY2027

What is the estimated cost of your SRF project? $24,971,000

Please attach a copy of the user charge ordinance.

Table 1
WATER RATE REVENUE SUMMARY

		LAST YR. 2023	YEAR 1 (Current Year) 2024	YEAR 2 2025	YEAR 3 2026		SRF Project 2027
1.	Number of Residential Customers	1,979	2,040	2085	2,111		2,141
2.	Number of New Residential Service Connections	32	45	26	30		36
3.	Annual Residential Water Sales (Gallons)	115.6M	76.2M	115.6M	115.6M		115.6M
4.	Avg Daily Residential Usage (Gal/day) (Line 3 divided by line 1 divided by 365)	160	102	152	150		148
5.	Annual Residential Water Sales ($)	$1,413,211	$1,018,668	$1,580,301	$1,817,346		$2,089,948
6.	Average Annual Residential Bill (line 5 divided by line 1)	$714.11	$499.35	$757.94	$860.89		$976.16
7.	Annual Residential Bill Amount Uncollected	$46,422	$4,237	$4,237	$4,237		$4,237
8.	Total Residential Rates Collected (Line 5 minus line 7)	$1,366,789	$1,014,431	$1,576,064	$1,813,109		$2,085,711
9.	Impact and Connection Fees per Residential Service	$7,601	$7,601	$7,601	$7,601		$7,601
10.	Total Residential Impact and Connection Fees (Line 2 times line 9)	$102,191	$146,953	$200,000	$230,000		$280,000
11.	Number of Commercial Customers	475	475	475	475		475
12.	Number of New Commercial Service Connections	7	4	4	4		4
13.	Annual Commercial Water Sales (Gallons)	88,084,000	57,718,000	88,084,000	88,084,000		88,084,000
14.	Annual Commercial Water Sales ($)	$828,642	$559,630	$928,113	$1,067,330		$1,227,430
15.	Annual Commercial Bill Amount Uncollected	$21,273	$965	$965	$965		$965
16.	Total Commercial/Industrial Bills Collected (Line 14 minus line 15)	$807,369	$558,665	$927,148	$1,066,365		$1,226,465
17.	Impact and Connection Fees for Commercial Service	$3,378 / $4,223	$3,378 / $4,223	$3,885 / $4,856	$4,467 / $5,584		$5,137 / $6,422
18.	Total Commercial Impact and Connection Fees (Line 12 times line 17)	$23,648	$13,979	$41,500	$47,725		$49,384
19.	Bulk Water Sales	$22	$9	0	0		0
20.	Total Projected Water Revenue (Line 8+10+16+18+19)	$2,300,021	$1,734,038	$2,744,713	$3,157,200		$3,631,560

* Large meters should be checked annually for accuracy.

Instructions for Completing Table 1

Identify the source of the above information and explain methods used to develop the projections (*Attachment #* _____). Include an explanation of any revenue and expense growth or other adjustments; for example, any rate increases, service growth, inflation adjustments, expense adjustments reflecting the cost of operating additional facilities, or other considerations. In completing this table assume through year 3 that no SRF project is constructed. In the " SRF Project" column enter the numbers that reflect the first year in which the SRF loan will begin repayments. When completing the numbers in this column assume that the SRF project will be financed using 100% loan funding.

Line 1 Include the actual number of customers for last year and year 1 (current year). The numbers in years 2 and 3 should reflect an estimated number of residential customers, adjusted for growth. In the SRF column include the expected number of customers based on constructing your SRF project.

Line 2 This line is a subset of line 1. It should reflect the number of new customers for that year.

Line 3 This line is your total volume (gallons) of water used by your residential customers. Use actual gallons sold for Last Year and do an estimate for the current year based on total to-date. To determine Year 2 and 3 water sales, first calculate the average daily residential usage in gallons per day on line 4. The estimated water sales for Year 2 and 3 can now be determined by multiplying line 4 by line 1.

Line 4 This is the average daily residential usage (gallons per day) by a single residential customer. To get this number divide line 3 by line 1. Use Last Year and Current Year to project usage for Year 2 and 3. Usage should be fairly constant.

Line 5 This is your total residential water sales in dollars. Year 2 and 3 water sales should reflect any increases in rates (i.e. due to inflation). In the SRF column list what the sales would need to be if the SRF project was a 100% loan (to meet all expenses).

Line 6 To obtain the average annual residential bill, divide line 5 by line 1.

Line 7 This is the amount of the uncollected residential bills outstanding for the year.

Line 8 Line 5 minus line 7.

Line 9 This line is the impact and connection fee for new residential service.

Line 10 Multiply line 2 by line 9.

Line 11 Include the actual number of customers for last year and year 1 (current year). The numbers in years 2 and 3 should reflect an estimated number of commercial customers, adjusted for growth. In the SRF column include the expected number of customers based on constructing your SRF project.

Line 12 This line is a subset of line 11. It should reflect the number of new customers that will be charged an impact or connection fee.

Line 13 This line is your total volume (gallons) of water used by your commercial accounts.

Line 14 This is your total commercial water sales in dollars. Year 2 and 3 water sales should reflect any increases in rates (i.e. due to inflation). In the SRF column list what the sales would need to be if the SRF project was a 100% loan (to meet all expenses).

Line 15 This is the amount of the uncollected residential bills outstanding for the year.

Line 16 Total revenue collected for commercial accounts (line 14 minus line 15).

Line 17 This line is the impact and connection fee for new commercial/industrial accounts.

Line 18 Multiply line 12 by line 17.

Line 19 Total revenue for bulk water sales to consecutive systems.

Line 20 Total of line 8+10+16+18+19.

TABLE 2

INCOME, EXPENSES, AND CASH FLOW STATEMENT

	Income, Expense, and Cash Flow Statement	Last Yr. 2024	Year 1 2025	Year 2 2026	Year 3 2027		SRF Project 2028
	OPERATING REVENUES						
1	Water Rates	$2,181,230	$2,508,415	$2,884,677	$3,317,378		$3,814,985
2	Fire Protection						
3	Fees and Services	$261,000	$300,150	$345,173	$396,948		$456,191
4	Interest Income						
5a	Other –						
5b	Other –						
6	**Total (Lines 1 - 5)**	$2,442,230	$2,808,565	$3,229,849	$3,174,327		$4,271,476
	NON-OPERATING REVENUES						
7	Interest Income	$2,500	$2,500	$2,500	$2,500		$2,500
8	Interfund Transfer						
9	Proceeds from the Sale of Assets						
10	Leases and Extraction Fees						
11	Construction Grants	$1,094,050	0	0	0		0
12	Proceeds from Borrowing	0	0	$24,971,000	0		0
13	Equity Contribution	$500,000	0	0	0		0
14	Other -						
15	**Total (Lines 7 - 14)**	$1,652,563	$2,500	$24,973,500	$2,500		$2,500
	OPERATING EXPENSES						
	OPERATION AND MAINTENANCE						
16	Salaries (Operators)	$308,568	$317,825	$327,360	$337,181		$347,296
17	Benefits	$195,511	$201,376	$207,418	$213,640		$220,049
18	Utilities	$154,500	$159,135	$163,909	$168,826		$173,891
19	Chemicals & Treatment	$53,000	$54,590	$56,228	$57,915		$59,652
20	Monitoring	$22,100	$22,763	$23,446	$24,149		$24,874
21	Materials, Supplies & Parts	0	0	0	0		0
22	Transportation	$250	$258	$265	$273		$281
23	Purchased Water Costs	0	0	0	0		0
24	Outside Services –	$1,295,114	$1,333,967	$1,373,986	$1,415,206		$1,457,662
25	Other –	0	0	0	0		0
26	**Total (Lines 16 – 25)**	$2,029,043	$2,089,914	$2,152,612	$2,217,190		$2,283,706

	ADMINISTRATIVE						
27	Salaries and Benefits						
28	Building Overhead						
29	Office Supplies & Postage	$11,000	$11,330	$11,670	$12,020		$12,381
30	Insurance	$174,900	$180,147	$185,551	$191,118		$196,851
31	Customer Billing & Collection						
32	Accounting and Legal						
33	A/E & Professional Services						
34	Other -	$10,800	$11,124	$11,458	$11,801		$12,155
35	**TOTAL (Lines27 – 34)**	$196,700	$202,601	$208,679	$214,939		$221,388
36	**Net Operating Income (Line 6 minus 26 minus 35)**	$216,487	$516,049	$868,558	$1,282,197		$1,766,382
	NON-OPERATING EXPENSES						
37	Debt-Repayment – Principal and Interest	$775,000	$783,476	$784,176	$1,002,493		$2,225,633
38	Capital Improvements Acquisition of Plant Equipment	0	0	$24,971,000	0		0
39	Interfund Transfers	0	0	0	0		0
40	To General Fund	0	0	0	0		0
41	To Replacement Fund	0	0	0	0		0
42	To Emergency Fund	0	0	0	0		0
43	Depreciation Expenses (If money is set aside)	0	0	0	0		0
44	Other -	0	0	0	0		0
45	**TOTAL (Lines 37 + 44)**	$775,000	$783,476	$25,755,176	$1,002,493		$2,225,633
46	**Net Non-Operating Income (Line 15 minus Line 45)**	$877,563	($780,976)	($781,676)	($999,993)		($2,223,133)
47	**Net Income Before Taxes (Lines 36 + 46)**	$1,094,050	$264,926	$86,883	$282,204		($456,751)
	TAXES (N/A for publicly owned systems)						
48	Income Taxes						
49	Other Taxes						
50	**TOTAL (Lines 48 + 49)**						
51	**Net Income After Taxes (Line 47 minus 50)**	$1,094,050	$264,926	$86,883	$282,204		($456,751)

Instructions for Completing Table 2

Identify the source of the above information and explain methods used to develop the projections (*Attachment* # _____). Include an explanation of any revenue and expense growth or other adjustments; for example, any rate increases, service growth, inflation adjustments, expense adjustments reflecting the cost of operating additional facilities, or other considerations.

REVENUES- Revenues include all sources of income to the system. They are separated on this form as: "Operating", lines 1-6 and "Non-Operating", lines 7-15. When using the subcategory "other" under any item, please write a descriptive term.

EXPENSES- Expenses include all those activities or purchases which incur cost for the system. Expenses can be estimated in various ways. One method bases the projections on historical expense. This can be accomplished by using historical costs and escalating them from known and projected changes. An example of a known change would be an increase in labor costs for the budget period due to known or anticipated salary increases. An example of a projected increase or escalation in costs would be a 5% annual inflation rate. Materials and Supplies expense, for instance, would be expected to increase with the projected inflation rate. Expenses are separated on this form in the same fashion as Revenues with further subtopics to more clearly define expenses. When using the subcategory "other" under any item please write a descriptive term and cross out the word "other". Expenses are separated on this form as "Operating", lines 16-26, "Administrative", lines 27-35, "Non-Operating", lines 37-45, and "Taxes" lines 48-50.

Lines 1 This line includes all money received for supplying water service. Information should come from completed Attachment 1.

Line 2 If a separate fee is charged for fire protection include on this line.

Line 3 Include all miscellaneous fees and charges generated by providing water service other than for the actual water service (for example, connection fees, bad check fees, reconnect fees, meter testing fees, etc.).

Line 4 Interest earned from cash on hand or on fees financed by the utility.

Line 5 If used, please describe.

Non-operating revenues are funds generated outside the water system and used by the water system to cover expenses.

Lines 7-15 Items should be clear, modify topics if needed.

Lines 16-17 Salaries and Benefits (Operators), include all compensation to employees of your system when the work is related to the system's O&M. This account should not include compensation of officers, directors, or general and administrative staff. Volunteer labor cannot be applied.

Line 18 Utilities, includes the cost of all electric power, gas, telephone, water (at least account for what is being used at the plant), and any other system-related expenses incurred in producing and delivering water.

Line 19 Chemicals and treatment is intended to cover the cost of all chemicals used in the treatment of your water.

Line 20 Monitoring, includes all water monitoring costs incurred by the system. This should include both in-house monitoring and analysis costs as well as outside laboratory costs.

Line 21 Materials, supplies, and parts means all materials and supplies used in the O&M of the water system and in providing and delivering the water to the customer. Include any repairs or parts needed in producing and delivering water. This would include grease, oil, and minor repairs to equipment. This should not include materials for administrative purposes such as postage, copying or copy machine supplies, billing forms, or letterhead.

Line 22 Transportation is intended to include all expenses related to trucks, automobiles, construction equipment, and other vehicle expense used in producing and delivering water to the customer.

Line 23 Include the cost of purchasing water. Use only if a consecutive system.

Administration expenses are considered overhead but not those directly related to O&M of the daily production and delivery of water to the customer. This category includes billing and administrative costs incurred by the system. For example, all meter reading costs, secretarial costs, postage, publications, reference materials, uncollectible debts insurance accounting services, and all other overhead items belong in this subsection.

Lines 27 Salaries and Benefits include all compensation to employees of your system in which the work is related to the administration of the system, such as officers, directors, secretarial, and meter reading salaries and benefits. This account should not include compensation of operators. If an employee performs both operation and meter reading a percentage of their salary should appear under the appropriate topic. For example, if an operator reads meters 25% of the time, ¾ of their salary should be shown on line 16 and ¼ of their salary on line 27.

Line 28 Overhead associated with the building itself such as, mortgage payment, insurance, taxes, maintenance, etc.

Line 29 Office supplies and postage includes all materials and supplies in administration of the water system. This includes office supplies, postage, copier charges, and paper.

Line 30 Insurance (Vehicles, Liability, Workers' Compensation) includes all insurance costs associated with the coverage for the vehicles, general liability, workers' compensation insurance, and other insurance costs related to the operation and administration of the system.

Line 31 Customer billing and collection should include all expenses specific to this function such as, special billing forms or software.

Lines 32 Accounting and legal expenses includes all salaries and wages with legal and accounting functions for the system even if they are outside services.

Line 33 A/E and professional services means all engineering and other professional services expenses associated with water system planning and design requirements.

Line 34 Other means expenses such as employee training and water certification requirements (classes, registration fees, travel, etc.), public relations campaigns and public notifications, etc. Also include any recurring expenses that did not fit into any of the above line items.

Non-operating expenses are ones that are necessary and paid by the water system, but are not part of daily O&M or Administration of the system. Debt Repayment and Capital Improvements are typical items that may appear on this type of analysis.

Lines 37-42 Expenses that are involved in operating or administering the water system that were not considered in the totals appearing on lines 26 and 35 should be shown in these items, modify if necessary.

Line 38 Capital improvements include facility and non-facility costs related to: 1) Meeting growth requirements or improving your system's infrastructure to provide better service and reliability to existing customers, 2) replacing or renovating existing facilities, or 3) to ensure compliance with drinking water regulations.

Line 39-42 Identify any transfer of funds used to offsets other non-water system related capital expenditures. These lines represent some possible categories, modify if needed.

Line 43 Depreciation expense only applies to systems which are currently depreciating investments made in the past (recovery of previously invested funds). Include amounts on this line only if money is actually set aside.

Line 44 Include any recurring non-operating expenses that did not fit into any of the above line items.

Taxes can be incurred in a variety of ways such as a state utility tax, business and occupation tax, property tax or federal income tax. Each of these taxes can be accounted for separately within the operating budget, modify if necessary.

Lines 48-49 Include any incurred taxes.

Identify Each Obligation		Coverage		
#1	r & Sewer Revenue Bond Series	15%		
#2	r & Sewer Revenue Bond Series	15%		
#3	r & Sewer Revenue Bond Series	15%		
#4	SRF Note	15%		
#5	DW SRF - LS260370	15%		
#6	NEW SRF Loan	15%		

Annual Debt Service (Principal Plus Interest)

Fiscal Year	#1	#2	#3	#4	#5	#6	Total Debt Service
2024	$563,885	$139,696	$64,226	$16,544	$0		$784,351
2025	$563,010	$139,696	$64,226	$16,544	$0		$783,476
2026	$563,970	$139,696	$64,226	$16,544	$0		$784,436
2027	$563,710	$139,696	$64,226	$16,544	$0		$784,176
2028	$564,258	$139,696	$64,226	$16,544	$217,770	$1,441,583	$2,444,076
2029	$563,585	$139,696	$64,226	$16,544	$0	$1,441,583	$2,225,633
2030	$562,720	$139,696	$64,226	$8,272	$0	$1,441,583	$2,216,496
2031	$563,663	$139,696	$64,226	$0	$0	$1,441,583	$2,209,167
2032	$563,358	$139,696	$64,226	$0	$0	$1,441,583	$2,208,862
2033	$562,833	$139,696	$64,226	$0	$0	$1,441,583	$2,208,337
2034	$564,088	$139,696	$64,226	$0	$0	$1,441,583	$2,209,592
2035	$563,068	$139,696	$64,226	$0	$0	$1,441,583	$2,208,572
2036	$563,828	$139,696	$64,226	$0	$0	$1,441,583	$2,209,332
2037	$563,313	$139,696	$64,226	$0	$0	$1,441,583	$2,208,817
2038	$563,550	$139,696	$64,226	$0	$0	$1,441,583	$2,209,054
2039	$564,513	$139,696	$64,226	$0	$0	$1,441,583	$2,210,017
2040	$564,173	$139,696	$64,226	$0	$0	$1,441,583	$2,209,677
2041	$563,558	$139,696	$64,226	$0	$0	$1,441,583	$2,209,062
2042	$564,668	$0	$64,226	$0	$0	$1,441,583	$2,070,476
2043	$563,448	$0	$64,226	$0	$0	$1,441,583	$2,069,256
2044	$563,953	$0	$64,226	$0	$0	$1,441,583	$2,069,761
2045	$563,128	$0	$0	$0	$0	$1,441,583	$2,004,710
2046	$564,000	$0	$0	$0	$0	$1,441,583	$2,005,583

SCHEDULE OF PRIOR, PARITY, OR PROJECTED REVENUES AND DEBT COVERAGE FOR RATE-BASED SYSTEM PLEDGED REVENUE

(Provide information beginning with the two fiscal years preceding the anticipated date of the first SRF loan repayment.)

	FY2024	FY2025	FY2026	FY2027	FY2028
(a) Net Operating Revenues. (Table 2 line 36)	$216,487	$516,049	$868,558	1,282,197	1,766,382
(b) Debt Service (including required coverage) pledged to all prior, parity, or projected projects (last column of Table 3).	$784,351	$783,476	$784,436	$784,136	$2,444,076
(c) Net Revenue (= a – b)	($567,864)	($267,426)	$84,123	$498,022	($677,694)

(d) Attach audited annual financial report(s), or pages thereof, and any other documentation necessary to support the above information. Include any notes or comments from the audit reports regarding compliance with covenants of debt obligations having a prior or parity lien on the revenues pledged for repayment of the SRF loan. (*Attachment #* _____)

(e) Attach worksheets reconciling this page with the appropriate financial statements (for example, backing out depreciation and interest payments from operating expenses). (*Attachment #* _____)

(f) If the net revenues were not sufficient to satisfy the debt service and coverage requirement, please explain what corrective action was taken. (Attachment #_____)

(k) Identify the source of the above information and explain methods used to develop the projections (Attachment # _____). Include an explanation of any revenue and expense growth or other adjustments; for example, any rate increases, service growth, inflation adjustments, expense adjustments reflecting the cost of operating additional facilities, or other considerations.

LIST OF ATTACHMENTS (use additional sheets if necessary)

Attachment	Number

TECHNICAL: Accurate answers to the following questions will help identify the technical strengths as well as areas that may need improving within your system. If a question or section does not apply to your system, please write N/A for not applicable. For questions that ask you to rate your system from 1 to 5, answer 1 for worst case scenario and answer 5 for the best case scenario.

- System has current and accurate data showing average and peak gpd used — Yes ☒ No ☐
- System's capacity exceeds peak demand by more than 20% (Percentage - %) — Yes ☒ No ☒
- System can meet peak demand without pumping at peak capacity for extended periods. — Yes ☒ No ☐
- System has an emergency plan in place to meet system demand during a shortage (natural disaster or largest pump/well out, etc.) — Yes ☒ No ☐
- System has accurate records indicating types and percentage of customers use: — Yes ☒ No ☐
  Residential 70% Commercial 30% Industrial _____% Dedicated Irrigation Meter 0%
- System has comprehensive water loss program that compares amount of water produced (plant meter) with total delivered through metered and unmetered service connections (system's unaccounted for water is 25%) — Yes ☒ No ☐

Purchase Water Systems **NA** ☒

System has a written agreement with the supplier that:

- ensures adequate supply of water during shortage conditions, — Yes ☐ No ☐
- does not require the purchase of a minimum amount of water (water is supplied through a meter), — Yes ☐ No ☐
- assures supplying water system will remain in compliance with the appropriate State or federal regulations, and — Yes ☐ No ☐
- assures purchasing system will be notified of any water quality issues. — Yes ☐ No ☐

Surface Water Systems and Systems Using Ground Water Under the Influence of Surface Water **NA** ☒

- System has redundancy for all critical treatment components — 1 2 3 4 5
- System monitors raw, settled, and individual filtered water turbidity — 1 2 3 4 5
- System consistently (95% of the time) has a filtered water turbidity of _____%, which is within the current standard of .3 NTU — 1 2 3 4 5
- System has the capability to add coagulant before the filter and disinfect at various points in the treatment process — 1 2 3 4 5
- System is evaluating (or has evaluated) changes necessary to meet the Enhanced Surface Water Treatment Rule — 1 2 3 4 5
  Some needed changes are: _____
- System is evaluating (or has evaluated) changes needed to meet requirements in the Disinfection By Products Rule — 1 2 3 4 5
  Some planned modifications are: _____

Ground Water System **NA** ☐

- A minimum of two sources of groundwater are provided — Yes ☒ No ☐
- Source water protection area provides a minimum 500 foot radius around each drinking water well — Yes ☒ No ☐
- Groundwater source capacity equals or exceeds the design maximum day demand and equals or exceeds the design average day demand with the largest producing well out of service — Yes ☒ No ☐
- System monitors raw water quality to determine appropriate treatment — 1 2 3 4 5
- System's well(s) have; air/vacuum relief valve, check valve, blow-off, by-pass, meter,

working sanitary seal, construction/maintenance records and are properly vented 1 2 **3** 4 5
- System routinely monitors drawdown **1** 2 3 4 5

Disinfection

- System has adequate contact time of 360 minutes following disinfection and before the first user in the distribution system Yes ☒ No ☐
- Disinfection equipment is regularly inspected and maintained Yes ☒ No ☐
- A chlorine residual is maintained throughout the distribution system 1 2 3 4 **5**

Distribution System

- System has accurate information, including age, for pipe materials that currently make up the distribution system **1** 2 3 4 5
- Water mains providing fire protection are a minimum of 6-inches in diameter Yes ☐ No ☒
- System is free of severe "water hammer" problems **1** 2 3 4 5
- System tracks ranges of operating pressure, especially during peak demand 1 **2** 3 4 5
- System maintains a minimum operating pressure of 20 psi Yes ☒ No ☐
- Normal operating pressure is kept between 40 and 100 psi 1 2 **3** 4 5
- System has a routine leak detection program that uses (type of equipment)_____, repairs identified leaks quickly, and keeps water loss in the distribution system below _____%. Average number of leak repairs per year is 100 **1** 2 3 4 5
- System has a cross connection control program in place that addresses: evaluation of each service connection, installation of specified backflow preventer, training, record keeping, annual testing, and education **1** 2 3 4 5
- System is working to eliminate dead ends in the mains **1** 2 3 4 5
- System has a flushing program that operates _____ times a year **1** 2 3 4 5
- System has a map showing the bacteriological, lead and copper, and TTHM (if applicable) sampling points 1 2 3 4 **5**
- System has accurate "as-built" maps of the distribution system posted that show: location of sources (or intakes), size of mains, dead end mains, valves, curb stops on service lines, and proximity of mains to other utilities (gas, electric, etc.) **1** 2 3 4 5
- System has a routine valve exercise program 1 2 **3** 4 5
- All customers are metered and all meters are routinely calibrated 1 2 3 **4** 5
- Customer complaints are relatively infrequent 1 2 **3** 4 5
  List number of complaints in the past year: 2.

Pumping

- System has a pump maintenance program that includes annual inspection, scheduling of repair, and routine maintenance that is conducted by a qualified contractor 1 **2** 3 4 5
- System has standby or emergency power equipment that is routinely tested under load and can provide 100% of the average daily demand for 7 days 1 2 3 4 **5**

Storage

- System is able to meet peak demand without the high service pumps running at peak capacity for extended period 1 2 3 4 **5**
- System has adequate reserve capacity for fire protection. **1** 2 3 4 5
  Total storage capacity of the system is 1 M gallons _____ gals
- System's 1 storage tanks receive routine inspection (every 3-5 years) to determine and schedule any needed maintenance 1 2 3 4 **5**
- All storage tanks are equipped with an altitude valve to prevent overflowing and are sized appropriately to ensure adequate turnover and no loss of water quality 1 2 3 4 **5**

- Storage tanks are covered and the surrounding areas are fenced 1 2 3 4 5
- Storage tanks have a drain valve and an entry hatch to allow access for cleaning and painting of the interior of the tank 1 2 3 4 5

MANAGERIAL: Answering the next set of question will help the system clearly define responsible parties, staffing needs, operational needs, policies, and internal standard that guide system performance. For questions that ask you to rate your system from 1 to 5, answer 1 for worst case scenario and answer 5 for the best case scenario.

- System has a current organizational chart and accompanying position descriptions that clearly define responsibilities of staff members 1 2 3 4 5
- The plant is a category Class 2C plant operating 6 hours per day.

List names, class, and license numbers for all operators fulfilling staffing requirements:

Joseph Thomas – B 0012173 Salvador Mora – C 0025241

Troy Kepley – C 0023075

Juan Cardenas – C 0020126

- System is satisfied with service provided by contract operator(s) NA 1 2 3 4 5
- The operator's authority and responsibilities are clearly defined 1 2 3 4 5

Policies and Plans: Please indicate with a check mark the items for which the water system has written policies or plans.

☒ standard specifications	☒ connection policies	☒ main extension policies
☒ bacteriological sampling plan	☒ emergency operation plan	☒ Lead & Copper sample plan
☒ cross connection control plan	☒ record management plan	☒ TTHM
☒ general rules	☒ disconnection policy	☒ public education & outreach
☒ disaster response plan	☒ personnel policy	☒ Safety/Risk Management Policy

- Based on the answers above the system has: clear organizational structure, defined staffing requirements, and appropriate rules/policies 1 2 3 4 5

Operations and Maintenance: The items that follow are elements that may be contained in a thorough Operations and Maintenance (O&M) manual. A complete O&M manual is useful as a quick reference for anything from trouble shooting to emergency procedures. Please indicate with a check mark those items contained in the system's O&M manual.

Introduction and Overview

☒ System name	☒ System ID#	☒ location
☒ design flow capacity	☒ type of treatment	☒ water source
☐ available training	☒ publications available	

☒ Statement of the purpose of the manual and relay to the operator how to best obtain pertinent information

☒ organizational chart (note which activities require qualified and licensed/certified personnel)

General System Description

☒ a flow schematic (source to distribution)

☒ pumping capabilities (source, chemicals, and high service)

☒ storage (raw, finished water, and chemicals)

☒ system map showing location of all wells, intake structures, pumping stations, storage tanks, and the defined service area

System Operation and Control

☒ identification of major system components including a description of the normal operation of each component

☒ possible alternative operation modes and circumstances under which they would be used

☒ schematic diagrams of each treatment process

☒ preventative maintenance program (include inspections performed when the facility is off-line)

- ☒ common operating problems with methods of bypassing while being repaired
- ☒ importance of and how to use laboratory tests for process control
- ☒ routine system operation for each major system component this should include startup and shutdown procedures, safety procedures, and meter reading
- ☒ evaluation of overall system performance

Laboratory Testing

- ☒ identification of samples and tests needed for compliance as well as for process control.
- ☒ sampling locations, time, and methods
- ☒ how to interpret laboratory results and the use of these results to improve the process
- ☒ what should be in laboratory supply and chemicals inventory
- ☒ list of laboratory references;
- ☒ instructions for filling out worksheets for a sample (include completed example)
- ☒ for tests to be performed by outside laboratories, the name of the laboratory, contact person, telephone number, and method of requesting sample pick-up or schedule for sample pick-up

Records and Reports Section

- ☒ a general explanation of the purpose and importance of accurate records and reports
- ☐ a log of complaints and responses
- ☒ daily logs, maintenance records, laboratory records, monthly reports, monitoring reports, sanitary surveys, annual reports, operating cost reports, and accident reports.
- ☒ historical records (permits, standards, pumping capacity, consumption, and drawdown)
- ☒ list of equipment warranties and provisions
- ☒ specific area for filing records
- ☒ procedures for reporting to appropriate agencies (specify how long records should be kept)

Maintenance

- ☒ general information including purpose and value of scheduled and preventative maintenance
- ☒ preventative maintenance schedule and sample worksheets with instructions
- ☒ specifications for fuels, lubricants, filters, etc. for equipment
- ☒ troubleshooting charts or guides which reference pages in manufacturers' O&M manual or system's O&M manual as appropriate
- ☒ a record of data plate information on each piece of equipment maintained, this should include manufacturers' maintenance schedule for routine adjustments
- ☒ a work order system for maintenance of equipment with sample forms to accurately track O&M costs for each piece of equipment
- ☒ brief operation instructions for each piece of equipment with reference to the manufacturers' technical specifications for major system components
- ☐ a mechanism for storage and check out of specialized equipment used infrequently
- ☒ list of outside contract maintenance tasks
- ☒ contact person and phone numbers for equipment manufacturers, major suppliers, and all utilities serving the system
- ☐ list of special tools used and how to replace
- ☐ stocks of spare parts, supplies, chemicals and other items vital to system operation
- ☒ a system of requisitions and/or work orders used to distribute parts, supplies, chemicals, etc. for reorder purposes

Emergency Response Program

- ☒ pre-response activity such as; personnel assignments, emergency equipment inventory, filling a storage tank before a storm hits, copies of all emergency numbers. Laminated copy of phone numbers to keep readily accessible should include water system personnel responsible for making decisions in specific situations; including name, job title, home and work phone number (pager/cell phone number if available), police, fire departments, and for chemical spills or exposure CHEMTECH 800-424-9300.
- ☒ safety procedures for all personnel involved in the response

☒ a contingency plan to ensure proper treatment of water even in adverse conditions which may include agreements with nearby water systems for equipment or personnel
☒ procedures for putting standby and emergency sources into active service
☒ procedures for notifying customers, the local health jurisdiction, and EPA of water quality problems
☒ systematic procedure for returning to normal operation

Appendix

The appendix can contain documents and other information that cannot be easily incorporated into the body of the manual. Large documents such as copies of plans and specifications may be stored separately from the main manual. The following list has examples of items that might be included in appendices. Please check all that apply to your O&M Manual.

☒ Detailed design criteria	☒ User Charge System	☒ Approved shop drawings
☒ Schematics	☒ Piping color codes	☐ Valve indices or schedule
☒ As-built drawings	☒ Drinking water rules/Ordinance	☒ Manufacturers' manuals

- Based on the answers above please rate the system's current O&M Manual. 1 2 3 4 5

The last set of questions is designed to help you evaluate the systems' source(s). Please read the item then circle the number from 1 (needs improving) to 5 (top notch) that you feel best describes your systems' current status relative to that item or check boxes as appropriate.

- System has an active Source Water Assessment Program 1 2 3 4 5

For Ground Water Systems:

- System has accurate historical information (like well driller's log and construction records) for each well 1 2 3 4 5
- Well(s) have the "zone of contribution" identified on a map 1 2 3 4 5
- No storage of potential contaminants in close proximity of well(s) 1 2 3 4 5
- Well(s) are housed and fenced and have an appropriate concrete pad 1 2 3 4 5
- Well casing(s) extend at least 12" above floor or ground 1 2 3 4 5

Name of aquifer is known: ☒ Yes ☐ No
Aquifer is: Upper Floridian ☐ Confined ☒ Unconfined

For Surface Water Systems:

- Commercial, industrial, or agricultural operations up stream are identified 1 2 3 4 5
- System has provided a contact to these facilities in case of an accidental release 1 2 3 4 5
- System performs up stream monitoring 1 2 3 4 5
- System has a raw water reservoir of _____ gallons that acts as a buffer 1 2 3 4 5

Overall:

- System has adequate knowledge and program activity to protect and ensure an adequate supply of drinking water 10 years into the future 1 2 3 4 5

CERTIFICATION: I, the undersigned authorized representative of the applicant, hereby certify that all information contained in this form and attachments is true, correct, and complete to the best of my knowledge and belief. I also certify that I have been duly authorized to file the business plan and to provide these assurances.

Signature Of Authorized Representative _____

Name (Please Print) _____

Title _____

Address _____

City _____ State _____ Zip _____

Phone _____ Fax _____

APPENDIX E: REQUIREMENTS FOR SUPPLEMENTAL APPROPRIATIONS FOR HURRICANES FIONA AND IAN (SAHFI)

In September 2022, Hurricane Ian, a powerful Category 4 storm, struck Florida, causing widespread devastation. Hurricane Ian significantly impacted the City of LaBelle's water and wastewater treatment infrastructure, causing widespread disruptions and exposing vulnerabilities across multiple systems. The storm's effects highlighted critical areas for improvement to ensure resiliency for future events including the following:

1. Source Water and Treatment Challenges

- **Electrical Disruptions**: Extensive power surges and outages, caused by high winds and lightning strikes, affected source wells and water treatment facilities. Backup systems were insufficient to maintain continuous operations, leading to fluctuations in water pressure.
- **Equipment Damage**: Lightning and flooding damaged key treatment components, including pump motors, control panels, and chemical feed systems, necessitating emergency repairs.
- **Chemical Supply Issues**: Delays in chemical deliveries disrupted the treatment process. Existing chemical storage tanks lacked sufficient capacity to accommodate extended supply interruptions.

2. Water Distribution System Vulnerabilities

- **Pressure Fluctuations**: Inconsistent power supply led to water hammer effects, straining, and damaging the distribution system piping.
- **Damaged Isolation Valves and Hydrants**: Non-functional isolation valves and aging fire hydrants limited the City's ability to isolate failures and ensure adequate fire protection.
- **Single Points of Failure**: Dead ends in the distribution system caused localized outages, exacerbating service interruptions.

3. Wastewater Treatment Challenges

- **Access Restrictions**: Fallen trees blocked dirt roads leading to wastewater treatment facilities, delaying critical maintenance and emergency operations.
- **Camera and Monitoring System Failures**: Damage to SCADA systems and lack of online access to the facilities cameras hindered remote monitoring and real-time system management.
- **Flooding and Erosion**: Excessive rainfall and localized flooding impacted the structural integrity of wastewater treatment facilities, complicating operations.

4. Broader Operational Impacts

- **Emergency Power Deficits**: Limited backup power systems could not sustain operations during prolonged outages, exposing the need for additional portable and stationary generators.
- **Communication Breakdowns**: Damaged infrastructure impeded coordination between response teams and regulatory agencies.
- **Aging Plant Equipment**: The water treatment plant's aging equipment was severely stressed. All of the critical service pumps downstream of the RO system, including the clearwell, high service,

and concentrate deep well injection pumps, are at the end of their useful life and need to be replaced to insure reliable and energy efficient operation.

- **Redundancy**: The hurricane highlighted the lack of redundancy in certain areas of the water treatment system including capacity limits if one RO train is out of service, storage limitations with the City only having the storage capacity of one ground storage tank, and supply limitations due to size restrictions in water distribution piping and inadequate distribution system looping.

In summary, Hurricane Ian exposed a significant number of critical vulnerabilities in LaBelle's water treatment and supply system, highlighting the need for modernization and improved resilience and redundancy to protect against water supply disruption as a result of future similar events. Pictures of damage around the City of LaBelle as a result of Hurricane Ian are included in this Appendix E. Many of the improvements to address the vulnerabilities had already been identified in the City's Drinking Water Facility Plan. The following items were added or removed from the scope of Projects 1 and 2 in the Drinking Water Facility Plan to address additional needs or vulnerabilities identified as a result of Hurricane Ian:

<u>Project 1 – Water Source and Treatment Improvements</u>

- Added replacement of (2) 50 HP High Service Pumps, (2) 100 HP High Service Pumps, (2) 40 HP Concentrate Pumps, and (2) 30 HP Clearwell Pumps
- Added purchase of critical operating shelf spares for long lead equipment including replacement Variable Frequency Drives for the source water well pumps and motor-operated valves for the RO skids
- Added upgrading of the camera system at the water plant to allow for remote monitoring of the camera system at both the source water wells and the water treatment plant
- Added controls and electrical improvements to provide a greater level of protection against lightning strikes and Florida Power & Light power surges

<u>Project 2 – Water Distribution and Storage Upgrades</u>

- Removed State Road 80 & Helms Road Water Main Extensions; this work is being contracted and executed separately
- Removed Zone B Water Main Improvements – this work is being contracted and executed separately
- Added pressure surge/water hammer prevention equipment on downstream side of high service pumps for protection of distribution system
- Added replacement of undersized hydrants or hydrants at end of useful life that are not providing adequate fire flow capacity
- Added water main improvements to replace undersized pipes that are limiting distribution during fire flow events
- Added water main improvements to eliminate some of the significant system dead ends that have been created by unmanaged distribution system additions over the last 80 years resulting in poor water distribution to certain areas of the network.

Updated construction cost estimates and life cycle cost estimates that incorporate the above changes are included in this Appendix E and are summarized below in Table E-1. The total capital cost of the recommended projects is estimated to be $19.45 million in 2024 dollars.

Table E-5: Updated Selected Plan Proposed Costs

	Project 1 – Source & Treatment Upgrades	Project 2 – Distribution and Storage Upgrades
Construction Base Cost (2024)	$4,080,000	$10,556,000
Construction Contingency 10%	$420,000	$1,101,000
Engineering, Permitting and Design 10%	$420,000	$1,101,000
Engineering Services During Construction 8%	$336,000	$881,000
Fiscal, Legal and Administration 3%	$126,000	$330,000
Land Acquisition	$0	$100,000
Construction Escalation to mid-point of construction (end of 2026 7%)	$799,000	$2,104,000
Total Opinion of Capital Costs	**$6,162,000**	**$16,108,000**

The City of LaBelle is seeking SAHFI funding for work associated with the projects identified in the Drinking Facility Plan which involve Water Source and Treatment Improvements (Project 1) and New Water Distribution System and Storage Upgrades (Project 2). This work is eligible for SAHFI funding as it satisfies the goals described within the Hurricane Ian Special Appropriation Florida Requirements guidance for the following purposes:

Subpart L – Drinking Water State Revolving Funds:
Authority: Section 1452 of the Safe Drinking Water Act, as amended, 42 U.S.C. 300j-12

Project 3 in the Facility Plan, relating to meter replacements, does not satisfy the goals and therefore funding under SAHFI is not being sought for this particular project.

Specific project elements of Projects 1 & 2 meet a number of the program goals specified within Attachment 2 of the Memorandum dated September 7, 2023 and titled "Award and Implementation of the 2023 State Revolving Fund Supplemental Appropriation for Hurricanes Fiona and Ian (SAHFI)" from the United States Environmental Protection Agency (EPA). LaBelle's proposed projects specifically meet the following program goals:

A. Project 1 – Source and Treatment Upgrades SAHFI Compliance

I. Drinking Water SRF - SAHFI Requirement I

Projects that **prevent interruption of water distribution system operation** in the event of a flood or natural disaster, including but not limited to:

c. Replacement of damaged equipment with more energy efficient equipment

Project 1 Specific Project Compliance Element - Project 1 will include replacement of the four (4) high service pumps – two (2) 50 HP and two (2) 100 HP - which are at the end of their useful life, with new pumps with premium efficiency motors. Also, one (1) additional 50 HP propane powered high service pump will be provided as a backup high service pump to be put into service in the event of loss of primary and backup electrical power at the water treatment plant.

g. Installation/construction of redundant distribution system components and equipment

Project 1 Specific Project Compliance Element – Project 1 includes (1) 50 HP high service propane driven backup pump to provide pumping of finished water to the distribution system upon loss of power at the water treatment plant.

II. Drinking Water SRF - SAHFI Requirement III

Projects that **maintain the operation of a drinking water treatment plant, intake or well** in the event of a flood or natural disaster, including but not limited to:

a. Installation of back-up energy supply or alternative energy sources (e.g., solar panels, wind turbines, batteries, switch boxes) and/or hardening of existing connections to the power grid

Project 1 Specific Project Compliance Element - Project 1 includes a new propane powered pump for finished water transfer from the clearwell to the ground storage tank to allow for pump operation independent of the availability of electricity. The selected alternative for Project 1 also includes new emergency backup generators for the source water well pumps and a portable trailer-mounted genset to provide for a backup power supply which can be utilized at the water treatment plant or the source water wells in the event of stationery genset failure.

b. Replacement of damaged equipment with more energy efficient equipment

Project 1 Specific Project Compliance Element - Project 1 will include replacement of the clearwell and concentrate pumps – (2) 30 HP clearwell pumps and (2) 40 HP concentrate pumps – which are at the end of their useful life. In addition, the existing clearwell pumps are a non-standard pump design which is very difficult to repair and service. These pumps will be replaced with new pumps with premium efficient motors.

c. Physical "hardening" or waterproofing of pumps and electrical equipment at pump stations and other components of distribution systems (including storage facilities and associated equipment) through upgrade or replacement, including:
Waterproofing electrical components (e.g., pump motors)

- Waterproofing circuitry
- Dry floodproofing/sealing of structure to prevent floodwater penetration
- Installation/construction of wind resistant features (e.g., wind resistant roofing materials, wind-damage-resistant windows, storm shutters)

Project 1 Specific Project Compliance Element – Project 1 includes improving the chemical storage and pumping at the water treatment plant to prevent unexpected failures of equipment at the end of its useful life, eliminate safety and environmental risks with the existing containment and drainage under the existing chemical storage canopy, protect critical chemical feed equipment from weather-related damages, and provide more resilience to the chemical storage area. The canopy structure over the existing chemical feed systems will be replaced with a climate controlled building. The sodium hypochlorite chemical feed and storage system will be moved from its existing location in a stand-alone shed into the new building with the other chemical feed systems and storage tanks. Chemical feed systems and storage tanks will be increased in size to accommodate the larger capacity of the upgraded RO skids (ref. A.II.g. below). The existing fiberglass control panels will be replaced with 316SS NEMA 4X panels to protect power and controls equipment from spraying water and/or chemicals.

f. Installation of larger capacity storage tanks

- Installation of larger capacity chemical storage tanks for continued treatment in absence of delivery service
- Installation of larger capacity fuel storage tanks for back-up generators
- Installation of larger capacity water storage facilities (e.g., raw water reservoirs, backwash tanks, contact basins)

Project 1 Specific Project Compliance Element - Project 1 will double the capacity of the chemical storage systems, adding redundancy to mitigate the effect of failures and backup capacity to mitigate delays in delivery of chemicals as a result of a flood or natural disaster.

g. Installation/construction of redundant system components and equipment

Project 1 Specific Project Compliance Element – Project 1 includes new membranes and additional pressure vessels to expand the two (2) RO trains from 0.75 MGD to 1.125 MGD each. The upgraded skids will allow the City to continue to supply water to residents if one of the reverse osmosis treatment trains is offline. A third finished water clearwell pump will be added. This pump will be propane powered to allow the transfer of finished water from the clearwell to the ground storage tank when power is unavailable at the water treatment plant. A trailer mounted generator will provide the

City with backup power capabilities and the ability to move the power supply to the location where it is most needed in the event one of the stationary generators fails. Project 1 also includes the purchase of critical shelf spares including RO skid motor operated valves and VFDs for the source water wells to provide equipment redundancy for difficult to repair equipment with long lead times.

h. SCADA system projects to allow remote or multiple system operation locations

Project 1 Specific Project Compliance Element - Project 1 includes SCADA upgrades which consist of an upgraded camera system at the water treatment plant to allow for remote monitoring of the plant and source water wells and improvements to controls and power surge protection, including possible improvements to lightning protection and grounding at the water treatment plant and source water wells to enable the facilities to better handle lightning strikes and utility-side power surges. Project 1 also includes SCADA upgrades to incorporate the RO skid and chemical feed system upgrades into the existing SCADA system.

B. Project 2 – Distribution and Storage Upgrades SAHFI Compliance

I. Drinking Water SRF - SAHFI Requirement I

Projects that **prevent interruption of water distribution system operation** in the event of a flood or natural disaster, including but not limited to:

a. Installation of back-up generators (including portable generators) or alternative energy sources (e.g., solar panels, wind turbines, batteries, switch boxes) that service pump stations or other distribution system facilities

Project 2 Specific Project Compliance Element – Project 2 will provide backup power to all equipment associated with the new elevated storage tank which will be integrated into the design of the new backup gensets at the source water supply wells.

c. Replacement of damaged equipment with more energy efficient equipment

Project 2 Specific Project Compliance Element - Project 2 includes a hydropneumatic tank or other pressure surge or water hammer prevention equipment connected to the water distribution system to prevent pressure surges in the distribution system at high service pump startup and shutdown that result in damages to the distribution system piping. Project 2 also includes the replacement of fire hydrants throughout the City that are undersized and at the end of their useful life which increases the risk of the City not being able to protect the public during fire emergencies. And Project 2 includes identification and replacement of non-functional water main isolation gate valves. Non-functional isolation valves prevent the City from being able to quickly isolate piping failures in the distribution system which can result in the loss of large volumes of finished water when operators struggle to close valves (or locate working valves) as

well as the need to isolate much larger sections of the distribution system than would otherwise be necessary.

g. Installation/construction of redundant distribution system components and equipment

Project 2 Specific Project Compliance Element - Project 2 includes new transmission and distribution mains that will eliminate some of the distribution system dead ends around the City and create looping in LaBelle's system, including an extension of the water main along SR80 from the Wal-Mart north of Helms Road to Miller Avenue, to minimize the number of single points of failure that can lead to water outages and to better balance flow distribution throughout the network. Additionally, the selected alternative for Project 2 includes new storage capacity to bring LaBelle's total finished water storage capacity up to the amount required by F.A.C. 62-555.320 (19)(a) and to maintain storage and supply of drinking water in the event one of the system's storage tanks is taken offline. Project 2 will also include replacement of sections of piping in the water distribution system that currently limit distribution of adequate fire flow to hydrants around the city.

II. Drinking Water SRF - SAHFI Requirement III

Projects that **maintain the operation of a drinking water treatment plant, intake or well** in the event of a flood or natural disaster, including but not limited to:

a. Installation of back-up energy supply or alternative energy sources (e.g., solar panels, wind turbines, batteries, switch boxes) and/or hardening of existing connections to the power grid

Project 2 Specific Project Compliance Element - Project 2 includes a propane powered backup pump for finished water distribution from the treatment plant during periods when the water treatment plant is without utility-supplied or generator-supplied electricity.

b. Replacement of damaged equipment with more energy efficient equipment

Project 2 Specific Project Compliance Element - Project 2 includes replacement of the four (4) high service pumps which are at the end of their useful life with new pumps with premium efficient motors.

f. Installation of larger capacity storage tanks

- Installation of larger capacity chemical storage tanks for continued treatment in absence of delivery service
- Installation of larger capacity fuel storage tanks for back-up generators
- Installation of larger capacity water storage facilities (e.g., raw water reservoirs, backwash tanks, contact basins)

Project 2 Specific Project Compliance Element – Project 2 includes a new 1MG elevated storage tank to provide additional and redundant storage of finished drinking water for the City.

g. Installation/construction of redundant system components and equipment

Project 2 Specific Project Compliance Element – Covered above under B.II.a. and f.

C. 500-Year Floodplain:

Flood zones for the planning area are designated in Figure 2-3 of the Facilities Plan. Most of the proposed planning area falls within Zone A, AE, AH, and X floodplain with minimal to moderate flood hazard. The drinking water treatment facility and source water well locations on FEMA's hazard map confirm that the plant and water wells are located outside of the 0.2% Annual Chance Flood Hazard referred to as the 500-Year Floodplain, providing enhanced redundancy and resiliency of the system during major flood events and natural disasters.

Project 1 Alternative 1 Conceptual Cost Estimate - SAHFI Revision
Source and Treatment Upgrades - Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Reverse Osmosis Skids Expansion

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
Reverse Osmosis Upgrades							
1	New Reverse Osmosis Cartridge Products	EA	$ 25,000	20	$ 500,000	$ 100,000	$ 1,016,000
2	New Membranes for Existing Reverse Osmosis Cartridges	LS	$ 275,000	1	$ 275,000	$ 55,000	$ 559,000
3	Piping and install	LS	$ 250,000	1	$ 250,000	$ -	$ 250,000
4	MWTF Camera System Upgrade	LS	$ 30,000	1	$ 30,000	$ 5,000	$ 60,000
New Pumps							
5	100 HP Propane-Driven Centrifugal High Service Pump and Motor 1,850 gpm @ 140 ft TDH	EA	$ 120,000	1	$ 120,000	$ 48,000	$ 155,000
6	30 HP Propane-Driven Vertical-Turbine Chlorine Contact Chamber Vertical Turbine Pump and Motor 1,050 gpm @ 39 ft TDH	EA	$ 50,000	1	$ 50,000	$ 20,000	$ 65,000
7	100 HP High Service Pumps	EA	$ 75,000	2	$ 150,000	$ 15,000	$ 293,000
8	50 HP High Service Pumps	EA	$ 55,000	2	$ 110,000	$ 15,000	$ 219,000
9	40 HP Concentrate Pumps	EA	$ 60,000	2	$ 120,000	$ 15,000	$ 238,000
10	30 HP Clearwell Pumps	EA	$ 50,000	2	$ 100,000	$ 15,000	$ 201,000
11	10" Ductile Iron Pipe for New Pumps	LF	$100	40	$ 4,000	$ 2,800	$ 4,000
12	10" Check Valve for New Pumps	EA	$ 2,820	2	$ 5,640	$ 2,256	$ 7,000
13	10"x6" Flanged Eccentric Reducer for New Pumps	EA	$ 1,200	2	$ 2,400	$ 960	$ 3,000
14	6" Ductile Iron Restrained Coupling Adapter	EA	$ 1,000	4	$ 4,000	$ 1,600	$ 5,000
15	Structural Pad for New Pump (Assumed 15' x 8' x 12")	EA	$ 5,000	1	$ 5,000	$ 3,500	$ 5,000
16	Instrumentation	LS	$ 45,000	1	$ 45,000	$ 9,000	$ 91,000
17	SCADA Implementation	LS	$ 20,000	1	$ 20,000	$ 4,000	$ 41,000
18	Spare parts - well VFDs and RO MOVs	LS	$ 100,000	1	$ 100,000	$ 40,000	$ 129,000
Well Generator Upgrades							
19	100 kW Generator	EA	$ 75,000	3	$ 225,000	$ 76,500	$ 497,000
20	Transfer Switches for 100 kW Generator	EA	$ 10,000	2	$ 20,000	$ 6,800	$ 44,000
21	Surge Protectors for 100 kW Generator	EA	$ 5,000	2	$ 10,000	$ 3,400	$ 22,000
22	Other Power Surge and Lightning Protection	LS	$ 100,000	1	$ 100,000	$ 34,000	$ 221,000
23	Instrumentation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
24	SCADA Implementation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
25	Testing Allowance	LS	$ 2,000	1	$ 2,000	$ 800	$ 3,000
Chemical Storage and Pumping Upgrades							
26	Sodium Hypochlorite - 2,000-Gallon Bulk Tank	EA	$ 6,000	2	$ 12,000	$ 2,400	$ 24,000
27	Sodium Hypochlorite - 75-Gallon Day Tank	EA	$ 500	1	$ 500	$ 100	$ 1,000
28	Sodium Hypochlorite - 6.0 gal/hour Duplex Pump Skid	EA	$ 5,000	2	$ 10,000	$ 2,000	$ 21,000
29	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
30	Sulfuric Acid - 500-Gallon Bulk Tank	EA	$ 1,200	1	$ 1,200	$ 240	$ 3,000
31	Sulfuric Acid - 30-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
32	Sulfuric Acid - 1.5 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
33	Sulfuric Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
34	Orthophosphate - 275-Gallon Bulk Tank	EA	$ 1,000	1	$ 1,000	$ 200	$ 2,000
35	Orthophosphate - 10-Gallon Day Tank	EA	$ 200	1	$ 200	$ 40	$ -
36	Orthophosphate - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
37	Orthophosphate - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
38	Sodium Hydroxide - 1,550-Gallon Bulk Tank	EA	$ 1,800	1	$ 1,800	$ 360	$ 3,000
39	Sodium Hydroxide - 40-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
40	Sodium Hydroxide - 3.0 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
41	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
42	Hydrofluorosilicic Acid - 240-Gallon Bulk Tank	EA	$ 900	1	$ 900	$ 180	$ 2,000
43	Hydrofluorosilicic Acid - 35-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
44	Hydrofluorosilicic Acid - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
45	Hydrofluorosilicic Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
46	Antiscalant - 55-Gallon Bulk Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
47	Antiscalant - 25-Gallon Day Tank	EA	$ 300	1	$ 300	$ 60	$ -
48	Antiscalant - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
49	Antiscalant - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
50	New Chemical Storage Building with Secondary Containment	EA	$ 1,002,700	1	$ 1,002,700	$ 401,080	$ 1,298,000
Other Construction Costs							
51	Mobilization/Demobilization (5%)	5%	$ 166,000	1	$ 166,000		$ 166,000
52	Insurance and Bonds (3%)	3%	$ 99,000	1	$ 99,000		$ 99,000
53	General Conditions	5%	$ 166,000	1	$ 166,000		$ 166,000
54	Overhead & Profit	10%	$ 332,000	1	$ 332,000		$ 332,000
SUBTOTAL					**$ 4,080,000**		**$ 6,325,000.00**
NON-CONSTRUCTION COSTS							
55	Contingency	10%	$ 420,240	1	$ 420,000		$ 420,000
56	Engineering, Permitting, and Design	10%	$ 420,240	1	$ 420,000		$ 420,000
57	Engineering Services During Construction	8%	$ 335,580	1	$ 336,000		$ 336,000
58	Legal and Administration	3%	$ 126,480	1	$ 126,000		$ 126,000
TOTAL					**$ 5,382,000**		**$ 7,627,000.00**

Project 1 Alternative 2 Conceptual Cost Estimate - SAHFI Revision
Source and Treatment Upgrades - Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Replace Existing Reverse Osmosis Skids with New, Larger Reverse Osmosis Skids

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
Reverse Osmosis Upgrades							
1	Demolish Existing Reverse Osmosis Skids	EA	$ 50,000	2	$ 100,000	$ 20,000	$ 203,000
2	New 1.5 MGD Reverse Osmosis Membrane Skid	EA	$ 1,200,000	2	$ 2,400,000	$ 480,000	$ 4,876,000
New Pumps							
3	100 HP Propane-Driven Centrifugal High Service Pump and Motor 1,850 gpm @ 140 ft TDH	EA	$ 120,000	1	$ 120,000	$ 48,000	$ 155,000
4	30 HP Propane-Driven Vertical-Turbine Chlorine Contact Chamber Vertical Turbine Pump and Motor 1,050 gpm @ 39 ft TDH	EA	$ 50,000	1	$ 50,000	$ 20,000	$ 65,000
5	10" Ductile Iron Pipe for New Pumps	LF	$100	40	$ 4,000	$ 2,800	$ 4,000
6	10" Check Valve for New Pumps	EA	$ 2,820	2	$ 5,640	$ 2,256	$ 7,000
7	10"x6" Flanged Eccentric Reducer for New Pumps	EA	$ 1,200	2	$ 2,400	$ 960	$ 3,000
8	6" Ductile Iron Restrained Coupling Adapter	EA	$ 1,000	4	$ 4,000	$ 1,600	$ 5,000
9	Structural Pad for New Pump (Assumed 15' x 8' x 12")	EA	$ 5,000	1	$ 5,000	$ 3,500	$ 5,000
10	Instrumentation	LS	$ 45,000	1	$ 45,000	$ 9,000	$ 91,000
11	SCADA Implementation	LS	$ 5,000	1	$ 5,000	$ 1,000	$ 10,000
Well Generator Upgrades							
12	100 kW Generator	EA	$ 75,000	2	$ 150,000	$ 51,000	$ 331,000
13	Transfer Switches for 100 kW Generator	EA	$ 10,000	2	$ 20,000	$ 6,800	$ 44,000
14	Surge Protectors for 100 kW Generator	EA	$ 5,000	2	$ 10,000	$ 3,400	$ 22,000
15	Other Power Surge and Lightning Protection	LS	$ 100,000	1	$ 100,000	$ 34,000	$ 221,000
16	Instrumentation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
17	SCADA Implementation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
18	Transfer Switches for 100 kW Generator	EA	$ 2,000	2	$ 4,000	$ 1,360	$ 9,000
19	Surge Protectors for 100 kW Generator	EA	$ 1,000	2	$ 2,000	$ 680	$ 4,000
20	Instrumentation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
21	SCADA Implementation	LS	$ 1,000	1	$ 1,000	$ 200	$ 2,000
22	Testing Allowance	LS	$ 2,000	1	$ 2,000	$ 800	$ 3,000
Chemical Storage and Pumping Upgrades							
23	Sodium Hypochlorite - 2,000-Gallon Bulk Tank	EA	$ 6,000	2	$ 12,000	$ 2,400	$ 24,000
24	Sodium Hypochlorite - 75-Gallon Day Tank	EA	$ 500	1	$ 500	$ 100	$ 1,000
25	Sodium Hypochlorite - 6.0 gal/hour Duplex Pump Skid	EA	$ 5,000	2	$ 10,000	$ 2,000	$ 21,000
26	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
27	Sulfuric Acid - 500-Gallon Bulk Tank	EA	$ 1,200	1	$ 1,200	$ 240	$ 3,000
28	Sulfuric Acid - 30-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
29	Sulfuric Acid - 1.5 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
30	Sulfuric Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
31	Orthophosphate - 275-Gallon Bulk Tank	EA	$ 1,000	1	$ 1,000	$ 200	$ 2,000
32	Orthophosphate - 10-Gallon Day Tank	EA	$ 200	1	$ 200	$ 40	$ -
33	Orthophosphate - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
34	Orthophosphate - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
35	Sodium Hydroxide - 1,550-Gallon Bulk Tank	EA	$ 1,800	1	$ 1,800	$ 360	$ 3,000
36	Sodium Hydroxide - 40-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
37	Sodium Hydroxide - 3.0 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
38	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
39	Hydrofluorosilicic Acid - 240-Gallon Bulk Tank	EA	$ 900	1	$ 900	$ 180	$ 2,000
40	Hydrofluorosilicic Acid - 35-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
41	Hydrofluorosilicic Acid - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
42	Hydrofluorosilicic Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
43	Antiscalant - 55-Gallon Bulk Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
44	Antiscalant - 25-Gallon Day Tank	EA	$ 300	1	$ 300	$ 60	$ -
45	Antiscalant - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
46	Antiscalant - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
47	New Chemical Storage Building with Secondary Containment	EA	$ 1,100,000	1	$ 1,100,000	$ 440,000	$ 1,424,000
Other Construction Costs							
48	Mobilization/Demobilization (5%)	5%	$ 210,000	1	$ 210,000		$ 210,000
49	Insurance and Bonds (3%)	3%	$ 126,000	1	$ 126,000		$ 126,000
50	General Conditions	5%	$ 210,000	1	$ 210,000		$ 210,000
51	Overhead & Profit	10%	$ 421,000	1	$ 421,000		$ 421,000
SUBTOTAL					**$ 5,173,000**		**$ 8,608,000.00**
NON-CONSTRUCTION COSTS							
52	Contingency	10%	$ 532,819	1	$ 533,000		$ 533,000
53	Engineering, Permitting, and Design	10%	$ 532,819	1	$ 533,000		$ 533,000
54	Engineering Services During Construction	8%	$ 425,479	1	$ 425,000		$ 425,000
55	Legal and Administration	3%	$ 160,363	1	$ 160,000		$ 160,000
TOTAL					**$ 6,824,000**		**$ 10,259,000.00**

Project 1 Alternative 3 Conceptual Cost Estimate - SAHFI Revision
Source and Treatment Upgrades - Construction of New Backup Generators at Well Sources, Chemical Storage and Pumping Upgrades, and Replace Existing Reverse Osmosis Skids with New Ultrafiltration Membrane Skids

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
Reverse Osmosis Upgrades							
1	Demolish Existing Reverse Osmosis Skids	EA	$ 50,000	2	$ 100,000	$ 20,000	$ 203,000
2	New 1.5 MGD Ultrafiltration Membrane Skid	EA	$ 1,000,000	2	$ 2,000,000	$ 400,000	$ 4,063,000
New Pumps							
3	100 HP Propane-Driven Centrifugal High Service Pump and Motor 1,850 gpm @ 140 ft TDH	EA	$ 120,000	1	$ 120,000	$ 48,000	$ 155,000
4	30 HP Propane-Driven Vertical-Turbine Chlorine Contact Chamber Vertical Turbine Pump and Motor 1,050 gpm @ 39 ft TDH	EA	$ 50,000	1	$ 50,000	$ 20,000	$ 65,000
5	10" Ductile Iron Pipe for New Pumps	LF	$100	40	$ 4,000	$ 2,800	$ 4,000
6	10" Check Valve for New Pumps	EA	$ 2,820	2	$ 5,640	$ 2,256	$ 7,000
7	10"x6" Flanged Eccentric Reducer for New Pumps	EA	$ 1,200	2	$ 2,400	$ 960	$ 3,000
8	6" Ductile Iron Restrained Coupling Adapter	EA	$ 1,000	4	$ 4,000	$ 1,600	$ 5,000
9	Structural Pad for New Pump (Assumed 15' x 8' x 12")	EA	$ 5,000	1	$ 5,000	$ 3,500	$ 5,000
10	Instrumentation	LS	$ 45,000	1	$ 45,000	$ 9,000	$ 91,000
11	SCADA Implementation	LS	$ 5,000	1	$ 5,000	$ 1,000	$ 10,000
Well Generator Upgrades							
12	100 kW Generator	EA	$ 75,000	2	$ 150,000	$ 51,000	$ 331,000
13	Transfer Switches for 100 kW Generator	EA	$ 10,000	2	$ 20,000	$ 6,800	$ 44,000
14	Surge Protectors for 100 kW Generator	EA	$ 5,000	2	$ 10,000	$ 3,400	$ 22,000
15	Other Power Surge and Lightning Protection	LS	$ 100,000	1	$ 100,000	$ 34,000	$ 221,000
16	Instrumentation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
17	SCADA Implementation	LS	$ 10,000	1	$ 10,000	$ 2,000	$ 21,000
18	Testing Allowance	LS	$ 2,000	1	$ 2,000	$ 800	$ 3,000
Chemical Storage and Pumping Upgrades							
19	Sodium Hypochlorite - 2,000-Gallon Bulk Tank	EA	$ 6,000	2	$ 12,000	$ 2,400	$ 24,000
20	Sodium Hypochlorite - 75-Gallon Day Tank	EA	$ 500	1	$ 500	$ 100	$ 1,000
21	Sodium Hypochlorite - 6.0 gal/hour Duplex Pump Skid	EA	$ 5,000	2	$ 10,000	$ 2,000	$ 21,000
22	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
23	Sulfuric Acid - 500-Gallon Bulk Tank	EA	$ 1,200	1	$ 1,200	$ 240	$ 3,000
24	Sulfuric Acid - 30-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
25	Sulfuric Acid - 1.5 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
26	Sulfuric Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
27	Orthophosphate - 275-Gallon Bulk Tank	EA	$ 1,000	1	$ 1,000	$ 200	$ 2,000
28	Orthophosphate - 10-Gallon Day Tank	EA	$ 200	1	$ 200	$ 40	$ -
29	Orthophosphate - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
30	Orthophosphate - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
31	Sodium Hydroxide - 1,550-Gallon Bulk Tank	EA	$ 1,800	1	$ 1,800	$ 360	$ 3,000
32	Sodium Hydroxide - 40-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
33	Sodium Hydroxide - 3.0 gal/hour Duplex Pump Skid	EA	$ 4,000	1	$ 4,000	$ 800	$ 8,000
34	Sodium Hypochlorite - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
35	Hydrofluorosilicic Acid - 240-Gallon Bulk Tank	EA	$ 900	1	$ 900	$ 180	$ 2,000
36	Hydrofluorosilicic Acid - 35-Gallon Day Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
37	Hydrofluorosilicic Acid - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
38	Hydrofluorosilicic Acid - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
39	Antiscalant - 55-Gallon Bulk Tank	EA	$ 400	1	$ 400	$ 80	$ 1,000
40	Antiscalant - 25-Gallon Day Tank	EA	$ 300	1	$ 300	$ 60	$ -
41	Antiscalant - 0.65 gal/hour Duplex Pump Skid	EA	$ 2,000	1	$ 2,000	$ 400	$ 4,000
42	Antiscalant - Transfer Pump	EA	$ 400	1	$ 400	$ 88	$ 1,000
43	New Chemical Storage Building with Secondary Containment	EA	$ 1,100,000	1	$ 1,100,000	$ 440,000	$ 1,424,000
Other Construction Costs							
44	Mobilization/Demobilization (5%)	5%	$ 189,000	1	$ 189,000		$ 189,000
45	Insurance and Bonds (3%)	3%	$ 114,000	1	$ 114,000		$ 114,000
46	General Conditions	5%	$ 189,000	1	$ 189,000		$ 189,000
47	Overhead & Profit	10%	$ 379,000	1	$ 379,000		$ 379,000
SUBTOTAL					**$ 4,660,000**		**$ 7,663,000.00**
NON-CONSTRUCTION COSTS							
48	Contingency	10%	$ 479,980	1	$ 480,000		$ 480,000
49	Engineering, Permitting, and Design	10%	$ 479,980	1	$ 480,000		$ 480,000
50	Engineering Services During Construction	8%	$ 383,285	1	$ 383,000		$ 383,000
51	Legal and Administration	3%	$ 144,460	1	$ 144,000		$ 144,000
TOTAL					**$ 6,147,000**		**$ 9,150,000.00**

Project 2 Alternative 1 Conceptual Cost Estimate - SAHFI Revision
Distribution and Storage Upgrades - New Concrete Ground Storage Tank and Pump Station, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
New Concrete Ground Storage Tank and Pump Station							
1	1,000,000-Gallon Concrete Ground Storage Tank	EA	$ 1,600,000	1	$ 1,600,000	$ 1,920,000	$ 1,492,000
2	Aerator for 500,000-gal Tank	EA	$ 81,000	2	$ 162,000	$ 64,800	$ 210,000
3	Tank Coating	LS	$ 1,000,000	1	$ 1,000,000	$ 400,000	$ 1,295,000
4	12" Ductile Iron Yard Piping	LF	$ 400	350	$ 140,000	$ 98,000	$ 149,000
5	Yard Piping Valve & Fitting Allowance	LS	$ 50,000	4	$ 200,000	$ 80,000	$ 259,000
6	100 HP High Service Pumps	EA	$ 75,000	2	$ 150,000	$ 150,000	$ 426,000
7	50 HP High Service Pumps	EA	$ 55,000	2	$ 110,000	$ 150,000	$ 352,000
8	Variable-Frequency Drives for High Service Pumps	EA	$ 75,000	4	$ 300,000	$ 90,000	$ 646,000
9	Pump Canopy	EA	$ 250,000	1	$ 250,000	$ 175,000	$ 266,000
10	Pump Slab and Pads	EA	$ 50,000	4	$ 200,000	$ 148,000	$ 209,000
11	Pump Station Instrumentation	LS	$ 70,000	1	$ 70,000	$ 14,000	$ 142,000
12	Pump Station & Tank SCADA Implementation	LS	$ 30,000	1	$ 30,000	$ 6,000	$ 61,000
13	Switchgear	LS	$ 150,000	1	$ 150,000	$ 45,000	$ 323,000
14	Chlorination equipment	LS	$ 30,000	1	$ 30,000	$ 6,000	$ 61,000
15	Hydrant Assembly	EA	$ 5,700	1	$ 5,700	$ 4,560	$ 6,000
16	Chain Link Fence + Gate	LF	$ 70	0	$ -	$ -	$ -
17	Gas Generator	EA	$ 75,000	1	$ 75,000	$ 30,000	$ 97,000
18	Electrical Site Work	LS	$ 30,000	5	$ 150,000	$ 51,000	$ 331,000
19	Electrical Building	LS	$ 650,000	1	$ 650,000	$ 455,000	$ 690,000
20	Uninterruptible Power Supply	EA	$ 1,500	0	$ -	$ -	$ -
21	Driveway (Asphalt)	SY	$ 55	1000	$ 55,000	$ 22,000	$ 71,000
22	Crushed Stone (Tank Washdown)	CY	$ 40	250	$ 10,000	$ 4,000	$ 13,000
23	Concrete Energy Blocks (Tank Washdown)	EA	$ 75	15	$ 1,125	$ 788	$ 1,000
24	Site Clearing + Grading	LS	$ 25,000	1	$ 25,000	$ 17,500	$ 26,000
25	Loam and Seed Disturbed Area	SY	$ 3	9000	$ 27,000	$ 10,800	$ 35,000
26	Testing Allowance	LS	$ 15,000	1	$ 15,000	$ 6,000	$ 19,000
12" and larger upgrades + replacement of old/undersized hydrants							
27	12" Ductile Iron Water Main (Helms Road)	LF	$ 250	5300	$ 1,325,000	$ 927,500	$ 1,407,000
28	12" Ductile Iron Water Main	LF	$ 250	0	$ -	$ -	$ -
29	Gate Valves	EA	$ 3,000	6	$ 18,000	$ 7,200	$ 23,000
30	Hydrant Assembly	EA	$ 5,700	100	$ 570,000	$ 456,000	$ 583,000
31	Fittings	LS	$ 132,500	1	$ 132,500	$ 53,000	$ 172,000
32	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
33	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
<12" upgrades							
34	8" Ductile Iron Water Main	LF	$ 200	5,300	$ 1,060,000	$ 742,000	$ 1,126,000
35	Gate Valves	EA	$ 1,500	6	$ 9,000	$ 3,600	$ 12,000
36	Hydrant Assembly	EA	$ 5,700	6	$ 34,200	$ 27,360	$ 35,000
37	Fittings	LS	$ 106,000	1	$ 106,000	$ 42,400	$ 137,000
38	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
39	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
Valve Exercise & Replacement Program							
40	Valve Exercise Program	LS	$ 17	464	$ 7,733		$ 8,000
41	Replace Failing Valves (Quantity Estimated, to be Validated by Exercise Program)	EA	$ 3,000.00	140	$ 420,000	$ 168,000	$ 544,000
Other Construction Costs							
42	Mobilization/Demobilization (5%)	5%	$ 458,000	1	$ 458,000		$ 458,000
43	Insurance and Bonds (3%)	3%	$ 275,000	1	$ 275,000		$ 275,000
44	General Conditions	5%	$ 458,000	1	$ 458,000		$ 458,000
45	Overhead & Profit	10%	$ 916,000	1	$ 916,000		$ 916,000
SUBTOTAL					**$ 8,365,000**	$ 6,380,000	**$ 13,410,000.00**
NON-CONSTRUCTION COSTS							
46	Contingency	10%	$ 873,000	1	$ 873,000		$ 873,000
47	Engineering, Permitting, and Design	10%	$ 873,000	1	$ 873,000		$ 873,000
48	Engineering services during construction	8%	$ 698,000	1	$ 698,000		$ 698,000
49	Legal and Administration	3%	$ 262,000	1	$ 262,000		$ 262,000
TOTAL					**$ 11,071,000**		**$ 16,116,000.00**

Project 2 Alternative 2 Conceptual Cost Estimate - SAHFI Revision
Distribution and Storage Upgrades - New Pedosphere Elevated Storage Tank, Water Main Improvements, and Valve Exercising and Replacement Program

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
New Pedesphere Elevated Storage Tank							
1	1,000,000-Gallon Pedesphere Elevated Storage Tank	EA	$ 3,500,000	1	$ 3,500,000	$ 4,200,000	$ 3,265,000
2	Tank Coating	LS	$ 100,000	1	$ 100,000	$ 40,000	$ 129,000
3	12" PVC Yard Piping	LF	$ 225	150	$ 33,750	$ 23,625	$ 36,000
4	Yard Piping Valve & Fitting Allowance	LS	$ 10,000	1	$ 10,000	$ 4,000	$ 13,000
5	Instrumentation	LS	$ 15,000	1	$ 15,000	$ 3,000	$ 30,000
6	SCADA Implementation	LS	$ 15,000	1	$ 15,000	$ 3,000	$ 30,000
7	Hydrant Assembly	EA	$ 5,700	1	$ 5,700	$ 4,560	$ 6,000
8	Chain Link Fence + Gate	LF	$ 70	400	$ 28,000	$ 11,200	$ 36,000
9	Electrical Site Work	LS	$ 5,000	1	$ 5,000	$ 1,700	$ 11,000
10	Uninterruptible Power Supply	EA	$ 1,500	1	$ 1,500	$ 600	$ 2,000
11	Driveway (Asphalt)	SY	$ 55	0	$ -	$ -	$ -
12	Crushed Stone (Tank Washdown)	CY	$ 40	0	$ -	$ -	$ -
13	Concrete Energy Blocks (Tank Washdown)	EA	$ 75	0	$ -	$ -	$ -
14	Site Clearing + Grading	LS	$ 25,000	1	$ 25,000	$ 17,500	$ 26,000
15	Loam and Seed Disturbed Area	SY	$ 3	5000	$ 15,000	$ 6,000	$ 19,000
16	Testing Allowance	LS	$ 15,000	1	$ 15,000	$ 6,000	$ 19,000
12" and larger upgrades + replacement of old/undersized hydrants							
17	12" Ductile Iron Water Main (Helms Road)	LF	$ 250	7400	$ 1,850,000	$ 1,295,000	$ 1,965,000
18	12" Ductile Iron Water Main (SR80)	LF	$ 250	0	$ -	$ -	$ -
19	Gate Valves	EA	$ 3,000	8	$ 24,000	$ 9,600	$ 31,000
20	Hydrant Assembly	EA	$ 5,700	100	$ 570,000	$ 456,000	$ 583,000
21	Fittings	LS	$ 185,000	1	$ 185,000	$ 74,000	$ 240,000
22	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
23	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
<12" upgrades							
24	8" Ductile Iron Water Main	LF	$ 200	7,400	$ 1,480,000	$ 1,036,000	$ 1,572,000
25	Gate Valves	EA	$ 1,500	8	$ 12,000	$ 4,800	$ 16,000
26	Hydrant Assembly	EA	$ 5,700	8	$ 45,600	$ 36,480	$ 47,000
27	Fittings	LS	$ 148,000	1	$ 148,000	$ 59,200	$ 192,000
28	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
29	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
Valve Exercise & Replacement Program							
30	Valve Exercise Program	LS	$ 17	464	$ 7,733		$ 8,000
31	Replace Failing Valves (Quantity Estimated, to be Validated by Exercise Program)	EA	$ 3,000.00	140	$ 420,000	$ 168,000	$ 544,000
Other Construction Costs							
32	Mobilization/Demobilization (5%)	5%	$ 429,000	1	$ 429,000		$ 429,000
33	Insurance and Bonds (3%)	3%	$ 257,000	1	$ 257,000		$ 257,000
34	General Conditions	5%	$ 429,000	1	$ 429,000		$ 429,000
35	Overhead & Profit	10%	$ 858,000	1	$ 858,000		$ 858,000
SUBTOTAL					**$ 10,556,000**	$ 7,465,000	**$ 10,869,000.00**
NON-CONSTRUCTION COSTS							
36	Contingency	10%	$ 1,101,000	1	$ 1,101,000		$ 1,101,000
37	Engineering, Permitting, and Design	10%	$ 1,101,000	1	$ 1,101,000		$ 1,101,000
38	Engineering services during construction	8%	$ 881,000	1	$ 881,000		$ 881,000
39	Legal and Administration	3%	$ 330,000	1	$ 330,000		$ 330,000
TOTAL					**$ 13,969,000**		**$ 14,282,000.00**

Project 2 Alternative 3 Conceptual Cost Estimate - SAHFI Revision
Distribution and Storage Upgrades - New Fluted Column Elevated Storage Tank, State Route 80 and Zone B Water Mains, and Valve Exercising and Replacement Program

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
New Fluted Column Storage Tank							
1	1,000,000-Gallon Fluted Column Elevated Stora	EA	$ 6,500,000	1	$ 6,500,000	$ 7,800,000	$ 6,063,000
2	Tank Coating	LS	$ 100,000	1	$ 100,000	$ 40,000	$ 129,000
3	12" PVC Yard Piping	LF	$ 225	250	$ 56,250	$ 39,375	$ 60,000
4	Yard Piping Valve & Fitting Allowance	LS	$ 10,000	1	$ 10,000	$ 4,000	$ 13,000
5	Instrumentation	LS	$ 15,000	1	$ 15,000	$ 3,000	$ 30,000
6	SCADA Implementation	LS	$ 15,000	1	$ 15,000	$ 3,000	$ 30,000
7	Hydrant Assembly	EA	$ 5,700	1	$ 5,700	$ 4,560	$ 6,000
8	Chain Link Fence + Gate	LF	$ 70	400	$ 28,000	$ 11,200	$ 36,000
9	Gas Generator	EA	$ 5,000	1	$ 5,000	$ 2,000	$ 6,000
10	Electrical Site Work	LS	$ 5,000	1	$ 5,000	$ 1,700	$ 11,000
11	Uninterruptible Power Supply	EA	$ 1,500	1	$ 1,500	$ 600	$ 2,000
12	Driveway (Asphalt)	SY	$ 55	1000	$ 55,000	$ 22,000	$ 71,000
13	Crushed Stone (Tank Washdown)	CY	$ 40	200	$ 8,000	$ 3,200	$ 10,000
14	Concrete Energy Blocks (Tank Washdown)	EA	$ 75	15	$ 1,125	$ 788	$ 1,000
15	Site Clearing + Grading	LS	$ 65,000	1	$ 65,000	$ 45,500	$ 69,000
16	Loam and Seed Disturbed Area	SY	$ 3	9000	$ 27,000	$ 10,800	$ 35,000
17	Testing Allowance	LS	$ 15,000	1	$ 15,000	$ 6,000	$ 19,000
12" and larger upgrades + replacement of old/undersized hydrants							
18	12" Ductile Iron Water Main (Helms Road)	LF	$ 250	5300	$ 1,325,000	$ 927,500	$ 1,407,000
19	12" Ductile Iron Water Main	LF	$ 250	0	$ -	$ -	$ -
20	Gate Valves	EA	$ 3,000	6	$ 18,000	$ 7,200	$ 23,000
21	Hydrant Assembly	EA	$ 5,700	100	$ 570,000	$ 456,000	$ 583,000
22	Fittings	LS	$ 132,500	1	$ 132,500	$ 53,000	$ 172,000
23	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
24	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
<12" upgrades							
25	8" Ductile Iron Water Main	LF	$ 200	5,300	$ 1,060,000	$ 742,000	$ 1,126,000
26	Gate Valves	EA	$ 1,500	6	$ 9,000	$ 3,600	$ 12,000
27	Hydrant Assembly	EA	$ 5,700	6	$ 34,200	$ 27,360	$ 35,000
28	Fittings	LS	$ 106,000	1	$ 106,000	$ 42,400	$ 137,000
29	Pressure Testing & Disinfection	LS	$ 6,000	1	$ 6,000	$ 2,400	$ 8,000
30	Geotechnical Investigations	LS	$ 30,000	1	$ 30,000		$ 30,000
Valve Exercise & Replacement Program							
31	Valve Exercise Program	LS	$ 17	464	$ 7,733		$ 8,000
32	Replace Failing Valves (Quantity Estimated, to be Validated by Exercise Program)	EA	$ 3,000.00	140	$ 420,000	$ 168,000	$ 544,000
Other Construction Costs							
33	Mobilization/Demobilization (5%)	5%	$ 533,000	1	$ 533,000		$ 533,000
34	Insurance and Bonds (3%)	3%	$ 320,000	1	$ 320,000		$ 320,000
35	General Conditions	5%	$ 533,000	1	$ 533,000		$ 533,000
36	Overhead & Profit	10%	$ 1,067,000	1	$ 1,067,000		$ 1,067,000
SUBTOTAL					**$ 13,120,000**	$ 10,430,000	**$ 13,167,000.00**
NON-CONSTRUCTION COSTS							
37	Contingency	10%	$ 1,369,000	1	$ 1,369,000		$ 1,369,000
38	Engineering, Permitting, and Design	10%	$ 1,369,000	1	$ 1,369,000		$ 1,369,000
39	Engineering services during construction	8%	$ 1,095,000	1	$ 1,095,000		$ 1,095,000
40	Legal and Administration	3%	$ 411,000	1	$ 411,000		$ 411,000
TOTAL					**$ 17,364,000**		**$ 17,411,000.00**

Project 3 Alternative 1 Conceptual Cost Estimate
Large Commercial Service Meter and System Meter Replacement Program - Replace Commercial Service Meters, AMI Endpoints, and Production Meters 1.5" and Above

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
1	Replace Commercial Service Meters	EA	$ 2,000	58	$ 116,000	$ 34,800	$ 250,000
2	Replace System Meters	EA	$ 10,000.00	4	$ 40,000	$ 12,000	$ 86,000
3	Replace All AMI Endpoints	EA	$ 500.00	58	$ 29,000	$ 8,700	$ 63,000
SUBTOTAL					**$ 185,000**	$ 56,000	**$ 399,000.00**
NON-CONSTRUCTION COSTS							
3	Contingency	10%	$ 19,000	1	$ 19,000		$ 19,000
4	Engineering, Permitting, and Design	10%	$ 19,000	1	$ 19,000		$ 19,000
5	Engineering Services During Construction	0%	$ -	1	$ -		$ -
6	Legal and Administration	3%	$ 6,000	1	$ 6,000		$ 6,000
TOTAL					**$ 229,000**		**$ 443,000.00**

Project 3 Alternative 2 Conceptual Cost Estimate
Large Commercial Service Meter and System Meter Replacement Program - Replace All Commercial Service and Production Meters 1.5" and Above, Replace AMI Endpoints at End of Life

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
1	Replace Commercial Service Meters	EA	$ 2,000	58	$ 116,000	$ 34,800	$ 250,000
2	Replace Remaining AMI Endpoint After 5 Years	EA	$ 600	58	$ 34,800	$ 10,440	$ 75,000
3	Replace System Meters	EA	$ 10,000.00	4	$ 40,000	$ 12,000	$ 86,000
SUBTOTAL					**$ 191,000**	$ 57,000	**$ 411,000.00**
NON-CONSTRUCTION COSTS							
4	Contingency	10%	$ 19,000	1	$ 19,000		$ 19,000
5	Engineering, Permitting, and Design	8%	$ 15,000	1	$ 15,000		$ 15,000
6	Engineering Services During Construction	0%	$ -	1	$ -		$ -
7	Legal and Administration	3%	$ 6,000	1	$ 6,000		$ 6,000
TOTAL					**$ 231,000**		**$ 451,000.00**

Project 3 Alternative 3 Conceptual Cost Estimate
Large Commercial Service Meter and System Meter Replacement Program - Maintain Existing Commercial Service and System Meters 1.5" and Above

ITEM NO.	DESCRIPTION	UNITS	UNIT COST	QTY	TOTAL CAPITAL COST	LIFETIME O&M	LIFE CYCLE COST (LCCA)
CONSTRUCTION COSTS							
N/A			$ -		$ -	$ -	$ -
SUBTOTAL					$ -		$ -
NON-CONSTRUCTION COSTS							
1	Estimated Revenue Losses from Service Metering Failure	EA	$ -	58	$ -	$ 696,000	$ 513,000
TOTAL					$ -		**$ 513,000**

APPENDIX F: CUSTOM SOIL RESOURCE REPORT

United States Department of Agriculture

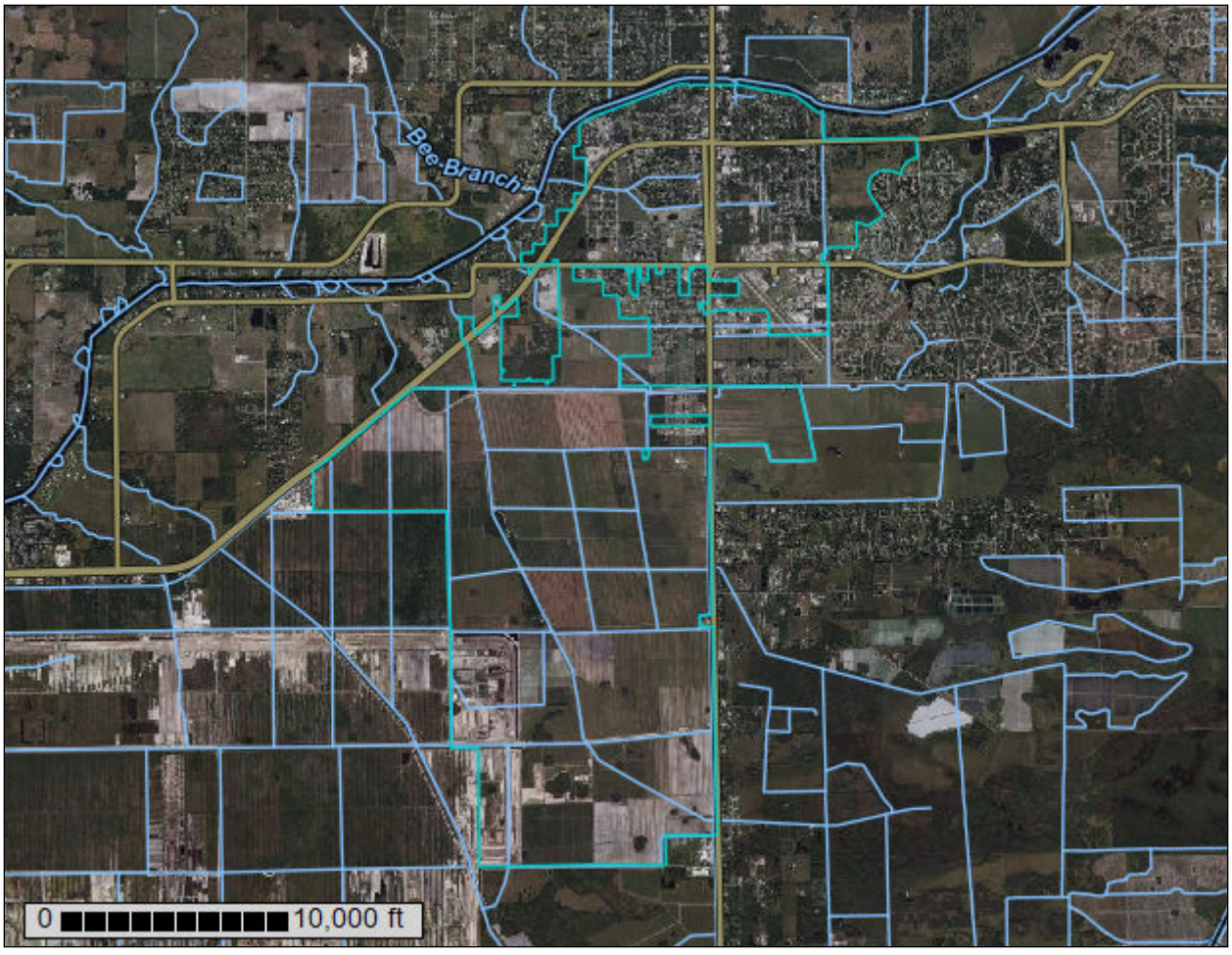
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Glades County, Florida, and Hendry County, Florida

LaBelle Advanced Wastewater Treatment Plant



July 20, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

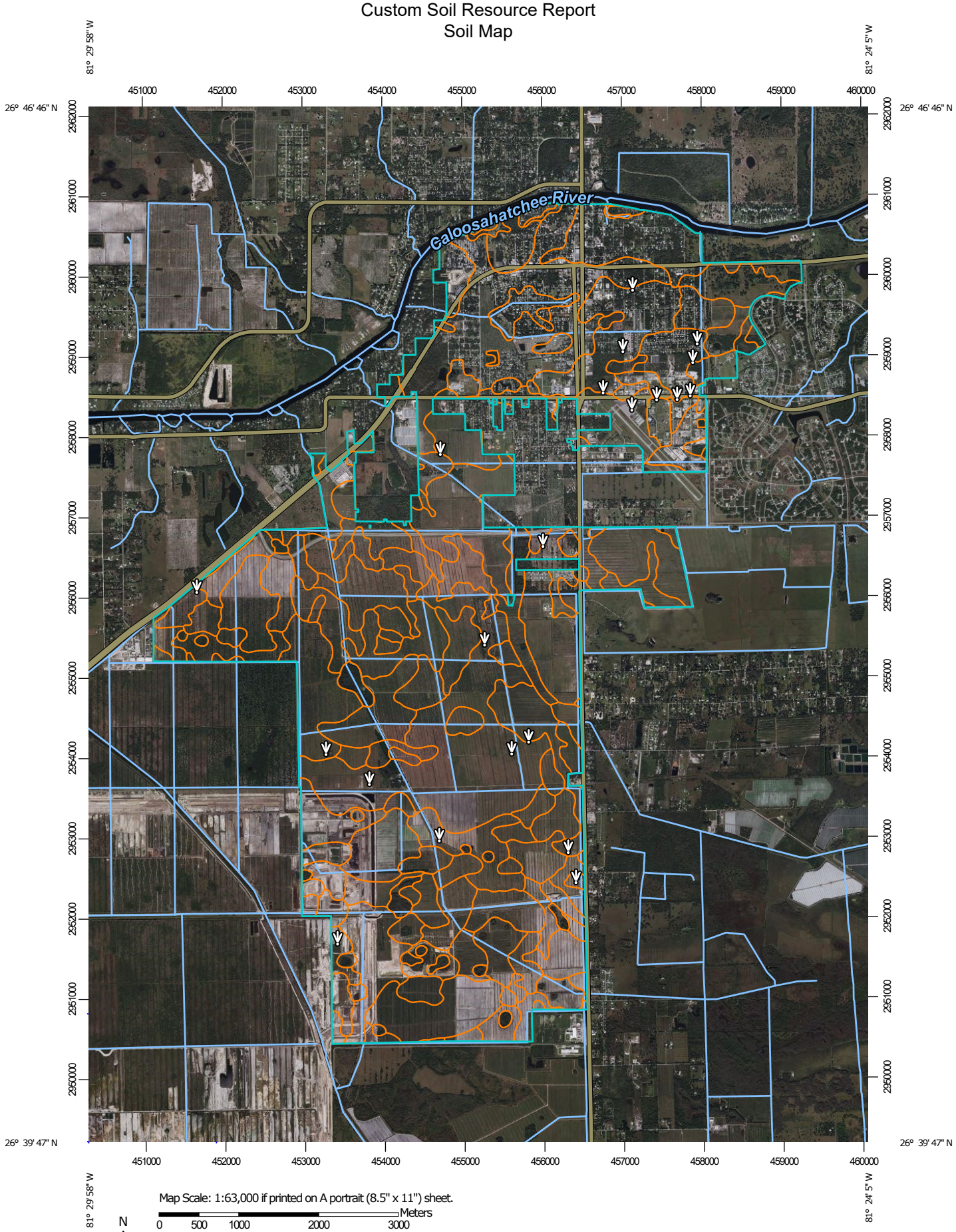
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:63,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 500 1000 2000 3000

Feet
0 3000 6000 12000 18000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Glades County, Florida
Survey Area Data: Version 22, Sep 6, 2023

Soil Survey Area: Hendry County, Florida
Survey Area Data: Version 23, Aug 28, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 14, 2021—Nov 23, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
35	Arents, very steep	0.1	0.0%
99	Water	0.2	0.0%
Subtotals for Soil Survey Area		**0.3**	**0.0%**
Totals for Area of Interest		**9,237.3**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Cypress Lake sand, 0 to 2 percent slopes	949.6	10.3%
2	Pineda sand, limestone substratum	501.3	5.4%
4	Oldsmar sand, 0 to 2 percent slopes	552.4	6.0%
6	Wabasso sand, 0 to 2 percent slopes	777.8	8.4%
7	Immokalee sand, 0 to 2 percent slopes	1,724.9	18.7%
8	Malabar sand, 0 to 2 percent slopes	355.8	3.9%
9	Riviera fine sand, 0 to 2 percent slopes	179.9	1.9%
10	Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes	1.9	0.0%
14	Wabasso sand, limestone substratum, 0 to 2 percent slopes	673.0	7.3%
15	Myakka sand, 0 to 2 percent slopes	39.9	0.4%
17	Basinger sand, 0 to 2 percent slopes	350.5	3.8%
18	Pompano sand, 0 to 2 percent slopes	298.8	3.2%
19	Gator muck, frequently ponded, 0 to 1 percent slopes	70.3	0.8%
20	Okeelanta muck	9.7	0.1%
21	Holopaw sand, 0 to 2 percent slopes	670.3	7.3%
22	Valkaria sand	97.0	1.0%
27	Riviera sand, limestone substratum	581.5	6.3%
28	Cypress Lake sand, frequently ponded, 0 to 1 percent slopes	79.9	0.9%
29	Oldsmar sand, limestone substratum	352.4	3.8%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
32	Riviera sand, frequently ponded, 0 to 1 percent slopes	68.7	0.7%
34	Chobee fine sandy loam, limestone substratum, depressional	46.8	0.5%
37	Tuscawilla fine sand, 0 to 2 percent slopes	44.2	0.5%
39	Udifluvents	10.4	0.1%
45	Pahokee muck, drained, 0 to 1 percent slopes	10.1	0.1%
47	Udorthents	115.1	1.2%
49	Aquents, organic substratum	16.8	0.2%
53	Adamsville fine sand, 0 to 2 percent slopes	150.2	1.6%
57	Chobee fine sandy loam, frequently ponded, 0 to 1 percent slopes	484.1	5.2%
62	Pineda sand, depressional	12.6	0.1%
99	Water	11.2	0.1%
Subtotals for Soil Survey Area		**9,237.0**	**100.0%**
Totals for Area of Interest		**9,237.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas

are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Glades County, Florida

35—Arents, very steep

Map Unit Setting

National map unit symbol: 1ksky
Elevation: 0 to 50 feet
Mean annual precipitation: 42 to 50 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

A - 0 to 2 inches: fine sand
C - 2 to 80 inches: variable

Properties and qualities

Slope: 45 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

99—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified

Forage suitability group: Forage suitability group not assigned (G155XB999FL)

Other vegetative classification: Forage suitability group not assigned (G155XB999FL)

Hydric soil rating: Unranked

Hendry County, Florida

1—Cypress Lake sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2zlf0
Elevation: 0 to 100 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Cypress lake and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cypress Lake

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits over limestone

Typical profile

Ap - 0 to 7 inches: sand
E - 7 to 28 inches: sand
Btg - 28 to 33 inches: fine sandy loam
2R - 33 to 43 inches: bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 13 to 58 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 6.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)

Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: No

Minor Components

Pineda

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL), Slough (R156BY011FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

2—Pineda sand, limestone substratum

Map Unit Setting

National map unit symbol: 17n44
Elevation: 0 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Pineda, limestone substratum, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pineda, Limestone Substratum

Setting

Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 10 inches: sand
E/Bw - 10 to 32 inches: sand
Btg - 32 to 50 inches: sandy clay loam
2R - 50 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks

Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Boca

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156AY010FL - Subtropical Pine Flatwoods and Palmetto Prairie of Big Cypress
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pineda

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Malabar

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

4—Oldsmar sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2sm4p
Elevation: 0 to 80 feet
Mean annual precipitation: 42 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Oldsmar and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oldsmar

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 38 inches: sand
Bh - 38 to 50 inches: sand
Btg - 50 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Minor Components

Immokalee
Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Holopaw
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Basinger
Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Cypress lake
Percent of map unit: 2 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Tequesta
Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave

Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

6—Wabasso sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2svyr
Elevation: 0 to 70 feet
Mean annual precipitation: 46 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Wabasso and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wabasso

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 25 inches: sand
Bh - 25 to 30 inches: sand
Btg - 30 to 58 inches: sandy clay loam
Cg - 58 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 9 to 50 inches to strongly contrasting textural stratification
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Brynwood

Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Cypress lake

Percent of map unit: 5 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Pineda

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

7—Immokalee sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2s3ll
Elevation: 0 to 150 feet
Mean annual precipitation: 42 to 57 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Immokalee and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Immokalee

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 9 inches: sand
E - 9 to 36 inches: sand
Bh - 36 to 55 inches: sand
C - 55 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Valkaria

Percent of map unit: 5 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pomello

Percent of map unit: 3 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY150FL - Sandy Upland Mesic Flatwoods and Hammocks on Rises and Knolls
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Satellite

Percent of map unit: 2 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY150FL - Sandy Upland Mesic Flatwoods and Hammocks on Rises and Knolls
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Felda

Percent of map unit: 1 percent

Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

8—Malabar sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2sm5k
Elevation: 0 to 40 feet
Mean annual precipitation: 46 to 57 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Malabar and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Malabar

Setting

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 15 inches: sand
Bw - 15 to 35 inches: sand
E' - 35 to 45 inches: sand
Btg - 45 to 65 inches: sandy loam
Cg - 65 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Holopaw

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Basinger

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Cypress lake

Percent of map unit: 3 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip

Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

9—Riviera fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzw2
Elevation: 0 to 80 feet
Mean annual precipitation: 44 to 59 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Riviera and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riviera

Setting

Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 28 inches: fine sand
Bt/E - 28 to 32 inches: fine sandy loam
Btg - 32 to 42 inches: sandy clay loam
C - 42 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Wabasso

Percent of map unit: 8 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pinellas

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Cabbage Palm Flatwoods (R155XY005FL)
Hydric soil rating: No

Brynwood

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Floridana

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps

Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Oldsmar
Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

10—Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2svyp
Elevation: 0 to 100 feet
Mean annual precipitation: 42 to 63 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Pineda and similar soils: 45 percent
Pineda, wet, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pineda

Setting
Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile
A - 0 to 1 inches: fine sand
E - 1 to 5 inches: fine sand
Bw - 5 to 36 inches: fine sand
Btg/E - 36 to 54 inches: fine sandy loam
Cg - 54 to 80 inches: fine sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: No

Description of Pineda, Wet

Setting

Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 1 inches: fine sand
E - 1 to 5 inches: fine sand
Bw - 5 to 36 inches: fine sand
Btg/E - 36 to 54 inches: fine sandy loam
Cg - 54 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: A/D
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Minor Components

Felda
Percent of map unit: 6 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Wabasso
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Valkaria
Percent of map unit: 2 percent
Landform: Drainageways on flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Cypress lake
Percent of map unit: 2 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

14—Wabasso sand, limestone substratum, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzws
Elevation: 0 to 50 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Wabasso, limestone substratum, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wabasso, Limestone Substratum

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits over limestone

Typical profile

A - 0 to 6 inches: sand
E - 6 to 25 inches: sand
Bh - 25 to 35 inches: sand
Btg - 35 to 45 inches: sandy clay loam
2R - 45 to 55 inches: bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 13 to 54 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Cypress lake

Percent of map unit: 6 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Gentry

Percent of map unit: 3 percent
Landform: Depressions on marine terraces

Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

15—Myakka sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2twt9
Elevation: 10 to 130 feet
Mean annual precipitation: 43 to 62 inches
Mean annual air temperature: 64 to 77 degrees F
Frost-free period: 280 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Myakka and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myakka

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 20 inches: sand
Bh - 20 to 36 inches: sand
C - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Basinger

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear, convex
Across-slope shape: Concave, linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Valkaria

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

17—Basinger sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2vbpc
Elevation: 0 to 50 feet
Mean annual precipitation: 42 to 62 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Basinger and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Basinger

Setting

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 25 inches: sand
Bh - 25 to 50 inches: sand
C - 50 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Holopaw

Percent of map unit: 6 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Malabar

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Pompano

Percent of map unit: 3 percent
Landform: Drainageways on flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Anclote

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

18—Pompano sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzw4
Elevation: 0 to 40 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pompano and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pompano

Setting

Landform: Drainageways on flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
C - 6 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)

Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Myakka
Percent of map unit: 8 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Brynwood
Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Holopaw
Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Samsula
Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

19—Gator muck, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tzwz
Elevation: 0 to 100 feet
Mean annual precipitation: 42 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Gator and similar soils: 83 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gator

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material over sandy and loamy marine deposits

Typical profile

Oa - 0 to 18 inches: muck
Cg1 - 18 to 36 inches: sandy clay loam
Cg2 - 36 to 55 inches: fine sandy loam
Cg3 - 55 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very high (about 13.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D

Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Terra ceia

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Chobee

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Tequesta

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

Felda

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)

Hydric soil rating: Yes

Pompano

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

20—Okeelanta muck

Map Unit Setting

National map unit symbol: 17n4l
Elevation: 0 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Okeelanta, undrained, and similar soils: 50 percent
Okeelanta, drained, and similar soils: 37 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Okeelanta, Undrained

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oa - 0 to 48 inches: muck
C - 48 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None

Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very high (about 20.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Description of Okeelanta, Drained

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oa - 0 to 48 inches: muck
C - 48 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very high (about 20.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Delray

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Pahokee, drained

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Terra ceia

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Holopaw, depressional
Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Winder, depressional
Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear, concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

21—Holopaw sand, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2x9g9
Elevation: 0 to 190 feet
Mean annual precipitation: 46 to 57 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Holopaw and similar soils: 84 percent
Minor components: 16 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holopaw

Setting

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
Eg - 5 to 48 inches: sand
Btg - 48 to 65 inches: sandy clay loam
BCkg - 65 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Other vegetative classification: Slough (R155XY011FL), Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 6 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL), Slough (R156BY011FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Cypress lake

Percent of map unit: 2 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Gentry

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

22—Valkaria sand

Map Unit Setting

National map unit symbol: 17n4n
Elevation: 10 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Valkaria and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valkaria

Setting

Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 10 inches: sand
E - 10 to 15 inches: sand
Bw - 15 to 45 inches: sand
C - 45 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Pompano
Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Pineda
Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Malabar
Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Immokalee
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Myakka
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf

Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Basinger

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

27—Riviera sand, limestone substratum

Map Unit Setting

National map unit symbol: 17n4s
Elevation: 0 to 60 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Riviera, limestone substratum, and similar soils: 83 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riviera, Limestone Substratum

Setting

Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 35 inches: sand
Btg - 35 to 50 inches: sandy loam
2R - 50 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 50 to 80 inches to lithic bedrock

Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Boca

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156AY010FL - Subtropical Pine Flatwoods and Palmetto Prairie of Big Cypress
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Gentry

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave

Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Pineda, limestone substratum

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Winder

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Ecological site: F155XY140FL - Loamy and Clayey Hardwood Hammocks
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G155XB341FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Holopaw, limestone substratum

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Wabasso, limestone substratum

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

28—Cypress Lake sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2zlf1
Elevation: 0 to 280 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 55 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Cypress lake and similar soils: 77 percent
Minor components: 23 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cypress Lake

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Sandy and loamy marine deposits over limestone

Typical profile

Ap - 0 to 7 inches: sand
E - 7 to 28 inches: sand
Btg - 28 to 33 inches: fine sandy loam
2R - 33 to 43 inches: bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 13 to 58 inches to lithic bedrock
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D

Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Minor Components

Pineda

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Malabar

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Holopaw

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Basinger

Percent of map unit: 3 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Okeelanta

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces, flatwoods on drainageways
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

29—Oldsmar sand, limestone substratum

Map Unit Setting

National map unit symbol: 17n4v
Elevation: 0 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Oldsmar, limetone substratum, and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oldsmar, Limetone Substratum

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 37 inches: sand
Bh - 37 to 63 inches: sand
Btg - 63 to 73 inches: sandy clay loam
2R - 73 to 77 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 60 to 73 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Hallandale
Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F156AY030FL - Subtropical Moist Hammocks of Big Cypress
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Pineda, limestone substratum
Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Malabar
Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Immokalee
Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Holopaw, limestone substratum
Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear

Across-slope shape: Concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Riviera, limestone substratum

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

32—Riviera sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tzwm
Elevation: 0 to 70 feet
Mean annual precipitation: 46 to 58 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Riviera and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riviera

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 0 inches: sand
E - 0 to 22 inches: sand
Btg/E - 22 to 31 inches: sandy loam
Btg1 - 31 to 42 inches: sandy loam
Btg2 - 42 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Chobee

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Malabar

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear

Across-slope shape: Concave, linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

34—Chobee fine sandy loam, limestone substratum, depressional

Map Unit Setting

National map unit symbol: 17n4y
Elevation: 0 to 80 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Chobee, depressional, limestone subst., and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chobee, Depressional, Limestone Subst.

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy alluvium

Typical profile

A - 0 to 15 inches: fine sandy loam
Btg - 15 to 50 inches: sandy clay loam
2R - 50 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 79 inches to lithic bedrock
Drainage class: Very poorly drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Forage suitability group: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Jupiter

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Cabbage Palm Flatwoods (R155XY005FL)
Hydric soil rating: Yes

Gentry

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Winder, depressional

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear, concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Dania

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

37—Tuscawilla fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 30dg1
Elevation: 20 to 110 feet
Mean annual precipitation: 46 to 61 inches
Mean annual air temperature: 66 to 77 degrees F
Frost-free period: 335 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Tuscawilla and similar soils: 84 percent
Minor components: 16 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tuscawilla

Setting

Landform: Rises on flats on marine terraces

Landform position (three-dimensional): Tread, talf, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 3 inches: fine sand
Eg - 3 to 10 inches: fine sand
Btg - 10 to 13 inches: fine sandy loam
Btkg - 13 to 40 inches: fine sandy loam
Ckg - 40 to 68 inches: fine sand
2Ckg - 68 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F155XY140FL - Loamy and Clayey Hardwood Hammocks
Forage suitability group: Loamy and clayey soils on flats of hydric or mesic lowlands (G155XB341FL)
Other vegetative classification: Wetland Hardwood Hammock (R155XY012FL), Loamy and clayey soils on flats of hydric or mesic lowlands (G155XB341FL)
Hydric soil rating: Yes

Minor Components

Wabasso

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Chobee, flooded

Percent of map unit: 4 percent
Landform: Flood plains on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear

Across-slope shape: Linear
Ecological site: R155XY050FL - Loamy and Clayey Freshwater Floodplain Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G156BC345FL)
Hydric soil rating: Yes

Tequesta

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

Cypress lake

Percent of map unit: 2 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Jupiter

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Cabbage Palm Flatwoods (R155XY005FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

39—Udifluvents

Map Unit Setting

National map unit symbol: 17n50
Elevation: 0 to 30 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

Udifluvents and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udifluvents

Setting

Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Runoff class: Negligible
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Minor Components

Riviera

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Immokalee

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

45—Pahokee muck, drained, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2rfsb
Elevation: 0 to 60 feet
Mean annual precipitation: 42 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Pahokee, drained, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pahokee, Drained

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over limestone

Typical profile

Oa - 0 to 40 inches: muck
2R - 40 to 50 inches: bedrock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 36 to 51 inches to lithic bedrock
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very high (about 16.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)

Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Cypress lake
Percent of map unit: 6 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Dania, drained
Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156AY010FL)
Hydric soil rating: Yes

Lauderhill, drained
Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL)
Hydric soil rating: Yes

47—Udorthents

Map Unit Setting
National map unit symbol: 17n54
Elevation: 0 to 20 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Minor Components

Aquents

Percent of map unit: 10 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

49—Aquents, organic substratum

Map Unit Setting

National map unit symbol: 17n55
Elevation: 0 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

Aquents and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aquents

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits over organic material over sandy marine deposits

Typical profile

A - 0 to 8 inches: fine sand
E - 8 to 35 inches: loamy sand
Oa - 35 to 42 inches: muck
C - 42 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Minor Components

Basinger

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Winder

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G155XB341FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Pompano

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Chobee, depressional

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Okeelanta, drained

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Riviera, depressional

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave

Across-slope shape: Concave
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

53—Adamsville fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2x9c0
Elevation: 0 to 130 feet
Mean annual precipitation: 42 to 57 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 345 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Adamsville and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adamsville

Setting

Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
C - 7 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: A
Ecological site: F155XY150FL - Sandy Upland Mesic Flatwoods and Hammocks on Rises and Knolls
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: Upland Hardwood Hammock (R155XY008FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Minor Components

Zolfo

Percent of map unit: 4 percent
Landform: Rises on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY150FL - Sandy Upland Mesic Flatwoods and Hammocks on Rises and Knolls
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Tavares

Percent of map unit: 4 percent
Landform: Knolls on marine terraces, flats on marine terraces, ridges on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope, tread, rise
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Ecological site: R155XY180FL - Sandy Scrub on Rises, Ridges, and Knolls of Mesic Uplands
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL), Sand Pine Scrub (R155XY001FL), Sandy soils on rises, knolls, and ridges of mesic uplands (G155XB121FL)
Hydric soil rating: No

Myakka

Percent of map unit: 3 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pompano

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave

Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

57—Chobee fine sandy loam, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tzvw
Elevation: 10 to 70 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Chobee and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chobee

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy marine deposits

Typical profile

A - 0 to 9 inches: fine sandy loam
Btg1 - 9 to 13 inches: fine sandy loam
Btg2 - 13 to 68 inches: sandy clay loam
Cg - 68 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Forage suitability group: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Hydric soil rating: Yes

Minor Components

Tequesta

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

Winder

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Hydric soil rating: Yes

Placid

Percent of map unit: 3 percent
Landform: Depressions on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

62—Pineda sand, depressional

Map Unit Setting

National map unit symbol: 17n5h
Elevation: 10 to 80 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pineda, depressional, and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pineda, Depressional

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E/Bw - 5 to 24 inches: sand
Btg - 24 to 42 inches: sandy loam
Cg - 42 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Gator

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Chobee, depressional

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Holopaw, depressional

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Malabar, depressional

Percent of map unit: 2 percent

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Boca, depressional

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F156AY050FL - Subtropical Freshwater Cypress Swamps of Big Cypress
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Valkaria

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Okeelanta, drained

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Riviera, depressional

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps

Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

99—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: Unranked

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APPENDIX G: SOURCE WATER PROTECTION REPORT

SWAPP Quick Links

- Home (/swapp/)
- Search By County (https://prodapps.dep.state.fl.us/swapp/Welcome/links/search_county_v)
- Search by PWS Name or Number (https://prodapps.dep.state.fl.us/swapp/Welcome/links/search_pws_v)
- How to Help? (https://prodapps.dep.state.fl.us/swapp/Welcome/links/help_v)

Definitions

- Aquifers (https://prodapps.dep.state.fl.us/swapp/Welcome/links/aquifers_v)
- Public Water Systems (https://prodapps.dep.state.fl.us/swapp/Welcome/links/public_water_systems_v)
- Assessment (https://prodapps.dep.state.fl.us/swapp/Welcome/links/assessment_v)
- Potential Contaminants (https://prodapps.dep.state.fl.us/swapp/Welcome/links/potential_contaminants_v)
- Susceptibility (https://prodapps.dep.state.fl.us/swapp/Welcome/links/susceptibility_v)
- Prevention (https://prodapps.dep.state.fl.us/swapp/Welcome/links/prevention_v)

Contact Us

- Email (mailto:Marian.Fugitt@floridadep.gov?subject=SWAPP Question)
- Mailing Address (https://prodapps.dep.state.fl.us/swapp/Welcome/links/contact_v)

EPA Source Water Protection Website

(https://www.epa.gov/sourcewaterprotection)

Source Water Assessment & Protection Program

Results For: 2023

LABELLE, CITY OF
2500 SR-29 S
LABELLE, FL 33935

Public Water System ID: 5260050
County Name: HENDRY
DEP Regulatory Office: DEP South District
2295 Victoria Ave, Suite 364
Fort Myers, FL 33901
239-344-5600
Public Water System Type: COMMUNITY
Public Water System Source: GROUND, PURCHASED
Primary Use: MUNICIPAL/CITY
Population Served: 5950
Size of Assessment Area:

GROUND: For this community system, a 5-year ground water travel time around each well was used to define the assessment area. The 5-year ground water travel time is defined by the area from which water will drain to a well pumping at the average daily permitted rate for a five year period of time.

Number of Wells: 2

Well ID	Owner ID	FLUWID	Status	Well Depth (ft)	Aquifer
63003	UFA - 2	AAO4474 (//floridadep.gov/water/source-drinking-water/content/florida-unique-well-identification-program)	ACTIVE	697	Floridan Aquifer
63004	UFA 3	AAO4473 (//floridadep.gov/water/source-drinking-water/content/florida-unique-well-identification-program)	ACTIVE	632	Floridan Aquifer

This system purchases water only during emergencies from:

PORT LABELLE (/swapp/Welcome/detailsByPwsNumber/5260226)

Results:

GROUND WATER:

Number of Unique Potential Contaminant Sources: 2*

*Note: This number represents the total of **unique** potential contaminant sources at this system which commonly is a subset of all of the records (rows) shown in the table below. When these unique potential contaminant sources affect more than one well at this system, they will appear more than once in the following table. Map Direct is a visual tool that can be accessed at Map Direct: Source Water Assessment and Protection (SWAPP) Map (state.fl.us) (https://ca.dep.state.fl.us/mapdirect/?webmap=3733594f71034be2a1b3a84e1e17a221) for more details.

Facility Type	Facility Class	Status	Name	Affected Well	Susceptibility Score	Concern Level
PETROLEUM STORAGE TANK (/swapp/Welcome/links/potential_contaminants_v)	LOCAL GOVERNMENT	OPEN	LA BELLE CITY WELL #2	63003	2.77 (/swapp/Welcome/links/susceptibility_v)	LOW (/swapp/Welcome/links/susceptibility_v)
PETROLEUM STORAGE TANK (/swapp/Welcome/links/potential_contaminants_v)	LOCAL GOVERNMENT	OPEN	LA BELLE CITY WELL#3	63003	2.77 (/swapp/Welcome/links/susceptibility_v)	LOW (/swapp/Welcome/links/susceptibility_v)
PETROLEUM STORAGE TANK (/swapp/Welcome/links/potential_contaminants_v)	LOCAL GOVERNMENT	OPEN	LA BELLE CITY WELL #2	63004	2.77 (/swapp/Welcome/links/susceptibility_v)	LOW (/swapp/Welcome/links/susceptibility_v)

APPENDIX H: USFWS WILDLIFE CLEARANCE LETTER AND OFFICIAL SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Florida Ecological Services Field Office
777 37th St
Suite D-101
Vero Beach, FL 32960-3559
Phone: (352) 448-9151 Fax: (772) 562-4288
Email Address: fw4flesregs@fws.gov
https://www.fws.gov/office/florida-ecological-services

In Reply Refer To: 07/22/2024 23:11:59 UTC
Project Code: 2024-0119853
Project Name: City of LaBelle Advanced Wastewater Treatment Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. **Please include your Project Code, listed at the top of this letter, in all subsequent correspondence regarding this project.** Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Marine Mammals
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Florida Ecological Services Field Office
777 37th St
Suite D-101
Vero Beach, FL 32960-3559
(352) 448-9151

PROJECT SUMMARY

Project Code: 2024-0119853
Project Name: City of LaBelle Advanced Wastewater Treatment Project
Project Type: Wastewater Facility - New Construction
Project Description: Construction of a new Advanced Wastewater Treatment Plant, lift station upgrades, forcemain upgrades, and sewer system rehabilitation.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@26.71992735,-81.46458275048573,14z

Counties: Hendry County, Florida

ENDANGERED SPECIES ACT SPECIES

There is a total of 12 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Florida Bonneted Bat *Eumops floridanus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8630	Endangered
Florida Panther *Puma (=Felis) concolor coryi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1763 General project design guidelines: https://ipac.ecosphere.fws.gov/project/Z73M3FMV7BGVTAYMWGU7FKNQVQ/documents/generated/7123.pdf	Endangered
Puma (=mountain Lion) *Puma (=Felis) concolor (all subsp. except coryi)* Population: FL No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6049	Similarity of Appearance (Threatened)
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered
West Indian Manatee *Trichechus manatus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. ***This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.*** Species profile: https://ecos.fws.gov/ecp/species/4469 General project design guidelines: https://ipac.ecosphere.fws.gov/project/Z73M3FMV7BGVTAYMWGU7FKNQVQ/documents/generated/7281.pdf	Threatened

BIRDS

NAME	STATUS
Crested Caracara (audubon""s) [fl Dps] *Caracara plancus audubonii* Population: FL DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8250	Threatened
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Everglade Snail Kite *Rostrhamus sociabilis plumbeus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7713	Endangered
Florida Scrub-jay *Aphelocoma coerulescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6174	Threatened

REPTILES

NAME	STATUS
American Alligator *Alligator mississippiensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/776	Similarity of Appearance (Threatened)
Eastern Indigo Snake *Drymarchon couperi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/646	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.

3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

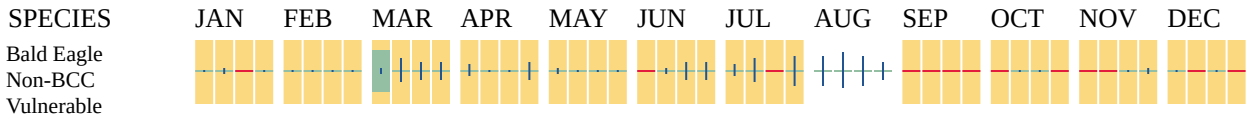
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort – no data



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel *Falco sparverius paulus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9587	Breeds Apr 1 to Aug 31

NAME	BREEDING SEASON
Bachman's Sparrow *Peucaea aestivalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6177	Breeds May 1 to Sep 30
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Great Blue Heron *Ardea herodias occidentalis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/10590	Breeds Jan 1 to Dec 31
Painted Bunting *Passerina ciris* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9511	Breeds Apr 25 to Aug 15
Prairie Warbler *Setophaga discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513	Breeds May 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Swallow-tailed Kite *Elanoides forficatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

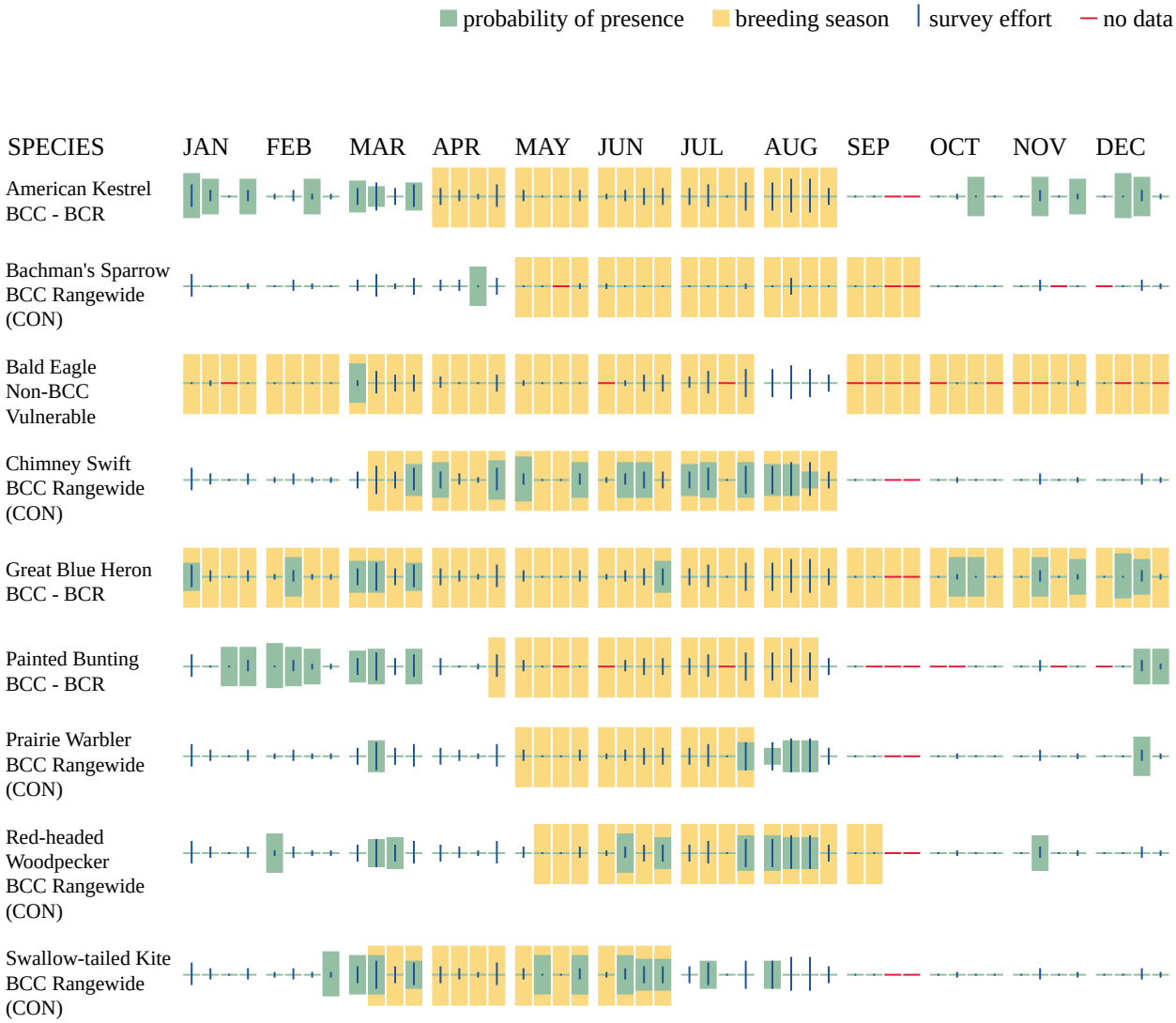
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MARINE MAMMALS

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

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1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NAME

West Indian Manatee *Trichechus manatus*
Species profile: https://ecos.fws.gov/ecp/species/4469

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1Cx
- PEM1Fx
- PEM1Cd
- PEM1Ax

RIVERINE

- R5UBH
- R2UBH
- R2ABHx
- R4SBC
- R2UBHx
- R5UBFx

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1Cd
- PFO2Ad
- PFO2Fd
- PFO1/3Cd
- PSS1/3Cd
- PFO2Cd
- PFO1Fd
- PFO4Cd
- PSS1Fx
- PFO2/1Fd

FRESHWATER POND

- PAB4Fx
- PAB4Fd
- PUBHx

- PAB4Hx
- PUBKx

IPAC USER CONTACT INFORMATION

Agency: LaBelle city
Name: Morgan French
Address: 1496 Highway 90
City: Chipley
State: FL
Zip: 32428
Email mfrench@woodardcurran.com
Phone: 8507033000

You have indicated that your project falls under or receives funding through the following special project authorities:

- BIPARTISAN INFRASTRUCTURE LAW (BIL) (OTHER)

APPENDIX I: CURRENT RATE STRUCTURE

APPENDIX J: COMMUNITY ENGAGEMENT

INDEPENDENT
NEWSMEDIA INC. USA

Lake Okeechobee News
313 NW 4th Avenue
Okeechobee, FL 34972
863-763-3134

STATE OF FLORIDA
COUNTY OF HENDRY

Before the undersigned authority personally appeared **Katrina Elsken Muros**, who on oath says that she is **Editor in Chief** of the **Lake Okeechobee News**, a weekly newspaper published in **Hendry County, Florida;** that the attached copy of advertisement, being a **Public Notice** matter of

Public Notice

in the **20th Judicial District of the Circuit Court of Hendry County, Florida,** was published in said newspaper in the issues of

07/24/24
(Print Dates)

or by publication on the newspaper's website, if authorized, on

07/24 thru 08/06/2024
(Website Dates)

Affiant further says that the newspaper complies with all legal requirements for publication in Chapter 50, Florida Statutes.

NOTICE OF PUBLIC MEETING
City of LaBelle, FL

Notice is hereby given, the LaBelle City Commission will hold a Public Meeting located at City Hall in the Commission Chambers at 481 W. Hickpoochee Ave., LaBelle, FL 33935 on Thursday, August 8, 2024, at 5:30 P.M. for the purpose of considering the approval of the City of LaBelle drinking water improvements facility planning documents. This meeting will include a discussion of the proposed drinking water improvements. The meeting is intended to afford the opportunity to individuals to be heard on the economic and social effects of the location, design, and environmental impact of the proposed drinking water improvements.

A portion of the funding for this project is anticipated to come from the State Revolving Fund (SRF) loan program. Financial impacts on utility users will be presented at the hearing. Reports, documents, and data relevant to the discussion, "Drinking Water Facility Plan", are available for public review at LaBelle City Hall. These reports present infrastructure needs, alternative analyses, and cost comparisons over a 20-year planning period to support the development of drinking water improvements and the City's goals. These documents were prepared to meet the planning requirements for the FDEP Drinking Water State Revolving Fund programs for the purpose of obtaining funding for new facilities in the City of LaBelle. Other business which may properly come before the Commission will also be addressed. All interested persons are invited to attend this meeting.

SPECIAL REQUIREMENTS: If you require special aid or services as addressed in the American Disabilities Act, please contact the City Clerk's Office at (863) 675-2872, no less than five (5) days prior to the above stated meeting date.

City of LaBelle, Florida
Julie C. Wilkins, Mayor
3146 LON/Hendry 07/24/2024

Katrina Elsken Muros

Sworn to and subscribed before me by means of
☐ Physical Presence ☒ Online Notarization
physical presence or online notarization, this
24th day of July, 2024.

JANET SUE MADRAY
MY COMMISSION # HH 129146
EXPIRES: May 12, 2025
Bonded Thru Notary Public Underwriters

(Signature of Notary Public)
STAMP OF NOTARY PUBLIC

Woodard & Curran

woodardcurran.com