Charlotte County Utilities Department

2024 Annual Report
May 2025

Prepared by

JonesEdmunds

2024 ANNUAL REPORT

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SIGN-OFF SHEET

This document, titled 2024 CCU Annual Report, was prepared by Jones Edmunds & Associates, Inc., with the Charlotte County Utilities Department's assistance. Some information included was collected during Jones Edmunds' field observations of facilities. Other information, including financial and statistical information, was provided by Charlotte County Utilities Department staff. The report reflects Jones Edmunds' judgment and professional opinions in light of the information available at the time of preparation. Third parties are solely responsible for any use, reliance, or decisions made based on this report. Jones Edmunds accepts no responsibility for damages, if any, suffered by any third-party resulting from decisions made or actions based on this report.

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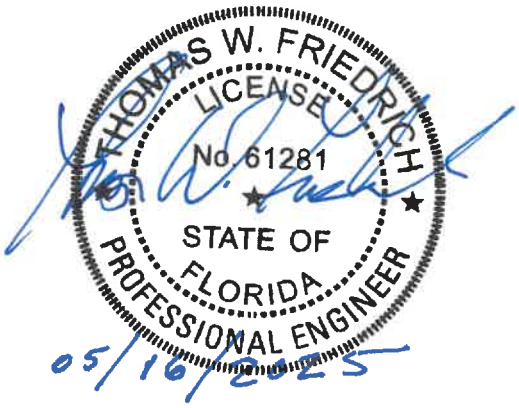

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ABBREVIATIONS AND ACRONYMS

Authority	Peace River Manasota Regional Water Supply Authority
AADF	Annual Average Daily Flow
ACFM	Actual Cubic Foot Per Minute
AMI	Advanced Metering Infrastructure
AMP	Asset Management Plan
APWA	American Public Works Association
ARV	Air-Release Valve
ASR	Aquifer Storage and Recovery
ATS	Automatic Transfer Switch
AWIA	America's Water Infrastructure Act of 2018
AWT	Advanced Water Treatment
AWWA	American Water Works Association
BCC	Board of County Commissioners
BFP	Belt Filter Press
BOD	Carbonaceous Biochemical Oxygen Demand (5 day)
CAAP	Capacity Assessment and Assurance Program
CAR	Capacity Analysis Report
$CBOD_5$	5-Day Carbonaceous Biochemical Oxygen Demand
CCC	Chlorine Contact Chamber
CCR	Consumer Confidence Report
CCTV	Closed-Circuit Television
CCU	Charlotte County Utilities Department
CDL	Commercial Driver's License
CDOC	Continuing Demonstrations of Capability
CHWA	Charlotte Harbor Water Association
CIP	Capital Improvement Program
CMMS	Computerized Maintenance Management System
CMOM	Capacity, Management, Operation, and Maintenance
CMP	Capital Maintenance Plan
CR	County Road
CRA	Community Redevelopment Area
CY	Calendar Year
°F	Degrees Fahrenheit
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
EPA	US Environmental Protection Agency
EPLAB	East Port Laboratory
EQ	Equalization
ERP	Emergency Response Plan
ERU	Equivalent Residential Unit
EWD	Englewood Water District

FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOH	Florida Department of Health
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FPSC	Federal Public Service Commission
FOG	Fat, Oil, and Grease
FSAWWA	Florida Section of AWWA
ft	Foot
FY	Fiscal Year
GDC	General Development Corporation
GDU	General Development Utilities
GIS	Geographical Information System
GIWA	Gasparilla Island Water Association
GMLS	Grand Master Lift Station
gpd	Gallons Per Day
gph	Gallons Per Hour
gpm	Gallons Per Minute
GPS	Global Positioning System
GST	Ground Storage Tank
HDPE	High-Density Polyethylene
HLD	High-Level Disinfection
HMI	Human Machine Interface
HOA	Homeowners Association
HP	Horsepower
HSP	High-Service Pump
HSPS	High-Service Pump Station
I&C	Instrumentation and Controls
I/I	Inflow and Infiltration
IDOC	Initial Demonstrations of Capability
in	inch
IR	Internal Recycle
IW	Injection Well
kVA	Kilovolt-Ampere
kW	Kilowatt
lb/day	Pounds per Day
LED	Light-Emitting Diode
LES	Liquid Environmental Solutions
LF	Linear Foot
LIMS	Laboratory Information Management System
LPS	Low-Pressure Sewer
LS	Lift Station
LTF	Leachate Treatment Facility
µS/cm	Micro Siemens Per Centimeter

MADF	Monthly Average Daily Flow
MBR	Membrane Bioreactor
MCC	Motor Control Center
MDF	Maximum Daily Flow
MG	Million Gallon
mg/L	Milligrams Per Liter
MGD	Million Gallons Per Day
MIT	Mechanical Integrity Test
mL	Milliliter
MLE	Modified Ludzack-Ettinger
MLSS	Mixed Liquor Suspended Solids
MLVSS	Mixed Liquor Volatile Suspended Solids
mm	Millimeter
MRS	Master Reuse System
MSBU	Municipal Service Benefit Unit
NEC	National Electrical Code
NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NFPA	National Fire Protection Association
O&M	Operations and Maintenance
ORP	Oxygen Reduction Potential
OSHA	Occupational Safety and Health Administration
PAC	Powdered-Activated Carbon
PACT	Powdered-Activated Carbon Treatment
PLC	Programmable Logic Controller
PMF	Peak Monthly Flow
ppm	Parts Per Million
PSAR	Public Supply Annual Report
PRF	Peace River Manasota Regional Water Supply Facility
psi	Pounds Per Square Inch
PVC	Polyvinyl Chloride
PWS	Potable Water System
QAS	Quality Assurance Specialist
R&R	Renewal and Replacement
RAS	Return-Activated Sludge
RO	Reverse Osmosis
RRA	Risk and Resilience Assessment
RTS	Regional Transmission System
RTU	Radio Telemetry Units
RWBS	Reclaimed Water Booster Stations
SCADA	Supervisory Control and Data Acquisition
scfm	Standard Cubic Foot per Minute
SDS	Safety Data Sheet
SF	Square Foot

SFWMD	South Florida Water Management District
SM	Standard Method
SOP	Standard Operating Procedure
SPD	Surge Protective Device
SR	State Road
SRF	State Revolving Fund
SRS	Septage Receiving Station
SWFWMD	Southwest Florida Water Management District
TCU	Telemetry Control Unit
TDH	Total Dynamic Head
TDS	Total Dissolved Solids
TMADF	3-Month Average Daily Flow
TMP	Transmembrane Pressure
TN	Total Nitrogen
TNI	The NELAC Institute
TP	Total Phosphorus
TSS	Total Suspended Solids
UCMR4	Unregulated Contaminant Monitoring Rule
UF/IFAS	University of Florida/Institute for Food and Agricultural Sciences
UIC	Underground Injection Control
UV	Ultraviolet
VFD	Variable-Frequency Drive
VS	Vacuum Station
WAS	Waste-Activated Sludge
WBS	Water Booster Stations
WO	Work Order
WRF	Water Reclamation Facility
WTP	Water Treatment Plant
WUP	Water Use Permit

GLOSSARY

Term	Description
Activated sludge	A process for treating wastewater using air and a biological floc to reduce the organic content of the wastewater.
Annual average daily flow (AADF)	The total volume of wastewater flowing into a wastewater facility or water flowing from a water facility during any consecutive 365 days divided by 365.
Backflow prevention	A physical means to keep water from flowing back into a water system once it is discharged from the system. Examples are air gaps, double-check valve assemblies, and reduced-pressure zone devices.
Consumer Confidence Report (CCR)	An annual water-quality report required by the US Environmental Protection Agency and Florida Department of Environmental Protection and distributed to the customers of a water utility.

Term	Description
Cross-connection	Any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device that contains or may contain contaminated water, sewage, or other waste or liquid of unknown or unsafe quality that may be capable of imparting contamination to the public water supply resulting from backflow.
Deep injection well	A well drilled into a confined, non-potable aquifer for disposal of treated wastewater.
Force main	A pressure pipe joining the pump discharge at a wastewater pumping station with a point-of-gravity flow.
Gravity sewer	Piping installed at a gradual incline (slope) that allows wastewater to flow exclusively by the energy of gravity.
Headworks	The *front end* of a wastewater treatment plant that removes items from wastewater that cannot be removed by the treatment process.
Lift station (pumping station)	A structure equipped with pumps to impart energy to convey wastewater through a force main.
Low-pressure sewer	An alternative to gravity sewers that requires a small pump at each property. Piping is small and shallow and can be constructed to follow the contours of the land as opposed to deeper and larger pipes necessary to accommodate the slopes required for gravity sewers.
Peak day flow	The largest volume of wastewater flowing into a wastewater facility or water flowing from a water facility during any consecutive 24-hour period.
Peak hour flow	The largest volume of wastewater flowing into a wastewater facility or water flowing from a water facility during any consecutive 1-hour period.
Public-access reclaimed water	Treated wastewater meeting the requirements of Chapter 62-610, Part III, of the Florida Administrative Code, for application on areas accessible to the public.
Restricted-access reclaimed water	Treated wastewater meeting the requirements of Chapter 62-610, Part II, of the Florida Administrative Code, for application on areas where access by the public is controlled and infrequent.
Reverse osmosis	A water treatment method that uses pressure and a semi-permeable membrane to purify water.
Three-month average daily flow	The total volume of wastewater flowing into a wastewater facility or water flowing from a water facility during 3 consecutive months divided by the number of days in this 3-month period.
Vacuum sewer	A mechanized system of wastewater transport that relies on differential air pressure to move wastewater. Vacuum pumps maintain a negative pressure on the collection system. The differential pressure between atmosphere and vacuum is the driving force that conveys wastewater through the system.

EXECUTIVE SUMMARY

INTRODUCTION

The Charlotte County Utilities (CCU) 2024 Annual Report updates the public and utility's stakeholders on the utility system's status and provides CCU staff with a tool for planning capital projects and improving operations. The report provides a high-level review and update of CCU's administration organization, financial information, major events, Capital Improvement Program (CIP) projects, and the conditions and recommendations for the water treatment plants, water distribution systems, wastewater collection systems, wastewater treatment facilities, and reclaimed water distribution systems.

ADMINISTRATION

The Board of County Commissioners (BCC) periodically reviews and determines the appropriate rate structure for providing services to current customers. The BCC approved a new schedule for water, sewer, and reclaimed water rates through Ordinance 2024-110, effective October 2024, to increase utility service costs by 3.24 percent.

The total Operations and Maintenance (O&M) revenue for Fiscal Year (FY) 2024 was:

- $100,975,696 (water and wastewater services).
- $7,590,267 (connection charges).
- $15,317,402 (connection fees).

In FY 2024, CCU continued to experience growth, with the number of active water customers increasing by 3.8 percent (from 69,113 to 71,722) and the number of active wastewater customers increased by 5.9 percent (from 46,037 to 48,764).

WATER TREATMENT PLANTS

Chapter 3 presents an overview of the Peace River Facility (PRF) and a detailed assessment of the County-owned Reverse Osmosis (RO) Water Treatment Plant (WTP). CCU has two water supply sources for its two independent public water systems (PWSs). CCU is a member government of, and purchases treated water from the Peace River Manasota Regional Water Supply Authority (Authority) for the consecutive PWS that serves Mid and West Counties. The Authority owns, operates, and maintains the PRF, which has its own water use permit and provides treated surface water to neighboring counties. Charlotte County's allocation of the Authority-produced water is 16.1 million gallons per day (MGD) annual average daily flow (AADF), 19.32 MGD for the peak month, and 22.54 MGD for the maximum day. In FY 2024, CCU used 12.8 MGD AADF or approximately 80 percent of the water allocated by the Authority under AADF conditions. Recommendations are not provided for Authority-owned facilities. In 2024, Charlotte County committed to an additional 3.0 MGD allocation from the Authority to increase their total allocation from 16.1 MGD AADF to 19.1 MGD AADF by 2032.

CCU also owns and operates the Burnt Store RO WTP, which produces water for the Burnt Store PWS serving South County. The Burnt Store RO WTP operates under Water Use Permit No. 3522, which expires in 2033. As currently configured, the Burnt Store RO WTP

capacity is 3.61 MGD with 1.5 million gallons (MG) of storage. In FY 2024, the Burnt Store RO WTP produced an average daily rate of 0.80 MGD of finished water, or approximately 22 percent of its design capacity. Raw water was supplied by six water production wells: RO-7, RO-8, RO-9, RO-11, RO-12, and RO-16. Concentrate from the treatment process is disposed of into two on-site deep injection wells with a combined capacity of 3.44 MGD.

Primary recommendations for the Burnt Store RO WTP include:

- Replace equipment at Well No. 7 due to rust and operational hazards.
- Continue to maintain and repair the membranes to extend life to the extent feasible (also replace end caps and leaks).

WATER DISTRIBUTION

Chapter 4 reviews and discusses CCU's distribution system infrastructure for its two independent PWSs. At the end of FY 2024, the Port Charlotte PWS had 67,677 water service connections, and the population, based on units served, was estimated to be approximately 167,429. The Port Charlotte PWS consists of approximately 1,500 miles of water main, six water booster stations (WBSs), four ground storage tanks (GSTs) totaling 10 MG of potable water storage, one disinfection station, seven supply interconnects with the Authority, and nine emergency interconnects with neighboring water utilities. The Authority also has an additional 12 MG of storage capacity available to Authority members for emergency fire flow or for general distribution during temporary loss of treatment at the PRF. For FY 2024, the total unaccounted-for water loss for the Port Charlotte PWS was 6.7 percent.

Primary recommendations for the Port Charlotte PWS include:

- Complete pumping and ground storage tank (GST) improvement projects to the existing WBSs to meet future demands (projects for the existing Gulf Cove, Golf Course, Walenda, and Rotonda WBSs are currently ongoing).

At the end of FY 2024, the Burnt Store PWS had 4,045 service connections, and the population, based on units served, was estimated to be approximately 11,750. The Burnt Store PWS distribution system consists of 74 miles of water main and has no water supply interconnects or emergency interconnects with neighboring water utilities. For FY 2024, the total unaccounted-for water loss for the Burnt Store PWS was 14.1 percent. Historically, Charlotte County has experienced higher-than-typical water loss in the Burnt Store PWS; CCU has investigated the water loss extensively, including completing an Unaccounted Water Investigation Report in 2021, which triggered a water audit with a plan to mitigate the high loss. CCU continues to install new C-900 PVC pipes to mitigate leaks in the system. The primary recommendation for the Burnt Store PWS distribution system includes:

- Investigate the potential to install interconnects with neighboring utilities to increase system resiliency.

CCU performs annual maintenance on pipes, valves, meters, and hydrants throughout both distribution systems. In FY 2024, CCU repaired 77 hydrants and serviced 293 hydrants, repaired 127 line breaks on pipes 3 inches in diameter or larger, and exercised 180 valves throughout the Port Charlotte and Burnt Store PWSs. The 2022 Consumer Confidence

Reports (CCRs) confirm that the water delivered by both CCU water distribution systems meets or exceeds regulatory quality requirements.

Wastewater Collection

Chapter 5 presents the CCU wastewater collection systems, which currently serve 48,764 customer accounts in four distinct collection areas. Based primarily on CCU's geographic information system (GIS), the collection system consists of approximately 395 miles of gravity sewer, 384 miles of low-pressure sewers (LPSs), 38 miles of vacuum sewer, four vacuum stations, 206 miles of force main, 310 lift stations (owned by CCU), and 8,100 manholes. Wastewater from each customer is collected and conveyed to one of four water reclamation facilities (WRFs) based on location. Additional wastewater is hauled from septic tanks throughout the County for treatment at the East Port WRF. CCU owns tanker trucks that are used to haul wastewater from septic tanks on an as-needed basis, and from lift stations and vacuum stations during emergencies. The Wastewater Collection workgroup has a maintenance program that includes condition assessment inspections by closed-circuit television (CCTV) and collection line cleaning to restore/maintain hydraulic capacity.

During FY 2024, a site review of representative facilities selected by CCU showed them to be functioning as intended but generally in fair to poor condition with the exception of the newly rehabilitated stations.

General recommendations for the CCU wastewater collection system include:

- Evaluate rehabilitating lift stations.
- Continue to use the hydraulic modeling to assess the need for upgrades.
- Continue to televise and repair gravity sewers and manholes.
- Install odor-control systems at lift stations that are significantly impacted by sewer gases.

Wastewater Treatment Facilities

Chapter 6 includes an overview and discussion of CCU's four WRFs and the Zemel Road Leachate Treatment Facility (LTF). Table ES-1 summarizes permit information and current percent permit capacity associated with each WRF. WRFs are complex facilities that require continual repair and rehabilitation to maintain operations and expansions to accommodate growth in Charlotte County. In FY 2024, the East Port WRF, West Port WRF, and Rotonda WRF operated within their permit limits for flow and effluent quality. Burnt Store WRF generally met flow and effluent quality requirements but experienced total nitrogen (TN) exceedances; treatment quality will be improved to advanced water treatment (AWT) as part of the plant expansion.

Primary recommendations for the WRFs include:

- Complete the West Port WRF expansion project, including evaluating the future expansion of the Rotonda WRF.

The Zemel Road LTF uses powder-activated carbon (PAC) to treat the leachate originating from the Zemel Road Class 1 landfill. The LTF has a capacity of 0.25 MGD and conveys

treated effluent to a deep injection well. The plant is operating within its permitted treatment capacity, but some improvements are recommended to maintain operations.

Table ES-1 CCU WRFs Flow and Capacity Statistics

Facility	Current Flow (MGD AADF)	Current Permitted Capacity (MGD AADF)	Operating Capacity (%)[a]	Future Capacity (MGD AADF)	Estimated Year to Complete Expansion
East Port	5.02	6.0	84	9.0 w/ AWT[b]	2026
West Port	0.73	1.2	61	2.5 w/ AWT[c]	2032
Rotonda	1.13	2.0	57	2.5 w/ AWT	TBD
Burnt Store	0.31	0.5	62	1.0[d]	2026

Notes:

[a] Based on the current AADF/permitted capacity.

[b] In construction.

[c] In design.

[d] In CMAR design/construction. Future expansion to 2.5 MGD including AWT modifications TBD.

The primary recommendations for the LTF include:

- Evaluate the effluent pumping operations.
- Replace the interior lining and decant mounting system brackets of the treatment unit tanks.
- Replace the polymer feed system and blower air intakes for the parallel treatment unit tanks.

Reclaimed Water Distribution System

Chapter 7 discusses CCU's reclaimed water distribution systems including the Master Reuse System (MRS) serving the Mid and West County areas and the Burnt Store reclaimed water distribution system serving South County. The MRS is fed by the East Port, West Port, and Rotonda WRFs and contains approximately 50 miles of transmission mains, four reclaimed water booster stations (RWBSs), three GSTs with a total volume of 4.0 MG, and three storage ponds with a total volume of 115 MG. The MRS infrastructure is in good condition; however, it requires more pipe hydraulic capacity to allow more reclaimed water to be transferred from Mid County to West County to major users. The Burnt Store reclaimed water distribution system primarily consists of one 7-mile-long transmission main that is currently serving five customers. The system infrastructure is in good condition.

CCU's current goal is to encourage the beneficial use of reclaimed water and continue expanding the system to serve additional customers, with a focus on large users.

The primary recommendations for the reclaimed water distribution system include:

- Evaluate improvements to pumping and transmission capacity to convey excess reclaimed water supply from Mid County to West County as recommended in the Reclaimed Water Master Plan.

- Install throttling control valves at all current major reclaimed water users with pond discharges in the Mid and West County areas.
- Develop and conduct a community survey to better determine potential customer interest in reclaimed water reuse (to be used to evaluate economic feasibility of the distribution system expansion opportunities).
- Replace the ultraviolet (UV)-damaged transducer screens at the RWBSs.

ENGINEERING

As Charlotte County's population continues to grow, CCU's ability to develop plans that address the projected growth is vital. The Engineering Division develops CIP projects for CCU's water, wastewater, and reclaimed water infrastructure systems. Table ES-2 summarizes the FY 2024 CIP budget dollars and expenditures for the three infrastructure sectors. The budget includes multi-year CIP projects; therefore, expenditures occur over multiple years. Chapter 8 provides details of the CIP budget and expenditure.

Table ES-2 FY 2024 CIP Budget and Expenditures

Infrastructure Sector	Budget	Expenditure
Water	$3,427	$6,216
Wastewater	$83,518	$22,368
Reclaimed Water	$150	$188

Note: Dollars in thousands. Does not include expenditures for removal and replacement (R&R) of existing facilities and assets or expenditures related to new developments.

UTILITY SUPPORT SERVICES

Chapter 9 discusses support services for CCU services including state-certified laboratory testing, asset management (Cityworks), and Operation and Information Technology (Supervisory Control and Data Acquisition [SCADA] and Cybersecurity).

The East Port Laboratory (EPLAB) conducts most water quality testing for the County's facilities. The EPLAB is certified to conduct analyses by the Florida Department of Health (FDOH) according to The NELAC Institute (TNI) Standards. In FY 2024, the laboratory processed 8,758 samples, including performing 33,117 analyses and additional field sampling and sample courier service responsibilities. Due to the upcoming AWT plant expansions at East Port WRF and Burnt Store WRF, staffing requirements may need to be evaluated so that laboratory analysis services are not negatively impacted by new monitoring requirements. The EPLAB uses Laboratory Information Management System (LIMS) – a data management software that generates paper documentation forms and sample identification numbers to record and track test results.

Jones Edmunds worked with CCU to implement the Cityworks Computerized Maintenance Management System (CMMS) to track work activities and the status of assets across the County. Cityworks is a GIS-centered system, leveraging geographic information to map and manage assets. This implementation is part of a broader effort to standardize asset and work tracking across County departments using a centralized platform. The system supports scheduling routine maintenance, identifying infrastructure issues, and reporting key performance indicators to support data-driven decision-making.

Operation and Information Technology refers to CCU's SCADA and Cybersecurity infrastructure. CCU uses SCADA to monitor and control facility operations. Several facilities represent multiple projects involving different engineers, bid contractors, and SCADA system integrators. This has resulted in a SCADA system of mixed hardware, software, and architecture that includes diverse and separate operations. A SCADA Master Plan was completed in FY 2020. The primary goal of the SCADA Master Plan was to define and document a road map for implementing the technology, practices, and organizations required to meet CCU's short-term and long-term goals for SCADA. CCU has since converted SCADA software at several facilities from Wonderware to VTScada. Chapter 9 includes recommendations from the SCADA Master Plan.

CONSOLIDATED RECOMMENDATIONS

Chapter 10 consolidates all recommendations discussed throughout this Annual Report for each CCU water, wastewater, and reclaimed water facility visited during this assessment.

1 INTRODUCTION

1.1 PURPOSE AND SCOPE

The Charlotte County Utilities Department (CCU) prepares an Annual Report every year to regularly document the status of its facilities and provide an update to the stakeholders of the utility and the public. The report also serves as a tool for planning capital projects and improving operations. This document provides a high-level review and update of CCU's administration organization, financial information, major events, Capital Improvement Program (CIP) projects, and the conditions and recommendations for the water treatment plants, water distribution systems, wastewater collection systems, wastewater treatment facilities, and reclaimed water distribution systems.

The Report is divided into the following chapters:

1. **Introduction**: General information concerning the report's preparation.
2. **Administration**: Charlotte County government structure and CCU's organization, administration programs, and financial information.
3. **Water Treatment Plants**: Descriptions and records concerning the purchase and production of potable water and the general condition of the components.
4. **Water Distribution System**: Description of the water distribution system and the general condition of components.
5. **Wastewater Collection:** Description and records concerning the collection of wastewater and the general condition of components.
6. **Wastewater Treatment Facilities**: Descriptions and records concerning the facilities used to treat wastewater and leachate and the general condition of the components.
7. **Reclaimed Water Distribution System**: Description of the reclaimed water distribution system and the general condition of the components.
8. **Engineering**: The status of the water, wastewater, and reclaimed water CIP projects and a summary of the major engineering reports completed for the County.
9. **Utility Support Services**: Descriptions and records concerning the laboratory facilities, asset management, and information technologies.
10. **Consolidated Recommendations**: Summary of planning recommendations, capital improvements, and operation and maintenance (O&M) items for the water, wastewater, and reclaimed water systems.

1.2 AUTHORITY

Jones Edmunds' preparation of the Fiscal Year (FY) 2024 Annual Report is authorized by Charlotte County Purchase Order No. 20250001908, Work Order No. 34.

1.3 DEMOGRAPHICS

Charlotte County is on the southwest coast of Florida approximately 96 miles south of Tampa. It covers 694 square miles and contains approximately 126 miles of waterways. With an elevation ranging from 5 to 25 feet above sea level, Charlotte County enjoys a sub-tropical climate where the extreme temperatures of summer and winter are subdued by the prevailing gulf breezes. Numerous upland and aquatic preservation areas are in the area.

Charlotte Harbor includes one of the world's largest protected marine estuaries, encompassing 270 square miles with 219 miles of natural shoreline.

The Office of Economic and Demographic Research estimated the Charlotte County population in 2024 to be 210,645. In 2009, Port Charlotte was named "Best Place to Retire" by *Money* magazine, and the community has received similar recognition from other sources during the past decade.

A large portion of this coastal community's urban development is in the west third of the County, including the barrier islands abutting the Gulf of Mexico. The Port Charlotte planned residential development occupies most of Central County with some residential lots having canal access to Charlotte Harbor. A large development known as Rotonda is in the west area of the County. Every lot within Rotonda is within a half mile of a golf course.

A growing area in the extreme south area of the County, near the Lee County border, is known as the Burnt Store Corridor because of its location on and near Burnt Store Road. This area encompasses 8 square miles and is currently only 15-percent built out.

Commercial growth along many of the main corridors constitutes over 1,500 acres. Most of the commercial epicenters are along US Highway 41 (US 41) and in the Murdock area of Port Charlotte. Commercial zones have also developed along Kings Highway, Rampart Boulevard, and State Road (SR) 776. Less than 0.1 percent of the County area consists of industrial development. The industrial development is primarily within the Community Redevelopment Area (CRA) in Charlotte Harbor.

1.4 DEVELOPMENT OF CCU

In the mid-1950s, the Mackle brothers of Miami, Florida, began to purchase large tracts of land in the Mid and West County areas. The Mackle brothers, later known as General Development Corporation (GDC), platted the area for residential development communities, generally 0.25-acre residential lots with some commercial areas along main corridors such as US 41. Most GDC developments in the area were supplied water from the GDC-owned and -operated Peace River Manasota Regional Water Supply Facility (PRF), which was constructed in the 1970s and managed by GDC's subsidiary General Development Utilities (GDU).

In 1991, Charlotte County purchased the GDU assets, forming the initial core of the CCU system in Mid County and in the Gulf Cove and South Gulf Cove areas of West County. The purchase included water infrastructure including three water booster stations (WBSs), three ground storage tanks (GSTs), and approximately 610 miles of water mains serving approximately 28,500 water connections. The purchased wastewater infrastructure included three treatment plants (South Port and East Port in Mid County and West Port in West County) along with associated transmission lines and collection systems consisting of 140 miles of gravity and low-pressure mains, 56 lift stations, and 61 miles of force mains serving approximately 11,000 sewer connections. CCU eventually grew to operate wastewater, potable water, and leachate treatment plants.

Over the years, CCU has continued to acquire, upgrade, and construct facilities such as water treatment plants (WTPs), WBSs, wastewater treatment facilities, and water reclamation facilities (WRFs) and to expand its collection and distribution system

infrastructure as necessary to serve residents, meet demands, treat flows, and maintain permit requirements. The major expansions to the CCU system are listed below, and more detailed improvements can be found in previous Annual Reports:

- In 1991, CCU purchased the GDU assets establishing the CCU water and wastewater systems.
- The Zemel Road Leachate Treatment Facility (LTF) was first permitted in 1991. The plant is owned by Charlotte County Solid Waste and operated by CCU.
- In 1992, CCU established interconnects with North Port at Flamingo Boulevard and Biscayne Boulevard and at Harbor Boulevard.
- CCU constructed the Walenda WBS, consisting of a 2-million-gallon (MG) GST in 1993.
- CCU started its reuse program on August 16, 1994, in Mid County.
- CCU acquired Rampart Utilities in Mid County in 1999, consisting of gravity collection and transmission lines serving 1,400 connections.
- CCU acquired the Five Lands WTP in 1998 and decommissioned it in April 2007.
- CCU acquired Aqua-Source Utilities in West County in fall 2000, consisting of the Rotonda WRF and gravity and low-pressure collection systems totaling 3,400 connections.
- The 24-inch transmission main and interconnect from the PRF along Kings Highway to the DeSoto County line was completed in 2001.
- CCU acquired Florida Water Services in Mid County in 2003, consisting of a collection system that serves 3,400 sewer connections in the Deep Creek area.
- CCU acquired Florida Water Services in South County in 2003, consisting of the Burnt Store WRF and WTP and gravity sewer collection systems and pump stations in the Burnt Store area.
- The Rotonda WTP #3 was converted to a WBS in 2005.
- The Rotonda, Gulf Cove, and Golf Course WBSs were upgraded in 2007 with new chemical feed systems.
- A potable water system interconnect was established with the Englewood Water District (EWD) in 2007.
- The Gertrude WBS and GST were decommissioned in 2008.
- The reclaimed water Phase 1 expansion was completed in 2009 and included two strategically placed 0.5-MG storage tanks and pumping stations along with approximately 10 miles of 16-inch-diameter reclaimed water transmission main and 4 miles of 12-inch-diameter reclaimed water transmission main.
- The reclaimed water Phase 2 expansion was completed in 2014, which included approximately 2 miles of 16-inch transmission pipe, additional storage at the West Port WRF in West County, and construction of the West County reclaimed WBS along the interconnect between the reclaimed water systems for the Rotonda and West Port WRFs.

- The reclaimed water Phase 3 expansion was completed in FY 2020. It included Stage 5 Improvements at East Port WRF for a 95-MG reclaimed water storage pond and a 9-million-gallon-per-day (MGD) high-service pump station (HSPS) and installation of three reclaimed water transmission mains (approximately 5.5 miles of 16-inch-diameter main along Placida Road, approximately 1.5 miles of 16-inch-diameter main along Cape Haze Drive, and approximately 1 mile of 12-inch-diameter main along Rotonda Boulevard West).

1.5 MAJOR EVENTS

CCU is an active Charlotte County department with projects and administrative activities underway. The following sections list significant events occurring within FY 2024.

1.5.1 GENERAL OPERATIONS

- Conducted County-wide damage assessments, repairs, and recovery efforts in response to Hurricane Helene.
- Continued development and utilization of the County's new asset management system, Cityworks, for tracking utility assets with integrated GIS capabilities.
- Awarded a contract to Colliers Engineering & Design for Subsurface Utility Engineering verification. The collected data will integrate with the County's GIS system and Cityworks, providing CCU with enhanced visibility of its infrastructure to support future planning, maintenance, and informed decision-making.
- Successfully applied for two Clean Water State Revolving Fund (SRF) loans under the Supplemental Appropriation for Hurricanes Fiona and Ian (SAHFI) program, securing 100% principal forgiveness:
  - $11M for South County Improvements Project
  - $19.8M for the East Port WRF Expansion Project
- Collaborated with HDR Engineering on the $1-million Florida Commerce Resiliency and Modernization Grant to identify vulnerabilities and implement adaptive and mitigation projects.
- Persistently pursued grant opportunities to fund CCU capital improvement projects.
- Presented the Capacity Assessment and Assurance Program (CAAP) Framework Development and Flow Monitoring Program to the BCC in partnership with Veith Engineering & Business Solutions as part of ongoing Capacity, Management, Operations, and Maintenance (CMOM) initiatives.
- Obtained American Public Works Association (APWA) certification. On January 9, 2024, the APWA Director presented the APWA Accreditation award to CCU. APWA certifications are credentials that demonstrate experience and excellence in the public works and utility industry. The certification is valid for 5 years. CCU plans to recertify in the future.
- Conducted a Water Meter Study, during which data were collected and analyzed in the preparation for a final report and presentation to the BCC, expected in 2025. The Meter Changeout Program also progressed, with 11,525 meters replaced between January and December 2024. This initiative benefited both CCU and its customers by improving water

usage accuracy, enhancing leak detection, promoting water conservation, and increasing system efficiency.

- Advanced the CMOM Program (as an ongoing initiative to improve the wastewater collection system. Key strategies implemented included routine inspections and monitoring, preventative maintenance, data analysis and reporting, stakeholder engagement, and emergency response planning. These efforts ensured more effective management and sustainability of wastewater infrastructure.
- Remained active in public relations throughout the year, averaging 45 social media posts across various platforms and conducting an estimated seven facility tours at various plants.
- Per the BCC, decided to take an additional 3 MGD from the Peace River Manasota Regional Water Supply Authority (Authority) water allocation to secure future water supply for the County.
- Developed a comprehensive Training Manual for CCU to provide new hires with the tools, knowledge, and expectations necessary for success in their roles while ensuring a clear understanding of company policies and procedures. The Administration Division was the first to implement the manual, with plans to expand its use across all divisions in the coming years.
- Restructured the warehouse to meet the growing demands of the County. Space was maximized, processes streamlined, inventory management improved, and resource availability ensured on time.
- Collaborated the warehouse with the CCU Fiscal Services Division to streamline purchasing procedures in Cityworks and Munis.
- Per the BCC, approved a new schedule for water, sewer, and reclaimed water rates through Ordinance 2024-110, effective October 2024, to increase utility service costs by 3.24 percent.

1.5.2 ENGINEERING

- Received a total of 59 new applications, with 58 projects approved for construction. Major approved projects include West Port East Residential, West Port East Major Roads, Firelight North, Willow Development Phases 2 and 3, and Willow Townhomes.
- Received the Reclaimed Water Master Plan from Jones Edmunds in May 2024 and posted it to the CCU website.
- Maintained collaboration with Jones Edmunds on hydraulic modeling of the utility system.
- Completed construction of the Ackerman Septic to Sewer Zones 1 and 2 project and continued work on on-lot connection plumbing contracts.
- Awarded Poole & Kent of Florida, Inc., a $106-million contract for the expansion of the East Port WRF, increasing its capacity from 6 to 9 MGD
- Continued technical engineering and design work with Giffels-Webster Engineers on the Lake View Midway Septic-to-Sewer project.

- Began construction began on the CCU's 8-inch parallel water main installation project as a collaboration with the Authority's 2B 42-inch pipeline project.
- Awarded a contract to Johnson Engineering for the Babcock Ranch Water Use Permit and initiated technical engineering work.
- Awarded a contract to Weston & Sampson Engineers, Inc., for the South County Utility Improvements, which include an elevated water tank, a lift station, and a booster station. Began the technical engineering and design work.
- Continued technical engineering and design work with Johnson Engineering for the Public Works Kings Highway Widening project, which included utility improvements.
- Awarded a contract to Kimley-Horn & Associates for the Gulf Cove Ground Water Storage Improvements, and technical engineering and design work is underway.
- Conducted ongoing water quality monitoring in coordination with the County's Water Quality Manager.
- Awarded a contract to Accurate Drilling Systems to install seven utility mains, with construction begun and expected completion in FY 2025.
- Continued the updates to the 2017 Sewer Master Plan throughout FY 2023/2024; projected to be finalized during FY 2024/2025.
- Presented the Preliminary Engineering Report for the Cape Haze Septic to Sewer Project to the BCC in July. Unfortunately, the BCC decided not to move forward with a Municipal Service Benefit Unit (MSBU), as the timing did not align with Public Works' paving program for this area.
- Continued development of the Engineering Design Manual throughout the year, intending to finalize and fully implement it by 2026.

1.5.3 Water and Wastewater System Operations

- Awarded contract to Pantropic Power for the purchase of a new generator for Walenda Booster Station.
- Completed and submitted EPA's lead line inventory for both systems with no lead service lines discovered.
- Distributed 4,682,490,000 gallons of water in the Port Charlotte water system.
- Distributed 278,237,056 gallons of water in the Burnt Store water system.
- Added 2,315 new service connections (193 per month average).
- Increased customers served by 5,619.
- Continued Walenda, Gulf Cove, and Rotonda booster station upgrade designs for additional capacity and reliability.
- Purchased the upgraded Gulf Cove generator and the upgraded Walenda generator.
- Performed Public Supply Annual Report for BS & PC Systems.
- Participated in an AWWA Water Audit.

- Repaired 191 main breaks 3 inches or larger and repaired 822 service line leaks.
- The Water Division came in under budget for the end of FY 2024.
- Completed 10,003 work orders.
- Repaired/serviced 336 fire hydrants.
- Added 96 new fire hydrants, 198 system valves, and 219 miles of water main piping.
- Continued the manhole relining program for various structures within the wastewater collection system.

1.5.4 Reclaimed Water System Operations

- Provided irrigation water to golf courses, parks, roadway landscaping, and numerous residential and commercial customers during FY 2024. CCU continues to identify new users and improve operations with a focus on large users.

1.5.5 Instrumentation and Control Group

- Provided programmable logic controller (PLC) programming.
- Cross-trained between divisions.
- Installed and calibrated controls.

1.5.6 Operations Data Management

- Completed the initial Trihedral VTScada implementation at all plant facilities.

1.5.7 Reports and Studies

- Finalized the Reclaimed Water Master Plan (by Jones Edmunds) in April 2023 and posted it to the County website. This report evaluated future water supply needs and identified CIP projects for implementation.
- Finalized an O&M Manual for the County's water distribution systems (by Jones Edmunds).
- Continued amending the South County portion of the Sewer Master Plan with various consultants as part of the Burnt Store WRF AWT Expansion Project.
- Continued to work with various consultants to prepare quarterly reports for each WRF and prepare operating permit renewals for the WRFs and deep injection wells.
- Completed a CMOM Report (by Kimley-Horn) in compliance with new FDEP requirements. A CMOM Program is being developed for the County based on the findings in the report.
- Completed a CAAP Framework Development and Flow Monitoring Report (by Veith Engineering and Hazen and Sawyer).
- Worked with Hazen and Sawer to update its Pre-Treatment and Fat, Oil, and Grease (FOG) programs and ordinances.
- Developed O&M manuals for all plants, water distribution, wastewater collection, and reclaimed water systems in compliance with the US Environmental Protection Agency (EPA) guidelines. However, maintaining and updating the O&M manuals remains a

progressive requirement when new features are introduced or when notable changes to operation occur.

1.6 Acknowledgements

Jones Edmunds acknowledges the following Charlotte County staff for providing guidance, information, field assistance, and review in the preparation of this report:

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2 ADMINISTRATION

2.1 COUNTY GOVERNMENT

The Charlotte County government operates under an elected BCC and an appointed County Administrator. The BCC is responsible for the legislative duties of the County government. Five County Commissioners representing separate Districts serve on the BCC over staggered 4-year terms.

The County Administrator is the County's chief administrative officer and is responsible for all administrative matters and operations under the BCC's authority. The County Administrator's responsibilities include appointing County Department Directors with final approval by the BCC.

2.2 UTILITIES DEPARTMENT

CCU, a Charlotte County government department, provides potable water production and distribution, wastewater collection and treatment, and reclaimed water distribution for irrigation within their service areas. CCU serves nearly 70,000 homes and businesses in the Greater Port Charlotte area, El Jobean, Gulf Cove, Englewood East, Rotonda, and Burnt Store, as well as bulk customers including El Jobean Water Association, Riverwood Development, Inc., Encore Super Park, and Little Gasparilla Island.

CCU maintains interconnects for emergency bulk water sales with the Charlotte Harbor Water Association, Gasparilla Island Water Association, City of North Port Utilities, and EWD. An interconnect with the City of Punta Gorda allows CCU to provide or receive water depending on each system's demands.

CCU's mission, vision, and values are as follows:

Mission: To provide safe, reliable drinking water, reclaimed water, and wastewater service for the enrichment of the community.

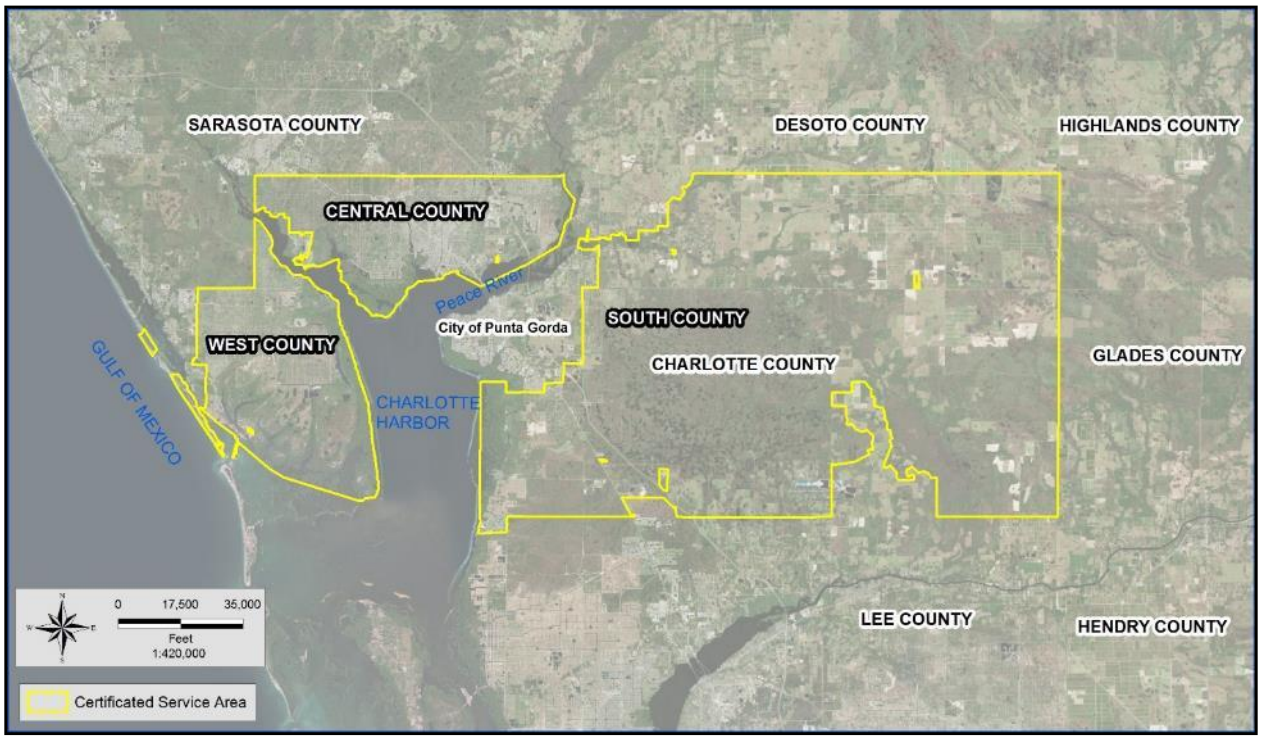
Vision: To enrich our community's quality of life by providing reliable utility services that fulfill future demands.

Values:

- **Committed** – to public and environmental safety as good stewards of what we have been given.
- **Accountable** – to the public through transparency and honesty.
- **Resourceful** – efficiencies through collaboration, teamwork, technology, and defined processes.
- **Energetic** – by providing exemplary service that exceeds our community's expectations.
- **Supportive** – by striving to meet the needs of the public and our environment.

Figure 2-1 shows the CCU service areas outlined in yellow.

Figure 2-1 CCU Service Areas



CCU is led by a Utilities Director, who works under the direction of the County Administrator and Deputy County Administrator. CCU consists of four divisions: Administration, Business Services, Engineering Services, and Operations.

The Administration Division includes the Utilities Director and support staff and manages the overall utility and supervises all other utility divisions. Specific duties of the Administration Division include Utilities Department budget oversight, Grants Management, Asset Management, and Warehouse and Administrative Support Services.

The Director's responsibilities include:

- Planning for water and wastewater needs.
- Developing potable water treatment/distribution systems.
- Developing wastewater treatment/collection systems.
- Developing reclaimed water distribution systems.
- Operating the County's water, wastewater, and reclaimed water systems.
- Instituting water conservation practices and educational programs.
- Communicating – internally and externally with customers.

The Business Services Division is managed by the Business Services Manager and includes:

- Customer Service.
- Billing and Collections.
- Meter Services.

The Engineering Services Division provides engineering and construction observation services to residential and commercial utility customers. The Division is managed by the Engineering Services Manager and includes:

- Preliminary Engineering Group.
- Design Group.
- Construction Services Group.

The Operations Division, overseen by the Utility Operations Managers, is responsible for the O&M of all County-owned and -operated water, wastewater, and reclaimed water facilities including:

- Water and wastewater treatment facilities.
- Water distribution systems including booster pumping stations, storage tanks, fire hydrants, valves, and the entire water distribution piping.
- Wastewater collections including lift stations and vacuum stations, low-pressure sewer, gravity sewer, vacuum sewer, and force main piping systems.
- Reclaimed water distribution systems including cross-connection control and water-quality monitoring.
- An Instrumentation and Controls (I&C) Group, under a supervisor, formed from existing I&C technicians in each division.

Financial services are supplied by the Fiscal Services Division of the Charlotte County Budget & Administrative Services Department. CCU pays for five personnel, led by a Financial Manager, through an inter-fund transfer.

CCU also funds two positions in the County Information Technology Department to assist with upgrading and maintaining hardware and software systems.

At the start of 2025, the total number of full-time positions budgeted for CCU was 300, with 276 positions filled.

Figure 2-2 and Figure 2-3 show the CCU organizational structure at the beginning of FY 2024 (January 2024).

2.3 Administration Facilities

The Charlotte County Environmental Campus is on an outparcel of the East Port WRF. The campus includes the CCU Administration Building, Operations Service Center/Warehouse, Charlotte County Public Works Solid Waste Division, Community Services, University of Florida Institute of Food and Agricultural Services (UF/IFAS) Extension Services Division, the Charlotte County/Punta Gorda Municipal Planning Organization, and Public Works Mosquito and Aquatic Weed Control.

Figure 2-2 January 2025 CCU Organizational Chart – Overall

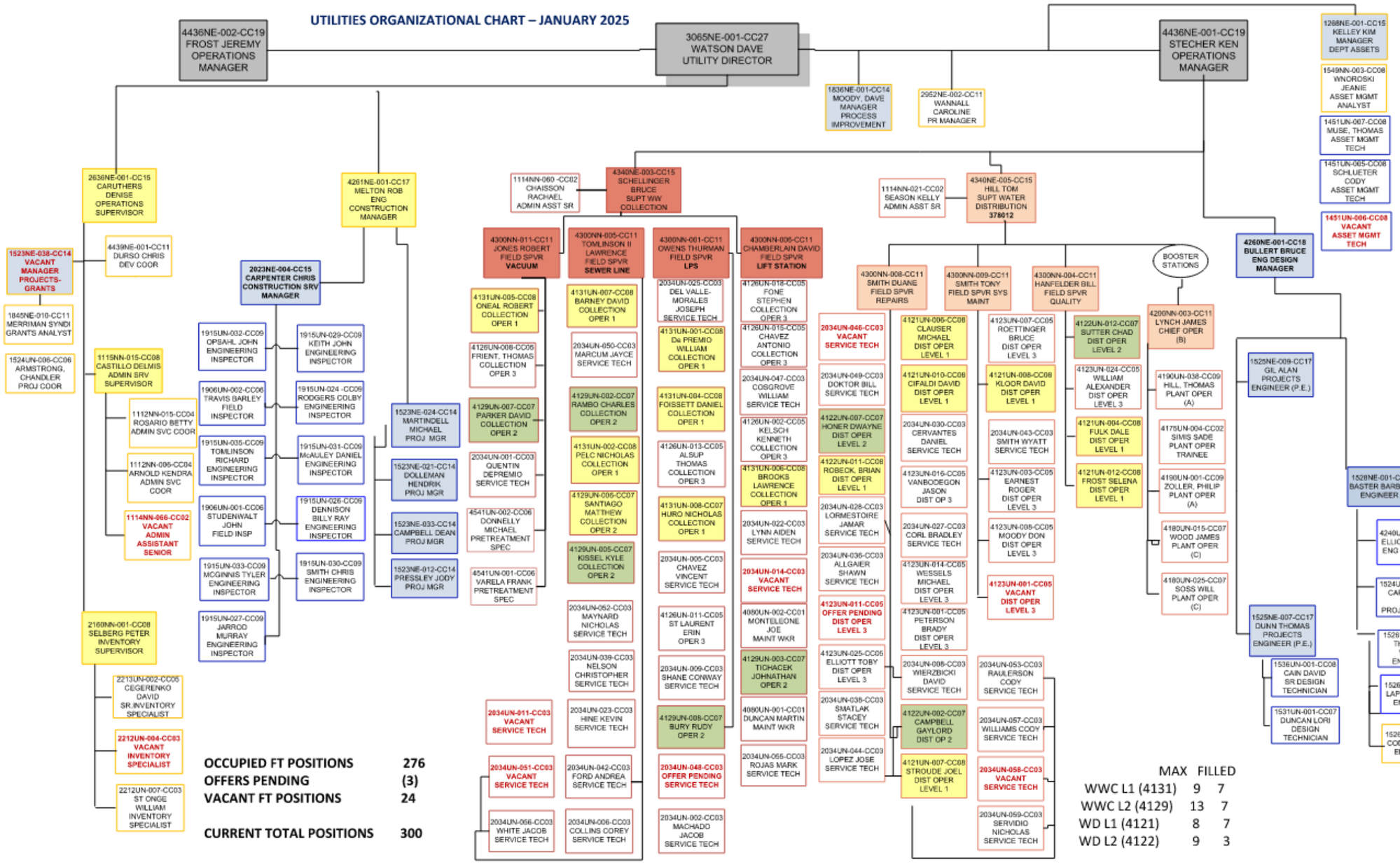
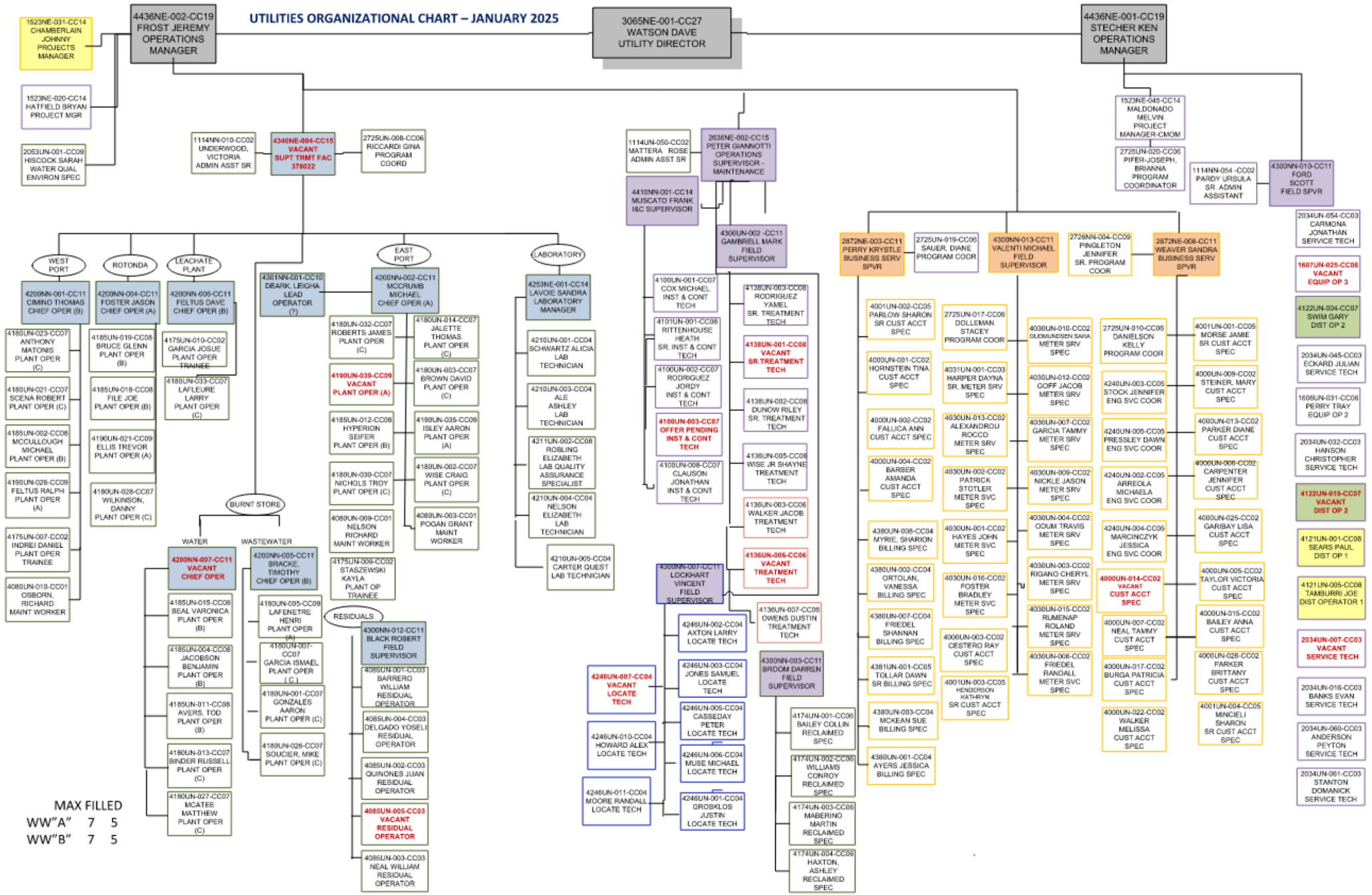


Figure 2-3 January 2025 CCU Organizational Chart – Operations



2.4 CCU WATER CONSERVATION EFFORTS

In FY 2024, CCU continued with its outreach efforts, including oversight of the Water Conservation Programs and community education efforts discussed in the following sections.

2.4.1 WATERING RESTRICTIONS

For the portion of Charlotte County where CCU provides service, Charlotte County follows current Southwest Florida Water Management District (SWFWMD) Conservation Measures as posted on their website *https//www.SWFWMD.state.fl.us/*. For portions of Lee County where CCU provides service, Charlotte County follows the South Florida Water Management District (SFWMD) Conservation Measures as posted on their website *https://www.sfwmd.gov/community-residents/landscape-irrigation*.

2.4.2 IN-HOUSE ENFORCEMENT OF WATERING RESTRICTIONS

The BCC approved enforcement of watering restrictions in early 2008. The enforcement allows CCU staff to progressively enforce water restrictions for CCU customers, including written warnings with educational materials and escalating unauthorized water usage charges for repeat offenses. These charges appear on the customer's water bills. The Sheriff's Office continues to provide enforcement services for non-CCU customers.

2.4.3 WATER RESTRICTIONS ORDINANCE

On November 24, 2020, the BCC adopted Ordinance #2020-045 modifying the existing ordinance to comply with year-round SWFWMD water conservations and to add water shortage plan provisions distinguishing between water management districts in Charlotte County. The details of the watering restrictions are contained at *https://www.charlottecountyfl.gov/departments/utilities/about-utilities/conservation/water-restriction.stml.*

2.4.4 CONSERVATION-BASED RATE TIERS

CCU uses a five-tier rate structure where the water user pays different prices per unit of water delivered depending on the amount used, with a higher price charged for larger quantities.

2.4.5 RECLAIMED WATER USE AND EXPANSION

Another method for conserving water supplies is to encourage the use of reclaimed water. Using reclaimed water for irrigation and other non-potable water needs reduces the demand for potable water, surface water, and groundwater. CCU started its reuse program on August 16, 1994, when the first customer was signed to the East Port Water WRF. The County's other wastewater treatment facilities were eventually upgraded to provide reclaimed water to meet customer demands in other parts of the County. In 2005, CCU began designing a customer-based reclaimed water transmission system rather than a WRF service-area-based system. Preliminary design began with preparing a computerized hydraulic model.

The goal of the modeling effort was to identify the infrastructure needed to connect the three WRFs in Mid and West County areas into one reclaimed water transmission system and to serve as many customers as economically possible. Today, CCU has two reclaimed

water systems – one serves the Mid and West County areas, and one serves the South County area. CCU's Port Charlotte public water system (PWS) operates under a Master Reuse Permit approved by FDEP that allows CCU to move reclaimed water from East Port WRF, West Port WRF, and Rotonda WRF to customers. Abundant reclaimed water at the East Port WRF and customer demands for irrigation water throughout the central and west parts of the County were the driving forces behind CCU's desire to expand its reclaimed water distribution system. Today, the Master Reuse System (MRS) is kept fully pressurized to allow customers to withdraw reclaimed water when needed.

Over the years, the hydraulic model continued to be improved and used as a tool to expand the reuse system throughout the County. In January 2020, a Technical Memorandum completed by Jones Edmunds documented the updates to the CCU reclaimed water hydraulic model, model verification, current operations, and analyses and recommendations for reclaimed water system improvements to maximize conveyance of reclaimed water to existing and future customers. CCU and Jones Edmunds have continued this effort and have developed the CCU Reclaimed Water Master Plan to prioritize CIP projects for the reclaimed water systems.

2.4.6 Community Outreach

CCU regularly participates in water conservation-related outreach including bill inserts, news articles, and speaking engagements within the community. CCU funded a portion of the salary for a Florida Yards and Neighborhoods Charlotte County UF/IFAS Extension Program Assistant for the past several years. CCU and UF/IFAS Extension Services work jointly to promote Florida-Friendly Landscaping. A donated demonstration garden on CCU's Environmental Campus property is accessible to all Charlotte County residents and is maintained by Master Gardeners who are given free space at the Campus to better educate residents.

CCU conducts citizen educational tours at the Burnt Store Reverse Osmosis (RO) WTP and CCU's four WRFs. The purpose of the tours is to promote alternative water sources, water conservation, and good stewardship of water resources.

The water/wastewater plant tours included:

- Water/Wastewater Treatment Processes.
- Regulatory Requirements.
- State-of-the-Art Membrane Bioreactor (MBR) and RO Technology.
- Process for Producing Reclaimed Water.
- Treatment and Disposal of Effluent.
- Biosolids and their Disposal.
- Environmental Impacts of Water Reclamation.
- Alternative Water Sources.

CCU promotes an understanding of its operations through outreach programs such as:

- Presentation of the Utility for County Ambassador Program.
- Presentation of the Utility for Leadership Charlotte.
- Presentation of the Utility for Government Academy.
- Utility booth at Community Outreach Event.

- Utility project and program presentations to Charlotte County Realtors.
- Imagine a Day Without Water.
- Speaking engagements at Homeowner Association (HOA) meetings.
- Presentations and speaking engagements at local schools.
- Project information meetings for residents and business owners.

2.4.7 Water Conservation Month

CCU's annual Water Conservation Month program includes a BCC proclamation with community outreach/educational displays at various community events.

2.4.8 CCU Website/Social Media

Customers can access information on the latest water restrictions, conservation tips, and general CCU current events at the Charlotte County website, *www.charlottecountyfl.gov,* and at the Administration office. The public can also receive updated information on projects, services, conservation tips, hydration information, and general current events with pictures on Facebook. Facebook also provides an avenue to announce public outreach events and educational tours and to make reservations online to attend events and tours.

2.5 Financial

CCU is a government-owned enterprise fully funded by customer rates, not by tax dollars. Savings opportunities (or profits) are passed through to the benefit of the utility customers. CCU's policies, rates, and security deposits are established by the BCC. The County Clerk of the Circuit Court serves as the accountant and auditor for the BCC and is responsible for the collection and disbursement of County funds.

2.5.1 Revenues

The BCC approved a new schedule for water, sewer, and reclaimed water rates through Ordinance 2024-110, effective October 2024, to increase utility service costs by 3.24 percent.

The HeartShip Program is available to help customers who are faced with a period of personal or family crisis and do not have sufficient money to pay their utility bill. This program is funded by contributions from caring members of the community. The County's Human Services Department, in cooperation with CCU's Business Services Division, administers the HeartShip funds.

The total O&M revenue for FY 2024 water and wastewater services was $100,975,696. The total O&M connection charge revenue was $7,590,267, and the total connection fee revenue was $15,317,402.

2.5.2 Debt Service

The 2008 series bond for the Wastewater Expansion Program was finalized in October 2023. Table 2-1 summarizes the principal bond balances for CCU bonds in FY 2024 and includes the two series bonds that remained for FY 2024. The two bonds, 2016 and 2021, received a sinking fund transfer from April through September 2024, and in October 2024 (FY 2025) the final series bond payments will be retired and closed both bonds.

Table 2-1 Principal Balances on CCU Bonds by FY 2024

Series Bond	Original Issuance	Current Debt	Comments
2016	Refinance – 2006 and part of 2011	$5,690,000	Refinanced Debt
2021	Refinance – 2011	$9,380,000	Refinanced Debt
	Total FY 2024 Bond Debt	$15,070,000	
	State Revolving Fund (SRF) Debt	$ 66,193,484	
	Total Long-Term Debt	$ 81,263,484	

2.5.3 CCU Customer Base

During FY 2024, the number of active water services increased from 69,113 to 71,722, and the number of active sewer services increased from 46,037 to 48,764. For planning purposes, the level of service for water and wastewater established by CCU is 225 gallons per day (gpd) of water consumption per equivalent residential unit (ERU) and 190 gpd of wastewater flow per ERU. These levels, as established by the Charlotte County 2050 Comprehensive Plan, represent maximum daily usage plus fire flow.

2.5.4 Insurance

CCU is self-insured. The self-insurance is provided by the County and is administered by the Gehring Group, with Kurt Gehring acting as the Agent of Record. CCU is also covered by general property and liability insurance, excess property insurance, boiler and machinery insurance, and pollution liability insurance. Utility buildings and contents are covered for up to 100 percent of the replacement cost without depreciation. In Mr. Gehring's opinion, the insurance coverage is adequate for CCU and its facilities. Therefore, the County complies with the bond covenant property insurance requirements as set forth below:

> *Insurance – The Issuer will carry such insurance as is ordinarily carried by private or public corporations owning and operating utilities similar to the System with a reputable insurance carrier or carriers, including public and product liability insurance in such amounts as the Issuer shall determine to be sufficient and such other insurance against loss or damage by fire, explosion (including underground explosion), hurricane, tornado or other hazards and risks, and said property loss or damage insurance shall at all times be in an amount or amounts equal to the fair appraisal value of the buildings, properties, furniture, fixtures and equipment of the System, or such other amount or amounts as the Consulting Engineers shall approve as sufficient.*
>
> *The Issuer may establish certain minimum levels of insurance for which the Issuer may self-insure. Such minimum levels of insurance shall be in amounts as recommended in writing by an insurance consultant who has a favorable reputation and experience and is qualified to survey risks and to recommend insurance coverage for persons engaged in operations similar to the System.*
>
> *The Issuer shall, immediately upon receipt, deposit the proceeds from property loss and casualty insurance to the credit of the Revenue Fund. The proceeds from property loss and casualty insurance shall be applied as follows: (A) if such proceeds, together with other available funds of the*

Issuer, are sufficient to repair or replace the damaged portion of the System, such proceeds and other available funds shall be deposited to the credit of the Renewal and Replacement Funds and, together with any other available funds of the Issuer, applied to such repair or replacement; or (B) if such proceeds, together with other available funds of the Issuer, are not sufficient to repair or replace the damaged portion of the System or if the Issuer makes a determination in accordance with Section 5.07 hereof that such portion of the System is no longer necessary or useful in the operation of the System, such proceeds shall (1) if such proceeds equal or exceed $50,000, (a) be applied to the redemption or purchase of Bonds or (b) be deposited in irrevocable trust for the payment of Bonds in the manner set forth in Section 9.01, provided the Issuer has received an opinion of Bond Counsel to the effect that such deposit shall not adversely affect the exclusion, if any, from gross income of interest on the Bonds for purposes of federal income taxation, or (2) if such proceeds are less than $50,000, be deposited in the Revenue Fund.

2.6 RATE COMPARISON

The County annually compares rates and rate structure for neighboring utility systems that provide residential services. The most recent comparison, completed in November 2024, is shown in Table 2-2. The results assume that the water service consists of delivering 4,000 gallons of water per month through a standard (3/4-inch) meter and that sewer service flows correspond with 4,000 gallons of water per month.

Table 2-2 Rate Comparison

Utility Systems	Water Charge ($)	Wastewater Charge ($)	Combined Charges ($)
CCU:			
Rates as of November 2024	55.92	77.38	125.47
Other Neighboring Utilities:			
Charlotte Harbor Water Association	57.70	N/A	N/A
City of Naples (inside City)	17.02	44.7	61.72
City of Bradenton	29.18	36.86	66.04
City of Punta Gorda (inside City)	33.87	40.64	74.51
Manatee County	23.10	53.17	76.27
Lee County	25.91	51.13	77.04
Pinellas County	25.02	52.29	77.31
Bonita Springs Utility	29.81	48.11	77.92
Hillsborough County	34.75	46.32	81.07
Englewood Water District	32.77	48.80	81.57
City of Arcadia (inside City)	38.44	43.57	82.01
City of Clearwater	38.23	50.28	88.51
City of Punta Gorda (outside City)	42.33	50.80	93.13
City of Sarasota (inside City)	35.9	59.17	95.07
Sarasota County	33.58	69.04	102.62

Utility Systems	Water Charge ($)	Wastewater Charge ($)	Combined Charges ($)
City of Naples (outside City)	21.28	83.24	104.52
City of Marco Island - Marco Island	53.92	52.48	106.40
City of Cape Coral	38.23	68.37	106.60
Desoto County	59.23	49.30	108.53
Okeechobee Utility Authority	47.31	61.69	109.00
City of Fort Myers (inside City)	32.15	80.16	112.31
St. Lucie County	52.15	61.29	113.44
FGUA – Lehigh Acres	44.29	71.71	116.00
City of Fort Myers (outside City)	40.13	76.36	116.49
City of Sarasota (outside City)	44.33	72.25	116.58
FGUA – Lake Fairways and Pine Lakes	56.50	61.27	117.77
Collier County	46.36	71.76	118.12
FGUA – North Fort Myers	56.50	62.18	118.68
City of Venice	58.08	62.07	120.15
City of North Port (inside City)	50.99	71.24	122.23
City of Arcadia (outside City)	57.64	65.38	123.02
City of Marco Island - Marco Shores	48.52	77.38	125.90
Gasparilla Island Water Association	45.70	81.76	127.46
City of North Port (outside City)	58.63	81.91	140.54

2.7 Large Water Users

Table 2-3 and Table 2-4 list the 10 largest water consumers in FY 2024 for the Port Charlotte and Burnt Store PWSs, respectively. The values presented are totals for FY 2024.

Table 2-3 CCU Port Charlotte PWS Large Water Users

Water Customer	Total Water Purchased (thousands of gallons)
Riverwood Development, Inc.	60,481
Gasparilla Island Water Association	38,683
Shorepoint Health – Port Charlotte	33,425
HCA Florida Fawcett Hospital	29,111
El Jobean Water Association	25,382
Charlotte County School Board	22,264
CCU Lift/Vacuum Station	20,782
Encore Super Park-Port Charlotte	17,065
Little Gasparilla Water Utility, Inc.	14,267
Dr Horton Inc	13,886
Total 10 Largest Users	**275,346**

Table 2-4 CCU Burnt Store PWS Large Water Users

Water Customer	Total Water Purchased (thousands of gallons)
Invitation Homes 7, LP	12,622
SHM Burnt Store, LLC	4,530
The City of Cape Coral	3,994
IH6 Property Florida L.P.	3,570
Florida Design Communities	3,338
Lennar Homes, LLC	3,265
Dr Horton Inc	3,172
Grande Isle Towers I & II Condo Association Inc.	2,910
Grande Isle Towers III & IV Condo Association Inc.	2,903
Heritage Landing Master	2,730
Total 10 Largest Users	**43,034**

2.8 Planning Recommendations

Table 2-5 through Table 2-8 summarize the general planning recommendations for CCU's continued operations of the utilities systems.

Table 2-5 Administration Planning Recommendations

Recommendation:	Continue CCU's vision to ensure safe, reliable utility services at fair and reasonable rates.
Recommendation:	Continue developing and updating standards for water and sewer construction to ensure the most effective use of CIP funds.
Recommendation:	Continue developing options for water, sewer, and reclaimed water service in the County to meet the growing demand for municipal utility services.
Recommendation:	Continue developing CCU's Information System functions to update/ replace software and computer equipment to increase operating efficiencies and cost savings.
Recommendation:	Continue to explore regional solutions to water and wastewater service needs for the mutual benefit of Charlotte County and the adjoining counties and cities.
Recommendation:	Continue to document planned and proposed developments to assist with future planning.
Recommendation:	Continue to pursue FEMA funding for rehabilitating utility assets damaged by Hurricane Ian.
Recommendation:	Continue to evaluate the feasibility of rehabilitating the damaged Administration Building.
Recommendation:	Develop/update the Business Continuity Plan.[1]
Recommendation:	Become a member of an intrastate mutual aid and assistance program.[1]
Recommendation:	Remove USB port slots from selected desktops to limit the vulnerability of the SCADA system.[1]

Recommendation:	Develop a cybersecurity culture through training and internal programs.[1]
Recommendation:	Require equipment vendors for HMI, field controllers, field devices, etc., and software suppliers for data management to provide information on cybersecurity and updates for their products.[1]
Recommendation:	Weigh the options for automation in future designs to consider cyber threats and include manual components where applicable to increase infrastructure resilience.[1]
Recommendation:	Continue to develop and host public education events to educate the community on the benefits water of reclaimed water.

[1] Recommendation from the RRA Report (March 2020).

Table 2-6 Water System Planning Recommendations

Recommendation:	Continue to update the water system hydraulic computer models and use them as planning tools for future water system improvements.
Recommendation:	Continue the AMI Water Meter Replacement Program.
Recommendation:	Continue to integrate acquired utilities into the overall CCU water system to maximize reliability and reduce costs to CCU customers.
Recommendation:	Continue to make improvements at the water storage tank/booster pumping station facilities to increase reliability and control of the pumps to improve water distribution to customers.
Recommendation:	Continue to develop and update water quality models for each distribution system for use in ongoing development reviews.
Recommendation:	Develop a systemwide hydrant flushing program.
Recommendation:	Develop a program to identify and track asbestos and lead pipe.
Recommendation:	Develop a systemwide valve exercise program.
Recommendation:	Develop a best management practice plan to standardize pump and motor sizing across CCU pumping facilities to better facilitate maintenance and replacement of equipment.
Recommendation:	Develop an equipment calibration program for tracking and calibrating water system analyzers, flow meters, and applicable devices.

Table 2-7 Wastewater System Planning Recommendations

Recommendation:	Use the wastewater lift station and force the main computer model to assess the need for upgrades to the system based on expected demand for services.
Recommendation:	Continue to televise and smoke test gravity sewers to locate source(s) of inflow and infiltration (I/I). Repair gravity sewers and manholes as required to mitigate I/I and regain sewer and WRF capacity.
Recommendation:	Continue construction and plan for the next phases of sewer expansion in the Port Charlotte area in accordance with the 2017 Sewer Master Plan and 2024 Sewer Master Plan Update.
Recommendation:	Evaluate the need for technical support from the software company or from the County's IT group with hours set aside to work exclusively on data transfer and report set-up and implementation to expand and optimize the LIMS capabilities.

Recommendation:	Evaluate cost-effective disposal alternatives for dewatered biosolids other than transporting to Synagro and the landfill as part of the plant upgrade.
Recommendation:	Develop an equipment calibration program for tracking and calibrating wastewater system analyzers, flow meters, and applicable devices.
Recommendation:	Complete recommendations from CCU's CMOM program.
Recommendation:	Continue to evaluate system capacity and impacts of I/I using recommended tools from the CAAP Framework Development and Flow Monitoring Program.

Table 2-8 Reclaimed Water System Planning Recommendations

Recommendation:	Seek ways to increase the use of reclaimed water currently produced by CCU WRFs, including improving reliability and access for customers.
Recommendation:	Evaluate improvements of pumping and transmission capacity to convey excess reclaimed water supply from Mid County to West County as recommended in the Reclaimed Water Master Plan.
Recommendation:	Maintain updated hydraulic models for the MRS and Burnt Store system to predict the impact of future demand on the reclaimed water transmission system.
Recommendation:	Develop and complete a community survey to better determine potential reclaimed water customers. Results of the study can be used to determine economic feasibility of water delivery.
Recommendation:	Continue to develop and host public education events to educate the community on the benefits of reclaimed water.
Recommendation:	Evaluate opportunities to expand the reclaimed water transmission systems with assistance from new developers for areas with limited-to-no reclaimed water service but multiple new large developments.
Recommendation:	Complete a potable reuse feasibility study.
Recommendation:	Develop an equipment calibration program for tracking and calibrating reclaimed water system analyzers, flow meters, and applicable devices.

3 WATER TREATMENT PLANTS

This Chapter presents an overview of CCU's available water supplies. CCU has two independent PWSs with independent water supply sources (as shown in Figure 3-1) the Port Charlotte PWS serves Mid and West Counties, and the Burnt Store PWS serves South County. The Port Charlotte PWS purchases water from the Peace River Manasota Regional Water Supply Authority. The Burnt Store PWS is supplied by groundwater treated at the CCU-owned Burnt Store RO WTP. Figure 3-1 shows CCU's water service areas, water supply interconnects, the Burnt Store RO WTP, and more.

3.1 PEACE RIVER MANASOTA REGIONAL WATER SUPPLY FACILITY

The Authority was created in 1982 with the goal of creating a safe, reliable, and sustainable, water supply system for the southwest Florida region. The current regional members include Charlotte, DeSoto, Manatee, Hardee, and Sarasota Counties, and the City of North Port. The Authority provides treated water to the members through a Master Water Supply Contract.

The Authority supplies the Port Charlotte PWS through the Authority's Regional Transmission System pipelines at several water delivery point, or interconnects. The Authority's primary water supply is surface water from the Peace River treated at the PRF. Charlotte County previously owned this surface water treatment facility but sold it to the Authority in 1991; thus, it was dubbed the "1991 Facility." The PRF treats source water from the Peace River via conventional surface water treatment consisting of coagulation, flocculation, sedimentation, filtration, and disinfection. The Authority uses this five-step process to remove organics, color, and turbidity while inactivating pathogens that may be present in the source water. The Authority is planning to expand and supplement its water supply and treatment operations with an expansion to the PRF and development of new water supply sources (i.e., groundwater).

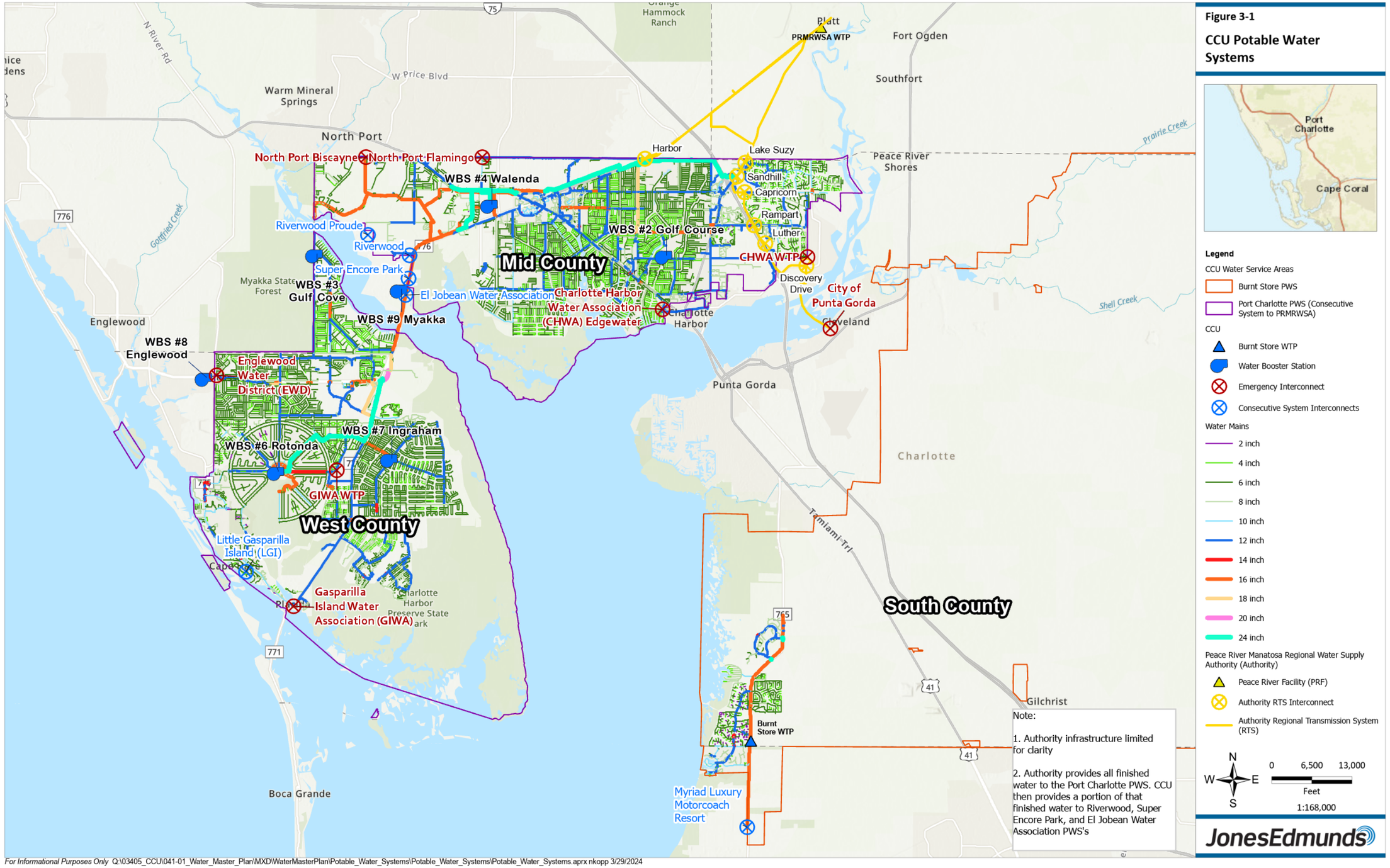
The PRF has a maximum capacity of 51.0 MGD, and the current water supply available for allocating to Authority members is capped at 34.7 MGD annual average daily flow (AADF) until a plant expansion occurs. Charlotte County's contracted water supply allocation from the Authority is 16.1 MGD AADF, 19.320 MGD for the peak monthly average day, and 22.54 MGD for the maximum day. In FY 2024, the County financially committed to an 18-MGD expansion to the PRF from which they will receive 3.0 MGD AADF from the Authority that will be partially available in 2030 and fully available in 2032.

In FY 2024, the Authority supplied CCU with approximately 4,683 MG, or 12.8 MGD AADF.

3.2 BURNT STORE RO WTP

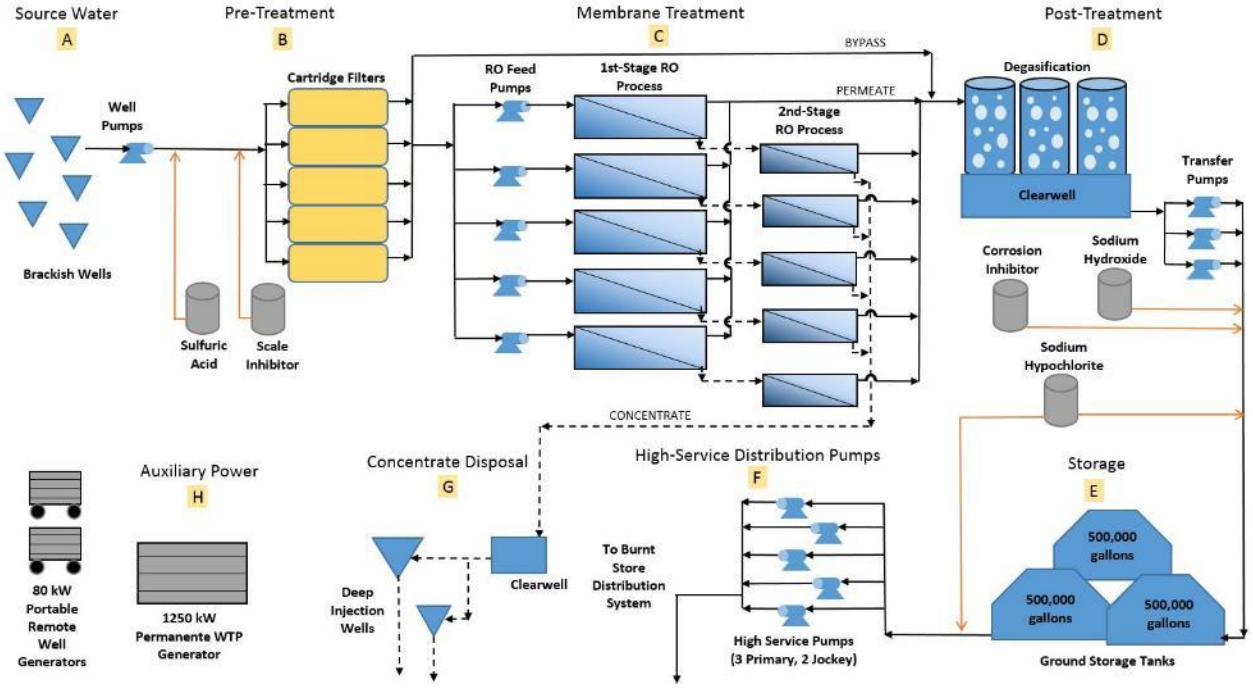
The Burnt Store PWS is served by the Burnt Store RO WTP (PWS ID6080318) at 17430 Burnt Store Road in Punta Gorda. CCU owns and operates the WTP, which has a permitted treatment capacity of 3.61 MGD. Figure 3-2 shows the Burnt Store RO WTP process flow diagram, which is described in this section.

Figure 3-1 Charlotte County Water Service Areas



For Informational Purposes Only Q:\03405_CCU\041-01_Water_Master_Plan\MXD\WaterMasterPlan\Potable_Water_Systems\Potable_Water_Systems\Potable_Water_Systems.aprx nkopp 3/29/2024

Figure 3-2 Burnt Store RO WTP Process Flow Diagram



The Burnt Store RO WTP draws groundwater from seven production wells. Raw water is dosed with a pH adjuster (sulfuric acid) and a phosphorus-free scale inhibitor (A-111 Plus by American Water Chemicals) to prevent membrane scaling during the RO treatment process. Downstream of the chemical injection, the pH-adjusted raw water passes through cartridge filters to remove common small particulates present in groundwater. This improves the water quality of the RO feed water and prolongs the life of the downstream membranes. After the cartridge filters, high-pressure RO feed pumps pump the RO feed water into the RO treatment trains.

The RO process separates dissolved solids from the water by forcing the water through a semi-permeable membrane. The process requires a pressure of 120 to 160 pounds per square inch (psi) and results in two streams. The RO membranes produce a treated water (permeate) and a byproduct waste stream (concentrate). The permeate is then blended with approximately 10-percent raw water for stabilization before post-treatment. The Burnt Store RO WTP uses a two-stage process to increase the water recovery of the system by processing the concentrate of the first stage through a second stage of membranes. The remaining concentrate is disposed of via on-site deep well injection.

During post-treatment, the permeate is conveyed through packed tower degasifiers for hydrogen sulfide removal. After degasification, sodium hydroxide is added for pH adjustment, followed by a zinc-orthophosphate-based corrosion inhibitor (A-731 by American Water Chemicals) and sodium hypochlorite for disinfection. The finished water is typically stored in GSTs before refinement of the disinfectant residual and distribution via high-service pumps (HSPs).

The Burnt Store RO WTP process consists of the following components:

- A) Source Water – Burnt Store Wellfield
  - Seven Groundwater Wells with Submersible Pumps
  - Twelve Monitoring Wells
- B) Pre-Treatment Process
  - Sulfuric Acid Chemical Feed System
  - Phosphorus-Free Scale Inhibitor Chemical Feed System
  - Five Cartridge Filter Vessels
- C) Membrane Treatment Process
  - Five RO High-Pressure Feed Pumps
  - Two 2-Stage RO Trains (500,000-gpd capacity each)
  - Three 2-Stage RO Trains (750,000-gpd capacity each)
- D) Post-Treatment Process
  - Control Valve for Blended Raw Water
  - Three Packed Tower Degasification Units
  - Three Transfer Pumps Sodium Hypochlorite Chemical Feed System
  - Sodium Hydroxide Chemical Feed System
  - Zinc-Orthophosphate-Based
  - Corrosion Inhibitor Chemical Feed System

- E) Storage
  - Three 500,000-gallon Finished-Water GSTs
- F) Distribution HSPs
  - Four 125-horsepower (HP) HSPs (1,400 gpm)
  - Two 25-HP Jockey Pumps
- G) Concentrate Disposal
  - Two Deep Injection Wells with a Total Capacity of 3.44 MGD
  - One Dual-Level Deep Monitoring Well
- H) Auxiliary Power
  - One 1,250-kilowatt (kW) Generator (serving the original RO Process Building, RO Process Building, Operations Building, and three on-site groundwater wells)
  - Two 80-kW Portable Generators (serving four remote groundwater wells)

3.2.1 REGULATORY CONSIDERATIONS

The Burnt Store RO WTP is a Category II, Plant Class B, community PWS. The permit schedule includes:

- SWFWMD Water Use Permit (WUP) issued on September 25, 2013, and expires on September 25, 2033.
- FDEP – Deep Injection Well IW-1 (Underground Injection Control [UIC] Permit No.: 0271367-009-UO/1X) is currently in good standing with FDEP. A draft permit was issued by FDEP on February 3, 2025.
- FDEP – Deep Injection Well IW-2 (UIC Permit No.: 0271367-008-UO/1X) was issued on August 18, 2022, and expires August 18, 2027.

3.2.1.1 Water-Quality Monitoring

CCU routinely and continuously monitors the quality of the raw water and finished water produced at the Burnt Store RO WTP. Monitoring wells are sampled quarterly, and the samples are sent to the CCU laboratory. Water-quality data from the production and monitoring wells are reported to SWFWMD and digitally by CCU. The water-quality parameters are also used to assess the performance of the membranes and other process equipment and determine maintenance needs.

Table 3-1 shows the Burnt Store RO WTP finished water quality for FY 2024 on an average monthly basis. Additional water quality data are found in the CCRs discussed in Chapter 4.

Table 3-1 Burnt Store RO WTP Finished Water Quality for FY 2024

Month	pH (s.u.)*	TDS (mg/L)*	Cond. (µS/cm)*	Free Chlorine (mg/L)*	Alkalinity (mg/L)*	Total Hardness (mg/L)*	Remote Sample pH (s.u.)	Remote Sample Free Chlorine (mg/L)
Oct-23	7.65	287	616	1.6	22	84	7.61	1.2
Nov-23	7.67	279	603	1.4	23	81	7.69	1.1
Dec-23	7.81	277	598	1.3	24	95	7.83	1.1
Jan-24	7.78	279	601	1.3	24	91	7.83	1.1
Feb-24	7.88	275	596	1.5	25	87	7.88	1.3
Mar-24	7.86	272	592	1.5	22	92	7.88	1.4
Apr-24	7.69	274	595	1.6	26	89	7.70	1.4
May-24	7.72	280	606	1.5	21	96	7.70	1.3
Jun-24	7.8	284	613	1.5	25	95	7.72	1.3
Jul-24	7.73	284	613	1.4	25	96	7.72	1.2
Aug-24	7.73	289	621	1.4	24	84	7.77	1.2
Sep-24	7.79	289	618	1.4	24	96	7.77	1.2
Annual Avg.	**7.76**	**281**	**606**	**1.5**	**24**	**91**	**7.76**	**1.2**

Notes: mg/L = milligrams per liter; NA = Not Available; TDS = Total Dissolved Solids; s.u. = standard units; µS/cm = micro-Siemens per centimeter.

* GST Sample Location.

3.2.1.2 Production Wells and Treatment Capacity

Table 3-2 shows the permitted wellfield information as noted in the active SWFWMD WUP No. 3522.013, including well capacities. Permitted well production is based on the currently active wells RO-7, RO-8, RO-9, RO-11, RO-12, RO-16, and the newly rehabilitated RO-15, is approximately 1.86 MGD AADF and 2.45 MGD peak monthly flow (PMF). Note the wellfield is expandable to approximately 3.17 MGD AADF and 4.12 MGD PMF under the existing permit.

Table 3-2 Burnt Store RO WTP Current and Future Production Wells

Well ID	Diameter (inch)	Depth Total/Cased (ft-bls)	Permit Limit, Average (gpd)	Permit Limit, Peak Month (gpd)
RO-7	8	596/300	200,000	272,000
RO-8	8	595/304	200,000	272,000
RO-9	8	602/550	200,000	272,000
RO-11	12	650/526	367,500	471,700
RO-12	12	470/412	367,500	471,700
RO-14*	12	650/300	327,400	417,300
RO-15	12	909/800	200,000	272,000
RO-16	12	611/320	327,400	417,400
RO-17*	12	650/450	327,500	417,300
RO-18*	12	650/450	327,400	417,300
RO-19*	12	650/450	327,400	417,300
		Total	**3,172,000**	**4,118,000**

Notes: * Future wells; bls = below land surface.

Table 3-3 summarizes the total water flows were processed in FY 2024. As of September, daily water production at the Burnt Store RO WTP was operating at approximately 28 percent of its design capacity.

Table 3-3 Burnt Store RO WTP – Total Water Balance FY 2024

Month	Raw Water from Wells (MG)	Raw Water Bypass (MG)	Total Water Produced (MG)	Total Concentrate (MG)	Finished Water to Distribution (MG)
Oct-23	26.67	2.34	21.17	5.60	20.46
Nov-23	30.55	2.68	24.09	6.31	24.01
Dec-23	32.40	2.84	26.22	6.64	24.52
Jan-24	31.48	2.81	25.36	6.27	24.63
Feb-24	33.43	2.94	26.76	6.84	25.89
Mar-24	35.96	3.19	28.69	7.50	27.67
Apr-24	33.64	2.97	26.90	6.92	26.13
May-24	35.24	3.08	28.21	7.16	27.34
Jun-24	28.56	2.51	22.97	5.64	22.14
Jul-24	25.20	2.27	20.33	4.98	19.58
Aug-24	24.21	2.19	19.55	4.79	19.76
Sep-24	23.29	2.11	18.74	4.71	18.03
Total	**360.6**	**57.9**	**289.0**	**73.4**	**280.2**
AADF	**1.0**	**0.09**	**0.80**	**0.20**	**0.74**

3.2.2 Treatment Components and Condition Assessments

Jones Edmunds personnel performed an on-site review of the WTP on January 28, 2025, and toured the facility with the Chief Operator to review plant conditions and operations. The WTP shares a secure site with the Burnt Store WRF.

The Process Building, Storage Room, Motor Control Center (MCC) Building, and Operations/ Administration Building (shared with the Burnt Store WRF) appeared to be in good condition. Non-bulk chemicals (sulfuric acid, scale inhibitor, and corrosion inhibitor) are stored in single-walled 55-gallon chemical drums. For these storage drums, FDEP Rule 62-762.501, Florida Administrative Code (FAC), details that all storage tanks shall have secondary containment requirements. Three SCADA computer stations use on-site computer graphic monitoring screens to manage and monitor the various systems within the WTP. The site contains a small Operations testing laboratory for monitoring water-quality parameters such as conductivity, pH, and temperature.

Overall, the WTP site is well maintained. The staff does an excellent job of keeping the interior of the buildings neat and clean. Valves throughout the WTP are typically exercised at least once per year. Process piping is painted and clearly marked indicating the raw, feed, permeate, concentrate, and finished water streams. The stainless-steel pipe and equipment are cleaned frequently. Compliance meters are calibrated every 6 months, and calibration tags appeared to be up-to-date. Operations noted the exhaust fans in the process building should be replaced because they are near the end of their operational life. Bulk-storage chemical tanks and secondary containment are in a covered area attached to the east end of the WTP process building. The chemical tanks and piping are painted and well-marked. Eyewash and shower stations are in the bulk storage area, and the chemical feed area appeared to be in good condition.

The chemical feed pump area requires general routine maintenance, such as daily inspection for leaks and pump functionality. CCU staff noted an ongoing effort to replace the existing aging Jesco pumps with new Prominent pumps. The chemical feed systems are discussed in more detail in the following sections.

The required documents maintained on site include:

- Monthly Operating Reports
- Operating Permits
- Operators' Licenses
- Facility Logbook
- Facility Operating Plans
- Well Laboratory Reports
- Sampling Plans
- Laboratory Results
- Flow Meter Calibrations
- Chlorine and pH Meter Calibrations
- Chain-of-Custody Forms
- Facility O&M Manuals
- Maintenance Records
- Facility Record Drawings
- Daily Temperature Logs
- Spill Protocol and Record of Spills

3.2.2.1 Burnt Store Wellfield

All production wells are operated using submersible well pumps. Flow and pressure for each of the wells are monitored through SCADA. In FY 2022, new air-release valves (ARVs) were installed at each well. Jones Edmunds observed:

- Well No. 7 is an 8-inch-diameter well on site adjacent to the WTP's back-up generator. This is the oldest well in operation at the WTP and nearing end of useful life. Significant corrosion and deterioration was observed on the knife gate valve and gaskets. The instrumentation wiring is excessive in length and creating a tripping hazard.
- Well No. 8 is an 8-inch-diameter on-site well near the WTP entrance. The well pump was repaired in FY 2023 and is operational. However, the well is only pumping at a rate of approximately 420 gpm instead of the expected 650 gpm. Minor rust was observed on the pressure transducer saddle.

- Well No. 9 is an 8-inch-diameter on-site well near the GSTs. Minor rust was observed on the wellhead and butterfly valve operator, but overall, the well is in good condition.
- Well No. 11 is a 12-inch-diameter off-site well on Burnt Store Road. Minor rust was observed on the wellhead stainless-steel pipe.
- Well No. 12 is a 12-inch-diameter off-site well on Burnt Store Road. A small burrow was found under the concrete; the County should be conscious of environmental considerations for certain animal species before performing any maintenance activities. Minor rust was observed on the stainless-steel wellhead pipe, but the pump and motor are in excellent condition. Operations noted that the butterfly valve at this well needs to be replaced.
- Well No. 15 is at the rear of the site. A permit modification application for the reactivation of this well was submitted and became effective as of February 27, 2024.
- Well No. 16 is a 12-inch-diameter well on the east side of the site. The well pump is in excellent condition.

3.2.2.2 Pre-Treatment Components

Sulfuric Acid Addition

Sulfuric acid is used to decrease the pH of the raw water and prevent calcium carbonate precipitation. The 1,000-gallon bulk sulfuric acid storage tank is outside in the covered bulk storage area. The 100-gallon sulfuric acid storage tank is indoors near the chemical feed skid. Jones Edmunds observed:

- The sulfuric acid skid contains two chemical dosing pumps that are being replaced.

Scale Inhibitor Addition

Currently CCU uses A-111 Plus by American Water Chemicals as scale inhibitor to prevent precipitation and scaling of carbonate, sulfate, silica, and iron onto the RO membrane surfaces. The scale inhibitor is stored in a 75-gallon tank near the scale inhibitor feed skid in the process room. Jones Edmunds observed:

- The scale inhibitor skid contains two chemical dosing pumps for redundancy in functioning as intended.
- The scale inhibitor system appears to be in good condition.

Cartridge Filtration

The facility operates five stainless-steel vessels containing 40 1-micron cartridge filters. Pressure is monitored across the vessels to determine when filters need to be replaced, which is typically completed two times per year. Jones Edmunds observed:

- The cartridge filters are closed equipment that appeared to be in working condition; the inside components were not visible for inspection.
- The staff reported no irregularities.
- Gauges and instrumentation are locally provided for monitoring of pretreatment systems.

3.2.2.3 Membrane Treatment Components

RO Feed Pumps

The Burnt Store RO WTP has five two-stage RO process trains, A through E. Trains A and B are served by two horizontal split-case pumps, and Trains C, D, and E are fed by vertical turbine pumps. At the time of the visit, Train B was out of service, but other trains and feed pumps appeared to be in good condition with no reported issues.

Membranes

Trains A and B are arranged in an 8:4 array – eight pressure vessels in the first stage and four pressure vessels in the second stage. Each pressure vessel contains seven RO membrane elements resulting in 84 per train, 168 total. These membrane elements are approximately 15 years old and show signs of minor membrane fouling.

Trains C, D, and E are arranged in a 14:6 array. Each pressure vessel contains seven RO membrane elements resulting in 140 per train, 420 total. The total number of membrane elements at the Burnt Store RO WTP is 588. The membrane elements in Trains C, D, and E are approximately 13 years old. New isolation valves were installed at each train in FY 2022. CCU is evaluating options for membrane rehabilitation or replacement including membrane autopsy studies.

- At the time of the visit, Train B was out of service due to a pressure break. CCU is working on repairing or replacing the train. CCU also indicated that Trains A and B will eventually be replaced by larger membranes to match Trains C, D, and E.
- The older train, A, is still producing good-quality permeate but operates at a higher pressure, indicating that fouling is occurring.
- Trains C, D, and E are in good working condition except for some leaks on the concentrate port seals on Trains C and D.

Membrane Cleaning System

A membrane cleaning system was originally installed with the plant's construction to maintain the life of the membranes, but the system has historically not been used. Despite this, the membranes are still meeting or exceeding their life expectancies.

3.2.2.4 Post-Treatment Components

Degasification and Clearwell

Hydrogen sulfide is removed from the RO permeate via packed-tower degasification. Three packed-tower degasification units with blowers are on top of the concrete clearwell and can be operated automatically or manually. The degasifier media was replaced in FY 2023. CCU should regularly exercise the isolation valves between the two clearwell tanks.

Degasified water is transferred from the clearwells to the GSTs by three horizontal centrifugal pumps. Analyzers inside the clearwell monitor water quality. The analyzers report the water quality data using VTScada, which can be monitored from the Operations Building or online. Instruments and chemical feed rates can be adjusted to obtain the proper water quality.

Jones Edmunds observed:

- All three pumps are operational, but the operator noted pumping difficulties against higher head. The pumps likely require service or replacement.
- The variable-frequency drives (VFDs) were replaced in FY 2023.
- Two in-line injection quills in the transfer pipe leading to the GSTs inject sodium hydroxide, corrosion inhibitor, and sodium hypochlorite.
- The analyzer panel and equipment are outdoors and have been damaged by UV. Recommended to extend the panel cover to better protect against UV and rain events.

Sodium Hydroxide

Sodium hydroxide (NaOH) is used to adjust the pH of the finished water before it is pumped into the distribution system. The NaOH system consists of a 1,100-gallon bulk storage tank, a chemical feed skid with two chemical feed pumps, and a 90-gallon chemical feed tank. Operators noted special provisions need to be made during extremely low temperatures (less than 45°F). Jones Edmunds observed:

- The system is in good condition overall, except that the chemical feed pumps will need to be replaced soon. Operators noted the existing pumps have difficulty pumping at lower day tank volumes. CCU is evaluating adding a pedestal to raise the day tank elevation, providing additional pumping head. Replacement with higher head pumps may also address this.

Corrosion Inhibitor

A zinc-orthophosphate-based corrosion inhibitor is used to inhibit the dissolving of copper, lead, and zinc in the distribution system. CCU uses A-731 by American Water Chemicals for the corrosion inhibitor. A 30-gallon tank and chemical feed pump are indoors near the HSPs and appear to function as intended.

Sodium Hypochlorite

The sodium hypochlorite system consists of two bulk storage tanks, one 200-gallon day tank, two chemical feed pumps, and two injection points. The two bulk storage tanks are outside the process room and hold 1,400 and 1,100 gallons. Sodium hypochlorite is primarily injected before water enters the storage tanks (pre-disinfection), although operators also have the capability of injecting after the GSTs (post-disinfection) as needed to meet disinfection compliance. Jones Edmunds observed:

- The sodium hypochlorite system appears to be in good operating condition.

3.2.2.5 Storage and Distribution HSPs

The Burnt Store RO WTP contains three 0.5-MG concrete GSTs with a combined storage capacity of 1.5 MG. Jones Edmunds observed:

- GSTs A and B were inspected by USG Water Solutions in FY 2023.
- GST C was inspected and repainted in FY 2023.
- No sedimentation or defects were found in the GSTs.

Finished water is pumped to the distribution system by four 125-HP HSPs (up to 1,400 gpm) and two 25-HP jockey pumps. Jones Edmunds observed:

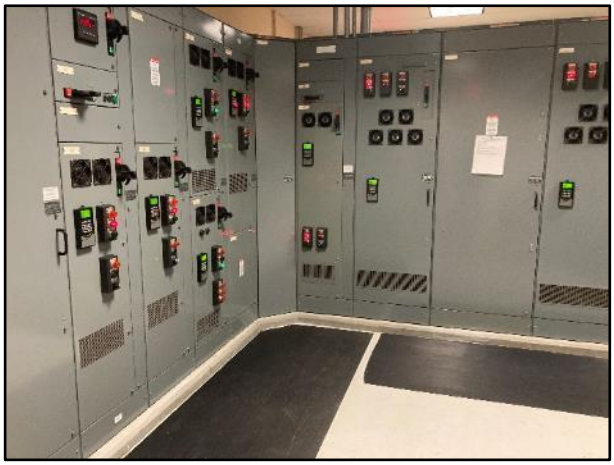
- The VFDs on the pumps provide a constant pressure of 65 psi at the beginning of the distribution system at the WTP regardless of the water use.
- The HSPs were operational and appeared to be in good condition.

3.2.2.6 Concentrate Disposal/Deep Injection Wells

Concentrate from the RO process is sent by residual pressure from the RO treatment trains and blended with reclaimed water from the Burnt Store WRF for disposal using deep injection wells IW-1 and IW-2. The wells are described in more detail in Chapter 6. Jones Edmunds observed:

- Both injection wells have flow meters and pressure gauges that can be monitored in the control room.
- Operators reported no issues with pumping operations at the time of visit.
- The exteriors of the well systems were being repainted during the site visit.

3.2.2.7 Electrical Components, Standby Power, and Circuitry



The main electrical components of this facility include the electrical components of the RO process buildings, one 1,250-kW standby generator, and two 80-kW portable generators. Jones Edmunds observed:

- The distribution transformer, which provides power to the site, appears to be in good condition with no obvious signs of significant concern.
- The incoming switchgear appears to be in good condition with minor issues.

Auxiliary Power

The WTP standby generator is operated for 4 hours under load twice per month. Maintenance is performed by a contractor. Jones Edmunds observed:

- The existing automatic transfer switch (ATS) has experienced repairs throughout its lifetime but is currently working and functional. CCU is storing a new ATS on site, which will be installed in the room north of the MCC room. Once the new ATS is installed, the existing ATS will be taken offline. The timeline for this work to be completed was noted as uncertain.
- The two generators historically attached to Wells No. 15 and 16 were converted to portable generators. They can now be used to power the pumps at wells No. 11, 12, 15, and 16 through permanently mounted generator connections at each well.

3.2.3 Operations

The facility is staffed 16 hours per day, 7 days per week. The Burnt Store RO WTP operators remotely monitor the pressures in the Burnt Store distribution system 24 hours per day. Alarms notify operators so that corrective action can be taken in a timely manner, if necessary.

The RO treatment trains are regularly alternated to reduce membrane fouling. The operator indicated that typical membrane operation alternates daily between (1) Trains A and B plus one additional train (C, D, or E) in service or (2) Trains C, D, and E in service.

Security camera display is provided at the Operations Building in a separate small electrical room rather than the operator office(s).

3.2.4 Maintenance

Routine maintenance is performed on a scheduled basis. Groundwater wells are visually inspected daily and well valves are exercised yearly. Rehabilitation of major pieces of equipment is completed according to the CIP that is revised yearly.

In-house maintenance personnel or outside contractors perform maintenance required to keep the WTP in compliance with regulations. Membrane performance is assessed by monitoring the pressure, recovery, and water quality of the system. Staff can monitor water

quality and pressure throughout the membrane process via SCADA interface on site or online. Minor leaks in the sample valves were observed at the sample sink, but the sink is still operational as intended. The treatment process requires continual maintenance of the chemical systems. The Chief Operator has established a daily chemical system inspection routine in which the inspection results are recorded in a log. Leaks or other malfunctions are addressed immediately or referred to the Chief Operator for maintenance.

As part of the daily inspection, the Operations staff calibrate the chemical feed pumps, examine the membrane process piping, visually check the union connections and other potential sources of leaks for each chemical storage and feed system, and tighten components as needed. The staff change the cartridge filters every 6 months or when the differential pressure across the vessel exceeds 50 psi. Membranes are cleaned or replaced as determined by continuous water-quality and hydraulic monitoring. GSTs are scheduled for cleaning and inspection every 5 years in accordance with FDEP Section 62.555.350(2), FAC.

3.2.5 Review of Previous Report Recommendations

Table 3-4 summarizes the recommendations and status from the 2023 Annual Report for the Burnt Store RO WTP.

Table 3-4 Burnt Store RO WTP 2023 Recommendations and Status

Recommendation:	Evaluate installing monitors in operators' offices in the Operations Building for improved security surveillance.
Progress:	Ongoing.
Recommendation:	Install additional permitted groundwater wells as needed to meet future demands as identified in the Potable Water Master Plan. CCU should initiate plans to install at least one new well.
Progress:	Ongoing. Babcock Ranch Wellfield is being evaluated as a potential future water supply for Burnt Store.
Recommendation:	Repair the security gate mechanism so that it can be opened and closed remotely.
Progress:	Completed.
Recommendation:	Continue to inspect and tighten the connections for the scale inhibitor, sodium hydroxide, sodium hypochlorite, and sulfuric acid pipes daily to prevent leakage.
Progress:	Ongoing.
Recommendation:	Continue to maintain and repair the membranes to extend life to the extent feasible.
Progress:	Ongoing.
Recommendation:	Continue to spray wash the concentrate disposal wetwell as needed.
Progress:	Completed on an as-needed basis.
Recommendation:	Complete recommendations from Risk and Resilience Assessment Report (2020).
Progress:	Ongoing.
Recommendation:	Complete evaluation to determine remaining membrane life for Trains A through E and develop a membrane replacement schedule to meet short- and long-term demands for the growing community.
Progress:	Completed.

Recommendation:	Continue to coordinate with the Authority to better determine available future capacity and reserve additional capacity, as needed, based on CCU's projected future flows.
Progress:	Ongoing.
Recommendation:	Replace the chemical feed pumps, as they are nearing the end of their service life.
Progress:	In progress.

4 WATER DISTRIBUTION SYSTEMS

This Chapter reviews the potable water distribution system infrastructure of the Port Charlotte and Burnt Store PWSs. Table 4-1 shows CCU's PWSs and the associated infrastructure. Jones Edmunds personnel evaluated the water distribution system components on January 26, 2025.

At the end of FY 2024, CCU had 67,677 customer accounts in the Port Charlotte PWS and 4,045 customer accounts in the Burnt Store PWS. Based on inventory data provided by the County when this report was prepared, the two systems contain approximately 1,522 miles of water mains ranging in size from 2 to 10 inches in diameter for the distribution mains and from 12 to 36 inches in diameter for the transmission mains, as well as approximately 5,300 fire hydrants.

The CCU water distribution system generally consists of the following major components:

- Authority water supply interconnects for delivery of water from the Authority's regional transmission system to CCU transmission mains.
- CCU transmission mains that convey water from the Authority's water supply interconnects to the distribution mains.
- Transmission mains in the Burnt Store PWS that transport water from the Burnt Store RO WTP to distribution mains in South County and north Lee County.
- Distribution mains that supply water from the transmission mains to customers.
- Fire protection assemblies and fire hydrants that may also be used to flush the distribution system for maintenance purposes.
- Isolation valves that allow the operators to shut off the flow in pipe sections for maintenance purposes.
- GSTs that provide storage for peak customer demand, firefighting, and periods when treatment plants are not producing water.
- Disinfection facilities to maintain appropriate disinfection levels in the distribution system for delivery to the consumer. The Port Charlotte PWS uses chloramine disinfection and must maintain minimum combined chlorine residual of 0.4 mg/L. The Burnt Store PWS uses chlorine disinfection and must maintain a free chlorine residual 0.2 mg/L.
- WBSs adjacent to GSTs and associated disinfection chemical feed facilities.
- A 24-inch check valve on the main supply line from the PRF to maintain system pressures and reserve water supply if the PRF is unable to supply water and pressure during emergencies.
- Interconnects with neighboring utilities for system redundancy and system flexibility.

4.1 PORT CHARLOTTE WATER DISTRIBUTION SYSTEM

The Port Charlotte PWS water is supplied to CCU through four Authority-owned regional transmission mains. The original pipeline is a 36-inch-diameter line supplemented by a 12-inch line. In September 2007, a 24-inch main became operational. In August 2012, a 42-inch main became operational. Based on existing CCU geographic information system (GIS) data at the time of this report, the Port Charlotte PWS consists of four aboveground, pre-stressed concrete GSTs with a total combined capacity of 10 MG, six WBSs, one chemical booster station, seven supply interconnects, nine emergency interconnects,

approximately 1,479 miles of water main pipes between 2 and 36 inches in diameter, and approximately 5,300 fire hydrants. The following sections describe the system interconnects and WBSs in Mid and West Charlotte County.

4.1.1 Authority Supply Interconnects

The Port Charlotte PWS contains supply interconnects used exclusively to receive Authority water supplies; several interconnects have been installed over the years, providing CCU with redundancy and system flexibility. As allowed by the Authority contract, CCU may re-sell Authority water supplies to adjacent utilities using available emergency interconnects described in Section 4.1.2. Table 4-1 lists the Charlotte County metered supply interconnects with neighboring entities. The supply interconnects are owned by the Authority and are reported to be in good condition by CCU staff.

Table 4-1 Charlotte County Metered Supply Interconnects

Entity	Name	Approximate Location	Size
Authority	Discovery Drive Meter Station	Discovery Drive	24-inch
Authority	Kings Highway Meter Station	173 Kings Highway	24-inch
Authority	Kings Highway Meter Station	173 Kings Highway	12-inch
Authority	Harbor Boulevard Interconnect	21453 Bachmann Boulevard	24-inch

4.1.1.1 Discovery Drive Meter Station

The Phase 1A Punta Gorda pipeline interconnect (Kings Highway/Shell Creek Loop) consists of over 12 miles of pipeline with a minimum design capacity of 6.0 MGD, aboveground storage, high-service pumping, disinfection facilities, and tie-in points with CCU. The geographical end points of the interconnect are the Authority's 24-inch Regional Transmission System (RTS) on Kings Highway at the Charlotte/DeSoto County line and the City of Punta Gorda's Shell Creek WTP on South Washington Loop Road in Charlotte County. The interconnect is on Discovery Drive, is owned and operated by the Authority, and is used as a master meter to track water delivered to CCU along I-75 interconnects.

4.1.1.2 Authority Supply Connections

The Authority supply connections are on the north and east edges of the Mid County distribution system and supply water to Mid and West County. The Kings Highway and Harbor Boulevard connections contain interconnect vaults and telemetry that are owned by the Authority but can be accessed by Charlotte County. The connections along I-75 (Rampart, Luther, and Sandhill) are buried and do not have flow monitoring at each location; instead, the flow is calculated from the flow meters on Kings Highway and the Punta Gorda Interconnect flow meter.

Additionally, CCU will be funding its contractual portion of the allocation of the new 42-inch-diameter transmission main from approximately the Harbor Boulevard connection to Gulf Cove WBS, along Hillsborough Boulevard, Chancellor Boulevard, and Campbell Street; the new transmission main will provide additional flow and pressure to Mid and West County and will include several new supply connections. The project is expected to be completed by FY 2025/2026.

4.1.2 Emergency Interconnects

As a further safeguard for uninterrupted water supplies to Charlotte County citizens, CCU has additional emergency interconnects with adjacent water distribution systems. These interconnects are manually operated, equipped with bi-directional flow meters, and connected to the County's advanced metering infrastructure (AMI) system. The County has two 6-inch interconnects with Charlotte Harbor Water Association (CHWA), one 16-inch interconnect and one 12-inch interconnect with the City of North Port PWS, two interconnects with the Gasparilla Island Water Association (GIWA), one interconnect with EWD, and one interconnect with Punta Gorda. Table 4-2 lists the County's emergency interconnects.

Table 4-2 Charlotte County Emergency Interconnects

Entity	Name	Approximate Location	Size
CHWA	CHWA WTP Interconnect	2515 Highlands Road	6-inch
CHWA	CHWA Interconnect	22234 Edgewater Drive	6-inch
City of North Port	Flamingo Boulevard Interconnect	W Hillsborough Boulevard	12-inch
City of North Port	Biscayne Drive Interconnect	17 Biscayne Drive	16-inch
GIWA	GIWA Interconnect	12595 Gasparilla Road	10-inch
GIWA	GIWA WTP Interconnect	5050 Linwood Road	6-inch
EWD	Englewood Interconnect	6369 Richledge Street	12-inch
Authority Phase IA Pipeline	Punta Gorda Interconnect	27589 Disston Avenue	24-inch

The emergency interconnects with CHWA, North Port, the Authority, and GIWA require little maintenance other than exercising valves.

4.1.3 Water Booster Stations

Booster stations are strategically located in the distribution system and typically adjacent to GSTs. The equipment at the booster stations is secured by chain-link fences with barbed-wire tops. The booster stations are used to increase the flow, pressure, and disinfectant concentrations throughout the system. The Hach 5500sc Ammonia Monochloramine analyzers have been replaced with Siemens Wallace & Tiernan DEPOLOX 3 Plus at all WBSs. The following sections describe the active WBS operations and their respective conditions.

4.1.3.1 Port Charlotte Golf Course – WBS #2

The Port Charlotte Golf Course Booster Station is at 22339 Gleneagle Terrace, Port Charlotte, Florida 33952. The station provides local storage, pressure, and disinfectant boosting capability for the Mid County service area east of Tamiami Trail. The station was built in 1966 and rehabilitated in 2011. The station contains a climate-controlled laboratory and electrical room, a ventilated pump and chemical feed room, and a 1-MG GST. The station is fenced and has one automatic access gate. The station contains two chemical-injection systems for sodium hypochlorite and ammonium sulfate addition. Each system contains three chemical feed pumps and two chemical storage tanks. The two 300-gallon ammonium sulfate storage tanks and two 900-gallon sodium hypochlorite tanks have the proper secondary containment and are under a covered shed adjacent to the pump room. CCU operates the station to maintain a 4.0-mg/L disinfectant residual. The station has a detached diesel generator for backup power supply.

The following O&M upgrades were made over the last 3 years:

- 2021 – Sealed the chemical injection piping wall connection.
- 2022 – Upgraded security.
- 2022 – Repaired/replaced the perimeter fence.
- 2023 – Added new labels to the chemical storage tanks and fill valves.
- 2023 – Inspected the GST.
- 2023 – Installed a roof ridge cap.

Condition Assessment

Jones Edmunds completed an on-site review of the WBS on January 27, 2025, and the information gathered at that time was used to update this section in accordance with the project scope. The station appears to be in good condition overall with updated equipment. The graveled areas around the station infrastructure are free from weeds, and the landscaping is well maintained. All tools and equipment are organized and stored properly inside the building. The HSPs are maintained and appear to be functioning properly. The ladder cage for the GST has been replaced by a ladder guard. The portion of the sodium hypochlorite dosing line after the chemical pumps and just outside the operation building is missing its outer secondary protective layer and should be repaired.

Additionally, a Jones Edmunds electrical engineer conducted an electrical equipment site visit assessment on February 28, 2024. The electrical engineer noted that lights for the covered storage area at the southwest corner are missing vapor-protection covers and are exposed to the environment. Operations staff also noted that when weekly maintenance and testing are performed (testing is performed for 1 hour) on the generator set and the VFDs have frequently faulted out due to over-voltage and have to be manually reset. The reason

for this issue is not known and will need to be investigated. The incoming switchgear and distribution transformer appear to be in good condition with no obvious signs of significant concern. The generator and enclosure are mounted outside on an elevated sub-base fuel tank. They appear to be in good condition.

The review of the WBS showed most systems appear to be in good condition and well maintained.

The following deficiencies were noted:

- The sodium hypochlorite dosing line near operations building does not have an outer protective layer.
- The flow meter screens are damaged from sunlight exposure.
- The hazard warning labels on the diesel fuel tank are torn and illegible.
- Lights for the covered storage area are missing vapor covers and are exposed to the environment.
- The VFDs frequently fault-out when maintenance is performed on the generator set.

4.1.3.2 Gulf Cove – WBS #3

The Gulf Cove Booster Station was built in 1980 and is at 12050 Van Lenten, Port Charlotte, Florida 33981. The station receives flow through an aging 12-inch ductile-iron pipe that spans under the Myakka River and feeds the 2-MG GST. The station has four HSPs, rated at 50, 60, 75, and 100 HP. The pumps and electrical components of the station are in a ventilated building. The station is fenced and contains two entrances with automatic gates.

The station contains two chemical injection systems for ammonium sulfate and sodium hypochlorite addition. Each skid has two chemical feed pumps for redundancy. The booster station has two 600-gallon sodium hypochlorite storage tanks and two 300-gallon ammonium sulfate storage tanks. Chemical skids and associated analyzers are in ventilated buildings, and the chemical storage tanks are outside under covered sheds. The sodium hypochlorite storage tanks are double walled, and the ammonium sulfate storage tanks contain secondary containment basins for safety.

Disinfectant residual is continuously monitored using an ammonia/monochloramine analyzer. CCU operates the station to maintain a 4.0-mg/L disinfectant residual. The booster station contains a diesel generator as a backup power supply.

The following O&M improvements were completed over the past 3 years:

- 2022 – Installed new fencing around the perimeter.
- 2022 – Inspected the GST and repaired minor wall leakage.
- 2022 – Installed new 15-gallon-per-hour (gph) Jesco DX50 sodium hypochlorite pumps.

- 2022 – Installed new light-emitting diode (LED) lighting in the pump and chemical storage tank rooms.
- 2022 – Replaced Pump No. 4 VFD and subsequently corrected VFD issues by installing higher-voltage fuses.
- 2022 – Replaced an existing chlorine chemical storage tank with a new tank.
- 2023 – Installed new conduit from the generator to the electrical building.
- 2023 – Installed new security cameras.
- 2023 – Replaced bearings and motor in HSP No. 1.
- 2023 – Replaced HSP No. 2.
- 2023 – Replaced sodium hypochlorite feed Pump No. 2.
- 2023 – Repaired roof damage from Hurricane Ian.
- 2023 – Replaced chemical level displays.
- 2024 – Replaced the emergency generator and fuel tank.
- 2024 – Replaced the Hach 5500 SC analyzer with Siemens Wallace & Tiernan DEPOLOX 3 Plus.

Condition Assessment

Jones Edmunds completed an on-site review of the WBS on January 28, 2025, and the information gathered at that time was used to update this section in accordance with the project scope. The station generally appears to be in good condition. Roads and landscaping are well maintained. Graveled areas around the facility infrastructure are free from weeds, and the grass is cut. The fence surrounding the perimeter was replaced in response to damage by Hurricane Ian. The indoor buildings are kept clean, and tools and equipment are organized and stored properly. The HSPs are well maintained and appear to be functioning properly, with Pump #2 having been replaced in FY 2023. At the time of the 2023 annual report visit, Operations staff was installing a new expansion joint and butterfly valve in-line with Pump No. 1. The Operations staff noted that the MCC section in the pump building will be walled off to separate the MCC and pumping rooms. Additionally, a small office in the center of the pump building will be removed with the new construction.

The incoming switchgear and distribution transformer appear in good condition with no obvious signs of significant concern. The incoming power company transformer shows signs of surficial rust. A new standby generator has been installed with a fuel tank sized to support two 150-HP pumps. The old generator and tank will be donated to Charlotte County Community Services. Generators are exercised weekly for 1 hour by CCU. In FY 2021, the Operations staff reported that several VFDs had failed due to power-quality issues. These issues were resolved in FY 2022 by replacing the fuses and drives with ones of higher voltage Overall, the electrical equipment is in good functioning condition based on information from the Operations staff. The following deficiencies were noted:

- The pipe connecting the GST to the pump station is constructed of formed concrete, which is not industry standard.
- The ammonia chemical feed room exhaust fan is severely corroded and will not function.
- Shingle loss on the pump building roof.
- Minor rust on the awning of the sodium hypochlorite bulk storage.
- Leaking check valve on the GST bypass that connects to the booster pumps.
- The conduit wires from the newly installed cameras are not fully enclosed.

- The copper chemical injection quill connections are corroded and should be replaced with Schedule 80 quill connections.
- The chemical feed room lacks secondary containment.

4.1.3.3 Walenda – WBS #4

The Walenda Booster Station is at 17177 Walenda Avenue, Port Charlotte, Florida 33953. The property contains potable water and reclaimed water infrastructure including reclaimed and potable water GSTs. The potable water GST has a capacity of 2 MG. The potable water station was built in 1994 and has two 100-HP and three 75-HP pumps. The larger pumps were replaced in 2010, and the smaller pumps were investigated as part of the Potable Water Master Plan. The pumps and electrical components are in a ventilated room. The laboratory and office are in a climate-controlled room. The station is fenced and has two entrances with automatic gates. The station contains two liquid-handling systems for sodium hypochlorite and ammonium sulfate injection. The sodium hypochlorite system contains two 1,000-gallon bulk storage tanks and a chemical injection skid. The ammonium sulfate system consists of two 300-gallon bulk storage tanks and a chemical skid. The chemical skids for sodium hypochlorite and ammonium sulfate each contain two chemical feed pumps and are in ventilated rooms. The bulk storage tanks are outside under covered sheds within secondary containment structures. CCU operates the station to maintain a 4.0-mg/L disinfectant residual using an ammonia/monochloramine analyzer and a total chlorine analyzer. A diesel generator in the pump room provides backup power to the station. The generator is exercised weekly.

The following O&M improvements were completed over the past 3 years:

- 2022 – Installed new 1-inch mesh security fence around perimeter of station.
- 2022 – Replaced the I/O card.
- 2023 – Replaced sodium hypochlorite Pump No. 2.
- 2023 – Installed a new electrical box.
- 2023 – Replaced the fuel injector and injection pump on the generator.
- 2023 – Replaced the chemical level-indicator display on sodium hypochlorite bulk storage tank No. 2.
- 2023 – Replaced the soffit on the pump building.
- 2024 – Replaced the Hach 5500 SC analyzer with Siemens Wallace & Tiernan DEPOLOX 3 Plus.

Condition Assessment

Jones Edmunds completed an on-site review of the WBS on January 27, 2025, and the information gathered at that time was used to update this section in accordance with the project scope. The general condition of the station appears to be good with no obvious signs of significant concern. The access roads outside the facility are aging and need to be repaved but appear to be in fair condition inside the property. Graveled areas around the station infrastructure are free from weeds, and landscaping is well maintained. A new security fence was installed in FY 2023 around the site perimeter. The building interiors are kept clean, and tools and equipment are organized and stored properly. The HSPs are well maintained and appear to be functioning properly.

The incoming switchgear and distribution transformer appear in good condition with no obvious signs of significant concern. CCU staff reported that the existing on-site standby generating system is slightly undersized for a full load of the facility; a new generating system has been ordered and will be installed to meet the required fuel and load capacities. The generator is inside the building that also contains the electrical switchgear. Operations staff stated that the current generator and fuel tank are planned to be removed with the installation of the new generator. Once the old generator is removed, the MCC area will be walled off to create a new dedicated MCC room. Overall, the electrical equipment appears to be in good functioning condition with no significant signs of concern based on information from the Operations staff.

The following deficiencies were noted:

- The tank inspection revealed an issue in the tank bonding that will require multi-layer stripping before the tank can be repainted.
- CCU Operations staff confirmed that the generator is unable to accommodate the existing loads of the facility, which is a significant concern and relates to the operational security of the facility. Additionally, the generator is inside the building that also contains the electrical switchgear; this raises concerns regarding maintenance personnel being properly notified of hazardous conditions that may exist during maintenance operations including fuels present, elevated noise levels, and potentially excessive heat. Excess heat may also be detrimental to the VFDs in the building since these devices are typically temperature sensitive. Staff indicated that the fuel system for the generator is sufficiently sized and functioning properly to handle the current loading.
- The chemical injection skid-containment areas appeared to feature open-floor sumps filled with rocks. Staff indicated that the floor sumps were abandoned water meter boxes. To comply with regulations, the floor sumps should be properly surfaced and/or sealed.
- The awning cover and support brackets for the sodium hypochlorite bulk storage are rusted and need replacement.
- The discharge gate valve on Pump No. 3 has a leak.
- The discharge pipe vault for the HSPs needs to be drained of water.

4.1.3.4 Rotonda – WBS #6

The Rotonda Booster Station is at 46 Parade Circle, Rotonda, Florida 33947. Built in 1973, the station has two 100-HP pumps, two 60-HP pumps, and a 5-MG GST. The pumps and electrical components of the station are in a ventilated building. The station also contains a separate climate-controlled building with an office and laboratory. The station is fenced and has one gated entrance.

The station has two chemical feed systems for injecting ammonium sulfate and sodium hypochlorite. The ammonium sulfate skids are in a ventilated shed, and each skid contains two chemical feed pumps for injection before and after the GST. The sodium hypochlorite skids are in a chemical room attached to the main pumping room, and each skid contains two chemical feed pumps for injection before and after the GST. Ammonium sulfate is stored in two 300-gallon bulk storage tanks, and sodium hypochlorite is in two 1,000-gallon bulk storage tanks. The chemical storage tanks are housed within a covered structure with secondary containment chambers for safety.

Disinfectant residuals are continuously monitored by an ammonia/monochloramine analyzer. CCU operates the station to maintain a 4.0-mg/L disinfectant residual. A diesel generator is available on site to provide backup power to the station. The generator is tested weekly.

The following O&M improvements were completed over the past 3 years:

- 2022 – Repainted aboveground piping.
- 2022 – Installed new lighting.
- 2022 – Installed new fencing around the perimeter.
- 2022 – Installed new rotating assembly into Pump No. 1.
- 2022 – Power-washed the GST.
- 2022 – Repainted the influent GST piping.
- 2022 – Replaced the generator battery.
- 2023 – Installed a new exhaust fan.
- 2023 – Installed new LED lighting in the HSP room.
- 2023 – Installed a new rotating assembly and replaced the suction valve on HSP No. 2.
- 2023 – Replaced sodium hypochlorite feed Pump No. 1.
- 2023 – Repaired the generator stairs.
- 2023 – Installed a new concrete pad and shed.
- 2023 – Replaced the bleach tank.
- 2023 – Installed a new breaker and PLC uninterruptable power supply.
- 2023 – Repaired the perimeter fence.

- 2024 – Installed new a canopy for the ammonium sulfate and sodium hypochlorite bulk storages.
- 2024 – Replaced Hach 5500 SC analyzer with Siemens Wallace & Tiernan DEPOLOX 3 Plus.

Condition Assessment

The station appears to be in good condition. Roads and landscaping appear to be in good condition. Graveled areas around the facility infrastructure are free from weeds. The building interiors are kept clean, and tools and equipment are organized and stored properly. The motor of Pump No. 4 has been refurbished and is ready to be installed.

Interviews with operators indicate that the valves in and out of the GST are exercised regularly. Hurricane Milton caused the mobile office trailer to tip over but was turned right-side up and was back to regular use at the time of the visit.

The incoming switchgear and distribution transformer appear to be in fair to poor condition. Equipment was identified as possibly being at the end of its service life because of the age. CCU is currently involved in a pumping and electrical improvements project for the WBS, which will replace existing electrical equipment. The CIP includes a project to replace all main switchgear in this facility.

Additionally, a Jones Edmunds electrical engineer conducted an electrical equipment site assessment on February 11, 2025. The Operations staff pointed out that the generator plug receptacle does not match their standards and requires an adapter. Operations staff also removed the air-conditioning units from the three VFD cabinets and commented that issues arise with overheating if the drive is continuously in use. Staff pointed out that of the six separate MOVs (Metal Oxide Varistor), two of them often have problems closing and often trip out the motor operators. Also, the flex cords on the MOVs have code violations because they are unsupported at 6 feet in length, and the metallic flex shows severe sun damage. The electrical engineer noted that the pump check valve position indicators for all pumps are not working properly. The reason for this issue is not known and should be investigated. Lastly, for all 480V equipment, an appropriate ArcFlash label is required by NFPA 70E.

The following deficiencies were noted:

- Much of the switchgear appears to be in fair-to-poor condition and is possibly reaching the end of its service life. Many components may no longer be manufactured, making long-term maintenance an issue.
- An exterior-mounted ATS appears to be in fair condition and degraded due to exposure to weather.
- The sodium hypochlorite pump room has notable paint loss due to corrosion.
- The check valve for Pump No. 3 was observed to be leaking, and a work order (WO) has been submitted.
- The building roof is damaged and waterlogged.
- The generator plug receptacle requires an adapter and does not meet County standards.
- The outdoor waterproof receptacle is missing a protective cover plate.
- The check valve position indicators on all pumps do not function properly.
- ArcFlash labels on all 480V equipment are missing.

4.1.3.5 Ingraham – WBS #7

The Port Charlotte PWS contains one disinfection booster station at 14276 Ingraham Boulevard, Port Charlotte, Florida 33981. The Ingraham Boulevard sodium hypochlorite/ ammonium sulfate injection station monitors chlorine residual and injects additional disinfection chemicals to maintain the FDEP-required levels. The injection station is enclosed within a 6-foot chain-link fence with barbed wire on top. The station contains two ventilated buildings; one serves as an office and the other houses the chemical skids. Each skid contains one chemical feed pump, and a spare is kept on site. The system does not have a permanent backup generator and relies on the sewer system pump station power adjacent to the booster station. A total chlorine residual of 4.0 mg/L is maintained by injecting sodium hypochlorite and ammonia at a rate that is paced by the flow passing the station. The chlorine level and local water pressure are monitored continuously.

The following upgrades were made over the last 3 years:

- 2022 – Installed a new insertion flow meter at the bridge crossing; a solar-powered radio signal transmits flows back to the station.
- 2022 – Installed a new sump pump and wiring.
- 2024 – Installed a Siemens Wallace & Tiernan DEPOLOX 3 Plus analyzer.

Condition Assessment

The general condition of the station appears to be fair. The buildings are weathered but in operable condition. The landscaping is maintained. The electrical components at the Ingraham Disinfection Station appear to be in good condition with no obvious signs of significant concern. The station does not have access to backup power in the event of power loss.

4.1.3.6 Englewood – WBS #8

The Englewood (EWD) WBS is at 6369 Richledge Street, Englewood, Florida 34224. The EWD WBS is primarily used to boost water pressure or transfer water between EWD and CCU during an emergency. It includes two 40-HP booster pumps with a diesel generator for backup power supply. The station was upgraded in FY 2022 to include a chemical disinfection dosing system. However, the station was heavily damaged by Hurricane Ian in September 2023, including damage to electrical equipment and the on-site generator; the WBS has not been used since the Hurricane while the repairs are pending. Monitoring at the interconnect facility includes total chlorine residual, free ammonia residual, pressure, and flow. By opening or closing valves, the EWD interconnect pumping station can pump water in either direction, i.e., to or from EWD. However, EWD and CCU must both get

permission from and will be billed by the Authority to receive excess water as stipulated by the Authority contract.

In FY 2015, Charlotte County completed minor modifications to the pumps and piping system that allow this facility to increase water circulation in the west portion of CCU's service area. A new flow meter was installed and shows the circulation is approximately 750 gpm. This change has resulted in increased system pressure and chlorination residual levels in the area that are required to meet FDEP delivery disinfection requirements. CCU replaced a faulty HMI in FY 2017 and constructed an aluminum cover over the pumps and piping at the site in FY 2018. CCU also installed a new flow meter at the interconnect to monitor flows crossing SR 776 in West County. During the site visit, the operator noted that an upgraded transformer will be needed in the future.

The following upgrades were made over the last 3 years:

- 2022 – Installed a chemical dosing system including the following:
    - One double-walled 500-gallon sodium hypochlorite storage tank.
    - One double-walled 120-gallon ammonium sulfate storage tank.
    - One in-line chemical mixer with two chemical injection quills.
    - Two built-in-house chemical injection skids.
    - One eyewash station.

Condition Assessment

Due to damage done by Hurricane Ian, the interconnect has not been in operation since the storm. The control panel was flooded, and evidence of a small electrical fire was present. The small office building used as an operator laboratory was blown away.

The following deficiencies were noted:

- The operator laboratory/office building is completely gone.
- The control panel is powered but shows signs of water damage and previous fire.
- Conduit to the control panel is rusted.
- The perimeter fence is damaged and needs repair.

4.1.3.7 Myakka – WBS #9

The Myakka Booster Station is at 4070 Railroad Avenue, Port Charlotte, Florida 33953. The property includes a potable WBS and a wastewater vacuum collection station. However, since its installation, this WBS has historically been unused by CCU due to upstream hydraulic issues caused by operation of the Myakka WBS, and therefore was not inspected. The potable water station was built in FY 2020 and has three 40-HP pumps. The HSPs are skid mounted for future removal and use at other sites. The pumps, electrical components, and water-quality testing appurtenances are in a climate-controlled room. The

station is fenced and has one entrance with a manual gate. The station does not include disinfectant dosing features; however, residual chlorine and ammonia are monitored continuously throughout each day. A diesel generator provides backup power to the station.

Condition Assessment

Jones Edmunds last completed an on-site review of the WBS on November 15, 2022, as part of CCU's Hurricane Ian Damage Assessments; the information gathered at that time was used to update this section, in accordance with the project scope. The CCU staff is aware of the following damages, as recorded during the hurricane assessment, and has been working diligently to address them accordingly. The station appears in great condition overall.

The following deficiencies were noted:

- The roof was damaged; it is missing shingles and is wrapped with plastic.

4.1.4 Storage

GSTs are required to be cleaned and inspected every 5 years. The tanks are designed to be filled by residual pressure and/or by use of pressure-sustaining valves. The water is pumped from the GST and pressurized to the desired system pressure before re-entering the distribution system. The GSTs provide the following functions for the CCU water supply system:

- Store water in case of an interruption of service at the WTP or a main transmission pipe failure.
- Provide local water to booster stations to provide adequate pressure for CCU customers and for firefighting.
- Meet peak demand by storing water during low-use periods for release during high-use periods.

Four operational potable water GSTs are included in CCU distribution systems, ranging in capacity from 1 to 5 MG for a total capacity of 10 MG. The Burnt Store water distribution system does not have any WBS but includes three 0.5-MG GSTs at the Burnt Store WTP. Table 4-3 lists the GST capacities and number of HSPs and chemical feed pumps at each WBS.

In addition, six 2-MG GSTs (for a total capacity of 12 MG) are at the PRF. This stored amount of treated water is available to Charlotte County and other Authority members for water supply for peak use such as fire flow or in case of a temporary loss of treatment at the PRF.

Table 4-3 WBS GST Capacities, HSPs, and Chemical Feed Pumps

Booster Station Name	GST Capacity (MG)	Number of HSPs	Number of Chemical Pumps
Port Charlotte Golf Course	1	2	6
Gulf Cove	2	4	4
Walenda	2	5	4
Rotonda	5	4	8
Ingraham	N/A[1]	0	2
Englewood	N/A[1]	2	4
Myakka	N/A[1]	3	0
Total	**10**	**20**	**28**

Note: [1]No GST exists at this location.

4.1.5 OPERATIONS

Treated water from the PRF enters the main CCU service area via four metered regional transmission mains. In general, potable water flows from northeast Mid County to southwest West County. Water enters the Port Charlotte water distribution system from Authority supply interconnects at the northeast extents of Port Charlotte, then flows to the Golf Course WBS and the Walenda WBS, which serves as a key piece of infrastructure for the County under current operations. The Walenda WBS conveys flow to the Gulf Cove WBS and feeds the 5-MG GST at the Rotonda WBS for redistribution to the respective areas. The Walenda WBS feeds the Rotonda WBS through a dedicated 24-inch transmission main along Gasparilla Road. However, the 24-inch dedicated 5-MG feed line is currently limited by the upstream pipe from the Walenda WBS along El Jobean (SR 776), which is only 16 inches diameter and also serves as the Myakka River crossing. The 16-inch-diameter water main that supplies the 24-inch line to the Rotonda WBS is further restricted by approximately 1,100 feet of 12-inch line that runs across and along SR 776. This line should be up-sized accordingly.

Sodium hypochlorite and ammonium sulfate are injected into the system to maintain proper disinfectant concentrations throughout the distribution system and the GSTs. Each tank is refilled when its level falls below the two-third point, unless there is reason for caution, such as during hurricane season. In such emergency situations, each tank is generally kept full.

Sound O&M processes implemented by a well-trained staff maintain the CCU system's integrity. Expected capacity needs are met through careful forecasting of demands and CIP project planning. CCU maintains stationary generators at WBS that are exercised on a weekly routine to ensure reliability. The Water Distribution workgroup is responsible for dozens of operational processes with the common goal of maintaining adequate flow rate, volume, quality, and water pressure to CCU customers. CCU has a proactive training program for its staff. The County uses the industry-recognized University of California/ Sacramento study books to assist staff in obtaining their operator licenses. CCU requires staff to take the course before sitting for the State certification tests.

4.1.6 WATER REPORT

CCU maintains monthly water data for its Port Charlotte PWS, which totalizes water into the distribution system and distinguishes domestic and non-domestic water usage to estimate unaccounted-for water volumes. Table 4-4 shows the results tracked during FY 2024 for the Port Charlotte PWS. The table compares the water received from the PRF to the sum of the total water billed to customers, water for distribution system flushing and fire department uses, and water loss due to identified leaks and breaks.

CCU estimates the quantity of water used for flushing the distribution system water lines by the size of the outlet and amount of time flushing has occurred. Public water system FAC regulations require a minimum free chlorine residual of 0.2 part per million (ppm) or a minimum combined chlorine residual of 0.6 ppm throughout the distribution system at all times. Most of the flushing water used is to maintain chlorine residual levels in the distant, isolated parts of the distribution system.

Water loss due to line breaks are estimated based on the pressure in the line before the break and the size of the pipe. At present, most main breaks are caused by contractors excavating for other utility installations or by aging pipes in the system. For example, new telephone systems are being changed from copper to fiber, new electricity poles are being installed, and underground lines are replacing old pole lines. Loss due to line breaks are estimated at approximately 2.0 MG per month, which is about 0.5 percent of the total FY 2024 water use.

The unaccounted-for water loss column is the total metered water (Table 4-4, Column 2) minus the sum of the known usages (Table 4-4, Columns 3 through 8). The unaccounted-for water in the CCU Port Charlotte PWS for FY 2024 was approximately 26.2 MG per month, or 6.7 percent.

4.2 BURNT STORE WATER DISTRIBUTION SYSTEM

The CCU Burnt Store PWS is wholly separated physically and geographically from the Port Charlotte PWS, as shown in Table 4-4. It is owned and operated by CCU. The current service area is concentrated in approximately 8 square miles in the south part of Charlotte County and approximately 2 square miles in north Lee County along the County border.

The system serves the nearly built-out Burnt Store Marina residential development in Lee County and the sparsely populated but growing residential developments along Burnt Store Road and Tuckers Grade to the northwest. The water is produced by the CCU-owned Burnt Store RO WTP.

Based on existing GIS data at the time of this report, the Burnt Store PWS consists of 74 miles of water main ranging in size from 2- to 24-inch diameter. Water main installations are expected to continue north and south of the WTP extending toward Punta Gorda and into Lee County, respectively.

Table 4-4 CCU Unaccountable Water Report (Port Charlotte PWS) FY 2024

Month	Total Metered Water (gal)	Sold (gal)	Construction Flushing (gal)	Hydrant Flushing (gal)	Construction Fill (gal)	Line Breaks (gal)	Fire Fighting (gal)	Unaccounted-for Water Loss[1] (gal)
Oct-23	384,354,000	264,096,000	212,250	37,641,025	2,818	277,034	95,000	82,029,873
Nov-23	388,026,000	344,408,000	236,180	35,900,885	28,344	1,457,280	95,000	5,900,311
Dec-23	381,247,000	302,795,000	827,675	37,400,172	10,051	1,870,757	95,000	38,248,345
Jan-24	375,012,000	310,164,000	98,320	39,554,880	496	2,148,513	95,000	22,950,791
Feb-24	366,741,000	300,549,000	0	37,246,936	0	2,203,410	95,000	26,646,654
Mar-24	406,173,000	313,394,000	0	39,064,980	0	2,558,260	95,000	51,060,760
Apr-24	412,580,000	324,901,000	0	37,760,410	0	2,120,025	95,000	47,703,565
May-24	466,453,000	371,894,000	0	40,859,100	0	1,396,558	95,000	52,208,342
Jun-24	405,020,000	406,495,000	81,095	38,470,100	234	854,385	95,000	(40,975,814)
Jul-24	380,796,000	299,156,000	150,990	39,641,030	326	828,785	95,000	40,923,869
Aug-24	364,888,000	342,497,000	0	40,040,450	326	1,774,133	95,000	(19,518,909)
Sep-24	351,200,000	296,637,000	0	40,018,880	0	6,763,717	95,000	7,685,403
Total (gal)	4,682,490,000	3,876,986,000	1,606,510	463,598,848	42,595	24,252,857	1,140,000	314,863,190
Monthly Average (gal)	**390,207,500**	**323,082,167**	**133,876**	**38,633,237**	**3,550**	**2,021,071**	**95,000**	**26,238,599**

Note: [1] Negative monthly water loss occurs because the meters are not read on the same day every month.

4.2.1 INTERCONNECTS

The Burnt Store PWS does not have interconnects with neighboring utilities. However, as identified in the Potable Water Master Plan, CCU is considering options to interconnect South County to other systems, such as the City of Punta Gorda or the Authority. If an interconnect is established, CCU may need to convert to chloramine disinfection and/or provide a separate transmission line from the future Babcock facility to maintain a free chlorination system.

4.2.2 WATER BOOSTER STATIONS

Due to the relatively small service population of the Burnt Store PWS, the system has no booster stations or disinfection injection points. All of the chemicals and pumps are at the Burnt Store RO WTP. However, a WBS improvement near Heritage Landing was identified in the Water Master Plan to address future growth.

4.2.3 STORAGE

The water storage for the Burnt Store PWS is at the Burnt Store RO WTP; no additional storage is provided within the Burnt Store PWS. However, an elevated storage tank improvement near Tuckers Grade was identified in the Potable Water Master Plan to address future growth.

4.2.4 OPERATIONS

Treated water from the Burnt Store RO WTP enters the South County service area through a 20-inch transmission main. The transmission system divides into 16-inch north and 16-inch south transmission pipes within the Burnt Store Road right-of-way. CCU maintains a stationary generator on site that is exercised on a weekly routine to ensure reliability.

As with the Port Charlotte PWS, forecasting and capital improvements planning are conducted for the Burnt Store PWS. The Water Distribution workgroup is also responsible for maintaining adequate flow rate, volume, quality, and pressure to the South County CCU customers.

4.2.5 WATER AUDIT

CCU maintains monthly water data for its Burnt Store PWS which totalizes water into the distribution system and distinguishes domestic and non-domestic water usage to estimate unaccounted-for water volumes. Table 4-5 shows the results tracked during FY 2024 for the Burnt Store PWS. The data compares the water passing through the discharge meter at the Burnt Store RO WTP to the sum of total water billed to customers, water for distribution system flushing and fire department uses, and water loss due to identified leaks and breaks.

CCU estimates the quantity of water used for flushing the distribution system water lines by the size of the outlet and amount of time flushing has occurred. Water regulations require a minimum free chlorine residual throughout the system of 0.2 ppm. A large portion of the flushing water is used to maintain chlorine residual levels in the distant isolated parts of the distribution system.

Table 4-5 CCU Unaccountable Water Report (Burnt Store PWS) FY 2024

Month	Total Metered Water (gal)	Sold (gal)	Construction Flushing (gal)	Hydrant Flushing (gal)	Construction Fill (gal)	Line Breaks (gal)	Fire Fighting (gal)	Unaccounted-for Water Loss (gal)
Oct-23	20,280,320	14,227,000	0	42,750	0	0	55,000	5,955,570
Nov-23	23,840,128	22,290,000	0	34,560	86,130	288,810	55,000	1,085,628
Dec-23	24,343,168	16,126,000	1,618,750	14,750	219,160	63,620	55,000	6,245,888
Jan-24	24,455,296	23,217,000	0	299,000	0	358,840	55,000	525,456
Feb-2	25,722,240	23,107,000	0	45,020	0	676,890	55,000	1,838,330
Mar-24	27,491,200	22,227,000	0	23,400	0	156,580	55,000	5,029,220
Apr-24	25,958,272	21,639,000	0	22,750	0	604,170	55,000	3,637,352
May-2	27,160,448	24,065,000	0	86,936	0	42,930	55,000	2,910,582
Jun-24	21,966,080	21,370,000	0	88,350	0	569,880	55,000	(117,150)
Jul-24	19,402,247	16,449,000	0	12,000	0	526,810	55,000	2,359,437
Aug-24	19,758,841	13,802,000	450,006	45,750	0	21,510	55,000	5,384,575
Sep-24	17,858,816	12,965,000	0	95,450	0	341,810	55,000	4,401,556
Total (gal)	278,237,056	231,484,000	2,068,756	810,716	305,290	3,651,850	660,000	39,256,444
Monthly Average (gal)	**23,186,421**	**19,290,333**	**172,396**	**67,560**	**25,441**	**304,321**	**55,000**	**3,271,370**

At present, most main breaks are caused by contractors excavating for other utility installations or by aging pipes in the system. The Burnt Store PWS has experienced line breaks due to pressure surges in the system. The system includes old PVC water pipes that are thinner than the current CCU standard PVC water pipes. The thinner pipes are more brittle and susceptible to breakage. The pumps that pressurize the Burnt Store PWS have been modified with VFDs to reduce pressure surges.

The unaccounted-for water loss column is the total metered water (Column 2) minus the sum of the known uses (Columns 3 through 8). The unaccounted-for water loss percentage for FY 2024 was approximately 14.1 percent for the Burnt Store PWS. For reference, SWFWMD requires a water audit to be completed during any *calendar year* where water losses of 10 percent or higher are reported in PSARs; note that the information provided in Table 4-5 covers FY 2024.CCU is well aware of high water-loss percentages that have been historically tracked for the Burnt Store PWS. CCU has taken several steps to evaluate and reduce water losses in the Burnt Store PWS but has not been able to reduce losses to under 10 percent despite those efforts. CCU has worked directly with SWFWMD to determine potential causes for the high water loss and to take actions to address it, including:

- Completed a water-loss-reduction plan in 2015.
- Completed a water-loss investigation report in 2021.
- Developed initiative to replace aged non-PVC and antiquated-class PVC pipe with new C-900 PVC pipe, and developed a standard to prioritize C-900 PVC pipe over other pipe materials.
- Installed new fixed-base meters in every residential water service and checked the accuracy of the commercial water meters.
- Performed a leak analysis throughout the Burnt Store PWS.
- Reduced the operating pressure of the system to reduce leaks.
- Continued investigating the water loss issue by checking the accuracy of the meters and water accounting system.

4.3 MAINTENANCE

CCU performs three types of maintenance on its water distribution systems: predictive, preventive, and corrective. In predictive maintenance, tests and observations are performed on equipment to predict when failure of the component might occur. An example of a CCU predictive maintenance procedure occurs during the daily inspection of large stations. While at the station, the operator takes infrared readings on motors and other components to measure abnormally high temperature readings. In doing so, an impending failure can be averted by addressing the cause of the temperature spike. Predictive maintenance is most suitable for equipment that is in essentially continuous operation, where abrupt failure would prove detrimental.

Preventive maintenance involves exercising components such as valves and hydrants, changing lubricants, and replacing wearable parts on a schedule of time or usage. Preventive maintenance is most suitable for equipment that must be ready to be operated, even though it is typically not in use.

Corrective maintenance occurs when an abrupt failure happens or when the system is compromised by others, such as a cable installer puncturing a water main. Corrective

maintenance focuses on restoring service as soon as possible, even with a temporary repair to be upgraded later.

4.3.1 Work Orders (WOs)

Maintenance begins with a WO. Predictive and preventive WOs are generated by staff, so there is flexibility as to when they are performed. They are scheduled at such a time to be most efficient in terms of the availability of resources, especially labor and in-stock parts.

Corrective WOs are usually generated by a customer phone call. During normal office hours, a CCU dispatcher documents the information and contacts the appropriate Field Supervisor to respond. During off-hours, an answering service records the information and contacts the on-call line technician for response. The on-call line technician has the resources to organize a four-person crew after hours, if needed. The level of service, from the customer's perspective, is that a live voice will respond to an emergency call 24 hours a day, 7 days a week. Some corrective WOs are generated by a telemetered alarm when certain parameters are breached, for example, low system pressure. The telemetry system sends a message to the cell phone of the Chief Operator, who deploys the required staff. This procedure allows a problem to be addressed before a loss or reduction of service to the customer occurs.

The response time by the repair crew, even to the farthest point of the service area, is less than 45 minutes. This level of service is maintained in part by distributing crews geographically to reduce response distance. To maintain this level of service during off-hours, emergency staff are equipped with cell phones to expedite communication and wireless-enabled laptop computers. Every crew is in a vehicle equipped with the materials and tools to perform a wide range of maintenance activities, reducing the need for trips to the warehouse. In addition, warehouse personnel are on call 24/7 and are equipped to deliver materials and parts as needed.

4.3.2 Data Management

WOs generate valuable data that can be used to improve O&M based on actual performance. Historically, data have been maintained in several media, including electronic and paper based, so retrieval is not always easy. This condition was greatly improved with the County's implementation of a computerized maintenance management system. Known as an CMMS, it allows data to be stored on a file server and accessible to authorized users. The system has standard reports, but custom reports can be created for specific purposes. CMMS has greatly reduced paperwork and improved efficiency. The system continues to be expanded to other County departments, and staff training continues.

The information being maintained includes costs to complete a WO in terms of labor, parts, and equipment use, including vehicles and outside contractors, if needed. The data can be used to generate budgets, evaluate the efficiency of processes and particular components of equipment, perform "what-if" scenarios, and conduct many other analyses that were too cumbersome to perform in the past.

4.3.3 Maintenance Activities

The CCU Water Distribution staff perform daily visual inspections, water-quality tests, and temperature checks at each of the booster stations. In addition, each booster station is visited at least monthly to perform mechanical and electrical tests, greasing, and

lubrication. Staff perform repairs and replacement of booster station pumps and motors, rather than relying on outsourced services that are expensive and not as responsive. Each in-service booster station has a portable gantry on-site to enable pumping units and motors to be pulled and replaced quickly. Due to these maintenance practices, the booster stations and especially the pumps are kept operating efficiently.

As part of ongoing maintenance, CCU periodically tests water meters for accuracy. The water meters are maintained and warranted for a 20-year replacement cycle. The existing design standards for pipes, valves, and hydrants allow the maintenance staff to be more efficient and cost-effective in maintaining the system. Water valves have been surveyed using a global positioning system (GPS), which allows any valve to be quickly located if it needs to be shut off. Staff regularly exercise hydrants and system valves to increase reliability. Large water meters are checked for accuracy yearly and repairs are conducted when necessary.

Maintenance activities for FY 2024 in both County distribution systems included:

- **Summary**: Completed 9,938 WOs within the distribution systems.
- **Hydrants**: Repaired 71 hydrants and serviced 266 hydrants, including exercising, flow testing, and painting.
- **Water Quality and Line Breaks**: Responded to 100 water quality customer calls and 976 customer leak calls. Issued 108 boil water notices and repaired 136 line breaks on pipes 3 inches or larger.
- **Valves**: Replaced 17 valves and exercised/maintained 272 valves.
- **Meters**: Tested 83 large meters and 432 small meters.

4.3.4 Staff Training and Employee Retention

CCU encourages employees and staff members to participate in training activities to maintain license requirements and attract superior staff among a competitive labor market. The following training has been conducted by CCU staff recently:

- Thirty-seven employees completed a 4-hour Asbestos Field Staff Training class.
- Fourteen employees completed an 8-hour Asbestos Supervisor Training class.
- Nine Employees completed a 5-day Asbestos Supervisor Training course.
- Seven employees completed an 8-hour Asbestos Occupational Safety and Health Administration (OSHA) Training class.
- Four employees completed CDL-A related permitting and classwork.
- Two employees completed a 90-hour APWA Supervisor and Management program.

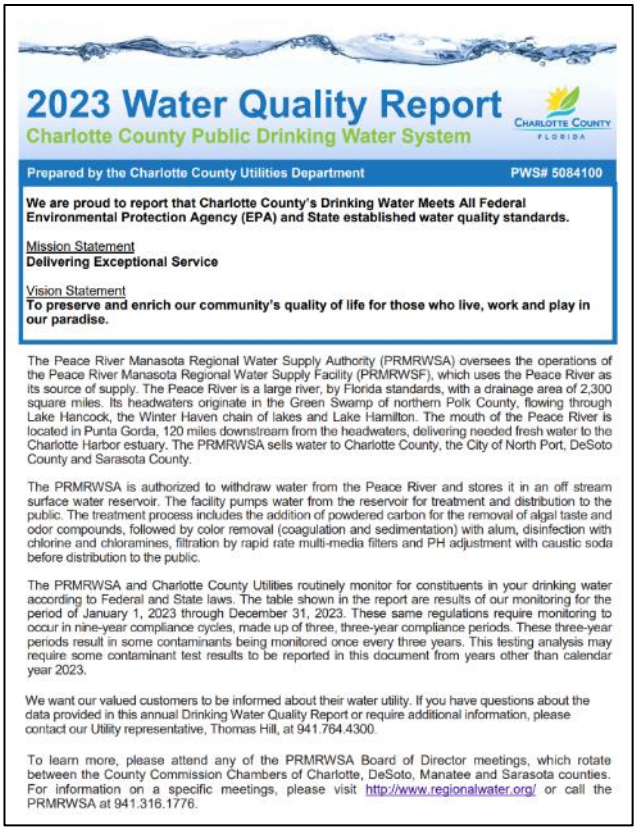
As with many organizations, maintaining the proper number of staff is required to complete the maintenance activities that accompany the management of a distribution system.

4.4 Consumer Confidence Reports

As required by federal and state regulations for utilities, CCU provides accessibility to every customer to view electronically or obtain a hard copy of the annual water-quality report, also known as the Consumer Confidence Report (CCR). The report tabulates the results of water-quality testing to identify the level of any contaminants specified by primary and secondary drinking water standards that are detected in the drinking water. Potable water,

including bottled water, typically originates from rivers, lakes, streams, ponds, reservoirs, springs, or wells. As water travels over land or through the ground, it dissolves naturally occurring minerals and can also absorb substances that originate from animal or human activity. These contaminants may include:

- Microbial contaminants, such as viruses and bacteria.
- Inorganic contaminants, such as salts, metals, pesticides, and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals.
- Radioactive contaminants, which can be naturally occurring.



2023 Water Quality Report

Charlotte County Public Drinking Water System

Prepared by the Charlotte County Utilities Department PWS# 5084100

We are proud to report that Charlotte County's Drinking Water Meets All Federal Environmental Protection Agency (EPA) and State established water quality standards.

Mission Statement
Delivering Exceptional Service

Vision Statement
To preserve and enrich our community's quality of life for those who live, work and play in our paradise.

The Peace River Manasota Regional Water Supply Authority (PRMRWSA) oversees the operations of the Peace River Manasota Regional Water Supply Facility (PRMRWSF), which uses the Peace River as its source of supply. The Peace River is a large river, by Florida standards, with a drainage area of 2,300 square miles. Its headwaters originate in the Green Swamp of northern Polk County, flowing through Lake Hancock, the Winter Haven chain of lakes and Lake Hamilton. The mouth of the Peace River is located in Punta Gorda, 120 miles downstream from the headwaters, delivering needed fresh water to the Charlotte Harbor estuary. The PRMRWSA sells water to Charlotte County, the City of North Port, DeSoto County and Sarasota County.

The PRMRWSA is authorized to withdraw water from the Peace River and stores it in an off stream surface water reservoir. The facility pumps water from the reservoir for treatment and distribution to the public. The treatment process includes the addition of powdered carbon for the removal of algal taste and odor compounds, followed by color removal (coagulation and sedimentation) with alum, disinfection with chlorine and chloramines, filtration by rapid rate multi-media filters and PH adjustment with caustic soda before distribution to the public.

The PRMRWSA and Charlotte County Utilities routinely monitor for constituents in your drinking water according to Federal and State laws. The table shown in the report are results of our monitoring for the period of January 1, 2023 through December 31, 2023. These same regulations require monitoring to occur in nine-year compliance cycles, made up of three, three-year compliance periods. These three-year periods result in some contaminants being monitored once every three years. This testing analysis may require some contaminant test results to be reported in this document from years other than calendar year 2023.

We want our valued customers to be informed about their water utility. If you have questions about the data provided in this annual Drinking Water Quality Report or require additional information, please contact our Utility representative, Thomas Hill, at 941.764.4300.

To learn more, please attend any of the PRMRWSA Board of Director meetings, which rotate between the County Commission Chambers of Charlotte, DeSoto, Manatee and Sarasota counties. For information on a specific meetings, please visit http://www.regionalwater.org/ or call the PRMRWSA at 941.316.1776.

To ensure that tap water is safe to drink, EPA regulations limit the concentrations of certain contaminants in water provided by PWSs. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk.

The results, as reported in the latest CCRs for the Port Charlotte and South County distribution systems, indicate the levels of tested water contaminants in the CCU service area are safely below the maximum contaminant level allowed by federal and state regulations and orders and in most cases are well below the level.

The most recent CCRs for the Port Charlotte and Burnt Store PWSs are available at *https://www.charlottecountyfl.gov/departments/utilities/about-utilities/conservation/*.

4.5 Review of Previous Recommendations

Table 4-6 and Table 4-7 summarize the recommendations and status from the 2023 Annual Report for the Port Charlotte and Burnt Store PWSs, respectively. Table 4-8 summarizes the general recommendations that apply to both distribution systems.

Table 4-6 Port Charlotte PWS– 2023 Recommendations and Status

Recommendations:	Interconnects 1. Lower the lighting fixtures under the canopy to illuminate the pumps and equipment at the EWD interconnect. 2. Complete recommendations from RRA Report (2020). 3. Install bollards around the equipment.
Progress:	1. Ongoing. 2. Ongoing. 3. Ongoing.
Recommendations:	WBS General 1. Complete load studies and arc-flash labeling for electrical equipment to comply with NFPA 70E. 2. Complete repair and rehabilitation of assets damaged by Hurricane Ian, maximizing use of available FEMA funds. 3. Complete construction of the new O'Hara WBS and place the new WBS into service. This improvement was identified in the Potable Water Master Plan as a water quality improvement that would significantly reduce flushing. 4. Begin designing the new Robin WBS and place the new WBS into service. This improvement was identified in the Potable Water Master Plan as a water quality improvement that would significantly reduce flushing. 5. Design and construct a new 24-to-30-inch diameter water main from Gulf Cove WBS to Rotonda WBS as an extension from the Authority's Phase 2B 42-inch transmission main as a dedicated feed line for Rotonda's 5-MGD GST. 6. Design and construct 1,100 feet of 16-inch water transmission main along SR-776 that feeds the 24-inch dedicated transmission line to Rotonda GST (between Gillot Road and Conway Road). 7. Evaluate replacing analog pressure gauges with pressure transducers integrated into SCADA.
Progress:	1. In Progress. 2. Ongoing. 3. Bid received but project put on hold. 4. In Progress. 5. In progress. 6. In progress. 7. Ongoing.

Recommendations:	Port Charlotte Golf Course WBS 1. Perform yard maintenance around the perimeter fencing. 2. Label the switchgear to identify parts and components that could be energized. 3. Replace the cage around the GST ladder to comply with OSHA requirements. 4. Replace the torn hazard warning label on the diesel fuel tank 5. Replace the screens on the flow meters and install UV protection.
Progress:	1. Ongoing. 2. Completed. 3. Completed. 4. Completed. 5. In progress.
Recommendations:	Walenda WBS 1. Complete the generator replacement project at the WBS, including a new generator and fuel tank designed above the floodplain. 2. Continue to monitor the electrical system's performance to ensure proper functionality and replace insufficient components as needed. Electrical equipment is being evaluated as part of the WBS Upgrades project. 3. Continue to perform yard maintenance around the perimeter fencing. 4. Trim tree limbs on the northwest corner of the pump room. 5. Install bollards around the WBS effluent pipe. 6. Clearly label chemical storage tanks and fill valves. 7. Resurface and recoat the exterior of the GST. 8. Add additional signage indicating "No Trespassing, Violators will be Prosecuted" along fencing.
Progress:	1. In progress. 2. Ongoing. 3. Ongoing. 4. Being completed in 2025 as part of new generator installation. 5. Completed. 6. Completed. 7. In planning. 8. Completed.

Recommendations:	Gulf Cove WBS 1. Complete HSP #1 repairs and place pump back into service. 2. Complete the generator replacement project at the WBS, including a new generator and fuel tank designed at or above the 100-year floodplain elevation. 3. Replace the concrete pipe connecting the GST to the pump station at the WBS. 4. Continue to monitor the electrical system's performance to ensure proper functionality and replace insufficient components as needed. Electrical equipment is being evaluated as part of the WBS Upgrades project. 5. Replace the exhaust fan in the ammonia chemical feed room. 6. Properly secure the pressure transducer at the back of the GST. 7. Replace the corroded copper sodium hypochlorite chemical injection quill with a Schedule 80 material. 8. Pump out the water in the vault containing the HSP feed piping. 9. Secure the electrical conduit for the newly installed cameras. 10. Repaint the pump building. 11. Add secondary containment to the chemical feed room. 12. Complete design and construction of new GST(s) and demolition of the existing 2-MG GST that has reached the end of its serviceable life. Synchronize construction timing and hydraulic conditions with the Authority RTS 42-inch Phase 2B pipeline to Gulf Cove WBS. 13. Complete the generator replacement project at the WBS, which includes a new generator and fuel tank designed above the flood plain.
Progress:	1. Completed. 2. In Progress. 3. Design project in progress. 4. Ongoing. 5. Not Completed. 6. Completed. 7. Not completed. 8. Ongoing. 9. Completed 10. Not completed. 11. Not completed. 12. Not completed. 13. Not completed.
Recommendation:	Ingraham Disinfection Station 1. Clearly label chemical storage tanks. 2. Fix the level indicators for the sodium hypochlorite storage tanks.
Progress:	1. Completed. 2. Completed.

Recommendations:	Rotonda WBS 1. Replace approximately 1,100 feet of 12-inch piping restricting the flow/capacity of the 24-inch line (from the tank to just north of Conway Road) feeding the Rotonda water booster tank. 2. Continue to monitor the electrical system's performance to ensure proper functionality and replace insufficient components as needed. Electrical equipment is being evaluated as part of the WBS Upgrades project. 3. Develop a standard schedule for tank-filling operations. 4. Paint the wall that contains the HMI in the pump room. 5. Replace the incoming main breaker as soon as possible. The failure of this specific device may render the station out of service for an extended period. 6. The gaps surrounding the VFDs should be mitigated to prevent potential contact with live parts. 7. Install bollards around the monitoring equipment. 8. Clearly label chemical storage tanks and fill valves. 9. Develop an ERP for WBS bypass and operations without the laboratory and control room. 10. Replace damaged pressure gauges. 11. Relocate the ATS indoors. 12. Repair the roof and awning on the pump building.
Progress:	1. Scheduled for completion. 2. Ongoing. 3. Completed. 4. In Progress. 5. Completed. 6. Not Completed. 7. Completed. 8. Partially completed. 9. Not Completed. 10. Ongoing. 11. Ongoing. 12. Ongoing.

Table 4-7 Burnt Store PWS – 2023 Recommendations and Status

Recommendation:	Continue to replace old "class" PVC pipe in the distribution system with new C-900 PVC pipe.
Progress:	Ongoing.
Recommendation:	Continue developing a computerized hydraulic model for the South County distribution system.
Progress:	Ongoing.
Recommendation:	Investigate the feasibility of installing interconnects with neighboring utilities.
Progress:	Ongoing.
Recommendation:	Complete repair and rehabilitation of assets damaged by Hurricane Ian, maximizing use of available FEMA funds.
Progress:	Ongoing.

Table 4-8 General Distribution System – 2023 Recommendations and Status

Recommendation:	Continue to update the water system hydraulic computer models and use them as planning tools for future water system improvements.
Progress:	Ongoing.
Recommendation:	Continue the AMI Water Meter Replacement Program.
Progress:	Ongoing.
Recommendation:	Continue to integrate acquired utilities into the overall CCU water system to maximize reliability and reduce costs to CCU customers.
Progress:	Ongoing.
Recommendation:	Continue to make improvements at the water storage tank/booster pumping station facilities to increase reliability and control of the pumps to improve water distribution to customers.
Progress:	Ongoing.
Recommendation:	Continue to develop and update water quality models for each distribution system for use in ongoing development reviews.
Progress:	Ongoing.
Recommendation:	Develop a systemwide hydrant flushing program.
Progress:	In progress.
Recommendation:	Develop a program to identify and track asbestos and lead pipe.
Progress:	Not completed.
Recommendation:	Develop a systemwide valve exercise program.
Progress:	In progress.
Recommendation:	Develop a best management practice plan to standardize pump and motor sizing across CCU pumping facilities to better facilitate maintenance and replacement of equipment.
Progress:	In progress.
Recommendation:	Develop an equipment calibration program for tracking and calibrating water system analyzers, flow meters, and applicable devices.
Progress:	In progress.

5 WASTEWATER COLLECTION SYSTEM

5.1 SEWER SYSTEMS

The purpose of a wastewater collection system is to transport wastewater from customer structures to a treatment facility. The CCU collection system consists of the following components:

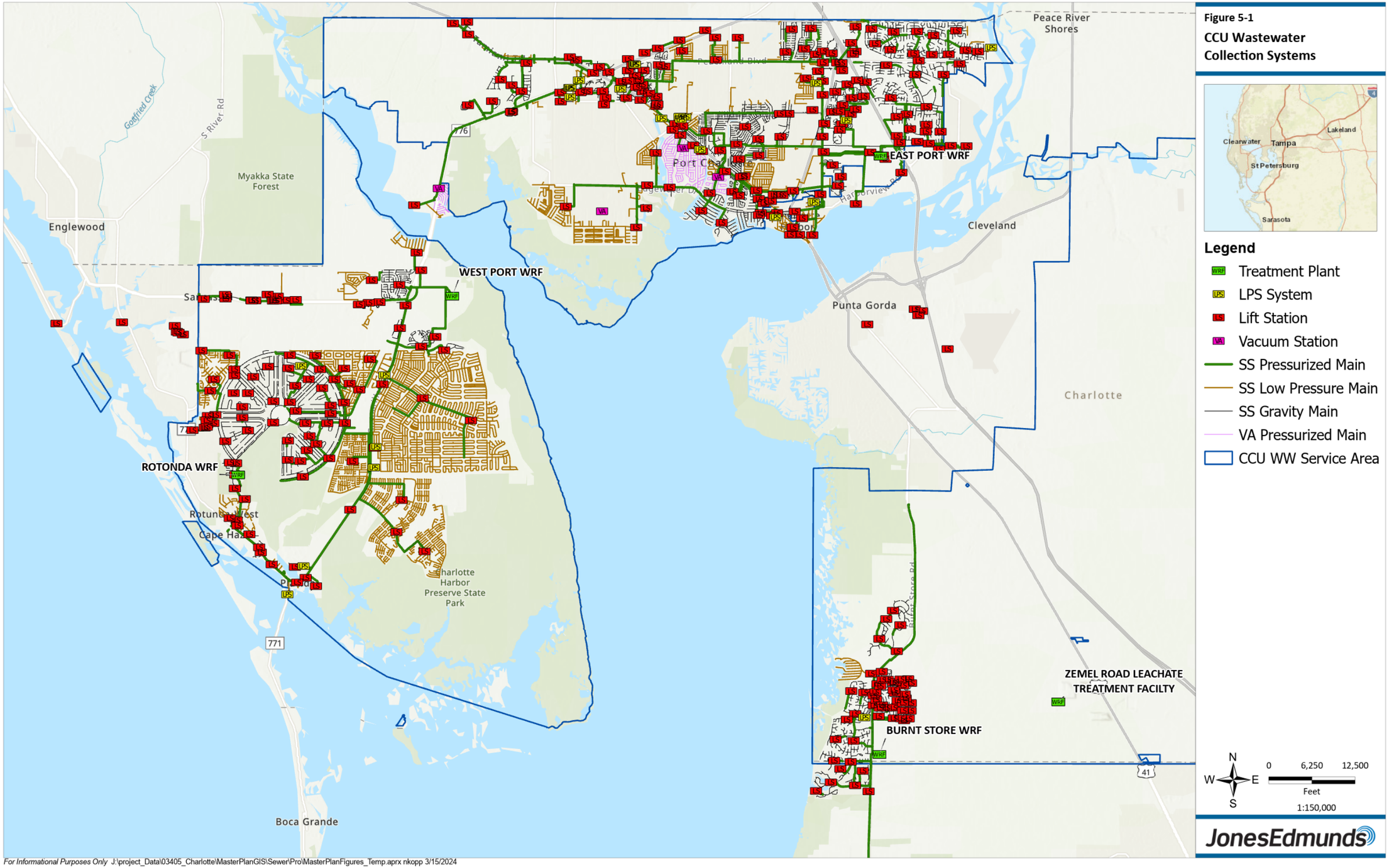
- **Gravity Sewer** – as the name implies, is piping installed at a gradual incline (slope) that allows wastewater to flow exclusively by the energy of gravity. Gravity sewers include manholes that allow maintenance staff entry and equipment use. Flow entering gravity sewers discharges to manholes, lift stations, or a treatment plant.
- **Vacuum Sewer** – moves sewage from an individual service wastewater storage tank to a wastewater pumping station by a vacuum that is created at a pumping station site. This system uses smaller-diameter pipes than a gravity sewer system.
- **Low-Pressure Sewer (LPS)** – is an alternative to a gravity sewer system and requires a small pump at each property. This system costs less to construct (smaller-diameter pipes, shallow-depth piping) but costs more to operate and maintain (electrically driven equipment). Flows within an LPS system move only when pushed by new flow contributions.
- **Force Main** – is a pressured sewer pipe that conveys wastewater in a situation where gravity sewer flow is not possible. This system component is fed by a lift station.
- **Lift Station (LS)** – also referred to as pump station, is a facility designed to move wastewater from lower to higher elevations through force mains. This system component provides additional energy to the system where reliance on gravity is not possible. Lift stations are common in Florida because of the flat terrain.
- **Vacuum Station (VS)** – houses a collection tank, discharge pumps to send the sewage to the treatment plant, controls to automate the station, and vacuum pumps that create a negative pressure in the vacuum mains.

CCU's service area is served by four collection systems. Each system is tributary to a WRF, discussed further in Chapter 6. Figure 5-1 shows the CCU certificated service area and the wastewater collection system infrastructure.

At the end of FY 2024, CCU had 48,764 wastewater customers, an increase of 2,727 customers since FY 2023. Based primarily on CCU GIS data, the wastewater collection system primarily features the following approximated inventory:

- 384 miles of low-pressure sewer (LPS) mains.
- 206 miles of force main.
- 395 miles of gravity sewer.
- 310 County-owned lift stations.
- 384 miles of low-pressure sewer.
- 38 miles of vacuum sewer.
- 4 vacuum stations.
- 11,800 septic tank effluent pumping (STEP)/LPS pumps.

Figure 5-1 CCU Wastewater Collection Systems



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5.1.1 System Expansion

CCU has developed hydraulic models (SewerGEMS™) for the South, Mid, and West County wastewater systems that have been improved and maintained by the County and various consultants over the years. The models have been incrementally and continuously updated with respect to new developments, infrastructure changes, construction projects, and other information sourced by the County. The models are used to identify areas where capacity upgrades are needed to support future growth, as well as upgrades needed for future system expansions.

Jones Edmunds is under contract with the County to update and maintain the models and evaluate hydraulic impacts from CIP projects and service connections to new developments. In FY 2024, wastewater modeling was conducted for the 2024 CCU SMP to determine infrastructure improvements for 5-year, 10-year, 15-year, and buildout scenarios across the County.

5.2 Lift Stations

CCU owns and maintains a total of 310 LSs and outsources maintenance and repair for 14 Charlotte-County-affiliated LSs through service contracts within Charlotte County. VSs are not included in the lift station count; Section 5.3 discusses the VS. For auxiliary power (also known as backup power), 30 stationary generators are installed at various LSs. CCU staff diligently exercises these stationary generators on a once-weekly routine schedule. In addition, CCU also has available 23 trailer-mounted generators (ranging from 30 to 180 kW) and 10 portable hand-held generators (15 kW) that can be used at portable generator receptacles located on LS control panels.

In recent years, CCU has taken significant strides to provide more resilience to their wastewater collection system, in large part due to FEMA grant funding agreements that the County has acquired to secure additional generators. CCU has now implemented stationary generators into new and rehabilitated LS designs as a standard feature, when necessary, based on the criticality of failure. As an additional safeguard, most LSs also include dedicated discharge and/or suction connections on site for emergency transfer of flow using temporary or mobile pumping systems.

Jones Edmunds personnel and CCU Operations staff conducted site visits on January 29, 2025, through January 31, 2025, to the MLS, LSs, and VSs, as selected by CCU staff. Additionally, an electrical condition assessment was conducted for the Master LS-309 Bridgewater. The CCU-selected stations were dispersed throughout the County's Deep Creek, Port Charlotte (Mid County), and Rotonda and Gulf Cove (West County) wastewater service areas. The LSs are selected as based on existing conditions, infrastructure needs, and considering current, past, and future wastewater collection and transmission improvement projects; typically, a balance of recently improved lift stations and those in need of rehabilitation are requested for inspection and documentation.

Table 5-1 lists the 19 LSs visited; Section 5.3 addresses the VS. The site-visit assessments will help CCU to identify and prioritize maintenance, rehabilitation, or replacement work at these LSs.

Table 5-1 Field Inspections for Master and Representative LS

Station No.	Location
Master LS-65 South Port	4157 Tamiami Trail (Behind Advance Auto Parts)
Master LS-139 Altoona	Edgewater Drive & Altoona Street
Master LS-309 Bridgewater (Electrical Only)	Bridgewater Road and Newcastle Lane
Master LS-816 Boulevard West	300 Rotonda Boulevard West
LS-1 Community Center	Orange Street and Easy Street
LS-2 Dalton	Sharon Circle and Dalton Boulevard
LS-6 Higgs	Salem Avenue and Higgs Drive
LS-7 Pure Oil	Tamiami Trail and Easy Street
LS-9 Church	Behind St. Vincent de Paul (2499 Gates Avenue)
LS-24 Charlotte Square	Forrest Nelson Boulevard and Tamiami Trail
LS-25 Vo-Tech	Murdock Circle and Education Way
LS-44 Liberty Elementary	Wilkie Avenue and Atwater Street
LS-45 Woodbury	Paulson Drive and Woodbury Drive
LS-303 Constantine	Constantine Street and Aden Way
LS-305 Bremen	Bremen Way and Nuremberg Boulevard
LS-323 Aysen	Aysen and Rancaque Street
LS-812 Annapolis	Across from 226 Annapolis Lane
LS-818 Harbor West	14613 Ponce De Leon Trail
LS-821 Rebel Court	Rebel Court and Bonita Drive

5.2.1 MASTER LS-65 SOUTH PORT

Constructed in 1996, South Port Master Lift Station is centrally located just south of US 41 and southwest of the building at 4157 S Tamiami Trail in Port Charlotte. LS-65 currently receives flow from over 23 different lift stations, surrounding gravity lines, and LPS lines. The flow is then conveyed to the East Port WRF.

The site has no significant lighting other than building lights, but the building housing the generator and panels has indoor lighting. The carbon adsorption unit is within a locked and fenced area that has barbed wire. The generator is operated once a week each Monday to ensure it is ready for standby power.

- Due to the high inflow of this station and the relatively shallow wetwell, the system capacity is extremely limited. The time between a high-water alarm and sewage spill is estimated at less than 10 minutes. Table 5-2 presents the lift station details.

The following deficiencies were noted:

- Installed pumps will be running off their performance curve after the RTS and Grand Master Lift Station (GMLS) construction.
- The pressure meter is not functional.
- No fencing or enclosure to protect the valves and piping.
- Generator controls exceed the 6-foot-7-inch limit as required by code.
- The station currently only has two functioning pumps instead of three. Pump 1 is out of service.
- CCU staff noted that the suction piping was clogged.
- ARV is installed on the incorrect side of the valve assembly.
- Wetwell is showing signs of H_2S corrosion.
- Discharge piping and appurtenances are showing signs of corrosion and sun damage.
- The circuit breaker for Pump 1 does not meet the required service capacity to function properly.

Proposed improvements to the station include:

- Evaluate replacing the pumps to a lower head pump selection to avoid future run-out conditions.
- Repair/replace the pressure meter.
- Install a fence the entire site.
- Evaluate generator control elevations to conform to code.
- Cleanout suction pipe of pump 1 to place it back in service.
- Re-install ARV to the correct side of the valve assembly.
- Complete the rebuilding of pump 1 to reinstall it in the wetwell.
- Re-line the wetwell.
- Address the corrosion on the discharge piping and appurtenances and apply a new protective coating system as needed.
- Replace the 200A circuit breaker for pump 1 with a 250A circuit breaker.

Table 5-2 Master LS-65 South Port

Station Info	Wetwell	Cross-Section Type	Circular	
		Diameter	12 ft	
		Discharge FM Diameter	10 in	
		Depth	19 ft	
		Valve Assembly	10-inch Kennedy Clow Check Valves 10-inch Dezurik Plug Valves	
		Odor Control	Carbon Adsorption	
	Pump	Quantity	2	1
		Manufacturer	Flygt	Sulzer
		Model	N 3301	N/A
		Impeller	460	N/A
		Horsepower	88	N/A
		Operating Point	1,500 gpm @ 111 ft TDH	
Electrical Info	Telemetry /SCADA	SCADA Telemetry Type	DFS TAC II Controller	
		Surge Protector Present?	No	
		Backup Battery Present?	Yes	
	Generator	Standby or Portable?	Standby	
		Power Ratings	300-kW 375-kVA	
		Fuel Capacity	Approximately 3,000 gallons	
	System Supply	Voltage	480	
		Phase	3	
		Surge Protector Present?	Yes	
		Backup Battery Present?	No	

5.2.2 Master LS-139 Altoona

Constructed in 2016, the Altoona Lift Station is at the northeast corner of the intersection of Edgewater Drive and Altoona Street. This station receives wastewater from surrounding LPSs as well as three County-owned stations (LS-20 Lakeview, LS-23 O'Hara, and LS-60 McGrath). Master LS-139 discharges through a 12-inch force main to the Southport Master Lift Station (LS-65), which flows directly to the East Port WRF.

The wetwell hatches are in good condition and provide adequate access to remove the pumps from the lift station's rail retrieval system. The station is fenced and has site lighting. Table 5-3 presents the lift station details.

The following deficiencies were noted:

- One of the pumps was out of service and was removed. The other pump was not properly mounted to the railing system.
- CCU staff reports the generator main braker is undersized.
- Water service for the odor control unit is connected through a tube above ground.

Proposed improvements to the station include:

- Service and reinstall the out of service pump. Re-mount the other existing pump.
- Replace the generator main breaker with an adequately sized breaker.
- Install an underground line to provide water service to the lift station.

Table 5-3 Master LS-139 Altoona

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	12 ft
		Discharge FM Diameter	12 in
		Depth	25 ft
		Valve Assembly	12-inch Kennedy Clow Check Valves 12-inch Dezurik Plug Valves
		Odor Control	Bio Filter
	Pump	Quantity	2
		Manufacturer	Sulzer
		Model	ABS XFP100J-CH1 PE350/4
		Impeller	13.19 in
		Horsepower	46.9
		Operating Point	303 gpm @ 61 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TCU Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	No
	Generator	Standby or Portable?	Standby
		Power Ratings	100-kW 125-kVA
		Fuel Capacity	683 gallons
	System Supply	Voltage	480
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes

5.2.3 MASTER LS-309 BRIDGEWATER (ELECTRICAL ONLY)

This section will only include details specific to the electrical condition assessment of the Bridgewater Master LS-309 conducted as part of the FY 2024 Annual Report. A standard Annual Report condition assessment of the Bridgewater Master LS-309 was completed in the FY 2023 Annual Report, including the non-electrical components, deficiencies identified, and improvement recommendations. Overall, four facilities were selected by CCU staff for the FY 2024 Annual Report for electrical-specific condition assessment by Jones Edmunds electrical engineering staff; the selected facilities included:

- Rotonda Boulevard East RWBS.
- Bridgewater Master (LS-309).
- Harbor Vacuum Station (VS-2).
- Eagle Street RBS.

The Jones Edmunds electrical engineer conducted the above site visits on Tuesday, February 11, 2025. No major issues were identified or reported by CCU operations staff during the site visit.

The following deficiencies were noted:

- The standby generator is mounted above a sub-based fuel tank, placing it at a significant height above the ground. The measured mounting height for the emergency stop switch is approximately 83 inches above the ground, making it 3 inches higher than the maximum allowed by the code (80 inches).
- The lift station is missing appropriate ArcFlash labeling on all 480 V equipment, as required by NFPA 70E.

Proposed improvements to the station include:

- Lower the mounting of the standby generator so that it is below the required 80 inches.
- Add missing ArcFlash labeling on all 480 V equipment.

5.2.4 MASTER LS-816 ROTONDA BOULEVARD WEST

The Rotonda Boulevard West Master Lift Station (LS-816) was built in the 1980s. LS-816 receives wastewater from up to 16 contributing County-owned pump stations. LS-816 discharges to LS-801, which directly discharges to the Rotonda WRF. The station receives flow from a 21-inch gravity sewer and a 2-1/2-inch low-pressure system force main.

The station is not fenced, and the proximity of the overhead power lines results in potential danger to County staff when station pumps need to be pulled with a crane truck. Table 5-4 presents the lift station details.

The following deficiencies were noted:

- Signs of corrosion on the wetwell interior wall likely due to high hydrogen sulfide concentration.
- Interior concrete slab shows wear, exposing structural rebar and wood.
- Significant wear shows on the valve vault, including partial burial of the valves.
- No dedicated suction or discharge bypass piping.
- Missing seal-offs from the control panel conduit. This represents a significant code violation as well as a potential explosion hazard.
- Rusted and worn padlocks on the wetwell hatches.

Proposed improvements to the station include:

- Re-line the wetwell.
- Repair or rehabilitate the concrete top slab.
- Replace the valve vault and bring to current standards or evaluate converting the valves to aboveground.
- Install seal-offs on any electrical equipment within 10 feet of the wetwell to return to conformance with code.
- Install dedicated suction or discharge bypass piping.
- Rehabilitate or replace the padlocks on the wetwell hatches.
- Evaluate the adjacent lot for future lift station conversion.

Table 5-4 Master LS-816 Rotonda Boulevard West

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	10 ft
		Discharge FM Diameter	8 in
		Depth	21 ft 9 in
		Valve Assembly	8-in Dresser Check Valves 8-in Dezurik Plug Valves
		Odor Control	None
	Pump	Quantity	2
		Manufacturer	Flygt
		Model	NP 3127
		Impeller	488
		Horsepower	10
		Operating Point	1,125 gpm @ 24 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TAC II
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Portable
		Power Ratings	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	240
		Phase	3
		Surge Protector Present?	No
		Backup Battery Present?	No

5.2.5 Representative Lift Stations Condition Assessments

Jones Edmunds personnel and CCU Operations staff also toured the selected group of neighborhood lift stations on January 31, 2024, through February 2, 2024, to develop a general sense of the overall condition of the lift stations that are within the CCU wastewater collection system. The outcome of the assessment will allow CCU to identify and prioritize maintenance, rehabilitation, or replacement work at these lift stations.

5.2.5.1 LS-1 Community Center

Originally built in 1959, the Community Center lift station (LS-1) is at the southwest corner of the Orange Street and Easy Street intersection and is housed in a concrete building on an open easement with no fencing. This station receives gravity flows from the local community center and residential area. The station discharges into a 4-inch force main that manifolds into a 6-inch force main that pumps to Master LS-65 South Port, which conveys flow to the East Port WRF. Many portions of this station were

observed to be in poor condition and outdated from current standards, but the station appears to be functioning as intended. Table 5-5 presents the lift station details.

The following deficiencies were noted:

- The concrete building has cracks, including visible daylight through pipe penetrations.
- Signs of corrosion on the wetwell interior wall from hydrogen sulfide.
- The access hatch hinge is separated from the wall.
- Notable wear of paint on pumps and piping.
- Conduit running out of the top of the electric meter is no longer connected and exposed. The metal conduit casing has begun to cut and damage the main electrical feed wiring.

Proposed improvements to the station include:

- Evaluate replacement of this station to meet current CCU standards. A replacement lift station should also provide the following to address current deficiencies:
  - CCU standard lift station design for a new wetwell and new discharge piping and appurtenances.
  - Electrical controls and panel features to meet CCU standards and electrical codes including an outdoor-rated panel, phase monitors, a surge-protection device (SPD), and seal-offs.
  - Permanent security fencing to prevent unwanted access and dedicated site lighting for accessibility and safety.
  - Potable water service.

- Assuming the station will be completely replaced in the near future, the following improvements are recommended to the existing LS in the interim:
  - Seal cracks in building and gaps in pipe penetrations.
  - Evaluate the significance of the corrosion to the wetwell.
  - Anchor the access hatch hinge back to the wall.
  - Restore and seal the conduit connection to the electric meter.

Table 5-5 LS-1 Community Center

Station Info	Wetwell	Cross-Section Type	Rectangular	
		Area	7 ft by 6 ft	
		Depth	13 ft	
		Discharge FM Diameter	4 in	
		Valve Assembly	4-in ADF and Mueller Check Valves 4-in Dezurik Plug Valves	
		Odor Control	None	
	Pump	Quantity	1	1
		Manufacturer	Gorman-Rupp	All Prime
		Model	T4A3-B	XS-4S
		Size	15 HP	7.5 HP
		Impeller	9.75 in	9.75 in
		Operating Point	220 gpm @ 65 ft TDH	440 gpm @ 28 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TAC II Controller	
		Surge Protector Present?	No	
		Backup Battery Present?	Yes	
	Generator	Standby or Portable?	Portable	
		Size	N/A	
		Fuel Capacity	N/A	
	System Supply	Power	208V 3-phase	
		Surge Protector Present?	Yes	
		Backup Battery Present?	No	

5.2.5.2 LS-2 Dalton

The Dalton lift station (LS-2) is north of Sharon Circle Park, northwest of the intersection of Sharon Circle and Dalton Boulevard. The station was completely rebuilt in 2021 to the updated CCU LS standards. The newly improved Dalton LS receives wastewater from the surrounding residential area. LS-2 discharges through a 6-inch force main to South Port Master LS-65, which conveys flow to the East Port WRF.

The station was observed to be in good condition and the station appears to be functioning as intended. The station is gated and has barbed wire fencing for security. A portion of the concrete pad at the lift station site is dedicated for future generator installation and usage. Table 5-6 provides the lift station details.

The following deficiencies were noted:

- Slight corrosion and paint wear on the discharge piping and appurtenances.
- The front gate is damaged and is temporarily repaired using zip-ties.

Proposed improvements to the station include:

- Address the corrosion on the discharge piping and appurtenances and apply a new protective coating system as needed.
- Complete a permanent repair to the front gate.

Table 5-6 LS-2 Dalton

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	8 ft
		Depth	22 ft-2 in
		Discharge FM Diameter	6 in
		Valve Assembly	6-in Kennedy Clow Check Valves 6-in HPCO Plug Valves
		Odor Control	None
	Pump	Quantity	2
		Manufacturer	Sulzer
		Model	XFP-100C-CB1.4-PE 35/4
		Size	4.7 hp
		Impeller	7.09 in
		Operating Point	440 gpm @ 28 ft TDH
Electrical Info	Telemetry /SCADA	SCADA Telemetry Type	DFS TCU Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Portable
		Size	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	230
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	No

5.2.5.3 LS-6 Higgs

Constructed in 2021, the Higgs lift station (LS-6) is across the street from 21184 Higgs Drive near the southwest corner of the intersection of Salem Avenue and Higgs Drive. LS-6 receives gravity flow from the surrounding residential area. LS-6 discharges through a 6-inch force main that ultimately is conveyed to the East Port WRF.

The station is observed to be in good condition and functioning as intended. Maintenance access is adequate for removal of the pumps from the 2-inch cylindrical rail-retrieval system. The station is fenced with barbed wire. Table 5-7 provides the lift station details.

The following deficiencies were noted:

- Adequate lighting is not available for evaluating the control panel or wetwell.
- Eroded rock base along southwest fence line has introduced a slip-and-fall hazard. Noticeable gaps are between the grade and the bottom of the fence in various locations.
- Slight corrosion and paint wear on the discharge piping and appurtenances.
- Cracking was observed in the square formwork at the top of the wetwell.
- Odor control system is out of service.
- The surge protector on the main disconnect switch is damaged.
- Float seated atop pump rail and appeared to be damaged.
- Yard waste, debris, and traffic control devices located immediately outside the security fence.
- Geotextile fabric along the station driveway appeared to be overgrown and partially damaged and/or removed.

Proposed improvements to the station include:

- Evaluate the installation of additional site lighting for lift station serviceability.
- Reestablish level grade along southwest fence line and along perimeter fence line to eliminate slip-and-fall hazard.
- Address the corrosion on the discharge piping and appurtenances and apply a new protective coating system as needed.
- Evaluate the significance of cracks in concrete formwork at the top of the wetwell.

- Re-establish the float operations in accordance with the intended lift station design.
- Remove yard waste, debris, and traffic control devices immediately outside the security fence.
- Re-establish driveway loading support for CCU vehicle ingress/egress and crane operations.
- Assess the need for an odor control system. If deemed necessary, replace the odor control system.
- Install new SPD to protect the main disconnect switch.

Table 5-7 LS-6 Higgs

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	8 ft
		Discharge FM Diameter	6 in
		Depth	22 ft 2 in
		Valve Assembly	6-in Kennedy Clow Check Valves 6-in Dezurik Plug Valves
		Odor Control	Siemens Carbon Adsorber
	Pump	Quantity	2
		Manufacturer	Sulzer
		Model	XFP-100C-CB1.4-PE 35/4
		Impeller	7.09 in
		Horsepower	4.7
		Operating Point	369 gpm @ 46 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TAC II Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Portable
		Size	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	240
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	No

5.2.5.4 LS-7 Pure Oil

Constructed in 1980, the Pure Oil lift station (LS-7) is north of the gas station on the northeast corner of the intersection of Tamiami Trail and Easy Street. The lift station serves residential and commercial areas to its north and west and discharges into a 4-inch force main, which is conveyed to the East Port WRF.

The station is not fenced, is housed in a concrete building, and has a plastic-wrapped roof that is pending roof repairs from damage reported as a result of Hurricane Ian. The County's easement to access the station only extends 10 to 15 feet from the curb. Table 5-8 provides the lift station details.

Table 5-8 LS-7 Pure Oil

Station Info	Wetwell	Cross-Section Type	Rectangular	
		Length	13 ft	
		Width	6 ft	
		Discharge FM Diameter	4 in	
		Depth	12 ft 8 in	
		Odor Control	None	
		Valve Assembly	4-in Kennedy Clow Check Valve 4-in Dezurik Plug Valve	4-in American Flow Control Check Valve 4-in Dezurik Plug Valve
	Pump	Quantity	1	1
		Manufacturer	Gorman-Rupp	All Prime
		Model	T4A3-B	XS-4S
		Impeller	9.75 in	9.75 in
		Horsepower	20	20
		Operating Point	440 gpm @ 50 ft TDH	
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TAC II Controller	
		Surge Protector Present?	Yes	
		Backup Battery Present?	Yes	
	Generator	Standby or Portable?	Portable	
		Size	N/A	
		Fuel Capacity	N/A	
	System Supply	Voltage	240	
		Phase	3	
		Surge Protector Present?	None	
		Backup Battery Present?	None	

The following deficiencies were noted:

- Missing seal-offs from the control panel conduit.
- Obstructed access for a crane truck.
- Corrosion on Gorman-Rupp pump.
- Outdated and lack of surge protection observed.
- Inadequate indoor lighting.
- Float terminal blocks are exposed.

Proposed improvements to the station include:

- Evaluate replacement of this station to meet current CCU standards. A replacement lift station should also provide the following to address current deficiencies:
    - CCU standard lift station design for the new wetwell and new discharge piping and appurtenances.
    - Electrical controls and panel features to meet CCU standards and electrical codes, including outdoor-rated panel, phase monitors, SPD, and seal-offs.
    - SCADA integration.
    - Permanent security fencing to prevent unwanted access and dedicated site lighting for accessibility and safety.
    - Potable water service.
- Assuming the station will be completely replaced in the near future, the following improvements are recommended to the existing lift station in the interim:
    - Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes.
    - Evaluate possibilities for a dedicated access to the station.
    - Address the corrosion on the Gorman-Rupp pump and apply a new protective coating system as needed.
    - Install new and/or up to date SPDs to protect the pumps and SCADA system.
    - Install proper indoor lighting.
    - Rehabilitate float terminal blocks to meet NEC codes.

5.2.5.5 LS-9 Church

Installed in 1989, the Church Lift Station (LS-9) is behind the St. Vincent de Paul Society at 2499 Gates Avenue directly south of the Gates Avenue and Beverly Avenue intersection. The lift station receives flow from surrounding gravity and Hernando Lift Station (LS-10). LS-9 discharges to an 16-inch force main that manifolds to a 20-inch force main, which is conveyed to the East Port WRF.

The emergency dedicated pump suction and the emergency discharge connection are above grade adjacent to the wetwell. The station is fenced. The station has no dedicated site lighting. The wetwell and dry-pit have screened vents. Table 5-9 provides the lift station details.

The following deficiencies were noted:

- Concrete corrosion in the wetwell and concrete separation around the wetwell access hatch.
- Operations staff noted issues with force main flows fighting against each other during heavy rain events.
- Corrosion on seal-offs below the control panel and the portable generator receptacle.
- A small hole was found in the fence in front of the bypass connection.

Proposed improvements to the station include:

- Evaluate possible options for converting the station to submersible; otherwise evaluate concrete repair and restoration for the site.
- Evaluate system curve conditions in high rain events to ensure efficient pump selection.
- Install new and/or up to date SPDs to protect the pumps and SCADA system.
- Address the corrosion on the portable generator receptacle and apply a new protective coating system as needed.
- Provide provisions to access the bypass valve while maintaining site security.

Table 5-9 LS-9 Church

Station Info	Wetwell	Cross-Section Type	Rectangular
		Length	16 ft
		Width	9 ft
		Discharge FM Diameter	4 in
		Depth	12 ft 8 in
		Odor Control	None
		Valve Assembly	6-in Kennedy Clow Check Valve 6-in Dezurik Plug Valve
	Pump	Quantity	2
		Manufacturer	Flygt
		Model	CT 3201
		Impeller	454
		Horsepower	29
		Operating Point	690 gpm @ 59 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TAC II Controller
		Surge Protector Present?	No
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Portable
		Size	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	480
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	No

5.2.5.6 LS-24 Charlotte Square

Constructed in 1982, the Charlotte Square lift station (LS-24) is northeast of Abbe's Donut Nook at 2150 Tamiami Trail north of the intersection of Forrest Nelson Boulevard and Tamiami Trail. The station receives residential and commercial flow from the surrounding area and discharges to the Quesada Lift Station (LS-37) to convey flow to the East Port WRF.

The station is equipped with a 2-inch cylindrical rail-retrieval system. The wetwell is an older design in which the valve vault is not separated by a wall and is instead a shelf built into the side of the wetwell (shown in photograph to the left). This design can be dangerous to operators who need access during high-water levels in addition to confined space issues and sulfide exposure. The site is not fenced in and has a large buildup of debris and trash from surrounding businesses. Table 5-10 provides the details for this lift station.

The following deficiencies were noted:

- Heavy corrosion of the lined concrete wetwell and equipment.
- Flooding events during heavy rainfall in short periods (flash flooding).
- No dedicated station bypass.
- The current discharge piping configuration poses major safety concerns as there is no separation between the discharge piping/valves and the wetwell.
- Missing seal-offs from the control panel conduit.
- Missing dedicated site lighting.
- Valve vault hatch bolt is corroded, and the valve vault cannot be opened properly.

Proposed improvements to the station include:

- Evaluate the wetwell for potential structural repair and restoration of wetwell lining.
- Current and buildout flows will be modeled by Jones Edmunds as part of the RTS, Interceptor, and GMLS Update. Based on the model evaluation, improvements will be suggested to address issues with flooding events.
- Construct a separate isolated valve vault for operator safety, including standard dedicated discharge.
- Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes.
- Evaluate incorporating dedicated lift station lighting.
- Restore valve vault hatch to normal operating conditions.

Table 5-10 LS-24 Charlotte Square

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	6 ft
		Discharge FM Diameter	4 in
		Depth	14 ft 10 in
		Valve Assembly	4-inch Kennedy Clow Check Valves 4-inch Dezurik Plug Valves
		Odor Control	None
	Pump	Quantity	2
		Manufacturer	ShinMaywa
		Model	4CNWX42.2T2E
		Impeller	22-4
		Horsepower	3
		Operating Point	100 gpm @ 47 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TAC II Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Portable
		Size	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	208
		Phase	3
		Surge Protector Present?	No
		Backup Battery Present?	No

5.2.5.7 LS-25 Vo-Tech

Built in the 1980s, the Vo-Tech lift station (LS-25) was named after the nearby Charlotte Technical College, Charlotte County's first vocational-trade school. This lift station is at the southeast corner of Murdock Circle and Education Way. The station receives flow from the technical school campus, adjacent institutional and medical facilities, and the Charlotte County Administration Center. The Vo-Tech Lift Station conveys flow to the East Port WRF.

The site is fenced with barbed wire but does not have dedicated site lighting, but the operator noted the lighting is generally adequate due to the lift station being near a traffic intersection. Adequate space appeared to be provided for maintenance activities. The operator advised that the site was being evaluated by CCU for a potential sinkhole and advised the Jones Edmunds staff not to walk on or stand near the grade settlement. Subsequent observation of the wetwell indicated a gravity sewer line runs under the

identified area, potentially damaged or crushed by the observed grade settlement. Table 5-11 provides the lift station details.

Table 5-11 LS-25 Vo-Tech

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	8 ft
		Discharge FM Diameter	6 in
		Depth	18 ft 6 in
		Valve Assembly	6-in AFC Flapper-Style Check Valves 6-in Dezurik Plug Valves
		Odor Control	None
	Pump	Quantity	2
		Manufacturer	Flygt
		Model	NP 3127
		Impeller	489
		Horsepower	10
		Operating Point	238 gpm @ 46 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TAC II Controller
		Surge Protector Present?	No
		Backup Battery Present?	No
	Generator	Standby or Portable?	Standby
		Power Ratings	42-kW 52.5-kVA
		Fuel Capacity	279 gallons
	System Supply	Voltage	480
		Phase	3
		Surge Protector Present?	No
		Backup Battery Present?	No

The following deficiencies were noted:

- Lined concrete wetwell is showing early signs of corrosion.
- Grade settlement observed near generator and between discharge piping and generator.
- Potentially crushed invert east of the wetwell.
- Missing ARVs on the discharge piping.
- Antiquated check valves.
- Missing SPD.

Proposed improvements to the station include:

- Re-line the wetwell.
- Re-establish grade near the generator and between discharge piping and generator to original condition.
- Evaluate the invert east of the wetwell.
- Replace the removed ARVs on the discharge piping.
- Replace the check valves with those specified in CCU standards.
- Install new and/or up-to-date SPDs to protect the pumps and SCADA system.

5.2.5.8 LS-44 Liberty Elementary

The Liberty Elementary Lift Station (LS-44) is in front of Liberty Elementary School at 370 Atwater Street, northeast of the intersection of Wilkie Avenue and Atwater Street. The station receives low-pressure sewer flow from the surrounding residential and gravity flow from the elementary school. LS 44 conveys flow through a 12-inch force main to a 20-inch force main on Peachland Boulevard and finally to East Port WRF. This station was visited in 2023 and 2022 as but not during the 2024 Annual Report.

The lift station contains two 20-HP Flygt model CP 3152 submersible pumps with 454-mm impellers; one of the pumps is not seated correctly and is experiencing blowback. The pumps are submerged in a 6-foot-diameter, 10-foot-2-inch-deep wetwell. Each pump has an estimated capacity of 454 gpm at approximately 45 feet of head.

The wetwell is extremely corroded with cracks along the lining of the wall, and lining separation from the wall. The wetwell hatch is in good condition and provides adequate access to remove the pumps along the 2-inch cylindrical rail-retrieval system. The wetwell is vented but a strong odor was present at the time of the site visit. The adjacent lined valve vault includes 4-inch ductile iron discharge piping, Dezurik plug valves, and Mueller check valves with a dedicated discharge. Heavy corrosion is evident within the vault, particularly on the check valves. The hatch of the valve vault is in good condition.

The power service to the station is 230-volt, three-phase, with a pole-mounted transformer. The control panel has seal-offs although becoming corroded likely due to the high exposure to hydrogen sulfide and is equipped with a portable generator receptacle. The station did not appear to have a mechanical interlock. The station has a DFS Tac II SCADA system with a telemetry transmitter/receiver.

The site has barbed-wire fencing. The overall condition of the fencing is fair; the fence is showing signs of corrosion, some barbed wire disconnects occur, and a gap between the gravel and the bottom of the fence creates easy access for small animals. The only access to the lift station is across the sidewalk through the school entrance, which does not allow vehicular access. The station is equipped with potable water service. The station does not have dedicated site lighting.

The following deficiencies were noted:

- The wetwell has severe lining peeling and corrosion.
- Piping, check, and plug valves in the vault are heavily corroded.
- Being next to the school makes access difficult during peak school traffic.
- The fence is corroding at the brackets and hinges, has barbed wire damage, and has gaps between grade and fence line.
- Blowbacks from the pump.
- Strong hydrogen sulfide odor from the wetwell.
- Seal-offs are corroded.
- Missing dedicated site lighting.

Proposed improvements to the station include:

- Evaluate and perform full replacement of wetwell, valve vault, and associated appurtenances to meet CCU standards.
- Address the corrosion on the piping, check, and plug valves in the vault and apply a new protective coating system as needed.
- Evaluate incorporating dedicated access for operations staff.
- Restore corroded fence materials and repair the fence damage. Re-establish the grade between the fence and gravel.
- Re-establish the pump to its original seating to prevent blowback.
- Evaluate the addition of an odor-control system.
- Replace the seal-offs on the control panel due to heavy corrosion and immense sulfide odor.
- Evaluate incorporating dedicated lift station lighting.

5.2.5.9 LS-45 Woodbury

The Woodbury lift station (LS-45) is across the street from Full Spectrum Retirement at 630 Woodbury Drive, south of the intersection of Paulson Drive and Woodbury Drive. This station, built in 1983, receives wastewater from the surrounding commercial properties along US 41. The station discharges through a 6-inch force main to Quesada (LS-37) where flow is conveyed to the East Port WRF.

The station is equipped with a 2-inch cylindrical rail-retrieval system. The site is completely fenced and does not have dedicated lighting or an odor-control system. Table 5-12 provides the lift station details.

Table 5-12 LS-45 Woodbury

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	6 ft
		Discharge FM Diameter	6 in
		Depth	18 ft 3 in
		Valve Assembly	6-inch Mueller Check Valves 6-inch AFC Plug Valves
		Odor Control	None
	Pump	Quantity	2
		Manufacturer	Flygt
		Model	NP 3127
		Impeller	438
		Horsepower	10
		Operating Point	176 gpm @ 24 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TAC II Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Standby
		Power Ratings	42-kW 52.5-kVA
		Fuel Capacity	279 gallons
	System Supply	Voltage	480
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	No

The following deficiencies were noted:

- Missing seal-offs from the control panel conduit.
- Strong hydrogen sulfide odor from wetwell.
- Broken invert between the LS and manhole to the immediate east (on Woodbury Drive). The operator reported repairs to the invert and/or manhole are pending through CCU.
- The fence and barbed wire are showing signs of corrosion and have some damage.
- Piping, check, and plug valves in the vault are heavily corroded.
- Missing or damaged swing mechanism for the check valve.
- Wetwell is showing signs of corrosion.
- Outdated SPD.
- Missing dedicated site lighting.
- The concrete support for the control panel, power feed, and main disconnect is damaged.

Proposed improvements to the station include:

- Install seal-offs on any electrical equipment within 10 feet of the wetwell to return to conformance with current electrical codes.
- Install an odor-control system.
- Evaluate and complete rehabilitation of the invert and/or manhole to immediate east to restore normal operating conditions.
- Address the corrosion on the piping, check, and plug valves in the vault and apply a new protective coating system as needed.
- Replace corroded fence materials. Repair fence and barbed wire damage.
- Rehabilitate or replace check valve.
- Re-line the wetwell.
- Install new and/or up-to-date surge-protection device (SPDs) to protect the pumps and SCADA system.
- Evaluate incorporating dedicated lift station lighting.
- Repair or replace the damaged concrete electrical support.

5.2.5.10 LS-303 Constantine

The Constantine Lift Station (LS-303) is across the street from 26168 Constantine Road at the southeast corner of the intersection of Constantine Road and Aden Way. The station receives residential flow from the surrounding development through gravity inverts, discharges to the Mauritania Lift Station (LS-302), and ultimately flows to the East Port WRF through the Bridgewater Master Lift Station (MLS-309). The station has an Omni-Beacon telemetry system. No hose bibb is provided on site for washdown.

The wetwell is in the center of the road intersection, which requires Operations staff to manage traffic during routine maintenance and any pump removal. The design to move the lift station into the lot and convert the existing wetwell to a master manhole has been completed. The new design includes isolation valves and bypass piping, which currently do not exist at this simplex station. Table 5-13 provides the lift station details.

The following deficiencies were noted:

- No interlock between the generator breaker and the main breaker.
- Missing seal-offs from the control panel conduit.
- Difficult-to-access wetwell.
- No isolation valves.

Proposed improvements to the station include:

- Install an interlock on the electrical equipment and perform a detailed electrical code review to return to conformance with code.
- Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes.
- Perform thorough rehabilitation on the wetwell and prepare for construction of the improved design to allow safe access.
- Prepare for construction of the improved design to allow safe access, inclusion of appropriate valves, and inclusion of bypass piping.

Table 5-13 LS-303 Constantine

Station Info	Wetwell	Cross-Section Type	Manhole
		Diameter	6 ft
		Discharge FM Diameter	4 in
		Depth	N/A
		Valve Assembly	None
		Odor Control	None
	Pump	Quantity	1
		Manufacturer	Flygt
		Model	NP 3085
		Impeller	465
		Horsepower	3
		Operating Point	312 gpm @ 16 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	N/A
		Surge Protector Present?	N/A
		Backup Battery Present?	N/A
	Generator	Standby or Portable?	Portable
		Power Ratings	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	240
		Phase	1
		Surge Protector Present?	No
		Backup Battery Present?	Yes (for alarm)

5.2.5.11 LS-305 Bremen

The Bremen Lift Station (LS-305) is at the intersection of Bremen Way and Nuremberg Blvd in the center of the road intersection. The station receives residential flow from the surrounding development through gravity inverts, discharges to a manhole downstream, and ultimately flows to the East Port WRF through the Bridgewater Master Lift Station (MLS-309). The station has an Omni-Beacon telemetry system. No hose bibb is provided on site for washdown.

The lift station requires Operations staff to manage traffic during routine maintenance and any pump removal. The lift station is planned to move into a nearby lot and for the existing wetwell to be converted to a master manhole. Table 5-14 provides the lift station details.

The following deficiencies were noted:

- No interlock between the generator breaker and the main breaker.
- Missing seal-offs from the control panel conduit.
- Difficult-to-access wetwell.
- No isolation valves.

Proposed improvements to the station include:

- Install an interlock on the electrical equipment and perform a detailed electrical code review to return to conformance with code.
- Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes.
- Perform thorough rehabilitation on the wetwell and prepare for construction of the improved design to allow safe access.
- Prepare for construction of the improved design to allow safe access, inclusion of appropriate valves, and inclusion of bypass piping.

Table 5-14 LS-305 Bremen

Station Info	Wetwell	Cross-Section Type	Manhole
		Diameter	6 ft
		Discharge FM Diameter	4 in
		Depth	N/A
		Valve Assembly	None
		Odor Control	None
	Pump	Quantity	1
		Manufacturer	Flygt
		Model	NP 3085
		Impeller	465
		Horsepower	3
		Operating Point	36 gpm @ 11 ft TDH

Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	N/A
		Surge Protector Present?	N/A
		Backup Battery Present?	N/A
	Generator	Standby or Portable?	Portable
		Power Ratings	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	240
		Phase	1
		Surge Protector Present?	No
		Backup Battery Present?	No

5.2.5.12 LS-323 Aysen

Constructed in the 1980s, the Aysen Lift Station (LS-323) is northwest of the property at 25358 Aysen Drive. The station receives flow from LS-324, LS-325, and LS-326 and discharges to LS 321. Discharge isolation valves and the emergency pump connection are below ground in an adjacent valve vault. The station is not fenced, but the panel, wetwell, and valve vault are padlocked.

The County owns the lot directly northeast of the lift station, and design plans have been completed to construct this lift station conversion. This will allow easier access to the lift station from the south end of Purus Street. During the visit, the discharge force main experienced a pipe break, but wastewater was able to be contained to the valve vault due to the wetwell configuration and CCU's quick response. Table 5-15 provides the lift station details.

Table 5-15 LS-323 Aysen

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	8 ft
		Discharge FM Diameter	4 in
		Depth	19 ft 6 in
		Valve Assembly	4-inch Kennedy Clow Check Valves 4-inch Dezurik Plug Valves
		Odor Control	None
	Pump	Quantity	2
		Manufacturer	Sulzer
		Model	ABS XFP100C-CB1.4 PE35/4
		Impeller	7 in
		Horsepower	4.7
		Operating Point	281 gpm @ 31 ft TDH

Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TCU Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Portable
		Power Ratings	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	240
		Phase	1
		Surge Protector Present?	No
		Backup Battery Present?	No

The following deficiencies were noted:

- Signs of corrosion on the wetwell and valve vault interior likely due to hydrogen sulfide concentrations.
- No interlock between the generator breaker and the main breaker.
- Missing seal-offs from the control panel conduit.
- Nearby vegetation is impeding access to the control panel.

Proposed improvements to the station include:

- Coat the wetwell and valve vault and repair the valve vault appurtenances.
- Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes.
- Proceed with lift station conversion.
- Remove nearby vegetation around the control panel.

5.2.5.13 LS-812 Annapolis

The Annapolis Lift Station (LS-812), built in the 1970s and upgraded in 2006, is in the utility corridor across from 226 Annapolis Lane. This submersible lift station receives flow from the surrounding residential areas and conveys the wastewater to the Rotonda WRF.

The station does not have the standard fence with barbed wire but instead has a smaller chain surrounding the lift station. The station does not have dedicated lighting, an odor-control system, or dedicated access to the site without having to travel off-road. The operator noted that the drainage mainly impacts the accessibility to the station, but the station itself operates fine due to the elevated pad and wetwell. Table 5-16 provides the lift station details.

The following deficiencies were noted:

- Missing seal-offs from the control panel conduit. This represents a significant code violation as well as a potential explosion hazard.
- No dedicated drive access. Difficult to access during wet weather.
- Missing potable water service near the station.
- Missing SCADA system.
- Wetwell is cracking and leaking.
- Wetwell is showing signs of corrosion.
- Missing dedicated site lighting.

Proposed improvements to the station include:

- Install seal-offs on any electrical equipment within 10 feet of the wetwell to return to conformance with current electrical codes.
- Construct dedicated access pathway for the Operations staff.
- Connect to water service near the station.
- Install a SCADA system.
- Seal cracks and leaks in wetwell.
- Re-line the wetwell.
- Build dedicated lift station lighting.

Table 5-16 LS-812 Annapolis

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	6 ft
		Discharge FM Diameter	4 in
		Depth	17 ft
		Valve Assembly	4-in Kennedy Clow Check Valves 4-in HPCO Plug Valves
		Odor Control	None
	Pump	Quantity	2
		Manufacturer	Flygt
		Model	CP 3102
		Impeller	433
		Horsepower	5
		Operating Point	246 gpm @ 23 ft TDH

Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	N/A
		Surge Protector Present?	N/A
		Backup Battery Present?	N/A
	Generator	Standby or Portable?	Portable
		Power Ratings	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	240
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	No

5.2.5.14 LS-818 Harbor West

Constructed in 2019, the Harbor West Lift Station (LS-818) is at 14613 Ponce De Leon Trail and receives gravity flows from the surrounding area. LS-818 discharges through a 4-inch DI force main and is conveyed to the West Port WRF.

The station is fenced and has site lighting but does not have an odor-control system; however, the wetwell is vented. Table 5-17 provides the lift station details.

Table 5-17 LS-181 Harbor West

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	8 ft
		Discharge FM Diameter	4 in
		Depth	26 ft 4 in
		Valve Assembly	4-in Kennedy Clow Check Valves 4-in Dezurik Plug Valves
		Odor Control	None
	Pump	Quantity	2
		Manufacturer	Flygt
		Model	NP 3127
		Impeller	256
		Horsepower	6.5
		Operating Point	100 gpm @ 81 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TCU Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Portable
		Power Ratings	N/A
		Fuel Capacity	N/A
	System Supply	Voltage	480
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes

The following deficiency was noted:

- Paint chipping and slight corrosion on the discharge piping and appurtenances.

The proposed improvement to the station includes:

- Address the corrosion on the discharge piping and appurtenances and apply a new protective coating system as needed.

5.2.5.15 LS-821 Rebel Court

The Rebel Court Lift Station (LS-821) constructed in the 1970s, is southeast of the intersection of Rebel Court and Bonita Drive and receives flow from the surrounding residential area. The Rebel Court station discharges through a 6-inch force main to LS-816, then to LS-801, and finally to the Rotonda WRF.

The station is equipped with a T-shaped rail-retrieval system. A dedicated discharge is on site but is buried, showing signs of corrosion, and not easily accessible in case of an emergency.

The generator is the only part of the lift station that is fenced with barbed wire. The operator noted that the drainage at the station is not good due to being in the ditch. Overhead powerlines and a limited easement adjacent to neighboring property at this station can make accessibility challenging. Table 5-18 provides the lift station details.

The following deficiencies were noted:

- Missing seal-offs from the control panel conduit.
- Erosion around the wetwell lid.
- Signs of I/I into the wetwell due to gaps between wetwell section rings. The wetwell is showing signs of degradation due to lack of liner.
- Corrosion of valves in the valve vault.
- Corrosion of wetwell hatch.
- Corrosion of discharge bypass camlock connection.
- Outdated SPD.
- Missing dedicated site lighting.

Proposed improvements to the station include:

- Install seal-offs on any electrical equipment within 10 feet of the wetwell and perform a detailed electrical code review to return to conformance with current electrical codes.
- Re-establish grade around the wetwell lid.
- Re-line the wetwell
- Address the corrosion on the discharge piping and appurtenances and apply a new protective coating system as needed.
- Rehabilitate or replace the wetwell hatch.
- Rehabilitate or replace camlock connection.
- Install new and/or up-to-date SPDs to protect the pumps and SCADA system.
- Build dedicated lift station lighting.

Table 5-18 LS-821 Rebel Court

Station Info	Wetwell	Cross-Section Type	Circular
		Diameter	8 ft
		Discharge FM Diameter	6 in
		Depth	23 ft 3 in
		Valve Assembly	6-in Kennedy Clow Check Valves 6-in Mueller Plug Valves
		Odor Control	None
	Pump	Quantity	2
		Manufacturer	Flygt
		Model	NP 3127
		Impeller	438
		Horsepower	10
		Operating Point	1,322 gpm @ 27 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TCU Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Portable
		Power Ratings	31-kW 38.8-kVA
		Fuel Capacity	221 gallons
	System Supply	Voltage	230
		Phase	3
		Surge Protector Present?	No
		Backup Battery Present?	No

5.3 VACUUM STATIONS

The collection system has four vacuum stations owned by CCU. The four existing stations have permanent auxiliary power and on-site trailer-mounted generators capable of providing full power for 3 to 5 days.

During site visit assessments conducted by Jones Edmunds personnel and CCU staff on January 31, 2024, through February 2, 2024, three vacuum stations were evaluated, as selected by CCU staff. In addition to the standard assessments, an electrical condition assessment was conducted at the El Jobean vacuum station, VS-3. In total, all four vacuum stations were visited as shown in Table 5-19. The site visit assessments will help CCU to identify and prioritize maintenance, rehabilitation, or replacement work at these lift stations.

Table 5-19 Visited Wastewater Collection Systems – Vacuum Stations

Station No.	Location
VS-1 – Skylark	598 Skylark Lane NW
VS-2 – Harbor	3450 Harbor Boulevard
VS-3 – El Jobean	4070 Railroad Avenue

5.3.1 VS-1 – SKYLARK

The Skylark Vacuum Station (VS-1) is at 598 Skylark Lane NW, southwest of the intersection of Azalea Avenue NW and Skylark Lane NW. This vacuum lift station receives flow from the vacuum collection system in the surrounding area through two 10-inch and two 8-inch vacuum lines. VS-1 discharges through a 6-inch that manifolds into an 8-inch force main header that conveys flow to the East Port WRF.

The building contains a dedicated pump crane for removing the discharge pumps and valves from the lower level. Additionally, CCU maintains a portable hoist system for use at any vacuum station. The station is gated and surrounded by a block wall. The roof and ceiling are being repaired from wind damage from Hurricane Ian. The operators noted that equipment is frequently cleaned, but poor drainage in the vacuum tank pit results in additional labor. The generator is operated once a week each Monday morning to verify standby power capabilities.

Table 5-20 provides the vacuum station details.

Table 5-20 VS-1 Skylark

Station Info	Wetwell	Vacuum Tank Volume	5,000 gallons
		Design Pressure	5 psi
		Discharge FM Diameter	6 to 8 in
		Odor Control	Mulch Bed
		Valve Assembly	6-in GA Plug and Check Valves 8-in GA Plug and Check Valves
	Vacuum Pump	Quantity	6
		Manufacturer	Busch
		Model	Mink MM 1502 AV
		Air Displacement	353 ACFM
		Horsepower	15
	Effluent Pump	Manufacturer	Cornell
		Model	4514T-VC18DB
		Impeller	14 in
		Horsepower	50
		Operating Point	725 gpm @ 137.4 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TCU Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Standby
		Power Ratings	300-kW 375-kVA
		Fuel Capacity	519 gallons
	System Supply	Voltage	480
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	No

The following deficiencies were noted:

- The crane pump on site is not aligned with the valves. Some of the valves are below the common discharge line and meter, making them difficult to access with the crane.
- The access for tank maintenance is at the top of the tank without a dedicated access point.
- Plastic covers for the effluent pump motor components are missing or broken.
- Liner within mulch bed is tearing at the edges. Poor drainage in the vacuum tank pit.
- Check valve for pump 1 was noted by CCU staff to be leaky.
- Missing discharge flow meter.

Proposed improvements to the station include:

- Modify the overhead crane for lateral movement.
- Add a catwalk for accessing the top of the tank for maintenance.
- Rehabilitate or replace the leaky check valve.
- Replace the plastic covers for the pump motor components.
- Evaluate solutions to address poor drainage to achieve better drainage, such as at VS-2 Harbor.
- Rehabilitate the liner for the mulch bed.
- Install a discharge flow meter.

5.3.2 VS-2 – HARBOR

The Harbor Vacuum Station (VS-2) is at 3450 Harbor Boulevard. This vacuum lift station receives flow from two 8-inch vacuum lines, with a third 8-inch influent line for future use. VS-2 collects flow from approximately 200 homes in the surrounding area. VS-2 transmits flow through a 6-inch Siemens flowmeter to the Southport Master Lift Station (LS-65), which flows directly to the East Port WRF. The building contains a dedicated pump crane for removal of pumps and valves from the lower level.

The station is gated and surrounded by a 4-foot block wall. CCU added a hazard sign near the stairwell to prevent entry by unauthorized personnel. The roof and ceiling are being repaired from wind damage from Hurricane Ian. The station has outdoor and indoor site lighting. The generator is operated once a week each Monday to verify standby power capabilities. Table 5-21 provides the vacuum station details.

The following deficiencies were noted:

- The pump crane on site is not aligned with the pump or the valves. Some of the valves are below the common discharge line and meter, making them difficult to access with the crane.
- The tank maintenance access is at the top of the tank without a dedicated access point.
- The pump skid continuously rusts.
- The moisture separator seals are beginning to corrode.
- Poor interior lighting due to repairs from Hurricane Ian.
- Reported issues of unauthorized personnel being near the site.
- Suction and discharge bypass labels are not consistent with other vacuum stations.
- The exhaust fan was reported by CCU staff to be out of service.
- The liner for the mulch bed is tearing at the edges.

Additionally, the Jones Edmunds electrical engineer visited on February 11, 2025, to meet with staff and observe the station. CCU staff reported the exhaust fan at the lower level is inoperable and out of service. A belt has been ordered to replace the current one, if this was caused by mechanical or electrical issues is unknown.

The electrical engineer noted the following deficiencies:

- The interior of the structure is missing a ceiling, which is being replaced.
- Temporary lighting has been strung across the ceiling but provides poor illumination, which might be an issue for staff.
- Unsupported conductors are partially suspended from the ceiling. These are likely from the original lighting and intended to be reused. Extreme care should be taken within the facility due to the potential of shock hazard.
- The exhaust fan is inoperable at the lower levels – a belt replacement was ordered.

Proposed improvements to the station include:

- Modify the overhead crane for lateral movement.
- Add a catwalk for accessing the top of the tank for maintenance.
- Evaluate long-term solutions to pump skid rusting.
- Replace corroded seals on moisture separators.
- Evaluate lighting improvements for operators like those at Ackerman VS-4.
- Rehabilitate the liner for the mulch bed.
- Relabel the suction and discharge bypass piping to be consistent with other vacuum stations.
- Evaluate security improvements for better monitoring (i.e., cameras, etc.).

Table 5-21 VS-2 Harbor

Station Info	Wetwell	Vacuum Tank Volume	5,000 gallons
		Discharge FM Diameter	6 to 8 in
		Design Pressure	5 psi
		Odor Control	Mulch Bed
		Valve Assembly	6-inch GA Check and Plug Valves
	Vacuum Pump	Quantity	3
		Manufacturer	Busch
		Model	Mink MM 1502 AV
		Air Displacement	353 ACFM
		Horsepower	15
	Effluent Pump	Manufacturer	Cornell
		Model	4514T-VC18D8
		Impeller	10 in
		Horsepower	25
		Operating Point	411 gpm @ 92 ft TDH
Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TCU Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Standby
		Power Ratings	218.7-kW 375-kVA
		Fuel Capacity	500 gallons
	System Supply	Voltage	480
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	No

5.3.3 VS-3 – El Jobean

The El Jobean Vacuum Station (VS-3) (LS 99) is at 4070 Railroad Avenue, south of the intersection of Weeksonia Avenue and Railroad Avenue. The vacuum lift station receives flow from the vacuum collection system in the surrounding area, including residential units and three restaurants, through three 8-inch vacuum lines.

The building has a dedicated pump crane for removing the discharge pumps and valves from the lower level. The discharge isolation valves are overhead in the lower level and only accessible by the dedicated overhead crane in the building. The station is gated and surrounded by a block wall. The station has indoor site

lighting. The generator is operated once a week each Monday to verify standby power capabilities. Table 5-22 provides the vacuum station details.

The following deficiencies were noted:

- The access for tank maintenance is at the top of the tank without a dedicated access point.
- The overhead door to pull the vacuum pumps is relatively short and has a low ceiling.
- The platform holding the vacuum pumps near pump 2 has a small crack.

Proposed improvements to the station include:

- Install a catwalk or dedicated ladder for accessing the top of the tank for maintenance.
- Verify the vacuum station site is in accordance with OSHA and County safety and confined-space requirements.
- Install a portable hoist or dedicated overhead crane for easier access to the vacuum pumps.
- Evaluate fall protection needs while removing pumps for maintenance and repair.
- Rehabilitate or repair the platform holding up the vacuum pumps.

Table 5-22 VS-3 El Jobean

Station Info	Wetwell	Vacuum Tank Volume	2,900 gallons
		Discharge FM Diameter	6 to 8 in
		Design Pressure	5 psi
		Odor Control	Mulch Bed
		Valve Assembly	6-in Pratt Check Valves 6-in MVCO Plug Valve 8-in MVCO Plug Valve
	Vacuum Pump	Quantity	3
		Manufacturer	Busch
		Model	Mink MM 1502 AV
		Air Displacement	353 ACFM
		Horsepower	10
	Effluent Pump	Manufacturer	Cornell
		Model	4NHTA-VC18DB
		Impeller	14 in
		Horsepower	50
		Operating Point	273 gpm @ 100 ft TDH

Electrical Info	Telemetry/ SCADA	SCADA Telemetry Type	DFS TAC II Controller
		Surge Protector Present?	Yes
		Backup Battery Present?	Yes
	Generator	Standby or Portable?	Standby
		Power Ratings	300-kW 375-kVA
		Fuel Capacity	519 gallons
	System Supply	Voltage	480
		Phase	3
		Surge Protector Present?	Yes
		Backup Battery Present?	No

5.4 Operations

The operation of the wastewater collection system requires the ability to move all service area-generated wastewater to its tributary treatment plant. The wastewater quantity is in constant flux, and CCU Operations staff is tasked with understanding and managing the daily, monthly, and seasonal lows and peaks. The flat terrain of Charlotte County requires more than 300 pumping stations to transfer wastewater from the customer connections to the treatment plants.

CCU maintains a separate department for operating and maintaining the collection systems. Although many of the pumping stations (lift and vacuum stations) are continuously monitored by RTUs, each station is visited monthly at a minimum, in accordance with FDEP requirements. Most of the daily sewer department effort is involved with maintaining the pumping stations through daily or weekly physical inspections and a proactive maintenance program.

Unforeseen pump station failures require immediate attention. CCU maintains two 6,000-gallon tankers and three 4,000-gallon tankers and has contracts with local septage haulers. These tankers serve a dual purpose. They are used to transport sludge from the wastewater treatment plants but are also available to haul raw wastewater from lift station sites and to supplement vacuum station performance during emergencies. As discussed in Section 5.2, many pump stations include on-site standby power or portable generator receptacles that can be used during power failures and bypass pump connections in the event of a pump failure. With an ongoing effort through FEMA grants and CIP projects, CCU continues to increase the number of stations with dedicated auxiliary power options, as well as acquire additional spare generators for emergency use at any station.

5.5 Maintenance

Maintenance procedures for the wastewater collection system are similar to the following for the water distribution systems.

5.5.1 Work Orders (WOs)

The process for generating and completing WOs in the Wastewater Collection workgroup is similar to the process described for the Water Distribution workgroup. WOs are generated on a daily basis for repair- and maintenance-related items. Service calls from customers also result in generated WOs prioritized based on criticality. Each WO provides a means for CCU staff to be dispatched for evaluation and/or repair of reported issues. WOs from service calls may require preventative or corrective actions. In FY 2024, CCU completed 11,056 WOs, with 900 coming from customer calls for leaks and 125 from main breaks for pipes over 3 inches.

5.5.2 Data Management

The CMMS described in Chapter 4 is in full implementation. As its database continues to expand, it will also be shared even more than it is currently. For example, a manager will be able to query the system to determine if open WOs exist in a specific neighborhood, regardless of whether they are water or wastewater related, or if the Public Works Department is planning to pave a street before a planned open-cut repair of a wastewater collection line.

During the planning stages of a new collection system, CCU engages an engineering consultant to perform a feasibility study that includes an economic comparison of installing a conventional or modified gravity system, with its network of lift stations and force mains, versus a low-pressure and/or a vacuum system. The major components of the comparison are initial construction costs and future maintenance costs over the life of the system. Future costs are brought to present-day costs, much like an annuity, and added to construction costs to determine total project cost. The final selection of the new collection system is based on these life-cycle costs and the specific needs of each area served.

The CMMS will allow this type of economic analysis to be performed with greater precision in future studies, because costs will be more accurately known.

5.5.3 Maintenance

The wetwells of all lift stations and vacuum stations are inspected regularly. Problems are addressed as they are found. This effort extends beyond the thorough inspection of representative stations, as described in Section 5.2.

Most of the CCU collection and transmission systems were acquired in the 1990s from other utilities where some of the infrastructure dates back to the 1950s. Older sewers were typically installed in swales, which made them more prone to I/I. Also, design and construction standards were not as stringent as the current practices when much of the system was installed. Pipe material and joints were constructed with material that deteriorates with time. The older gravity sewer pipes are vitrified clay with frequent joints that are sources of I/I. Vitrified clay pipe is resistant to corrosion but is more brittle than PVC and HDPE pipe. After many years of service, cracks develop, and pieces of the clay pipe protrude into the flow stream. Although CCU has relatively few plugged sewers, the broken clay pipe will cause blockage and must be repaired.

CCU Wastewater Collections staff performs in-place pipe repairs to fix most of the broken pipes in the system. Most repairs involve a cast-in-place lining, fold-and-form lining, or PVC

lining. These repair methods restore the integrity of the sewer system without requiring excavation.

The gravity sewer system provides considerable storage time during power failures to allow CCU staff time to address the issue. CCU has developed an emergency preparedness program for the systems in the service area. If a power failure occurs in the LPS system, approximately 20 minutes of wastewater storage remains in the LPS system lift station wetwells. This allows CCU to dispatch appropriate tanker truck and/or generator support, as discussed earlier in this chapter.

5.6 Review of Previous Report Recommendations

Table 5-23 summarizes the recommendations and status since the 2023 Annual Report for the wastewater collection system. See previous year's Annual Report for recommendations and status of the wastewater collection system not inspected in the 2023 Annual Report.

Table 5-23 Wastewater Collection System – FY 2023 Recommendations and Status

Recommendation:	Continue the scheduled repair of sanitary lift stations that have deteriorated due to age and hydrogen sulfide presence.
Progress:	Ongoing.
Recommendation:	Continue to use the wastewater lift station and force main computer model to assess the need for upgrades to the system based on expected demand for services.
Progress:	Ongoing.
Recommendation:	Continue construction and plan for the next phases of sewer expansion in the Port Charlotte area in accordance with 2024 Sewer Master Plan.
Progress:	Ongoing.
Recommendation:	Install odor-control systems at lift stations where hydrogen sulfide concentrations cause odors and deteriorate structures.
Progress:	Ongoing.
Recommendations:	Master Lift Station No. 65 – South Port (Electrical Only) 1. Remove the abandoned pressure switches. 2. Make provisions to lower generator controls height. 3. Restore cover to original condition.
Progress:	1. Not complete. 2. Not complete. 3. Complete.
Recommendations:	Master Lift Station No. 321 – Angol 1. Rehabilitate or replace the wetwell vent and dedicated suction. 2. Restore the flow meter to good operating condition. 3. Restore barbed wire to original condition. 4. Configure SCADA control points for generator operation. 5. Evaluate the significance of the corrosion to wetwell.
Progress:	Not completed.

Recommendations:	Master Lift Station No. 309 – Bridgewater 1. Evaluate the significance of the corrosion to wetwell. 2. Evaluate the significance of concrete wear and cracks around the odor-control unit. 3. Evaluate alternative drainage options. 4. Evaluating incorporating dedicated lift station lighting.
Progress:	Not completed.
Recommendations:	Master Lift Station No. 815 – "Z" 1. Evaluate the significance of the corrosion near the odor-control system. 2. Evaluate the significance of cracks on the concrete pad. 3. Evaluate the need for painting the discharge piping appurtenances. 4. Evaluate incorporating dedicated lift station lighting.
Progress:	In progress.
Recommendation:	Lift Station No. 1 – Community Center Evaluate replacement of this station to meet current CCU standards.
Progress:	Not complete.
Recommendations:	Lift Station No. 2 – Dalton 1. Evaluate the need for painting the discharge piping appurtenances. 2. Evaluate the need for barbed wire restoration.
Progress:	In progress.
Recommendations:	Lift Station No. 6 – Higgs 1. Evaluate site lighting for lift station employee serviceability. 2. Evaluate the need for painting the discharge piping appurtenances. 3. Evaluate the significance of the cracks in concrete formwork at the top of the wetwell.
Progress:	1. In progress. 2. Not complete. 3. Not complete.
Recommendation:	Lift Station No. 7 – Pure Oil Evaluate replacement of the station to meet current CCU standards.
Progress:	Not complete.
Recommendation:	Lift Station No. 19 – Port Charlotte High School Evaluate the significance of the corrosion of the piping and fittings within the valve vault.
Progress:	Not complete.
Recommendations:	Lift Station No. 24 – Charlotte Square 1. Evaluate the wetwell for potential structural repair and restoration of wetwell lining. 2. Evaluate the seal of the wetwell and/or raising the wetwell elevation to avoid I/I. 3. Evaluate constructing a separate, isolated valve vault for operator safety, including a standard dedicated discharge. Evaluate incorporating dedicated lift station lighting.
Progress:	Not complete.

Recommendations:	Lift Station No. 25 – Vo-Tech 1. Evaluate the significance of the wetwell corrosion. 2. Evaluate potential solutions to grade settlement to re-establish grade near the generator and between the discharge piping and generator to original condition. 3. Evaluate the invert to the east.
Progress:	Not complete.
Recommendations:	Lift Station No. 44 – Liberty Elementary 1. Evaluate and perform full replacement of the wetwell, valve vault, and associated appurtenances to meet CCU standards. 2. Evaluate the significance of the corrosion on the fittings within the valve vault. 3. Evaluate the addition of an odor-control system. 4. Evaluate incorporating dedicated access for Operations staff. 5. Evaluate incorporating dedicated lift station lighting.
Progress:	Not complete.
Recommendations:	Lift Station No. 45 – Woodbury 1. Evaluate and complete rehabilitation of the invert and/or manhole to immediate east to restore normal operating conditions. 2. Evaluate the addition of an odor-control system. 3. Evaluate the significance of the wetwell corrosion. 4. Evaluate incorporating dedicated lift station lighting. 5. Evaluate the damaged electrical support for repair or replacement.
Progress:	In progress.
Recommendations:	Lift Station No. 809 – Placida Harbour 1. Evaluate incorporating a dedicated access for Operations staff, including access for pump trucks. 2. Evaluate incorporating a water service connection near the station. 3. Evaluate incorporating dedicated lift station lighting.
Progress:	In progress.
Recommendations:	Lift Station No. 812 – Annapolis 1. Evaluate incorporating a dedicated access for Operations staff. 2. Evaluate incorporating a water service connection near the station. 3. Evaluate the addition of a SCADA system. 4. Evaluate the significance of the wetwell corrosion. 5. Evaluate incorporating dedicated lift station lighting.
Progress:	In progress.
Recommendations:	Lift Station No. 813 – Marina 1. Add dedicated lighting. 2. Permanent security fencing to prevent unwanted access. 3. Update electrical controls to meet CCU standards and electrical codes including outdoor-rated panel, phase monitors, SPD, and seal-offs. 4. Provide SCADA integration. 5. Provide potable water service at the station.
Progress:	Not complete.

Recommendation:	Lift Station No. 819 – Rotonda Circle #1 Evaluate the replacement of this station to meet CCU standards and to relocate away from the waterway.
Progress:	In progress.
Recommendations:	Lift Station No. 821 – Rebel Court 1. Evaluate the significance of the degradation of the wetwell and relining of the wetwell. 2. Evaluate the significance of the corrosion on the valves in the valve vault. 3. Evaluate the integrity of the wetwell hatch. 4. Evaluate incorporating dedicated lift station lighting.
Progress:	In progress.
Recommendations:	Vacuum Station No. 1 – Skylark 1. Evaluate the significance of the corrosion on the valves in the valve vault. 2. Evaluate modifying the overhead crane for lateral movement. 3. Evaluate adding a catwalk for accessing the top of the tank. 4. Evaluate replacing the check valve with a CCU standard check valve. 5. Evaluate full rehabilitation of the mulch bed odor-control to mitigate deficiencies. 6. Evaluate lighting improvements for operators like Ackerman, VS-4. 7. Evaluate trench drainage implementation like Harbor VS-2. 8. Evaluate and install discharge a flow meter.
Progress:	In progress.
Recommendations:	Vacuum Station No. 2 – Harbor 1. Evaluate modifying the overhead crane for lateral movement. 2. Evaluate adding a catwalk for accessing the top of the tank for maintenance. 3. Evaluate long-term solutions to the pump skid rusting. 4. Evaluate replacing corroded seals on the moisture separators. 5. Evaluate lighting improvements like those at Ackerman, VS-4. 6. Evaluate security improvements for better monitoring (i.e., cameras, etc.).
Progress:	In progress.
Recommendation:	Vacuum Station No. 4 – Ackerman Evaluate trench drainage implementation like Harbor, VS-2.
Progress:	In progress.

6 WASTEWATER TREATMENT FACILITIES

CCU owns and operates four WRFs throughout Charlotte County and one LTF for the County landfill as shown in Figure 6-1. The East Port WRF serves Mid County, the West Port and Rotonda WRFs serve the West County service area, and the Burnt Store WRF serves the South County service area. This Chapter presents each facility independently since each WRF is unique in its design and treatment approach. In addition, this Chapter reviews CCU's wastewater pre-treatment and biosolids handling and disposal programs. Table 6-1 lists permitted treatment capacities of CCU's WRFs.

Figure 6-1 CCU Wastewater Treatment Facilities

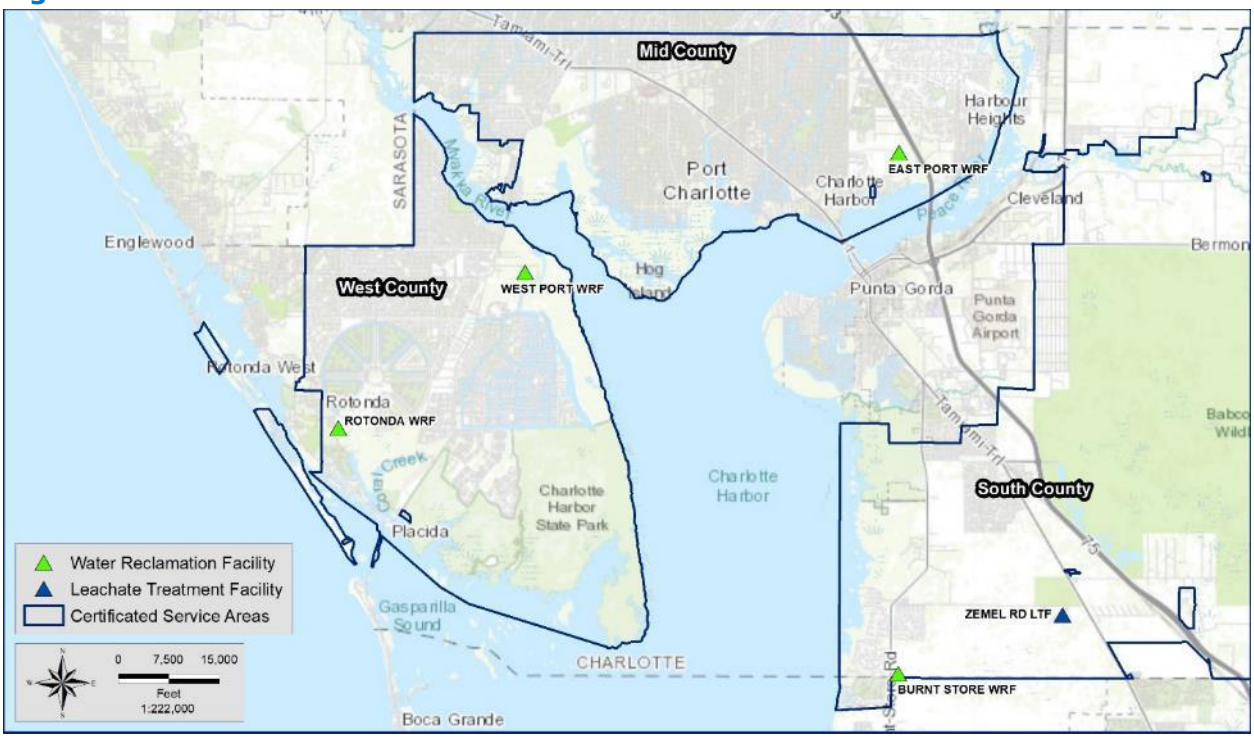


Table 6-1 CCU Water Reclamation Facilities and Design Capacities

WRFs	Current Permitted Capacity (MGD AADF)
East Port	6.0[a]
West Port	1.2[b]
Rotonda	2.0[c]
Burnt Store	0.5[d]
Total	**9.7**

Notes:

[a] Construction for plant expansion to 9.0 MGD AADF expected to be complete by December 2026.

[b] Design for expansion to 2.5 MGD AADF w/ AWT is underway and expected to be completed by 2032.

[c] Future Design is planned for re-rate to 2.5 MGD AADF w/ AWT; schedule to be determined.

[d] CMAR project to expand to 1.0 MGD underway; expected completion is by Summer 2026.

6.1 WASTEWATER PRETREATMENT COMPLIANCE

CCU has a wastewater pretreatment program for receiving and collecting septage and FOG within the collection system to serve their residents with septic systems, enhance treatment, and prevent overflows in the collection system. CCU's Pretreatment Program includes:

- Transported Waste Receiving Program.
- Restaurant Grease Interceptor Inspection Program.
- Investigation of unauthorized discharges to the wastewater system.

6.1.1 TRANSPORTED WASTE RECEIVING PROGRAM

CCU is proud of the Waste Receiving Program, which provides an environmentally safe disposal option for septic waste, reducing land application and environmental impacts. The septage receiving station (SRS) at the East Port WRF combines the hauled waste with plant influent to achieve reclaimed water-quality effluent and beneficial reuse of biosolids. Once on site, septage haulers enter a code to activate the SRS and then another code to identify their hauled septage as either In-County or Out-of-County septage for billing purposes.

In FY 2019, the SRS hours of operation were changed to 7:00 a.m. to 4:30 p.m., Monday through Friday, which allowed CCU staff to better monitor operations. This approach prolongs the life of the equipment by ensuring compliance with disposal requirements and eliminating mixed loads that damage equipment. In FY 2024, the program accepted 1,005,834 gallons from 26 permitted haulers.

6.1.2 RESTAURANT GREASE INTERCEPTOR INSPECTION PROGRAM

CCU does not accept FOG deliveries to any of their wastewater treatment facilities. This program is designed to help prevent sanitary sewer overflows in the CCU sanitary sewer collection system by removing FOG at the source. Program staff perform spot inspections and monitor grease interceptors at more than 400 restaurants and other food-preparation facilities County-wide to maintain compliance with the required pump-out schedule (e.g., 30, 60, or 90 days) and other required maintenance. The focus has been on older buildings and facilities that might have inadequate grease interceptors. Plans for new restaurants and other food preparation facilities are reviewed by CCU's Engineering Services Division for adherence to County specifications. This coordination with the Building Department has made the program more efficient. In FY 2024, 11,056 WOs were completed, including 1,703 grease trap inspections, 25 grease trap re-inspections, 19 new installation inspections. The Liquid Environmental Solutions Facility that treated Fats, Oils, and Grease at the East Port WRF is no longer in operation, and that Fats, Oils, and Grease is transported to the Fort Myers or Sarasota facilities for disposal.

6.1.3 INVESTIGATION OF UNAUTHORIZED DISCHARGES

Investigation and prevention of unauthorized discharges are important for protecting the treatment capabilities of the WRFs and the environment. These unauthorized discharges are pollutants that enter the municipal waste stream and have an adverse effect on the treatment process. Fortunately, no significant or categorical users are in the CCU collection system, eliminating the need for a full Industrial Pretreatment Program. When plant Operations staff report issues pertaining to the treatment process at any WRF, Pretreatment

staff begin investigating by sampling upstream lift stations and manholes, reviewing activities from local connections, and working closely with lift station crews and plant personnel. The goal is to determine the source of the illegal discharge, take steps to eliminate the problem up to and including fines, and return the plant to normal operations.

6.2 EAST PORT WRF

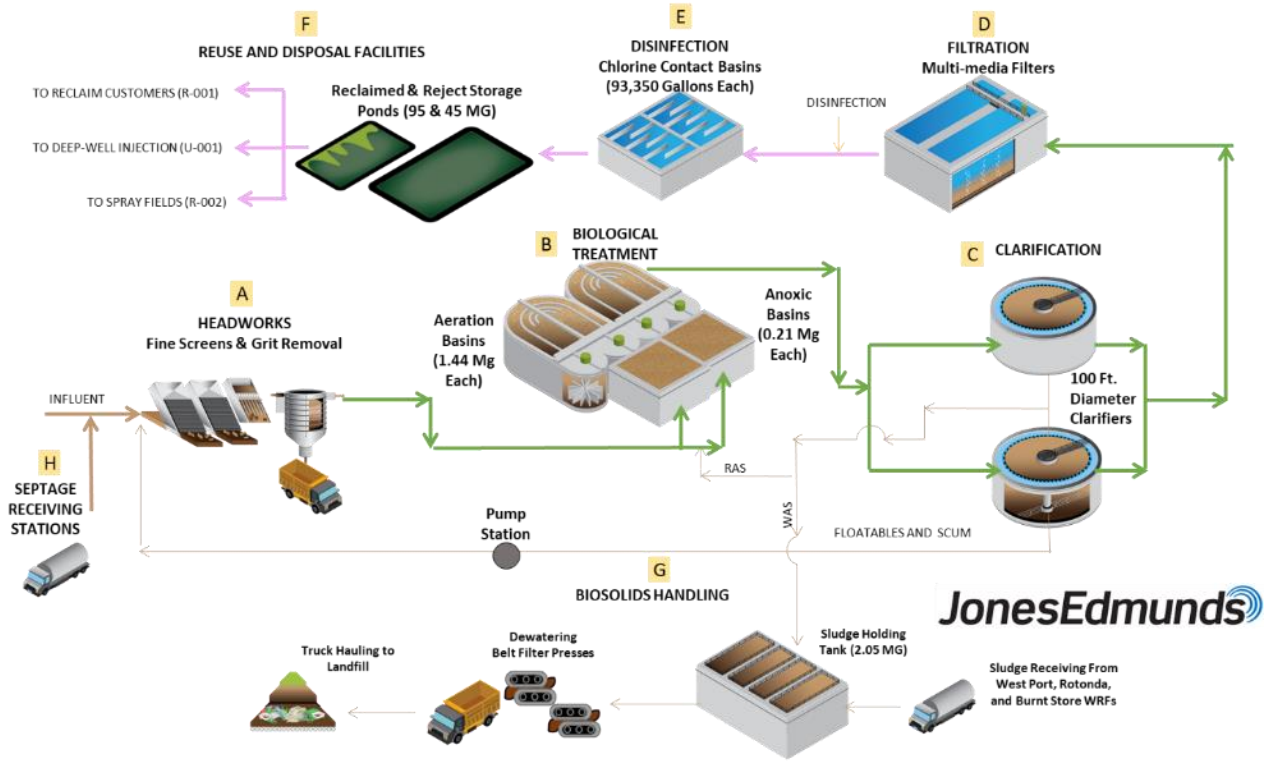
The East Port WRF is at 3100 Loveland Boulevard, Port Charlotte, Florida, and was acquired as part of the 1991 GDU purchase. The WRF began its current operations in 1996 with a currently permitted operating capacity of 6.0 MGD AADF. East Port WRF uses a two-stage activated-sludge process to treat domestic wastewater collected from the Mid-County service area. Emergency power is provided by two diesel emergency generators in an on-site building with an ATS to maintain operation of critical facilities in the case of electrical power failure.

The East Port WRF is also the location of a National Environmental Laboratory Accreditation Program (NELAP)-certified East Port Laboratory (EPLAB) at the main operations building. The WRF site includes 51 acres of conservation easement, with the remaining area consisting primarily of woodlands. The site is home to more than 20 varieties of birds, including great egrets, osprey, and Carolina wrens. Many other wildlife species including gopher tortoises, scrub jays, bobcats, armadillos, cottontails, and alligators make the East Port WRF their home.

The East Port WRF is permitted to distribute 10.23-MGD AADF of reclaimed-quality water to the MRS (R-001) for unrestricted-public-access reuse, inject 9.60-MGD AADF into a deep well injection system (U-001), and apply 1.45-MGD AADF to a slow-rate restricted-access land application system (R-002). The WRF is classified as a Type I, Category II, Class A domestic wastewater treatment facility under FAC 62-699 and is required to meet Class III Reliability standards in accordance with Chapters 62-600 and 62-610, FAC. The restricted irrigation system consists of 187 acres on site using slow-rate irrigation (R-002 Sprayfields). About 45 acres of the sprayfields were abandoned in 2018 for use by the Charlotte County Sheriff Department.

Figure 6-2 shows the East Port WRF process flow diagram. The key components of the East Port process are described in the following sections.

Figure 6-2 East Port WRF Process Flow Diagram



A) Headworks: Raw wastewater enters the WRF headworks structure where mechanical screening and grit removal take place. Two mechanical fine screens with a screen opening of 0.25-inch (6-milimeters) remove debris/screenings from the influent flow. After screening, wastewater flows into one of the two vortex-type grit-removal units for grit separation. Compacted screenings and separated/dewatered grit are discharged into dumpsters at the lower level of the headworks for disposal. Internal plant flows from the In-Plant Pump Station No. 1 and No. 2, septage pump station, and supernant pump station are introduced back to the headworks, including septage, biosolids dewatering system filtrate, tank and unit process drain flows, and supernatant decant from the aerobic digesters.

B) Biological Treatment: Wastewater from the headworks splits between two biological treatment trains configured in a 2-Stage Anoxic/Aerobic, Modified Ludzack-Ettinger (MLE) process. Each train includes an anoxic basin and oxidation ditch (aeration basin) for 5-day carbonaceous biochemical oxygen demand ($CBOD_5$) and total nitrogen (TN) reduction. Mixers keep solids suspended and homogenous in the anoxic zones. Mechanical surface aerators increase the dissolved oxygen (DO) aerobic zone and assist in maintaining channel velocity to keep the mixed liquor in suspension. Internal recycle (IR) pumps send mixed liquor rich in nitrate-nitrogen from the aeration basin to the anoxic basins to enhance TN reduction for each train.

C) Clarification: Flow from the biological treatment process splits between two center-fed circular clarifiers. The clarifiers provide a quiescent environment to promote solids separation. The clarifiers are skimmed to remove floating materials and scum, which are sent by a scum pump station to the aerobic digester for treatment. The clarifier effluent flows over a circumferential weir into a final effluent launder trough.

Weir washers travel along the scum skimmer to remove algae from the weirs and trough. Settled solids from the secondary clarifiers are pumped to the front of the anoxic basins by the RAS/WAS Pump Station as return-activated sludge (RAS) to replenish the microbial community and to the aerobic digesters as waste-activated sludge (WAS).

D) Filtration: Clarified water splits between two multi-media (sand and anthracite) traveling bridge filters to reduce Total Suspended Solids (TSS) to a level at or below 5 mg/L to comply with high-level disinfection (HLD) regulations. A metal canopy over the filters was designed for use with an ultraviolet (UV) shade cloth to inhibit algae growth within the filter and provide equipment protection from sun exposure. Filter backwash is sent to In-Plant Pump Station No. 2, which pumps backwash water to the headworks structure. Turbidity analyzers are used to continuously monitor TSS before disinfection.

E) Disinfection: Filtered water splits between two chlorine contact chambers (CCCs) where liquid sodium hypochlorite is dosed for disinfection. CCC No. 1 is designated for reclaimed water production that meets HLD requirements. CCC No. 2 is designated for disposal to restricted-access sites (e.g., Class I deep injection wells or sprayfields) that meet basic-level disinfection requirements. Sodium hypochlorite is stored in a dual-containment, polymer storage tank with a capacity of 6,000 gallons and fed to the chambers by pump skid with three diaphragm-type pumps. Non-reagent analyzers are used to adjust chlorine feed rates and for chlorine residual compliance measurement.

F) Reuse and Disposal Facilities: Transfer pumps (Nos. 1, 2, and 3) in the clearwell of CCC No. 2 pump reclaimed water to the 95-MG reclaimed water Storage Pond. HSPS No. 1 is in the CCC No. 1 clearwell and pumps reclaimed water to the plant water system 8-inch force main loop. The clearwells of CCC No. 1 and No. 2 are connected by a 4-foot-wide slide gate that is normally open. The gate is currently inoperable and held in the open position; however, it will be replaced as part of the ongoing 9.0-MGD expansion project. The 95-MGD reclaimed water pond is connected to the 9-MGD HSPS No. 2 via a 30-inch suction line. This pump station pumps directly to the 36-inch distribution line that feeds the public access reclaimed water system known as the County's MRS. Reclaimed water reuse and disposal are operated in accordance with the WRF's Monitoring and Operating Protocol for the Reclaimed Water System.

Off-spec reclaimed water is conveyed to the 45-MG reject pond by opening and closing automated valves. From the 45-MG reject pond, water is discharged to the sprayfields or the Class I injection wells (IW-1 and IW-2) with permitted capacities of 1,420 gpm (2.045 MGD) and 5,250 gpm (7.560 MGD), respectively.

G) Biosolids Handling: WAS is pumped from the clarifiers to the 2.0-MG sludge holding tanks where blowers provide aeration to the sludge before gravity thickening and dewatering using two Ashbrook 2-meter belt filter presses (BFPs) fed by dedicated progressive-cavity pumps. Since the East Port WRF is the County's only facility with sludge thickening, waste sludge is hauled from the County's other WRFs (West Port, Rotonda, and Burnt Store) for thickening at the East Port WRF. The County owns two

6,000-gallon tanker trucks that make daily hauls from the other WRFs and off-load into the East Port WRF sludge holding tanks. Operations staff decant the digested sludge several times a week, and the supernatant is pumped back to the headworks. The sludge feed pumps withdraw thickened sludge from Sludge Holding Tank No. 1 and pump thickened WAS to the dewatering units. A sludge truck/tank transfer pump station offloads tankers and transfers sludge between tanks. Sludge is dewatered to approximately 17-percent total solids loaded onto trucks by belt conveyor and hauled to the Charlotte County Bio Recycling Center, which is owned and operated by Synagro and located at the County's Zemel Road Class I Municipal Landfill. The thickened sludge is recycled to create compost.

H) Septage Receiving Stations (SRS): The WRF has two Lakeside Raptor SRSs for domestic septage tank haulers to off-load septage. The septage haulers have unique access codes for off-loading and invoice generation. Septage haulers enter their access code in the receiving station control panel, the valve opens to allow off-load, and the flow meter records the septage volume for billing each hauler. The system allows for fast off-loading, minimal operations oversight, and administrative features to collect and record hauler data for invoicing. The septage is screened and directly pumped to the WRF headworks.

6.2.1 Regulatory Considerations

The East Port WRF operations are regulated by FDEP under the provisions of Chapter 403, Florida Statutes, and the applicable FAC Rules. The following permits govern plant operations:

- Plant Operating Permit (FL0040291-029-DW1P) – Expiration Date: November 29, 2027
  - Authorization for expansion to 9.0 MGD including upgrades to meet AWT standards. Authorization to discharge reclaimed water to West Port Community Development District stormwater management system (D-004).
  - Notice of Minor Revision (FL0040291-031-DWF) to increase frequency of analysis of monitoring for BOD5, TSS, TN, and total phosphorus (TP) parameters from 5 to 7 days per week.
  - The East Port WRF Expansion to 9.0 MGD includes new SRSs, AWT, and dewatering system. Construction was in progress at the time of the site visit and is expected to be completed by December 2026. The 9.0-MGD expansion includes an oxidation ditch splitter box sized for 12.0 MGD, an equalization (EQ) tank and a transfer pump station, a third oxidation ditch, an AWT diversion structure and AWT structure sized for 12.0 MGD, third and fourth clarifiers, new scum pump stations, third and fourth effluent filters and CCCs, an effluent transfer pump station, a chemical storage and feed system, a fourth sludge holding tank, a dewatering facility with two screw presses and room for a third, a new SRSs, and associated electrical, I&C, and SCADA improvements. The 9.0-MGD expansion was designed to accommodate a future expansion to 12.0 MGD including a complete replacement of the existing headworks.
  - The future 12.0-MGD expansion improvements include a 12.0-MGD headworks, fourth oxidization ditch, fifth effluent filter, fifth CCC, additional chemical storage,

additional dewatering unit in the dewatering facility, and associated electrical, I&C, and SCADA improvements.

- IW-1 Permit (0330486-004-UO/1M) – Expiration Date: October 17, 2027
  - The previous MIT was performed on IW-1 on August 21, 2024. The next MIT will be due by August 20, 2029.
- IW-2 Permit (0330486-003-UO/1M) – Expiration Date: May 4, 2026
  - The previous MIT was performed on IW-2 on November 14, 2024. The next MIT will be due by July 1, 2025.

6.2.2 Wastewater Flows and Loads

The East Port WRF permitted capacity is 6.0-MGD AADF. In FY 2024, the highest AADF was 5.41 MGD, and the East Port WRF operated at 90 percent of the plant permit capacity. The highest maximum daily flow (MDF) occurred in August 2024 at 13.38 MGD. The highest 3-month average daily flow (TMADF) of 5.37 MGD occurred in September 2024, which is 90 percent of the plant permitted capacity. The plant permit capacity is based on AADF, so the facility remains in compliance with the plant permitted capacity of 6.0 MGD. Although the plant is operating at 90 percent of the rated capacity of 6.0 MGD AADF, the ongoing efforts and completed plant improvement design described above are prepared to increase the design capacity of the East Port WRF to 9.0 MGD. Table 6-2 summarizes the influent flows as reported in the Discharge Monitoring Reports (DMRs).

Table 6-2 East Port WRF Influent Flows FY 2024

Month	MADF (MGD)	AADF (MGD)[1]	TMADF (MGD)	MDF (MGD)	TMADF Percent Capacity (%)
Oct-23	5.36	5.03	5.03	7.06	84
Nov-23	4.67	4.94	4.99	5.05	83
Dec-23	4.87	4.94	4.97	5.83	83
Jan-24	5.76	5.03	4.97	8.07	83
Feb-24	5.41	5.10	5.02	5.82	84
Mar-24	5.29	5.16	5.10	6.07	85
Apr-24	4.69	5.18	5.15	5.27	86
May-24	4.35	5.18	5.17	4.66	86
Jun-24	5.16	5.23	5.20	6.96	87
Jul-24	6.15	5.33	5.25	8.12	87
Aug-24	6.91	5.37	5.31	13.38	88
Sep-24	6.35	5.41	5.37	11.09	90

Notes: MDF = Maximum daily flow.

[1] Permitted plant capacity of 6.0 MGD; measured at monitoring site CAL-10.

At the end of FY 2024, the average annual influent load for BOD was 5,372 pounds per day (lb/day) and for TSS was 8,696 lb/day. The maximum monthly average BOD load was 6,999 lb/day in April 2024. The maximum monthly average TSS load was 15,720 lb/day in August 2024.

Table 6-3 summarizes the wastewater characteristics of the East Port WRF influent as reported by CCU Operations staff.

Table 6-3 East Port WRF Influent Water Quality FY 2024

Month	BOD		TSS	
	Monthly Avg. Concentration (mg/L)[1]	Monthly Avg. Load (lb/day)[2]	Monthly Avg. Concentration (mg/L)[1]	Monthly Avg. Load (lb/day)[2]
Oct-23	115	4,824	160	6,712
Nov-23	125	5,150	162	6,674
Dec-23	132	5,438	184	7,581
Jan-24	118	4,950	173	7,257
Feb-24	145	6,167	178	7,571
Mar-24	147	6,326	179	7,703
Apr-24	162	6,999	177	7,647
May-24	154	6,653	202	8,727
Jun-24	117	5,103	174	7,590
Jul-24	103	4,579	263	11,691
Aug-24	87	3,896	351	15,720
Sep-24	97	4,377	210	9,475

Note: [1] Provided directly by CCU Operations staff.

[2] Calculated via the AADF MG for each month.

6.2.3 Treatment Objectives and Effluent Quality

The East Port WRF is designed to treat wastewater to three effluent standards: one for disposal to the deep injection wells (U-001 and U-002), one for public-access reuse (R-001) levels requiring HLD, and one for the on-site sprayfields (R-002) requiring basic level disinfection. Table 6-4 lists the flows and primary water quality requirements for each effluent reuse and disposal method. Currently, the WRF has 100-percent backup to the reuse system with disposal to U-001.

Table 6-4 East Port WRF Effluent Requirements

Reuse/Disposal Method	R-001	R-002	U-001
Max Flow (MGD)	10.233[a]	1.45[a]	9.6[a]
Max BOD (mg/L)[1]	20[a]/30[b]/45[c]/60[d]	20[a]/30[b]/40[c]/60[d]	20[a]/30[b]/45[c]/60[d]
Max TSS (mg/L)[1]	5[d]	20[a]/30[b]/45[c]/60[d]	20[a]/30[b]/45[c]/60[d]
Total Fecal (#/mL)	25[d]	200[a]/200[e]/800[d]	Not applicable
TN[1]	Report [d]	N/A	N/A
TP[1]	Report [d]	N/A	N/A

Notes: [1]Frequency of analysis increased from 5 days per week to 7 days per week, effective immediately, per Notice of Permit Revision dated February 28, 2023.

Statistical Bases: [a]annual average; [b]monthly average; [c]weekly average; [d]single sample; [e]monthly geometric mean.

Table 6-5 summarizes the effluent flow and water quality of the East Port WRF. The East Port WRF produces a high-quality reclaimed water and operates within the permitted flow limits. In FY 2024, the annual average effluent flow to the MRS (R-001) and sprayfields (R-002) were 1.4 MGD and 0.02 MGD AADF, respectively. Wells IW-1 and IW-2 (U-001) totaled 0.31 MGD AADF, which is below the permitted capacity of 9.6 MGD AADF. The maximum single sample BOD and TSS values were 1.1 mg/L and 46 mg/L, respectively, showing no violations of the single-sample limits for BOD or TSS were recorded in FY 2024. Consequently, the BOD and TSS annual average, monthly, and weekly concentration requirements were also met in FY 2024. The fecal coliform count permit requirements were met for annual, monthly, weekly, and single samples in FY 2024 with April 2024 marking the highest maximum fecal coliform counts at 105.4.

Table 6-5 East Port WRF Effluent Flow and Water Quality

Month	Reuse and Disposal Method				Water Quality		
	R-001 Monthly Avg. Flow (MGD)[1]	R-002 Monthly Avg. Flow (MGD)[2]	IW-1 Monthly Avg. Flow (MGD)[3]	IW-2 Monthly Avg. Flow (MGD)[4]	Maximum BOD Conc. (mg/L)[5]	Maximum TSS Conc. (mg/L)[6]	Maximum Fecal Count (#/100mL)[5]
Oct-23	1.9	0	0.2	2.3	0	0.4	<1
Nov-23	2.6	0	0.2	2.4	0	0.5	<1
Dec-23	2.1	0	0.2	2.0	0	46.0	4.1
Jan-24	1.0	0	0.4	5.2	1.07	0.3	2.0
Feb-24	1.5	0	0.2	2.0	1.1	0.5	9.7
Mar-24	1.8	0	0.4	4.9	0	0	90.8
Apr-24	0.8	0	0.3	4.1	0	0	105.4
May-24	0	0.1	0.3	3.7	0	0	5.1
Jun-24	1.6	0	0.05	0.5	1.07	0.6	<1
Jul-24	1.7	0	0.4	4.7	1	0.3	1.0
Aug-24	1.0	0.1	0.4	4.4	1.05	0.4	9.8
Sep-24	0.8	0	0.6	5.3	1	0.3	4.1

Note: [1]Monitoring site FLW-02; [2]Monitoring site FLW-04; [3]Monitoring site FLW-03;
[4] Monitoring site FLW-05; [5]Monitoring sites EFA-01 and EFA-02; [6]Monitoring sites EFA-02 and EFB-01.

6.2.4 Treatment Components and Condition Assessments

Jones Edmunds completed an on-site review of the WRF on January 30, 2025; the information gathered at that time was used to update this section. Jones Edmunds personnel met with the Chief Operator, Mike McCrumb, to review existing conditions and operations; records were collected and reviewed as part of Annual Report efforts. Access to the facility is through a secure gate in a fence that surrounds the WRF and the on-site irrigation and deep injection well areas. The WRF site, stormwater pond, and sprayfield sites are routinely mowed and cleared and are well maintained.

The Operations Building includes the office of the Treatment Facilities Division Manager, the EPLAB, Backflow and Reclaimed Water Coordinator, conference room, administrative space, operations room, breakroom, and offices for Operations staff and other related staff.

General observations noted at the time of the site visit include:

- Construction of the 9.0-MGD expansion is underway.
- Visible valves appeared to be in good condition and in working order and plant operators strive to exercise valves regularly.
- Visible process piping is painted by color code and clearly marked, but several have surficial chalking and should be scheduled for repainting in the next 2 to 3 years.
- All compliance meters are being calibrated every 6 months, and calibration tags are up to date.

Required documents maintained on site include:

- Operating permits for the treatment facility and deep injection wells.
- Operator's licenses.
- Facility logbook.
- Facility Standard and Emergency Operating Plans.
- DMRs.
- Effluent Analysis Reports.
- Annual Reuse Report.
- Pathogen Monitoring Report (*Giardia* and *Cryptosporidium*).
- Reports required to complete the last permit application (in process).
- Certification of the EPLAB.
- Sampling plan.
- Groundwater monitoring plan (contained in permit).
- Laboratory results.
- Flow meter calibrations.
- Chlorine and pH meter calibrations (one/day).
- Chain-of-custody forms for samples that are sent to laboratories.
- Monthly residual and marketing report (reported in dry tons/month).
- Facility O&M Manuals.
- Maintenance records (CMMS electronic data system).
- Reuse Operating Protocol.
- Facility Record Drawings.
- Daily temperature logs.
- Spill protocol and record of spills.

The Cross-Connection and Backflow Prevention Manuals are kept at the Reclaimed Water Coordinator's office at the East Port WRF.

6.2.4.1 WRF Influent Sampling Location

The East Port WRF monitored influent water quality and flow for permit compliance. The influent water quality sampling location (INF-01) and flow monitoring (FLW-01) locations at the East Port WRF are clearly marked, and the refrigerated influent composite sampler and flow meter are in good operating condition. The flow meter was calibrated in December 2024.

6.2.4.2 Septage Receiving Stations

The two SRSs require constant maintenance due to the high number of septage haulers that use the facilities and the nature of the waste. The SRSs are reaching the end of their useful life. Jones Edmunds observed:

- A new SRS is under construction as part of the 9.0-MGD expansion to replace the existing.

6.2.4.3 Headworks

The overall condition of the headworks is fair, but various components have experienced corrosion and are in poor condition. The CCU WRF team have kept the equipment functioning. The CCU WRF staff have installed a number of bird deterrents on the lower level on pipes and ledges, but a few areas remain where birds still land and create waste on the floor.

- The rake/teeth used to clear the screens of captured debris have broken off or deteriorated along with other components. CCU is working to replace the headwork screens, but an overall replacement with an upgraded headworks is recommended in the next 1 to 2 years.
- The grit classifiers show signs of corrosion.
- The aluminum grating at the influent channel was not installed or missing at the time of the visit and should be to be reinstalled or replaced.
- The floor is clean and dry.
- The hose bibb at the top of the headworks was disconnected and no longer in use.

6.2.4.4 Flow Equalization

The East Port WRF does not have flow EQ storage for peak-hour influent flows and loads. However, the 1.48-MG cast-in-place concrete tank that previously served as an aerobic digester is being modified and retrofitted to serve as an influent EQ tank as part of the 9.0-MGD expansion under construction.

- The tank is full of water, and the contractor has been working on leak-testing and mitigation.

6.2.4.5 Biological Treatment

The overall condition and operation of the biological treatment process is good.

- Very little floatable solids on the water surface of both oxidation ditches. The CCU WRF staff noted that Mixer No. 2 in the anoxic basin will be replaced in the near future.

- Four VFD-controlled surface aerators (two in each) with speed adjusted by DO probes at the end of the ditches. Each oxidation ditch has two aerators, one of which runs at a constant set point of 80 percent speed, and the other runs at variable speeds controlled by VFDs.
- Operators set controls through SCADA for six well-maintained and functioning VFD-controlled IR pumps.
- A third biological treatment train matching the existing two is under construction as part of the 9.0-MGD plant expansion.

6.2.4.6 Clarification

The overall condition of the clarification process is well maintained and clean. The two existing clarifiers were observed to be in good operating condition.

- The light pole on the walkway between the two clarifiers was replaced after being blown off by Hurricane Ian.
- The clarifiers have five well-maintained and functioning VFD-controlled RAS pumps. RAS Pump No. 4 was replaced in FY 2023, and the motor for RAS Pump No. 3 was replaced in FY 2023. Operators set controls through SCADA.
- The RAS flow meter was calibrated in December 2024.
- Two well-maintained and functioning WAS pumps are controlled by operators' settings in the SCADA system.
- The scum ejectors were replaced in FY 2023; however, they will eventually be replaced with a cost-effective scum-pumping system as part of the 9.0-MGD plant expansion that is under construction.
- Two additional clarifiers and a matching RAS and WAS pump stations are under construction as part of the 9.0-MGD plant expansion.

6.2.4.7 Filtration

The overall condition of the effluent filtration system is good.

- Both filters were in operation and were rehabilitated in FY 2023/2024.
- New roof panels were installed on the galvanized frame and provide UV protection for the filters as part of the 9.0 MGD expansion.

6.2.4.8 Disinfection and Effluent Sampling

The CCCs and chemical feed systems are in good condition, well maintained, and operated to produce reclaimed water for unrestricted public-access reuse.

- Liquid sodium hypochlorite (12.5 percent) is stored in a 6,000-gallon dual-containment tank.
- The skid-mounted chlorine feed system is encased in a clear plastic enclosure with access doors on the front and top.
- The effluent flow and monitoring locations (EFA-01 and EFA-02) are clearly marked, and the refrigerated effluent composite samplers are in good operating condition.
- The effluent sample pump at CCC No. 1 does not have a proper base and should be provided with a new one.
- A new chemical storage and feed facility are under construction as part of the 9.0-MGD plant expansion.

6.2.4.9 Reclaimed Water, Disposal, and Storage

Reclaimed Water Facilities

Effluent that meets reclaimed water standards from the East Port WRF is conveyed to CCU's MRS (discussed in Chapter 7) using the reclaimed water HSPSs. The East Port WRF has two reclaimed water HSPSs.

Reclaimed water HSPS No. 1 is in the CCC No. 1 clearwell and provides the WRF with plant water:

- The HSPS has three well-maintained and operational VFD-controlled 100-HP vertical turbine pumps. The VFD controls allow the pumps to operate at high speeds to meet distribution system demand and at low speeds to provide non-potable water on site for operation and maintenance purposes.

Reclaimed water HSPS No. 2 is south of MCCs No. 1 and No. 2:

- The HSPS has five VFD-controlled pumps supplying 9.0 MGD of reclaimed water at 108 psi.
- The paint on the pumps and their associated piping is chipping with some surficial rust stains.
- The four 120-micron ORIVAL self-cleaning filters are being bypassed due to fouling issues and will be deconstructed and removed. The bypass around these filters is not impacting reclaimed water quality to end users.

Reject Storage and Alternate Disposal

Excess reclaimed water or effluent not meeting reclaimed water standards (reject water) is disposed of through two deep injection wells and a restricted-access, on-site slow-rate irrigation system (on-site sprayfield). CCU also maintains a 45-MG lined effluent storage pond that is used before injection well and/or sprayfield disposal. It also serves as additional wet weather storage.

The pond transfer pump station is in the CCC No. 2 clearwell and transfers water to the ponds.

- Pump No. 1 was out of service for repairs and is expected to be returned in FY 2025.
- The other two pumps are well maintained but are showing signs that they need to be repainted.

The irrigation pump station is on the east bank of the 45-MG reject pond and pumps water from the pond to the deep injection wells or the sprayfield.

- The pump station has five well-maintained irrigation pumps that appeared to have been painted recently.
- Both deep injection wells are well maintained and in good working order. All valves are exercised regularly and associated meters are calibrated semi-annually.

Wet-Weather Storage

The on-site 95-MG lined reclaimed water pond and 45-MG reject lined storage pond are available for wet-weather storage of reclaimed water. Reclaimed water HSPS No. 2 withdraws water from the 95-MG reclaimed water pond and sends the reclaimed water into the MRS.

6.2.4.10 Biosolids Handling Facilities

The overall conditions of the sludge holding tanks, associated piping, truck off-loading facilities, decant supernatant pumping, and BFP feed pumps at the biosolids handling and storage tanks are in good condition:

- Sludge Holding Tank No. 3 has some areas that have partially plugged diffusers based on observations of the aeration and mixing during the visit; the sludge holding tank should also be taken offline and cleaned in the next year.
- Sludge Holding Tank No. 4 is under construction as part of the 9.0-MGD expansion.
- Temporary BFPs are in operation while the new dewatering facilities are under construction as part of the 9.0-MGD expansion.
- Concerns over dewatering and sludge storage capacity are being addressed as part of the 9.0-MGD plant expansion.
- Aboveground piping around the tanks has chalking and should be repainted in the next 2 to 3 years.

6.2.4.11 Electrical Components and Circuitry

The East Port WRF contains one 1,250-kW generator serving as the primary standby power and an additional 1,500-kW generator. One standby generator serving the Administration Building was relocated from another facility in used condition. The facility has five primary electrical switchgear locations – the Administration Building, the Generator/MCC Building, the new primary Incoming Switchgear Building, the new Electrical Building No. 2, and the Blower Building. The Administration Building has a separate service drop from the power company. The rest of the WRF is served through two new parallel transformers serving the incoming switchgear building recently constructed. The Administration Building, the incoming switchgear building, and Electrical Building No. 2 were all constructed within the last 9 years.
The Generator/MCC Building had upgrades and improvements to the existing original equipment and generators. The Blower Building has been in service for several years.

The incoming service and distribution transformers at the Administration Building are in excellent condition with no obvious signs of concern. The standby generator functions properly and is in good condition. Since it was relocated from another location, it does show signs of wear and deterioration but with no major issues to interfere with its function. The distribution switchgear of the Administration Building was in excellent condition with minor issues (see below). Overall, the electrical equipment is in good functioning condition based on information from Operations staff.

The Incoming Switchgear Building was constructed a few years ago. As such, all equipment is in excellent condition. The facility is fed by two power company transformers, also newly installed. A thermographic survey of the facility showed no anomalies or issues.

The Generator/MCC Building is an existing building with older equipment and new equipment installed under Stage 5 (Reclaimed Water HSPS No. 2) and Stage 1 and 2 WRF Improvements. The existing switchgear appears to be in good condition. The switchgear includes complete arc-flash labeling required by NFPA 70E. The existing 1,250-kW generator is in overall good condition.

The distribution switchgear was in excellent condition with minor issues. Overall, the electrical equipment is in good functioning condition based on information from the Operations staff.

The following lists minor electrical issues at locations throughout the WRF. None of these constitute a significant issue but are documented here for reference and for future action:

- Headworks – Several conduits and their supports to the handrails and elsewhere were broken or damaged and need to be replaced or repaired.

- Oxidation Ditches Controller Panels – The screens on the controllers for the probes at the effluent of the oxidation ditches are showing some signs of sun damage, and we recommend that sunshields be installed over the front of the three-sided enclosures.
- Storage Building – A portion of the wall siding and a downspout are bent from hurricane winds.
- Blower Building – Most of the equipment is new and in service as part of the GMLS. There is a loss of roof drip edge at the top of the building.
- Electrical Building No. 1 – The VFDs in this building are loud, and hearing protection is required. The appropriate signs and warnings need to be provided.
- Electrical Building No. 2 – Panel LE Section 2 Circuit #63 should be investigated for possible fault.
- Power Pole – This is leaning over along Old Landfill Road because of hurricane winds.
- Clarifier No. 1 – This shows unsupported conduit that needs to be properly supported per code.
- Chlorine Contact Tanks – The chlorine pumps on Tanks No. 1 and 2 are missing flex support, have broken cable connectors, and are missing waterproof covers.
- Stormwater Structure – Erosion of soil has occurred around this structure that is adjacent to the front gate entrance and a sewer manhole.
- Irrigation Pump Station – CCU staff reported several issues with the existing breakers. These include not having a proper actuation handle, which prevents them from being operated without opening the cover, in violation of the NEC. This represents a significant issue and should be remedied immediately. The switchgear in this station is also in poor condition, reaching the end of its reasonable service life. This issue is being resolved as part of the 9.0 MGD expansion.

6.2.5 Operation and Maintenance

The East Port WRF is staffed 24 hours per day, 7 days a week by licensed operators who also monitor the other WRFs within the CCU system 24 hours per day. Alarms are evaluated, and operators or maintenance personnel are dispatched to take corrective action, if necessary.

Routine maintenance is performed on a scheduled basis. Rehabilitation of major pieces of equipment is completed in accordance with the CIPs that are revised annually. Maintenance that is required to keep the WRF in compliance with regulations is performed immediately using in-house maintenance personnel or outside contractors.

6.2.6 Review of Previous Report Recommendations

Stages 1 and 2 of the East Port WRF upgrade were completed in FY 2016. Stage 5 Reclaimed Water Improvements were completed in FY 2019 and put into operation in March 2020. The expansion to 9.0 MGD, with many processes designed to accommodate future expansion to 12.0-MGD, is in progress and expected to be completed Fall 2026. The future construction expansion to 12.0 MGD will be accomplished as funding, growth, and development dictate. Table 6-6 summarizes the 2023 recommendations and status of each item.

Table 6-6 East Port WRF 2023 Recommendations and Status

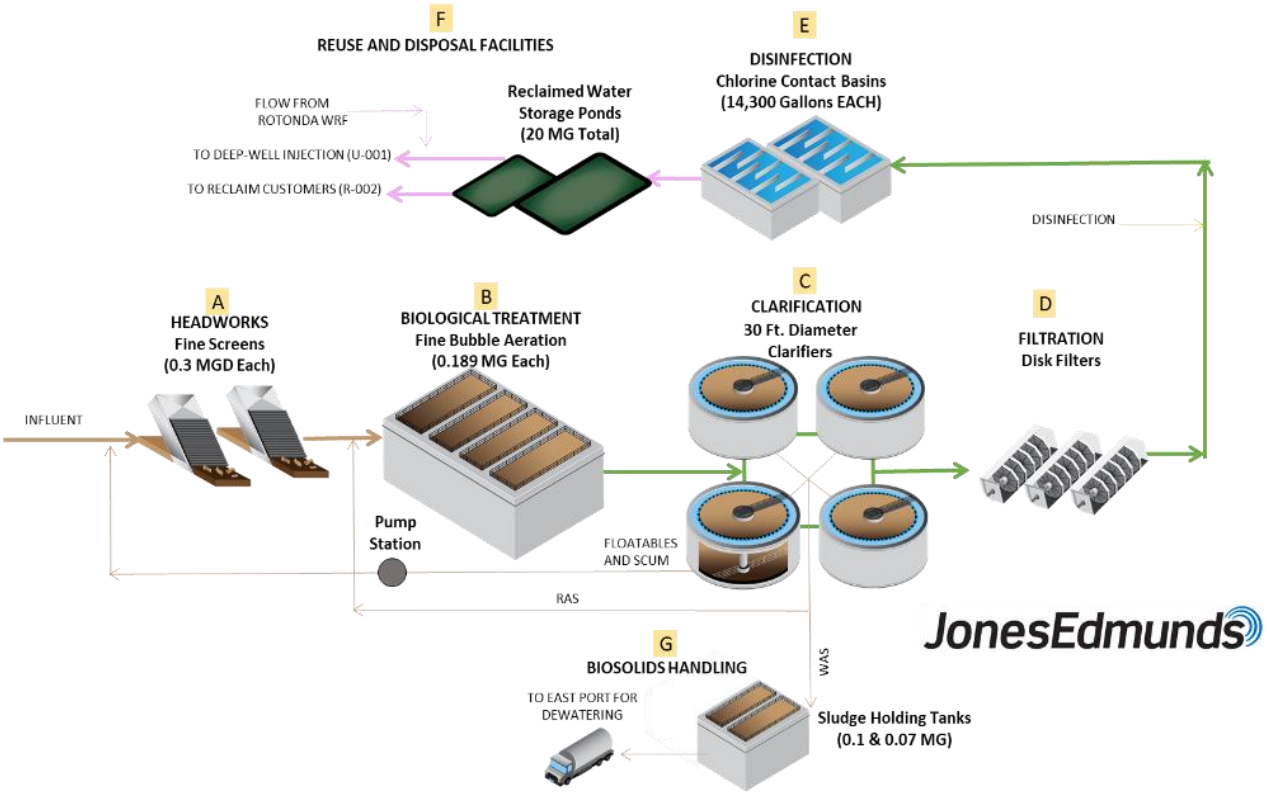
Recommendation:	Convey digester decant, In-Plant Pump Station No. 1 and No. 2 plant recycle flows into the EQ tank once expansion is complete.
Progress:	In progress.
Recommendation:	Repair hurricane-related damages.
Progress:	Complete.
Recommendation:	Replace hose bibb connections at the headworks.
Progress:	Not completed.
Recommendation:	Repaint all faded, chalked, or chipped paint on aboveground piping and pumps within the next 2 to 3 years.
Progress:	Ongoing.
Recommendation:	Replace insulation for Probe SC1000 piping on Oxidation Ditch No. 2.
Progress:	Complete.
Recommendation:	Include more bird deterrents near the clarifiers.
Progress:	Additional bird deterrents were added to the headworks. Existing clarifiers had some bird deterrents added, but additional measures are needed.
Recommendation:	Rails for the backwash mechanism at the filters are in fair condition, but the wall support is beginning to rust. The wall support should be painted.
Progress:	Completed.
Recommendation:	Replace the base of the pump heads at HSPS No. 1 and the pond transfer pumps.
Progress:	Not completed.
Recommendation:	Replace the irrigation pumping station electrical switchgear.
Progress:	Not complete.
Recommendation:	Install additional permitted groundwater wells as needed to meet future demands.
Progress:	Ongoing.
Recommendation:	Complete repair and rehabilitation of assets damaged by Hurricane Ian, maximizing use of available FEMA funds.
Progress:	Ongoing.
Recommendation:	Prepare an MIT plan for IW-1 at the East Port WRF for approval by FDEP. The next MIT should be completed and submitted to FDEP before September 4, 2024.
Progress:	Permit renewal complete.

6.3 West Port WRF

The West Port WRF is in the Gulf Cove area of West Charlotte County at 15005 Cattle Dock Point Road, Port Charlotte, Florida. This WRF was upgraded in 2005 and has a current permitted capacity of 1.20 MGD AADF. The West Port WRF uses an activated sludge process to treat domestic wastewater collected from part of the West County service area. The West Port WRF is permitted to distribute reclaimed-quality water to unrestricted public-access reuse sites and inject into a deep well injection system. Two diesel-powered emergency generators with ATSs provide standby power to the WRF.

Figure 6-3 shows the West Port WRF process flow diagram.

Figure 6-3 West Port WRF Process Flow Diagram



A) Headworks: Raw wastewater from the West County service area collection/ transmission system enters the headworks where it is screened to remove large inorganic material by four rotary influent screens. A manual bar screen is also

available for bypass purposes. Screenings are collected in a dumpster and hauled to the landfill for disposal. Internal plant flows from the on-site pump station are introduced at the bar screens.

B) Biological Treatment: Screened wastewater is split equally into four aeration basins where aeration and microorganisms are used to treat biodegradable material. Blowers aerate the wastewater through fine-bubble diffusers in each aeration basin.

C) Clarification: Flow from the biological treatment process is split between four secondary clarifiers for solids separation. The clarifiers have rotating skimmer arms to remove floatables and scum before the effluent flows over a circumferential weir. Telescoping valves adjust sludge withdrawal from the bottom of each clarifier and convey it to the sludge-return chamber. The sludge exits the return chamber where it is conveyed to the front of the aeration basins as RAS to replenish the microbial community or to the sludge holding/aerobic digestion tanks as WAS.

D) Filtration: Clarified water enters three automatic cleaning, disc-type cloth media filters for tertiary filtration to remove the remaining solids. The filters are housed in individual steel tanks.

E) Disinfection: The filtered water enters the CCCs where liquid sodium hypochlorite is dosed for disinfection. Only one chamber is currently in use.

F) Reuse and Disposal Facilities: Reclaimed-quality water is pumped to two lined storage ponds for storage and distribution to the reclaimed water system. Excess reclaimed water and water not meeting reclaimed water standards are pumped to the Class I injection well by three equally sized pumps. The West Port and Rotonda reclaimed water systems are interconnected, allowing Rotonda WRF to dispose of excess reclaimed water using the injection well.

G) Biosolids Handling: WAS is pumped from the clarifiers to the sludge-holding tanks where blowers provide aeration through coarse-bubble diffusers. The sludge is gravity thickened and decanted before being hauled to the East Port WRF for aerobic digestion, dewatering, and transport to the Charlotte County Zemel Road Landfill where it is processed into compost available for sale as a soil conditioner.

6.3.1 Regulatory Considerations

The West Port WRF operations are regulated by FDEP under the provisions of Chapter 403, Florida Statutes, and the applicable FAC rules. The following permits govern the plant operations:

- Plant Operating Permit (FLA014048) – Expiration Date: February 24, 2026.
- Deep Well (IW-1) Permit (0330461-002-UO/1M) – Expiration Date: May 4, 2026.
  - The last MIT was performed on IW-1 on November 14, 2024. The next MIT will be due by June 16, 2025.

6.3.2 Wastewater Flows and Loads

The West Port WRF permitted capacity is 1.20 MGD AADF. At the end of FY 2024, the AADF was 0.8 MGD, and the West Port WRF operated at 67 percent of the plant permit capacity. The highest MDF occurred in August 2024 at 1.35 MGD. The highest TMADF of 0.85 MGD occurred in November 2024, which is 71 percent of the plant permit capacity. Table 6-7 summarizes influent flows as reported in the DMRs.

Table 6-7 West Port WRF Influent Flows in FY 2024

Month	MADF (MGD)	AADF (MGD)[1]	TMADF (MGD)	MDF (MGD)	TMADF Percent Capacity (%)[1]
Oct-23	0.71	0.79	0.83	1.14	69
Nov-23	0.84	0.80	0.85	1.02	71
Dec-23	0.82	0.80	0.83	0.88	69
Jan-24	0.84	0.81	0.83	0.92	70
Feb-24	0.84	0.81	0.83	0.90	70
Mar-24	0.81	0.81	0.83	0.88	69
Apr-24	0.65	0.80	0.77	0.85	64
May-24	0.58	0.79	0.68	0.65	57
Jun-24	0.58	0.77	0.60	0.72	50
Jul-24	0.57	0.75	0.58	0.62	48
Aug-24	0.72	0.75	0.62	1.35	52
Sep-24	0.75	0.73	0.68	0.88	56

[1] Permitted capacity = 1.2 MGD AADF, measured at monitoring site FLW-01.

In FY 2024, the average annual influent load for BOD was 572 lb/day and for TSS was 803 lb/day. The maximum monthly average BOD load was 836 lb/day, occurring in March 2024. The maximum monthly average TSS load was 1,161 lb/day, also occurring in January 2024. Table 6-8 summarizes the wastewater characteristics of the West Port WRF influent.

Table 6-8 West Port WRF Influent Water Quality in FY 2024

Month	BOD		TSS	
	Monthly Avg. Concentration (mg/L)[1]	Monthly Avg. Load (lb/day)	Monthly Avg. Concentration (mg/L)[1]	Monthly Avg. Load (lb/day)
Oct-23	90	524	172	1,002
Nov-23	104	619	133	790
Dec-23	113	703	124	779
Jan-24	104	743	164	1,161
Feb-24	107	767	141	1,008
Mar-24	117	836	140	1,005
Apr-24	112	707	121	758
May-24	103	573	114	635
Jun-24	90	482	101	542
Jul-24	82	416	175	897
Aug-24	64	409	95	618
Sep-24	65	437	84	556

Note: [1] Measured at monitoring site INF-01.

6.3.3 Treatment Objectives and Effluent Quality

The West Port WRF is designed to treat wastewater to two effluent standards – one for disposal to the deep injection well (U-001) and the other for public-access reuse (R-002), which requires HLD. Table 6-9 lists the flow and primary water quality requirements for each effluent reuse and disposal method.

Table 6-9 West Port WRF Effluent Requirements

Reuse/Disposal Method	R-002	U-001
Max Flow (MGD)	Report[a,b]	4.75[e]
Max BOD (mg/L)	20[a]/30[b]/45[c]/60[d]	20[a] /30[b] /45[c]/60[d]
Max TSS (mg/L)	5[d]	20[a] /30[b] /45[c]/60[d]
Total Fecal (#/mL)	25[d]	Not Applicable

Notes: Statistical Bases – [a] annual average; [b] monthly average; [c] weekly average; [d] single sample; [e] instantaneous maximum.

Table 6-10 summarizes the effluent flow and water quality of the West Port WRF. In FY 2024, the annual average effluent flow for the reuse system (R-002) was 0.35 MGD. The maximum daily flow of the underground injection well (U-001) was 3.36 MGD, indicating that the WRF is meeting its effluent flow requirements. The maximum single-sample BOD and TSS values were 11.8 and 4.1 mg/L, respectively, showing that no violations of the single-sample limits for BOD or TSS were recorded in FY 2024. Consequently, the BOD and TSS annual average, monthly, and weekly concentration requirements were also met in FY 2024. The maximum fecal coliform counts exceeded 1/100 mL in April 2024. Compliance was maintained during these events by discharging the effluent via U-001.

Table 6-10 West Port WRF Effluent Flow and Water Quality in FY 2024

Month	Reuse and Disposal Method		Water Quality		
	R-002 Monthly Avg. Flow (MGD)[1]	U-001 Max. Day Flow (MGD)[2]	Maximum BOD Conc. (mg/L)[3]	Maximum TSS Conc. (mg/L)[4]	Maximum Fecal Count (#/100mL)[3]
Oct-23	0.24	1.30	0.4	2.0	0.24
Nov-23	0.67	0.14	1.7	1.0	0.67
Dec-23	0.41	1.18	0.4	1.0	0.41
Jan-24	0.00	2.98	7.8	2.0	0.00
Feb-24	0.10	2.44	11.8	1.0	0.10
Mar-24	0.29	2.00	2.2	1.0	0.29
Apr-24	1.13	0.21	2.2	1.0	1.13
May-24	0.59	0.10	1.5	1.0	0.59
Jun-24	0.38	0.09	1.6	1.0	0.38
Jul-24	0.25	2.81	1.6	4.1	0.25
Aug-24	0.14	2.68	0.4	7.3	0.14
Sep-24	0.03	3.36	3.1	2.0	0.03

Notes: [1] Monitoring site FLW-04; [2] Monitoring site FLW-02; [3] Monitoring sites EFA-01 and EFA-02; [4] Monitoring site EFB-01.

6.3.4 Treatment Components and Condition Assessment

Jones Edmunds completed an on-site review of the WRF on January 31, 2024. Our personnel met with Thomas Cimino, Chief Operator of the West Port WRF, to review plant conditions, operations, and records. Access to the facility is through a secure gate in a fence that extends to a water moat surrounding the WRF and reclaimed water storage ponds. A warning sign is on the access gate and multiple warning signs are outside the moat near the property boundary.

In general, the plant site is well kept and maintained. Staff have done a good job with groundskeeping and facility appearance. The area of mowed grass outside the reclaimed water storage pond is an aesthetic welcome to plant visitors. The Operations Building and shop area are clean and organized.

The plant operators continue to exercise all valves regularly. All compliance meters are calibrated every 6 months, and calibration tags were up to date at the time of the site visit.

Required documents maintained on site include:

- Operating permits for the treatment facility and deep injection wells.
- Operators' licenses.
- Facility logbook.
- Facility SOPs and Emergency Operating Plans.
- DMRs.
- Effluent Analysis Reports.
- Annual Reuse Report.
- Pathogen Monitoring Report (*Giardia* and *Cryptosporidium* every 2 years).
- Reports required to complete the last permit application.
- Certification of EPLAB.
- Sampling Plan.
- Groundwater Monitoring Plan (contained in permit).
- Laboratory results.
- Flow meter calibrations.
- Chlorine and pH meter calibrations (one/day).
- Chain-of-Custody forms for samples that are sent to laboratories.
- Monthly residual and marketing report (reported in dry tons/month).
- Facility O&M Manuals.
- Maintenance records (CMMS electronic data system).
- Reuse Operating Protocol.
- Facility Record Drawings.
- Daily temperature logs.
- Spill protocol and record of spills.

The Cross-Connection and Backflow-Prevention Manuals are kept at the Reclaimed Water Coordinator's office at the East Port WRF. The Chief Operator has prepared a notebook of required documents that is readily available for inspection.

6.3.4.1 WRF Influent Sampling Location

The WRF includes a 24-inch influent force main and 16-inch flow meter assembly that have been in service since January 2014. The influent water quality sampling location (INF-01) and flow monitoring locations are clearly marked, and the refrigerated influent composite sampler and flow meter are in good operating condition. The flow meter was calibrated in November 2024.

6.3.4.2 Headworks

The overall condition of the headworks structure was considered good at the time of the site visit. In 2021, the County completed a headworks rehabilitation project where the headworks structure, pumps, and piping were re-coated; all four drum screens were replaced; and four new chain-operated influent valves were installed. The drum screens and rotating equipment are subject to corrosion due to hydrogen sulfide. Odor control through chemical addition has been added before the headworks toward the entrance to the plant. This will help extend the service life of the drum screens and other equipment. The bottom of the headworks structure and dumpster appeared to be clean and orderly.

A fiberglass grating over the influent flow splitter area had been supported by two carbon-steel beams. These beams were replaced with aluminum beams in FY 2015. The fiberglass grating shows minor signs of fraying.

The WRF has no grit removal system. Grit usually accumulates in aeration basins and at the on-site lift station. Grit is removed from the system periodically by vacuum trucks. The Chief Operator indicated that the vacuum truck has easier access to the outer basins than the inner basins that require more physical labor to remove grit.

Although the lack of a grit removal system is an issue, the grit content of the wastewater entering the WRF is probably lower than most plants because a large majority of the flow is from septic tank effluent pumps.

6.3.4.3 Flow Equalization

The West Port WRF does not have flow-EQ storage for peak-hour flows. Introducing flow EQ would improve the efficiency and capacity of plant operations. An alternative would be to install VFDs on the major lift stations that directly pump to the WRF. Flow EQ will be added in Phase 1 of the West Port WRF 2.5-MGD expansion that is in design.

6.3.4.4 Biological Treatment

The overall condition of the activated-sludge facilities is good. The mixed liquor suspended solids (MLSS) are sampled every morning by the Operations staff. The WRF has four aeration basins. However, the lack of grit removal continues to present a maintenance challenge since deposited grit levels rise to block the diffusers. At the time of the site visit, Basin No. 4 was offline for cleaning. Overall, wastewater in the aeration basins was well mixed with some foam accumulation at the surface.

All three blowers appeared to be functioning as intended. Blower 2 received a new motor last year. Usually, one blower is operated at a time to meet aeration requirements. The operators cycle the blowers weekly. The plant typically operates between a pH of 6.6 and 6.7 but adjusts seasonally by running an additional blower. A timer is used to turn the blower on and off throughout the day. Using pH for operational control is not the most practical method for treating wastewater; an alternate control method including DO and oxygen-reduction potential (ORP) should be evaluated. The outlet weirs of the aeration tanks require manual cleaning when debris catches on the weirs.

6.3.4.5 Clarification

Although most of the unit process tanks are made of concrete or Type 304 stainless steel, the four secondary clarifiers consist of carbon steel and require constant paint maintenance every 2 years. The overall condition of the clarification process is fair. High sudden increases in influent flows can cause further issues with the clarifier performance when one of the four clarifiers is out of service.

Each of the feed wells had a small hole in the top wall causing a noticeable amount of suspended solids to exit into the main part of the clarifier. Operations staff follow a routine schedule of clarifier inspection, repair, and painting. The stairways leading to the bridges of the aboveground clarifiers were painted in FY 2020. The fiberglass grating and steps show signs of minor fraying and wear.

Overflow weirs are sprayed daily and brushed every 2 weeks to keep them clean. Algae builds up quickly despite the frequent cleanings. The overflow weirs were leveled in FY 2017. New weirs were installed in Clarifier No. 1 and Clarifier No. 2 in FY 2018. Clarifier No. 3 and Clarifier No. 4 received new weirs in FY 2020 and FY 2021, respectively.

The sludge-return chambers on the side of each clarifier have telescoping valves used to adjust sludge withdrawal from the bottom of the clarifier. The sludge is then conveyed to the four RAS/WAS pumps that are housed under a sheet-metal roof. Floatables accumulate in the sludge chambers and are periodically removed by manually skimming the 5-foot-by-5-foot boxes from the clarifier bridge when the chambers are full. The telescopic valves were operating properly, and the RAS/WAS pumps are in good operating condition. The pumps were being painted at the time of the visit.

6.3.4.6 Filtration

The filters are in good condition. The tanks are cleaned every month with 5 gallons of bleach. Regular bleach spraying mitigates algae growth but may cause long-term issues for exposed components such as motors. The filter will likely be replaced as part of the future expansion.

Three filters were in operation at the time of the site visit and were working properly. All filter cloths were replaced in FY 2021. The Chief Operator stated that a higher-quality effluent is obtained when all three filters are operating in parallel.

The filters are constructed of Type 304 stainless steel, but the fiberglass grating platform between the filters is supported by carbon steel angles. The paint is in good condition with some staining and rust on some exposed components that are not stainless steel such as the motors, which were replaced in FY 2021. The motor chains were in good condition and appeared to be functioning properly in the operational filters. One of the filter tanks was missing weir brackets.

The control panels and meter readouts for the three filters are under an aluminum cover. The turbidity sampling point is situated to receive the combined flow of all three filters. The control panels and turbidimeter are in fair condition.

6.3.4.7 Disinfection and Effluent Sampling

The overall condition of the chlorination system is excellent with the exception of the permanent roof structure. The roof was blown off due to Hurricane Ian but has not been repaired. Only CCC No. 1 was in service at the time of the site visit. CCC No. 2 was reported to be in good working condition. CCC No. 1 was recently painted. Each CCC has two trains. Good turbulent flow in the inlet boxes to the CCCs creates effective mixing. The pH and chlorine analyzers are in good working order. Plant operators clean the analyzer assemblies at regular intervals to remove any algae buildup. They also periodically alternate the CCCs to clean them.

In June 2017, a new chlorine feed system with two chemical feed pumps for each CCC and new storage tanks was installed in a new chlorine storage and feed area between the two CCC structures. This will enable two parallel CCCs to operate when peak hourly flows exceed 955 gpm. The new dosing pumps have double-containment protection.

The CCC effluent is monitored by the effluent composite water quality sampler (EFA-01). The overall condition of the effluent monitoring, storage, and disposal system is good.

6.3.4.8 Reuse, Disposal, and Storage

Reuse Facilities

The reclaimed water pump station conveys water into the interconnected MRS. The station contains two reclaimed water HSPs and one jockey pump. The two HSPs were replaced in FY 2021, the HSPs have difficulty pumping against the head conditions in the MRS. The main reclaimed water customer for the West Port WRF is the Coral Creek Golf Club Golf Course, which receives reclaimed water through a 7-mile-long, 10-inch-diameter main along Gasparilla Road.

The West Port WRF has two lined reclaimed water storage ponds – one 5 MG and one 15 MG. The stored water can be pumped to the reclaimed water distribution system or the deep injection well. The ponds had some algae growth at the time of inspection.

Reject Storage and Disposal

The plant also contains an option for reclaimed water disposal via deep injection well. Three new deep-well pumps are used to convey effluent through a 16-inch manifold pipe into the deep well. The building housing the pumps suffered wind damage from Hurricane Ian but was not yet repaired.

MIT for the deep injection well will be performed in 2025. Any effluent not meeting reclaimed water standards during the testing period will be automatically diverted to the existing on-site sprayfields.

Wet-Weather Storage

The on-site reclaimed water ponds provide up to 20 MG for wet-weather storage of reclaimed water. At the time of the site visit, the pond linings appeared to be in good condition. The ponds had some algae growth at the time of inspection. CCU is evaluating adding diffusers for the ponds.

6.3.4.9 Biosolids Handling

The sludge produced as a byproduct of treatment is pumped to aerobic sludge-holding tanks and then gravity thickened at the West Port WRF before being truck hauled in liquid form to the East Port WRF for sludge dewatering and final disposal at the compost facility. The overall condition of the sludge-holding tanks is good; however, the aerobic sludge-holding tank volume is too small and prevents proper decant thickening, resulting in a decant-thickened sludge of 1-percent solids or less. One of the decanting submersible pump reels was corroded and needs replacement. Additional sludge-holding tank volume and decant-thickening capabilities should be provided to allow a thickened sludge of 1.5- to 2.0-percent total solids, which will reduce the sludge-hauling volume by 50 to 100 percent and hauling costs. CCU is evaluating the feasibility of adding more biosolids-handling capacity at the West Port WRF to handle biosolids generated at the West Port and Rotonda WRFs.

Sludge is transferred between tanks and loaded onto tanker trucks by a sludge-transfer pump. Valve changes determine where sludge is directed. The liquid sludge load-out pump was replaced in FY 2017. The WRF has four emergency sludge-drying beds. Typically, two are used for the on-site collection system and two are used for emergency plant operations.

The Chief Operator indicated that the current sludge hauling schedule is effective such that biosolids-handling facilities have not exceeded system capacity. The ongoing East Port WRF

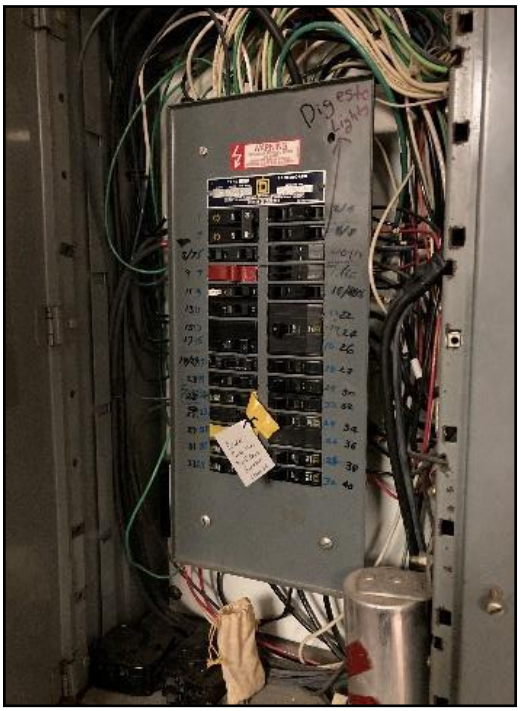
expansion includes a new dewatering facility that will increase solids receiving capacity from the other plants.

Electrical Components and Circuitry

The incoming switchgear and distribution transformer appear in good condition with no obvious signs of significant concern. The incoming power via overhead aerial was installed a few years ago. The WRF is served from two 400-kVA generators connected in parallel that are fed from a subbase tank and an auxiliary tank adjacent to them. A 6,000-gallon fuel tank and pad for the generators were installed in FY 2020; however, the Chief Operator reported issues with the tank's functionality and expects the tank to be removed and/or replaced in the future. Overall, the electrical equipment is in working condition, but the roof was severely damaged by Hurricane Ian and requires replacement. Additionally, Generator Set No. 2 was damaged and minor damage to computer equipment was sustained. The repairs to the building and any outstanding equipment will take place in FY 2024.

Additionally, an electrical equipment site visit assessment was conducted by the Jones Edmunds electrical engineer on in 2023. No specific issues were reported by Operations staff. The incoming power and electrical equipment will need to be further evaluated during design of plant expansion to 2.5 MGD with AWT. Overall, the following electrical deficiencies were noted:

- Generator Set No. 2 was out of service due to Hurricane Ian. The generator vendor states that a new generator is required.
- Staff indicated issues with incoming power where imbalance occurs and trips the blower breakers; staff indicated they plan to monitor and record power to verify this.
- The lighting panel in MCC No. 1 is missing a cover.
- The electrical room adjacent to the generator set was damaged due to Hurricane Ian; the facility is missing the roof, and CCU has installed a temporary cover.
- Sludge bed sump pump conduit broken.
- Blower MCC building outside conduit cover is open.
- MCC Building No. 2 outside conduit cover is open.
- Digestor No. 2 area light conduit support is missing.



- Clarifiers No. 1, 2, 3, and 4 are missing conduit clamps on area lights.
- Clarifiers No. 1 and 2 have broken conduit and are missing a line-box-style fitting cover.
- The conduit supports on the north wall of the headworks/aeration basin have broken, leaving the conduit unsupported.

6.3.5 Operations

The West Port WRF is staffed 16 hours per day, 7 days per week. Key plant components are automatic with continuous effluent monitoring, allowing the plant to operate 24 hours per day. During non-staffed hours at the West Port WRF, operators at the East Port WRF and CCU superintendents remotely monitor the West Port WRF via SCADA. Fixed alarms will also notify personnel so operators or maintenance staff can be dispatched to the West Port WRF when needed.

The West Port WRF produces reclaimed water that complies with HLD standards using biological nutrient removal (BNR), disk filtration, and chlorine disinfection. Reclaimed water that does not meet HLD standards is automatically diverted to the deep injection well for disposal. Reclaimed water is also automatically diverted to the deep injection wells when the reclaimed water storage ponds are full.

6.3.6 Maintenance

Routine maintenance is performed on a scheduled basis. Rehabilitation of major pieces of equipment is completed in accordance with the CIPs that are revised annually. Maintenance required to keep the WRF in compliance with regulations is performed immediately using in-house maintenance personnel or outside contractors.

6.3.7 Review of Previous Report Recommendations

Table 6-11 West Port WRF 2023 Recommendations and Status

Recommendation:	Repair wind damage to the CCC's roof, the generator MCC Building, and the Deep Well Injection Pump Building.
Progress:	Pending FEMA funds.
Recommendation:	Resolve hydraulic constraints in the irrigation wetwell for the injection well pumps to allow disposal of excess reclaimed water from the West Port WRF during wet-weather events.
Progress:	A new deep injection well will be installed during Phase 1 of the 2.5-MGD expansion.
Recommendation:	Clear and recondition the stormwater pond near the headworks.
Progress	Ongoing.
Recommendation:	Inspect the reclaimed water HSP pumps to evaluate the condition of shafts and other components.
Progress:	One HSP was replaced and the motor on the other was rebuilt.

Recommendation:	Replace the DH+ Network.
Progress:	Complete.
Recommendation:	Secure electrical switch gear to prevent unauthorized access or inadvertent exposure to live parts.
Progress:	Completed.
Recommendation:	Complete cleaning and maintenance of Aeration Basin No. 4.
Progress:	Ongoing during the site visit.

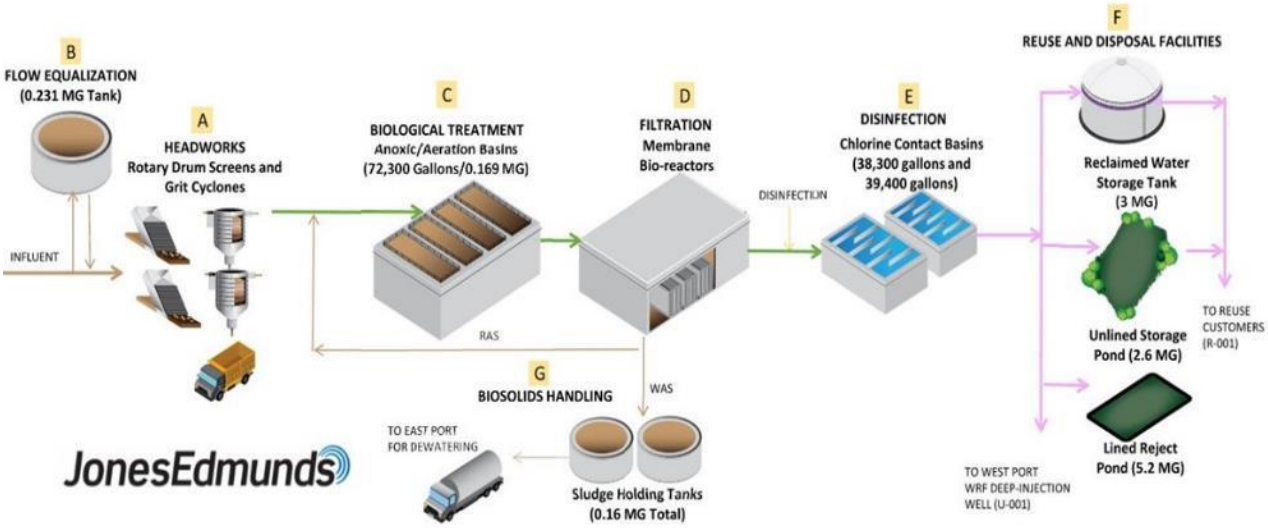
6.4 ROTONDA WRF

The Rotonda WRF is at 3740 Kendall Road, Rotonda West. This facility was purchased by Charlotte County from a private utility, Aqua Source, in 2000. The Rotonda WRF is permitted to distribute reclaimed-quality water to unrestricted-public-access reuse sites, MRS, and to the West Port WRF deep well injection system. The Rotonda WRF serves the west side of the Placida Peninsula including the inside of the circular Boundary Boulevard of the 7.5-square-mile Rotonda development; areas filling in the northeast and northwest corners outside the circular development; and adjacent areas along Cape Haze Boulevard, Pine Valley, White Marsh, Long Meadow, Broadmoor, Pinehurst, Pebble Beach, Oakland Hills, and Cape Haze neighborhoods.

A phased plant expansion was completed during FY 2009 and was cleared for service by FDEP on November 19, 2009. The expanded facility has a rated treatment capacity of 2.0 MGD AADF and a rated reclaimed water disposal capacity of 1.005 MGD AADF. The site has space for expansion to increase the capacity to 3.0 MGD. The Rotonda WRF uses activated sludge in an MBR configuration to treat wastewater.

Figure 6-4 shows the Rotonda WRF process flow diagram. Two diesel-powered emergency generators in an on-site building have ATSs for providing emergency power to the WRF.

Figure 6-4 Rotonda WRF Process Flow Diagram



The Rotonda WRF treatment process consists of the following components:

A) Headworks: Raw wastewater from the West County service area enters the Rotonda WRF headworks for screening and grit removal. Two Baycor rotary drum fine screens remove larger inorganic material. These screens are being replaced with Rotamat Screens by Huber Technology and will be completed in FY 2025. Grit removal is achieved in two grit concrete tanks immediately downstream of the rotary drum screens. Settled grit is pumped through two grit cyclones and one grit "snail" washer to remove organics. Screenings and grit removed by these two processes are collected and hauled to the landfill for disposal. Flows from the on-site lift station are sent to the headworks as well.

B) Flow Equalization: During peak flows, excess wastewater pours over a weir at the headworks and is diverted to a 300,000-gallon EQ tank. Pumps at the EQ tank return the wastewater to the headworks as influent flows return to average conditions. The EQ tank is equipped with two forced-air pumps to maintain the biological medium and prevent hypoxic conditions.

C) Biological Treatment: Wastewater from the headworks and/or EQ tank enters two activated-sludge treatment trains, which consist of an aerobic zone, an anoxic zone, and a swing zone that can be an aeration or anoxic zone. This configuration allows the biodegradation of organics and the removal of excess nitrogen. Blowers and fine-bubble diffusers provide oxygen to the wastewater in the aeration zone. The anoxic zone has submersible mixers to keep the mixed liquor suspended and a homogenous zone.

D) Filtration: From the biological treatment process, the wastewater flows to the four MBR filtration trains. Each train contains three cassettes. Hollow-tube membranes housed in individual cassettes provide a high level of filtration and replace secondary clarifiers and tertiary filters used at the other WRFs. The cassettes are periodically emptied and refilled with sodium hypochlorite during cleaning events. Sludge

produced in the treatment process is pumped to two locations – to the aeration basins as RAS to support microbial activities and to the two sludge-holding tanks as WAS.

E) Disinfection: The filtered water enters the CCC splitter box, directing the flow into one of two CCCs. Three chlorine feed pumps introduce liquid sodium hypochlorite for reclaimed water disinfection requirements. The chlorine is thoroughly mixed using a static mixer in the CCC influent pipe. The sodium hypochlorite is controlled by flow meters on the MBR effluent piping. The three sodium hypochlorite storage tanks have a total usable capacity of 4,080 gallons.

F) Reuse and Disposal Facilities: Reclaimed water is stored on-site in a 3.0-MG GST and a 2.64-MG reclaimed water storage pond. An on-site pump station provides flow to the reclaimed water transmission system that is interconnected with the MRS. During wet weather, excess reclaimed water can be disposed of in the West Port WRF deep injection well. The Rotonda WRF also has a lined reject pond with a storage capacity of 5.182 MG. Water is diverted to this pond when it does not meet the unrestricted-public-access reclaimed water quality standards and must be retreated through the WRF.

G) Biosolids Handling: WAS pumped to the two sludge-holding tanks (170,000-gallon total capacity), gravity thickened, and hauled to the East Port WRF for aerobic digestion and dewatering. The tanks are converted clarifiers with center surface aerators. Decanted supernatant recirculates to the headworks. Thickened sludge is hauled to the East Port WRF for digestion, dewatering, and final disposal at a compost facility at the Charlotte County Zemel Road Landfill.

6.4.1 Regulatory Considerations

The Rotonda WRF operations are regulated by FDEP under the provisions of Chapter 403, Florida Statutes, and the applicable FAC rules. Plant Operating Permit (FLA014098), expiration date May 30, 2027, governs the plant operations.

- FDEP authorized a minor permit revision to upgrade the existing headworks. The improvements were underway at the time of the visit and include installing new influent piping, replacing both influent screens, replacing both grit cyclones, installing new grit suction/discharge piping, and cleaning the grit chamber.

6.4.2 Wastewater Flows and Loads

The Rotonda WRF's permitted capacity is 2.0 MGD AADF. In FY 2024, the AADF was 1.19 MGD, and the WRF was operating at 60 percent of the plant permit capacity. The MADF of 2.13 MGD occurred in September 2024. The maximum TMADF of 1.83 MGD occurred in September 2024, which is 92 percent of the plant permit capacity, demonstrating the influence of wet weather and I/I on flows to the facility. Table 6-12 summarizes influent flows as reported on DMRs in FY 2024.

Table 6-12 Rotonda WRF Influent Flows in FY 2023

Month	MADF (MGD)	AADF (MGD)[1]	TMADF (MGD)	MDF (MGD)	TMADF Percent Capacity (%)
Oct-23	1.22	1.11	1.28	2.63	64
Nov-23	1.04	1.09	1.21	1.16	61
Dec-23	1.16	1.09	1.14	1.59	57
Jan-24	1.53	1.12	1.24	2.11	62
Feb-24	1.46	1.16	1.39	1.72	69
Mar-24	1.34	1.19	1.45	1.51	72
Apr-24	1.06	1.19	1.29	1.23	64
May-24	0.85	1.19	1.08	0.93	54
Jun-24	1.26	1.21	1.06	1.89	53
Jul-24	1.45	1.25	1.19	2.17	59
Aug-24	1.89	1.30	1.54	3.32	77
Sep-24	2.13	1.37	1.83	3.62	91

Note: [1] Permitted plant capacity 2.0 MGD.

In FY 2024, the average annual influent load for BOD was 1,029 lb/day and for TSS was 1,785 lb/day. The maximum monthly average for BOD load was 1,549 lb/day occurring in March 2024. TSS load typically exceeded 1,000 lb/day. The maximum monthly average TSS load was 3,013 lb/day, occurring in June 2024, which corresponds with seasonal residents. Table 6-13 summarizes the wastewater characteristics of the Rotonda WRF influent in FY 2024.

Table 6-13 Rotonda WRF Influent Water Quality in FY 2024

Month	BOD		TSS	
	Monthly Avg. Concentration (mg/L)[1]	Monthly Avg. Load (lb/day)	Monthly Avg. Concentration (mg/L)[1]	Monthly Avg. Load (lb/day)
Oct-23	78	729	101	960
Nov-23	97	828	174	1,482
Dec-23	130	1,333	169	1,723
Jan-24	94	1,224	163	2,158
Feb-24	121	1,483	166	2,011
Mar-24	143	1,549	224	2,430
Apr-24	98	853	187	1,578
May-24	118	813	200	1,380
Jun-24	140	1,163	366	3,013
Jul-24	61	730	85	1,017
Aug-24	50	681	95	1,329
Sep-24	61	966	150	2,336

Note: [1] Measured at monitoring site INF-01.

6.4.3 Treatment Objectives and Effluent Quality

The Rotonda WRF is designed to treat wastewater for two effluent standards: one for disposal to the deep injection well (U-001) and the other for a slow-rate public-access

system (R-001) for which HLD is required. Table 6-14 lists the flow and primary water-quality requirements for each effluent reuse and disposal method.

Table 6-14 Rotonda WRF Effluent Requirements

Reuse/Disposal Method	R-001	U-001
Maximum Flow (MGD)	Report[a,b]	4.75[a]
Maximum BOD (mg/L)	20[a]/30[b]/45[c]/60[d]	Not applicable
Maximum TSS (mg/L)	5.0[d]	Not applicable
Total Fecal (#/100mL)	25[d]	Not applicable

Note: Statistical bases: [a]annual average; [b]monthly average; [c]weekly average; [d]single sample.

Table 6-15 summarizes the effluent flow and water quality of the Rotonda WRF. In FY 2024, the annual average effluent flow for the slow-rate public-access system (R-001) was 1.28 MGD. The maximum daily flow of the well was 3.36 MGD, which included the West Port WRF flows and indicates that the WRF is meeting its effluent flow requirements. The maximum single-sample BOD and TSS values were 2.0 mg/L and 5.2 mg/L, respectively, showing no violations of the single-sample limits for BOD or TSS were recorded in FY 2024. Consequently, the BOD and TSS annual average, monthly, and weekly concentration requirements were also met in FY 2024. The maximum fecal coliform counts exceeded 1/100mL once in August 2024.

Table 6-15 Rotonda WRF Effluent Flow and Water Quality

Month	Reuse and Disposal Method		Water Quality		
	R-001 Monthly Avg. Flow (MGD)[1]	U-001 Maximum Daily Flow (MGD)[2]	Maximum BOD Conc. (mg/L)[3]	Maximum TSS Conc. (mg/L)[4]	Maximum Fecal Count (#/100 mL)[3]
Oct-23	1.12	1.30	2.0	0.4	<1
Nov-23	1.00	0.14	2.0	0.4	<1
Dec-23	1.08	1.18	2.0	0.4	<1
Jan-24	1.59	2.98	2.0	0.4	<1
Feb-24	1.39	2.44	2.0	0.4	<1
Mar-24	1.34	2.00	2.0	1.3	<1
Apr-24	1.09	0.21	2.0	0.4	<1
May-24	0.90	0.10	2.0	0.4	<1
Jun-24	1.14	0.09	2.0	0.4	<1
Jul-24	1.26	2.81	2.0	0.4	<1
Aug-24	1.54	2.68	2.0	0.4	<1
Sep-24	1.92	3.36	2.0	0.4	<1

Note: [1] Monitoring site FLW-03; [2] Monitoring site FLW-02 at Westport WRF;[3] Monitoring sites EFA-01; [4] Monitoring site EFB-01.

6.4.4 Treatment Components and Condition Assessments

Jones Edmunds completed an on-site review of the WRF on January 30, 2025. Our personnel met with Jason Foster, Chief Operator of the Rotonda WRF, to review conditions,

operations, and records. Access to the facility is through a secure gate in a fence surrounding the WRF and effluent storage ponds. The facility site is well-maintained, and the equipment is in working condition. Some painted exterior walls and piping showed signs that repainting should continue for FY 2024. A portion of the above-grade piping and HSPS No. 1 were repainted in FY 2021, and larger portions of piping and equipment were repainted in FY 2022. The remainder of the above-grade piping was repainted in FY 2024.

General observations noted at the time of the site visit include:

- Construction of improvement to the headworks is underway.
- The plant operators strive to exercise valves regularly.
- All compliance meters are calibrated every 6 months, and calibration tags were up to date at the time of the site visit.

Required documents maintained on site include:

- Operating permits for the treatment facility and deep injection wells.
- Operators' licenses.
- Facility logbook.
- Facility Standard and Emergency Operating Plans (guidance book created in-house).
- DMRs.
- Effluent Analysis Reports.
- Annual Reuse Report.
- Pathogen Monitoring Report (*Giardia* and *Cryptosporidium*).
- Reports required to complete the last permit application (in process).
- Certification of the EPLAB.
- Sampling Plan.
- Groundwater Monitoring Plan (contained in permit).
- Laboratory results.
- Flow meter calibrations.
- Chlorine and pH meter calibrations (one/day).
- Chain-of-custody forms for samples that are sent to laboratories.
- Monthly residual and marketing report (reported in dry tons/month).
- Facility O&M Manuals.
- Maintenance records (CMMS electronic data system).
- Reuse Operating Protocol.
- Facility Record Drawings.
- Daily temperature logs.
- Spill protocol and record of spills.

The Cross-Connection and Backflow Prevention Manuals are kept at the Reclaimed Water Coordinator's East Port WRF office and the Rotonda WRF Operations building.

6.4.4.1 WRF Influent Sampling Location

The influent water-quality sampling (INF-01) and flow monitoring (FLW-01) locations are clearly marked, and the refrigerated influent composite sampler and flow meter are in good operating condition. The two main influent valves to the headworks screens were replaced

as part of the headworks improvement and rehabilitation/replacement project under construction.

6.4.4.2 Headworks

The overall condition of the headworks is fair to poor. Construction of the headworks improvements project was underway at the time of the visit.

- Portions of the new influent piping had been installed.
- One screen had been replaced with a new Huber Rotamat screen. The other screen will be replaced as well.
- The grit removal system is functioning as intended.
- The grit cyclones are scheduled for replacement in FY 2024 and FY 2025 as part of the headworks improvements project.

6.4.4.3 Flow Equalization

The overall condition of the 0.3-MG EQ tank is good. The EQ tank, which attenuates high hourly flows, is filled through a gravity system initiated by an overflow weir at the headworks structure. The EQ tank contents are returned to the headworks for treatment at a steady flow over 24 hours using VFD pumps.

- The piping was recently painted.
- In the FY 2022 review, the Chief Operator noted that MLS 801 sends 1,500 gpm to the Rotonda WRF for about 20 minutes and then turns off for 20 to 30 minutes. The operation of the EQ tank has been adjusted to respond to the intermittent discharge from MLS 801.

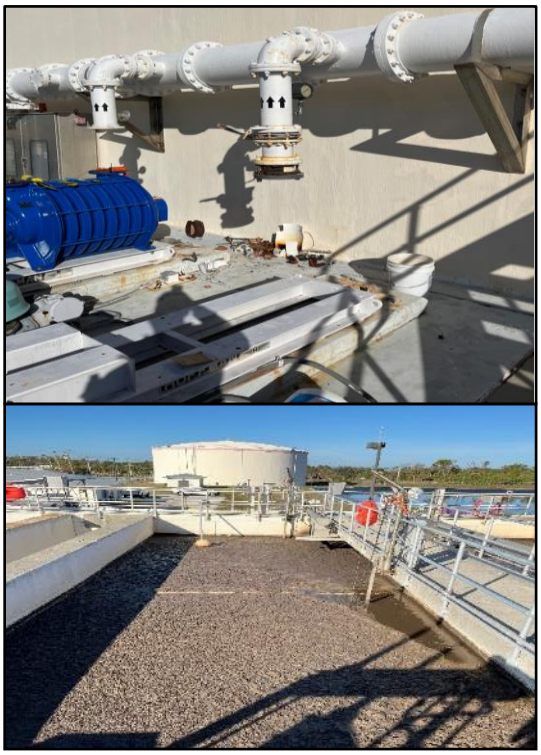
- The Flygt dry-installation submersible pumps are used to return to the treatment stream are in good working condition.
- The EQ tank has an overflow that sends flow to the reject pond and is pumped back to the front of the plant. The Chief Operator noted that this happens on occasion.
- The positive displacement blowers are run intermittently to save power. Oil sight glasses and fill ports improve maintenance.
- The EQ tank was painted in FY 2019.

- The Chief Operator indicated that an additional EQ tank is necessary to respond to additional surges and continue to maintain a steady flow to the MBRs.

6.4.4.4 Biological Treatment

The overall condition of the activated sludge facilities is good. The aeration tanks operate in a plug flow regime with anoxic, aerobic, and swing zones.

- The anoxic zones and the use of automatic DO probes to control blower speeds have contributed to the high level of treatment performance while conserving power.
- The lead operator noted that the aeration tanks are run at an MLSS concentration of 5,600 to 5,700 mg/L.
- A layer of foam was on the water surface in the anoxic zone at the time of inspection. To increase denitrification, additional tank volume may be needed.
- Additional mixers in the first anoxic zones are recommended.
- The Chief Operator indicated that an inspection of the diffuser in the aeration zones will be completed in summer FY 2025.



The facility has four multi-stage centrifugal Hoffman blowers with room for an additional blower to serve the aeration zones. Generally, one blower meets air requirements. Additional units are brought online during higher demands.

- Blowers No. 1 and No. 2 switched locations.
- Blower No. 2 was removed and is scheduled for replacement in FY 2026.
- Blower No. 1 was undergoing repairs at the time of the site visit.
- Blowers No. 4 and No. 5 were in excellent condition.
- The Chief Operator indicated they prefer three large and two small blowers for better flexibility.
- A sensor on one of the DO probes was replaced, and the other three probes are functioning properly.
- All Hach sensors that had been sun-damaged were replaced, and new UV covers were installed.

6.4.4.5 Filtration: Membrane Bioreactor

The MBR system continues to produce high-quality effluent. The system contains four trains with three membrane cassettes each. The MBRs are cleaned once every other day with a weak bleach solution to maintain their treatment efficiency and remove organics. The cassettes are periodically cleaned in place with concentrated chlorine bleach twice a year and are removed once a year for citrus cleaning to remove inorganics.

- The frame on the MLVSS Return/Recycle Pump No. 2 was rehabilitated in FY 2022, and the frame and skid floor were repainted in FY 2022.
- The lead operator noted no upgrades are needed to collect temperature data because it is already collected as part of the transmembrane pressure (TMP) calculation.
- In May 2019 HDR made a series of recommendations to improve membrane performance.
- In February and March 2025, the membrane cassettes are being replaced for all four trains.
- The lead operator noted that the new cassettes have a higher capacity and will handle a higher influent flow, which meets the capacity for the WRF re-rate recommended in the sewer master plan update.

6.4.4.6 Disinfection and Effluent Sampling

The overall condition of the chlorination system is good. The two concrete CCCs are in good condition. The CCCs are used alternately, but only one is required to meet the required contact time under current flows.

- Wind from Hurricane Ian in September 2022 caused the UV filter cloth and metal roof to be blown off the CCC, and it was still missing at the time of our site visit. During the site visit, neither CCC had a UV filter cloth.
- Operators should monitor the corrosion of the chlorine skids.
- The chlorine storage tanks feature polyethylene single-walled tanks with secondary containment basins. The tanks were replaced in FY 2021.

- Small-diameter corrugated HDPE drain piping coming from the secondary containments appeared to be in fair condition, and the in-line valves were open during the site visit.
- In FY 2024 secondary containment piping was installed from the storage tanks to the feed pumps.
- The canopy that covered the storage tanks was blown away by Hurricane Ian and replaced in FY 2024.
- The metal backplates for the chlorine analyzers have substantial corrosion and staining and should be replaced.

6.4.4.7 Reclaimed Water, Disposal, and Storage

Reclaimed Water Facilities

Reclaimed water meeting public-access water quality is sent to the MRS using the HSPs at HSPS No. 1 and HSPS No. 2. HSPS No. 1 uses three vertical turbine pumps with VFDs to provide reclaimed water to golf course storage ponds north of the Rotonda WRF and to transfer flow to the EQ tank, reclaimed water pond, or reclaimed water GST. HSPS No. 2 contains two HSPs and one jockey pump primarily used to convey reclaimed water from the storage tank to golf courses south of the WRF.

- The HSPS No. 1 motors were replaced with outdoor-rated motors in FY 2024.
- The HSPSs and aboveground piping were repainted in FY 2021.
- Both pump stations appeared to be in good working order during the visit.

Reclaimed water from the GST can be pumped to pressurized reuse customers using HSPS No. 2. The GST exterior appeared to be in good overall condition.

- The GST was drained and cleaned in FY 2017, and USG Water Solutions completed a detailed condition assessment on the exterior and interior with a report in April 2023.

Effluent Disposal Facilities

As mentioned previously, the Rotonda WRF provides reclaimed water to the MRS. This allows for excess reclaimed-quality effluent to be sent to the West Port WRF's reclaimed water storage ponds or deep injection well (capacity 4.75 MGD) for final disposal. The Rotonda WRF also contains an on-site lined reject pond with a storage capacity of 5.182 MG. Water diverted to this pond does not meet reclaimed water standards and must be retreated

through the WRF. A small pumping station adjacent to the pond pumps reject water to the headworks for retreatment.

- The reject pond did not have any observable damage to the liner or the berm.

Wet-Weather Storage

The on-site reclaimed water pond (2.64 MG), on-site GST (3.0 MG), and off-site Palms Pond (7.44 MG) are available for wet-weather storage of reclaimed water.

- The unlined reclaimed water storage pond has a reduced capacity due to groundwater percolation into the pond. The brush around the pond had been cleared in FY 2024.
- The Chief Operator expressed that the unlined storage pond is not being used at this time or in the foreseeable future. Jones Edmunds recommends considering removing this pond from the operating permit. Future planning indicates that this pond would be filled with compacted suitable soil and replaced with a 3.0-MG GST. This is expected to be decided as part of the Rotonda WRF Upgrades to AWT project currently in the planning phase.

6.4.4.8 Biosolids Handling Facilities

The overall condition of the solids-handling facilities is good. The decant mechanism for the sludge-holding tanks use telescoping valves, but the telescoping valves are limited to being lowered to one-half the depth of the tank. The operators have replaced the designed method of decanting by using bottom-feed submersible pumps lowered to the desired level with a winch to control the decanting level. Currently, decanting is done daily to attempt to maintain the holding tank capacity.

- No indication of limitations to the sludge-hauling capabilities was observed, as noted in last year's report.
- The pump-out station pumps and piping were replaced in FY 2023 by the CCU staff.
- One tank was half empty at the time of the visit.

6.4.4.9 Electrical Components and Circuitry

The Rotonda WRF was inspected by a Jones Edmunds Electrical Engineer on February 28, 2024. Generally, the overall condition of the plant was good, although significant signs of deterioration are apparent in many systems. The incoming switchgear and distribution transformer appear in good condition. The plant is served from two 810-kW generators configured to operate in parallel. Our review of the electrical equipment in Building
MCC-1 and the associated generator set revealed storm damage. This equipment is labeled with the appropriate NFPA 70E arc-flash warnings. Overall, the electrical equipment in Building MCC-2 is in good functioning condition based on information from Operations staff. This equipment is also labeled with the appropriate NFPA 70E arc-flash warnings.

The following deficiencies were noted:

- During the site visit, the audible alarm on generator set No. 2 was continuously sounding. Operations staff noted this fault alarm will not clear but does not prevent the generator from running. However, the Operations staff also noted that when both generator sets are running, the synchronizer is failing, which prevents both generator sets from working concurrently.

- Throughout many areas of the plant, conduits have become disconnected from their fittings and are now hanging loose with exposed wires, which is a code violation. Many of the conduit fittings are becoming badly deteriorated and rusted.
- Atop the headworks are two rotary drum screens. Old instrumentation/power connections are on the sides of each of them. Whatever was originally connected has been removed, but the conductors in the wiring were simply abandoned in place. Whether these were live conductors was not determined, but even if abandoned, they are considered to be a hazard unless identified as out of service or removed.
- The biosolids handling facility has a floating mixer that is being fed from flexible cordage. The mixer is currently operational and meets NEC; however, this cordage is wholly unsupported except for one small clip. This deficiency is a repeat listing from previous years.
- The blower assemblies use flexible conduit to provide power to the motor operated valves. This conduit is longer than 6 feet and is unsupported. This deficiency is a repeat listing from previous years.
- A light pole on site is broken and laying on its side, exposing wires to the environment.
- The MCC Building No. 2 exterior waterproof receptacle is missing its cover. Many other waterproof receptacles across the plant were also missing their covers, which is a code violation.
- The on-site lift station is reported to handle implant wastewater flows. The conduit traveling from the wetwell to the adjacent control panel does not contain conduit seal-

offs, which is in violation of NEC since this is considered a classified area. When opening the control panel, a strong smell of sewer gasses is present, and the copper conductors and terminals have visible corrosion. This deficiency is a repeat listing from previous years.

- MCC Building No. 3 sustained Hurricane Ian damage such that interior lighting fixtures are hanging from wires – representing a significant hazard to staff (see photo). This deficiency is a repeat listing from previous years.
- Several control boxes made of fiber-reinforced plastic are showing severe signs of UV damage.

6.4.5 Operation and Maintenance

The WRF consistently produces high-quality reclaimed water due to the use of MBR units; however, the treatment process is more energy intensive than conventional secondary treatment with filtration and requires a higher level of operator attention and understanding to balance flow and load through the MBR units. The Operations staff has done an excellent job maintaining the facility and the MBR membranes.

Plant Operators staff the Rotonda WRF 16 hours per day, 7 days per week. The WRF can be continuously monitored by the East Port WRF operators through a County-wide telemetry system that allows the Rotonda WRF to continue to produce reclaimed water 24 hours per day. The Wonderware SCADA software has been replaced with VTScada. Alarms are evaluated, and operators or maintenance staff can be dispatched to the Rotonda WRF to address issues, if necessary. Effluent not meeting reclaimed water standards is automatically diverted to the reject storage pond for retreatment.

Routine maintenance is performed on a scheduled basis. Rehabilitation of major pieces of equipment is completed in accordance with the CIPs that are revised annually. Maintenance that is required to keep the WRF in compliance with regulations is performed immediately using in-house maintenance personnel or outside contractors.

6.4.6 Review of Previous Annual Report Recommendations

Table 6-16 presents the FY 2023 recommendations and their status for the Rotonda WRF.

Table 6-16 Rotonda WRF 2023 Recommendations and Status

Recommendation:	Evaluate different aeration systems for the reclaimed water storage pond.
Progress:	Not completed.
Recommendation:	Evaluate aquifer storage and recovery (ASR) for additional reclaimed water storage at the Rotonda WRF.
Progress:	A new deep injection well and GST are planned as part of the Rotonda WRF expansion.
Recommendation:	Address previous recommendations for the headworks including influent valves, flow control, grit cyclones, and screens as part of the headworks improvement project.
Progress:	Ongoing with the Headworks Improvement project.

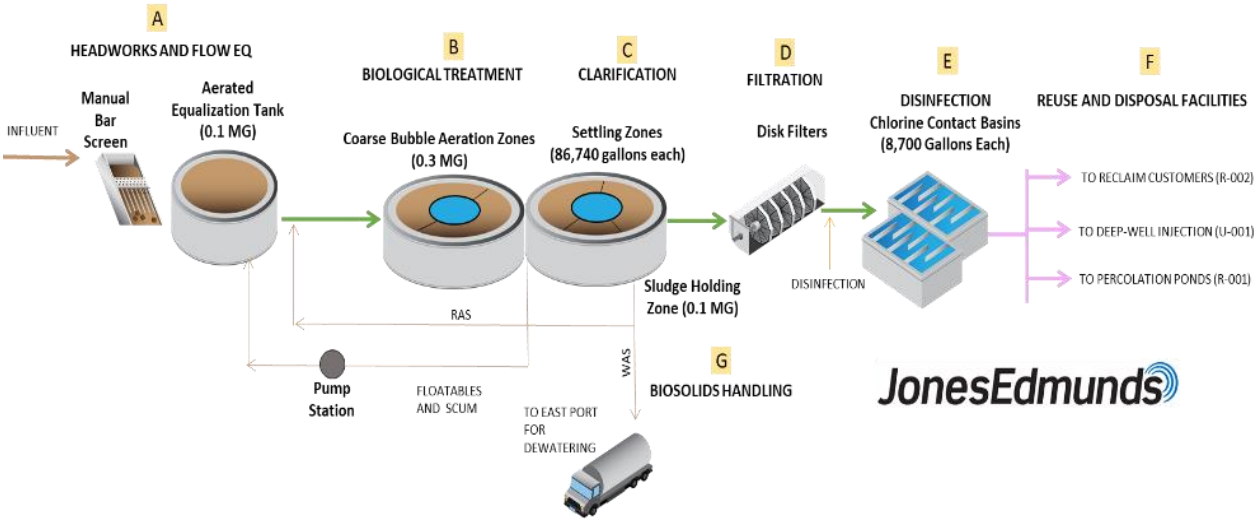
Recommendation:	Add an MBR cassette to the trains as capacity needs dictate.
Progress:	Ongoing. CCU intends to replace the membranes during FY 2025.
Recommendation:	Add a galvanized metal frame and UV shade cloth to the CCCs.
Progress:	Added to FY 2025 budget.
Recommendation:	Add UV protection to the sides of the chlorine storage tanks to protect from direct sunlight.
Progress:	Not added to FY 2025 budget.
Recommendation:	A year before scheduled replacement, order membrane modules. Install new membrane modules in Train No. 1. Do not install new membrane modules with existing membrane modules in the same train. Move the existing membrane modules from Train No. 1 to Train No. 4. Train No. 4 will then have six membrane cassettes, which will extend the life of the membranes.
Progress:	Ongoing. CCU intends to replace membranes during FY 2025.
Recommendation:	Constantly monitor membrane permeability trend, especially for Trains No. 3 and No. 4.
Progress:	Ongoing.
Recommendation:	Add temperature to the data collected weekly so that permeability can be corrected with the temperature to account for seasonal changes in water viscosity.
Progress:	Temperature is currently factored into the TMP calculations used to monitor.
Recommendation:	Adjust the membrane slack to offset use of equipment, as recommended by the manufacturer.
Progress:	Ongoing.
Recommendation:	Continue to paint tanks, buildings, and pipes in the next 2 years.
Progress:	Complete.
Recommendation:	Replace Blower No. 5 with the correct lower-scfm-capacity blower to lower oxygen levels and improve nitrogen removal.
Progress:	The operator states that this is not an issue. Blower 2 has been replaced with a lower capacity blower.
Recommendation:	Add headworks PLC to SCADA.
Progress:	Completed.
Recommendation:	Evaluate additional denitrification capacity.
Progress:	Currently effluent nitrogen is under 5 mg/L.
Recommendation:	Evaluate adding another EQ tank to respond to historical surges. Surges were not an issue in FY 2024.
Progress:	CCU to consider this as part of the future Rotonda WRF expansion project.
Recommendation:	Add an MBR cassette to the existing trains as capacity needs dictate.
Progress:	Higher capacity membranes are being installed in FY 2025.
Recommendation:	Replace the permeate pump to MBR No. 3.
Progress:	Complete.
Recommendation:	Complete replacement of Blower No. 1.
Progress:	Complete.

6.5 BURNT STORE WRF

The Burnt Store WRF was acquired on December 12, 2003, when CCU purchased Florida Water Services' Burnt Store Division. Located in southwest Charlotte County on Burnt Store Road, the WRF serves south Charlotte County along Burnt Store Road and 2 square miles of residential golf course/marina in Lee County. The WRF shares the site with the Burnt Store RO WTP.

The WRF uses conventional activated sludge with effluent filtration and high-level chlorine disinfection to produce reclaimed water. The facility's permitted capacity is 0.5-MGD AADF. Effluent can be distributed as reclaimed water to unrestricted-public-access reuse sites, injected into a deep well injection system, and applied to a slow-rate restricted-access land application system. The deep injection well system is shared with the adjacent Burnt Store RO WTP. Figure 6-5 shows the Burnt Store WRF process flow diagram.

Figure 6-5 Burnt Store WRF Process Flow Diagram



The Burnt Store WRF process consists of the following components:

A) Headworks and Flow EQ: Raw wastewater from the South County service area collection/transmission system enters the WRF manual bar screen and flows into the EQ tank. Blowers equipped with timers and coarse-bubble diffusers aerate the wastewater and suspend solids. Internal plant flows from the on-site pump station are also pumped into the EQ tank.

The EQ transfer pumps are equipped with VFDs that operators periodically adjust based on season and historical trends. The EQ tank is equipped with ultra-sonic level sensors that turn off the pumps based on a low level and trigger an alarm condition if the EQ tank level gets above the high-level alarm.

B) Biological Treatment: The activated-sludge treatment occurs in two steel-ring package treatment units. The wastewater from the EQ tank enters the outer ring of a package-type treatment basin equipped with coarse-bubble diffusers where it is combined with RAS flow from the settlers. The MLSS are aerated to achieve extended aeration treatment, and the air-flow rate of the diffusers is adjusted to achieve nitrogen removal.

   The plant has three Gardner Denver centrifugal blowers: one dedicated to the aeration tanks, one dedicated to the sludge digestion tank, and one on stand-by. A fourth smaller blower provides air to the EQ tank.

C) Clarification: The two-steel circular secondary clarifiers are within the center of each package treatment unit for gravity solids separation. The clarifiers are skimmed to remove floatables and scum before clarifier effluent flows over a circumferential weir to the tertiary filters.

   Sludge pumps convey settled solids to the RAS or the WAS. The RAS pumps turn on 10 minutes before and turn off 10 minutes after the EQ pumps turn on and turn off. Scum is collected in a scum trough and sent to the plant lift station where it is returned to the EQ tank.

D) Filtration: Clarified water from the settlers enters four disk filters, each having 5-micron filter cloths. The disk filter unit is installed in a steel filter tank that allows water to flow from outside the disk filters into a manifold system of the filter unit.

E) Disinfection: The filtered water can be sent to two CCCs where liquid sodium hypochlorite is introduced for disinfection. Two chemical feed pumps are controlled by a chlorine analyzer to dose sodium hypochlorite. A mixing pump is provided at the chemical feed point, and the chambers are baffled and sized to meet disinfection requirements. The chlorine analyzer measures chlorine concentration at the beginning of the CCC and adjusts the chlorine feed rates. A reagent-less analyzer measures the chlorine residual at the CCC discharge weir for compliance with regulatory limits. Sodium hypochlorite is stored in two tanks with a total capacity of 2,200 gallons.

F) Reuse and Disposal: Effluent water meeting reclaimed water standards is conveyed through the unrestricted-public-access reclaimed water system via a HSP station. The HSP station consists of two large HSPs and two smaller jockey pumps. Effluent water not meeting reclaimed water standards is conveyed to two Class I deep injection wells, and four percolation ponds are available for disposal of excess reclaimed water or treated water that does not meet reclaimed water standards.

   IW-2 is currently being used as the primary means of effluent disposal, with the older well, IW-1, maintained as a backup. Currently, a maximum of 380 gpm can be diverted to the deep well. Effluent flow that exceeds the deep well flow setpoint is

diverted to the percolation pond system by way of a splitter mechanism at the CCC. The deep injection wells are also used for disposal of concentrate from the Burnt Store WTP RO facilities. Flows from the WTP and WRF are combined in a wetwell at the injection well pumping station. Two equally sized vertical turbine pumps are used to inject water into the injection well.

G) Biosolids Handling: Three crescent-shaped sludge-holding tanks are in one steel ring tank, providing a total capacity of nearly 300,000 gallons. Sludge is hauled to the East Port WRF and combined with the sludge from the other Charlotte County WRFs for digestion, dewatering, and final disposal at the compost facility at the County's Zemel Road Landfill. One blower is dedicated to the sludge-holding/aerobic digestion tank.

6.5.1 Regulatory Considerations

The Burnt Store WRF operations are regulated by FDEP under the provisions of Chapter 403, Florida Statutes, and the applicable FAC rules. The following permits govern plant operations:

- Plant Operating Permit (FLA014083) – Expiration Date: December 28, 2026.
- IW-1 Permit (0271367-007-UO/1I) – Expiration Date: May 14, 2024.
  - The last MIT was performed on IW-1 on June 5, 2020. The next MIT is due by June 4, 2025.
  - A permit renewal was submitted January 26, 2024, and is pending approval by FDEP (application number 0271367-009-UO).
- IW-2 Permit (0271367-008-UO/1X) – Expiration Date: August 22, 2027.
  - The last MIT was performed on IW-2 on April 6, 2023, and the next MIT is due by April 5, 2028.

6.5.2 Wastewater Flows and Loads

The Burnt Store WRF's permitted capacity is 0.500-MGD AADF. In FY 2024, the AADF was 0.35 MGD, and the Burnt Store WRF is operating at 70 percent of the plant permit capacity. The MDF occurred in September 2024 at 1.08 MGD. The maximum TMADF of 0.46 MGD occurred in March 2024, which is 92 percent of the plant permit capacity. Table 6-17 summarizes influent flows as reported on the FY 2024 DMRs.

Table 6-17 Burnt Store WRF Influent Flows in FY 2024

Month	MADF (MGD)	AADF (MGD)[1]	TMADF (MGD)	MDF (MGD)	TMADF Percent Capacity (%)
Oct-23	0.31	0.31	0.32	0.56	64
Nov-23	0.28	0.30	0.32	0.33	64
Dec-23	0.34	0.31	0.31	0.60	63
Jan-24	0.49	0.32	0.37	0.79	74
Feb-24	0.48	0.33	0.43	0.64	87
Mar-24	0.43	0.33	0.46	0.54	93

Month	MADF (MGD)	AADF (MGD)[1]	TMADF (MGD)	MDF (MGD)	TMADF Percent Capacity (%)
Apr-24	0.33	0.33	0.41	0.48	82
May-24	0.23	0.33	0.33	0.27	66
Jun-24	0.33	0.34	0.30	0.78	59
Jul-24	0.36	0.35	0.31	0.51	61
Aug-24	0.45	0.37	0.38	1.03	75
Sep-24	0.50	0.38	0.43	1.08	87

Note: [1] Permitted plant capacity 0.500 MGD; measured at monitoring site FLW-01.

As the data show, the Burnt Store WRF has reached a percent-of-capacity use that requires a capacity analysis report (CAR) every year to assess the previous year's flows and their impact on the capabilities of the plant to meet its permitted effluent requirements. Historically, WRF flows were consistent, but a substantial population growth has been observed in this area in recent years. CCU is in the design phase for the expansion of this WRF, which will increase the capacity of the Burnt Store WRF plant through a phased approach to meet projected needs.

For FY 2024, the average annual influent load for BOD was 305 lb/day and for TSS was 427 lb/day. The maximum monthly average BOD load was 525 lb/day, occurring in February 2024. The maximum monthly average TSS load was 603 lb/day in February 2024, which corresponds with seasonal residents and the dry season. Table 6-18 summarizes the wastewater characteristics of the WRF influent.

Table 6-18 Burnt Store WRF Influent Water Quality in FY 2024

Month	BOD		TSS	
	Monthly Avg. Concentration[1] (mg/L)	Monthly Avg. Load (lb/day)	Monthly Avg. Concentration[1] (mg/L)	Monthly Avg. Load (lb/day)
Oct-23	83	212	120	305
Nov-23	107	256	147	350
Dec-23	111	318	137	375
Jan-24	116	441	153	581
Feb-24	141	525	162	603
Mar-24	153	498	177	574
Apr-24	154	389	179	463
May-24	104	201	142	273
Jun-24	71	244	120	425
Jul-24	56	167	121	395
Aug-24	51	178	90	323
Sep-24	64	227	124	461

Note: [1] Measured at monitoring site INF-01.

6.5.3 WRF Treatment Objectives and Effluent Quality

The Burnt Store WRF is designed to treat wastewater to three effluent standards – one for disposal to the deep injection wells (U-001), one for the percolation pond systems (R-001)

which requires basic disinfection and contains a nitrate limit, and one for public-access reuse (R-002) which requires HLD. Table 6-19 lists the flow and primary water quality requirements for each effluent reuse and disposal method.

Table 6-19 Burnt Store WRF Effluent Requirements

Reuse/Disposal Method	R-001	R-002	U-001
Max Flow (MGD)	0.25[a]	2.2603[a]	3.444[d]
Max BOD (mg/L)	20[a]/30[b]/45[c]/60[d]	20[a]/30[b]/ 45[c]/60[d]	20[a]/30[b]/45[c]/60[d]
Max TSS (mg/L)	20[a]/30[b]/45[c]/60[d]	5[d]	20[a]/30[b]/ 45[c]/60[d]
Total Fecal (#/mL)	200[a]/200[e]/800[d]	25[d]	Not Applicable

Notes: Statistical bases: [a]annual average; [b]monthly average; [c]weekly average; [d]single sample; [e]monthly geometric mean.

Table 6-20 summarizes the effluent flow and water quality of the Burnt Store WRF. In FY 2024, the annual average effluent flow for the percolation ponds (R-001) and reuse system (R-002) were 0.14 MGD and 0.01 MGD, respectively. The MDF of the well (U-001) was 0.84 MGD, indicating that the WRF is meeting its effluent flow requirements. The maximum single-sample BOD and TSS values were 2.0 mg/L and 3.5 mg/L, respectively. No violations of the single-sample limits for BOD or TSS were recorded in FY 2024. Consequently, the BOD and TSS annual average, monthly, and weekly concentration requirements were also met in FY 2024. The maximum fecal coliform counts rarely exceeded 1/100mL and were well within public-access reuse standards. The plant experienced unusually high fecal coliform samples in December 2023 and September 2024.

Table 6-20 Burnt Store WRF Effluent Flow and Water Quality

Month	Reuse and Disposal Method			Water Quality		
	R-001 Monthly Avg. Flow[1] (MGD)	R-002 Monthly Avg. Flow[2] (MGD)	U-001 Maximum Day Flow[3] (MGD)	Maximum BOD Conc.[4] (mg/L)	Maximum TSS Conc.[5] (mg/L)	Maximum Fecal Count[5] (#/100mL)
Oct-23	0.26	0.010	0.36	2.0	0.4	18.5
Nov-23	0.14	0.012	0.34	2.0	2.0	<1
Dec-23	0.12	0.005	0.44	2.0	3.5	2
Jan-24	0.17	0.009	0.84	2.0	1.7	21.1
Feb-24	0.14	0.010	0.52	2.0	0.4	<1
Mar-24	0.16	0.011	0.47	2.0	0.4	<1
Apr-24	0.12	0.011	0.50	2.0	0.4	<1
May-24	0.18	0.009	0.34	2.0	0.4	<1
Jun-24	0.14	0.011	0.58	2.0	0.4	<1
Jul-24	0.03	0.010	0.52	2.0	0.4	<1
Aug-24	0.09	0.006	0.58	2.0	0.4	<1
Sep-24	0.13	0.008	0.57	2.0	0.4	<1

Notes: [1] Monitoring site OTH-01; [2] Monitoring site OTH-02; [3] Monitoring site OTH-03; [4] Monitoring site EFA-01; [5] Monitoring sites EFA-01 and EFA-02.

6.5.4 Treatment Components and Condition Assessments

Jones Edmunds completed an on-site review of the plant on January 28, 2025. Our personnel met with John Thompson, Chief Operator of the Burnt Store WRF, to review plant conditions and operations and discuss records. At the time of the previous year's assessment, the gate mechanism that was damaged by Hurricane Ian could not be opened or closed remotely. The gate has since been repaired and was operating with security present at the gate. The plant site is well kept and maintained including mowing and storage of used equipment in suitable locations.

Required documents maintained on site include:

- Operating permits for the treatment facility and deep injection well.
- Operators' licenses.
- Facility logbook.
- Facility Standard and Emergency Operating Plans.
- DMRs.
- Effluent Analysis Reports.
- Annual Reuse Report.
- Pathogen Monitoring Report (*Giardia* and *Cryptosporidium* every 5 years per permit).
- Reports required to complete the last permit application.
- Certification of the EPLAB.
- Sampling Plan.
- Groundwater Monitoring Plan (contained in permit).
- Laboratory results.
- Flow meter calibrations.
- Chlorine and pH meter calibrations (one/day).
- Chain-of-custody forms for samples that are sent to laboratories.
- Monthly residual and marketing report (reported in dry tons/month).
- Facility Operations and Maintenance Manuals.
- Maintenance records (CMMS electronic data system).
- Reuse Operating Protocol.
- Facility Record Drawings.
- Daily temperature logs.
- Spill protocol and record of spills.

6.5.4.1 WRF Influent Sampling Location

The influent water quality sampling location (INF-01) is clearly marked, and the refrigerated influent composite sampler is in operating condition. The Operations staff has budgeted for a new influent composite sampler to be installed in place of the current sampler.

6.5.4.2 Headworks

The headworks' overall condition is poor. It consists of one manually cleaned bar rack at the top of the EQ tank. The headworks does not include grit removal system, and the influent manual-screening system cannot prevent fine debris and grit from entering the facility's EQ tank, pumping systems, and process tanks. Currently, the only way to remove floatables that pass through the manual bar screen is using a bucket to remove them from the EQ tank.

The lack of fine screening and grit removal creates operational and mechanical problems for the EQ tank and pumps. Staff clears the EQ transfer pumps weekly during the peak season and biweekly during the off-peak season. The staff also clears the pipelines of debris annually to remove clogs in the system.

6.5.4.3 Flow Equalization

The Aquastore EQ tank is in poor condition. The EQ tank has signs of rust around the upper steel rim, which likely originates from the RO WTP waste line. Internal piping is in poor condition with leaks at flanged fittings, and one of the drop diffusers inside the EQ tank has been damaged and is no longer secure. Since no grit-removal facilities are provided, grit accumulation occurs in the EQ tank and reduces treatment capacity. The grit accumulation is currently being managed by having a vendor periodically pump out the grit in the EQ tank while in operation. The blower and motor for the EQ tank need to be replaced. The air diffusers and piping should be cleaned and/or repaired as necessary the next time the tank is cleaned.

The EQ tank can transfer flow to the treatment process train by gravity (gravity mode) and/or pumped using the EQ transfer pump station. The gravity mode allows diurnal loads to be equalized using the entire tank volume. The gravity mode pumps up to a splitter box, inside the EQ tank, with gravity flow piping to split flow between the two activated-sludge treatment basins. However, the capacity of the gravity piping is too small to pass the maximum daily flows. As such, Operations staff pump the raw wastewater from the EQ tank to the aeration basin. The equalization pumps and motors were replaced in January 2021. The system is capable of pumping 400 gpm with one pump running at a time. The pumps send water to the splitter box, and the raw effluent runs by gravity to the aeration basin. The flow does not reach a 2-foot-per-second velocity, and the operators have experienced issues with the 12-inch feed pipes clogging. The Chief Operator noted that EQ Pump No. 2 cannot be removed for maintenance because it is fused to the volute. However, a new motor for Pump No. 2 is planned for installation soon.

Construction of the Burnt Store WRF expansion, which is projected to be completed by FY 2026, should evaluate the installation of a new headworks. Operations noted the EQ tank is scheduled for cleaning at the next EQ tank inspection.

6.5.4.4 Biological Treatment

The activated-sludge facilities are steel-ring package plants consisting of two aeration tanks and two clarifiers. At the time of the site visit, the aeration basins appeared to have adequate and even air distribution throughout the tank. All blowers were rebuilt in FY 2017, and new VFDs were provided for two of the blowers in FY 2022. Motor repairs for Blower No. 1 were completed in FY 2023. Blowers 2 and 3 need to be replaced. The Chief Operator noted that the blowers are undersized for the volume of wastewater that the plant has been experiencing recently. Additionally, the pressure gauges for the blowers were not working at the time of the site visit. The operation of the blowers is based on timers, but no DO sensors are provided to adjust blower operation. The hinged sluice gates separating the two aeration tanks are not functioning as intended, allowing wastewater to flow to the adjacent tank during maintenance. The tanks have minimum free-board (<1 foot), creating concerns of overflowing during high-flow conditions or if a downstream flow obstruction occurs. CCU staff reported that the tank has since been successfully repaired by staff with assistance from a certified diver. The repairs included installing steel cables to adjust the sluice gates.

6.5.4.5 Clarification

The clarifier portions of the tanks appear to be functioning, although solids were observed near the surface; Clarifier No. 1 appeared to be performing less adequately than Clarifier No. 2 based on water flow and additional solids observed at the surface. The Chief Operator noted that Clarifier No. 2 typically treats approximately 60 percent of the plant flow. Notable algae growth was observed on the weirs. A significant amount of floatables passes through the headworks and collects in the clarifiers. The floatables are returned to the headworks and accumulate in the WRF until they are manually removed. The scum troughs were observed to be worn and need replacing. Operators must manually turn on the solenoid to drain the East tank's scum trough and return floatables to the headworks; this should be replaced to automatically drain the trough. The two RAS/WAS pumps that draw solids from the bottom of the tanks are in poor condition and are operating at their end of lifetime. RAS Pump No. 1 was replaced in FY 2023. The valves of the RAS/WAS station have notable rust and should be considered for replacement. The pipe pumping design makes it difficult for operators to de-rag the pumps. The Chief Operator mentioned that the gear box for the clarifiers needs repair or replacement soon. CCU continues to maintain and repair these systems until the WRF expansion is completed.

Overall, the tanks appear to be in good condition and were recently painted. Additionally, a white rock and shell aggregate was being installed around the tanks, adding to the plant aesthetics.

6.5.4.6 Filtration

The effluent filtration system is a cloth-media disk filter with 5-micron cloths, housed in a painted carbon-steel tank and controlled by a series of backwash actuators. The cloth filters and frames are reaching their 2-year limit and should be replaced soon. The backwash actuators were replaced in FY 2019 and are in excellent condition. The operator indicated that the filter is producing a good-quality effluent but backwashes frequently during periods of high flow, which can cause overflows to the CCC. The WRF expansion project includes new filtration.

6.5.4.7 Disinfection and Effluent Sampling Station

The overall condition of the chlorination system is good. The concrete CCCs are in good condition. The UV cover that had previously been installed on CCC No. 1 is no longer in service. A submersible mixing pump is used to enhance chlorine mixing. A sampling pump is used to pump CCC effluent to the chlorine analyzer for compliance monitoring, which replaced an old gravity-fed system and improved reliability.

The two sodium hypochlorite tanks are well kept and meeting regulatory requirements. An emergency eyewash and shower are at the sodium hypochlorite storage tank and chemical feed pump area. A concrete containment wall has been constructed around the entire chlorine storage and pumping area. Two new Prominent diaphragm chemical feed pumps were installed in FY 2023. The awning structure over the two sodium hypochlorite tanks has significant rust spotted on the flanged supports of the support beams at the four corners of the concrete slab. The effluent monitoring locations (EFA-01 and EFA-02) are clearly marked. The refrigerated effluent composite sampler was reported to have experienced repairs recently but is now in functioning condition.

6.5.4.8 Reuse, Disposal, and Storage

As mentioned previously, the Burnt Store WRF has three permitted effluent reuse and disposal options, including public-access reuse (R-002), a deep injection well (UIC), and a percolation pond system (R-001). Effluent that meets reclaimed water standards is conveyed to the reclaimed water customers within the Burnt Store WRF service area if the demand is present. If the effluent does not meet reclaimed water standards or the demand is not present in the reuse system, the effluent is conveyed to the deep injection well or percolation ponds.

Reuse Facilities

The Burnt Store WRF reuse facilities include a reclaimed water pump station and clearwell, which are in overall good condition. The reclaimed water pump station is above the clearwell following the CCCs. Two HSPs and two booster pumps are used to convey up to 0.5 MGD AADF of reclaimed water to customers. The booster pumps are currently used to satisfy demand in the reuse system, but the two large HSPs are working properly and are tested regularly. The reclaimed water HSPs and jockey pumps are well maintained and show no signs of deterioration. Flow to the reclaimed water pump station is monitored by an ultrasonic flow meter and primary weir device, which became obsolete when the WRF began transferring flow to the deep injection well system. A new flow meter is needed to monitor the pump discharge line and measure reclaimed water flow. In addition, no on-site reclaimed water storage is available, which will require future major reclaimed water users to be served through direct distribution to the user's reclaimed water holding facility or require storage to be added on site. These limitations will be addressed in the design of the Burnt Store WRF expansion project. Chapter 7 provides additional information about the Burnt Store Reuse System.

Effluent Disposal Facilities

The Burnt Store WRF also has two alternate options for disposing of excess reclaimed water or effluent not meeting reclaimed water standards including two injection wells (IW-1 and IW-2) and four on-site percolation reuse ponds. IW-1 has a rated capacity of 0.564 MGD. IW-2 is designed for an ultimate capacity of 9.5 MGD. However, due to hydraulic and supply limitations associated with available test water, IW-2 was tested at a flow rate of 2.88 MGD. Thus, the initial capacity rating for IW-2 is 2.88 MGD.

The deep injection wells are well maintained and in good working order, but some improvements and flow limitations have been noted on the system. The improvements include replacing an injection well pump in FY 2018 and a 16-inch valve on the IW-2 inlet line in FY 2019. The deep well pumping station is limited to 380 gpm since the effluent flows by gravity to the wetwell through a 6-inch-diameter pipe, which is insufficient to move peak flows. Flow that does not reach the deep well overflows to the percolation ponds. This situation impacts the WRF's ability to handle peak flows and limits the capacity of the deep wells.

Operations personnel exercise IW-1 once per month for a minimum of 24 hours to maintain its integrity. An upgrade to the injection well pumps should be considered with future plant capacity expansions. Four shallow monitoring wells around the IW-1 deep injection well were installed as part of the injection well construction. These wells should not be plugged because they may be needed if any rehabilitation work is performed on IW-1 or IW-2.

Table 6-21 lists the average flow pumped into IW-1 and IW-2 and the total monthly volumes sent to the deep wells and percolation ponds. As the data show, the wells are well

within their rated capacities, and IW-2 is the primary well used for disposal. In FY 2024, a total volume of approximately 122 MG was sent to the deep injection wells and 51 MG were sent to the percolation ponds.

Table 6-21 Burnt Store WRF Average and Total Injection Well Flows

Month	Average IW Flow (MGD)	Total IW Volume (MG)	Total Pond Volume (MG)
Oct-23	0.133	4.1	8.0
Nov-23	0.219	6.6	4.1
Dec-23	0.274	8.5	3.6
Jan-24	0.361	11.2	5.3
Feb-24	0.428	12.4	4.0
Mar-24	0.397	12.3	5.0
Apr-24	0.343	10.3	3.7
May-24	0.197	6.1	5.4
Jun-24	0.313	9.4	4.1
Jul-24	0.438	13.6	0.9
Aug-24	0.448	13.9	2.7
Sep-24	0.469	14.1	4.0
Annual Avg	0.335	10.2	4.3
Annual Total	**4.02**	**122**	**51**

Note: The Burnt Store WRF injection wells also receive the concentrate flows from the Burnt Store RO WTP.

The percolation ponds are used to their maximum permitted capacity to encourage shallow groundwater recharge. The percolation ponds are alternately rested and allowed to dry. The pond bottoms are harrowed to enhance percolation. The interior of the ponds above the water line are mowed. Limitations have been reported in the percolation ponds that have been attributed to the high groundwater conditions in the area.

As part of the WRF upgrades, CCU intends to evaluate other means for transferring greater amounts of effluent flow to the deep well, such as increasing the size of the piping and investigating the need for additional storage, additional filtration, and other redundancies to comply with the corresponding regulations.

Wet-Weather Storage

The on-site percolation ponds are available for limited wet-weather storage of reclaimed water at the Burnt Store WRF.

6.5.4.9 Biosolids Handling

The overall condition of the biosolids-handling facilities is good. Two tanks are aerated to provide partial sludge stabilization, and the third tank is normally used for thickening and decanting. Hook-up connections are provided for trucks to transport thickened sludge to the East Port WRF for further processing. A bottom-feed submersible pump suspended on a winch is used to decant supernatant back to the front end of the facility for treatment.

6.5.4.10 Electrical Components and Circuitry

The incoming switchgear and distribution transformer appear in fair-to-good condition. The incoming power company service transformer exhibits an extensive amount of surface rust, which may soon be impacting the transformer function. The existing primary distribution switchboard outside the MCC room is also exhibiting signs of degradation from the weather. The plant is served from a single generator of an undetermined size, and its water pump was replaced in FY 2022. The generator was in good condition but exhibited signs of residual diesel fuel on top of the diesel fuel tank. This may be indicative of additional issues. Overall, the electrical equipment in Building MCC-1 is in good functioning condition based on information from the Operations staff, except for the deficiencies listed below.

The following deficiencies were noted:

- The switchgear contains warning labels identifying parts and components as being energized. However, none of the equipment includes the appropriate arc-flash labeling required by NFPA 70E.
- The fiberglass MCC building should be replaced with a concrete structure.
- The main breaker trips when two blowers are started simultaneously.
- The generator is undersized and is not capable of supporting all blowers at one time.

6.5.5 Operations

The Burnt Store WRF is continuously monitored by online instrumentation through SCADA. A new Operations Building, which is shared with the Burnt Store RO WTP staff, was completed in FY 2009. The Operations Building houses the WRF operating system, which is used to monitor critical operations and maintain compliance with regulatory requirements. The Operations Building also now houses the monitoring for the security cameras, which the Chief Operator noted was recently moved from the laboratory.

Plant Operations staff manage the treatment process effectively and work to address maintenance items in a timely manner. The plant produces effluent meeting the requirements for reclaimed water and injection well disposal. The flow EQ tank helps attenuate diurnal and extreme weather flows to enable proper treatment.

The Burnt Store WRF is staffed 8 hours per day, 7 days per week. The WRF can be continuously monitored by the East Port WRF operators through a County-wide telemetry system that allows the Burnt Store WRF to continue to produce reclaimed water 24 hours per day.

6.5.6 Maintenance

Routine maintenance is performed on a scheduled basis. Rehabilitation of major pieces of equipment is completed according to the CIPs that are revised annually. Maintenance that is required to keep the WRF in compliance with regulations is performed immediately using

in-house maintenance personnel or outside contractors. The entire facility was scheduled to be repainted in FY 2018. Painting of the facility was completed in FY 2019.

6.5.7 Review of Previous Report Recommendations

Table 6-22 presents the FY 2023 recommendations and their status for the Burnt Store WRF.

Table 6-22 Burnt Store WRF FY 2023 Recommendations and Status

Recommendation:	Perform maintenance and equipment replacement as necessary through the ongoing WRF expansion to 1.0 MGD and future WRF expansion to 2.5 MGD w/MGD.
Progress:	Ongoing.
Recommendation:	Evaluate the existing generator performance to determine limitations that may occur before constructing the plant expansion, which will include a new generator.
Progress:	2.5 MGD w/AWT expansion has been deferred until after 1.0 MGD expansion is complete.
Recommendation:	Investigate the high frequency of replacing chemical feed pumps. Consider using a different manufacturer and/or equipment model.
Progress:	Chemical feed pumps were replaced with Prominent pumps. Operators report they are working as intended with no issues.
Recommendation:	Complete motor repairs for Blower No. 1 and place back in service.
Progress:	Completed.
Recommendation:	Repair front access gate from hurricane-related damage and fully establish security.
Progress:	Completed.
Recommendation:	Continue to evaluate and repair composite sampling units as necessary.
Progress:	New influent composite sampler budgeted for replacement in 2025.
Recommendation:	Evaluate replacement of EQ tank Pump No. 2 due to fused volute and lack of maintenance access.
Progress:	Operators report pump is functioning as intended; however, they noted difficulty may arise when maintenance is needed.
Recommendation:	Evaluate cause of VFD issues for EQ tank Pump No. 2.
Progress:	In progress.

6.6 Wastewater Biosolids Transport, Processing, and Disposal

Partially digested biosolids from CCU's four WRFs are processed at the East Port WRF biosolids management and processing facility. CCU owns two 6,000-gallon tankers for biosolids transportation from the West Port, Rotonda, and Burnt Store WRFs. The biosolids are discharged into a 2.05-MG aerated-sludge holding tank for partial stabilization and decant thickening before dewatering. Biosolids dewatering is accomplished by two Ashbrook 2-meter-wide BFPs near the holding tank. The biosolids are dewatered to approximately 17-percent solids and hauled in County-owned 35-cubic yard dump trailers to the Synagro compost facility at the Charlotte County Zemel Road Landfill. The dewatered biosolids are

mixed with chipped yard waste, composted to Class A standards, and distributed and marketed for organic amendment for sandy soil enhancement and material for landfill final cover.

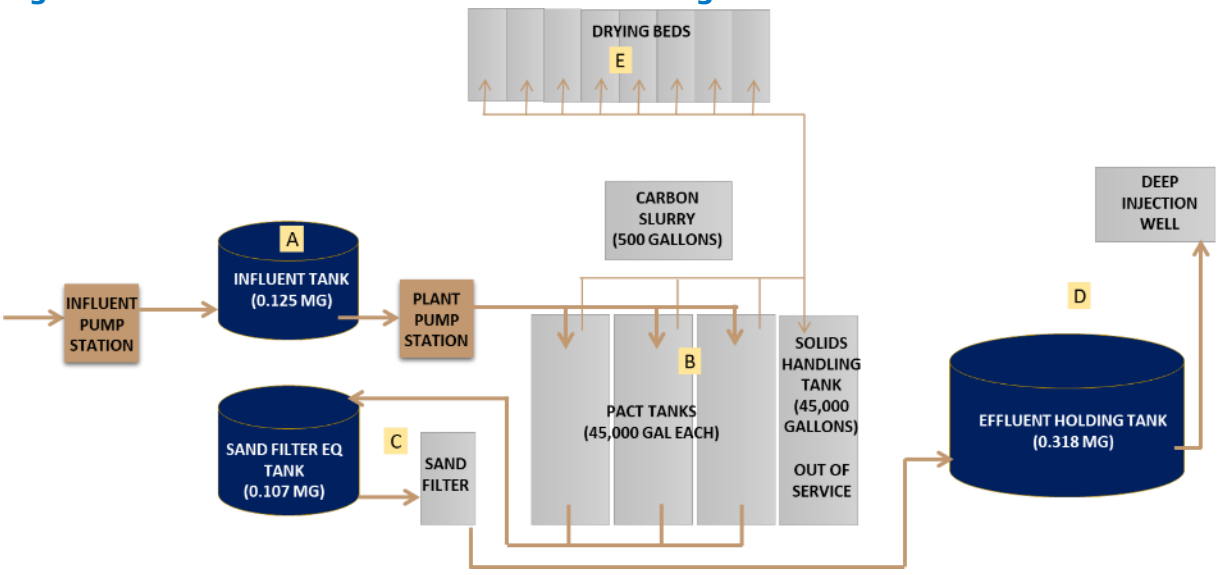
6.7 LEACHATE TREATMENT FACILITY

The Zemel Road LTF is operated and maintained by CCU for the Charlotte County Municipal Solid Waste Management Department. Leachate generated by the Zemel Road Municipal Solid Waste Landfill is treated at the LTF and disposed of on site. The treatment facility and landfill share a 308-acre parcel in South County at 29751 Zemel Road, Punta Gorda, Florida 33955.

The landfill is designed to contain and collect leachate to protect surrounding groundwater and lakes. Leachate is generated as water seeps down through the solid waste, picking up dissolved and suspended solids. A vertical bentonite (clay soil) slurry wall that blends below ground with the natural confining layer of soil surrounding the landfill separates the interior landfill leachate from the natural environment. A leachate collection system installed under the waste drains the liquid to a central location where it is pumped to the LTF.

Figure 6-6 shows the LTF process flow diagram.

Figure 6-6 Zemel Road LTF Process Flow Diagram



The Zemel Road LTF consists of the following components:

A) Influent: Most of the LTF influent originates from the landfill collection system and is conveyed to the LTF through the landfill pump station (PS-1). The landfill leachate is combined with the plant office sanitary sewer, landfill underdrain flows, and runoff from the composting operation. The flows are conveyed through the influent flow meter and enter a steel circular influent-holding tank. The plant pumping station (PS-2) transfers leachate from the influent holding tank to the powder-activated carbon treatment (PACT) system.

B) PACT Treatment: The batch reactor PACT system consists of three separate tanks using aerated activated sludge with carbon particle adsorption. Each PACT tank is a small package plant with separate PAC feed and aeration systems. PAC is mixed with water to form a carbon slurry before combining with the raw leachate. The solution is then aerated to promote aerobic digestion and is followed by a sludge-settling period.

C) Filtration: After settling is completed, the decant water is pumped to the filter feed tank and gravity fed through a sand filter for final polishing. The filter effluent is conveyed to a glass-lined steel effluent storage tank.

D) Effluent Disposal: The LTF effluent is conveyed from the effluent storage tank to a deep injection well and disposed of in a confined saltwater aquifer at an approximate depth of 2,700 feet below ground surface. The effluent sample point at the deep injection well may be seen in the photo provided.

E) Solids Disposal: After decanting the treated leachate, a portion of the solids (mixed carbon/biological sludge) from the PACT tanks are conveyed to the outdoor sludge-drying beds for dewatering. Once dry, the solids are conveyed to a dumpster and hauled to the landfill for final disposal.

6.7.1 Regulatory Considerations

The Zemel Road LTF is regulated by FDEP under the provisions of Chapter 403, Florida Statutes, and the applicable FAC rules. The following permits govern plant operations:

- Class 1 Landfill Permit – Expiration Date: July 15, 2033.
- IW-I and MW-1 UIC Permit (No. 191077-005-UO/1I) – Expiration Date: February 3, 2030:
  - Monthly Summary Reports submitted to FDEP.
  - Quarterly Specific Injectivity Tests completed and submitted to FDEP.
  - The next 5-year MIT is due by February 28, 2027.

6.7.2 LEACHATE FLOWS

The LTF construction permit was issued in 1991 as part of the Class I landfill to treat 0.25 MGD of leachate. The current UIC permit specifies a maximum wellhead pressure of 40 psi, a peak flow rate of 320 gpm, and a maximum injection volume of 0.46 MGD. Table 6-23 summarizes the flows sent from the LTF to the deep injection well. In FY 2024, the maximum wellhead pressure, peak flow rate, and maximum daily injection volume were within permit limits, and the LTF treated a total of 17.48 MG.

Table 6-23 LTF Deep Injection Well Flows – FY 2024

Month	Maximum Wellhead Pressure (psi)	Peak Injection Rate (gpm)	Maximum Injection Volume	Total Monthly Flow (MG)
Oct-23	28	225	0.1	1.50
Nov-23	28	250	0.24	1.14
Dec-23	29	254	0.1	1.17
Jan-24	30	281	0.13	1.56
Feb-24	29	303	0.17	1.35
Mar-24	27	180	0.11	1.34
Apr-24	29	261	0.13	1.69
May-24	29	284	0.16	1.87
Jun-24	29	273	0.16	1.90
Jul-24	29	250	0.11	1.38
Aug-24	30	235	0.23	1.35
Sep-24	31	237	0.12	1.23

6.7.3 TREATMENT OBJECTIVES AND EFFLUENT QUALITY

The LTF uses a PACT batch tank treatment system, which combines PAC and activated sludge (aerobic bacteria) to simultaneously adsorb and metabolize the leachate contaminants to treat the leachate to an acceptable level for deep well injection disposal. The treated leachate is sampled daily for pH, weekly for fecal coliform, TSS, and total alkalinity and monthly for TOC, TDS, BOD, COD, TN, TKN, nitrate, lead, and chlorides. In addition, treated leachate is sampled and analyzed for the Primary and Secondary Drinking Water parameters semiannually. Table 6-24 summarizes the LTF effluent quality goals before disposal of the treated leachate.

Table 6-24 Effluent Quality Goals

Parameter	Effluent Quality Goal
pH	6.0–9.5 s.u.
TSS	20 mg/L
BOD	20 mg/L
COD	Acceptable BOD/COD ratio

A program to operate the Zemel Road Landfill as a landfill bioreactor and recycle leachate to enhance landfill biogas production at the landfill has changed influent leachate flows and characteristics over the years. However, the effluent leachate still meets acceptable final

effluent standards for disposal to the 0.46-MGD deep injection well system adjacent to the treatment plant.

6.7.4 Treatment Components and Condition Assessments

Jones Edmunds conducted a site visit of the LTF on January 28, 2025, and met with William (Dave) Feltus, Chief Operator, to review plant conditions, operations, and records. Access to the facility is through a secure gate at the entrance to the landfill. The plant is isolated among landfill operation buildings and adjacent to the yard waste composting facility. The facility appears to be in good condition and staff do a good job maintaining the grounds and the facility's appearance.

The facility is required to maintain plant documents on site. The following summarizes the types of documents generally found at treatment plants. Due to the nature of this facility and since it is permitted under the landfill permit, some traditional documents may not be required for the LTF:

- Operating permit for the deep injection well.
- Operators' licenses.
- Facility logbook.
- Facility Standard and Emergency Operating Plans.
- MORs.
- Effluent Analysis Reports (N/A).
- Reports required to complete the last permit application.
- Certification of the laboratory used for sample analysis.
- Sampling Plan.
- Groundwater Monitoring Plan (N/A).
- Laboratory results.
- Chain-of-custody forms for samples that are sent to laboratories.
- Facility O&M Manuals.
- Maintenance records (CMMS electronic data system).
- Facility Record Drawings.
- Spill protocol and record of spills are kept by the owner of the plant, Charlotte County Public Works Department, and kept on file at the LTF office.

6.7.4.1 LTF Influent

The influent flow is a combination of raw leachate from the landfill collection system, sanitary sewage, and runoff from the co-composting program at the County's Zemel Road Landfill. The composting program combines dewatered biosolids from the East Port WRF with yard waste to create an organic soil conditioner. The composting operation is on a concrete-paved area near the LTF, and FDEP requires the runoff be captured and treated at the LTF. Since the area is remote and no wastewater collection infrastructure is provided in the vicinity, the sanitary sewage from the plant office is also treated at the LTF.

The landfill collection system contains a network of underdrains, trenches, vertical excavations, and a slurry wall to capture and contain leachate seeping through the landfill. The LTF operators are not responsible for the landfill collection system but work with the Solid Waste Operations Manager to balance the flow since LTF operators must maintain a

static head differential between the water level on the inside and outside of the landfill slurry wall to keep an inward groundwater gradient across the slurry wall. This operation is completed to prevent leachate from leaving the site as required by permit. The landfill leachate combines with the plant office sanitary sewer and the landfill underdrains outside the slurry wall and enters the influent pump station.

6.7.4.2 Influent Pump Station

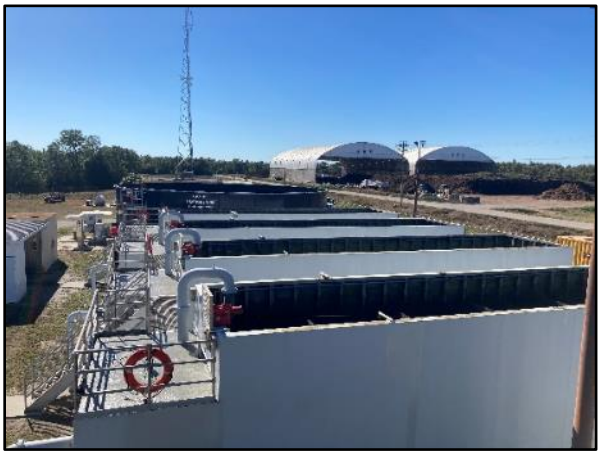
The influent pump station (PS-1) was rehabilitated in FY 2023 and is in excellent condition; however, the operator reports pumping capacity is not as expected. CCU is working with the design engineer to resolve the issue. Although the influent is primarily fed by the gravity-driven network, a significant amount of storage is within the landfill collection system, which provides some operational flexibility for the LTF and can be used if PS-1 is temporarily out of service.

The influent pumps convey leachate into the 125,000-gallon influent holding tank and through the influent plant flow meter to record the daily influent leachate volumes; the influent holding tank and influent pump station were rehabilitated in FY 2023. A high-level sensor automatically shuts off the pump in the No. 1 Pump Station to prevent overfilling of the raw leachate tanks.

6.7.4.3 PAC Treatment

The plant pumping station (PS-2) transfers leachate from the influent holding tank to the batch treatment tanks Monday through Friday when operators are present. On weekends, the Chief Operator monitors (PS-1) the level in the influent tank via SCADA.

The PACT system uses a combination of PAC and active aerobic bacteria to simultaneously adsorb and metabolize leachate contaminants. The LTF contains three parallel treatment units, each consisting of a 45,000-gallon tank, chemical feed, aeration, and pumping systems. Approximately 30,000 gallons of raw leachate are pumped from the influent storage tank into the PACT tank for chemical addition, mixing, holding, and settling. One hundred pounds of fresh PAC and 3,500 mL of phosphoric acid are added to each PACT tank. The contents are mixed by aeration for approximately 7 hours. Approximately 135 mL of polymer is added to each PACT tank each day to assist in settling out the carbon and biomass from the effluent. The material in the PACT tanks settles for approximately 1 hour. After settling is completed, the decant water is pumped to the filter equalization storage tank. The carbon sludge remains in each PACT tank and is reactivated when the next batch of leachate is introduced for processing. Waste



sludge is removed from the PACT tanks as necessary (typically weekly) by pumping to the sludge drying beds.

The three PACT units are in decent-to-poor condition. At the time of the visit, signs of leaking were observed due to the rust on the bottom of all treatment tanks, including the decommissioned sludge holding tank. After discussion with Operations, to extend the operation life of the tanks the liner on the inside of the tank can be removed and new tank liner installed. The motor for the third tank blower was replaced, but the polymer feed systems and blower air intakes for the treatment trains should be replaced. Significant rust and corrosion were observed on the decant mounting system of the tanks and should be replaced.

6.7.4.4 Filtration

The filter EQ tank is a glass-lined steel tank with a capacity of 107,000 gallons. The filter feed stream flows by gravity through the sand filter system and is pumped from the sand filter to the effluent storage tank. The sand filter compressor was replaced in FY 2020, but the mechanical parts of the sand filter remain in poor condition and should be replaced. No back-up is provided for the treatment equipment, which makes maintenance and repair work more difficult to coordinate. The installation of a second filter or provisions to provide temporary filtration connection should be investigated as needed based on plant operating conditions. Rust was observed on the valves of the clearwell lift station that pumps effluent from the filter tank to the effluent storage tank and should be repaired or replaced.

6.7.4.5 Effluent Storage and Disposal

The effluent disposal system contained a storage tank, submersible pumps, and a deep injection well. LTF effluent is stored and equalized in an effluent storage tank so that the injection well down-hole flow does not exceed 320 gpm. LTF effluent is pumped from the effluent storage tank into the injection well by two dry-pit submersible pumps. Effluent is typically disposed of the same day it is treated. Most of the effluent is pumped into the deep injection well, with a small volume used for dust control at the landfill. The deep injection well typically operates 6 days per week, but operation can be adjusted according to leachate production and effluent disposal requirements.

The effluent storage and disposal systems are in fair condition and are properly maintained to meet the facility's needs. The facilities were recently painted. The existing 12-HP pumps were installed by CCU personnel in FY 2015. The pumps are submersible type and are operating satisfactorily under their typical operating period of approximately 7 hours per day. However, the pumps' exposed exteriors generate high heat, creating a risk of skin exposure to operators.

6.7.4.6 Solids Handling Facilities

The LTF has a sludge digestion tank that historically was used for solids handling but is no longer in operation. Today, waste solids (mixed carbon and biological waste sludge) are

conveyed directly from the PACT tanks and allowed to dry through evaporation. The LTF contains eight 725-square-foot (approximately 5,800 square feet total) sludge drying beds. A Bobcat loader is used for sludge removal for maximum maneuverability within the sludge drying beds. Grit is removed from the batch process tanks, as necessary, and dried with biosolids. The Bobcat removes and dumps dried solids into a dumpster that is hauled to the landfill for use as cover on the landfill. The sludge drying beds are well maintained and sufficient drying bed area for dewatering of solids.

6.7.4.7 Auxiliary Power

The LTF has no auxiliary standby power, and according to discussions with staff, power outages used to occur frequently. During off hours, the power supply is monitored through the high-level alarm at PS-1, which is monitored at the East Port WRF. Power outages that stop the aeration process for more than a day severely impact the microorganisms and process treatment, resulting in the need for seed sludge to restart the biological process again.

6.7.4.8 Wet-Weather Storage

October to May of FY 2017 was dry with less than 15 inches of rain out of an annual average total of 67 inches County-wide. The single largest storm event was Hurricane Irma, which made landfall on September 10, 2017, and deposited approximately 8 inches of rain in the Charlotte County area. Even with the heavy rains and storm conditions, the LTF was able to sufficiently process the leachate using the storage within the landfill and influent EQ tank.

6.7.5 Operations

The LTF is operated as a batch sequence reactor currently treating leachate 5 days per week, Monday through Friday, during working hours and is manually controlled by staff. During wet-weather periods or following a maintenance or repair event, the Chief Operator may operate on weekends, as determined necessary to process the leachate volume. Adding maintenance staff can support the efforts made by the Chief Operator to appropriately respond to unexpected events.

The overall system, from PS-1 to the injection well, has several capacity differences. If operated continuously, PS-1 has a pumping capacity of 0.22 MGD, the PACT process has a 0.250-MGD capacity, and the injection well has a 0.46-MGD capacity. In the event of excess flows, the operational treatment period could be extended to increase the volume treated per day. Alternately, the sludge digestion tank could be converted to a fourth PACT unit.

6.7.6 Maintenance

The LTF is owned by the Charlotte County Public Works Solid Waste Division and operated by CCU personnel. The Chief Operator and Assistant Operator complete routine maintenance on a scheduled basis. Emergency maintenance and/or and routine maintenance and repairs are performed using in-house Operations personnel or outside contractors to maintain regulatory compliance. A dedicated maintenance worker for the facility or scheduled maintenance worker at the facility during a specific number of days per week will mitigate issues with operators, focusing on maintenance issues and performing

the work. Rehabilitation or replacement of major pieces of equipment is included in the annual CIP updates, which are coordinated with Public Works and completed at their discretion.

6.7.7 Review of Previous Annual Report Recommendations

Table 6-25 shows the recommendations for the LTF from the FY 2023 Annual Report and their current status.

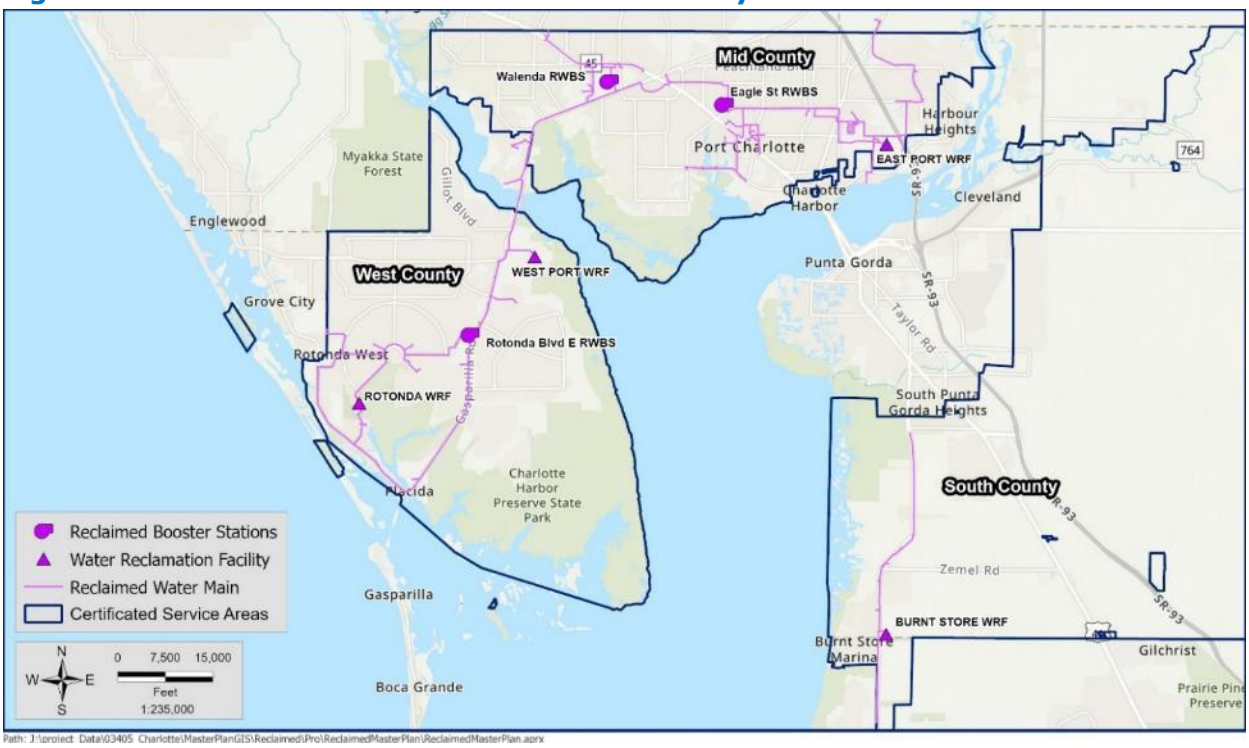
Table 6-25 LTF 2023 Recommendations and Status

Recommendation:	Evaluate ways to address the effluent tank transfer pumps having high heat output and being open to exposure, prioritizing safety. Potential solutions include installing safety features, installing cooling jackets, or replacing pumps with non-submersible-type pumps.
Progress:	Ongoing.
Recommendation:	Add a generator to the treatment facility to keep the plant operational during power outages.
Progress:	Currently being pursued through FEMA grants.

7 RECLAIMED WATER DISTRIBUTION SYSTEM

One of CCU's goals is to maximize the beneficial use of reclaimed water and reduce the impact on other water resources. This Chapter presents the CCU reclaimed water distribution system components and condition assessments of those system components and reviews CCU's backflow and cross-connection prevention program. Similar to the water distribution systems discussed in Chapter 4, CCU operates two reclaimed water distribution systems. The MRS is supplied public-access-quality reclaimed water from the East Port, West Port, and Rotonda WRFs, and serves the Mid and West County service areas. The Burnt Store reclaimed water distribution system is fed by the Burnt Store WRF and serves the South County service area. Figure 7-1 shows the County-wide reclaimed water distribution systems.

Figure 7-1 CCU Reclaimed Water Distribution Systems



At the time of this report, the two systems contained approximately 89 miles of reclaimed water mains providing service to 85 reclaimed water customer connections in the MRS and six connections in the Burnt Store system. The CCU reclaimed water distribution system consists of the following major components:

- Transmission mains that supply reclaimed water to bulk users and distribution mains serving pressurized customers.
- Reclaimed water booster stations (RWBSs) adjacent to GSTs for maintaining distribution system pressures.
- Lined and unlined ponds at the WRFs for reclaimed water storage during periods of reduced demand.

- Pond discharge sites that allow the operators to remotely shut off the flow of reclaimed water to bulk customers using irrigation ponds.

7.1 Master Reuse System

CCU's reclaimed water distribution system serving Mid and West Counties is known as the MRS. The MRS operates under a Master Reuse Permit approved by FDEP that allows CCU to move reclaimed water from East Port WRF, West Port WRF, and Rotonda WRF to customers. The development and interconnection of the MRS evolved from the County observing an excess of reclaimed water supply produced in Mid County and reclaimed water demand remained more prevalent in West County. The MRS currently has a permitted capacity of 10.23 MGD AADF in combined flows from East Port WRF, West Port WRF, and Rotonda WRF (R-001). The MRS infrastructure includes high-service pump stations and reclaimed water storage at each WRF, and three RWBSs. Overall, the MRS has a combined reclaimed water storage throughout the system of 119 MG (ponds and GSTs).

7.1.1 Reclaimed Water Booster Stations

The MRS contains three active RWBSs, two of which include 0.5-MG GSTs. The booster stations are used to maintain the flow and pressure throughout the system and work in conjunction with the reclaimed water pumping stations at the WRFs; typically, the systems operate between 80 and 100 psi. Jones Edmunds staff visited the RWBSs on January 27, 2025, and describe the RWBS components and condition assessments in this section.

7.1.1.1 Eagle Street RWBS

The Eagle Street RWBS, constructed in 2008, is approximately 5 miles west of the East Port WRF along the 16-inch reclaimed water transmission main. The station is within a fenced area in a residential neighborhood near Tamiami Trail and contains two concrete buildings and a 0.5-MG concrete GST. The GST is equipped with a level sensor to regulate volume and a check valve to allow reclaimed water to bypass the station. Operations staff indicated this booster station is used when transferring flow to West County. More specifically, the Eagle Street RWBS supplements pressure and flow during times of high demand when the GST at Walenda RWBS operates at low-water level.

The RWBS contains one 125-HP HSP and one 60-HP jockey pump. The HSP has a pumping capacity of 1,440 gpm, and the jockey pump has a pumping capacity of 577 gpm. Each pump is controlled by a VFD to maintain system pressure for instantaneous customer use. The pumps are housed in a concrete building along with unused chemical feed pumps. An inline filter is downstream of the pumps; however, this filter mechanism is currently offline.

Pump operations, flow, and pressure are monitored 24 hours per day through a County-wide SCADA telemetry system. The PLC and electrical control center are housed in a separate air-conditioned building. Operators can inject sodium hypochlorite after the reclaimed water enters the GST, but disinfection at this location is not currently needed or used.

A modification to the Walenda RWBS in FY 2019 provided additional pressure for commercial reclaimed water customers in the Eagle Street area and reduced the dependence on the Eagle Street RWBS.

O&M improvements completed at the RWBS over the past 3 years consist of the following:

- 2023 – Replaced Pump No. 1.
- 2023 – Replaced the motor on Pump No. 2.

Condition Assessment

Jones Edmunds completed an on-site review of the plant on January 27, 2025. In general, the electrical room equipment, pump room equipment, and tank appeared to be in good condition. Additionally, a Jones Edmunds electrical engineer conducted an electrical equipment site visit assessment on February 11, 2025, with County staff. The distribution breaker in panel L1 tripped and a faulty receptacle was reported. The MOV that is mounted on the recycle pipe is inoperable, and the reason for faulty operation is unknown. All 480V equipment was missing ArcFlash labels, which are required by NFPA 70E.

The following deficiencies were noted:

- The pipes were not painted properly.
- The pressure transducer screens are worn out from sun damage.
- Faulty receptacle that trips a breaker in panel L1.
- The MOV for the recycle pipe is not operational.
- All 480V equipment was not equipped with ArcFlash labels.

7.1.1.2 Walenda RWBS

The Walenda RWBS is at 17177 Walenda Avenue, Port Charlotte, approximately 4.5 miles northwest of the Eagle Street RWBS. The station was constructed in 2008 and is within a proposed residential/commercial neighborhood known as West Port. In FY 2019, the Walenda RWBS was modified to provide pressure to the reclaimed water system along US 41 between Enterprise Boulevard and Cornelius Boulevard.

The site is fenced and contains reclaimed and potable water infrastructure including reclaimed and potable water GSTs. The gates and buildings are kept locked. The reclaimed water GST has a capacity of 0.5 MG and is equipped with a level sensor. The RWBS contains one 125-HP HSP and one 60-HP jockey pump, each equipped

with VFDs. The HSP has a pumping capacity of 1,440 gpm, and the jockey pump has a pumping capacity of 577 gpm. The pumps and chemical feed system are in a concrete building. An inline filter is downstream of the pumps; however, this filter mechanism is currently offline.

Pump operations, flow, and pressure are monitored 24 hours per day through a SCADA telemetry system. The PLC and electrical control center are housed in a separate air-conditioned building. Like the Eagle Street RWBS, operators can inject sodium hypochlorite after the reclaimed water enters the GST, but disinfection at this location is not currently needed.

The Walenda station is available for pumping and storage but currently operates in an as-needed mode by CCU staff based on system demands. The hydraulic modeling for the reclaimed water system indicates that the Walenda station will be an essential component for meeting the future reclaimed water demands.

Condition Assessment

Jones Edmunds completed an on-site review of the plant on January 27, 2025; the information gathered at that time was used to update this section, in accordance with the project scope.

The access roads outside the facility are aging and need to be repaved but are in fair condition inside the property. Fallen trees around the site will require complete removal. The motors for both pumps were removed during the time of the visit because they were locked and not working. The roof over the chemical storage tanks is missing shingles from hurricane winds that need to be replaced. The recycle actuator is held on by a strap and needs to be properly secured. The GST level indicator is broken and needs to be replaced. A cable on the back of the GST needs to be re-secured to the side of the tank. Additionally, pressure transducer screens are damaged from sunlight exposure and need replacing. The HSPs are well maintained and functioning properly.

The electrical room equipment, pump room equipment, and storage tank are in good condition. Due to the pumps being removed, loose wires near the pumps should be put away securely. Some pipe equipment needs to be painted purple. The grounds are well maintained.

The following deficiencies were noted:

- The access roads outside the facility are washed out and need to be repaved.
- The bypass actuator is held on by a strap and needs to be properly secured.
- The GST level indicator is broken and needs to be replaced.
- GST operations need to be restored as it is not reported to be in operation.

7.1.1.3 Gertrude RWBS

The Gertrude site is at 21131 Gertrude Avenue, Port Charlotte, approximately 4.6 miles northwest of the East Port WRF. The station was originally used for the potable water system but was decommissioned in FY 2008. CCU is evaluating rehabilitating the site for use as a RWBS. The site currently consists of a 0.5-MG GST and a 600-square-foot concrete building. The GST was previously cleaned and lined in FY 2004. The addition of the station

will increase the resilience of the MRS, provide operational flexibility, and provide pressure and reclaimed water storage in the surrounding area.

Condition Assessment

Due to its currently decommissioned status, this station was not assessed as part of this report. However, CCU continues to evaluate rehabilitation opportunities to use this site and its available equipment.

7.1.1.4 Rotonda Boulevard East RWBS

The Rotonda Boulevard East RWBS is on Rotonda Boulevard East just west of CR 771. The station was completed in FY 2014 and is an in-line RWBS that does not contain a GST. An architectural wall and chain link fence shield the station from the highway, and access gates are kept locked. The RWBS contains one 100-HP high-head HSP and two 40-HP low-head HSPs, each equipped with VFDs. The 100-HP HSP has a pumping capacity of 972 gpm, and the 40-HP HSPs have a pumping capacity of 1,045 gpm each. Pump operations, flow, and pressure can be monitored 24 hours per day through a SCADA telemetry system. The PLC and electrical control center are housed under a covered area. The station is currently used to help maintain system pressure in West County and back pressure to Mid County; however, this RWBS can also be used to help convey flows as the County's reclaimed water demands continue to increase in West County.

This is a complex pump station with multiple operational configurations. The RWBS was configured to allow operation in multiple modes, which include pumping from Mid County to West County, pumping from Rotonda WRF to West Port WRF, or pumping from West Port WRF to the West County customers. CCU staff are evaluating the hydraulics of this station to improve the operational configurations and settings for the RWBS.

The following O&M improvement was completed at the RWBS over the past 3 years:

- 2023 – Replaced the motor for Pump No. 3.

Condition Assessment

Jones Edmunds completed an on-site review of the plant on January 27, 2025; the information gathered at that time was used to update this section, in accordance with the project scope.

The station was in good condition overall. However, some minor issues exist that need attention.

The following deficiencies were noted:

- One of the external wall panels was missing and needs replacing.
- Pressure transducer and gauge screens have been damaged from sunlight exposure and need replacing.
- Some valves were leaking, causing rust, and should be replaced.
- Equipment should be recalibrated.

7.1.2 STORAGE

Reclaimed water storage is provided by a combination of lined and unlined storage ponds at the WRFs and GSTs in the distribution system. Table 7-1 lists the storage capacity and type for each reclaimed water storage site. Currently, Operations staff at the East Port WRF monitors reclaimed water levels in the ponds and GSTs through SCADA. The Master Reuse System is now operated as a pressurized system to allow customers to draw reclaimed water when needed. The WRF ponds and GSTs are kept full to meet customer demands. Excess reclaimed flows are conveyed to deep injection wells or other permitted disposal methods as specified in the WRF's permits.

Table 7-1 Reclaimed Water Storage Capacity and Location

Site	Location	Storage Type	Storage Capacity (MG)
East Port WRF	Mid County	Lined Pond	95.0
West Port WRF	West County	Lined Pond Lined Pond	15.0 5.0
Rotonda WRF	West County	GST Unlined Pond	3.0 —[1]
Eagle Street RWBS	Mid County	GST	0.5
Walenda RWBS	Mid County	GST	0.5
		Total	**119.0**[2]

[1] Currently not being used and planned for demolition as part of Rotonda WRF expansion project.
[2] Value excludes the reject pond storage.

The GSTs at the Walenda and Eagle Street sites are filled by system feed and used to maintain the distribution system pressure during peak demand. The GSTs also provide the following functions for the CCU reclaimed water supply system:

- Minimize high pumping pressures at the WRFs.
- Provide local storage for nightly peak irrigation demands when the flows at the WRFs are lowest.

7.1.3 CURRENT AND FUTURE RECLAIMED WATER CUSTOMERS

Currently, most customers use the reclaimed water for irrigation purposes. CCU's reclaimed water customers are a combination of bulk users who receive water through pond discharges and then repump as needed for irrigation and direct-pressurized customers whose irrigation systems are connected to the reuse system. As noted in the Reclaimed Master Plan, CCU's current focus is on large users to maximize the offset of freshwater supplies.

West County contains nine 18-hole golf courses and residential/commercial developments that have marginal access to good freshwater irrigation sources. Currently, five golf courses and several smaller reclaimed water customers are receiving reclaimed water for irrigation; however, additional golf courses have committed to be future large users. Service of reclaimed water to West County is limited by the amount of reclaimed water that is produced by the two WRFs in west Charlotte County, the Rotonda WRF and the West Port WRF. The ultimate capacity of the reclaimed water system in the East Port WRF, West Port WRF, and Rotonda WRF service areas is extensive due to the number of residential developments, golf courses, and other reclaimed water demands in the area.

Table 7-2 and Table 7-3 list the agreement amounts for current and future reclaimed water users in Mid and West County, respectively. The agreement amount columns and total agreement amount rows indicate ultimate or potential future flows, whereas the current agreement amount row estimates reclaimed water capacity for current users, assuming supply is available. The County has signed agreements for current reclaimed water customers equaling approximately 6.471 MGD of reuse for the MRS. Additionally, future user flow is expected to add approximately 0.139 MGD of reclaimed water, indicating a total potential near-term demand of approximately 6.610 MGD in Mid and West County combined. However, some future reclaimed water user agreement amounts are unknown at this time, which will ultimately increase the total demand.

Table 7-2 Current and Future Mid County Reclaimed Water Users

Reclaimed Water Sites	Pond/ Direct	Current/ Future User	Agreement Amount (MGD)
7-Eleven #37528	Direct	Current	0.001
Auto Zone – 19681 Cochran	Direct	Future	TBD
BJs Wholesale Club	Direct	Current	0.011
Burger King – Murdock	Direct	Current	0.001
CCCS – Fire Station #2	Direct	Current	0.001
CCCS – Sheriff's Office	Direct	Current	0.011
CCCS Parks – 1120 Centennial Boulevard (Aquatic)	Direct	Current	0.002
CCCS Parks – 1185 Centennial Boulevard (Ball Fields)	Direct	Current	0.050
CCCS Parks – Franz Ross	Direct	Current	0.048
CCCS Parks – McGuire Park & LS #11	Direct	Current	0.006
CCCS Parks – Sports Park	Pond	Current	0.250
CCPW – Edgewater Median 1	Direct	Current	0.010
CCPW – Edgewater Median 2	Direct	Current	0.010
CCPW – Edgewater Median 3	Direct	Current	0.010
CCPW – Edgewater Median 4	Direct	Current	0.010
CCPW – Edgewater Median 5	Direct	Current	0.010
CCPW – Edgewater Median 6	Direct	Current	0.010
CCPW – Edgewater Median 7	Direct	Current	0.010
CCPW – Edgewater Median 8	Direct	Current	0.010
CCPW – Elkam Boulevard 1	Direct	Current	0.010

Reclaimed Water Sites	Pond/ Direct	Current/ Future User	Agreement Amount (MGD)
CCPW – Elkam Boulevard 2	Direct	Current	0.010
CCPW – Harbor Boulevard (Median 3115)	Direct	Current	0.010
CCPW – Olean 1 (21175-M)	Direct	Current	0.010
CCPW – Olean 2 (21298-M)	Direct	Current	0.010
CCPW – Olean 3 (21405-M)	Direct	Current	0.010
CCPW – Toledo Blade North of US 41	Direct	Current	0.004
CCPW – US 41 Median north of 776	Direct	Current	0.001
CCPW – US 41 Median north of 776	Direct	Current	0.001
CCPW – US 41 Median north of 776	Direct	Current	0.001
CCPW – US 41 Revitalization PC Boulevard	Direct	Current	0.010
CCPW – US 41 south of PC Boulevard	Direct	Current	0.002
CCU – LS # 18 Lift Station ODC	Direct	Current	0.010
CCU – LS # 59 Skylark Vac Station 2	Direct	Current	0.005
CCU – LS # 99 El Jobean Vac Station 3	Direct	Current	0.005
Charlotte Convenience (7-11)	Direct	Current	0.002
Charlotte Crossing	Direct	Current	0.005
Deep Creek Golf Club	Pond	Current	0.180
Family Dollar – Rampart	Direct	Future	0.001
Gulf Cove United Methodist Church	Direct	Current	0.012
JRE Millennium Phy Group	Direct	Current	0.015
Kia of Port Charlotte	Direct	Current	0.015
Kingsway Country Club (GC)	Pond	Current	0.230
Kravin Chikin	Direct	Future	TBD
Maple Leaf Estates	Pond	Current	0.388
Marylou Home Owners Assoc.	Direct	Current	0.038
Mazda of Port Charlotte	Direct	Future	TBD
Ming Zhou – B.O.A.	Direct	Current	0.001
MRI Partners LLC	Direct	Current	0.001
MRT Landscaping	Direct	Current	0.025
Murphy Oil USA #7360 – Murdock	Direct	Current	0.001
Myakka RV Park	Direct	Current	0.040
North Port Freestanding ER	Direct	Current	TBD
Parkside Memory Cottage	Direct	Current	0.002
Pt. Char G. C. – Golf Links	Pond	Current	0.613
Pt. Charlotte Church of Christ	Direct	Current	0.001
Rick Johnson Auto	Direct	Current	0.000
Riverwood (GC)	Pond	Current	1.200
Shorepoint Health Port Charlotte	Direct	Current	0.008
Suncoast Lakes Home Owners	Direct	Current	0.067

Reclaimed Water Sites	Pond/ Direct	Current/ Future User	Agreement Amount (MGD)
Sunnydell Commons II	Direct	Current	0.004
Tamiami Investment Partners, LLC	Direct	Current	0.010
Tommy's Car Wash	Direct	Current	0.002
Wal-Mart #721	Direct	Future	0.018
Waste Management	Direct	Current	0.008
West Port Community Development District	Pond	Current	0.450
Current Mid County Reclaimed Water Agreements			3.874
Total Mid County Reclaimed Water Agreement Amounts			**3.893**

Note: TBD = To be determined.

Table 7-3 Current and Future West County Reclaimed Water Users

Reclaim Sites	Pond/ Direct	Current/ Future User	Agreement Amount (MGD)
Anglers Club	TBD	Future	0.050
Bel Aire	TBD	Future	TBD
Boca Vista	Direct	Current	0.008
CCPW – 10320 Winborough	Direct	Current	0.001
CCPW – 8110 Wiltshire	Direct	Current	0.001
CCPW – 8400 Wiltshire	Direct	Current	0.001
CCPW – 9100 Winborough	Direct	Current	0.001
CCPW – Gasparilla Road (FUTURE)	TBD	Future	0.010
CCPW – Winchester/Sunset	Direct	Current	0.020
Coast Concrete	Pond	Current	0.060
Colonial Concrete	Direct	Current	0.008
Coral Caye (Placida Commons)	Direct	Current	0.095
Coral Creek Air Park (BK IV AS LLC)	Direct	Current	0.045
Coral Creek Club	Pond	Current	0.308
Dollar General – 322 Ingram	Direct	Current	0.002
Fellowship Church	Direct	Current	0.027
Hacienda Del-Mar	Direct	Current	0.105
Hammocks	TBD	Future	0.060
Harbor West	Pond	Current	0.144
Hills Golf Club	TBD	Future	TBD
Landings at Coral Creek	Direct	Current	0.120
Lemon Bay Golf Course	Pond	Current	0.342
Meadows & Villas Conservation Area – Robin	Direct	Current	0.002
Meadows & Villas Conservation Area – Rot Tr	Direct	Current	0.002
Placida Harbour	Direct	Current	0.019
Preserve at Windward Condominium	Direct	Current	0.005

Reclaim Sites	Pond/ Direct	Current/ Future User	Agreement Amount (MGD)
RGP Links Golf Club	Pond	Current	0.290
RGP Long Marsh North	Pond	Current	0.225
RGP Long Marsh South	Pond	Current	0.225
RGP Palms Golf Club	Pond	Current	0.290
Rotonda NW Golf Club	Pond	Future	TBD
Rotonda Sands	Pond	Future	TBD
Safe Cove Boat Storage	Direct	Current	0.003
South Gulf Cove	Pond	Future	TBD
Windward Patio Homes	Direct	Current	0.250
Current West County Reclaimed Water Agreements			2.597
Total West County Reclaimed Water Agreement Amounts			**2.717**

7.1.4 Discharge Valve Stations

Many of the larger reclaimed water users are golf courses and golf course communities that receive reclaimed water through pond discharge valve stations. These stations generally contain the following:

- A flow meter.
- Gate valves with motorized actuators.
- Pond-level indicators.
- Pressure-indicating transmitters.
- Isolation valves.
- Air-relief valves.
- Telemetry and SCADA.

Most of the pond discharge stations include a valve with a motorized actuator that allows CCU to remotely open or close the valve via SCADA. Most of the motorized actuators also allow the valve to be partially opened to a specified percent-open setting, which throttles the reclaimed water discharge to maintain a set flow rate or system pressure. Motorized valves without a percent-open setting only have an open or closed setpoint, which does not allow control of flow or system pressure.

The discharge ponds also include pond-level indicators to prevent too much reclaimed water from being conveyed to the ponds and leading to overflows. Some community developments such as Aileron Golf Club (formerly Kingsway Country Club), Maple Leaf Golf Course, Deep Creek Golf Club, and West Port Community Development District have stormwater storage lake systems (D-001, D-002, D-003, and D-004, respectively) that are also used for reclaimed water storage. These lakes contain adjustable weir gates and intermittently overflow to stormwater ditches that ultimately drain into the Peace River. Maintaining an adequate level in these lakes to avoid overflowing is a high priority for CCU staff. Table 7-4 summarizes the current pond discharge reclaimed water customers, their control valve type, and whether they are identified in the master reuse permit as a stormwater storage lake.

Table 7-4 Existing Pond Discharges

Reclaimed Water Customer	Pond Discharge Type
Mid County Customers	
Riverwood CDD	Control Valve, Electronic Throttling
Port Charlotte Golf Course	Control Valve, Electronic Throttling
CC Parks Department Sports Park	Control Valve, Electronic Throttling
Maple Leaf Estates*	Manual Valve, Manual Throttling
Deep Creek Golf Club*	Control Valve, Electronic Throttling
Aileron Golf Club*	Control Valve, Electronic Throttling
West Port Community Development District*	Control Valve, Electronic Throttling
West County Customers	
Lemon Bay Golf Course	Control Valve, Electronic Throttling
Coral Creek Club	Control Valve, Electronic Throttling
RGP Palms Golf Course	Control Valve, Electronic Throttling
RGP Long Marsh South	Control Valve, Electronic Throttling
RGP Long Marsh North	Control Valve, Electronic Throttling
RGP Links Golf Course	Control Valve, Electronic Throttling
Harbor West	Control Valve, Electronic Throttling

*Permitted stormwater storage lake system.

7.1.5 OPERATIONS

High-quality reclaimed water produced at the East Port, West Port, and Rotonda WRFs is stored in the on-site storage ponds or off-site GSTs during periods of low demand. Currently, the East Port WRF produces the most reclaimed water within the Mid and West County Master Reuse System. The East Port WRF contains two reclaimed water HSP stations, although HSP No. 2 serves as the primary pump station for conveying reclaimed water from the 95-MG storage pond to Mid and West County, and HSP No. 1 is used for plant water and as a backup to HSP No. 2. CCU attempts to maintain a minimum system pressure of 50 psi to all customers. The direct pressurized and pond customers in Mid County are primarily supplied from the East Port WRF since demand is higher in West County. The Walenda and Eagle Street RWBSs are available for reclaimed water pumping and storage and operate as needed by CCU staff based on system demands. The reclaimed water in the GSTs is recirculated to maintain water quality.

The West County portion of the Master Reuse System is primarily supplied by the West Port and Rotonda WRFs, but also is fed water from East Port WRF via the Master Reuse System. The West Port WRF has two lined reclaimed water storage ponds used to store reclaimed water produced during the day for distribution at night or to store excess reclaimed water during wet-weather periods. West Port WRF contains one reclaimed water pump station that is used to convey flows to the Master Reuse System. Rotonda WRF has an unlined reclaimed water storage pond and GST on site and operates two different reclaimed water pump stations. The reclaimed water infrastructure at these WRFs is used to provide reclaimed water to pressure and the customers through the Master Reuse System and is operated together with constant communication by the operations personnel.

7.2 BURNT STORE SYSTEM

The Burnt Store reclaimed water distribution system receives reclaimed water from the Burnt Store WRF to serve the South County service area. In South County, a 7-mile-long reclaimed water transmission along Burnt Store Road serves as the primary conveyance pipe of the reclaimed water system. The transmission main was originally constructed in FY 2006 to serve the community Heritage Landings (previously known as Tern Bay golf course) but never received reclaimed water because the community did not develop as expected. However, three smaller users benefited from the transmission main and currently receive low-pressure reclaimed water from the Burnt Store WRF. As mentioned in Chapter 6, the reuse system is currently permitted for 2.26 MGD; however, significant limitations exist for providing the flows of this quantity including reclaimed water supply, pumping capacity, and storage capacity.

Several large developments are underway or planned in South County that will significantly increase the wastewater and reclaimed water flows in the service area. In FY 2019, the County engaged the services of consultants McKim & Creed and Jones Edmunds to design an expansion of the Burnt Store WRF. The project will address the current pumping and storage limitations and allow CCU to connect more users to the Burnt Store reclaimed water distribution system and upgrade the WRF to meet advanced AWT standards.

7.2.1 RECLAIMED WATER BOOSTER STATIONS

The Burnt Store system does not currently contain any RWBS; rather, the pump capacity is provided solely by the Burnt Store WRF reclaimed water pump station. The station contains two constant-speed high-service pumps with a capacity of 900 gpm each. The reclaimed water pumps discharge into a 7-mile-long 12-inch/16-inch reclaimed water transmission main that conveys reclaimed water to customers via direct irrigation system delivery or to on-site storage ponds to meet customer-controlled irrigation schedules.

7.2.2 STORAGE

The Burnt Store system has limited storage since no storage exists within the distribution system and the storage at the WRF is limited to the clearwell under the reclaimed water pump station.

However, the Burnt Store WRF expansion project currently proposes to convert the existing RIBs to reclaimed water storage ponds and a reject pond, as well as a GST.

7.2.3 CURRENT AND FUTURE RECLAIMED WATER CUSTOMERS

Currently, three reclaimed water customers are served by the Burnt Store system in South County and CCU uses a small amount of reclaimed water for drip irrigation of landscaping along the development entranceways and common areas. CCU is pursuing other potential bulk reclaimed water users, such as golf courses, that have expressed interest in using reclaimed water in irrigation storage ponds, like the Burnt Store Marina & Golf Club. Table 7-5 lists the current and potential future major reclaimed water users within the Burnt Store WRF service area. Although the total potential future reclaimed water user demand is noted as approximately 2.117 MGD, Heritage Landing has expressed interest in receiving future flows up to 1.5 MGD, which would increase the total to approximately 3.5 MGD.

Table 7-5 Burnt Store System Current and Potential Future Reclaimed Water Users

Reclaimed Water Sites	Pond/ Direct	Current/ Future User	Agreement Amount (MGD)
Burnt Store Colony 1	Direct	Current	0.008
Burnt Store Colony 2	Direct	Current	0.008
Burnt Store Lakes	Direct	Current	0.048
Burnt Store Marina & GC	Pond	Future	1.920
City of Cape Coral	TBD	Future	0.085
CCCS – Fire Station # 5	Direct	Current	0.001
CCPW – Cape Horn	Direct	Current	0.000
CCPW – Burnt Store Village Landscape	Direct	Current	0.004
Dollar General (Burnt Store)	Direct	Future	0.003
Heritage Landing	Pond	Future	0.125
Tuckers Pointe	Pond	Future	TBD
Current Burnt Store Reclaimed Water Agreements			0.197
Total Burnt Store Reclaimed Water Agreement Amounts			**0.282**

7.2.4 Discharge Valve Stations

Currently, no pond discharge valve stations are in the Burnt Store system.

7.2.5 Operations

The WRF's pump station is used to convey reclaimed water from the Burnt Store WRF to the 8.5-mile-long 12-inch reclaimed water transmission main along Burnt Store Road. The system is operated at relatively low pressure, and users are currently responsible for supplying their systems with in-line pumps to boost pressure.

As with the MRS, forecasting and CIP planning are also conducted for the South County reclaimed water distribution system. The Burnt Store WRF operators are currently responsible for maintaining the reclaimed water components since the vertical infrastructure components are on site. As the system continues to expand, the Reclaimed Water Distribution workgroup will be responsible for maintaining the Burnt Store System.

7.3 Maintenance

The reclaimed water distribution system is inspected and monitored daily to meet FDEP requirements. Monthly inspections highlight the distribution equipment that may need repair, calibration, or replacement. An important element of the program is that reclaimed water sites are inspected yearly for possible cross-connections. The Backflow and Reclaimed Services staff coordinate with reclaimed water customers to keep them updated on the reclaimed water supply, inform them of operational problems, and provide information and guidance regarding FDEP and SWFWMD rules and regulations. The workgroup is also involved in documentation, inspection, and minor repairs of the reclaimed water distribution system.

7.4 Backflow and Cross-Connection Prevention Program

The Backflow and Cross-Connection Prevention Program uses two types of surveys to monitor customer water use and type – basic backflow equipment survey and cross-connection control survey. The basic backflow equipment survey is used to verify the site information of each water user. The cross-connection survey provides information on possible cross-connections and health-hazard levels. The information in the surveys is used to inform customers with the required description of the backflow prevention. A CCU database is being created that includes information on each water user, backflow prevention measures in place at their site, backflow testing requirements, and communication with the customer. This information satisfies the FDEP requirements for implementation of a Backflow and Cross-Connection Prevention Program. CCU's Cross-Connection Control Manual provides the structure by which the program can be administered and a vehicle for changes as needed in the future. The program includes testing and repair of backflow devices at County-owned facilities. This part of the program will increase as the database of backflow information increases.

The Cross-Connection Control Program reports inventory every calendar year (CY), in accordance with FDEP regulations. The inventory reported for CY 2024 is as follows:

- Cross-Connections Inspected: 0
- Charlotte County Backflow Tests: 3,610
- Potential Cross-Connections Corrected: 0

7.5 Review of Previous Annual Report Recommendations

Table 7-6 and Table 7-7 summarize the recommendations and their status from the 2023 Annual Report for the MRS and Burnt Store system, respectively.

Table 7-6 Master Reuse System FY 2023 Recommendations and Status

Recommendation:	Develop an operational protocol for the Mid/West County MRS. CCU staff intend to operate the reclaimed water system under a select number of operational configurations and will determine their preferred method for meeting their reclaimed water demands using the hydraulic model.
Progress:	Ongoing. Some operational items are addressed in the Reclaimed Water Master Plan.
Recommendation:	Install throttling control valves at all current major users with pond discharges in the Mid and West County areas.
Progress:	Installed as part of pond discharge assembly. All new pond users will be required to install this equipment per CCU standard.
Recommendation:	Develop Reclaimed Water Booster Station Design Standards.
Progress:	Ongoing.
Recommendation:	Complete repairs for facilities and assets that experienced hurricane-related damage.
Progress:	Ongoing.
Recommendation:	Maintain updated hydraulic models to predict the impact of future demand on the reclaimed water transmission systems.
Progress:	Ongoing.

Recommendation:	Develop and complete a community survey to better determine potential reclaimed water customers. Results of the study can be used to determine the economic feasibility of water delivery.
Progress:	Not completed.
Recommendation:	Continue to develop and host public education events to educate the community on the benefits of reclaimed water.
Progress:	Ongoing.
Recommendation:	CIP recommendations to improve capacities of treatment, storage, and pumping in the MRS for future demands is being developed in the Reclaimed Water Master Plan.
Progress:	Completed.
Recommendation:	Evaluate adding piping connections (including controls, pumps, valves, meters, etc.) to increase the number of reclaimed water small users in Mid County.
Progress:	Ongoing, but CCU is currently focused on adding large users and large developments.
Recommendation:	Seek ways to increase the use of reclaimed water currently produced by CCU WRFs, including improving reliability and access for customers.
Progress:	Ongoing.
Recommendation:	Create a reclaimed water system O&M Manual and operating protocols.
Progress:	Not completed.

Table 7-7 Station Reclaimed Water Distribution System FY 2023 Recommendations and Status

Recommendation:	Burnt Store: CIP recommendations to improve capacities of treatment, storage, and pumping in the Burnt Store system for future demands is being developed as in the Reclaimed Water Master Plan.
Progress:	Complete.
Recommendation:	Burnt Store: Maintain updated hydraulic models for the Burnt Store system to predict the impact of future demand on the reclaimed water transmission systems.
Progress:	Ongoing.
Recommendation:	Eagle Street RWBS: ▪ Replace the anchor system for the chlorine storage tank. ▪ Replace damaged pressure gauges.
Progress:	Not completed.
Recommendation:	Walenda RWBS: ▪ Properly secure the bypass actuator. ▪ Replace or fix the GST level gauge.
Progress:	Not completed.

Recommendation:	Rotonda Boulevard RWBS: ▪ Recalibrate the equipment. ▪ Replace damaged pressure gauges and install UV protection. ▪ Replace flexible conduits as needed.
Progress:	Not completed.

8 ENGINEERING

The Engineering Division is responsible for preparing and managing engineering reports, studies, project designs, and construction observation and management. Charlotte County's Fiscal Services Division also plays a large role in the development and maintenance of the Capital Improvement Plan, which includes projects for the County's Utilities Department, CCU.

8.1 CAPITAL IMPROVEMENT PLAN

The County's Capital Improvement Plan is designed to plan and construct improvements to the CCU water, wastewater, and reclaimed water systems. As Charlotte County's population continues to grow, CCU's ability to develop plans that address the projected growth is vital. This section summarizes CIP projects in progress or initiated in FY 2023. In accordance with the County's Capital Improvement Plan policy, a project shall be considered a capital project if a planned expense exceeds $100,000 for an asset expected to have a useful life of 10 years or more.

Charlotte County develops and maintains a collective Capital Improvement Plan for certain public facilities, including utilities, as part of the Capital Improvements Element of the County's Comprehensive Plan (*Charlotte 2050*). The Capital Improvement Plan collectively refers to a Capital Improvement Program/CIP and Capital Needs Assessment (CNA); the CIP component consists of a 6-year forecast covering Year 1 through Year 6, and the CNA captures the following 14-year period from Year 7 through Year 20. The CIP is updated and adopted annually; the CNA is updated biennially.

Charlotte County develops and maintains a 6-year CIP that forecasts spending for approved CIP projects and is considered a link between the County's Comprehensive Plan and its fiscal planning process. The CIP focuses on the County's short-range physical needs, serving as a planning and implementation tool for development, acquisition, construction, maintenance and renovation of public facilities, infrastructure, and capital equipment.

The County also maintains a 20-year CNA that identifies projects beyond the initial 6-year CIP planning horizon. The CNA is not balanced with County revenues; the CNA serves as a basis of *potential* projects to be considered for inclusion in a County 6-year CIP.

Table 8-1 FY 2024 Budget and Expenditure Balance

Utility System	FY 24 Budget	FY 24 Expenditure	Budget Expended
Water	$3,427	$6,216	181%
Wastewater	$83,518	$22,368	27%
Reclaimed Water	$150	$188	125%
Total	**$87,095**	**$28,772**	**33%**

Note: Dollars in thousands.

Table 8-2 summarizes CCU's 6-year forecasted CIP project schedule for water, wastewater, and reclaimed water systems.

Table 8-2 Capital Improvement Program (CIP) – 6-year Forecast Project Costs (Dollars in Thousands)

CIP Number	Project Names	Prior Years Actual	Capital Improvement Program (CIP)						CNA	Total
			Actual 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Future Years	
332001	Potable Water Master Plan	$643	$28	$0	$0	$0	$0	$0	$0	**$671**
332201	Emergency Interconnect to Punta Gorda-Burnt Store	$1	$41	$0	$0	$0	$0	$0	$0	**$42**
332202	Walenda Booster Station Upgrade	$9	$63	$0	$0	$0	$0	$0	$0	**$72**
332203	Potable Water Master Plan Recommended Improvements	$0	$107	$1,100	$1,038	$968	$1,142	$1,198	$0	**$5,553**
332204	Burnt Store RO WTP – Plug/Abandon Well #15	$0	$95	$0	$0	$0	$0	$0	$0	**$95**
332207	Toledo Blade from Hillsborough to US 41 24-inch Water Main	$0	$98	$0	$4,043	$0	$0	$0	$0	**$4,141**
332209	Golf Course Booster Station Upgrades	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
332210	Gillot Blvd Water Main Upsizing	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
332211	Potable Water Storage Tank – South County	$0	$88	$0	$5,602	$0	$0	$0	$0	**$5,690**
332212	Potable Water Elevated Tank – Mid County	$0	$0	$0	$0	$0	$0	$0	$6,172	**$6,172**
332213	Potable Water Elevated Tank – West County	$0	$0	$0	$0	$0	$0	$0	$9,625	**$9,625**
332214	Calumet to Robin Rd - Waterway Crossing SGC to Rotonda Meadows	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
332215	Hillsborough/Cranberry Intersection Water Main (North Port)	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
332216	Water Meter Study Recommended Improvements	$0	$0	$0	$4,615	$0	$0	$0	$0	**$4,615**
332301	Babcock Ranch Water Supply	$0	$254	$0	$0	$0	$0	$0	$0	**$254**
332401	Water Main Along Hillsborough (PRMRWSA)	$0	$5,237	$0	$0	$0	$0	$0	$0	**$5,237**
332402	Gertrude Booster Station Demolition	$0	$0	$605	$0	$0	$0	$0	$0	**$605**
332404	Major Water Transmission Lines	$0	$205	$400	$400	$400	$400	$400	$0	**$2,205**
350902	Reclaimed Water Lines	$1,091	$3	$0	$0	$0	$0	$0	$0	**$1,094**
351203	Wastewater Force Mains Replacement – Deep Creek	$7,138	$0	$31	$31	$30	$29	$29	$119	**$7,407**
351204	Master Lift Stations	$451	$0	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	**$9,451**
351401	Reclaimed Connections for County Facilities	$49	$0	$0	$0	$0	$0	$0	$0	**$49**
351406	Grand Master Lift Station and Gravity Interceptor – Loveland	$24,079	$0	$157	$157	$150	$150	$143	$510	**$25,346**
351408	Myakka River 24-inch Water Main	$1	$0	$0	$0	$0	$0	$0	$0	**$1**
351502	Burnt Store Phase 2	$3,287	$0	$0	$0	$0	$0	$0	$0	**$3,287**
351602	Charlotte Harbor Water Quality Initiative Phase 2 – EL Jobean	$8,728	$0	$0	$0	$0	$0	$0	$0	**$8,728**
351901	Burnt Store WRF Expansion	$3,441	$455	$6	$5	$273	$267	$267	$4,882	**$9,596**

CIP Number	Project Names	Prior Years Actual	Capital Improvement Program (CIP)						CNA	Total
			Actual 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Future Years	
351902	East Port WRF Expansion	$2,364	$15,704	$4	$199	$380	$380	$371	$2,811	**$22,213**
351903	Cape Haze Sewer & Reclaim Transmission System	$2,146	$0	$0	$0	$0	$0	$0	$0	**$2,146**
352101	Charlotte Harbor Water Quality Project Septic to Sewer	$0	$0	$0	$3,000	$0	$0	$0	$0	**$3,000**
352200	CMOM Recommended Utility Improvements	$0	$0	$550	$577	$0	$0	$0	$0	**$1,127**
352201	Wastewater Force Main SR 776 Sunnybrook to Gasparilla CR 771	$45	$4	$0	$0	$0	$0	$0	$0	**$49**
352202	Reclaimed Water Master Plan Recommended	$0	$36	$0	$0	$0	$0	$0	$0	**$36**
352203	Reclaimed Water Automated Valves	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
352204	Odor Control System for Midway Blvd & Loveland Blvd	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
352205	Rotonda WRF Reclaimed Storage Pond	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
352206	West Port WRF Reclaimed Water Pond	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
352207	East Port WRF Wetwell Cover and Ozone System	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
352208	West Port WRF Perimeter Fencing (Homeland Security)	$445	$0	$0	$0	$0	$0	$0	$0	**$445**
352209	East Port WRF Deep Well Supply Line	$0	$69	$0	$0	$0	$0	$0	$0	**$69**
352210	Veterans Wastewater Force Main US41 to Peachland	$0	$0	$0	$923	$4,226	$0	$0	$0	**$5,149**
352211	East Port WRF Equalization System	$0	$0	$2,200	$2,308	$0	$0	$0	$0	**$4,508**
352212	Olean Blvd Force Main – Easy St. To Loveland	$0	$0	$5,500	$0	$0	$0	$0	$0	**$5,500**
352213	West Port WRF Expansion 1.2 to 3MGD (Including Equalization)	$423	$840	$63,255	$0	$0	$0	$0	$0	**$64,518**
352214	West Port WRF Deep Injection Well Capacity Increase	$0	$0	$1,100	$0	$0	$0	$0	$0	**$1,100**
352215	Replace Filters at East Port WRF Stage 5	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
352216	Safety Improvements at Vacuum Pump Stations	$0	$0	$220	$0	$0	$0	$0	$0	**$220**
352217	Sewer Master Plan Update Recommended Improvements	$0	$0	$550	$577	$0	$0	$0	$0	**$1,127**
352218	Bachmann Tract – Wastewater Extension	$0	$41	$0	$0	$0	$0	$0	$0	**$41**
352401	Reclaimed Water Booster Station Upgrades	$0	$0	$0	$0	$0	$952	$0	$0	**$952**
352403	Rotonda WRF Expansion 2 MGD to 3 MGD	$0	$0	$0	$0	$0	$1,269	$3,994	$48,872	**$54,135**
352404	East Port WRF Control Room Hardening	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
352405	Burnt Store WRF Control Room Hardening	$0	$0	$1,095	$0	$0	$0	$0	$0	**$1,095**
352406	Master Lift Stations	$0	$0	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	**$9,000**
352407	Wastewater Force Mains Expansionary	$0	$246	$700	$700	$700	$700	$700	$0	**$3,746**

CIP Number	Project Names	Prior Years Actual	Capital Improvement Program (CIP)						CNA	Total
			Actual 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Future Years	
352408	Reclaimed Water Lines	$0	$149	$150	$150	$150	$150	$150	$150	**$1,049**
360804	Water Transmission/Wastewater Collection Reimb.	$1,689	$0	$1,000	$1,000	$1,000	$1,000	$1,000	$0	**$6,689**
361401	CCU Business Services Customer Billing and Database	$1,538	$0	$800	$800	$800	$800	$800	$0	**$5,538**
361410	Parkside - Gertrude and Aaron Street Improvements	$3,143	$0	$0	$0	$0	$0	$0	$0	**$3,143**
361411	Parkside - Olean Blvd (US41 to Easy) Improvements	$2,281	$0	$0	$0	$0	$0	$0	$0	**$2,281**
361603	Charlotte Harbor Water Quality Initiative Phase 2 – Countryman and Ackerman	$19,229	$2,898	$60	$86	$82	$77	$72	$516	**$23,020**
362001	Relocation Needs Utility Pipe Replace	$413	$626	$1,742	$1,742	$1,742	$1,742	$1,742	$0	**$9,749**
362002	Scada System Upgrades	$1,104	$163	$1,100	$577	$605	$0	$0	$0	**$3,549**
362003	Harbor View Rd Widening – Utility	$9	$55	$0	$14,235	$0	$0	$0	$0	**$14,299**
362101	US 41Commercial Corridor Utilities Expansion	$82	$19	$0	$0	$0	$0	$0	$0	**$101**
362102	Lake View Midway Septic and Water Exp	$664	$354	$0	$0	$0	$0	$0	$0	**$1,018**
362200	South County Utility Infrastructure	$3,175	$116	$0	$0	$0	$0	$0	$0	**$3,291**
362201	US 41 Northbound Utility Improvements	$2	$83	$11,551	$0	$0	$0	$0	$0	**$11,636**
362204	Edgewater-Flamingo Corridor Connection	$0	$0	$0	$0	$23,236	$0	$0	$16,306	**$39,542**
362205	Kings Hwy I-75 to Desoto County Line Utility Improvements	$8	$70	$0	$0	$0	$0	$0	$0	**$78**
362206	Utility Relocations and/or Improvements – FDOT Minor Projects	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
362212	Fiber Optic Installs for Utility Plants and Booster Stations	$0	$329	$810	$850	$0	$0	$0	$0	**$1,989**
362301	Cape Haze Water Quality Improvement	$0	$296	$0	$0	$0	$0	$0	$0	**$296**
362402	Utility Improvements – Cochran Blvd – Pellam to Lakeview	$0	$0	$0	$0	$0	$1,684	$0	$0	**$1,684**
362404	Water Transmission/Wastewater Collection Reimb.	$0	$0	$1,000	$1,000	$1,000	$1,000	$1,000	$0	**$5,000**
362405	CCU Business Services Customer Billing and Database	$0	$0	$800	$800	$800	$800	$800	$0	**$4,000**
369501	Waterway Crossings for Public Works (Water and Sewer)	$5,060	$0	$0	$0	$0	$0	$0	$0	**$5,060**
	TOTAL	**$92,738**	**$28,772**	**$99,486**	**$48,415**	**$39,542**	**$15,542**	**$15,666**	**$92,963**	**$433,124**

8.2 Review of Design, Reports, and Studies

The following describes reports and studies prepared by CCU Engineering or submitted by external engineering consultants in FY 2024. Prior year reports and annual reoccurring reports are also included for reference.

8.2.1 Reports Completed in FY 2024

- CCU 2023 Annual Report, Jones Edmunds, March 2024.
- CCU Reclaimed Water Master Plan, Jones Edmunds, 2024.
- Future Water Supply Modeling Technical Memorandum, Jones Edmunds, 2024.
- Manchester Locke Report, CCUD, 2024.
- CAAP & Flow Monitoring Program, Veith Engineering & Business Solutions (VEBS), October – November 2023.
    - I/I Desktop Analysis Framework Technical Memorandum.
    - I/I Evaluation and Mitigation Options Guidance Manual Technical Memorandum.
    - Flow and Rainfall Monitoring SOP Technical Memorandum.

8.2.2 Reports Completed in FY 2023

- CCU 2022 Annual Report, Jones Edmunds, March 2023.
- CCU Potable Water Master Plan, Jones Edmunds, April 2023.
- CCU Modeling Tasks, Jones Edmunds:
    - Tuckers Pointe Development – Water and Wastewater.
    - Simple Life Development – Water and Reclaimed Water.
    - Edgewater Drive/Flamingo Boulevard Main Sizing – Water, Wastewater, and Reclaimed Water.
    - Cattledock Pointe Valve Station – Reclaimed Water.
    - SR 776 Main Sizing – Wastewater.
    - Harbor Village Development – Water, Wastewater, and Reclaimed Water.
    - Starling Development – Water, Wastewater, and Reclaimed Water.
    - The Cove Development – Water, Wastewater, and Reclaimed Water.
- CMOM Program, Kimley-Horn, 2023.
- CAAP and Flow Monitoring Program, VEBS and Hazen & Sawyer, 2023.

8.2.3 Reports Completed in FY 2022

- CCU 2021 Annual Report, Jones Edmunds, March 2022.
- East Port WRF Permit Renewal and Application and Authorization for Substantial Modification, Jones Edmunds, November 2022. The application included multiple supplemental reports for continued operations and expansion of the East Port WRF.
- Burnt Store WRF Permit Renewal Application and Authorization for Substantial Modifications, Jones Edmunds, July 2021 and revised March 2022. The application included adding Advanced Wastewater Treatment to the Burnt Store WRF expansion.

- Lake View – Midway Water Quality Improvements Preliminary Design Report, Giffels-Webster Engineers Inc., September 2022, First Revision November 2022, Second and Final Revision January 2023.
- Compliance Monitoring Report for Special Condition No. 18, 08-0210682-001 Annual Summary 2022.
- El Jobean Sewer Expansion Charlotte County, Florida Final Report FDEP Agreement No. NF063 October 2022 – CCU completed a final report to meet the compliance criteria for sewer connections in El Jobean that were partially funded by EPA through an agreement/contract with the Nonpoint Source Management Program of the FDEP.
- Preliminary Engineering Report Green Dolphin Drive Water Main Project #22-0005, July 6, 2022 – CCU completed a report to provide the most cost-effective and feasible option for replacing a disabled potable water main. The proposed project will provide a redundant connection to the island area.

9 UTILITY SUPPORT SERVICES

9.1 STATE-CERTIFIED LABORATORY

The East Port Laboratory (EPLAB) is a part of CCU and is at the East Port WRF Administration and Operations Building. EPLAB provides regulatory and operational support for CCU facilities including four WRFs, one WTP, one LTF, six deep injection wells, and the potable water distribution systems. EPLAB is a National Environmental Laboratory Accreditation Program (NELAP)-certified laboratory (Florida Department of Health [FDOH] ID E54436, which was renewed July 1, 2024, and reissued for EPA Method Update Rule in September 2022) and a member of the National Environmental Laboratory Accreditation Conference (NELAC) Institute (TNI). The current EPLAB staff includes the Laboratory Manager, Laboratory Quality Assurance Specialist (QAS), four additional laboratory support personnel (laboratory technicians), and one temporary worker. The laboratory accreditations include performing analyses for potable water microbiology, non-potable water general chemistry, and non-potable water microbiology.

9.1.1 ACCREDITATION AND CERTIFICATIONS

EPLAB operates in compliance with the 2016 *Environmental Laboratory Sector Standards* set by TNI and in accordance with Chapter 64E-1, FAC (Certification of Environmental Testing Laboratories), FDEP Quality Assurance requirements (Chapter 62-160, FAC), and FDOH Environmental Laboratory Certification requirements. As required by current TNI standards and FDEP regulations, the EPLAB must assess laboratory operations every 2 years, conduct annual management reviews, and perform proficiency tests every 6 months as a part of the continuing certification process. All laboratory personnel are required to obtain certification to perform specific analyses in the laboratory including documentation of Initial and Continuing Demonstrations of Capability (IDOC/CDOC) and analysis of Proficiency Testing samples. Results from the test samples are sent to FDOH for regulation compliance and compared to results from other laboratories nationwide. EPLAB staff typically excel at proficiency tests, usually passing within two standard deviations of the national average. The frequency of reviews, tests, and audits conducted at the EPLAB and required for maintaining certifications and CCU goals are listed herein:

- The Laboratory Manager performs a Management Review of the EPLAB quality system and environmental testing activities each year, as required by the TNI Standards.
- An engineering consultant performs an operations review of the EPLAB annually.
- FDOH requires a laboratory audit every 2 years. The most recent biannual FDOH assessment was conducted by a private company under contract with FDOH. It was conducted in November 2022.
- Proficiency tests are conducted semi-annually, typically in August and February.
- Internal audits are completed periodically to ensure system quality.

Table 9-1 lists the current certifications of the EPLAB, which are renewed July 1 each year. The laboratory is expecting to add a new certification in FY 2025.

Table 9-1 Laboratory Certifications

Analyte	Method/Tech	Category	Matrix
Escherichia Coli	SM 9223 B	Microbiology	Drinking Water
Total Coliforms	SM 9223 B	Microbiology	Drinking Water
Ammonia as N	EPA 350.1	General Chemistry	Non-potable Water
Ammonia as N	SM 4500-NH3 D-2011	General Chemistry	Non-potable Water
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	General Chemistry	Non-potable Water
Carbonaceous BOD ($CBOD_5$)	SM 5210 B-2016	General Chemistry	Non-potable Water
Chloride	SM 4500-Cl^- E-2011	General Chemistry	Non-potable Water
Conductivity	EPA 120.1	General Chemistry	Non-potable Water
Enterococci	ENTEROLERT/QUANTI-TRAY	Microbiology	Non-potable Water
Fecal Coliforms	COLILERT®-18	Microbiology	Non-potable Water
Fecal Coliforms	SM 9222 D-2015	Microbiology	Non-potable Water
Kjeldahl Nitrogen – Total	EPA 351.2	General Chemistry	Non-potable Water
Nitrate as N	EPA 353.2	General Chemistry	Non-potable Water
Nitrate as N	SM 4500-NO3 H-2016	General Chemistry	Non-potable Water
Nitrite	SM 4500-NO2-B-2011	General Chemistry	Non-potable Water
Nitrite as N	EPA 353.2	General Chemistry	Non-potable Water
Phosphorus, Total	EPA 365.4	General Chemistry	Non-potable Water
Residue-Filterable (TDS)	SM 2540 C-2015	General Chemistry	Non-potable Water
Residue-Nonfilterable (TSS)	SM 2540 D-2015	General Chemistry	Non-potable Water
Sulfate	ASTM D516-16	General Chemistry	Non-potable Water
Total Nitrate-Nitrite	EPA 353.2	General Chemistry	Non-potable Water
Total Nitrate-Nitrite	SM 4500-NO3 H-2016	General Chemistry	Non-potable Water

Note: ASTM = American Society for Testing and Materials; SM = Standard Method.

9.1.2 Quality Assurance and Quality Control

The EPLAB has implemented a robust quality system that encompasses Quality Assurance (QA) and Quality Control (QC) activities. The EPLAB staff maintain a comprehensive guidance document, referred to as the *Quality Manual*, to document the processes and steps of QA/QC. The EPLAB Quality Manual will be revised in March 2025, to include corrective actions noted in the November 2024 FDOH audit.

The document contains 28 sections, including organization, document control, purchasing services and supplies, client service, control of records, data integrity, environmental conditions, calibration, sample handling, quality assurance, and reporting methods. TNI standards are referenced for each section of the Quality Manual, which allows for quick reference between this local document and the TNI standards. In addition, staff have also developed in-house standard operating procedures (SOPs) for specific tasks. The SOPs are maintained and revised annually to coincide with new TNI standards in accordance with FDOH's Environmental Laboratory Program. Hardcopies of the most current Quality Manual

and SOPs are readily available to EPLAB staff in the laboratory. A Master List of all documents currently in use in the laboratory including effective date, revision number, and location is maintained by the QAS.

QA procedures are well documented, and all laboratory personnel have received documented training on all quality assurance/control protocols. Chain-of-custody documentation is strictly adhered to during sample receipt and handling. Laboratory equipment is tested for accuracy in accordance with the Quality Manual. Samples are arranged efficiently for analysis by batches to reduce the numbers of blanks, calibration standards, and QC samples needed per analysis.

Electronic entry of data at the laboratory station or output of an automatic analyzer directly to report forms has eliminated one source of potential errors. Organization of data in an electronic format would allow direct input into FDEP forms, which would eliminate another source of data entry error. Currently, FDEP water quality forms are not compatible with LIMS. The FDEP forms are expected to be updated. QA by a responsible person-in-charge is required to check hand-entered data entries. All data are reviewed and approved by the Laboratory Manager or QAS before being released to the client or FDEP. Laboratory results from the outside laboratories are received, reviewed, and forwarded to the WTP and WRF Chief Operators for use in compliance reporting.

9.1.3 Record Keeping

The Quality Assurance Manual and SOPs are kept in a neat and organized manner and are easily accessible to all laboratory personnel. Safety Data Sheets (SDSs) required by the Hazard Communication Standard (29 CFR 1910.1200(g)) are available for all chemicals used in the laboratory. Copies of FDOH certifications for the outside laboratories are maintained by the QAS. Personnel records, including documentation of training and IDOC/CDOC, are maintained by the Laboratory Manager and QAS. All sample data are cross-referenced to sampling information, standards and reagent information, and analysis logbooks using chain-of-custody and the assigned unique sample ID. Electronic data are backed up daily, and historical data are archived on an external hard-drive. Paper and electronic records are well maintained to meet regulatory requirements. Sampling schedules for each facility are clearly posted for staff to review, and all upcoming special sampling events (e.g., Annual Effluent Analysis, Cryptosporidium, and Giardia) are clearly posted with their due dates. Sample receiving and documentation procedures have been upgraded to be fully electronic, but the chain of custody is managed and tracked by hard copy.

9.1.4 Data Management

The laboratory uses the EthoSoft web-based X-LIMS (Laboratory Information Management System) for data management. The LIMS software is used to prepare paper documentation forms and to assign unique sample identification numbers to samples for recording and tracking results. The LIMS can be used to track samples through the storage, analysis, and reporting phases, reducing the possibility of error. The Laboratory Manager can produce daily status reports of all current laboratory work through LIMS. The LIMS is also capable of

monitoring quality control results and chemical use to manage supplies ordering. The laboratory continually reviews and manages the inventory. A hardcopy tracking system, developed by the Laboratory Manager, is also used in conjunction with LIMS for those analytes not suited to electronic tracking. Data in the LIMS and on all computers used in the laboratory are backed-up daily by the County's IT Department and to the EthoSoft off-site server ("the Cloud"). All analytical data are also downloaded annually by the QAS onto an external hard drive for long-term storage.

9.1.5 Laboratory Operations and Site Visit

Jones Edmunds staff visited the EPLAB on January 30, 2025, and met with the Laboratory Manager, Sandra Lavoie, to discuss operations in FY 2024. The Laboratory Manager reviews the WRF's permits, provides operators with pre-labeled sampling bottles, and coordinates sampling events to account for the lab's staffing and analytical capabilities, sample holding times, and water quality compliance schedules. During FY 2024, the EPLAB received 8,758 samples and conducted 33,117 analyses. EPLAB sends some samples to outside laboratories that are certified to perform tests that EPLAB is not certified to perform. The EPLAB used external laboratories to process an additional 3,794 analyses, totaling 38,911 analyses.

The number of samples and analyses required from the laboratory is expected to increase with the future AWT upgrades to the WRFs, requiring frequent sampling of TP, which is a labor-extensive process due to the digestion steps. The laboratory has been using an automatic analyzer (received FY 2023) that will increase reliability (using the old analyzer as a backup) and sampling capabilities.

The following reviews, tests, reports, and trainings were completed in FY 2024:

- The annual Management Review of the EPLAB quality system and environmental testing activities was submitted in FY 2024.
- The EPLAB participated in and passed two TNI/FDOH-mandated Proficiency Testing studies (in February 2024 and August 2024). Staff achieved a score of 99.1 percent. The next set of proficiency testing is scheduled for the first quarter in FY 2025. EPLAB is waiting to receive the tests and will begin with this testing in February 2025.
- The Quality Integrity System Report was completed in December 2024.
- The annual Ethics and Data Integrity training for all laboratory staff in the EPLAB was completed in August 2024 and October 2024.

The EPLAB workspace consists of five main rooms:

- Sample receiving and storage.
- Un-refrigerated chemicals and equipment storage.
- Administrative workstations for laboratory technicians.
- Main laboratory benches.
- Drinking water laboratory.

No deficiencies were noted, the areas are kept clean and orderly, and staff do an excellent job of maintaining the workspaces. Jones Edmunds observed the following:

- All IDOC/CDOC records are complete and up to date, SOPs for all certified methods were reviewed and revised (as needed) during FY 2024, and all laboratory staff received appropriate QA, SOP, and data integrity training.
- The laboratory staff continues to demonstrate their diligence in ensuring that all laboratory data entries, chain-of-custody forms, bench sheets, etc., are correctly transferred to the final laboratory analysis report, which is used for reporting to regulatory agencies.
- A new autoclave was purchased for TP digestion.
- A temporary laboratory technician was hired, which has increased efficiency and allowed other technicians to get cross-training.

Table 9-2 summarizes the previous years' recommendations and provides a progress update for reference. Recommendations for this year's report are included in Chapter 10.

9.1.6 Review of Previous Report Recommendations

Table 9-2 CCU EPLAB FY 2023 Recommendations and Status

Recommendation:	Continue implementation of the LIMS system. Evaluate hiring IT support or a consultant that can work exclusively on the set-up and implementation of the LIMS or purchase a service package from the vendor to do the set-up of laboratory-specific forms and reports with remote installation.
Progress:	Although some progress has been made in the LIMS implementation, time constraints on laboratory personnel due to sample load as well as instrument integration issues appear to have slowed progress. Ms. Lavoie noted that this effort is significantly limited by how customizable the program is and has requested, with our recommendation, the support of a consultant to guide decision making.
Recommendation:	Update personnel on new sampling procedures including the need for accuracy in use of collection bottles, sample storage, and delivery to the laboratory.
Progress:	Recurring. EPLAB has meetings to continue to improve and keep personnel updated.
Recommendation:	Investigate the benefit of purchasing analytical equipment to process additional sampling required for the AWT upgrades at the WRFs and to increase the frequency of analysis for BOD, TSS, TN, and TP at East Port WRF.
Progress:	Budgeted for FY 2026, the staff is currently receiving quotes.

9.2 Asset Management

Asset management is the strategic practice of managing capital assets to minimize the total lifecycle costs and ensure delivery of established level of service. Asset management plans are developed as a tool to record all the owner's asset management practices and strategies. Typically, an CMMS such as Cityworks is used to manage asset data.

According to the *Reference Guide for Asset Management Tools* (June 2020), EPA has identified that an Asset Management Plan (AMP) should include the following components:

- Introduction – Identifies goals, strategic plan, mission statement, and other relevant background information.
- Staff Information – Identifies system staffing structure and asset management team. Includes stakeholder education and outreach.
- Level of Service – Defines the system operation and expectations for customer service delivery.
- Asset Inventory – Identifies and evaluates system assets. Includes evaluation of criticality, probability/consequence of failure, and remaining useful life.
- Operation and Maintenance – Identifies and tracks applicable operating procedures and required maintenance routines.
- Capital Improvements – Identifies short- and long-term asset rehabilitation and replacement projects based on Asset Inventory and O&M data.
- Financial Strategy – Determines if system revenue(s) will be adequate to fund current and future O&M and Capital Improvements. This component reasonably ensures the desired level of service is economically feasible.
- Compliance – Identifies and tracks requirements for system compliance with respect to federal and state guidelines.
- Preparedness – Identifies emergency procedures to maintain system operations such as emergency power backup.

The EPA Reference Guide also identifies the following as additional components that may be included to increase the value and effectiveness of an AMP, although they are not noted as required: energy management, water efficiency, climate change, regional planning, and multi-sector asset management.

CCU does not currently have an AMP; however, over recent years the BCC has taken a forward approach in continuing to develop its Strategic Plan. The Charlotte County Strategic Plan is updated every fiscal year and includes goals, initiatives, and highlighted past achievements for identified "strategic focus areas." In FY 2020, the BCC streamlined the Strategic Plan by narrowing the number of focus areas from nine to four. The current Strategic Plan focus areas are described as follows:

- **Public Services** – To maintain a safe and healthy community by delivering essential services from skilled, professional, and dedicated public servants.
- **Economic and Community Development** – To create a business climate that promotes a diversified, growing economy consistent with sustainable growth management plans, environmental stewardship, and enhanced quality of life.
- **Infrastructure** – To build and maintain countywide infrastructure that meets our evolving needs and enhances our community appearance, improves public safety, and protects our natural resources.
- **Efficient and Effective Government** – To manage fiscally sound county operations with a culture of transparency, accountability, citizen engagement and innovation.

In FY 2020, Charlotte County retained Jones Edmunds to implement Cityworks CMMS in support of the County's Strategic Plan. Cityworks CMMS is used to standardize the work and asset tracking process in a robust system with capabilities to schedule routine maintenance

and tasks, identify and track hot spots and issues with infrastructure, and report on key performance indicators across County Departments. Cityworks was initially implemented in the Utilities, Facilities, and Public Works Departments.

As part of these efforts, Jones Edmunds and CCU began with a review of current GIS data, as Cityworks is built on the spatial data for assets in the system. The Jones Edmunds team recommended GIS database schema edits to bring the data in conformance with industry standards as well as adding the necessary fields for Cityworks use. Part of the scope included development of a vertical asset schema for the CCU plants, which organizes specific plant assets into database tables that are then related to the physical plant location or room where they reside, which is then captured spatially within the GIS. Polygons for plant process areas were created as part of this project for this purpose. The GIS data was published to the database to be used by Cityworks and will become the database of record for all work done within the County.

Jones Edmunds met with the various groups within CCU including Water Distribution, Wastewater Collection, Engineering, Reclaimed Water, Treatment Facilities, and Instrumentation and Control to learn about current workflow processes and work that is done on the CCU assets (scheduled and routine maintenance, emergency maintenance asset replacement, etc.). These meetings, combined with the 2018 departmental work process evaluation performed by LA Consulting, assist in configuring Cityworks to capture the work and needed information for the CMMS. Configuration includes the elements of:

- Domain and Groups were set up to determine how information can be shared across department boundaries.
- GIS configuration and Map Development specifically configured for CCU staff to use in the field.
- WOs, which will reflect activities performed.
- Service Requests, which will capture internal and external requests for information on the CCU assets.
- Inspections, which will hold custom questions and information routinely checked for assets in the system.
- Crews, which provide an efficient association of costs to each WO.
- Projects to streamline activity tracking.
- Inboxes, which will support the major workflow activity tracking for each department.
- Dashboards and Reporting, which will employ both out-of-the-box and custom reports for data analysis and data mining.
- Storeroom, the Cityworks warehousing add-on that tracks materials influx, use and stock on hand. Different Storerooms will be set up for the CCU Storerooms as well as each of the trucks and their rolling stock.

The effort also includes integration with two global and three utilities-specific software packages in use at the County. Eden integration has been completed and will allow for an

up-to-date employee record for assigning work in Cityworks. PublicStuff will soon be connected to Cityworks such that a complaint filed by a citizen or entered via a call center will result in a Service Request assignment within Cityworks for one of the CCU departments as applicable. An integration with Banner, the customer information system, will be designed to cut down on duplication of work entered between the two systems. An integration with SCADA will allow the creation of WOs based on alarms and equipment run times. Finally, the effort will integrate Cityworks with GraniteNET so that the County can more easily pass information between Cityworks and the CCTV pipe inspection system.

Full implementation was completed in FY 2023 and is currently live. CCU will spend time completing User Acceptance Testing. Following a testing period, the system can be tweaked with necessary adjustments to accommodate needs of CCU, then the remainder of Cityworks users will be trained on the updated system. Setup of the Cityworks add-on Performance Budgeting will follow go-live for users. This is the facet of Cityworks that will assist with planning and budgeting for future fiscal years, as well as the ability to compare planned effort versus actual effort across departments. The County collaborated with Jones Edmunds to refine the Cityworks program for better use by County staff, including completing several additional training sessions with Jones Edmunds staff.

9.3 Operation and Information Technology

CCU operates facilities 24 hours per day, 365 days per year, to provide safe drinking water for Charlotte County while collecting and treating wastewater so it can be distributed for beneficial re-use by reclaimed water customers. An integral part of daily operations involves monitoring and controlling facilities using the SCADA system, either on site or remotely; many smaller facilities such as lift stations are primarily operated remotely. Of equal importance is the Utility's ability to concurrently operate the numerous processes involved. Automation of these tasks, as for most cases in the CCU system, allows CCU to deliver their utility services at the lowest feasible cost to the customer. However, automated systems are more susceptible to network threats, so cybersecurity should be considered and evaluated as a forefront issue for every SCADA or network improvement.

The existing CCU utility systems include many acquired assets. Several facilities represent multiple projects involving different engineers, bid contractors, and SCADA system integrators. This has resulted in a SCADA system of mixed hardware, software, and architecture that includes diverse and separate operations. Supporting and maintaining information for sharing and use can become problematic even for the most basic operations. CCU completed the SCADA Master Plan (McKim & Creed, March 2020) to improve this situation with a goal of standardizing hardware and software platforms and improving the overall system operations.

The primary goal of the SCADA Master Plan was to define and document a road map for the implementation of the technology, practices, and organization required to meet CCU's short-term goals and long-term vision for SCADA. CCU's short-term SCADA goals include:

- Assess CCU's current SCADA infrastructure.
- Identify equipment and systems that are inefficient, aging, or obsolete.
- Evaluate the best, most cost-effective options for improvements for equipment, communications, and software.

- Recommend standards for equipment, communications, and software.
- Identify and cost projects to implement these goals.

CCU's long-term SCADA goals include:

- Bring all services onto a common SCADA platform to be shared throughout CCU.
- Provide a central location to monitor all CCU operations during non-business hours and during weather emergencies.
- Expand SCADA services to supplement future utility service expansions in the most efficient manner.
- Provide management with timely operational data to better monitor and optimize operations.
- Provide SCADA data to integrate with other County software packages, such as the CMMS.

These goals were used in the SCADA Master Plan to develop recommendations to incorporate into CCU's current and future planning, CIP, and O&M programs. Many improvements are inter-related. Specific recommendations from the SCADA Master Plan are included in Chapter 10 and are summarized as follows:

- Conduct a cybersecurity audit of the SCADA system to assess the vulnerability of the system and prepare for AWIA compliance.
- Establish and implement new CCU standards for software, equipment, and communications. These standards will help minimize the number of platforms in use by CCU, reducing the investment in spare parts and the training requirements as well as improving the knowledge and efficiency of the maintenance staff. This will also allow CCU to better manage and control future SCADA project implementations.
- Define and implement new policies and procedures for changes in management, contingency, and disaster recovery.
- Migrate from the two SCADA software platforms currently in use at CCU to a single SCADA platform provided by Trihedral's VTScada. CCU began converting to VTScada in FY 2021 and should continue to implement VTScada in accordance with the SCADA Master Plan.
- Upgrade the control systems equipment at CCU major facilities as outlined in the SCADA Master Plan. Some of this work can be accomplished as stand-alone projects and other work can be implemented as part of planned CIP projects.
- Work with the County IT Department to expand the County's fiber optic network to include all major CCU facilities, specifically the Rotonda WRF and Burnt Store facilities. Expansion to include smaller facilities (existing and future) should be included as it is deemed cost-effective. This effort is currently ongoing.
- Establish a Central Command Center at the East Port WRF. The Central Command Center would give CCU greater day-to-day operational flexibility and would provide monitoring and control of remote facilities during an extreme weather event.
- Integrate the new SCADA system with other CCU systems such as LIMS, CMMS, and GIS. This integration will decrease manual data entry and related errors, increase efficiency and automation of the process, and provide an infrastructure to apply analytics and artificial intelligence.

10 CONSOLIDATED RECOMMENDATIONS

10.1 PLANNING RECOMMENDATIONS

Table 10-1 through Table 10-7 summarize the Planning Recommendations from the FY 2024 Annual Report. The recommendations have been compiled from each chapter and summarized for each CCU workgroup.

10.1.1 ADMINISTRATIVE

Table 10-1 Administration Planning Recommendations

Recommendation:	Continue CCU's vision to ensure safe, reliable utility services at fair and reasonable rates.
Recommendation:	Complete update to CCU design standards.
Recommendation:	Evaluate utility connection and extension fee structures to align with higher construction costs and high growth in Charlotte County.
Recommendation:	Continue developing the Utilities' Information System functions to update/replace software and computer equipment to increase operating efficiencies and cost savings.
Recommendation:	Continue exploring regional solutions to water and wastewater service needs for the mutual benefit of Charlotte County and adjoining counties and cities.
Recommendation:	Develop a standard process for tracking planned and proposed developments to assist with documentation for master planning and CIPs.
Recommendation:	Implement recommendations from the RRA Report (March 2020).
Recommendation:	Continue to develop and host public education events to educate the community on the benefits water of reclaimed water.

10.1.2 WATER TREATMENT PLANTS

Table 10-2 Water Treatment Planning Recommendations

Recommendation:	Evaluate installation of monitors in operators' offices in operations building for improved security surveillance.
Recommendation:	Continue evaluating and planning for transition from sodium hypochlorite to chloramine.
Recommendation:	Continue to coordinate with the Authority to better determine available Authority future capacity and reserve additional capacity, as needed based on CCU's projected future flows.

[1] Recommendation from the RRA Report (March 2020).

10.1.3 WATER DISTRIBUTION SYSTEM

Table 10-3 Water Distribution Planning Recommendations

Recommendation:	Continue to update the water system hydraulic computer models and use them as planning tools for future water system improvements.
Recommendation:	Continue the AMI Water Meter Replacement Program.
Recommendation:	Continue to integrate acquired utilities into the overall CCU water system to maximize reliability and reduce costs to CCU customers.

Recommendation:	Continue to make improvements at the water storage tank/booster pumping station facilities to increase reliability and control of the pumps to improve water distribution to customers.
Recommendation:	Continue to develop and update water quality models for each distribution system for use in ongoing development reviews.
Recommendation:	Develop a systemwide hydrant flushing program.
Recommendation:	Develop a program to identify and track asbestos and lead pipe.
Recommendation:	Develop a systemwide valve exercise program.
Recommendation:	Develop a best management practice plan to standardize pump and motor sizing across CCU pumping facilities to better facilitate maintenance and replacement of equipment.
Recommendation:	Develop an equipment calibration program for purposes of tracking and calibrating water system analyzers, flow meters, and applicable devices.

10.1.4 Wastewater Collection System

See previous year's Annual Reports for recommendations to lift stations not inspected as part of the 2024 Annual Report.

Table 10-4 Wastewater Collection System Planning Recommendations

Recommendation:	Continue the scheduled repair of sanitary lift stations that have deteriorated due to age and hydrogen sulfide presence.
Recommendation:	Complete recommendations from CCU's CMOM program.
Recommendation:	Continue to evaluate system capacity and impacts of I/I using recommended tools from the CAAP Program Framework Development and Flow Monitoring Program.
Recommendation:	Continue to use the wastewater lift station and force main computer model to assess the need for upgrades to the system based on expected demand for services.
Recommendation:	Continue to televise and smoke test gravity sewers to locate source(s) of I/I. Repair gravity sewers and manholes as required to mitigate I/I and regain sewer and WRF capacity.
Recommendation:	Install odor-control systems at lift stations where hydrogen sulfide concentrations cause odors and deteriorate structures.
Recommendations:	Master Lift Station No. 65 – South Port ▪ Evaluate replacing the pumps for new head condition. ▪ Evaluate the generator control elevations to be within code.
Recommendations:	Master Lift Station No. 309 – Bridgewater ▪ Evaluate the significance of the corrosion to wetwell. ▪ Evaluate the significance of concrete wear and cracks around the odor-control unit. ▪ Evaluate alternative drainage options. ▪ Evaluating incorporating dedicated lift station lighting.
Recommendations:	Master Lift Station No. 816 – Rotonda Boulevard West ▪ Evaluate replacing the valve vault with above-ground equipment. ▪ Evaluate the adjacent lot for future lift station conversion.

Recommendation:	Master Lift Station No. 321 – Angol ▪ Evaluate the significance of the corrosion to wetwell.

Recommendations:	Lift Station No. 1 – Community Center
	▪ Evaluate replacing this station to meet current CCU standards. A replacement lift station should also provide the following to address current deficiencies:
	  ▪ CCU standard lift station design for a new wetwell and new discharge piping and appurtenances.
	  ▪ Electrical controls and panel features to meet CCU standards and electrical codes including an outdoor-rated panel, phase monitors, an SPD, and seal-offs.
	  ▪ SCADA integration.
	  ▪ Permanent security fencing to prevent unwanted access, and dedicated site lighting for accessibility and safety.
	  ▪ Potable water service.
	▪ Assuming the station will be completely replaced in the near future, the following improvements are recommended to the existing lift station in the interim:
	  ▪ Evaluate the significance of the corrosion to wetwell.

Recommendation:	Lift Station No. 2 – Dalton ▪ Evaluate the need for painting the discharge piping appurtenances.
Recommendations:	Lift Station No. 6 – Higgs ▪ Evaluate site lighting for lift station employee serviceability. ▪ Evaluate the need for painting the discharge piping appurtenances. ▪ Evaluate the significance of the cracks in concrete formwork at the top of the wetwell. ▪ Evaluate need for an odor control system.

Recommendations:	Lift Station No. 7 – Pure Oil
	▪ Evaluate replacing this station to meet current CCU standards. A replacement lift station should also provide the following to address current deficiencies:
	  ▪ CCU standard lift station design for a new wetwell and new discharge piping and appurtenances.
	  ▪ Electrical controls and panel features to meet CCU standards and electrical codes including an outdoor-rated panel, phase monitors, an SPD, and seal-offs.
	  ▪ SCADA integration.
	  ▪ Permanent security fencing to prevent unwanted access, and dedicated site lighting for accessibility and safety.
	  ▪ Potable water service.
	▪ Assuming the station will be completely replaced in the near future, the following improvements are recommended to the existing lift station in the interim:
	  ▪ Evaluate the possibilities for dedicated access to the station.
	  ▪ Evaluate the significance of corrosion on the Gorman-Rupp pump.

Recommendations:	Lift Station No. 9 – Church ▪ Evaluate possible options for converting the station to submersible; otherwise evaluate concrete repair and restoration for the site. ▪ Evaluate system curve conditions in high rain events to ensure efficient pump selection.
Recommendations:	Lift Station No. 24 – Charlotte Square ▪ Evaluate the wetwell for potential structural repair and restoration of wetwell lining. ▪ Evaluate the seal of the wetwell and/or raising the wetwell elevation to avoid I/I. ▪ Evaluate incorporating dedicated lift station lighting.
Recommendations:	Lift Station No. 25 – Vo-Tech ▪ Evaluate potential solutions to grade settlement to re-establish grade near the generator and between the discharge piping and generator to original condition. ▪ Evaluate the invert to the east.
Recommendations:	Lift Station No. 44 – Liberty Elementary ▪ Evaluate and perform full replacement of the wetwell, valve vault, and associated appurtenances to meet CCU standards. ▪ Evaluate the addition of an odor-control system. ▪ Evaluate incorporating dedicated access for Operations staff. ▪ Evaluate incorporating dedicated lift station lighting.
Recommendations:	Lift Station No. 45 – Woodbury ▪ Evaluate and complete rehabilitation of the invert and/or manhole to immediate east to restore normal operating conditions. ▪ Evaluate incorporating dedicated lift station lighting.
Recommendations:	Lift Station No. 812 – Annapolis ▪ Evaluate incorporating a dedicated access for Operations staff. ▪ Evaluate incorporating a water service connection near the station. ▪ Evaluate the addition of a SCADA system. ▪ Evaluate the significance of the wetwell corrosion. ▪ Evaluate incorporating dedicated lift station lighting.
Recommendation:	Lift Station No. 818 – Harbor West ▪ Evaluate the need for painting discharge piping appurtenances.
Recommendations:	Lift Station No. 821 – Rebel Court ▪ Evaluate the significance of the degradation of the wetwell and relining of the wetwell. ▪ Evaluate the significance of the corrosion on the valves in the valve vault. ▪ Evaluate the integrity of the wetwell hatch. ▪ Evaluate incorporating dedicated lift station lighting.
Recommendations:	Vacuum Station No. 1 – Skylark ▪ Evaluate full rehabilitation of the mulch bed odor-control to mitigate deficiencies. ▪ Evaluate trench drainage implementation like Harbor VS-2.

Recommendations:	Vacuum Station No. 2 – Harbor ▪ Evaluate long-term solutions to pump skid rusting. ▪ Evaluate lighting improvements for operators like those at Ackerman VS-4. ▪ Relabel the suction and discharge bypass piping to be consistent with other vacuum stations. ▪ Evaluate security improvements for better monitoring (i.e., cameras, etc.).
Recommendations:	Vacuum Station No. 3 – El Jobean ▪ Verify the vacuum station site is in accordance with OSHA and County safety and confined-space requirements. ▪ Evaluate fall protection needs while removing pumps for maintenance and repair.

10.1.5 WASTEWATER TREATMENT FACILITIES

Table 10-5 WRF Planning Recommendations

Recommendation:	Develop and submit to FDEP a plan of action to remove the excessive sand and grit accumulation from the EQ tank, aeration basins, and clarifiers per Compliance Inspection Report dated July 15, 2024.
Recommendation:	Evaluate the need for technical support from the software company or from the County's IT group with hours set aside to work exclusively on data transfer and report set-up and implementation to expand and optimize the LIMS capabilities.
Recommendation:	Evaluate cost-effective disposal alternatives for dewatered biosolids other than transporting to Synagro and the landfill as part of the plant upgrade.
Recommendation:	Replace septage receiving pre-treatment units when repair is no longer cost effective and modify to allow septage treatment in aerated sludge-holding tank and/or pump to the headworks.
Recommendation:	Complete financing and project preparations for bidding and construction of the Burnt Store WRF expansion project.
Recommendation:	Complete evaluation for expansion of West Port WRF and determining future use of Rotonda WRF, based on future flows. See previous Annual Reports for CIP recommendations related to West Port WRF.
Recommendation:	Evaluate different aeration systems for the reclaimed water storage pond at the Rotonda WRF.
Recommendation:	Evaluate additional denitrification capacity for Rotonda WRF as part of the plant expansion.
Recommendation:	Evaluate adding another EQ tank to respond to additional surges at Rotonda WRF as part of the plant expansion.
Recommendation:	Evaluate additional reclaimed water storage at the Rotonda WRF.
Recommendation:	Create O&M Manuals for each plant based on EPA criteria.
Recommendation:	Evaluate the existing Burnt Store WRF generator performance to determine limitations that may occur prior to construction of plant expansion, which will include a new generator.

Recommendation:	Evaluate the head condition of West Port WRF existing reclaimed water HSPs to improve distribution of reclaimed water to the MRS.
Recommendation:	Complete a life cycle cost-benefit analysis for rehabilitation of the existing headworks versus building the new 12-MGD headworks.

10.1.6 Reclaimed Water Distribution System

Table 10-6 Reclaimed Water System Planning Recommendations

Recommendation:	Maintain updated hydraulic models for the MRS and Burnt Store system to predict the impact of future demand on the reclaimed water transmission systems.
Recommendation:	Develop and complete a community survey to better determine potential reclaimed water customers. Results of the study can be used to determine economic feasibility of water delivery.
Recommendation:	Evaluate adding piping connections (including controls, pumps, valves, meters, etc.) to increase the number of small users in Mid County.
Recommendation:	Seek ways to increase the use of reclaimed water currently produced by CCU WRFs including improving reliability and access for customers.
Recommendation:	Create a reclaimed water system O&M Manual and operating protocols.
Recommendation:	Continue to develop and host public education events to educate the community on the benefits water of reclaimed water.

10.1.7 Utility Support Services

Table 10-7 Utility Support Services – Planning Recommendations

Recommendation:	Evaluate staffing, sample courier service, testing procedures, and equipment as it relates to future monitoring requirements. AWT expansions of East Port WRF and Burnt Store WRF will require additional testing.
Recommendation:	Develop Change Management/Version Control Standards.[1]
Recommendation:	Develop a Contingency and Disaster Recovery Plan.[1]
Recommendation:	Develop a Transition Plan for Lift Station Sites.[1]
Recommendation:	Hire new I&C staff.[1]
Recommendation:	Use Cityworks implementation to develop Utility AMP to track water, wastewater, and reclaimed distribution systems and facilities.
Recommendation:	Continue to convert as-builts and incorporate complete projects into the existing GIS system. When possible, require contractors to provide as-built shapefiles as part of major construction project close-out.
Recommendation:	Fully complete transition to VTScada at applicable facilities.[1]

[1] Recommendations from SCADA Master Plan (McKim & Creed, March 2020).

10.2 Capital Improvements

Table 10-8 through Table 10-21 summarize the CIPs that were identified and recommended during the FY 2023 condition assessments. Capital improvement recommendations refer to items that are expected to exceed $100,000 to accomplish. The recommendations have been compiled from each chapter and are summarized for each CCU Workgroup.

10.2.1 Administrative Buildings

Table 10-8 East Port Environmental Campus – CIP Recommendations

Recommendation:	Continue to evaluate rehabilitation of the Administration Building and other local facilities damaged by Hurricane Ian.

10.2.2 Water Treatment Plants

Table 10-9 Burnt Store RO WTP – CIP Recommendations

Recommendation:	Install additional permitted groundwater wells as needed to meet future demands.

10.2.3 Water Distribution System

Table 10-10 Port Charlotte PWS – CIP Recommendations

Recommendations:	WBS General ▪ Complete construction of the new O'Hara WBS and place the new WBS into service. This improvement was identified in the Water Master Plan as a water quality improvement which would significantly reduce flushing. ▪ Begin designing the new Robin WBS and place the new WBS into service. This improvement was identified in the Water Master Plan as a water quality improvement which would significantly reduce flushing. ▪ Design and construct a new 24- to 30-inch-diameter water main from Gulf Cove WBS to Rotonda WBS as an extension from the Authority's Phase 2B 42-inch transmission main as a dedicated feed line for Rotonda's 5-MGD GST. ▪ Design and construct 1,100 ft of 16-inch water transmission main along SR 776 that feeds the 24-inch dedicated transmission line to Rotonda GST (between Gillot Road and Conway Road). ▪ Evaluate replacing analog pressure gauges with pressure transducers integrated into SCADA.
Recommendations:	Walenda WBS ▪ Complete the generator replacement project at the WBS, including a new generator and fuel tank designed above the flood plain. ▪ Continue to monitor performance of the electrical systems to ensure proper functionality and replace insufficient components as needed. Electrical equipment is being evaluated as part of the WBS Upgrades project.

Recommendations:	Gulf Cove WBS ▪ Complete the design and construction of new GST(s) and demolition of the existing 2-MG GST that has reached the end of serviceable life. Synchronize construction timing and hydraulic conditions with the Authority RTS 42-inch Phase 2B pipeline to Gulf Cove WBS. ▪ Complete the generator replacement project at the WBS, which includes a new generator and fuel tank designed above the flood plain. ▪ Continue to monitor performance of the electrical systems to ensure proper functionality and replace insufficient components as needed. Electrical equipment is being evaluated as part of the WBS Upgrades project.
Recommendations:	Rotonda WBS ▪ Replace approximately 1,100 feet of 12-inch piping that restricts flow/capacity of the 24-inch line (from Gillot Road to just north of Conway Road) feeding the Rotonda water booster tank. ▪ Continue to monitor electrical systems performance to ensure proper functionality and replace insufficient components as needed. Electrical equipment is being evaluated as part of the WBS Upgrades project.

[1] Recommendation from RRA Report (March 2020).

Table 10-11 Burnt Store PWS – CIP Recommendations

Recommendation:	Continue replacing old "class" PVC pipe in the distribution system with new C-900 PVC pipe.
Recommendation:	Continue developing a computerized hydraulic model for the Burnt Store PWS.
Recommendation:	Investigate the feasibility of installing interconnects with neighboring utilities.[1]

[1] Recommendation from RRA Report (March 2020).

10.2.4 Wastewater Collection Systems

Table 10-12 Sewer and Lift Station Systems – CIP Recommendations

Recommendation:	Several lift stations are nearing the ends of their useful life and have antiquated designs; CCU is planning for replacement or rehabilitation to replace the equipment and bring the stations up to CCU LS design standards. From the lift stations included in this year's report, the following are being evaluated on a case-by-case basis for replacement/rehabilitation: ▪ LS-1 Community Center ▪ LS-7 Pure Oil ▪ LS-303 Constantine ▪ LS-305 Bremen ▪ LS-323 Aysen ▪ MLS-816 Boulevard West These projects would require funding as a capital improvement plan or through the removal and replacement (R&R) funding pool.

Table 10-13 Vacuum System – CIP Recommendations

Recommendation:	Evaluate staffing requirements and ability to provide additional sampling support to Operations staff.
Recommendation:	Complete repair and rehabilitation of assets damaged by Hurricane Ian, maximizing use of available FEMA funds.
Recommendation:	Evaluate hiring IT support that can work exclusively on the set-up and implementation of the LIMS or purchase a service package from the vendor to do the set-up of laboratory-specific forms and reports with remote installation.

10.2.5 Wastewater Treatment Facilities

Table 10-14 East Port WRF – CIP Recommendations

Recommendation:	Evaluate the replacement of the older 1,250-kW emergency generator.

Table 10-15 West Port WRF – CIP Recommendations

Recommendation:	Install a UV cover over the CCCs.

Table 10-16 Rotonda WRF – CIP Recommendations

Recommendation:	Add the Rotonda WRF as a reclaimed water user, and add an irrigation system to help maintain grass.

Table 10-17 Burnt Store WRF – CIP Recommendations

Recommendation:	Remove the excessive sand and grit accumulation from the EQ tank, aeration basins, and clarifiers per the Compliance Inspection Report dated July 15,2024 (first submit a plan to FDEP according to the planning recommendations herein).
Recommendation:	Replace blowers No. 2 and No. 3.
Recommendation:	Replace EQ pump and motor No. 2.
Recommendation:	Replace blower and motor No. 4.
Recommendation:	Install new headworks equipment, such as fine screening and grit removal, as a long-term plan to address excessive grit buildup in the EQ tank, aeration basins, and clarifiers.

Table 10-18 Leachate Treatment Facility – CIP Recommendations

Recommendation:	Remove and replace the inside liner of the all treatment unit tanks.
Recommendation:	Replace the polymer feed systems and blower air intakes for the parallel treatment unit tanks.

10.2.6 Reclaimed Water Distribution System

Table 10-19 Reclaimed Water Distribution System – CIP Recommendations

Recommendation:	CIP recommendations to improve capacities of treatment, storage, and pumping in the MRS and Burnt Store systems are included in the Reclaimed Water Master Plan.

10.2.7 Utility Support Services

Table 10-20 EPLAB – CIP Recommendations

Recommendation:	Open a new position and hire an additional Laboratory Technician in FY 2024 to increase their reliability and capabilities for the upcoming added testing and permit reporting that will be required as the County's WRFs are upgraded to AWT facilities. The position will need to be added and filled in FY 2024 or FY 2025 due to the required duration of the training in the laboratory.

Table 10-21 Operation and Information Technology – CIP Recommendations

Recommendation:	Add the Headworks PLC at Rotonda WRF to SCADA.
Recommendation:	Add the PLCs at East Port WRF to SCADA.
Recommendation:	Build the Central Control Center at East Port WRF.
Recommendation:	Complete the Cybersecurity Audit.
Recommendation:	Fully transition to VTScada software at all plant facilities.
Recommendation:	Convert to VTScada software (remote sites).
Recommendation:	Develop Lift Station/Reclaimed Water Booster Station Design Standards.
Recommendation:	Develop SCADA Specifications and Standards.
Recommendation:	Improve the septage billing at East Port WRF.
Recommendation:	Replace the PLCs at Gulf Cove WBS, Walenda WBS, Englewood WBS, Golf Course WBS, Myakka WBS, Ingraham Disinfection Station, and Rotonda WRF.
Recommendation:	Install fiber at Gulf Cove WBS, Walenda WBS, Englewood WBS, Golf Course WBS, Ingraham Disinfection Station, El Jobean Vacuum Station, Harbor Vacuum Station, Skylark Vacuum Station, Rotonda RWBS, West Port RWBS, Walenda RWBS, Eagle Street RWBS, Rotonda WRF.
Recommendation:	Replace the reclaimed water delivery site control panels.

Note: All recommendations from SCADA Master Plan (McKim & Creed, March 2020).

10.3 Operation and Maintenance

Table 10-22 through Table 10-32 summarize the O&M items that were identified and recommended during the FY 2023 condition assessments. O&M recommendations refer to items that can be completed by CCU staff or within the Operations budget (i.e., tasks that are expected to be less than $100,000). The recommendations have been compiled from each chapter and summarized for each CCU Workgroup.

10.3.1 Water Treatment Plants

Table 10-22 Burnt Store RO WTP – O&M Recommendations

Recommendation:	Continue to perform yard maintenance around the perimeter fencing.[1]
Recommendation:	Continue to inspect and tighten the connections for the scale inhibitor, sodium hydroxide, sodium hypochlorite, and sulfuric acid pipes daily to prevent leakage.
Recommendation:	Continue to maintain and repair the membranes to extend life to the extent feasible (also replace end caps and leaks).
Recommendation:	Continue to spray wash the concentrate disposal wetwell as needed.
Recommendation:	Continue maintenance of controlled burns on the property to maintain shrub growth and fire buffer around wells.[1]
Recommendation:	Install bollards around the influent transformer box.[1]
Recommendation:	Install fire hose connections on the well piping.[1]
Recommendation:	Replace the chemical feed pumps, as they are nearing the end of their service life.
Recommendation:	Develop an ERP for valve failure in the clearwell and begin exercising the valve.[1]
Recommendation:	Replace gate valve and piping gaskets at Well No. 7. Reorganize the local electrical wiring of the well.
Recommendation:	Replace or repair the butterfly valve on Well No. 12.
Recommendation:	Install new exhaust fans for the RO and HSP building.

[1] Recommendation from RRA Report (March 2020).

10.3.2 Water Distribution System

Table 10-23 Port Charlotte PWS – O&M Recommendations

Recommendations:	Interconnects ▪ Lower the lighting fixtures under the canopy to illuminate the pumps and equipment at the EWD interconnect. ▪ Add an intrusion alarm to the CCU RTU panels.[1] ▪ Install bollards around the equipment.[1]
Recommendations:	Port Charlotte Golf Course WBS ▪ Continue to perform yard maintenance around the perimeter fencing.[1] ▪ Label the switchgear to identify parts and components that could be energized. ▪ Replace the cage around the GST ladder to comply with OSHA requirements. ▪ Replace the torn hazard warning label on the diesel fuel tank. ▪ Replace the screens on the flow meters and install UV protection. ▪ Install double walled pipe on dosing line from operations.

Recommendations:	Walenda WBS ▪ Continue to perform yard maintenance around the perimeter fencing.[1] ▪ Trim tree limbs on the northwest corner of the pump room.[1] ▪ Install bollards around the WBS effluent pipe.[1] ▪ Clearly label chemical storage tanks and fill valves.[1] ▪ Resurface and recoat the exterior of the GST. ▪ Add additional signage indicating "No Trespassing, Violators will be Prosecuted" along the fencing.[1] ▪ Continue to monitor performance of the electrical systems to ensure proper functionality and replace insufficient components as needed. Electrical equipment is being evaluated as part of the WBS Upgrades project. ▪ Replace the sodium hypochlorite bulk storage chemical storage awning cover support brackets. ▪ Repair leak on Pump No. 3. ▪ Drain discharge pipe vault for HSPs.
Recommendations:	Gulf Cove WBS ▪ Pump out the water in the vault containing the HSP feed piping. ▪ Secure the electrical conduit for the newly installed cameras. ▪ Place HSP No. 1 back into service. ▪ Add secondary containment to the chemical feed room. ▪ Replace the exhaust fan in the ammonia chemical feed room. ▪ Continue to monitor water quality entering the Gulf Cove WBS.[1] ▪ Properly secure the pressure transducer at the back of the GST. ▪ Replace the corroded copper sodium hypochlorite chemical injection quill with a Schedule 80 material. ▪ Continue to monitor performance of the electrical systems to ensure proper functionality and replace insufficient components as needed. Electrical equipment is being evaluated as part of the WBS Upgrades project. ▪ Repair shingle loss on roof of pump building. ▪ Monitor and evaluate rust accumulation on awning cover of bulk sodium hypochlorite storage. ▪ Repair the leaking check valve on the GST bypass to booster pumps.

Recommendations:	Rotonda WBS ▪ Continue to monitor the performance of the electrical systems to for proper functionality, and replace components as needed. Electrical equipment is being evaluated in the WBS Upgrades. ▪ Paint the wall that contains the HMI in the pump room. ▪ Replace damaged pressure gauges. ▪ Relocate the ATS indoors. ▪ Repair the roof and awnings on the pump building. ▪ Replace the incoming breaker as soon as possible. The failure of this specific device may render the station out of service for an extended period. ▪ Further recommend that the gaps surrounding the VFDs be mitigated to prevent potential contact with live parts. ▪ Install bollards around the monitoring equipment.[1] ▪ Clearly label chemical storage tanks and fill valves.[1] ▪ Develop an ERP for WBS bypass and operations without laboratory and control room.[1] ▪ Develop a standard schedule for tank filling operations. ▪ Repaint and add chemical protectant to the sodium hypochlorite pump room. ▪ Replace the generator plug receptacle to meet County standards. ▪ Install cover plate to outdoor waterproof receptacle. ▪ Repair the check valve position indicators. ▪ Add ArcFlash labels on all 480 V equipment.
Recommendations:	Ingraham Disinfection Station ▪ Clearly label chemical storage tanks. ▪ Fix the level indicators for the sodium hypochlorite storage tanks.

[1] Recommendation from RRA Report (March 2020).

10.3.3 Wastewater Collection Systems

See previous year's Annual Reports for recommendations to lift stations not inspected as part of the 2024 Annual Report.

Table 10-24 Wastewater Collection System – O&M Recommendations

Recommendations:	Master Lift Station No. 65 – South Port ▪ Repair pressure meter. ▪ Complete the rebuilding of pump 1 and cleanout suction pipe. ▪ Re-install the ARV. ▪ Re-line the wetwell ▪ Replace the 200A circuit breaker for pump 1 with 250A. ▪ Install a fence around the site. ▪ Address corrosion on discharge pipe and apply new protective coating system.
Recommendations:	Master Lift Station No. 139 - Altoona ▪ Service and reinstall the out of service pump and re-mount the other existing pump. ▪ Replace the generator's main breaker with a larger, adequately sized breaker. ▪ Install an underground water service line to lift station.

Recommendations:	Master Lift Station No. 309 – Bridgewater (Electrical Only) ▪ Lower mount of standby generator. ▪ Add ArcFlash label for all 480 V equipment.
Recommendations:	Master Lift Station No. 816 – Rotonda Boulevard West ▪ Re-line the wetwell and rehabilitate top concrete slab. ▪ Install seal-offs on any electrical equipment to conform with code. ▪ Install dedicated suction or discharge bypass. ▪ Replace padlocks on wetwell hatches.
Recommendations:	Lift Station No. 1 – Community Center ▪ Assuming the station will be completely replaced in the near future, the following improvements are recommended to the existing lift station in the interim: ▪ Anchor the access hatch hinge back to the wall. ▪ Paint the above ground pump and discharge piping. ▪ Seal cracks in building and gaps in pipe penetrations. ▪ Restore and seal the conduit connection to the electric meter.
Recommendations:	Lift Station No. 2 – Dalton ▪ Permanently repair the front gate. ▪ Apply corrosion paint protection to discharge piping.
Recommendations:	Lift Station No. 6 – Higgs ▪ Reestablish level grade along fence line. ▪ Address the corrosion on the discharge piping and apply a new protective coating system as needed. ▪ Re-establish the float operations in accordance with the intended lift station design. ▪ Remove yard waste, debris, and traffic control devices located immediately outside the security fence. ▪ Re-establish driveway loading support for CCU vehicle ingress/ egress and crane operations. ▪ Install a new SPD to protect the main disconnect switch. ▪ Replace the check valve seals during the next check valve maintenance.
Recommendations:	Lift Station No. 7 – Pure Oil ▪ Install new and/or up to date SPDs to protect the pumps and SCADA system. ▪ Install proper indoor lighting. ▪ Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with codes. ▪ Rehabilitate the float terminal blocks to meet NEC code. ▪ Address the corrosion on the Gorman Rupp pump and apply a new protective coating system as needed.

Recommendations:	Lift Station No. 9 – Church ▪ Install new and/or up-to-date SPDs to protect the pumps and SCADA system. ▪ Address the corrosion on the portable generator receptacle and apply a new protective coating system as needed. ▪ Provide provisions to access the bypass valve while maintaining site security.
Recommendations:	Lift Station No. 24 – Charlotte Square ▪ Construct a separate isolated valve vault for operator safety, including standard dedicated discharge. ▪ Restore valve vault hatch to normal operating conditions. ▪ Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes. ▪ Install a separate isolated valve vault for operator safety, including a standard dedicated discharge.
Recommendations:	Lift Station No. 25 – Vo-Tech ▪ Re-line the wetwell. ▪ Replace the removed ARVs on the discharge piping. ▪ Replace the check valves with those specified in CCU standards. ▪ Install new and/or up-to-date SPDs to protect the pumps and SCADA system
Recommendations:	Lift Station No. 44 – Liberty Elementary ▪ Restore corroded fence materials and repair fence damage. Re-establish the grade between the fence and gravel. ▪ Re-establish the pump to its original seating to prevent blowback. ▪ Replace seal offs to the control panel due to heavy corrosion and immense sulfide odor.
Recommendations:	Lift Station No. 45 – Woodbury ▪ Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with codes. ▪ Install an odor-control system. ▪ Replace corroded fence materials. ▪ Address the corrosion on the piping, check and plug valves in the vault and apply a new protective coating system as needed. ▪ Repair fence and barbed wire damage. ▪ Rehabilitate or replace check valve. ▪ Install new and/or up to date SPDs to protect the pumps and SCADA system. ▪ Repair or replace the damaged concrete electrical support.

Recommendations:	Lift Station No. 303 – Constantine ▪ Install an interlock on the electrical equipment and perform a detailed electrical code review to return to conformance with code. ▪ Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes. ▪ Prepare for construction of the improved design to allow safe access, inclusion of appropriate valves, and inclusion of bypass piping. ▪ Perform thorough rehabilitation on the wetwell and prepare for construction of the improved design to allow safe access.
Recommendations:	Lift Station No. 305 – Bremen ▪ Install an interlock on the electrical equipment and perform a detailed electrical code review to return to conformance with code. ▪ Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes. ▪ Prepare for construction of the improved design to allow safe access, inclusion of appropriate valves, and inclusion of bypass piping. ▪ Perform thorough rehabilitation on the wetwell and prepare for construction of the improved design to allow safe access.
Recommendations:	Lift Station No. 323 – Aysen ▪ Coat the wetwell and valve vault and repair the valve vault appurtenances. ▪ Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes. ▪ Proceed with lift station conversion. ▪ Remove nearby vegetation around the control panel.
Recommendations:	Lift Station No. 813 – Marina ▪ Secure the mechanical interlock behind the dead front between the generator and the main breaker. ▪ Complete surface preparation to remove rust and excess paint, and apply standard green paint to discharge piping and plug valve to represent sewer utility. ▪ Repair wetwell gaps to eliminate access gaps and excess I/I to the lift station. Incorporate drainage provisions as necessary to appropriately capture and divert surface water runoff to avoid and prevent flooding.
Recommendation:	Lift Station No. 818 – Harbor West ▪ Address the corrosion on the discharge piping and appurtenances, and apply a new protective coating system as needed.

Recommendations:	Lift Station No. 821 – Rebel Court ▪ Install seal-offs on any electrical equipment within 10 feet of the wetwell to conform with current codes. ▪ Rehabilitate or replace the camlock connection and wetwell hatch. ▪ Re-establish the grade around the wetwell lid. ▪ Install new and/or up-to-date SPDs to protect the pumps and SCADA system. ▪ Build dedicated lift station lighting
Recommendations:	Vacuum Station No. 1 – Skylark ▪ Modify the overhead crane for lateral movement. ▪ Add a catwalk for accessing the top of the tank for maintenance. ▪ Rehabilitate or replace the leaky check valve. ▪ Replace the plastic covers for the pump motor components. ▪ Rehabilitate the liner for the mulch bed. ▪ Install a discharge flow meter.
Recommendations:	Vacuum Station No. 2 – Harbor ▪ Modify the overhead crane for lateral movement. ▪ Add a catwalk for accessing the top of the tank for maintenance. ▪ Replace corroded seals on moisture separators. ▪ Rehabilitate the liner for the mulch bed.
Recommendations:	Vacuum Station No. 3 – El Jobean ▪ Install a catwalk or dedicated ladder for accessing the top of the tank for maintenance. ▪ Install a portable hoist or dedicated overhead crane for easier access to the vacuum pumps. ▪ Rehabilitate or repair the platform holding up the vacuum pumps.

10.3.4 Wastewater Treatment Facilities

Table 10-25 East Port WRF – O&M Recommendations

Recommendation:	Convey Digester Decant, In-Plant Pump Station No. 1, and No. 2 Plant Recycle flows into the EQ Tank once expansion is complete.
Recommendation:	Repaint all faded or chipped paint on aboveground piping and pumps throughout the plant within the next 2 to 3 years.
Recommendation:	Repair damaged conduits, connectors, and conduit supports throughout plant, as identified in Section 6.2.
Recommendation:	Replace hose bibbs connections at the headworks.
Recommendation:	Include more bird deterrents near the clarifiers.
Recommendation:	Replace the gate at the clearwell.
Recommendation:	Clean out diffusers as they become clogged.
Recommendation:	Replace base of pump heads at the HSPS No. 1 and Pond Transfer Pumps.
Recommendation:	Replace the irrigation pumping station electrical switchgear.

Table 10-26 West Port WRF – O&M Recommendations

Recommendation:	Inspect the reclaimed water HSP pumps to evaluate condition of shafts and other components.
Recommendation:	Replace the broken decant winch at the sludge holding tanks.
Recommendation:	Complete maintenance, cleaning, and recoating of CCC No 1.

Table 10-27 Rotonda WRF – O&M Recommendations

Recommendation:	Add UV protection to the CCCs.
Recommendation:	Add UV protection to the sides of the chlorine storage tanks to protect from direct sun light.
Recommendation:	Continue to paint tanks, buildings, and pipes in the next 2 years.
Recommendation:	Adjust the membrane slack as needed. These membranes are at the end of their life cycle and this maintenance is critical for their longevity.
Recommendation:	Continue monitoring and trending membrane permeability data and add temperature to the data collected weekly so permeability can be corrected with temperature to account for seasonal changes in water viscosity.
Recommendation:	Constantly monitor membrane permeability trend, especially for Trains No. 3 and No. 4, for which end of life is estimated to be FY 2024 and FY 2026, respectively, since this trend can either accelerate or decelerate.
Recommendation:	Complete electrical load study and arc-flash labeling.
Recommendation:	Purchase a few module blanks for top and bottom headers and wait to observe membrane effluent turbidity spikes, which would indicate that one of the cracked potting headers has breached the membrane integrity. Remove the compromised membrane module and install module blanks in its place until new purchased membrane module is received. Once the new membrane module is received, install the new membrane in the middle of the cassette and move an existing module where the compromised module was. This could prolong the new membrane module potting header life.
Recommendation:	A year before scheduled replacement, order membrane modules. Install new membrane modules in Train No. 1. Do not install new membrane modules with existing membrane modules in the same train. Move the existing membrane modules from Train No. 1 to Train No. 4. Train No. 4 will then have six membrane cassettes, which will extend the life of the membranes.

Table 10-28 Burnt Store WRF – O&M Recommendations

Recommendation:	Replace influent composite sampler.
Recommendation:	Perform maintenance and equipment replacement as necessary until the WRF expansion can be completed.
Recommendation:	Evaluate the cause of VFD issues for EQ tank Pump No. 2.
Recommendation:	Repair or replace the rusted flange supporting the light poles on the treatment tank.
Recommendation:	Replace the sluice gate for North train of the CCC.

Recommendation:	Repair or replace the rusted electrical panel for the plant lift station and both influent and effluent sample panels.
Recommendation:	Remove old chemical storage shed next to new chemical storage.
Recommendation:	Repair or replace solenoid for scum trough or West clarifier to work in automatic mode not only hand.
Recommendation:	Repair or replace the cracked pipe on the East side of the EQ splitter box.
Recommendation:	Repair or replace the gearboxes in Clarifiers No. 1 and No. 2.
Recommendation:	Replace corroded/rusted items and repair valve vault for the plant lift station near the CCC.
Recommendation:	Replace the effluent sample port.
Recommendation:	Repair or replace corroded brackets for chemical and RAS/WAS storage awning.
Recommendation:	Replace the MW1 and MW2 sample pumps.
Recommendation:	Remove the excessive sand and grit accumulation from the EQ tank, aeration basins, and clarifiers per the Compliance Inspection Report dated July 15, 2024 (first submit a plan to FDEP per planning recommendations herein).
Recommendation:	Replace all filter frames and cloths.
Recommendation:	Replace the in-plant lift station valve vault with standard materials (currently fiberglass).

Table 10-29 Leachate Treatment Facility – O&M Recommendations

Recommendation:	Add a generator to the LTF to keep the plant operational during power outages.
Recommendation:	Evaluate ways to address the effluent tank transfer pumps having high heat output and being open to exposure, prioritizing safety. Potential solutions include installation of safety features, installation of cooling jackets, or replacement of pumps with non-submersible type pumps.
Recommendation:	Replace air compressor for hydropneumatic tank.
Recommendation:	Replace the decant mounting system bracket for the PAC tanks.
Recommendation:	Sand-blast the inside of all PAC tanks to remove the inside liner. Recoat the inside liner of the tanks to prevent further leaks and rusting near the outside bottom of the tank. Recoating the tank can add operational years to the tank before they need to be replaced.

10.3.5 Reclaimed Water Distribution System

Table 10-30 Reclaimed Water Distribution System – O&M Recommendations

Recommendation:	RWBS General Develop an operational protocol for the MRS. CCU staff should operate the reclaimed water system under a select number of operational configurations and determine their preferred method for meeting the reclaimed water demands using the hydraulic model.

Recommendation:	Install throttling control valves at all current and future major reclaimed water users with pond discharges.
Recommendation:	Complete repairs for facilities and assets that experienced hurricane-related damage.
Recommendation:	Replace all UV-impacted transducer screens and install proper UV protection.
Recommendation:	Properly recoat all above-ground piping.
Recommendations:	Eagle Street RWBS ▪ Replace the anchor system for the chlorine storage tank. ▪ Replace damaged pressure gauges.
Recommendations:	Walenda RWBS ▪ Restore GST operations (it is reported GST has not been used). ▪ Properly secure the bypass actuator. ▪ Replace or fix the GST level gauge.
Recommendations:	Rotonda Boulevard RWBS ▪ Replace flexible conduits as needed. ▪ Recalibrate the equipment. ▪ Replace damaged pressure gauges and install UV protection.

10.3.6 Utility Support Services

Table 10-31 EPLAB – O&M Recommendations

Recommendation:	Continue implementation of LIMS.
Recommendation:	Continue working with sampling personnel on sampling protocols; in particular, sample labeling in the field, correct completion of chain-of-custody information, and sample submittal.

Table 10-32 Operation and Information Technology – O&M Recommendations

Recommendation:	Revise Fiber Optic Network for Physical Redundancy at East Port WRF.
Recommendation:	Integrate SCADA into LIMS.

Note: All recommendations from SCADA Master Plan (McKim & Creed, March 2020).