

Mayor

Joe Coviello

Council Members

District 1: John Gunter

District 2: John M. Carioscia Sr.

District 3: Marilyn Stout

District 4: Jennifer I. Nelson

District 5: Dave Stokes

District 6: Richard Williams

District 7: Jessica Cosden



1015 Cultural Park Blvd.
Cape Coral, FL

City Manager

John Szerlag

City Attorney

Dolores Menendez

City Auditor

Andrea R. Butola

City Clerk

Rebecca van Deutekom

AGENDA
COMMITTEE OF THE WHOLE

January 29, 2018

4:30 PM

Council Chambers

PLEDGE OF CIVILITY

We will be respectful of each other even when we disagree.
We will direct all comments to the issues. We will avoid personal attacks.

VIDEO

1. MEETING CALLED TO ORDER

A. MAYOR COVIELLO

2. PLEDGE OF ALLEGIANCE

3. ROLL CALL

A. MAYOR COVIELLO, COUNCIL MEMBERS CARIOSCIA, COSDEN, GUNTER, NELSON, STOKES, STOUT, WILLIAMS

4. BUSINESS:

A. CITIZENS INPUT TIME

A maximum of 60 minutes is set for input of citizens on matters concerning the City Government; 3 minutes per individual.

B. DISCUSSION

(1) Utilities Department Annual Report Presentation (4:30 p.m. to 4:40 p.m.)

(2) Development Options for 175-Acre Site Formerly Known as the Old Golf Course Property

5. ROUND TABLE DISCUSSION

6. TIME AND PLACE OF FUTURE MEETINGS

- A. A Regular Meeting of the Cape Coral City Council is Scheduled for Monday, February 5, 2018 at 4:30 p.m. in Council Chambers

7. MOTION TO ADJOURN

GENERAL RULES AND PROCEDURES REGARDING THE CAPE CORAL CITY COUNCIL AGENDA

In accordance with the Americans with Disabilities Act and Section of 286.26, Florida Statutes, persons with disabilities needing special accommodation to participate in this meeting should contact the Office of the City Clerk at least forty-eight (48) hours prior to the meeting. If hearing impaired, telephone the Florida Relay Service Numbers, 1-800-955-8771 (TDD) or 1-800-955-8770 (v) for assistance.

Persons wishing to address Council under Citizens Input or the Consent Agenda may do so during the designated times at each meeting. No prior scheduling is necessary.

All speakers must have their presentations approved by the City Clerk's office no later than 3:00 PM the day of the meeting.

Any citizen may appear before the City Council at the scheduled PUBLIC HEARING/INPUT to comment on the specific agenda item being considered. No prior scheduling is necessary.

When recognized by the presiding officer, a speaker shall address the City Council from the designated speaker's lectern, and shall state his or her name and whom, if anyone, he or she represents. An address shall only be required if necessary to comply with a federal, state or local law.

Copies of the agenda are available in the main lobby of Cape Coral City Hall and in the City Council Office, 1015 Cultural Park Boulevard. Copies of all back-up documentation are also available for review in the lobby of Council Chambers. You are asked to refrain from removing any documentation. If you desire copies, please request they be made for you. Copies are 15 cents per page. Agendas and back-up documentation are also available on-line on the City website (capecoral.net) after 4:00 PM on the Thursday prior to the Council Meeting.

***PUBLIC HEARINGS DEPARTMENT OF COMMUNITY DEVELOPMENT CASES**

In all public hearings for which an applicant or applicants exist and which would affect a relatively limited land area, including but not limited to PDPs, appeals concerning variances or special exceptions, and small-scale rezonings, the following procedures shall be utilized in order to afford all parties or their representatives a full opportunity to be heard on matters relevant to the application:

1. The applicant, as well as witnesses offering testimony or presenting evidence, will be required to swear or affirm that the testimony they provide is the truth.
2. The order of presentation will begin with the City staff report, the presentation by the applicant and/or the applicant's

representative; witnesses called by the applicant, and then members of the public.

3. Members of the City Council may question any witness on relevant issues, by the applicant and/or the applicant's representative, City staff, or by any member of the public.
4. The Mayor may impose reasonable limitations on the offer of testimony or evidence and refuse to hear testimony or evidence that is not relevant to the issue being heard. The Mayor may also impose reasonable limitations on the number of witnesses heard when such witnesses become repetitive or are introducing duplicate testimony or evidence. The Mayor may also call witnesses and introduce evidence on behalf of the City Council if it is felt that such witnesses and/or evidence are necessary for a thorough consideration of the subject.
5. After the introduction of all-relevant testimony and evidence, the applicant shall have the opportunity to present a closing statement.
6. If a person decides to appeal any decision made by the City Council with respect to any matter considered at such meeting or hearing, he or she will need a record of the proceedings, and that, for such purpose, he or she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.

Item Number:	B.(1)
Meeting Date:	1/29/2018
Item Type:	DISCUSSION

AGENDA REQUEST FORM
CITY OF CAPE CORAL



TITLE:

Utilities Department Annual Report Presentation (4:30 p.m. to 4:40 p.m.)

REQUESTED ACTION:

STRATEGIC PLAN INFO:

1. Will this action result in a Budget Amendment?
2. Is this a Strategic Decision?
 - If Yes, Priority Goals Supported are listed below.
 - If No, will it harm the intent or success of the Strategic Plan?

Planning & Zoning/Staff Recommendations:

SUMMARY EXPLANATION AND BACKGROUND:

LEGAL REVIEW:

EXHIBITS:

Staff presentation
Memo - Utilities Department Annual Report
Utilities Department Annual Report FY 2016

PREPARED BY:

Division- Department-

SOURCE OF ADDITIONAL INFORMATION:

ATTACHMENTS:

Description	Type
<input type="checkbox"/> Staff Presentation	Backup Material
<input type="checkbox"/> Memo - Utilities Department Annual Report	Backup Material



FY 2016 UTILITIES ANNUAL REPORT



UTILITIES ANNUAL REPORT

PURPOSE OF REPORT:

To comply with Section 5.18 of the City's Water and Sewer Revenue Bonds.

The Issuers shall at all times employ Consulting Engineers, whose duties shall be to make any certifications and perform any other acts required or permitted of the Consulting Engineers under this Ordinance, and also review the construction and operation of the System, to make an inspection of the System at least once a year... To submit to the Issuer a report with recommendations as to the proper maintenance, repair and operation of the System during the ensuing Fiscal Year, including recommendations for expansion and additions to the System to meet anticipated service demands, and an estimate of the amount of money necessary for such purposes...

UTILITIES ANNUAL REPORT

ENGINEER TETRA TECH SCOPE OF SERVICES:

- Review the system facilities and provide professional recommendations for maintaining a useful and fiscally stable system.
- Determine that rates established by the City are sufficient to meet all operations and maintenance obligations.
- Determine that all deposits from the system operation are deposited in the appropriate funds.
- Ensure that the disposition of revenues is in accordance with all bond covenants.

UTILITIES ANNUAL REPORT

ENGINEER'S SUMMARY OF KEY ACTION ITEMS REQUIRED BY THE CITY:

- Continue to provide training and certification opportunities for the City's utility employees.
- Continue to review and replace aging equipment at all facilities for the purpose of increasing system reliability, redundancy, and efficiency.
- Continue to rehab lift stations throughout the City. This may require increasing the number of lift stations per year as these facilities age.



UTILITIES ANNUAL REPORT

ENGINEER'S SUMMARY OF KEY ACTION ITEMS REQUIRED BY THE CITY:

- Continue cleaning membrane elements at the Southwest Reverse Osmosis Water Treatment Plant in order to reduce operating costs and improve production efficiency.
- Continue to replace drinking water meters as they reach the end of their useful life.
- Continue to identify sources of unaccounted-for water along with repairing and replacing distribution components.



UTILITIES ANNUAL REPORT

ENGINEER'S SUMMARY OF KEY ACTION ITEMS REQUIRED BY THE CITY:

- Continue to replace older galvanized steel water mains with larger sized lines with more durable pipe material. (Only one galvanized pipe project area remaining)
- Continue to identify sources of infiltration and inflow in the gravity collection system along with repairing and replacing the collection system when required.



UTILITIES ANNUAL REPORT

ENGINEER'S SUMMARY OF KEY ACTION ITEMS REQUIRED BY THE CITY:

- Complete construction of the North 2 Utilities Extension Project and move to next phase, which is the North 1 UEP.
- Complete the design, construction, and permitting of the Southwest Operations Building.



UTILITIES ANNUAL REPORT

ENGINEER'S SUMMARY OF KEY ACTION ITEMS REQUIRED BY THE CITY:

- Continue to investigate feasible alternatives for augmenting the supply of fresh water for irrigation.
- Initiate design and construct the five million gallon reuse storage tank that will improve pressures and flows for the Southwest 6&7 UEP and North 2 UEP service areas.
- Continue to perform on-going and required improvements to the irrigation system.



UTILITIES ANNUAL REPORT

PROFESSIONAL OPINION OF UTILITIES SYSTEMS:

“Based on our review of the Fiscal Year 2016 financial information for the water, sewer and water reuse systems, the systems have complied with applicable covenants of the 2003 Series Bonds, including preparing an annual budget for the systems, maintaining sufficient rates, and providing adequate funds for proper operation and maintenance of the systems.”

– Tetra Tech

“The facilities, operations and management as positioned and planned for, are adequate to meet the forecasted demands due to customer growth.”

– Tetra Tech

QUESTIONS/COMMENTS?



MEMORANDUM

CITY OF CAPE CORAL
UTILITIES DEPARTMENT

Mayor / Council
FY1

TO: John Szerlag, City Manager
FROM: Jeff Pearson, Utilities Director
DATE: November 15, 2017
SUBJECT: Utilities Annual Report

JP

*Approval
JS*

On behalf of the City of Cape Coral Utilities Department, I am pleased to provide a copy of the Water, Wastewater & Irrigation Annual Report. I am requesting permission to schedule a power point presentation for a Committee of the Whole (COW) Meeting after the December 2017, City Council hiatus. With your permission, I would like to distribute copies of the Utilities Annual Report to the new City Council after the new members are sworn in on November 20, 2017. This will allow Council Members ample time to review the contents prior to the COW Meeting in early 2018.

The purpose of this report is to comply with Section 5.18 of the City of Cape Coral, Florida, Water and Sewer Refunding Revenue Bonds, Series 2003, as quoted in part below:

The Issuers shall at all times employ Consulting Engineers, whose duties shall be to make any certifications and perform any other acts required or permitted of the Consulting Engineers under this Ordinance, and also review the construction and operation of the System, to make an inspection of the System at least once a year... To submit to the Issuer a report with recommendations as to the proper maintenance, repair and operation of the System during the ensuing Fiscal Year, including recommendations for expansion and additions to the System to meet anticipated service demands, and an estimate of the amount of money necessary for such purposes...

The Report includes an assessment of the ability of the Utility System to meet anticipated service demands and an estimate of the amount of revenue necessary for such purpose. Tetra-Tech, the Consulting Engineer's Summary is outlined below:

- Provide training and certification of the City's utility employees through both internal and external programs.
- Review and replace, as required, aging equipment at all facilities for the purposes of increasing system reliability, redundancy, and efficiency.
- Refurbish and upgrade lift stations throughout the City. This may require increasing the number of lift stations per year as these facilities age.
- Clean annually the membrane elements at the Southwest and North RO Water Treatment Plants in order to reduce costly replacement charges and increase water production flow capacity and efficiencies.
- Continue the water meter replacement program to replace water meters as they age, or as they may be identified as not reading accurately.
- Continue to identify sources of unaccounted for water, along with repairing and replacing distribution system components.
- Replace older galvanized steel water mains with larger sized lines constructed out of longer lasting materials which require less maintenance and improve water quality.
- Continue to identify sources of infiltration and inflow in the gravity collection system, along with the repair and replacement of pipelines and manholes when identified.
- Construct the proposed Aquifer Storage and Recovery (ASR) wells and pumping station projects in accordance with the Utilities Department Capital Improvement Program, after completing hydrogeological modeling.
- Complete the construction and place into service the second deep injection well at the Southwest Water Reclamation Facility (Southwest WRF).
- Construct a deep injection well at the North RO WTP, after completing the hydrogeological modeling.
- Complete the ongoing improvements at the Palm Tree Palm Station.

- Complete the construction and place into service the Southwest Operations Building.
- Complete the construction and installation of the Southwest Bio-Solids Centrifuges.
- Begin construction of the North 2 Utility Extension Project (UEP) and begin design of the North 1 UEP.
- Perform on-going and required improvements to the irrigation system.

Furthermore, based on Tetra-Tech's review of the Fiscal Year 2016 financial information for the potable water, wastewater and irrigation quality water systems, the utility systems have complied with applicable covenants of the 2003 Series Bonds, including preparing an annual budget, maintaining sufficient rates, and providing adequate funds for proper operation and maintenance. The facilities, operations and management as positioned and planned for, are adequate to meet the forecasted demands due to customer growth.

Please let me know if you have any questions regarding the attached report. I can be reached in my office at 239-574-0709.

Attachment: Fiscal Year 2016 Utilities Annual Report



November 16, 2017

Mr. Jeff Pearson
Utilities Director
City of Cape Coral
1015 Cultural park Boulevard
Cape Coral, Florida 33990

Subject: Fiscal Year 2016 City of Cape Coral Annual Report

Tt #200-08309-17005

Dear Mr. Pearson:

Submitted herein is the Consulting Engineer's Annual Report, which addresses the operations, maintenance and condition of the City's water and water reclamation system in accordance with Section 5.18 of the City of Cape Coral, Florida, Water and Sewer Refunding Revenue Bonds, Series 2003. This section requires that the consulting engineers for the Utility Department inspect and review the operation, maintenance and repair of the water and water reclamation facilities, and report annually to the City with their recommendations and comments as to the water and water reclamation systems. In addition, included herein are discussions of the management of the system, rates and charges, and capital improvements.

Financial, statistical, and operating data included in this report have been taken from the books of record and accounts prepared by the City. The report was prepared using several sources of information including, but not limited to, Florida Department of Environmental Protection (FDEP), Discharge Monitoring Reports (DMRs) for the Everest Parkway and Southwest Water Reclamation facilities, operations summary information for the North and Southwest Reverse Osmosis Water Treatment Plants (WTP), water quality data for the raw and finished water, facility inspections, the 2016 City of Cape Coral Comprehensive Annual Financial Report, and interviews with utility personnel.

The City owns and operates a water system which includes 55 raw water supply wells, 28 miles of raw transmission mains, the Southwest Reverse Osmosis WTP with a permitted capacity of 18.1 MGD, the North Reverse Osmosis WTP with a permitted capacity of 12 MGD Reverse Osmosis WTP, associated brine disposal system, two storage and re-pump stations, and 907 miles of potable water mains. The existing water system components are in good physical condition. The system currently meets demand and water quality standards, but regular maintenance is required. The City has performed the necessary operation and maintenance activities to keep the facilities in proper condition. Capital improvements that have been completed by the Utilities Department are adequate to meet current and anticipated growth. Finished water quality criteria met or exceeded regulatory standards, and proper permits were current during FY 2016.

Tetra Tech, Inc.

10600 Chevrolet Way, Suite 300, Estero FL 33928
Tel 239.390.1467 www.tetrattech.com



The City's water reclamation system includes 734 miles of gravity sewer mains, 11,659 manholes, 278 lift stations, 203 miles of force mains, two water reclamation facilities and an irrigation system for water reuse of reclaimed water. The two water reclamation facilities are the Everest Parkway Facility, with a permitted capacity of 13.4 MGD, and the Southwest Facility with a permitted capacity of 15.0 MGD. As with the water system, the facilities are in good condition and the City has excellent operation and maintenance programs in place to properly maintain the facilities. The treatment facilities consistently produce high quality effluent that are in compliance with all regulatory permits. The City continues to complete wastewater related capital improvement projects designed to meet existing system requirements and future growth.

The City's irrigation system includes 790 miles of mains, five storage tanks and 15 high service pumps located at the water reclamation facilities, and five canal pump stations. These facilities are kept in good condition and the system is considered exemplary in the State of Florida. The City is operating the utility facilities in compliance with all regulatory requirements. The City's irrigation system is operating within its current permitted capacity. The City is pursuing additional sources of irrigation water to meet system requirements and projected growth.

Based on our review of the Fiscal Year 2016 financial information for the water, sewer and water reuse systems, the systems have complied with applicable covenants of the 2003 Series Bonds, including preparing an annual budget for the systems, maintaining sufficient rates, and providing adequate funds for proper operation and maintenance of the systems.

The facilities, operations and management as positioned and planned for, are adequate to meet the forecasted demands due to customer growth. We appreciate the City staff's cooperation in providing the information necessary to prepare this report.

Very truly yours,

Tetra Tech, Inc.

A handwritten signature in blue ink, appearing to read 'D M Nelson'.

Daniel M. Nelson, P.E.
Vice President

Tetra Tech, Inc.

10600 Chevrolet Way, Suite 300, Estero FL 33928
Tel 239.390.1467 www.tetrattech.com



City of Cape Coral

Cape Coral City Hall, 1015 Cultural Park Boulevard, Cape Coral, FL 33990
239.574.0444 | www.capecoral.net

**Water, Wastewater & Irrigation
Fiscal Year 2016 Annual Report**

City of Cape Coral
Utilities Department



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1.0 INTRODUCTION

1.1 INTRODUCTION SUMMARY

The City of Cape Coral is located in southwest Florida in Lee County. The City strives to provide its citizens with excellent water and wastewater services.

After review of the City of Cape Coral's water and water reclamation systems, Tetra Tech has identified ongoing programs and specific projects that the City is implementing to improve system reliability and provide a high level of utility services to the City's residents and businesses. These items will be further described throughout the Annual Report and are summarized below:

- Provide training and certification of the City's utility employees, through both internal and external programs.
- Review and replace, as required, aging equipment at all facilities for the purposes of increasing system reliability, redundancy, and efficiency.
- Refurbish and upgrade lift stations throughout the City. This may require increasing the number of lift stations per year as these facilities age.
- Clean annually the membrane elements at the Southwest Reverse Osmosis Water Treatment Plant (Southwest RO WTP) and the North Reverse Osmosis Water Treatment Plant (North RO WTP) plants in order to reduce costly replacement charges and increase water production flow capacity and efficiencies.
- Continue the water meter replacement program to replace water meters as they age, or as they may be identified as not reading accurately.
- Continue to identify sources of unaccounted-for water, along with repairing and replacing distribution system components.
- Replace older galvanized steel water mains with larger sized lines constructed out of longer lasting materials which require less maintenance and improve water quality.
- Continue to identify sources of infiltration and inflow in the gravity collection system, along with the repair and replacement of pipelines and manholes when identified.
- Construct the proposed Aquifer Storage Recovery (ASR) wells and pumping station projects in accordance with the Utilities Department Capital Improvement Program, after completing hydrogeological modeling.
- Complete the construction and place into service the second deep injection well at the Southwest Water Reclamation Facility (Southwest WRF).
- Construct a deep injection well at the North RO WTP, after completing hydrogeological modeling.
- Complete the ongoing improvements at the Palm Tree Pump Station.
- Complete the construction and place into service the Southwest Operations Building.
- Complete the construction and installation of the Southwest Bio-Solids Centrifuges.
- Begin construction of the North 2 Utility Extension Project (UEP) and begin design of the North 1 UEP.
- Perform on-going and required improvements to the irrigation system.

1.2 GENERAL

The City of Cape Coral is a pre-platted city consisting of approximately 73,000 acres of land and is situated in the west coastal portion of Lee County, bordered on the west by Matlacha Pass, on the south by the Caloosahatchee River, on the east by North Fort Myers and the Caloosahatchee River, and on the north by Charlotte County.

Cape Coral enjoys subtropical weather year round, and as a result of this environment, the City is a noted residential retirement and vacation community. Many of the seasonal residents own homes in the City, or rent for an extended period each year, and split their time between winters in Cape Coral and summers in a northern location. Many

residents of Cape Coral enjoy direct or close indirect water access through the extensive freshwater and saltwater canal system throughout the City. Many residents of Cape Coral now enjoy the comforts of the City-owned and maintained water, wastewater, and reuse irrigation systems which have been expanded over the years.

The residents of Cape Coral are provided with police and fire protection systems, as well as a number of City-maintained recreational facilities. The City of Cape Coral had a population of 154,305 out of the total Lee County population of 618,754 at the 2010 census. The population within the City of Cape Coral increased by 50.86 percent between the 2000 and 2010 censuses, compared to an increase of 40.34 percent for Lee County during the same period. As projected by the Cape Coral Chamber of Commerce, the year 2020 population is estimated to be 203,955, a 32.2% increase from 2010.

1.3 PURPOSE

Tetra Tech was retained by the City of Cape Coral, Florida through a Professional Services Agreement dated April 17, 2017, and by Purchase Order Number 41382, dated April 20, 2017, to serve as the City's representative Consulting Engineer for the purpose of preparing this Annual Report for the fiscal year ending September 30, 2016 (FY 2016) for the water, wastewater, and reuse systems.

The purpose of this report is to comply with Section 5.18 of the City of Cape Coral, Florida, Water and Sewer Refunding Revenue Bonds, Series 2003, as quoted in part below:

"The Issuers shall at all times employ Consulting Engineers, whose duties shall be to make any certifications and perform any other acts required or permitted of the Consulting Engineers under this Ordinance, and also review the construction and operation of the System, to make an inspection of the System at least once a year...to submit to the Issuer a report with recommendations as to the proper maintenance, repair and operation of the System during the ensuing Fiscal Year, including recommendations for expansion and additions to the System to meet anticipated service demands, and an estimate of the amount of money necessary for such purposes..."

1.4 SCOPE OF SERVICES

The scope of services for this project included the following:

- Developing and presenting advisory opinions regarding the usefulness and continued financial stability of the system facilities.
- Determination and application of bond proceeds to certain funds regarding construction, renewal, and replacement.
- Study and report preparation regarding maintenance and inspection of existing facilities, systems and connections as required by applicable Revenue Bond Issues relating to the utility systems.

The following specific criteria were evaluated to prepare this report, as delineated by the bond covenants, which include:

1. That the rates established by the City are sufficient to meet all operations and maintenance obligations, and produce:
 - a. Net revenues, expansion fees, and special assessment proceeds that are at least equal to one hundred twenty percent (120%) of the annual debt service requirements of the bonds and one hundred percent (100%) of the amounts required to be deposited into the Reserve Accounts and the Renewal and Replacement funds, and;
 - b. Net revenues in each fiscal year adequate to pay at least one hundred percent (100%) of the annual debt service.
2. That the deposits from the system operation are deposited in the appropriate funds.
3. That the system is maintained and operated in an efficient and economical manner and that such expenditures for renewal and replacement are proper. A site review shall be made of the water and wastewater systems to confirm the condition of the facilities.
4. That the disposition of revenues is in accordance with all bond covenants.
5. That any sale of any components of the water and sewer systems be in accordance with stated bond resolutions.
6. That the City has not issued any other obligations except upon the conditions and in the manner provided by the bond resolutions.
7. That any additional bonds have met the requirements of the resolution.
8. That insurance requirements of the facilities are adequate.
9. That the requirements placed upon the operating budgets have been met.
10. That the water and sewer systems have been maintained in good condition and continuously operated in an efficient manner and at a reasonable cost as a City revenue producing entity.
11. That the City has not rendered or caused to be rendered any free services of any nature.
12. That the City is diligently enforcing the collection of fees, rentals, and other charges.
13. That the City has, to the full extent permitted by law, required all lands, buildings, and structures within the City, which can use the facilities and services of the sewer and water systems to connect with and use these facilities.
14. Review recommendations for expansion and additions to the system to meet anticipated service demands.
15. Review Capital Improvement Program (CIP), based on the FY 2016 budget.
16. Review safety issues associated with the water and wastewater facilities.

2.0 ORGANIZATION AND MANAGEMENT

2.1 INTRODUCTION

The City of Cape Coral is governed by a Council/Mayor form of government. The City Manager reports to the City Council and is responsible for implementing Council policy and the general administration of City business. The record keeping and accounting for the City are the responsibilities of the City Clerk and the City Financial Services Department, respectively. Coordination, management, and administration of the City's water production: water reclamation and collection/distribution systems are the responsibility of the Utilities Director. The City Attorney provides legal advice regarding general City business, as well as matters relating to water production, water reclamation, and collection/distribution systems. In addition, the City retains legal, engineering, accounting, and financial consultants as necessary to assist in the planning and operation of its water production, water reclamation, and collection/distributions systems.

2.2 CITY COUNCIL AND ADMINISTRATION

The legal responsibilities and powers of the water production and water reclamation systems are vested in and exercised through the City Council consisting of (8) members elected by the citizens of the City for four-year terms. The Council members consist of the Mayor and (7) District representatives.

Pursuant to its rights and duties with regard to water production, water reclamation and collection/distribution system matters, the City Council approves the budget and revisions thereto, ratifies contracts and approves all rates, charges, and revisions thereto for water production, water reclamation, and reclaimed water service.

The City Manager is responsible for assisting the City Council and for the proper administration of all affairs of the City coming under the City Manager's jurisdiction. Such responsibilities include but are not limited to, supervision over departments and offices of the municipal government; informing the City Council of the City's financial condition; and assisting in the preparation of the budgets and documents necessary for the procurement of funds.

The Utilities Director is responsible for assisting the City Manager in the proper administration of all affairs of the City's Utilities Department. The Utilities Director's responsibilities include, but are not limited to, overseeing the administration of the Utilities Department along with the preparation of annual budgets and documents for budget preparation to the City Council.

Record keeping and accounting for the City and Utilities Department are the responsibilities of the City's Financial Services Director.

2.3 UTILITIES DEPARTMENT

The Utilities Department is divided into three divisions, which are: Water Production; Water Reclamation; Collection/Distribution. The Utilities Department is managed by the Utilities Director. Under the direction of the Utilities Director, Utilities Administration provides for the overall management of the utility operations and is responsible for developing long range plans and then implementing those plans through appropriate utility construction projects to serve the utility customers. Additional responsibilities include permitting, ordinances, resolutions, grants and development of projects. **Figure 2-1** shows the present organizational structure for Utilities Administration. The current staff for the City of Cape Coral's Utilities Department fulfills the State requirements for the staffing of the production facilities in accordance with the Florida Administrative Code Chapter 62-699.310.

Facilities and infrastructure which are operated, managed, and maintained under the direction of the Utilities Department and the division of responsibility among the three Divisions are summarized in **Table 2-1**.

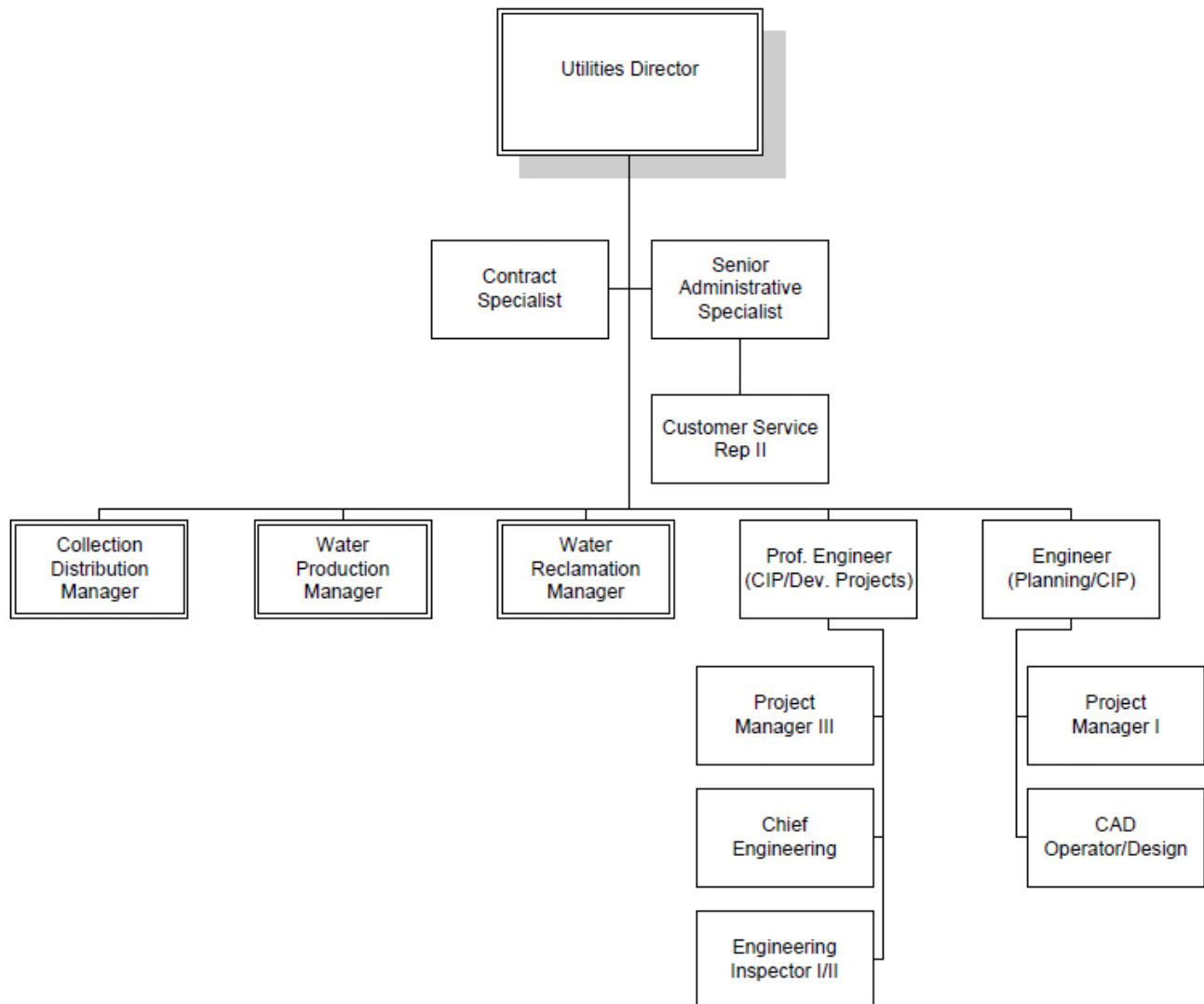
Figure 2-1. Utilities Administration Organizational Chart

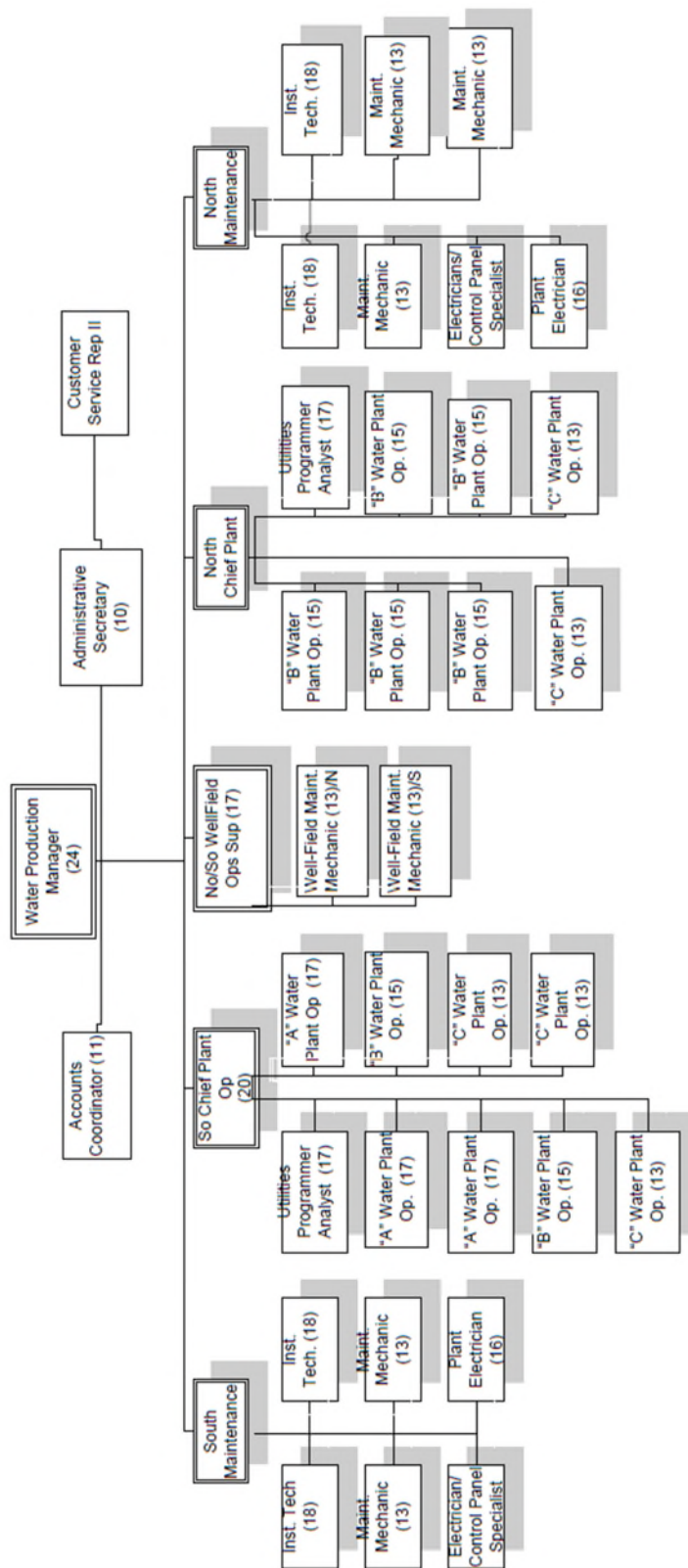
Table 2-1. Division Responsibility for Utility Systems Facilities & Infrastructure

Utility Systems Facilities & Infrastructure	Utilities Division Responsibility	FY 2014	FY 2015	FY 2016
Potable Water System Facilities				
Southwest Reverse Osmosis Water Treatment Plant	Water Production	1	1	1
North Reverse Osmosis Water Treatment Plant	Water Production	1	1	1
Palm Tree Pump Station	Water Production	1	1	1
Van Loon Pump Station	Water Production	1	1	1
Potable Water System Infrastructure				
Raw Water Transmission Mains (miles)	Collection/Distribution	28	28	28
Potable Water Mains (miles)	Collection/Distribution	856	907	907
Service Laterals (No. of)	Collection/Distribution	88,828	88,932	88,884
Potable Water Fire Hydrants (No. of)	Collection/Distribution	3,718	4,239	4,253
Water Meters (No. of)	Collection/Distribution	57,060	61,522	61,654
Water Reclamation System Facilities				
Everest Water Reclamation Facility	Water Reclamation	1	1	1
Southwest Water Reclamation Facility	Water Reclamation	1	1	1
Master Lift Stations (No. of)	Water Reclamation	22	22	22
Lift Stations (No. of)	Water Reclamation	255	277	278
Gravity Sewer Mains (Total Miles)	Collection/Distribution	675	734	734
Gravity Sewer Mains (PVC Miles)	Collection/Distribution	512	571	571
Gravity Sewer Mains (Clay Miles)	Collection/Distribution	162	162	162
Gravity Sewer Mains (Ductile Iron Miles)	Collection/Distribution	1	1	1
Force Mains (Miles)	Collection/Distribution	194	203	203
Service Laterals (No. of)	Collection/Distribution	51,060	51,354	51,279
Manholes (No. of)	Collection/Distribution	10,473	11,659	11,659
Reuse Distribution System				
Reuse Distribution Mains (Miles)	Collection/Distribution	723	790	790
Service Laterals (No. of)	Collection/Distribution	64,000	64,000	64,457
Reuse Water Fire Hydrants (No. of)	Collection/Distribution	850	850	846

2.3.1 Water Production Division

The Water Production Division has a total of approximately 42 positions of which 17 are state certified water treatment plant operators. Of the 17 plant operators, 11 are in operations positions and six in other related positions. The Water Production Division is responsible for the operation of the overall water system, with the exception of the maintenance of water transmission lines and appurtenances. Staffing presently includes eight Class A operators, five Class B operators, and four Class C operators which is in compliance with the requirements for the operation of a Category II, Class A facility as outlined in Chapter 62-699, Treatment Plant and Classification and Staffing, Florida Administrative Code (FAC), which states: "In Class A plants a certified operator shall be on-site and in charge of each required shift and for periods of required staffing time when the lead/chief operator is not on-site." The lead/chief operator of the City's two Water Treatment Plants must be Class A certified and each plant must also be staffed by operators with Class C or higher certification 24-hours per day, seven days per week. This division is responsible for the raw water supply, treatment, and storage of finished water, including the water treatment plants. The Water Production Division is also responsible for the off-site operation and maintenance of the Van Loon and the Palm Tree Pump Stations. The primary function of this division is to provide the City's water customers with a safe and reliable supply of drinking water, which meets or exceeds all state and federal drinking water standards for potable water quality. Illustrated in **Figure 2-3** is the present organizational structure of the Water Production Division.

Figure 2-2. Water Production Division Organizational Chart



2.3.2 Water Reclamation Division

The Water Reclamation Division has a total of approximately 67 positions, of which 21 are state-certified wastewater treatment plant operators. In order to operate the Everest and Southwest Water Reclamation Facilities, both of which are Category I, Class A facilities, this division includes 10 Class A operators, two Class B operators and nine Class C operators, which meets the approved staffing requirements as outlined in Chapter 62-699 FAC. As with the water treatment plants, the City's water reclamation facilities are also staffed 24 hours per day, seven days per week. This division is responsible for the operation, maintenance, and regulatory reporting of the water reclamation and biosolids treatment facilities. This division is also responsible for the operation and maintenance of the City's master lift stations, local lift stations, and canal pump stations for irrigation. Illustrated in **Figure 2-4** is the organizational structure of the Water Reclamation Division.

2.3.3 Utilities Collection/Distribution Division

The Utilities Collection/Distribution (UCD) Division consists of approximately 86 positions, consisting of customer service representatives, field technicians, equipment operators, crew coordinators, trade workers, and engineering inspectors. The UCD Division is responsible for operation and maintenance of the utility system infrastructure located outside of the water and wastewater treatment facilities, and outside of the lift station facilities. The UCD Division services water distribution, wastewater collection and reuse distribution infrastructure in compliance with the Florida Administrative Code. The City does not separate the employees into system specific groups as all employees work on all aspects of the three utility systems as needed. However, costs are allocated by the percentages of the time spent on water, wastewater, or reuse irrigation systems. Illustrated in **Figure 2-2** is the present organizational structure of the UCD Division.

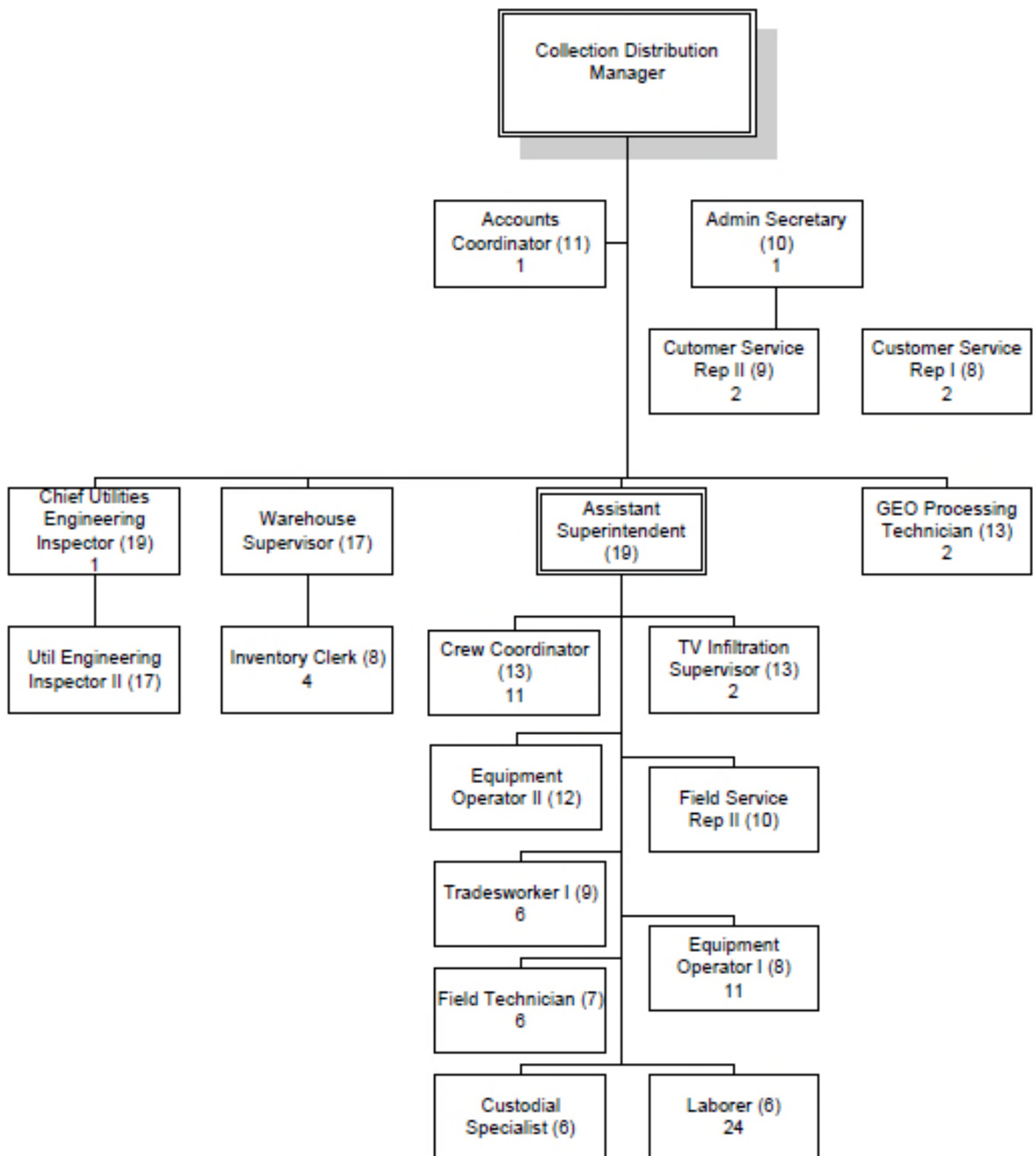
The UCD Division has always believed in an intensive training program. This training program was designed to create a team that demonstrates complete knowledge of our three utility systems. By investing in the education of our staff we ensure the safe operation of these systems and the equipment needed to manage routine maintenance and emergency repairs. Current percentages of staff who have obtained the following Certifications or Licenses include; level 1 Water Distribution 41%, Waste Water Certification A/B/C 33%, Intermediate FDOT MOT 82%, Advanced FDOT MOT 3%, Backflow Testing and Repair Certification 62%, and possess a valid Class A or B Commercial Drivers Licensed 75%. These certifications, along with numerous other routine training programs i.e.: trenching and shoring, confined space entry, trench rescue/recovery, equipment operator certification, and many others provide the city residents with a competent utilities field staff.

The UCD Division is responsible for operation and maintenance of the water system raw transmission mains, potable water mains, service laterals, potable water fire hydrants, and meters. In addition, the UCD Division repairs all leaks and major line breaks, and is responsible for new installations, service turn on/off's, responding to customer concerns, inspecting service connections, handling emergencies, and restoration following repair.

The UCD Division is responsible for operation and maintenance of the wastewater collection system gravity sewer mains, force mains, service laterals, and manholes. In addition, the UCD Division repairs any leaks and major line breaks, and is responsible for new installations, existing line inspections (TV and grouting), manhole repairs and restoration.

The UCD Division is responsible for operation and maintenance of the reuse distribution system mains, laterals, and reuse system fire hydrants.

Figure 2-3. Collection/Distribution Division Organizational Chart



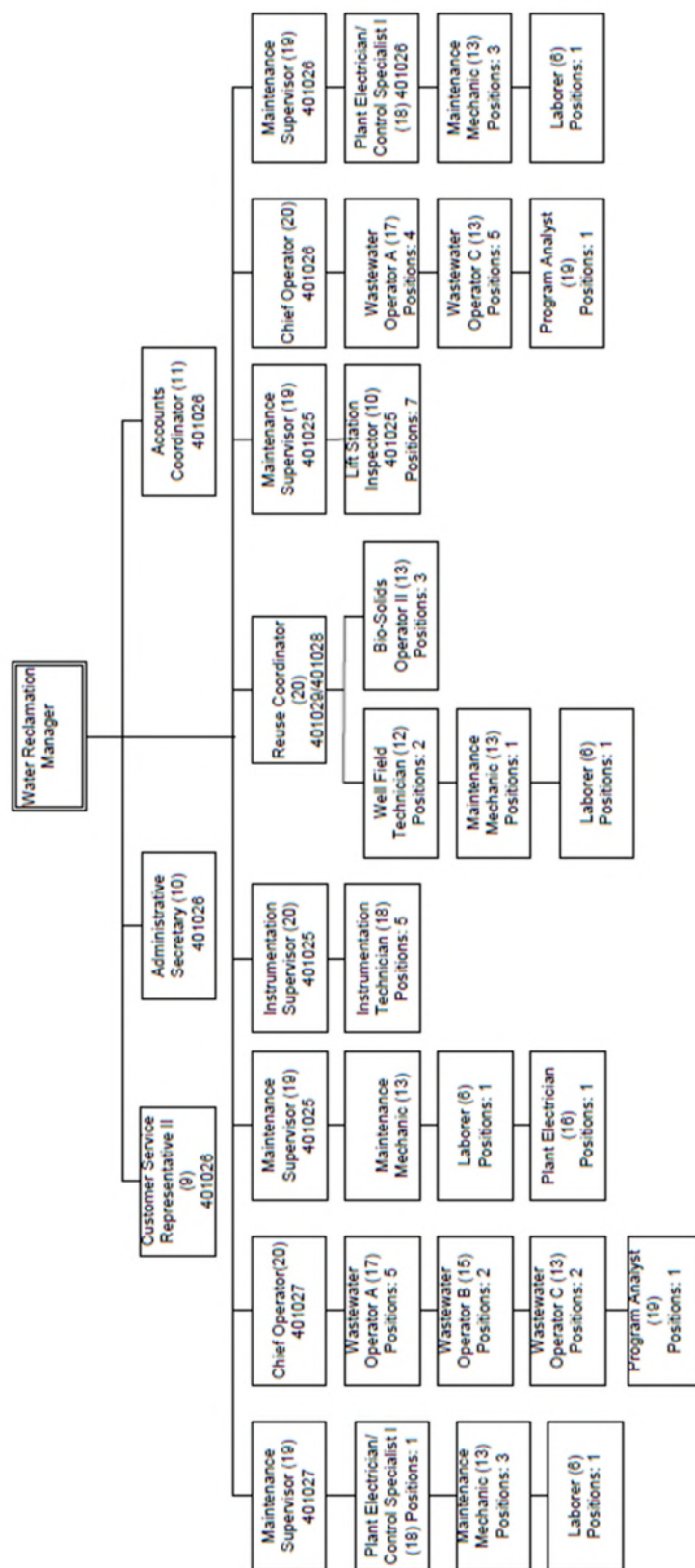
2.4 LEGAL COUNSEL

The City Attorney is appointed by the City Council and acts as general legal counsel for the City in all legal matters, which include the water and wastewater systems.

2.5 CONSULTING ENGINEER

The City has retained Tetra Tech as Consulting Engineers to prepare the FY 2016 Annual Report for the City concerning water and wastewater related matters pursuant to Section 5.18 of the City of Cape Coral, Florida, Water and Sewer Refunding Revenue Bonds, Series 2003.

Figure 2-4. Water Reclamation Division Organizational Chart



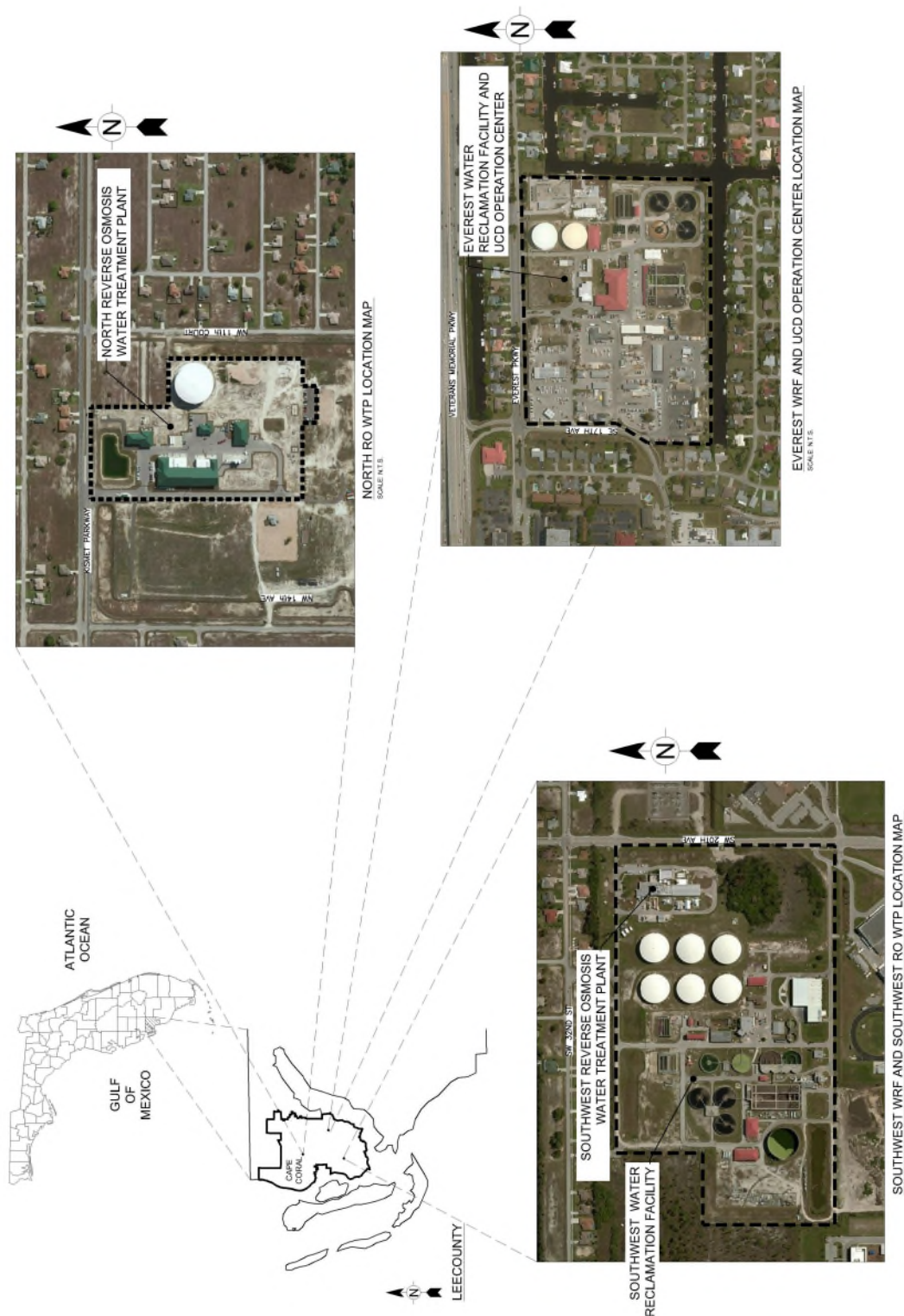
3.0 WATER AND WASTEWATER SYSTEMS

3.1 INTRODUCTION

The City of Cape Coral Utilities Department provides potable water supply; irrigation water supply; and collection, treatment and disposal of sanitary sewage for its customers. The City owns and operates a system that includes: raw water supply wells; raw water transmission mains; two potable water production facilities; potable water storage and pumping facilities; a potable water distribution system; a wastewater collection system; two wastewater treatment/water reclamation facilities; reclaimed water storage and pumping facilities; canal withdrawal and pumping facilities for additional irrigation water supply; an irrigation water distribution system; a deep injection well for excess reclaimed water disposal during wet weather.

The Southwest RO WTP and the North RO WTP are the City's two potable water production facilities. The Southwest WRF and the Everest Water Reclamation Facility (Everest WRF), are the City's two water reclamation facilities. The Southwest WRF and Southwest RO WTP are located adjacent to one another, south of Gleason Parkway between Oasis Boulevard and Chiquita Boulevard, as shown on **Figure 3-1**. The Everest WRF is located approximately one quarter mile east of Del Prado Boulevard South on the south side of Everest Parkway, as shown on **Figure 3-1**. The North RO WTP is located near the intersection of Chiquita Boulevard and Kismet Parkway as shown in **Figure 3-1**.

Descriptions of each major component of the City's potable water, wastewater, and irrigation systems are provided in the following sections. Within the subsections are descriptions of the components which were operated and maintained during FY 2016 as well as improvements which were made to the systems during FY 2016.

Figure 3-1. Location Map for City of Cape Coral Water Treatment and Water Reclamation

3.2 POTABLE WATER SYSTEM

In FY 2016 the City of Cape Coral operated and maintained two water production facilities: the Southwest RO WTP with a capacity of 18.1 million gallons per day (MGD); the North RO WTP with a capacity of 12 MGD. These plants are supplied raw water from a total of 55 raw water production wells via three raw water transmission systems. Additionally, two water storage and repump stations are used to boost water pressure in the potable water transmission and distribution system connection to the treatment and repump facilities. In FY 2016, the following initiatives related to the potable water system were underway or completed:

- Continued reduction in electrical usage from Southwest RO WTP membranes replacement with a new type of lower pressure membrane in an innovative configuration: estimated \$126,895 recurring annual cost avoidance.
- Achieved compliance with Lee County Electric Cooperative (LCEC) load management agreement for peak load shaving at the both water treatment plants: estimated \$215,000 annual recurring electric cost savings.
- Began engineering design and permitting for the Phase I Palm Tree Pump Station improvements.
- Completed plans and specifications for the Auxiliary Power and Control project at the Van Loon Pump Station.
- Selected a contractor and began work on the Southwest RO WTP warehouse project.
- Completed final technical specifications for the Southwest RO WTP Well Communication/Control retrofit project.
- Completed the Grounding Study for the Southwest RO WTP.
- Began implementing grounding improvements for the Southwest RO Well as per the SW Well Field Grounding Study to determine the best grounding template for the Southwest RO WTP Well Communication/Control retrofit project.
- Completed Switchgear/Breaker Maintenance for the Southwest RO WTP.
- Completed the North Supervisory Control and Data Acquisition (SCADA) System Optimization Project.
- Completed Security System updates for monitoring and access control at the re-pump stations and both RO Plants
- Completed the final engineering design and technical specifications for the Southwest RO WTP Plant 1 structural improvements.
- Started the preliminary design for Southwest RO Odor Control Improvements.
- Completed repairs to the damaged primary buss duct that feeds power to the North RO WTP Operations and Production Building.
- Began construction on the Southwest RO WTP / Southwest WRF Deep Injection Well #2 as scheduled and required by the FDEP Consent Order.
- Completed recoating the 30,000 gallon Acid Bulk Tank at North RO and decommissioned the two temporary plastic tanks.
- Completed specifications and advertised a Request for Qualifications (RFQ) for geological services to update the hydrogeological ground water model.
- Closed out and finalized all of the MWH work authorizations and obtained all AutoCAD files for the MWH North UEP design.
- Performed successful cleaning of the reverse osmosis membrane elements in both plants resulting in reduced operating pressures.
- Changed out degasifier packing media at the Southwest RO WTP.
- Completed on-line cleaning for all six ground storage water tanks.

3.2.1 Raw Water Supply

The City's potable water production facilities are supplied with brackish raw water from the Upper Floridan aquifer. There are a total of 55 wells. The two plants that make up the Southwest RO WTP receive water from 33 wells. Plant No. 1 at the Southwest RO WTP was completed in 1977 and is supplied by 12 production wells. Plant No. 2 at the Southwest RO WTP was completed in 1985 and is supplied by 22 wells. The North RO WTP was completed in 2010 and is supplied by 22 production wells. Each wellfield supplies water to its respective water treatment facility through an independent raw water transmission system.

The production rates of the 55 production wells range from 250 gallons per minute (GPM) to 750 GPM with a combined total pumping rate of approximately 39 MGD. The operation and maintenance of the raw water supply wells is controlled and performed by the Water Production Division. Typically each year, under an ongoing proactive well rehabilitation program, approximately three wells are planned for refurbishment. The rehabilitation, which is performed by City staff, includes a modified process of acidizing the wells, meter calibration, new butterfly valves, and wellhead painting and improvements. This program is important because under normal operating conditions and, over time, most wells will gradually lose a portion of their production capacity and require cleaning of the well screen and acidification of the interface with the aquifer to restore specific capacity. Wells are refurbished on a specific capacity and draw down basis. Wells that have a drop in flow of 200 GPM or a drawdown of over 90 ft are flagged for refurbishment. In FY 2016, City staff performed routine maintenance of the wells including motors, variable frequency drives, and remote communication devices. It is the opinion of Tetra Tech that this system is in generally good condition.

Based on Tetra Tech's review of the raw water supply, especially considering the installation of the new wellfield in FY 2010, no improvements or expansions are necessary at this time. The ongoing regular maintenance and upgrade program is recommended to continue in order to maintain the wellfields in a good and reliable condition. Future upgrades include well field control and electrical service upgrades which are planned for installation beginning in FY 2018.

3.2.2 Raw Water Mains

The UCD Division currently maintains approximately 28 miles of raw water transmission mains which transport raw water from the 55 RO supply wells to the Southwest RO WTP and the North RO WTP. As part of an ongoing maintenance program, the areas of the raw water mains are inspected regularly for leaks and other potential problems that may occur. A review of the UCD Division operation and maintenance indicates that the City's raw water mains, which are epoxy lined ductile iron or polyvinyl chloride (PVC) with a life expectancy on the order of 100 years, are well maintained and in good physical condition. It is the opinion of Tetra Tech that this system is in good condition. The ongoing regular maintenance and upgrade programs are recommended to continue in order to maintain the transmission systems in a good and reliable condition.

3.2.3 Southwest Reverse Osmosis Water Treatment Plant

The Southwest RO WTP has served the City of Cape Coral since 1977 when the initial 3.0 MGD facility (Plant No. 1) was placed into service. Plant No. 1 was expanded to 6.0 MGD of production capability in 1980. In 1985, an additional 9.0 MGD facility (Plant No. 2) was added. Modifications made during FY 2008, allowed the current design capacity for Plant No. 2 to be increased to 12.1 MGD, for a combined capacity of this facility of 18.1 MGD. A new maintenance building that provides additional work areas and enclosed storage for material, vehicles, and equipment was completed in March 2017 (FY 2017). Structural reinforcement of the existing Plant No. 1 pump and control building to enable the facility to resist higher wind loads was completed in May 2017 (FY 2017). This facility is located near the intersection of Gleason Parkway and SW 20th Avenue.

Plant No. 1 is a three-stage reverse osmosis (RO) process. The RO process consists of pumping water under pressure causing the purified product water to pass through the membranes with the concentrated material in the feedwater being rejected as concentrate. For a three-stage system, the concentrate from the first stage is sent to the second stage and the concentrate from the second stage is sent to the third stage, with the product water from each of the three stages blended together providing the overall product from the RO treatment process. The concentrate from the third stage must be disposed of according to the Florida Department of Environmental Protection (FDEP) regulations. Plant No. 1 is supplied raw water from 12 wells. Plant No. 1 consists of 10 treatment trains, each provided water from a dedicated feed pump. Each treatment train consists of 10 first-stage pressure vessels, seven second stage pressure vessels, and four third-stage pressure vessels. Each 8-inch diameter pressure vessel has four membrane modules. All of the Plant No. 1 membranes underwent annual cleaning in FY 2016. The raw water currently has a conductivity of approximately 2,800 $\mu\text{S}/\text{cm}$ with product water from the RO membranes of approximately 90 to 100 $\mu\text{S}/\text{cm}$. Feed water pressure is typically in the range of 120 to 130 psi. Approximately 100 gallons of raw water with a conductivity of approximately 2,800 $\mu\text{S}/\text{cm}$ is treated to produce approximately 75 gallons of product water with a conductivity of approximately 100 $\mu\text{S}/\text{cm}$ (75% recovery across the RO membranes) and is then blended with an additional 17 gallons of raw water to produce 92 gallons of blended product water in order to increase the conductivity back to approximately 720 $\mu\text{S}/\text{cm}$. On an overall basis, it takes approximately 117 gallons of raw water to produce 92 gallons of blended product water, resulting in 25 gallons of concentrate requiring disposal. The overall efficiency of Plant No. 1 is such that 78.5 gallons of potable water are produced from each 100 gallons of water removed from the wells. The RO membrane elements for Plant No. 1 are high rejection thin film composite membranes.

Plant No. 2 is a two-stage RO process in which the concentrate from the first stage is sent to the second stage, with the product water from the two stages blended together providing the overall product from the RO treatment process. The concentrate from the second stage must be disposed of according to FDEP regulations. Plant No. 2 is supplied raw water from 22 wells. Plant No. 2 consists of eight treatment trains, each provided water from a dedicated feed pump. Each treatment train consists of 20 first-stage pressure vessels and 10 second-stage pressure vessels. Each 8.5-inch diameter pressure vessel has seven membrane modules. All of the Plant No. 2 membranes were replaced in FY 2014 and underwent annual cleaning in FY 2016. The raw water currently has a conductivity of approximately 3,400 $\mu\text{S}/\text{cm}$ with product water from the RO membranes of approximately 100 to 130 $\mu\text{S}/\text{cm}$. Feed water pressure is typically in the range of 150 to 160 psi. Approximately 100 gallons of raw water with a conductivity of approximately 3,400 $\mu\text{S}/\text{cm}$ is treated to produce approximately 80 gallons of product water with a conductivity of approximately 120 $\mu\text{S}/\text{cm}$ (80% recovery across the RO membranes) and is then blended with an additional 25 gallons of raw water to produce 105 gallons of blended product water in order to increase the conductivity back to approximately 720 $\mu\text{S}/\text{cm}$. On an overall basis, it takes approximately 125 gallons of raw water to produce 105 gallons of blended product water, resulting in 20 gallons of concentrate requiring disposal. The overall efficiency for Plant No. 2 is that approximately 84 gallons of potable water are produced from each 100 gallons of water removed from the wellfield. The RO membrane elements for Plant No. 2 are high rejection thin film composite membranes.

Operation of pretreatment and post-treatment systems for both Plant No. 1 and Plant No. 2 are essentially the same, although provided in parallel units dedicated to each plant. Pretreatment of the raw water from the wellfield is provided using a combination of chemical addition and filtration. Sulfuric acid is added to reduce the pH of the water in order to minimize potential solubility problems through the membrane process and the polyacrylic acid is added as a scale inhibitor. The reduction in pH is also needed for proper degasification (removal of hydrogen sulfide) in the post-treatment process. After chemical addition, the raw water is filtered through 5 micron cartridge filters to remove any materials which might otherwise reach the membranes and damage them. This pretreatment scheme has been used very successfully at this facility over the years in meeting water quality performance standards at a reasonable treatment cost. This form of pretreatment, along with an aggressive membrane cleaning program, has helped the Southwest RO Plant achieve membrane element life spans of more than 12 years on average. This is well beyond the normal three year warranty period and well in excess of the industry standard for membrane element life span. The blended product water is then post-treated for the removal of gases such as hydrogen sulfide and carbon dioxide using stripping towers, through the addition of sodium hydroxide (caustic soda) in order to raise the pH, and addition of liquid sodium hypochlorite to provide chlorine for disinfection prior to being pumped to the onsite storage tanks ready for pumping to the City's customers.

Also located on the plant site are three 5.0 million gallon prestressed concrete ground storage tanks. The blended product water, following degasification and post treatment using caustic and liquid sodium hypochlorite, is transferred to the ground storage tanks using three transfer pumps from Plant No. 1 and three transfer pumps from Plant No. 2. The water from the ground storage tanks is then pumped into the City's potable water distribution system using the high service pump station. The high service pump station currently has four constant speed pumps (two with a capacity of 2,000 gpm and two with a capacity of 3,500 gpm) and three pumps controlled by variable frequency drives (each rated for 2,500 gpm at full-speed). Operators at the Southwest RO WTP operate the high service pump station at their facility in order to maintain the desired pressure throughout the distribution system, while operators at the North RO WTP operate its high service pump station to maintain a preset flow (which is periodically adjusted to meet overall system needs and water production rates). In this manner, the high service pump stations at the two water treatment plants are not trying to work against each other, but instead operate in tandem to maintain the system pressure. This simple operating approach is working well at this time, however, this operating approach may be modified at some point in the future when overall system demands become much larger and a control strategy has been designed for automation of the system based on flows and pressure.

All on-site power needs are met through the equipment housed in the Southwest RO WTP electrical and generator room. Power is supplied by LCEC or from one (or both) of two 2,250 KW diesel generator units. Diesel fuel is supplied from two 15,000 gallon bulk storage tanks with interconnecting piping such that either tank can supply the day tank serving each generator. Each of these generator units has sufficient capacity to power 100% of the currently constructed plant capacity. The Southwest RO WTP utilizes this auxiliary power capability to realize significant cost savings with LCEC. The plant participates in a load shed program with LCEC during peak power demand times on their system. The plant also has portable generators to provide power at the production wells. These portable generators allow the plant to produce water during extended power outages that can last longer than water storage supplies could otherwise sustain the system. These portable generators, along with the main generators also put the system in compliance with the FDEP requirement to be able to produce average daily demand using auxiliary power.

The permitted production capacity of this facility is 18.1 MGD, which can be produced using approximately 21.5 MGD of raw water while producing approximately 3.4 MGD of concentrate water requiring disposal. The firm capacity of Plant No. 1 with one of the 10 membrane process trains out of service is 5.4 MGD and the firm capacity of Plant No. 2 with one of the eight membrane process trains out of service is 10.6 MGD, providing a combined firm capacity for the Southwest RO WTP of 16 MGD.

Disposal of concentrate water at the Southwest RO WTP is through a single on-site deep injection well, with the back-up being a surface water discharge to Lake Finistere (a tidally influenced salt-water lake). The concentrate piping provides a blending of the concentrate from Plant No. 1 and Plant No. 2 prior to a tee which diverts the

combined concentrate to either the on-site deep injection well or to Lake Finistere. In the event that the concentrate is being disposed to Lake Finistere, it is adjusted using injection of caustic, liquid sodium hypochlorite, and dissolved air which is blended within the pipeline between the Southwest RO WTP and the lake discharge point. The deep injection well was permitted as a dual purpose well to serve not only the Southwest RO WTP but also the adjacent Southwest WRF. The Southwest WRF also has a reject storage tank in the event that its water quality does not meet reuse requirements or the reuse storage tanks are full.

A second deep injection has been constructed at the Southwest WRF and the new well has passed a mechanical integrity test. The new well will serve the Southwest RO WTP and Southwest WRF. Construction of surface piping is currently underway and the City anticipates that the new well will be ready for beneficial use beginning sometime in FY 2018.

3.2.4 North Reverse Osmosis Water Treatment Plant

The construction of the North RO WTP began in FY 2006 and was completed during FY 2010. The facility was placed into service on March 8, 2010. This facility is located on a 20 acre site near the intersection of Chiquita Boulevard and Kismet Parkway. The permitted production capacity of the North RO WTP is 12.0 MGD, which can be produced using approximately 14.5 MGD of raw water while producing approximately 2.5 MGD of concentrate water requiring disposal. The firm capacity of this water treatment plant with one of the four membrane process trains out of service is 9.0 MGD.

Much of the infrastructure for the North RO WTP has been completed for a facility with a build-out capacity of 36 MGD. In particular, the approximately 14,000 square foot operations building, approximately 3,100 square foot maintenance building, approximately 7,700 square foot electrical and generator building, and approximately 8,300 square foot high service pump building will likely meet the needs of this facility through build-out of the facility to a capacity of 36 MGD. The approximately 24,000 square foot process building will provide the needs of this facility through expansion likely somewhere between 24 and 30 MGD (depending on future increases in current source water allocation), with room for a future extension of the building planned as needed to eventually meet the 36 MGD build-out capacity. At this time, equipment has been installed in the facility to treat 12 MGD. This will allow future expansion of this facility with minimal disruption and on a relatively fast completion track.

These facilities are constructed to the current building codes, generally constructed using reinforced concrete that provides a hardened facility protected from tropical storms and hurricanes.

The reverse osmosis membrane elements are low pressure high rejection thin film composite membranes. Pretreatment of the raw water from the wellfield is provided using a combination of chemical addition and filtration. Sulfuric acid is added to reduce the pH of the water in order to minimize potential solubility problems through the membrane process and the polyacrylic acid is added as a scale inhibitor. The reduction in pH is also needed for proper degasification (removal of hydrogen sulfide) in the post-treatment process. After chemical addition, the raw water is filtered through 5 micron cartridge filters to remove any materials which might otherwise reach the membranes and damage them. This cost effective pretreatment scheme was chosen based on the City's experience operating the City's Southwest RO WTP for meeting water quality performance standards at a reasonable treatment cost and extending the life of the membrane elements.

Following pretreatment, the feed water travels under pressure to four membrane treatment trains operated in parallel. Each treatment train has a production capacity of 2.5 MGD. Each membrane treatment train employs a dedicated 400 horsepower process pump that conveys water into the first stage of the train to begin the reverse osmosis process. Each treatment train is a two stage system. The first stage has 42 pressure vessels in service and can be expanded to 48 pressure vessels in service by adding membranes to six additional existing pressure vessels. The second stage has 21 pressure vessels in service and can be expanded to 24 pressure vessels in service by adding membranes to three additional existing pressure vessels. The concentrate from the first stage becomes the feed flow to the second stage. The product water from the two stages is combined and then blended with raw water in order to meet the target water quality parameters. The general control strategy for operation of

each train is to control the product water flow to 1,750 gpm while also controlling the concentrate flow to 437 gpm in order to provide an 80 percent recovery. Approximately 100 gallons of raw water with a conductivity of approximately 3,000 $\mu\text{S}/\text{cm}$ is treated to produce approximately 80 gallons of product water with conductivity of approximately 120 $\mu\text{S}/\text{cm}$ (80% recovery across the RO membranes) and is then blended with an additional 20 gallons of raw water to produce 100 gallons of blended product water in order to increase the conductivity back to approximately 720 $\mu\text{S}/\text{cm}$. On an overall basis, it takes approximately 120 gallons of raw water to produce 100 gallons of blended product water, resulting in 20 gallons of concentrate requiring disposal. This use of blended product water saves money as it reduces the amount of post treatment chemicals needed in order to add alkalinity and stabilize the water for corrosion control. Approximately 20% of finished water from the plant is raw water that does not have to go through the RO trains, which also results in significant production cost savings. The blended product water is then post-treated for the removal of gases such as hydrogen sulfide using stripping towers. The off-gas is discharged using a 90 foot tall tower and high output air dispersion system. This dispersion system is substantially cheaper to operate than a conventional wet scrubber system and also helps to reduce the amount of sodium hydroxide needed in the next step of the process. After traveling through the degasification system, the blended product water enters the 170,000 gallon clearwell.

In the clearwell, sodium hydroxide (caustic soda) is added in order to raise the pH for stabilization of the water for corrosion control, and liquid sodium hypochlorite is added to provide chlorine for disinfection. After this final step in the post-treatment process the water is then pumped (transferred) to the 12-million gallon prestressed concrete ground storage tank (GST). The clearwell water is pumped to the GST using 100 horsepower transfer pumps (two with one spare). At this point, the treatment process is complete and this transferred water is now available for pumping to the City's customers.

The water from the ground storage tank is then pumped into the City's potable water distribution system using the high service pump station. The high service pump station currently has four pumps (two with a capacity of 3,750 gpm and two with a capacity of 7,500 gpm). These pumps are controlled by variable frequency drives which allow the pumping of a predetermined flowrate into the distribution system. Operators at the Southwest RO WTP operate the high service pump station at their facility in order to maintain the desired pressure throughout the distribution system. In this manner, the high service pump stations at the two water treatment plants are not trying to work against each other, but instead operate in tandem to maintain the system pressure. This simple operating approach is working well at this time, although may be modified at some point in the future as per the distribution system automation project which is in the five year CIP. When overall system demands become much larger and more complex, an automated system will be required to ensure adequate pressures are maintained throughout the system and that all high service pumps are working in unison to ensure the most cost effective distribution strategy.

All on-site power needs are met through the equipment housed in the North RO WTP electrical and generator building. Power is supplied by LCEC or from one (or both) of two 2,250 KW diesel emergency generator units. Each of these generator units has sufficient capacity to power 100% of the currently constructed plant capacity. The plant utilizes this auxiliary power capability to realize significant cost savings with LCEC. The North RO WTP participates in a load shed program with LCEC during peak power demand times on their system. The plant also has portable generators to provide power at the production wells. These portable generators allow the plant to produce water during extended power outages that can last longer than water storage supplies could otherwise sustain the system. These portable generators, along with the main generators also put the system in compliance with the FDEP requirement to be able to produce average daily demand using auxiliary power.

Disposal of concentrate water at this facility is through a single on-site deep injection well. After construction of that well, FDEP and the Contractor (MWH) had concerns over installing the second (back-up) well due to geological anomalies with the first well. After collecting more operating and sampling data from the current well and the monitoring wells, City staff will revisit the issue with FDEP and work with the regulatory agency on plans for a future well. This is a critical concern to the Water Production staff, as there is presently no back-up disposal method at this facility in case of mechanical failure of the well. Because there is presently no alternative disposal method, during periods of regulatory agency mandated testing of the well, or during other maintenance activity on the well,

no water can be produced at this facility and all water must be supplied to the City's customers from the Southwest RO WTP. At the current system demands, this is not a concern (for testing or maintenance) as the system demand can be met through a combination of operation of the Southwest RO WTP and pumping water from the ground storage tanks at both facilities as well as off-site Palm Tree and Van Loon ground storage tank and pump station sites. It is anticipated that this issue will also need to be revisited at some time in the future depending on the progress of future projects such as expansion of this facility and/or the future construction of a North WRF which would be on property owned by the City adjacent to the North RO WTP. When constructed, a North WRF may also require use of the deep injection well in a shared manner similar to what is now done at the Southwest facility.

Table 3-1 provides a description of the major process equipment Southwest and North RO WTPs.

Table 3-1. Water Treatment Plant Major Process Equipment

Parameter/Unit Operation or Process		SW Plant 1	SW Plant 2	North
1.0	Wells:			
	Number of Production Wells	12	21	22
	Number of Injection Wells	1 (Shared by Plants 1 & 2)		1
2.0	Feed Water Cartridge Filters:			
	Number of Filters per Housing	5	10	4
	Number of Filters per Housing	80	52	140
	Length of Filters (inches)	40	30	40
	Filter Grade (nominal micron rating)	5	5	5
3.0	Blend Water Cartridge Filters:			
	Number of Filters per Housing	n/a	n/a	1
	Number of Filters per Housing	n/a	n/a	98
	Length of Filters (inches)	n/a	n/a	40
	Filter Grade (nominal micron rating)	n/a	n/a	5
4.0	High Pressure Pumps:			
	Number of Pumps	10	8	4
	Horsepower per Pump (hp)	150	150	400
	Feed Flow per Train (gpm)	464	1000	2187
5.0	Reverse Osmosis Units:			
	Number of Production Trains	10	8	4
	Number of Pressure Vessels per Train	21	30	72
	Pressure Vessel Array	10:7:4	20:10	48:24
	Number of Elements per Vessel	4	7	7
	Number of Stages	3	2	2
	Total Elements (Train)	84	210	504
	Total Number of Elements (Plant)	840	1,680	2,016
	Membrane Element Size (inches)	8 x 40	8.5 x 40	8 x 40

Table 3-1. Water Treatment Plant Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		SW Plant 1	SW Plant 2	North
	RO Membrane Type	High Rejection TFC	High Rejection TFC	High Rejection TFC
	Feed Pressure to 1 st Stage (psi)	130	190	150
	Recovery Rate (%)	0.75	0.85	0.8
	RO Capacity (mgd)	5	10	10
	Current Blend Rate (mgd)	1	2	2
	Total Plant Capacity (mgd)	6	12	12
	Raw Water Required (mgd)	7.7	13.7	14.5
	Concentrate Produced (mgd)	1.7	1.7	2.5
6.0	Degassifiers:			
	Number of Degassifiers	2	2	2
7.0	Clearwells:			
	Number of Clearwells	1	1	1
	Clearwell Volume (gallons)	41,000	117,500	170,000
8.0	Transfer Pumps:			
	Number of Pumps	3	3	3
	Horsepower per Pump (hp)	100	150	100
	Capacity per Pump (gpm)	2385	4276	4167
	Total Pumping Capacity (gpm)	7,155	12,828	12,501
9.0	High Service Pumps			
	Number of Pumps	4	3	4
	Horsepower			
	Units 1-2 (hp)	125	200	300
	Unit 3 (hp)	200	200	600
	Unit 4 (hp)	200	n/a	600
	Pumping Capacity			
	Unit 1 (gpm)	2000	2500	3750

Table 3-1. Water Treatment Plant Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		SW Plant 1	SW Plant 2	North
	Unit 2 (gpm)	2000	2500	3750
	Unit 3 (gpm)	3500	2500	7500
	Unit 4 (gpm)	3500	n/a	7500
	Total Capacity	10,500	7,500	22,500
10.0	Sulfuric Acid Feed System			
	Number of Bulk Tanks	1	1	1
	Bulk Capacity per Tank (gallons)	15,000	20,000	
	Day Capacity per Tank (gallons)	250	360	475
	Number of Day Tanks	2	1	2
11.0	Sodium Hydroxide Feed System			
	Number of Bulk Tanks	1	1	1
	Bulk Capacity per Tank (gallons)	6,000	12,770	16,500
	Number of Day Tanks	1	1	2
	Day Capacity per Tank (gallons)	45	150	475
12.0	Scale Inhibitor Feed System			
	Number of Bulk Tanks	1	1	1
	Bulk Capacity per Tank (gallons)	2,000	3,500	5,000
	Number of Day Tanks	1	1	1
	Day Capacity per Tank (gallons)	150	60	120
13.0	Liquid Sodium Hypochlorite Feed System			
	Liquid Sodium Hypochlorite Tanks			
	Number of Bulk Tanks	3 (Shared by Plants 1 & 2)		2
	Bulk Capacity per Tank (gallons)	4,000		10,000
	Total Bulk Storage (gallons)	12,000		20,000
	Number of Day Tanks	1	1	1
	Day Capacity Tank (gallons)	160	160	1,000

Table 3-1. Water Treatment Plant Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		SW Plant 1	SW Plant 2	North
	Shared 1 Concentrate Day Tank (gallons)	60 (Shared by Plants 1 & 2)		n/a
14.0	Plant Emergency Generators			
	Number of Generators	1	1	2
	Power Output per Generator (kW)	2,250	2,250	2,250
	Total Power (kW)	2,250	2,250	4,500
15.0	Plant Emergency Generator Diesel Fuel Bulk Tanks			
	Number of Bulk Storage Tanks	1	1	2
	Capacity Per Bulk Tank (gallons)	15,000	15,000	12,000
	Total Bulk Capacity (gallons)	15,000	15,000	24,000
16.0	Plant Emergency Generator Diesel Fuel Day Tanks			
	Number of Day Tanks	1	1	2
	Capacity Per Day Tank (gallons)	400	400	400
17.0	Portable Well Generators			
	Number of Generators	4 (Shared by Plants 1 & 2)		10
	Power Output per Generator (kW)	65 (Shared by Plants 1 & 2)		65
	Day Tank Fuel Capacity (gallons)	100 (Shared by Plants 1 & 2)		100

3.2.5 Water Storage and Pumping Facilities

The Van Loon Pumping Station is used as a storage and repump station and the total rated capacity of the pumps are 2.9 MGD. There is also a 1.0 MG concrete ground storage tank on site. The firm pumping capacity of the Van Loon Storage and Repump Station is 1.4 MGD. Additionally, the station has a portable hook up for 1 High Service pump in case of an emergency. **Table 3-2** shows the major process equipment of both the Palm Tree Pumping Station and the Van Loon Storage and Repump Station. It is the opinion of Tetra Tech that this system is in good operating condition.

Table 3-2. Storage and Repump Station Major Process Equipment

Parameter/Unit Operation or Process		Palm Tree Pumping Station	Van Loon Storage & Repump Station
1.0	Finished Water Storage:		
	Type	Concrete Ground Storage Tank	Concrete Ground Storage Tank
	Number of Tanks	1	1
	Capacity of Tanks	2 MG	1 MG
2.0	High Service Pumps:		
	Number of Pumps	4	2
	Capacity of Pumps	(Units 1, 2, 3 & 4) 1,500 GPM	(Each) 1,000 GPM
	Total Capacity	6,000 GPM	2,000 GPM

3.2.6 Potable Water Mains

The potable water mains distribute finished water from the City's two RO treatment plants to the customers of Cape Coral. The potable mains, including service laterals, are also inspected for leaks and other potential problems. Other work under these programs includes the removal and replacement of galvanized steel potable water mains and service lines throughout the City.

Several years ago, the City initiated a program for water meter change-outs and retrofits to a radio-electronic system with objectives to reduce the number of reading routes and to replace older meters.

The UCD Division has an ongoing fire hydrant maintenance program that includes flushing, repairing, and painting the City's hydrants.

It is the opinion of Tetra Tech that the City's potable water system is in good operating condition. It is recommended that the City continue with the galvanized pipe replacement program, and that the City continue with the leak detection and meter change out programs as these programs improve customer service while also maintaining a system that meets regulatory requirements. The gradual replacement of older systems provides better customer service while also providing improved utility efficiency.

3.2.7 Potable Water Production and Finished Water Quality

The City's RO water treatment plants had a combined monthly average daily flow (ADF) for FY 2016 that ranged from a low of 9.498 MGD in June 2016 to 10.925 MGD in April 2016, based on information obtained from the monthly operating reports which the City submits to FDEP. **Figure 3-2** compares the average daily flows (ADF) for FY 2014, FY 2015 and FY 2016 and the permitted capacity for each of the two RO water treatment plants. This figure also demonstrates that the facility has a significant amount of capacity available. **Tables 3-3 and 3-4** show the historical flow data for FY 2014, FY 2015 and FY 2016 for the each RO water treatment plant. **Table 3-5** provides a comparison of the combined average daily water production for FY 2014, FY 2015 and FY 2016.

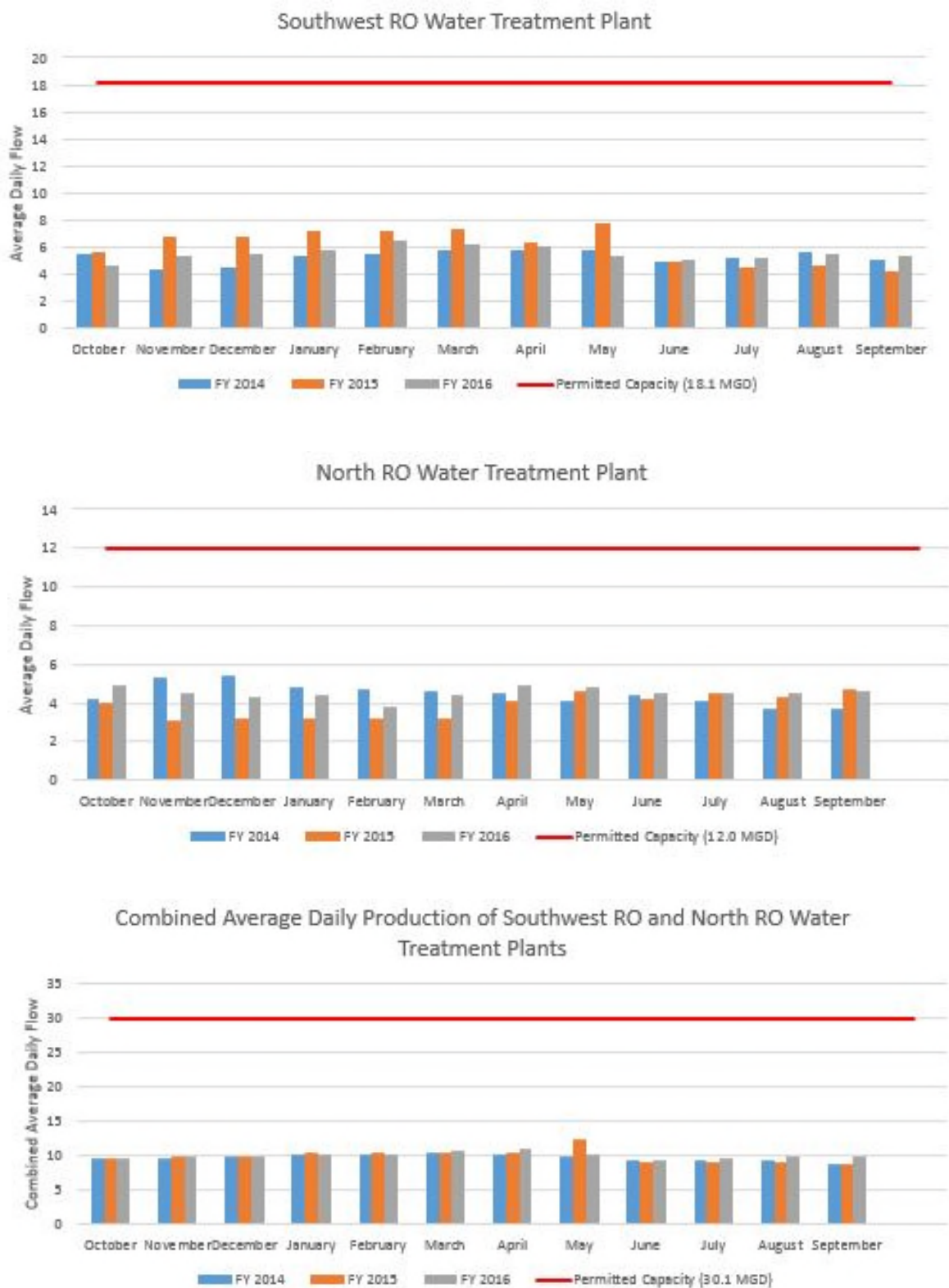
Figure 3-2. Water Production Flow Summary FY 2014 through FY 2016

Table 3-3. Historical Water Flow Data – Southwest RO WTP

FY 2014 SOUTHWEST RO WTP			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-13	5.454	2.823	8.093
Nov-13	4.344	1.592	8.433
Dec-13	4.529	1.294	9.250
Jan-14	5.330	2.092	9.394
Feb-14	5.485	1.610	10.308
Mar-14	5.762	1.513	12.103
Apr-14	5.755	3.247	9.086
May-14	5.801	3.258	10.638
Jun-14	4.928	2.301	8.215
Jul-14	5.247	1.900	9.297
Aug-14	5.588	2.836	9.697
Sep-14	5.080	0.000	8.624

Table 3-3. Historical Water Flow Data – Southwest RO WTP (Cont'd)

FY 2015 SOUTHWEST RO WTP			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-14	5.621	3.263	7.970
Nov-14	6.805	6.156	7.661
Dec-14	6.777	6.021	7.674
Jan-15	7.273	6.439	8.442
Feb-15	7.170	6.434	8.572
Mar-15	7.374	6.564	8.633
Apr-15	6.314	4.609	7.711
May-15	7.764	5.076	11.737
June-15	4.940	4.102	5.584
July-15	4.440	3.607	5.904
Aug-15	4.682	3.727	6.325
Sep-15	4.261	3.472	5.878

Table 3-3. Historical Water Flow Data – Southwest RO WTP (Cont'd)

FY 2016 SOUTHWEST RO WTP			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-15	4.698	3.971	5.870
Nov-15	5.369	4.485	6.657
Dec-15	5.543	4.302	8.462
Jan-16	5.734	4.777	6.749
Feb-16	6.463	4.935	9.071
Mar-16	6.269	4.048	6.953
Apr-16	6.034	4.415	7.148
May-16	5.331	4.630	6.568
June-16	5.014	4.150	6.103
July-16	5.253	4.528	6.139
Aug-16	5.440	4.142	6.787
Sep-16	5.333	3.758	6.511

Table 3-4. Historical Water Flow Data – North RO WTP

FY 2014 NORTH RO WTP			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-13	4.254	2.378	7.177
Nov-13	5.335	2.448	8.254
Dec-13	5.373	2.368	7.303
Jan-14	4.823	1.560	8.100
Feb-14	4.736	2.219	7.071
Mar-14	4.623	2.570	7.347
Apr-14	4.532	2.397	6.349
May-14	4.095	1.056	4.095
Jun-14	4.379	2.410	5.869
Jul-14	4.075	2.391	5.456
Aug-14	3.674	2.890	4.348
Sep-14	3.741	1.611	6.030

Table 3-4. Historical Water Flow Data – North RO WTP (Cont'd)

FY 2015 NORTH RO WTP			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-14	3.978	2.123	6.453
Nov-14	3.112	2.785	3.402
Dec-14	3.176	2.768	3.474
Jan-12	3.175	2.701	3.701
Feb-15	3.215	2.702	3.614
Mar-15	3.239	3.029	3.494
Apr-15	4.131	2.769	5.144
May-15	4.606	3.062	6.323
June-15	4.160	3.502	5.072
July-15	4.550	3.275	4.995
Aug-15	4.352	2.778	5.146
Sep-15	4.666	3.004	5.427

Table 3-4. Historical Water Flow Data – North RO WTP (Cont'd)

FY 2016 NORTH RO WTP			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-15	4.872	3.883	5.490
Nov-15	4.460	3.337	5.142
Dec-15	4.352	1.072	5.125
Jan-16	4.433	3.713	5.000
Feb-16	3.840	1.324	5.351
Mar-16	4.437	3.341	6.392
Apr-16	4.891	3.949	6.284
May-16	4.813	4.035	5.889
June-16	4.484	3.447	5.263
July-16	4.464	3.792	5.069
Aug-16	4.507	3.425	5.417
Sep-16	4.610	4.065	5.594

Table 3-5. Combined Average Daily Potable Water Production

Month	FY 2014 (MGD)	FY 2015 (MGD)	FY 2016 (MGD)	FY 2015 & 2016 %Diff
October	9.710	8.676	9.570	10.2%
November	9.680	8.481	9.829	14.2%
December	9.900	8.719	9.895	12.6%
January	10.150	8.909	10.167	12.7%
February	10.220	9.678	10.303	6.2%
March	10.390	9.508	10.706	11.2%
April	10.290	10.165	10.925	7.9%
May	9.900	9.937	10.144	2.2%
June	9.310	9.174	9.498	3.7%
July	9.320	9.803	9.717	-1.0%
August	9.260	9.792	9.947	1.8%
September	8.820	9.999	9.943	-0.6%
Average	9.746	9.403	10.054	6.9%

Historically, the RO water treatment plants have consistently met or exceeded the Florida Department of Environmental Protection (FDEP) minimum standards for finished water quality. The finished water characteristics are reported daily on the monthly operating reports (MORs) and include effluent turbidity, total dissolved solids, free residual chlorine, pH, and the number of gallons treated. The bacteriological test results of the raw water are also reported on the MORs. In addition to the bacteriological test results and finished water characteristics, the finished water produced by each RO water treatment plant meets additional FDEP regulated primary and secondary drinking water quality standards. Each year, the City publishes the mandatory Consumer Confidence Water Quality Report and posts the report online on the City's web site.

Table 3-6 provides an analysis of raw water used, finished water provided, and water billed for fiscal years 2013 through 2016. In FY 2016 the RO plants produced approximately 3.619 billion gallons of finished water and the City of Cape Coral billed for about 3.213 billion gallons of water according to City records. Approximately 229 million gallons of potable water was unbilled as a result of line flushing, breaks, and leaks throughout the year. The gallons of water produced, billed for, and losses from flushing, breaks, and leaks were adjusted for average meter errors, per the City of Cape Coral's RO monthly water use reports. Approximately 236 million gallons of water was unaccounted for in FY 2016. Subtracting the unavoidable real losses from the unbilled water in FY 2016, the adjusted unaccounted for water percent for FY 2016 is approximately 6.4 percent. Industry norms suggest that unaccounted for water of less than 10-percent are acceptable.

Table 3-6. Total Raw Water, Water Produced and Water Billed

FY 2013	FY 2013	FY 2014	FY 2015	FY 2016
Raw Water Pumped to Plants (1,000 gallons)				
North	2,218,224	2,073,168	1,865,404	2,211,454
Southwest	2,109,241	2,358,859	2,756,194	2,586,790
Combined	4,327,465	4,432,027	4,621,621	4,798,244
Finished Water Pumped to System (1,000 gallons)				
North	1,687,612	1,570,651	1,411,472	1,652,909
Southwest	1,747,104	1,944,933	2,232,228	2,026,238
Combined	3,434,716	3,515,584	3,643,700	3,679,147
Overall Percent Recovery (including blending)				
North	76.10%	75.80%	75.70%	74.74%
Southwest	82.80%	82.40%	81.00%	79.29%
Combined	79.40%	79.30%	78.80%	76.72%
Metered Water for Billing (1,000 gallons)	2,868,722	2,922,847	2,984,230	3,162,781
Adjusted Metered Water for Billing (1,000 gallons)	2,914,621	2,969,612	3,031,978	3,213,386
Flushed/Leaked (1,000 gallons)	176,557	185,719	243,511	229,428
Accounted for Water (1,000 gallons)	3,091,178	3,155,236	3,275,322	3,442,814
Unaccounted for Water (1,000 gallons)	343,538	360,347	368,378	236,334
Percent Unaccounted for Water	10.00%	10.25%	10.11%	6.42%

The City strives to reduce that amount of unbilled water. We concur that the City should continue to pursue efforts to reduce unbilled water, which are a goal of every water provider as well as an emphasis of the Water Management Districts which regulate water use permits. The City has taken several actions to reduce this percentage including regular monitoring/testing of large (1 1/2-inch to 8-inch) meters, the replacement of service laterals with Schedule 80 PVC piping, the tracking of water mains and service line leaks, monthly reporting of water consumption, the purchase of leak detection equipment, and accurate accounting for water used in flushing water lines which is necessary for maintenance of water quality in the distribution system. The City also completed a leak detection study and water audit in FY 2016 to further assist in reduction of unaccounted for water losses.

3.3 WATER RECLAMATION SYSTEM

The City of Cape Coral's water reclamation system consists of gravity sewer mains, wastewater lift stations, force mains, two water reclamation facilities, and an extensive residential reuse irrigation system. The treatment facilities include the Everest and Southwest WRFs. Each plant operates under its own permit and both permits are current. The permit for the Everest WRF will expire in FY 2018. The permit for the Southwest WRF will expire in FY 2022. The permitted capacity for the Everest WRF is 13.4 MGD and the permitted capacity for the Southwest WRF is 15.0 MGD. Reuse water from both the Everest WRF and Southwest WRF is distributed to the City of Cape Coral's citizens via a reuse irrigation system.

Treated reuse quality water is stored in two 5.0 million gallon capacity ground storage tanks at the Everest WRF and three 5.0 million gallon capacity ground storage tanks at the Southwest WRF prior to distribution. Currently, the City's total ground storage capacity is 25 million gallons.

In the event the reuse irrigation system does not use 100% of the effluent, after filling the five reuse storage tanks, the excess reuse water is pumped into the deep injection wells. The Everest WRF permit allows excess reuse water to be discharged to the Caloosahatchee River through a 36-inch diameter pipe, however, the City prefers not to discharge to this surface water and has not done so since 2008.

Effluent from the Southwest WRF is no longer able to be discharged to the Caloosahatchee River. Both plants had to use their deep injection wells in FY 2016 for reuse disposal. The Southwest WRF deep injection well was used in September of 2016 to inject 5.08 MG of reuse water. The Everest WRF deep injection well was used to dispose of reuse water in: October 2015 to dispose of 4.64 MG; January 2016 to dispose of 7.03 MG; February 2016 to dispose of 5.14 MG.

The primary source of irrigation water is water from the City's 300 miles of freshwater canals, which is pumped from five canal pump stations maintained by the Water Reclamation Division. The five freshwater canal pump stations pump directly into the irrigation water distribution piping network. Reuse quality effluent from the Everest and Southwest WRFs provides additional irrigation water for customers served by the City's reclaimed water system.

3.3.1 Gravity Sewer Mains

The City's gravity sewer main system transports wastewater from residences, businesses, institutions, and other facilities to the collection system lift stations. There is an ongoing gravity sewer main closed circuit television inspection (CCTV) program that is used to locate leaks and other defects in the sewer mains and manholes. The City owns and operates three CCTV vehicles to ensure the continuation of this program. The UCD Division goal is to CCTV inspect the system every two to three years in order to detect and prioritize defects requiring repair. The majority of the existing sewer mains are PVC, which is less prone to cracking than clay; however, there are 162 miles of clay gravity sewer mains dating back to the original construction of the City. The newer UEP service areas consist of PVC gravity sewer mains which are in generally good condition. However, during heavy rain events, inflow conditions are encountered with water entering the manhole "chimneys", especially where manholes are located in drainage swales. As in many wastewater utilities, infiltration and inflow are most pronounced in the older sections of the City with clay piping. This is also apparent upon review of the Discharge Monitoring Reports (DMRs) from the treatment facilities. During days of heavy rains, flows will quickly increase, and in turn, decrease with cessation of rainfall. In order to improve this situation, the UCD Division began a program of encasing the "chimneys" of critical manholes in FY 1999. The procedure used is to cut a section of concrete pipe to fit vertically between the top of the manhole section and the casting. By sealing the joints with mastic, the "chimney" is essentially sealed from infiltration. In addition, the UCD Division also utilizes manhole cover inserts at select locations. These are heavy plastic pans that fit in the manhole casting below the cast iron lid. They eliminate most water inflow into the manhole, which otherwise would seep in around the lid. They can be removed for entry into the manhole. Another procedure being used by the UCD Division to reduce infiltration into the system and also to maintain the integrity of some of the manholes is to install PVC liners in the deeper manholes that are experiencing

deterioration of the manhole walls from hydrogen sulfide gas. This type of problem is common to wastewater utilities in Florida. This method of rehabilitation has proven successful in Cape Coral, with the initial installation; now more than 25 years old, being in good condition. During FY 2016 the UCD Division continued the gravity sewer and manhole rehabilitation program to further reduce the inflow and infiltration into the wastewater collection system.

It is the opinion of Tetra Tech that the gravity sewer mains are in generally good physical condition and recommends that the City continue to review the older system areas through smoke testing/televising and perform repairs as needed.

3.3.2 Wastewater Lift Stations

The City of Cape Coral owns and operates a total of 298 wastewater lift stations, of which 22 are master lift stations. The master stations are triplex or larger, that is, they have three or more pumps that operate in an alternating lead, lag, and lag-lag mode; the duplex stations have two pumps that operate in an alternating lead-lag mode. Of the 298 lift stations, 25 have odor control systems. All of the master lift stations are equipped with back-up power generators. In addition to the fixed master station back-up power generators, the City also has 24 portable trailer mounted generators.

The City of Cape Coral has an ongoing pro-active program of rehabilitating lift stations. Rehabilitation of lift stations typically includes the coating of the wet well and replacing the discharge piping between the pumps and check valves with high-density polyethylene (HDPE). This process also includes the replacement of the pump discharge bases, check valves, and plug valves. In FY 2016, one lift station was rehabilitated. Rehabilitation of the oldest lift stations is a beneficial program that ensures the lift stations will function properly, transport wastewater in an environmentally safe manner, and is less costly than complete replacement. The City intends to continue the lift station rehabilitation program. The five-year CIP for lift station rehabilitation is to typically rehabilitate an average of five lift stations per year. As these lift stations age, the number to be rehabilitated each year will likely need to increase.

Under the City's maintenance program, personnel inspect the collection system lift stations weekly. Additional monitoring of many of the duplex stations is performed through the monitoring of the City's SCADA system on a continual basis. Use of the SCADA system provides critical information that supplements the necessary on-site inspections. Typical management data available from the SCADA system includes alarm conditions such as high water levels inside the station, number of pumps running, or unauthorized entry into the station. Should operational problems develop at either of the two water reclamation facilities or within the transmission system, the pumps at the various lift stations can be remotely turned on or off, enabling one individual to remotely manage wastewater flows. There are currently 13 lift stations without SCADA. These stations without SCADA have sufficient volume to store wastewater flow into the stations for approximately two days. Each lift station without SCADA is inspected every Monday, Wednesday, and Friday. Therefore, the City does not feel that there is a need to connect these stations through SCADA.

As a safety requirement, all deep lift stations (approximately five feet in depth or greater) must have netting or grates over the opening. The nets and grates serve a dual purpose. They prevent someone or something from accidentally falling into the lift station wetwell and they reduce the number of personnel required to service/repair the wetwells. Lift stations that are shallow (approximately five feet in depth or less) do not require safety nets. The City is also adding irrigation/reuse wash water systems to station wetwells, which aid in eliminating grease buildup and help reduce the maintenance required by system personnel. In addition to the repairs and maintenance discussed, the City maintains an inventory of spare pumps for most of its lift stations immediately available if needed. The City is in the process of adding more spare parts and pumps to increase system reliability.

It is the opinion of Tetra Tech that the lift stations are in generally good operating condition and recommends that the City continue its lift station rehabilitation program.

3.3.3 Force Mains

The City's force main system conveys wastewater, under pressure, from the aforementioned lift stations to the City's water reclamation facilities. The City has an ongoing program to monitor the force main system for leaks and other potential problems.

It is the opinion of Tetra Tech that this system is in good operating condition and recommends that the City continue the program of checking for leaks and other potential problems.

3.3.4 Everest Water Reclamation Facility

The Everest WRF was acquired by the City of Cape Coral in 1975 (2.3 MGD), was expanded in 1976 to 4.0 MGD, and in 1989 was expanded and upgraded to 7.3 MGD. In 1991-1992, the City began its beneficial reuse of reclaimed water program. In 1995, FDEP approved a rerating of this facility to 8.5 MGD. During FY 2003, a third clarifier was constructed, at the time for additional system reliability although it is now used to meet the current permit capacity with standard EPA reliability classification. During FY 2005 and 2006, the then single mechanical bar screen was rebuilt and a second bar screen was installed, along with construction of new effluent automatic backwash filters during FY 2006 and 2007. During FY 2008, construction began at the Everest WRF in order to expand its current capacity to 13.4 MGD. The fourth clarifier was constructed during FY 2009 and placed into service. Major facility expansion additions included: two new aeration basins; a fourth clarifier; a new set of chlorine contact chambers; a second 5.0 million gallon reuse storage tank; a deep injection well; and additional transfer/reuse pumps.

The Everest WRF consists of the following treatment processes in sequence: flow metering; influent screening and grit removal; five-stage Bardenpho nitrification-denitrification biological treatment; effluent filtration and disinfection; effluent flow metering; transfer pumping to reuse storage tanks. In the event the reuse irrigation system does not use 100% of the effluent, after filling the City's five reuse storage tanks, the excess reuse water is pumped into the deep injection well. The Everest WRF permit allows excess reuse water to be discharged to the Caloosahatchee River through a 36-inch diameter pipe, however, the City prefers not to discharge to this surface water and has not done so since 2008.

Influent screening is provided by two mechanical bar screens, each with a manufacturer's rated capacity of 19 MGD; and a manual bar screen with a capacity of 19 MGD for back-up. Grit removal is provided by two vortex-type grit removal units, each with a manufacturer's rated capacity of 30 MGD; and two grit cyclone/classifier units. The screened and dewatered influent wastewater flows by gravity to four biological treatment units. Each of these four units has five stages of treatment that comprise the five-stage Bardenpho process. In sequence, this process consists of: an anaerobic zone (Stage 1); a first anoxic zone (Stage 2), an aerobic zone (Stage 3); a second anoxic zone (Stage 4); a reaeration zone (Stage 5). Each of the four biological treatment tanks has two mixed liquor internal recycle pumps which pumps from the end of the aerobic zone (Stage 3) to the beginning of the first anoxic zone (Stage 2).

The mixed liquor from the biological treatment tanks reaeration channel (Stage 5) is split and flows by gravity to four secondary clarifiers for settling. Two sludge pump stations, one for the first two clarifiers and one for the second pair of clarifiers, either return biological solids to the biological treatment tanks influent mixing channel or pump waste sludge for thickening and dewatering. Each sludge pump station utilizes three RAS pumps and two WAS pumps. The effluent from the secondary clarifiers flows by gravity to two sets of two traveling bridge filters. The filtered effluent flows by gravity to two sets of two chlorine contact tanks which correspond to the two sets of filters. Disinfection is provided through use of liquid sodium hypochlorite.

The disinfected effluent is pumped by a total of six effluent transfer pumps into the two reclaimed water storage tanks. The reclaimed water is pumped to irrigation customers from these storage tanks using a total of six reclaimed water pumps. In the event that the effluent produced by this facility does not meet reuse water standards, flow can be diverted to the deep injection well or surface water discharge. Nearly one hundred percent of the reclaimed

water from this facility had been sent to the City's reuse system in recent years. The sludge dewatering facilities at the Everest WRF are no longer in use as the sludge is pumped via force main to the Southwest WRF for handling. Refer to **Table 3-7** for the monthly average, minimum and maximum daily flows for the last three fiscal years.

Table 3-7. Everest WRF Historical Flow Data FY 2014 through FY 2016

FY 2014 EVEREST WRF			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-13	7.16	5.85	9.37
Nov-13	6.13	5.45	7.27
Dec-13	6.00	4.65	6.49
Jan-14	6.07	5.33	6.86
Feb-14	6.55	5.86	7.41
Mar-14	6.42	5.85	7.76
Apr-14	6.33	5.65	7.21
May-14	6.08	5.21	7.03
Jun-14	6.38	4.89	9.21
Jul-14	7.19	5.80	8.49
Aug-14	7.49	6.38	9.37
Sep-14	7.87	6.45	9.84

Table 3-7. Historical Everest WRF Wastewater Flow Data (Cont'd)

FY 2015 EVEREST WRF			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-14	6.95	6.09	9.17
Nov-14	6.68	5.70	11.57
Dec-14	6.63	6.12	7.57
Jan-12	6.15	5.59	6.59
Feb-15	6.27	5.64	6.89
Mar-15	6.26	5.48	6.96
Apr-15	6.11	5.39	7.00
May-15	6.12	5.24	6.81
June-15	6.73	5.55	7.94
July-15	8.12	6.29	12.06
Aug-15	8.12	7.01	9.94
Sep-15	8.41	7.01	10.99

Table 3-7. Historical Everest WRF Wastewater Flow Data (Cont'd)

FY 2016 EVEREST WRF			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-15	7.50	6.25	10.27
Nov-15	6.62	5.92	9.10
Dec-15	7.56	6.01	10.62
Jan-16	8.86	6.03	15.07
Feb-16	7.78	6.58	10.06
Mar-16	6.37	5.69	7.13
Apr-16	6.01	5.47	6.54
May-16	6.05	5.47	7.26
June-16	7.30	5.67	10.47
July-16	7.04	5.93	9.90
Aug-16	7.09	5.90	8.85
Sep-16	8.25	6.55	10.95

3.3.5 Southwest Water Reclamation Facility

The Southwest WRF went into operation during FY 1994 with a permitted capacity of 6.6 MGD. The facility was expanded to the current permitted capacity of 15.0 MGD in FY 2010.

The Southwest WRF consists of the following treatment processes in sequence: influent flow metering; screening and grit removal; three-stage nitrification-denitrification biological treatment; continuous backwash filtration; disinfection; effluent flow metering; transfer pumping to reuse storage tanks. In the event the reuse irrigation system does not use 100% of the effluent, after filling the City's five reuse storage tanks, the excess reuse water is pumped into the deep injection wells.

Influent screening is provided by two mechanical bar screens, each with a manufacturer's rated capacity of 23 MGD; and a manual bar screen with a capacity of 23 MGD for back-up. Grit removal is provided by four vortex-type grit removal units, each with a manufacturer's rated capacity of 15 MGD; and two grit cyclone/classifier units. The screened and dewatered influent wastewater flows by gravity to three biological treatment units. Each of these three units has four stages of treatment that comprise the four-stage Bardenpho process. In sequence, this process consists of: an anaerobic zone (Stage 1); an anoxic zone (Stage 2); an aerobic zone (Stage 3); a reaeration zone (Stage 4). Each of the three biological treatment units has two mixed liquor return pumps and three anaerobic/anoxic mixers.

The mixed liquor from the reaeration channel is split via gravity to five secondary clarifiers for settling. Two sludge pump stations, one with three RAS pumps and the second with five RAS pumps and four WAS pumps, either return biological solids to the influent mixing channel or pump waste sludge for thickening and dewatering. The effluent from the secondary clarifiers flows by gravity to two sets of effluent automatic backwash filters: one consisting of four traveling bridge filters; the second consisting of 14 continuous backwash upflow-type filters. The filtered effluent from each set of automatic backwash filters flows by gravity to corresponding chlorine contact tanks. Two chlorine contact tanks are provided for each type of filtration. Disinfection is provided through use of liquid sodium hypochlorite.

The disinfected effluent is pumped by a total of four effluent transfer pumps into three reclaimed water storage tanks. The reclaimed water is pumped to irrigation customers from these storage tanks using a total of eight reclaimed water pumps. In the event that the effluent produced by this facility does not meet reuse water standards, the disinfected effluent can be diverted to one 6.8 million gallon reject storage tank from which the water can be returned to the head of the plant for retreatment. In addition, the effluent from the Southwest WRF can be diverted to a deep injection well which is shared with the adjacent Southwest RO WTP.

Waste sludge from the Everest WRF is pumped via a force main to the Southwest WRF and enters the facility with the raw influent wastewater. This input of solids into the Southwest WRF results in an increase in solids inventory which must be maintained in the biological treatment process at the Southwest WRF and an increase in the solids which must be wasted from the biological treatment process at the Southwest WRF. As a result, the WAS pumps at the Southwest WRF pump the waste sludge generated at this facility as well as that generated at the Everest WRF into the on-site waste sludge holding tanks. The sludge from these waste sludge holding tanks is pumped to the biosolids dewatering and treatment facility which is located at the Southwest WRF.

Refer to **Table 3-8** for the monthly average, minimum and maximum daily flows for the last three fiscal years. **Figure 3-4** graphically displays the comparison of the influent wastewater flows to the permitted capacities for both the Everest and Southwest WRFs. **Table 3-9** provides a description of the major process equipment for the Everest and Southwest WRFs.

Table 3-8. Southwest WRF Historical Flow Data FY 2014 through FY 2016

FY 2014 SOUTHWEST WRF			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-13	5.77	5.28	6.76
Nov-13	5.48	5.12	6.03
Dec-13	5.43	5.01	5.95
Jan-14	5.53	5.16	5.89
Feb-14	5.83	5.28	6.27
Mar-14	5.90	5.5	6.66
Apr-14	5.74	5.39	6.11
May-14	5.44	5.1	5.96
Jun-14	5.34	5.01	6.02
Jul-14	5.68	5.13	6.24
Aug-14	6.03	5.5	6.69
Sep-14	6.29	5.48	7.46

Table 3-8. Southwest WRF Historical Flow Data FY 2014 through FY 2016 (Cont'd)

FY 2015 SOUTHWEST WRF			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-14	5.80		6.75
Nov-14	5.78		8.27
Dec-14	5.73		6.11
Jan-12	5.63		5.99
Feb-15	5.72		6.31
Mar-15	5.77		6.19
Apr-15	5.56		6.08
May-15	5.40		6.17
June-15	5.73		6.18
July-15	6.48		12.3
Aug-15	6.67		10.48
Sep-15	6.78		9.31

Table 3-8. Southwest WRF Historical Flow Data FY 2014 through FY 2016 (Cont'd)

FY 2016 SOUTHWEST WRF			
Month	Avg. Daily Flow (MGD)	Minimum Daily Flow (MGD)	Maximum Daily Flow (MGD)
Oct-15	6.43	5.82	7.25
Nov-15	6.26	5.77	8.10
Dec-15	6.42	4.59	8.50
Jan-16	7.38	5.61	10.74
Feb-16	6.86	6.36	7.63
Mar-16	6.41	6.08	7.00
Apr-16	6.08	5.74	6.61
May-16	6.02	5.50	6.52
June-16	6.61	5.81	8.62
July-16	6.43	5.88	6.99
Aug-16	6.63	5.84	7.34
Sep-16	7.14	5.73	8.05

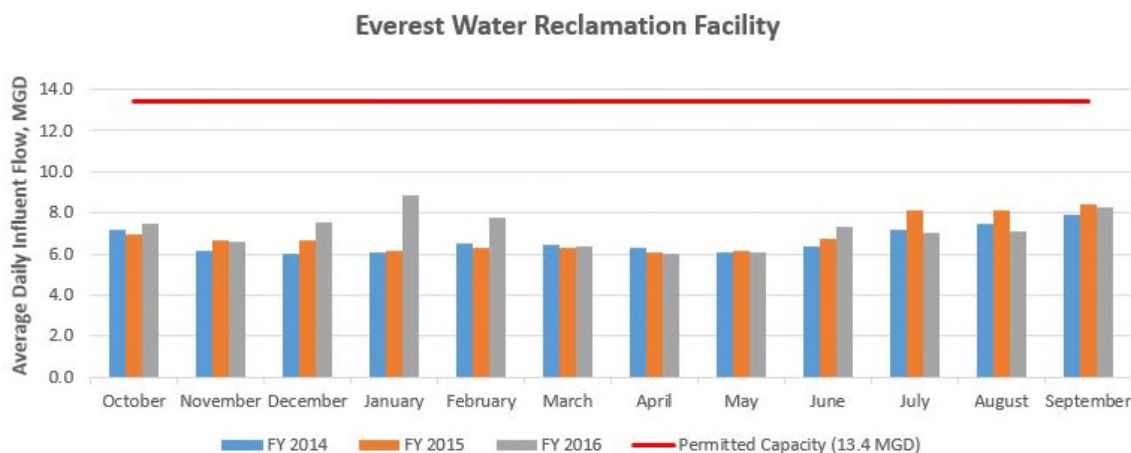
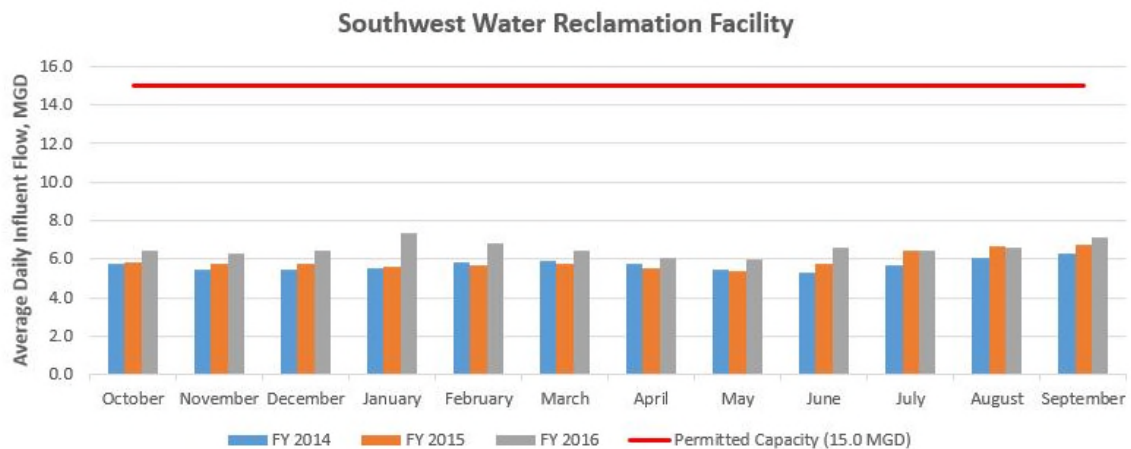
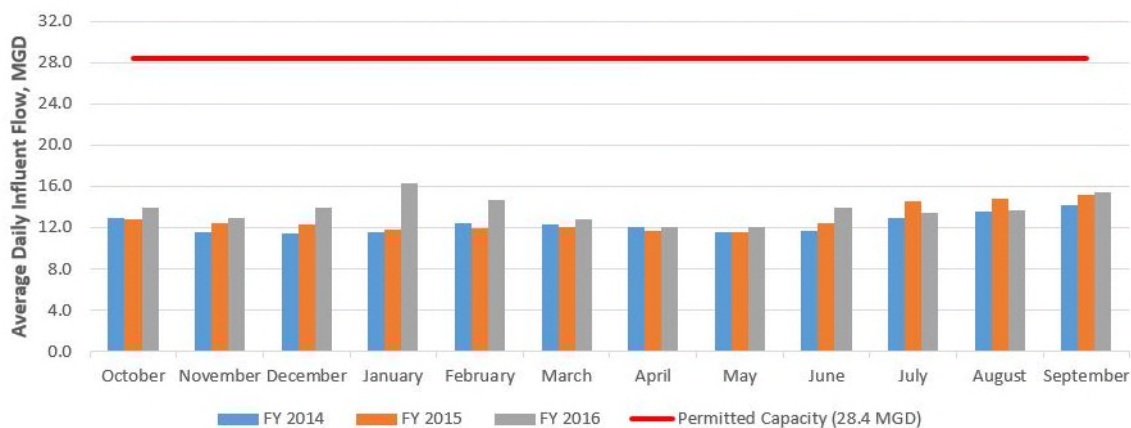
Figure 3-3. Water Reclamation Flow Summary FY 2014 through FY 2016**Table 5-1. Five-Year CIP (Cont'd)****Combined Southwest and Everest Water Reclamation Facilities**

Table 3-9. Water Reclamation Facility Major Process Equipment

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
1.0	Plant Influent		
	Average Daily Flow (MGD)	13.4	15
	Peak Instantaneous Flow (MGD)	37.1	45
2.0	Influent Flow Meters		
	Number of Influent Flowmeters	1	4
	Diameter (inches)	36	20, 20, 30, 42
	Type	Electromagnetic	Electromagnetic
3.0	Manual Screening		
	Number of Screens	1	1
	Type	Bar Rack	Bar Rack
	Width x Depth (inches)	36 x 78	42 x 78
	Spacing (inches)	0.75	0.625
	Capacity (mgd)	13.6	23
4.0	Mechanical Bar Screens		
	Number of Screens	2	2
	Type	Rake	Step
	Width & Depth (inches)	36 x 78	36 x 66
	Spacing (inches)	0.25	0.2
	Capacity (mgd) (each)	19	23
	Horsepower (min/max)	2/5	3
5.0	Screenings Conveyor		
	Number of Conveyors	2	1
	Type	Shaftless	Shaftless
	Capacity (cu/ft/hr)	n/a	200
	Horsepower	5	5
6.0	Screening Washpresses		
	Number of Washpresses	2	2
	Type	Screw Wash Press	Screw Wash Press
	Capacity(cu/ft/hr)	n/a	99
	Horsepower	5	5

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
7.0	Grit Chambers		
	Number of Grit Chambers	2	4
	Type	Vortex	Head Cell
	Size (mgd) each	30	15
8.0	Grit Cyclone Classifiers	2	2
	Type	Cyclone/Classifier	Cyclone/Classifier
	Capacity (gpm) each	220	315
	Horsepower	1	0.3
6.0	Grit Pumps		
	Number of Grit Pumps	2	4
	Drive	Constant	Constant
	Type	Recessed Impeller	Recessed Impeller
	Flow (gpm) each	220	210
	Horsepower	10	15
8.0	Aeration Basins		
	Number of Aeration Basins	4	3
	Type	Single Pass/Plug Flow	Single Pass/Plug Flow
	Side Water Depth (feet)	Varies by zone	20.9
	Overall Width (feet)	52	41.5
	Overall Length (feet)	200	258
	Total Volume (million gallon) each	1.13	1.67
	Recirculation Ratio for RAS Range%	30-100	30 - 100
9.0	Influent Channels		
	Number of Influent Channels	1	1
	Length (feet)	185.5	130.5
	Width (feet)	10	10
	Sidewater Depth (feet)	16.61	22.65
	Volume (million gallons) each	0.23	0.22

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
	Number of Influent Channel Mixers	4	3
	Mixer Motor/Blade (hp)	3	1@5/5 2@5/3
10.0	Anaerobic Zone (Stage 1)		
	Number of Process Trains	4	3
	Length of Each (feet)	31	25.33
	Width of Each (feet)	20	26
	Sidewater Depth of Each (feet)	15.75	22.4
	Volume of Each (million gallons)	0.073	0.11
	Number of Mixers in Each Anaerobic Zone	1	1
	Motor of Each (hp)	3	5
11.0	1st Anoxic Zone (Stage 2)		
	Number of Process Trains	4	3
	Length of Each (feet)	52.2	56.25
	Width of Each (feet)	20	26
	Sidewater Depth of Each (feet)	15.74	21.6
	Volume of Each (million gallons)	0.12	0.24
	Number of Mixers in Each Anoxic Zone	3	9
	Motor of Each (hp)	3	5
12.0	Aerobic Zone (Stage 3)		
	Number of Process Trains	4	3
	Length of Each (feet)	127.5	196
	Width of Each (feet)	52	41.5
	Sidewater Depth of Each (feet)	14.56	20.9
	Volume (million gallon) each	0.72	1.27
	Diffuser (each)	1,828	3,170/per Basin
	Type	Ceramic Fine Bubble	Ceramic Fine Bubble
13.0	2nd Anoxic Zone (Stage 4)		
	Number of Process Trains	4	N/A

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
	Length of Each (feet)	52.2	N/A
	Width of Each (feet)	20	N/A
	Sidewater Depth of Each (feet)	15.74	N/A
	Volume of Each (million gallons)	0.12	N/A
	Number of Mixers in Each Anoxic Zone	3	N/A
	Motor of Each (hp)	3	N/A
14.0	Reaeration Channel (Stage 5)		
	Number of Reaeration Channels	1	1
	Length (feet)	221.5	130.5
	Width (feet)	6.5	6
	Sidewater Depth (feet)	11.61	16.85
	Volume (million gallon) each	0.13	0.1
	Diffusers	Ceramic Fine Bubble	Removable Coarse Bubble
15.0	Aeration Basin Blowers		
	Number of Blowers	3	3
	Type	Multi-stage Centrifugal	Single-Stage Centrifugal
	Capacity (scfm) each	5,150	8,667
	Horsepower, each	300	450
16.0	Aeration Basin Blowers		
	Number of Blowers	2	N/A
	Type	Single-Stage Centrifugal	N/A
	Capacity (scfm) each	6,500	N/A
	Horsepower, each	300	N/A
17.0	Internal Mixed Liquor Recycle Pumps		
	Number of Pumps	8	6
	Type	Horizontal Axial Flow	Axial Flow Propeller
	Drive	Constant Speed	Constant Speed

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
	Flow (gpm)	3,600	6,400
	Flow (%ADF)	300	300
	Head (feet)	4.25	4.05
	Motor (hp)	15	20
18.0	Waste Scum (WASC) Pumps		
	Number of Pumps	2	2
	Type	Vertical Non-Clog	Submersible Non-Clog
	Drive	Constant Speed	Constant Speed
	Flow (gpm) each	90	300
	Head (feet)	24	24
	Motor(hp)	2.3	3.7
19.0	Waste Activated Sludge Pump PS 1		
	Number of Pumps	4	4
	Type	Rotary Lobe	Rotary Lobe
	Drive	Variable Speed	Variable Speed
	Flow (gpm) each	125	140-300
	Head (feet)	16	9.2
	Motor (hp)	5	15
20.0	Return Activated Sludge Pump PS 1		
	Number of Pumps	3	3
	Type	Horizontal Centrifugal	Screw Centrifugal
	Drive	Variable Speed	Variable Speed
	Flow(gpm) each	2,600	520 – 1,740
	Flow % ADF @AD/@PHF	50%/100%	30 - 100
	Head (feet)	32	14.2 – 23.4
	Motor (hp)	30	25
21.0	Return Activated Sludge Pump PS 2		
	Number of Pumps	3	5

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
	Type	Horizontal Centrifugal	Screw Centrifugal
	Drive	Variable Speed	Variable Speed
	Flow (gpm) each	2,600	695 – 2,605
	Flow % ADF	50%/100%	30 - 100
	Head	32	15 – 29.9
	Motor (hp) each	30	30
22.0	Secondary Scum Pumps		
	Number of Pumps	3	5
	Type	Submersible Non-Clog	Submersible Non-Clog
	Drive	Constant Speed	Constant Speed
	Flow (gpm) each	200	200
	Head (feet)	27.5	27.5
	Motor(hp)	3.7	3.7
23.0	Secondary Scum Pumps		
	Number of Pumps	1	N/A
	Type	Centrifugal	N/A
	Drive	Constant Speed	N/A
	Flow (gpm) each	90	N/A
	Head (feet)	24	N/A
	Motor (hp)	2.3	N/A
24.0	Secondary Clarifiers		
	Number of Clarifiers	4	3/2
	Type	Circular Center Feed	Circular Center Feed
	Mechanism	Spiral Blade	Section Header
	Motor (hp) each	0.75	1
	Diameter (feet)	110	120/100
	Sidewater Depth (feet)	14	16/13.75

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
	Surface Overflow Rate At Peak Hourly Influent Flow (gpm/sf)	973	822/1,260
	Solids Loading Rate At Average, Daily Flow (lb/d/sf)	15.4	8/10.5
	Solids Loading Rate At Peak Hour (lb/d/sf)	44.3	30.2/31.5
25.0	Filters		
	Number of Filters	4	4
	Type	Auto Backwash Traveling Bridge	Auto Backwash Traveling Bridge
	Length (feet)	120	84
	Width (feet)	16	16
	Filter Surface Area (sf)	1,920	1,344
	Surface Loading Rate At Average, Dry Weather Flow (gpm/sf)	1.21	1.33
	Surface Loading Rate At Peak Hour Flow (gpm/sf)	3.36	4
26.0	Filtration		
	Number of Filters	N/A	14
	Type	N/A	Continuous Backwash
	Number	N/A	14
	Length (feet)	N/A	14.21
	Width (Feet)	N/A	17.61
	Filter Surface Area (sf)	N/A	200
	Average Filter Loading Rate (gpm/sf)	N/A	2
	Peak Hour Filter Loading Rate (gpm/sf)	N/A	5
27.0	Chlorine Contact Basins		
	Number of Basins	4	2
	Type	3-Pass	3-Pass
	Capacity Each (mgd)	18.55	15
	Volume Each (gal)	99,858	177,725

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
	Detention Time @ PHF (minutes)	15.3	17.2
28.0	Chlorine Contact Basins		
	Number of Basins	N/A	2
	Type	N/A	3-Pass
	Capacity (mgd) each	N/A	7.7
	Volume Each (gal)	N/A	81,000
	Volume Total (gal)	N/A	162,000
	Detention Time @ PHF (minutes)	N/A	15
29.0	Alum Feed and Storage System		
	Number of Metering Pumps	2	4
	Flow Range (gph)	140	60.2
	Inject Pressure, Maximum (psi)	20/40	60
	Number of Bulk Storage Tanks	2	2
	Volume of Each Bulk Storage Tank (gal)	6,000	11,800
30.0	Sodium Hypochlorite Feed & Storage System		
	Number of Storage Tanks	2	4
	Day Tank Volume Each (gal)	12,000	11,800
	Number of Recirculation Pumps	1	1
	Flow Range (gpm)	20	20
	Chlorine Contact Tank Feed Pump	42,860	42,834
	Flow Range (gph)	85.6/46.0	184/46
31.0	Reclaimed Water Pumping/Storage		
	Number of Transfer Pumps	6	4
	Type	Vertical Turbine	Vertical Turbine
	Drive	Variable	Variable
	Flow (gpm)	5,150	10,420
	Head (feet)	70	43
	Motor(hp)	150	200

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
32.0	Reclaimed Water Storage Tanks		
	Number of Tanks	2	3
	Volume (million gallon)	5	5
	Diameter (feet)	140	160
	Maximum Water Depth (feet)	43.45	33.25
33.0	Reclaimed Water Distribution Pumps		
	Number of Pumps	6	8
	Type	Vertical Turbine	Vertical Turbine
	Drive	Variable	Variable
	Flow (gpm)	5000	4,600
	Head (feet)	173	173
	Motor (hp)	300	250
34.0	Reject Water Storage Tanks		
	Number of Tanks	N/A	1
	Volume (million gallon)	N/A	6.8
	Diameter (feet)	N/A	170
	Maximum Water Depth (feet)	N/A	41
35.0	Reject Water Pumps		
	Number of Pumps	N/A	2
	Type	N/A	Vertical Turbine
	Drive	N/A	Constant
	Flow (gpm)	N/A	700
	Head (feet)	N/A	40
	Motor (hp)	N/A	20
36.0	Deep Injection Well Pumps		
	Number of Pumps	2	Uses Reuse Pumps
	Motor (hp)	500	Uses Reuse Pumps

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
37.0	WAS Storage Tanks		
	Number of Tanks	2	2
	Volume of Each (million gallons)	0.12	1.16
	Air Diffuser Type	Coarse Bubble	Coarse Bubble
38.0	WAS Storage Blowers		
	Number of Blowers	N/A	4
	Type	N/A	Rotary Positive Displacement
	Drive	N/A	Constant
	Capacity (scfm)	N/A	3,000
	Motor (hp)	N/A	150
39.0	WAS Transfer Pumps		
	Number of Pumps	3	3
	Type	Centrifugal/Rotary Lobe	Rotary Lobe
	Drive	Variable	Constant
	Flow (gpm)	250	300
	Head (feet)	139	35
	Motor (hp)	20	20
40.0	Waste Holding Tanks		
	Number of Tanks	N/A	2/2
	Volume (gallons) each	N/A	235,000/553,000
	Diameter (feet)	N/A	50
	Maximum Water Depth (feet)	N/A	16
	Coarse Bubble Diffusers per Tank	N/A	80
	Diffuser Flow Rate	N/A	12
41.0	Waste Holding Blowers		
	Number of Blowers	N/A	4
	Type	N/A	Rotary Positive Displacement
	Drive	N/A	Constant

Table 3-9. Water Reclamation Facility Major Process Equipment (Cont'd)

Parameter/Unit Operation or Process		Everest WRF	Southwest WRF
	Capacity	N/A	1140
	Horsepower	N/A	75
42.0	Centrifuges		
	Number of Centrifuges	N/A	3
	Diameter (Inches)	N/A	23.23
	Operating Speed (R.P.M.)	N/A	3,000
	Force (G)	N/A	2,968
	Overall Length (Inches)	N/A	207.91
	Overall Width (Inches)	N/A	63 - 81.9 with lube unit
	Overall Height (Inches)	N/A	69.01
	Dry Weight (Lbs.)	N/A	22,046
	Total Connected Load (HP)	N/A	200
43.0	Polymer Feed Systems		
	Number of Systems	N/A	3
	Number of Pumps	N/A	3
	Type	N/A	Metering
	Drive	N/A	Variable
	Max Discharge (psi)	N/A	300
	Motor (hp)	N/A	0.50
	Liquid Polymer Feed Capacity (gph)	N/A	100
	Polymer Solution Concentration (%)	N/A	100

3.3.6 Biosolids Dewatering and Treatment Facility

The Biosolids dewatering and treatment facility is located at the Southwest WRF and processes the sludge produced from both the Everest WRF and Southwest WRF. All dewatered biosolids are converted to mulch, used for fuel at the waste to energy plant or disposed of at the Lee County Landfill. The total amount of biosolids transferred to the Lee County Solid Waste – Lee Hendry Landfill #834142 in FY 2016 was 1,970 dry tons.

3.4 WATER REUSE SYSTEM

3.4.1 Reclaimed Water Supply

Effluent from both the Everest WRF and the Southwest WRF are used as sources of supply for the reuse system. There are two 5.0 million gallon storage tanks at the Everest WRF, and the Southwest WRF has three 5.0 million gallon storage tanks. When these are full, due to wet weather, excess effluent is pumped into the deep injection wells or discharged into the Caloosahatchee River. However, no effluent was discharged into the river in FY 2016.

The reclaimed water is pumped throughout the reuse distribution system via high service pumps located at each WRF. The reuse pumping capacity is provided in **Table 3-9**.

It is the opinion of Tetra Tech. that this system is in good operating condition. Based on Tetra Tech's review of the Reclaimed Water Supply, besides regular maintenance and upgrades, no improvements or expansions are determined to be necessary at this time.

3.4.2 Canal Water Supply

When the demands of the reuse irrigation system exceed the reclaimed water produced, the City utilizes five City owned and operated canal pump stations that augment the reclaimed water supply. These pump stations draw water from 300 miles of fresh water canals in the City and pump it directly into the reuse distribution system after filtration/screening and liquid chlorine injection (for disinfection). As water levels decline in the southern canals, a transfer pump station is utilized to pump water from canals north of Pine Island Road into the southern canal system.

The canal pump stations are designed to look like residential single-family homes in order to match the surrounding areas. The City's five canal pump stations have the combined total pumping capacity to provide approximately 59,200 gpm (85.2 MGD) of irrigation water and fire protection. Based on our inspections and discussions with staff, the stations appear to be in good condition and are very well maintained.

The City has recognized the need to increase the use of canal water to supplement the irrigation system. To meet future demand the City has several weir improvement projects underway and completed in the northern part of the City to capture more water for irrigation use and for the level maintenance of the fresh water canal system.

The 1999 Master Plan laid out a 20-year plan for improvements including raising canal weirs and installing transfer pumps to provide sufficient irrigation water, yet not promote flooding of areas along the canals. The City is actively pursuing the phases of the improvements recommended in this plan. Currently, near the end of the wet season, the City raises eight weirs to capture an additional 1-vertical foot of water in the canals, upstream of the weirs, which equates to approximately 500 million to 600 million gallons of additional water stored. This is approximately one to two months of the canal water pumped for the irrigation demands.

It is the opinion of Tetra Tech that this system is in good operating condition and it is recommended that the City continue proceeding with completing the weir improvement projects as well as other considerations to assist in maximizing system storage. The City previously installed a test ASR well in order to investigate the potential of storing excess water in the aquifer during the wet season with recovery during the dry season. This would reduce demands on the canal system. This program should be investigated further and additional wells constructed. The City of Cape Coral has been working with the City of Fort Myers regarding the potential of constructing an

interconnect pipeline which would allow transfer of excess reuse water from Fort Myers to Cape Coral. This project would reduce demand on the canal system.

3.4.3 Reuse Mains

The reuse irrigation water is carried to the reuse customers through 723 miles of reuse mains. These mains range in size from 2-inches to 42-inches in diameter. As with a potable water system, the reuse mains should be flushed periodically in order to be maintained properly. The UCD Division performs flushing of its reuse mains as needed.

It is the opinion of Tetra Tech that this system is in good operating condition.

Based on Tetra Tech's review of the Reuse Mains, besides regular maintenance and upgrades, no major improvements or expansions to reuse mains appear to be necessary at this time other than those new pipelines which will be installed as part of the UEP.

3.4.4 Backflow and Cross Connection Prevention

As part of an ongoing UCD Division program, the City is inspecting every potable water customer service. This is being done for two reasons. First, the City is verifying proper backflow protection. Second, they are inspecting for unauthorized reuse connections. This verification includes checking for unauthorized connection, conducting a cross-connection inspection, and checking the billing register for payment. With this program, the City is taking an active role in both ensuring that no free reuse service is provided and that appropriate use of this valuable commodity is occurring.

3.5 SAFETY

3.5.1 Water Production Division

The Water Production Division meets monthly to review OSHA requirements, conduct required training sessions, and review specific safety issues; such as caustic handling, blood borne pathogens, diesel fuel and generators, and liquid sodium hypochlorite and acid handling, for the plant and the plant staff. Additionally, the Division has a safety committee that meets quarterly to discuss plant safety and review accident reports.

3.5.2 Water Reclamation Division

All employees at the Water Reclamation Facilities are issued copies of the facilities safety policy booklets and are trained on the use of personal protective equipment. In-house safety meetings are held monthly at each of the plants. Bi-weekly safety handouts are provided for facility personnel to become familiar with proper general safety procedures. Annual training consists of lockout-tag-out training, right-to-know training, hazardous waste, blood borne pathogens, confined space entry, heat stroke, lightning, and safe driving training.

3.5.3 Collection and Distribution Division

The Collection and Distribution Division meets monthly to discuss safety issues and training. Meeting topics include confined space, lightning, heavy equipment, and traffic safety. Additionally, crews are subjected to unannounced risk management inspections weekly at job sites, and quarterly confined space entry training.

3.6 STRUCTURAL REVIEW

Overall WTP and WRF structures appear to be in good condition. Most structures are new or have recently gone through rehabilitation and/or upgrades.

3.6.1 Water Production Facilities

The structures for the Southwest RO WTP were constructed over 25 years ago, under pre-Dade County Protocols. The building structures which contain Plant 1 and 2 did not match current Florida Building Code Requirements (130 MPH with 1.15 importance factor) or more stringent City Building Codes (150 MPH with a 1.15 importance factor). Due to the potential for significant damage during a hurricane, it was recommended that both structures be brought into compliance with at least the Florida Building Code, as they house a critical community asset required for water supply. In FY 2016, the City was proceeding with the construction of the upgrades to the Southwest RO WTP structures, with construction scheduled to be completed in FY 2017. The completion of the new North RO WTP has considerably improved reliability and redundancy with regard to water supply and treatment.

3.6.2 Water Reclamation Facilities

Everest Water Reclamation Facility The Everest WRF expansion and modification was complete in FY 2009. As part of the expansion and modification many of the existing structures were significantly modified and rehabilitated. There are some visible cracks on the outside wall of the rehabilitated aeration basins, but the modified structures appear to be in good condition. Additionally, the new structures remain in good condition.

Southwest Water Reclamation Facility: A major construction/plant expansion program was substantially completed in FY 2010. As part of this construction, many of the existing facilities were significantly modified. The administration building is planned for eventual replacement, as it is in very poor condition and not currently occupied. Operations staff utilize temporary office trailers as they await construction of a new administration building.

With the exception of the administration building, it is the opinion of Tetra Tech that the existing facilities of the Southwest WRF are in good structural condition, based on observations made during the site visits.

4.0 REGULATORY COMPLIANCE

4.1 WATER PRODUCTION FACILITIES

The City of Cape Coral's Water Production Facilities are currently authorized to withdraw groundwater from the Upper Floridan Aquifer as granted by the SFWMD Water Use Permit (WUP) number 36-00046-W. The WUP was issued during October 2009, and is valid for a 20-year period ending October 22, 2029.

The WUP limits the maximum monthly withdrawal to 1.312 billion gallons per month and the maximum annual withdrawal to 14.326 billion gallons. During FY 2015, the total annual withdrawal from the aquifer was 4.622 billion gallons. In FY 2016, the total annual withdrawal from the aquifer was 4.798 billion gallons.

According to FDEP rules, an operation permit is not required for the City's RO plants. However, FDEP permit number FL0040088, expiration December 31, 2017 authorizes the City of Cape Coral's Southwest Reverse Osmosis Water Treatment Plant to discharge concentrate (brine) to one existing Class 1 underground injection well, and during emergencies to Lake Finistere. Prior to the renewal of this permit, FDEP identified that the permit to discharge to Lake Finistere would not be renewed. As a result, Consent Order [OGC Case No. 12-1121-36-1W] was issued August 31, 2012 requiring discontinuance of discharge to Lake Finistere within five years in order to allow the City time to construct a second Class I deep injection well at the Southwest RO WTP. The second deep injection has been constructed at the Southwest WRF and the new well has passed a mechanical integrity test. The new well will serve the Southwest RO WTP and Southwest WRF. Construction of surface piping is currently underway and the City anticipates that the new well will be ready for beneficial use beginning sometime in FY 2018.

The quality of finished potable water produced by the City of Cape Coral [Public Water Supply 536035] for public consumption has met or exceeded all the standards set forth by FDEP Rule 62550 FAC.

4.2 WATER RECLAMATION FACILITIES

The Everest Water Reclamation Facility operates under FDEP permit number FL0030007 and the Southwest Water Reclamation Facility operates under FDEP permit number FLA455458. The Everest plant has a capacity of 13.4 MGD and the Southwest Plant has a capacity of 15.0 MGD.

Effluent disposal from both WRF facilities is permitted as public access reuse irrigation. Everest WRF is also permitted to surface water discharge to the Caloosahatchee River, a Class IV marine water, having a wasteload allocation for CBOD of 2061.1 pounds per year (20 mg/L). Total suspended solids of 2061.1 pounds per year (20 mg/L), total nitrogen of 308.5 pounds per year, 3 milligrams per liter and total phosphorus of (51.4 pounds per year) (0.5 mg/L). The City constructed deep injection wells for backup effluent disposal. The deep injection wells were completed in early FY 2010 and operational testing began in June 2010. FDEP issued the operating permit in January 2012. The river disposal system will remain as an emergency backup for the Everest WRF, however this disposal option has not been used since 2008.

The effluent limitations for public access reuse are 5 mg/L total suspended solids and non-detect on fecal coliform 75% of the time (no single sample greater than 25 colonies per 100 mL). Both WRFs have consistently met permit requirements.

4.3 CANAL PUMP STATIONS

Withdrawals from the canals used to augment the reuse water supply are permitted under an amended South Florida Water Management District WUP, which was separated from the raw water supply well permit in FY 2006. This permit was renewed in FY 2006. The permitted limit for the annual withdrawal from the canal system was increased from 4.35 billion gallons to 11.622 billion gallons. Similarly, the maximum monthly limit of 873.0 MG was increased to 1.490 billion gallons. The new expiration date of this permit is March 21, 2026.

5.0 UTILITY CAPITAL IMPROVEMENTS PLAN

5.1 INTRODUCTION

This report provides an overview of the three major utility systems (potable water, wastewater, and irrigation water) that are owned and operated by the City of Cape Coral. In addition to performing operations, routine maintenance, and ongoing rehabilitation programs on these three major utility systems, the City also plans and implements major capital improvements. This is done to ensure the facilities will continue to comply with applicable regulations while maintaining sufficient capacity to meet current and future demands.

5.2 BOND ISSUE CAPITAL PROJECTS

At this time, the City has completed all of the capital projects identified in its outstanding bond issues, except the biosolids facility. In FY 2016, the City was in the process of implementing construction of a portion of the biosolids facility to improve process residuals dewatering and reduce annual operation costs. The three centrifugal dewatering units and auxiliary polymer feed equipment that were included in the originally proposed biosolids treatment system are being placed into service. The City has entered into an inter-local agreement with Lee County for dewatered biosolids to be transported to the County's landfill for processing (by the County) at a significant savings due to the greater dewatering efficiency of the centrifuges.

5.3 EXISTING AND FUTURE CAPITAL IMPROVEMENTS

The City annually prepares a five-year Capital Improvement Plan (CIP). **Table 5-1** summarizes the City's water, wastewater, and irrigation CIP included in the FY 2016 budget. Typically, City staff identify major expansions or system improvements several years in advance. The projects can then be planned and budgeted for in an orderly manner. The City reviews and updates the five-year CIP annually, extending it out an additional year. In the process, each planned improvement will undergo several reviews. The five-year CIP is adjusted by the City as needs change throughout each fiscal year. As economic conditions change, modifications may be made to defer the year for completion of projects to align with budget constraints.

Table 5-1. Five-Year CIP

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	ADM-36 Palm Tree Bl Phase 1	Water/Sewer User Fees	\$1,977,633	-	-	-	-	-	-	\$1,977,633
Utilities	ADM-37 Galvanized Pipe Rpl 1A	Water/Sewer User Fees	\$1	-	-	-	-	-	-	\$1
Utilities	IRR-14 SW 6/7 Non Assd Util	Water/Sewer User Fees	\$159,324	-	-	-	-	-	-	\$159,324
Utilities	UCD-1 Administration Building	Water/Sewer User Fees	\$752,022	-	\$500,000	\$4,000,000	\$3,000,000	-	-	\$8,252,022
Utilities	ADM-47 Foremain I/C Veterans	Water/Sewer User Fees	\$100,000	-	\$1,750,000	\$500,000	-	-	-	\$2,350,000
Utilities	IRR-15 Weir#4 Construction	Water/Sewer User Fees	\$1,222,410	-	-	-	-	-	-	\$1,222,410
Utilities	ADM-38 Fire Sprinkler ConvFY14	Water/Sewer User Fees	\$291,073	-	-	-	-	-	-	\$291,073
Utilities	IRR-16 Weir# 16 & 17 Const	Water/Sewer User Fees	\$800,000	-	-	-	-	-	-	\$800,000
Utilities	IRR-17 Reuse River Crossing	Water/Sewer User Fees	\$1,142,131	-	\$1,000,000	\$1,250,000	\$4,750,000	\$3,000,000	-	\$11,142,131
Utilities	ADM-39 Potable Wtr Infr FY14	Water/Sewer User Fees	\$64,394	-	-	-	-	-	-	\$64,394
Utilities	IRR-18 Reuse Main Ext (FGUA)	Water/Sewer User Fees	\$500,000	-	-	-	-	-	-	\$500,000
Utilities	WRE3 Everest Landscaping	Water/Sewer User Fees	\$153,573	-	-	-	-	-	-	\$153,573
Utilities	WRC-8 Plant LS Rehabs FY13	Water/Sewer User Fees	-	-	-	-	-	-	-	-

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	ADM-40 Infiltrn & Inflow FY14	Water/Sewer User Fees	\$1	-	-	-	-	-	-	\$1
Utilities	WRB-2 Biosolids Centrifuge	Water/Sewer User Fees	-\$39,977	-	-	-	-	-	-	-\$39,977
Utilities	UCD-8 Manhole Rehab FY14	Water/Sewer User Fees	-\$1	-	-	-	-	-	-	-\$1
Utilities	WRC-9 Lift Station Rehab FY12	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	WRE-4 Plant LS Rehab FY13	Water/Sewer User Fees	\$128,109	-	-	-	-	-	-	\$128,109
Utilities	WRC-10 LS Fixed General	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	WRSW-4 Operations Building	Water/Sewer User Fees	\$4,225,515	\$1,500,000	-	-	-	-	-	\$5,725,515
Utilities	WRSW-5 Plant LS Rehabs FY13	Water/Sewer User Fees	\$70,247	-	-	-	-	-	-	\$70,247
Utilities	SRO-4 Plant 1 Structural Upgrd	Water/Sewer User Fees	\$706,398	-	-	-	-	-	-	\$706,398
Utilities	SRO-5 Retrofit Well Field Com	Water/Sewer User Fees	\$753,266	-	-	-	-	-	-	\$753,266
Utilities	SRO-6 Control System Upgrade	Water/Sewer User Fees	\$750,000	\$250,000	-	-	-	-	-	\$1,000,000
Utilities	SRO-7 Underground Well Feeds	Water/Sewer User Fees	\$145,675	\$47,816	-	-	-	-	-	\$193,491
Utilities	SRO-8 Deep Injection Well# IW2	Water/Sewer User Fees	\$1,453,133	-	-	-	-	-	-	\$1,453,133

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	SRO-9 Whse & Storage Bldg	Water/Sewer User Fees	\$108,318	-	-	-	-	-	-	\$108,318
Utilities	SRO-10 Lightening & Grounding	Water/Sewer User Fees	\$79,220	-	-	-	-	-	-	\$79,220
Utilities	NRO-5 Deep Injection Well IW1	Water/Sewer User Fees	\$1,500,000	-	\$3,000,000	-	-	-	-	\$4,500,000
Utilities	NRO-6 Perimeter Wall	Water/Sewer User Fees	\$850,000	-	-	-	-	-	-	\$850,000
Utilities	NRO-7 Landscaping	Water/Sewer User Fees	\$300,000	-	-	-	-	-	-	\$300,000
Utilities	NRO-8 Aux Power Van Loon PS	Water/Sewer User Fees	\$940,025	-	-	-	-	-	-	\$940,025
Utilities	NRO-9 Distribtn Sys Automate	Water/Sewer User Fees	-	-	\$240,000	\$390,000	-	-	-	\$630,000
Utilities	NRO-10 Rehab/Rpl Raw Wtr Well	Water/Sewer User Fees	-	\$100,000	\$800,000	\$800,000	\$1,600,000	\$1,600,000	-	\$4,900,000
Utilities	WRC-11 Lift Station Rehab FY14	Water/Sewer User Fees	\$1,327,894	-	-	-	-	-	-	\$1,327,894
Utilities	WRC-12 Lift Station Rehab FY16	Water/Sewer User Fees	\$1,487,600	-	-	-	-	-	-	\$1,487,600
Utilities	WRC-13 Lift Station Rehab FY17	Water/Sewer User Fees	-	\$1,790,352	-	-	-	-	-	\$1,790,352
Utilities	WRE-5 Building for Analyzers	Water/Sewer User Fees	\$232,520	-	-	-	-	-	-	\$232,520
Utilities	ADM-48 Infiltrn & Inflow FY15	Water/Sewer User Fees	\$84,710	-	-	-	-	-	-	\$84,710

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	ADM-43 42" Forcemain Intercon	Water/Sewer User Fees	\$2,430,029	\$500,000	-	-	-	-	-	\$2,930,029
Utilities	ADM-44 Unspecified Projects	Water/Sewer User Fees	\$151,781	-	-	-	-	-	-	\$151,781
Utilities	ADM-45 ASR/IRR Supply FY14	Water/Sewer User Fees	\$27,300	-	-	-	-	-	-	\$27,300
Utilities	ADM-46 Palm Tree Phase III	Water/Sewer User Fees	-	-	-	-	-	-	\$1,000,000	\$1,000,000
Utilities	SRO-3 Odor Control Mod	Water/Sewer User Fees	\$508,445	-	-	-	-	-	-	\$508,445
Utilities	NRO-1 Bulk Diesel Storage Mod	Water/Sewer User Fees	\$246,220	-	-	-	-	-	-	\$246,220
Utilities	ADM-24 Land Purchases	Water/Sewer User Fees	\$2,270,976	\$1,025,000	\$975,000	\$865,000	\$715,000	\$615,000	\$590,000	\$7,055,976
Utilities	WRSW-1 Chlorine Chamber Coatg	Water/Sewer User Fees	-	\$150,000	-	-	-	-	-	\$150,000
Utilities	IRR-1 Weir Improvements	Water/Sewer User Fees	-	\$100,000	\$1,000,000	\$1,000,000	\$1,500,000	-	\$1,500,000	\$5,100,000
Utilities	WRC-1 Lift Station Rehab FY18	Water/Sewer User Fees	-	-	\$2,114,987	-	-	-	-	\$2,114,987
Utilities	SRO-1 Plt 2 Feed Wtr/Blend Lin	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	IRR-2 NE 10MG Stor Tank & Pump	Water/Sewer User Fees	\$500,000	-	\$100,000	\$5,950,000	\$5,950,000	-	-	\$12,500,000
Utilities	IRR-3 SW 5MG Stor Tank & Pump	Water/Sewer User Fees	\$3,900,000	\$1,500,000	-	-	-	-	-	\$5,400,000

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	UCD-7 MARS Test Bench	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	WRE/WRSW-1 Clar/Launder Trough	Water/Sewer User Fees	-	-	\$210,000	\$165,000	-	-	-	\$375,000
Utilities	WRE-2 Reseal North CI Chamber	Water/Sewer User Fees	\$120,000	-	-	-	-	-	-	\$120,000
Utilities	WRC-5 LS Odor Control Rehab	Water/Sewer User Fees	\$139,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	-	\$514,000
Utilities	ADM-1 Smoke Testing I&I	Water/Sewer User Fees	\$100,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$400,000
Utilities	IRR-7 Reuse Sys Improve FY15	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	WRC-6 Generator Storage Bldg	Water/Sewer User Fees	\$157,500	\$1,000,000	-	-	-	-	-	\$1,157,500
Utilities	ADM-3 Galvanized Pipe Rpl 3A	Water/Sewer User Fees	\$160,480	-	-	-	-	-	-	\$160,480
Utilities	ADM-4 Galvanized Pipe Rpl 3B	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	ADM-5 Galvanized Pipe Rpl 2A	Water/Sewer User Fees	-	\$1,700,000	-	-	-	-	-	\$1,700,000
Utilities	ADM-6 Galvanized Pipe Rpl 2B	Water/Sewer User Fees	-	-	\$1,350,000	-	-	-	-	\$1,350,000
Utilities	WRC-2 Lift Station Rehab FY19	Water/Sewer User Fees	-	-	-	\$2,452,442	-	-	-	\$2,452,442
Utilities	WRC-3 Lift Station Rehab FY20	Water/Sewer User Fees	-	-	-	-	\$2,524,709	-	-	\$2,524,709

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	WRC-4 Lift Station Rehab FY21	Water/Sewer User Fees	-	-	-	-	-	\$2,594,000	-	\$2,594,000
Utilities	ADM-7 Fire Sprinkler Conv FY15	Water/Sewer User Fees	\$250,000	-	-	-	-	-	-	\$250,000
Utilities	ADM-8 Fire Sprinkler Conv FY16	Water/Sewer User Fees	\$500,000	-	-	-	-	-	-	\$500,000
Utilities	ADM-9 Fire Sprinkler Conv FY17	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	ADM-10 Fire Sprinkler Conv FY18	Water/Sewer User Fees	-	-	\$500,000	-	-	-	-	\$500,000
Utilities	ADM-11 Fire Sprinkler Conv FY19	Water/Sewer User Fees	-	-	-	\$500,000	-	-	-	\$500,000
Utilities	ADM-12 Potable W'tr Infr FY15	Water/Sewer User Fees	\$39,560	-	-	-	-	-	-	\$39,560
Utilities	ADM-13 Potable W'tr Infr FY16	Water/Sewer User Fees	\$100,000	-	-	-	-	-	-	\$100,000
Utilities	ADM-14 Potable W'tr Infr FY17	Water/Sewer User Fees	-	\$300,000	-	-	-	-	-	\$300,000
Utilities	ADM-15 Potable W'tr Infr FY18	Water/Sewer User Fees	-	-	\$300,000	-	-	-	-	\$300,000
Utilities	ADM-16 Potable W'tr Infr FY19	Water/Sewer User Fees	-	-	-	\$300,000	-	-	-	\$300,000
Utilities	ADM-17 Potable W'tr Infr FY20	Water/Sewer User Fees	-	-	-	-	\$300,000	-	-	\$300,000
Utilities	ADM-49 ASR/IRR Supply FY15	Water/Sewer User Fees	\$465,584	-	-	-	-	-	-	\$465,584

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	UCD-2 Manhole Rehab FY16	Water/Sewer User Fees	\$332,587	-	-	-	-	-	-	\$332,587
Utilities	UCD-3 Manhole Rehab FY17	Water/Sewer User Fees	-	\$500,000	-	-	-	-	-	\$500,000
Utilities	UCD-4 Manhole Rehab FY18	Water/Sewer User Fees	-	-	\$500,000	-	-	-	-	\$500,000
Utilities	UCD-5 Manhole Rehab FY19	Water/Sewer User Fees	-	-	-	\$500,000	-	-	-	\$500,000
Utilities	UCD-6 Manhole Rehab FY20	Water/Sewer User Fees	-	-	-	-	\$500,000	-	-	\$500,000
Utilities	ADM-54 Burnt St Widg- Casings	Water/Sewer User Fees	\$254,361	-	-	-	-	-	-	\$254,361
Utilities	ADM-19 Infiltrn & Inflow FY16	Water/Sewer User Fees	\$500,000	-	-	-	-	-	-	\$500,000
Utilities	ADM-20 Infiltrn & Inflow FY17	Water/Sewer User Fees	-	\$750,000	-	-	-	-	-	\$750,000
Utilities	ADM-21 Infiltrn & Inflow FY18	Water/Sewer User Fees	-	-	\$750,000	-	-	-	-	\$750,000
Utilities	ADM-22 Infiltrn & Inflow FY19	Water/Sewer User Fees	-	-	-	\$750,000	-	-	-	\$750,000
Utilities	ADM-23 Infiltrn & Inflow FY20	Water/Sewer User Fees	-	-	-	-	\$750,000	-	-	\$750,000
Utilities	SRO-2 Plt 2 Bldg Replacement	Water/Sewer User Fees	-	-	-	\$500,000	\$3,000,000	\$4,000,000	\$4,000,000	\$11,500,000
Utilities	WRB-1 Compost Process Facility	Water/Sewer User Fees	-	-	-	-	-	-	-	-

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	NRO-3 Reconst Van Loon PS Bldg	Water/Sewer User Fees	-	-	\$250,000	\$250,000	\$250,000	-	-	\$750,000
Utilities	ADM-26 ASR/IRR Supply FY16	Water/Sewer User Fees	\$100,000	-	-	-	-	-	-	\$100,000
Utilities	ADM-27 ASR/IRR Supply FY17	Water/Sewer User Fees	-	\$100,000	-	-	-	-	-	\$100,000
Utilities	ADM-28 ASR/IRR Supply FY18	Water/Sewer User Fees	-	-	\$100,000	-	-	-	-	\$100,000
Utilities	ADM-29 ASR/IRR Supply FY19	Water/Sewer User Fees	-	-	-	\$100,000	-	-	-	\$100,000
Utilities	ADM-30 ASR/IRR Supply FY20	Water/Sewer User Fees	-	-	-	-	\$100,000	-	-	\$100,000
Utilities	ADM-42 Irr to PW (F/H) FY15	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	ADM-31 Irr to PW (F/H) FY16	Water/Sewer User Fees	\$500,000	-	-	-	-	-	-	\$500,000
Utilities	ADM-32 Irr to PW (F/H) FY17	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	ADM-33 Irr to PW (F/H) FY18	Water/Sewer User Fees	-	-	\$500,000	-	-	-	-	\$500,000
Utilities	ADM-34 Irr to PW (F/H) FY19	Water/Sewer User Fees	-	-	-	\$500,000	-	-	-	\$500,000
Utilities	ADM-35 Irr to PW (F/H) FY20	Water/Sewer User Fees	-	-	-	-	\$500,000	-	-	\$500,000
Utilities	IRR-8 Reuse Sys Improve FY16	Water/Sewer User Fees	\$369,838	-	-	-	-	-	-	\$369,838

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	IRR-9 Reuse Sys Improve FY17	Water/Sewer User Fees	-	\$350,000	-	-	-	-	-	\$350,000
Utilities	IRR-10 Reuse Sys Improve FY18	Water/Sewer User Fees	-	-	\$350,000	-	-	-	-	\$350,000
Utilities	IRR-11 Reuse Sys Improve FY19	Water/Sewer User Fees	-	-	-	\$350,000	-	-	-	\$350,000
Utilities	ADM-50 Palm Tree Improv Phase	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	IRR-12 Reuse Sys Improve FY20	Water/Sewer User Fees	-	-	-	-	\$350,000	-	-	\$350,000
Utilities	WRSW-2 Repave South Entrance	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	IRR-4 NaClO Storage Rooms	Water/Sewer User Fees	\$11,306	-	-	-	-	-	-	\$11,306
Utilities	WRSW-3 Replace Gate & Actr	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	WRC-7 Rehab Master LS 200	Water/Sewer User Fees	\$1,015,921	\$80,000	-	-	-	-	-	\$1,095,921
Utilities	WRC-7 Vault Coating FY16	Water/Sewer User Fees	\$25,000	-	-	-	-	-	-	\$25,000
Utilities	WRE-6 Vault Coating FY16	Water/Sewer User Fees	\$40,000	-	-	-	-	-	-	\$40,000
Utilities	WRE/WSW-2 Clarifier Ctnng FY16	Water/Sewer User Fees	\$100,000	\$100,000	\$100,000	\$50,000	-	-	-	\$350,000
Utilities	ADM-56 NE Reservoir	Water/Sewer User Fees	\$451,100	-	-	-	-	-	-	\$451,100

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	ADM-57 NC Reservoir	Water/Sewer User Fees	\$200,000	\$400,000	-	-	-	-	-	\$600,000
Utilities	SRO-12 Containment Pits	Water/Sewer User Fees	-	\$300,000	-	-	-	-	-	\$300,000
Utilities	NRO-2 Containment Pits	Water/Sewer User Fees	\$350,000	-	-	-	-	-	-	\$350,000
Utilities	SRO-13 Pit 2 MCC Replacement	Water/Sewer User Fees	-	\$750,000	-	-	-	-	-	\$750,000
Utilities	WRE-7 Headworks & Structl Ctg	Water/Sewer User Fees	-	\$200,000	\$200,000	-	-	-	-	\$400,000
Utilities	WRE-9 Bleach Containment Ctg	Water/Sewer User Fees	-	\$250,000	-	-	-	-	-	\$250,000
Utilities	WRSW-6 Rpl Utility Mains MCC-1	Water/Sewer User Fees	-	-	-	\$150,000	-	-	-	\$150,000
Utilities	ADM-58 Burnt St-Casings Ph II	Water/Sewer User Fees	-	\$600,000	-	-	-	-	-	\$600,000
Utilities	ADM-62 Fiber Optics	Water/Sewer User Fees	-	\$750,000	\$750,000	\$500,000	-	-	-	\$2,000,000
Utilities	ADM-63 WAS Line	Water/Sewer User Fees	-	\$500,000	\$1,000,000	\$1,000,000	-	-	-	\$2,500,000
Utilities	ADM-65 FM/MOV/IMPS Sys & Comm	Water/Sewer User Fees	-	\$1,000,000	\$500,000	\$1,000,000	\$1,000,000	\$1,000,000	-	\$4,500,000
Utilities	IRR-21 Irrigation System Comm	Water/Sewer User Fees	-	\$500,000	-	-	-	-	-	\$500,000
Utilities	ADM-71 North 2 Canal PS (1)	Water/Sewer User Fees	-	\$3,500,000	\$3,500,000	-	-	-	-	\$7,000,000

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	WRE-10 MCC Blower Conduit Clar	Water/Sewer User Fees	-	\$50,000	-	-	-	-	-	\$50,000
Utilities	WRWS-8 Odor Control Rehab	Water/Sewer User Fees	-	\$60,000	-	-	-	-	-	\$60,000
Utilities	IRR-22 North 2 Non Assd Util	Water/Sewer User Fees	-	\$1,000,000	-	-	-	-	-	\$1,000,000
Utilities	IRR-23 North 1 Non Assd Util	Water/Sewer User Fees	-	-	-	\$350,000	\$350,000	-	-	\$700,000
Utilities	IRR-24 North 3 Non Assd Util	Water/Sewer User Fees	-	-	-	-	\$250,000	\$250,000	-	\$500,000
Utilities	ADM-64 F/Main Replace Pelican	Water/Sewer User Fees	-	-	-	\$750,000	-	-	-	\$750,000
Utilities	ADM-59 Burnt St-Casings Ph III	Water/Sewer User Fees	-	-	\$750,000	-	-	-	-	\$750,000
Utilities	WRWS-9 Reroute Clar Pipe-ABW	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	SRO-14 Ground Storage Tank Ctg	Water/Sewer User Fees	-	-	-	-	-	-	-	-
Utilities	UCD-9 Manhole Rehab FY21	Water/Sewer User Fees	-	-	-	-	-	\$500,000	-	\$500,000
Utilities	ADM-66 Fire Sprinkler ConvFY20	Water/Sewer User Fees	-	-	-	-	\$500,000	-	-	\$500,000
Utilities	ADM-51 Infiltrn & Inflow FY21	Water/Sewer User Fees	-	-	-	-	-	\$750,000	-	\$750,000
Utilities	ADM-60 Infiltrn & Inflow FY22	Water/Sewer User Fees	-	-	-	-	-	-	\$750,000	\$750,000

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	ADM-52 ASR/IRR Supply FY21	Water/Sewer User Fees	-	-	-	-	-	\$3,000,000	-	\$3,000,000
Utilities	ADM-55 ASR/IRR Supply FY22	Water/Sewer User Fees	-	-	-	-	-	-	\$3,000,000	\$3,000,000
Utilities	ADM-53 Irr to PW (F/H) FY21	Water/Sewer User Fees	-	-	-	-	-	\$1,000,000	-	\$1,000,000
Utilities	ADM-61 Irr to PW (F/H) FY22	Water/Sewer User Fees	-	-	-	-	-	-	\$1,000,000	\$1,000,000
Utilities	IRR-13 Reuse Sys Improve FY21	Water/Sewer User Fees	-	-	-	-	-	\$350,000	-	\$350,000
Utilities	IRR-20 Reuse Sys Improve FY22	Water/Sewer User Fees	-	-	-	-	-	-	\$350,000	\$350,000
Utilities	NSRO-3 Replace Membranes	Water/Sewer User Fees	-	-	-	-	-	\$1,500,000	-	\$1,500,000
Utilities	WRE-8 Rehab Biosolids Bldg	Water/Sewer User Fees	-	-	-	-	-	-	\$500,000	\$500,000
Utilities	WRC-14 Lift Station Rehab FY22	Water/Sewer User Fees	-	-	-	-	-	-	\$2,735,000	\$2,735,000
Utilities	UCD-10 Manhole Rehabs FY22	Water/Sewer User Fees	-	-	-	-	-	-	\$500,000	\$500,000
Utilities	ADM-67 Fire Sprinkler ConvFY21	Water/Sewer User Fees	-	-	-	-	-	\$500,000	-	\$500,000
Utilities	ADM-68 Fire Sprinkler ConvFY22	Water/Sewer User Fees	-	-	-	-	-	-	\$500,000	\$500,000
Utilities	ADM-69 Potable Wtr Infr FY21	Water/Sewer User Fees	-	-	-	-	-	\$300,000	-	\$300,000

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utilities	ADM-70 Potable Wtr Infr FY22	Water/Sewer User Fees	-	-	-	-	-	-	\$300,000	\$300,000
Utility Extension	North Area 2 Potable Water Transmission	CFEC	\$2,381,123	\$6,864,933	-	-	-	-	-	\$6,864,933
Utility Extension	North Area 2 Wastewater Transmission	CFEC	\$10,432,209	\$11,081,499	-	-	-	-	-	\$11,081,499
Utility Extension	North Area 2 Irrigation Transmission	CFEC	\$5,279,259	\$22,641,502	-	-	-	-	-	\$20,529,504
Utility Extension	North Area 1 Potable Water Transmission	CFEC	\$78,143	-	\$447,117	\$447,117	-	-	-	\$894,234
Utility Extension	North Area 1 Wastewater Transmission	CFEC	\$1,353,885	-	\$7,746,618	\$7,746,618	-	-	-	\$15,493,236
Utility Extension	North Area 1 Irrigation Transmission	CFEC	\$1,088,058	-	\$6,225,618	\$6,225,618	-	-	-	\$12,451,236
Utility Extension	North Area 3 Potable Water Transmission	CFEC	-	-	\$185,743	\$185,743	\$2,173,192	\$2,173,192	-	\$4,717,870
Utility Extension	North Area 3 Wastewater Transmission	CFEC	-	-	\$1,038,193	\$1,038,193	\$12,146,853	\$12,146,853	-	\$26,370,092
Utility Extension	North Area 3 Irrigation Transmission	CFEC	-	-	\$696,843	\$696,843	\$8,153,061	\$8,153,061	-	\$17,699,808
Utility Extension	North Area 4 Potable Water Transmission	CFEC	-	-	-	-	\$27,869	\$27,869	\$326,063	\$381,801
Utilities	ADM-70 Potable Wtr Infr FY22	Water/Sewer User Fees	-	-	-	-	-	-	\$300,000	\$300,000
Utility Extension	North Area 2 Potable Water Transmission	CFEC	\$2,381,123	\$6,864,933	-	-	-	-	-	\$6,864,933

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utility Extension	North Area 2 Wastewater Transmission	CFEC	\$10,432,209	\$11,081,499	-	-	-	-	-	\$11,081,499
Utility Extension	North Area 2 Irrigation Transmission	CFEC	\$5,279,259	\$22,641,502	-	-	-	-	-	\$20,529,504
Utility Extension	North Area 1 Potable Water Transmission	CFEC	\$78,143	-	\$447,117	\$447,117	-	-	-	\$894,234
Utility Extension	North Area 1 Wastewater Transmission	CFEC	\$1,353,885	-	\$7,746,618	\$7,746,618	-	-	-	\$15,493,236
Utility Extension	North Area 1 Irrigation Transmission	CFEC	\$1,088,058	-	\$6,225,618	\$6,225,618	-	-	-	\$12,451,236
Utility Extension	North Area 3 Potable Water Transmission	CFEC	-	-	\$185,743	\$185,743	\$2,173,192	\$2,173,192	-	\$4,717,870
Utility Extension	North Area 3 Wastewater Transmission	CFEC	-	-	\$1,038,193	\$1,038,193	\$12,146,853	\$12,146,853	-	\$26,370,092
Utility Extension	North Area 3 Irrigation Transmission	CFEC	-	-	\$696,843	\$696,843	\$8,153,061	\$8,153,061	-	\$17,699,808
Utility Extension	North Area 4 Potable Water Transmission	CFEC	-	-	-	-	\$27,869	\$27,869	\$326,063	\$381,801
Utility Extension	North Area 4 Wastewater Transmission	CFEC	-	-	-	-	\$958,161	\$958,161	\$11,210,488	\$13,126,810
Utility Extension	North Area 4 Irrigation Transmission	CFEC	-	-	-	-	\$655,116	\$655,116	\$7,664,861	\$8,975,093
Utility Extension	North Area 5 Potable Water Transmission	CFEC	-	-	-	-	-	-	\$98,645	\$98,645
Utility Extension	North Area 5 Wastewater Transmission	CFEC	-	-	-	-	-	-	\$976,913	\$976,913

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utility Extension	North Area 5 Irrigation Transmission	CFEC	-	-	-	-	-	-	\$664,893	\$664,893
Utility Extension	Southwest 6 & 7 Potable Water Collection & Distribution	Utility Special Assessment	-	-	-	-	-	-	-	-
Utility Extension	Southwest 6 & 7 Wastewater Collection & Distribution	Utility Special Assessment	-	-	-	-	-	-	-	-
Utility Extension	Southwest 6 & 7 Irrigation Collection & Distribution	Utility Special Assessment	-	-	-	-	-	-	-	-
Utility Extension	North Area 2 Potable Water Collection & Distribution	Utility Special Assessment	\$15,386,622	\$6,412,987	-	-	-	-	-	\$6,412,987
Utility Extension	North Area 2 Wastewater Collection & Distribution	Utility Special Assessment	\$51,019,580	\$6,329,139	-	-	-	-	-	\$6,329,139
Utility Extension	North Area 2 Irrigation Collection & Distribution	Utility Special Assessment	\$20,580,662	-	-	-	-	-	-	\$0
Utility Extension	North Area 1 Potable Water Collection & Distribution	Utility Special Assessment	\$2,834,941	-	\$11,121,848	\$11,121,848	-	-	-	\$22,243,696
Utility Extension	North Area 1 Wastewater Collection & Distribution	Utility Special Assessment	\$13,133,197	-	\$28,803,009	\$28,803,009	-	-	-	\$57,606,018

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utility Extension	North Area 1 Irrigation Collection & Distribution	Utility Special Assessment	\$6,751,884	-	\$11,618,773	\$11,618,773	-	-	-	\$23,237,546
Utility Extension	North Area 3 Potable Water Collection & Distribution	Utility Special Assessment	-	-	\$1,391,893	\$1,391,893	\$16,285,153	\$16,285,153	-	\$35,354,092
Utility Extension	North Area 3 Wastewater Collection & Distribution	Utility Special Assessment	-	-	\$2,835,649	\$2,835,649	\$33,177,093	\$33,177,093	-	\$72,025,484
Utility Extension	North Area 3 Irrigation Collection & Distribution	Utility Special Assessment	-	-	\$1,143,865	\$1,143,865	\$13,383,224	\$13,383,224	-	\$29,054,178
Utility Extension	North Area 4 Potable Water Collection & Distribution	Utility Special Assessment	-	-	-	-	\$1,167,703	\$1,167,703	\$13,662,129	\$15,997,535
Utility Extension	North Area 4 Wastewater Collection & Distribution	Utility Special Assessment	-	-	-	-	\$2,517,446	\$2,517,446	\$29,454,114	\$34,489,006
Utility Extension	North Area 4 Irrigation Collection & Distribution	Utility Special Assessment	-	-	-	-	\$1,015,506	\$1,015,506	\$11,881,421	\$13,912,433
Utility Extension	North Area 5 Potable Water Collection & Distribution	Utility Special Assessment	-	-	-	-	-	-	\$1,194,991	\$1,194,991
Utility Extension	North Area 5 Wastewater Collection & Distribution	Utility Special Assessment	-	-	-	-	-	-	\$2,592,002	\$2,592,002

Table 5-1. Five-Year CIP (Cont'd)

Type	Description	Funding Source	FY16 EOY Budget Balance	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY16-22 TOTAL
Utility Extension	North Area 5 Irrigation Collection & Distribution	Utility Special Assessment	-	-	-	-	-	-	\$1,045,581	\$1,045,581
Annual Totals			\$168,901,765	\$75,158,228	\$96,260,156	\$98,347,611	\$119,840,086	\$112,744,377	\$97,547,101	\$636,367,763

6.0 FINANCIAL REVIEW

6.1 GENERAL

The Water and Sewer Fund is classified as an enterprise fund and accounts for operations that are financed and operated in a manner similar to private business enterprises. As such, the intent and focus of the Utility should be to ensure that the costs of providing goods or services to the general public on a continuing basis are financed or recovered primarily through user charges.

In order to finance the various capital improvements needed to properly maintain the Utility and continue to operate in the most cost effective manner possible, the City has utilized three different forms of long-term debt instruments. Two of these instruments are two different types of Bonds; revenue bonds and assessment bonds. The primary difference between the two lies in the security pledged by the City to the bondholders to repay the principal and interest amounts as they become due. The Water and Sewer Revenue Bonds, Series 2011, are secured by a pledge of the user fees and charges as well as other capital and miscellaneous charges received from the operation of the City's water and sewer systems. The Water and Wastewater Improvement Assessment Bonds, Series 2007, on the other hand, are secured by a pledge of the proceeds of the City's water and sewer special assessment programs for each respective area of improvement. The City has also entered into loan agreements (Notes Payable) through the State Revolving Fund Loan Program secured by a junior lien pledge of the system revenues.

6.2 OUTSTANDING DEBT

Table 6-1 presents a listing of the long-term outstanding debt as of September 30, 2016, including the original issue amount.

6.3 BOND RESOLUTION AND COVENANTS

The Bond Resolution No. 98-86 as amended and supplemented sets forth the covenants the City has made pertaining to revenues, operating and maintenance (O&M) expenses, debt service coverage, and other compliance issues. These covenants and other compliance issues will be addressed in the following portion of this report and consist of:

- Operation and Maintenance
- Annual Budget
- Rates:
 - Schedule of Rates and Charges
 - O & M Expenses
 - Net Revenues
 - Debt Service Coverage
 - Renewal and Replacement (R & R) Requirements
- Books and Records
- Annual Audit
- Insurance

Table 6-1. Listing of Long-Term Outstanding Debt

Series	Name	Original Issue Amount	Outstanding Amount
<u>Revenue Bonds</u>			
2011	Water and Sewer Refunding Revenue Bonds ⁽¹⁾	\$ 175,000,000	\$ 166,185,000
2011A	Water and Sewer Refunding Revenue Bonds ⁽²⁾	106,560,000	100,845,000
2013	Water and Sewer Refunding Revenue Bonds ⁽³⁾	10,440,000	4,265,000
2015	Water and Sewer Refunding Revenue Bonds	72,415,000	72,415,000
2015A	Water and Sewer Refunding Revenue Bonds	94,740,000	93,310,000
	Total	\$ 459,155,000	\$ 437,020,000
<u>Notes Payable</u>			
2001	State Revolving Fund Loan Agreement #7516P ⁽⁴⁾	\$ 13,856,923	\$ 1,196,325
2004	State Revolving Fund Loan Agreement #7516L 01 ⁽⁴⁾	7,224,652	308,464
2004	State Revolving Fund Loan Agreement #7516L 02 ⁽⁴⁾	35,848,122	1,466,875
2013	State Revolving Fund Loan Agreement DW#360103 ⁽⁴⁾⁽⁵⁾	16,668,746	11,944,353
2013	State Revolving Fund Loan Agreement WW#360100 ⁽⁴⁾⁽⁵⁾	54,662,272	54,662,272
	Total	\$ 128,260,715	\$ 69,578,289
<u>Special Assessment Debt</u>			
2003	Water Improvement Assessment Bonds (Southwest 3)	\$ 8,295,000	\$ 1,825,000
2005	Wastewater and Irrigation Water Refunding Assessment Bonds (Southwest 1, Pine Island Road and Southwest 3 Areas)	53,285,000	12,645,000
2005	Utility Improvement Assessment Bonds (Southwest 2)	31,680,000	13,740,000
2006	Utility Improvement Assessment Bonds (Southeast 1)	30,870,000	14,320,000
2007	Utility Improvement Assessment Bonds (Southwest 4)	67,955,000	38,390,000
2007	Utility Improvement Assessment Bonds (Southwest 5 and Surfside)	57,855,000	27,570,000
	Total	\$ 249,940,000	\$ 108,490,000

- (1) Fully refunded the outstanding 2009 Water and Sewer Revenue Bonds and refinanced certain commercial paper issued on an interim basis.
- (2) Refinanced \$107,438,000 of commercial paper obligations issued on an interim basis.
- (3) Refunded \$10,970,000 of 2003 Water and Sewer Refunding Revenue Bonds.
- (4) Secured by lien on net revenues and impact fees.
- (5) Payments begin six months after completion of the project, estimated at September 2017. Outstanding amount includes actual draws and capitalized interest

6.4 OPERATION AND MAINTENANCE

The City's "Operating and Maintenance" covenant states that:

"The City of Cape Coral should maintain or cause to be maintained the system and all portions thereof in good condition and will operate or cause to be operated the same in an efficient and economical manner, making or causing to be made such expenditures for equipment and for renewals, repairs and replacements as may be proper for the economical operation and maintenance thereof."

Based on inspections of the water and sewer facilities, review of records, and discussions with the Utility's staff, it is concluded that the water and sewer systems are maintained in good condition and operate in an efficient and economical manner, as was mentioned in previous sections of this Report.

6.5 ANNUAL BUDGET

The City annually prepares and adopts, prior to the beginning of each fiscal year, an annual budget in accordance with applicable law. The budget is comprehensive and provides for all areas necessary for the complete operation of the Water and Sewer Utility. This estimate of revenues and expenditures, prepared in budget form, provides a basis for continuing control of expenditures throughout the budget period.

6.6 RATES

Adequate revenues need to be generated from water and sewer user rates and charges in order to meet the fiscal requirements of the Utility including, for example, the Operating and Maintenance Expenses and Debt Service. In addition, the City must also meet its rate covenant as specified in the Bond Resolution. According to the Bond Resolution, the City:

"... shall fix, establish and maintain such rates and collect such fees, rates or other charges for the product, services and facilities of the system, and revise the same from time to time, whenever necessary, as will always provide in each fiscal year, (1) Net Revenues, Expansion Fees and Special Assessment Proceeds adequate at all times to pay in each fiscal year at least one hundred twenty percent (120%) of the annual Debt Service on all outstanding Bonds becoming due in such fiscal year and one hundred percent (100%) of any amounts required by the terms of this resolution to be deposited during such fiscal year into the Reserve Account and the Renewal & Replacement Fund, and (2) Net Revenues in each fiscal year adequate to pay at least one hundred percent (100%) of (a) the Annual Debt Service on all Outstanding Bonds becoming due in such fiscal year and (b) any payments of Subordinated indebtedness which must be made during such fiscal year from the Net Revenues. Such rates, fees or other charges shall not be so reduced so as to be insufficient to provide adequate Net Revenues, Expansion Fees and Special Assessment Proceeds for the purposes provided therefore by the Resolution. .."

In addition, in the event Variable Rate Bonds are outstanding at the commencement of a Fiscal Year, the City has agreed to budget interest payable on such Bonds during such fiscal year at a rate equal to the lesser of (1) the highest interest rate such Bonds were bearing during the prior fiscal year, and (2) the Maximum Interest Rate applicable to such Bonds. Finally, if, in any fiscal year, the City fails to comply with the above requirements, it must cause the Consulting Engineers to review its rates, fees, tolls, charges, income, Gross Revenues, Operating Expenses and methods of operation and to make recommendations as to the methods by which the City may promptly seek to comply with the above requirements. The City must thereafter implement such recommendations to the extent required to comply with the above rate covenant thereafter.

6.6.1 Rates and Charges

Table 6-2 shows the water, irrigation and sewer rates for residential customers and **Table 6-3** shows the rates for commercial customers. **Table 6-4** presents the miscellaneous charges.

Table 6-2. Water and Irrigation Rates

Water Rates	
Monthly Capacity Service Charge (by meter size)	
<u>Meter Size (inches)</u>	<u>Amount</u>
5/8	\$ 17.32
1	\$ 43.32
1-1/2	\$ 86.63
2	\$ 138.61
3	\$ 277.23
4	\$ 433.17
6	\$ 866.34
8	\$ 1,386.14
10	\$ 1992.58
Commodity Charge per Thousand Gallons for Water	
<u>Commercial Commodity Charge per 1,000 Gallons</u>	<u>Amount</u>
Per 0 to 25,000 gallons	\$ 5.06
Per 25,001 to 50,000 gallons	\$ 5.70
Per 50,001 plus gallons	\$ 6.86
<u>Residential Commodity Charge per 1,000 Gallons</u>	<u>Amount</u>
Per 0 to 5,000 gallons	\$ 3.90
Per 5,001 to 10,000 gallons	\$ 4.55
Per 10,0001 to 15,000 gallons	\$ 6.86
Per 15,001 to 20,000 gallons	\$ 10.25
Per 20,001 to 30,000 gallons	\$ 11.32
Per 30,001 plus gallons	\$ 12.44
Irrigation Water Service Rates	
<u>Customer Class</u>	<u>Amount</u>
Single Family Residential and Duplex	\$ 9.50
Non-metered Multi-family Residential and all Non-Residential uses less than/equal to 1" meter	\$ 0.0012 per square foot of total property area
Non-Residential uses greater than 1" meter	\$ 0.50 per 1,000 gallons

Table 6-3. Sewer Rate Schedule

Wastewater Service Rates	
<u>Meter Size (inches)</u>	<u>Amount</u>
5/8	\$ 21.07
1	\$ 52.67
1-1/2	\$ 105.35
2	\$ 168.56
3	\$ 337.11
4	\$ 526.74
6	\$ 1,053.49
8	\$ 1,685.58
10	\$ 2,423.02
<u>Commodity Charge</u>	<u>Amount</u>
Sewer commodity charge – All classes per \$1,000 gallons	\$ 9.04

Table 6-4. Miscellaneous Charges

Charge	Amount
New Account Charge	\$ 50.00
Customer Deposits	
<u>Residential</u>	
5/8	\$ 100.00
<u>Commercial (per meter)</u>	
5/8	\$ 100.00
1	\$ 130.00
1 1/2	\$ 255.00
2	\$ 350.00
Each inch above 2"	\$ 120.00
<u>Turn Off/Turn Off</u>	
Turn on/Turn off for existing customer during normal business hours, each time.	\$ 20.00
Turn on/Turn off for existing customer not during normal business hours, each time.	\$ 25.00

Table 6-4. Miscellaneous Charges (Cont'd)

Installation of Meters	
5/8-inch meter, per installation	\$ 310.00
1-inch meter, per installation	\$ 340.00
Over 1-inch meter	Actual time, materials and overhead costs
Delinquent Charge; Charge due if payment is not received on or before the payment date	\$ 5.00
Over 1-inch meter	Actual time, materials and overhead costs
Meter Test Deposit ⁽¹⁾	
5/8 and 1-inch	\$ 40.00
Greater than 1-inch	\$ 60.00
Greater than 2-inch	Actual Cost

(1) If the meter is found to register in excess of accuracy limits prescribed by standards set forth in the Ordinance, the deposit will be refunded; but if below such accuracy limits the deposit will be retained by the City as a service charge for conducting the test

Fire Line for Residential Fire Service (Potable Water File Lines)

<u>Fire Line Size (inches)</u>	<u>Fixed Annual Service Charge</u>
1	\$ 75.79
2	\$ 151.58
4	\$ 303.15
6	\$ 454.75
8	\$ 606.33
10	\$ 757.90
12	\$ 909.48

Fire Line for Commercial Fire Service (Irrigation Water Fire Lines)

<u>Fire Line Size (inches)</u>	<u>Fixed Annual Service Charge</u>
1	\$ 50.00
2	\$ 100.00
4	\$ 200.00
6	\$ 300.00
8	\$ 400.00
10	\$ 500.00
12	\$ 600.00

Table 6-4. Miscellaneous Charges (Cont'd)

Utility Capital Expansion Fees – Water	Water with Irrigation ⁽¹⁾	Water without Irrigation ⁽²⁾	Irrigation
Single Family Residence 5/8 –inch	\$ 2,658.00	\$ 1,320.00	\$ 2,318.00
Multi-Family (per Dwelling Unit) 5/8-inch	\$ 1,834.00	\$ 911.00	\$ 1,599.00
<u>Residential (if applicable), Non-residential</u>			
5/8-inch meter	\$ 2,658.00	\$ 1,320.00	\$ 2,318.00
1.0-inch meter	\$ 6,645.00	\$ 3,301.00	\$ 5,792.00
1.5-inch meter	\$ 13,290.00	\$ 6,601.00	\$ 11,587.00
2.0-inch meter	\$ 21,264.00	\$ 10,562.00	\$ 18,538.00
3.0-inch meter	\$ 42,528.00	\$ 21,123.00	\$ 37,076.00
4.0-inch meter	\$ 66,450.00	\$ 33,005.00	\$ 57,932.00
6.0-inch meter	\$ 132,900.00	\$ 66,010.00	\$ 115,866.00
8.0-inch meter	\$ 212,640.00	\$ 105,616.00	\$ 185,385.00
10.0-inch meter	\$ 305,670.00	\$ 151,823.00	\$ 266,490.00
12.0-inch meter	\$ 411,990.00	\$ 204,630.00	\$ 359,183.00

⁽¹⁾ Residential fee required if customer does not hook up to irrigation system

⁽²⁾ Fee paid in conjunction with irrigation impact fee if customer hooks up to irrigation system

Utility Capital Expansion Fees – Sewer	Sewer	Sewer District 2	Sewer District 2 Breakdown	
			Major	Local
Single Family Residence 5/8 –inch	\$ 2,529.00	\$ 3,112.00	\$ 2,529.00	\$ 583.00
Multi-Family (per Dwelling Unit) 5/8-inch	\$ 1,745.00	\$ 2,147.00	\$ 1,745.00	\$ 402.00
<u>Residential (if applicable), Non-residential</u>				
5/8-inch meter	\$ 2,529.00	\$ 3,112.00	\$ 2,529.00	\$ 583.00
1.0-inch meter	\$ 6,323.00	\$ 7,781.00	\$ 6,323.00	\$ 1,458.00
1.5-inch meter	\$ 12,643.00	\$ 15,558.00	\$ 2,643.00	\$ 2,915.00
2.0-inch meter	\$ 20,229.00	\$ 24,893.00	\$ 20,229.00	\$ 4,664.00
3.0-inch meter	\$ 40,459.00	\$ 49,787.00	\$ 40,459.00	\$ 9,328.00
4.0-inch meter	\$ 63,217.00	\$ 77,792.00	\$ 63,217.00	\$ 14,575.00
6.0-inch meter	\$ 126,433.00	\$ 155,583.00	\$ 126,433.00	\$ 29,150.00
8.0-inch meter	\$ 202,293.00	\$ 248,933.00	\$ 202,293.00	\$ 46,640.00
10.0-inch meter	\$ 290,797.00	\$ 357,842.00	\$ 290,797.00	\$ 67,045.00
12.0-inch meter	\$ 391,944.00	\$ 482,309.00	\$ 391,944.00	\$ 90,365.00

Table 6-4. Miscellaneous Charges (Cont'd)

Contribution in Aid of Construction (CIAC)	Water	Sewer	Irrigation
Single Family Residence 5/8-inch	\$ 3,200.00	\$ 6,500.00	\$ 2,400.00
Multi-Family (per Dwelling Unit)	\$ 2,208.00	\$ 4,485.00	\$ 1,656.00
Residential (if applicable), Non-residential			
5/8-inch meter	\$ 3,200.00	\$ 6,500.00	\$ 2,400.00
1.0-inch meter	\$ 8,000.00	\$ 16,250.00	\$ 6,000.00
1.5-inch meter	\$ 16,000.00	\$ 32,500.00	\$ 12,000.00
2.0-inch meter	\$ 25,600.00	\$ 52,000.00	\$ 19,200.00
3.0-inch meter	\$ 51,200.00	\$ 104,000.00	\$ 38,400.00
4.0-inch meter	\$ 80,000.00	\$ 162,500.00	\$ 60,000.00
6.0-inch meter	\$ 160,000.00	\$ 325,000.00	\$ 120,000.00
8.0-inch meter	\$ 256,000.00	\$ 520,000.00	\$ 192,000.00
10.0-inch meter	\$ 368,000.00	\$ 747,500.00	\$ 276,000.00
12.0-inch meter	\$ 496,000.00	\$ 1,007,500.00	\$ 372,000.00

6.6.2 Revenues

Gross Revenues are mainly derived from monthly water and sewer rates and charges well as miscellaneous income. The Bond Resolution defines "Gross Revenues" as:

"All income and moneys received by the City from the rates, fees, rentals, charges, and other income to be made and collected by the City for the use of the products, services and facilities to be provided by the system, or otherwise received by the City or accruing to the City in the management and operation of the system, calculated in accordance with generally accepted accounting methods employed in the operation of public utility systems similar to the system, including, without limiting to the generality of the foregoing, all earnings and income derived from the investments of moneys under the provisions of the Resolution which are transferred to the Revenue Fund or Interest Account as provided therein. "Gross Revenues" shall not include (1) any Government Grants, (2) Water Expansion Fees, (3) Sewer Expansion Fees, (4) Special Assessments, and (5) any portion of Betterment Fees (levied and collected pursuant to Section 19-38 of the Code of the City, or other similar fees or charges, which are not directly related to costs incurred by the City for labor and material expended for hooking up new customers."

6.6.2.1 Water and Sewer Accounts (Meters) and Flows

Table 6-5 shows a summary of water and sewer customers and is based on a schedule reflecting the number of accounts and flows provided by the City's customer billing service Division. As of September 30, 2016, the water system had 60,776 accounts, of which approximately 83 percent were residential units, 6 percent multi-family units, 7 percent duplex, and 4 percent commercial/governmental. The sewer system had 59,904 accounts, of which about 84 percent were residential units, 6 percent multi-family units, 6 percent duplex, and 4 percent commercial/governmental. The total water and sewer gallons billed in fiscal year 2016 were 3,176,146,960 and 3,066,737,300, respectively.

Table 6-5. Accounts and Flow Summary ⁽¹⁾

	2015 End of Year Number of Accounts	2016 End of Year Number of Accounts	2016 Percentage of Total
<u>Water</u>			
Residential	47,926	50,677	83.38%
Duplex	3,835	3,953	6.50%
Multi-Family	3,877	3,834	6.31%
Commercial	2,106	2,183	3.59%
City	52	129	0.21%
Total Active Units	57,796	60,776	100.00%
<u>Sewer</u>			
Residential	46,646	50,185	83.78%
Duplex	3,726	3,800	6.34%
Multi-Family	3,769	3,768	6.29%
Commercial	2,023	2,103	3.51%
City	47	48	0.08%
Total Active Units	56,211	59,904	100.00%
<u>Total Water Gallons Billed</u>	3,042,580,320	3,176,146,960	
<u>Total Sewer Gallons Billed</u>	2,880,552,300	3,066,737,300	

⁽¹⁾ Provided by the City of Cape Coral Finance Department

6.6.2.2 Capital Expansion Fees

The Bond Resolution requires the City to deposit into the Water Expansion Fees Fund all water expansion fees as received, and deposit into the Wastewater Expansion Fees Fund all sewer expansion fees as received. Section 4 of the Bond Resolution provides more details pertaining to the Water Expansion Fees Fund and Wastewater Expansion Fees Fund, respectively. Based on information provided by the City's Finance Department, **Table 6-6** shows the annual Capital Expansion Fee Revenue for water and sewer during Fiscal Year 2016. Total Capital Expansion Fee Revenue for the 12 months ending September 30, 2016 was \$ 2,584,395 for water, \$ 7,096,458 for sewer, and \$ 1,234,562 for irrigation.

Table 6-6. Summary of Capital Expansion Fee Revenues ⁽¹⁾

<u>Description</u>	Fiscal Year Ended September 30,		Increase/(Decrease)	
	<u>2015</u>	<u>2016</u>	<u>Amount</u>	<u>Percentage</u>
Water Expansion Fees	\$ 2,177,497	\$ 2,584,395	\$ 406,898	18.69%
Sewer Expansion Fees	6,111,600	7,096,458	984,858	16.11%
Irrigation Expansion Fees	1,046,984	1,234,562	187,578	17.92%
Total Capital Expansion Fees	\$9,336,081	\$10,915,415	\$1,579,334	16.92%

⁽¹⁾ Amounts available for debt service as provided by the City of Cape Coral Finance Department

6.6.2.3 Interest Income

Based on information provided by the Finance Department, **Table 6-7** shows the amount of Unrestricted Interest Income included in Net Revenues for the 12-month period ending September 30, 2016.

Table 6-7. Summary of Interest Income ⁽¹⁾

<u>Description</u>	Fiscal Year Ended September 30,		Increase/(Decrease)	
	<u>2015 ⁽²⁾</u>	<u>2016 ⁽³⁾</u>	<u>Amount</u>	<u>Percentage</u>
Unrestricted Interest Income	\$ 756,447	\$ 624,985	\$ (131,462)	-17.38%

⁽¹⁾ Amounts available for debt service as provided by the City of Cape Coral Finance Department

⁽²⁾ Fiscal Year 2015 derived from Footnote 13 on page 73 of the 2015 CAFR

⁽³⁾ Fiscal Year 2016 derived from Footnote 13 on page 80 of the 2016 CAFR

6.6.2.4 Revenue Comparison

Water and sewer operating revenues (excluding special assessment bond funds) for Fiscal Year 2016 equaled \$79,687,249 and were about 4.46 percent more than Fiscal Year 2015 operating revenues. **Table 6-8** presents a comparison of Fiscal Years 2015 and 2016 Operating Revenues.

Table 6-8. Summary of Operating Revenues

<u>Description</u>	Fiscal Year Ended September 30		Increase/(Decrease)	
	<u>2015 ⁽¹⁾</u>	<u>2016 ⁽²⁾</u>	<u>Amount</u>	<u>Percentage</u>
Total Operating Revenues	\$ 76,287,327	\$ 79,687,249	\$ 3,399,922	4.46%

⁽¹⁾ Fiscal Year 2015 derived from Footnote 13 on page 73 of the 2015 CAFR

⁽²⁾ Fiscal Year 2016 derived from Footnote 13 on page 80 of the 2016 CAFR

6.6.3 Operating and Maintenance Expenses

The Bond Resolution defines "Operating Expenses" as:

"The City's expenses for operation, maintenance, repairs and replacements with respect to the system and shall include, without limiting the generality of the foregoing, administration expenses, insurance and surety bond premiums, legal and engineering expenses, ordinary and current rentals of equipment or other property, refunds of money lawfully due to others, payments to others for disposal of sewage or other wastes, payments to pension, retirement, health and hospitalization funds, and any other expenses required to be paid for or with respect to proper operation or maintenance of the system, all to the extent properly attributable to the System in accordance with generally accepted accounting principles employed in the operation of public utility systems similar to the System, and disbursements for the expenses, liabilities and compensation of any Paying Agent or Registrar under the Resolution, but does not include any costs or expenses in respect of original construction or improvement other than expenditures necessary to prevent an interruption or continuance of an interruption of Gross Revenues or minor capital expenditures necessary for the proper and economical operation or maintenance of the system, or any provision for interest, depreciation, amortization, or similar charges."

Fiscal Year 2016's total water and sewer operating expenses excluding depreciation and special assessment bond funds were 3.68 percent higher than Fiscal Year 2015 operating expenses, as shown in **Table 6-9**.

Table 6-9. Summary of Operating Expenses

Description	Fiscal Year Ended September 30		Increase/(Decrease)	
	2015⁽¹⁾	2016⁽²⁾	Amount	Percentage
Total Operating Expenses	\$ 40,442,926	\$ 41,931,221	\$ 1,488,295	3.68%

(1) Fiscal Year 2015 derived from Footnote 13 on page 73 of the 2015 CAFR

(2) Fiscal Year 2016 derived from Footnote 13 on page 80 of the 2016 CAFR

6.6.4 Operating Results (Net Revenue)

Table 6-10 presents the Net Revenues available to pay Senior Lien Bonds and Junior Lien Notes Payable for Fiscal Years 2015 and 2016. Net Revenues for Fiscal Year 2016 were greater than Net Revenues for Fiscal Year 2015 by \$1,780,165 or about 4.86 percent. It should be noted that the interest income amounts (derived from Table 6-7) represent only the portions included in Net Revenues when computing Debt Service Coverages as provided for by the Bond Resolution.

Table 6-10. Summary of Net Revenues Available to Pay Debt and Other System Needs

Description	Fiscal Year Ended September 30		Increase/(Decrease)	
	2015	2016	Amount	Percentage
Total Operating Revenues	\$ 76,287,327	\$ 79,687,249	\$ 3,399,922	4.46%
Interest Income	756,447	624,985	(131,462)	-17.38%
Total Gross Revenues	\$ 77,043,774	\$ 80,312,234	\$ 3,268,460	4.24%
Total Operating Expenses	\$ 40,442,926	\$ 41,931,221	\$ 1,488,295	3.68%
Net Revenues	\$ 36,600,848	\$ 38,381,013	\$ 1,780,165	4.86%

6.6.5 Debt Service Coverages

Table 6-11 presents the debt service requirements and the coverage tests as defined in the Bond Resolution. The debt service for Test 1 includes the sum of Debt Service on outstanding Senior Lien Bonds. Test 2, debt service is equal to all Outstanding Indebtedness including Senior and Junior Lien Bonds. In Fiscal Year 2016 the coverage favorably exceeded the requirement for both Test 1 and Test 2.

6.6.6 Renewal and Replacement

The Bond Resolution defines the "Renewal and Replacement Fund" as:

"There shall be deposited to the Renewal and Replacement Fund such sums as shall be sufficient to pay one twelfth (1/12) of five percent (5%) of the Gross Revenues derived from the System during the preceding Fiscal Year until the amount accumulated in such Fund is equal to the Renewal and Replacement Fund Requirement"

Based on the Gross Revenues for the preceding Fiscal Year (2015) of \$ 77,043,774 as shown in Table 6-11, the required minimum balance of the Renewal and Replacement is approximately \$3.85 million. As provided in the 2016 Comprehensive Audited Financial Report, the balance of the Renewal and Replacement account was \$5,967,221 as of September 30, 2016. This amount is sufficient to meet the covenant requirement relating to the Renewal and Replacement Account Fund for Fiscal Year 2016.

6.7 BOOKS AND RECORDS

The City maintains books, records and accounts of the revenues and operations of the water and sewer systems, which are separate and apart from all other books, records, and accounts of the City. This procedure is in compliance with Section 5.05 of the Bond Resolution for Fiscal Year 2016.

6.8 ANNUAL AUDIT

The City is required, immediately after the close of each fiscal year, to cause the books, records, and accounts relating to the Utility System to be properly audited by a recognized independent firm of Certified Public Accounts (CPAs), and shall require such accountants to complete their report of such annual audit in accordance with applicable law.

The City retained Clifton Larson Allen LLP as their independent auditors in Fiscal Year 2016, and has complied with the Annual Audit covenant for Fiscal Year 2016. Clifton Larson Allen LLP issued an unqualified opinion on the City's financial statements for Fiscal Year 2016.

Table 6-11. Summary of Debt Service Coverage Tests

<u>Description</u>	<u>Fiscal Year Ended September 30</u>		<u>Increase/(Decrease)</u>	
	<u>2015 ⁽¹⁾</u>	<u>2016 ⁽²⁾</u>	<u>Amount</u>	<u>Percentage</u>
<u>Revenues</u>				
Total Operating Revenues	\$ 76,287,327	\$ 79,687,249	\$ 3,399,922	4.46%
Interest Income	756,447	624,985	(131,462)	-17.38%
Total Gross Revenues	\$ 77,043,774	\$ 80,312,234	\$ 3,268,460	4.24%
Total Operating Expenses	\$ 40,442,926	\$ 41,931,221	\$ 1,488,295	3.68%
Net Revenues available for Debt Service	\$ 36,600,848	\$ 38,381,013	\$ 1,780,165	4.86%
<u>Capital Expansion Fee Revenues Available for Debt</u>				
Water Expansion Fees	\$ 2,177,497	\$ 2,584,395	\$406,898	18.69%
Sewer Expansion Fees	6,111,600	7,096,458	984,858	16.11%
Irrigation Expansion Fees	1,046,984	1,234,562	187,578	17.92%
Total Capital Expansion Fee Revenues	\$ 9,336,081	\$ 10,915,415	\$ 1,579,334	16.92%
Net Revenues available for Debt Service (including CEF)	\$ 45,936,929	\$ 49,296,428	\$ 3,359,499	7.31%
<u>Test 1</u>				
Net Revenues and Expansion Fees adequate at all times to pay at least 120% of (a) the Annual Debt Service on all Outstanding Bonds becoming due in such fiscal year				
Net Revenues & Expansion Fees	\$ 45,936,929	\$ 49,296,428	\$ 3,359,499	7.31%
Annual Debt Service (Senior Lien) ⁽¹⁾	\$ 29,413,222	\$ 28,844,647	\$ (568,575)	-1.93%
Calculated Coverage Ratio	1.56	1.71		
Required Coverage Ratio	1.20	1.20		
<u>Test 2</u>				
Net Revenues adequate to pay at least 100% of (a) the Annual Debt Service on all Outstanding bonds becoming due in such fiscal year and (b) any payments of Subordinated Indebtedness which must be made during such fiscal year from the Net Revenues				
Net Revenues	\$ 36,600,848	\$ 38,381,013	\$1,780,165	4.86%
Annual Debt Service (Senior Lien & Junior Lien) ⁽²⁾	\$ 30,477,000	\$ 29,260,327		
Calculated Coverage Ratio	1.20	1.31		
Required Coverage Ratio	1.00	1.00		

(1) From page 171 of 2015 CAFR and page 177 of 2016 CAFR

(2) Provided by the Cape Coral Finance Department

6.9 INSURANCE

The Bond Resolution requires:

"The City to 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 as such amounts as the City 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 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 City may establish certain minimum levels of insurance for which the City 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 proceeds of any property loss insurance shall be held in the Construction Fund and applied in accordance with the requisition procedure provided in Section 4.03 of the Resolution to the necessary costs involved in such repair and replacement and, to the extent not so applied, shall (together with proceeds of any use and occupancy insurance) be deposited in the Revenue Fund as Gross Revenues."

The City employs a full-time manager who oversees loss prevention programs. The City's management is of the opinion that the City has sufficient insurance to indemnify the City against reasonably foreseeable losses.

The insured values of the water and sewer systems are updated each year to reflect the replacement costs as determined by an actuary. **Tables 6-12 and 6-13** show the insurance policies in place and the insured values of the water and sewer systems.

Table 6-12. Schedule of Insurance Policies in Force ⁽¹⁾

Insurer	Risk	Coverage Amount	Expiration Date
Hartford Life & Accident Insurance Co.	Accidental & Death	\$66,041.74 in line of duty / \$66,041.74 fresh pursuit / \$198,669.21 unlawful and intentional death	10/1/2017
Florida Municipal Insurance Trust	General Liability	\$3,000,000	10/1/2017
Florida Municipal Insurance Trust	Law Enforcement Liability	\$3,000,000	10/1/2017
Florida Municipal Insurance Trust	Workers' Compensation	Statutory	10/1/2017
Florida Municipal Insurance Trust	Employer's Liability by Accident/Disease	\$1,000,000 each accident / \$1,000,000 policy limit / \$1,000,000 each employee	10/1/2017
Florida Municipal Insurance Trust	Property – Non-Utility	\$141,525,887 Real Property / \$11,590,484 Personal Property	10/1/2017
Various reinsurers	Property- Utility	\$150,000,000	10/1/2017
Florida Municipal Insurance Trust	Boiler & Machinery	\$50,000,000	10/1/2017
Florida Municipal Insurance Trust	Public Officials Liability	\$3,000,000	10/1/2017
Florida Municipal Insurance Trust	Auto Liability & Physical Damage	\$3,000,000 Liability Physical Damage - value of vehicle	10/1/2017
Wright National Flood Insurance Co.	Flood Insurance	Various	10/1/2017
Indian Harbor Insurance Co.	Environmental Insurance – Pollution Liability	\$1,000,000 each Pollution Condition / \$1,000,000 Aggregate	10/1/2017
Florida Municipal Insurance Trust	Crime Policy	\$500,000 or \$10,000 depending on coverage	10/1/2017
Continental Insurance Co.	Hull – Watercraft	\$584,000	10/1/2017
Mount Vernon Fire Insurance Co.	Liquor Law Liability – Coral Oaks Golf Club	\$1,000,000 per Occurrence / \$2,000,000 Aggregate	10/1/2017
National Fire & Marine Insurance Co.	TULIP Acct – Special Events – Tenants	\$1,000,000 per Occurrence / \$2,000,000 Aggregate	10/1/2017

⁽¹⁾ Furnished by the City of Cape Coral Risk Management Department. Policies were renewed upon expiration.

Table 6-13. Insured Values of the Water and Sewer Systems ⁽¹⁾

Department	Building Replacement Value	Contents Replacement Value	Total Value
Reverse Osmosis Water Treatment Plants	\$31,462,909	\$45,521,172	\$76,984,081
Water Reclamation Facilities	General Liability	\$3,000,000	10/1/2017
Florida Municipal Insurance Trust	Law Enforcement Liability	\$3,000,000	10/1/2017
Florida Municipal Insurance Trust	Workers' Compensation	Statutory	10/1/2017
Florida Municipal Insurance Trust	Employer's Liability by Accident/Disease	\$1,000,000 each accident / \$1,000,000 policy limit / \$1,000,000 each employee	10/1/2017

⁽¹⁾ Furnished by the City of Cape Coral Risk Management Department. Policies were renewed upon expiration.

Item Number: B.(2)
Meeting Date: 1/29/2018
Item Type: DISCUSSION

AGENDA REQUEST FORM
CITY OF CAPE CORAL



TITLE:

Development Options for 175-Acre Site Formerly Known as the Old Golf Course Property

REQUESTED ACTION:

STRATEGIC PLAN INFO:

1. Will this action result in a Budget Amendment?
2. Is this a Strategic Decision?
 - If Yes, Priority Goals Supported are listed below.
 - If No, will it harm the intent or success of the Strategic Plan?

Planning & Zoning/Staff Recommendations:

SUMMARY EXPLANATION AND BACKGROUND:

LEGAL REVIEW:

EXHIBITS:

Development Options Memo
Update - Development Options for 175 acre site
Aerial Map - Golf Course
Aerial Map - All Projects

PREPARED BY:

Division- Department-

SOURCE OF ADDITIONAL INFORMATION:

ATTACHMENTS:

Description	Type
<input type="checkbox"/> Development Options Memo	Backup Material
<input type="checkbox"/> Update - Development Options for 175 acre site	Backup Material

- ▣ Aerial Map - Golf Course
- ▣ Aerial Map - All Projects

Backup Material
Backup Material

MEMORANDUM

CITY OF CAPE CORAL CITY MANAGER'S OFFICE

TO: Mayor Coviello and Council Members

FROM: John Szerlag, City Manager 

DATE: December 29, 2017

SUBJECT: Development Options for 175-Acre Site in CRA
Formerly Known as the Old Golf Course Property

Revised to Reflect Date
Change in 1st Paragraph

Recent Background

D.R. Horton made a conditional offer to purchase the above-referenced site from Florida Gulf Ventures (the Ryan Company), and a comprehensive plan amendment to change the land use from "Parks" to "Residential" was submitted to the City on October 31, 2016. The comp plan amendment was the first step in allowing this parcel to be developed as residential. While not a requirement of the land use amendment, D.R. Horton provided a proposed site development plan that included a 50-foot landscape buffer around most of the site perimeter. Although City staff supported the comp plan amendment, the motion to approve the comprehensive plan amendment for transmittal failed at the City Council Meeting on August 21, 2017.

Prior to the comp plan amendment vote, D.R. Horton stepped away from the project. Since then, I have been in contact with Executive Vice President Bill McHale of the Ryan Company to discuss development options. We both agree that a lawsuit over use of this property is not the best option. Not only is it costly, but more importantly, we are in a better position by making our own decision instead of having a judge make it for us. Should Mayor and Council agree, we are left with two viable options: Allow residential development via comp plan amendment and project plan development, or purchase the property. I will describe each option in chronological order:

Option 1: Approve Residential Development

Mr. McHale advised that he is submitting an application for a comp plan amendment for the 175-acre site in January. Succinctly, the Comprehensive Plan is the policy document to guide future development in Cape Coral over a 20- to 30-year timeframe. Contained therein are future land use classifications to determine which types of development will be allowed through zoning districts. The Ryan Company's application will be for future land use classifications to allow residential development.

If the comp plan amendment is approved, the next step would be to approve a planned development project Mr. McHale would submit. This is known as a PDP and is a process for local approval for a specific development proposal. In this case, Mr. McHale has indicated the PDP would include a subdivision with up to 500 single-family residential units.

The entire process for staff review, public hearings and ultimate Council approval will take six to 10 months. So, we are looking at November 2018 before a building permit could be pulled.

Option 2: Buy the Property

I asked Mr. McHale if the Ryan Company would be interested in selling the site to the City of Cape Coral if Mayor and Council formally agree to this option. Mr. McHale responded in the affirmative and indicated a price of \$12 million. Mr. McHale also informed he would need a non-contingent purchase contract from the City of Cape Coral, and then he would abandon the comp plan amendment/PDP process. Prior to the City taking ownership, the contract would require Ryan Company to remediate the site in accordance with the final review and report issued by the Florida Department of Environmental Protection.

The City would have up to 18 months from date of the non-contingent contract to purchase and remit payment to the Ryan Company. Additionally, the City could make monthly payments after 18 months in an amount agreed upon by both parties should the need present itself. Thus, if we had a Council-approved offer to purchase the property in February 2018, we would have until August 2020 to pay or make monthly payments for an amount stipulated in the non-contingent contract to purchase.

Please know that Mr. McHale is not interested in how the City finances this purchase, but we need to identify a definitive funding source. That funding source will be a 10-year bank loan supported with General Fund revenues. That said, other revenue sources may become available to mitigate the cost of the bank loan or eliminate the need for the loan such as:

1. Potential proceeds from the sale, lease or P3 with the Seven Islands development. The current appraised value of the Seven Islands for a commercial mixed-use development is \$25.3 million. We could sell the property or develop a ground lease with an indication that development will occur commensurate with the concept plan approved by City Council in December 2016. This includes a conference center, marina, retail, and up to eight stories for a hotel and multi-family structures.
2. Other General Fund options including capital reshuffling or use of fund balance.
3. Grants (including another request to Lee County for possible use of 20/20 funds).

We also need to be mindful that should the City purchase this 175-acre parcel, there will be development costs, and recurring operation and maintenance costs. This is a large site that could accommodate various uses, and these costs will vary based upon the ultimate use. The attached memo from Parks and Recreation provides some estimated costs for development and O&M associated with several parks uses. Should Council select this option, the Parks Master Plan should be recalibrated. Please know that while we have \$1.6 million in our Park Impact Fee Fund, most of these dollars are allocated to debt service until 2036.

Council also has the option to consider other complementary uses for the property in combination with parks and recreation services. Supplementary funding options might be available depending on the uses identified.

Recommendation

We have a Committee of the Whole Meeting on January 29, 2018. I recommend Mayor and Council discuss this issue with the general objective of determining if City Council wishes to purchase the property. If the answer is “yes,” I would request authorization at a City Council Meeting in February to negotiate a contract for purchase with the Ryan Company. If the answer is “no,” the Ryan Company will proceed with their comp plan amendment and PDP application.

As always, kindly advise should you have any questions.

JS: pd

Attachment: Memo from Acting Parks and Recreation Director Kerry Runyon

C: William J. McHale, Executive Vice President (Ryan Company)
Dolores Menendez, City Attorney
Connie Barron, Public Affairs Manager
Vincent Cautero, Community Development Director
Victoria Bateman, Finance Director
Christopher Phillips, Management/Budget Administrator
Dawn Andrews, Property Broker

CITY OF CAPE CORAL
PARKS AND RECREATION DEPARTMENT

TO: John Szerlag, City Manager
Connie Barron, Public Affairs Manager

FROM: Kerry Runyon, Acting Parks and Recreation Director *KR*

DATE: December 28, 2017

SUBJECT: Four Themes for the Old Golf Club

Development Costs

1. Community Center and surrounding facilities - \$ 6 M
3 – 4 wings with counter in front; meeting/sitting area in the middle that encompasses the following:
 - Rotino type facility for senior programs
 - Four Freedoms Park with children's programs
 - Multipurpose indoor center for basketball leagues, soccer, pickleball, fitness center with 2 classrooms for fitness programs, restrooms with shower facilities
 - 2 Basketball Courts
 - Covered Playground
 - Food Service (concessions)
 - Tennis courts – 5
2. Passive Area with Gardens - \$500,000
 - Arboretum
 - Fragrance Garden
 - Butterfly Garden
 - Community Garden
3. Small Amphitheater and surrounding facilities - \$775,000
 - Corporate pavilion with parking and restrooms – \$900,000
 - Small maintenance building/area - \$350,000
 - Pickle Ball – 8 courts - \$300,000
4. Perimeter Pathway with Linear Park items – \$4.5 M (2.94 miles)
 - 400-500 Parking spaces - \$200,000

Total Project Cost: \$13,525,000 (best estimate)

Operational/Maintenance Costs - Based on Annual Youth Services (Youth Center) Budget: \$1.7 M

KR/kep

John Szerlag

From: Bill McHale <Bill.McHale@RyanCompanies.com>
Sent: Thursday, December 28, 2017 11:34 AM
To: John Szerlag
Subject: Golf course property

John Szerlag, City Manager
Cape Coral, Florida

John, this email is in response to your memorandum of December 28, 2017 on our 175 acre parcel in Cape Coral. I am in agreement that the contents of this memorandum are an accurate reflection of our conversations regarding this site as to the comp plan amendment, PDP , remediation and purchase of the property.

Sincerely, Bill McHale

Sent from my iPad

MEMORANDUM

CITY OF CAPE CORAL
CITY MANAGER'S OFFICE

TO: Mayor and Council Members

FROM: John Szerlag, City Manager 

DATE: January 25, 2018

SUBJECT: Update on 12/29/17 Memorandum Regarding Development Options for
175 Acre Site in CRA Formerly Known as the Old Golf Course Property

I have been in contact with Mr. Bill McHale of the Ryan Company (owner of the above-referenced parcel) and he advised me of the following:

1. The Comp Plan Amendment Application will not be submitted prior to our January 29, 2018 meeting. He hopes to have it submitted to DCD by the first week in February. That said, the new application will be identical to the previous one submitted in terms of changing the land use from parks to residential. A portion of that application is submitted for reference, Attachment 1.
2. If the Comp Plan Amendment is approved, Mr. McHale will then submit a Planned Development Project Request. This is known as a PDP and is a process for local approval for a specific development proposal. In this case, Mr. McHale has indicated the PDP would include a subdivision with up to 500 single-family residential units.
3. The Ryan Company will work with the City in an attempt to secure 20/20 funding from Lee County. It should be noted, however, that the County previously turned down a request for funding of this property.
4. Please know that my earlier letter indicated that potential proceeds from the sale, lease or P3 with the Seven Islands development could be an option of securing all or part of the funding should City Council wish to purchase the old golf course property. As such, attached is a brief scope of work and timeline to bring the development of the Seven Islands to fruition, Attachment 2.

As always, please feel free to contact me should you have any questions.

JS:pd

Attachments: Copy of Previous Comp Plan Amendment Application
Seven Islands Scope of Work/Timeline

C: William J. McHale, Executive Vice President (Ryan Company)
Dolores Menendez, City Attorney
Connie Barron, Public Affairs Manager
Vincent Cautero, Community Development Director
Victoria Bateman, Finance Director
Christopher Phillips, Management/Budget Administrator
Dawn Andrews, Property Broker



DEPARTMENT OF COMMUNITY DEVELOPMENT
LARGE SCALE COMPREHENSIVE LAND USE MAP AMENDMENT
Questions: 239-574-0553

Case # LL16-0013

FEE \$1,225.00 first 3 acres plus \$220.00 each additional acre over 3 up to 20 acres; \$22.00 per acre over the first 20 acres. In addition to the application fee, all required advertising costs are to be paid by the applicant (ORD 39-03, Sec. 5.4). Advertising costs will be billed and must be paid prior to hearing.

Following the approval of your request, the applicant shall be responsible for paying the City to electronically record the final signed Resolution or Ordinance with the Lee County Clerk of Court. Until this fee is paid, restrictions on the issuance of any City permits will remain on the affected property that will prevent the city from issuing any applicable building permits, site plans, certificates of use, or certificates of occupancy for any property covered by the Resolution or Ordinance.

OWNER OF PROPERTY
FLORIDA GULF VENTURE LLC

c/o Ryan Companies US Inc.
50 S. 10TH ST STE 300

Address: _____
City: MINNEAPOLIS State: MN Zip 55403
Phone 239.225.2631

Email: jweverett@drhorton.com

AUTHORIZED REPRESENTATIVE
Banks Engineering

Address: 10511 Six Mile Cypress Parkway
City: Fort Myers State: FL Zip 33966
Phone: 239-939-5490

Email: shewitt@bankseng.com

Unit 9, 14, & 15 Block 0251 Lot(s) 001A Subdivision _____
Legal Description CAPE CORAL UTS 9/14/15 PB 13 PGS 18/67/72 TR A UT 14 + 15 PT TR B TR C GOLF DESC IN
OR 3408 PG 3036 + CC UN 9 BLK 251 LOTS 1A + 1B + TR A UNIT 9

Address of Property 4003 Palm Tree Blvd., Cape Coral, FL 33904

Plat Book 13 Page 18, 67, & 72
Current Zoning R1B Strap Number 12-45-23-C2-0000A.0000
Current Land PK Proposed Land Use SF

Parcel Size: Width Varies Depth Varies Sq. Ft. 7,633,890± Acreage 175.25±
Soil Type: Matlacha Gravelly Fine Sand, Limestone Substratum; Water; Hallandale Fine Sand; Hallandale-Urban Land Complex; Wabasso Sand, Limestone
Substratum; Urban Land; Pineda Fine Sand; Matlacha-Urban Land Complex; Oldsmar Sand; Eau Gallie Sand; & Immokalee-Urban Land Complex

Urban Services Area: (check one) ☒ Infill ☐ Transition ☐ Reserve
Natural Resources: (state habitat type, e.g. high lands, wetlands, upland forest, oak hammocks, etc.): _____

Animal Species: (list any endangered, threatened, or species of special concern on-site)
Bald Eagle Nest, 4 potentially occupied gopher tortoise burrows & 1 burrowing owl nest

Estimated Development:

Estimate total lot coverage: _____ %
Estimate total building floor area _____ sq. ft.
Estimate type of future development and percentages (e.g. business
offices, commercial retail, automotive repair, etc.)

Single-Family Residential allows up to 4.4 units per acre or 771 maximum
units; however estimated development based on companion
PDP is 500 units with amenities and infrastructure.



DEPARTMENT OF COMMUNITY DEVELOPMENT
LARGE SCALE COMPREHENSIVE LAND USE MAP AMENDMENT
Questions: 239-574-0553

Case # _____

AUTHORIZATION TO REPRESENT PROPERTY OWNER(s)

PLEASE BE ADVISED THAT Stacy Ellis Hewitt, AICP - Banks Engineering
(Name of person giving presentation)

IS AUTHORIZED TO REPRESENT ME IN THE REQUEST TO THE PLANNING & ZONING COMMISSION/ LOCAL
PLANNING AGENCY, BOARD OF ZONING ADJUSTMENTS AND APPEALS AND/OR CITY COUNCIL FOR
Future Land Use Amendment

(Type of Public Hearing – i.e., PDP, Zoning, Special Exception, Variance, etc.)

UNIT BLOCK LOT(S) SUBDIVISION

OR LEGAL DESCRIPTION CAPE CORAL UTS 9/14/15 PB 13 PGS 18/67/72 TR A UT 14 + 15 PT TR B TR C GOLF DESC IN OR
3408 PG 3036 + CC UN 9 BLK 251 LOTS 1A + 1B + TR A UNIT 9

LOCATED IN THE CITY OF CAPE CORAL, COUNTY OF LEE, FLORIDA.

Florida Gulf Venture, LLC, a Delaware limited liability company

PROPERTY OWNER (Please Print)

PROPERTY OWNER (Please Print)

By: Rylan, LLC, member

By: Ryan Companies US, Inc.,

PROPERTY OWNER (Signature & Title)

managing member

PROPERTY OWNER (Signature & Title)

STATE OF Minnesota, COUNTY OF Hennepin

Subscribed and sworn to (or affirmed) before me this 11 day of October, 2016, by
William J. McHale who is personally known or produced
as identification.

Exp. Date: 1.31.20 Commission Number: _____

Signature of Notary Public:

Printed name of Notary Public:



Margaret M. Molinari

Note: Please list all owners. If a corporation, please supply the Planning Division with a copy of corporation papers.

AUTHORIZATION AS OWNER'S REPRESENTATIVE

William McHale is hereby authorized by the undersigned property owner(s) as a duly appointed
(Print Name)

representative for property described as:

Parcel Tax STRAP No(s).:

12-45-23-C2-000A.000

Address/Site Location:

4003 Palm Tree Boulevard
Cape Coral, Florida

Florida Gulf Venture, LLC

By Rylan LLC

Its Managing Member

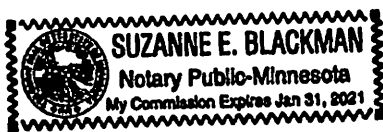
By Ryan Companies US, Inc.

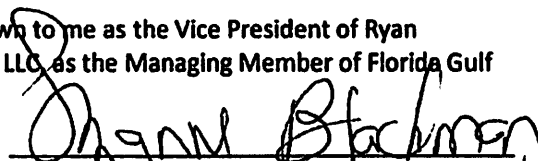
Its Managing Member


Timothy M. Gray, Vice President

SWORN TO, SUBSCRIBED AND ACKNOWLEDGED before me this 5th day of October, 2016,

by Timothy M. Gray, who is personally known to me as the Vice President of Ryan
Companies US, Inc., as the Managing Member of Rylan, LLC, as the Managing Member of Florida Gulf
Venture, LLC.




Notary Public
SUZANNE BLACKMAN
Printed Name
N/A
Commission Number
01-31-2021
My Commission Expires



DEPARTMENT OF COMMUNITY DEVELOPMENT

Case # _____

LARGE SCALE COMPREHENSIVE LAND USE MAP AMENDMENT

Questions: 239-574-0553

AUTHORIZATION TO REPRESENT PROPERTY OWNER(S)

PLEASE BE ADVISED THAT Stacy Hewitt - Banks Engineering
(Name of person giving presentation)

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PLANNING AGENCY, BOARD OF ZONING ADJUSTMENTS AND APPEALS AND/OR CITY COUNCIL FOR
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3408 PG 3036 + CC UN 9 BLK 251 LOTS 1A + 1B + TR A UNIT 9

LOCATED IN THE CITY OF CAPE CORAL, COUNTY OF LEE, FLORIDA.

SEE ATTACHED

PROPERTY OWNER (Please Print)

PROPERTY OWNER (Please Print)

PROPERTY OWNER (Signature & Title)

PROPERTY OWNER (Signature & Title)

STATE OF _____, COUNTY OF _____

Subscribed and sworn to (or affirmed) before me this _____ day of _____, 20____, by
_____ who is personally known or produced _____
as identification.

Exp. Date: _____ Commission Number: _____

Signature of Notary Public: _____

Printed name of Notary Public: _____

Note: Please list all owners. If a corporation, please supply the Planning Division with a copy of corporation papers.



DEPARTMENT OF COMMUNITY DEVELOPMENT
LARGE SCALE COMPREHENSIVE LAND USE MAP AMENDMENT
Questions: 239-574-0553

Case # _____

Estimated peak hour trip ends: See attached Traffic impact study

If 300 or less peak hour trip ends are projected, the applicant must provide the source of the traffic projection. If more than 300 peak hour trip ends are projected, a traffic impact study must be completed and submitted as part of the application (see attachments).

City Sewer: Yes ☒ No ☐
City Water: Yes ☒ No ☐

THIS APPLICATION SHALL ALSO HAVE ANY ADDITIONAL REQUIRED SUPPORTING DOCUMENTS

The owner of this property, or the applicant agrees to conform to all applicable laws of the City of Cape Coral and to all applicable Federal, State, and County laws and certifies that all information supplied is correct to the best of their knowledge.

SEE ATTACHED _____
NAME (PLEASE TYPE OR PRINT) AUTHORIZED SIGNATURE

STATE OF _____, COUNTY OF _____
(SIGNATURE MUST BE NOTARIZED)

Sworn to (or affirmed) and subscribed before me this _____ day of _____, 20____, by _____
who is personally known or produced _____
as identification.

Exp. Date: _____ Commission Number: _____

Signature of Notary Public: _____
Printed name of Notary Public: _____



DEPARTMENT OF COMMUNITY DEVELOPMENT
LARGE SCALE COMPREHENSIVE LAND USE MAP AMENDMENT
Questions: 239-574-0553

Case # _____

ACKNOWLEDGEMENT FORM

I have read and understand the above instructions. Hearing date(s) will be confirmed when I receive a copy of the Notice of Public Hearing stipulating the day and time of any applicable hearings.

I acknowledge that I, or my representative, must attend any applicable meetings scheduled for the Planning & Zoning Commission/Local Planning Agency, Board of Zoning Adjustments and Appeals, and Council.

I will have the opportunity, at the hearing, to present verbal information pertaining to my request that may not be included in my application.

I understand any decision rendered by the CITY shall be subject to a thirty (30) day appeal period. Any work performed within the thirty (30) day time frame or during the APPEAL process will be completed at the applicant's risk.

I understand I am responsible for all fees, including advertising costs. All fees are to be submitted to the City of Cape Coral with the application or the item may be pulled from the agenda and continued to future date after fees are paid.

Please obtain all necessary permits prior to commencing any phase of construction.

Please indicate on a separate sheet those persons to whom you wish a copy of the Public Hearing Notice sent.

By submitting this application, I acknowledge and agree that I am authorizing the City of Cape Coral to inspect the subject property and to gain access to the subject property for inspection purposes reasonably related to this application and/or the permit for which I am applying.

I hereby acknowledge that I have read and understood the above affidavit on the _____ day of _____, 20____

SEE ATTACHED

NAME (PLEASE TYPE OR PRINT)

APPLICANT'S SIGNATURE

STATE OF _____, COUNTY OF _____

Subscribed and sworn to (or affirmed) before me this _____ day of _____, 20____, by _____ who is personally known or produced _____ as identification.

Exp. Date: _____ Commission Number: _____

Signature of Notary Public: _____

Printed name of Notary Public: _____

ATTACHMENT 2

Timeline for the Seven Islands Zoning District

- 11/17/17: Staff draft complete
- November-December 2017: Meetings with City Attorney's office
- 2/7/18: Presentation of zoning district language before P&Z Commission
- 3/5/18: Council Introduction date
- 3/19/18: Tentative 1st Public Hearing to adopt zoning district language
- 4/2/18: Tentative Final Council meeting to adopt zoning district language

Timeline for the Seven Islands Rezone

- 12/15/17: Staff draft complete
- 3/6/18: Tentative presentation of rezone to Hearing Examiner
- 4/2/18: Council Introduction date
- 4/16/18: 1st Council meeting to adopt rezone
- 4/30/18: Final Council meeting to adopt rezone

Timeline for the Mixed-Use Comprehensive Plan Text Amendment

- 11/9/17: Staff draft complete
- 3/7/18: Presentation of Comp Plan text language before P&Z Commission
- 3/19/18: Council Introduction date
- 4/2/18: Public Hearing to transmit MX text amendment
- 4/6/18: Amendment sent to state and regional agencies
- Late-May 2018: End of state and regional review
- Mid-July 2018: Public Hearing to adopt MX text amendment
- Mid-September 2018: Effective date of adopted MX text amendment

Timeline for RFP for development of Seven Islands

Note: A policy decision will need to be made by the City Council if they wish to sell or lease the Seven Islands properties and the City's involvement with the development, i.e., allow private development to occur in accordance with vision plan and zoning district or a P3 scenario.

Late May 2018: Staff from County Manager's Office, Procurement, and Community Development begin to craft RFP Scope of Services for RFP

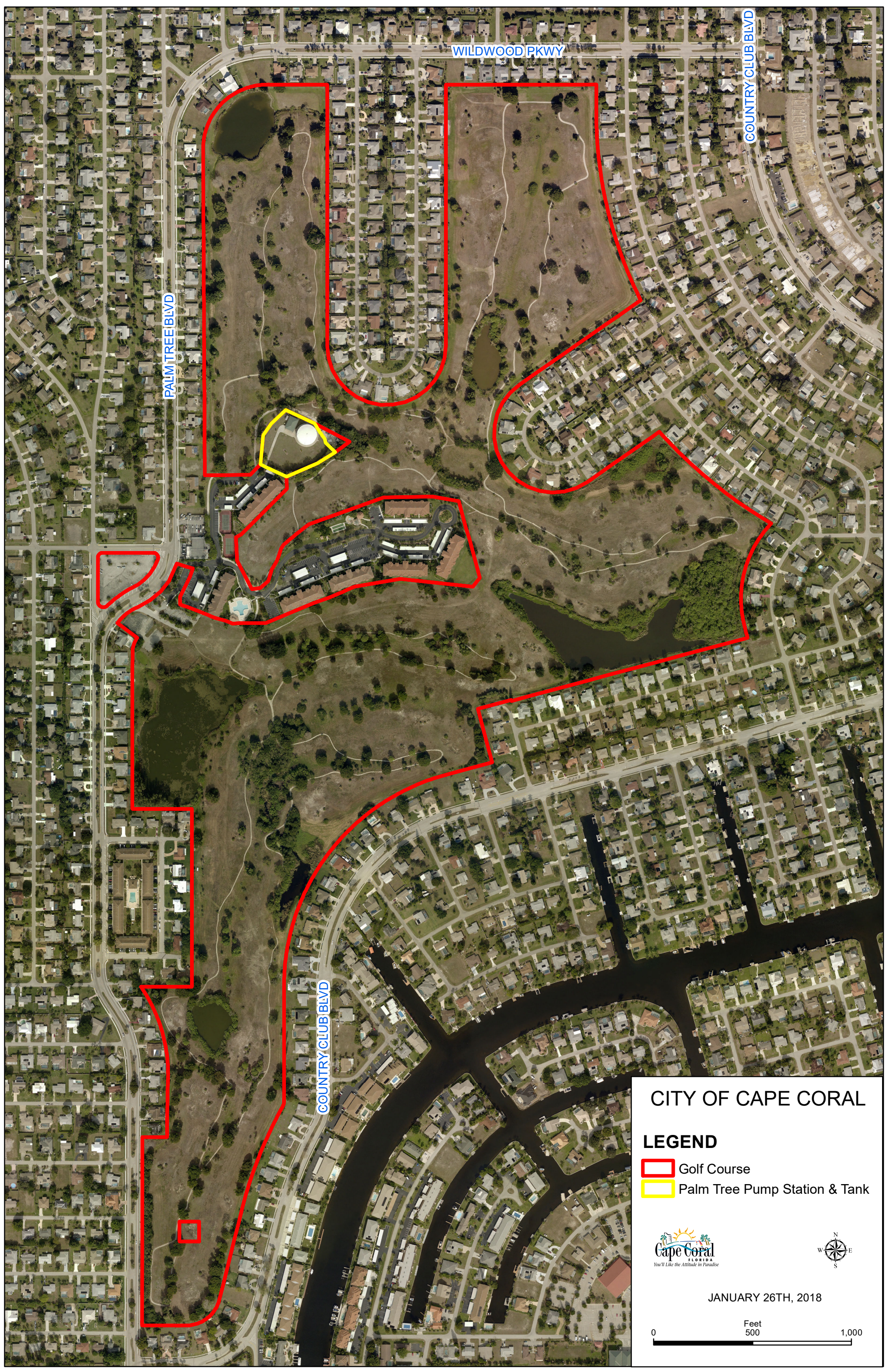
Late June 2018: Staff finalizes RFP and presents to City Manager for approval

Late June 2018: City Manager approves RFP and Procurement releases RFP to prospective vendors.

End of August 2018: Procurement receives proposals

September 2018: Selection team considers proposals and makes recommendations to Council

October 2018: City Council selects development team



WILDWOOD PKWY



PALM TREE BLVD

COUNTRY CLUB BLVD

COUNTRY CLUB BLVD

CITY OF CAPE CORAL

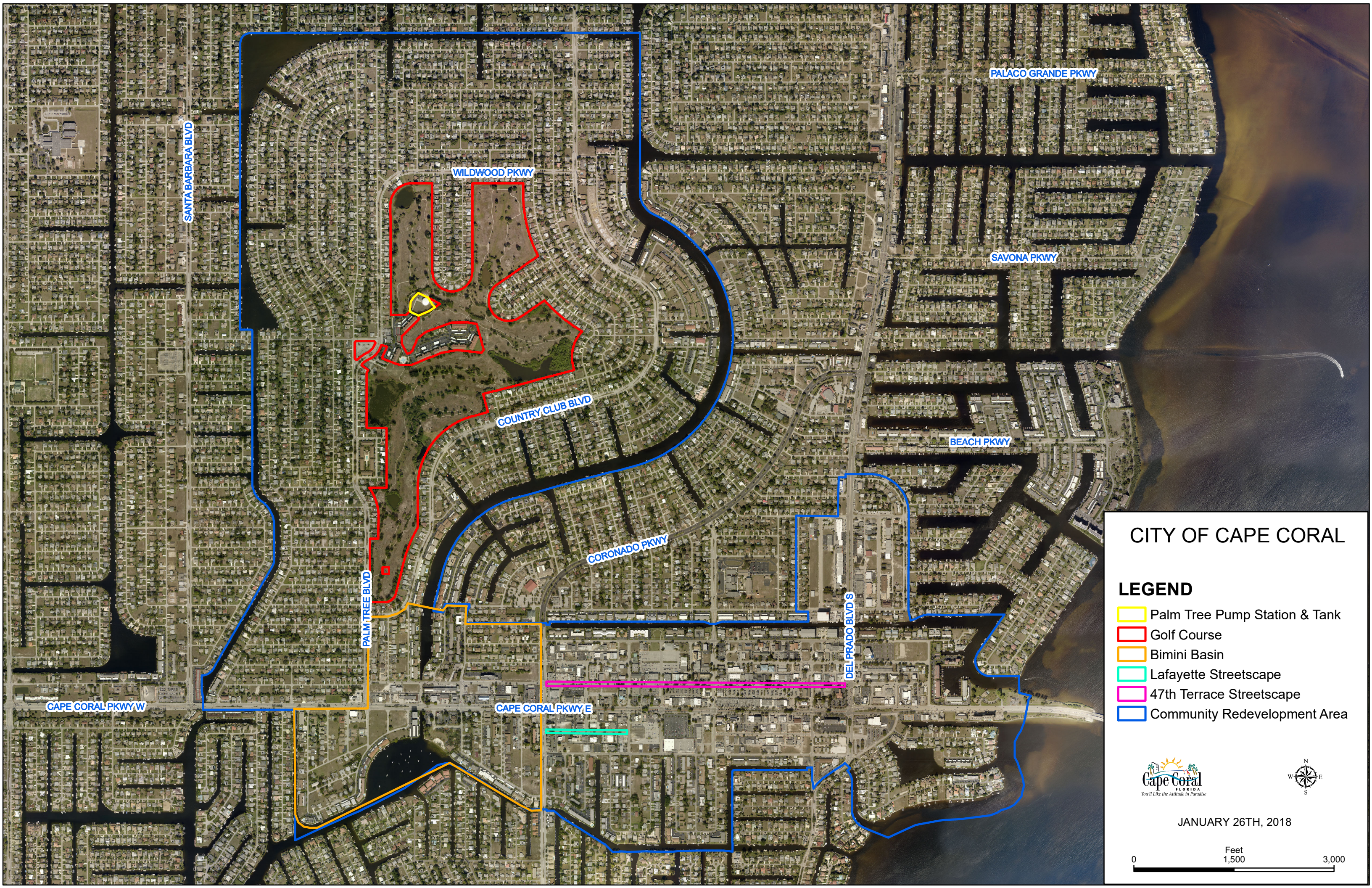
LEGEND

-  Golf Course
-  Palm Tree Pump Station & Tank





JANUARY 26TH, 2018





CITY OF CAPE CORAL

LEGEND

-  Palm Tree Pump Station & Tank
-  Golf Course
-  Bimini Basin
-  Lafayette Streetscape
-  47th Terrace Streetscape
-  Community Redevelopment Area



JANUARY 26TH, 2018

