City Review Submittal
06/09/2020

CITY OF LYNN HAVEN ADVANCED WASTEWATER TREATMENT FACILITY PLANNING DOCUMENT

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Project No. 14429

June 2020

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City of Lynn Haven AWTF

Planning Document

June 2020

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Tables

Figures

Executive summary

The City of Lynn Haven owns and operates a 2.5 million gallon per day (MGD) advanced wastewater treatment facility (AWTF) which provides public use (Part III) reclaimed water for both irrigation and surface water discharge to St. Andrews Bay. Several factors have led the City to seek options to provide a greater amount of resiliency in its AWTF infrastructure, while simultaneously meeting both present and future capacity and level of service requirements.

The purpose of this report is to summarize the findings and recommendations developed for the proposed improvement to the Lynn Haven AWTF. A recap of the existing facility is presented along with discussion of historical and projected facility flows. The report then evaluates three (3) alternatives using the following criteria:

- Estimated Capital Costs
- Operation and Maintenance Costs
- Resiliency
- Environment
- Operability
- Constructability
- Efficiency

The three alternatives evaluated include:

A. No Action
B. Flow Diversion to Another Facility
C. Upgrades to the Existing Facility

Based on the evaluation, the selected option is for the city to upgrade its existing treatment facility, primarily it's influent pump station, headworks, and pretreatment equipment. This option would be an initial phase to future upgrades which would eventually bring the capacity up to a level that offers a consistent level of service while allowing for unfettered City growth and prosperity. Additionally, the proposed project would prevent extreme weather from adversely affecting the sanitary sewage treatment process, and prevent environmental catastrophes such as Sanitary Sewer Overflows. The proposed modifications would cost approximately $6.7 million. This is an order of magnitude cost with 10% contingency. It is anticipated that the project would take approximately 18 to 24 months to complete, and consist of the following upgrades:

1. A new, supplemental influent pump station, with VFD controls.
2. Rerouting of existing influent piping.
3. A new elevated headworks structure.
4. New mechanical screens.
5. New screenings compactors.
6. New vortex degritting systems.
7. A new backup power generator.
8. A new backup power generator shelter.
9. A new electrical equipment shelter.

1 Introduction

This Wastewater Collection System Facilities Plan was prepared by Panhandle Engineering, Inc. and Mott MacDonald on behalf of the City of Lynn Haven to meet the planning requirements of the Clean Water State Revolving Fund (CWSRF) program. The City of Lynn Haven is currently seeking funding through the Clean Water State Revolving Fund Program (CWSRF) to improve the resiliency of its Advanced Wastewater Treatment Facility (AWTF) infrastructure, while also providing capacity to meet the City's current and future level of service. The City of Lynn Haven intends to utilize either conventional design/bid/build contracting procedures for construction for the planned improvements. Panhandle Engineering and Mott MacDonald will also prepare all other planning, design, administrative, and pre-construction documents necessary to be eligible for CWSRF construction funding.

1.1 Existing Facility

The City of Lynn Haven's AWTF currently operates under FDEP Permit No. FL0169978-015-DW1P/NR, which expires February 27, 2025. The facility is permitted to treat 2.5 MGD on an annual average daily flow basis using sequential batch reactor (SBR) treatment and post-treatment filtration, ultraviolet (UV) disinfection, and post-UV chlorination. Chlorinated effluent flows to a 1.0 million gallon (MG) reclaimed water storage tank located at the Lynn Haven Sports Park (Sports Park) and 11.0 MG reclaimed water storage pond located at Nature Walk Golf Course (Golf Course). Excess effluent flows are de-chlorinated and discharged into St. Andrews Bay. The sludge that is generated by means of the wastewater treatment process is treated and hauled to either the Springhill Landfill or Wetappo Farms for land application. The City of Lynn Haven's existing wastewater service region encompasses an area that is approximately 10.88-square miles as shown in **Figure 1-1**. The City provides wastewater service to approximately 7,810 residential, 325 small commercial, and 80 large commercial customers within this area.

1.1.1 Location

The City of Lynn Haven is located in the center of Bay County, Florida, and is surrounded on three sides by North Bay and various tributary bayous. The center of town is located near the intersection of State Road 77 and 14th Street. The Lynn Haven AWTF is located on the western side of town and lies within the two city blocks that are bounded by 6th Street, 5th Street, Missouri Avenue, and the North Bay shoreline. The AWTF main entrance is located on 5th Street across the street from A.L. Kinsaul Park and the center coordinates are latitude 30°15'00.9315"N and longitude 85°39'34.2616"W. Lynn Haven City Hall is located at 825 Ohio Ave Lynn Haven, FL 32444. The location map of the AWTF and the City of Lynn Haven is shown in **Figure 1-2**.

1.1.2 Description

The existing Lynn Haven wastewater treatment plant was placed into service in the1960's and has been expanded in incremental phases to meet the growing community's wastewater treatment needs. The last major plant capacity upgrade was constructed in 1998 to achieve the current permitted treatment capacity of 2.5 million gallons per day (MGD) Annual Average Daily Flow (AADF). The AWTF includes pre-treatment (mechanical bar screens & a vortex de-gritting unit), two (2) sequential batch reactors (1,365,000 gallons, each), a post equalization tank (329,000 gallons), two (2) Fuzzy Filter® units (each unit includes an 8' x 8' compressible media)

installed in 2015, a dual channel ultraviolet light disinfection unit (each UV unit contains two (2) banks), a sodium hypochlorite chlorination disinfection system (the chlorine contact chamber is the effluent pipeline between the effluent pump station at the AWTF to the intersection of Illinois Avenue and 8th Street), four (4) digesters with a total capacity of 1.143 MG, a centrifuge with backup drying beds, a 1.0 MG reclaimed water storage tank (located at sports park), a 11.0 MG reclaimed water storage pond (located at the golf course), a 3.0 MG lined reject water holding pond (located at the AWTF), and continuous on-line monitoring instruments for turbidity, residual chlorine, and chemical feed systems. The existing AWTF site and the process flow schematic are illustrated in **Figure 1-3** and **Figure 1-4**, respectively.

The sludge treatment (Class B) includes aerobic digestion to meet pathogen reduction requirements. The vector attraction reduction requirements are accomplished by incorporating the digested biosolids into the soil within 6 hours after land application or landfilling.

1.2 Problem Statement

The City of Lynn Haven AWTF sustained both wind and flood damage from Hurricane Michael, a category 5 hurricane. Emergency and immediate-needs repairs have been made, but the AWTF is experiencing intermittent problems with the current configuration, particularly during wet weather events which cause surcharging in the gravity influent line, resulting in repeated Sanitary Sewer Overflows (SSOs). Additionally, the facility is considered aged at approximately 24 years old, which is indicative of the need for several of the AWTF process equipment components to require replacement/upgrades. Considering the age of the facility, the City has taken a proactive approach and retained the services of Panhandle Engineering and Mott MacDonald to analyze various alternatives and preliminarily design key process components at the Lynn Haven AWTF and evaluate the cost, and resiliency involved with each alternative. This report address the upgrades required to the City's primary treatment. It is anticipated that the subsequent reports will address upgrades to the facility's secondary and tertiary treatment systems.

1.2.1 Effects of Hurricane Michael

On October 10th, 2018 the Category 5 (157 mph or higher sustained winds) Hurricane Michael made landfall on the state of Florida approximately 35 miles south east from the City of Lynn Haven. The devastating storm laid waste to the local terrain, including homes, businesses, trees, and powerlines. The City of Lynn Haven sustained broad substantial damage due to high winds and hurricane generated tornadoes. The City's water and wastewater infrastructure was heavily damaged from the storm, including damage due to uprooted and fallen trees, destroyed buildings, and wind flung debris impacts. In the months following the storm, the disaster recovery efforts also caused key infrastructure to become damaged, for example, sewer lines located beneath roadways were crushed due to the heavy traffic loads from emergency debris removal trucks. During this disaster recovery time, the Lynn Haven AWTF remained operational, even though portions of the plant were either non or partially functional due to the widespread damages caused by the storm. A list of the storm related damages caused by the high winds, debris impacts, and flooding at the AWTF include the following items.

1. The ultraviolet disinfectant system.
2. The sludge digesters.
3. The onsite backup generators.
4. The staff office buildings.
5. The storage buildings.
6. The outside lighting throughout the Plant.
7. The catwalks throughout the Plant.
8. Sewer backup.

The majority of the Hurricane Michael damages at the AWTF have since been repaired in the eighteen (18) months since the catastrophic storm event, and the AWTF is now considered functionally operational as of May 2020, with the exception of some minor repairs that need to be made, which will be completed later in 2020. The damages sustained from Hurricane Michael has however, highlighted a recurring SSO issue during wet/extreme weather. The SSOs occur primarily in the gravity portion of the City's collection and conveyance system, where the wastewater flows into the AWTF.

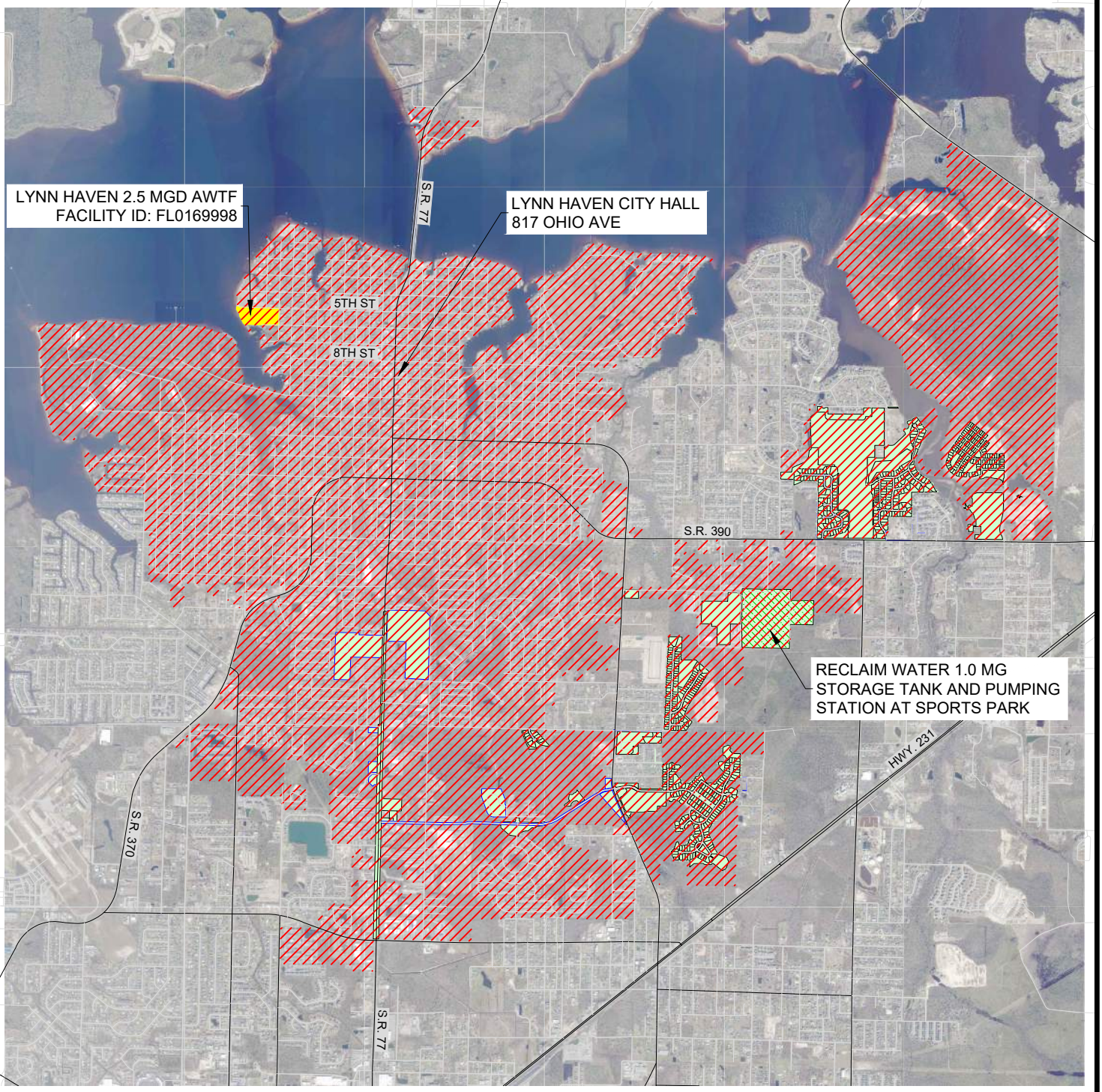
1.3 Project Description

The purpose of this plan is to provide the City of Lynn Haven with an evaluation of options to be used primarily as a decision-making tool, allowing the City to make informed decisions in a manner which is cost effective, maximizes resiliency, and provides the greatest relative overall benefits. The three (3) options to be investigated are as follows:

1. Alternative A: No Action
2. Alternative B: Flow Diversion to Another Facility
3. Alternative C: Upgrades to the Existing Facility.

Resiliency is particularly to be focused on during the analysis, as the AWTF is located in a warm subtropical climate, near to the Gulf of Mexico and therefore has a greater propensity to experience named tropical windstorms.

FIGURE 1-1
CITY OF LYNN HAVEN AWTF
SERVICE AREA MAP



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AWTF SERVICE AREA MAP
CITY OF LYNN HAVEN AWTF
PLANNING DOCUMENT
LYNN HAVEN, FLORIDA

CAD FILE:	14429-FIGURES-2.dwg
DWN BY:	JAH
DATE:	JUNE 2020
SHEET NO:	FIG. 1-1
PROJECT NUMBER	14429

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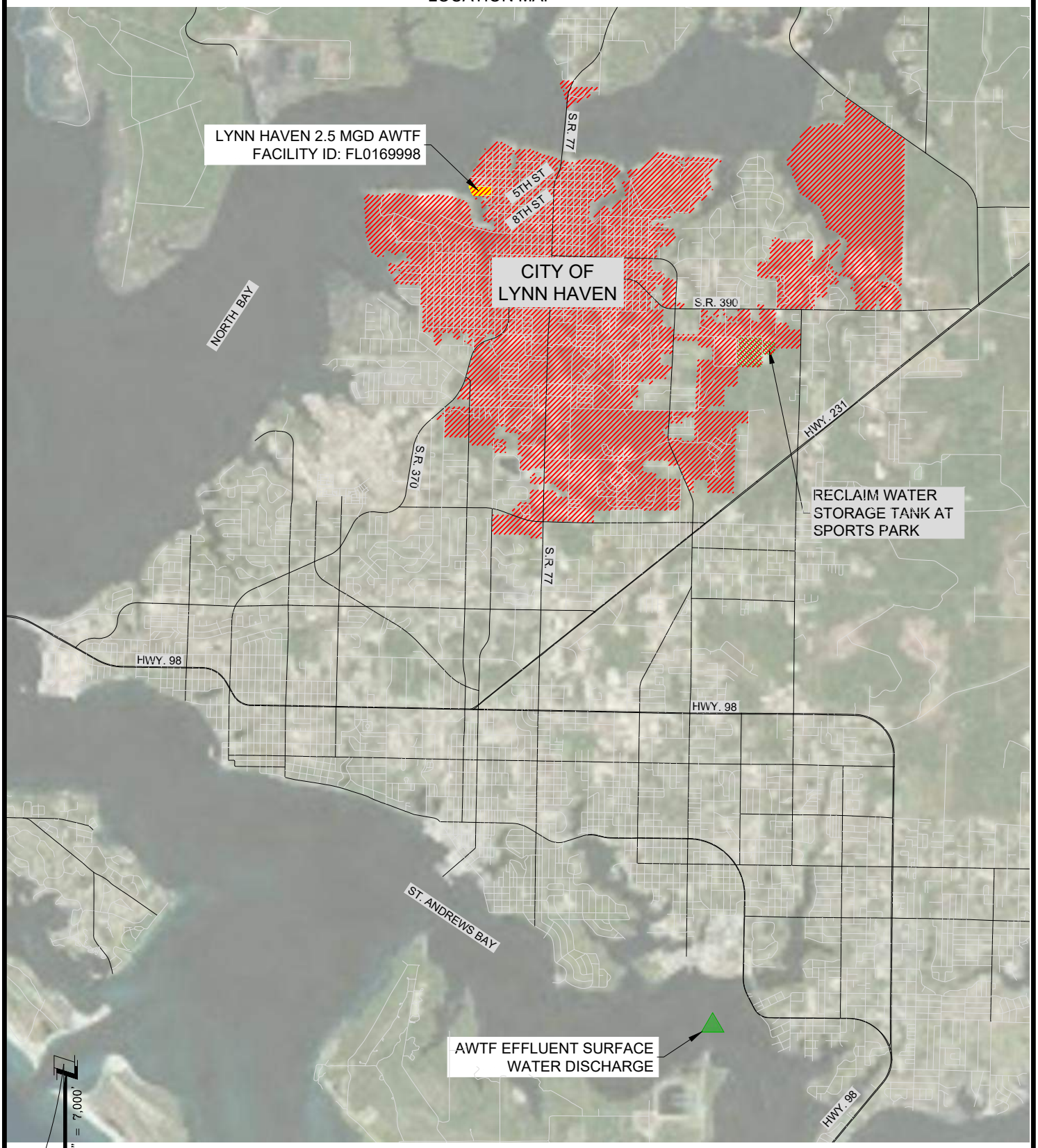
FIGURE 1-2
CITY OF LYNN HAVEN AWTF
LOCATION MAP



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AWTF LOCATION MAP
CITY OF LYNN HAVEN AWTF
PLANNING DOCUMENT
LYNN HAVEN, FLORIDA

CAD FILE:	14429-FIGURES-2.dwg
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FIGURE 1-3
CITY OF LYNN HAVEN AWTF
EXISTING SITE PLAN

7

SCALE: 1" = 100'

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AWTF EXISTING SITE PLAN
CITY OF LYNN HAVEN AWTF
PLANNING DOCUMENT
LYNN HAVEN, FLORIDA

CAD FILE: 14429-FIGURES-2.dwg
DWN BY: JAH
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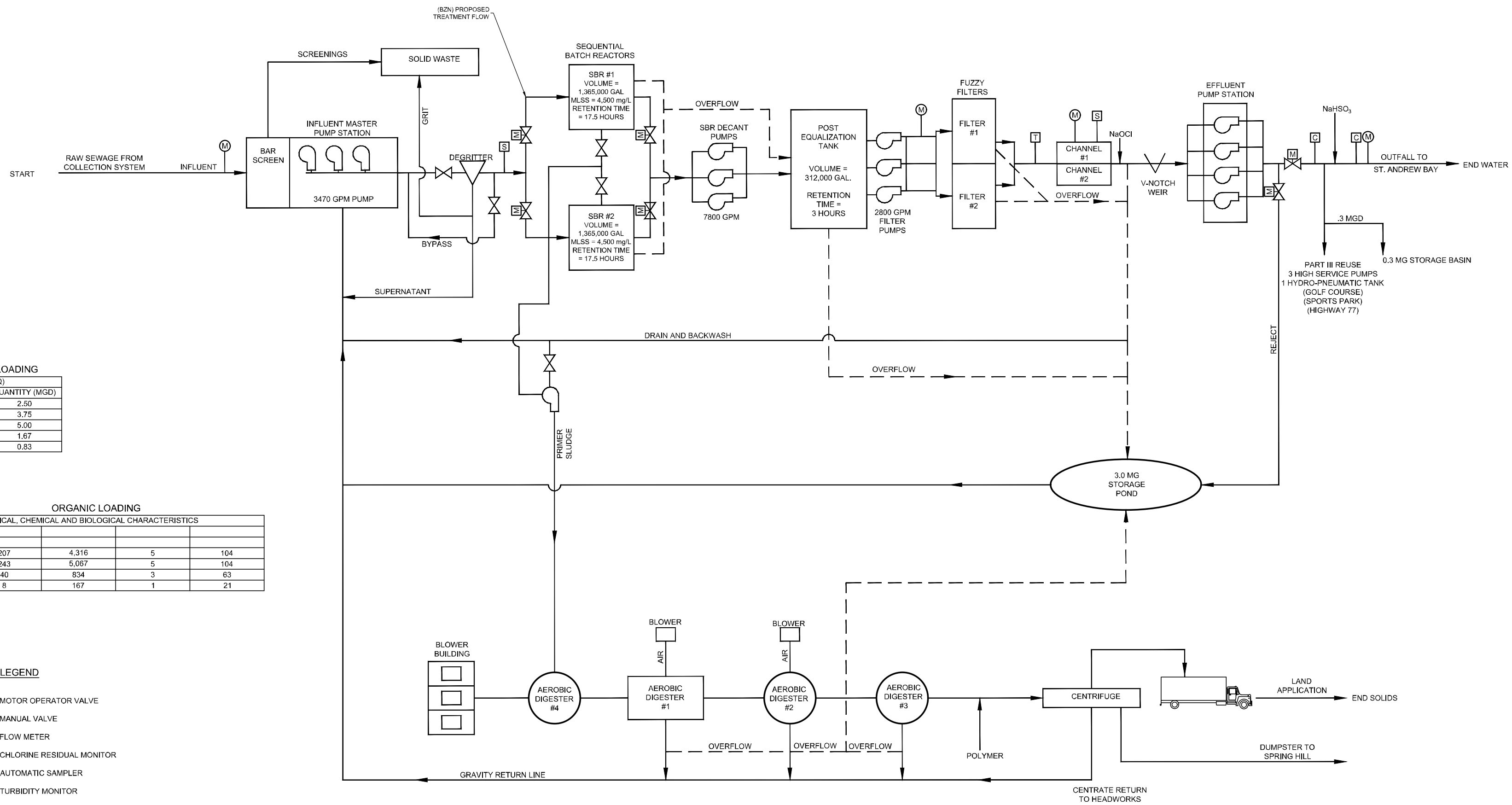
PROJECT NUMBER
14429

Date: Jun 09, 2020, 9:02am User ID: jahFile: P:\14429 AWTF Expansion Master Plan\1 CIVIL3DFolder\Exhibits\14429-FIGURES-2.dwg

FIGURE 1-4
Process Flow Diagram



HYDRAULIC LOADING

FLOW (Q)	
TYPE	QUANTITY (MGD)
AVERAGE DAILY	2.50
PEAK DAILY	3.75
PEAK HOURLY	5.00
MINIMUM DAILY	1.67
MINIMUM HOURLY	0.83

ORGANIC LOADING

	PHYSICAL, CHEMICAL AND BIOLOGICAL CHARACTERISTICS			
PARAMETER				
BOD_5	207	4,316	5	104
TSS	243	5,067	5	104
TKN	40	834	3	63
TOTAL P	8	167	1	21

LEGEND

- M — MOTOR OPERATOR VALVE
- MANUAL VALVE
- M — FLOW METER
- C — CHLORINE RESIDUAL MONITOR
- S — AUTOMATIC SAMPLER
- T — TURBIDITY MONITOR
- PUMP

REV	DATE	BY	REVISIONS
NOT			RELEASED FOR CONSTRUCTION BY: DATE:

SCALE: AS NOTED
DESIGNED BY: SEP
DRAWN BY: CAK/JAH
REVIEWED BY: CBF
ISSUE DATE: FEBRUARY 2020
ACAD FILE NAME: 14429 pfs.dwg

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WASTEWATER TREATMENT PLANT PROCESS FLOW SCHEMATIC
MASTER PLAN FOR AWTF EXPANSION
CITY OF LYNN HAVEN ~ FACILITY NUMBER FL0169978
LYNN HAVEN, FLORIDA

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SHEET NUMBER 1
PROJECT NUMBER 14429

2 Design Criteria

2.1 Twenty Year Planning Period

Any of the proposed AWTF alternatives must meet the projected 20-year needs of the City and provide capacity for new developments and proposed property annexes. The Lynn Haven AWTF has already reached 75% flow capacity over the past few years, and per Florida Department of Environmental Protection (FDEP), and the Florida Administrative Code (FAC), the preliminary design to meet capacity must begin. Any feasible solution would need to provide enough capacity for the projected growth of the City for at least the 20-year planning period.

The City has a current approximate population of 20,500 residents and encompasses over 10.88 square miles. There are two major thoroughfares, State Road 77 and 390, which pass through the City of Lynn Haven. The City has also shown, that it is has progressively become a favorable location for the inhabitants of Bay County to permanently reside.

Lynn Haven currently is in the later stages of disaster recovery from Hurricane Michael (2018). This catastrophic storm destroyed many older homes and buildings throughout the City. Post-storm, many of the heavily damaged buildings and densely forested lots have been demolished and/or cleared due to storm damage. The City's local residents have begun to rebuild their existing homes and businesses, alongside new buildings on previously undeveloped land. New apartment and townhome complexes throughout the City, have started the development and construction process. This "forced urban renewal" has given the City numerous opportunities for new development through lot splits, reconstruction, and land development. The older sections of the City's wastewater is collected and conveyed through a large gravity sewer collection basin. These collection basin wastewater flows will mostly stay the same, due to local terrain constraints, and limitations of potential expansion points.

The City of Lynn Haven has the capability to expand its borders to both the south and east, into areas of Unincorporated Bay County by using the process of voluntary land annexation. Lynn Haven is currently surrounded by large tracks of residential and commercial property, which are currently located within Unincorporated Bay County. As part of the land annexation process, the City must be able to provide new users with utilities, i.e. water and wastewater services. Due to the greater distances away from the AWTF, new users will rely on sanitary sewer force mains to play the primary role in the transmission of the collected wastewater. The City currently operates and maintains 72 lift stations, which vary in size from 2-40 HP pumps, in order to deliver the collected wastewater to the AWTF. When the City is required to expand its borders, new lift stations and force main routes will be vital in providing adequate sewer collection and conveyance services to the wastewater treatment facility.

During any City expansion, the regional demand for municipal wastewater treatment and disposal will increase. Any proposed alternatives would need to incorporate the additional capacity from both population increases and City expansion, thus accommodating the larger wastewater flows and meeting the City's future needs. For the City to thrive and grow over the next 20 years, wastewater services will also need to expand proportionally with the City, such that a favorable level of service can be maintained for all users.

2.2 Existing and Future Conditions

Population

Historical population data was obtained from the U.S. Census Bureau and the University of Florida Bureau of Economics Business Research (BEBR). This data was utilized to evaluate the historical growth trends and calculated projected growth in the service area. The linear regression or best-fit straight-line method was used to project future populations.

In 2010, the U.S. Census Bureau determined the population of the City of Lynn Haven to be 18,493. During this 10-year period from 2000 to 2010, there was a population increase of approximately 48.5%. The equivalent average annual population growth rate was estimated to be 4.03% during this period. In 2019 Lynn Haven experienced a population decrease due to Hurricane Michael. City residents moved out of town due to loss of home and business from the destruction brought by Hurricane Michael. Relief efforts and disaster recovery is still ongoing, but the population of Lynn Haven is beginning to rise again to pre-hurricane levels. The BEBR data was used to identify the Lynn Haven historical population estimates up to year 2019. The estimated 4.03% annual population growth rate for Lynn Haven, Florida was used to calculate future annual population projections for the planning period (see **Table 2-1**).

Table 2-1:Historic and Projected Population

Year	Lynn Haven Population	Population Data Source
2010	18,493[1]	2010 Census Data
2011	18,632[2]	BEBR Estimate
2012	18,772[2]	BEBR Estimate
2013	18,911[2]	BEBR Estimate
2014	19,068[2]	BEBR Estimate
2015	19,287[2]	BEBR Estimate
2016	20,004[2]	BEBR Estimate
2017	20,886[2]	BEBR Estimate
2018	21,201[2]	BEBR Estimate
2019	19,586[2]	BEBR Estimate
2020	**20,054[3]**	**City's Current Estimated Population**
2021	22,943[4]	Projected (4.03% Growth Rate)
2022	23,868[4]	Projected (4.03% Growth Rate)
2023	24,830[4]	Projected (4.03% Growth Rate)
2024	25,831[4]	Projected (4.03% Growth Rate)
2025	26,872[4]	Projected (4.03% Growth Rate)
2026	27,955[4]	Projected (4.03% Growth Rate)
2027	29,082[4]	Projected (4.03% Growth Rate)
2028	30,254[4]	Projected (4.03% Growth Rate)
2029	31,473[4]	Projected (4.03% Growth Rate)
2030	32,741[4]	Projected (4.03% Growth Rate)
2031	34,060[4]	Projected (4.03% Growth Rate)
2032	35,433[4]	Projected (4.03% Growth Rate)
2033	36,861[4]	Projected (4.03% Growth Rate)
2034	38,346[4]	Projected (4.03% Growth Rate)
2035	39,891[4]	Projected (4.03% Growth Rate)
2036	41,499[4]	Projected (4.03% Growth Rate)
2037	43,171[4]	Projected (4.03% Growth Rate)
2038	44,911[4]	Projected (4.03% Growth Rate)
2039	46,721[4]	Projected (4.03% Growth Rate)
2040	**48,604[4]**	**Projected (4.03% Growth Rate)**

1) Actual Census Data.
2) Data from 2011 through 2019 BEBR Population Estimates.
3) City of Lynn Haven's Estimated Population of 22,054 as of May 2020
4) Data from 2021 through 2040 projected using an annual growth rate of 4.03%

Flows

The wastewater flow projections were based on the evaluation of historical wastewater flows for the past 10 years and the population projections that were previously described in **Section 2.2**. These flow projections are used determine the adequacy of the existing facilities in treating future flows, and any required changes to the AWTF capacity. Additionally, the projected wastewater flows will serve as the basis for the future wastewater capital improvements program and establishment of timelines to accomplish improvements in order to meet the customers' needs and maintain the required level of service. The flow projection method follows the FDEP Capacity Analysis Report (CAR) Guidelines for a system with seasonal flow variations.

The Lynn Haven AWTF annual average daily flow projections per the FDEP CAR Guidelines are based on the population projections and the historical per capita wastewater flows. The yearly annual average daily wastewater flow was divided by the total population to determine the historical gallons per day per capita (gpd/c). The average per capita flow for the past ten years was 80 gpd/c. This historical per capita flow average was multiplied by the yearly population projections to determine the future annual average daily flows on a yearly basis for the next 20 years. The calculated annual average daily wastewater flow projections range from 1.764 MGD in 2020 to approximately 3.888 MGD in 2040. The annual average daily flow projections per FDEP CAR Guidelines are presented in **Table 2-2**.

The Lynn Haven AWTF experiences flow variation based on seasonal rainfall amounts. The projected yearly three-month average daily flows are based the annual average daily flow projections and a seasonal flow variation factor of 1.16. The seasonal flow variation factor is the average ratio of the yearly maximum three-month average daily flow to the annual average daily flow for the past 10 years. The calculated 1.16 seasonal flow variation factor was multiplied by the yearly annual average daily flow projections to determine the future maximum three-month average daily flows on a yearly basis up to the year 2040. The calculated yearly maximum three-month average daily wastewater flow projections range from 2.046 MGD in 2020 to 4.510 MGD in 2040. These yearly maximum three-month average daily flow projections per FDEP CAR Guidelines are also presented in **Table 2-2**.

Table 2-2: Historic and Projected Wastewater Flows

Year	Lynn Haven Population	Annual Average Daily Flow (MGD)	Yearly Maximum Three-Month Average Daily Flow (MGD)	Estimated Per Capita Flow (Gallons per Day)	Maximum Three-Month ADF to Annual ADF Ratio	Plant Capacity (MGD)
2010	18,493	1.628	1.875	88	1.15	2.5
2011	18632	1.465	1.631	79	1.11	2.5
2012	18772	1.665	2.101	89	1.26	2.5
2013	18,911	1.561	1.969	83	1.26	2.5
2014	19,068	1.442	1.646	76	1.14	2.5
2015	19,287	1.435	1.604	74	1.12	2.5
2016	20,004	1.602	1.771	80	1.11	2.5
2017	20,886	1.620	1.935	78	1.19	2.5
2018	*21,201*	*1.713*	*2.027*	*81*	1.18	2.5
2019*	*19,586*	*1.460*	*1.648*	*75*	*1.13*	2.5

Year	Lynn Haven Population	Annual Average Daily Flow (MGD)	Yearly Maximum Three-Month Average Daily Flow (MGD)	Estimated Per Capita Flow (Gallons per Day)	Maximum Three-Month ADF to Annual ADF Ratio	Plant Capacity (MGD)
2020**	***22,054***	***1.764***	***2.046***	***80***	***1.16***	**2.5**
2021	*22,943*	*1.835*	*2.129*	*80*	*1.16*	2.5
2022	*23,868*	*1.909*	*2.214*	*80*	*1.16*	2.5
2023	*24,830*	*1.986*	*2.304*	*80*	*1.16*	2.5
2024	*25,831*	*2.066*	*2.397*	*80*	*1.16*	2.5
2025	*26,872*	*2.150*	*2.494*	*80*	*1.16*	2.5
2026	*27,955*	*2.236*	*2.594*	*80*	*1.16*	2.5
2027	*29,082*	*2.327*	*2.699*	*80*	*1.16*	2.5
2028	*30,254*	*2.420*	*2.807*	*80*	*1.16*	2.5
2029	*31,473*	*2.518*	*2.921*	*80*	*1.16*	2.5
2030	*32,741*	*2.619*	*3.038*	*80*	*1.16*	2.5
2031	*34,060*	*2.725*	*3.161*	*80*	*1.16*	2.5
2032	*35,433*	*2.835*	*3.289*	*80*	*1.16*	2.5
2033	*36,861*	*2.949*	*3.421*	*80*	*1.16*	2.5
2034	*38,346*	*3.068*	*3.559*	*80*	*1.16*	2.5
2035	*39,891*	*3.191*	*3.702*	*80*	*1.16*	2.5
2040	***48,604***	***3.888***	***4.510***	***80***	***1.16***	**2.5**
2045	*59,220*	*4.738*	*5.496*	*80*	*1.16*	2.5
2050	*72,155*	*5.772*	*6.696*	*80*	*1.16*	2.5

* 2019 Average monthly flow from January to November as reported on DMR's.

** City of Lynn Haven's Estimated Population of 22,054 as of May 2020

1) Data from 2011 through 2019 BEBR Population Estimates.
2) Projected Annual Average Wastewater flows calculated using projected populations and the 80 gpc/d (The 2019 Past 10-Year Average).
3) Projected Maximum 3-Month ADF and the 1.16 Seasonal Flow Variation Function (The Past 10-Year Average of the Maximum Three-Month ADF)
4) Population projections calculated using Annual Growth Rate of 4.03%

Wastewater flow projections based on potential City expansions and estimated growth during the next 10-years were evaluated to verify the accuracy of the FDEP CAR population-based flow projection method. As mentioned in **Section 2.1**, Lynn Haven has the capability to expand its borders to the south and east into areas of Unincorporated Bay County through the process of voluntary land annexation. These areas and vacant parcel of land within the City limits were evaluated to determine an estimated number of residential homes, small commercial building, and large commercial developments that could be added to the City's wastewater system during the next 10-Years. The population for these future residential and commercial services were calculated using 2.54 persons per home, and 250 gallons per equivalent residential unit. The calculated future population was multiplied by the Lynn Haven adopted level of service of 98 gallons per day per capita (gpd/c) to determine additional wastewater flow projections for the 10-Year Land Development Projections method. Refer to **Table 2-3** for the Projected 10-Year Land Development Wastewater Estimates.

Table 2-3: Projected 10-Year Land development Wastewater Flow Estimations

10-Year Projected Land Development	Projected Units	Population (2.54 per Home)	Per Capita Flow 98 gpd/c
Residential	3,356	8,524	835,352
Small Commercial (300 gpd)	30	92	9,000
Large Commercial (600 gpd)	15	92	9,000
Projected Population & Flow Increase =		**8,708**	**853,352**

The 10-year land development additional wastewater flow increase of 0.853 MGD was added to the Annual Average Daily Flow of 1.764 MGD from 2020, resulting in a projected wastewater flow of 2.617 MGD in year 2030. The FDEP CAR projected wastewater flow for year 2030 is 2.619 MGD, which validates the use population-based flow projection method used for the 20-year planning period. See **Table 2-4**, for a comparison of the flow estimation methodology.

Table 2-4: Flow Estimation Methodology Verification

Flow Projection Method Comparison	2030 Flow (MGD)
2020 Annual Average Daily Flow (MGD)	1.764
10-Year CAR Projection (80 gpd/c) – see Year 2030 in Table 2-2	**2.619**
10-Year Land Development Projection (Table 2-3) plus 2020 Annual Average Daily Flow	**2.617**

3 Alternatives Analysis

3.1 Alternative Descriptions

As discussed, three alternatives were considered in the cost and effectiveness analysis. To be considered feasible, an alternative must meet current and future (20-year) capacity and level of service requirements. The alternative may accomplish this either outright, or initiate, as a first phase, an incremental approach to additional upgrades, which will progressively provide for the City's needs. Details on each alternative along with criteria for evaluation of each alternative are discussed in the following sections. Criteria used in the evaluation of the alternatives include capital costs, operation and maintenance costs, resiliency, environment, operability, constructability, and efficiency.

3.1.1 Alternative A: No Action

Alternative A is essentially status quo. It does nothing to address the current problems affecting the AWTF or provide for any future needs of the City, but is included in the analysis to allow for the investigation of any possible consequences of not addressing the situation. Alternative A represents no change to the existing AWTF structures, process, or operation, and is not considered to be a feasible option. An additional reason that Alternative A is not considered viable is that projected flows, (see **Section 2.2**, **Table 2.2)** predict that the capacity of the plant is reaching a level where plant expansion is eminent. F.A.C. 62-600.405 "Planning for Wastewater Facilities Expansion", requires that when the capacity of a wastewater plant is expected to be equaled or exceeded within five (5) years, preliminary design and planning must be initiated. Based on the projected flows, the three-month average daily flow can be expected to meet or exceed capacity around 2026 (6-years away), and the average daily flow is anticipated to meet or exceed the plant capacity in 2029 (9-years away).

3.1.2 Alternative B: Flow Diversion to Another Facility

Alternative B consists of partial diversion of 2 MGD AADF and 7.5 MGD Peak Hourly Flow (PHF) of influent wastewater flow away from the AWTF to a neighboring facility. Alternative B includes a 24-inch diameter pipeline connecting the Lynn Haven AWTF and the neighboring St. Andrews WWTF, located approximately 6.25-miles away. Also included in Alternative B, are modifications to the existing AWTF (i.e. upgrades to SBRs, new headworks, and a post equalization system) to ensure continued operation, pretreatment including mechanical screening, flow metering, an effluent transfer pump station with surge protection at the Lynn Haven AWTF, capacity upgrades to the St. Andrews WWTF to accommodate the additional flows, and a service agreement between the two municipalities. See **Figure 3-1** for the proposed FM between the Lynn Haven AWTF to the St. Andrews WWTF.

Figure 3-1: Proposed Forcemain Route

3.1.3 Alternative C: Upgrades to the Existing Facility

Alternative C looks at a first phase of upgrades to the existing facility, that would meet current and future needs of the City. The components identified to have the greatest initial impact for the AWTF are primarily involved with the influent pretreatment process, namely a supplemental influent pump station and a new elevated headworks. Both of which suffered damage during Hurricane Michael, which causes them to be vulnerable during wet weather conditions and display a greater propensity to causing sanitary sewer overflows.

3.2 Cost Analysis

The economic impact of each alternative is presented in the following sections, and is comprised of the initial capital costs, and the annual operation and maintenance (O&M) costs. A net value present worth analysis is then performed on each, which considers the time value of money over the specified planning period, typically the expected useable life of the major system components.

3.2.1 Capital Costs

3.2.1.1 Alternative A: No Action

Alternative A has no capital cost involved as it is essentially a decision to do nothing and continue to operate and maintain the AWTF as it currently exists. The No Action alternative would have the lowest cost of $0 capital expenditure and doesn't merit a formal economic analysis. Obviously, the selection of Alternative A, will not address any of the issues or concerns which prompted this study, including meeting FAC 62-600.405 requirements by providing a plan to increase capacity, and is therefore not considered feasible.

3.2.1.2 Alternative B

Alternative B: Diversion of Flow to St. Andrews WWTF, has a capital cost of $55,120,000 and is considered to be a feasible alternative, as it would satisfy all requirements set forth in **Section**

3.1. This alternative includes costs associated with modifications to the Lynn Haven AWTF, particularly upgrades to the SBRs, new headworks, and increased capacity to the post equalization system. The AWTF modifications are required to maintain facility operation throughout the planning period. Other costs include a new VFD controlled pump station at the AWTF with mechanical bar screens, a 24-inch diameter transfer pipeline with surge protection (hydropneumatic surge tank), and costs associated with capacity increases at the receiving wastewater treatment facility (St. Andrews WWTF). A standard 10% of the construction cost is used to calculate the construction contingency and 20% for inspection, soft, and engineering costs.

Table 3-1: Alternative B: Capital Costs

Alternative B: Flow Diversion to Another Facility Opinion of Cost

Description	Unit	Unit Cost	QTY	Cost
Modifications to Lynn Haven AWTF [1]	LS	$5,000,000	1	$5,000,000
Mechanical Bar Screens [2]	Per	$375,000	2	$750,000
Effluent Pump Station [3]	LS	$3,500,000	1	$3,500,000
24-inch Diameter Forcemain [4]	Feet	$550	33000	$18,150,000
Modifications to St. Andrews WWTF [5]	LS	$15,000,000	1	$15,000,000
			Sub Total	$42,400,000
Construction Contingency	NA	10%	NA	$4,240,000
Engineering / CEI / Soft Costs [6]	NA	20%	NA	$8,480,000
			Total	**$55,120,000**

1. Includes upgrades to SBRs, new headworks & Post equalization system.
2. 316 Stainless Steel Construction.
3. Includes VFDs for pump motor controls.
4. Includes a surge tank.
5. Required to increase capacity for additional flow, includes cost for effluent disposal improvements.
6. Soft Costs include survey, geotechnical, environmental, etc.

3.2.1.3 Alternative C

Alternative C: Modifications to the Existing Facility, has a capital cost of $6,688,500 and is considered feasible, as it would satisfy all requirements set forth in **Section 3.1**. The AWTF would require additional upgrades in the future to fully realize the City's required capacity, and this would be considered as an initial phase. The modifications include a supplementary influent master pump station, which would allow for a greater degree of separation between the gravity and forcemain fed influent flows, and mitigate any potential SSOs, which might occur due to surcharging the system during extreme weather. Also, an elevated headworks structure, which brings the pretreatment equipment up out of any potential flooding, while allowing the wastewater to flow via gravity to the next process unit. Mechanical screens, backup static bar screens, and screening compactors are included, as are energy efficient dual vortex degritters. The solids/screenings separated from the wastewater stream, will drop through a chute and into the waiting dumpsters below, to be transported to a landfill for disposal. Grit will be pumped to the grit washing system and will be conveyed to a dumpster, which will ultimately be disposed of in a landfill. Additionally, both an electrical shelter and a portable generator shelter are included, to protect and house the electrical equipment and backup emergency power system. Proposed site layouts showing the location of the new headworks and pump station is included as **Figures 3-2** and **3-3**.

Table 3-2: Alternative C: Capital Costs

Alternative C: Modifications to Existing Facility Opinion of Cost

Influent Master Pump Station				
Description	Unit	Unit Cost	QTY	Cost
Mobilization	LS	$150,000	1	$150,000
Concrete	LS	$185,000	1	$185,000
Pumps, Piping, Genset, Electrical [1]	LS	$1,288,000	1	$1,288,000
Headworks				
Mechanical Screens & Compactors [2]	PU	$321,000	2	$642,000
Screenings Chute [3]	LS	$40,000	1	$40,000
Degritting Units & Slurry Pumps [3]	PU	$600,000	2	$1,200,000
Piping	LS	$250,000	1	$250,000
Manual Bar Screens [2]	PU	$10,000	2	$20,000
Slide Gates	PU	$15,000	4	$60,000
Stairs, Catwalk, Handrail & Toe Plates [4]	LS	$45,000	1	$45,000
Grating [4]	LS	$25,000	1	$25,000
Concrete	CY	$800	600	$480,000
Headworks Coating	LS	$60,000	1	$60,000
Civil Site Improvement	LS	$200,000	1	$200,000
Electrical	LS	$500,000	1	$500,000
		Construction Sub Total		***$5,145,000***
Engineering / CEI / Soft Costs [5]	NA	20%	NA	$1,029,000
Construction Contingency	NA	10%	NA	$514,500
		Non-Construction Sub Total		***$1,543,500***
			Total	**$6,688,500**

1. Pumps to have VFDs.
2. 316 Stainless Steel Construction.
3. 304 Stainless Steel Construction.
4. Aluminum Construction.
5. Soft costs include survey, geotechnical, environmental, etc.

3.2.2 Operation & Maintenance Costs

The maintenance cost for each alternative was calculated using a percentage of the Replacement Asset Value (RAV), while operation cost was estimated utilizing consumables and electric power cost. The RAV includes the cost to replace any mechanical equipment, and refurbish costs for structures/piping. The percentage RAV used to calculate the maintenance cost is based on the expected useful life of each alternative's equipment and uses a linear (straight-line) depreciation method. Essentially, the maintenance for each alternative will cost the same as replacing the equipment , distributed over the expected life of the equipment. Therefore, 20-years expected life will use 5% RAV for maintenance.

Operation cost is calculated using consumables, and electricity costs. The annual consumable cost is estimated at 1% of the RAV. Electricity costs are estimated by assuming equipment will operate for a total of 18-hours every day, and electricity cost is taken at $0.09/kWh.

The RAV for Alternative B is $16,536,000, and is taken as 30% of the capital cost. This results in an expected annual maintenance cost of $826,800. This maintenance includes the SBRs, the headworks, pumps, VFDs, valves, and any other routine and non-routine maintenance related to the upgrades. The annual electricity cost assumes that it will require a total combined 260 horsepower (HP) to operate the pumps and equipment. This results in an annual electricity demand of 1,270,272 kWh, which cost approximately $114,324.

The RAV for Alternative C is $2,430,000, and includes the cost for replacing the pumps, generator, mechanical screens, and electrical equipment. This results in an expected annual maintenance cost of $121,500. This maintenance includes the any and all routine and non-routine maintenance related to the upgrades. The annual electricity cost assumes that it will

require a total combined 125 horsepower (HP) to operate the pumps and equipment. This results in an annual electricity demand of 612,406 kWh, which cost approximately $55,117.

The total estimated annual O&M cost for Alternatives B and C, is $1,106,484 and $200,917 respectfully. **Tables 3-3** and **3-4** summarize the estimated annual O&M costs for each alternative.

Table 3-3: Alternative B, Estimated Annual O&M Cost

Alternative B: Flow Diversion to Another Facility Annual O&M

Estimated Annual Maintenance Costs			
Description	Replacement Asset Value		Cost
General Maintenance	$16,536,000		$826,800
Estimated Annual Operation Costs			
Description	Demand	Unit Cost	Cost
Annual Electricity Cost	1270272 kWh	$0.09 /kWh	$114,324
Annual Consumable's Cost	NA	1%	$165,360
		Total	**$1,106,484**

Table 3-4: Alternative C, Estimated Annual O&M Cost

Alternative C: Modifications to existing Facility Annual O&M

Estimated Annual Maintenance Costs			
Description	Replacement Asset Value		Cost
General Maintenance	$2,430,000		$121,500
Estimated Annual Operation Costs			
Description	Demand	Unit Cost	Cost
Annual Electricity Cost	612406 kWh	$0.09 /kWh	$55,117
Annual Consumable's Cost	NA	1%	$24,300
		Total	**$200,917**

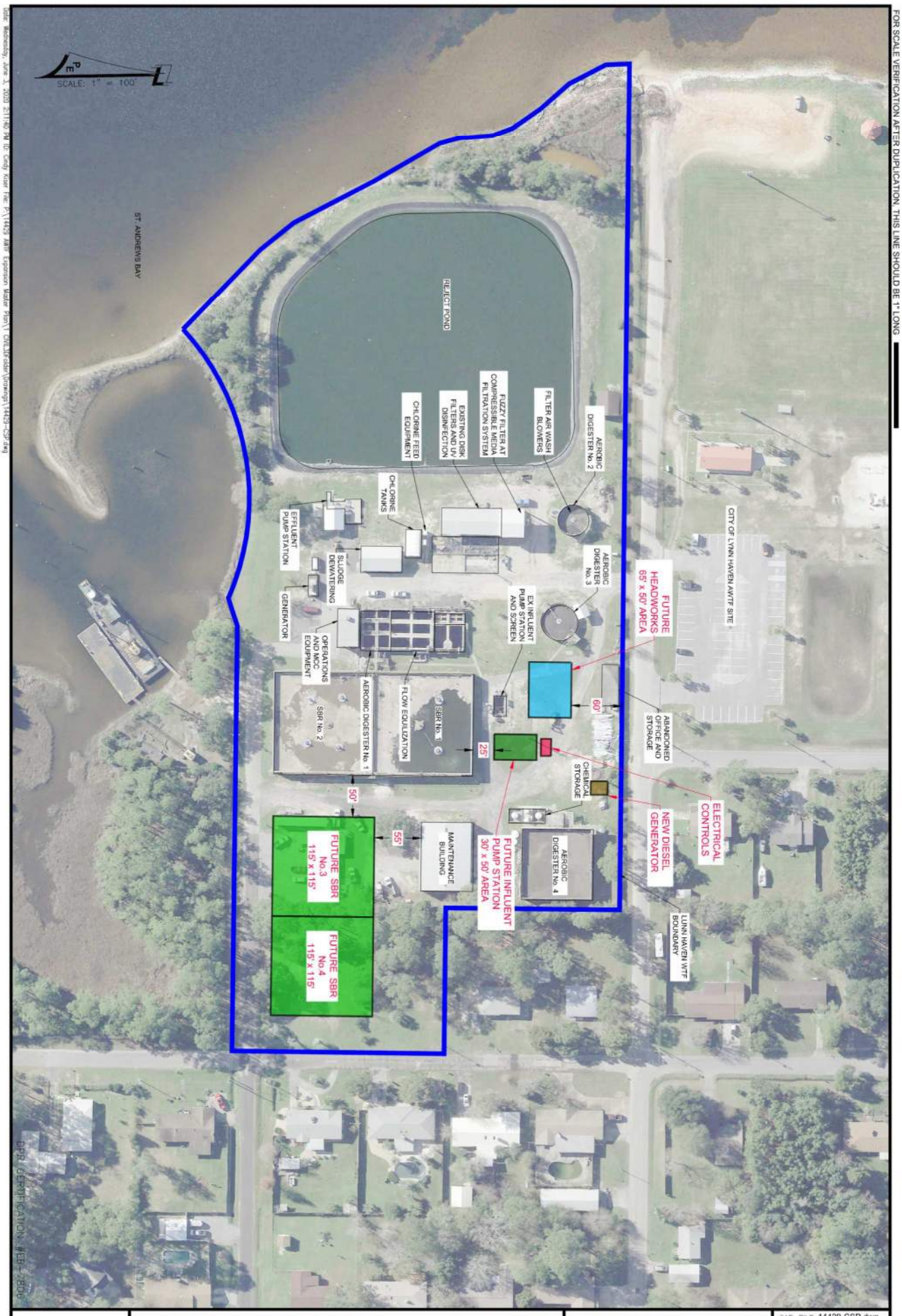
3.2.3 Net Present Cost Comparison

The alternative economic comparison includes estimated capital costs as well as O&M costs for each alternative. Present value was calculated on the annual O&M cost using a 20-year planning period, and a 1.36% discount rate. These present cost values were then combined with the capital cost, resulting in the Net Present Cost. The lowest cost option was Alternative C: Modifications to the Existing Facility. Alternative A: No Action was determined to not be feasible, and therefore not included in the comparison. **Table 3-5** below provides a Net Present Cost Comparison of the three alternatives.

Table 3-5: Net Present Cost Comparison

Alternative Net Present Cost Comparison

Description	Alternative B	Alternative C
Project Capital Cost	$55,120,000	$6,688,500
Maintenance Present Cost	$14,392,885	$2,115,065
Operation Present Cost	$4,868,730	$1,382,479
Net Present Cost	**$74,381,615**	**$10,186,043**



FOR SCALE VERIFICATION AFTER DUPLICATION, THIS LINE SHOULD BE 1" LONG

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Figure 3-2
CSP-1

CONCEPTUAL SITE PLAN #1
AWTF EXPANSION MASTER PLAN
CITY OF LYNN HAVEN
LYNN HAVEN, FLORIDA

PANHANDLE ENGINEERING, INC.
ENVIRONMENTAL ENGINEERS • CIVIL ENGINEERS • LAND PLANNERS
3005 South Highway 77 Lynn Haven, Florida 32444
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CAD FILE:	14429-CSP.dwg
DWN BY:	CAK
DATE:	JUNE 2020
SHEET NO:	CSP-1
PROJECT NUMBER	14429

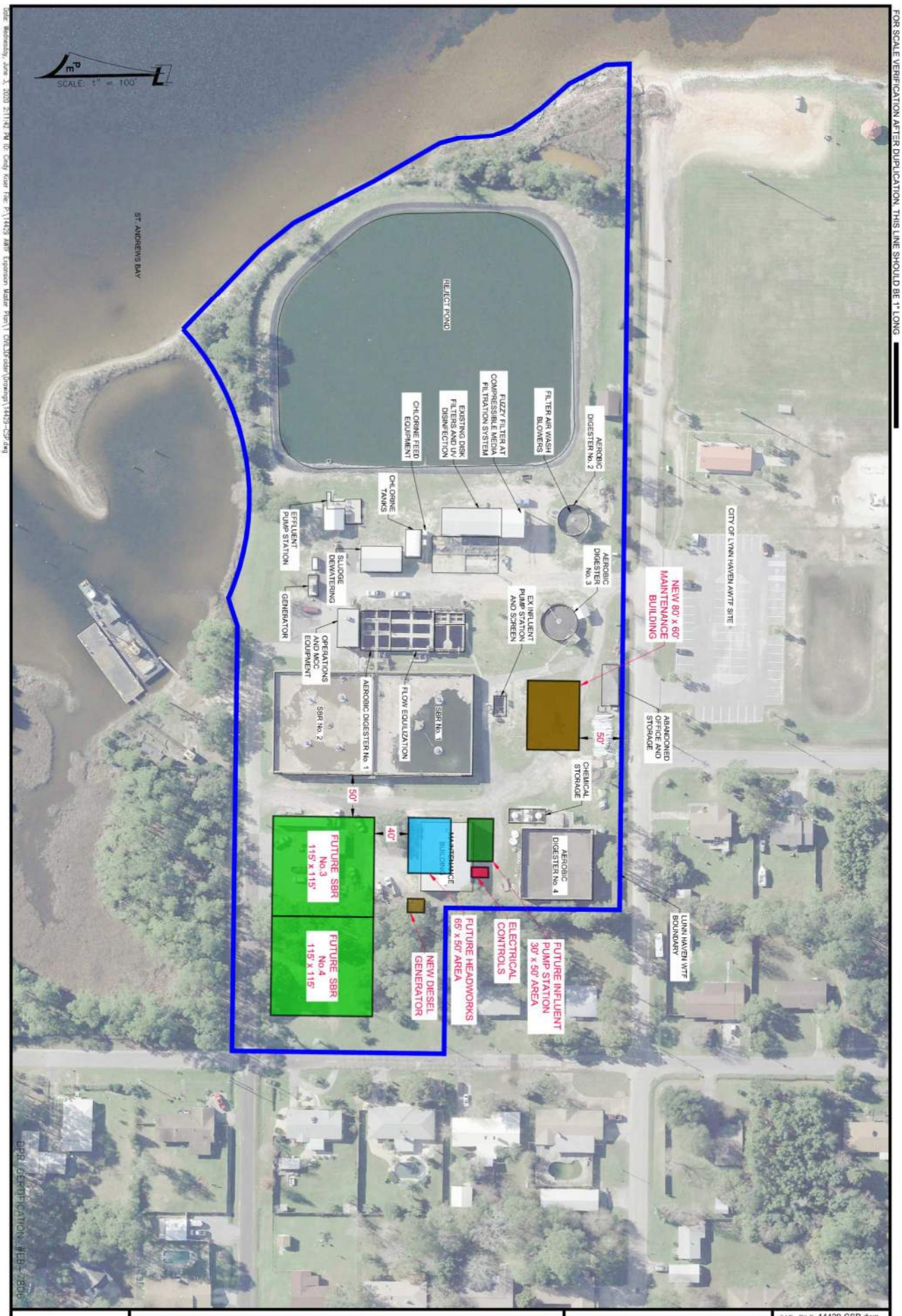

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Figure 3-3
CSP-2

CONCEPTUAL SITE PLAN #2
AWTF EXPANSION MASTER PLAN
CITY OF LYNN HAVEN
LYNN HAVEN, FLORIDA

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3005 South Highway 77 Lynn Haven, Florida 32444
(850)763-5200 Fax (850)769-0730 www.panhandleengineering.com

CAD FILE:	14429-CSP.dwg
DWN BY:	CAK
DATE:	JUNE 2020
SHEET NO:	CSP-2
PROJECT NUMBER	14429

3.3 Effectiveness Analysis

3.3.1 Resiliency Analysis

The resiliency analysis is considered necessary as the facility is located in an area with a greater than normal chance of being affected by extreme weather. The concept is to weigh each alternative on its ability to ensure its infrastructure is capable of being resilient in the face of extreme weather, primarily hurricanes, and flooding. Some questions that are considered for each alternative when performing a resiliency analysis are; during the course of a flood or natural disaster, can this system maintain operation and integrity, and does it protect and preserve critical infrastructure?

The no action alternative does nothing to increase resiliency, and the current infrastructure of the AWTF has proven inadequate in the face of a natural disaster (Hurricane) and therefore is ranked the lowest of the choices. Both Alternative B and C are ranked approximately equal in the resiliency analysis, as they both offer an increased amount of redundancy and durability. Alternative B does so by connecting two wastewater treatment facilities, and Alternative C does so by improving the design, and location of key wastewater infrastructure at the existing plant. With side by side comparison, Alternative C will score slightly better, as it does not have the extra forcemain components that could potentially develop issues over time.

3.3.2 Environmental Analysis

The environmental analysis consists of looking into the potential for regulator noncompliance actions. Each alternative is evaluated based on the potential to cause negative environmental impacts, which would cause regulatory infractions. The environmental analysis goal is twofold, one, to see which alternative would be the least probable of causing environmental infractions and two, which would have the least negative effect on the environment if an infraction occurs.

Alternative A: No Action offers the least favorable outcome, as continued SSOs will occur during wet weather events, prompting environmental hazards (uncontrolled release of raw wastewater) on a recurring basis. Alternative B does address the current issues to the plant, but will rely on a facility (St. Andrews WWTF) which currently only has a surface water discharge to dispose of its effluent, and while this is acceptable, it is environmentally less favorable than a recycle/reuse effluent scenario. Alternative C is ranked the best environmentally, as it both mitigates the wet weather SSOs, and allows for a large amount of the treated effluent to continue to be recycled, as the Lynn Haven AWTF is currently permitted as a public reuse facility.

3.3.3 Operational Analysis

The operational aspects considered for each alternative account for ease and simplicity of day to day operation and routine maintenance from a non-monetary perspective. The questions asked in evaluating each alternative based on operational aspects is, how will the process be done and, how complex is said process operation. The goal is to choose uncomplicated operation and easily performed routine maintenance, as they will result in better operation & maintenance efficiency.

While Alternative A has a higher rank due to a greater familiarity to the WWTF operators, it rank is lowered, due to the existing equipment being older and thus requiring more maintenance to continue to provide the same level of service. Alternative B has newer equipment which should require less maintenance, however, as it will involve a different type of process (partial treatment and transfer) which moderates its operability rank. Alternative C will use new equipment, while being state of the art, it will also be conventional wastewater treatment

equipment and familiar to the operators. Thus, Alternative C will have the highest rank, with Alternative A and B having an approximately equal, lower rank.

3.3.4 Permittability Analysis

The evaluation of each alternative based on its permittability is primarily concerned with how quickly and easily it is to obtain jurisdictional authorization and approval. There are many elements involved in assessing the permittability of a project. One consideration in determining the permittability of an alternative is the familiarity of the process to the authority having jurisdiction. If the solution is novel, then the authority will have less experience with approving it and will result in a greater vetting process. This convolutes and extends the permitting approval process. Other attributes involved with judging a projects permittability may involve environmental compliance and health and safety issues.

The no action option has no permitting and based solely on acquisition of new permits, would receive the highest score, except that, the issues causing the SSOs during wet weather events will likely lead to a formal enforcement (consent order), thus placing the current permit in jeopardy, which lowers the alternatives ranking significantly. Diverting the facilities wastewater flow to another facility will require an agreement between municipalities, and a considerable (6.25-mile) pipeline located in the right of way of several jurisdictional streets. While permitting is certainly possible, there will surely be additional difficulties in obtaining all of the necessary permits, and an extended process may be required. The potential complications with obtaining all of the necessary permits for Alternative B, cause it to have an average permittability score. Modification to the existing facility will be the most favorable, as the treatment process upgrades proposed are conventional, are isolated to only the Lynn Haven AWTF project site, and use well know, and reliable technologies.

3.3.5 Construction Analysis

The constructability of each alternative depends on both the ease of construction and potential impacts on continued process operation during construction. Major obstacles to construction are identified and evaluated with the unqualified constraint that the process remain in continuous operation.

No action has no construction activities, and would rank highly in constructability. Diversion of flow will mostly be offsite linear pipeline work, along with construction at two (2) wastewater treatment facilities. The possibility for construction issues increases proportionally with the amount of construction taking place, which causes Alternative B to have an average constructability rank. Modification to the existing plant will not hinder any current process operation, as it will be new unit process' which will be built supplementary to the existing units, and will only come online once complete.

3.3.6 Efficiency Analysis

The efficiency analysis is concerned primarily with how well each alternative deals with water and energy conservation.

3.3.6.1 Water Efficiency

Alternatives A and C will continue to use reclaimed water for any process operations and are considered equally high in water efficiency rank. Alternative B removes water which would be recycled and diverts it to a plant which will discharge the treated effluent as surface water discharge. Alternative B is ranked the lowest and Alternatives A and C are ranked approximately equal above B.

3.3.6.2 Energy Efficiency

Alternative B is the least energy efficient, as pumping the approximately 6.25 miles to the other WWTF is energy intensive. Alternative A is ranked the most energy efficient of the options, but due to increased efficiency with new equipment, the no action alternative is closely followed in energy efficiency rank by Alternative C: Upgrades to the Existing Facility.

3.4 Alternative Conclusions and Recommendations

3.4.1 Cost and Effectiveness Comparison

Several factors were considered in this Lynn Haven AWTF planning document. Each factor was given a weight for importance (1-5 with 1 being not very important, and 5 being essential), then each alternative was given a rating (1-5, with 1 representing the least favorable and 5 being the most favorable) for its extent in satisfactorily achieving the intent of that respective factor. The alternatives were then compared using the sum of the weighted factors. This methodology essentially asks, how important is the criteria considered and how well does the alternative meet the criteria? Alternative C scored the highest in this decision matrix. **Table 3-6** shows the complete evaluation matrix.

Table 3-6: Evaluation Matrix for Recommended Alternative

Criteria	Weight	Alternative A: No Action [1]		Alternative B: Diversion of Flow		Alternative C: Upgrades to Existing Facility	
		Raw	Weighted	Raw	Weighted	Raw	Weighted
Economic	5	5	25	2	10	4	20
Resiliency	5	1	5	4	20	5	25
Environment	3	2	6	3	9	4	12
Operability	2	5	10	3	6	4	8
Permittability	4	3	12	2	8	4	16
Constructability	2	5	10	2	4	4	8
Efficiency	3	3	9	2	6	4	12
Total Weighted Score			**77**		**63**		**101**

1. Alternative A: No Action is not considered to be viable, as it fails to address any of the concerns which prompted this study.

3.4.2 Recommended Alternative

The chosen alternative based on the findings in this report is Alternative C, to modify the existing facility by upgrading the headworks and installing a supplemental influent pump station. Alternative A: No Action, does nothing to address the serious issues which effect the facility and is not considered a viable option. While Alternative B helps mitigate some of the concerns, it is ineffective in meeting the needs of the citizens of the City of Lynn Haven. Only Alternative C: Modification of the Existing Facility meets all the criteria and does so at considerably less cost than the other alternative.

4 Selected Alternative

4.1 Alternative C: Modification of the Existing Facility

4.1.1 Summary

The selected modifications to the City of Lynn Haven AWTF consists of the following:

1. A new, supplemental influent pump station, with VFD pumps.
2. Rerouting of existing influent piping.
3. A new elevated headworks structure.
4. New mechanical screens.
5. New screenings compactors.
6. New vortex degritting systems.
7. A new backup power generator.

4.1.2 Master Influent Plant Pump station

The new influent pump station will supplement the existing plant pump station and will be a submersible type station with three pumps. Two pumps will be used for pumping peak flows and a third for backup. The pumps will be non-clog type wastewater submersible pumps with variable frequency drives. The pump station will have a rated capacity of approximately 6,000 gpm. The station will be located adjacent to the proposed elevated headworks. The pumps will lift wastewater flow to the new fine screening structure via a 24-inch force main. The new 20-ft square concrete pump station has been sized to accommodate future growth.

4.1.3 Headworks

4.1.3.1 New Influent Screening Facility

The new influent screening facility will be provided to remove rags and debris typically found in wastewater which would protect downstream equipment and reduce plant loadings. Two automatically cleaned and washed internally mechanical screens will be provided for this purpose. Each screen will be rated at 5 MGD. The screens will be sized to capture all material greater than 6-mm in diameter. All screening will be conveyed via stainless steel discharge chute into a “dumpster” type receiving container and will be land filled. Influent flow to the facility is discharged into a concrete channel and will be split equally to both units and equipped with means to isolate one for maintenance and service while the other is still operational. Flow is by gravity both through the screens and to the grit removal system. For backup, a manual bar screen with 1-inch openings will be provided behind each of the mechanical screens located in the concrete channels. This will prevent any large material from passing should the mechanical screens be out of service.

4.1.3.2 Screening Disposal

All screening material will be discharged into a “dumpster” type receiving container. Through the use of a stainless steel “Y” type chute, all screening will be transported to a single discharge point. The dumpster will be located below the chute on a concrete pad. The actual size of the dumpster will vary with plant flow but for design purposes, a concrete pad big enough to accommodate a 15-16 cubic yard (CY) dumpster will be provided. The estimated screening will

range from 0.5-1 CY per MGD per day. The area will also be equipped with a 1-inch wash down hose.

4.1.3.3 New Degritter System

A new Grit King™ type degritting system will be utilized to remove grit and other fine debris that has passed the screens. The reduction of this sand and grit material protects equipment and other downstream systems from abrasion and accumulation of excessive solids inherent in most Florida Panhandle wastewater. The target size removal is 150 micron at the design peak hourly flow of 10 MGD. The system will utilize two 12 ft diameter freestanding stainless steel cyclonic type grit separators. The unit is similar to a large cylinder having a bottom discharge of grit and an upper discharge of liquid. Grit collected will be dewatered in a stainless-steel decanter and will be landfilled. The system will have no moving parts. Total bypass of the system will be provided. Effluent discharge from the degritter will flow by gravity to a splitter box and on to the SBR units.

4.1.3.4 Grit Disposal

All grit will be discharged into a two (2) CY stainless steel decanter system for further dewatering prior to disposal in a sanitary landfill. The grit from the degritter will discharge into the decanter through opening and closing of a control valve after a fixed time interval. It is estimated that approximately 0.2-0.4 CY of grit per MGD per day will be removed by the degritter system.

4.1.3.5 Headworks Splitter Box

The new splitter box will be an integral part of the headworks and will receive influent flow from the degritter. The box will be equipped with slide gates that will allow the operator to control flow to each SBR unit.

4.2 Environmental Review

4.2.1 Environmental Benefits

The proposed project will alleviate a bottleneck, and provide the City of Lynn Haven with robust and resilient wastewater treatment infrastructure. This work will reduce the potential and occurrence of Sanitary Sewer Overflows (SSOs), thereby reducing the harm of uncontrolled raw sewage from entering the environment. An additional benefit is that during a natural disaster, the treatment plant will have a greater probability of continued operation, thus providing the citizenry of Lynn Haven with access to sanitary conditions and a cleaner environment during a critical post-crisis period.

4.2.2 Environmental Impacts

The work proposed under this project will be performed within an existing wastewater facility which has been previously disturbed, and which is continuously impacted by maintenance, repair activities, and vehicular traffic. Such conditions generally inhibit the presence of animal and plant species, other than the grasses that are planted and maintained for soil retention and erosion control. Further, this wastewater treatment facility environment is also generally devoid of natural surface water bodies, prime agricultural lands, and wetlands. A visual survey of the project area reveals that the features common to the specific areas of impact and proposed construction in the Lynn Haven AWTF are as follows:

- Paved streets, driveways, and related stormwater drainage systems/structures.
- Unpaved areas which are mowed and maintained.
- Other public utilities including sanitary sewer, electric, natural gas, telephone/internet.
- Industrial process equipment used for the treatment of wastewater.
- The absence of wetlands.
- The absence of plant diversity.
- The absence of wildlife habitat.
- The absence of wildlife.

Considering the conditions noted above, no specific investigations or studies to determine environmental effects have been performed. It is anticipated that the Florida Department of Environmental Protection will conduct an environmental review in conjunction with the processing of the loan application and publish an Environmental Information Document (EID)

4.2.3 Threatened and Endangered Species

Threatened and endangered species and other resources "that are known or expected to be on or near the project area" are listed in **Exhibit A**. The contents of which was obtained from the U.S. Fish and Wildlife Service's website and is the Information for Planning and Consultation (IPaC) report for the Lynn Haven AWTF. The implication being that there are no threatened or endangered species where the work is to be done, and that if any are encountered, U.S. Fish and Wildlife will be contacted immediately and work in that area suspended until a further determination has been made to ensure the safety of said species.

4.2.4 Effects on Minority/Low Income Communities

A review, consisting of a 0.25-mile radius area around the proposed project site, using the EPA tool EJSCREEN is included as **Exhibit B**. The indication from the review, being that there are no Environmental Justice Communities near the proposed project site. The only applicable higher than average, at risk minority group, are children less than 5-years of age, and the only applicable elevated pollution indicator is air pollution. The proposed project is not going to be a contributor to any pollution of concern (air pollution), nor harass the at-risk minority population (children less than 5-years old) in any way.

The proposed project is not expected to have any significant adverse human health or environmental effects on minority or low-income communities nor on any other communities. On the contrary, since the purpose of the project is to enhance the public health and safety by repairing and replacing failing components of the City's wastewater treatment facility, the net effect will be a positive one for all members of the community.

4.2.5 Other Environmental Effects

Construction Impacts

During the construction work proposed by this planning document, there will be minor inconveniences to the limited number of residents in the vicinity of the work. Improvements at the wastewater treatment facility will be confined to that site with the exception of minor increases in local traffic resulting from the construction. In the immediate area of the construction site there will likely be increased airborne particulates, elevated noise, and some surface runoff during rainfall events. Public access to the project site will be restricted, and control measures will be implemented to minimize these temporary effects.

Wetlands

As can be seen on **Exhibit C** – Wetlands, no major wetland exist within the proposed project area. Should any construction activities encounter a wetland, the contractor will be required to conform to the Florida Department of Environmental Protection, Northwest Florida Water Management District, and U.S. Army Corp of Engineers rules and regulations.

4.3 Financial Feasibility

4.3.1 Estimated Project Costs

The estimated project cost for the construction of the new influent pump station, the elevated headworks, and the rerouting of the AWTF pipe-works is approximately $6.7 million dollars, as previously detailed in **Section 3.2.1.3** of this Plan and presented in **Table 4-1**.

Table 4-1: Opinion of Cost for Proposed Project
Modifications to Existing Facility Opinion of Cost

Influent Master Pump Station				
Description	Unit	Unit Cost	QTY	Cost
Mobilization	LS	$150,000	1	$150,000
Concrete	LS	$185,000	1	$185,000
Pumps, Piping, Genset, Electrical [1]	LS	$1,288,000	1	$1,288,000
Headworks				
Mechanical Screens & Compactors [2]	PU	$321,000	2	$642,000
Screenings Chute [3]	LS	$40,000	1	$40,000
Degritting Units & Slurry Pumps [3]	PU	$600,000	2	$1,200,000
Piping	LS	$250,000	1	$250,000
Manual Bar Screens [2]	PU	$10,000	2	$20,000
Slide Gates	PU	$15,000	4	$60,000
Stairs, Catwalk, Handrail & Toe Plates [4]	LS	$45,000	1	$45,000
Grating [4]	LS	$25,000	1	$25,000
Concrete	CY	$800	600	$480,000
Headworks Coating	LS	$60,000	1	$60,000
Civil Site Improvement	LS	$200,000	1	$200,000
Electrical	LS	$500,000	1	$500,000
		Construction Sub Total		***$5,145,000***
Engineering / CEI / Soft Costs	NA	20%	NA	$1,029,000
Construction Contingency	NA	10%	NA	$514,500
		Non-Construction Sub Total		***$1,543,500***
			Total	**$6,688,500**

4.3.2 Operation and Maintenance costs

The City of Lynn Haven Utility Operation and Maintenance (O&M) costs for 2019 are included in the Capital Financing Plan, see **Exhibit D**. The proposed projects O&M cost of $200,917 was previously discussed in **Section 3.2.2.3**.

4.3.3 Rate Analysis

In anticipation of this project, the City has already completed a rate study. The utility rate for the city of Lynn Haven is a combination of both the water and sewer utilities and is included as **Exhibit E**.

4.3.4 Loan Repayment Sources

The implementation of the proposed project is feasible from an engineering perspective and will require funding. It is recommended that, to minimize utility rates, the City should pursue grant funds to help cover the necessary capital improvements. It is important to note that the City has anticipated the need for this proposed project, and completed a user rate analysis. The proposed project cost has been identified in, **Schedule 6** of the Rate Study (see **Appendix E**) and has already been planned for.

4.3.5 Other Funding Opportunities

The following have been identified as potential sources of funds:

1. SRF – The State Revolving Fund is a loan program with low interest rates. The project could potentially be funded by SRF but would require repayment with user rates. Additionally, SRF currently has a potential resiliency grant program in the project area and by obtaining the supplementary grant funds, the City's utility rates could remain lower.
2. USDA – The United States Department of Agriculture's Rural Development provides loans for which the City could qualify. The funding cap is generally $5 to $6 million per project with interest rates slightly higher than SRF.
3. Legislative Appropriation – Budget constraints typically limit such appropriations to $2 to $3 million.

4.3.6 Capital Financing Plan

The Capital Financing Plan (CFP) provides various financial records of the City of Lynn Haven, and is included in **Exhibit D** of this Planning Document.

4.4 Project Implementation

4.4.1 Permits

A FDEP Substantial Modification Permit, is the only anticipated permit required for this project.

4.4.2 Schedule

In order to initiate the required work to meet the City's capacity and level of service needs in a timely manner, a schedule is required. Please see **Table 4-3** for the priority of work to complete the proposed project.

Table 4-2: Proposed Project Schedule

Project Public Participation	Jun-20
Execute Resolution to Seek Project Funding	Jun-20
Projected Engineering Funding Acceptance	Sep-20
Begin Engineering & Design	Oct-20
Complete Engineering & Design	Jun-21
Begin Bidding Process	Jul-21
Complete Bidding Process	Sep-21
Begin Construction	Nov-21
Complete Construction	May-23
Project Closeout	Oct-23

4.5 Public Participation

The City has advertised and made available to the public this Planning Document for a period of 14-days prior to the public hearing on June 23, 2020, to discuss the project. See **Exhibit F**, for a copy of the advertisement.

4.6 City Authorization

It is anticipated that the City will adopt this Facility Plan by a resolution on June 23,2020. See **Exhibit G**, for a copy of the executed resolution.

EXHIBIT A

IPaC

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Lynn Haven AWTF Upgrades

LOCATION

Bay County, Florida

Local office

Panama City Ecological Services Field Office

(850) 769-0552
(850) 763-2177

1601 Balboa Avenue
Panama City, FL 32405-3792

http://www.fws.gov/panamacity/specieslist.html
http://www.fws.gov/panamacity/pcdata.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

NAME	STATUS
West Indian Manatee Trichechus manatus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4469	Threatened Marine mammal

Birds

NAME	STATUS
Piping Plover Charadrius melodus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot Calidris canutus rufa No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1864	Threatened
Wood Stork Mycteria americana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8477	Threatened

Reptiles

NAME	STATUS
Eastern Indigo Snake Drymarchon corais couperi No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/646	Threatened
Gopher Tortoise Gopherus polyphemus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6994	Candidate

Fishes

NAME	STATUS
Atlantic Sturgeon (gulf Subspecies) Acipenser oxyrinchus (=oxyrhynchus) desotoi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/651	Threatened

Crustaceans

NAME	STATUS

Panama City Crayfish Procambarus econfinae No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8915	Proposed Threatened

Flowering Plants

NAME	STATUS
Florida Skullcap Scutellaria floridana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2240	Threatened
Godfrey's Butterwort Pinguicula ionantha No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6805	Threatened
Harper's Beauty Harperocallis flava No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3735	Endangered
Telephus Spurge Euphorbia telephioides No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5499	Threatened
White Birds-in-a-nest Macbridea alba No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6291	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.

2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bonaparte's Gull Chroicocephalus philadelphia This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere

Brown Pelican Pelecanus occidentalis — Breeds Jan 15 to Sep 30

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/6034

Common Loon gavia immer — Breeds Apr 15 to Oct 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4464

Double-crested Cormorant phalacrocorax auritus — Breeds Apr 20 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/3478

Herring Gull Larus argentatus — Breeds Apr 20 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Least Tern Sterna antillarum — Breeds Apr 20 to Sep 10

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-breasted Merganser Mergus serrator — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Ring-billed Gull Larus delawarensis — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

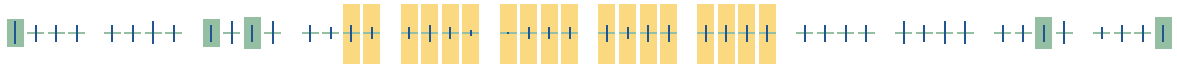
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

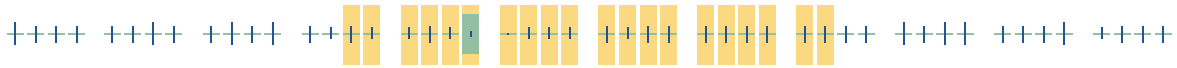
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort – no data

Herring Gull
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Least Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Red-breasted Merganser
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Ring-billed Gull
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Marine mammals

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take (to harass, hunt, capture, kill, or attempt to harass, hunt, capture or kill) of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

West Indian Manatee *Trichechus manatus*
https://ecos.fws.gov/ecp/species/4469

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER POND
PUBHx

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

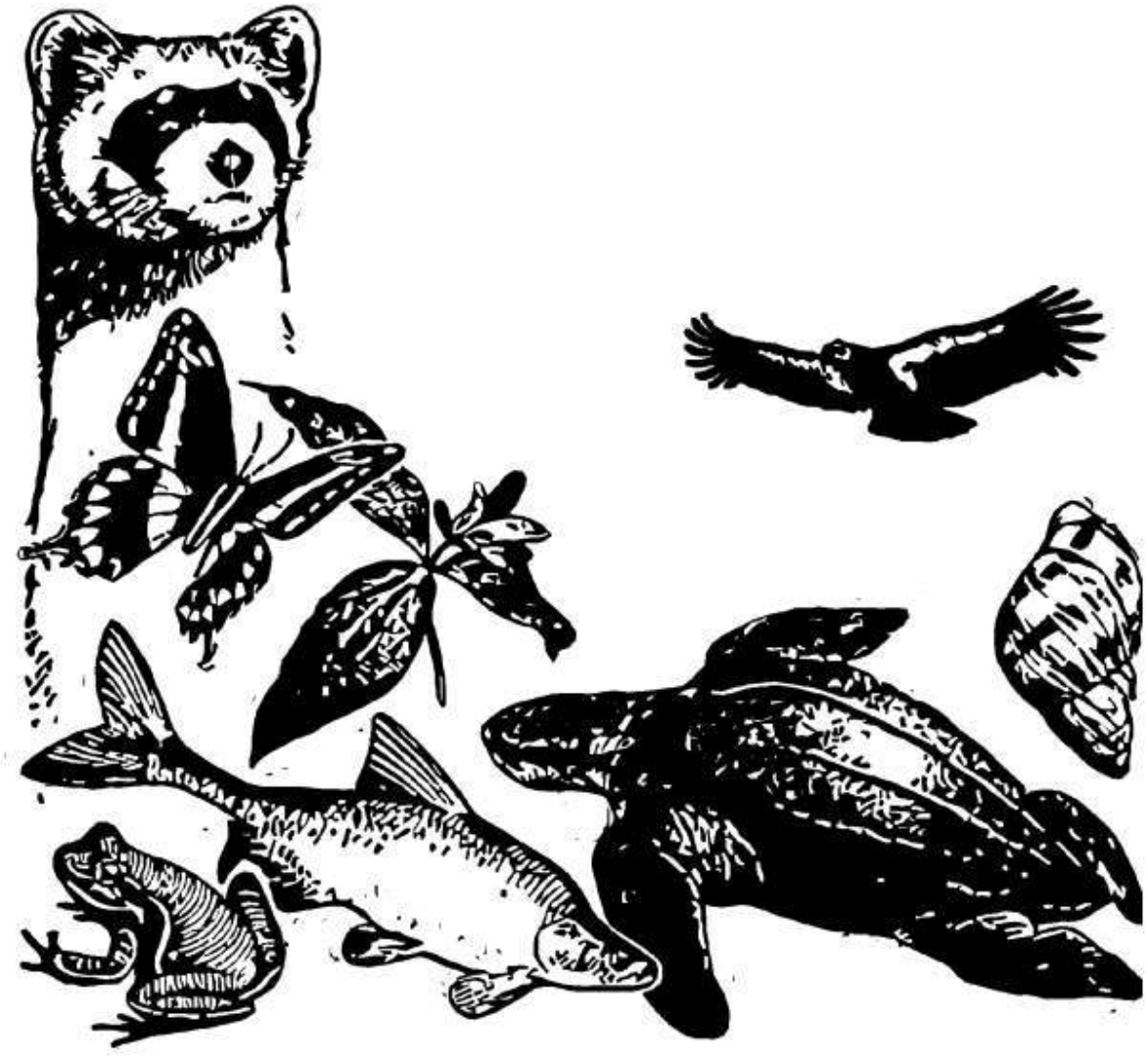
U.S. Fish & Wildlife Service

Lynn Haven AWTF Upgrades

IPaC Conservation Measure Report

Generated May 22, 2020 10:40 AM MDT, IPaC vunspecified

This report is not an official list of all project requirements. Please contact the local U.S. Fish amd Wildlife Service office to discuss additional requirements.



IPaC - Information for Planning and Consultation (https://ecos.fws.gov/ipac/): A project planning tool to help streamline the U.S. Fish and Wildlife Service environmental review process.

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U.S. Fish & Wildlife Service

IPaC Conservation Measure Report

Project Description

PROJECT NAME

Lynn Haven AWTF Upgrades

LOCATION

Bay County, Florida

PROJECT TYPE

Wastewater Treatment Plant Construction

IPAC LINK

https://ecos.fws.gov/ipac/project/SJT2P-E6EKV-CWJGH-OEEFZ-N5LXZ4

U.S. Fish and Wildlife Service Contact Information

Trust resources in this location are managed by:

Panama City Ecological Services Field Office
1601 Balboa Avenue
Panama City, FL 32405-3792
(850) 769-0552

Species Evaluation Summary

Evaluated (1)

The following species have been evaluated for the potential effects of your project activities.

Red Knot Calidris canutus rufa

Not evaluated (12)

IPaC does not have data yet for the following species for your project type(s). Please consult the local FWS office to review potential impacts to these species.

Atlantic Sturgeon (gulf Subspecies) Acipenser oxyrinchus (=oxyrhynchus) desotoi
Eastern Indigo Snake Drymarchon corais couperi
Florida Skullcap Scutellaria floridana
Godfrey's Butterwort Pinguicula ionantha
Gopher Tortoise Gopherus polyphemus
Harper's Beauty Harperocallis flava
Panama City Crayfish Procambarus econfinae
Piping Plover Charadrius melodus
Telephus Spurge Euphorbia telephioides
West Indian Manatee Trichechus manatus
White Birds-in-a-nest Macbridea alba
Wood Stork Mycteria americana

Conservation Measures

Based on the information you have entered about this project, the U.S. Fish and Wildlife Service Endangered Species Program recommends the following conservation measures (CMs) to avoid, minimize, or mitigate the effects of your project on threatened and endangered species.

This list is not an official list of all project requirements. Please contact the local U.S. Fish and Wildlife Service office to discuss additional requirements.

Suggested conservation measures are not available for this project.

Please contact the local U.S. Fish and Wildlife office to review impacts for this project.

U.S. Fish & Wildlife Service

Appendix A: Potential Project/Species Interactions

Projects may interact directly with individuals of a species (such as causing auditory disturbances to birds or crushing of small mammals due to heavy equipment use). Projects may also interact indirectly with individuals by impacting resources they need for breeding, feeding or sheltering.

Direct Interactions

Direct interactions are ways that this project may directly impact individuals by running over them or crushing them, for example.

1. **Collisions**
   An instance of one moving object striking violently against an organism (e.g., aircraft strike to birds or running over an animal in the roadway).
   SPECIES: Red Knot
2. **Crushing**
   Inward force or forcefully compressing resulting in trauma.
   SPECIES: Red Knot
3. **Displacement**
   The forced displacement of a species or object due to the loss of a resource or habitat in general.
   SPECIES: Red Knot
4. **Disturbance**
   An action that causes either sights or sounds that disturbs a species normal behavior or function.
   SPECIES: Red Knot
5. **Entrapment**
   Entrapment is the intentional or accidental confinement of a species. Confinement can occur as a result of a man-made structure or some change in the environment. For example, fish getting trapped within a hydrologic device or an animal trapped within their nest or roost as a result of fallen rocks or trees.
   SPECIES: Red Knot
6. **Injury**
   Damage to an organism directly caused by an activity or structure.
   SPECIES: Red Knot
7. **Predation (increased)**
   An increase in the rate of occurrence in which an individual is consumed by another.
   SPECIES: Red Knot
8. **Toxicity**
   Toxicity is the ability of a toxic agent to produce harm, illness, or death.
   SPECIES: Red Knot

Indirect Interactions

Indirect interactions are ways that this project may affect listed species by impacting the environmental resources that the species rely on for survival or recovery.

1. **Beaches**
   A landform alongside a body of water which consists of loose particles. The particles composing a beach are typically made from rock, such as sand, gravel, shingle, and pebbles.
   SPECIES: Red Knot
2. **Coastal shore**
   The zone of unconsolidated material in a coastal area that extends from the mean low water line to the place where there is a marked change in material or physiographic form, or to the line of permanent vegetation (the effective limit of storm waves and storm surge), i.e. to the coastline. The beach or shore can be divided into the foreshore and the backshore.
   SPECIES: Red Knot
3. **Horseshoe crabs**
   Horseshoe crabs are marine arthropods of the family Limulidae and order Xiphosura or Xiphosurida, that live primarily in and around shallow ocean waters on soft sandy or muddy bottoms.
   SPECIES: Red Knot
4. **Invertebrates**
   Invertebrates are animals that lack a backbone and includes groups such as sponges, cnidarians, flatworms, molluscs, arthropods, insects, segmented worms, and echinoderms as well as many other lesser-known groups of animals.
   SPECIES: Red Knot
5. **Mollusks**
   Mollusks are a group of species in the Mollusca phylum. Mollusks make up a significant part of marine invertebrates that serve as a source of nutrition for many species.
   SPECIES: Red Knot
6. **Vegetation**
   An assemblage of plant species and the ground cover they provide. It is a general term, without specific reference to particular taxa, life forms, structure, spatial extent, or any other specific botanical or geographic characteristics.
   SPECIES: Red Knot

EXHIBIT B
EJSCREEN

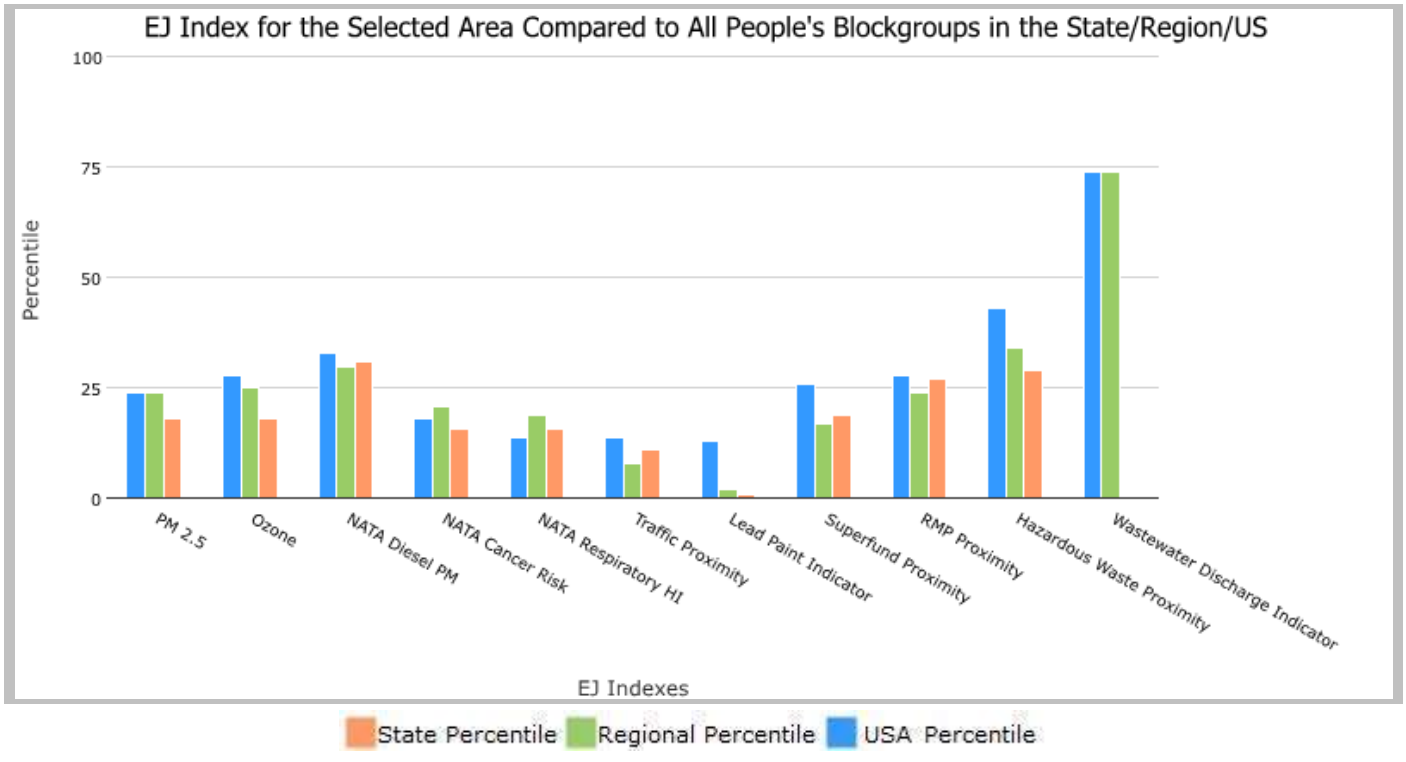
EJSCREEN Report (Version 2019)

.25 miles Ring Centered at 30.249858,-85.660558, FLORIDA, EPA Region 4

Approximate Population: 238

Input Area (sq. miles): 0.20

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	18	24	24
EJ Index for Ozone	18	25	28
EJ Index for NATA* Diesel PM	31	30	33
EJ Index for NATA* Air Toxics Cancer Risk	16	21	18
EJ Index for NATA* Respiratory Hazard Index	16	19	14
EJ Index for Traffic Proximity and Volume	11	8	14
EJ Index for Lead Paint Indicator	1	2	13
EJ Index for Superfund Proximity	19	17	26
EJ Index for RMP Proximity	27	24	28
EJ Index for Hazardous Waste Proximity	29	34	43
EJ Index for Wastewater Discharge Indicator	N/A	74	74



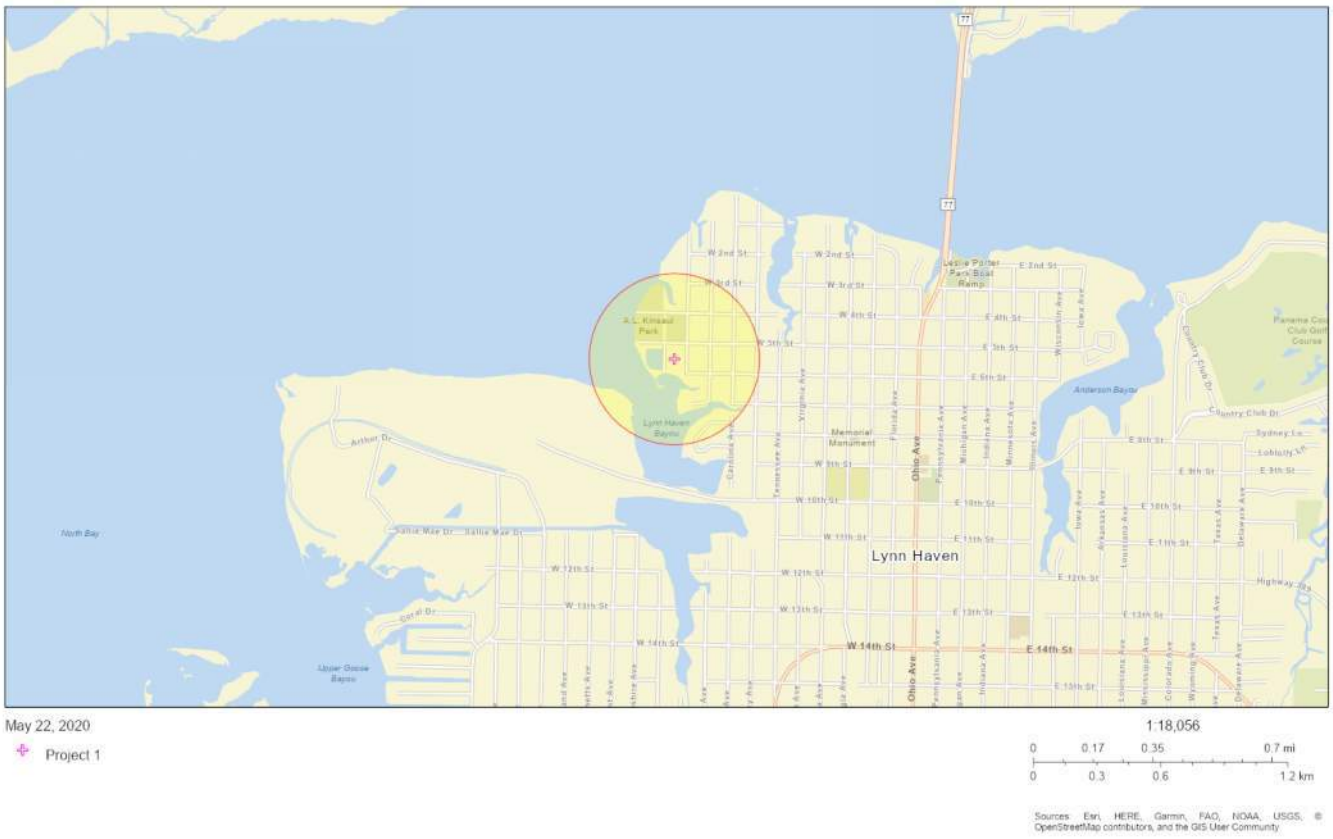
This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report (Version 2019)

.25 miles Ring Centered at 30.249858,-85.660558, FLORIDA, EPA Region 4

Approximate Population: 238

Input Area (sq. miles): 0.20



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJSCREEN Report (Version 2019)

.25 miles Ring Centered at 30.249858,-85.660558, FLORIDA, EPA Region 4

Approximate Population: 238

Input Area (sq. miles): 0.20

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m^3)	7.72	7.43	65	8.59	24	8.3	32
Ozone (ppb)	35.7	33.7	61	40	22	43	12
NATA* Diesel PM (µg/m^3)	0.208	0.557	7	0.417	<50th	0.479	<50th
NATA* Cancer Risk (lifetime risk per million)	35	33	69	36	<50th	32	60-70th
NATA* Respiratory Hazard Index	0.54	0.49	71	0.52	60-70th	0.44	70-80th
Traffic Proximity and Volume (daily traffic count/distance to road)	340	550	57	350	73	750	59
Lead Paint Indicator (% Pre-1960 Housing)	0.31	0.11	86	0.15	84	0.28	63
Superfund Proximity (site count/km distance)	0.052	0.13	40	0.083	60	0.13	43
RMP Proximity (facility count/km distance)	0.21	0.79	32	0.6	46	0.74	39
Hazardous Waste Proximity (facility count/km distance)	0.081	0.47	18	0.52	21	4	14
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0	0.48	N/A	0.45	42	14	37
Demographic Indicators							
Demographic Index	14%	41%	8	38%	10	36%	16
Minority Population	4%	45%	3	38%	7	39%	9
Low Income Population	24%	36%	30	37%	28	33%	39
Linguistically Isolated Population	0%	7%	29	3%	51	4%	45
Population With Less Than High School Education	5%	12%	24	13%	21	13%	27
Population Under 5 years of age	7%	5%	72	6%	68	6%	66
Population over 64 years of age	13%	19%	38	16%	42	15%	46

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

EXHIBIT C
BAY COUNTY GIS
WETLANDS

Web Map

City of Lynn Haven AWTF
Wetland Map

N
W E
S

wetlands

- Freshwater Pond
- Estuarine and Marine Wetland
- Estuarine and Marine Deepwater

Printed: 5/22/2020

EXHIBIT D

CAPITAL FINANCING PLAN

EXHIBIT E
LYNN HAVEN RATE STUDY

Stantec

City of Lynn Haven, FL

Water and Sewer Utility Rate Study – Final Report

September 30, 2019

Stantec

September 17, 2019

Ms. Vickie Gainor
Acting City Manager
City of Lynn Haven
825 Ohio Ave
Lynn Haven, FL 32444

Re: Water and Sewer – Final Report

Dear Ms. Gainor,

Stantec Consulting is pleased to present this Final Report of the FY 2019 Water & Sewer Revenue Sufficiency Analysis (Study) that we performed for the City of Lynn Haven, Florida (City). We appreciate the fine assistance provided by you and all of the members of the City staff who participated in the Study.

If you or others at the City have any questions, please do not hesitate to call me at (904) 247-0787 or email me at michael.burton@stantec.com.

We appreciate the opportunity to be of service to the City and look forward to the possibility of doing so again in the near future.

Sincerely,

Michael Burton
Director

777 S. Harbour Island Blvd., Suite 600
Tampa, Florida 33602
(813) 443-5138
michael.burton@stantec.com

Enclosure

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

1.1 BACKGROUND AND OBJECTIVES

The City of Lynn Haven retained Stantec to perform a Revenue Sufficiency Analysis (RSA) in 2010 that resulted in the development of a ten-year financial management plan and corresponding plan of annual rate adjustments implemented by the City. The plan recommended the City adopt annual rate adjustments of 4.5% beginning in FY 2012 and throughout the projection period to FY 2020. Stantec also performed a study in 2017, however, the rate plan recommended in that study was not enacted by the City.

The City has engaged Stantec to perform an updated Study based upon the most current data available and assumptions in order to evaluate the adequacy of the revenue provided by its current rates to meet its current and projected cost requirements. The objective of the study is to indicate the sufficiency of Utility revenues for both the water and sewer systems under existing and projected future conditions to meet all of its ongoing obligations such as the Utility's operating costs, capital improvement program (CIP), debt service, and minimum reserve targets and requirements and recommend a plan of rate revenue adjustments required as necessary. The principal objectives or components of the Study are as follows:

Revenue Sufficiency Analysis – Evaluate the sufficiency of water and sewer rate revenue adjustments to generate the level of revenues necessary to satisfy the Utility's projected requirements through FY 2029, including 1) operating expenses, 2) CIP costs, 3) existing debt service costs and corresponding debt service coverage ratios, 4) adequate operating reserves; and, 5) develop a recommended plan of future water and sewer rate revenue adjustments that will satisfy these projected revenue requirements during each year of the forecast.

North Bay Acquisition Analysis – Evaluate the long-term financial impact of acquiring the North Bay Utility System as an alternative to expanding the City's existing Wastewater Treatment Plant, an investment of $25 million. Analyzing the viability of this option included consideration of all financial variables associated with acquiring the North Bay system, such as ongoing operating cost impact, additional debt service obligations, capital investments, and increased revenues from the additional customers.

1.2 ANALYSIS

During the Study, we reviewed alternative multi-year financial management plans and corresponding water and sewer rate revenue adjustment plans through several interactive work sessions with City staff. In this way, we developed the recommended financial management plan and corresponding plan of annual water and sewer rate revenue adjustments presented in this report that will allow the City to fund its revenue requirements throughout the projection period and meet its financial performance goals and objectives.

In order to initialize the RSA, we obtained the City's historical and budgeted financial information regarding the operation of its water and sewer system, as well as historical customer counts and volume data by class of customer. We also obtained the City's multi-year CIP, documented the City's current debt service obligations and covenants, or promises made to lenders, relative to debt coverage requirements and reserves. We also consulted with City staff regarding other assumptions and policies that would affect the financial performance of the Utility, such as trends in demands, planned developments/customer growth, debt service coverage levels, levels of reserves, capital funding sources, earnings on invested funds, and escalation rates for operating costs.

All of this information was entered into the revenue sufficiency and financial planning module of our proprietary Financial Analysis and Management System (FAMS-XL) interactive modeling system. This module of FAMS-XL produced a ten-year projection of the sufficiency of the revenue provided by the current rates of the system to meet current and projected financial requirements, and determined the level of rate revenue increases necessary in each year of the projection period to satisfy the system's annual financial requirements.

The revenue sufficiency and financial planning module of FAMS-XL utilizes all projected available funds in each year of the projection period to pay for capital projects. The model is set up to reflect the rules of cash application as defined and applied by City staff, and it produces a detailed summary of the funding sources to be used for each project in the CIP. To the extent that current revenues and unrestricted reserves are not adequate to fund all capital projects in any year of the projection period, the model identifies the amount and timing of a borrowing requirement to fund those projects, or portions thereof, that are determined to be eligible for borrowing. In this way the FAMS-XL model is used to develop a borrowing program that includes the required borrowing amount by year and the resultant annual debt service requirements for each year in the projection period.

2. REVENUE SUFFICIENCY ANALYSIS

2.1 DESCRIPTION

This section presents the financial management plan and corresponding plan of annual water and sewer rate adjustments developed in the revenue sufficiency analysis (RSA) that was conducted as part of the Study. The following sub-sections of the report present a description of the source data, assumptions, and results of the RSA. This report also includes an Appendix A that presents detailed supporting schedules for the financial management plans identified herein for the water and sewer systems.

2.2 SOURCE DATA

The following presents the key source data relied upon in conducting the RSA:

Beginning Fund Balances

Utility staff provided the audited financial information used to establish the beginning FY 2019 fund balances for the Utility as of September 30, 2018. Any funds reserved or encumbered for specific capital projects were included in the beginning fund balances, and the associated capital project costs were included in the CIP.

Revenues

The revenues utilized in the RSA reflect an evaluation of historical results, the FY 2018 budget, and the FY 2019 Budget. The Utility's revenues consist of rate revenue, connection fees, interest income, and other minor revenue from miscellaneous service charges.

FY 2019 was based on an examination of billing units, recognizing the impact of hurricane Michael. The hurricane primarily affected rate revenues by making living units and commercial establishments unusable. Approximately 1,247 utility accounts were taken offline and while many are expected to return in coming years this is having a negative effect on rate revenues in the near term. Rate revenue is then adjusted annually, beginning in FY 2020, to reflect assumed new customer growth and returning customers associated with hurricane Michael recovery, changes in demand, and assumed rate increases. Projections of all other revenues are based upon the amounts within the FY 2019 Budget, excluding revenue from impact fees (which is calculated based on the assumed growth in new accounts and projected fees) and interest income, which is calculated based on projected annual fund balances.

Operating Expenditures

The FY 2019 revenue requirements were based upon the FY 2018 unaudited actuals and the FY 2019 Budget, respectively, and include all operations and maintenance (O&M) expenses, debt service requirements, transfers out, and minor capital outlay requirements. Each year thereafter, O&M expenses

and minor capital outlays were projected based upon the FY 2019 Budget, adjusted annually based on assumed cost escalation factors for individual expense categories and annual spending assumptions. The cost escalation factors and spending assumptions are reflected in detail in schedule 5 of Appendix A of this report. There is an annual transfer of just over $1 million to the Stormwater department to cover stormwater related debt service. The City plans to stop this transfer in FY 2021 when the Stormwater department is expected to be able to independently cover its own debt service, which will allow for the water and sewer utilities to have lower rate increases going forward. We discuss the projected rate increases in section 4 of this report.

Additionally, on a historical basis the Utility has spent less than its annual operations and maintenance expenditure budget. As such, we have applied spending execution rates of 98% for O&M expenses in all years of the forecast, while all personnel services expenses and minor capital outlays are assumed to be executed at 100% of the projected expenditures.

Debt Service

The annual repayments for all outstanding debt for the Utility were based upon the specific amortization schedules for each outstanding issuance, as provided by City staff. It is important to note that the Series 2011 Capital Improvement Bond will be paid off in FY 2020 and will result in a large reduction of required debt service for the City. Any additional borrowing identified by the model during the projection period is calculated based on the assumed debt service terms included herein.

Capital Improvement Program

City staff and Panhandle Engineering provided the 10-year capital improvement program (CIP) in project-level detail from FY 2019 through FY 2029. A 100% execution factor was applied to all anticipated projects to reflect that the City historically fully executes the CIP. In total, the projected executed CIP (including inflation, as described in Section 2.3.1 below) from FY 2019– FY 2029 is approximately $64 million for the Utility. A list of projects and costs by year for the Utility is included on Schedule 3 of the Appendix. The CIP is anticipated to be funded primarily using State Revolving Fund (SRF) loans and was developed by City staff and Panhandle Engineering. The projects that drive the majority of the rate plan are the AMI meter installation, upgrades at the existing wastewater treatment plant and upgrades to the wastewater collection and interceptor system.

2.3 ASSUMPTIONS

The key assumptions utilized in the RSA are presented below.

Cost Escalation

Annual cost escalation factors for the various types of operating expenses, including inter-fund transfers, were developed based upon City staff estimates, historical trends, industry experience, and future

expectations. Schedule 6 of the Appendix presents the specific escalation factors assumed for the various categories of expenses in the budget.

The 10-year CIP that was provided by City staff was planned in current day dollars. Therefore, beginning in FY 2019, the RSA also includes an annual cost inflation factor of 3.0% annually for the CIP, (based upon recent increases observed in the Engineering News Record - Construction Cost Index), to account for the inflation in the future cost of construction.

Customer Growth & Volume Forecast

New connection projections and assumed annual changes in billed usage utilized for the calculation of water and sewer revenue were based upon recently observed levels of customer growth, discussions with City staff, and observance of local environmental and economic conditions. The RSA reflects account growth ranging from 1.61% to 3.51%, with system usage growth projected to fall within the same range over the period, indicating a stable level of use per account. Hurricane Michael resulted in the deactivation of approximately 1,247 customer accounts. It is expected that 422 of those accounts would be recovered in FY 2020 and FY 2021 evenly, with about 50 accounts being recovered annually each year thereafter.

To the extent that projected growth rates materially differ from actual growth, it would affect the results of the RSA presented herein. Projected annual water and sewer system growth rates, as well as incremental new connections, are presented on Schedule 1 of the Appendix.

Price Elasticity

When water and sewer rates increase, consumption is likely to decline as customers look to lower their monthly bill totals. In order to generate sufficient rate revenue, projected rate revenue adjustments must increase to compensate for the smaller revenue base. Therefore, a price elasticity adjustment was included in the analysis which reduces projected consumption-based revenues by the product of the annual rate revenue increase and the annual price elasticity coefficient assumed. For example, a 0.10 price elasticity coefficient, which was used in this Study, results in a projected decline in water and sewer consumption-based revenue of 1.00% for every 10.00% increase in rates.

Interesting Earnings on Invested Funds

The RSA reflects future annual interest earning rates on invested funds of 0.50% in FY 2019 and FY 2020, 0.75% in FY 2021, 0.75% in FY 2020 and 1.00% in FY 2021 and each year thereafter.

Minimum Reserve Policy

Reserve balances for utility systems are funds set aside for a specific cash flow requirement, financial need, project, task, or legal covenant. These balances are maintained in order to meet short-term cash flow requirements, and at the same time, minimize the risk associated with meeting the financial obligations and continued operational and capital needs under adverse conditions. The level of reserves

maintained by a utility is an important component and consideration in developing a utility system multi-year financial management plan.

Many utilities, rating agencies, and the investment community as a whole place a significant emphasis on having sufficient reserves available for potentially adverse conditions. The rationale related to the maintenance of adequate reserves is twofold. First, it helps to assure a utility that it will have adequate funds available to meet its financial obligations during unusual periods (i.e. when revenues are unusually low and/or expenditures are unusually high). Second, it provides funds for emergency repairs or replacements to the system, which may occur because of natural disasters or unanticipated system failures.

The financial management plan presented in this report assumes the City will maintain a minimum operating fund balance or reserve equal to six months of annual operating expenses (including personal services costs and operations and maintenance costs).

These levels of operating and capital reserves are very consistent with 1) our industry experience for similar systems, 2) the findings of reserve studies conducted by the AWWA, and 3) a healthy level of reserves for a municipal utility system per the evaluation criteria published by the municipal utility rating agencies (Fitch, Moody's, and Standard & Poor's).

Existing Debt Service

The utility will pay approximately $1.7 million for existing bonds in FY 2019 and approximately $2.4 million in FY 2020. After this period, the required debt service falls about $1 million to a level of $1.5 million per year for several years. These figures are the total between existing senior-lien bonds and State Revolving Fund (SRF) loans coming online in FY 2020 but do not count the SRF debt calculated by the model to fund future capital projects.

Future Borrowing & Capital Funding

The majority of projects identified within the CIP are expected to be funded by State Revolving Fund (SRF) loan proceeds. For these projects, it was assumed that the debt would be issued for a 20-year term at an interest rate of 1.00% (consistent with recent market conditions) and a 2.00% loan service fee. It is anticipated that the City will receive $44.6 million in SRF loan proceeds through FY 2029. The rest of the projects in the CIP will be funded through revenue gained from operations.

Debt Service Coverage

The Utility must maintain net revenues (gross revenues minus operating expenses) that are at least 1.25 times greater than the annual debt service expense (i.e. the annual principal and interest payments) on its outstanding debt.

This coverage requirement is a minimum requirement. To the extent that the Utility is unable to meet this requirement, it could be found in technical default and the City would likely have its credit rating

downgraded, which would affect the interest rates and terms of future financing initiatives. As a policy decision, utilities often measure revenue sufficiency and set rates based upon a higher coverage requirement in order to ensure compliance with these covenants in the event future projections of revenue, and expenses do not occur as predicted. In fact, rating agencies provide guidance as to the levels of debt service coverage ratios they consider indicative of financially healthy utility systems. As such, the recommended financial management plan was established with a target debt service coverage ratio of 1.25 on net revenues, though rating agencies consider 1.50 and above adequate for financially strong utility systems.

3. FINDINGS AND RECOMMENDATIONS

Based upon the data, assumptions, and policies presented herein, the City's current water and sewer rates will not provide sufficient revenue to meet its ongoing debt service, capital, operating, and reserve requirements over a multi-year projection period. As such, the RSA developed a financial management plan and corresponding plan of water and sewer rate revenue increases that will meet the City's current and projected revenue requirements under the assumed and projected conditions described in this report.

As discussed with City management, the first potential date for rate adjustments is estimated to be October 1, 2019. As such, the analysis herein assumes no rate adjustments until that time at the earliest, with following rate adjustments recurring on October 1st of each year thereafter.

The water and sewer fund currently pays for stormwater related debt service in the form of an annual transfer to the stormwater utility. The City has expressed interest in discontinuing this transfer and requiring stormwater revenues to pay for stormwater debt service. Removing this transfer from the water and sewer fund would alleviate rate pressure from the utility. The transfer is approximately $1M annually. Given these dynamics the revenue sufficiency analysis was performed holding all other assumptions the same (ceteris paribus) and the results are show in table 4-1. Appendix A includes the detailed assumptions ad results of this scenario.

Table 4-1 Rate Adjustment Plan & Monthly Residential Bill Impacts

	FY 2019	FY 2020 10/1/19	FY 2021 10/1/20	FY 2022 10/1/21	FY 2023 10/1/22	FY 2024 10/1/23
Water and Sewer Rate Increase	0.00%	4.50%	4.50%	4.50%	4.50%	4.50%
Average Water and Sewer Bill (5,000 Gal)	$63.99	$66.82	$69.84	$73.00	$76.30	$79.70

3.1 NORTH BAY UTILITY SYSTEM ACQUISITION ANALYSIS

This section of the report presents the assumptions and results related to the analysis of the potential North Bay Utility System (the "North Bay System") acquisition. Appendix B includes detailed supporting schedules for the financial management plan assuming the North Bay acquisition takes place in FY 2021.

3.1.1 Description

The City has considered the potential acquisition of the neighboring North Bay Utility System in FY 2019 as an alternative to investing $25 million on the expansion of their existing Wastewater Treatment Plant. Acquiring the North Bay System would immediately address wastewater treatment capacity issues the City is facing and would relieve the need to invest in the expansion of the existing Wastewater Treatment Plant. Through preliminary discussions with Bay County, the acquisition of the North Bay System would

be paid for by the transfer of debt obligation from the County to the City for the outstanding debt related to the North Bay System.

3.1.2 Assumptions

Customers

If the City were to acquire the North Bay system, they would receive the revenue from 3,452 new water ERUs and 694 new sewer ERUs. In addition, per discussions with City Staff, the North Bay system is expected to grow with new development by approximately 150 water and sewer ERUs per year through FY 2029 (not including the recovery of the approximately 1,247 ERUs being recovered since the Hurricane Michael). These customers would be subject to the 25% outside City surcharge on the City's water and sewer rates. It should be noted that despite the outside City surcharge, the customers of the North Bay System would see savings in their monthly water and sewer bills, if acquired by the City, compared to the current Bay County rates. Applying the customer count and outside City surcharge to the existing system would generate approximately $1.0 million in additional revenue in FY 2021.

Annual Operating Costs

City staff and Panhandle Engineering has estimated the increased annual costs for personnel, operations and maintenance required for the City to own and operate the North Bay System. The annual operating cost estimates for the water and sewer systems would be approximately $800,000, and $750,000, respectively. These costs are escalated annually based upon the cost escalation factors mentioned in sub-section 2.3 in this report.

Capital Investment

While the scenario of acquiring the North Bay System would relieve the City from the $25 million investment in expanding the existing Wastewater Treatment Plant, certain capital investment in the City's existing wastewater system would still be required. Per City staff and Panhandle Engineering, approximately $6 million in capital investment for improvements to the existing Wastewater Treatment system would be required, phased in from FY 2021 – FY 2023.

Debt Service

The preliminary terms of the acquisition are understood to include the transfer of County's existing debt service obligation for the North Bay System to the City as payment for the system. The debt service obligation is approximately $1.3 million annually beginning in FY 2019 and would affect the City's annual debt service coverage requirements for the water and sewer Utility.

3.1.3 Rate Plan

Table 4-3 outlines the rate plan that would be needed in event that the North Bay acquisition proceeds as outlined above. This rate plan also assumes that the transfer to the Stormwater fund will be removed in FY 2021. Notably, this scenario allows for a smaller rate adjustment plan of 3.50% per year, compared to the previous scenario which called for increases of 4.50% per year.

Table 4-3 North Bay Scenario Rate Adjustment Plan & Monthly Residential Bill Impacts

	FY 2019	FY 2020 10/1/19	FY 2021 10/1/20	FY 2022 10/1/21	FY 2023 10/1/22	FY 2024 10/1/23
Water and Sewer Rate Increase	0.00%	3.50%	3.50%	3.50%	3.50%	3.50%
Average Water and Sewer Bill (5,000 Gal)	$63.99	$66.24	$68.51	$70.90	$73.37	$75.97

Disclaimer

This document was produced by Stantec Consulting Services Inc. ("Stantec") for the City of Lynn Haven and is based on a specific scope agreed upon by both parties. In preparing this report, Stantec utilized information and data obtained from the City of Lynn Haven or public and/or industry sources. Stantec has relied on the information and data without independent verification, except only to the extent such verification is expressly described in this document. Any projections of future conditions presented in the document are not intended as predictions, as there may be differences between forecasted and actual results, and those differences may be material.

Additionally, the purpose of this document is to summarize Stantec's analysis and findings related to this project, and it is not intended to address all aspects that may surround the subject area. Therefore, this document may have limitations, assumptions, or reliances on data that are not readily apparent on the face of it. Moreover, the reader should understand that Stantec was called on to provide judgments on a variety of critical factors which are incapable of precise measurement. As such, the use of this document and its findings by the City of Lynn Haven should only occur after consultation with Stantec, and any use of this document and findings by any other person is done so entirely at their own risk.

APPENDIX A: SUPPORTING SCHEDULES

Assumptions **Schedule 1**

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Fiscal Year Start Date	10/1/2018	10/1/2019	10/1/2020	10/1/2021	10/1/2022	10/1/2023	10/1/2024	10/1/2025	10/1/2026	10/1/2027	10/1/2028
Annual Growth											
Water											
Ending # of ERCs	10,299	10,661	11,022	11,222	11,422	11,622	11,822	12,022	12,222	12,422	12,622
ERC Growth	*N/A*	361	361	200	200	200	200	200	200	200	200
% Change in ERCs	*N/A*	*3.51%*	*3.39%*	*1.81%*	*1.78%*	*1.75%*	*1.72%*	*1.69%*	*1.66%*	*1.64%*	*1.61%*
Usage per ERC	4,761	4,761	4,761	4,761	4,761	4,761	4,761	4,761	4,761	4,761	4,761
% Change in Usage per ERC	*N/A*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Usage	588,393,523	609,031,492	629,669,462	641,095,327	652,521,192	663,947,057	675,372,922	686,798,788	698,224,653	709,650,518	721,076,383
% Change in Usage	*-10.68%*	*3.51%*	*3.39%*	*1.81%*	*1.78%*	*1.75%*	*1.72%*	*1.69%*	*1.66%*	*1.64%*	*1.61%*
% Paying Capital Charges	*100.00%*	*41.52%*	*3.93%*	*33.33%*	*33.33%*	*33.33%*	*33.33%*	*46.15%*	*46.15%*	*46.15%*	*46.15%*
New Development		*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*
Account Recovery		*211*	*211*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*
Water Baseline Growth		*361*	*361*	*200*	*200*	*200*	*200*	*200*	*200*	*200*	*200*
Sewer											
Ending # of ERCs	7,113	7,474	7,836	8,036	8,236	8,436	8,636	8,836	9,036	9,236	9,436
ERC Growth	*N/A*	*361*	*361*	*200*	*200*	*200*	*200*	*200*	*200*	*200*	*200*
% Change in ERCs	*N/A*	*5.08%*	*4.83%*	*2.55%*	*2.49%*	*2.43%*	*2.37%*	*2.32%*	*2.26%*	*2.21%*	*2.17%*
Usage per ERC	*4,447*	*4,447*	*4,447*	*4,447*	*4,447*	*4,447*	*4,447*	*4,447*	*4,447*	*4,447*	*4,447*
% Change in Usage per ERC	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Usage	379,591,091	398,869,495	418,147,898	428,821,062	439,494,226	450,167,391	460,840,555	471,513,720	482,186,884	492,860,048	503,533,213
% Change in	*N/A*	*5.08%*	*4.83%*	*2.55%*	*2.49%*	*2.43%*	*2.37%*	*2.32%*	*2.26%*	*2.21%*	*2.17%*
% Paying Capital Charges	*100.00%*	*41.52%*	*41.52%*	*75.00%*	*75.00%*	*75.00%*	*75.00%*	*75.00%*	*75.00%*	*75.00%*	*75.00%*
New Development		150	150	150	150	150	150	150	150	150	150
Account Recovery		211	211	50	50	50	50	50	50	50	50
Sewer Baseline Growth		361	361	200	200	200	200	200	200	200	200
Capital Spending											
Annual Capital Budget (Future Year Dollars)	$ -	$ 2,126,429	$ 5,105,121	$ 3,192,046	$ 6,470,375	$ 4,976,223	$ 9,250,593	$ 8,535,342	$ 7,884,370	$ 8,120,901	$ 8,364,528
Annual Percent Executed	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Impact Fees											
Water Impact Fees	$1,151.00	$1,151.00	$1,179.78	$1,209.27	$1,239.50	$1,270.49	$1,302.25	$1,334.81	$1,368.18	$1,402.38	$1,437.44
Sewer Impact Fees	$3,232.00	$3,232.00	$3,312.80	$3,395.62	$3,480.51	$3,567.52	$3,656.71	$3,748.13	$3,841.83	$3,937.88	$4,036.33
Average Annual Interest Earnings Rate											
On Fund Balances	0.50%	0.50%	0.75%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Operating Budget Reserve											
Target (Number of Months of Reserve)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Operating Budget Execution Percentage											
Personal Services	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Variable Operations and Maintenance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Fixed Operations and Maintenance	100%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Capital Outlay	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

FY 2019 Beginning Balances as of 10/1/2018 — Schedule 2

Stantec Grouping of Funds in Model	Revenue Fund	Restricted Reserves	Water Impact Fees	Sewer Impact Fees
Current Unrestricted Assets				
Cash and Cash Equivalents	$ 7,302,197	$3,028,742	$ 472,582	$ 1,240,474
Accounts Receivable, Net	383,738	-	-	-
Grants Receivable	1,833,581	-	-	-
Inventory	105,791	-	-	-
Prepaid Expenses	70,377	-	-	-
Notes Receivable	8,800	-	-	-
Total Current Assets	**$ 9,704,484**	**$ 3,028,742**	**$ 472,582**	**$ 1,240,474**
CURRENT LIABILITIES				
Less: Accounts Payable	$ (47,226)	$ -	$ -	$ -
Less: Accrued Expenses	(19,129)	-	-	-
Less: Accrued Interest	(125,159)	-	-	-
Less: Unearned Revenues	(145,311)	-	-	-
Less: Due to Other Goverments	(629)	-	-	-
Less: Compensated Absences	(10,840)	-	-	-
Calculated Fund Balance (Assets - Liabilities)	**$ 9,356,190**	**$ 3,028,742**	**$ 472,582**	**$ 1,240,474**
Plus/(Less): Customer Deposits	(474,205)	-	-	-
Plus/(Less): Capital Repair and Replacement	-	(1,713,056)	-	-
Available Fund Balance	**$ 8,881,985**	**$ 1,315,686**	**$ 472,582**	**$ 1,240,474**

Fund Summary	
Revenue Fund	$ 8,881,985
Restricted Reserves	1,315,686
Water Impact Fees	472,582
Sewer Impact Fees	1,240,474
Impact Fees	-
Capital Fund	-
Renewal & Replacement	-
	$ 11,910,727

Projection of Cash Inflows **Schedule 3**

		FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Rate Revenue Growth Assumptions**											
2	**Water**											
3	% Change in Base Revenue	N/A	3.51%	3.39%	1.81%	1.78%	1.75%	1.72%	1.69%	1.66%	1.64%	1.61%
4	% Change in Usage Revenue	N/A	3.51%	3.39%	1.81%	1.78%	1.75%	1.72%	1.69%	1.66%	1.64%	1.61%
5	**Sewer**											
6	% Change in Base Revenue	N/A	5.08%	4.83%	2.55%	2.49%	2.43%	2.37%	2.32%	2.26%	2.21%	2.17%
7	% Change in Usage Revenue	N/A	5.08%	4.83%	2.55%	2.49%	2.43%	2.37%	2.32%	2.26%	2.21%	2.17%
8	**Assumed Rate Revenue Increases**											
9	Assumed Water Rate Increase	N/A	0.00%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
10	Assumed Sewer Rate Increase	N/A	0.00%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
11	**Water Rate Revenue**											
12	Base Rate Revenue	$ 1,160,740	$ 1,255,518	$ 1,356,476	$ 1,443,240	$ 1,535,065	$ 1,632,232	$ 1,735,036	$ 1,843,786	$ 1,958,811	$ 2,080,454	$ 2,209,079
13	Usage Rate Revenue	1,983,525	2,136,248	2,298,088	2,434,550	2,578,296	2,729,693	2,889,123	3,056,990	3,233,715	3,419,740	3,615,530
14	**Total Water Rate Revenue**	**$ 3,144,265**	**$ 3,391,766**	**$ 3,654,564**	**$ 3,877,790**	**$ 4,113,361**	**$ 4,361,925**	**$ 4,624,158**	**$ 4,900,776**	**$ 5,192,526**	**$ 5,500,195**	**$ 5,824,609**
15	**Sewer Rate Revenue**											
16	Base Rate Revenue	$ 697,517	$ 765,924	$ 839,076	$ 899,215	$ 963,068	$ 1,030,847	$ 1,102,776	$ 1,179,090	$ 1,260,040	$ 1,345,888	$ 1,436,911
17	Usage Rate Revenue	2,002,483	2,189,403	2,388,179	2,548,327	2,717,530	2,896,258	3,085,006	3,284,292	3,494,660	3,716,681	3,950,953
18	**Total Sewer Rate Revenue**	**$ 2,700,000**	**$ 2,955,328**	**$ 3,227,255**	**$ 3,447,543**	**$ 3,680,598**	**$ 3,927,105**	**$ 4,187,782**	**$ 4,463,382**	**$ 4,754,700**	**$ 5,062,569**	**$ 5,387,863**
19	**Other Operating Revenue**											
20	**WATER**											
21	COUNTY IMPACT COLLECTION FEE	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ 2,500
22	CONSTRUCTION WATER	5,700	5,700	5,700	5,700	5,700	5,700	5,700	5,700	5,700	5,700	5,700
23	WATER TAP FEES	29,000	29,000	29,983	30,527	31,071	31,615	32,159	32,703	33,247	33,791	34,335
24	WATER CONNECT FEES	92,000	92,000	95,118	96,844	98,570	100,296	102,022	103,747	105,473	107,199	108,925
25	IRRIGATION TAP FEES	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500
26	IRRIGATION CONNECTION FEES	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500	10,500
27	RECONNECT REREAD & TESTING FEE	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000
28	PENALTY INCOME	95,000	95,000	95,000	95,000	95,000	95,000	95,000	95,000	95,000	95,000	95,000
29	CREDIT CARD ADMINISTRATION FEE	23,500	23,500	23,500	23,500	23,500	23,500	23,500	23,500	23,500	23,500	23,500
30	MISCELLANEOUS REVENUE	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
31	DISHONORED CHECK CHARGES	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800
32	BAD DEBT COLLECTIONS	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
34	**SEWER**											
35	REUSE FEES	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000
36	FDEP GRANT IMPROVEMENTS	-	-	-	-	-	-	-	-	-	-	-
37	SEWER TAP FEES	15,000	15,000	15,725	16,126	16,528	16,929	17,331	17,732	18,133	18,535	18,936
38	MISCELLANEOUS REVENUE	500	500	500	500	500	500	500	500	500	500	500
39	**Total Other Operating Revenue**	**$ 377,500**	**$ 377,500**	**$ 382,325**	**$ 384,997**	**$ 387,668**	**$ 390,340**	**$ 393,011**	**$ 395,682**	**$ 398,354**	**$ 401,025**	**$ 403,697**
40	**Interest Income**											
41	Unrestricted	$ 39,845	$ 26,935	$ 23,426	$ 25,843	$ 26,737	$ 27,433	$ 28,151	$ 28,893	$ 29,658	$ 30,448	$ 31,264
42	Restricted											
43	**Total Interest Income**	**$ 39,845**	**$ 26,935**	**$ 23,426**	**$ 25,843**	**$ 26,737**	**$ 27,433**	**$ 28,151**	**$ 28,893**	**$ 29,658**	**$ 30,448**	**$ 31,264**
44	**Total Cash Inflows**	**$ 6,261,610**	**$ 6,751,529**	**$ 7,287,571**	**$ 7,736,173**	**$ 8,208,364**	**$ 8,706,802**	**$ 9,233,103**	**$ 9,788,733**	**$ 10,375,238**	**$ 10,994,237**	**$ 11,647,433**

Projection of Cash Outflows **Schedule 4**

		Account Code	Expense Line Item	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1			**WATER**											
2			**Personal Services**											
3	PS	401-401533-512000-	SALARIES-GENERAL EMPLOYEES	$ 600,917	$ 618,945	$ 637,513	$ 656,638	$ 676,337	$ 696,627	$ 717,526	$ 739,052	$ 761,224	$ 784,060	$ 807,582
4	PS	401-401533-514000-	OVERTIME, GENERAL EMPLOYEES	50,000	51,500	53,045	54,636	56,275	57,964	59,703	61,494	63,339	65,239	67,196
5	PS	401-401533-521000-	FICA & MEDICARE BENEFIT	46,350	47,741	49,173	50,648	52,167	53,732	55,344	57,005	58,715	60,476	62,291
6	PS	401-401533-522000-	PENSION BENEFIT GENERAL EMP	105,222	108,379	113,798	119,487	125,462	131,735	138,322	145,238	152,500	160,125	168,131
7	PS	401-401533-523000-	LIFE & HEALTH INSURANCE	97,637	100,566	103,583	106,691	109,891	113,188	116,584	120,081	123,684	127,394	131,216
8	PS	401-401533-524000-	WORKERS COMPENSATION INSURA	11,184	11,520	11,865	12,221	12,588	12,965	13,354	13,755	14,168	14,593	15,030
9	PS	401-401533-524001-	LTD	3,357	3,458	3,561	3,668	3,778	3,892	4,008	4,129	4,253	4,380	4,512
10			**Operations & Maintenance**											
11	OMF	401-401533-531043-	REVENUE SUFFICIENCY ANALYSIS	10,000	10,300	10,455	10,611	10,770	10,932	11,096	11,262	11,431	11,603	11,777
12	OMF	401-401533-531081-	PROFESSIONAL SERVICES-OTHER	87,000	89,610	90,954	92,318	93,703	95,109	96,535	97,983	99,453	100,945	102,459
13	OMF	401-401533-534000-	CONTRACTUAL SERVICES	18,000	18,540	18,818	19,100	19,387	19,678	19,973	20,272	20,577	20,885	21,198
14	OMF	401-401533-534001-	TESTING & ANALYSIS	21,000	21,630	21,954	22,284	22,618	22,957	23,302	23,651	24,006	24,366	24,732
15	OMF	401-401533-540000-	TRAVEL & PER DIEM	3,500	3,605	3,659	3,714	3,770	3,826	3,884	3,942	4,001	4,061	4,122
16	OMF	401-401533-540001-	TRAINING & CERTIFICATION	2,500	2,575	2,614	2,653	2,693	2,733	2,774	2,816	2,858	2,901	2,944
17	OMF	401-401533-541000-	COMMUNICATIONS	5,500	5,665	5,750	5,836	5,924	6,013	6,103	6,194	6,287	6,382	6,477
18	OMF	401-401533-541001-	INTERNET SERVICES	3,500	3,605	3,659	3,714	3,770	3,826	3,884	3,942	4,001	4,061	4,122
19	OMF	401-401533-542000-	POSTAGE & COURIER SERVICE	5,000	5,150	5,227	5,306	5,385	5,466	5,548	5,631	5,716	5,801	5,888
20	OMF	401-401533-543000-	UTILITIES	130,000	133,900	140,595	147,625	155,006	162,756	170,894	179,439	188,411	197,831	207,723
21	OMF	401-401533-543001-	BAY COUNTY WATER CONTRACT	348,000	358,440	370,586	377,311	384,035	390,760	397,485	404,209	410,934	417,658	424,383
22	OMF	401-401533-544000-	RENTALS & LEASES	2,370	2,441	2,478	2,515	2,553	2,591	2,630	2,669	2,709	2,750	2,791
23	OMF	401-401533-546001-	R & M VEHICLES	21,000	21,630	21,954	22,284	22,618	22,957	23,302	23,651	24,006	24,366	24,732
24	OMF	401-401533-546002-	R & M BUILDING & GROUNDS	23,090	23,783	24,139	24,502	24,869	25,242	25,621	26,005	26,395	26,791	27,193
25	OMF	401-401533-546003-	R & M MACHINERY & EQUIPMENT	27,000	27,810	28,227	28,651	29,080	29,517	29,959	30,409	30,865	31,328	31,798
26	OMF	401-401533-546004-	R & M MECHANICAL	8,000	8,240	8,364	8,489	8,616	8,746	8,877	9,010	9,145	9,282	9,422
27	OMF	401-401533-546009-	R & M INFRASTURCTURE	5,000	5,150	5,227	5,306	5,385	5,466	5,548	5,631	5,716	5,801	5,888
28	OMF	401-401533-549007-	FEES BAD DEBT COLLECTION	2,000	2,060	2,091	2,122	2,154	2,186	2,219	2,252	2,286	2,321	2,355
29	OMF	401-401533-549010-	BANK CHARGES	14,000	14,420	14,636	14,856	15,079	15,305	15,534	15,767	16,004	16,244	16,488
30	OMF	401-401533-551000-	SUPPLIES, OFFICE	2,300	2,369	2,405	2,441	2,477	2,514	2,552	2,590	2,629	2,669	2,709
31	OMF	401-401533-552000-	SUPPLIES, OPERATING	189,000	194,670	197,590	200,554	203,562	206,616	209,715	212,861	216,054	219,294	222,584
32	OMF	401-401533-552200-	FUEL	20,000	20,600	21,630	22,712	23,847	25,039	26,291	27,606	28,986	30,436	31,957
33	OMF	401-401533-552500-	CHLORINE & CHEMICALS	29,000	29,870	31,364	32,932	34,578	36,307	38,123	40,029	42,030	44,132	46,338
34	OMF	401-401533-554000-	DUES/PUBLICATIONS/SUBSCRIPTIO	3,000	3,090	3,136	3,183	3,231	3,280	3,329	3,379	3,429	3,481	3,533
35	OMF	401-401533-573047-	AGENCY FEES 15 CAP IMPRV BOND	279	-	-	-	-	-	-	-	-	-	-
36	OMF	401-401533-573052-	ISSUANCE COSTS 17 CAP IMP BONE	15,911	-	-	-	-	-	-	-	-	-	-
37	OMF	401-401533-591000-	INDIRECT ALLOCATION	681,833	702,288	712,822	723,515	734,367	745,383	756,564	767,912	779,431	791,122	802,989
38	OMF	401-401533-599000-	BAD DEBT	13,000	13,390	13,390	13,390	13,390	13,390	13,390	13,390	13,390	13,390	13,390
39	CO	401-401533-564000-	CAPITAL OUTLAY, EQUIPMENT	157,000	161,710	164,136	166,598	169,097	171,633	174,208	176,821	179,473	182,165	184,898
40			**Total WATER**	**$ 2,762,450**	**$ 2,828,648**	**$ 2,900,398**	**$ 2,968,509**	**$ 3,038,465**	**$ 3,110,332**	**$ 3,184,179**	**$ 3,260,078**	**$ 3,338,103**	**$ 3,418,333**	**$ 3,500,847**
41	PS	402-402535-512000-	SALARIES-GENERAL EMPLOYEES	$ 419,394	$ 431,976	$ 444,935	$ 458,283	$ 472,032	$ 486,193	$ 500,778	$ 515,802	$ 531,276	$ 547,214	$ 563,630
42	PS	402-402535-514000-	OVERTIME, GENERAL EMPLOYEES	25,000	25,750	26,523	27,318	28,138	28,982	29,851	30,747	31,669	32,619	33,598
43	PS	402-402535-521000-	FICA & MEDICARE BENEFIT	32,621	33,600	34,608	35,646	36,715	37,817	38,951	40,120	41,323	42,563	43,840
44	PS	402-402535-522000-	PENSION BENEFIT GENERAL EMP	82,369	84,840	89,082	93,536	98,213	103,124	108,280	113,694	119,378	125,347	131,615
45	PS	402-402535-523000-	LIFE & HEALTH INSURANCE	77,711	80,042	82,444	84,917	87,464	90,088	92,791	95,575	98,442	101,395	104,437
46	PS	402-402535-524000-	WORKERS COMPENSATION INSURA	5,301	5,460	5,624	5,793	5,966	6,145	6,330	6,520	6,715	6,917	7,124
47	PS	402-402535-524001-	LTD	2,338	2,408	2,480	2,555	2,631	2,710	2,792	2,875	2,962	3,051	3,142
48	PS	402-402535-526000-	OTHER POSTEMPLOYMENT BENEFI	1,800	1,854	1,882	1,910	1,939	1,968	1,997	2,027	2,058	2,089	2,120
49	PS		ADDTL FTEs	-	-	-	90,000	92,700	95,481	98,345	101,296	104,335	107,465	110,689
50	PS		Additional FTE - Lift Station Mechanic	45,000	46,350	47,045	47,751	48,467	49,194	49,932	50,681	51,441	52,213	52,996
51	OMF	402-402535-531043-	REVENUE SUFFICIENCY ANALYSIS	25,000	25,750	26,136	26,528	26,926	27,330	27,740	28,156	28,579	29,007	29,442
52	OMF	402-402535-531081-	PROFESSIONAL SERVICES-OTHER	26,000	26,780	27,182	27,589	28,003	28,423	28,850	29,282	29,722	30,167	30,620
53	OMF	402-402535-531082-	PROFESSIONAL SERV-PERMITTING	1,000	1,030	1,045	1,061	1,077	1,093	1,110	1,126	1,143	1,160	1,178
54	OMF	402-402535-534000-	CONTRACTUAL SERVICES	17,000	17,510	17,773	18,039	18,310	18,584	18,863	19,146	19,433	19,725	20,021
55	OMF	402-402535-534001-	TESTING & ANALYSIS	30,000	30,900	31,364	31,834	32,311	32,796	33,288	33,787	34,294	34,809	35,331
56	OMF	402-402535-534005-	SLUDGE REMOVAL	300,000	309,000	313,635	318,340	323,115	327,961	332,881	337,874	342,942	348,086	353,308
57	OMF	402-402535-540000-	TRAVEL & PER DIEM	1,300	1,339	1,359	1,379	1,400	1,421	1,442	1,464	1,486	1,508	1,531
58	OMF	402-402535-540001-	TRAINING & CERTIFICATION	3,300	3,399	3,450	3,502	3,554	3,608	3,662	3,717	3,772	3,829	3,886
59	OMF	402-402535-541000-	COMMUNICATIONS	3,500	3,605	3,659	3,714	3,770	3,826	3,884	3,942	4,001	4,061	4,122
60	OMF	402-402535-541001-	INTERNET SERVICES	3,300	3,399	3,450	3,502	3,554	3,608	3,662	3,717	3,772	3,829	3,886
61	OMF	402-402535-542000-	POSTAGE & COURIER SERVICE	2,500	2,575	2,614	2,653	2,693	2,733	2,774	2,816	2,858	2,901	2,944
62	OMF	402-402535-543000-	UTILITIES	400,000	412,000	432,600	454,230	476,942	500,789	525,828	552,119	579,725	608,712	639,147
63	OMF	402-402535-544000-	RENTALS & LEASES	5,000	5,150	5,227	5,306	5,385	5,466	5,548	5,631	5,716	5,801	5,888
64	OMF	402-402535-545000-	INSURANCE, LIABILITY	5,000	5,150	5,227	5,306	5,385	5,466	5,548	5,631	5,716	5,801	5,888
65	OMF	402-402535-546001-	R & M VEHICLES	16,000	16,480	16,727	16,978	17,233	17,491	17,754	18,020	18,290	18,565	18,843
66	OMF	402-402535-546002-	R & M BUILDING & GROUNDS	85,000	87,550	88,863	90,196	91,549	92,922	94,316	95,731	97,167	98,624	100,104
67	OMF	402-402535-546003-	R & M MACHINERY & EQUIPMENT	70,000	72,100	73,182	74,279	75,393	76,524	77,672	78,837	80,020	81,220	82,438
68	OMF	402-402535-546004-	R & M MECHANICAL	60,000	61,800	62,727	63,668	64,623	65,592	66,576	67,575	68,588	69,617	70,662
69	OMF	402-402535-546009-	R & M INFRASTURCTURE	50,000	51,500	52,273	53,057	53,852	54,660	55,480	56,312	57,157	58,014	58,885
70	OMF	402-402535-551000-	SUPPLIES, OFFICE	2,000	2,060	2,091	2,122	2,154	2,186	2,219	2,252	2,286	2,321	2,355
71	OMF	402-402535-552000-	SUPPLIES, OPERATING	79,000	81,370	82,591	83,829	85,087	86,363	87,659	88,973	90,308	91,663	93,038
72	OMF	402-402535-552200-	FUEL	12,000	12,360	12,978	13,627	14,308	15,024	15,775	16,564	17,392	18,261	19,174
73	OMF	402-402535-552500-	CHLORINE & CHEMICALS	75,000	77,250	81,113	85,168	89,427	93,898	98,593	103,522	108,699	114,133	119,840
74	OMF	402-402535-573036-	ISSUANCE COSTS 14 CAP IMP BONE	593	593	602	611	620	629	639	648	658	668	678

Projection of Cash Outflows **Schedule 4**

	Account Code		Expense Line Item	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
75	OMF	402-402535-573041-	AGENCY FEES 11 CAP IMPRV BOND	550	-	-	-	-	-	-	-	-	-	-
76	OMF	402-402535-573044-	AGENCY FEES 14 CAP IMPRV BOND	900	-	-	-	-	-	-	-	-	-	-
77	OMF	402-402535-573047-	AGENCY FEES 15 CAP IMPRV BOND	810	-	-	-	-	-	-	-	-	-	-
78	OMF	402-402535-573048-	ISSUANCE COST 16 SALES TAX	5,110	-	-	-	-	-	-	-	-	-	-
79	OMF	402-402535-573049-	AGENCY FEES 16 SALES TAX BOND	1,125	-	-	-	-	-	-	-	-	-	-
80	OMF	402-402535-573052-	ISSUANCE COSTS 17 CAP IMP BOND	15,911	-	-	-	-	-	-	-	-	-	-
81	OMF	402-402535-591000-	INDIRECT ALLOCATION	254,820	262,465	266,402	270,398	274,454	278,570	282,749	286,990	291,295	295,664	300,099
82	OMF	402-402535-599000-	BAD DEBT	12,000	12,360	12,360	12,360	12,360	12,360	12,360	12,360	12,360	12,360	12,360
83	CO	402-402535-564000-	CAPITAL OUTLAY, EQUIPMENT	192,000	197,760	200,726	203,737	206,793	209,895	213,044	216,239	219,483	222,775	226,117
84			**Total SEWER**	**$ 2,447,253**	**$ 2,495,515**	**$ 2,561,976**	**$ 2,720,722**	**$ 2,794,544**	**$ 2,870,923**	**$ 2,949,962**	**$ 3,031,770**	**$ 3,116,462**	**$ 3,204,156**	**$ 3,294,977**
85	OMF	401-401533-552300-	Uniforms	$ 3,000	$ 3,090	$ 3,136	$ 3,183	$ 3,231	$ 3,280	$ 3,329	$ 3,379	$ 3,429	$ 3,481	$ 3,533
86	OMF	401-401533-564500-	Vehicles	20,000	20,600	20,909	21,223	21,541	21,864	22,192	22,525	22,863	23,206	23,554
87	OMF	401-401533-573000-	AGENCY FEES	750	-	-	-	-	-	-	-	-	-	-
88	OMF	401-401533-573049-	AGENCY FEES 16 SALES TAX BOND	810	-	-	-	-	-	-	-	-	-	-
89	CO	401-401533-561000-	CAPITAL OUTLAY, LAND	111,910	115,267	116,996	118,751	120,533	122,341	124,176	126,038	127,929	129,848	131,795
90			**Total ADDTL WATER FOR FY19**	**$ 136,470**	**$ 138,957**	**$ 141,042**	**$ 143,157**	**$ 145,305**	**$ 147,484**	**$ 149,696**	**$ 151,942**	**$ 154,221**	**$ 156,534**	**$ 158,882**
91	PS	402-402535-523002-	HEALTH DEDUCTIBLE	$ 2,500	$ 2,575	$ 2,614	$ 2,653	$ 2,693	$ 2,733	$ 2,774	$ 2,816	$ 2,858	$ 2,901	$ 2,944
92	PS	402-402535-523003-	HEALTH OUT OF POCKET	1,350	1,391	1,411	1,433	1,454	1,476	1,498	1,520	1,543	1,566	1,590
93	OMF	402-402535-552300-	Uniforms	700	721	732	743	754	765	777	788	800	812	824
94	OMF	402-402535-554000-	DUES/PUBLICATIONS/SUBSCRIPTIO	500	515	523	531	539	547	555	563	572	580	589
95			**Total ADDTL SEWER FOR FY19**	**$ 5,050**	**$ 5,202**	**$ 5,280**	**$ 5,359**	**$ 5,439**	**$ 5,521**	**$ 5,603**	**$ 5,688**	**$ 5,773**	**$ 5,859**	**$ 5,947**
96			**Total Expenses by Category**											
97	PS		Personal Services	$ 1,610,051	$ 1,658,353	$ 1,711,185	$ 1,855,784	$ 1,914,912	$ 1,976,014	$ 2,039,161	$ 2,104,425	$ 2,171,881	$ 2,241,606	$ 2,313,682
98	OMF		Operations & Maintenance	3,280,262	3,335,231	3,415,653	3,492,877	3,572,419	3,654,377	3,738,853	3,825,954	3,915,793	4,008,488	4,104,162
99	CO		Capital Outlay	460,910	474,737	481,858	489,086	496,423	503,869	511,427	519,098	526,885	534,788	542,810
100			**Total Expenses**	**$ 5,351,223**	**$ 5,468,321**	**$ 5,608,696**	**$ 5,837,747**	**$ 5,983,753**	**$ 6,134,260**	**$ 6,289,441**	**$ 6,449,477**	**$ 6,614,559**	**$ 6,784,882**	**$ 6,960,654**
101			**Expense Execution Factors**											
102			Personal Services	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
103			Operations & Maintenance	100%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
104			Capital Outlay	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
105			**Total Expenses at Execution**											
106			Personal Services	$ 1,610,051	$ 1,658,353	$ 1,711,185	$ 1,855,784	$ 1,914,912	$ 1,976,014	$ 2,039,161	$ 2,104,425	$ 2,171,881	$ 2,241,606	$ 2,313,682
107			Operations & Maintenance	3,280,262	3,268,527	3,347,340	3,423,019	3,500,970	3,581,289	3,664,076	3,749,435	3,837,478	3,928,318	4,022,078
108			Capital Outlay	460,910	474,737	481,858	489,086	496,423	503,869	511,427	519,098	526,885	534,788	542,810
109			**Total Expenses at Execution**	**$ 5,351,223**	**$ 5,401,617**	**$ 5,540,383**	**$ 5,767,889**	**$ 5,912,305**	**$ 6,061,172**	**$ 6,214,664**	**$ 6,372,958**	**$ 6,536,243**	**$ 6,704,713**	**$ 6,878,571**
110			**Transfers Out**											
111			TRANSFER TO STORMWATER	$ 1,017,658	$ 1,017,658	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
112			**Total Transfers Out**	**$ 1,017,658**	**$ 1,017,658**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
113			**Debt Service**											
114			2011 Capital Impr Bond	$ 368,300	$ 678,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
115			2014 Capital Impr Bond	212,126	209,251	210,726	211,738	212,275	212,300	211,800	209,880	209,880	209,880	209,880
116			2015 Capital Impr Rev Bond	250,938	251,950	153,744	151,250	153,325	154,725	150,525	151,549	151,549	151,549	151,549
117			2016 Sales Tax Refunding	210,806	212,987	209,370	211,437	210,926	213,492	210,077	315,954	315,954	-	-
118			2017 Capital Impr Bonds	676,425	675,325	401,775	405,775	399,675	403,318	406,435	394,380	394,380	394,380	394,380
119			State Revolving Fund-Water	-	209,004	209,004	209,004	209,004	209,004	209,004	209,004	209,004	209,004	209,004
120			State Revolving Fund-Sewer	-	186,092	372,184	372,184	372,184	372,184	372,184	372,184	372,184	372,184	372,184
121			Calculated Subordinate Debt	-	-	108,124	254,844	584,893	824,062	1,310,347	1,763,982	2,179,747	2,587,989	3,036,853
122			**Total Debt Service**	**$ 1,718,594**	**$ 2,422,909**	**$ 1,664,926**	**$ 1,816,231**	**$ 2,142,282**	**$ 2,389,085**	**$ 2,870,371**	**$ 3,416,933**	**$ 3,832,698**	**$ 3,924,985**	**$ 4,373,849**
123			**Total Cash Outflows**	**$ 8,087,475**	**$ 8,842,183**	**$ 7,205,309**	**$ 7,584,120**	**$ 8,054,587**	**$ 8,450,257**	**$ 9,085,035**	**$ 9,789,892**	**$ 10,368,942**	**$ 10,629,698**	**$ 11,252,420**

Cost Escalation Factors **Schedule 5**

Account Number	Expense Line Item Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
512000	SALARIES-GENERAL EMPLOYEES	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
514000	OVERTIME, GENERAL EMPLOYEES	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
521000	FICA & MEDICARE BENEFIT	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
522000	PENSION BENEFIT GENERAL EMP	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
523000	LIFE & HEALTH INSURANCE	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
524000	WORKERS COMPENSATION INSURANCE	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
524001	LTD	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
531041	COMPUTER SOFTWARE SUPPORT	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
531043	REVENUE SUFFICIENCY ANALYSIS	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
531081	PROFESSIONAL SERVICES-OTHER	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
531082	PROFESSIONAL SERV-PERMITTING	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
534000	CONTRACTUAL SERVICES	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
534001	TESTING & ANALYSIS	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
540000	TRAVEL & PER DIEM	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
540001	TRAINING & CERTIFICATION	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
541000	COMMUNICATIONS	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
541001	INTERNET SERVICES	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
542000	POSTAGE & COURIER SERVICE	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
543000	UTILITIES	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
543001	BAY COUNTY WATER CONTRACT	3.39%	1.81%	1.78%	1.75%	1.72%	1.69%	1.66%	1.64%	1.61%
544000	RENTALS & LEASES	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
544001	UNIFORM RENTAL	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
546001	R & M VEHICLES	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
546002	R & M BUILDING & GROUNDS	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
546003	R & M MACHINERY & EQUIPMENT	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
546004	R & M MECHANICAL	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
546009	R & M INFRASTURCTURE	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
549007	FEES BAD DEBT COLLECTION	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
549010	BANK CHARGES	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
551000	SUPPLIES, OFFICE	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
552000	SUPPLIES, OPERATING	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
552200	FUEL	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
552500	CHLORINE & CHEMICALS	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
554000	DUES/PUBLICATIONS/SUBSCRIPTION	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
559000	DEPRECIATON EXPENSE	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
563000	CAPITAL OUTLAY, IMPROVEMENTS	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
564000	CAPITAL OUTLAY, EQUIPMENT	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
565000	SR390 UTILITY RELOCATE	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
571003	PRINCIPAL 97 SALES TAX BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
571009	PRINCIPAL 05 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
571010	PRINCIPAL 05 SALES TAX BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
571046	PRINCIPAL 15 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
571048	PRINCIPAL 16 SALES TAX BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
571052	PRINCIPAL 17 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
572003	INTEREST 97 SALES TAX BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
572009	INTEREST 05 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
572010	INTEREST 05 SALES TAX BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
572046	INTEREST 15 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
572048	INTEREST 16 SALES TAX	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
572052	INTEREST 17 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573009	ISSUANCE COSTS 05 CAP IMP BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573019	AGENCY FEES 05 CAP IMPRV BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573046	ISSUANCE COSTS 15 CAP IMP BOND	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
573047	AGENCY FEES 15 CAP IMPRV BOND	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
573048	ISSUANCE COST 16 SALES TAX	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
573052	ISSUANCE COSTS 17 CAP IMP BOND	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
591000	INDIRECT ALLOCATION	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
591001	TRANSFER TO GENERAL FUND	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
591003	TRANSFER TO SEWER FUND	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
591010	TRANSFER TO STORMWATER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
599000	BAD DEBT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
599003	LOSS ON ABANDONMENT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
599099	RESERVE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
531022	ENGINEERING-WORK PRODUCT	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
534005	SLUDGE REMOVAL	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
545000	INSURANCE, LIABILITY	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
562000	CAPITAL OUTLAY, BUILDINGS	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
571008	PRINCIPAL 04 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
571041	PRINCIPAL 11 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
571044	PRINCIPAL 14 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
572008	INTEREST 04 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
572041	INTEREST 11 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
572044	INTEREST 14 CAP IMPRVMNT BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573008	ISSUANCE COSTS 04 CAP IMP BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573010	ISSUANCE COSTS 05 SALES TAX	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573013	AGENCY FEES 97 SALES TAX BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573014	AGENCY FEES 97 CAPITAL IMPRVMT	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573018	AGENCY FEES 04 CAP IMPRV BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573020	AGENCY FEES 05 SALES TAX BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573036	ISSUANCE COSTS 14 CAP IMP BOND	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
573041	AGENCY FEES 11 CAP IMPRV BOND	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
573044	AGENCY FEES 14 CAP IMPRV BOND	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
573049	AGENCY FEES 16 SALES TAX BOND	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NBPS	ADDTL NORTH BAY PS	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
NBOM	ADDTL NORTH BAY O&M	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
NBCO	ADDTL NORTH BAY CO	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
FTE	ADDTL FTEs	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
	Weighted Average Increase in O&M Expenses[1]	2.67%	4.35%	2.60%	2.61%	2.63%	2.64%	2.66%	2.67%	2.69%

[1] The Weighted Average Increase in O&M Expenses is reflective of the cost escalation factors presented on this schedule and the cost execution factors on Schedule 1.

Capital Improvement Program **Schedule 6**

		FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**WATER**											
2	Service Tubing (Replace Misc Services)	$ -	$ 25,000	$ 25,000	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Jenks Ave Widening	-	500,000	-	-	-	-	-	-	-	-	-
4	HWY 390 Utility Relocation (SR 77 to 231)	-	-	-	-	750,000	-	-	-	-	-	-
5	AMI Installation	-	451,429	451,429	451,429	451,429	451,429	451,429	-	-	-	-
6	Storm Recovery Repairs - General Recovery	-	200,000	200,000	-	-	-	-	-	-	-	-
7	**SEWER**											
8	HWY 390 Utility Relocation (SR 77 to 231)	-	-	-	-	750,000	-	-	-	-	-	-
9	Headworks	-	300,000	3,000,000	-	-	-	-	-	-	-	-
10	Upgrade to existing AWT Plant	-	-	300,000	1,066,667	1,066,667	1,066,667	4,625,000	4,625,000	4,625,000	4,625,000	-
11	Lift Station No.4	-	450,000	-	-	-	-	-	-	-	-	-
12	Slip lining and replacement of 1961 lines	-	-	380,000	380,000	380,000	380,000	380,000	-	-	-	-
13	Lift Station and Upgrades and hydraulic modeling	-	-	200,000	471,429	471,429	471,429	471,429	471,429	471,429	471,429	-
14	Forcemain Improvements	-	-	200,000	614,286	614,286	614,286	614,286	614,286	614,286	614,286	-
15	Sports Park Reuse Booster Station & Infrastructu	-	-	-	-	937,500	937,500	937,500	937,500	-	-	-
16	Reuse Main Improvements	-	-	-	-	500,000	500,000	500,000	500,000	-	-	-
17	Future Unspecified Capital Projects	-	-	-	-	-	-	-	-	700,000	700,000	700,000
21	Storm Recovery Repairs	-	200,000	200,000	-	-	-	-	-	-	-	-
22	Unspecified Future Spending	-	-	-	-	-	-	-	-	-	-	5,710,714
59	**Total CIP Budget (in current dollars)**	**$ -**	**$ 2,126,429**	**$ 4,956,429**	**$ 3,008,810**	**$ 5,921,310**	**$ 4,421,310**	**$ 7,979,643**	**$ 7,148,214**	**$ 6,410,714**	**$ 6,410,714**	**$ 6,410,714**
60	Cumulative Projected Cost Escalation[1]	0.0%	0.0%	3.0%	6.1%	9.3%	12.6%	15.9%	19.4%	23.0%	26.7%	30.5%
61	**Resulting CIP Funding Level**	**$ -**	**$ 2,126,429**	**$ 5,105,121**	**$ 3,192,046**	**$ 6,470,375**	**$ 4,976,223**	**$ 9,250,593**	**$ 8,535,342**	**$ 7,884,370**	**$ 8,120,901**	**$ 8,364,528**
62	Annual CIP Execution Percentage	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
63	**Final CIP Funding Level**	**$ -**	**$ 2,126,429**	**$ 5,105,121**	**$ 3,192,046**	**$ 6,470,375**	**$ 4,976,223**	**$ 9,250,593**	**$ 8,535,342**	**$ 7,884,370**	**$ 8,120,901**	**$ 8,364,528**

[1] CIP Escalation factors are consistent with the Engineering News Record Construction Cost Index.

FAMS - Control Panel **Schedule 7**

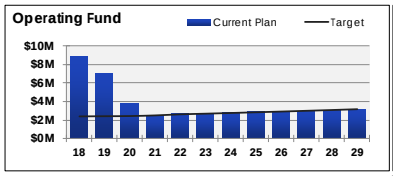
CALC LAST2 SUB
SAVE OVR2
5YR CTRL

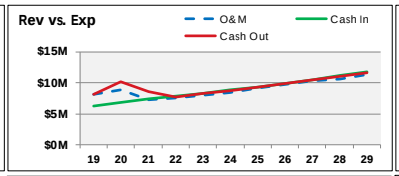
FAMS-XL©

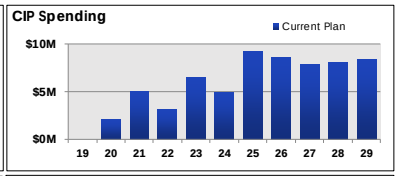
Lynn Haven, FL

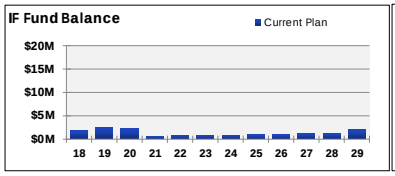
Stantec

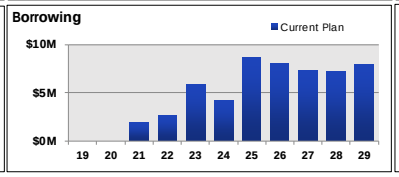
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2022	FY 2027
Water Rate Plan	0.00%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	13.97%	41.95%
Sewer Rate Plan	0.00%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%	14.16%	42.29%
Senior-Lien DSC	0.80	0.90	2.28	2.51	2.86	3.20	3.61	3.67	4.07	6.38	7.03	NB	N
Subordinate DSC	0.00	-0.51	1.82	1.77	1.56	1.54	1.35	1.22	1.19	1.28	1.26	NB GROW	N
Avg Bill (5,000 gal)	$63.99	$66.82	$69.84	$73.00	$76.30	$79.70	$83.29	$87.02	$90.96	$95.04	$99.33	PLANT	Y
Change $		*$2.83*	*$3.02*	*$3.16*	*$3.30*	*$3.40*	*$3.59*	*$3.73*	*$3.94*	*$4.08*	*$4.29*	Check	0

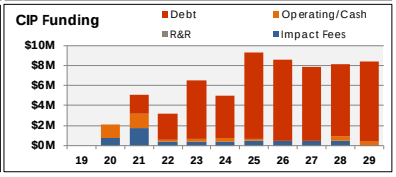












Pro Forma **Schedule 8**

			FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Operating Revenue**												
2	Water, Sewer Rate Revenue		$ 5,844,265	$ 5,844,265	$ 6,347,094	$ 6,881,820	$ 7,325,333	$ 7,793,960	$ 8,289,030	$ 8,811,940	$ 9,364,158	$ 9,947,226	$ 10,562,763
3	Change in Revenue From Growth		-	247,411	257,774	148,690	154,919	161,410	168,173	175,221	182,564	190,216	198,190
4	Subtotal		$ 5,844,265	$ 6,091,676	$ 6,604,868	$ 7,030,510	$ 7,480,252	$ 7,955,370	$ 8,457,203	$ 8,987,161	$ 9,546,723	$ 10,137,442	$ 10,760,953
5	*Weighted Average Rate Increase*		*0.00%*	*4.50%*	*4.50%*	*4.50%*	*4.50%*	*4.50%*	*4.50%*	*4.50%*	*4.50%*	*4.50%*	*4.50%*
6	Additional Rate Revenue From Rate Increase		-	274,125	297,219	316,373	336,611	357,992	380,574	404,422	429,603	456,185	484,243
7	Price Elasticity Adjustment		-	(18,708)	(20,267)	(21,550)	(22,904)	(24,331)	(25,837)	(27,425)	(29,099)	(30,864)	(32,724)
8	Total Rate Revenue		$ 5,844,265	$ 6,347,094	$ 6,881,820	$ 7,325,333	$ 7,793,960	$ 8,289,030	$ 8,811,940	$ 9,364,158	$ 9,947,226	$ 10,562,763	$ 11,212,472
9	Plus: Other Operating Revenue		377,500	377,500	382,325	384,997	387,668	390,340	393,011	395,682	398,354	401,025	403,697
10	**Equals: Total Operating Revenue**		**$ 6,221,765**	**$ 6,724,594**	**$ 7,264,145**	**$ 7,710,329**	**$ 8,181,628**	**$ 8,679,370**	**$ 9,204,951**	**$ 9,759,841**	**$ 10,345,580**	**$ 10,963,788**	**$ 11,616,169**
11	**Less: Operating Expenses**												
12	Personal Services		$ (1,610,051)	$ (1,658,353)	$ (1,711,185)	$ (1,855,784)	$ (1,914,912)	$ (1,976,014)	$ (2,039,161)	$ (2,104,425)	$ (2,171,881)	$ (2,241,606)	$ (2,313,682)
13	Operations & Maintenance Costs		(3,280,262)	(3,268,527)	(3,347,340)	(3,423,019)	(3,500,970)	(3,581,289)	(3,664,076)	(3,749,435)	(3,837,478)	(3,928,318)	(4,022,078)
14	**Equals: Net Operating Income**		**$ 1,331,452**	**$ 1,797,715**	**$ 2,205,620**	**$ 2,431,526**	**$ 2,765,746**	**$ 3,122,066**	**$ 3,501,714**	**$ 3,905,981**	**$ 4,336,221**	**$ 4,793,864**	**$ 5,280,408**
15	**Plus: Non-Operating Income/(Expense)**												
17	Interest Income		$ 39,845	$ 26,935	$ 23,426	$ 25,843	$ 26,737	$ 27,433	$ 28,151	$ 28,893	$ 29,658	$ 30,448	$ 31,264
18	Water Impact Fees		100,000	172,650	16,766	80,618	82,633	84,699	86,817	123,213	126,293	129,451	132,687
19	Sewer Impact Fees		482,000	484,800	496,920	509,343	522,077	535,128	548,507	562,219	576,275	590,682	605,449
20	N/A		16,599	17,584	20,398	20,540	21,217	22,027	22,866	23,906	25,153	26,446	30,375
21	**Equals: Net Income**		**$ 1,969,896**	**$ 2,499,683**	**$ 2,763,130**	**$ 3,067,871**	**$ 3,418,410**	**$ 3,791,354**	**$ 4,188,055**	**$ 4,644,212**	**$ 5,093,600**	**$ 5,570,890**	**$ 6,080,182**
22	**Less: Revenues Excluded From Coverage Test**												
23	Impact Fees		$ (582,000)	$ (657,450)	$ (513,686)	$ (589,961)	$ (604,710)	$ (619,828)	$ (635,323)	$ (685,432)	$ (702,568)	$ (720,132)	$ (738,136)
24	Other Capital Funding Sources		(16,599)	(17,584)	(20,398)	(20,540)	(21,217)	(22,027)	(22,866)	(23,906)	(25,153)	(26,446)	(30,375)
25	Transfers In		-	-	-	-	-	-	-	-	-	-	-
26	**Equals: Net Income Available For Debt Service**		**$ 1,371,297**	**$ 1,824,649**	**$ 2,229,047**	**$ 2,457,370**	**$ 2,792,482**	**$ 3,149,499**	**$ 3,529,866**	**$ 3,934,873**	**$ 4,365,879**	**$ 4,824,312**	**$ 5,311,672**
27	**Senior Lien Debt Service Coverage Test**												
28	Net Income Available for Senior-Lien Debt Service		**$ 1,371,297**	**$ 1,824,649**	**$ 2,229,047**	**$ 2,457,370**	**$ 2,792,482**	**$ 3,149,499**	**$ 3,529,866**	**$ 3,934,873**	**$ 4,365,879**	**$ 4,824,312**	**$ 5,311,672**
29	Existing Senior-Lien Debt		1,718,594	2,027,813	975,614	980,200	976,201	983,835	978,837	1,071,763	1,071,763	755,809	755,809
30	Cumulative New Senior Lien Debt Service (calculated)		-	-	-	-	-	-	-	-	-	-	-
31	**Total Annual Senior-Lien Debt Service**	**Req.**	**$ 1,718,594**	**$ 2,027,813**	**$ 975,614**	**$ 980,200**	**$ 976,201**	**$ 983,835**	**$ 978,837**	**$ 1,071,763**	**$ 1,071,763**	**$ 755,809**	**$ 755,809**
32	*Calculated Senior-Lien Debt Service Coverage*	**1.25**	**0.80**	**0.90**	**2.28**	**2.51**	**2.86**	**3.20**	**3.61**	**3.67**	**4.07**	**6.38**	**7.03**
33	**Subordinate Debt Service Coverage Test**												
34	Net Income Available for Subordinate Debt Service		**$ (347,297)**	**$ (203,163)**	**$ 1,253,432**	**$ 1,477,170**	**$ 1,816,281**	**$ 2,165,665**	**$ 2,551,029**	**$ 2,863,110**	**$ 3,294,116**	**$ 4,068,503**	**$ 4,555,863**
35	Existing Subordinate Debt		-	395,096	581,188	581,188	581,188	581,188	581,188	581,188	581,188	581,188	581,188
36	Cumulative New Subordinate Debt Service (calculated)		-	-	108,124	254,844	584,893	824,062	1,310,347	1,763,982	2,179,747	2,587,989	3,036,853
37	**Total Annual Subordinate Debt Service**	**Req.**	**$ -**	**$ 395,096**	**$ 689,312**	**$ 836,031**	**$ 1,166,081**	**$ 1,405,251**	**$ 1,891,534**	**$ 2,345,170**	**$ 2,760,935**	**$ 3,169,177**	**$ 3,618,041**
38	*Calculated Subordinate Debt Service Coverage*	**1.00**	**-**	**(0.51)**	**1.82**	**1.77**	**1.56**	**1.54**	**1.35**	**1.22**	**1.19**	**1.28**	**1.26**
39	**Total All-In Debt Service Coverage Test**												
40	Net Income Available for Subordinate Debt Service		**$ 1,371,297**	**$ 1,824,649**	**$ 2,229,047**	**$ 2,457,370**	**$ 2,792,482**	**$ 3,149,499**	**$ 3,529,866**	**$ 3,934,873**	**$ 4,365,879**	**$ 4,824,312**	**$ 5,311,672**
41	Total Senior-Lien Debt Service		1,718,594	2,027,813	975,614	980,200	976,201	983,835	978,837	1,071,763	1,071,763	755,809	755,809
42	Total Subordinate Debt Service		-	395,096	689,312	836,031	1,166,081	1,405,251	1,891,534	2,345,170	2,760,935	3,169,177	3,618,041
43	**Total Annual Debt Service**		**$ 1,718,594**	**$ 2,422,909**	**$ 1,664,926**	**$ 1,816,231**	**$ 2,142,282**	**$ 2,389,085**	**$ 2,870,371**	**$ 3,416,933**	**$ 3,832,698**	**$ 3,924,985**	**$ 4,373,849**
44	*Calculated All-In Debt Service Coverage*		**0.80**	**0.75**	**1.34**	**1.35**	**1.30**	**1.32**	**1.23**	**1.15**	**1.14**	**1.23**	**1.21**
45	**Cash Flow Test**												
46	Net Income Available For Debt Service		$ 1,371,297	$ 1,824,649	$ 2,229,047	$ 2,457,370	$ 2,792,482	$ 3,149,499	$ 3,529,866	$ 3,934,873	$ 4,365,879	$ 4,824,312	$ 5,311,672
47	Net Interfund Transfers (In - Out)		(1,017,658)	(1,017,658)	-	-	-	-	-	-	-	-	-
48	Net Debt Service Payment (Debt Service - Impact Fees Paym		(1,718,594)	(2,294,184)	(1,537,268)	(1,688,576)	(2,030,613)	(2,277,351)	(2,758,811)	(3,305,156)	(3,720,968)	(3,813,729)	(4,262,593)
49	Capital Outlay		(460,910)	(474,737)	(481,858)	(489,086)	(496,423)	(503,869)	(511,427)	(519,098)	(526,885)	(534,788)	(542,810)
50	**Net Cash Flow**		**$ (1,825,865)**	**$ (1,961,930)**	**$ 209,920**	**$ 279,707**	**$ 265,446**	**$ 368,279**	**$ 259,628**	**$ 110,619**	**$ 118,027**	**$ 475,795**	**$ 506,269**
51	**Unrestricted Reserve Fund Test**												
52	Balance At Beginning Of Fiscal Year		$ 8,881,985	$ 7,056,120	$ 3,717,762	$ 2,529,262	$ 2,639,401	$ 2,707,941	$ 2,778,652	$ 2,851,618	$ 2,926,930	$ 3,004,679	$ 3,084,962
53	Cash Flow Surplus/(Deficit)		-	-	209,920	279,707	265,446	368,279	259,628	110,619	118,027	475,795	506,269
54	Reserve Fund Balance Used For Cash Flow Deficit		(1,825,865)	(1,961,930)	-	-	-	-	-	-	-	-	-
55	Projects Designated To Be Paid With Cash		-	(25,000)	(25,750)	(26,523)	-	-	-	-	-	-	-
56	Projects Paid With Non Specified Funds		-	(1,351,429)	(1,372,670)	(143,045)	(196,907)	(297,569)	(186,661)	(35,307)	(40,278)	(395,512)	(423,351)
57	**Balance At End Of Fiscal Year**		**$ 7,056,120**	**$ 3,717,762**	**$ 2,529,262**	**$ 2,639,401**	**$ 2,707,941**	**$ 2,778,652**	**$ 2,851,618**	**$ 2,926,930**	**$ 3,004,679**	**$ 3,084,962**	**$ 3,167,880**
58	Minimum Working Capital Reserve Target		2,445,157	2,463,440	2,529,262	2,639,401	2,707,941	2,778,652	2,851,618	2,926,930	3,004,679	3,084,962	3,167,880
59	**Excess/(Deficiency) Of Working Capital To Target**		**$ 4,610,964**	**$ 1,254,322**	**$ -**	**$ -**	**$ -**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**

Capital Project Funding Summary **Schedule 9**

Final Capital Projects Funding Sources	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Sewer Impact Fees	$ -	$ 750,000	$ 1,793,805	$ 426,754	$ 434,321	$ 447,347	$ 460,725	$ 474,438	$ 488,493	$ 502,900	$ -
Revenue Fund	-	1,351,429	1,372,670	143,045	196,907	297,569	186,661	35,307	40,278	395,512	423,351
Subordinate (Srf) Debt Proceeds	-	-	1,912,896	2,595,724	5,839,147	4,231,308	8,603,207	8,025,597	7,355,599	7,222,489	7,941,177
Senior-Lien Debt Proceeds	-	-	-	-	-	-	-	-	-	-	-
Projects Designated To Be Paid With Cash	-	25,000	25,750	26,523	-	-	-	-	-	-	-
Total Projects Paid	**$ -**	**$ 2,126,429**	**$ 5,105,121**	**$ 3,192,046**	**$ 6,470,375**	**$ 4,976,223**	**$ 9,250,593**	**$ 8,535,342**	**$ 7,884,370**	**$ 8,120,901**	**$ 8,364,528**

Funding Summary by Fund **Schedule 10**

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Water Impact Fees											
Balance At Beginning Of Fiscal Year	$ 472,582	$ 575,195	$ 710,107	$ 692,235	$ 740,106	$ 806,547	$ 875,664	$ 947,773	$ 1,056,964	$ 1,170,390	$ 1,288,599
Annual Revenues	100,000	172,650	16,766	80,618	82,633	84,699	86,817	123,213	126,293	129,451	132,687
Less: Annual Expenses	-	-	-	-	-	-	-	-	-	-	-
Less: Payment Of Debt Service	-	(40,943)	(39,877)	(39,873)	(23,887)	(23,952)	(23,779)	(23,996)	(23,949)	(23,475)	(23,475)
Subtotal	$ 572,582	$ 706,902	$ 686,996	$ 732,980	$ 798,853	$ 867,295	$ 938,701	$ 1,046,990	$ 1,159,308	$ 1,276,365	$ 1,397,811
Less: Restricted Funds	-	-	-	-	-	-	-	-	-	-	-
Total Amount Available For Projects	572,582	706,902	686,996	732,980	798,853	867,295	938,701	1,046,990	1,159,308	1,276,365	1,397,811
Amount Paid For Projects	-	-	-	-	-	-	-	-	-	-	-
Subtotal	$ 572,582	$ 706,902	$ 686,996	$ 732,980	$ 798,853	$ 867,295	$ 938,701	$ 1,046,990	$ 1,159,308	$ 1,276,365	$ 1,397,811
Add Back: Restricted Funds	-	-	-	-	-	-	-	-	-	-	-
Plus: Interest Earnings	2,613	3,205	5,239	7,126	7,695	8,369	9,072	9,974	11,081	12,234	13,432
Less: Interest Allocated To Cash Flow	-	-	-	-	-	-	-	-	-	-	-
Balance At End Of Fiscal Year	**$ 575,195**	**$ 710,107**	**$ 692,235**	**$ 740,106**	**$ 806,547**	**$ 875,664**	**$ 947,773**	**$ 1,056,964**	**$ 1,170,390**	**$ 1,288,599**	**$ 1,411,243**
Sewer Impact Fees											
Balance At Beginning Of Fiscal Year	$ 1,240,474	$ 1,729,881	$ 1,384,667	$ 5,192	$ 26	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
Annual Revenues	482,000	484,800	496,920	509,343	522,077	535,128	548,507	562,219	576,275	590,682	605,449
Less: Annual Expenses	-	-	-	-	-	-	-	-	-	-	-
Less: Payment Of Debt Service	-	(87,782)	(87,782)	(87,781)	(87,782)	(87,782)	(87,782)	(87,782)	(87,782)	(87,782)	(87,782)
Subtotal	$ 1,722,474	$ 2,126,900	$ 1,793,805	$ 426,754	$ 434,321	$ 447,347	$ 460,725	$ 474,438	$ 488,493	$ 502,900	$ 517,667
Less: Restricted Funds	-	-	-	-	-	-	-	-	-	-	-
Total Amount Available For Projects	1,722,474	2,126,900	1,793,805	426,754	434,321	447,347	460,725	474,438	488,493	502,900	517,667
Amount Paid For Projects	-	(750,000)	(1,793,805)	(426,754)	(434,321)	(447,347)	(460,725)	(474,438)	(488,493)	(502,900)	-
Subtotal	$ 1,722,474	$ 1,376,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 517,667
Add Back: Restricted Funds	-	-	-	-	-	-	-	-	-	-	-
Plus: Interest Earnings	7,407	7,767	5,192	26	0	0	0	0	0	0	2,588
Less: Interest Allocated To Cash Flow	-	-	-	-	-	-	-	-	-	-	-
Balance At End Of Fiscal Year	**$ 1,729,881**	**$ 1,384,667**	**$ 5,192**	**$ 26**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 520,255**
Revenue Fund											
Balance At Beginning Of Fiscal Year	$ 8,881,985	$ 7,056,120	$ 3,717,762	$ 2,529,262	$ 2,639,401	$ 2,707,941	$ 2,778,652	$ 2,851,618	$ 2,926,930	$ 3,004,679	$ 3,084,962
Net Cash Flow	(1,825,865)	(1,961,930)	209,920	279,707	265,446	368,279	259,628	110,619	118,027	475,795	506,269
Less: Cash-Funded Capital Projects	-	(25,000)	(25,750)	(26,523)	-	-	-	-	-	-	-
Less: Payment Of Debt Service	-	-	-	-	-	-	-	-	-	-	-
Subtotal	$ 7,056,120	$ 5,069,191	$ 3,901,932	$ 2,782,447	$ 2,904,848	$ 3,076,220	$ 3,038,280	$ 2,962,238	$ 3,044,957	$ 3,480,474	$ 3,591,232
Less: Restricted Funds	(2,445,157)	(2,463,440)	(2,529,262)	(2,639,401)	(2,707,941)	(2,778,652)	(2,851,618)	(2,926,930)	(3,004,679)	(3,084,962)	(3,167,880)
Total Amount Available For Projects	4,610,964	2,605,751	1,372,670	143,045	196,907	297,569	186,661	35,307	40,278	395,512	423,351
Amount Paid For Projects	-	(1,351,429)	(1,372,670)	(143,045)	(196,907)	(297,569)	(186,661)	(35,307)	(40,278)	(395,512)	(423,351)
Subtotal	$ 4,610,964	$ 1,254,322	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Add Back: Restricted Funds	2,445,157	2,463,440	2,529,262	2,639,401	2,707,941	2,778,652	2,851,618	2,926,930	3,004,679	3,084,962	3,167,880
Plus: Interest Earnings	39,845	26,935	23,426	25,843	26,737	27,433	28,151	28,893	29,658	30,448	31,264
Less: Interest Allocated To Cash Flow	(39,845)	(26,935)	(23,426)	(25,843)	(26,737)	(27,433)	(28,151)	(28,893)	(29,658)	(30,448)	(31,264)
Balance At End Of Fiscal Year	**$ 7,056,120**	**$ 3,717,762**	**$ 2,529,262**	**$ 2,639,401**	**$ 2,707,941**	**$ 2,778,652**	**$ 2,851,618**	**$ 2,926,930**	**$ 3,004,679**	**$ 3,084,962**	**$ 3,167,880**
Restricted Reserves											
Balance At Beginning Of Fiscal Year	$ 1,315,686	$ 1,322,264	$ 1,328,876	$ 1,338,842	$ 1,352,231	$ 1,365,753	$ 1,379,411	$ 1,393,205	$ 1,407,137	$ 1,421,208	$ 1,435,420
Additional Funds:	-	-	-	-	-	-	-	-	-	-	-
Debt Service Reserve On New Debt	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal	$ 1,315,686	$ 1,322,264	$ 1,328,876	$ 1,338,842	$ 1,352,231	$ 1,365,753	$ 1,379,411	$ 1,393,205	$ 1,407,137	$ 1,421,208	$ 1,435,420
Plus: Interest Earnings	6,578	6,611	9,967	13,388	13,522	13,658	13,794	13,932	14,071	14,212	14,354
Balance At End Of Fiscal Year	**$ 1,322,264**	**$ 1,328,876**	**$ 1,338,842**	**$ 1,352,231**	**$ 1,365,753**	**$ 1,379,411**	**$ 1,393,205**	**$ 1,407,137**	**$ 1,421,208**	**$ 1,435,420**	**$ 1,449,774**

Subordinate Borrowing Projections **Schedule 11**

			FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Term (Years)			20	20	20	20	20	20	20	20	20	20	20
Interest Rate			1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Sources of Funds													
Par Amount			$ -	$ -	$ 1,951,154	$ 2,647,639	$ 5,955,930	$ 4,315,934	$ 8,775,271	$ 8,186,108	$ 7,502,711	$ 7,366,939	$ 8,100,000
Uses of Funds													
Proceeds			$ -	$ -	$ 1,912,896	$ 2,595,724	$ 5,839,147	$ 4,231,308	$ 8,603,207	$ 8,025,597	$ 7,355,599	$ 7,222,489	$ 7,941,177
Cost of Issuance	0.00%	of Par	-	-	-	-	-	-	-	-	-	-	-
Loan Repayment Res.	0.00%	of Capital Cost	-	-	-	-	-	-	-	-	-	-	-
Loan Service Fee	2.00%	of Capital Cost	-	-	38,258	51,914	116,783	84,626	172,064	160,512	147,112	144,450	158,824
Capitalized Interest	0	Years Interest	-	-	-	-	-	-	-	-	-	-	-
Debt Service Reserve	0	Year(s) of Debt Service	-	-	-	-	-	-	-	-	-	-	-
Other Costs			-	-	-	-	-	-	-	-	-	-	-
Total Uses			$ -	$ -	$ 1,951,154	$ 2,647,639	$ 5,955,930	$ 4,315,934	$ 8,775,271	$ 8,186,108	$ 7,502,711	$ 7,366,939	$ 8,100,000
1 Year Interest			$ -	$ -	$ 19,512	$ 26,476	$ 59,559	$ 43,159	$ 87,753	$ 81,861	$ 75,027	$ 73,669	$ 81,000
Annual Debt Service			$ -	$ -	$ 108,124	$ 146,720	$ 330,050	$ 239,169	$ 486,284	$ 453,636	$ 415,765	$ 408,241	$ 448,864
Total Debt Service			$ -	$ -	$ 2,162,477	$ 2,934,395	$ 6,600,995	$ 4,783,376	$ 9,725,688	$ 9,072,716	$ 8,315,302	$ 8,164,825	$ 8,977,281
Cumulative New Annual Subordinate Debt Service			**$ -**	**$ -**	**$ 108,124**	**$ 254,844**	**$ 584,893**	**$ 824,062**	**$ 1,310,347**	**$ 1,763,982**	**$ 2,179,747**	**$ 2,587,989**	**$ 3,036,853**

EXHIBIT F

ADVERTISMENT FOR NOTICE OF PUBLIC HEARING

EXHIBIT G

AUTHORIZATION FROM CITY BY RESOLUTION