

RESOLUTION NO. 2019 - 75

"A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF ST. JOHNS COUNTY, FLORIDA, RELATING TO THE STATE REVOLVING FUND LOAN PROGRAM; MAKING FINDINGS; ADOPTING THE FACILITY PLAN FOR THE NORTHEAST GROUND STORAGE TANK AND HIGH SERVICE PUMPING STATION AND AN EXPANSION OF THE NORTHWEST WATER TREATMENT PLANT PROJECTS; AUTHORIZING THE SUBMITTAL OF THE ADOPTED FACILITY PLAN TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION; AND PROVIDING AN EFFECTIVE DATE."

WHEREAS, the Board of County Commissioners of St. Johns County has determined that the construction of the improvement program projects, as set forth in the Facility Planning Document is in the best interest and welfare of its citizens; and

WHEREAS, the Board of County Commissioners of St. Johns County examined the Facility Planning Document titled, "Northwest and Northeast Water Treatment Plants Drinking Water Facility Plan" dated February 2019, prepared by CDM Smith and discussed the results and recommendations of the report at a public hearing on March 19th, 2019; and

WHEREAS, the Board of County Commissioners of St. Johns County examined the Facility Planning Document and the Business Plan, dated February 2019, prepared by CDM Smith, and discussed the results of the report at a public hearing on March 19th, 2019; and

WHEREAS, County Staff has requested that the Board of County Commissioners of St. Johns County approve and adopt the Facility Planning Document including the Business Plan in accordance with the SRF requirements for a loan; and

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF ST. JOHNS COUNTY, FLORIDA:

SECTION I. The above Recitals are hereby incorporated into the body of this Resolution, and are adopted as Findings of Fact.

SECTION II. The Board of County Commissioners of St. Johns County, Florida, hereby adopts the Facility Planning Document and the Business Plan associated with the Northeast Ground Storage Tank and High Service Pumping Station and an expansion of the Northwest Water Treatment Plant projects as the planning document for the Florida Department of Environmental Protection.

SECTION III. All resolutions or part of Resolutions in conflict with any of the provisions of this Resolution are hereby repealed.

SECTION IV. To the extent that there are typographical and/or administrative errors and/or omissions that do not change the tone, tenor or context of this Resolution, then this Resolution may be revised without subsequent approval of the Board of County Commissioners of St. Johns County.

SECTION V. This Resolution shall become effective immediately upon its passage and adoption.

PASSED and ADOPTED this 19 Day of March [month], 2019 [year].

ATTEST HUNTER S. CONRAD, CLERK

Hunter S. Conrad

Deputy Clerk of Courts

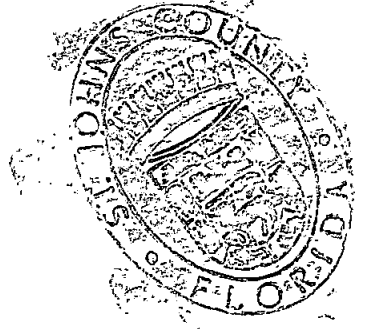
APPROVED AS TO FORM AND LEGALITY

Regina L. K...
County Attorney, Deputy

Paul M. Waldron

Chairman of the Board of County Commissioners

RENDITION DATE 3/21/19



**NOTICE OF A PUBLIC HEARING
TO RECEIVE PUBLIC INPUT REGARDING THE FACILITY PLAN AND
FUNDING OF THE NORTHEAST GROUND STORAGE TANK AND HIGH SERVICE PUMPING
STATION AND THE NORTHWEST WATER TREATMENT PLANT EXPANSION PROJECTS**

NOTICE IS HEREBY GIVEN that the Board of County Commissioners (BOCC) of St. Johns County, Florida, will hold a public hearing at their regularly scheduled County Commission meeting at 9:00 A. M. on Tuesday, March 19th, 2019 in the County Auditorium, 500 San Sebastian View, St. Augustine, Florida. The purpose of this hearing is to discuss and receive input on the Facility Plan (Plan) for the Northeast Ground Storage Tank and High Service Pumping Station and an expansion of the Northwest Water Treatment Plant Projects (Projects) prepared by CDM Smith. The Plan addresses the need for the Projects, alternatives considered, recommended alternatives, environmental impacts, and the financial impact of the Projects.

It is anticipated that the construction costs of the Projects will be funded by the State of Florida Revolving Loan Program (SRF). Cities, Counties, authorities and special districts responsible for water, wastewater, and stormwater are eligible for low-interest SRF loans.

A copy of the Plan and related documents including the Business Plan will be available for review in the office of 1205 SR16, St. Augustine, FL 32084, between the weekday hours of 8:00 am and 4:00pm. All residents and concerned persons are encouraged to attend and express their views to the BOCC or to send written comments to the Clerk of Court. Written comments will be distributed to the BOCC.

In accordance with the Americans with Disabilities Act, persons with disabilities needing assistance to participate in any of these proceedings should contact the Clerk of Court at 904.819.3600 at least 48 hours in advance of the meeting.

William Young
Director of Utilities
St. Johns County, FL

_____, 2019

Angela Knecht
Program Administrator
State Revolving Fund Management
3900 Commonwealth Blvd., Mail Station 3505
Tallahassee, Florida 32399-3000

Re: Northwest Water Treatment Facilities and NE Pumping Station/Proposed St. Johns County
2019 State Revolving Fund Loan

Dear Ms. Knecht:

I am the duly appointed County Attorney for St. Johns County, Florida. I have been advised that St. Johns County proposes to borrow approximately \$10,837,200, including capitalized interest, from the State Revolving Loan Program for construction of the Northeast Ground Storage Tank and High Service Pumping Station and an expansion of the Northwest Water Treatment Plant, for St. Johns County's utility system (the "System"). As part of the State Revolving Loan Program application process, I have been asked to address three matters relating to the proposed loan. In support of the application process, I hereby advise you of the following:

1. Pursuant to Resolution No. 2019 - ____ (the "Resolution"), St. Johns County has determined that the loan will be secured by the net water and sewer revenues of the System and legally available System connection fees. St. Johns County is lawfully empowered to pledge said net revenues and connection fees for the payment of the loan.
2. Pursuant to the Resolution, the pledge of said net revenues and connection fees will be subordinate to the pledge thereon in favor of all St. Johns County utility system revenue bonds and other obligations listed in Exhibit "A" attached to the Resolution, together with any additional bonds or obligations that are later issued on a parity therewith.
3. Under the St. Johns County rate ordinance relating to the System, all rates, deposits, charges, fees and costs established or contemplated by said ordinance may be modified or established at any time by resolution of the Board of County Commissioners of St. Johns County.

This letter is provided solely for your benefit in connection with the loan application process described above and may not be relied upon by any other persons or for any other purpose.

Sincerely,

Patrick F. McCormack
County Attorney
St. Johns County, Florida

DRINKING WATER STATE REVOLVING FUND BUSINESS PLAN

Sponsor Name: St. Johns County System Population: 94,583
 DWSRF Project #: _____ PWS ID#: 2554471
 Contact Person and Title: James Galley, MBA, CFP Telephone: 904-209-2634
 Mailing Address: 1205 State Road 16 City: St. Augustine State: FL Zip: 32084
 Contact for Finance Plan (if different): Diane Kemp Telephone: (941) 587-6652
 Mailing Address: 1064 N. Tamiami TRL, #1514 City: Sarasota State: FL Zip: 34236
 e-mail: kempdc@cdmsmith.com Fax: _____
 Source Type: Ground Water Purchase Water
 Surface Water Surface/Ground Combined

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

FINANCIAL

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

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

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

The revenues being dedicated to repayment of the DWSRF loan are:	Net water & sewer revenues + legally available connection fees
What is the frequency of water system billing?	monthly
How often are system rates reviewed for adequacy?	Every 3 to 5 years
When was the last time rates were reviewed?	2016
What resources and guidance does the water system use for setting water user rates, fees or charges?	Consultant
What is your water system bond rating?	S&P AA+; Moody's Aa2
Is a rate increase necessary as a result of this project?	No
What is the Median Household Income (MHI) for the entire system?	73,640

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

Acquire privately held land?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Acquire land held by another public water system entity?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Enter into inter-local or inter-project sponsoring agency's agreements?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Does the system have an annual budget with a separate reserve account for equipment replacement and/or capital improvement?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Does the system have a capital improvement plan? How many years does it cover? <u>5</u>	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Does the system have a governing board of directors?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>

Does the water system employ the services of a professional engineer?
 Are there procedures for billing and collection?
 Does the system have audited financial statements?
 Are there standard purchasing procedures that provide controls over expenditures?
 What year will construction be completed and repayments begin (for the first project)?
 What is the estimated cost of your SRF project?

Yes No
 Yes No
 Yes No
 Yes No

2020
 7,166,800 + 3,326,300

Please attach a copy of the user charge ordinance.

Table 1
WATER RATE REVENUE SUMMARY

		LAST YR. 2018	YEAR 1 (Current Year)	YEAR 2 2020	YEAR 3 SRF 2021	YEAR 4 2022
1.	Number of Residential Customers	41,851	43,525	45,266	47,077	48,960
2.	Number of New Residential Service Connections	1,635	1,674	1,741	1,811	1,883
3.	Annual Residential Water Sales (M Gallons)	3,485.6	3,625	3,770	3,920.8	4,077.7
4.	Avg Daily Residential Usage (Gal/day) (Line 3 divided by line 1 divided by 365)	228	228	228	228	228
5.	Annual Residential Water Sales (\$)	20,122,428	20,927,325	21,764,418	22,634,994	23,540,394
6.	Average Annual Residential Bill (line 5 divided by line 1)	480.81	480.81	480.81	480.81	480.81
7.	Annual Residential Bill Amount Uncollected	57,017	59,298	61,670	64,137	66,702
8.	Total Residential Rates Collected (Line 5 minus line 7)	20,065,411	20,868,027	21,702,748	22,570,857	23,473,692
9.	Impact and Connection Fees per Residential Service	2,104.7	2,138	2,138	2,138	2,138
10.	Total Residential Impact and Connection Fees (Line 2 times line 9)	3,441,196	3,578,844	3,721,998	3,870,878	4,025,713
11.	Number of Commercial Customers	2,601	2,705	2,813.2	2,925.8	3,042.8
12.	Number of New Commercial Service Connections	55	104	108	113	117
13.	Annual Commercial Water Sales (M Gallons)	71.6	74.4	77.4	80.5	83.7
14.	Annual Commercial Water Sales (\$)	3,979,275	4,138,446	4,303,984	4,476,143	4,655,189
15.	Annual Commercial Bill Amount Uncollected	62,320	64,813	67,405	70,101	72,905
16.	Total Commercial/Industrial Bills Collected (Line 14 minus line 15)	3,916,955	4,073,633	4,236,579	4,406,042	4,582,284
17.	Impact and Connection Fees for Commercial Service	12,502	6,876	6,886	6,886	6,875
18.	Total Commercial Impact and Connection Fees (Line 12 times line 17)	687,599	715,103	743,707	773,455	804,394
19.	Miscellaneous Revenue	4,735,369	4,924,784	5,121,775	5,326,646	5,539,712
20.	Total Projected Water Revenue (Line 8+10+16+18+19)	32,846,530	34,160,391	35,526,807	36,947,878	38,425,795

* Large meters should be checked annually for accuracy.

Instructions for Completing Table 1

Identify the source of the above information and explain methods used to develop the projections (*Attachment # 1*). Include an explanation of any revenue and expense growth or other adjustments; for example, any rate increases, service growth, inflation adjustments, expense adjustments reflecting the cost of operating additional facilities, or other considerations. In completing this table assume through year 3 that no SRF project is constructed. In the “SRF Project” column enter the numbers that reflect the first year in which the SRF loan will begin repayments. When completing the numbers in this column assume that the SRF project will be financed using 100% loan funding.

- Line 1 Include the actual number of customers for last year and year 1 (current year). The numbers in years 2 and 3 should reflect an estimated number of residential customers, adjusted for growth. In the SRF column include the expected number of customers based on constructing your SRF project.
- Line 2 This line is a subset of line 1. It should reflect the number of new customers for that year.
- Line 3 This line is your total volume (gallons) of water used by your residential customers. Use actual gallons sold for Last Year and do an estimate for the current year based on total to-date. To determine Year 2 and 3 water sales, first calculate the average daily residential usage in gallons per day on line 4. The estimated water sales for Year 2 and 3 can now be determined by multiplying line 4 by line 1.
- Line 4 This is the average daily residential usage (gallons per day) by a single residential customer. To get this number divide line 3 by line 1. Use Last Year and Current Year to project usage for Year 2 and 3. Usage should be fairly constant.
- Line 5 This is your total residential water sales in dollars. Year 2 and 3 water sales should reflect any increases in rates (i.e. due to inflation). In the SRF column list what the sales would need to be if the SRF project was a 100% loan (to meet all expenses).
- Line 6 To obtain the average annual residential bill, divide line 5 by line 1.
- Line 7 This is the amount of the uncollected residential bills outstanding for the year.
- Line 8 Line 5 minus line 7.
- Line 9 This line is the impact and connection fee for new residential service.
- Line 10 Multiply line 2 by line 9.
- Line 11 Include the actual number of customers for last year and year 1 (current year). The numbers in years 2 and 3 should reflect an estimated number of commercial customers, adjusted for growth. In the SRF column include the expected number of customers based on constructing your SRF project.

- Line 12 This line is a subset of line 11. It should reflect the number of new customers that will be charged an impact or connection fee.
- Line 13 This line is your total volume (gallons) of water used by your commercial accounts.
- Line 14 This is your total commercial water sales in dollars. Year 2 and 3 water sales should reflect any increases in rates (i.e. due to inflation). In the SRF column list what the sales would need to be if the SRF project was a 100% loan (to meet all expenses).
- Line 15 This is the amount of the uncollected residential bills outstanding for the year.
- Line 16 Total revenue collected for commercial accounts (line 14 minus line 15).
- Line 17 This line is the impact and connection fee for new commercial/industrial accounts.
- Line 18 Multiply line 12 by line 17:
- Line 19 Total revenue for bulk water sales to consecutive systems.
- Line 20 Total of line 8+10+16+18+19.

TABLE 2
INCOME, EXPENSES, AND CASH FLOW STATEMENT

Income, Expense, and Cash Flow Statement		Last Yr. 2018	Year 1 2019	Year 2 2020	Year 3 2021	SRF Project 2022
OPERATING REVENUES						
1	Water & Sewer Rates	46,903,729	48,600,467	50,544,486	52,566,265	54,668,916
2	Fire Protection					
3	Fees and Services	3,532,130	3,638,094	3,747,237	3,859,654	3,975,444
4	Interest Income	606,649	710,000	738,400	767,900	798,700
5a	Other – Special Assessment	31,279				
5b	Other –		68,897	71,653	74,519	77,500
6	Total (Lines 1 - 5)	51,073,787	53,017,458	55,101,776	57,268,338	59,520,560
NON-OPERATING REVENUES						
7	Interest Income					
8	Interfund Transfer					
9	Proceeds from the Sale of Assets	(45,286)				
10	Capital Contributions - Other					
11	Construction Grants		3,319,810			
12	Proceeds from Borrowing					
13	Equity (Unit Conn. Fees)	8,050,890	5,727,300	5,956,392	6,194,648	6,442,434
14	Other - Hastings Note Forgiveness	237,000				
15	Total (Lines 7 - 14)	8,242,604	9,047,110	5,956,392	6,194,648	6,442,434
OPERATING EXPENSES						
OPERATION AND MAINTENANCE						
16	Salaries (Operators)	5,154,458	6,003,760	6,213,892	6,431,378	6,656,476
17	Benefits	2,233,720	2,687,958	2,782,037	2,879,408	2,980,187
18	Utilities	2,309,806	2,831,004	2,930,089	3,032,642	3,138,784
19	Chemicals & Treatment	2,342,676	2,552,325	2,641,656	2,734,114	2,829,808
20	Adjust to Draft CAFR	1,425,058				
21	Materials, Supplies & Parts	2,058,220	2,294,635	2,374,947	2,458,070	2,544,103
22	Equipment & Vehicles		693,300	717,566	742,680	768,674
23	Purchased Water Costs					
24	Outside Services –	3,220,156	3,837,249	3,971,553	4,110,557	4,254,427
25	Other –	349,143	455,666	471,614	488,121	505,205
26	Total (Lines 16 – 25)	19,093,237	21,355,897	22,103,354	22,876,970	23,677,664

	ADMINISTRATIVE					
27	Salaries and Benefits	4,715,909	5,234,640	5,417,852	5,607,477	5,803,739
28	Building Overhead	245,433	226,076	233,989	242,178	250,655
29	Office Supplies & Postage	134,946	187,398	193,957	200,745	207,772
30	Insurance	76,083	81,491	84,343	87,295	90,351
31	Indirect	3,043,805	3,146,806	3,256,944	3,370,937	3,488,920
32	Accounting and Legal	485,356	514,410	532,414	551,049	570,336
33	A/E & Professional Services	809,329	1,115,739	1,154,790	1,195,208	1,237,040
34	Other -	47,387	243,162	251,673	260,481	269,598
35	TOTAL (Lines 27 - 34)	9,558,248	10,749,722	11,125,962	11,515,370	11,918,411
36	Net Operating Income (Line 6 minus 26 minus 35)	22,422,302	20,911,839	21,872,460	22,875,998	23,924,485
	NON-OPERATING EXPENSES					
37	Debt-Repayment – Principal and Interest-Revenue Bonds	12,039,489	11,997,767	11,977,551	11,963,751	11,950,751
38	Capital Improvements – Connection Fee Fund	3,768,952	8,000,000	10,400,000	3,500,000	5,250,000
39	Interfund Transfers					
40	To General Fund					
41	CIP - Replacement Fund	4,225,690	2,615,000	2,405,000	2,655,000	2,405,000
42	Existing SRF Principal & Int.	972,538	972,477	972,415	972,351	972,285
43	Depreciation Expenses (If money is set aside)					
44						
45	TOTAL (Lines 37 + 44)	21,006,669	23,585,244	25,754,966	19,091,102	20,578,036
46	Net Non-Operating Income (Line 15 minus Line 45)	(12,764,065)	(14,538,134)	(19,798,574)	(12,896,454)	(14,135,602)
47	Net Income Before New Debt (Lines 36 + 46)	9,658,237	6,373,705	2,073,886	9,979,544	9,788,883
	New Debt Service					
48	Revenue Bonds				488,677	488,677
49	SRF				2,884,200	3,320,900
50	TOTAL (Lines 48 + 49)				3,372,877	3,809,577
51	Net Income After New Debt (Line 47 minus 50)	9,658,237	3,441,361	(967,771)	6,606,667	5,979,306

Instructions for Completing Table 2

Identify the source of the above information and explain methods used to develop the projections (*Attachment # 1*). Include an explanation of any revenue and expense growth or other adjustments; for example, any rate increases, service growth, inflation adjustments, expense adjustments reflecting the cost of operating additional facilities, or other considerations.

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

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

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

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

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

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

Line 5 If used, please describe.

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

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

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

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

- Line 19 Chemicals and treatment is intended to cover the cost of all chemicals used in the treatment of your water.
- Line 20 Monitoring, includes all water monitoring costs incurred by the system. This should include both in-house monitoring and analysis costs as well as outside laboratory costs.
- Line 21 Materials, supplies, and parts means all materials and supplies used in the O&M of the water system and in providing and delivering the water to the customer. Include any repairs or parts needed in producing and delivering water. This would include grease, oil, and minor repairs to equipment. This should not include materials for administrative purposes such as postage, copying or copy machine supplies, billing forms, or letterhead.
- Line 22 Transportation is intended to include all expenses related to trucks, automobiles, construction equipment, and other vehicle expense used in producing and delivering water to the customer.
- Line 23 Include the cost of purchasing water. Use only if a consecutive system.

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

- Lines 27 Salaries and Benefits include all compensation to employees of your system in which the work is related to the administration of the system, such as officers, directors, secretarial, and meter reading salaries and benefits. This account should not include compensation of operators. If an employee performs both operation and meter reading a percentage of their salary should appear under the appropriate topic. For example, if an operator reads meters 25% of the time, $\frac{3}{4}$ of their salary should be shown on line 16 and $\frac{1}{4}$ of their salary on line 27.
- Line 28 Overhead associated with the building itself such as, mortgage payment, insurance, taxes, maintenance, etc.
- Line 29 Office supplies and postage includes all materials and supplies in administration of the water system. This includes office supplies, postage, copier charges, and paper.
- Line 30 Insurance (Vehicles, Liability, Workers' Compensation) includes all insurance costs associated with the coverage for the vehicles, general liability, workers' compensation insurance, and other insurance costs related to the operation and administration of the system.
- Line 31 Customer billing and collection should include all expenses specific to this function such as, special billing forms or software.
- Lines 32 Accounting and legal expenses includes all salaries and wages with legal and accounting functions for the system even if they are outside services.

- Line 33 A/E and professional services means all engineering and other professional services expenses associated with water system planning and design requirements.
- Line 34 Other means expenses such as employee training and water certification requirements (classes, registration fees, travel, etc.), public relations campaigns and public notifications, etc. Also include any recurring expenses that did not fit into any of the above line items.

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

- Lines 37-42 Expenses that are involved in operating or administering the water system that were not considered in the totals appearing on lines 26 and 35 should be shown in these items, modify if necessary.
- Line 38 Capital improvements include facility and non-facility costs related to: 1) Meeting growth requirements or improving your system's infrastructure to provide better service and reliability to existing customers, 2) replacing or renovating existing facilities, or 3) to ensure compliance with drinking water regulations.
- Line 39-42 Identify any transfer of funds used to offsets other non-water system related capital expenditures. These lines represent some possible categories, modify if needed.
- Line 43 Depreciation expense only applies to systems which are currently depreciating investments made in the past (recovery of previously invested funds). Include amounts on this line only if money is actually set aside.
- Line 44 Include any recurring non-operating expenses that did not fit into any of the above line items.

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

- Lines 48-49 Include any incurred taxes.

SCHEDULE OF PRIOR, PARITY, AND PROJECTED LIENS

List annual debt service beginning two years before the anticipated loan agreement date and continuing at least fifteen fiscal years. Include all existing and projected liens on the system. Use additional pages as necessary.

Identify Each Obligation		Coverage	Insured?
#1	Series 1991A	1.20	
#2	Series 2013 A&B	1.20	
#3	Series 2014	1.20	
#4	Series 2016	1.20	
#5	JCI Note A&B	1.00	

Annual Debt Service (Principal Plus Interest)

Fiscal Year	#1	#2	#3	#4	#5	Total Debt Service	Total Debt Service Incl. Coverage.
2018	\$3,625,000	\$1,760,438	\$2,265,850	\$4,350,263	\$37,938	\$12,039,489	\$14,439,798
2019	\$3,625,000	\$1,749,788	\$2,264,250	\$4,347,063	\$11,666	\$11,997,767	\$14,394,987
2020	\$3,625,000	\$1,745,238	\$2,261,250	\$4,346,063		\$11,977,551	\$14,373,061
2021	\$3,625,000	\$1,724,438	\$2,267,000	\$4,347,313		\$11,963,751	\$14,356,501
2022		\$5,067,188	\$2,260,000	\$4,623,563		\$11,950,751	\$14,340,901
2023		\$5,076,838	\$2,265,750	\$4,635,600		\$11,978,188	\$14,373,826
2024		\$5,092,238	\$2,263,500	\$4,625,100		\$11,980,838	\$14,377,006
2025		\$5,101,638	\$2,263,500	\$4,628,850		\$11,993,988	\$14,392,786
2026		\$5,110,638	\$2,260,500	\$4,640,850		\$12,011,988	\$14,414,386
2027		\$5,758,138	\$2,264,500	\$4,120,350		\$12,142,988	\$14,571,586
2028		\$5,764,138	\$2,265,000	\$4,113,600		\$12,142,738	\$14,571,286
2029		\$5,768,638	\$2,262,000	\$4,120,850		\$12,151,488	\$14,581,786
2030		\$5,761,638	\$2,265,500	\$4,121,100		\$12,148,238	\$14,591,686
2031		\$5,773,638	\$2,265,000	\$4,114,350		\$12,152,988	\$14,583,586
2032		\$5,773,638	\$2,260,500	\$4,125,600		\$12,159,738	\$14,591,686
2033		\$5,752,138	\$2,267,000	\$4,111,000		\$12,130,138	\$14,556,166
2034		\$5,776,175	\$2,268,750	\$4,118,250		\$12,163,175	\$14,595,810
2035		\$1,778,750	\$2,265,750	\$4,121,750		\$8,166,250	\$9,799,500
2036		\$1,773,500	\$2,268,000	\$2,436,250		\$6,477,750	\$7,773,300
2037		\$1,775,500		\$2,430,750		\$4,206,250	\$5,047,500
2038		\$1,774,250				\$1,774,250	\$2,129,100
2039		\$1,774,750				\$1,774,750	\$2,129,700
2040		\$1,776,750				\$1,776,750	\$2,132,100

2018	\$18,780	\$26,430				\$12,084,699	\$14,485,008
2019	\$18,780	\$26,430				\$12,042,977	\$14,440,197
2020	\$18,780	\$26,430				\$12,022,761	\$14,418,271
2021	\$18,780	\$26,430				\$12,008,961	\$14,401,711
2022	\$18,780	\$26,430				\$11,995,961	\$14,386,111
2023	\$18,780	\$26,430				\$12,023,398	\$14,419,036
2024	\$18,780	\$26,430				\$12,026,048	\$14,422,216
2025	\$18,780	\$26,430				\$12,039,198	\$14,437,996
2026	\$18,780	\$26,430				\$12,057,198	\$14,459,596
2027	\$9,390	\$13,205				\$12,165,583	\$14,594,181
2028						\$12,142,738	\$14,571,286
2029						\$12,151,488	\$14,581,786
2030						\$12,148,238	\$14,591,686
2031						\$12,152,988	\$14,583,586
2032						\$12,159,738	\$14,591,686
2033						\$12,130,138	\$14,556,166
2034						\$12,163,175	\$14,595,810
2035						\$8,166,250	\$9,799,500
2036						\$6,477,750	\$7,773,300
2037						\$4,206,250	\$5,047,500
2038						\$1,774,250	\$2,129,100
2039						\$1,774,750	\$2,129,700
2040						\$1,776,750	\$2,132,100

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

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

	<u>FY2018</u>	<u>FY2019</u>	<u>FY2020</u>	<u>FY2021</u>	<u>FY2022</u>
(a) Net Operating Revenues. (Table 2 line 36)	<u>22,422,302</u>	<u>20,911,839</u>	<u>21,872,460</u>	<u>22,875,998</u>	<u>23,924,485</u>
(b) Debt Service (including required coverage) pledged to all prior, parity, or projected projects (last column of Table 3).	<u>15,603,427</u>	<u>15,558,546</u>	<u>15,536,548</u>	<u>19,423,157</u>	<u>19,909,686</u>
(c) Net Revenue (= a – b)	<u>6,818,875</u>	<u>5,353,293</u>	<u>6,335,912</u>	<u>3,452,841</u>	<u>4,014,799</u>

(d) Attach audited annual financial report(s), or pages thereof, and any other documentation necessary to support the above information. Include any notes or comments from the audit reports regarding compliance with covenants of debt obligations having a prior or parity lien on the revenues pledged for repayment of the SRF loan. (*Attachment # 2*)

- (e) Attach worksheets reconciling this page with the appropriate financial statements (for example, backing out depreciation and interest payments from operating expenses). (Attachment # 3)
- (f) If the net revenues were not sufficient to satisfy the debt service and coverage requirement, please explain what corrective action was taken. (Attachment #)
- (k) Identify the source of the above information and explain methods used to develop the projections (Attachment # 1). Include an explanation of any revenue and expense growth or other adjustments; for example, any rate increases, service growth, inflation adjustments, expense adjustments reflecting the cost of operating additional facilities, or other considerations.

LIST OF ATTACHMENTS (use additional sheets if necessary)

Attachment	Number
Source of information & methods for projections	1
Unaudited CAFR 2018	2
Reconciliation of Actual Revenue and Expenses with CAFR 2018	3

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

- System has current and accurate data showing average and peak gpd used Yes No
- System's capacity exceeds peak demand by more than 20% (Percentage - %) Yes No
- System can meet peak demand without pumping at peak capacity for extended periods. Yes No
- System has an emergency plan in place to meet system demand during a shortage (natural disaster or largest pump/well out, etc.) Yes No
- System has accurate records indicating types and percentage of customers use: Residential 95.05% Commercial 1.99% Industrial 2.94% Dedicated Irrigation Meter .02% Yes No
- System has comprehensive water loss program that compares amount of water produced (plant meter) with total delivered through metered and unmetered service connections (system's unaccounted for water is 6%) Yes No

Purchase Water Systems NA

System has a written agreement with the supplier that:

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

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

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

- System is evaluating (or has evaluated) changes needed to meet requirements in the Disinfection By Products Rule 1 2 3 4 5
- Some planned modifications are: _____

Ground Water System NA

- A minimum of two sources of groundwater are provided Yes No
- Source water protection area provides a minimum 500 foot radius around each drinking water well Yes No
- Groundwater source capacity equals or exceeds the design maximum day demand and equals or exceeds the design average day demand with the largest producing well out of service Yes No
- System monitors raw water quality to determine appropriate treatment 1 2 3 4 5

- System's well(s) have; air/vacuum relief valve, check valve, blow-off, by-pass, meter, working sanitary seal, construction/maintenance records and are properly vented 1 2 3 4 5
- System routinely monitors drawdown 1 2 3 4 5

Disinfection

- System has adequate contact time of 16 minutes following disinfection and before the first user in the distribution system Yes No
- Disinfection equipment is regularly inspected and maintained Yes No
- A chlorine residual is maintained throughout the distribution system 1 2 3 4 5

Distribution System

- System has accurate information, including age, for pipe materials that currently make up the distribution system 1 2 3 4 5
- Water mains providing fire protection are a minimum of 6-inches in diameter Yes No
- System is free of severe "water hammer" problems 1 2 3 4 5
- System tracks ranges of operating pressure, especially during peak demand 1 2 3 4 5
- System maintains a minimum operating pressure of 20 psi Yes No
- Normal operating pressure is kept between 40 and 100 psi 1 2 3 4 5
- System has a routine leak detection program that uses (type of equipment)N/A, repairs identified leaks quickly, and keeps water loss in the distribution system below ____%. Average number of leak repairs per year is 18 1 2 3 4 5
- System has a cross connection control program in place that addresses: evaluation of each service connection, installation of specified backflow preventer, training, record keeping, annual testing, and education 1 2 3 4 5
- System is working to eliminate dead ends in the mains 1 2 3 4 5
- System has a flushing program that operates 4 times a year 1 2 3 4 5
- System has a map showing the bacteriological, lead and copper, and TTHM (if applicable) sampling points 1 2 3 4 5
- System has accurate "as-built" maps of the distribution system posted that show: location of sources (or intakes), size of mains, dead end mains, valves, curb stops on service lines, and proximity of mains to other utilities (gas, electric, etc.) 1 2 3 4 5
- System has a routine valve exercise program 1 2 3 4 5
- All customers are metered and all meters are routinely calibrated 1 2 3 4 5
- Customer complaints are relatively infrequent 1 2 3 4 5
List number of complaints in the past year: 63.

Pumping

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

Storage

- System is able to meet peak demand without the high service pumps running at peak capacity for extended period 1 2 3 4 5
- System has adequate reserve capacity for fire protection. 1 2 3 4 5
Total storage capacity of the system is 13.3 Mil gals
- System's 14 storage tanks receive routine inspection (every 3-5 years) to determine and schedule any needed maintenance 1 2 3 4 5

- All storage tanks are equipped with an altitude valve to prevent overflowing and are sized appropriately to ensure adequate turnover and no loss of water quality
- Storage tanks are covered and the surrounding areas are fenced
- Storage tanks have a drain valve and an entry hatch to allow access for cleaning and painting of the interior of the tank

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

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

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

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

Allen Klipstine (DWA 0006938), Dan Nowaczyk (DWA 0014181), Hugh Mabry (DWC 0016883), Jeff Hatcher (DWC 0022838), Nathan Mitrosky (DWA 0013980), John Bennett (DWC 0025656), Brian Howard (DWA 0019005), Charles Badger (DWB 0020962), Joseph Shaughnessy (DWC 0023556), Mark Werling (DWC 0025258), Marc Rosarius (DWB 0014955)

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

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

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> standard specifications | <input checked="" type="checkbox"/> connection policies | <input checked="" type="checkbox"/> main extension policies |
| <input checked="" type="checkbox"/> bacteriological sampling plan | <input checked="" type="checkbox"/> emergency operation plan | <input checked="" type="checkbox"/> Lead & Copper sample plan |
| <input checked="" type="checkbox"/> cross connection control plan | <input type="checkbox"/> record management plan | <input checked="" type="checkbox"/> TTHM |
| <input checked="" type="checkbox"/> general rules | <input checked="" type="checkbox"/> disconnection policy | <input checked="" type="checkbox"/> public education & outreach |
| <input checked="" type="checkbox"/> disaster response plan | <input checked="" type="checkbox"/> personnel policy | <input checked="" type="checkbox"/> Safety/Risk Management Policy |

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

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

Introduction and Overview

- | | | |
|---|---|--|
| <input checked="" type="checkbox"/> System name | <input checked="" type="checkbox"/> System ID# | <input checked="" type="checkbox"/> location |
| <input checked="" type="checkbox"/> design flow capacity | <input checked="" type="checkbox"/> type of treatment | <input checked="" type="checkbox"/> water source |
| <input type="checkbox"/> available training | <input type="checkbox"/> publications available | |
| <input checked="" type="checkbox"/> Statement of the purpose of the manual and relay to the operator how to best obtain pertinent information | | |
| <input type="checkbox"/> organizational chart (note which activities require qualified and licensed/certified personnel) | | |

General System Description

- a flow schematic (source to distribution)
- pumping capabilities (source, chemicals, and high service)
- storage (raw, finished water, and chemicals)
- system map showing location of all wells, intake structures, pumping stations, storage tanks, and the defined service area

System Operation and Control

- identification of major system components including a description of the normal operation of each component
- possible alternative operation modes and circumstances under which they would be used

- schematic diagrams of each treatment process
- preventative maintenance program (include inspections performed when the facility is off-line)
- common operating problems with methods of bypassing while being repaired
- importance of and how to use laboratory tests for process control
- routine system operation for each major system component this should include startup and shutdown procedures, safety procedures, and meter reading
- evaluation of overall system performance

Laboratory Testing

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

Records and Reports Section

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

Maintenance

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

Emergency Response Program

- pre-response activity such as; personnel assignments, emergency equipment inventory, filling a storage tank before a storm hits, copies of all emergency numbers. Laminated copy of phone numbers to keep readily accessible should include water system personnel responsible for making decisions in specific

- situations; including name, job title, home and work phone number (pager/cell phone number if available), police, fire departments, and for chemical spills or exposure CHEMTECH 800-424-9300.
- safety procedures for all personnel involved in the response
- a contingency plan to ensure proper treatment of water even in adverse conditions which may include agreements with nearby water systems for equipment or personnel
- procedures for putting standby and emergency sources into active service
- procedures for notifying customers, the local health jurisdiction, and EPA of water quality problems
- systematic procedure for returning to normal operation

Appendix

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

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> Detailed design criteria | <input type="checkbox"/> User Charge System | <input checked="" type="checkbox"/> Approved shop drawings |
| <input checked="" type="checkbox"/> Schematics | <input type="checkbox"/> Piping color codes | <input checked="" type="checkbox"/> Valve indices or schedule |
| <input checked="" type="checkbox"/> As-built drawings | <input checked="" type="checkbox"/> Drinking water rules/Ordinance | <input checked="" type="checkbox"/> Manufacturers' manuals |

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

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

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

For Ground Water Systems:

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

For Surface Water Systems:

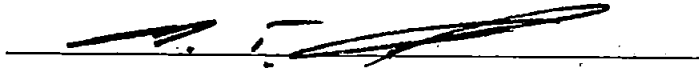
- Commercial, industrial, or agricultural operations up stream are identified 1 2 3 4 5
- System has provided a contact to these facilities in case of an accidental release 1 2 3 4 5
- System performs up stream monitoring 1 2 3 4 5
- System has a raw water reservoir of _____ gallons that acts as a buffer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

Overall:

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

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

Signature Of Authorized Representative



Name (Please Print) Michael Wanchick

Title County Administrator

Address 500 San Sebastian View

City St. Augustine State FL Zip 32084

Phone (904) 209-0530 Fax _____

February 2019

**Northwest and Northeast
Water Treatment Plants
Drinking Water Facility Plan**

St. Johns County, Florida

**CDM
Smith**

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Executive Summary

The purpose of this report is to provide a Facilities Plan, in accordance with Section 62-552.700 of the Florida Administrative Code and the Florida Department of Environmental Protection (FDEP) State Revolving Fund (SRF) Loan program requirements. This Facilities Plan is to document the need to expand the Northwest and Northeast Water Treatment Plants (WTP), which are owned and operated by the St. Johns County Utility Department (SJCUD). This document was prepared by CDM Smith Inc. (CDM Smith) and Mott MacDonald, Inc.

The Northwest WTP is a 6.0-million gallons per day (mgd) potable water treatment facility located between State Road (SR) 16 and Interstate 95 off International Golf Parkway (IGP). The Northwest WTP operates under Public Water System Identification Number (PWS ID) 2554471. Due to increased demands, exceeding or nearing the current permitted plant finished water production capacity of 6.0 mgd, SJCUD has implemented a design to construct an expansion of the WTP in two phases to meet the increasing demands for the Northwest WTP service area. Phase 1 (The Project) expands its potable water production capacity from 6.0 to 9.0 mgd. Phase 2 will expand the plant from 9.0 to 12.0 mgd.

The Phase 1 expansion will include a new clearwell complex (No. 2) with forced draft aeration, vertical turbine transfer pumps with variable frequency drives (VFD), chemical system additions for stabilizing and disinfecting the finished potable water and high service pump replacement,

The total SRF funded project cost for the Northwest WTP Phase 1 expansion is estimated to be \$7,166,800, which includes construction, a contingency allowance, and technical services costs.

The Northeast WTP is a 2.25-mgd potable WTP located at 326 Van Gogh Circle, Ponte Vedra, Florida and serves the northern area of SJCUD's potable water system. The NE WTP operates under PWS ID 2554475. Also due to increased demands exceeding or nearing the current permitted finished water production capacity of 2.25 mgd, St. Johns County has implemented a design to construct an expansion of the WTP to meet the increased demands for the Northeast WTP service area.

The NE WTP project will upgrade the high service pumping and storage capacity to ensure that increased flow demands are being met and providing redundancy in their pumping and storage systems, along with chemical system additions for stabilizing and disinfecting the finished potable water

The total SRF funded project cost for the Northeast WTP expansion is estimated to be \$3,326,300, which includes construction, a contingency allowance, and technical services costs.

A detailed description of all the SRF cost for both projects is provided in Section 6 (Implementation and Compliance) of this Facility Plan.

Section 1

Introduction

This Facilities Plan was prepared by CDM Smith Inc. (CDM Smith) and Mott MacDonald in accordance with the requirements for the Drinking Water Facility Plan Review checklist and Section 62-552.700 F.A.C. for the State Revolving Fund (SRF) Loan Program. The areas and projects considered in preparing this plan are the Northwest Water Treatment Plant (WTP) and the Northeast WTP within the St. Johns County Utility System.

1.1 Project Background

The project(s) consists of improvements to the drinking water systems in the St. Johns County Utilities' main service area. St. Johns County is experiencing growth and is planning, designing, and constructing water, sewer, and reclaimed water infrastructure that will support this growth. The Northwest WTP and Northeast WTP are both existing WTPs owned and operated by St. Johns County Utility Department (SJCUD) that were identified as requiring upgrades to meet these growth demands.

These two WTPs are comprised of two individual service areas: the Northwest WTP service area and the Northeast WTP service area. These service areas and the entire St. Johns County Utility Service Area is shown on **Figure 1-1**.

1.2 Project Need and Justification

Northwest WTP

SJCUD owns and operates the NW WTP, a potable water treatment facility located between State Road (SR) 16 and Interstate 95 off International Golf Parkway (IGP). **Figure 1-2** is a location map of the NW WTP site. The NW WTP operates under Public Water System Identification Number (PWS ID) 2554471 and its current permitted finished water production capacity is 6.0 million gallons per day (mgd).

Source water for the NW WTP originates from six Upper Floridan aquifer (UFA) production wells and contains moderate concentrations of hydrogen sulfide (H₂S). The treatment process utilized at the NW WTP was specifically designed to remove H₂S (pH adjustment using carbonic acid followed by forced draft degasification and chemical scrubbing for odor control), provide disinfection (free chlorination using sodium hypochlorite), and pH adjustment (sodium hydroxide) prior to storage and distribution. Annual average and maximum day finished water production rates for 2018 were 3.52 and 4.93 mgd, respectively. The NW WTP primarily serves the northwestern portion of SJCUD's potable water distribution area and will have the capability to transfer up to 2.0 mgd of finished water to SJCUD's County Road (CR) 214 WTP to supplement water supply in the southern distribution area. During a day in May 2018, and again in July 2018, the maximum day flow for the Northwest WTP was 6.26 and 5.82 mgd, respectively. Due to these increased demands, exceeding or nearing the current permitted plant finished water production capacity of 6.0 mgd, St. Johns County has implemented this design to construct an expansion of the WTP to meet the increasing demands for the Northwest WTP service area.

Due to this additional growth and increased flow demands within the service area, SJCUD intends to expand the Northwest WTP from 6.0 to 9.0 mgd to include the following improvements:

- Carbon dioxide storage and feed system improvements.
- One new Clearwell Complex No. 2 with a new 3.0-mgd forced draft degasification tower, new blowers, new biological odor control scrubbers, and new vertical turbine transfer pumps.
- High Service Pump (HSP) Replacement, increasing the HSP pumping capacity from 13.6 to 18.1 mgd. The existing pumps are rated for the following capacities; two at 1,400 gpm each, two at 1,825 gpm each and two at 3,150 gpm each, at an approximate discharge pressure of 80 pounds per square inch (psi). The existing pumps will be replaced with five new VFD-driven high service pumps, each rated for approximately 3,150 gpm at 80 psi. This will result in a high service pump firm capacity of approximately 18.1 mgd.
- Sodium hypochlorite and sodium hydroxide storage and feed system improvements.
- Site work for expansion, including a loop access driveway, clearing, fencing, lightning, facility access gate and associated required landscaping.
- Site stormwater drainage improvements.
- Facility-wide programming and instrumentation and electrical improvements for the expansion.

The implementation of these improvements at the Northwest WTP will also enable SJCUD to meet projected demand from future population growth.

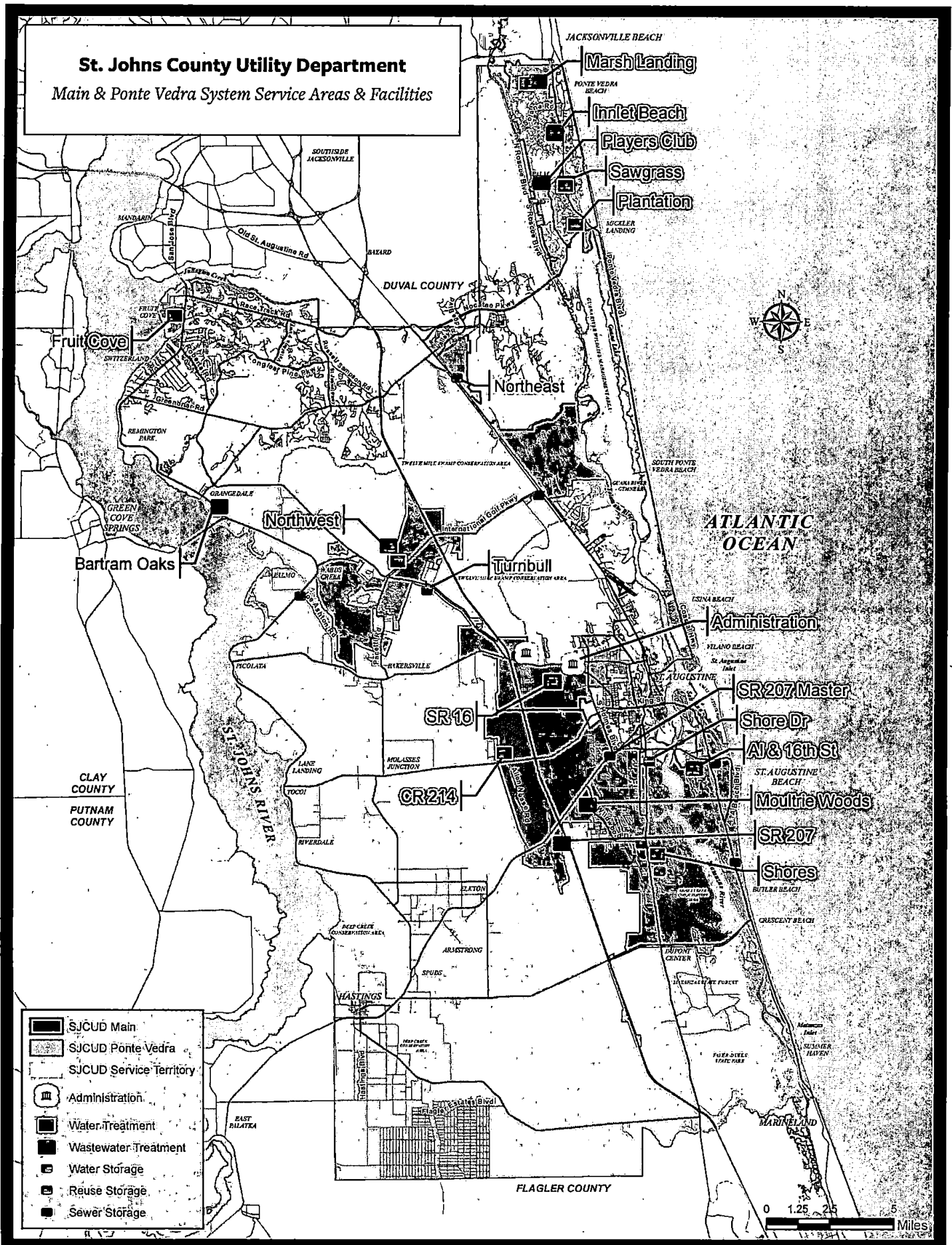


Figure 1-1. St. Johns County Service Areas

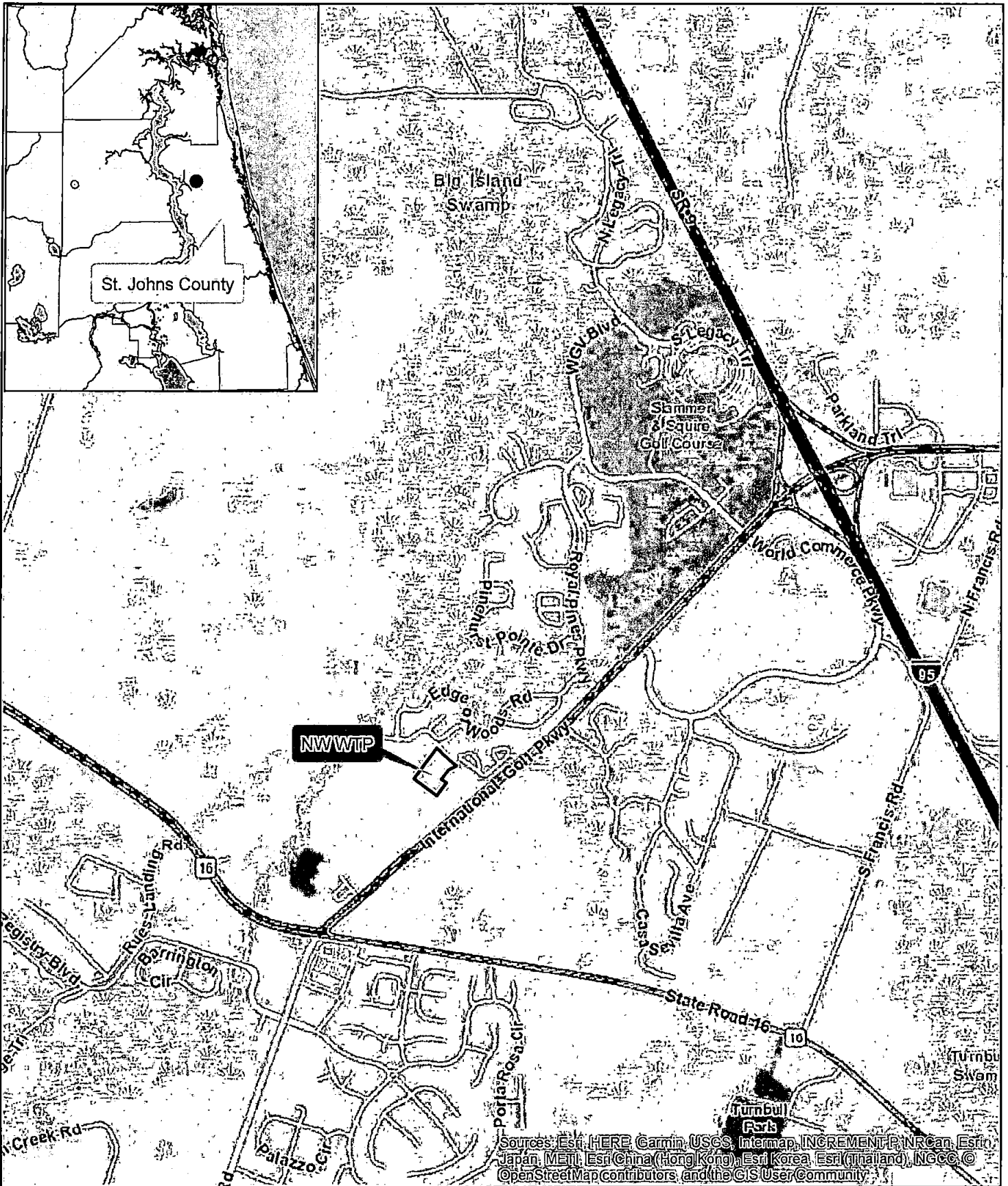


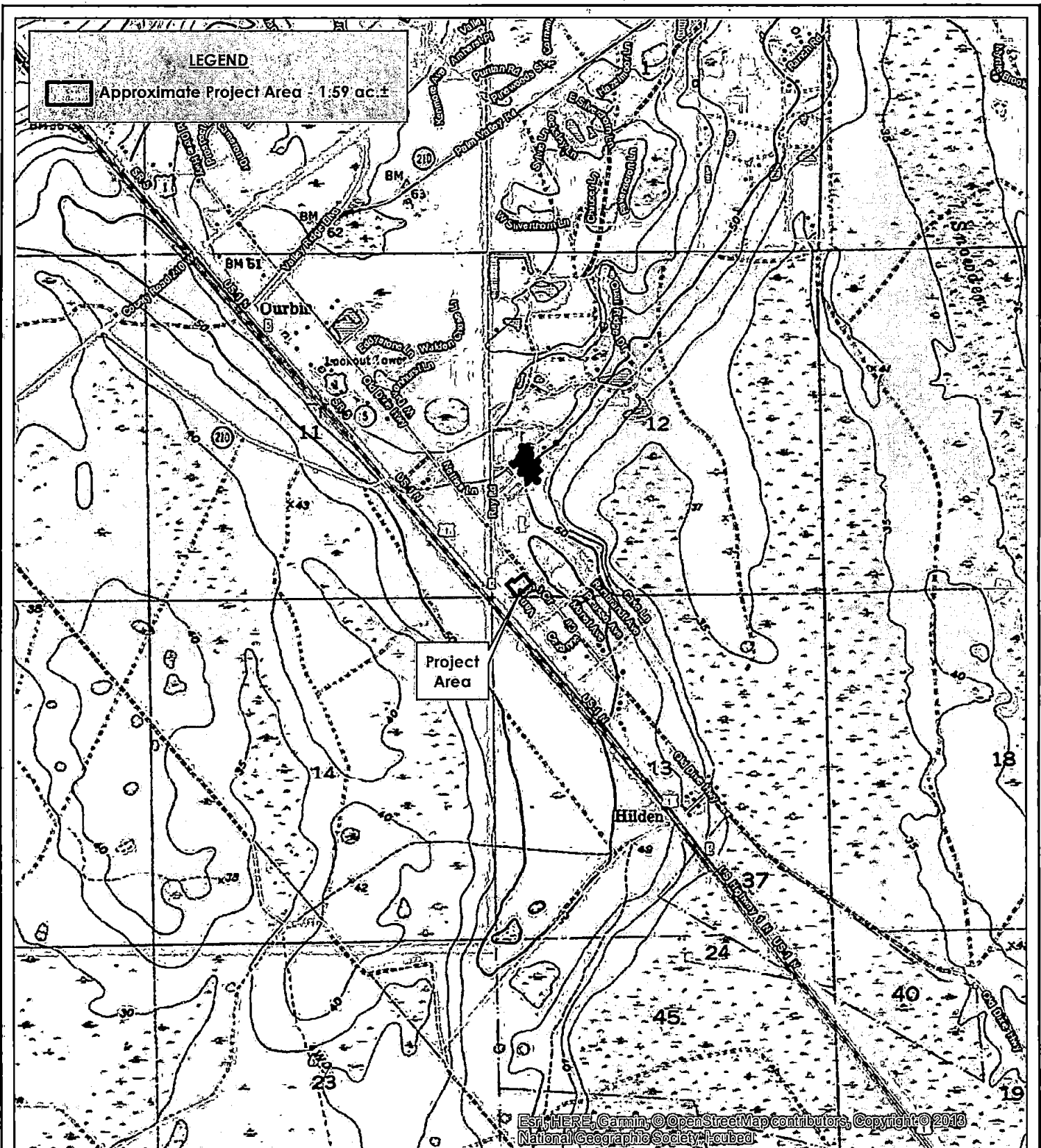
Figure 1-2
Northwest WTP
Location Map
St. Johns County, FL

Northeast WTP

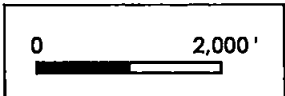
The Northeast WTP is an existing WTP located at 326 Van Gogh Circle, Ponte Vedra, Florida and serves the northern area of SJCUD's potable water system. **Figure 1-3** is a location map of the NE WTP site. Mott MacDonald developed a hydraulic model, updated existing IWRP gap analysis models, and provided a technical memorandum, *SJCUD IWRP NE Water Model Development Technical Memorandum dated June 2018* for this portion of SJCUD's water distribution system. Based on this memorandum, three of four pumps operate during peak times of the average day scenario, and all four pumps at the Northeast WTP operate to satisfy peak demands of the max day scenario. Under the max day scenario there is not any redundancy or back-up pumps, so if one pump failed this station would not be capable of providing the necessary flow to the system. The water supply is provided by a neighboring utility that is requiring the water supply to be normalized throughout the day to minimize the pressure variations to their customers. SJCUD has a long-term goal to eliminate dependency on the neighboring utility. This would require an upgrade to this facility to include water supply and treatment, converting the system from a consecutive water system to an independent water treatment system. While this goal is not feasible on the short timeline required to meet the immediate needs, it was a factor in the selection of an alternative.

This project will upgrade the high service pumping and storage capacity of the Northeast WTP to ensure that increased flow demands are being met and providing redundancy in their pumping and storage systems. The major design components of the project include the following:

- A nominal 1.0-million gallon (MG), cylindrical, pre-stressed concrete ground storage tank (GST) with a tray aerator to match the height and flow rating of the existing aerator
- Piping and valving upgrades to allow parallel operation of the GSTs
- Replacement of two 500-gallons per minute (gpm) capacity pumps, one 1,000-gpm capacity pump, and one 1,500-gpm capacity pump with three 1,375-gpm capacity pumps and one 400-gpm capacity jockey pump at the required system pressure of 70 pounds per square inch (psi) as per the IWRP NE Water Model TM. This will result in a firm high service pump capacity of approximately 3.96 mgd.
- Electrical design to provide four new variable frequency drives (VFDs) for all new pumps.
- Replacement of existing main service transformer, main service breaker, automatic transfer switch, and motor control center.
- HVAC upgrades for the electrical room and restroom.
- Grading and miscellaneous soil improvements for the new tank and stormwater pond addition.
- Replacement of sodium hypochlorite feed pumps with a new duplex pump skid.
- Upgrades to the WTP instrumentation including influent flow measurement, effluent flow measurement, new discharge pressure transmitter, and new level sensors for the existing GST.



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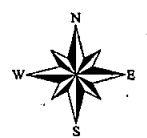
Section: 12
 Township: 5 South
 Range: 28 East

Lat: 30° 04' 32.85" N (30.075792 dd)
 Long: 81° 26' 54.01" W (-81.448336 dd)

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 Jacksonville, FL 32216
 (904) 285-1397
 mail@ersenvironmental.com

Figure 1-3. Northeast WTP Location Map
 St. Johns County, Florida

Project No.:	18106
Exhibit No.:	1
Date:	1-7-18
Rev. Date:	



1.3 Scope of Study

This report is organized into the following sections:

- **Executive Summary:** Provides a brief summary of the project(s).
- **Section 1 - Introduction:** Provides information related to the project background, project need and scope of study.
- **Section 2 - Existing Conditions:** Provides a description of the planning area including the service area characteristics and environmental conditions; the socio economic conditions, an inventory of the existing potable water facilities and the need for the facilities.
- **Section 3 - Future Conditions:** Provides narrative concerning future service area changes, population projections, and potable water demand projections.
- **Section 4 - Development of Alternatives:** Establish design needs for the planning period and identify and evaluate various water system alternatives to satisfy the planning year needs.
- **Section 5 - Selection Plan:** Recommend the most cost effective, environmentally sound facilities to meet the planning needs, identify any adverse environmental impacts and propose mitigating measures as well as describe in details the recommended facilities and their cost.
- **Section 6 - Implementation and Compliance:** Identify the need for public hearing and identify the regulatory agencies review steps, identify a source of financial plan and develop a schedule of implementation of the recommended facilities.

Section 2

Existing Conditions

2.1 Description of Planning Areas

The planning areas and the service areas are the same for these project(s), as described in Section 1. The St. Johns County Utility service areas are shown on Figure 1-1. Figures 1-2 and 1-3 provide the locations of the existing NW WTP and NE WTP within these two service areas.

2.1.1 Service Areas

The planning areas are comprised of two service areas: the Northwest WTP service area and the Northeast WTP service area. The approximate limits of these two service areas are described below.

Northwest WTP

The Northwest WTP is located between SR 16 and Interstate 95 off IGP and primarily serves the northwestern portion of SJCUD's main potable water distribution system. Its service area is bounded by CR 210 to the north, Six-mile Creek to the west, CR 208 to the south, and 12-Mile Swamp to the east. The Northwest WTP also services the area for the SR 16 WTP, which is approximately bounded by SR 16 to the north, Collins Ave. to the east, I-95 to the west, and extends halfway toward CR 214 to the south. The Northwest WTP service area within the St. Johns County service area is presented on Figure 1-1. The Northwest WTP operates under PWS number 2554471.

Northeast WTP

The Northeast WTP is located at 326 Van Gogh Circle, Ponte Vedra, Florida and primarily serves the northern portion of SJCUD's main potable water distribution system. Its service area is bounded by CR 210 to the north, 12-Mile Swamp to the west, Stokes Creek to the south, and the Tolomato River to the east. The Northwest WTP service area within the St. Johns County service area is presented on Figure 1-1. The Northeast WTP operates under PWS number 2554475.

2.1.2 Climate

The planning areas have a subtropical maritime climate. It is characterized by long, warm, humid summers and mild, dry winters. The average temperature in the summer is 80°F and the average temperature in the winter is 62°F. Both winter and summer temperatures are moderated by proximity to the Atlantic Ocean. The rainy season lasts from June through the middle of October. Summer rains occur as convective afternoon and early evening thundershowers. These showers, which are local and of short duration, may produce 3 or more inches of rainfall in an hour or more. During the latter part of September and into early fall, when temperatures are fairly moderate, these showers occur early in the day and their frequency diminishes. Although thundershowers occur with the greatest frequency in the summer, they may occur in all seasons.

2.1.3 Surface Water Hydrology

Major water bodies are shown on Figure 1-1. The Northwest WTP planning area is located within two sub-basins: Six Mile Creek and Mill Creek. These sub-basins feed into the Six Mile Creek basin. The Northeast WTP planning areas is located within five sub-basins: Six Mile Creek, Sweetwater Creek, Marshall Creek, Stokes Creek, and the Tolomato River. These sub-basins feed into the Six Mile Creek and Tolomato River Unit basins.

2.1.4 Air Quality

Air quality within the service area is considered to be in compliance with the State and Federal ambient Air Quality Standards.

2.1.5 Wetland and Floodplains

Northwest WTP

A small amount of wetland areas was identified within the Northwest WTP property. The proposed improvements would impact approximately 0.14 acres of state jurisdictional wetlands.

A federal permit may be required from the U.S. Army Corps of Engineers (USACE) if the wetlands within the project area are claimed as jurisdictional wetlands. However, the USACE may not claim jurisdiction of the wetlands depending on their assessment of connection to waters of the United States. Jurisdictional claims require further documentation by USACE and verification by the Environmental Protection Agency. If the wetlands are claimed as jurisdictional wetlands by USACE, the project may be able to be permitted with a Nationwide Permit. A pre-application meeting with USACE will be scheduled during the final design stage of the project to determine the necessary permit, if one is required.

The existing site is contained within Zone "X" as shown on the most recent Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Map No. 12109C0276J, revised December 7, 2018. Zone "X" is described as "Areas determined to be outside the 0.2 percent annual chance floodplain." Base flood elevations (BFE) were not determined on the described FEMA FIRM. Therefore, the site is not located within the regulated floodplain. Additional analysis (modeling) would be needed to determine peak design stormwater stages within and adjacent to the site. Information for the Northwest WTP on the wetland impacts is provided in **Appendix A**.

Northeast WTP

A small amount of wetland areas was identified within the Northeast WTP property. The proposed project will include 0.18 acres of impact to a previously disturbed forested wetland as well as 0.08 acres of impact to the existing stormwater pond. Areas of wetland that will remain are already highly disturbed from the neighboring residential development and existing roadway; therefore, no additional secondary impacts are expected to occur as a result of the proposed project. With the exception of the 0.18 acres of wetland impacts, the only negative impacts from the construction of the project are the typical temporary nuisances that occur during construction such as dust and increased noise. Additional information on wetland impacts and other project environmental concerns for the Northeast WTP are provided in **Appendix B**.

2.1.6 Impact on Historic and Archeological Resources

The areas where the projects will be constructed consist of lands that were cleared for construction of new facilities. Therefore, it is not believed that the proposed projects will impact any historic or archeological resources. In the event that a finding of a significant nature occurred during the proposed construction project, construction activities would comply with all applicable local, state, and federal regulations to minimize impacts.

2.1.7 Impact upon Flora, Fauna, Threatened or Endangered Plant or Animal Species

It is not believed that the proposed projects will impact threatened or endangered plant or animal species.

The Project Manager and subcontractor personnel are sensitized to the possible presence of bald eagles, gopher tortoises, and indigo snakes. Any evidence of these protected species will be brought to the attention of SJCUD with the possible impacts noted and modified construction plans as necessary to appropriately accommodate the individual species. In the event that new eagle nesting sites, gopher tortoise sites, or other protected species are identified within the project area limits, appropriate changes will be made to the construction delivery plans and schedule.

2.1.8 Source Water Protection

St. Johns County has developed a wellhead protection ordinance to protect its source waters in accordance with Rule 62-521. SJCUD draws all of its drinking water supply from the Floridan Aquifer.

2.2 Socio-Economic Conditions

2.2.1 Population

The population data are based upon the customers served in both of the two service areas and is presented in **Appendix C**. A total population of 229,715 people was served in the St. Johns County Utility service area in 2017. The Northwest WTP and Northeast WTP service areas serve a population of 23,487 and 8,715, respectively.

2.3 Potable Water System

2.3.1 Current and Historical Potable Water Demand

This subsection describes the current and historical potable water demand for Northwest WTP and Northeast WTP that serve the northern St. Johns County Utility System. Monthly Operating Report (MOR) flow data for these operating water treatment plants during 2016, 2017, and 2018 were provided by SJCUD in the preparation of the plan.

Northwest WTP

A summary of the potable water demand is shown in **Table 2-1**. The total average daily flow (ADF) demands for the water system in 2016, 2017, and 2018 were 2.61, 2.99, and 3.52 mgd, respectively. The total maximum daily flow (MDF) demands for the water system in 2016, 2017,

and 2018 were 3.74, 4.27, and 4.95 mgd, respectively. The total potable water demand increased each year from year 2016 to 2018. The Northwest WTP has a MDF permitted capacity of 6.0 mgd.

Table 2-1 Summary of Finished Water Flows for the Northwest WTP

Year	Total Flows (mgd)	
	ADF	MDF
2016	2.61	3.74
2017	2.99	4.27
2018	3.52	4.95

Northeast WTP

A summary of the potable water demand is shown in Table 2-2. The total ADF demands for the water system in 2016, 2017, and 2018 were 1.04, 1.19, and 1.26 mgd, respectively. The total MDF demands for the water system in 2016, 2017, and 2018 were 1.40, 1.65, and 1.70 mgd, respectively. The total potable water demand increased each year from year 2016 to 2018. The Northeast WTP has a MDF permitted capacity of 2.25 mgd.

Table 2-2 Summary of Finished Water Flows for the Northeast WTP

Year	Total Flows in mgd	
	ADF	MDF
2016	1.04	1.40
2017	1.19	1.65
2018	1.30	1.70

2.3.2 Description of the Existing Water Treatment Facilities

The St. Johns County Utility main service area in the northern portion of St. Johns County is served primarily by the Northwest WTP and the Northeast WTP.

Northwest WTP

Source water for the Northwest WTP originates from six UFA production wells and contains moderate concentrations of H₂S. The treatment process utilized at the Northwest WTP was specifically designed to remove H₂S (pH adjustments using carbonic acid followed by forced draft degasification and chemical scrubbing for odor control), provide disinfection (free chlorination using sodium hypochlorite), and pH adjustment (sodium hydroxide) prior to storage and distribution. The water is pumped from the 0.5- and 1.50-MG GSTs by 6 high service pumps installed in a high service pump and control building. The current pumping system has 6 (5 duty and 1 standby) horizontal split case centrifugal pumps with a rated capacity of approximately 3,150 gpm (2), 1,400 gpm (2), and 1825 gpm (2) at a design discharge pressure of approximately 80 psi. This results in an existing high service pump firm capacity of approximately 13.6 mgd.

Northeast WTP

The Northeast WTP is located in the northern portion of the St. Johns County main service area at 326 Van Gogh Circle, Ponte Vedra, Florida. Northeast WTP treatment consists of storage in a prestressed concrete storage tank with tray aerator and that is periodically treated with

ammonium sulfate. Disinfection with sodium hypochlorite occurs downstream of the storage tank prior to high service pumping to the distribution system. Four high service pumps are located at the Northeast WTP, with capacities of 500 gpm (2), 1,000 gpm, and 1,500 gpm, providing a finished water pumping capacity of 3,500 gpm. This results in an existing high service pump firm capacity of approximately 2.88 mgd.

2.4 Need for Facilities

The following improvements were identified as needed to serve the water customers in the St. Johns County Utility system. The improvements are discussed in more detail in Section 4.

Northwest WTP

To meet the increased water demands for this service area, SJCUD has decided to pursue the Phase 1 expansion at the Northwest WTP to provide an additional 3.0 mgd of finished water capacity to the plant. Annual average and maximum day finished water production rates for 2018 were 3.52 and 4.93 mgd, respectively. The NW WTP primarily serves the northwestern portion of SJCUD's potable water distribution area and will have the capability to transfer up to 2.0 mgd of finished water to SJCUD's CR 214 WTP to supplement water supply in the southern distribution area. During a day in May 2018, and again in July 2018, the maximum day flow for the Northwest WTP was 6.26 and 5.82 mgd, respectively. Due to these increased demands, exceeding or nearing the current permitted plant finished water production capacity of 6.0 mgd, St. Johns County has implemented this design to construct an expansion of the WTP to meet the increasing demands for the Northwest WTP service area. The Phase 1 expansion is part of a 2-phase expansion plan that will include features that lead to easy implementation of the future phase 2 (9 to 12 mgd) expansion. Thus, the Phase 1 expansion proposes to increase the maximum day flow capacity of the plant from 6 to 9 mgd, which will be done through the addition of the items listed in Section 1.2.

Northeast WTP

Based on the technical memorandum provided in the SJCUD IWRP NE Water Model Development Technical Memorandum dated June 2018, three of four pumps operate during peak times of the average day scenario, and all four pumps at the Northeast WTP operate to satisfy peak demands of the max day scenario. Under the max day scenario there is not any system redundancy or backup pumps, so if one pump failed this station would not be capable of providing the necessary flow to the system. The water supply is provided by a neighboring utility that is requiring the water supply to be normalized throughout the day to minimize the pressure variations to their customers. SJCUD has a long-term goal to eliminate dependency on the neighboring utility. This would require an upgrade to this facility to include water supply and treatment converting the system from a consecutive water system to an independent water treatment system. While this goal is not feasible on the short timeline required to meet the immediate needs, it was a factor in the selection of an alternative.

Section 3

Future Conditions

3.1 Service Area Changes

The Northwest service area is expected to grow substantially to the north and west of the existing service area towards CR 210 and CR 16A with the build-out of the Silverleaf DRI and other smaller developments. Growth is also expected to the south and east within large developments including current projects such as Trailmark, Gran Lake, Windward Ranch and future projects including Grand Oaks, Steeplechase and others. Overall, the service area is expected to grow by more than 17,000 single- and multi-family homes. It is anticipated that the service area will more than double by 2040. In addition to the expected growth of the service area, SJCUD is currently conveying 1.0 mgd and plans on ultimately sending 2.0 mgd to the CR 214 WTP to reduce demand on the CR 214 wellfield.

The Northeast service area is also expected to grow to the west and south of the existing service area. Growth is expected to come from the Twin Creeks development to the west of US 1 and south of CR 210.

3.2 Population Projections

The population projections for the planning horizon of 2030 are based on the technical memorandum provided by Jones Edmunds, Inc. for the St. Johns County Consumptive Use Permit renewal (Dec. 21, 2018) presented in **Appendix C**. Population projections were based on data provided by the Bureau of Economic and Business Research (BEBR) and assume a medium growth forecast for 2018. The projected population served by each water treatment plant for the planning horizon of 2030 is presented in **Table 3-1**.

Table 3-1 Projected Population Growth in the Northwest WTP and Northeast WTP Service Areas

Year	Estimated Population Served	
	Northwest WTP	Northeast WTP
2020	31,278	10,114
2025	41,178	12,029
2030	50,200	13,729

3.3 Potable Water Demand Projections

Additionally, the potable water demand projections for the planning horizon of 2030 are based on the technical memorandum provided by Jones Edmunds for the St. Johns County Consumptive Use Permit renewal (Dec. 21, 2018) presented in **Appendix C**. The projected potable water demand for each WTP for the planning horizon of 2030 is presented in **Table 3-2**. The maximum day flow (MDF) projections show the need for these projects to meet future potable water demands.

Table 3-2 Potable Water Demand Projections for the Northwest WTP and Northeast WTP Service Areas

Year	Estimated Potable Water Demand (AADF) (mgd)		Estimated Potable Water Demand (MDF) (mgd)	
	Northwest WTP	Northeast WTP	Northwest WTP ¹	Northeast WTP
2020	3.72	1.33	5.25	1.73
2025	4.82	1.59	6.80	2.07
2030	5.81	1.81	8.19	2.35

1. A factor of 1.41 was used to calculate the max day flow (MDF) for the Northwest WTP based on WTP operational data.
2. A factor of 1.30 was used to calculate the max day flow (MDF) for the Northeast WTP based on WTP operational data.

Section 4

Development of Alternatives

4.1 General

As a part of this Facilities Plan document, three alternatives were evaluated for each WTP expansion to meet the projected increased flow demands. These alternatives were evaluated and scored, based upon the estimated capital and operation and maintenance cost and non-economic factors including constructability, reliability and simplicity. The following describe the three alternatives evaluated for the Northwest WTP and Northeast WTP.

Northwest WTP

- Alternative 1 – No action. This alternative is as stated, do nothing to expand the current facility to meet water demands.
- Alternative 2 – Upgrades and expansion of the existing WTP that would include:
 - Chemical odor control scrubber system with additional chemical odor control scrubber treatment capacity.
 - Alternative CO₂ system technology (Blue-in-Green) for the increased CO₂ demand.
 - Additional horizontal split case transfer pumps to supplement the existing horizontal split case transfer pumps and a new clearwell complex for the increase in finished water production from 6.0 to 9.0 mgd.
- Alternative 3 – Upgrades and expansion of the existing WTP that would include:
 - Biological odor control scrubber system as an alternative to chemical odor control scrubber system.
 - The addition of a second redundant CO₂ storage tank and feed system to match the current CO₂ system supplier.
 - Five new vertical turbine transfer pumps with VFDs to replace all the existing horizontal split case transfer pumps and new clearwell complex for the increase in finished water production from 6.0 to 9.0 mgd.

Please note the cost evaluated for Alternatives 2 and 3, listed above for the expansion of the NW WTP from 6.0 to 9.0 mgd, only included the cost of the different treatment technologies, for the same processes, listed in these two alternatives. The cost for the common process to both alternatives, were not included. These common processes included a new forced draft aeration tower, high service pump replacement, chemical feed system modifications, and miscellaneous site and infrastructure improvements.

Northeast WTP

- Alternative 1 – No action. This alternative is as stated, do nothing to expand the current facility to meet water demands.
- Alternative 2 – Construct a remote storage and booster pump station.
- Alternative 3 – Upgrade the existing high services pumps to higher capacity and expand the current storage volume on the existing NE WTP site

4.2 Water Treatment System Alternatives**4.2.1 Northwest WTP****4.2.1.1 Alternative 1**

If no action is taken, SJCUD will not be able to provide its customers the current and future potable water demands. Failure to increase the WTP capacity and provide adequate sulfide treatment of the raw water would also result in taste and odor complaints of the finished water. Additionally, inadequate treatment of off-gas from the forced draft aerator would result in odor complaints in the ambient air surrounding the WTP.

Therefore, the “No Action” alternative is not viable.

4.2.1.2 Alternative 2

The chemical odor control scrubber system, carbon dioxide storage and feed system, and clearwell complex transfer pump system at the Northwest WTP will be upgraded to expand the treatment capacity from 6.0 to 9.0 mgd.

In this alternative, the existing chemical odor control scrubber system would be upgraded with additional chemical scrubber treatment capacity for the increased demand from 6.0 to 9.0 mgd. The increased demand of the carbon dioxide storage and feed system due to the additional treatment capacity from 6.0 to 9.0 mgd would be replaced with an alternate CO₂ technology (Blue-in-Green) system supplier, which utilizes an emerging technology for the transfer of CO₂ in the raw water. The existing horizontal split-case clearwell transfer pumping system will be expanded to meet additional flow demand.

This alternative provides additional chemical scrubbers that can achieve adequate and consistent odor control, but these systems tend to have higher operations and maintenance cost. The alternate CO₂ system technology utilizes an alternate method for transferring CO₂ to the raw water to provide pH adjustment. This type of alternate CO₂ system is not widely used in the municipal market. The horizontal split case transfer pumps match the existing pumps but are not self-priming and will require the use of a vacuum priming system.

4.2.1.3 Alternative 3

The odor control scrubber system, carbon dioxide storage and feed system, and clearwell complex transfer pump system at the Northwest WTP will be upgraded to expand the treatment capacity from 6.0 to 9.0 mgd.

In this alternative, a biological odor control scrubber system will be installed to meet the current and additional treatment demands. The biological scrubber system does not require sodium hydroxide or sodium hypochlorite and will typically have lower operations and maintenance cost and is simple to operate. The existing CO₂ TOMCO carbon dioxide storage and feed system will be expanded to meet treatment demands, with a matching CO₂ TOMCO system. This systems technology has a proven track record and is familiar to the operations staff. The existing clearwell complex transfer pumping system will be replaced with vertical turbine pumps with variable frequency driven motors to provide additional operational flexibility for the clearwell complex. The new vertical turbine transfer pumps will be self-priming and will therefore not require a vacuum priming system.

4.2.2 Northeast WTP

4.2.2.1 Alternative 1

If no action is taken, SJCUD will not be able to provide its customers the current and future potable water demands. Failure to increase storage and upgrade the pumping capacity will not allow the County to meet fire flow requirements in the service area which is unacceptable for its customers.

Therefore, the “No Action” alternative is not viable.

4.2.2.2 Alternative 2

Due to limited available land on the existing site, a new GST and booster pump station facility off-site are the next viable alternative. For long-term sustainability and to support the goals of both independence from the neighboring utility and growth in the area, a minimum 2.5-mgd facility would be required. The ideal site would be approximately 10 acres near the existing site or near a proposed future wellfield to minimize the transmission piping required. The proposed alternative would initially provide the increased storage and pumping capacity and would have the available land to support the addition of further treatment once production wells are available.

4.2.2.3 Alternative 3

Replacement of the existing pumps with new pumps is a simple and straightforward approach to immediately increasing the ability of the plant to meet potable water and fire flow demands. Based on modeling results, the existing pumps can be replaced and new larger pumps installed with minimal modifications to the existing system. Furthermore, there is space onsite to construct a new 1.0-MG GST to double the storage capacity of the WTP. Once the new tank is constructed there is no more available land for further improvements. The source of water for the WTP is from a neighboring utility. As noted, the goal of SJCUD is to construct an additional wellfield and WTP to remove their dependency on that water supply. After a future wellfield location is identified, the Northeast WTP could be converted to a booster pump station for the area with storage. The benefit of this future arrangement is that the land required for the new WTP site can be reduced since the existing Northeast WTP would have 2.0 MG of storage.

4.3 Cost Analysis

Northwest WTP

The project cost for the selected alternatives is presented in **Table 4-1**. Costs were based on bid tabulations from similar projects and prices obtained from recognized suppliers.

Table 4-1 Summary of the Present Value of the 20-Year Life Cycle Costs of Northwest WTP Alternatives¹

Life Cycle Cost Evaluation			
Description of Expense		Alternative 2	Alternative 3
Capital Costs ²	Carbon Dioxide Storage and Feed System	\$1,878,888	\$1,039,200
	Scrubbing System ³	\$989,280	\$3,312,000
	Transfer Pumping System	\$528,000	\$1,216,800
	Total Capital Costs	\$3,396,168	\$5,568,000
Operational Costs ⁴	Carbon Dioxide Storage and Feed System	\$396,310	\$405,172
	Scrubbing System	\$351,318	\$21,859
	Transfer Pumping System	\$12,700	\$14,000
	Total Annual Operational Cost	\$760,328	\$441,031
Total Life Cycle Cost⁵		\$14,707,892	\$12,129,439

Notes:

1. No economic analysis was done for the "no action" alternative because it was determined least feasible.
2. Total capital expenses include indirect costs (i.e., general conditions, insurance, overhead, profit, etc. assumed to be 50 percent of the direct costs) and a 50-percent contingency based on direct costs
3. Assumes County discontinues use of existing chemical scrubbing system and installs a new biological scrubbing system to replace existing chemical scrubbing system
4. Total annual operational expenses presented do not account for routine maintenance of equipment or periodic replacement of components; no contingency is provided on annual operating costs
5. Present worth includes both initial capital expenses and annual operational expenses; present worth based upon a 20-year life cycle, 3 percent interest rate, and operation of the facility at average conditions (i.e. average carbon dioxide dose of 252 mg/L and average production rate of 6.375 mgd)

Northeast WTP

The project cost for the selected alternatives are presented in **Table 4-2**. Costs were based on bid tabulations from similar projects and prices obtained from recognized suppliers.

Table 4-2 Summary of the Present Value of the 20-Year Life Cycle Costs of Northeast WTP Alternatives¹

Life Cycle Cost Evaluation		Alternative 2	Alternative 3
Description of Expense			
Capital Costs	Transmission Main	\$ 1,320,000	-
	Upgrade Existing WTP	-	\$2,799,900
	New Storage and BPS ²	\$5,020,321	-
	Easements/Acquisitions ²	\$2,000,000	-
	Total Construction Costs	\$8,340,321	\$2,799,900
Operational Costs ³	Chemicals	\$12,220	\$12,220
	Energy ⁴	\$61,060	\$61,060
	Maintenance and Supplies	\$22,900	\$22,900
	Personnel	\$34,000	\$34,000
	Total Annual Variable Costs	\$130,180	\$130,180
	Present Value of Variable Costs⁵	\$1,622,330	\$1,622,330
Total Life Cycle Cost		\$9,962,652	\$4,422,180

Notes:

1. No action was not analyzed because, while least costly, it is the least feasible alternative.
2. A minimum of 10 acres would be required for a new booster station and storage facility of this capacity after including a 500-foot setback from the property line for all structures of a water facility per St. Johns County development code. A recent land sale was used to establish a base cost of \$200,000 per acre in this area.
3. The chemical and maintenance and supplies variable costs for Alternatives 2 and 3 were based on actual costs from the Northeast WTP divided by a ratio of its current ADF to the expected initial ADF of the proposed plant = (1.3/1.77). Personnel and maintenance costs are equal to Northeast WTP's personnel costs.
4. Energy consumption was based on actual costs from the Northeast WTP divided by a ratio of its current ADF to the expected initial ADF of the proposed plant = (1.3/1.77). Present worth includes both initial capital expenses and annual operational expenses; present worth based upon a 20-year life cycle, 3 percent interest rate, and operation of the facility at average conditions (i.e. average carbon dioxide dose of 252 mg/L and average production rate of 6.375 mgd)
5. Present Value of variable cost assumes an interest rate of 5% was assumed for a period of 20 years.

4.4 Evaluation Matrix

Northwest WTP

To assist in the alternative selection for the Northwest WTP, an evaluation matrix was created and is presented in **Table 4-3**.

Table 4-3 Northwest WTP Alternatives Evaluation Matrix

Category ¹	Alternative 2	Alternative 3
Construction Costs	2	3
Life Cycle Costs	3	1
Reliability and Simplicity	3	1
Constructability	2	2
Score ²	10	7

¹Alternative 1 was not analyzed because it is the least feasible alternative.

²The possible scores for each category range from 1-3, with 3 being the worst; therefore, the lowest score is more preferable.

Northeast WTP

To assist in the alternative selection for the Northeast WTP an evaluation matrix was created and is presented in **Table 4-4**.

Table 4-4 Northeast WTP Alternatives Evaluation Matrix

Category ¹	Alternative 2	Alternative 3
Construction Costs	3	2
Life Cycle Costs	1	1
Reliability and Simplicity	3	2
Constructability	3	1
Score ²	10	6

¹Alternative 1 was not analyzed because it is the least feasible alternative.

²The possible scores for each category range from 1-3, with 3 being the worst; therefore, the lowest score is more preferable.

Section 5

Selection Plan

5.1 Selected Alternatives

This section provides a summary of the alternatives that were selected for each facility and the reason or justification for the selection made at each facility. The selected alternatives for each facility and the justification are provided below.

Northwest WTP

- Alternative 3 – For the Northwest WTP project, Alternative 3 was selected for the upgrades to existing WTP from 6.0 to 9.0 mgd. This alternative uses a biological odor control scrubber system, the current CO₂ system design, vertical turbine transfer pump system, a new clearwell complex with forced draft aeration, high service pump upgrades, and miscellaneous site and infrastructure improvements. Alternative 3 provided the following benefits
 - The biological scrubber is a simple system to operate with lower operational costs.
 - The CO₂ system is familiar to the operations staff.
 - The vertical turbine pumps will not require a vacuum priming system, which are known to fail periodically.
 - It provided lower overall operation and life cycle cost.

Northeast WTP

- Alternative 3 – For the Northeast WTP project Alternative 3 was selected for the upgrades to the existing WTP. These improvements in general include upgrades to the existing high service pumps to higher capacity and expansion of the current storage volume.
- These improvements will provide overall lower capital cost and life cycle cost.
- These improvements will also provide better reliability and an easier facility to construct and operate/maintain.
- Site plans for the selected alternatives for the Northwest WTP and Northeast WTP are provided on Figures 5-1 and 5-2, respectively.

5.2 Cost of Proposed Facilities

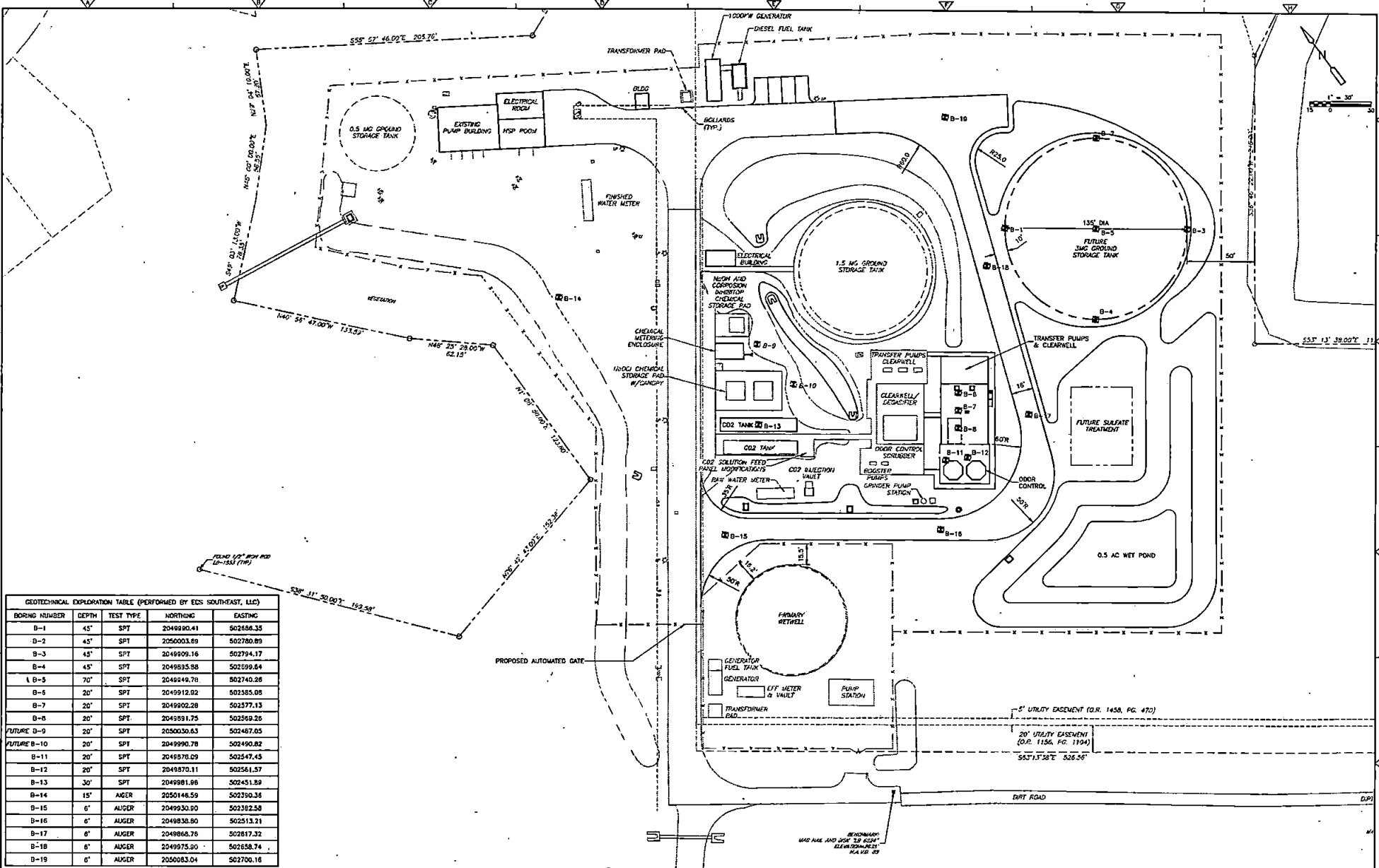
The construction costs for the projects selected for implementation are summarized in Table 5-1.

Table 5-1 Project Construction Costs

Description of Expense	Northwest WTP Expansion Costs	Northeast WTP Expansion Costs
Subtotal – Construction + Administration	\$6,033,000 ¹	\$2,799,900
Contingency	\$603,000	\$280,000
Subtotal	\$6,636,000	\$3,079,900
Technical Services	\$530,800	\$246,400
Total Costs	\$7,166,800	\$3,326,300

¹ The total construction cost for the selected alternative for the NW WTP project, includes the cost previously described in Section 4, as well as “common” processes which include the forced draft aeration tower, high service pump replacement, chemical system modifications and miscellaneous site and infrastructure improvements. These common costs were not included in the life cycle cost analysis for the NW WTP alternatives evaluation.

3/26/24 (C:\DC\2424\EXPANSION\CDR\00005_1000000.dwg) 10:10:00 AM
 User: jsmith
 Plot: 1/11/2018 8:53:33 AM
 PLOT: 1/11/2018 8:53:33 AM
 FILE: 1/11/2018 8:53:33 AM
 TITLE: NORTHWEST WTP PHASE 1 (6 TO 9 MGD) EXPANSION



GEOTECHNICAL EXPLORATION TABLE (PERFORMED BY EGS SOUTHEAST, LLC)

BORING NUMBER	DEPTH	TEST TYPE	NORTHING	EASTING
B-1	45'	SPT	2049890.41	502686.35
B-2	45'	SPT	2050003.69	502780.89
B-3	45'	SPT	2049809.16	502794.17
B-4	45'	SPT	2049835.88	502599.64
B-5	70'	SPT	2046449.78	502740.28
B-6	20'	SPT	2049912.92	502355.08
B-7	20'	SPT	2049902.28	502577.13
B-8	20'	SPT	2049911.75	502569.26
FUTURE B-9	20'	SPT	2050030.63	502487.03
FUTURE B-10	20'	SPT	2049990.78	502490.82
B-11	20'	SPT	2049878.09	502547.45
B-12	20'	SPT	2049870.11	502561.57
B-13	30'	SPT	2049981.96	502451.89
B-14	15'	AUGER	2050148.59	502350.36
B-15	6'	AUGER	2049930.00	502382.50
B-16	6'	AUGER	2049838.80	502513.21
B-17	6'	AUGER	2049866.76	502617.32
B-18	6'	AUGER	2049975.80	502658.74
B-19	6'	AUGER	2050083.04	502700.16

REV.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: _____
 DRAWN BY: _____
 SHEET CHECK BY: _____
 CROSS CHECK BY: _____
 APPROVED BY: _____
 DATE: JANUARY 2018

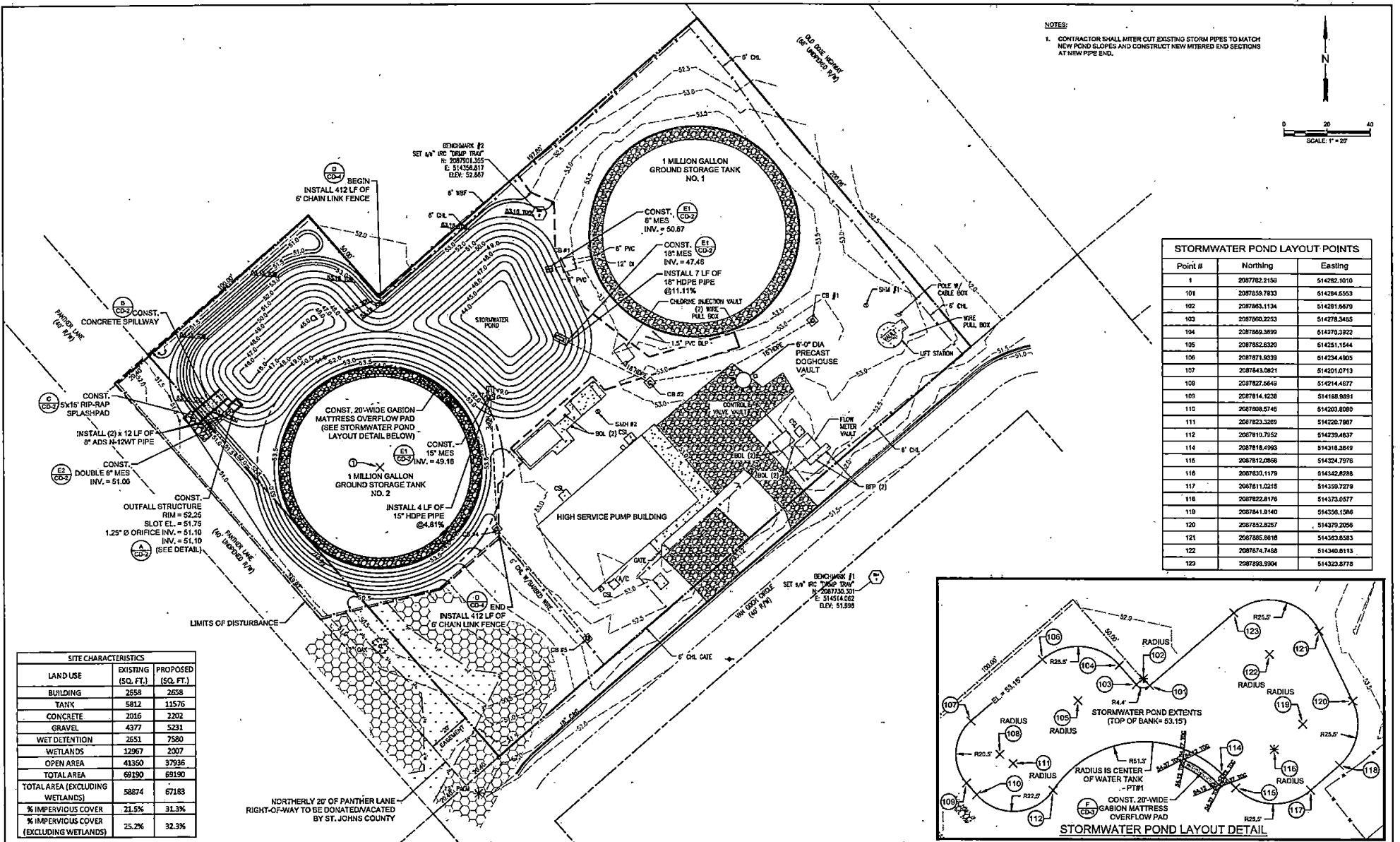
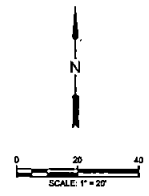
CDM Smith
 8381 Old Brick Road, Suite 200
 Jacksonville, FL 32256
 904.771.7100
 FL CCR No. FR-0000070

ST. JOHNS COUNTY UTILITY DEPARTMENT
 ST. JOHNS COUNTY, FLORIDA
**NORTHWEST WTP
 PHASE 1 (6 TO 9 MGD) EXPANSION**

NORTHWEST WTP PROPOSED SITE PLAN
 PROJECT NO. 8334-23360
 FILE NAME: C0035PL.DWG
 Figure 5-1

NOTES:

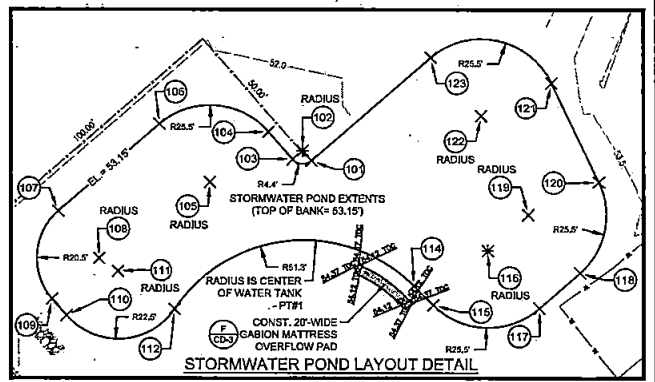
1. CONTRACTOR SHALL MITER CUT EXISTING STORM PIPES TO MATCH NEW POND SLOPES AND CONSTRUCT NEW MITERED END SECTIONS AT NEW PIPE END.



STORMWATER POND LAYOUT POINTS

Point #	Northing	Easting
1	2087782.2150	514262.1010
101	2087659.7830	514284.5553
102	2087863.1134	514281.5870
103	2087860.2253	514278.3435
104	2087869.3899	514270.3222
105	2087852.8320	514251.1544
106	2087871.6039	514234.4903
107	2087843.0821	514201.0713
108	2087827.5849	514214.4877
109	2087814.1238	514188.9891
110	2087808.5745	514200.8080
111	2087823.3285	514220.7907
112	2087810.7052	514239.4837
114	2087818.4390	514318.2649
116	2087812.0866	514324.7976
118	2087830.1179	514342.8788
117	2087811.0218	514320.7278
118	2087822.8176	514373.0577
119	2087841.8140	514356.1586
120	2087852.8257	514379.2026
121	2087885.8818	514363.6583
122	2087874.7455	514340.8113
123	2087893.9904	514323.8778

SITE CHARACTERISTICS		
LAND USE	EXISTING (SQ. FT.)	PROPOSED (SQ. FT.)
BUILDING	2658	2658
TANK	5812	11576
CONCRETE	2016	2202
GRAVEL	4377	5231
WET DETENTION	2651	7580
WETLANDS	2267	2007
OPEN AREA	41350	37926
TOTAL AREA	69190	69190
TOTAL AREA (EXCLUDING WETLANDS)	58874	67183
% IMPERVIOUS COVER (EXCLUDING WETLANDS)	21.5%	31.3%
% IMPERVIOUS COVER (EXCLUDING WETLANDS)	25.2%	32.3%



NO. BY DATE CHECKED 1. _____ 2. _____ 3. _____	M MOTT MACDONALD Mod. MacDonald Florida, LLC	Architects Engineers Surveyors AA-00000555 ES-0000165 LB-0006783 10243 Calanion Pkwy., N., Suite 320 Jacksonville, Florida 32256 Telephone: (904) 253-1000	DESIGNER: S. WHITE DRAWN BY: C. RILEY DATE: DEC 2018 CHECKED BY: S. MORGAN DATE: DEC 2018	DESIGN ENGINEER STEVEN D. WHITE, P.E. FLORIDA REGISTRATION NO. 58809	St. Johns County Utility Department 1200 STATE ROAD 16 ST. AUGUSTINE, FL 32084 PHONE: (904) 208-2025 FAX: (904) 209-2827	NORTHEAST WTP GROUND STORAGE TANK AND HIGH SERVICE PUMP STATION UPGRADES	NORTHEAST WTP PROPOSED SITE PLAN	FIGURE 5-2

Section 6

Implementation and Compliance

6.1 Public Hearing/Dedicated Revenue Hearing

A public hearing/dedicated revenue hearing for the Northeast WTP project and the Northwest WTP project will be held at the St. Johns County Administrative Offices on March 19, 2019 at the regularly scheduled meeting beginning at 9:00 am after advertising in the area newspapers. Interested parties will be notified of the hearing. Records of the public notice and this plan will be made available in the SJCUD office. The FDEP proposed hearing date for the Northwest and Northeast WTPs is May 8, 2019.

6.2 Regulatory Agency Review

As part of the review process for this plan and in order to qualify for a subsidized SRF loan, various governmental agencies must approve the manner in which the County will implement the plan. Agencies that will have the opportunity to review and comment on the plan include:

- Florida Department of Environmental Protection
- Northeast Florida Regional Planning Council
- St. Johns River Water Management District
- Office of the Governor's State Clearinghouse

6.3 Financial Planning

6.3.1 Proposed Project Costs

The scope of this financing plan includes the planned water improvements for a total construction cost of approximately \$9.7M in 2019 dollars including a 10 percent contingency as shown in Table 6-1 and a total program cost including engineering, program management, legal, and administration of \$10.5M as shown in Table 6-1. The recommended financial plan funds the water system CIP improvements presented with a SRF loan.

Table 6-1 Proposed Project Costs and Funding Sources

Project Description	Construction Costs	Contingency	Subtotal Construction Costs	Technical Services	Total Project Costs	Funding Source
Northwest WTP Expansion	\$6,033,000	\$603,300	\$6,636,000	\$530,800	\$7,166,800	State Revolving Fund (SRF)
Northeast WTP Water Booster PS & Storage	\$2,799,900	\$280,000	\$3,079,900	\$246,400	\$3,326,300	State Revolving Fund (SRF)
Totals	\$8,832,900	\$883,300	\$9,715,900	\$777,200	\$10,493,100	

6.3.2 Financing Plan Model

The Financing Plan was determined using a spreadsheet model. The model projected customer user fees for the financing scenario. Debt service was added to show financing projects with either SRF funding or revenue bonds.

6.3.2.1 Assumptions

Financial

Financial assumptions including the following:

- Debt terms (SRF) – 20 year; 2% interest rate; 2% issuance cost
- Debt terms (Revenue Bonds) – 20 year; 4.5% interest rate; 2% issuance cost
- Customer base – assumed 4% increase in single-family and commercial customers

Table 6-2 presents the comparison of SRF funding versus revenue bond financing.

Table 6-2 Comparison of SRF Funding vs. Conventional Revenue Bond Financing

	NW WTP Expansion	NE Water Booster PS & Storage	With SRF Funds	With Revenue Bonds
Administration Costs	\$481,000		\$481,000	
Construction Costs	5,551,700	2,799,900	8,351,600	8,351,600
Subtotal	\$6,032,700	\$2,799,900	\$8,832,600	\$8,832,600
Contingency	603,300	280,000	883,300	883,300
Subtotal	\$6,636,000	\$3,079,900	\$9,715,900	\$9,715,900
Technical Services ^a	530,800	246,400	777,200	777,200
Subtotal	\$7,166,800	\$3,326,300	\$10,493,100	\$10,493,100
Finance Costs - SRF and Revenue Bonds (2%) ^b	143,300	66,500	209,800	209,800
Subtotal	\$7,310,100	\$3,392,800	\$10,702,900	\$10,702,900
Capitalized Interest ^c	97,500	36,800	134,300	-
Principal Loan/Bond	\$7,407,600	\$3,429,600	\$10,837,200	\$10,702,900
Annual Debt Service ^d	\$451,200	\$209,000	\$660,200	\$822,800
^a Technical service estimated at 8 percent of Construction & Contingency Costs.				
^b Finance costs equal 2 percent of above subtotal.				
^c Capitalized interest equal to one-half of sixteen month construction period for NW and 13 months for NE at 2 percent interest.				
^d Annual Debt Service for SRF based on 20 years at 2 percent interest and Revenue Bond based on 20 years at 4.5 percent interest.				

Table 6-3 presents the impact of the SRF loans and revenue bonds on the customer base, in terms of the cost per equivalent residential connection (ERC) per year. There is no rate increase needed for the projected debt service.

Table 6-3 Annual Cost of Selected Plan with SRF & Revenue Bond Financing

	With SRF Funds	With Revenue Bonds
Annual Debt Service ^a	\$660,200	\$822,800
Residential Percent ^b	94.15%	94.15%
Residential Share of Debt Service	\$621,578	\$774,666
Residential Customers	41,851	41,851
Annual Cost per customer	\$14.85	\$18.51

^a Taken from Table 6-2

^b The residential percent equals the residential customers (41,851) divided by system customers (44,452) in FY2018.

Table 6-4 presents a financial analysis of the water system and the overall impact of the improvements and identifies total water system costs and the resulting net revenue through 2022. With no rate increases and conservative customer increases, the existing water rates will provide for the existing revenue bond debt and SRF loan coverage through 2022.

Table 6-4 Financial Analysis of the Water System including the Overall Impact of the Improvements Through 2022

	Fiscal Year 2018 - CAFR	Fiscal Year 2019 - CAFR	Fiscal Year 2020 - Projection	Fiscal Year 2021 - Projection	Fiscal Year 2022 - Projection
Operating Revenues					
Water and Wastewater Sales ^a	\$46,903,729	\$48,600,467	\$50,544,486	\$52,566,265	\$54,668,916
Special Assessment	\$31,279			-	-
Interest Revenue ^b	\$606,649	\$710,000	\$738,400	\$767,900	\$798,700
Other		\$68,897	\$71,653	\$74,519	\$77,500
Fees & Services ^c	\$3,532,130	\$3,638,094	\$3,747,237	\$3,859,654	\$3,975,443
Total Operating Revenues	\$51,073,787	\$53,017,458	\$55,101,775	\$57,268,338	\$59,520,559
Operating Expenses^d					
Salaries & Benefits	\$7,388,178	\$8,691,718	\$8,995,928	\$9,310,786	\$9,636,663
Utilities	\$2,309,806	\$2,831,004	\$2,930,089	\$3,032,642	\$3,138,785
Chemicals & Treatment	\$2,342,676	\$2,552,325	\$2,641,656	\$2,734,114	\$2,829,808
Adjust to Draft CAFR	\$1,425,058				
Materials, Supplies & Parts	\$2,058,220	\$2,294,635	\$2,374,947	\$2,458,070	\$2,544,103
Equipment & Vehicles		\$693,300	\$717,566	\$742,680	\$768,674
Purchased Water Costs					
Outside Services	\$3,220,156	\$3,837,249	\$3,971,553	\$4,110,557	\$4,254,427
Other	\$349,143	\$455,666	\$471,614	\$488,121	\$505,205
Total Operating Expenses	\$19,093,237	\$21,355,897	\$22,103,353	\$22,876,971	\$23,677,665
Administration Expenses^d					
Salaries & Benefits	\$4,715,909	\$5,234,640	\$5,417,852	\$5,607,477	\$5,803,739
Building Overhead	\$245,433	\$226,076	\$233,989	\$242,178	\$250,655
Office Supplies	\$134,946	\$187,398	\$193,957	\$200,745	\$207,772
Insurance	\$76,083	\$81,491	\$84,343	\$87,295	\$90,351
Indirect	\$3,043,805	\$3,146,806	\$3,256,944	\$3,370,937	\$3,488,920
Accounting & Legal	\$485,356	\$514,410	\$532,414	\$551,049	\$570,336

Table 6-4 Financial Analysis of the Water System including the Overall Impact of the Improvements Through 2022

	Fiscal Year 2018 - CAFR	Fiscal Year 2019 - CAFR	Fiscal Year 2020 - Projection	Fiscal Year 2021 - Projection	Fiscal Year 2022 - Projection
A/E & Professional Services	\$809,329	\$1,115,739	\$1,154,790	\$1,195,208	\$1,237,040
Other	\$47,387	\$243,162	\$251,673	\$260,481	\$269,598
Total Administration Expenses	\$9,558,248	\$10,749,722	\$11,125,962	\$11,515,371	\$11,918,409
Non-Operating Revenue					
Proceeds from Sale of Assets	\$(45,286)				
Construction Grants		\$3,319,810			
Equity (Unit Conn Fees) ^e	\$8,050,890	\$5,727,300	\$5,956,392	\$6,194,648	\$6,442,434
Other - Hastings	\$237,000				
Non-Operating Revenue	\$8,242,604	\$9,047,110	\$5,956,392	\$6,194,648	\$6,442,434
Net Revenues for Debt Service	\$30,664,906	\$29,958,949	\$27,828,852	\$29,070,644	\$30,366,919
Existing Debt Service - Revenue Bonds^f					
Series 1991A	\$3,625,000	\$3,625,000	\$3,625,000	\$3,625,000	
Series 2013A&B	\$1,760,438	\$1,749,788	\$1,745,238	\$1,724,438	\$5,067,188
Series 2014	\$2,265,850	\$2,264,250	\$2,261,250	\$2,267,000	\$2,260,000
Series 2016	\$4,350,263	\$4,347,063	\$4,346,063	\$4,347,313	\$4,623,563
Total Existing Revenue Bond Debt Service	\$12,001,551	\$11,986,101	\$11,977,551	\$11,963,751	\$11,950,751
Projected Revenue Bond					
FY 2019 CIP - US1 FM Relocation -\$6 M (LC 1.5%, 5%, 20 yrs)				\$488,677	\$488,677
Total Existing & Projected Revenue Bond Debt Service	\$12,001,551	\$11,986,101	\$11,977,551	\$12,452,428	\$12,439,428
Debt Service Coverage - Revenue Bonds (1.2X Required)	2.56	2.50	2.32	2.33	2.44
Net Revenues for SRF Debt Service	\$ 18,663,355	\$ 17,972,848	\$ 15,851,301	\$ 16,618,216	\$ 17,927,490
Existing SRF Loans ^f					

Table 6-4 Financial Analysis of the Water System including the Overall Impact of the Improvements Through 2022

	Fiscal Year 2018 - CAFR	Fiscal Year 2019 - CAFR	Fiscal Year 2020 - Projection	Fiscal Year 2021 - Projection	Fiscal Year 2022 - Projection
2012 SRF	\$ 542,688	\$ 542,627	\$ 542,565	\$ 542,501	\$ 542,435
2013 SRF	\$ 429,850	\$ 429,850	\$ 429,850	\$ 429,850	\$ 429,850
Total Existing SRF Loans	\$ 972,538	\$ 972,477	\$ 972,415	\$ 972,351	\$ 972,285
Projected SRF Loans					
FY 2017 Loan Application-\$37,039,140 (LC 2%, 2%, 20 yrs)				\$2,224,000	\$2,224,000
FY2019 Loan Application NE Water PS & Storage \$3,326,300 (LC 2%, 2%, 20 yrs)				\$209,000	\$209,000
FY2019 Loan Application NW WTP \$7,166,800 (LC 2%, 2%, 20 yrs)				\$451,200	\$451,200
FY 2019 CIP - I/I \$3M; Lift Sta \$4M (LC 2%, 5%,20 yrs)					\$436,700
Total Existing & Projected SRF Loans	\$972,538	\$972,477	\$972,415	\$3,856,551	\$4,293,185
Debt Service Coverage - SRF Loans (1.15X Required)	19.19	18.48	16.30	4.31	4.18
Other Debt and Capital					
Leases					
JCI Note A&B ^f	\$37,938	\$11,666			
Trane - Main ^f	\$26,430	\$26,430	\$26,430	\$26,430	\$26,430
Trane - PV ^f	\$18,780	\$18,780	\$18,780	\$18,780	\$18,780
Capital Expenses - Unit Connection Fees ^e	\$3,768,952	\$8,000,000	\$10,400,000	\$3,500,000	\$5,250,000
Capital Expense & Transfer to R&R Fund ^e	\$4,225,690	\$2,615,000	\$2,405,000	\$2,655,000	\$2,405,000
Total Other Debt & Capital	\$8,077,790	\$10,671,876	\$12,850,210	\$6,200,210	\$7,700,210
Annual Cash Surplus (Deficit)	\$9,613,027	\$6,328,495	\$2,028,676	\$6,561,455	\$5,934,095

^a Water & Sewer Rate revenue projections are increased by 4% from FY 2019 per Budget.

^b Interest revenue is projected to increase by 4% from FY 2019 Budget.

^c Fees & Services revenue is projected to increase by 3% from FY 2019 Budget.

^d Operating expenses were increased by 3.5% from FY 2019 Budget.

^e Unit Connection Fee revenue is projected to increase by 4% from FY 2019 Budget.

^f Debt Service payments were taken from the County's debt service amortization tables.

^gThe capital expenses from Unit Connection Fees & transfer to the R&R Fund is based on the FY 2019 CIP.

6.4 Implementation

SJCUD has the sole responsibility and authority to implement the recommended facilities. There are no inter-local agreements necessary for the County to provide drinking water services throughout the planning area.

6.5 Implementation Schedule

The estimated project schedule for the construction and planning activities of the SRF funding of the drinking water funding is presented in **Table 6-5**. Construction of these improvements is anticipated to commence by September 2019 for the Northwest WTP and July 2019 for the Northeast WTP.

Table 6-5 Construction Loan Schedule

Task	Northwest WTP	Northeast WTP
Request for Inclusion and Business Plan Submitted	March 1, 2019	March 1, 2019
Facilities Plan Completed	February 25, 2019	February 25, 2019
Public Hearing - County Commission	March 19, 2019	March 19, 2019
DEP Review, Planning Document Approved	March 22, 2019	March 22, 2019
Design Submittal	May 31, 2019	March 15, 2019
Bid Date	June 22, 2019	May 8, 2019
Construction Start	September 20, 2019	August 1, 2019
Substantial Completion	November 16, 2020	August 1, 2020

Appendix A

Northwest WTP Wetland Impacts

Memorandum

To: David Prah, P.E.

From: Brendan Brown, PWS

Date: December 20, 2018

Subject: St John's County NWWTP Expansion –
Wetland Delineation

CDM Smith conducted a 1-day field visit to the St John's County NWWTP (site) to assess the presence of wetlands within and directly adjacent to the potential project area. The results of this assessment are presented below.

Wetland Assessment and Delineation

CDM Smith conducted a site visit on November 28th, 2018 to determine the presence and extent of state and federally jurisdictional wetlands on the project site. The evaluation was conducted in accordance with routine determination guidelines as specified in the Florida Unified Wetland Delineation Methodology produced by Florida Department of Environmental Protection (FDEP) (Chapter 62-340 F.A.C.) and in the US Army Corps of Engineers (USACE) Wetland Delineation Manual (Technical Report Y-87-1) and Atlantic and Gulf Coastal Plain Regional Supplement. The wetland boundaries were flagged in the field and need to be located by a professional surveyor licensed in the state of Florida. The surveyed wetland boundary has not been provided at this time. The project area contains forested wetland areas that were historically cleared in the 1990s. Several small (less than 0.1 acre) wetlands were observed within the potential project area. The wetland areas meet both the state and federal criteria for jurisdictional wetlands. Common wetland species include red maple (*Acer rubrum*) and sweetgum (*Liquidambar styraciflua*) in the canopy. Understory species include wax myrtle (*Morella cerifera*), marsh fern (*Thelypteris palustris*), and cinnamon fern (*Osmunda cinnamomea*). Soils in most of the wetland areas meet the dark surface and sandy mucky mineral hydric soil indicators (USDA NRCS 2018). In general, seasonal high water levels are at ground surface.

Project Permitting

If impacts to the wetlands would occur due to construction, then an Environmental Resource Permit would be required from the FDEP. A federal permit may be required from the USACE if the wetlands are claimed as jurisdictional waters of the United States. However, the USACE may not claim jurisdiction of the wetlands depending on their assessment of connection to waters of the

United States. USACE jurisdictional claims require further documentation by that agency and verification by the Environmental Protection Agency. If the wetlands are claimed as jurisdictional wetlands by USACE, then the project may be able to be permitted with a Nationwide Permit. A pre-application meeting with USACE would be the first step in determining USACE jurisdictional status of the wetlands on site.

Once the surveyed locations of the wetland boundaries are provided by the surveyor and preliminary impacts are assessed, then pre-application meetings should be conducted with USACE and FDEP separately to determine potential permitting requirements for both stormwater and wetland impacts.

Appendix B

Northeast WTP and GST ERS Report

**Attachment A – FDEP
Northeast Water Treatment Plant
and Ground Storage Tank
St. Johns County, Florida
ERS Job No. 18106
January 2019**

Introduction

The applicant, in accordance with the attached plans, proposes to impact approximately 0.18 acre of wetlands for the construction of a ground storage tank and high pump station at an existing water treatment plant. The project site is approximately 1.59 acres in size and is located east of U. S. Highway 1 (Dixie Highway) at 326 Van Gogh Circle in St. Johns County, Florida. The property is within Section 12, Township 5 South, Range 28 East. The project location is shown on the attached Location Map (USGS Topographic Quadrangle Map, Exhibit 1).

Project History

The project will take place within an existing water treatment plant operated by the St. Johns County Utilities Department. The existing facility was authorized by the St. Johns River Water Management District (SJRWMD) Permit No. 63797-1 in 2000.

Soils

According to the *Soil Survey of St. Johns County, Florida* (U.S. Department of Agriculture – Natural Resource Conservation Service), one soil type is present on-site: Immokalee fine sand (7).

Site Description

Land use/land cover types were identified within and around the project, as depicted on Exhibit 3. These communities were classified using the Florida Department of Transportation *Florida Land Use, Cover and Forms Classification System* (FLUCFCS, 1999). The on-site wetlands were delineated pursuant to Florida Department of Environmental Protection (FDEP) methodologies (62-340, F.A.C.).

Hardwood-Coniferous Mixed (FLUCFCS 434) – Dominant vegetation in the undeveloped upland consists of a mixture of slash pine (*Pinus elliottii*), American elm (*Ulmus americana*), wax myrtle (*Morella cerifera*), red maple (*Acer rubrum*), muscadine grape (*Vitis rotundifolia*), bracken fern (*Pteridium aquilinum*), winged sumac (*Rhus copallinum*), and saw palmetto (*Serenoa repens*).

Reservoirs less than 10 acres (FLUCFCS 534) – A small stormwater pond approximately 0.08 acre in size is located on-site west of the existing water tank. This stormwater pond is part of the existing on-site stormwater management system, authorized by SJRWMD Permit No. 63797-1.

Wetland Forested Mixed (FLUCFCS 630) – Vegetation within the wetland includes Chinese tallow (*Triadica sebifera*), coastal plain willow (*Salix caroliniana*), red maple, swamp tupelo (*Nyssa biflora*), Virginia chainfern (*Woodwardia virginica*), cinnamon fern (*Osmunda cinnamomea*), slash pine, American elm, sweetgum (*Liquidambar styraciflua*), and wax myrtle. Evidence of historic disturbance was noted based on presence of trash, debris, and gravel/rock in the soil profile.

Wildlife

A preliminary survey for faunal species listed as endangered, threatened, or of special concern by the U.S. Fish and Wildlife Service (FWS) and/or the Florida Fish and Wildlife Conservation Commission (FWC) was conducted for the proposed project. The listed species survey also included the identification and mapping of habitat suitable for protected fauna.

In preparation for the field inspection, a Geographic Information System (GIS) database search and map review was conducted for the project site and surrounding areas for the occurrence of protected species or their habitat. Data compiled by the Florida Natural Areas Inventory (FNAI), which contains documented occurrences of species listed by FWS and/or FWC, were reviewed. Attention was focused on those species listed by FWC (Chapter 68A-27 F.A.C) and FWS (50 CFR 17.11-12). The data used to search for documented occurrences listed by FWC and FWS is updated regularly to ensure accuracy.

The GIS databases indicate no occurrence records of federally-listed species within the site. Nearby documented occurrences of listed species are depicted on Exhibits 5 and 6.

The wood stork is listed as Threatened by the FWS and FWC. No wood storks were observed during site visits. This species of bird forages in wetlands and water bodies with a shallow, variable water level, and nests in colonies in secluded wetlands. The latest supplemental habitat guidelines issued by FWS for wood storks define the Core Foraging Areas (CFA) for the wood stork in northern Florida as all suitable foraging habitat within 13 miles of any active breeding colony. The nearest documented active wood stork colony is located at Dee Dot Ranch approximately 9.7 miles north of the site (Exhibit 5).

The nearest documented wading bird rookery is located approximately 3.9 miles east of the site and was last documented as active in the 1970s FWC rookery survey. The proposed wetland impact includes functionally isolated forested wetland with minimal hydroperiod. On-site wetlands are not considered suitable foraging habitat due to canopy closure and reduced hydroperiod, therefore impacts to these wetlands are not expected to cause adverse impacts to wood stork or other wading bird habitat.

Exhibit 6 shows the locations of all documented listed species within a five-mile radius of the site.

Although the bald eagle (*Haliaeetus leucocephalus*) has been delisted by FWS and FWC, restrictions regarding work around their nests are still in place. The closest documented eagle nest is located approximately 3.5 miles northeast of the project site and was last documented as active in 2002. Since the management guidelines only apply when activity is proposed within 660 feet of a currently active nest, work within the assessment areas is not anticipated to adversely affect bald eagles.

The gopher tortoise (*Gopherus polyphemus*) is listed as Threatened by FWC and permitting and relocation are required for any tortoises or burrows that are impacted by a project. No gopher tortoise burrows or suitable habitat were identified within the project site. Due to the surrounding development and lack of suitable on-site habitat, no gopher tortoises are expected to be adversely affected by the project.

The eastern indigo snake (*Drymarchon corais couper*), a commensal species of the gopher tortoise, is listed as Threatened by both the state and federal wildlife agencies; it requires large areas of suitable habitat. There is one documented occurrence of the eastern indigo snake within 5-miles of the project

site. The snake was documented prior to 1982, approximately 3.5 miles northeast of the site. There is no suitable habitat for the eastern indigo snake in the project area, therefore this species is unlikely to be affected by the proposed work

Proposed Wetland Impacts

The applicant proposes to impact 0.18-acre of forested wetlands and 0.08-acre of existing stormwater pond for the construction of a water storage tank and high pump station. Pursuant to 62-340.700(1)(c), F.A.C., alteration of surface waters less than 0.5 acres that were constructed for stormwater treatment in accordance with a valid permit are not considered adverse.

Secondary Impacts

Areas of wetland that will remain are already highly disturbed from the neighboring residential development and existing roadway, therefore, no additional secondary impacts are expected to occur as a result of the proposed project.

There is no evidence of use of the adjacent uplands by aquatic or wetland dependent listed animal species for nesting or denning. ERS staff considered other relevant activities that are very closely linked and causally related to any proposed dredging or filling and determined they will not cause impacts to significant historical or archaeological resources. This project represents the total scope of development; no future phases are anticipated.

Elimination and Reduction of Wetland Impacts

The applicant has addressed elimination and reduction of wetland impacts by proposing to purchase credits from an in-basin mitigation bank. Utilization of regionally significant mitigation meets the criteria outlined in subsection 10.2.1.2(b), A.H. Vol. I, that states, a mitigation plan that provides regional ecological value and that provides greater long term ecological value than the area of wetland to be adversely affected will not require the applicant to implement practicable design modifications to reduce or eliminate impacts.

Cumulative Wetland Impacts

The proposed mitigation plan offsets the project's adverse impacts within the same drainage basin as the proposed impacts (Basin 5). The project as proposed and conditioned will not cause unacceptable cumulative impacts upon wetlands and other surface waters within the same drainage basin as this project. This project complies with Section 10.2.8, A.H. Vol. I.

Proposed Mitigation

Compensatory mitigation for unavoidable wetland impacts will be accomplished through the purchase of 0.07 UMAM mitigation bank credits from an in-basin mitigation bank. Please see attached UMAM Assessment for the proposed impacts. The applicant is currently in negotiations with several mitigation banks. A mitigation provider will be selected and a letter of reservation will be provided upon approval of the proposed mitigation plan. Pursuant to 62-340.700(1)(c), F.A.C., impacts to the existing stormwater pond are not considered adverse, thus no mitigation is proposed.

site: **Northeast Water Treatment Plant**

date: **1.7.19**

Impacts	Habitat Type	Location and Landscape Support		Water Environment		Community Structure		Acres	Functional Loss
		before	after	before	after	before	after		
1	630	4	0	4	0	4	0	0.18	0.0720
2									0.0000
3									0.0000
4									0.0000
5									0.0000
6									0.0000
7									0.0000
8									0.0000
9									0.0000
10									0.0000

Total Impact Acres	0.18	Total Creation Acres	0	Total Enhancement Provided	0	Upland Acres Provided	0
Total Functional Loss	0.072	Total Functional Gain Units	0.000				

Mitigation	Habitat Type	Location and Landscape Support		Water Environment		Community Structure		Time Lag	Risk Factor	Preservation Adjustment Factor	Relative Functional Gain	Acres Provided	Functional Gain Units
		before	after	before	after	before	after						
Preservation													
1								1	1.00		0.0000		0.0000
2								1	1.00		0.0000		0.0000
3								1	1.00		0.0000		0.0000
4								1	1.00		0.0000		0.0000
5								1	1.00		0.0000		0.0000
6								1	1.00		0.0000		0.0000
7								1	1.00		0.0000		0.0000
creation													
1								1	1.00		0.0000		0.0000
2								1	1.00		0.0000		0.0000
uplands													
11				X	X	X		1	1.00		0.0000		0.0000
12				X	X	X		1	1.00		0.0000		0.0000
13				X	X	X		1	1.00		0.0000		0.0000
14				X	X	X		1	1.00		0.0000		0.0000
15				X	X	X		1	1.00		0.0000		0.0000

Version:
June 2018

Chapter 62-340, F.A.C. Data Form

1. Date: 1-7-19 2. Staff Present: Environmental Resource Solutions 3. Data recorder(s): _____
 4. County: St. Johns (55) 5. Site Name: SJCUD NE Water Treatment Plant Tracking #: _____
 6. Point ID: A1 GPS Coordinates: 30.075518, -81.448448
 7. Distances and bearings from fixed objects (if no GPS): _____
 8. Current condition of described point: Authorized or legal condition Unauthorized or illegal condition
 9. Work type: Identification Delineation
 Point status: Wetland Non-Wetland Surface Water Upland

10. Vegetative Stratum §62-340.400: Using §62-340.400, F.A.C. with reasonable scientific judgment, select the appropriate vegetative stratum. (Do not include FAC species when determining 10% minimum areal extent.)
 Canopy (Min. 10% areal extent) Subcanopy (Min. 10% areal extent) Groundcover (No min. areal extent)
 Vegetation Absent at Point (Skip to # 14) Why? _____

11. Plant List §62-340.200(2),(6),(16), §62-340.400, §62-340.450, F.A.C.: Plant recorder: _____
As is under current conditions, without considering RSJ* or the legality of any alterations:

Select and identify plants in an area just large enough to represent and classify the plant community at the described point. Do not extend into different communities or hydrologic conditions.

1. Record the scientific name (binomial) and status of each plant species necessary to identify/delineate and classify the plant community in the selected area.
 2. Record the percent areal extent in the canopy, subcanopy, and groundcover columns for each species.
 3. For each species present in the **stratum selected in #10**, transfer the numbers from only that stratum's column into the appropriate status columns.

#	Binomial of Observed Species	Status	Canopy	Subcanopy	Groundcover	Upland	Facultative	Fac. Wet	Obligate
1.	Acer rubrum	FW	25					25	
2.	Morella cerifera	F	10	20			10		
3.	Serenoa repens	U		5					
4.	magnolia virginiana	O		10					
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.									
20.									
Percent areal extent totals for the stratum selected in question 10						0	10	25	0

12. In the stratum selected in #10: What is the % areal extent of Obligate plants? 0
 What is the % areal extent of Upland plants? 0
 Is the areal extent of Obligate plants greater than that of Upland plants? Yes No

13. In the stratum selected in #10: What is the total % areal extent of Obligate & Facultative Wet plants combined? 25
 What is the total % areal extent of Obligate, Facultative Wet, & Upland plants combined? 25
 What is the percentage of OBL + FACW in relation to all plants, excluding FAC? 100.0% $\left(\frac{OBL+FACW}{OBL+FACW+UPL} \right)$

Point ID/Location: 30.075518, -81.448448 Soil describer:

14. LRR/MLRA 154(U). Textures: Peat, Mucky Peat, Muck, Mucky Mineral (S or F), Sand, Fine, Marl

15. Is a soil profile description possible? Yes No If no, why? (If No, skip to #18)

16. Soil Description: As is under current conditions, without considering RSJ* or the legality of any alterations

Soil surface, or 0 inch depth for purposes of Chapter 62-340, F.A.C. is the muck or mineral surface (whether natural or fill)

Horizon	beginning to ending Depth (inches)	moist condition Matrix Hue Value/ Chroma	Matrix Texture	For sandy matrix horizons w/ value ≤ 3: % Organic Coating	- Describe soil features: DA (areas darker than matrix), LA (areas lighter than matrix), RC (redox concentrations): Record in moist condition hue value/chroma; % volume in horizon; boundaries (sharp/clear/diffuse); shape (rounded/linear/angular). - OB (organic bodies): Record texture (muck or mucky mineral), % volume in horizon. - Note if horizon's dominant characteristic is Physically Mixed (PM) - Note if horizon is Nonsoil (any material not listed in "Textures" above) and describe its type - Note if horizon is Fill and describe any inclusions or nonsoil materials within it.
1	0-1	10YR 2/1	Muck	100	
2	1-6	10YR 2/1	Sandy	90	Remaining Grains Unmasked
3					
4					
5					
6					

17. Hydric Soil Field Indicators: If present, check all Hydric Soil Field Indicators satisfied and specify their beginning and ending depths

Indicator Present	Begin Depth	End Depth
<input checked="" type="checkbox"/> All Texture		
<input checked="" type="checkbox"/> Sandy Texture		
<input checked="" type="checkbox"/> Fine Texture		
<input type="checkbox"/> (A1) Histosol*		
<input type="checkbox"/> (A2) Histic Epipedon*		
<input type="checkbox"/> (A3) Black Histic*		
<input type="checkbox"/> (A4) Hydrogen Sulfide*		
<input type="checkbox"/> (A5) Stratified Layers*		
<input type="checkbox"/> (A6) Organic Bodies		
<input type="checkbox"/> (A7) 5cm Mucky Mineral*		
<input checked="" type="checkbox"/> (A8) Muck Presence*		
<input type="checkbox"/> (A9) 1cm Muck*		
<input type="checkbox"/> (A11) Depleted Below Dark Surface		
<input type="checkbox"/> (A12) Thick Dark Surface		
<input type="checkbox"/> (S4) Sandy Gleyed Matrix*		
<input type="checkbox"/> (S5) Sandy Redox		
<input type="checkbox"/> (S6) Stripped Matrix		
<input checked="" type="checkbox"/> (S7) Dark Surface		
<input type="checkbox"/> (S8) Polyvalue Below Surface		
<input type="checkbox"/> (S9) Thin Dark Surface		
<input type="checkbox"/> (S12) Barrier Islands 1cm Muck		
<input type="checkbox"/> (F2) Loamy Gleyed Matrix*		
<input type="checkbox"/> (F3) Depleted Matrix		
<input type="checkbox"/> (F6) Redox Dark Surface		
<input type="checkbox"/> (F7) Depleted Dark Surface		
<input type="checkbox"/> (F8) Redox Depression		
<input type="checkbox"/> (F10) Marl		
<input type="checkbox"/> (F12) Iron-Manganese Masses		
<input type="checkbox"/> (F13) Umbric Surface		
<input type="checkbox"/> (F22) Very Shallow Dark Surface		

* = Stand-alone D Test - both hydric soil and hydrologic indicator To combine layers/indicators to meet thickness requirements, see NRCS Hydric Soils Technical Note 4.

18. Is any nonsoil horizon present at or within the uppermost 12 inches of the ground surface? Yes No Soil profile or site inaccessible

19. Hydric status: Hydric Non-hydric Inconclusive (disturbed/mixed soil, insufficient evaluation depth due to nonsoil or standing water, lack of site access, etc.) Why?

(Note: For a disturbed/mixed profile or nonsoil substrate, if one or more hydric soil field indicator is met within the mixed profile or despite the nonsoil horizon, it is considered hydric. Otherwise it is inconclusive.)

20. Is the depth of the soil profile 20 inches or greater from the soil surface? Yes No If no, depth of soil profile is: 6 inches Why? Trash preventing further exploration

(examples of refusal: root refusal, nonsoil, water table, loose sand, heavy texture, time constraints, weather conditions)

21. Observed height or depth of standing water from soil surface: 6 inches Above Below Not Observed

Point ID/Location: 30.075518, -81.448448

Indicator recorder: _____

22. Hydrologic Indicators: As is under current conditions, without considering the legality of any alterations

Hydrologic Indicators per §62-340.500, F.A.C. (and as applied to §62-340.600, F.A.C.)	Present at or near point and reliable	Present but not reflective of normal wet season hydrology	Predicted during normal wet season or high water	Within 100 ft waterward of point (not for upland or ID points)	1. Describe the type of all checked indicators. 2. Approximate the distance and compass direction of indicators within 100 ft of the point. 3. For water level indicators* note the height from ground surface at the point as well as waterward (w/ distance from point).
(1) Algal mats*					
(2) Aquatic mosses or liverworts*					
(3) Aquatic plants					
(4) Aufwuchs					
(5) Drift lines and rafted debris*					
(6) Elevated lichen lines*					
(7) Evidence of aquatic fauna					
(8) Hydrologic data*	✓				Hydric Soil Indicator expressed to surface
(9) Morphological plant adaptations*					
(10) Secondary flow channels					
(11) Sediment deposition*					
(12) Tussocks or hummocks*					
(13) Water marks*	✓				Stain marks on tree trunks

Estimated Seasonal High Water at Point: _____ inches

Above Ground Surface No Water Level Indicators
 Above Soil Surface N/A (described point is Upland)

23. Given normal conditions and reasonable scientific judgment, in accordance with §62-340.500, F.A.C., is one or more wetland hydrologic indicator(s) present or predicted with normal wet season or high water conditions at the described point (considering drought, seasonality, abnormal wet conditions, rare/aberrant events)? Yes No

24. Delineation by Wetland Definition §62-340.300(1), F.A.C.

As is under current conditions, without considering RSJ or the legality of any alterations:*

- a) Has a wetland boundary been delineated at the described point? Yes No (If No, skip to #25)
- b) If yes to 24a, can the boundary be easily delineated using the definition of wetlands? Yes No

25. A & B Test Wetland Criteria §62-340.300(2)(a),(b), F.A.C.

As is under current conditions, without considering RSJ or the legality of any alterations:*

- a) Is the areal extent of Obligate plants in the stratum selected in #10 greater than the areal extent of all Upland plants in that stratum? (See #12) Yes No Vegetation Absent at Point (If "Vegetation Absent", skip to #25f)
- b) Is the areal extent of Obligate and/or Facultative Wet plants in the stratum selected in #10 equal to or greater than 80% of all the plants in that stratum, excluding Facultative plants? (See #13) Yes No
- c) Is the soil hydric as identified using standard NRCS definitions and practices (see #19), or would a hydric soil field indicator be present but for any disturbance affecting the soil?
 Yes No Indeterminable with current conditions Why? _____
- d) Is the substrate composed of riverwash, nonsoil (see #18), rock outcrop-soil complex, or is the substrate located within an artificially created wetland area? Yes No If yes, which condition is present? _____
- e) Is one or more of the hydrologic indicators in §62-340.500, F.A.C. present at the described point? (See #23) Yes No
- f) Are the A Test criteria met per §62-340.300(2)(a), F.A.C. at the described point? Yes No
 (Note: If yes to 25a and yes to either 25c, 25d, or 25e, A Test criteria are met)
- g) Are the B Test criteria met per §62-340.300(2)(b), F.A.C. at the described point? Yes No
 (Note: If yes to 25b and yes to either 25c, 25d, or 25e, B Test criteria are met)
- h) Are there any **alterations or conditions** affecting reliable application of the A or B Test such that the Altered Sites Test is more appropriate? Yes No

Point ID/Location: 30.075518, -81.448448

26. C Test Wetland Criteria §62-340.300(2)(c), F.A.C.

As is under current conditions, without considering RSJ* or the legality of any alterations:

- a) Per §62-340.300(2)(c), F.A.C. is the described point Pine Flatwoods or Improved Pasture, or does it have drained soils? Yes No **If yes, select which of the following are met, then skip to #26d**
 Pine Flatwoods Improved Pasture Drained Soils

*Pine Flatwoods must have a monotypic or mixed canopy of long leaf pine or slash pine and an understory dominated by saw palmetto with **NO** obligate or facultative wet species present in the ground cover. Improved Pasture means areas where the dominant native plant community has been replaced with planted or natural recruitment of herbaceous species which are **NOT** obligate or facultative wet species and which have been actively maintained for livestock through mechanical means or grazing. Drained Soils are those in which permanent artificial alterations to the hydrology preclude the formation of hydric soils.*

- b) Are the soils at the described point saline sands (salt flats-tidal flats), or have they been field verified by NRCS's Keys to Soil Taxonomy (4th ed. 1990) as Umbraqualfs, Sulfaquents, Hydraquents, Humaquepts, Histosols (except Folists), Argiaquolls, or Umbraquolls? Yes No
- c) Do the soils at the described point have a NRCS hydric soil field indicator, and is the point located within a map unit named or designated by the NRCS as frequently flooded, depressionnal, or water? Yes No Inconclusive
Map Unit: Immokalee fine sand (9)

- d) Are the C Test criteria met per §62-340.300(2)(c), F.A.C. at the described point? Yes No
(Note: If no to 26a and yes to either 26b or 26c, C Test criteria are met)

- e) Are there any alterations or conditions affecting reliable application of the C Test such that the Altered Sites Test is more appropriate? Yes No

27. D Test Wetland Criteria §62-340.300(2)(d), F.A.C.

As is under current conditions, without considering RSJ* or the legality of any alterations:

- a) Is the soil hydric as verified by a NRCS hydric soil field indicator? (See #17 & 19)
 Yes No Inconclusive (If No or Inconclusive, skip to #27d)
- b) Does any NRCS hydric soil field indicator begin at the soil surface or are any of the following indicators present: A1, A2, A3, A4, A5, A7, A8, A9, S4, F2? Yes No (If yes, then hydrologic indicator §62-340.500(8) or (11) is met)
- c) Is one or more of the hydrologic indicators in §62-340.500, F.A.C. present at the described point? (See #23) Yes No
- d) Are the D Test criteria met per §62-340.300(2)(d), F.A.C. at the described point? Yes No
(Note: If yes to 27a and yes to either 27b or 27c, D Test criteria may be met)
- e) Are there any alterations or conditions affecting reliable application of the D Test such that the Altered Sites Test is more appropriate? Yes No

28. Altered Sites Tests §62-340.300(3), F.A.C.

For purposes of Chapter 62-340, F.A.C. **altered** refers to any natural or man-induced condition(s) which **masks or eliminates reliable expression** of wetland indicators (i.e. hydrophytic vegetation, hydric soils, and hydrologic indicators). **Unaltered or normal does not require a natural condition**, only an expression of wetland indicators that is sufficient to **reliably identify or delineate the wetland using the criteria in §62-340.300, F.A.C.**

Are there any alterations (legal or illegal) affecting the normal wetland condition? Yes No (If no, skip to #32)

29. Authorized or Legally Altered Vegetation and Soils Test Criteria §62-340.300(3)(a), F.A.C.

- a) Are there **authorized or legal** alterations affecting reliable expression of vegetation at the described point?
 Yes No If yes, how? _____
- b) Are there **authorized or legal** alterations affecting reliable soil evaluation at the described point? Yes No
If yes, how? _____ (If no to both 29a and 29b, skip to #30)
- c) If yes to 29a or 29b, which criteria tests are affected by the legal alterations?
 A Test B Test C Test D Test
- d) Using the most reliable available information and reasonable scientific judgement, would the types of evidence and characteristics contemplated in §62-340.300, F.A.C. identify or delineate the described point as a wetland with cessation of the legal altering activities? Yes No If no, why? _____ (If no, skip to #30)
- e) If yes to 29d, what §62-340.300, F.A.C. evidence would be expressed with cessation of legally altering activities?
 Plants Soils Hydrologic indicators
- f) If yes to 29d, which tests would be passed with cessation of legally altering activities?
 Wetland Definition A Test B Test C Test D Test

Why? _____

Point ID/Location: 30.075518; -81.448448

30. Authorized or Legally Altered Hydrology Test Criteria §62-340.300(3)(b), F.A.C.

- a) Has wetland hydrology of the area been **legally** drained or lowered? Yes No (If no, skip to #31)
If yes, how? _____
- b) Has wetland hydrology been **legally** eliminated at the described point? Yes No (If no, skip to #31)
- c) If yes to 30b, using reasonable scientific judgment or §62-340.550, F.A.C., have dredging or filling activities authorized by **Part IV of Chapter 373, F.S. permanently eliminated** wetland hydrology at the described point such that the wetland definition cannot be met? Yes No
Chapter 373, F.S. Part II activities (e.g., water use permits) or other temporary hydrologic alterations (e.g., surface water pumps, drought) do not apply.
- d) If no to 30c, what §62-340.300, F.A.C. evidence would be expressed with cessation of temporary hydrologic alterations?
 Plants Soils Hydrologic indicators
- e) If no to 30c, Which tests would be passed with cessation of temporary hydrologic alterations?
 Wetland Definition A Test B Test C Test D Test
Why? _____

31. Illegal or Unauthorized Altered Sites Test Criteria §62-340.300(3)(c), F.A.C.

If the altering activity is a violation of regulatory requirements, then application of §62-340.300(3)(c), F.A.C. and all provisions of Chapter 62-340, F.A.C. are utilized to identify or delineate the wetland in a forensic manner. This identification or delineation reflects the condition immediately prior to the unauthorized alteration.

- a) Have any **unauthorized** alterations affected the normal wetland condition at the described point? Yes No
If yes, how? _____ (If no, skip to #32)
- b) If yes to 31a, which criteria tests are affected by the unauthorized alterations?
 A Test B Test C Test D Test
- c) With reasonable scientific judgment is the described point a wetland, or would it have been a wetland immediately prior to the unauthorized alteration? Yes No. If no, why? _____ (If no, skip to #32)
- d) If yes to 31c, what §62-340.300, F.A.C. evidence was present immediately prior to the unauthorized alteration?
 Plants Soils Hydrologic indicators
- e) If yes to 31c, which tests would be passed immediately prior to the unauthorized alteration?
 Wetland Definition A Test B Test C Test D Test
Why? _____

32. Wetland and Other Surface Water Summary §62-340.600(2)(a-e), F.A.C.:

- Given normal expression, cessation of authorized alterations, or immediately prior to any unauthorized alterations:
- a) With reasonable scientific judgment is the described point a wetland as defined in §62-340.200(19), F.A.C. and located by §62-340.300, F.A.C.? Yes No. If yes, which criteria identified or delineated the wetland?
 Wetland Definition A Test B Test C Test D Test (Note: All wetlands are surface waters)
If summary answers differ from answers in 25f, 25g, 26d, or 27d, why? _____
- b) Is the described point located at or within the Mean High Water Line of a tidal water body?
 Yes No MHWL Unknown
- c) Is the described point located at or within the Ordinary High Water Line of a non-tidal natural water body or natural watercourse? Yes No
- d) Is the described point located at or within the top of the bank of an artificial lake, borrow pit, canal, ditch, or other type of artificial water body or watercourse with side slopes of 1 foot vertical to 4 feet horizontal or steeper, excluding spoil banks when the canals and ditches have resulted from excavation into the ground? Yes No
- e) Is the described point located at or within the Seasonal High Water Line of an artificial lake, borrow pit, canal, ditch, or other type of artificial water body or watercourse with side slopes flatter than 1 foot vertical to 4 feet horizontal or an artificial water body created by diking or impoundment above the ground? Yes No

33. Connection or Isolation of Wetland per Applicant's Handbook vol.1 Section 2.0 (54)

If the described point is a wetland, does it have a connection via wetlands or other surface waters, or is it wholly surrounded by uplands and therefore isolated? Connected Isolated N/A (Point is not wetland)

Point ID/Location: 30.075518, -81.448448

34. Photographs: Soil profile ID, Soil profile close-up, Soil horizon(s), Cross sections (horizons/critical depths), Other soil characteristics, Water level, Hydrologic indicators, Plant ID, Plant community, etc.

#	Memory Card # / Metadata	Description, compass direction (if applicable)	Taken By
1.			
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Notes:

Helpful Definitions for Applying Ch 62-340, F.A.C.

***"RSJ"** stands for Reasonable Scientific Judgement where used throughout this Data Form

Definition from §62.340.200(19) Florida Administrative Code

"Wetlands," as defined in subsection 373.019(17), F.S., means those areas that are inundated or saturated by surface water or ground water at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto.

Definition from §373.019(19) Florida Statutes

"Surface water" means water upon the surface of the earth, whether contained in bounds created naturally or artificially or diffused. Water from natural springs shall be classified as surface water when it exits from the spring onto the earth's surface.

Definition from §373.019(14) Florida Statutes

"Other watercourse" means any canal, ditch, or other artificial watercourse in which water usually flows in a defined bed or channel. It is not essential that the flowing be uniform or uninterrupted.

Definition from §62.340.200(15) Florida Administrative Code

"Seasonal High Water" means the elevation to which the ground and surface water can be expected to rise due to a normal wet season.

From The Florida Wetlands Delineation Manual pg. 37

Ordinary high water is that point on the slope or bank where the surface water from the water body ceases to exert a dominant influence on the character of the surrounding vegetation and soils. The OHWL frequently encompasses areas dominated by non-listed vegetation and non-hydric soils. When the OHWL is not at a wetland edge, the general view of the area may present an "upland" appearance.

Definition from §403.803(14) Florida Statutes

"Swale" means a manmade trench which:

- (a) Has a top width-to-depth ratio of the cross-section equal to or greater than 6:1, or side slopes equal to or greater than three feet horizontal to 1 foot vertical;
- (b) Contains contiguous areas of standing or flowing water only following a rainfall event;
- (c) Is planted with or has stabilized vegetation suitable for soil stabilization, stormwater treatment, and nutrient uptake; and
- (d) Is designed to take into account the soil erodibility, soil percolation, slope, slope length, and drainage area so as to prevent erosion and reduce pollutant concentration of any discharge.

Version:
June 2018

Chapter 62-340, F.A.C. Data Form

1. Date: 1-7-19 2. Staff Present: Environmental Resource Solutions 3. Data recorder(s): _____
 4. County: St. Johns (55) 5. Site Name: SJCUD NE Water Treatment Plant Tracking #: _____
 6. Point ID: A2 GPS Coordinates: 30.075478, -81.448406
 7. Distances and bearings from fixed objects (if no GPS): _____
 8. Current condition of described point: Authorized or legal condition Unauthorized or illegal condition
 9. Work type: Identification Delineation
 Point status: Wetland Non-Wetland Surface Water Upland

10. Vegetative Stratum §62-340.400: Using §62-340.400, F.A.C. with reasonable scientific judgment, select the appropriate vegetative stratum. (Do not include FAC species when determining 10% minimum areal extent.)
 Canopy (Min. 10% areal extent) Subcanopy (Min. 10% areal extent) Groundcover (No min. areal extent)
 Vegetation Absent at Point (Skip to # 14) Why? _____

11. Plant List §62-340.200(2),(6),(16), §62-340.400, §62-340.450, F.A.C.: Plant recorder: _____
As is under current conditions, without considering RSJ or the legality of any alterations:*

Select and identify plants in an area just large enough to represent and classify the plant community at the described point. Do not extend into different communities or hydrologic conditions.

1. Record the scientific name (binomial) and status of each plant species necessary to identify/delineate and classify the plant community in the selected area.
 2. Record the percent areal extent in the canopy, subcanopy, and groundcover columns for each species.
 3. For each species present in the **stratum selected in #10**, transfer the numbers from only that stratum's column into the appropriate status columns.

#	Binomial of Observed Species	Status	Canopy	Subcanopy	Groundcover	Upland	Facultative	Fac. Wet	Obligate
1.	Quercus virginiana	U	25			25			
2.	Serenoa repens	U		25					
3.	Ilex glabra	F		20					
4.	Pteridium aquilinum	U			20				
5.									
6.									
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16.									
17.									
18.									
19.									
20.									

Percent areal extent totals for the stratum selected in question 10 25 0 0 0

12. In the stratum selected in #10: What is the % areal extent of Obligate plants? 0
 What is the % areal extent of Upland plants? 25
 Is the areal extent of Obligate plants greater than that of Upland plants? Yes No

13. In the stratum selected in #10: What is the total % areal extent of Obligate & Facultative Wet plants combined? 0
 What is the total % areal extent of Obligate, Facultative Wet, & Upland plants combined? 25
 What is the percentage of OBL + FACW in relation to all plants, excluding FAC? 0.0% $\left(\frac{OBL+FACW}{OBL+FACW+UPL} \right)$

Point ID/Location: 30.075478, -81.448406 Soil describer:

14. LRR/MLRA 154(U) Textures: Peat, Mucky Peat, Muck, Mucky Mineral (S or F), Sand, Fine, Marl

15. Is a soil profile description possible? Yes No If no, why? (If No, skip to #18)

16. Soil Description: As is under current conditions, without considering RSJ* or the legality of any alterations

Soil surface, or 0 inch depth for purposes of Chapter 62-340, F.A.C. is the muck or mineral surface (whether natural or fill)

Horizon	beginning to ending Depth (inches)	moist condition Matrix Hue Value/ Chroma	Matrix Texture	For sandy matrix horizons w/ value ≤ 3: % Organic Coating	- Describe soil features: DA (areas darker than matrix), LA (areas lighter than matrix), RC (redox concentrations): Record in moist condition hue value/chroma; % volume in horizon; boundaries (sharp/clear/diffuse); shape (rounded/linear/angular). - OB (organic bodies): Record texture (muck or mucky mineral), % volume in horizon. - Note if horizon's dominant characteristic is Physically Mixed (PM) - Note if horizon is Nonsoil (any material not listed in "Textures" above) and describe its type - Note if horizon is Fill and describe any inclusions or nonsoil materials within it.
1	0-6	10YR 2/2	Sandy	60	Remaining grains unmasked
2	6-7	10YR 7/2	Sandy	100	60% Rock Inclusions.
3					
4					
5					
6					

17. Hydric Soil Field Indicators: If present, check all Hydric Soil Field Indicators satisfied and specify their beginning and ending depths

<input checked="" type="checkbox"/> All Texture	<input checked="" type="checkbox"/> Sandy Texture	<input checked="" type="checkbox"/> Fine Texture	Indicator Present	Begin Depth	End Depth
<input type="checkbox"/> (A1) Histosol*	<input type="checkbox"/> (S4) Sandy Gleyed Matrix*	<input type="checkbox"/> (F2) Loamy Gleyed Matrix*	1.		
<input type="checkbox"/> (A2) Histic Epipedon*	<input type="checkbox"/> (S5) Sandy Redox	<input type="checkbox"/> (F3) Depleted Matrix	2.		
<input type="checkbox"/> (A3) Black Histic*	<input type="checkbox"/> (S6) Stripped Matrix	<input type="checkbox"/> (F6) Redox Dark Surface	3.		
<input type="checkbox"/> (A4) Hydrogen Sulfide*	<input type="checkbox"/> (S7) Dark Surface	<input type="checkbox"/> (F7) Depleted Dark Surface	4.		
<input type="checkbox"/> (A5) Stratified Layers*	<input type="checkbox"/> (S8) Polyvalue Below Surface	<input type="checkbox"/> (F8) Redox Depression	5.		
<input type="checkbox"/> (A6) Organic Bodies	<input type="checkbox"/> (S9) Thin Dark Surface	<input type="checkbox"/> (F10) Marl	6.		
<input type="checkbox"/> (A7) 5cm Mucky Mineral*	<input type="checkbox"/> (S12) Barrier Islands 1cm Muck	<input type="checkbox"/> (F12) Iron-Manganese Masses			
<input type="checkbox"/> (A8) Muck Presence*		<input type="checkbox"/> (F13) Umbric Surface			
<input type="checkbox"/> (A9) 1cm Muck*		<input type="checkbox"/> (F22) Very Shallow Dark Surface			
<input type="checkbox"/> (A11) Depleted Below Dark Surface					
<input type="checkbox"/> (A12) Thick Dark Surface					

* = Stand-alone D Test - both hydric soil and hydrologic indicator

To combine layers/indicators to meet thickness requirements, see NRCS Hydric Soils Technical Note 4.

18. Is any nonsoil horizon present at or within the uppermost 12 inches of the ground surface? Yes No Soil profile or site inaccessible

19. Hydric status: Hydric Non-hydric Inconclusive (disturbed/mixed soil, insufficient evaluation depth due to nonsoil or standing water, lack of site access, etc.)
Why? Insufficient depth accessible

(Note: For a disturbed/mixed profile or nonsoil substrate, if one or more hydric soil field indicator is met within the mixed profile or despite the nonsoil horizon, it is considered hydric. Otherwise it is inconclusive.)

20. Is the depth of the soil profile 20 inches or greater from the soil surface? Yes No

If no, depth of soil profile is: 7 inches Why? Layer of buried rock encountered
(examples of refusal: root refusal, nonsoil, water table, loose sand, heavy texture, time constraints, weather conditions)

21. Observed height or depth of standing water from soil surface: _____ inches Above Below Not Observed

Point ID/Location: 30.075478, -81.448406

Indicator recorder: _____

22. Hydrologic Indicators: As is under current conditions, without considering the legality of any alterations

Hydrologic Indicators per §62-340.500, F.A.C. (and as applied to §62-340.600, F.A.C.)	Present at or near point and reliable	Present but not reflective of normal wet season hydrology	Predicted during normal wet season or high water	Within 100 ft waterward of point (not for upland or ID points)	1. Describe the type of all checked indicators. 2. Approximate the distance and compass direction of indicators within 100 ft of the point. 3. For water level indicators* note the height from ground surface at the point as well as waterward (w/ distance from point).
(1) Algal mats*					
(2) Aquatic mosses or liverworts*					
(3) Aquatic plants					
(4) Aufwuchs					
(5) Drift lines and rafted debris*					
(6) Elevated lichen lines*					
(7) Evidence of aquatic fauna					
(8) Hydrologic data*					
(9) Morphological plant adaptations*					
(10) Secondary flow channels					
(11) Sediment deposition*					
(12) Tussocks or hummocks*					
(13) Water marks*					

Estimated Seasonal High Water at Point: _____ inches Above Ground Surface No Water Level Indicators
 Above Soil Surface N/A (described point is Upland)

23. Given normal conditions and reasonable scientific judgment, in accordance with §62-340.500, F.A.C., is one or more wetland hydrologic indicator(s) present or predicted with normal wet season or high water conditions at the described point (considering drought, seasonality, abnormal wet conditions, rare/aberrant events)? Yes No

24. Delineation by Wetland Definition §62-340.300(1), F.A.C.

As is under current conditions, without considering RSJ or the legality of any alterations:*

- a) Has a wetland boundary been delineated at the described point? Yes No (If No, skip to #25)
 b) If yes to 24a, can the boundary be easily delineated using the definition of wetlands? Yes No

25. A & B Test Wetland Criteria §62-340.300(2)(a),(b), F.A.C.

As is under current conditions, without considering RSJ or the legality of any alterations:*

- a) Is the areal extent of Obligate plants in the stratum selected in #10 greater than the areal extent of all Upland plants in that stratum? (See #12) Yes No Vegetation Absent at Point (If "Vegetation Absent", skip to #25f)
 b) Is the areal extent of Obligate and/or Facultative Wet plants in the stratum selected in #10 equal to or greater than 80% of all the plants in that stratum, excluding Facultative plants? (See #13) Yes No
 c) Is the soil hydric as identified using standard NRCS definitions and practices (see #19), or would a hydric soil field indicator be present but for any disturbance affecting the soil?
 Yes No Indeterminable with current conditions **Why?** Insufficient soil pit depth
 d) Is the substrate composed of riverwash, nonsoil (see #18), rock outcrop-soil complex, or is the substrate located within an artificially created wetland area? Yes No If yes, which condition is present? _____
 e) Is one or more of the hydrologic indicators in §62-340.500, F.A.C. present at the described point? (See #23) Yes No
 f) Are the A Test criteria met per §62-340.300(2)(a), F.A.C. at the described point? Yes No
 (Note: If yes to 25a and yes to either 25c, 25d, or 25e, A Test criteria are met)
 g) Are the B Test criteria met per §62-340.300(2)(b), F.A.C. at the described point? Yes No
 (Note: If yes to 25b and yes to either 25c, 25d, or 25e, B Test criteria are met)
 h) Are there any **alterations or conditions** affecting reliable application of the A or B Test such that the Altered Sites Test is more appropriate? Yes No

Point ID/Location: 30.075478, -81.448406

26. C Test Wetland Criteria §62-340.300(2)(c), F.A.C.

As is under current conditions, without considering RSJ* or the legality of any alterations:

- a) Per §62-340.300(2)(c), F.A.C. is the described point Pine Flatwoods or Improved Pasture, or does it have drained soils? Yes No **If yes, select which of the following are met, then skip to #26d**
 Pine Flatwoods Improved Pasture Drained Soils

Pine Flatwoods must have a monotypic or mixed canopy of long leaf pine or slash pine and an understory dominated by saw palmetto with **NO** obligate or facultative wet species present in the ground cover. **Improved Pasture** means areas where the dominant native plant community has been replaced with planted or natural recruitment of herbaceous species which are **NOT** obligate or facultative wet species and which have been actively maintained for livestock through mechanical means or grazing. **Drained Soils** are those in which permanent artificial alterations to the hydrology preclude the formation of hydric soils.

- b) Are the soils at the described point saline sands (salt flats-tidal flats), or have they been field verified by NRCS's Keys to Soil Taxonomy (4th ed. 1990) as Umbraqualfs, Sulfaquents, Hydraquents, Humaquepts, Histosols (except Folists), Argiaquolls, or Umbraquults? Yes No
- c) Do the soils at the described point have a NRCS hydric soil field indicator, and is the point located within a map unit named or designated by the NRCS as frequently flooded, depressionnal, or water? Yes No Inconclusive
Map Unit: Immokalee fine sand (9)

- d) Are the C Test criteria met per §62-340.300(2)(c), F.A.C. at the described point? Yes No
(Note: If no to 26a and yes to either 26b or 26c, C Test criteria are met)

- e) Are there any alterations or conditions affecting reliable application of the C Test such that the Altered Sites Test is more appropriate? Yes No

27. D Test Wetland Criteria §62-340.300(2)(d), F.A.C.

As is under current conditions, without considering RSJ* or the legality of any alterations:

- a) Is the soil hydric as verified by a NRCS hydric soil field indicator? (See #17 & 19)
 Yes No Inconclusive (If No or Inconclusive, skip to #27d)
- b) Does any NRCS hydric soil field indicator begin at the soil surface or are any of the following indicators present: A1, A2, A3, A4, A5, A7, A8, A9, S4, F2? Yes No (If yes, then hydrologic indicator §62-340.500(8) or (11) is met)
- c) Is one or more of the hydrologic indicators in §62-340.500, F.A.C. present at the described point? (See #23) Yes No
- d) Are the D Test criteria met per §62-340.300(2)(d), F.A.C. at the described point? Yes No
(Note: If yes to 27a and yes to either 27b or 27c, D Test criteria may be met)
- e) Are there any alterations or conditions affecting reliable application of the D Test such that the Altered Sites Test is more appropriate? Yes No

28. Altered Sites Tests §62-340.300(3), F.A.C.

For purposes of Chapter 62-340, F.A.C. **altered** refers to any natural or man-induced condition(s) which **masks or eliminates reliable expression** of wetland indicators (i.e. hydrophytic vegetation, hydric soils, and hydrologic indicators). **Unaltered or normal does not require a natural condition**, only an expression of wetland indicators that is sufficient to **reliably identify or delineate the wetland using the criteria in §62-340.300, F.A.C.**

Are there any alterations (legal or illegal) affecting the normal wetland condition? Yes No (If no, skip to #32)

29. Authorized or Legally Altered Vegetation and Soils Test Criteria §62-340.300(3)(a), F.A.C.

- a) Are there authorized or legal alterations affecting reliable expression of vegetation at the described point?
 Yes No If yes, how? _____
- b) Are there authorized or legal alterations affecting reliable soil evaluation at the described point? Yes No
If yes, how? Deposition of rock subsurface (If no to both 29a and 29b, skip to #30)
- c) If yes to 29a or 29b, which criteria tests are affected by the legal alterations?
 A Test B Test C Test D Test
- d) Using the most reliable available information and reasonable scientific judgement, would the types of evidence and characteristics contemplated in §62-340.300, F.A.C. identify or delineate the described point as a wetland with cessation of the legal altering activities? Yes No If no, why? No vegetation or hydrology indicators. (If no, skip to #30)
- e) If yes to 29d, what §62-340.300, F.A.C. evidence would be expressed with cessation of legally altering activities?
 Plants Soils Hydrologic indicators
- f) If yes to 29d, which tests would be passed with cessation of legally altering activities?
 Wetland Definition A Test B Test C Test D Test

Why? _____

Point ID/Location: 30.075478, -81.448406

30. Authorized or Legally Altered Hydrology Test Criteria §62-340.300(3)(b), F.A.C.

- a) Has wetland hydrology of the area been **legally** drained or lowered? Yes No (If no, skip to #31)
If yes, how? _____
- b) Has wetland hydrology been **legally** eliminated at the described point? Yes No (If no, skip to #31)
- c) If yes to 30b, using reasonable scientific judgment or §62-340.550, F.A.C., have dredging or filling activities authorized by **Part IV** of Chapter 373, F.S. **permanently eliminated** wetland hydrology at the described point such that the wetland definition cannot be met? Yes No
Chapter 373, F.S. Part II activities (e.g., water use permits) or other temporary hydrologic alterations (e.g., surface water pumps, drought) do not apply.
- d) If no to 30c, what §62-340.300, F.A.C. evidence would be expressed with cessation of temporary hydrologic alterations?
 Plants Soils Hydrologic indicators
- e) If no to 30c, Which tests would be passed with cessation of temporary hydrologic alterations?
 Wetland Definition A Test B Test C Test D Test
Why? _____

31. Illegal or Unauthorized Altered Sites Test Criteria §62-340.300(3)(c), F.A.C.

If the altering activity is a violation of regulatory requirements, then application of §62-340.300(3)(c), F.A.C. and all provisions of Chapter 62-340, F.A.C. are utilized to identify or delineate the wetland in a forensic manner. This identification or delineation reflects the condition immediately prior to the unauthorized alteration.

- a) Have any **unauthorized** alterations affected the normal wetland condition at the described point? Yes No
If yes, how? _____ (If no, skip to #32)
- b) If yes to 31a, which criteria tests are affected by the unauthorized alterations?
 A Test B Test C Test D Test
- c) With reasonable scientific judgment is the described point a wetland, or would it have been a wetland immediately prior to the unauthorized alteration? Yes No If no, why? _____ (If no, skip to #32)
- d) If yes to 31c, what §62-340.300, F.A.C. evidence was present immediately prior to the unauthorized alteration?
 Plants Soils Hydrologic indicators
- e) If yes to 31c, which tests would be passed immediately prior to the unauthorized alteration?
 Wetland Definition A Test B Test C Test D Test
Why? _____

32. Wetland and Other Surface Water Summary §62-340.600(2)(a-e), F.A.C.:

Given normal expression, cessation of authorized alterations, or immediately prior to any unauthorized alterations:

- a) With reasonable scientific judgment is the described point a wetland as defined in §62-340.200(19), F.A.C. and located by §62-340.300, F.A.C.? Yes No If yes, which criteria identified or delineated the wetland?
 Wetland Definition A Test B Test C Test D Test (Note: All wetlands are surface waters)
If summary answers differ from answers in 25f, 25g, 26d, or 27d, why? _____
- b) Is the described point located at or within the Mean High Water Line of a tidal water body?
 Yes No MHWL Unknown
- c) Is the described point located at or within the Ordinary High Water Line of a non-tidal natural water body or natural watercourse? Yes No
- d) Is the described point located at or within the top of the bank of an artificial lake, borrow pit, canal, ditch, or other type of artificial water body or watercourse with side slopes of 1 foot vertical to 4 feet horizontal or steeper, excluding spoil banks when the canals and ditches have resulted from excavation into the ground? Yes No
- e) Is the described point located at or within the Seasonal High Water Line of an artificial lake, borrow pit, canal, ditch, or other type of artificial water body or watercourse with side slopes flatter than 1 foot vertical to 4 feet horizontal or an artificial water body created by diking or impoundment above the ground? Yes No

33. Connection or Isolation of Wetland per Applicant's Handbook vol.1 Section 2.0 (54)

If the described point is a wetland, does it have a connection via wetlands or other surface waters, or is it wholly surrounded by uplands and therefore isolated? Connected Isolated N/A (Point is not wetland)

Point ID/Location: 30.075478, -81.448406

34. Photographs: Soil profile ID, Soil profile close-up, Soil horizon(s), Cross sections (horizons/critical depths), Other soil characteristics, Water level, Hydrologic indicators, Plant ID, Plant community, etc.

#	Memory Card # / Metadata	Description, compass direction (if applicable)	Taken By
1.			
2.			
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Notes:

Helpful Definitions for Applying Ch 62-340, F.A.C.

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"Wetlands," as defined in subsection 373.019(17), F.S., means those areas that are inundated or saturated by surface water or ground water at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto.

Definition from §373.019(19) Florida Statutes

"Surface water" means water upon the surface of the earth, whether contained in bounds created naturally or artificially or diffused. Water from natural springs shall be classified as surface water when it exits from the spring onto the earth's surface.

Definition from §373.019(14) Florida Statutes

"Other watercourse" means any canal, ditch, or other artificial watercourse in which water usually flows in a defined bed or channel. It is not essential that the flowing be uniform or uninterrupted.

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From The Florida Wetlands Delineation Manual pg. 37

Ordinary high water is that point on the slope or bank where the surface water from the water body ceases to exert a dominant influence on the character of the surrounding vegetation and soils. The OHWL frequently encompasses areas dominated by non-listed vegetation and non-hydric soils. When the OHWL is not at a wetland edge, the general view of the area may present an "upland" appearance.

Definition from §403.803(14) Florida Statutes

"Swale" means a manmade trench which:

- (a) Has a top width-to-depth ratio of the cross-section equal to or greater than 6:1, or side slopes equal to or greater than three feet horizontal to 1 foot vertical;
- (b) Contains contiguous areas of standing or flowing water only following a rainfall event;
- (c) Is planted with or has stabilized vegetation suitable for soil stabilization, stormwater treatment, and nutrient uptake; and
- (d) Is designed to take into account the soil erodibility, soil percolation, slope, slope length, and drainage area so as to prevent erosion and reduce pollutant concentration of any discharge.

Appendix C

St. Johns County Consumptive Use Permit Renewal
Technical Memorandum

TECHNICAL MEMORANDUM **JonesEdmunds**

St. Johns County Consumptive Use Permit Renewal

TO: Teri Shoemaker, PE (SJC)

FROM: Michelle Hays, PG (Jones Edmunds)

XC: Larry Miller, PE (SJC), Mark Nelson, PE (Jones Edmunds)

DATE: December 21, 2018

SUBJECT: Summary of Population and Water Demand Projections
Jones Edmunds Project No. 19270-134-01

1 INTRODUCTION

The Integrated Water Resources Plan (IWRP) included population and water demand projections that were developed using 2013 service area build-out projections and 2007 through 2012 monthly water use data. This Technical Memorandum details the updates that were made to the population and water demand projections using 2013 through 2017 data.

2 DATA SOURCES

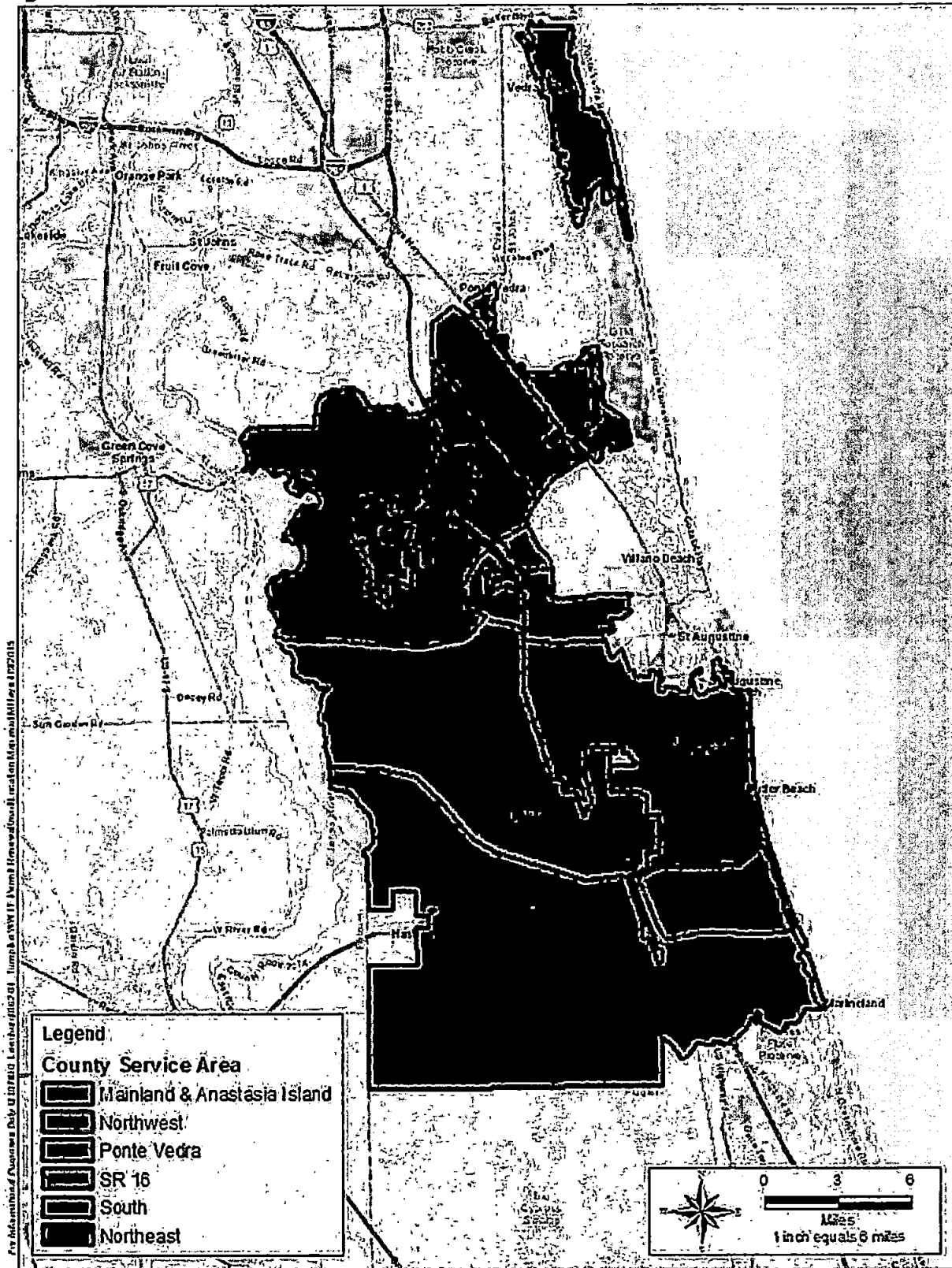
The following information provided by St. Johns County Utilities Department (SJCUD) were used to estimate the population and water demands:

- Accountmaster: GIS layer with monthly water use data from 2013 until 2017 for each account served by SJCUD.
- Technical Bulletin 2013-01 – Service Area Statistics: SJCUD baseline characteristics for each service area.
- Technical Bulletin 2013-02 – Service Area Build-out Projections: SJCUD summary of future development patterns and build-out.
- Technical Bulletin 2013-05 – Population Projections: SJCUD service area growth projections.
- St. Johns County Property Appraiser’s Geodatabase – Parcel-based land use data maintained by the County.

3 POPULATION PROJECTIONS

The IWRP used parcel-based population projections developed by GIS and Associates, Inc. (GISA) for SJCUD in 2009. Jones Edmunds combined updated 2017 parcel data, future land use (FLU) data, and large development data with 2010 census data and utility service area boundaries for the County’s six Service Areas shown in Figure 1. Jones Edmunds provided the updated data to GISA who used the Population Projection Model Engine™ to develop parcel-level projections for each Service Area. Tables 1 and 2 show the population

Figure 1 Service Areas



For information purposes only. This map is not intended to be used as a legal document. It is not a warranty, representation, or endorsement of any product or service.

Table 1 BEBR Medium Population Projections

Water Service Area	Parcel Count	Build-out Projection		Population Projections						
		Housing Units	Population	2017	2020	2025	2030	2035	2040	2045
Mainland and Anastasia Island	26,840	168,515	343,979	52,222	55,885	62,273	67,435	71,780	75,324	78,675
Northeast	4,430	22,768	48,269	8,715	10,114	12,029	13,729	15,281	16,728	18,143
Northwest	10,021	74,806	158,651	23,487	31,278	41,178	50,200	58,757	66,965	75,061
Outside	52,509	228,322	550,610	110,753	120,485	137,538	151,136	162,922	173,368	183,385
Ponte Vedra System	8,805	25,988	54,620	23,038	24,438	26,889	28,933	30,705	32,273	33,776
South	6,532	81,094	181,031	4,627	5,360	6,641	7,674	8,565	9,366	10,134
SR16	2,706	34,688	78,861	6,873	7,739	9,251	10,493	11,590	12,575	13,525
TOTALS	111,843	636,182	1,416,021	229,715	255,300	295,800	329,600	359,600	386,600	412,700

Table 2 BEBR High Population Projections

Water Service Area	Parcel Count	Build-out Projection		Population Projections						
		Housing Units	Population	2017	2020	2025	2030	2035	2040	2045
Mainland and Anastasia Island	26,840	168,515	343,979	52,222	58,977	68,481	77,845	86,213	93,702	102,025
Northeast	4,430	22,768	48,269	8,715	10,692	13,150	15,593	17,933	20,103	22,421
Northwest	10,021	74,806	158,651	23,487	33,534	43,856	53,693	63,274	72,580	81,956
Outside	52,509	228,322	550,610	110,753	128,553	151,293	173,225	193,922	212,620	231,357
Ponte Vedra System	8,805	25,988	54,620	23,038	25,631	29,396	33,131	36,596	39,628	42,798
South	6,532	81,094	181,031	4,627	5,945	7,336	8,583	9,743	10,830	11,939
SR16	2,706	34,688	78,861	6,873	8,467	10,689	12,931	15,119	17,138	19,402
TOTALS	111,843	636,182	1,416,021	229,715	271,800	324,200	375,000	422,800	466,600	511,900

projections for each service area in 5-year increments for the Bureau of Economic and Business Research (BEBR) 2018 medium and high forecasts, respectively. SJCUD also serves the Eagle Creek subdivision with water supplied by wholesale purchase from the City of St. Augustine (COSA). The Eagle Creek subdivision is builtout and; therefore, this area was not included in the population projections. The COSA 2017 water use was assumed for future demand projections.

The GISA parcel-based estimates were used to spatially distribute the population within each service area. Table 3 shows the average number of people per residential unit calculated for each service area. These numbers were used to project the number of future dwelling units. Table 4 summarizes the projected dwelling units in each service area. Figure 2 shows the projected served population growth up to 2045

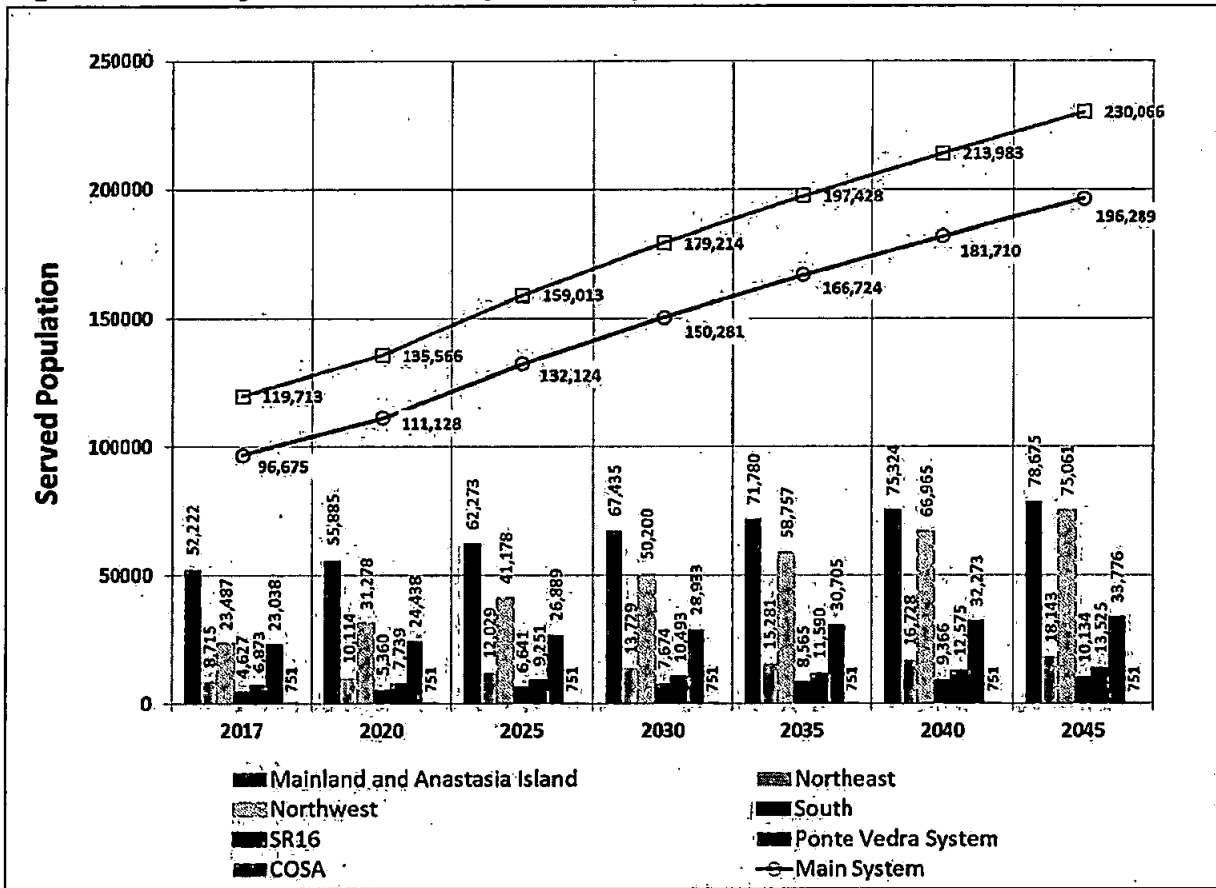
Table 3 Population per Dwelling Unit Ratios

Service Area	Population/ Dwelling Unit
Mainland and Anastasia Island	2.11
Northeast	2.51
Northwest	3.27
Ponte Vedra System	3.27
South	2.23
SR 16	3.27
Eagle Creek (COSA)	2.74

Table 4 Projected Residential Units by Service Area

Service Area	Mainland and Anastasia Island	Northeast	Northwest	Ponte Vedra System	South	SR 16	COSA
2017	24,708	3,478	7,172	7,036	2,073	2,099	274
2020	26,441	4,307	9,552	7,463	2,401	2,364	274
2025	29,463	4,801	12,575	8,212	2,975	2,825	274
2030	31,905	5,479	15,330	8,836	3,437	3,205	274
2035	33,961	6,099	17,943	9,377	3,837	3,539	274
2040	35,638	6,676	20,450	9,856	4,196	3,840	274
2045	37,224	7,241	22,923	10,315	4,540	4,130	274

Figure 2 Projected Served Population by Service Area



As with any population projections, we made assumptions that will impact the estimates. The analysis assumes the following:

- Existing parcels will not experience significant re-development and population increases.
- The spatial distribution of growth used by GISA is representative of current and future growth patterns.
- The number of people per dwelling unit in each service area will remain relatively constant.
- Planned approved developments will be built as planned.
- Non-residential growth will be similar to that experienced in the past and will be proportional to population growth.

4 WATER DEMAND PROJECTIONS

The IWRP water demand analysis has five end uses:

- Single Family (SF) Indoor
- SF Outdoor
- Multi-Family (MF) Indoor

- MF Outdoor
- Non Residential (NR)

Each property being served by 2045 is assigned water demands by developing a per-unit water-use metric for each use type (i.e., indoor use/SFU) and multiplying by the number of units being served estimated in the population projections (i.e., indoor use/SFU x SFU served in 2040 = 2040 SF indoor water use). The water-use metrics calculations are based on analysis of the monthly consumption data contained in the Accountmaster geodatabase. The monthly consumption data from January 2013 to December 2017 was used in the analysis. Total monthly water use for individual accounts in the Accountmaster file was aggregated and summed by their service area and by their type of use (SF, MF, or NR). The number of residential, MF, equivalent residential, and NR connections was totaled for each service area. NR water demand was assumed to grow proportional to the residential population. The Accountmaster data were cleaned of outliers and accounts that were not active over the entire period and were tagged so that their zero consumption during the early parts of the record was not included in the calculations.

Initially, the 5-year average water use for each month was calculated for each use type and normalized by the number of applicable units (equivalent residential connections [ERCs]). The same method as used in the IWRP was used to separate the indoor and outdoor water use for the SF and MF use types within each service area. The method uses the average October to March minimum-recorded consumption for each month through the period of record. Outdoor end-use estimates for SF and MF are calculated to estimate the available reclaimed water offsets.

Tables 5, 6, and 7 summarize the average metrics for the end uses in each service area. Table 8 provides summary statistics for each service area and the utility-wide averages. Table 9 summarizes water use by end use for each service area. The water use estimates shown in Table 9 are at the point of use and do not reflect the delivery system or treatment system losses that need to be factored into the amount of raw water supply needed to serve the existing and future customers.

To estimate the raw water demands for the County's Main System, the delivery system and treatment plant losses were calculated for 2013 through 2017. Table 10 provides the average 2013 – 2017 losses. These losses reflect the losses to the County's Main System, which is served by two wellfields – the Tillman Ridge wellfield and the Northwest wellfield – and wholesale agreements with the City of St. Augustine and JEA.

Additionally, the average annual daily flow (AADF) demands are adjusted to account for the increased demands during drier-than-normal and hotter-than-normal conditions. Table 11 shows the 2011 weather peaking factors documented in the IWRP and used to adjust the demand projections. The future water demands are calculated by multiplying the water use metrics for each end use by the projected population and then by multiplying by the customer to well loss factor and then by the weather peaking factor. The summarized water demands accounting for losses and weather peaking are shown in Table 12 and displayed in Figure 3.

Figure 3 Main System Projected Average Customer Water Demand by Service Area (MGD)

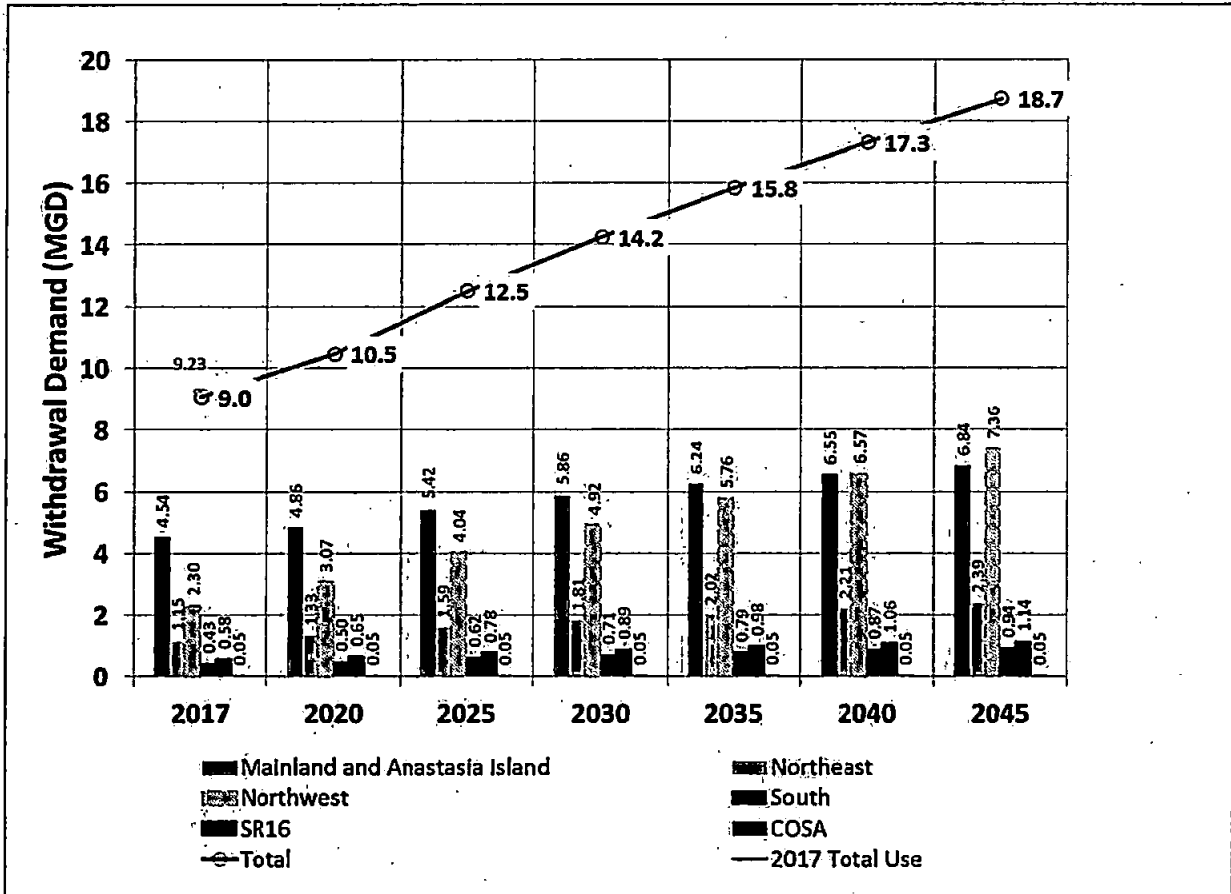


Table 13 shows the water sources that currently supply each service area. We compared the projected water demands shown in Table 12 to the current limits in the County’s Consumptive Use Permit (CUP) issued by the St. Johns River Water Management District to evaluate the capacity to supply each service area’s projected demand. Figure 4 shows that the projected demand for the Northeast service area exceeds the CUP’s JEA wholesale allowance of 1.5 MGD before 2025. Growth in the Northeast service area has recently increased and is projected to increase due to the Twin Creeks development. The County’s wholesale agreement with JEA allows up to 2.25 MGD; therefore, we recommend that the County request a permit modification to increase the JEA wholesale to match the wholesale agreement.

Several assumptions will impact the estimates:

- The period of record is sufficient to characterize water use behavior for each end use.
- Future customers will consume water in the same way existing customers use water.
- Indoor and outdoor water use can be separated based on a minimum-month analysis.

Table 5 Single Family Unit Average Monthly Use (gallons per month)

Service Area	Indoor	Total											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mainland and Anastasia Island	3,686	4,052	3,938	3,705	4,401	4,499	4,969	4,617	4,614	4,352	4,077	4,152	3,984
Northeast	6,763	7,540	7,473	7,484	9,028	9,694	10,990	9,417	9,962	9,311	8,517	9,422	7,989
Northwest	5,904	6,379	6,519	6,581	8,281	9,347	9,445	8,280	8,233	7,548	6,991	7,779	6,614
Ponte Vedra System	5,850	8,656	14,729	8,797	11,401	13,066	14,929	13,273	13,604	11,576	10,563	10,809	10,991
SR16	4,201	4,473	4,526	4,323	5,201	5,813	5,710	5,294	5,273	5,075	4,750	5,072	4,528
Eagle Creek	3,961	4,262	4,308	4,026	4,948	5,315	5,788	5,241	5,340	5,233	4,482	4,723	4,317

Table 6 Multi-Family Unit Average Monthly Use (gallons per month)

Service Area	Indoor	Total											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mainland and Anastasia Island	2,588	2,698	2,758	2,984	3,562	3,046	3,228	3,900	4,096	3,288	2,754	2,743	2,570
Northeast	2,943	3,611	3,092	2,943	3,293	3,017	3,223	3,003	3,046	3,729	3,424	3,793	3,750
Northwest	2,688	3,309	3,194	3,036	3,340	3,317	3,413	3,108	3,144	3,238	3,365	3,158	3,104
Ponte Vedra System	1,832	3,525	3,742	3,321	3,982	3,888	3,966	4,291	5,017	5,044	4,249	4,077	4,616
SR16	2,369	2,671	2,544	2,500	2,884	2,742	2,722	2,548	2,570	2,669	2,710	2,859	2,779

*Eagle Creek has not multi-family units

Table 7 Non-Residential Average Monthly Use per Square Foot

Service Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mainland and Anastasia Island	2.51	2.01	2.50	3.01	2.87	3.04	3.65	3.26	2.98	2.72	2.72	2.55
Northeast	1.86	1.40	1.73	1.89	1.91	1.99	1.61	2.17	2.00	1.92	2.29	2.06
Northwest	3.57	3.02	3.80	4.35	4.70	4.93	4.79	4.89	4.22	4.15	4.35	3.81
Ponte Vedra System	4.88	3.63	4.87	6.06	6.72	7.66	7.86	7.88	6.96	6.53	6.60	5.66
SR16	2.46	1.96	2.41	2.73	2.75	2.84	2.96	2.99	2.69	2.60	2.74	2.48
Eagle Creek	10.08	4.67	6.10	7.46	8.45	9.57	10.87	21.33	12.07	7.63	5.62	5.19

Table 8 Water Use Summary Statistics (gpd)

Service Area	Per Equivalent Connection (gpd)		Per Capita	
	Gross	Residential	Gross	Residential
Mainland and Anastasia Island	148	130	70	59
Northeast	267	261	107	101
Northwest	259	231	79	69
Ponte Vedra System	386	338	180	143
SR16	248	134	68	38
Eagle Creek (COSA)	165	156	60	57
Main System Weighted Average	191	164	75	63
Utility Weighted Average	234	202	98	80

Table 9 Water Use Summary Statistics by End Use

Service Area	Average Daily Use (MGD)					
	SF Indoor	SF Outdoor	MF IN	MF Outdoor	NR	Total
Mainland and Anastasia Island						
2017	2.17	0.35	0.47	0.10	0.59	3.67
2020	2.32	0.37	0.50	0.11	0.63	3.93
2025	2.58	0.42	0.56	0.12	0.71	4.38
2030	2.80	0.45	0.60	0.13	0.76	4.74
2035	2.98	0.48	0.64	0.14	0.81	5.05
2040	3.12	0.50	0.67	0.14	0.85	5.30
2045	3.26	0.53	0.70	0.15	0.89	5.53
Northeast						
2017	0.62	0.20	0.03	0.03	0.05	0.93
2020	0.72	0.23	0.03	0.03	0.06	1.08
2025	0.86	0.27	0.03	0.04	0.07	1.28
2030	0.98	0.31	0.04	0.05	0.08	1.46
2035	1.09	0.35	0.04	0.05	0.09	1.63
2040	1.20	0.38	0.05	0.06	0.10	1.78
2045	1.30	0.41	0.05	0.06	0.11	1.94
Northwest						
2017	1.18	0.35	0.06	0.03	0.24	1.86
2020	1.57	0.47	0.08	0.04	0.32	2.48
2025	2.07	0.62	0.10	0.05	0.43	3.27
2030	2.52	0.75	0.12	0.06	0.52	3.98
2035	2.95	0.88	0.14	0.07	0.61	4.66
2040	3.37	1.01	0.16	0.08	0.69	5.31
2045	3.77	1.13	0.18	0.09	0.78	5.95
Ponte Vedra System						
2017	1.51	1.55	0.11	0.11	0.86	4.15
2020	1.60	1.65	0.12	0.12	0.91	4.41
2025	1.76	1.81	0.13	0.13	1.01	4.85
2030	1.90	1.95	0.14	0.14	1.08	5.22
2035	2.01	2.07	0.15	0.15	1.15	5.54
2040	2.12	2.18	0.16	0.16	1.21	5.82
2045	2.22	2.28	0.16	0.17	1.26	6.09
South						
2017	0.21	0.05	0.03	0.01	0.06	0.35
2020	0.24	0.05	0.04	0.01	0.07	0.40
2025	0.30	0.06	0.05	0.01	0.08	0.50
2030	0.34	0.07	0.05	0.01	0.09	0.58
2035	0.38	0.08	0.06	0.01	0.10	0.64
2040	0.42	0.09	0.07	0.01	0.11	0.70
2045	0.45	0.10	0.07	0.02	0.12	0.76
SR16						
2017	0.11	0.02	0.02	0.02	0.14	0.32
2020	0.18	0.04	0.04	0.04	0.24	0.53
2025	0.22	0.05	0.04	0.04	0.28	0.63
2030	0.25	0.05	0.05	0.05	0.32	0.72
2035	0.27	0.06	0.05	0.05	0.36	0.79
2040	0.29	0.06	0.06	0.06	0.39	0.86
2045	0.32	0.07	0.06	0.06	0.41	0.93
COSA*						
2017	0.035	0.008	0.000	0.000	0.003	0.045

*COSA 2017 use was used for future demand projections.

Table 10 Delivery System and Treatment Plant Loss Factors

Year	Delivery System Loss Factors ¹	Concentrate Disposal	Treatment System Loss Factor ²	Customer to Well Loss Factor
2013	1.06	1.07	1.05	1.18
2014	1.07	1.07	1.06	1.19
2015	1.07	1.06	1.05	1.18
2016	1.06	1.05	1.05	1.17
2017	1.08	1.05	1.04	1.17
Average	1.06	1.07	1.05	1.18

¹ Delivery system loss factors are derived from dividing the metered WTP flows by the metered customer use

² Treatment plant loss factors are derived by dividing the metered well withdrawals by the metered WTP flows

Table 11 Weather-Related AADF Peaking Factors

Service Area	2011 AADF/5 Year AADF
Mainland and Anastasia Island	1.04
Northeast	1.07
Northwest	1.08
Ponte Vedra System	1.16

Table 12 Projected Water Demand with Losses

Year	Service Area							Main System Total ²
	Mainland and Anastasia Island	Northeast	Northwest	Ponte Vedra System	South	SR16	COSA ¹	
2017	4.54	1.15	2.30	5.13	0.43	0.58	0.05	9.05
2020	4.86	1.33	3.07	5.45	0.50	0.65	0.05	10.46
2025	5.42	1.59	4.04	5.99	0.62	0.78	0.05	12.48
2030	5.86	1.81	4.92	6.45	0.71	0.89	0.05	14.24
2035	6.24	2.02	5.76	6.84	0.79	0.98	0.05	15.84
2040	6.55	2.21	6.57	7.19	0.87	1.06	0.05	17.30
2045	6.84	2.39	7.36	7.53	0.94	1.14	0.05	18.72

¹ No projected growth in demand is projected for the COSA Wholesale

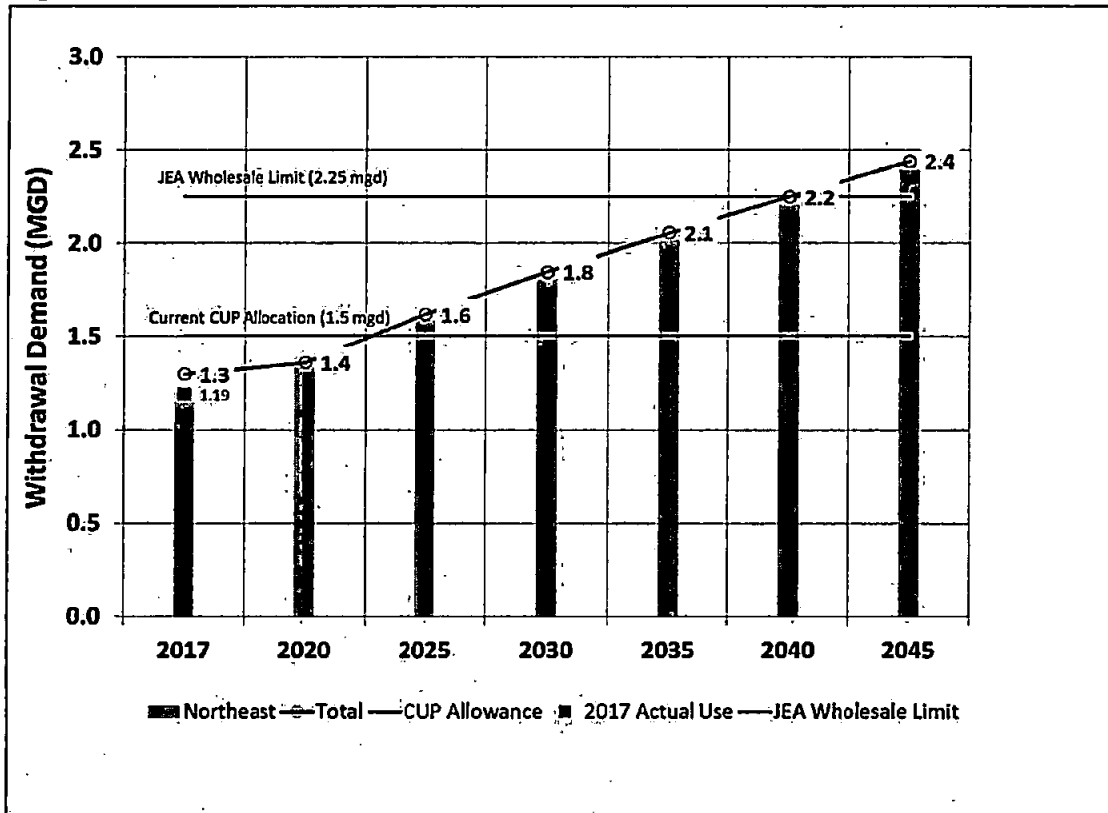
² Main System total does not include Ponte Vedra.

Table 13 Main System Water Sources

Water Source	Service Areas
Tillman Ridge Wellfield (CR214-WTP)	Mainland and Anastasia Island South
JEA Wholesale	Northeast
Northwest Wellfield/WTP	Northwest SR16
City of St. Augustine (COSA) Wholesale	Eagle Creek*

*Eagle Creek is outside the County's mapped service area in Figure 1 and no growth is assumed in the demand projections.

Figure 4 Northeast Service Area



5 BIBLIOGRAPHY

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- St. Johns County Utility Department Technical Bulletin 2013-06. Northwest WTP Capacity Analysis. March 13, 2013.



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THE ST. AUGUSTINE RECORD
Affidavit of Publication

MINUTES AND RECORDS
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SAINT AUGUSTINE, FL 32084

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PUBLISHED EVERY MORNING SUNDAY THROUGH SATURDAY
ST. AUGUSTINE AND ST. JOHNS COUNTY, FLORIDA

STATE OF FLORIDA
COUNTY OF ST. JOHNS

Before the undersigned authority personally appeared JAMIE WILLIAMS who on oath says he/she is an Employee of the St. Augustine Record, a daily newspaper published at St. Augustine in St. Johns County, Florida; that the attached copy of advertisement being a **NOTICE OF HEARING** in the matter of **NE GROUND STORAGE TANK** was published in said newspaper on **03/05/2019**.

Affiant further says that the St. Augustine Record is a newspaper published at St. Augustine, in St. Johns County, Florida, and that the said newspaper heretofore has been continuously published in said St. Johns County, Florida each day and has been entered as second class mail matter at the post office in the City of St. Augustine, in said St. Johns County, Florida for a period of one year preceding the first publication of the attached copy of advertisement; and affiant further says the he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission, or refund for the purpose of securing this advertisement for publication in said newspaper.

Sworn to and subscribed before me this _____ day of **MAR 05 2019**

by Jamie Williams who is personally known to me or who has produced as identification

Tiffany M. Lowe
(Signature of Notary Public)

**NOTICE OF A PUBLIC HEARING
TO RECEIVE PUBLIC INPUT REGARDING THE FACILITY PLAN AND
FUNDING OF THE NORTHEAST GROUND STORAGE TANK AND HIGH
SERVICE PUMPING STATION AND THE NORTHWEST WATER
TREATMENT PLANT EXPANSION PROJECTS**

NOTICE IS HEREBY GIVEN that the Board of County Commissioners (BOCC) of St. Johns County, Florida, will hold a public hearing at their regularly scheduled County Commission meeting at **9:00 a.m. on Tuesday, March 19, 2019** in the County Auditorium, 500 San Sebastian View, St. Augustine, Florida. The purpose of this hearing is to discuss and receive input on the Facility Plan (Plan) for the Northeast Ground Storage Tank and High Service Pumping Station and an expansion of the Northwest Water Treatment Plant projects prepared by CDM Smith. The Plan addresses the need for the Projects, alternatives considered, recommended alternatives, environmental impacts, and the financial impact of the Projects.

It is anticipated that the construction costs of the Projects will be funded by the State of Florida Revolving Loan Program (SRF). Cities, Counties, authorities and special districts responsible for water, wastewater, and stormwater are eligible for low-interest SRF loans.

A copy of the Plan and related documents including the Business Plan will be available for review in the office of 1205 SR16, St. Augustine, FL 32084, between the weekday hours of 8:00 a.m. and 4:00 p.m. All residents and concerned persons are encouraged to attend and express their views to the BOCC or to send written comments to the Clerk of Court. Written comments will be distributed to the BOCC.

NOTICE OF PERSONS NEEDING SPECIAL ACCOMMODATIONS AND TO ALL HEARING IMPAIRED PERSONS: In accordance with the Americans with Disabilities Act, persons needing special accommodations to participate in these proceedings should contact the ADA Coordinator at 904-209-0650 or at the County Administration Building, 500 San Sebastian View, St. Augustine, Florida. For hearing impaired individuals: Florida Relay Service: 1-800-955-8770 no later than 5 days prior to the date of the meeting.

BOARD OF COUNTY COMMISSIONERS
OF ST. JOHNS COUNTY, FLORIDA
HUNTER S. CONRAD, ITS CLERK
By: Yvonne King, Deputy Clerk

0003150604 March 5, 2019

