

TECHNICAL MEMORANDUM**Index Number 417-47 – Davis - Gate Pkwy To RG Skinner - Trans - R**

PREPARED FOR: JEA CAPITAL BUDGET PLANNING

PREPARED BY: WATER/WASTEWATER SYSTEMS PLANNING, Susan R. West, P.E.

DATE: December 28, 2018

Revision History (add rows as needed)			
Revision	Date	Author	Comments
1.0	04-Mar-21	Elizabeth DiMeo	Updated PD to incorporate combining project with 102-37: SIPS Greenland Pipeline, updated conceptual estimate and schedule. Updated information related to associated development projects.

Introduction & Justification

This Technical Memorandum (TM) is prepared for a planned reclaimed water main extension of approximately 15,000 feet of 30" reclaimed water main from RG Skinner Parkway to just south of J. Turner Butler Boulevard (JTB) at the Kernan Boulevard interchange. This TM identifies the preliminary route, itemizes potential design and construction considerations, provides a preliminary opinion of probable cost and includes a proposed project schedule.

This project is part of the JEA Reclaimed Water Master Plan and complete a portion of the connection between the Arlington East WRF with the planned Greenland WRF. Currently the reclaimed water flow from Arlington East is limited to 4 MGD. The completion of this main will allow the overall flow from Arlington East to increase to 16.8 MGD from both this proposed main and other reclaimed main projects currently underway. Increasing the reclaimed water available and subsequently the customer base not only helps revenues, but also reduces the overall discharge volume of treated waters to the St. Johns River and connected tributaries. Reducing the directly discharged volume reduces the amount of Total Nitrogen (TN) released into the environment, and as such provides an excellent approach to further assist JEA's efforts to remain below TMDL maximums. This connection is also critical for providing adequate service to the Nocatee area and the Greenland Energy Center when the combined-cycle turbines are implemented. The Greenland WRF site has been identified to serve as a major reclaimed water storage and delivery point for the reclaimed water distribution system.

This project will be designed and constructed in parallel to 102-37: SIPS - Greenland - Southside Blvd - Deerwood 3 to Greenland 30-inch water main project.

Scope**Capacity**

The reclaimed water main sizing of 30 inches is based on the existing and future projected reclaimed flows from the Arlington East WRF. This selection was based on the JEA Standards for ideal flow velocity of 2 – 5 fps and maximum operating pressure of 75 psi for a reclaimed water main.

Route & Alignment

As shown in Figures 1 and 2, the proposed 30" reclaimed water main routing will connect to a future crossing of the Southeast Quadrant Development Parcel (417-90), follow an easement south then

crossing the ETown development and connecting to the 30" reclaimed water main in RG Skinner Parkway. At the north end, the main will provide a 30 inch stubout for the future connection on the south side of the Southeast Quadrant Development just south of the JTB/Kernan Blvd interchange. A future 30 inch reclaimed main (approximately 5,500 feet) will cross the Southeast Quadrant Development in phases as a cost participation project (first phase anticipated to begin in FY 21). This portion will be handled by a separate project, but is noted to ensure coordination between the projects.

Figure 1. Overall Reclaimed Main Route and Location

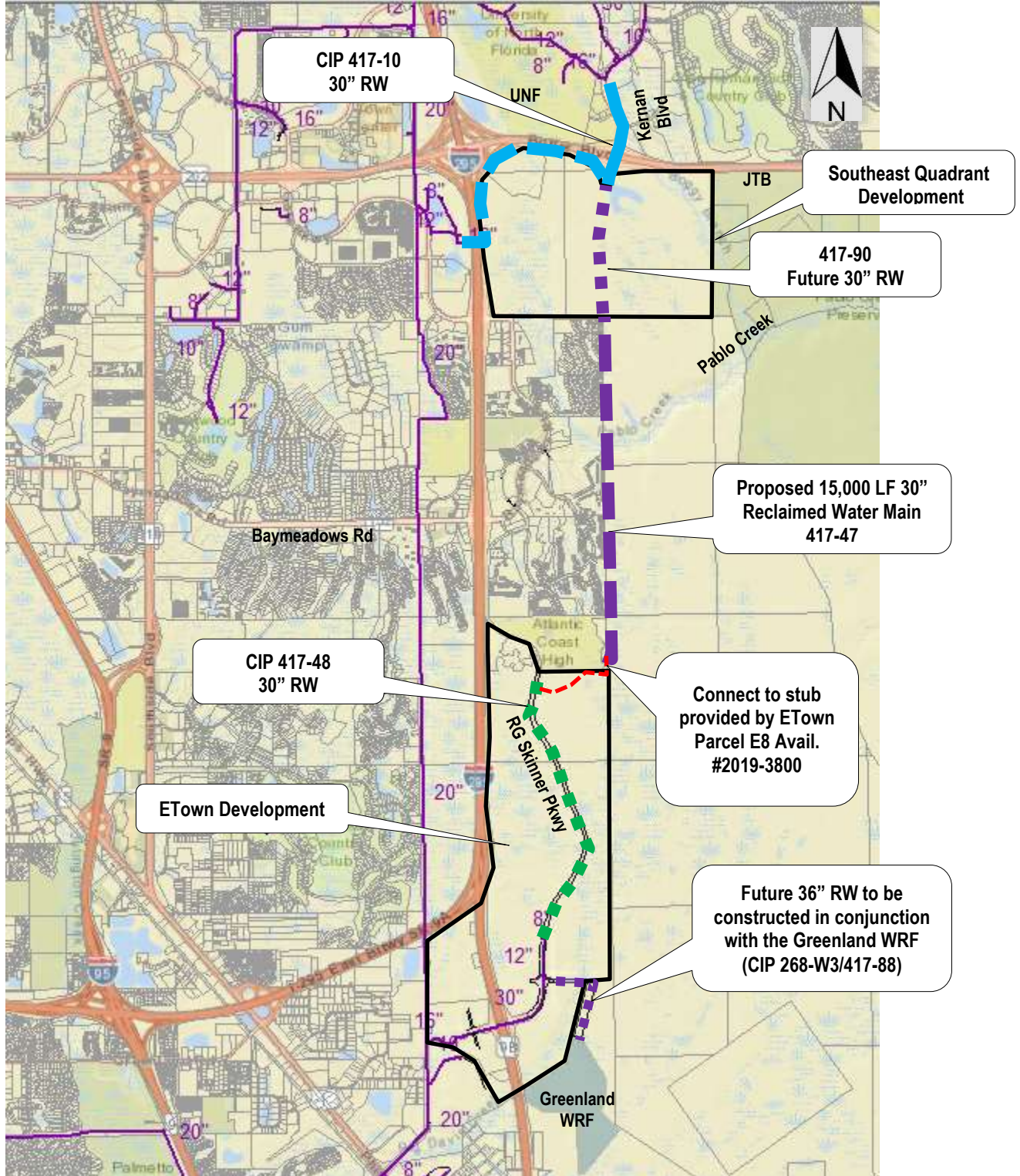
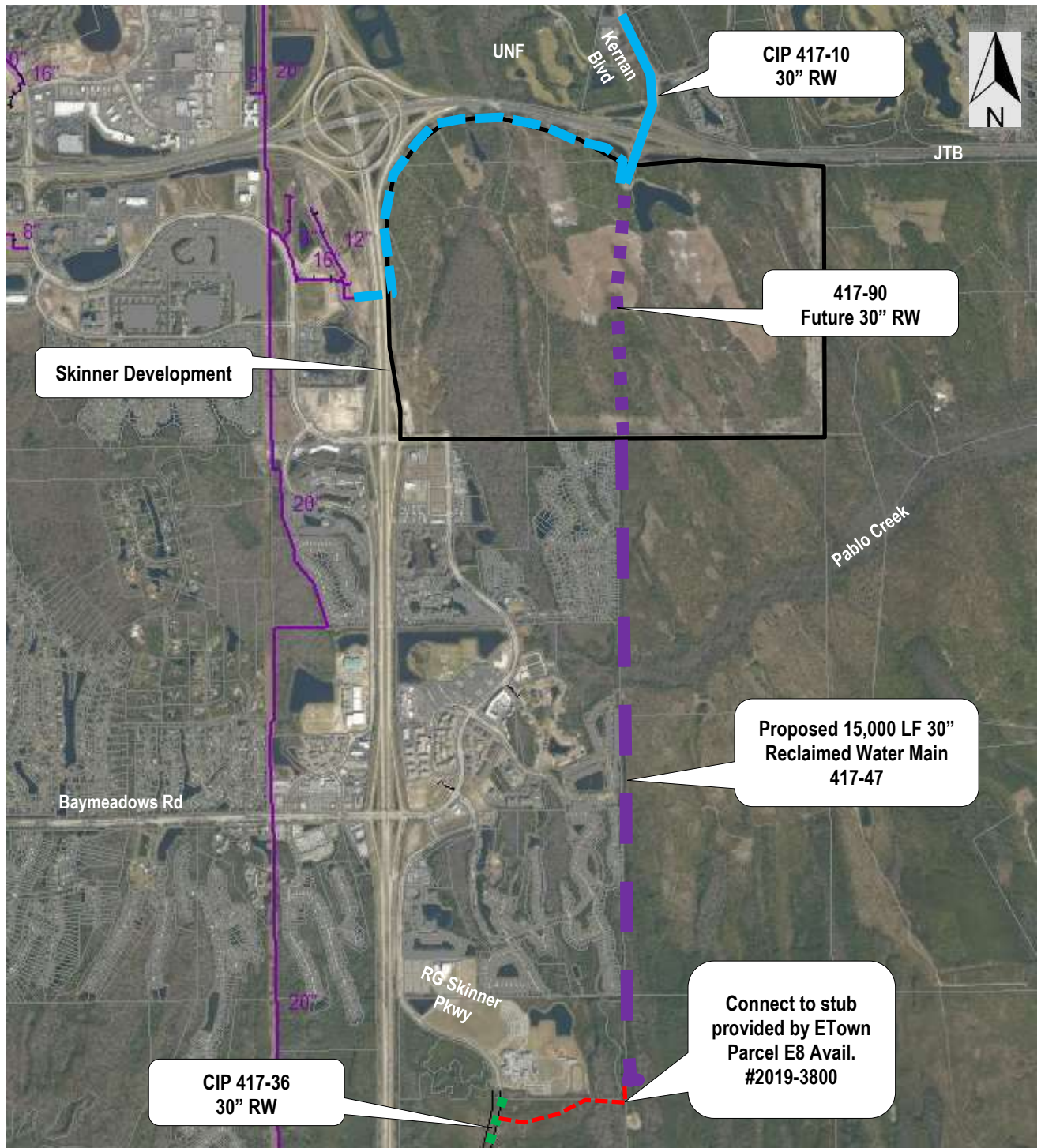
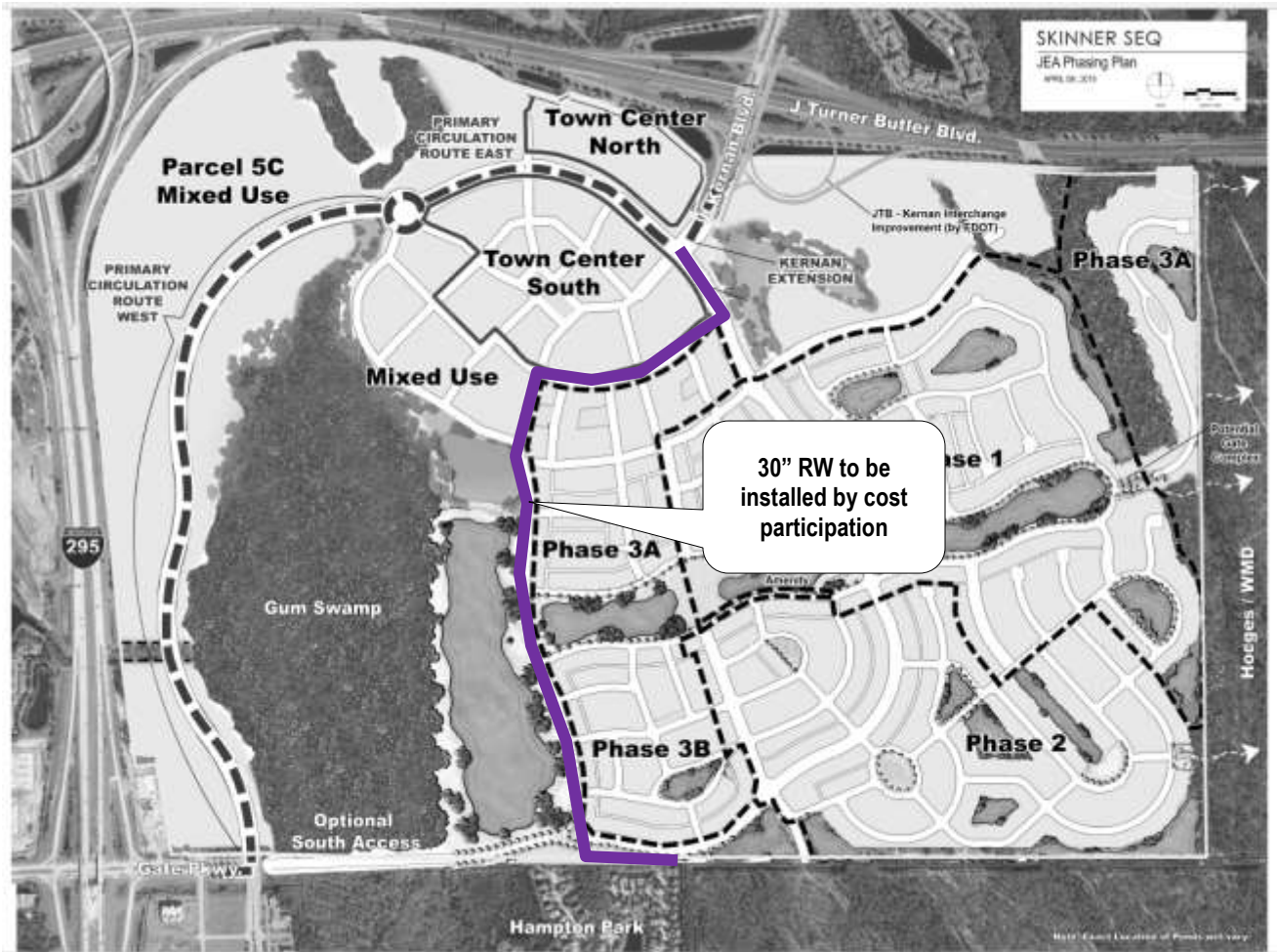


Figure 2 – Reclaimed Pipe Route – Aerial View



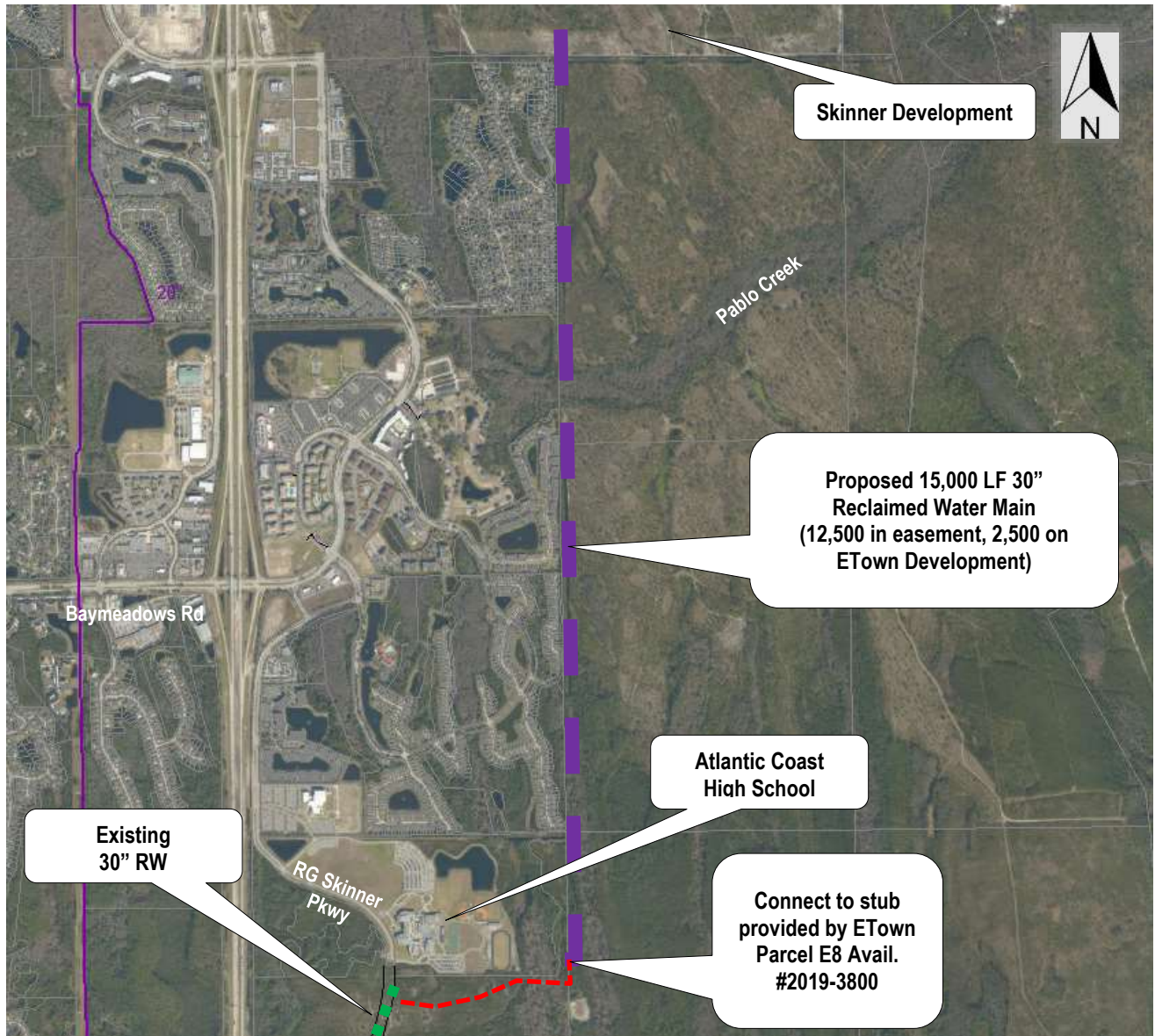
The proposed crossing of the Southeast Quadrant development is shown in Figure 3.

Figure 3



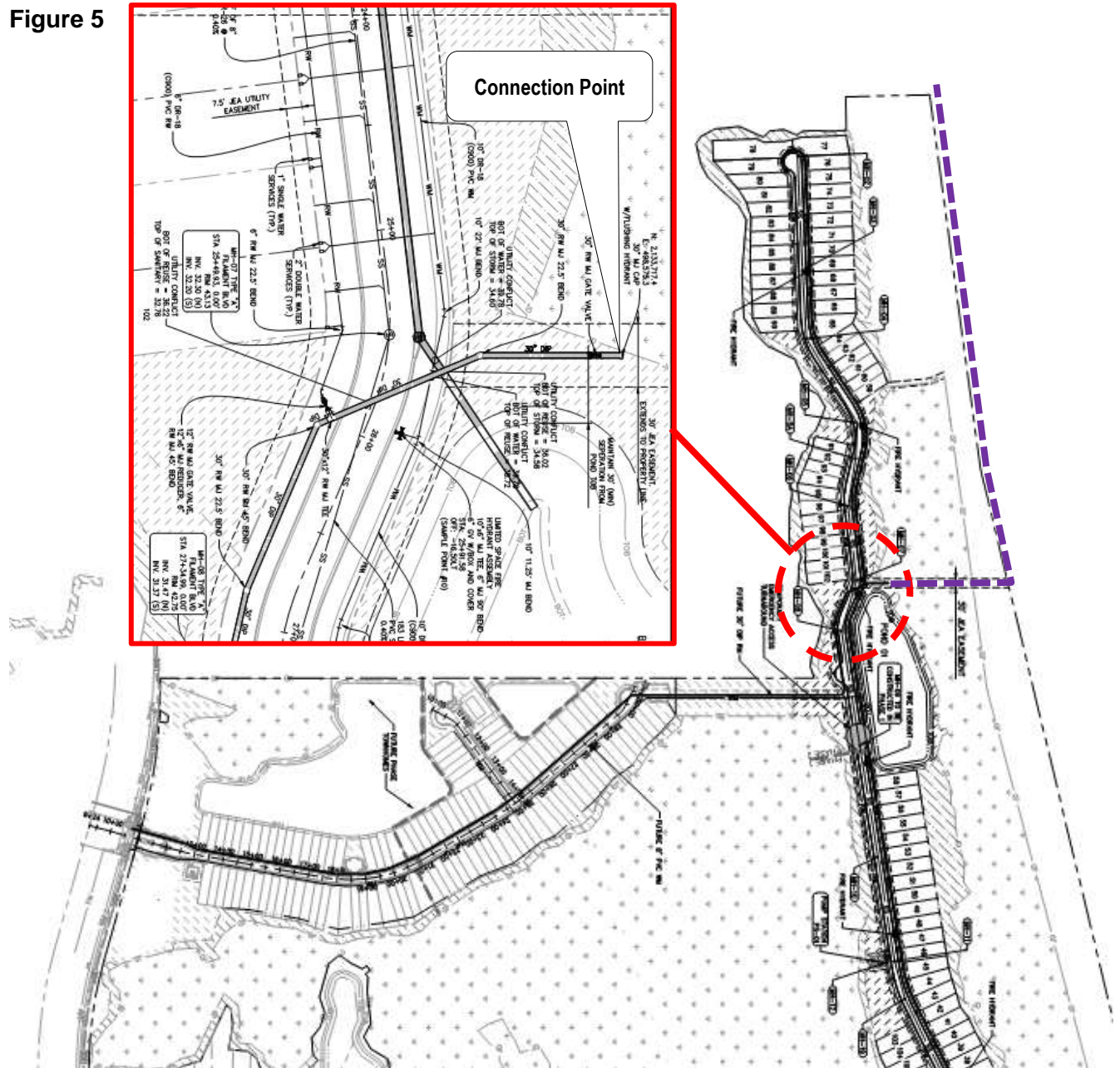
Just south of the Southeast Quadrant Development parcel, the reclaimed main will be installed within an easement to the ETown Development parcel. Final easement location and sizing is currently being negotiated with the land owner. The final easement configuration may include sizing for additional water and sewer mains as well as electrical infrastructure. The length of main to be installed within the easement is approximately 12,500 feet. The easement area is wooded and undeveloped. A directional drill is anticipated at the Pablo Creek crossing. A detail of this section is shown in Figure 4.

Figure 4 – Easement Area Detail



The portion of the reclaimed main that crosses the ETown Development is addressed in the Developer Utility Service and JEA Cost Participation Agreement between JEA and the developer. Per this agreement, the developer is extending a 30" main across the development and is providing a 30 foot easement on the north side of the property. This east-west reclaimed main was designed under Availability Number 2019-3800 and is currently under construction. Based on the progress of the ETown Development, it is anticipated that this 2,500 foot section of reclaimed main will be completed during 2021. A detail of this area is shown in Figure 5. The design engineer is Kimley Horn (project number 044808044) and the underground contractor is Jax Dirtworks, Inc.

Figure 5



Method of Construction

The methods of installation for the proposed reclaimed water main shall be by any means necessary in accordance with the latest edition of the JEA Water & Sewer Standards Manual, JEA Design Guidelines and as allowed by the City of Jacksonville. The project engineer should determine the most economical pipe routing and installation methods while remaining consistent with the JEA standards and specifications.

Special Crossings

The installation should primarily occur as a greenfield project. Portions of the main will be within undeveloped easement tracts which will likely require 1 or more wetland crossings. The method of install at these crossings shall be determined at the time of design when the wetland limits are known. Open cut or directional drill methods are acceptable provided the effective drill pipe diameter is consistent with the open cut pipe section.

Land Ownership/Real Estate Issues

The pipe routing will involve crossing development parcels and will utilize easements across undeveloped lands. The portions of the main that will cross development parcels may be accomplished by agreement with the developer with the developer engineering, permitting and constructing those sections with JEA reimbursement. It is expected the portion of work to be handled by the JEA Delivery and Collection Team is the portion within the easement. Efforts are underway by Planning and Real Estate to secure the easement required. It is possible the final easement alignment may include space for other water and sewer mains and electrical infrastructure. Final details of the easement to be provided when obtained.

The need for any other temporary construction or permanent easements should be evaluated early in the design process to allow time for acquisition. Any other easements and right-of-way issues will be coordinated by the design team and addressed during the project design phase.

The pipeline will be co-located with the SIPS-Greenland 30-inch water main in an easement along the D-Dot Ranch parcel. Real estate acquisition is underway and expected to be completed by the end of FY21.

Survey Requirements

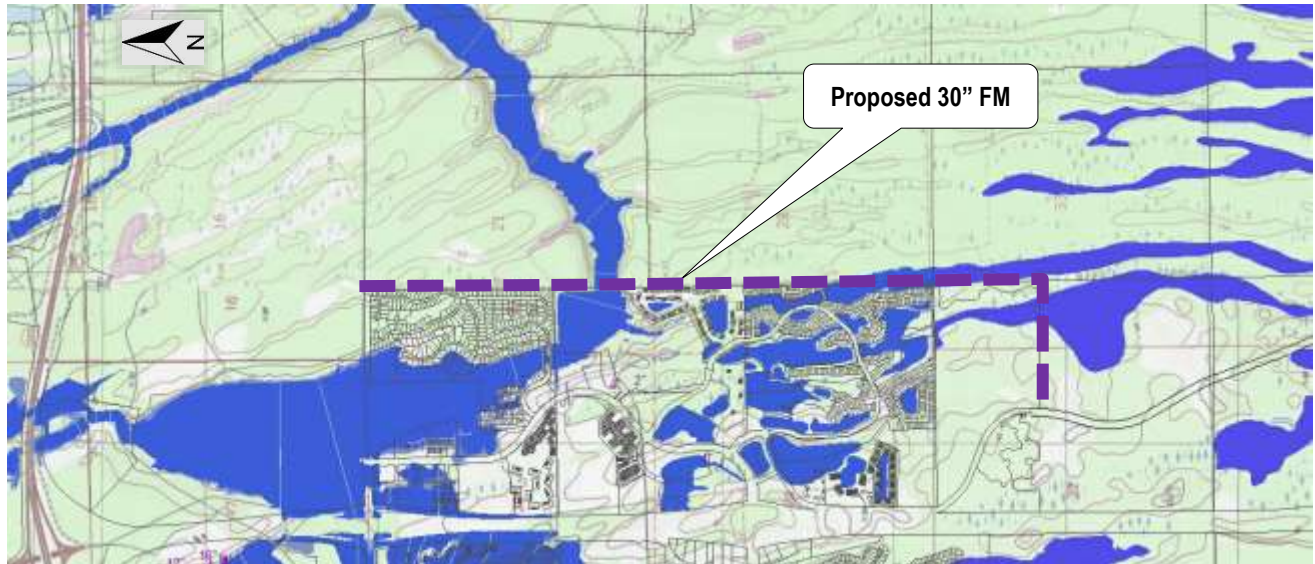
Final design of the project should be based on field survey data including horizontal and vertical locations and identification of existing utilities, pavement, guardrail, structures, electrical power poles, mail boxes and drainage features within the project area limits. Right-of-way boundary limits, existing easements and parcel ownership lines should be included on the survey as well as any vegetation deemed 'protected' by the governing jurisdictions including City of Jacksonville protected trees. Any wetland lines or significant habitat community limits should be flagged prior to survey commencement.

Site Development Characteristics

The project area includes work within public right-of-ways and undeveloped easements. The presence of environmentally sensitive wetlands and listed species within the project corridor should be evaluated and identified with the project survey effort.

Limits of Flood Plain

As shown in Figure 6, the pipe route will cross multiple 100 year flood plain strips per FEMA FIRM panels 557, 559 and 580 for Duval County.

Figure 6. FEMA Flood Zone – Site Overlay

Permit List

It is anticipated that permits may be required by the City of Jacksonville, (10 set review and Right-of-Way permit), the Florida Department of Environmental Protection, Army Corps of Engineers and the St. Johns River Water Management District. The project corridor should be evaluated for the presence of jurisdictional wetlands, listed species and protected trees. The need for any associated permitting should be addressed during the design phase. Other permits may be determined necessary during the design process and should be obtained by the design team.

Risks

This project provides for future growth in the southern reclaimed water service area, and improves the connection between the Arlington East WRF and Greenland WRF. Providing reclaimed water to bulk and retail users is the cheapest cost per gallon disposal method when compared to constructing rapid infiltration basins, retrofitting existing communities or aquifer recharge. Significant cost savings will be realized if the portions of this project which cross development parcels are constructed along with the development as a greenfield install. Constructing after the fact will result in suburban development impacts to roadway, infrastructure, hardscape and landscape.

Project Schedule

Milestone	Project Request	Revised PD	30% Design	60% Design	90% Design	100% Design	Bid
Project Start	1-Oct-19	22-Jul-20					
Design Start	1-Apr-20	07-Dec-21					
Design Finish	1-Feb-21	18-May-23					
Construction Start	~1-July 21	23-Jan-24					
Substantial Completion	-	22-Dec-25					
Final Completion	~1-Apr-22	01-Feb-25					

Project Cost

Cost Category	Project Request/ Original PD	Updated PD	30% Design	60% Design	90% Design	100% Design	Bid
Direct Const.	\$6,590,492	\$6,897,001					
Contingency	\$1,318,098	\$1,379,000					
SWA	\$0	\$0					
JEA Direct Const.	\$0	\$0					
Project Mgmt							
Engineering							
Prj. Support							
Serv.During Const							
Miscellaneous							
Real Estate							
Total							

Appendix A: Project Estimate

Appendix B: Project Schedule

Appendix A

Supporting Cost Estimate Information

CONSTRUCTION COST ESTIMATE

Project: 417-47 Gate Parkway to RG Skinner Parkway-Trans-R
CIP Cat: Reclaim Water Distribution
File Name: WS19008-1 417-47 Gate Parkway to RG Skinner Parkway-Trans-R
Cost Index: 11749.75 for March 2021
CP No: 417-47



Project Mgr: Beth DiMeo
Estimator: N Simmons

Estimate No: WS19008-1
Rev. No: 1
Date: 3/4/2021

PROJECT DEFINITION

CLASS 4

DIRECT CONSTRUCTION COSTS

<u>Contractor Cost</u>		<u>Material</u>	<u>Labor</u>	<u>Equipment</u>	<u>Other/Sub-Cont.</u>	<u>TOTAL</u>
Total From Estimate Details		\$2,873,475	\$332,414	\$99,367	\$3,004,901	\$6,310,157
Escalation	9%	\$267,233	\$30,915	\$9,241	\$279,456	\$586,845
Subtotal Contractor Cost		\$3,140,708	\$363,329	\$108,608	\$3,284,357	\$6,897,001
Contingency (Contractors Risk)	20%	\$628,142	\$72,666	\$21,722	\$656,871	\$1,379,400
Contingency (Contract SWA)	0%	\$0	\$0	\$0	\$0	\$0
Total Contractor Costs		\$3,768,849	\$435,994	\$130,329	\$3,941,228	\$8,276,401

<u>Additional Direct Costs</u>		<u>Material</u>	<u>Labor</u>	<u>Equipment</u>	<u>Other/Sub-Cont.</u>	<u>TOTAL</u>
JEA Supplied Material and Other		\$0	\$0	\$0	\$0	\$0
JEA Other Contract Costs		\$0	\$0	\$0	\$0	\$0
Subtotal: Additional Direct Costs		\$0	\$0	\$0	\$0	\$0
Total Direct Costs		\$3,768,849	\$435,994	\$130,329	\$3,941,228	\$8,276,401

13,600 LF 30" CLDI Reclaim Water Main Open Cut, 1,400 LF 36" HDPE Reclaim Water Main Directional Drill

CLASS 4

Accuracy Range

-30% to +30%

Appendix B

Project Schedule

[illegible]

