Project Scope

Project Description and Justification

This project scope is prepared to describe and justify a planned water main extension project along New World Avenue. As shown in Figure 1, approximately 9,500 feet of 24-inch water main is proposed along POW-MIA Memorial Pkwy (formally known as New World Avenue) between Waterworks Street and Tea Crates Place.

This water main project, located within the North Grid (south of I-10 and west of Chaffee Rd), will provide a second connection between the Cecil Commerce Center Water Treatment Plant (CCC WTP) and the rest of the Grid. As shown in Figure 1, the CCC WTP is located on the far west side of the North Grid and is connected to the Grid by a single 24-inch water main. Based on the N-1 Vulnerability Study prepared March 2016 to study the effects on the water grid in the event that a water treatment plant is taken offline, it was shown that the CCC WTP and Southwest WTP provide nearly all of the water for the southern portion of the North Grid. This project in conjunction with other Capital Projects (Index 101-05 Pritchard Rd - Old Plank Rd to Cisco Dr W - Trans - New - W and 101-06 Chaffee Rd - Westmeadows Dr S to Samaritan Way - Trans - New - W) will connect existing dead ends within the system which will provide redundancy and increase reliability in the event of water main breaks and peak usage times. Refer to Figure 2 highlighting future North Grid improvements.

Figure 1. Project Location

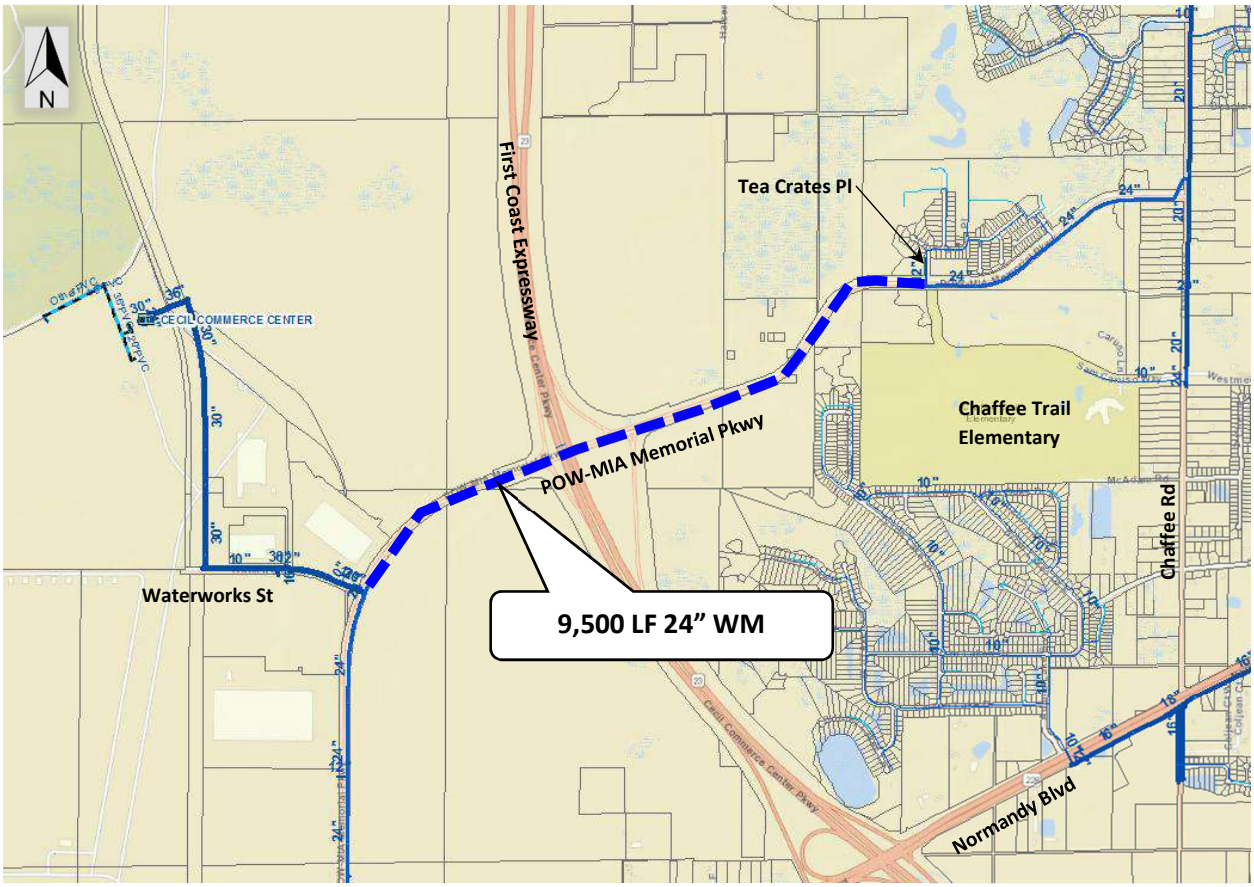
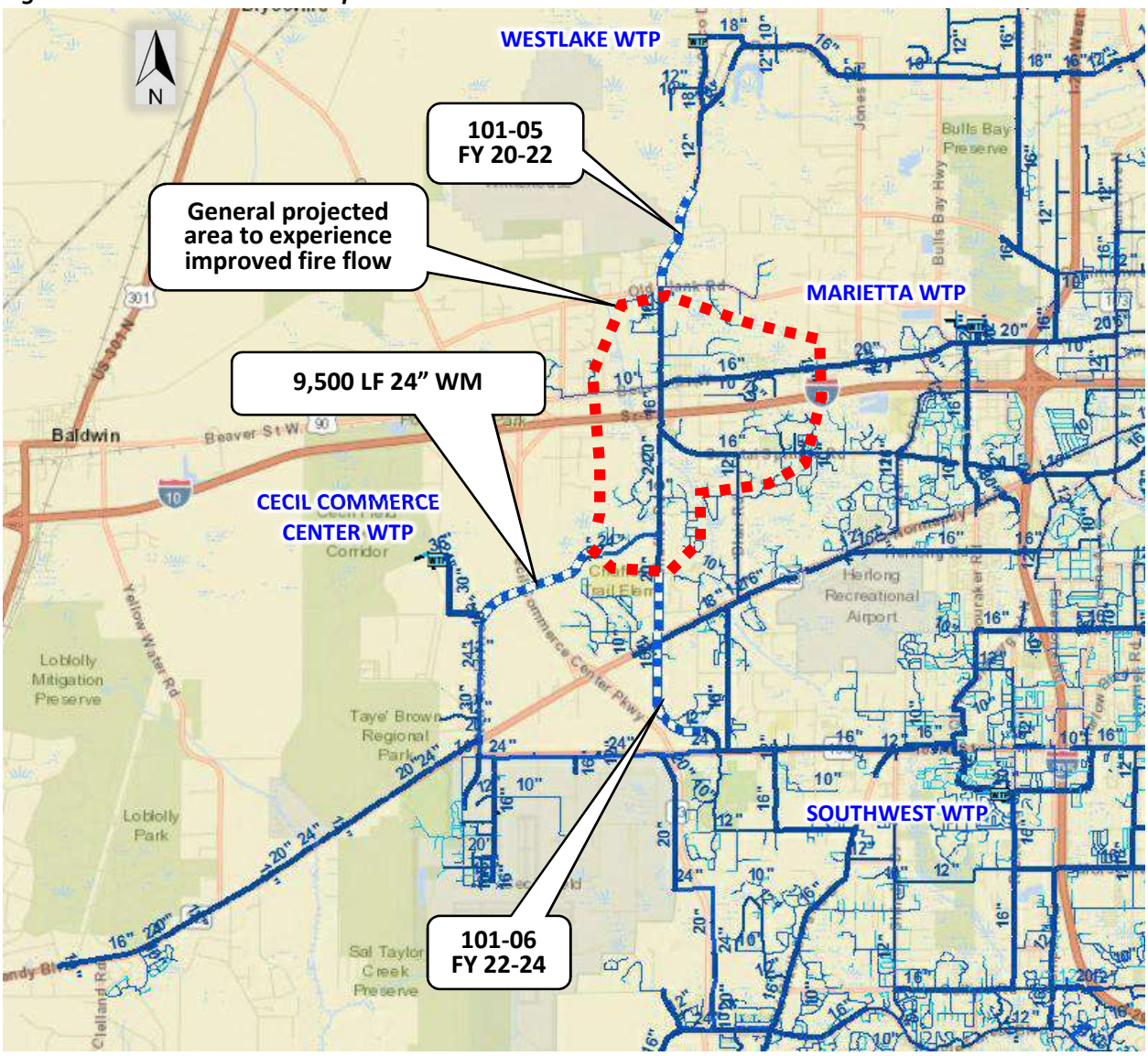


Figure 2. Future North Grid Improvements



Functional Requirements

Capacity and Sizing

Completion of this water main will allow approximately 3,300 gpm (approximately 4.7 mgd) to be supplied to the grid during current peak times. At build-out it is projected this pipe could convey up to 4,500 gpm (approximately 6.5 mgd) at peak. A pipe size of 24 inches was selected based on the anticipated flows, with the internal diameter equivalent to ductile iron sizes. The material for direct bury pipe shall be ductile iron. This additional connection to the grid will increase reliability in the Southwest area and will allow the Cecil Commerce Center WTP pumps to operate closer to their design range. Fire flow in the Chaffee/Beaver Street area will be increased by an average 900 gpm at 20 psi and the residual pressure drop will decrease from an average of 41% to an average of 22%. The St. Johns River Water Management District (SJRWMD) CUP allowance for this plant is sufficient to accommodate the increase in flows. Operationally, this plant will compete more heavily with the Marietta and Westlake WTPs. Therefore, the system operators should be updated with project completion timeframes.

Route

The 24-inch water main will follow POW-MIA Memorial Pkwy from the 24-inch water main stub-out at Tea Crates Place (Liberty Square subdivision) south side of POW-MIA Memorial Pkwy to the 24-inch water main stub-out at Waterworks Street east side of POW-MIA Memorial Pkwy. It is expected the water main will remain within road right-of-ways along the entire route; however the design engineer should determine the most economical and feasible side of roadway along POW-MIA Memorial Pkwy to route the pipe.

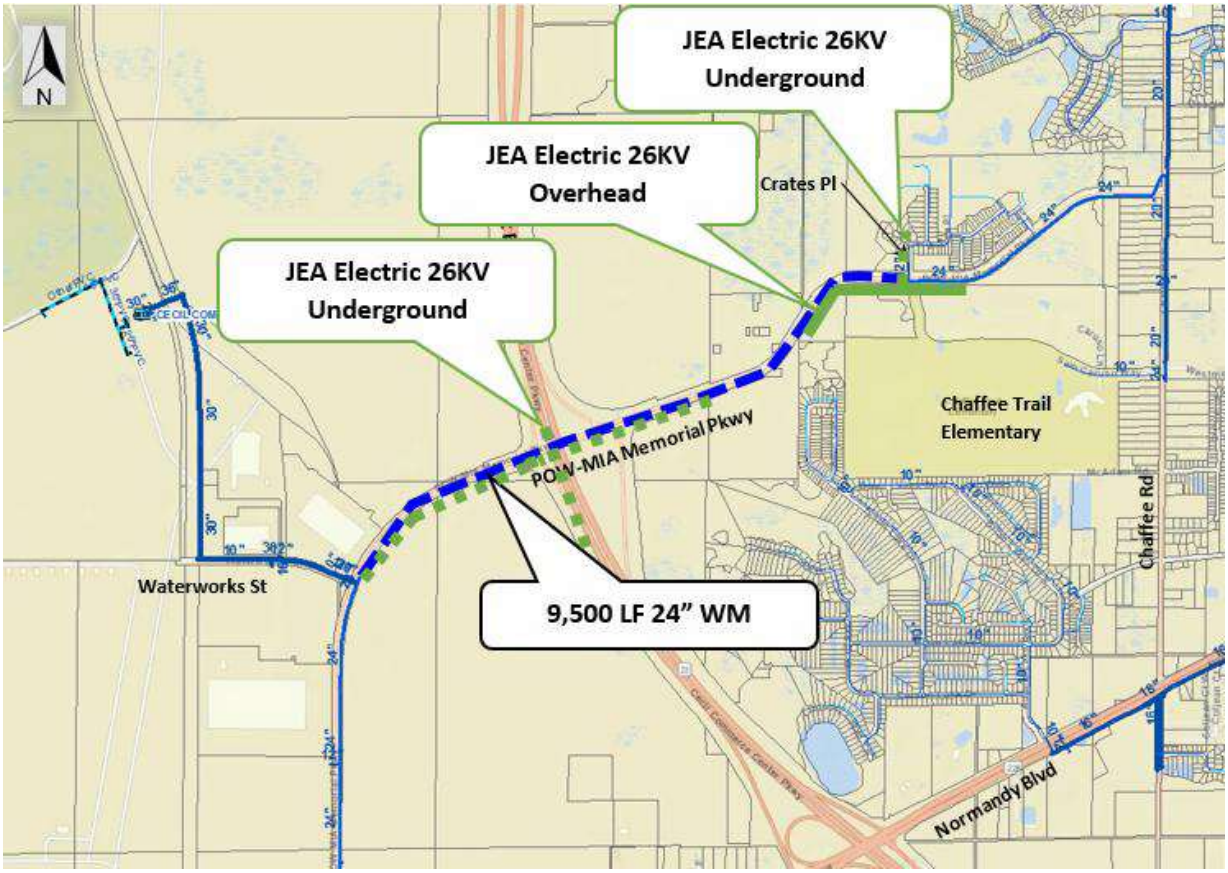
Existing 4-inch Water Main

An existing 4-inch water main is located along the north side of POW-MIA Memorial Pkwy starting at Waterworks St and dead-ends at a point west of Tea Crates Pl. It will need to be determined during the design phase if this water main needs to remain in service or if it can be abandoned.

Existing Electrical Primary and Secondary System

JEA has an existing primary and secondary electrical system along POW-MIA Memorial Pkwy that consists of primary 26KV underground electric lines on the south side of the Pkwy from south of Waterworks St. to the east side of the Cecil Commerce Center Pkwy interchange; secondary underground electric lines on the north and south sides of the Pkwy from south of Waterworks St. to the east side of the Cecil Commerce Center Pkwy interchange, with the line on the south side continuing further east ; primary 26KV overhead electric lines on the south side of the Pkwy near Tea Crates Pl; and primary 26KV underground electric lines that cross the Tea Crates Pl intersection. Refer to Figure 3 depicting the electrical system.

Figure 3. Existing Electrical Primary System



Valves and Hydrants

Isolation valves, fire hydrants, air release valves and other appurtenances will need to be provided in accordance with the latest edition of the JEA Water & Wastewater Standards Manual.

Method of Construction

The methods of installation for the proposed water main shall be by any means necessary in accordance with the latest edition of the JEA Water & Wastewater Standards Manual and as allowed by the City of Jacksonville and other applicable governing agencies. The design engineer should determine the installation methods while remaining consistent with the JEA standards and specifications.

Special Crossings

The project route will cross State Road 23 (First Coast Expressway). Under a previous project, four (4) 42-inch steel casings were installed under the north and southbound expressway lanes and entrance and exit ramps in anticipation of this project. The alignment, location, length and depth of these casings will need to be verified during the design phase.

There may be one (1) or two (2) crossings of POW-MIA Memorial Pkwy at the two existing stub-out connections depending on which side of the road the water main will be routed.

Location and Site Planning Considerations

Real Estate Issues

The construction is expected to remain within City of Jacksonville and FDOT road right-of-ways, so additional easements are not expected. However, the design team should identify any easement needs early in the design process to allow JEA Real Estate sufficient time to obtain the easements.

Survey and Geotechnical Requirements

Final design of the project should be based on field survey data including horizontal and vertical locations and identification of existing utilities, pavement, sidewalk, structures, drainage features, trees, etc. within the project area limits. Rights-of-way boundary limits and parcel ownership lines should be included on the survey, as well as any easements.

A geotechnical exploration should be performed to evaluate the general subsurface conditions encountered along the proposed water main route and to provide recommendations for pipe bedding and backfilling, constructability, dewatering, site preparation and any special conditions. The design engineer shall determine the number, location and depth of soil borings to meet the requirements of the project.

Permitting

It is anticipated that at a minimum permits will be required by the following regulatory agencies:

- City of Jacksonville (10 set review and Right-of-Way permit)
- Florida Department of Environmental Protection (FDEP)
- Florida Department of Transportation (FDOT)
- U.S. Army Corps of Engineers (USACE)
- 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 phase and will be obtained by the design team.

Risks

Redundancy within the water grid is essential for reliable customer service during normal conditions as well as following critical water main breaks, outages and fire flow events. The proposed water main extension provides a second connection between the Cecil Commerce Center WTP and the rest of the North Grid. In addition to providing grid redundancy, this additional connection improves the available fire flow and reduces the drop in pressure during a fire flow test. The project was initiated in 2007 with an anticipated completion in 2009 but has been delayed due to economy recession and subsequent development slow down. In addition to increased development and demand in the area, recent water main breaks along 103rd Street further justify the need for grid redundancy.

Project Schedule

Major activities are as follows:

- Engineer Selection – April 2020 to September 2020
- Survey, Design & Permitting – October 2020 to April 2021
- Procurement, Construction & Closeout – May 2021 to December 2022