Total Water Management Plan

General Project Information

July 2012
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Summary

JEA is the primary water, wastewater, and electrical power utility provider for the City of Jacksonville and Duval County, Florida, as well as for parts of neighboring St. Johns, Nassau, and Clay counties. More than 240,000 customers rely on JEA for clean, safe, and reliable drinking water supplies.

In 2007, JEA began a planning effort, called the Total Water Management Plan (TWMP), to develop a strategy to ensure that JEA’s potable water source, the Floridan Aquifer, would be protected from saltwater intrusion. The recommendations from this effort included building a pipeline to transfer water from the west side of the River to the east side of the River. To accomplish this, JEA began a project to design and construct a finished water transmission pipeline known as the TWMP Project. Once constructed, water will cross the River via a finished water transmission main under the river to the Arlington area and further east.

The TWMP Program is a potable water transmission pipeline comprised of six projects or segments of large diameter pipe (36-inch, 30-inch, and 24-inch). Segment 1 is primarily east of EverBank Stadium and consists of approximately 3,700 feet of 36-inch pipe. The total length of pipe in Segment 2 is 7,800 feet which includes approximately 6,700 feet of 36-inch steel pipe under the St. Johns River utilizing Horizontal Directional Drilling (HDD) installation method and 1,100 of 36-inch pipe on the east and west banks of the river. Segment 3 is in the Arlington neighborhood and consists of approximately 6,200 feet of 36-inch pipe. Segment 4 is also in the Arlington neighborhood and consists of approximately 6,900 feet of 30-inch pipe. Segment 5 is mainly along the Arlington Expressway and Southside Blvd. Segment 5 consists of approximately 10,000 feet of 30-inch pipe. Segment 6 is along Bradley Road and includes 9,100 feet of 24-inch water main. A map depicting all six segments is shown in Figure 1. Each segment is described in more detail in the following pages.

These projects have six different design consultants and potentially six different installation contractors for the various segments. CH2M HILL serves as Program Manager for this complex effort, and is responsible for contract management, design review, construction management, quality management, and commissioning support.

Project Highlights

The size and length of this project and the special construction techniques, HDD under the river for Segment 2 and under the expressway for Segment 4 and three separate Microtunnels on Segment 1 & 5 makes this project unique and one of the largest in the country. Interesting facts about the project are highlighted below.

- Total project cost $50.7 million
- The total length of pipe to be installed is approximately 8.3 miles.
- The total weight of steel and ductile iron pipes in each segment will be over 5,306,000 pounds (2,653 tons) which is equivalent to 947 Ford F-150 trucks.
- The future maximum water flow through Segments 1, 2 and 3 will be approximately 22 million gallons per day (mgd). At this flow rate the EverBank Stadium lower bowl could be filled with water in 8 ½ days.
- Once this project is complete it will provided an important interconnection between JEA’s North Grid and South Grid and allow JEA to better meet potable water demands.

Project Status

Project status and schedule for each segment is listed below.

<table>
<thead>
<tr>
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<th>Design</th>
<th>Construction Start</th>
<th>Completion</th>
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<td>Segment 1</td>
<td>Complete</td>
<td>May 2012</td>
<td>September 2012</td>
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<td>Complete</td>
<td>April 2012</td>
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<td>Complete</td>
<td>October 2012</td>
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<td>Complete</td>
<td>October 2012</td>
<td>July 2013</td>
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<td>Segment 5</td>
<td>In Progress</td>
<td>December 2012</td>
<td>September 2013</td>
</tr>
<tr>
<td>Segment 6</td>
<td>In Progress</td>
<td>January 2013</td>
<td>September 2013</td>
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Note 1: Schedule subject to change as designs are finalized
FIGURE 1

Segment 1
Start Date: 14-MAY-12
Completion Date: 04-SEP-12
36" - Pipe
Length = 3,700 LF

Segment 2
Start Date: 22-JUN-12
Completion Date: 28-DEC-12
36" - Pipe
Length = 7,800 LF

Segment 3
Start Date: 01-OCT-12
Completion Date: 14-JUN-13
36" - Pipe
Length = 6,200 LF

Segment 4
Start Date: 16-OCT-12
Completion Date: 10-JUL-13
30" - Pipe
Length = 6,600 LF

Segment 5
Start Date: 05-DEC-12
Completion Date: 06-AUG-13
30" - Pipe
Length = 10,000 LF

Segment 6
Start Date: 05-DEC-12
Completion Date: 05-SEP-13
24" - Pipe
Length = 9,100 LF

JEA Total Water Management Plan Projects
Segments 1 - 6
Segment 1

The route begins at the intersection of Beaver Street and Franklin Street and continues east on Beaver Street. At the roundabout on Beaver Street just north of EverBank Stadium, the alignment crosses Gator Bowl Boulevard using microtunnel technology and continues to Victoria Street. Segment 1 turns north on Victoria Street and continues north to Beaver Street. At Beaver Street, the route turns east and follows under the Hart expressway using microtunnel technology then continues towards the end of Beaver Street crossing under the CSX rail road using Auger Boring technology near the river. Currently the completion point of Segment 1 is approximately 60 feet east of the rail road lines near the river and is being coordinated with the Segment 2 route being completed by the design build team. Segment 1 consists of approximately 3,700 feet of 36-inch pipe.

Project Highlights

Interesting facts about the project are highlighted below

- Total project cost $4.3 million
- Segment 1 is primarily located near EverBank Stadium and in an industrial area located near the river.
- The pipe will be 36-inches in diameter, approximately 3,700 feet long, made of ductile iron and weigh over 552,000 pounds. This is equivalent to the weight of 99 Ford F-150 tucks.
- The volume of water in Segment 1 will be approximately 212,000 gallons, which is equivalent to 10 average size swimming pools.
- The route crosses MLK (Gator Bowl Blvd) and the Hart Expressway using Microtunnel technology.
- The route crosses FDOT and CSX right-of-ways.
- Once this project is complete it will allow JEA to better meet growing potable water demands in the southerly portion of JEA’s service area.

Segment 1–Status, Activities and Schedule

Design is 100% complete. Design review meetings have been held and preparation of specifications for bidding is underway.

- J B Coxwell Contracting Inc, is the Contractor and construction is about 50% complete to date
- Major milestones of August 3rd and October 18th are underway and will be met.
- Pre-construction meeting – May 29, 2012
- Construction start – May 29, 2012
- Substantial Completion – September 04, 2012*

* Anticipated Date based on current schedule
Segment 2 Project Description

Segment 2

The Segment 2 is a shore-to-shore route option, which consists of a single long 36-inch 6,700 LF Horizontal Directional Drill (HDD) from the west bank at Beaver Street to the east bank of the St. Johns River just south of the Mathews Bridge ending on the south side of the expressway in the vicinity of property owned by JTA. Staging of the project requires that JEA string the pipe, pre-assembled segments and coordinate the final assembly and pull back operations along the southern right of way (ROW) of Arlington Expressway. Additional piping scope will be added to cross the Arlington Expressway in the vicinity of Jones College, turn east to intersect with Arco Drive. There is a total of 7,800 feet of piping in this segment.

Although HDD construction is a common approach to pipe installation under rivers, this size an length of this project makes it distinctive and one of the largest in the country. Interesting facts about the project are highlighted below.

**Project Highlights**

- Project is using a Design Build approach
- Total project cost $23.3 million
- Prior to installation under the St. Johns River, the 6,700 foot long pipeline will be assembled along the south shoulder of Arlington Expressway.
- The 36-inch diameter pipe will be made of 3/4 inch thick steel and weigh approximately 2,000,000 pounds.
- 168 sections of 40 foot pipe segments will be welded together.
- The Contractor will use the HDD technique to create a tunnel approximately 48 inches in diameter and 60 feet below the river bed and 100 feet below the mean high water line of the river.
- Using a large 1.2 million pound directional drilling rig the Contractor will pull the 6,700 foot long assembled pipeline into the tunnel under the St. Johns River.
- Currently the HDD portion of the construction is approximately five weeks ahead of earlier schedules
- Once installed the pipeline will provide an important interconnection between JEA’s drinking water systems on each side of the river.

**Segment 2–Status, Activities and Schedule**

- Construction of the HDD pipeline is ahead of schedule and should have the pipe installed under the river by August 8, 2012
- Major milestones for the balance of the work are on schedule
- Pre-construction meeting – April 28, 2012
- Construction start – April 28, 2012
- Substantial Completion – December 03, 2012*

* Anticipated Date based on current schedule
FIGURE 3

[Map of JEA Total Water Management Plan Projects Segment 2 Map 36" WMM]
Segment 3 Project Description

Segment 3

Segment 3 route begins at the south end of Arco Drive and proceeds north to Arlington Road turning east and proceeding to Clock Street where it continues north to Commerce Street. The route then continues east on Commerce Street to the Arlington Water Treatment Plant. Segment 3 will also include the pipeline leaving the Arlington WTP and the alignment will complete at the intersection of Westdale Drive and Commerce Street near the southeast corner of the Arlington WTP property. Segment 3 consists of approximately 6,200 feet of 36-inch pipe.

A booster pump station is planned to be installed in the line at the Arlington Water Treatment Plant. The route crosses FDOT right-of-way at University Blvd. where FDOT has allowed an open-cut installation method.

Project Highlights

- Total project cost $4.9 million
- The Segment 3 route is primarily located through residential neighborhoods with the exception of the University Blvd. crossing which is near a church and several businesses.
- The pipeline will be 36-inches in diameter, approximately 6,200 feet long, made of ductile iron and weigh over 925,000 pounds (463 tons). This is equivalent to the weight of 165 Ford F-150 tucks.
- The volume of water in Segment 3 will be approximately 355,000 gallons, which is equivalent to 16 average size swimming pools.
- A booster pump station is planned to be installed in the pipeline at the Arlington Water Treatment Plant.
- Once this project is complete it will allow JEA to better meet growing potable water demands in the southerly portion of JEA’s service area.

Segment 3–Status, Activities and Schedule

Design is 100% complete. Design review meetings have been held and preparation of specifications for bidding is underway.

- No construction to date. Callaway Contracting Inc., is the apparent low bidder on this segment.
- Major milestones
- Pre-construction meeting – October 01, 2012*
- Construction start – October 01, 2012*
- Substantial Completion – June 14, 2013

* Anticipated Date based on current schedule
Segment 4 Project Description

Segment 4
Segment 4 begins at the intersection of Westdale Drive and Commerce Street near the southeast corner of the Arlington WTP property, and follows Commerce Street to the intersection of Underhill Drive. The route turns south on Underhill Drive and continues to Groveland Drive where it turns east crossing Arlington Road on to Lone Star Road turning south on Bert Road. The route continues south along Bert Road to meet the Arlington Expressway. The route crosses the Arlington Expressway south to the southerly Arlington Expressway Service Road. The route continues east along the south service road of the Arlington Expressway in the grassy median until it passes the bridge over a tributary water body of Strawberry Creek. Segment 4 consists of approximately 6,900 feet of 30-inch pipe.

Project Highlights
- Total project cost $4.6 million
- The Segment 4 route is primarily located through residential neighborhoods with the exception of the Arlington Rd. and Arlington Expressway crossings.
- The pipeline will be 30-inches in diameter, approximately 6,900 feet long, made of ductile iron and weigh over 770,000 pounds (385 tons). This is equivalent to the weight of 138 Ford F-150 tucks.
- The volume of water in Segment 4 will be approximately 276,000 gallons, which is equivalent to 13 average size swimming pools.
- Once this project is complete it will allow JEA to better meet growing potable water demands in the southerly portion of JEA’s service area.

Segment 4–Status, Activities and Schedule
Design is in progress.
- Construction contract is being advertised for bidding as of July 16, 2012
- No construction to date
- Major milestones
  - Pre-construction meeting – October 16, 2012*
  - Construction start –October 16, 2012*
  - Substantial Completion – July 10, 2013*
* Anticipated Date based on current schedule
Segment 5 Project Description

Segment 5

The water main route for Segment 5 follows the Arlington Expressway South Service Road east to Southside Boulevard. The route then follows Southside Boulevard south across Atlantic Boulevard to Bradley Road. Segment 5 consists of approximately 10,000 feet of 30-inch pipe. The water main will connect to an existing 16-inch main at Century Rd. The first half of Segment 5 is primarily located along the Arlington Expressway South Service Road which impacts the entrances to several apartment complexes and businesses.

Project Highlights
- Total project cost $8.8 million
- The pipeline will be 30-inches in diameter, approximately 10,000 feet long, made of ductile iron and weigh over 1,117,000 pounds (559 tons). This is equivalent to the weight of 199 Ford F-150 tucks.
- The volume of water in Segment 5 will be approximately 400,000 gallons, which is equivalent to 18 average size swimming pools.
- Once this project is complete it will allow JEA to better meet growing potable water demands in the southerly portion of JEA’s service area.

Segment 5–Status, Activities and Schedule
Design is in progress.
- No construction to date
- Major milestones
  - Pre-construction meeting – December 05, 2012*
  - Construction start – December 05, 2012*
  - Substantial Completion – September 01, 2013*
- * Anticipated Date based on current schedule
FIGURE 6
Segment 6 Project Description

Segment 6

The Segment 6 route is primarily located through residential neighborhoods with the exception of the Southside Boulevard crossing which is near a few businesses. The route for Segment 6 begins just west of Southside Boulevard at Bradley Road. The route crosses Southside Boulevard as a 30-inch water main where a connection will be made to an existing 16-inch line along the east side of Southside Boulevard. The route then heads east along Bradley Road as a 24-inch to the intersection of Bradley Road and Cortez Road. This segment includes approximately 200 feet of 30-inch water main and 9,100 feet of 24-inch water main. The water main will connect to an existing 16-inch main at Cortez Road.

Project Highlights

- Total project cost $4.6 million
- The pipeline will be 24-inches in diameter, approximately 9,100 feet long, made of ductile iron and weigh over 779,000 pounds (389 tons). This is equivalent to the weight of 139 Ford F-150 tucks.
- The volume of water in Segment 5 will be approximately 235,000 gallons, which is equivalent to 11 average size swimming pools.
- Once this project is complete it will allow JEA to better meet growing potable water demands in the southerly portion of JEA’s service area.

Segment 6 - Status, Activities and Schedule

Design is in progress.

- No construction to date
- Major milestones
  - Pre-construction meeting – December 05, 2012*
  - Construction start – December 05, 2012*
  - Substantial Completion – September 01, 2013*

* Anticipated Date based on current schedule