

***PEACE RIVER MANASOTA REGIONAL WATER SUPPLY AUTHORITY  
BOARD OF DIRECTORS MEETING  
April 3, 2024***

**ROUTINE STATUS REPORTS  
ITEM 7**

**Brackish Groundwater Reverse Osmosis Project at the Peace River Facility**

## **Project Status Report**

**Project:** Brackish Groundwater Reverse Osmosis Project at Peace River Facility

**Date:** April 3, 2024

**Prepared by:** James P. Guida, P.G., Director of Water Resources and Planning

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## **Project Description**

The Authority's Water Use Permit (WUP) for the Peace River Facility (PRF) was modified in October 2022 to authorize withdrawal of up to 9 MGD of brackish groundwater from wells on the RV Griffin Reserve, which would yield an estimated 5 MGD average annual day of finished water for allocation to Customers.

On February 10, 2023, the Authority requested proposals from firms for the purpose of providing professional design, engineering, inspection and geological services for feasibility, siting, capacity, design, permitting and construction management for the 'Peace River Brackish Groundwater Facility Project' (Project). At the April 5, 2023, meeting the Board approved the selection of Carollo Engineers to conduct the preliminary design and testing for the Brackish Groundwater Project (Project) at the PRF. On July 7, 2023, the Board approved the Professional Services Contract, Scope, and Fee for Work Order No. 1 for the Project. Negotiated costs for Work Order No. 1 are not to exceed \$5,488,750, which includes a \$500,000 Owners Allowance for out-of-scope work if authorized by the Executive Director. The Project is intended to inform the Authority in the selection of its next water supply development project.

This work is included in the CIP portions of the Authority's Amended FY 2023 and Tentative FY 2024 Budgets. Funds are proposed to come initially from the \$100M line of Credit with PNC Bank. Staff recommends these costs be included in any permanent financing that is obtained for the next regional water supply project.

## **Current Status**

Work Order No. 1 (Preliminary Design and Testing for Peace River Brackish Groundwater Supply Project) with Carollo Engineering, was issued on June 8, 2023, and includes well construction, aquifer and groundwater quality testing, and preliminary design of: 1) raw water mains and well sites; 2) injection well(s); and 3) brackish groundwater treatment facilities. The Project also includes permitting services, development of a 30% Design Package, and an engineer's opinion of probable cost. Preliminary Design and Testing for the Brackish Groundwater Project is scheduled for completion in March 2024. The Project is currently on schedule and on budget.

## **Project History Briefing**

**Project:** Brackish Groundwater Reverse Osmosis Project at Peace River Facility

**Date:** December 6, 2023

**Prepared by:** James P. Guida, P.G., Director of Water Resources and Planning

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The following information summarizes the historical milestones and key events to date for Work Order No. 1 - Preliminary Design and Testing for Peace River Brackish Groundwater Supply Project.

**June 2023** Board approved Work Order No. 1 for the Preliminary Design and Testing for Peace River Brackish Groundwater Supply Project on June 7, 2023. A Pre-Construction Meeting with Project hydrogeologists, engineers and the well drilling contractor was conducted on June 22, 2023, to facilitate Well construction permitting, mobilization of drilling equipment, and initiation of well construction to allow for brackish groundwater testing as soon as possible. A Project Kick-off Meeting was held with the Carollo Team on June 26, 2023. A Brackish Groundwater Drilling and Testing Program authorization request was submitted to the SWFWMD on June 28, 2023, and was approved by the SWFWMD on June 29, 2023.

**July 2023** The well drilling and testing program got underway in early July. The Surficial Aquifer System (SAS) test well (BW-SAS-1) was constructed on July 6, 2023. The 4-inch well was completed to a total depth of 40 ft below land surface (bls) with a screened interval of 20 to 40 ft bls. Construction of the Lower Arcadia Aquifer (LAA) 16-inch test well (BW-LAA-1) commenced on July 18, 2023.

**August 2023** BW-LAA-1 was completed with casing and total depths of 240 ft bls and 350 ft bls, respectively, on August 18, 2023. Preliminary step-drawdown testing was conducted on the well and indicated the well can produce approximately 570 gpm (about 861,000 gpd).

Drilling of the Upper Floridan Aquifer (UFA) test production well (BW-UFA-1) commenced on August 25, 2023. Surface casing installation was completed on August 29, 2023, to a depth of 55 ft bls. Pilot-hole drilling of well continues.

The original configuration of the wellfield was updated to allow for increased production capacity, enhanced sustainability, and to allow for greater flexibility in well construction characteristics. A total of 15 Upper Floridan Aquifer (UFA) production wells are now proposed to serve as the

raw water sources for the brackish groundwater Reverse Osmosis (RO) water treatment facility.

**September 2023** An Application for modification of the Authority's Water Use Permit (WUP) was submitted on September 1, 2023, and was deemed complete on September 15, 2023. A step-drawdown test was completed on September 12, 2023, and achieved a flow rate of 570 gallons per minute (gpm). Pilot-hole drilling of the Upper Floridan Aquifer (UFA) test production well (BW-UFA-1) continues with the pilot-hole depth currently at 600 feet bls. As of the end of September, the drilling and testing program is about 10 days ahead of schedule.

**October 2023** Authority and SWFWMD staff coordinated regarding the draft permit during October and the permit was scheduled for SWFWMD Governing Board consideration at their November 14, 2023, meeting. As of 10/31/23, the total and cased depths of the Lower Arcadia Aquifer (LAA) test production well (BW-LAA-1) were 240 feet and 350 feet bls, respectively. A Step-Drawdown test was completed on September 12, 2023, and achieved a flow rate of 570 gallons per minute (gpm). Pilot-hole drilling of the Upper Floridan Aquifer (UFA) test production well (BW-UFA-1) continues with the pilot-hole depth currently at 600 feet bls. The Suwannee Limestone was identified at a depth of 562 feet bls. The well contractor is in the process of reaming the 30-inch hole to place 590 feet of 20-inch casing. The drilling and testing program is about 2 weeks behind schedule and a larger drilling rig has been mobilized to the site to accelerate the reaming process.

Routing alternatives for the raw water transmission main (RWTM) were discussed and the preferred route was recommended and selected. Conceptual design of the RWTM, raw water wells, and various components of the RO brackish groundwater treatment facility continued. Finished water blending alternatives were discussed and the preferred siting was recommended and selected. Siting alternatives for the deep injection wells were discussed and the preferred siting was recommended and selected.

**November 2023** The requested modification of the Authority's Water Use Permit (WUP) was authorized by the SWFWMD Governing Board on November 14, 2023. The modified permit authorizes Annual Average and Peak Month withdrawals of 11.2 MGD (increase of 2.2 MGD) and 15 MGD (increase of 6.0 MGD), respectively.

The Suwannee Limestone was identified at a depth of 562 feet bls. The well contractor is currently in the process of reaming the 30-inch hole to place 590 feet of 20-inch intermediate casing. Reaming of the hole to set the 20-inch casing continues and is expected to be completed by December 1, pilot-hole drilling into the Suwannee will continue once the intermediate casing

has been installed. As of November 16, 2023, the drilling program is nearly 4-weeks behind schedule due to drilling rig equipment failures. The Consultant and Well Contractor (Applied) are in the process of identifying means to make-up for lost time and to ensure that collection of the information most important to engineering design of the RO treatment system and production wells continues to move forward in a manner that will allow for achievement of 30% design prior to April 2024.

### **December 2023**

The 20-inch Intermediate casing was set to a depth of 590 feet bls and cemented in place. Pilot-hole drilling continued to a depth of 860 feet bls and the Ocala Limestone was identified via index fossil (*Lepidocyclina Ocalana*) and geophysical logging at a depth of approximately 838 feet bls. On December 20, 2023, a 12-hour step-drawdown test was completed on the nominal 10-inch Suwannee pilot-hole using three steps with flow rates of 278, 379 and 432 gallons per minute (gpm). The specific capacity during the third step (432 gpm) was calculated to be 13.82 gallons per minute per foot (13.82) indicating a productive permeable zone in the Suwannee Limestone.

Conceptual design of the RO brackish groundwater treatment facility, raw water wellfield, raw water transmission main, and injection wells was completed and submitted on December 7<sup>th</sup> for the Authority's review. A workshop was held on December 12<sup>th</sup> to discuss and review the various conceptual design components, and to receive initial comments from the Authority. Final comments on the conceptual design from the Authority were requested and received by December 19<sup>th</sup>. Addressing and incorporating the Authority's comments was initiated.

### **January 2024**

The 7-day Suwannee Pilot-Hole Constant-Rate Test began at 9am on January 4, 2024 and concluded at 9am on January 11, 2024. A flow rate of approximately 480 gpm was maintained. Both manual water levels and pressure transducer water levels were collected before, during and after the test. Field water quality measurements were collected 168 times (once per hour) during the testing. Fourteen (14) water quality laboratory samples were collected throughout the test including a full primary and secondary drinking water standards sample at the end of the test. The water quality was extremely stable throughout the test with specific conductance increasing minimally from 1709 uS/cm at the start of the test to 1,710 uS/cm at the end of the test. The TDS was estimated to be approximately 1,077 mg/L.

Addressing and incorporating the Authority's comments on the conceptual design was completed. An intermediate design plan set of the RO brackish groundwater treatment facility, raw water wellfield, raw water transmission main, and injection wells is being completed for use towards developing the draft opinion of probable construction cost (OPCC). Equipment quotes were solicited and received from vendors for use in the draft OPCC. These will also be submitted to the Authority for the Authority's CMAR review/use. The draft OPCC has been initiated and will be submitted to the Authority in

early February. Water quality data from the constant rate test for the Suwannee will be reviewed and interpreted for any design revisions upon receipt from the laboratory.

## **February 2024**

The 7-day Suwannee/upper Avon Park Pilot-Hole Constant-Rate Test was undertaken from February 2 to February 9, 2024. A flow rate of approximately 1,339 gpm (1.93 MGD) was maintained. Both manual water levels and pressure transducer water levels were collected before, during and after the test. Field water quality measurements were collected 168 times (once per hour) during the testing. Fourteen (14) water quality laboratory samples were collected throughout the test including a full primary and secondary drinking water standards sample at the end of the test. The water quality was extremely stable throughout the test with specific conductance. The TDS at the end of the 7-day CRT was 1,040 mg/L. On February 22, Carollo's hydrogeologic subconsultant (RESPEC) recommended that the UFA Test/Production well be completed as a Suwannee/upper Avon Park production zone with a cased depth of 600 feet bls and total depth of 1,160 feet bls. Authority staff agreed with RESPEC's recommendation on February 23.

The intermediate (finalized conceptual) design was completed and submitted by Carollo for the RO facility, raw water wellfield, raw water transmission main, injection wells and concentrate piping. The first draft of the Engineer's Opinion of Probable Construction Cost (OPCC) was submitted to the Authority in early February for the Authority's CMAR review/use. Water quality data from the constant rate tests for both the Suwannee and Suwannee / upper Avon Park pilot holes was received, reviewed, and the RO process projections updated. Design progression was continued to preliminary design (30% design) for the RO facility, wellfields, and conveyances. A draft of the 30% design documents was provided for the Authority staff's review on March 4, 2024.