

Attachment A
Bennett Swamp Rehydration Project
Monitoring Program including Purchase and Installation of Equipment

Scope of Services

I. Introduction

The CONSULTANT shall provide Professional Stormwater and Environmental Engineering Services to provide the monitoring of the Bennett Swamp Rehydration Project for the first year following construction. The monitoring will conform to the requirements of the Quality Assurance Performance Plan of the FDEP Grant. It shall also conform to the quarterly water quality and biota monitoring requirements of the WRF NPDES permit modification (FL 0111392 dated June 28, 2017), specifically sections I.A.7 through I.A.15. The daily grab sampling, testing and reporting as required by sections I.A.1 through I.A.6 are not within the scope of services of this task assignment. Specifically, the CONSULTANT shall provide these services for the following tasks:

- Task 1—Purchase and Install Monitoring Equipment
- Task 2—Perform 13 Monthly Field Walks
- Task 3—Perform 5 Quarterly Biota Sampling
- Task 4—Prepare Monthly Monitoring Reports
- Task 5—Prepare Quarterly Biota Sampling Reports
- Task 6—Prepare Year End Final QAPP Report

Some of these tasks will run concurrent. Detailed descriptions of the scopes of work for the various tasks are described below.

II. Description of Services by Task

A. Task I—Purchase and Install Monitoring Equipment

The CONSULTANT shall purchase on behalf of the CITY and install the monitoring equipment as follows:

1. Upgrades from existing 13 groundwater piezometers

1A. The CONSULTANT shall purchase the equipment upgrades from the existing 13 cell phone communications system to a satellite telemetry system for the existing groundwater stage recorders. This task includes the direct purchase of equipment from the vendor plus additional posts and supplies as required. Included in the cost shall be a 1 year subscription for hourly transmission of data and a 5-year warranty of the equipment. The CONSULTANT shall purchase equipment, transmission subscription and warranty of equipment on behalf of the CITY.

1B. The CONSULTANT shall provide the labor, equipment and materials to remove existing cell phone piezometers and cell phone transmitters and install satellite telemetry systems based upon the assumption that the existing well points will be reutilized to install the new piezometers but additional posts for the new solar panels and satellite transmission equipment are required. A minimum of 3 galvanized steel cable wire stays shall be provided to secure the new posts. All removed equipment shall be delivered to the CITY.

1C. The CONSULTANT shall coordinate with the satellite telemetry's equipment vendor and the CITY's WWTP staff for startup, data downloading and interpretation.

2. New monitoring sites

2A. The CONSULTANT shall purchase equipment for the new piezometers/stage recorders with satellite telemetry for the 4 new sites as required by the NPDES permit. This task includes the direct purchase of equipment from the vendor plus additional posts and supplies as required. Included in the cost shall be a 1 year subscription for the transmission of data and a 5-year warranty of the equipment. The CONSULTANT shall purchase equipment, transmission subscription and warranty of equipment on behalf of the CITY.

2B. The CONSULTANT shall provide the labor, equipment and materials to install the monitoring wells/stilling wells and satellite telemetry/solar panel posts. A minimum of 3 galvanized steel cable wire stays shall be provided to secure the new posts.

2C. The CONSULTANT shall coordinate with the satellite telemetry's equipment vendor and the CITY's WWTP staff for startup, data downloading and interpretation.

3. Satellite Telemetry Transmission Equipment for Slim Pines 18" flow meter.

3A. The CONSULTANT shall purchase the equipment for the new solar powered satellite transmission for the Slim Pines 18" Flow Meter. Included in the cost shall be a 1 year subscription for the transmission of data and a 5-year warranty of the equipment. The CONSULTANT shall purchase equipment, transmission subscription and warranty of equipment on behalf of the CITY.

3B. Installation will be the responsibility of the construction contractor for the Bennett Swamp Rehydration Project.

3C. The CONSULTANT shall coordinate with the satellite telemetry's equipment vendor and the CITY's WWTP staff for startup, data downloading and interpretation for the Slim Pines 18" Flow Meters. The CONSULTANT shall provide labor as required for this onsite coordination.

B. Task 2—Perform 13 Monthly Field Walks

The CONSULTANT shall perform 13 monthly field walks along the pipeline construction alignments, the Thayer Canal weir, the US-92 outfall ditch and at the 4 biota monitoring sites. The field walks will be performed by a CH2M environmental scientist and a hydrologic engineer. These field walks shall be conducted within 1 week of the turning of the system on to dispersal and conducted approximately one month thereafter. The dates and times of the field walks will be coordinated with CITY staff, FFS staff, SJRWMD staff, and FDEP staff. However, failure of any or all of these entities to schedule participation by that agency shall not constitute justification for postponement and/or rescheduling. The scheduling priority shall be:

1. Availability of CH2M personnel
2. Availability of CITY Staff
3. Availability of FFS Staff
4. Availability of SJRWMD Staff
5. Availability of FDEP Staff

The intent of these walks is to qualitatively assess the vegetation regeneration/succession/transition of the construction pathways and dispersal units. Vegetation regeneration/succession/transition shall be documented by photographs and observations. Spread of the flow from the each of the dispersal units will be measured by means of a tape measure.

Documentation shall be in the form of a written technical memorandum to be provided to the CITY within one week of the field walk. At the CITY's request copies will be transmitted to the FFS, FDEP and/or the SJRWMD. Copies will be included in the Monthly Monitoring Report as described in Task 4.

C. Task 3—Biota and Water Quality Assessment Sampling

In accordance with the NPDES FLO11392 permit, the CONSULTANT shall perform the field measurement and monitoring services as required by sections I.A.7 through I.A.15. These service include the biota and water quality measurements in the 4 sampling locations:

1. At the Inflow Point WIM-01
2. At the point west of Hayes Island WIM-02
3. Upstream of Thayer Canal outfall WIM-03
4. Upstream of the US-92 outfall WIM-04

The field measurement and monitoring shall commence immediately following initiation of the dispersal of the water to Bennett Swamp and be conducted quarterly for the next 4 quarters. The CONSULTANT shall provide the labor, materials and equipment necessary to perform these services. Following each monitoring event, the CONSULTANT shall prepare a Certified Engineering Report. The CONSULTANT shall also prepare the Annual Report as required section I.A.15 of the permit and provide this to the CITY for the CITY's annual reporting requirements. The CONSULTANT shall coordinate with CITY staff on the format and content of the report to facilitate the CITY's reporting and monitoring requirements and to teach City staff. Copies of the report will be included within the specific months of the Monthly Monitoring Reports of Task 4.

D. Task 4—Monthly Monitoring Report

The CONSULTANT shall prepare a written report certified by a Registered Professional Engineer for 13 Monthly Monitoring Reports as required by the Quality Assurance Performance Plan of the FDEP grant. The reports shall begin with the initiation of the startup of the system and continue for 12 months, thereafter. This report will document the following:

1. Rainfall
2. Effluent Flow from the Bethune Point and Westside Regional WWTPs
3. Volumes and Mass Loadings to the Halifax River
4. Volumes and Mass Loadings to the Reuse System
5. Volumes and Mass Loadings to the Bennett Swamp System
6. Volumes and Mass Loadings to the Tomoka River System
7. Nutrient Load Reductions to the Halifax River

The Monthly Monitoring Report shall contain specific engineering evaluations regarding the performance of the system for the month of the report. It will contain the Monthly Field Walk Technical Memorandums as per Task 2. It will contain documentation of the performance of the system for each month and include summaries for the prior months of the calendar year to date. The report shall include recommendations as to operational changes that might optimize the nutrient removal efficiencies of the system.

E. Task 5—Prepare 5 Quarterly Biota Sampling Reports

The CONSULTANT shall prepare a written report certified by a Registered Professional Engineer for 5 Quarterly Biota Sampling Reports as required by the NPDES Permit FLO111392 Section 8 and the Quality Assurance Performance Plan of the FDEP grant. The reports shall begin with the initiation of the startup of the system and continue for 4 quarters, thereafter. This report will document the following:

1. Water Quality within the 3 locations—Startup and 4 Quarters
2. Sulfides of Soil Samples at 4 locations—Start up and Year End
3. 48 Hour Dissolved Oxygen/ph/Specific Conductance/Temperature at 3 locations—Startup 4 Quarters
4. Biota Sampling—
 - a. Herbaceous Vegetation at 4 sites—Startup and 4 Quarters
 - b. Woody Vegetation at 4 sites—Startup and Year End
 - c. Presence of Fish at 4 sites—Startup and Year End
 - d. Endangered and Threatened Species List at 4 sites—Startup and Year End

The Quarterly Biota Sampling Report shall contain results of the testing for the respective biological and water quality data obtained. It shall also contain descriptions of the methods employed as well as discussions of the functioning of the system.

F. Year End Final QAPP Report

The CONSULTANT shall prepare a written report certified by a Registered Professional Engineer at the conclusion of the first year's operation as required by the FDEP grant. This shall consist of assembling the 13 individual monthly monitoring reports of Task 4 and the 5 biota sampling reports of Task 5 into one document with appendices. Included in the document will be a summary of the performance of the first year of operation, as well as, recommendations to improve the system.

III. Schedule

The following is the anticipated schedule for the following tasks:

- A. Task 1—Purchase and Install Monitoring Equipment
 - A.1. Purchase Equipment—October 1, 2017-December 31, 2017
 - A.2. Install Equipment November 1, 2017-January 31, 2018
 - A.3. Coordinate with Vendor
 - A.3.1 13 Existing and 4 New Piezometers-- November 1, 2017-January 31, 2018
- B. Task 2—Perform 13 Monthly Field Walks—February/March, 2018 to March/April, 2019
- C. Task 3—Perform Quarterly Biota Sampling—February/March, 2018 to March/April, 2019
- D. Task 4—Prepare Monthly Monitoring Reports—February/March, 2018 to June, 2019

E. Task 5—Prepare Quarterly Biota Sampling Reports—February/March 2018 to June, 2019

F. Task 6—Prepare Year End Final QAPP Report—March, 2019 to May, 2019
