



City of North Port

PURCHASING

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WORK ASSIGNMENT

CONSULTANT

CDM Smith, Inc

CONTINUING CONTRACT NO. & TITLE

Continuing Contract No. 2016-23 - Professional Engineering Services for Utilities

THIS WORK ASSIGNMENT

WORK ASSIGNMENT #

2020-03

SHORT TITLE

MCWTP Water Treatability Evaluation

DATE SUBMITTED

3/23/2020

AMOUNT (LUMP SUM)

\$182,968.62

SCHEDULED COMPLETION

26 weeks from project kickoff

CONTRACT AND BUDGET OVERVIEW FOR FISCAL YEAR 2020

	DEPARTMENT	CITYWIDE (completed by Purchasing)
TOTAL OF PREVIOUS ASSIGNMENTS	\$199,945.68	\$199,945.68
THIS WORK ASSIGNMENT	\$182,968.62	\$182,968.62
TOTAL WORK ASSIGNMENTS	\$382,914.30	\$382,914.30
ACCOUNT NO/PROJECT NO	420-6061-533.31-05/U19WTE	Various

All work assignments require City Manager approval. In presenting this work assignment, it is understood that:

1. All associated supporting documentation and justification for this work assignment is attached hereto.
2. Unless specified herein, work does not involve watercraft, boat piers and/or other activities requiring additional workers compensation endorsements.
3. Contact or involvement with hazardous materials is not anticipated, should hazardous materials be encountered, the City shall be informed.
4. THIS WORK ASSIGNMENT SHALL NOT EXCEED \$200,000 & ANY RESULTING CONSTRUCTION SHALL NOT EXCEED \$2,000,000 PER FLORIDA STATUTE 287.055.

SUBMITTED BY:

Jason A. Sciandra

Digitally signed by Jason A. Sciandra
Date: 2020.03.23 08:24:23 -04'00'

03/23/2020

CONSULTANT

DATE

APPROVED BY:

DEPARTMENT DIRECTOR

Ginny Duyn
PURCHASING

Digitally signed by Ginny Duyn
Date: 2020.03.23 14:09:06 -04'00'

DATE

DATE

ASSISTANT CITY MANAGER

DATE

Lisa Herrmann
BUDGET ADMINISTRATOR

Digitally signed by Lisa Herrmann
DN: cn=Lisa Herrmann, o=City of North Port, ou=Finance, email=lherrmann@cityofnorthport.com, c=US
Date: 2020.03.23 15:14:12 -04'00'

DATE

Kimberly Ferrell
FINANCE DIRECTOR

Digitally signed by Kimberly Ferrell
Date: 2020.03.23 16:15:39 -04'00'

DATE

CITY MANAGER

DATE

Print Form

Clear All Fields

TASK AUTHORIZATION NO. __

FOR

MYAKKAHATCHEE CREEK WATER TREATMENT PLANT (MCWTP) WATER TREATABILITY EVALUATION

This Authorization, when executed, shall be incorporated in and become part of the Agreement for Professional Services between the City of North Port (OWNER), and CDM Smith Inc. (CONSULTANT), dated September 14, 2016 hereafter referred to as the Agreement.

PROJECT BACKGROUND

The OWNER desires to support a growing community and consumers of their potable water without a major change in source water treatment. This authorization is to enable the OWNER to provide a desktop level analysis of options to identify options to improve and potentially increase capacity of the surface water treatment portion of the Myakkahatchee Creek Water Treatment Plant (MCWTP). The MCWTP utilizes surface water and brackish groundwater sources.

North Port Utilities (NPU) the OWNER of MCWTP has identified an opportunity to increase utilization of surface water from Myakkahatchee Creek and the Cocoplum Waterway, especially during the dry winter season and drought conditions, by blending surface water into the reverse osmosis (RO) treatment process, which relies on increasingly brackish groundwater wells. While RO is a proven, dependable technology for treating groundwater, blending surface waters into the supply of a RO treatment unit requires close attention to surface water quality and careful selection of pretreatment technologies to avoid rapid membrane fouling and achieve stable operations.

SCOPE OF WORK

TASK 1 - PROJECT MANAGEMENT AND COORDINATION

This task consists of CONSULTANT's efforts for data gathering, information exchange, coordination, project tracking, quality checking and control, invoicing and project communications for the project.

Subtask 1.1 - Project Planning and Management

The CONSULTANT will set-up the project, project controls and project tracking and monitoring in accordance with our standard practice for project management. The CONSULTANT will determine data and information requirements and submit a data request list to the OWNER, requesting information that will be helpful for the project workshop under this task.

Subtask 1.2 - Project Meetings

The CONSULTANT will conduct a combined project kickoff and project alternatives development workshop with NPU within three (3) weeks of Notice-to-Proceed (NTP). Our lead Senior Engineer, project manager and our in-house O&M specialist, will attend the workshop, and discuss with OWNER to identify potential treatment alternatives for development in the treatability evaluation. The output from the workshop will consist of three or more treatment alternatives for project evaluation, considering the existing surface water treatment process, membrane treatment technologies, and other applicable technologies.

We have budgeted for up to five (5) progress meetings to discuss interim updates and project progress on a monthly basis and one (1) meeting to discuss final project deliverable with OWNER. The CONSULTANT's lead engineer and project manager will attend these meetings either in person or over conference call if attendance in person is to be avoided due to concerns for COVID or similar.

TASK 2 - TREATABILITY EVALUATION

Subtask 2.1 - Alternatives Identification

The CONSULTANT will conduct desktop evaluations of feasible scenarios and technologies to increase the use of Creek and Cocoplum water. These evaluations will consist of: 1) Use of the surface WTP with media filtration; 2) available membrane filtration approaches, described below, to pretreat surface water before blending with brackish groundwater for RO treatment; and 3) other potential approaches. The surface waters have higher TDS in winter and higher color, TOC, and turbidity in wet months. The CONSULTANT will consider these seasonal variations to identify alternatives to increase the future use of surface water at MCWTP year-round.

The CONSULTANT will consider historical water quality from the Creek and Cocoplum for three scenarios representing historical conditions: rainy, dry, and intermediate conditions. In general, during the dry season, the Creek salinity increases, with an increase in sulfate, calcium, alkalinity, pH, and DO saturation. During the rainy season Creek water becomes fresher, and organics, iron, color, algae, coliform bacteria, and turbidity increase. Several of these constituents can contribute to MF/UF fouling.

The CONSULTANT will evaluate the impact of known conditions on RO operations, fouling and scaling control, and bypass blending. The CONSULTANT will consider how to better utilize the existing coagulation process as pretreatment before potential membrane filtration treatment. The water quality summary will be compiled from the City's existing water quality records and data from the SWFWMD WMIS database, comprising 5,000+ observations over 20 years.

Subtask 2.2 - Focused Jar Testing

The CONSULTANT will conduct one round of up to three (3) days of jar testing to benchmark the current use of alum (coagulant use) and identify potential improvements to existing process at MCWTP. The jar testing will consist of testing alum and one ferric coagulant at three (3) doses each at three (3) different pH values with surface water from the MCWTP.

The results of this testing will be considered during the desktop analysis and will be summarized in an overall project report under Task 3.

Subtask 2.3 - Desktop Analysis

The CONSULTANT will conduct a desktop level analysis of up to six (6) alternatives agreed upon with the OWNER from Task 1. The CONSULTANT will provide the OWNER a summary of this desktop analysis in the project submittal under Task 3. The following process alternatives may be considered for this evaluation:

- CF-RSF: The existing coagulation-flocculation (CF) process followed by Rapid Sand Filtration (RSF)
- UF: Ultrafiltration

- RO: Reverse Osmosis as RO
- BF: Ballasted Flocculation (sand-like ballast assisted flocculation and subsequent filtration)
- EBF: Engineered Biofiltration (Ozonation and engineered biological filtration)

The CONSULTANT has budgeted this authorization based upon the six (6) treatment process alternatives listed below: (where ">" denotes followed by)

1. CF>RSF>RO
2. CF>RSF>UF>RO
3. CF>BF>RO
4. CF>BF>UF>RO
5. CF>EBF>RO
6. CF>EBF>UF>RO

Subtask 2.4 - Planning Level Cost Opinion

The CONSULTANT will prepare a planning level cost opinion for the alternatives for which a desktop evaluation is provided. This Class 5 AACE cost opinion is considered to be at a concept-screening level and will provide an order of magnitude of probable construction costs for the analyzed alternatives. The deliverable will consist of planning level costs in a tabular format with listing of assumptions and limitations.

Subtask 2.5 - Develop Preliminary Risk Register for Water Quality Contaminants

The CONSULTANT will conduct a literature review of up to ten articles selected by the CONSULTANT to assess known removal effectiveness for reclaimed water source for up to a total of 50 water quality contaminants by the existing RO processes and record the contaminant removal information in an Excel spreadsheet referred to as the "Preliminary Risk Register". The reclaimed water quality information if available for NPU with the OWNER and or publicly available reclaimed water quality from Florida utilities will be used for this work. This Preliminary Risk Register will provide assistance to OWNER to qualitatively understand the source water treatment barrier provided by the existing RO process at MCWTP for re-use of reclaimed water.

The preliminary risk register will consist of semiquantitative estimates of reductions for 50 (fifty) contaminants, with a residual risk score after treatment. This register will consist of the treatment alternatives analyzed under the 'desktop analysis.' It is estimated by the CONSULTANT that the contaminants will consist of organics and inorganics commonly observed in reclaimed water and compounds of emerging concern (CECs).

Subtask 2.6 - Regulatory Assistance

The CONSULTANT will provide assistance to OWNER for permitting coordination related to the feasibility of alternatives identified in this authorization and provide assistance to OWNER in support of

discussions to address regulatory concerns. The efforts for this subtask have been limited to a total of 40 hours.

TASK 3 - PROJECT TECHNICAL MEMORANDUM

The CONSULTANT will provide OWNER a Technical Memorandum (TM) summarizing the work under Task 1 and Task 2. This TM is intended to provide planning level assistance to the OWNER and will consist of the following narrative for the evaluated alternatives:

- A brief introductory description and background
- A planning level list of major changes to the existing MCWTP identified during this work for implementation, and a planning level budgetary cost opinion to implement the alternative
- Summary narrative for decision making for the alternatives under desktop evaluations: Specifically, Microfiltration versus Ultrafiltration, submerged vs. pressurized membranes, universal rack design or proprietary system design, full-flow filtration or partial flow, and options to fully abandon, partially abandon, or keep the existing multimedia filters.
- Summary narrative for adapting existing MCWTP treatment processes for potential future conditions, such as capability to treat compounds of emerging concern (CECs), and the supplementation of traditional source waters with highly treated reclaimed water.

The CONSULTANT will provide OWNER the draft TM in electronic form for review.

TASK 4 - PROJECT WORKSHOP AND LETTER REPORT

To capture OWNER's vision and drive project success, the CONSULTANT will conduct a project workshop after OWNER's review of the draft TM. The workshop will be attended by our lead senior engineer, project manager, and client service leader to capture OWNER's comments from operations, engineering, and administration. The CONSULTANT will then address OWNER's comments and electronically submit the project deliverable consisting of a letter report. This letter report will consist of a narrative summarizing the project work, the revised TM addressing OWNER's comments and the preliminary risk register in an excel format.

TASK 5 - OWNERS ALLOWANCE TO ANALYZE OPTION(S)

To offer an opportunity to further evaluate any specific topics of interest to OWNER arising from the work conducted under Task 1 through Task 4 the CONSULTANT will conduct additional work per OWNERS directive. This work may include but not be limited to expanding or exploring one or more alternatives for site specific conditions, O & M considerations, observe WTP operations and provide recommendations to upgrade existing chemical feed systems and or SCADA, planning level cost/benefit analysis, discuss and record limitations associated with the Southwest Florida Water Management. This task is proposed to be authorized by the OWNER at the staff level as OWNERS ALLOWANCE for a not to exceed Time and Materials basis for up to \$25,000. This task provides flexibility to further delineate specific option(s) per OWNER's directive.

ASSUMPTIONS

The above described engineering services have been based upon the following assumptions:

1. The CONSULTANT is not responsible for schedule delays for OWNER's review and feedback including providing project information. Upon request, the OWNER will provide available information to CONSULTANT in a prompt manner.
2. The work under this authorization does not propose change to the MCWTP facility or its operations; and is intended as a planning level alternatives analysis.
3. Deliverables from CONSULTANT to OWNER are limited to the items listed under deliverables. Unless listed under deliverables, no formal submittal or minutes of meeting is planned for work under Task 1 and or under Task 2.

DELIVERABLES

CONSULTANT will provide the following deliverables to the OWNER:

1. Meeting minutes for project kick-off and project alternatives development workshop under Task 1.
2. Draft TM and Excel file for preliminary risk register under Task 3 summarizing work under Task 1 and Task 2.
3. Project letter report, final TM and Excel file for preliminary risk register under Task 3 summarizing entire project work.

TIME OF COMPLETION/SCHEDULE

CONSULTANT shall start the project and commence work within 7 calendar days after issuance of a written Notice-to-Proceed from the OWNER. The CONSULTANT will provide a project baseline schedule at the kickoff and project alternatives development workshop which will be discussed with the OWNER. The baseline schedule will be for 26 weeks duration commencing from this workshop and will be amended by the CONSULTANT per direction from OWNER and or to meet health and safety requirements of the CONSULTANT for precaution against COVID.

COMPENSATION AND PAYMENT

In the Basic Services performed under the Scope of Work, the OWNER agrees to pay the CONSULTANT as follows: For work done by the CONSULTANT at the hourly billing rate for the category of the individual performing the work, for time directly chargeable to the project. The CONSULTANT's Fee Estimate based on the schedule of Hourly Billing Rates is attached as Exhibit A.

CONSULTANT will perform the SCOPE OF SERVICES on a time and materials basis in accordance with the terms of the master services agreement for a not-to-exceed fee for 1) Work described under Task 1 through Task 4 for \$157,968.62 and 2) Work described under Task 5 for additional amount of up to \$25,000. The total amount sought under this authorization is for \$182,968.62.

EXHIBIT A CONSULTANTS FEE ESTIMATE

Task Description	Principal-in-Charge	Senior PM	Senior Engineer	Engineer	Planner	Clerical	Total Budget	Total Budget
Contract Billing Rate:	\$291.50	\$212.00	\$201.40	\$137.80	\$125.08	\$79.50		
Hours/Dollars	hours	hours	hours	hours	hours	hours	hours	\$
Task 1 - Project Management and Coordination	9	38	41	16	6	10	120	\$ 22,687.18
Subtask 1.1 - Project Planning and Management	3	20	5	16	4	2	50	\$ 8,985.62
Subtask 1.2 - Project Meetings	6	18	36	0	2	8	70	\$ 13,701.56
Task 2 - Treatability Evaluation	68	92	236	120	10	39	565	\$ 107,743.70
Subtask 2.1 - Alternatives Identification	26	12	54	20	2	10	124	\$ 24,799.76
Subtask 2.2 - Focused Jar Testing	6	4	30	48	2	3	93	\$ 15,742.06
Subtask 2.3 - Desktop Analysis	24	20	56	20	2	14	136	\$ 26,633.56
Subtask 2.4 -Planning Level Cost Opinion	5	16	66	0	2	9	98	\$ 19,107.56
Subtask 2.5 - Develop Preliminary Risk Register for Water Quality Contaminants	7	8	22	32	2	3	74	\$ 13,065.56
Subtask 2.6 - Regulatory Assistance	0	32	8	0	0	0	40	\$ 8,395.20
Task 3 - Project TM	15	12	39	4	2	10	82	\$ 16,367.46
Task 4 - Project Workshop and Letter Report	11	8	16	16	1	9	61	\$ 11,170.28
Task 5 - Owners Allowance to Analyze Option(s)	20	30	61	0	1	5.03	117.0	\$ 25,000.00
PROJECT TOTALS (Tasks 1 through 4 only)	103.00	150.00	332.00	156.00	19.00	68.00	945.03	\$ 157,968.62
PROJECT TOTALS (Tasks 1 through 5)	123.00	180.00	393.00	156.00	20.00	73.03	1,062.05	\$ 182,968.62

