

**GROUNDWATER MODELING AND IMPACT EVALUATION IN SUPPORT OF
MODIFICATION OF WATER USE PERMIT NUMBER 10524**

This Work Order Number 5 is entered into as of this ___ day of _____, 2020, pursuant to that certain Continuing Consulting Engineering Services Agreement for Professional Services entered into as of this 17th day of April, 2018 (collectively referred to as the "Agreement"), by and between INDIAN RIVER COUNTY, a political subdivision of the State of Florida ("COUNTY") and CDM Smith Inc. (CDM Smith) ("Consultant").

1. The COUNTY has selected the Consultant to perform the professional services set forth in existing Work Order Number 5, Effective Date December 3, 2019.
2. The COUNTY and the Consultant desire to amend this Work Order as set forth on Exhibit A (Scope of Work) attached to this Amendment and made part hereof by this reference. The professional services will be performed by the Consultant for the fee schedule set forth in Exhibit B (Fee Schedule), and within the timeframe more particularly set forth in Exhibit C (Time Schedule), all in accordance with the terms and provisions set forth in the Agreement.
3. From and after the Effective Date of this Amendment, the above-referenced Work Order is amended as set forth in this Amendment. Pursuant to Section 1.4 of the Agreement, nothing contained in any Work Order shall conflict with the terms of the Agreement and the terms of the Agreement shall be deemed to be incorporated in each individual Work Order as if fully set forth herein.

IN WITNESS WHEREOF, the parties hereto have executed this Work Order as of the date first written above.

CONSULTANT:
CDM Smith Inc.

BOARD OF COUNTY COMMISSIONERS
OF INDIAN RIVER COUNTY

By: 
 Print Name: Eric J. Grotke, P.E., BCEE
 Title: Vice President

By: _____
 Susan Adams, Chairman

BCC Approved Date: _____

Attest: Jeffrey R. Smith, Clerk of Court and Comptroller

By: _____
 Deputy Clerk

Approved: _____
 Jason E. Brown, County Administrator

Approved as to form and legal sufficiency: _____
 Dylan T. Reingold, County Attorney

EXHIBIT A
CCNA-2018 WO NO. 5
AMENDMENT 1
FOR
INDIAN RIVER COUNTY UTILITIES
ADDITIONAL GROUNDWATER MODELING SIMULATIONS AND PREPARATION OF REVISED
GROUNDWATER MODELING PLAN
OF MODIFICATION OF WATER USE PERMIT NUMBER 10524

This Amendment, when executed, shall be incorporated in and become part of the Agreement for Professional Services (Contract #2018008) between Indian River County (OWNER), and CDM Smith Inc. (CONSULTANT), dated April 17, 2018, hereafter referred to as the Agreement.

PROJECT BACKGROUND

The OWNER owns and operates two Water Treatment Plants [WTPs], the South County WTP and North County WTP. The South County WTP withdraws groundwater from seven existing Upper Floridan Aquifer (UFA) production wells, while the North County WTP relies on groundwater from nine existing UFA production wells. OWNERS's existing Consumptive Use Permit (CUP) (10524) currently allows for a total combined groundwater withdrawal allocation of 12.838 million gallons per day [mgd], with 6.438 mgd from the North County wellfield and 6.40 mgd from the South County wellfield.

The current CUP expires on October 11, 2031. OWNER has experienced an increase in demand due to population growth and domestic self-supply users switching over to OWNER's water supply. OWNER began a draft application requesting modification of the existing CUP to the St. Johns River Water Management District (SJRWMD) in 2016. Groundwater modeling was performed to determine if there would be impacts on the water resources, environment, or other permitted users due to the anticipated increases in OWNER withdrawals from the UFA. CONSULTANT used a modified version of the South Florida Water Management District (SFWMD) East Coast Floridan Aquifer Model (ECFM) to perform the impact analysis for the UFA. Since the ECFM did not include the Surficial Aquifer System (SAS), the SJRWMD Coupled Aquifer [COUAQ] model was used to determine the drawdown in the Surficial Aquifer System (SAS) due to increased pumping and groundwater level drawdown in the UFA. The groundwater modeling results and analysis were summarized in a report that along with the model input and output files were submitted to the SJRWMD in support of the draft CUP application. SJRWMD staff previously approved the model as the best tool available for UFA uses in the area and the results of the modeling and impact evaluations.

Due to the resurgence of development, the OWNER must now modify the permit to account for the new and future demand projections. Based on actual groundwater withdrawals and an approximate 2 percent increase in demands over time (including an expanded service area), the 2050 demand was calculated to be 23.18 mgd. This is an increase from the existing EOP withdrawal of 12.838 mgd, which was used in the draft 2016 CUP application and the associated groundwater modeling and impact analysis. Additional modeling simulations are therefore necessary to determine whether the new

demand of 23.18 mgd will cause any adverse impacts to water resources, environmental resources, and other legal users.

After the CONSULTANT received notice-to-proceed for WO No. 5 and the project kickoff meeting was held with the OWNER, the OWNER requested that additional modeling simulations be conducted to determine the withdrawal flow split between the north and south wellfields. Also, the OWNER requested approval from the SJRWMD to use the existing groundwater models developed by the CONSULTANT in 2016 for the 2020 CUP modification. On January 13, 2020, SJRWMD provided approval for the use of the model but requested that a revised/updated groundwater modeling plan be submitted to the District for review and approval. These items were not included in WO No.5.

This Amendment has been developed to provide the additional groundwater modeling services requested by the OWNER.

SCOPE OF WORK

The following is a description of the work to be provided under this Amendment.

TASK 1 - ADDITIONAL GROUNDWATER MODELING SIMULATIONS

The CONSULTANT will perform two additional groundwater model simulations with the modified ECFM for the increased UFA allocation to determine the flow split between the north and south county WTP wellfields for the proposed 2050 EOP withdrawal. The CONSULTANT will also perform a third additional groundwater model simulation requested by SJRWMD referred to as “pumps off”, which will be used for the cumulative pumping impact scenario as described below. The modified ECFM model was used during previous permit modification attempt in 2016 and has been approved by SJRWMD for use in support of the current CUP modification.

The two (2) groundwater modeling simulations will be performed using the End-of-Permit (EOP) withdrawals for all permitted users and IRCU wells pumping at the requested allocation increase of 23.18 mgd. A detailed description of these two simulations are listed below:

1. Simulation 4 (SIM4) – Existing and proposed IRCU Hobart Park WTP wells will be pumped at 23.18 mgd and other legal user wells within the model domain pumping at their current EOP withdrawal rate, except for the agricultural use wells whose EOP allocations will be adjusted to 5 in 10-year factors provided by SJRWMD. The CONSULTANT has received a GIS shapefile from SJRWMD containing EOP withdrawals for all permitted users within the model domain.
2. Simulation 5 (SIM5) – Existing and proposed IRCU South County WTP wells will be pumped at 23.18 mgd and other legal user wells within the model domain pumping at their current EOP withdrawal rate, except for the agricultural use wells whose EOP allocations will be adjusted to 5 in 10-year factors provided by SJRWMD.
3. Simulation 6 (SIM6) – All Existing Legal User withdrawals in the model domain are set to zero (“pumps off”). Simulated groundwater elevations from the cumulative EOP withdrawals for all Existing Legal Users in the model domain are subtracted from the simulated groundwater elevations from the “pumps off” simulation to calculate cumulative groundwater level drawdown.

Simulations 4 and 5 will be used by the CONSULTANT and OWNER in determining the groundwater level drawdown due to the total proposed IRCU EOP withdrawal (23.18 mgd) occurring from each wellfield. Since the relationship between pumping rate and groundwater level drawdown is linear in confined aquifers, the maximum pumping rate can be determined for each wellfield that will not impact other existing legal users of the UFA. Simulation 6 will be used as the baseline condition for determining cumulative drawdown. The deliverable for this task will be maps showing the cone of depression (groundwater level drawdown) for each wellfield pumping scenario and contours of cumulative groundwater level drawdown due to pumping. The results of these Simulations 4 and 5 are for internal purposes only and will not be submitted to SJRWMD in the groundwater modeling and impact evaluation TM and/or described in the revised groundwater modeling plan. The results of Simulation 6 will be submitted to SJRWMD in the groundwater modeling and impact evaluation TM and described in the revised groundwater modeling plan.

TASK 2 - PREPARATION OF REVISED GROUNDWATER MODELING PLAN

The CONSULTANT will modify/update the existing groundwater modeling plan developed and approved by SJRWMD in 2016 to describe the three simulations listed in WO No. 5 and the methodology and data to adjust the agricultural pumping from legal users in the model domain.

The draft modeling plan will be submitted to the OWNER for review and comment. The CONSULTANT will incorporate comments provided by the OWNER into the plan and send the final plan to SJRWMD for review and approval before starting the model simulations.

TASK 3 - PROJECT AND QUALITY MANAGEMENT

Activities performed under this task consist of those general functions required to maintain the project on schedule, within budget, and that the quality of the work products defined within this Work Order is consistent with CONSULTANT's standards and the OWNER's requirements. Specific activities included are identified below:

Subtask 3.1 - Project Quality Management

CONSULTANT maintains a Quality Management System (QMS) on all projects. In accordance with the QMS, a project planning and scope review meeting will be conducted at the start of the project. In addition, the CONSULTANT's Technical Specialists will perform quality reviews of the deliverables identified in Task 1.

Subtask 3.2 - Project Status Reports

CONSULTANT's project manager will prepare and submit monthly written status reports with each invoice for an anticipated project duration of 4 months.

OTHER SERVICES NOT INCLUDED IN THIS WORK ORDER

This Work Order does not include the following items:

- Preparation of a Consumptive Use Permit application or permit fee; or
- Modeling changes for SJRWMD Requests for Additional Information.

OWNER'S RESPONSIBILITIES

The OWNER will provide all available data requested by the CONSULTANT for the purpose of completing the aforementioned tasks. The data necessary for this project are, but not limited to the following:

- To identify four new production well locations at the North Hobart Park Wellfield and six new production well locations at the South Wellfield to be capable of producing 23.18 mgd from each wellfield.
- To provide monthly water use data for the individual existing IRCUD production wells for the past five years (2015-2019) in electronic format.

The OWNER will also provide a timely review of all work products.

SCHEDULE

Previously, it was anticipated that the Project will take a total of 3 months to complete, starting within two weeks of receipt of a formal notice to proceed (NTP) on December 6, 2019. The groundwater modeling report with impact evaluations was estimated to be completed within 90 days of Notice-to-Proceed NTP was delayed until a project kickoff meeting could be scheduled in early January 2020. The project Kickoff meeting was held on January 8, 2020 where the scope items in this amendment were identified by the OWNER. This scope of work extends the schedule by 30 days for a total of 120 days from January 8th, which corresponds to May 7, 2020. CONSULTANT will prepare an updated detailed schedule within the first 10 calendar days after Notice-to-Proceed of Amendment 1.

COMPENSATION AND PAYMENT

Compensation for the work described in this Amendment shall be made on the basis of a lump sum fee. The lump sum fee for Tasks 1, 2 and 3, inclusive, is \$23,290 as shown in **Exhibits B-1** and **B-2**. The amended Work Order No. 5 lump sum amount is \$88,090. CONSULTANT will invoice OWNER on a monthly basis based on percent complete. For invoice purposes only, the value of each task is as shown in the **Table 1**.

Table 1 Estimated Budget for Amendment 1 to Work Order No. 5

TASK VALUE FOR INVOICE PURPOSES		
TASK	DESCRIPTION	VALUE
1	Additional Groundwater Modeling Simulations	\$18,290
2	Preparation of Revised Groundwater Modeling Plan	\$3,170
3	Project and Quality Management	\$1,830
TOTAL WORK ORDER NO. 5 AMMENDMENT 1- LUMP SUM		\$23,290

EXHIBIT B-1

INDIAN RIVER COUNTY UTILITIES

Additional Groundwater Modeling Simulations & Preparation of Revised Groundwater Modeling Plan in Support of Modification of Water Use Permit Number 10524

Task	Senior Officer	Senior Technical Expert	Principal	Senior Professional	Professional II	Staff Support Services	Document Control Specialist	Totals			
								Other Direct Costs	Hours	Labor	Labor + ODC
Task 1 – Additional Groundwater Modeling Simulations		20		70	0	12	0	\$200	102	\$18,090.00	\$18,290.00
<i>Subtotal</i>	0	20	0	70	0	12	0		102		
<i>Subtotal Amount</i>	\$0	\$4,700	\$0	\$12,250	\$0	\$1,140	\$0	\$200		\$18,090.00	\$18,290.00
Task 2 – Preparation of Revised Groundwater Modeling Plan		4		10	0	4	0	\$100	18	\$3,070.00	\$3,170.00
<i>Subtotal</i>	0	4	0	10	0	4	0		18		
<i>Subtotal Amount</i>	\$0	\$940	\$0	\$1,750	\$0	\$380	\$0	\$100		\$3,070.00	\$3,170.00
Task 3 – Project and Quality Management											
Subtask 3.1 - Project Quality Management	1	0	2		0	0	2		5	\$840.00	\$840.00
Subtask 3.2 - Project Status Reports	1	0	2			0	2	\$150.00	5	\$840.00	\$990.00
<i>Subtotal Hours</i>	2	0	4	0	0	0	4		10		
<i>Subtotal Amount</i>	\$480	\$0	\$840	\$0	\$0	\$0	\$360	\$150		\$1,680.00	\$1,830.00
TOTAL HOURS	2	24	4	80	0	16	4		130		
TOTAL AMOUNT	\$480.00	\$5,640.00	\$840.00	\$14,000.00	\$0.00	\$1,520.00	\$360.00	\$450.00		\$22,840.00	\$23,290.00

EXHIBIT B-2

BUDGET

INDIAN RIVER COUNTY UTILITIES

**Additional Groundwater Modeling Simulations & Preparation of Revised
Groundwater Modeling Plan in Support of Modification of Water Use Permit
Number 10524**

Description: As Outlined in the Scope of Services, Exhibit A

Reference: Agreement Between Indian River County Utilities
and CDM Smith Inc.

<u>Labor Category</u>	<u>Hours</u>	<u>Rate</u>	<u>Labor</u>
Senior Officer	2	\$240	\$480
Senior Technical Expert	24	\$235	\$5,640
Principal	4	\$210	\$840
Senior Professional	80	\$175	\$14,000
Professional II	0	\$140	\$0
Staff Support Services	16	\$95	\$1,520
Document Control Specialist	4	\$90	\$360
TOTAL HOURS	130		
TOTAL LABOR COST			<u>\$22,840</u>
OTHER DIRECT COSTS			<u>\$450</u>
TOTAL WORK ORDER AMOUNT			<u>\$23,290</u>

EXHIBIT C

INDIAN RIVER COUNTY UTILITIES

**ADDITIONAL GROUNDWATER MODELING SIMULATIONS & PREPARATION OF
REVISED GROUNDWATER DODELING PLAN IN SUPPORT OF MODIFICATION OF
WATER USE PERMIT NUMBER 10524**

WO NO. 5 AMENDMENT 1 SCHEDULE

It is anticipated that the work included in this Amendment will take 30 days to complete, starting within five (5) days of receipt of the executed Amendment and following the completion of the original scope of services. The estimated schedule is as shown below. CONSULTANT will prepare an updated detailed schedule within the first 10 calendar days after receipt of the Amendment.

TIME SCHEDULE	
Executed Amendment Received By	April 2, 2020
Technical Memorandum and Model Files	May 7, 2020

*Dates subject to receipt of the executed Amendment and the OWNER's review of work products