

**CCNA2018 WORK ORDER 5**

**SOUTH OSLO WATER PLANT  
MEMBRANE REPLACEMENT AND PLANT IMPROVEMENTS**

This Work Order Number 5 is entered into as of this \_\_\_ day of \_\_\_\_\_, 2018, pursuant to that certain Continuing Consulting Engineering Services Agreement for Professional Services entered into as of this 17<sup>th</sup> 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 Kimley-Horn and Associates, Inc., ("Consultant").

The COUNTY has selected the Consultant to perform the professional services set forth on Exhibit A (Scope of Work), attached to this Work Order 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), attached to this Work Order and made a part hereof by this reference. The Consultant will perform the professional services within the timeframe more particularly set forth in Exhibit C (Time Schedule), attached to this Work Order and made a part hereof by this reference all in accordance with the terms and provisions set forth in the Agreement. Pursuant to paragraph 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:**  
Kimley-Horn and Associates, Inc.

**BOARD OF COUNTY COMMISSIONERS  
OF INDIAN RIVER COUNTY**

By: \_\_\_\_\_

By: \_\_\_\_\_

Print Name: Brian Good, P.E.  
*Brian Good*

Peter D. O'Bryan, Chairman

Title: Principal

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 #1

### Work Order Number 5

#### **South Oslo Rd Membrane Treatment Plant Membrane Replacement and Process Piping Improvements**

### PROJECT UNDERSTANDING

The existing membranes at the Oslo Road membrane water treatment plant are more than 10 years old and ready for replacement. Some of the membranes have reduced salt rejection and operate at higher than normal operating pressures. Replacement will consist of removal and disposal of the existing elements, and installation of new membrane elements. Competitive bidding of equivalent elements from membrane manufacturers is recommended since membrane technology has improved and other manufacturers offer competitive membranes at equivalent performance. The work will be requested through advertising by an original equipment manufacturer (OEM) who has experience performing this type of work. The work will be publicly advertised for bidding through Indian River County (IRC) purchasing department.

Due to the age of the existing membrane system and support piping systems, a condition assessment will be conducted to assess reliability of the existing mechanical equipment; feedwater, permeate, and concentrate piping; pipe trenches; membrane skids; small piping systems; and high service pump distribution piping systems. Based on the assessment, improvements will be identified and prioritized according to importance. Documents will be prepared for the improvements identified in the assessment review and be included with the membrane replacement specifications.

### SCOPE OF SERVICES

The following scope consists of membrane replacement implementation and improvements identified in the assessment review for the South Oslo Rd water treatment plant.

#### **Task 1 – Condition Assessment – Piping & Membrane System**

The existing membrane system is currently operating at a reduced efficiency due to membrane degradation from scaling, fouling, and apparent intrusion of sand into the membranes. Consultant will evaluate the existing RO skid performance and normalized data, if available, to determine degradation method and determine if additional raw water quality is needed from the raw water supply wells.

Consultant will conduct a one-day condition assessment of the existing RO skid equipment, piping, pressure vessels, manifolds, trench piping, (permeate, concentrate, dump), pipe trench walls/floors/grating, feedwater pumps and piping manifold, high service piping manifold, cleaning piping, and chemical system piping within the trenches.

Consultant will review existing raw water quality evaluated under Work Order #17, and utilize available data to define, if necessary, the design raw water quality to be used for membrane projections. A design and worst case list of raw water quality parameters will be used for membrane projections.

Consultant will conduct up to twenty (20) membrane projections using membrane suppliers' software, with up to three (3) different membrane element manufacturer, and evaluate if optimization of the membrane system with respect to recovery, array, and other operating parameters are warranted to improve operating efficiency and lower operating pressures. Consultant will review membrane suppliers that can manufacture membrane elements which meet Hobart's treatment system requirements.

Consultant will develop a matrix of improvements that includes capital costs, operating cost savings, priorities (1 – 5 years), and how they are dovetailed into the wellfield and SCADA system improvements. Consultant will submit draft copies to IRCU, attend review meeting, update matrix with IRCU comments, then submit final copy to IRCU.

## **Task 2 – Preparation of Documents**

Consultant will prepare drawings for the following:

- membrane replacement,
- train piping replacement/modifications,
- drawings of skid piping modifications and feedwater pump room,
- inter-stage valve replacement,
- sample tubing modifications,
- permeate headers and PV permeate pipes,
- pressure vessel replacement,
- train modifications to array and/or piping,
- trench piping,
- trench repairs or flowable fill/structural slab,
- chemical piping listed herein,
- cleaning piping system
- dual high service pump discharge piping and replacement piping

Consultant will review and prepare drawings depicting small piping replacement, and should consider the following piping systems:

- Instrument air piping – black iron to stainless steel
- Sulfuric acid piping – PVC/CPVC to Halar/PVDF\*
- Scale inhibitor – PVC to HDPE

\*Consider replacing acid with CO2 supply – stainless steel tubing/piping

Consultant will design dual discharge piping headers for the high service pumps, with the intention of replacing the existing deteriorated header piping in the trench and routing a new parallel discharge header on the floor between high service pumps.

It is estimated a total of 10 – 12 drawings will be prepared.

The documents will be prepared and be used in advertising for bids. Consultant will utilize base drawings and sketches prepared in 2008 of RO trains depicting the scope of work on each of the membrane treatment trains and process room.

The procurement documents will include membrane and project specifications, projections, and scope of work for modifications to the train piping and arrays.

Consultant will prepare a list of qualifications for membrane suppliers and review with Owner. Consultant will finalize membrane replacement specifications and prepare scope of work as described in project understanding.

### **Task 3 – Permitting**

Due to the fact that permeate hoses and piping will be replaced, and that they come in contact with “potable water”, a permit from the Florida Department of Environmental Protection will be required.

Consultant will prepare a FDEP permit application FDEP Form 62-555.900(1), Application for a Specific Permit to Construct PWS Components for a minor modification to the RO water plant without an increase in rated plant capacity.

Consultant will prepare supporting documents, consisting of drawings, specifications, projections, and calculations supporting the permit application.

Consultant will prepare four (4) signed and sealed copies of permit application package and submit to FDEP Southeast District.

Consultant will respond to one round of reasonable requests for additional information from FDEP permitting agency requests for clarification.

### **Task 4 – Bidding Phase**

Consultant will prepare electronic copy of document for IRC purchasing department to be utilized for bidding purposes.

IRC purchasing department will advertise and administer the procurement of the bidding and respond to potential bidder questions. The Consultant will attend a pre-bid meeting, respond to OEM, contractor, or membrane supplier questions and prepare addendum(s), if required, which will be distributed to all the contract document holders by IRC purchasing department.

Consultant will review bids, provide a summary of comments, and a letter that identifies the lowest responsive, responsible bidder.

### TIME SCHEDULE

Consultant will conduct Task 1 within 2 - 4 weeks and Task 2 within 6 – 8 weeks from notice to proceed. Task 3 is scheduled to be 2 – 4 weeks after task 2 is complete. Bidding phase is assumed to take up to 4 – 6 weeks after task 1 through 3 are complete.

### FEE SCHEDULE

We will provide these services in accordance with our extension and amendment of our Continuing Consulting Engineering Services Agreement for Professional Services dated April 17<sup>th</sup>, 2018, by and between INDIAN RIVER COUNTY, a political subdivision of the State of Florida (“COUNTY”) and Kimley-Horn and Associates, Inc., (“Consultant”).

The Consultant will provide professional services for Task 1 through Task 4 on a lump sum fee basis as follows:

<b>Task No.</b>	<b>Task</b>	<b>Task Fee</b>
Task 1	Condition Assessment	\$ 15,827
Task 2	Prepare Documents	\$ 39,100
Task 3	Permitting	\$ 7,715
Task 4	Bidding Phase	\$ 9,724
	<b>Total Lump Sum Fee =</b>	<b>\$ 72,366</b>

### ADDITIONAL SERVICES

The following services are not included in the Scope of Services for this project, but may be required depending on circumstances that may arise during the execution of this project. Additional services include, but may not be limited to the following:

- Membrane pilot testing is not included under this scope
- Direct purchase of membrane elements and the procurement of these elements is not included under this scope, but can be provided if decided to purchase membrane elements directly
- Design drawings of any modification to the RO skids beyond what is listed herein
- **Construction phase services not included** under this task order, but will be prepared depending on schedule of bidding.