

CONSULTING SERVICE AUTHORIZATION

DATE:

CONSULTANT: Kimley Horn and Associates, Inc.

SERVICE AUTHORIZATION NO. 12-21.1 FOR CONSULTING SERVICES

CITY P.O. NO. _____ CITY EXPENSE CODE _____

TITLE: DELRAY BEACH DISTRIBUTION SYSTEM RESIDUAL CHLORINE DEPLETION STUDY

CITY PROJECT NO. _____

This Service Authorization, when executed, shall be incorporated in and shall become an integral part of the "Agreement for General Consulting Engineering Services" Contract, dated February 22, 2012.

I. PROJECT DESCRIPTION

Kimley-Horn and Associates, Inc. ("Kimley-Horn", "Consultant") is pleased to submit this service authorization request to the City of Delray Beach ("Client" or "City") for additional services related to the Distribution System Residual Chlorine Depletion Study (Service Authorization 12-21). It is our understanding that the Palm Beach County Health Department issued a Consent Order to the City due to incidents of low residual chlorine readings in the distribution system. The City has requested Kimley-Horn's assistance to help them develop and implement a new operating plan with the goal of increasing residual chlorine levels in the distribution system. Kimley-Horn has preliminarily recommended the following Steps be explored to collectively reduce the rate of chlorine decay, eliminate areas of chlorine residual below the required level, and reduce frequency of free chlorine maintenance operations:

STEPS:

1. Reduce Free Ammonia at the point of entry (POE) of the distribution system, or plant discharge
2. Improve System Re-Chlorination Stations
3. Water Treatment Plant Improvements (*not included with this service authorization*)

If the City is able to meet their treatment goals with Steps 1 and 2, Step 3 may not be needed. It is our understanding that the City would like to proceed with Steps 1 and 2 and will re-evaluate the need to perform Step 3 once they are complete. Kimley-Horn is already assisting the City with several of these tasks involved with Steps 1 and 2 as part of an existing service authorization. This service authorization is for the tasks that are required for Steps 1 and 2 and that are not currently authorized under any existing service authorization.

II. SCOPE OF SERVICES

TASK 1 – CHLORINE/FREE AMMONIA INVESTIGATION

The Consultant will perform the following tasks to assist the City with the development and implementation of Steps 1 and 2 of a new operating plan that will have the goal of increasing residual chlorine levels in the distribution system:

STEP 1

- The Consultant will investigate available instruments that will continuously measure free ammonia and total chlorine and that can be installed in the area of the common filter bay. The instruments will be selected based on their ability to provide a baseline of data and possible future pacing control of the chlorine and ammonia applications.
- The Consultant will prepare a schematic installation drawing, purchase specifications, and opinion of probable cost for the selected equipment. It is understood that the City will be responsible for purchasing this equipment.
- The Consultant will participate with water treatment plant (WTP) staff in conducting free ammonia testing for up to three (3) days at multiple locations within the WTP with the goal of identifying two (2) single locations that will provide representative and accurate reading of the free ammonia available in the finished water at the POE.
- The Consultant will assist the City in conducting water quality testing for up to one (1) day to determine the concentrations and species of disinfection byproducts (DBP) in the distribution system to determine if additional DBP's are formed in the distribution system.

STEP 2

- To evaluate the re-chlorination stations, the Consultant will:
 - Review available data for total chlorine and free ammonia in the distribution system and recommend locations for additional testing for locations throughout the distribution system. Possible locations for additional testing could include chlorine monitoring stations, the WTP clear well, North reservoir effluent, and/or Owen Baker/Miller Park pumping stations. This task is intended to identify any areas with significant decline in chlorine residuals in the distribution system. It is assumed that the City will conduct any additional recommended testing.
 - Review available enhanced chlorine residual monitoring data taken after the next chlorine maintenance event. It is assumed that the City will conduct all chlorine residual monitoring testing.
 - Develop and run scenarios with the hydraulic model developed under an existing service authorization with the goal of identifying locations that may be dosed more than once by stations due to low velocity in the pipe receiving chlorine.
 - Provide recommendations for the need for individual re-chlorination stations throughout the distribution system based on the enhanced chlorine residual monitoring in the distribution system and information obtained from the hydraulic model. A typical sketch with an opinion of probable cost will be provided for the

recommended instrumentation installation that should be performed to upgrade those distribution system re-chlorination stations that will remain online. These recommendations and sketches will be incorporated into the deliverables provided under an existing service authorization.

- The Consultant will participate in up to three (3) meetings with the Palm Beach County Health Department to discuss the components of this work.

ADDITIONAL SERVICES

Kimley-Horn can provide the Step 3 tasks as additional services at the request of the City and upon receipt of written authorization to proceed. Kimley-Horn also can provide additional services that arise due to unforeseen circumstances with prior written authorization from the City. Additional services that we can perform upon request of the City include, but are not limited to, the following:

- Provide permitting, bid phase or construction phase services.
- Provide drawings beyond the level of completion described in the scope of services.
- Investigate alternative configurations of equipment and piping that will allow application of free chlorine for predictable lengths of time followed by aeration to remove the chloroform.
- Investigate equipment and piping configurations that will allow for an increase in free chlorine contact time with that increase being limited and predictable to keep trihalomethane formation below regulatory requirements.
- Investigate the levels of total trihalomethanes present in the backwash water that is returned to the treatment system in the north side of the plant.
- Investigate the need to put a chlorination station at the North Reservoir and provide drawings and opinions of costs for the work.

Additional services will be performed based on proposals approved by the City in advance of the performance of those services.

SCHEDULE

KHA will begin work upon receiving a notice to proceed from the Client and will be performed generally commensurate with the City's schedule for chlorine maintenance operations. It is anticipated that the scope of work will be completed in six to eight months from the notice to proceed.

III. BUDGET

KHA will perform the Services in Task 1 on an hourly basis not to exceed the fees below without City permission. Fees will be invoiced monthly based on the actual amount of service performed and expenses incurred. Payment will be due within 25 days of your receipt of the invoice. Individual task amounts are informational only.

Reimbursable Expenses billed under this contract could include: in-house duplicating, facsimiles, postage, express delivery services, large-format color printing, construction drawing printing, specification printing, and other out of house printing. Reimbursable expense will be billed as incurred and back up documentation will be provided for these expenses.

Additional services which may be identified as needed at a later time will be negotiated at that time.

TASK	DESCRIPTION	FEE
1		\$34,502.00
	Estimated Reimbursable Expenses	\$ 200.00
	Total (Including Reimbursable Expenses)	\$34,702.00

IV. COMPLETION DATE

This service authorization is approved contingent upon the City's acceptance of and satisfaction with the completion of the services rendered in the previous phase or as encompassed by the previous service authorization. If the City in its sole discretion is unsatisfied with the services provided in the previous phase or service authorization, the City may terminate the contract without incurring any further liability. The CONSULTANT shall commence work on any service authorization approved by the City to be included as part of the contract without a further notice to proceed.

Approved by:

CITY OF DELRAY BEACH:

KIMLEY-HORN AND ASSOCIATES, INC.

Date _____

Date: 1/18/17

Cary D. Glickstein, Mayor

By: [Signature]
Kevin M. Schanen
(Seal)

Witness (Signature)



Witness (Printed)

Attest: _____

Approved as to Legal Sufficiency

R. Max Lohman, City Attorney

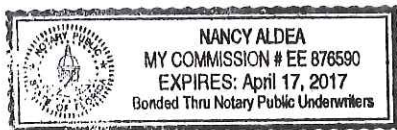
BEFORE ME, the foregoing instrument, this 18th day of January, 2017, was acknowledged by Kevin Schanen on behalf of the Corporation and said person executed the same free and voluntarily for the purpose therein expressed. ← Personally known to me.

Witness my hand and seal in the County and State aforesaid this 18th day of January, 2017.

[Signature]
Notary Public

State of Florida

My Commission Expires: 4/17/17



ESTIMATE FOR ENGINEERING SERVICES

PROJECT:	Delray Beach Distribution System Residual Chlorine Depletion Study, Amendment 1		SHEET 1 of 1								
	City of Delray Beach	John Potts/Fannie Howard	FILE NO.	DATE:							
ESTIMATOR:			01/05/17	0.0000							
DESCRIPTION:	See Scope of Services										
DIRECT LABOR (MAN-HOURS)											
	Senior Principal	Principal	Senior Professional	Professional	Analyst	Analyst	Analyst	Support Staff	SUB	EXP	LINE TOTAL
Task 1 - Chlorine/Free Ammonia Investigation - Steps 1 and 2	JP	MM	FH	SG							
Investigate and Recommend Instruments	6.0		1.0		12.0						\$2,856
Prepare schematic installation drawing and specification	6.0		1.0		12.0			2.0			\$3,000
Free Ammonia Testing at WTP	8.0		2.0		24.0			2.0			\$4,880
DBP Testing in the Distribution System	6.0		4.0					2.0			\$3,237
Analysis of Re-Chlorination Stations											\$0
Review available total chlorine/free ammonia data	2.0		6.0		9.0						\$2,477
Review available enhanced chlorine residual monitoring data	2.0		6.0		6.0						\$2,174
Develop and run scenarios in hydraulic model	2.0		9.0		18.0						\$3,926
Recommend locations for maintaining stations and provide conceptual sketch	6.0		6.0		12.0			3.0			\$3,972
Meetings with PBCHD (up to 3)	18.0		12.0		12.0			3.0			\$7,980
Reimbursable Expenses										\$200	\$200
	56	0	47	0	114	0	0	12	0	200	
	244.00	203.00	180.00	135.00	101.00	101.00	101.00	72.00	1.00	1.00	
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	13,664.00	0.00	8,460.00	0.00	11,514.00	0.00	0.00	864.00	0.00	200.00	\$34,702.00