



October 15, 2018

Ms. Patricia Strayer, P.E.
Town of Palm Beach
951 Old Okeechobee Road, Ste. "A"
West Palm Beach, FL 33401

RE: *Infiltration and Inflow Study of Town of Palm Beach Sanitary Sewer System*
PHASE 1 – System Wide Sewer Flow Analysis and Flow Metering Monitoring Plan

Dear Patricia,

Kimley-Horn and Associates, Inc. ("Consultant") is pleased to submit this proposal to the Town of Palm Beach ("Town") for providing professional engineering services for the evaluation of the Town's entire sewer network to determine the extent of rainfall derived infiltration and inflow (I&I) and sanitary sewer overflows (wet weather flows). Our project understanding, scope of services, schedule, and fee follow.

Project Understanding

The Town has been experiencing infiltration and inflow, along with some sanitary sewer overflows, throughout their entire sewer network. These occurrences place a burden on the existing sewer network and lead to additional monthly operational expenditures by the Town for excessive wastewater volumes, that is ultimately sent to the East Central Regional Water Reclamation Facility (ECRWF).

The Town's sewer network consists of approximately 40 miles of gravity sewer main, 1,000 manholes, 56 pump stations/lift stations and approximately 27 miles of sewer force main. The Consultant will perform a desktop I&I analysis on the Town's gravity sewer network utilizing the Town's GIS, existing lift station SCADA and rain gauge data. This analysis will use parameters and guidelines from EPA's Sanitary Sewer Overflow Analysis and Planning Toolbox and our sub consultant, ADS Environmental, proprietary I&I software referred to as Sliicer.

These tools will allow the Consultant to develop a Monitoring Plan that will prioritize specific lift station service areas for further analysis, by identifying the locations for individual metering devices to be installed. The installation of these metering devices and associated monitoring will be considered Phase 2 of the work. Phase 3 of the work will consist of the implementation of system corrective action to address the I&I issues.

The Consultant will provide a scope and fee for Phases 2 and 3 upon completion of each subsequent phase as may be requested by the Town.

Based on this understanding, our detailed scope of services is provided below.

Scope of Services**TASK 1 – Project Kickoff and Data Collection**

This Task consists of the project kickoff meeting to discuss the Town's overall goals and objectives. Attendees will include key Town staff, the Consultant's project manager and their key staff members. Also, as a part of this Task, the Consultant will commence with data collection and review of the following;

- GIS gravity sewer information and identification of sewer service areas.
- Sewer system layout and identification of parallel sewers and complex connections that could possibly lead to storm interconnects.
- Sewer system depths versus groundwater table evaluation, along with tidal influence zones. This evaluation may conclude the need for piezometers to be installed in strategic locations within Phase 2 of the work.
- Pipe materials and joint types.
- Identify lined versus unlined sewer locations.
- Record sewer infrastructure age and condition based upon available records.
- Existing lift/pump station run time data/SCADA system data.
- Rainfall data from existing Town rain gauge locations.
- Current Town sewer transmission system costs and master meter flow data for the pumping of wastewater from the Town to ECRWRF.
- Estimated permanent/seasonal population values versus actual flow rates to establish a base flow rate.
- Soil type and porosity. Soil profiles will be taken when piezometers are installed to supplement existing information. Available soil information and maps developed during past projects will also be reviewed.

The Consultant will work directly with Town staff to obtain existing SCADA data that can be converted to hourly run times for the various stations. This computation will assist in developing rainfall-derived inflow and infiltration (RDII) curves that could lead to reducing the number of flow meters required to be deployed in the system during Phase 2.

TASK 2 – Desktop I&I Analysis

The Consultant will complete a preliminary characterization of the Infiltration & Inflow using the existing data collected in Task 1. The approach will be as follows:

- Analyze and organize flow monitoring data
- Input sewer system flow data (derived from pump run times) and rainfall data into the Database Management Tool (DMT).
- The DMT includes software that;
 - Performs rainfall and flow data quality control
 - Identifies wet-weather events and determines rainfall volumes, peak rainfall intensities and antecedent moisture conditions.
 - Supports sanitary sewer system capacity analysis and planning.

- Perform rainfall-derived infiltration and inflow (RDII) analysis and generate associated hydrographs
- Summarize and export all data collected.
- Perform a quality check on all data and review for inconsistencies.

Upon completion of the DMT data entry and RDII analysis, the Consultant can perform the following analyses:

- Dry Weather Flow (DWF) Analysis for each lift/pump station service basin
- Wet Weather Flow (WWF) Analysis for each lift/pump station basin
- Develop a lift/pump station service area ranking, by prioritizing each station service area based on the amount of RDII observed.

TASK 3 – Flow Metering Monitoring Plan and Report

Upon completion of Task 1 and 2 above, the Consultant will proceed with the development of the Flow Metering Monitoring Plan for review and approval by the Town. The Plan will be developed addressing the following;

- Maps and Figures will be developed to define areas of I&I concern based upon the desktop analysis.
- The Consultant and their subconsultant, ADS Environmental, will determine the optimum location for flow meter locations to be used within Phase 2 of the work.
- The plan will also identify if additional rain gauges are required to supplement the ones already installed throughout the Town. ADS will use their RainAlert III, with the TB6 Tipping Bucket.
- The Consultant will identify the need for piezometers to be installed within Phase 2 of the work to further assist in the evaluation of groundwater and tidal influences.

The Consultant will prepare this report to include the following:

- Executive Summary
- Table of Contents
- Data Collection Summary
- Results of the Desktop I&I Analysis
- Additional Rain Gauge Placement (if needed)
- Placement of Piezometers in the Town
- Flow Metering Device Locations
- Prioritization of Problem Areas
- Phase 2 Scope of Services with costs

Additional Services

Any services not specifically provided for in the above scope, as well as any changes in the scope requested by the Town, will be considered additional services and will be performed based on proposals approved prior to performance of the additional services.

Information and Services Provided by the Town

The following information/services shall be provided to the Consultant:

- Utility Record Drawing Information as may be available
- Access to the Project Areas
- Metered flow data from Master Pump/Lift Stations
- Existing pump/lift station SCADA with run times and pump starts

Schedule

Kimley-Horn will perform the scope of services above as expeditiously as practical to meet a mutually agreed upon schedule. It is anticipated that services will begin upon receipt of a Notice to Proceed or Purchase Order and will be completed within 100 days.

Fee and Billing

Kimley-Horn will perform the services in TASK 1 through TASK 3 on an hourly basis as listed below. Kimley-Horn will not exceed the total maximum labor fee shown without authorization from the Town. Individual task amounts are provided for budgeting purposes only. Kimley-Horn reserves the right to reallocate amounts among tasks as necessary.

TASK 1 – Project Kickoff and Data Development	\$32,068
TASK 2 – Desktop I&I Analysis	\$28,712
<u>TASK 3 – Monitoring Plan Development and Report</u>	<u>\$35,016</u>
Total Not to Exceed Amount	\$95,796

Labor fee will be billed on an hourly basis in accordance to our Agreement. As to these tasks, direct reimbursable expenses such as express delivery services, fees, and other direct expenses will be billed at 1.0 times cost. All permitting, application, and similar project fees will be paid directly by the Town.

Closure

In addition to the matters set forth herein, our Agreement shall include and be subject to, and only to, the terms and conditions in the Professional Services Agreement for RFQ 2018-48 between the Town of Palm Beach and Kimley-Horn and Associates, Inc. As used in the Agreement, the term "Consultant" shall refer to Kimley-Horn and Associates, Inc., and the term "Town" shall refer to The Town of Palm Beach.

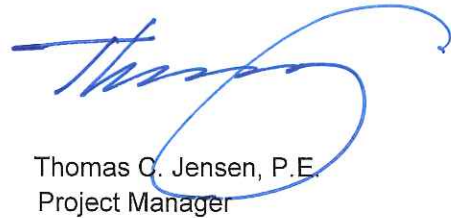
If you concur in all the foregoing and wish to direct us to proceed with the services, please notify us by providing a purchase order for the scope and fee described above.

We appreciate the opportunity to provide these services to you. Please contact me at (561) 840-0853 or at tom.jensen@kimley-horn.com should you have any questions.

Sincerely,
Kimley-Horn and Associates, Inc.



By: Kevin Schanen, P.E.
Vice President



Thomas C. Jensen, P.E.
Project Manager