

# 1.0 Introduction

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## 1.1 Project Background

The City of Hallandale Beach (City) is performing studies and rehabilitation efforts to reduce infiltration and inflow (I-I) throughout its wastewater collection system. The City requested that Hazen and Sawyer, PC (H&S) conduct an I-I analysis to help understand the magnitude of I-I system-wide, and to prioritize pump station collection areas (basins) on the basis of I-I severity to optimize the effectiveness of its sanitary sewer rehabilitation program and facilitate subsequent detailed investigation and rehabilitation. The work was conducted as a collaborative exercise with the performance of some subtasks by City personnel as described herein. The I-I analysis included the following primary tasks:

- Compare system-wide water usage and wastewater flow records for the most recent available 12-month period.
- Characterize the overall system based on I-I severity and the approximate proportions of infiltration, inflow, and wastewater.
- Develop a wastewater flow database for each pump station using date-and-time-stamped pump start and stop data along with wet well fill volumes.
- Analyze wastewater flow data considering selected wet weather events and periods of tidal influence, as well as the so-called “night flow” time period between 1:00 AM and 5:00 AM when actual wastewater flow is minimal and the majority of flow is infiltration (and in the case of wet weather, inflow).
- Convert basin-level flow data into units of gallons per day-inch-mile.
- Prioritize basins by I-I severity so that follow-up inspection and rehabilitation work can be focused on those areas where the greatest I-I reduction potential exists.

This report documents the results and conclusions of the I-I analysis and provides recommendations for follow-up actions.

It is noted that chloride data analysis was originally planned as part of the I-I analysis to assess the effects of tidal influence on infiltration rates. This task, however, was later deleted based on the decision that both the basin-level flow data and prior studies (URS, 2002-2003) adequately illustrated this influence.

## 1.2 System Description

The City of Hallandale Beach is located in southeast Broward County, encompassing an area of about 4.2 square miles. The year-round population is approximately 39,500, with a winter-season population of approximately 49,000. The wastewater collection system consists of 15 lift station service areas (basins), approximately 57 miles of gravity sewer mains, and nearly 1,200 manholes.

**Figure 1-1** depicts the sewer service area and the locations of the pump stations. The annual average daily flow for the twelve months through March of 2011 was 6.7 million gallons per day (mgd) as presented in **Table 1-1**. Wastewater collected using the above-described infrastructure is discharged through four separate metering installations to the City of Hollywood’s Southern Regional Wastewater Treatment Plant for treatment and disposal.