CASE STUDY

08/12

Moncks Corner, SC

5 iTrackers

14 day study

Pinpointed 80% of I&I

CONTENTS

OBJECTIVE

Background

The Berkeley County Water & Sanitation (BCWS) Authority is responsible for providing approximately 39,000 customers with clean drinking water along with proper disposal of the community's solid waste and wastewater. Over the years, its 237 employees have earned a well-deserved reputation for service excellence, fiscal responsibility, and environmental stewardship.

What We Did

the BCWS Wastewater Group began noticing that immediately following a major rain event, volume at the pump station servicing their Land O Pines community ***would nearly triple***. This escalation in volume caused an increase of:

- Overall processing costs
- Strain on the wastewater transportation network
- Workload on pumps

Tommy Harris, Superintendent of Wastewater Collection for the County, decided that it would be operationally and economically beneficial if the cause of the increases in wastewater flows were located and ultimately eliminated.

(5) iTracker® I&I Micro Detection Monitors were installed in designated manholes within the 2.1 linear miles of the collection system.

Figure 1: iTracker placement in Land O Pines Circle, Moncks Corner, SC

WHAT WE FOUND

Each iTracker unit was commissioned in 15 minutes without the requirement for confined space entry and immediately began monitoring the (5) independent mini-basins along the 2.1 linear mile major basin.

After two weeks of surveillance that included a major 5" cumulative rain event, the five iTrackers revealed the exact volumetric changes between dry and wet weather events within each of the five mini-basins under investigation.

> ***It was evident from the recorded data that manhole "129" was responsible for approximately 80% of the suspected peak RDII.***

Mini Basin 129

As can be seen from figure 2, levels increased from an average dry day level of 1.25" to a peak during the storm of 2.65". This resulted in a volumetric increase in flow of 4.48 times or 45 GPM.

Due to the effects of the 5" rain event on August 28th, 29th, and 30th, the average daily flow over the two-week surveillance period within mini-basin 129 increased by 7,670 GPD when compared to the average daily dry day flows. Peak period RDII at mini-basin 129 increased flows from 13 GPM to 58 GPM.

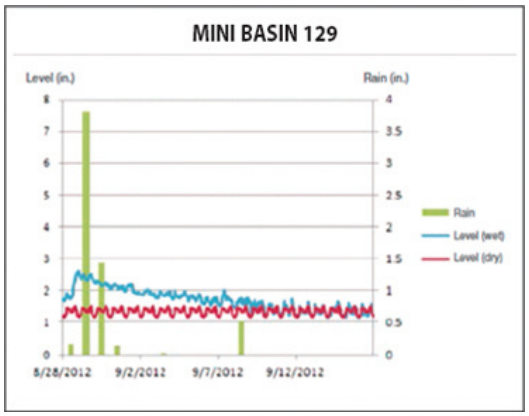


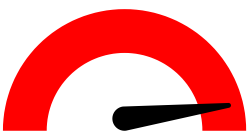
Figure 2: Mini basin 129 wet and dry levels

Mini Basin 1345

An analysis of the iTracker at the culmination of manhole 1345, located just prior to entering the pump station, showed that the peak volume during the August 29th storm increased 2.51 times, from 37 GPM to 93 GPM.

Peak Volume

Before 5" rain event



After 5" rain event

RESULTS

After two weeks of surveillance that included a major 5" cumulative rain event, the five iTrackers revealed the following:

80%

of the suspected Peak RDII emanated from Tracker 129

3X

iTracker 1345 confirmed the BCWS Wastewater Group's initial calculation of an approximate tripling in flow during a major rain event

GLOSSARY

Base Flow - Wastewater directly discharged by the population upstream of the iTracker® I&I Micro Detection Monitor

GWI - Abbreviation for 'Groundwater infiltration.' Water entering the collection network from saturated soil.

I&I - Inflow and infiltration

Infiltration - Surface water that enters the wastewater collection system after seeping through the soil.

Inflow - Water running directly into the sewer through open manholes, downspouts, and other openings or gaps not covered by soil

Peak - Level/Flow Values based upon maximum one-hour averages.

Population - Refers to the number of residences contributing to the sewer shed upstream of the monitored site. iTracking® technology utilizes the population to estimate the average amount of flow expected on a typical dry day to establish dry day Base Flows.

RDII - Abbreviation for "Rain-Derived Inflow and Infiltration." RDII is rainwater that enters the collection system.

Peak Delta Q - Increase in wastewater volume from the typical dry day average volume to the peak volume during a rain event expressed as a multiplying factor relating to volume. (EXAMPLE: Normal Dry Day Average Volume designated as 1. If Peak Volume shows an increase of 5x over Normal Dry Day Volume, **PEAK DELTA Q** is 5.)