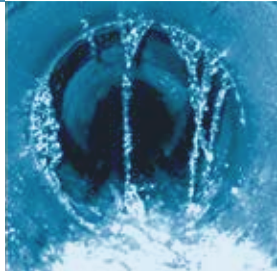
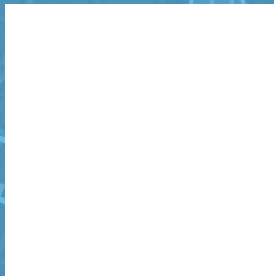
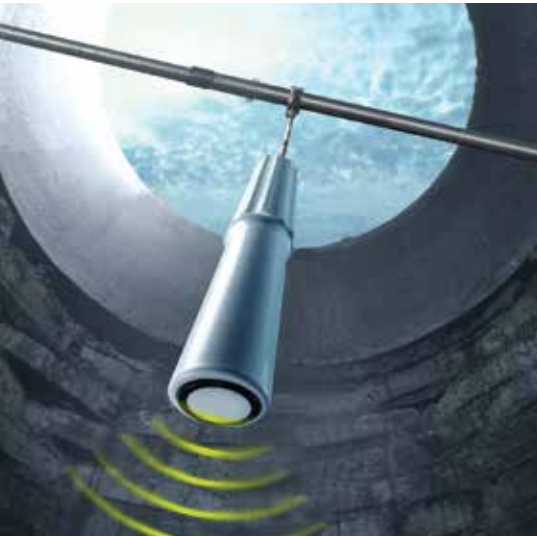


Inflow & Infiltration **Micro** Detection



Pinpointing Inflow & Infiltration
Down to Adjoining Manholes

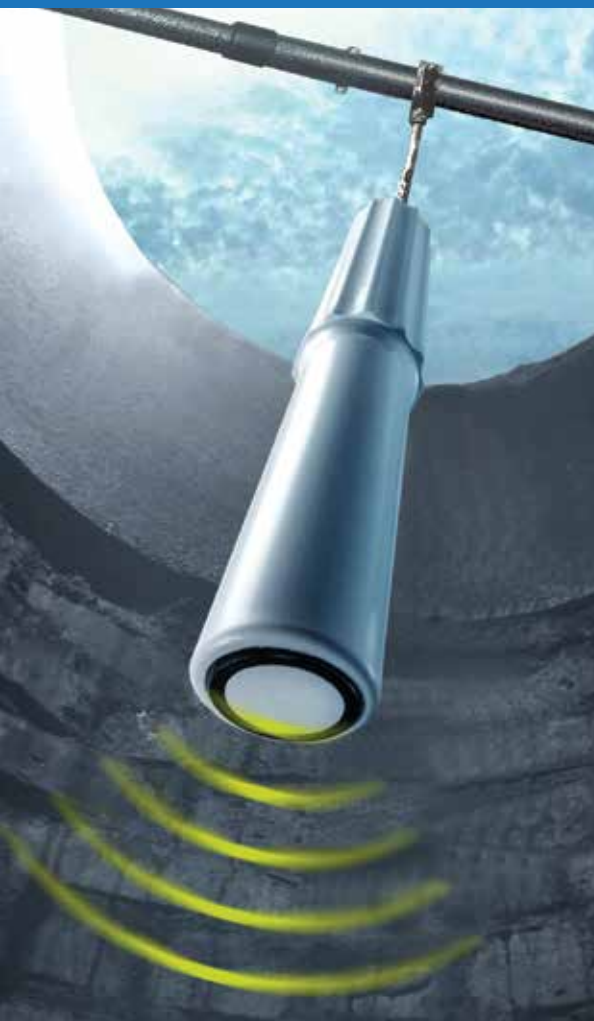


**Give us a call
ICM of AMERICA
877-494-5793**



iTracking®

A Technological Breakthrough in Inflow & Infiltration Detection



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iTracking®

INFLOW & INFILTRATION MICRO DETECTION

In case after case, extensive studies have proven that **80% of I&I originates in just 20%** of the collection system.

By having the ability to deliver over 40 times the detection capability of portable-type flow meters, patented iTracking® technology provides the means to locate and pinpoint inflow and infiltration to within a single pair of adjacent manholes.

Advanced TECHNOLOGY

Currently available methods for locating I&I, such as portable flow meters, are expensive, time-consuming to install, difficult to maintain, and technologically inefficient due to their 2-4 mile upstream piping requirement for accurately ascertaining flow. Alternative methods, such as Nighttime Flow Isolation, require expensive and time-consuming confined space entries while only providing a “snapshot” of true system performance.

Considering the above, it was time for a more technologically advanced and cost-efficient solution capable of pinpointing the sources of I&I down to micro-basins comprised of just a few manholes.

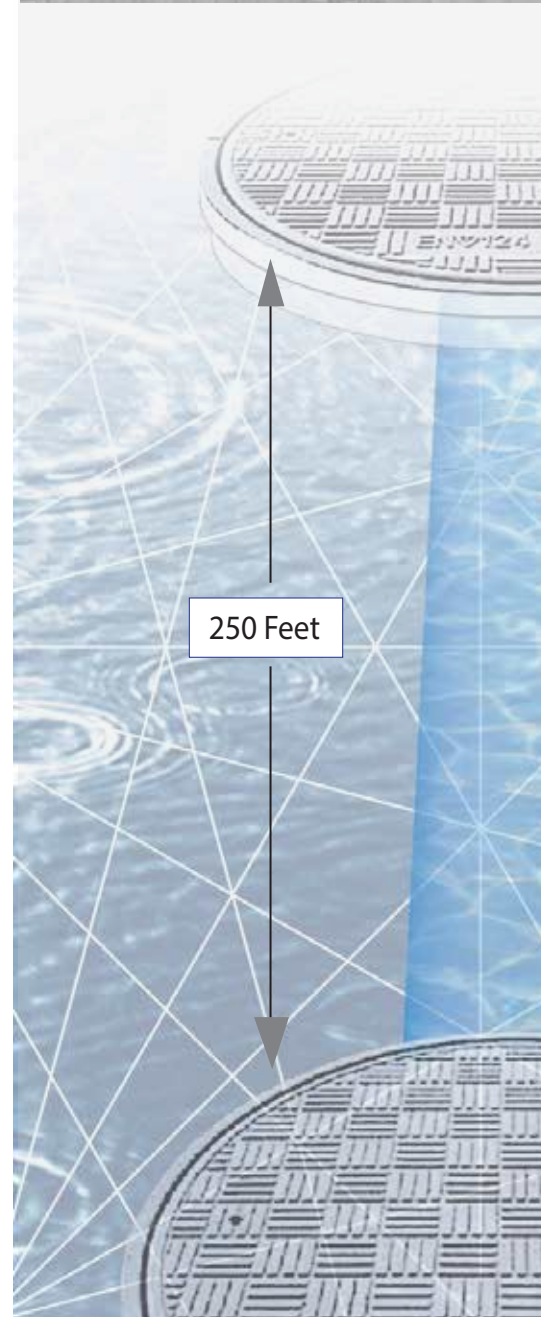


iTracker® Wi-Fi Enabled Sensors

iTracking® is the patented integration of three advanced technologies; low-cost sensors, wireless connectivity and high-speed automated software.

State-of-the-art iTracker® sensors operating on preset time schedules continuously track collection system performance by measuring and recording volumetric changes in wastewater levels between dry day and wet weather events. Upon downloading of logged data to a laptop or PC running iTracking® automated software, uniquely developed algorithms convert each volumetric change to its corresponding value in gallons per minute.

- **Non-Contact Sensor**
- **Weight: 1.9 lbs**
- **Dual Lithium Batteries**
- **Wi-Fi or Cellular Enabled**
- **Integrated Data Logger**





Advanced PERFORMANCE

iTracker® Sensors were engineered with only one thing in mind; **to provide inexpensive, quick and safe access to collection system performance data.**

Cost is “**1/3**” that of conventional flow meters; Installation is “**15 minutes**”; Maintenance is “**Zero**”; Data retrieval is “**Safe**”; Software is “**Free**”.



Minimal Projects Costs

When comparing historical purchase and installed costs of conventional doppler-type portable flow meters to iTracker® Sensors, savings of anywhere from 60% to 80% can be immediately realized.



Non-confined Space Installation

The true cost of any sewer study lies in the ongoing expense of confined-space entry, repetitive maintenance and time-consuming data retrieval. Non-confined space iTracker® installation is accomplished in 15 minutes.



Zero Maintenance

With “above-the-flow” iTracker® technology, the sensor never comes into direct contact with the media being measured. Repetitive maintenance due to fouled sensors, along with loss of critical data is no longer an issue.



Remote Data Retrieval

Conventional flow meters require physical retrieval of data, which at times, needs to be performed under non-accommodating conditions. Wi-Fi enabled iTrackers allow for remote data retrieval with any Wi-Fi enabled device. Cellular capability is available as an option.



MICRO I&I DETECTION

Zeroing in on the problem

Since 80% of I&I is contributed by 20% of the system, then pinpointing its cause to within adjacently located manholes is the key to a successful Sanitary Sewer Evaluation Study.

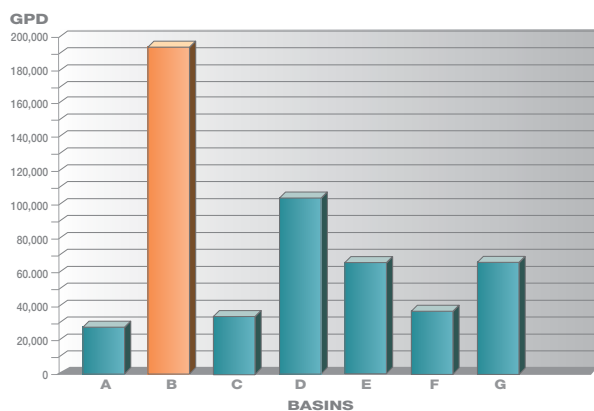
When compared to portable flow meters, iTracking® technology decreases previously required 2 to 4 mile basin investigation lengths down to a single pair of adjoining manholes. Through a simple 3-step process, iTracker® Micro Detection Sensors can deliver from 40 to 80 times the I&I detection capability of conventional flow metering systems.



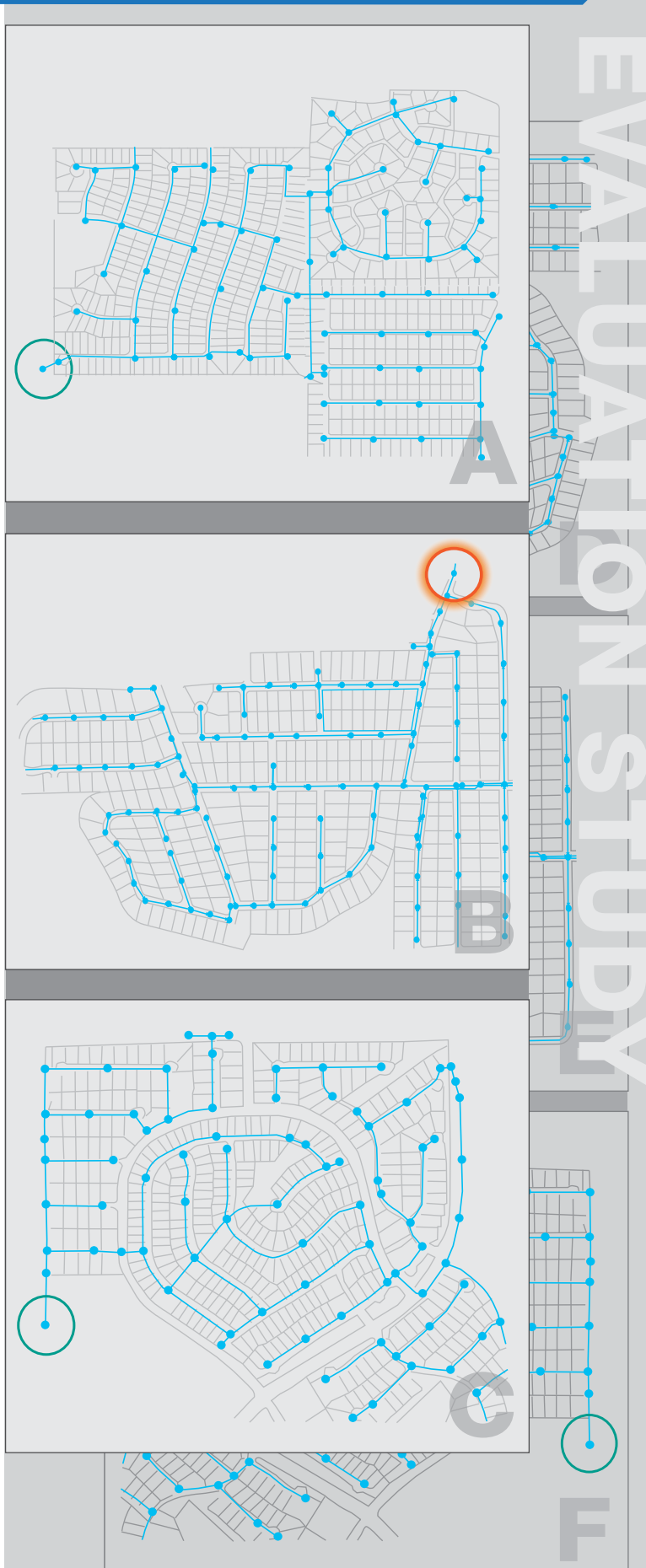
1 Major Basins

- A single iTracker® is strategically placed within the last manhole of each Major Basin under investigation.
- System performance data collected by the iTracker® is downloaded to the iTracking® automated software program.
- By the simple click of a button, a bar graph is immediately generated displaying I&I contribution rates for each Major Basin.

AVERAGE I&I VOLUME



As can be seen from the above bar graph, Major Basin B is responsible for the highest contribution (37%) of I&I.

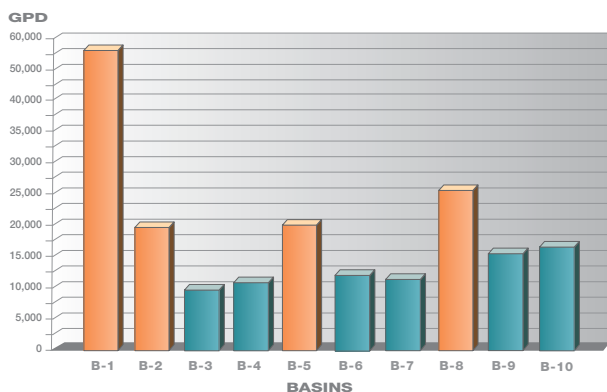


2 Mini-Basins

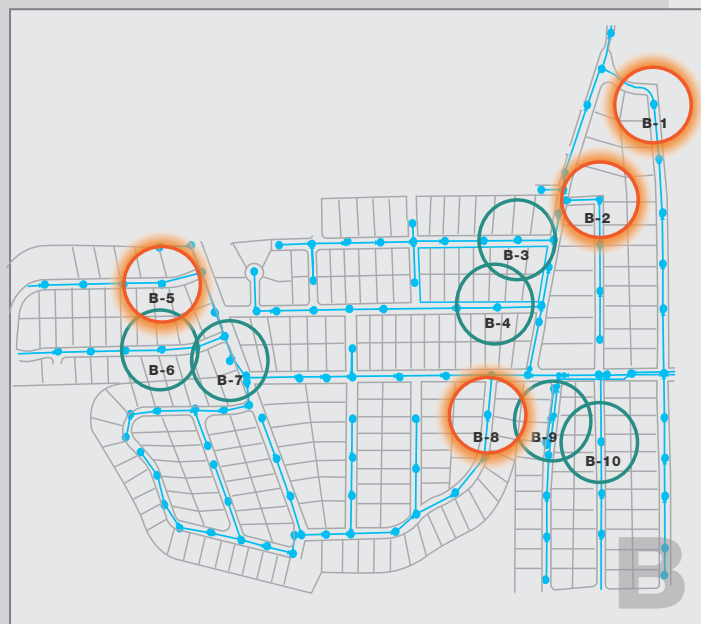
Of the seven Basins under investigation, Major Basin B was shown to be the largest contributor (37%) of I&I.

- Ten iTrackers® are strategically positioned within Major Basin B creating (10) new Mini-Basins (B-1 through B-10).
- System performance data obtained from the (10) newly created Mini-Basins is downloaded to the iTracking® automated software program.
- A bar graph is immediately generated displaying I&I contribution rates for each of the (10) Mini-Basins.

AVERAGE I&I VOLUME



As can be seen from the above bar graph, four out of the (10) Mini-Basins have been recognized as being responsible for 60% of the I&I within Major Basin B with Mini-Basin B-1 contributing nearly one-half of the 60%.



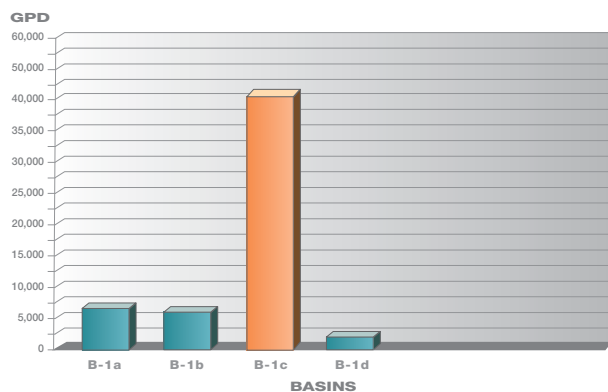
MAJOR BASIN B
(Mini-Basins B-1 thru B-10)



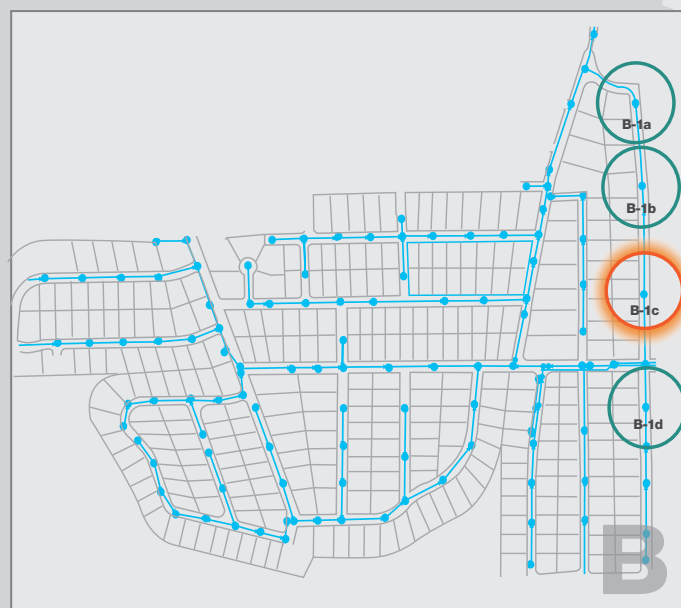
3 Micro-Basins

- Four iTrackers® are strategically positioned within Mini-Basin B-1 creating (4) new Micro-Basins (B-1a through B-1d).
- System performance data from the (4) newly created Micro-Basins is downloaded to the iTracking® automated software program.
- A bar graph is immediately generated displaying I&I contribution rates for each of the (4) Micro-Basins.

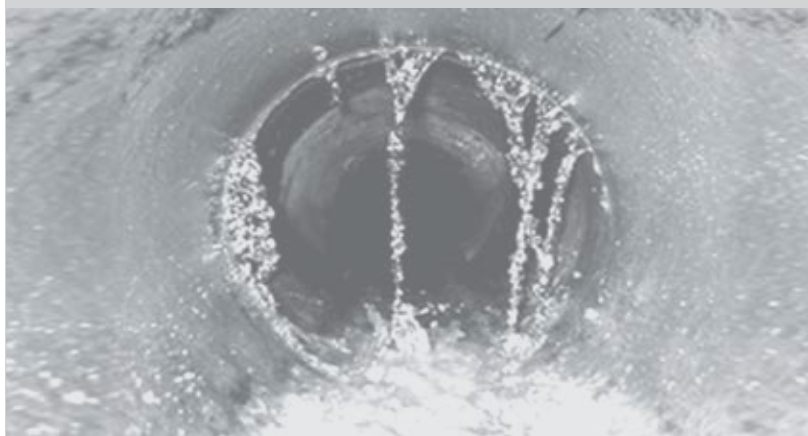
AVERAGE I&I VOLUME



As can be seen from the above bar graph, Micro-Basin B-1c is responsible for 73% of the I&I generated within Mini-Basin B-1.



MAJOR BASIN B
(Micro-Basins B-1a thru B-1d)



Advanced ANALYTICS

After downloading of sensor data to the iTracking® software program, proprietary algorithms convert each measurement of volumetric change to actual volume in gallons per minute. Then by the simple push of a button, charts, graphs and reports are automatically created describing the exact state of the infrastructure as it relates to Inflow & Infiltration.

- I&I Volume/Day
- I&I Cost/Day
- RDII Volume
- Peak RDII Volume
- Groundwater Infiltration

Location Analysis

Smart algorithms embedded within the iTracking® software program calculate mathematical factors representing exact volumetric increases in flow between dry weather days and wet weather events for each major, mini and micro-basin under investigation within the collection system. Simple to understand bar charts depict “at a glance” the sites most responsible for contributing the greatest amounts of storm water inflow and infiltration along with bar graphs depicting dry day and groundwater volumes. By visually presenting all of the data within a single chart, the most problematic sites can be quickly identified.

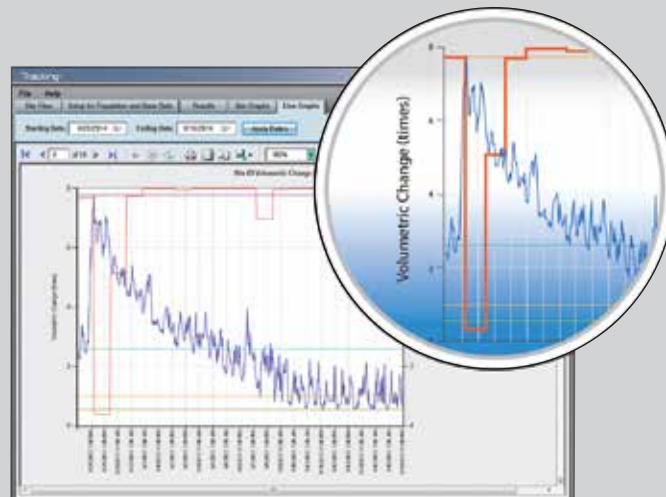


High visualization bar graphs, developed for each set of collection basins under investigation, instantly highlight all Major, Mini and Micro-Basins responsible for the greatest influx of I&I.



Detailed Hydrographs

Hydrographs report exactly what is transpiring within the collection system on a 5, 10 or 15-minute incremental basis. iTracking analysis programs start off at the Major Basin level and then drill down to greater detail as areas and sub-areas of I&I are identified and ranked by volume. This approach, in concert with a fully comprehensive set of hydrographs, greatly speeds up the process of dry and wet weather analysis for understanding the effects of inflow and infiltration. Hydrographs perform an array of engineering functions that greatly assist in providing a complete understanding of collection system performance. These functions include Rainfall Analysis, Groundwater Analysis, Dry vs. Wet Day Analysis, Peak RDII Analysis and Capacity Analysis.



Hydrographs display an array of engineering functions that assist in providing a complete understanding of collection system performance.

Consolidated Reports

Consolidated analysis reports are generated detailing the effects that both dry and wet weather have upon specifically designated areas within the wastewater collection network. Location, volume and cost data is clearly organized and presented for every major, mini and micro-basin undergoing investigation for suspicion of contributing excessive amounts of inflow and infiltration.

Volume	RD I/I Volume
360.00	55890.54
300.00	20275.80
360.00	485132.02
300.00	161731.02
300.00	124151.14

Concise "Results" Reports are efficiently presented on a single page that organizes in full detail all pertinent data relating to each site under analysis.



SewerWatch®

Instant I&I Detection



I&I Detection in the
Palm of your Hand

Instant I&I Detection

A Simple Tool for Identifying I&I has Finally Arrived

SewerWatch® is the friendliest tool available for quickly locating and assessing the extent of I&I after just a single rainstorm.

Eastech's free SewerWatch® App, working hand-in-hand with iTracker® sensors, provides O&M personnel with a quick and easy way to assess the collection network for I&I. Without the need for custom analytical software or "in the road" data retrieval, municipal personnel can simply connect to any iTracker in the system, click a button, and view its behavior for the last 24 hours, 7 or 30 days right in the palm of their hand.

Easy to understand graphs "magically" appear displaying the operating characteristics of user-selected segments of the collection network along with a quick "at a glance" analysis of both peak and average increases in volume due to the influence of I&I. Operations and maintenance personnel are now able to simply go out into the field with only their smartphones and with the click of a few buttons map the performance of their community's wastewater collection network.

Simple as 1 • 2 • 3

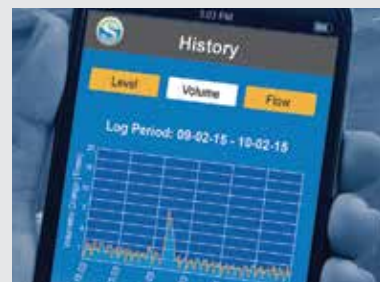
1. Walk or drive over to any manhole containing an iTracker sensor.



2. Connect to the iTracker's internal server via Wi-Fi from your smart device.



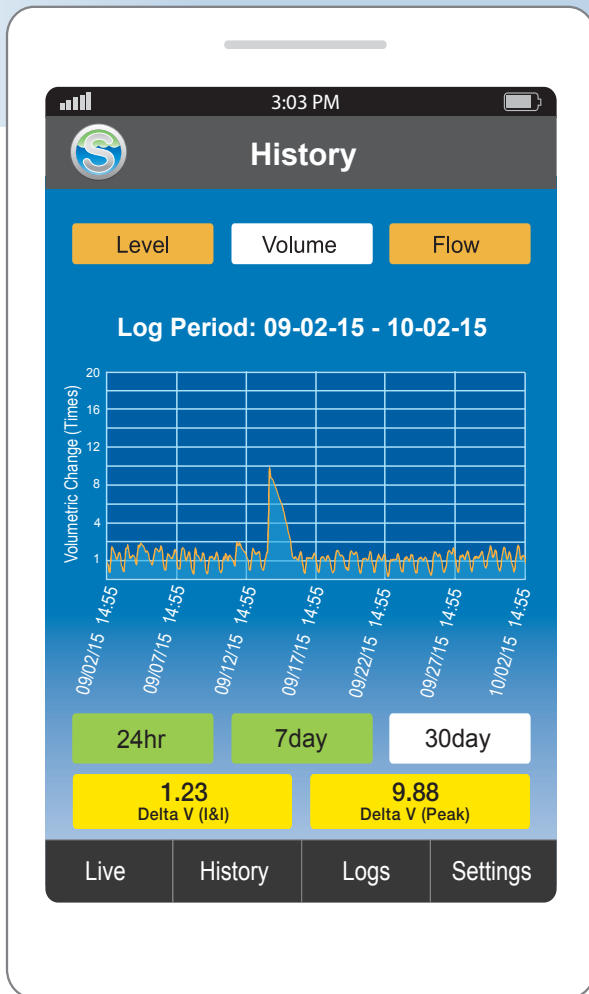
3. View performance graphs in the palm of your hand showing the effects of I&I.



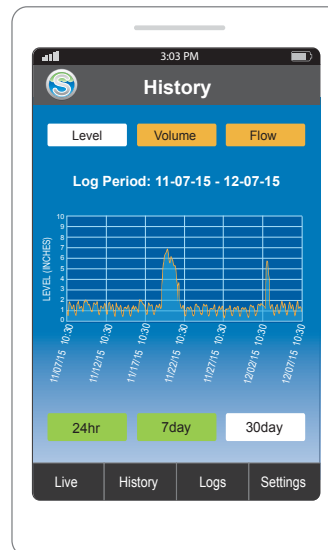
Connect, Click and Discover

Using just your smartphone, begin to discover what actually transpires within your collection system during changing weather conditions. Historical graphs, showing the past 24 hour, 7 and 30-day operating behavior of the sewer segment under surveillance, along with an automatic analysis of peak and volume increases due to I&I will be visually displayed on your phone.

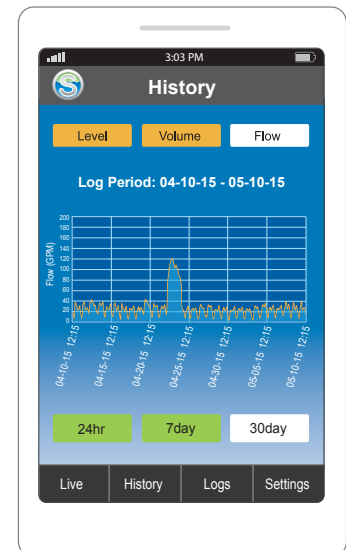
SewerWatch® is the I&I Detection tool that the industry has been waiting for and the best part is that it comes “free” with the purchase of any iTracker sensor. Simply “Connect” to the iTracker, “Click” over to your browser, and in minutes, “Discover” the inner workings of your wastewater infrastructure network. One can easily navigate from wastewater levels to changes in volume between dry and wet days to actual flow in gallons per minute.



30-day analysis of increases in wastewater volumes as compared to average dry day volume. Automatically calculates monthly increase in total volume (Delta V: 1.23 times) along with increase in peak volume (Delta V: 9.88 times) due to the effects of I&I when compared to average dry day volumes.



30-day analysis of increases in wastewater levels due to the effects of I&I.



30-day analysis of increases in wastewater flows due to the effects of I&I.

Pinpointing I&I down
to Adjacent Manholes



I&I Micro Detection

I&I Micro Detection

iTracking® Micro Detection is based on a simple premise:

What municipalities and utilities are ultimately interested in accomplishing is NOT to measure each gallon of I&I but to quickly and cost-efficiently PINPOINT those areas within the collection network responsible for contributing the greatest influx of rain and groundwater.

This is exactly what Eastech's iTracking Micro Detection technology is designed to achieve; locate inflow and infiltration down to adjacent manholes simply, safely, quickly and affordably.

Hundreds of independent flow studies have confirmed that 80% of I&I resides in just 20% of the collection network. It is in this 20% of the system that I&I needs to be discovered. Conventional Doppler-type flow meters, while able to measure flows in larger basins (2-4 miles) where wastewater levels remain at heights satisfactory for covering their "bottom-sitting" sensors, have proven themselves incapable of providing the necessary high resolution monitoring required for micro detecting I&I in the smaller diameter pipes (8"-12") that make up 85% of almost every collection system. This shortcoming presented Eastech with an opportunity for developing a solution not currently possible with conventional flow metering devices.

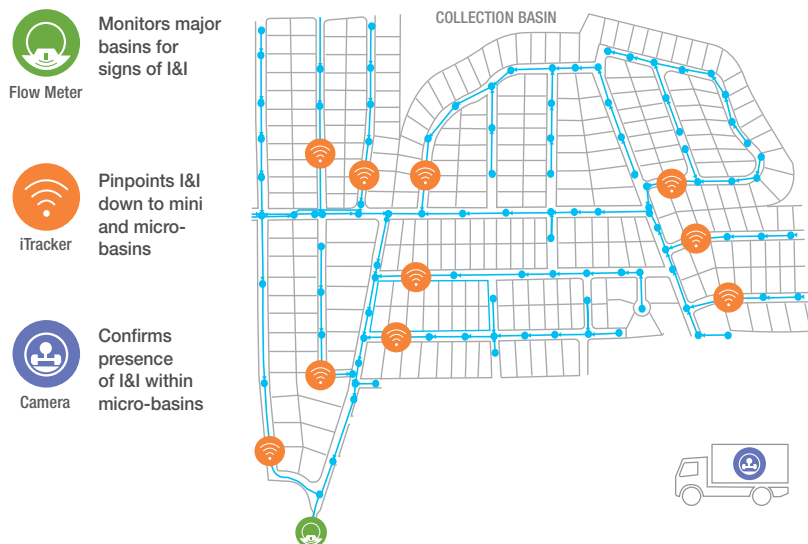
The key to iTracking Micro Detection is the seamless integration of low-cost sensors, wireless connectivity and automated analytical software, delivering results where portable flow meters fall short. iTracker® Wi-Fi and cellular-enabled sensors simply and safely record wastewater levels from 0 – 100% pipe ID during dry day periods and wet weather events and then convert those changes in level to volumetric differences in flow through the use of uniquely developed algorithms embedded within the iTracking software program. With the simple click of a button, bar charts, line graphs and operating performance reports are clearly presented detailing the contribution of I&I for each mini and micro-basin within the area under investigation. In many instances, the problem is pinpointed down to adjacent manholes without the requirement for expensive monitoring equipment, confined-space entry, repetitive maintenance or "in the road" data retrieval.

The success or failure of attempts to determine the actual location of I&I does not depend on the length of the sewer evaluation study period but rather on the investigative ability of the detection method employed. With iTracking Micro Detection technology, the time period to pinpoint faulty infrastructure could be as short as one rain event. This single storm approach is the biggest factor in delivering a successful and cost saving I&I detection study.

iTracking® Micro Detection has the ability to reveal the location of I&I after a single storm event

- Low-cost iTracker sensors provide the high-resolution data points required for pinpointing the 20% of faulty infrastructure contributing the majority of I&I.
- By strategically placing iTracker sensors upstream of regional flow meters, changes in wastewater volume as small as 1/10" can be observed in both mini and micro-basins.
- Maintenance-free iTracker sensors are capable of accurately measuring collection system performance on streets with minimal amounts of homes or commercial facilities.
- iTracker sensors are installed from the street level without the need for confined-space entry. Sensor calibration is accomplished in 5 minutes using any Wi-Fi enabled mobile device.

iTracking® Bridges the Gap between Flow Meters and Inspection Cameras



In most instances, **after just a single storm event**, the problem is pinpointed down to mini and micro basins without the requirement for expensive monitoring equipment, confined-space entry, repetitive maintenance or "in the road" data retrieval. This single storm approach is the main factor when it comes to delivering a successful and cost effective I&I detection study.

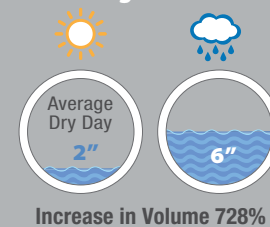
How iTracking® Works

iTracker® Wi-Fi or cellular-enabled sensors simply and safely record wastewater levels from 0–100% pipe ID during dry day periods and wet weather events and then convert those changes in level to volumetric differences in flow through the use of uniquely developed algorithms embedded within the iTracking software program.

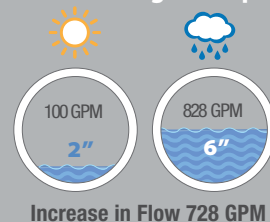
iTrackers® monitor and record levels within the manhole



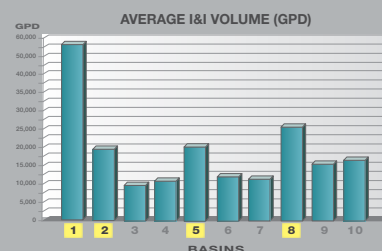
Smart algorithms convert changes in level to changes in volume



iTracking analytics convert changes in volume to flow in gallons per minute



Software identifies mini/micro basins with the greatest amounts of I&I



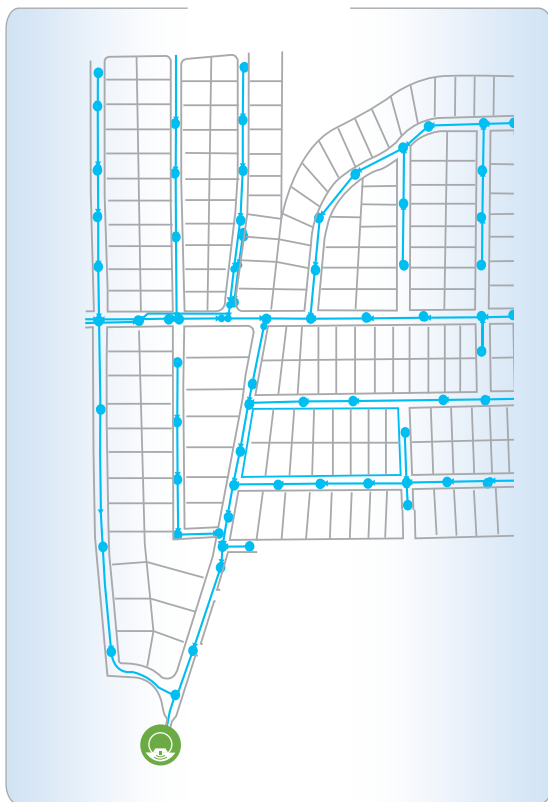
With the simple click of a button, bar charts, line graphs and operating performance reports are clearly presented detailing the contribution of I&I for each mini and micro basin under investigation.

I&I Micro Detection

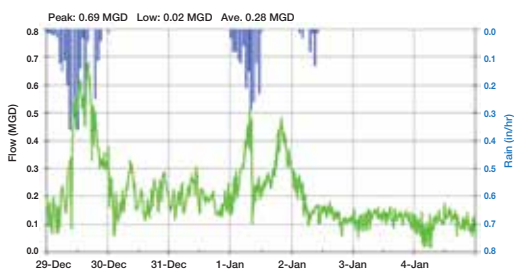


Flow Meter (Major Basin Monitoring)

Portable flow meters monitor operating conditions in major basins (2-4 linear miles) in order to discover the extent of inflow and infiltration.



Hydrographs are then created for each Major Basin showing increases in wastewater volume during periods of wet weather.

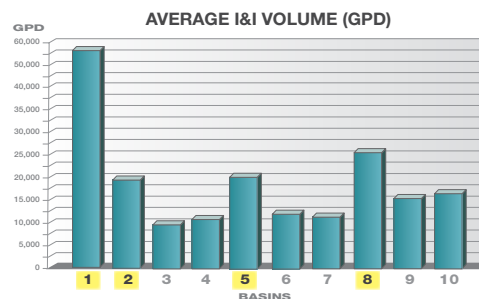


iTracking (Mini Basin I&I Detection)

iTracker sensors are strategically distributed within each major basin responsible for allowing the entry of excess volumes of ground and storm water.



“At a glance” iTracking analytics automatically identify the mini basins (1, 2, 5 & 8) responsible for contributing the highest percentages of I&I.



Zeroing in on the problem

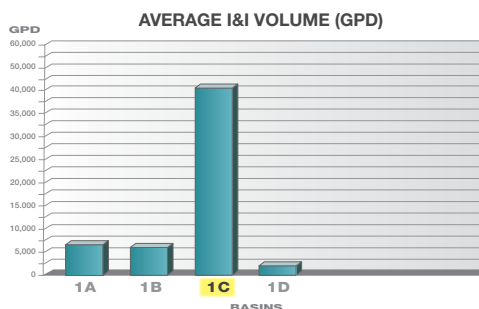


iTracking (Micro Basin I&I Detection)

Having discovered that mini basin 1 is responsible for 30% of total I&I, iTracker sensors are relocated creating (4) micro basins within mini basin 1.

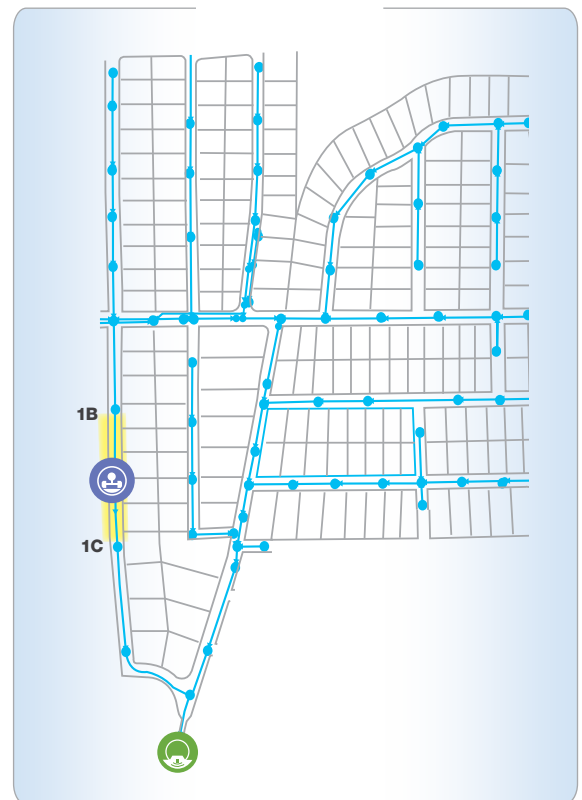


iTracking analytics immediately discover that micro basin 1C, comprised of adjacent manholes 1B - 1C, is contributing 75% of the I&I within all of mini basin 1.



Camera (I&I Confirmation)

A robotic inspection camera is employed to ascertain the exact cause of the Rain-Derived Inflow & Infiltration (RDII) entering micro basin 1C.



Robotic cameras are capable of providing visual evidence as to whether I&I is due to faulty construction, crumbling pipes or improper installation.





A better way to pinpoint inflow & infiltration

Netpak™ puts forward an exciting new approach for safely, quickly and affordably locating I&I.

- Maintenance-free smart sensors are installed in under 20 minutes
- Data is safely retrieved by using any Wi-Fi enabled mobile device
- Analytical software pinpoints I&I with the simple click of a button
- **Locate I&I all the way down to a pair of adjacent manholes**

SAFE

**Non-Confined
Space
Installation**



**Wireless
Connectivity**



**Zero
Maintenance**

**USER
FRIENDLY**

**SewerWatch
Mobile App**



**iTracking
Software**

