GREEN INFRASTRUCTURE: MONITORING & ASSESSMENT WITH STORMSENSOR

StormSensor provides the empirical data you need to evaluate the cumulative effects of green infrastructure projects in your city. Our networked system allows you to track trends from street level to outfall, all in real time.
Using a patented combination of networked Scute™ sensors and cloud-based software and analytics, StormSensor can help you evaluate the cumulative impacts of green infrastructure projects within your urban watershed.

**MONITORING GREEN INFRASTRUCTURE WITH STORMSENSOR**

Many green infrastructure (GI) projects are disconnected and small in scale, making their impacts on the larger system difficult and costly to evaluate. Using a patented combination of networked Scute™ sensors and cloud-based software, StormSensor can help you evaluate the cumulative impacts GI projects are having on your urban watershed.

For GI projects, we suggest that you employ a paired-watershed monitoring approach using test and reference sub-watersheds. Insights gathered while monitoring GI with a StormSensor network can be used to evaluate changes in infiltration, bulk flow, and thermal pollution within your watershed. All StormSensor data is cloud-based and easily accessible in one place via our cloud-based software, so there is no need to travel out to the field to download data; you can monitor your system from your computer.

**DATA & USABILITY**

Use Scute™ Sensors to monitor water temperature, depth, and velocity within sewer pipes and at outfalls.

Scute™ Sensors collect readings every 5 minutes, and they send their data wirelessly via the LoRa network to StormSensor’s cloud-based software.

Data from the Scute™ Sensors are paired with local weather data from weatherbit.io.

StormSensor uses proprietary algorithms to transform raw data and keep a running analysis of water flow rates, temperatures, and volumes at each monitoring point.
StormSensor's networked approach allows you to cost-effectively capture empirical data throughout your entire stormwater system.

You can view all of your data using StormSensor’s cloud-based software. This can be done in map view, where you can review your entire network of Scutes™ at a glance, or in site view, where you can dig deeper into the data for a particular Scute™.

You can download all raw and transformed data as a .csv for easy incorporation into other applications, such as models or reports.

**SUGGESTED MONITORING PROGRAM**

**Set up Test Sites**

A test site is the sub-sewershed that contains the GI project, or collection of projects.

The goal of monitoring at test sites is to evaluate flow and temperature patterns pre-and post-contact with the GI project, and to assess to what extent the effects of the project can be detected at the nearest outfall.

To set up your test sites, you want to select multiple monitoring points both upstream and downstream of the test sites and, ideally, you can also monitor the discharge point to empirically determine reductions in impacts to receiving waters as a result of successfully constructed GI projects.

**Set up Reference Sites**

Reference sites can both help you establish baseline flow conditions prior to installing GI, and they can function as a controls to confirm any measured impacts identified at test sites. Reference sites should be sub-sewersheds of similar size and land use to the test sites, but with little to no GI installed. Monitoring at a reference sites lets you evaluate how temperature and flow characteristics differ within the stormwater system and at outfalls in areas with and without GI installed. As with your test sites, you will want to select multiple monitoring points both upstream and downstream of the reference sites.
Green infrastructure projects are a big investment, with a potentially big return. StormSensor's continuous, real-time data capture allows you to prove it. And our monitoring network can help eliminate duplicated efforts within your organization so you can spend less money, better.

**EVALUATE BASELINE CONDITIONS**

Let your StormSensor Scute™ sensors run for 1 to 2 months, during which time they’ll collect baseline data and allow our algorithms to learn the patterns associated with your sites.

It’s important to remember that, no matter how well test and reference sites are paired, you will always see some differences in flow patterns.

**ASSESS THE EFFECTIVENESS OF YOUR GI PROJECTS**

Once baseline conditions have been determined you can compare between sites and evaluate projects. All data can be easily downloaded and incorporated into local models to improve accuracy for future planning.

- Comparisons between parameters upstream and downstream of GI projects help evaluate local effects of projects. Further comparisons to values at outfalls help evaluate the spatial extent of project benefits within the test site.
- Comparisons between the test and reference sites help to confirm observations and provide a running baseline.
- Comparisons between project types help determine operational efficiencies under varying conditions so you can empirically determine the best fit for a given land use.
- Comparisons on a long-term basis allow for evaluation of project effectiveness over time which can aid in cost-effective maintenance scheduling and long-term planning.

Continuous monitoring means you do not have to re-invent the wheel every time you want to monitor something new. Once your monitoring network is in place, you can use the data and insights generated for much more than monitoring green infrastructure. Quantify storm flows to local waters as you work to comply with TMDLs. Take advantage of StormSensor’s powerful analytics to detect potential illicit discharges throughout your system.

**WANT TO LEARN MORE?**

Schedule a demo! Get in touch with us at: SupportTeam@StormSensor.io
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