

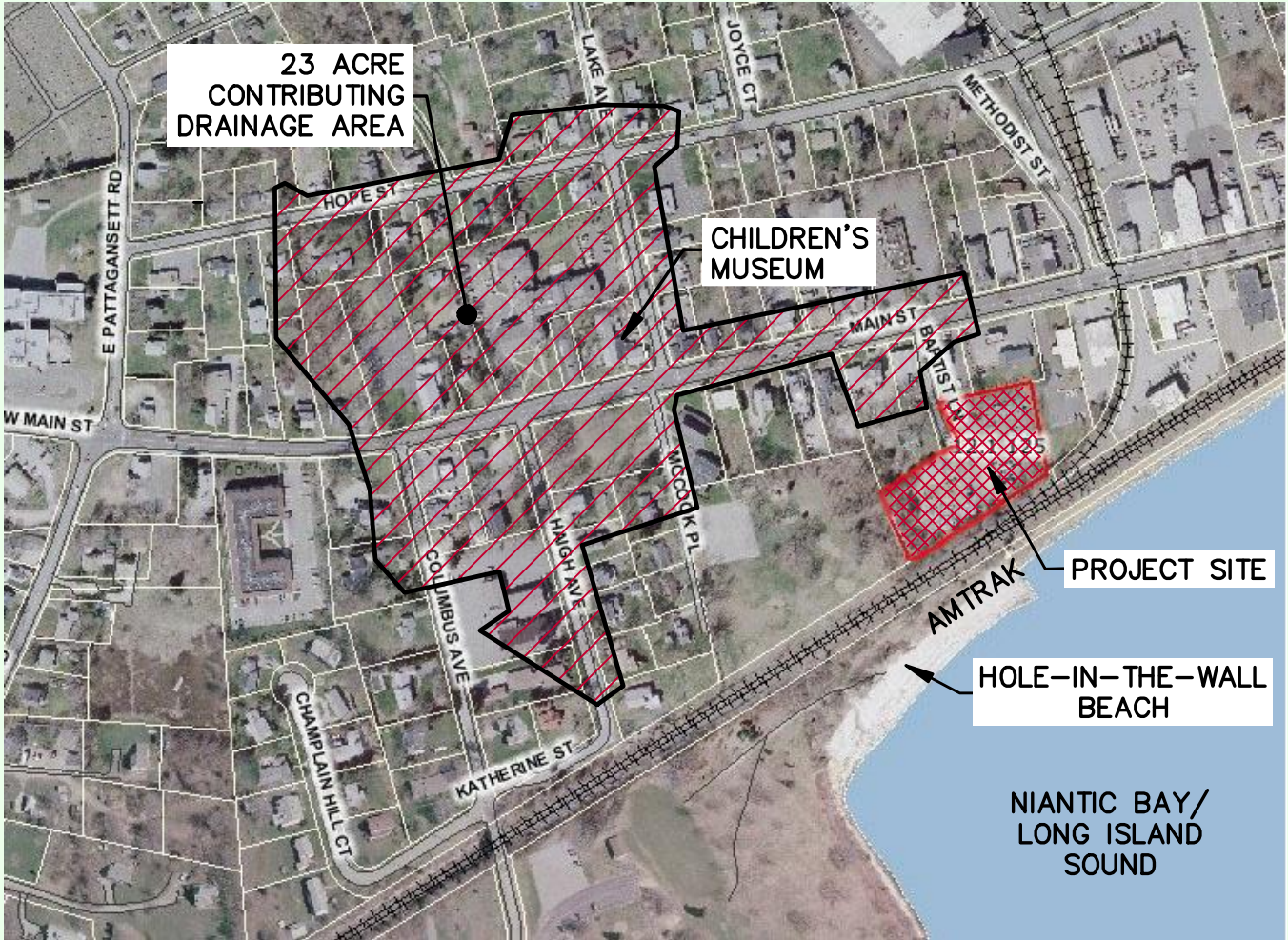
**PROBLEM:**  
MEASURING THE EFFECTIVENESS AND GATHERING DATA FROM A RETROFITTED URBAN STORMWATER TREATMENT SYSTEM IS VERY CHALLENGING.

# HOLE-IN-THE-WALL PARKING LOT

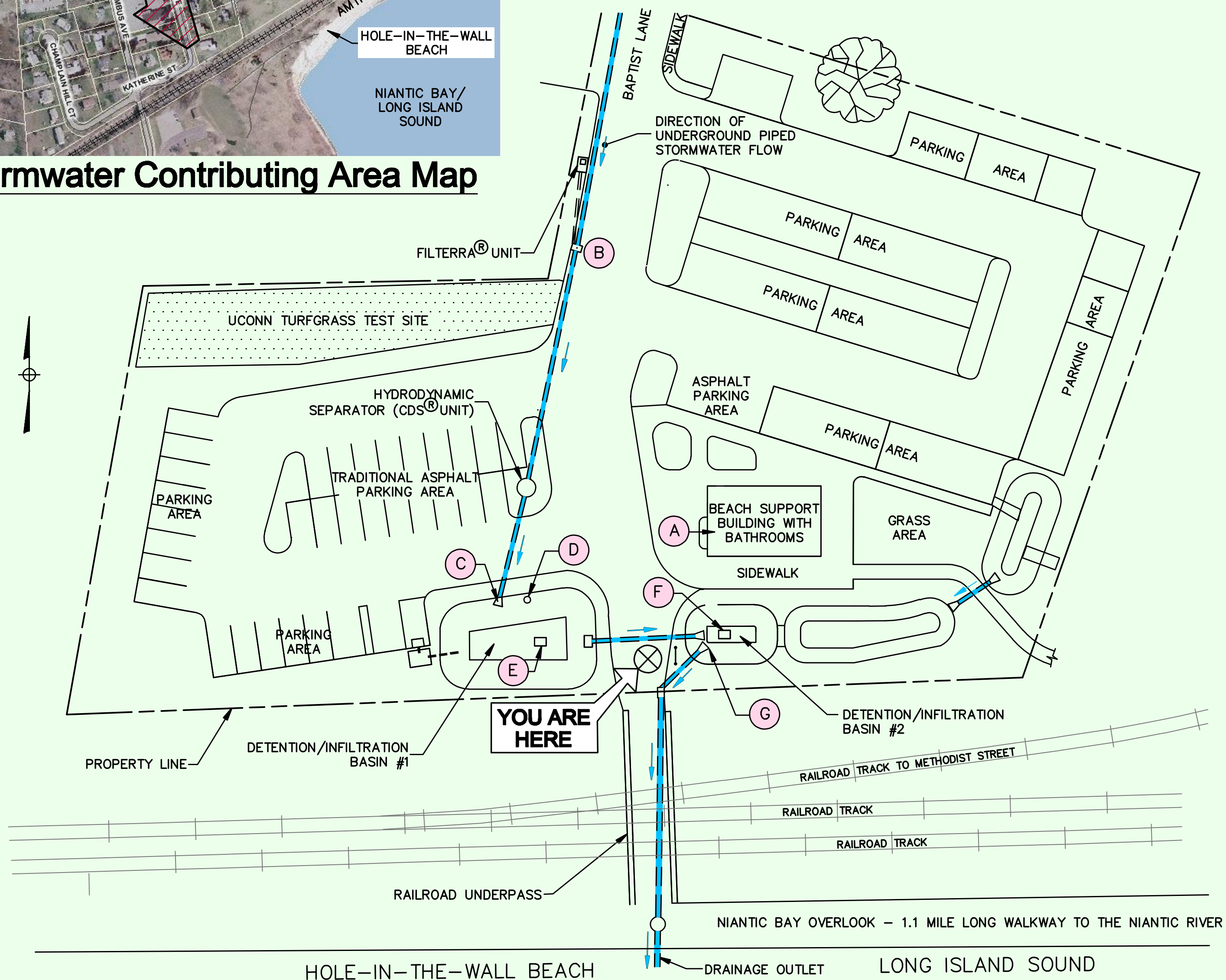
## LONG ISLAND SOUND STORMWATER QUALITY IMPROVEMENTS

## WEATHER AND STORMWATER MONITORING

**SOLUTION:**  
PROVIDE ELECTRONIC MEASURING DEVICES THAT RECORD FLOW, VOLUME, AND QUALITY OF STORMWATER AS IT PASSES THROUGH THE TREATMENT SYSTEM. A REAL-TIME WEATHER STATION ALONG WITH ALL OF THIS DATA NOW LETS ANYONE WITH ACCESS TO THE INTERNET STUDY AND DETERMINE THE EFFECTIVENESS OF THIS PROJECT FOR THEMSELVES.



Stormwater Contributing Area Map










Project Site Map  
(Plan)

### Interesting Facts

The Town of East Lyme has created a monitoring system in an outdoor stormwater classroom at the Hole-in-the-Wall parking lot located in downtown Niantic adjacent to the Long Island Sound. The monitoring system measures real-time weather and stormwater data that is broadcast over the Internet. The stormwater runoff is monitored as it enters the treatment system for quality, flow rate and volume. This data is measured again after stormwater enters the treatment system and before entering the Long Island Sound. The majority of storms are completely treated through the infiltration of stormwater.

Between this sign and the Hole-in-the-Wall Outdoor Stormwater Classroom Internet website at [www.eltownhall.com](http://www.eltownhall.com), visitors and people around the world can visually see the effect that rainfall has on stormwater and the effectiveness of different treatment and infiltration methods.

### Weather and Stormwater Monitoring Components

Item	Description
 A ECONET™ REMOTE MONITORING AND CONTROL SYSTEM	The ECONET™ consist of a device that monitors stormwater and weather throughout this parking lot. There are numerous sensors connecting corresponding devices to the Econet via electrical conduits. These sensors monitor weather and stormwater quality. This monitoring and control system of "real-time" data is available through the Internet.
 B MONITORING SENSOR – CATCH BASIN	There is a sensor in this catch basin that monitors 23 acres of stormwater runoff from Main Street for the following parameters: <ul style="list-style-type: none"><li>• Water Temperature (Air temperature when no water is present)</li><li>• Salinity</li><li>• Conductivity</li><li>• Total Dissolved Solids (TDS)</li><li>• Turbidity (value may not be 0 when there is no flow)</li></ul>
 C MONITORING SENSOR – INLET PIPE	There is a sensor in this detention/infiltration basin (#1) inlet pipe that monitors stormwater runoff from the upstream CDS unit for the following parameters: <ul style="list-style-type: none"><li>• Flow</li><li>• Velocity</li><li>• Volume</li><li>• Depth of flow</li></ul>
 D UTILITY POLE WITH WEATHER MONITORING STATION	There are sensors on this utility pole that monitor the weather for the following parameters: <ul style="list-style-type: none"><li>• Air temperature</li><li>• Wind speed and direction</li><li>• Barometric pressure</li><li>• Relative Humidity</li><li>• Rainfall</li></ul>
 E MONITORING SENSOR – CATCH BASIN RISER	The primary purpose of this catch basin riser (gravel bottom and no outlet) is to provide a location for a detention/infiltration basin stormwater depth sensor. This sensor is inside the catch basin located several feet from the top that measures the "depth of stormwater in detention basin #1".
 F MONITORING SENSOR – DRYWELL	There is a sensor at the bottom of this drywell located several feet from the top that measures the "depth of stormwater in the drywell and detention basin #2".
 G MONITORING SENSORS – OUTLET PIPE AND PROTECTIVE PIPE ENCLOSURE	There are sensors in these structures that monitor stormwater runoff from detention/infiltration basin #2 for the following parameters: <b>Outlet Pipe:</b> <ul style="list-style-type: none"><li>• Flow</li><li>• Velocity</li><li>• Volume</li><li>• Depth of flow</li></ul> <b>Protective pipe enclosure:</b> <ul style="list-style-type: none"><li>• Water temperature (Air temperature when no water is present)</li><li>• Salinity</li><li>• Conductivity</li><li>• Total Dissolved Solids (TDS)</li><li>• Turbidity (value may not be 0 when there is no flow)</li></ul>

### Acknowledgements

Technical, logistical support (in-kind services) and portions of hardware for the Econet™ Remote Monitoring and Control System was donated by:

YSI Incorporated  
1700-1725 Brannum Lane  
Yellow Springs, OH 45387-1107  
(800) 765-4974  
[www.ysi.com](http://www.ysi.com)  
[www.ysiconet.com](http://www.ysiconet.com)



High Speed Internet was donated by:  
MetroCast  
61 Myrock Avenue, P.O. Box 6008  
Waterford, CT 06385  
(860) 442-5616  
[www.metrocast.com](http://www.metrocast.com)



Utility Pole for Weather Monitoring Station was donated by:  
AT&T  
[www.att.com](http://www.att.com)



### Educational Corner

Terms to study:

- Salinity
- Conductivity
- Total Dissolved Solids (TDS)
- Turbidity
- Stormwater flow, velocity, volume
- Stormwater treatment system



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