MS4 Data Collection with Collector and iForms

NEGEO
New England Geosystems
www.negeosystems.com

The Challenge

- Identify, inspect, monitor, and modify their stormwater systems and work to improve stormwater quality in order to obtain a permit authorized by Section 22a-430b of the Connecticut General Statutes

- The permitting process includes several mapped elements, including:
  - Locate stormwater discharges (**outfalls**), to include type, material, size, latitude and longitude
  - Outfall (**inspection** and maintenance)
  - **Interconnections** with other MS4s
  - Receiving water bodies and **watersheds**
  - Impervious area to calculate **DCIA** (Directly Connected Impervious Area)
  - Areas with DCIA > 11%
  - **Detention/Retention pond** locations
  - **Catch basin** (inspection and maintenance)
  - **IDDE** (Illicit Discharge and Elimination) identification
  - **SSOs** (Sanitary Sewer Overflows) identification and monitoring
  - Additional Stormwater system features (**pipes, open channel conveyances, and manholes**)
  - **Sanitary** Sewer features (Required where available)
  - Additional recommended features (**Topography, Imagery, Septic**)

- Unfunded

The Questions

There are options for mapping your stormwater data. Questions to ask include:

- Who will **collect** the data?
- Who will **use** the data, once collected?
- What **features** do I need to collect?
- Is there **capital budget** available, or can this be done as a line item fiscal year task?
- What is the plan to maintain and **update** the data?
- What is the **time frame** for completion?
- What **method** should be used for collecting the data?
- Is there any **existing** data?

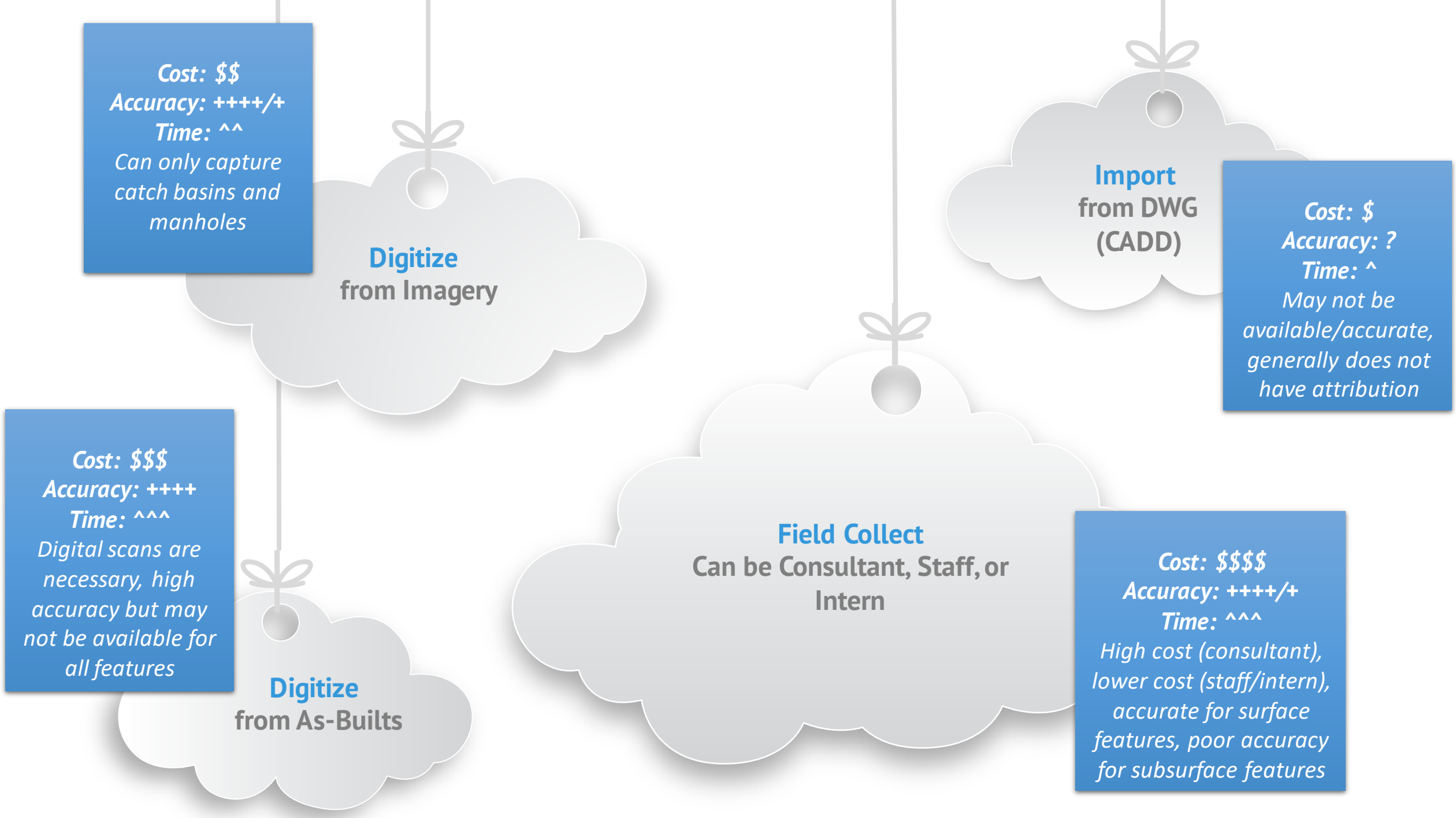
The Options

Digitize
from Imagery

Import
from DWG
(CADD)

Digitize
from As-Builts

Field Collect
Can be Consultant, Staff, or
Intern


Cost: $$
Accuracy: ++++/+
Time: ^^
Can only capture catch basins and manholes
Digitize
from Imagery
Import
from DWG
(CADD)
Cost: $
Accuracy: ?
Time: ^
May not be available/accurate, generally does not have attribution
Cost: $$$
Accuracy: ++++
Time: ^^^
Digital scans are necessary, high accuracy but may not be available for all features
Digitize
from As-Builts
Field Collect
Can be Consultant, Staff, or Intern
Cost: $$$$
Accuracy: ++++/+
Time: ^^^
High cost (consultant), lower cost (staff/intern), accurate for surface features, poor accuracy for subsurface features

A Solution

NEGEO has developed an integrated solution for collecting GIS Stormwater features required by the permit.

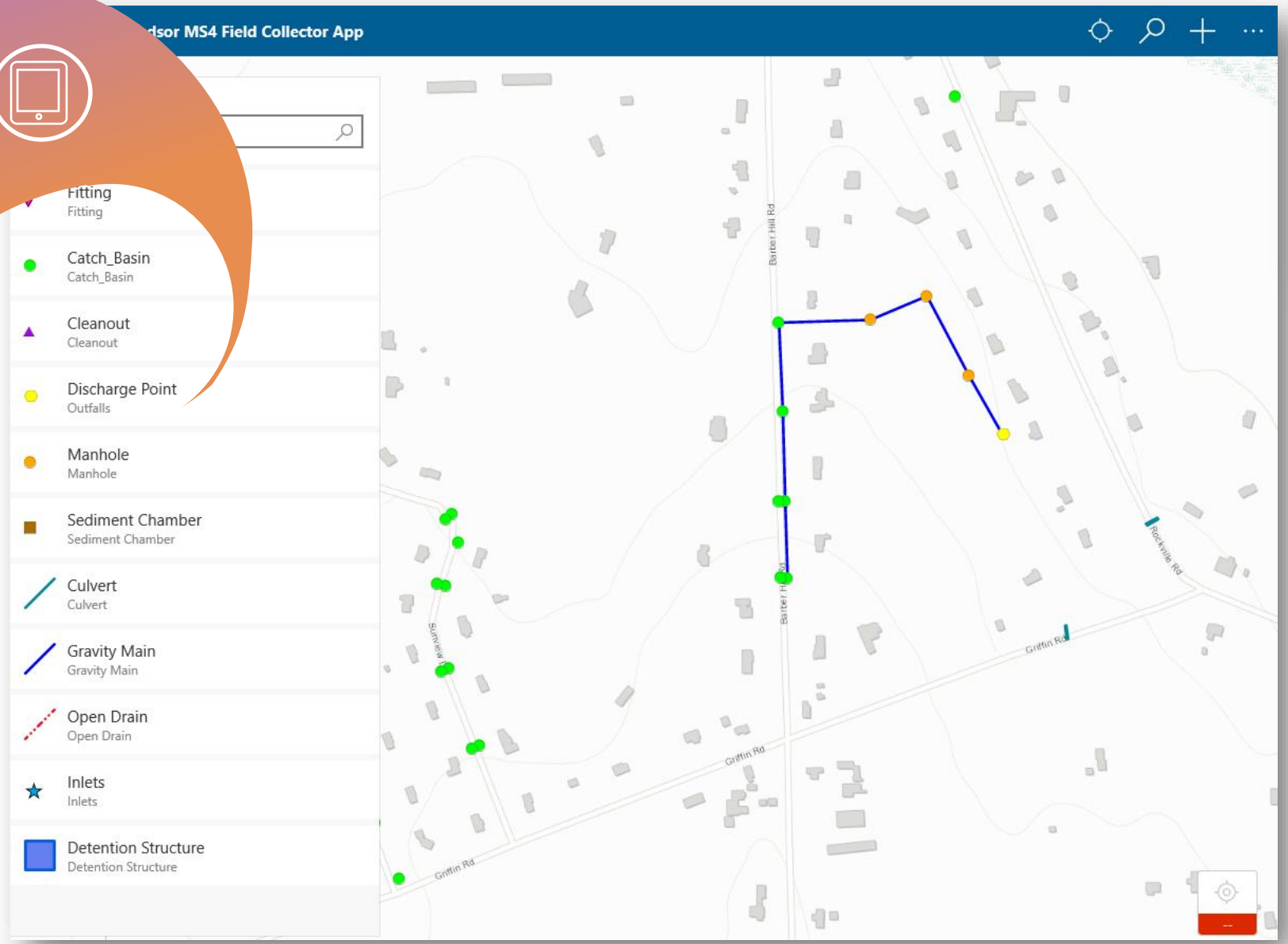
This solution can be utilized by Town staff and/or subconsultants to collect features and conduct inspections for Municipal stormwater systems.

Using a mobile device – a tablet, laptop, or even a phone- collect stormwater features such as outfalls, catch basins, and pipes.

An ArcGIS Online map is **set up** with the features and attribution you'd like to collect.

Staff, interns, or consultants can **capture data** in the field using a mobile device with Collector for ArcGIS.

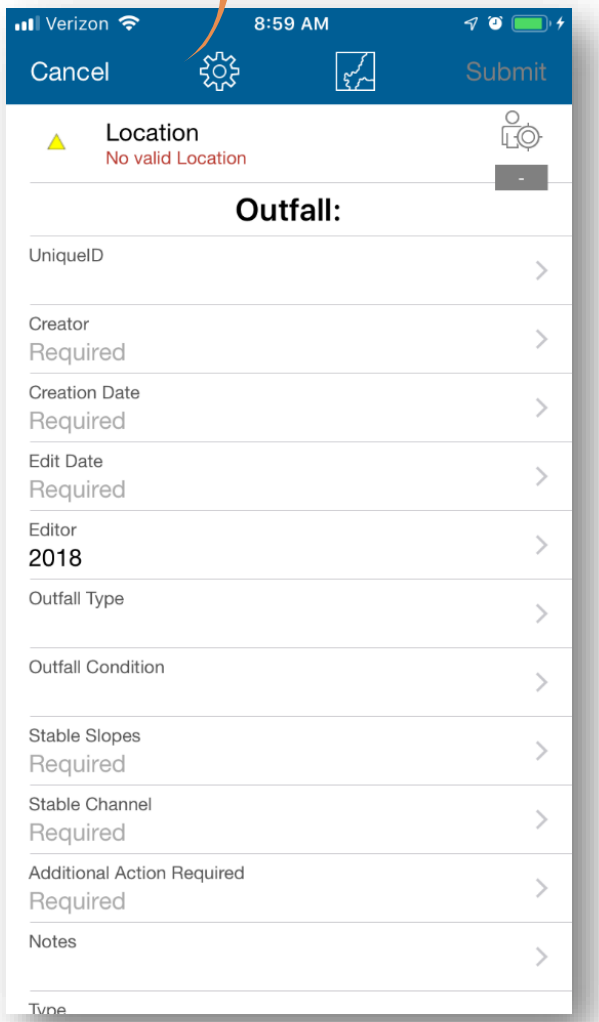
Collect GIS Features

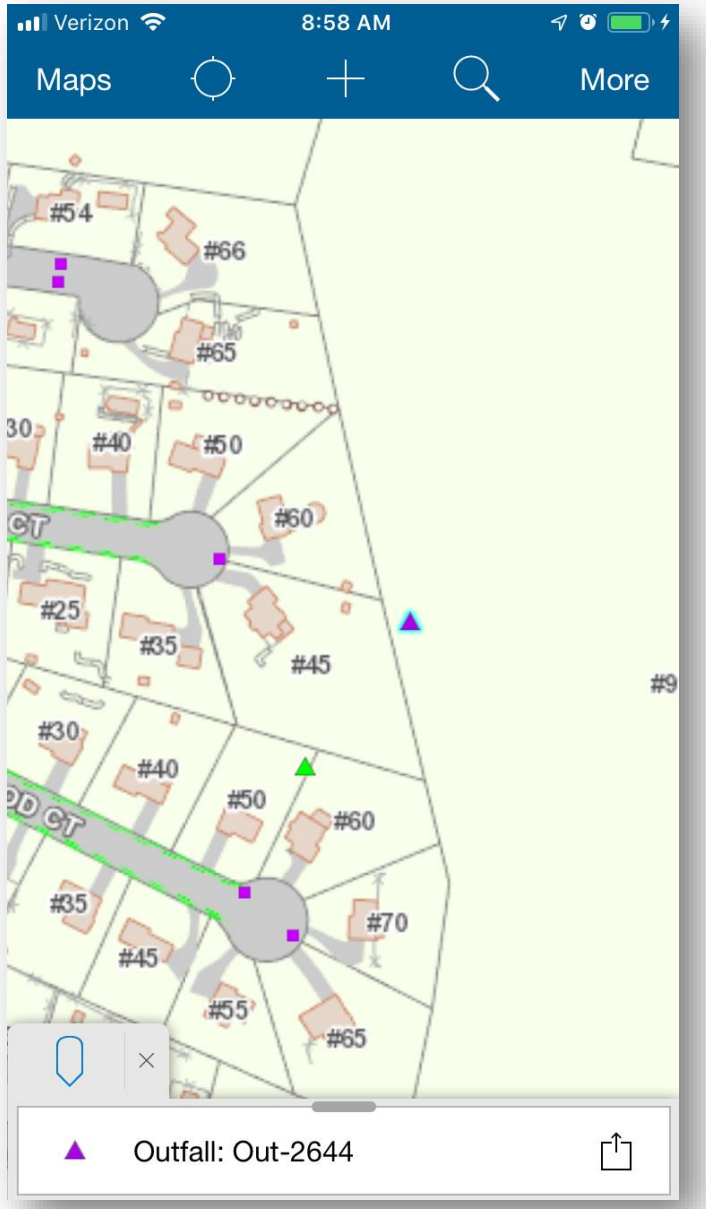


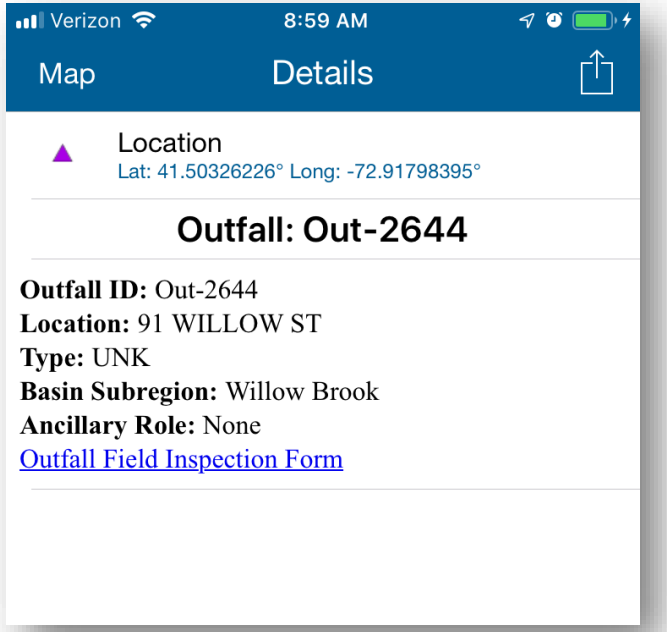
Collector for ArcGIS

VIEW EXISTING FEATURES

Collect GIS Features

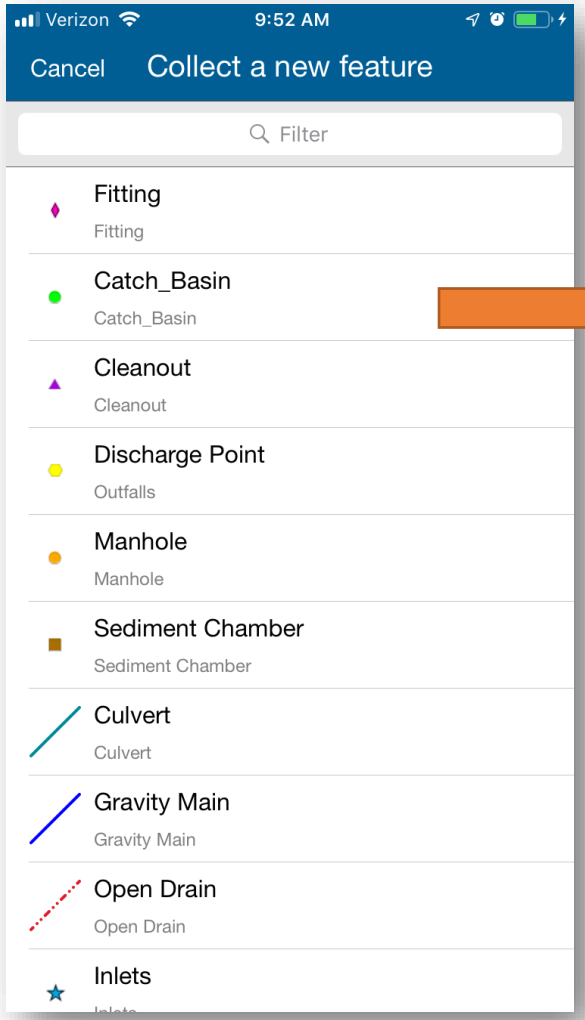


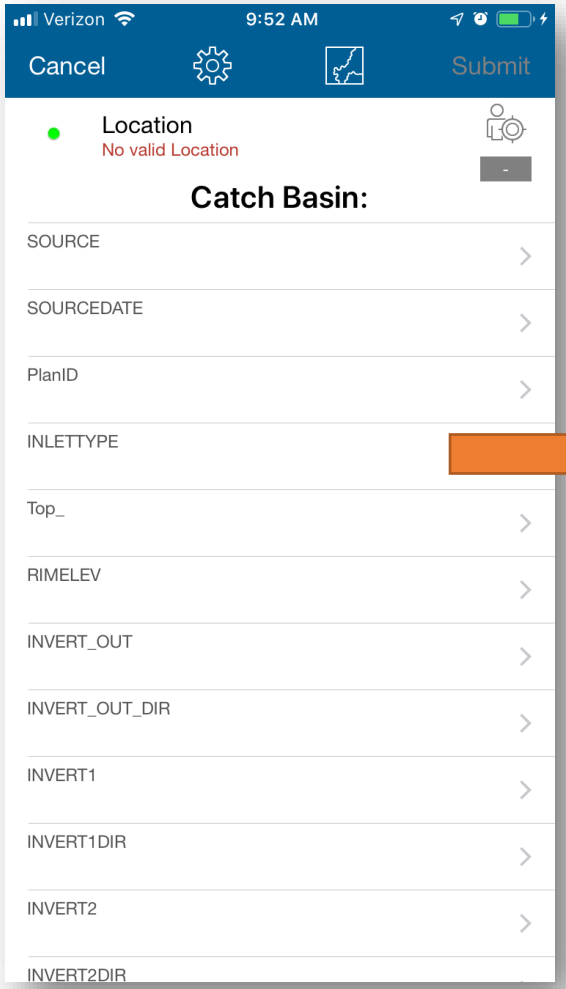


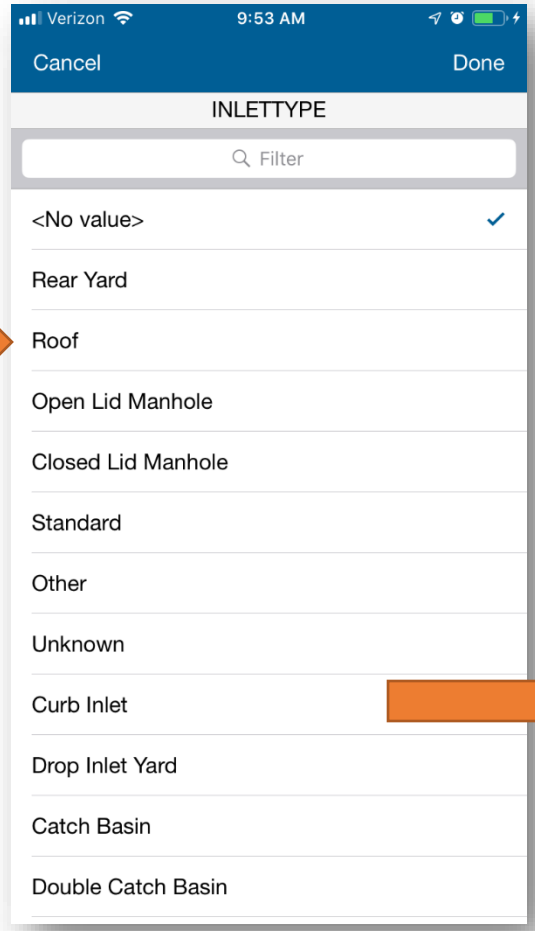


ADD A NEW FEATURE

Collect GIS Features





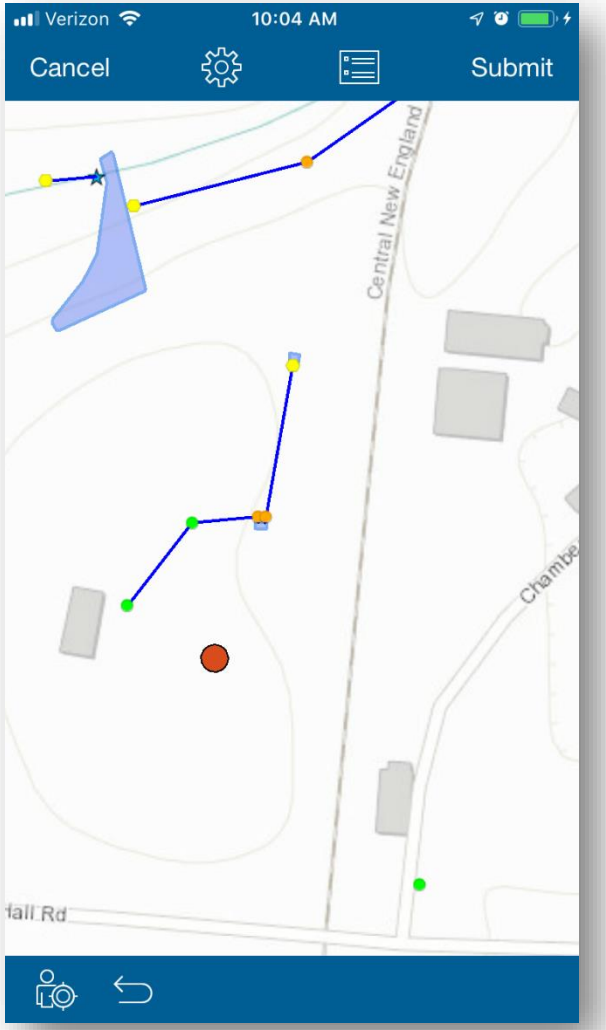


Click once you've got your attribution to return to the map

Collect GIS Features

ADD A NEW FEATURE

Tap on the screen to add point

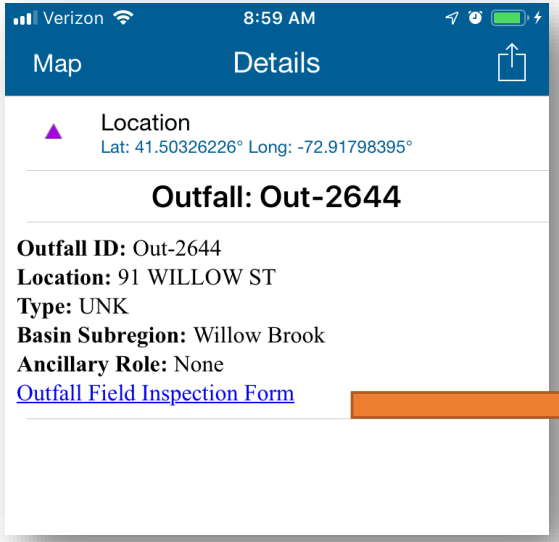


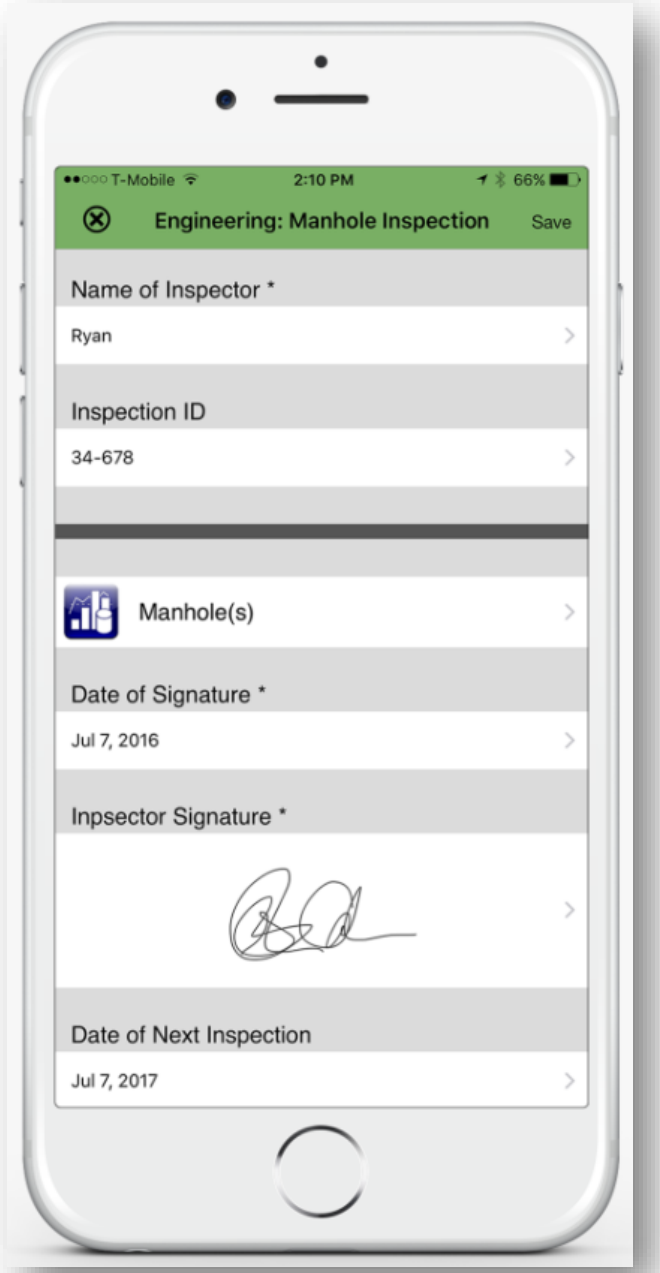
Click 'Submit' to save, or to return to the attributes

Once the stormwater features are collected in the field you can use an integrated custom inspection form for outfall testing, inspection, and monitoring, and catch basin cleaning.

iForm Builder by Zerion can be **integrated** with Collector to inspect Outfalls and Catch Basins. These forms are **linked** to a specific feature and can be pre-populated with information (type, size, etc.) from Collector. New information is collected within the form and **maintained** in a database.

FORM BUILDER



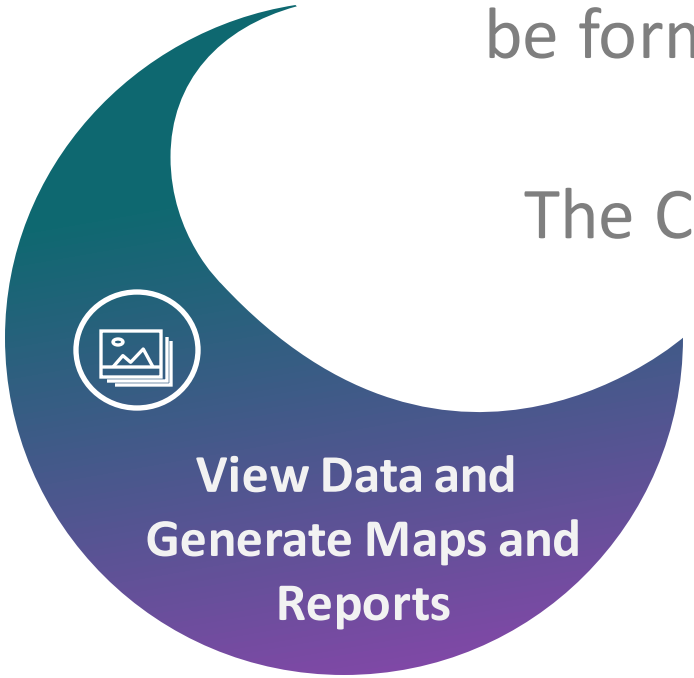


Conduct and Track Inspections

Sync and view new data, access forms, and generate reports for submission for MS4 requirements

With a MapXpress internal viewer from NEGEO, data collection and forms are integrated to view the data in **real-time**, and generate custom views and reports. These **custom reports** can be formatted for internal use, or to meet MS4 requirements.

The Collector and iForms workflow can still be used in GIS



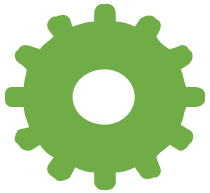
View Data and Generate Maps and Reports

mapXpress

What are the benefits of this approach?

- **Easy** to use
- iForms can be **customized** to resemble the paper form staff are accustomed to
- Introduces **digital** workflows
- Field collection done by staff or interns can **mitigate costs**
- Can be used **offline**
- **Add** features and forms at any time
- Workflow is **expandable** to other departments
- Collected data can have **other uses** (CBYD, Highway projects, etc.)
- **Real-time** review and management

What are the limitations of this approach?



- Implementation requires **familiarity** with GIS
- Field collection takes **time** and **money**
- Requires an annual **hosting fee** and an Esri organizational account.

Beyond MS4

Whichever option you choose, a solid GIS database of your stormwater features will offer benefits far beyond that of fulfilling your MS4 requirements:

- **Track**, **Schedule** and **Monitor** your catch basin cleaning
- **Provide data** to consultants and staff for outfall sampling and maintenance
- Inform Call Before You Dig **(CBYD)** and Road Construction projects
- Track Illicit Discharge **(IDDE)** up- and down-stream
- **Educate** residents about the impact of stormwater discharge

Thank you!

Kristen LaBrie
Project Manager
New England Geosystems
203-404-7129
Kristen@ne-geo.com

NEGEO
New England Geosystems
www.negeosystems.com