South Kingstown's Mobile iPad Infrastructure Inspection Application

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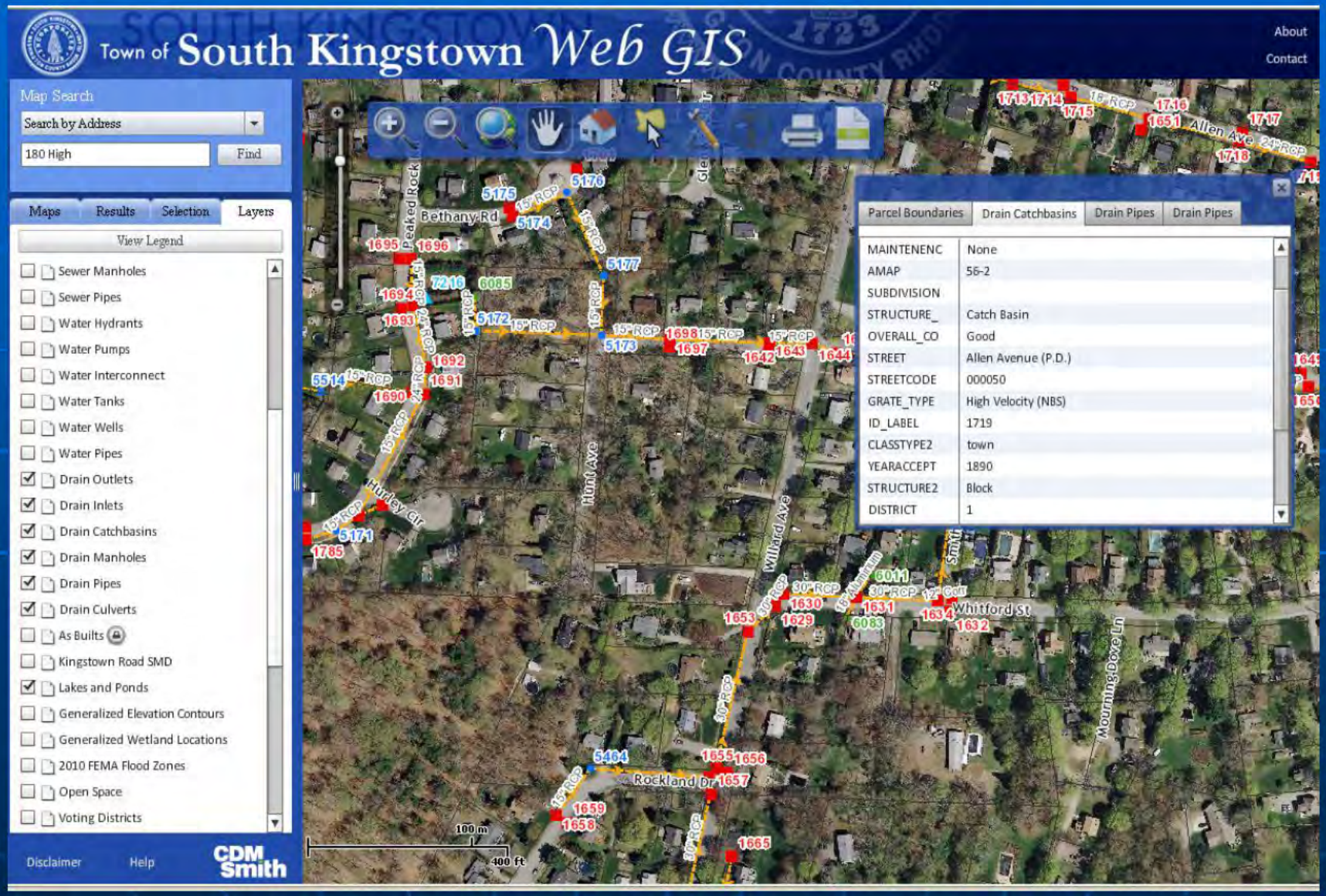
Town of South Kingstown, Rhode Island

NEURISA Lightning Talks
November 2013

NPDES Stormwater Phase II

- National Pollution Discharge Elimination System (NPDES)
- Mandated by Congress under the Clean Water Act
- Stormwater Management Program
- Illicit discharge detection and elimination program
- Key structures: Catchbasins and Outfalls

SKGIS Stormwater Data

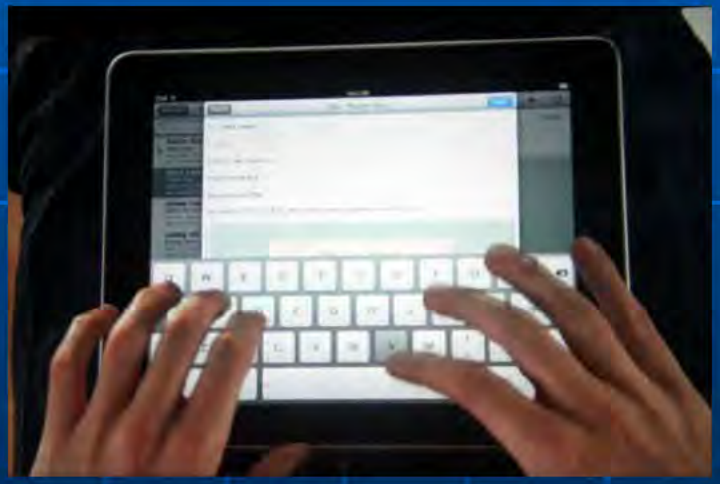


SKGIS Mobile Apps Evolution

- **2005-2012:**
  - Compaq Ipaq
  - ArcPad / Application Builder
  - Nightly download to Access database
- **2013**
  - Customized iPad app, developed by CDM Smith: iOS
  - App installed on iPads: unlimited # users (no Apple Store)
  - Configurable xml file
  - Editing Geodatabase directly

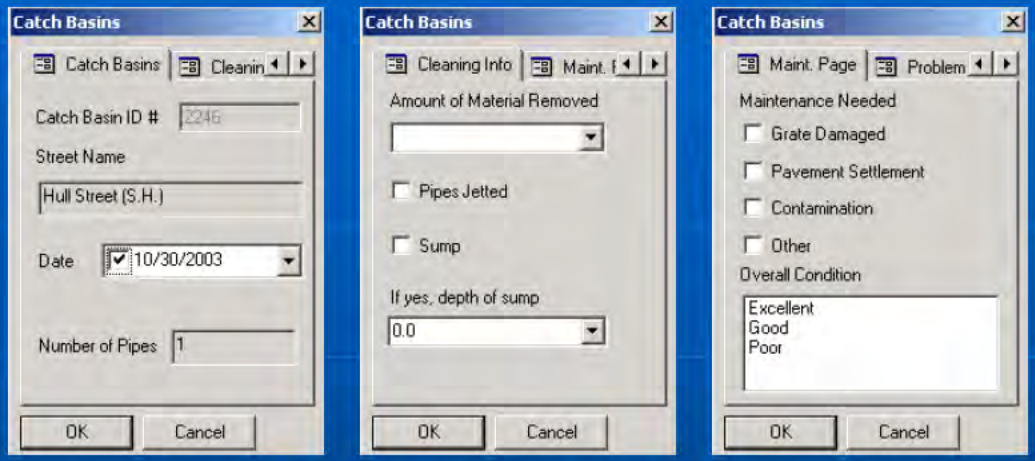
Technology Shift - Tablets

- Easier To Carry
- Bigger Screen Size: More Screen Real Estate
- Faster Processors
- More Storage Space
- Adaptability: Apps
- Longer Battery Life
- Keyboard / Touch Interface

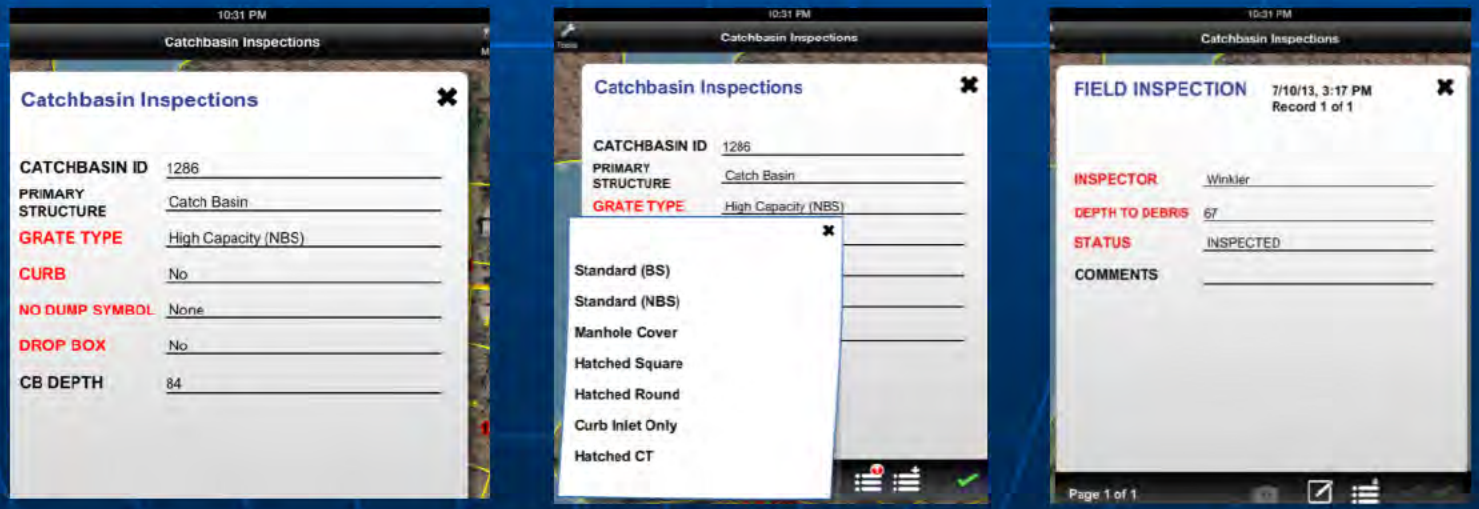


Technology Shift - Software

- ArcPad



- iPad



SK iPad Stormwater App

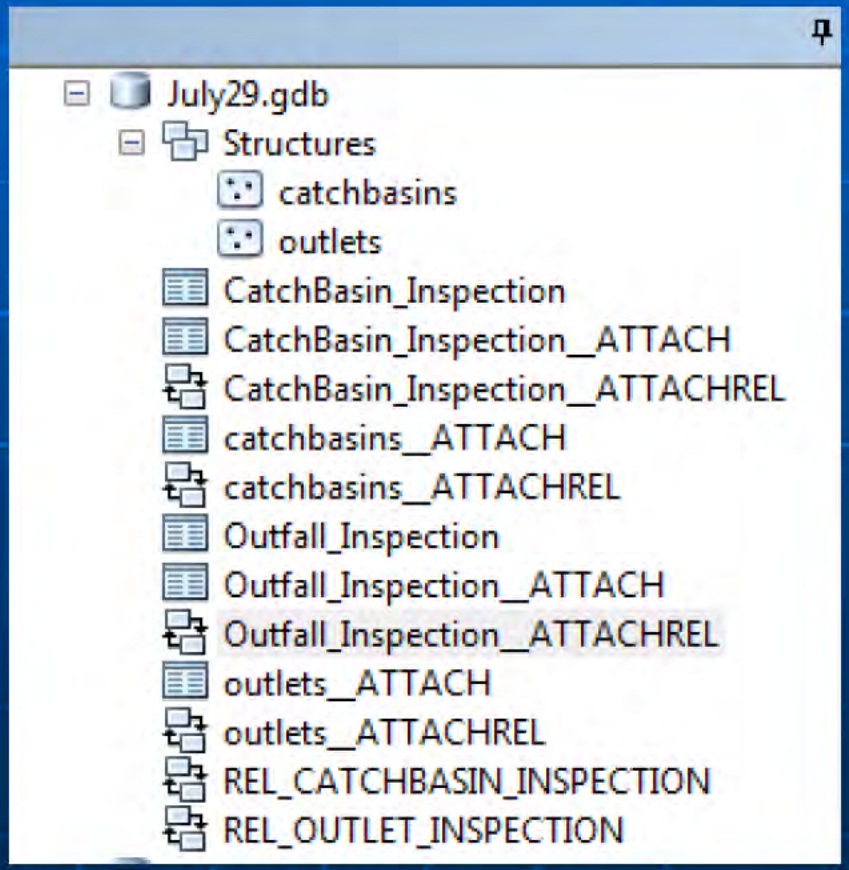
- GIS/Inspection data reads directly from GeoDatabase schema
- One to Many Inspections
- Inspection Status: Color Coded
  - Inspected
  - Uninspected
  - In Progress

SK iPad Stormwater App

- **Configurable Information to Edit**
  - Configure Required Fields
  - Configure Read Only Fields
- **Quick Maps**
- **Add Photo or Video to Features or Inspections**

Stormwater Geodb

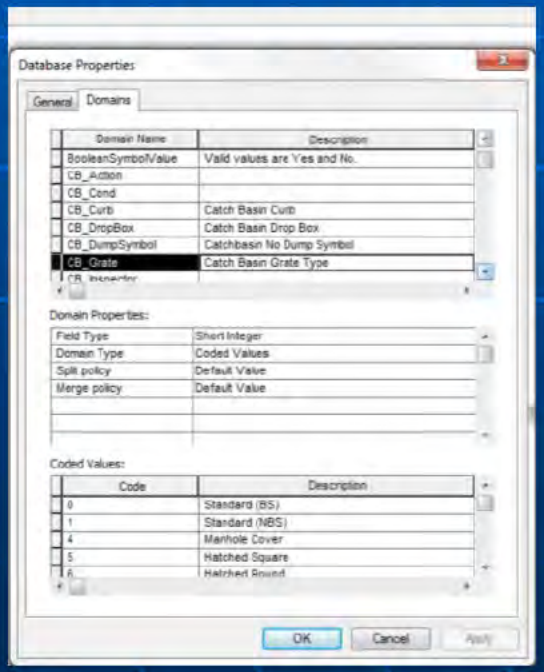
- **Structures: Point Feature Classes**
  - Outfalls
  - Catchbasins
- **Inspection Tables**
  - One to many
  - Linked by Feature ID
- **Inspection Attachments Tables**
  - Pictures



Mobile Data Preparation

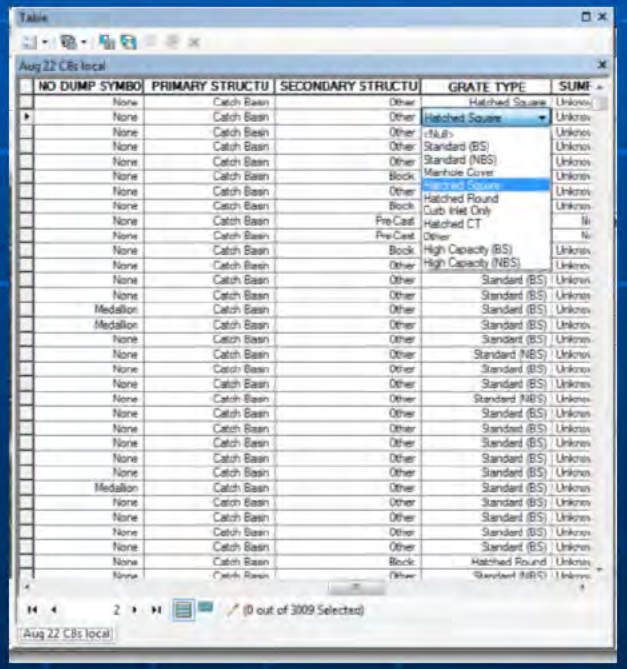
- Domains, domains, domains

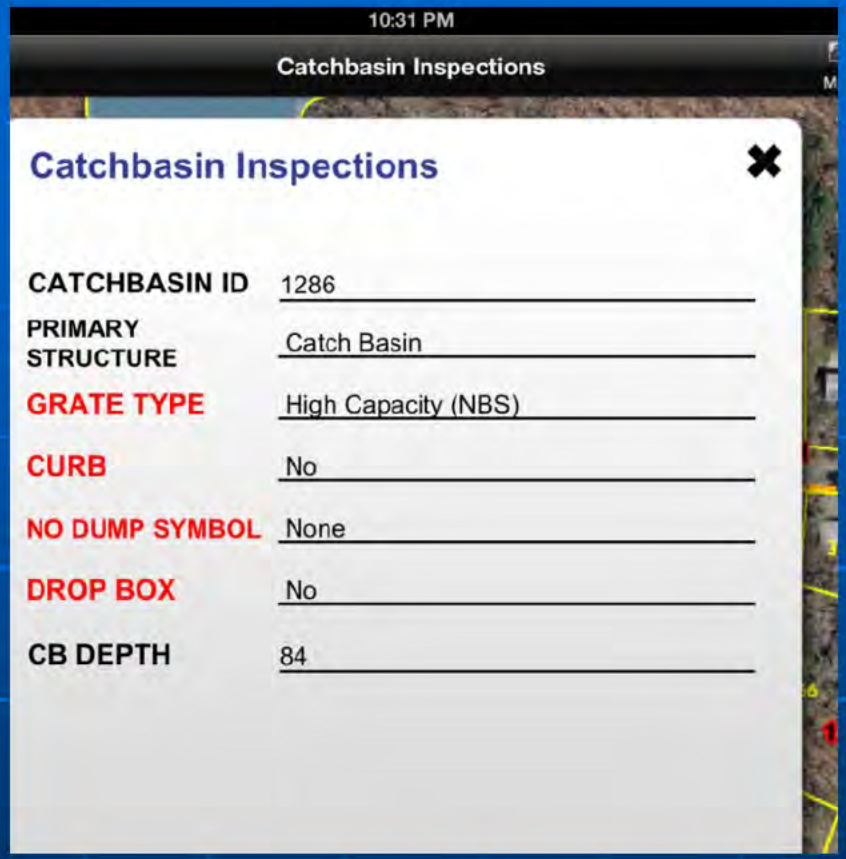
Geodatabase



Feature Class

Arcmap Editing

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Catchbasin Inspections
Catchbasin Inspections
CATCHBASIN ID
1286
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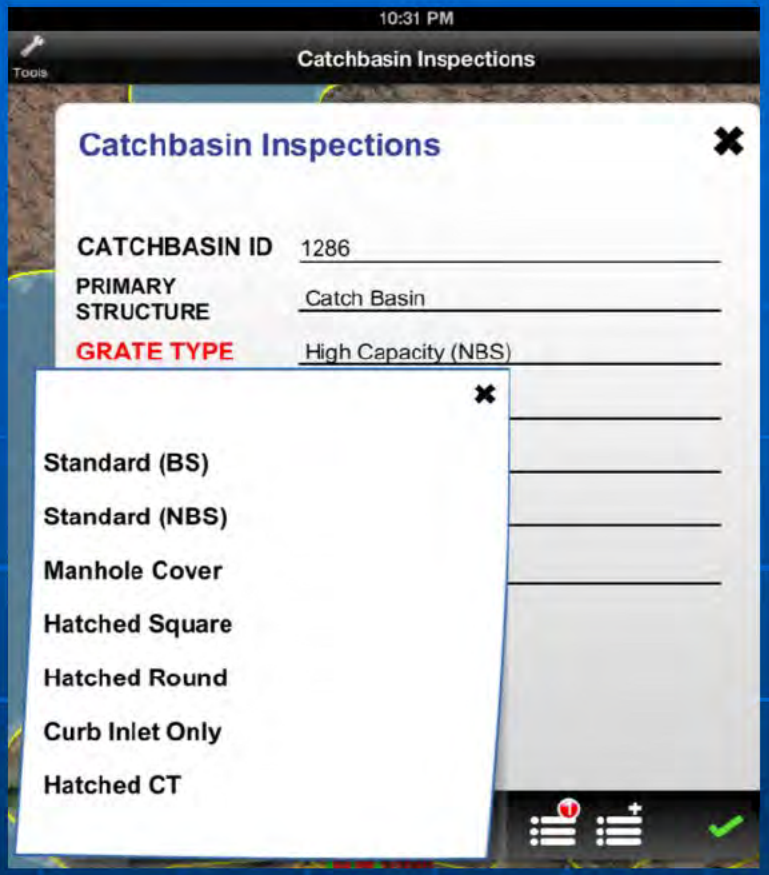
Catch Basin
GRATE TYPE
High Capacity (NBS)
CURB
No
NO DUMP SYMBOL
None
DROP BOX
No
CB DEPTH
84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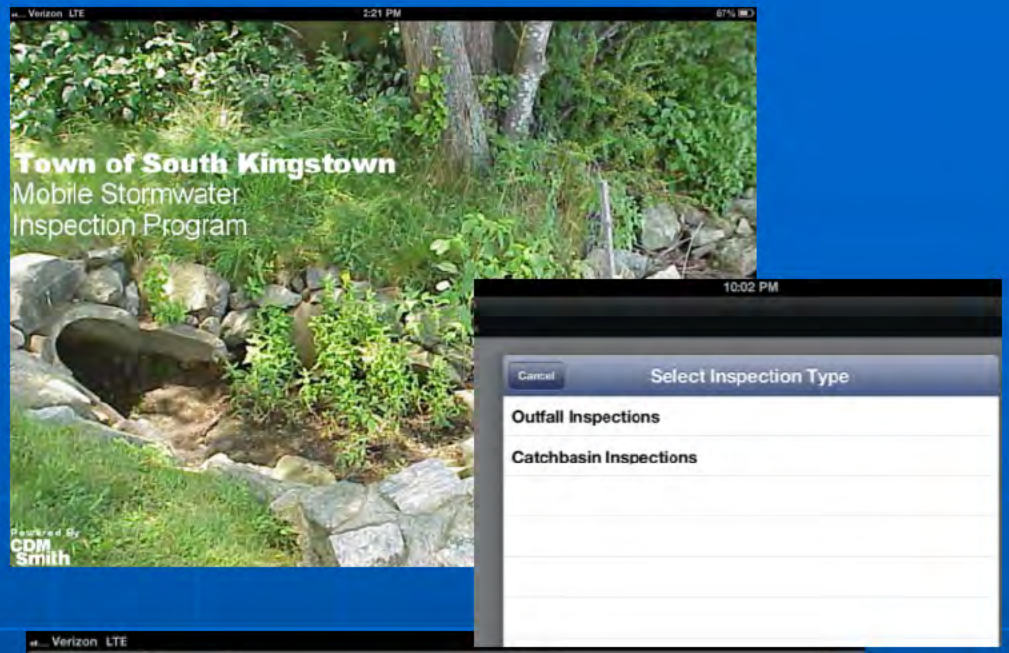
Tools
Catchbasin Inspections
Catchbasin Inspections
CATCHBASIN ID
1286
PRIMARY STRUCTURE
Catch Basin
GRATE TYPE
High Capacity (NBS)
Standard (BS)
Standard (NBS)
Manhole Cover
Hatched Square
Hatched Round
Curb Inlet Only
Hatched CT

Verizon LTE
3:06 PM
Messages
FaceTime
Photos
Camera
Maps
Clock
Photo Booth
Calendar
Contacts
Notes
Reminders
Newsstand
iTunes
App Store
Game Center
Settings
Find iPhone
Videos
Mail
SK Storm
Safari


Verizon LTE
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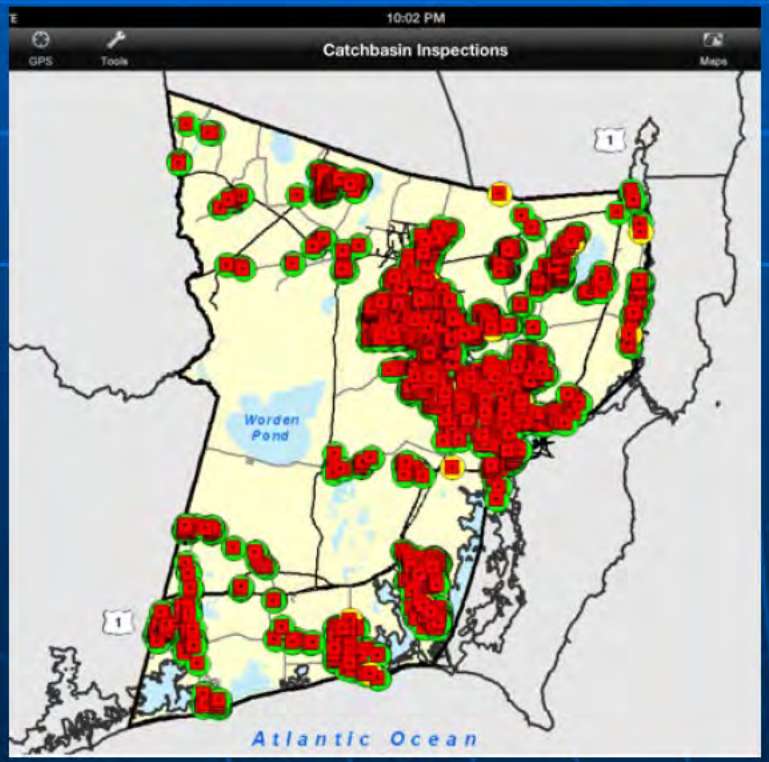
Town of South Kingstown
Mobile Stormwater
Inspection Program
Powered By
CDM Smith
10:02 PM
Cancel
Select Inspection Type
Outfall Inspections
Catchbasin Inspections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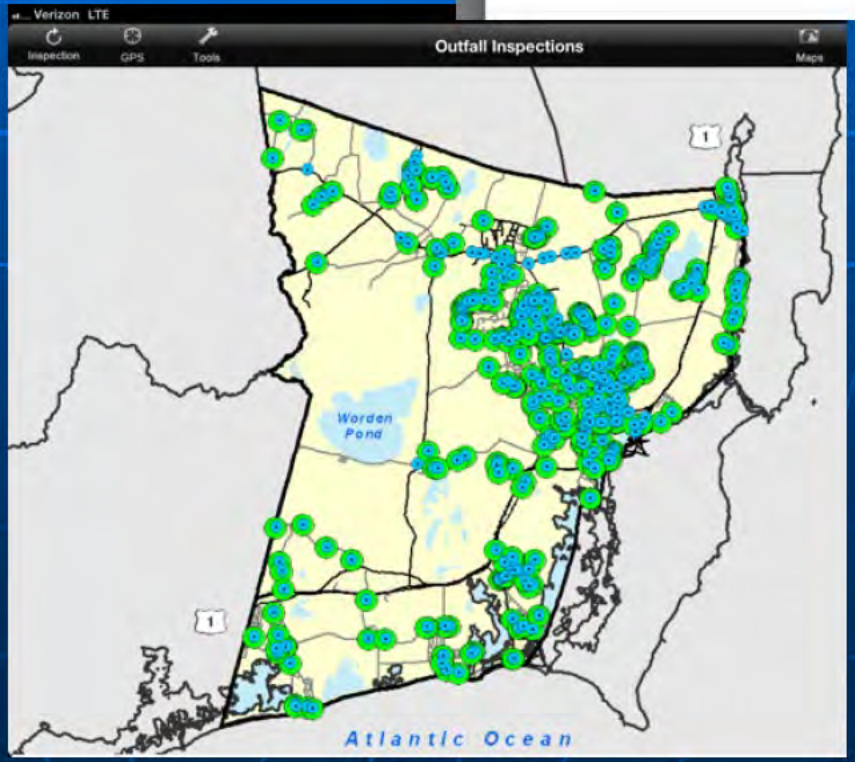
GPS
Tools
Catchbasin Inspections
Maps
Worden Pond
1
Atlantic Ocean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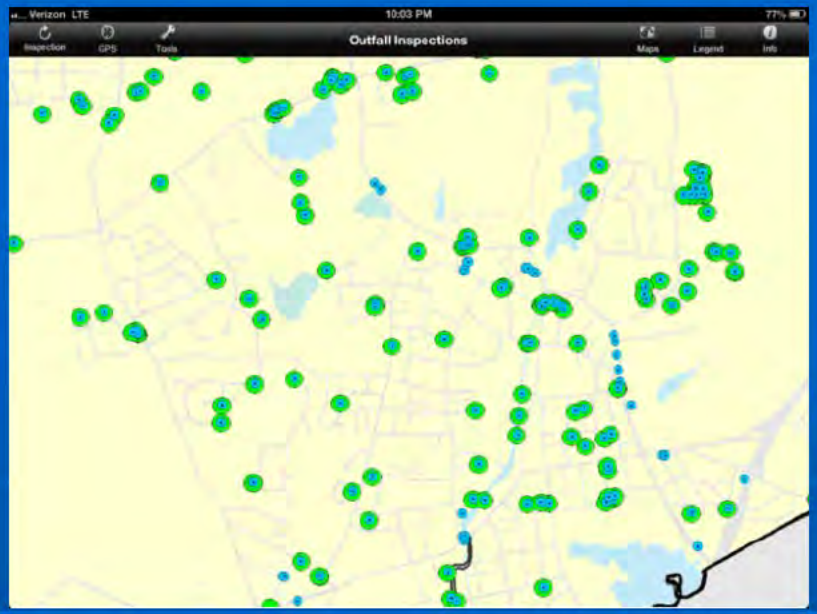
Inspection
GPS
Tools
Outfall Inspections
Maps
Worden Pond
1
Atlantic Ocean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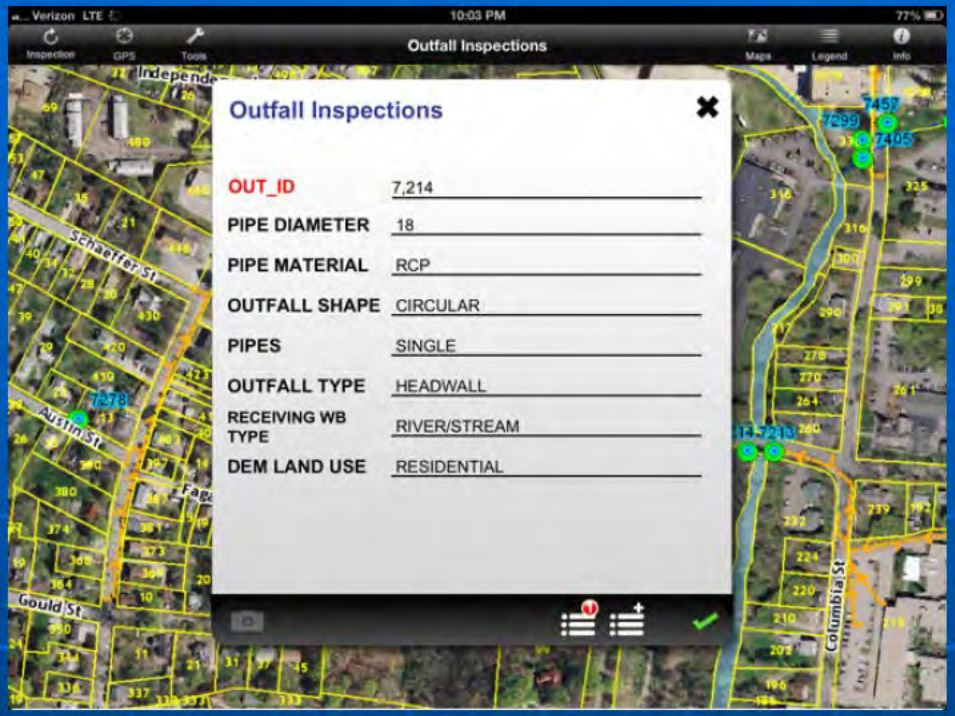
Inspection
GPS
Tools
Outfall Inspections
Maps
Legend
Info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10:03 PM
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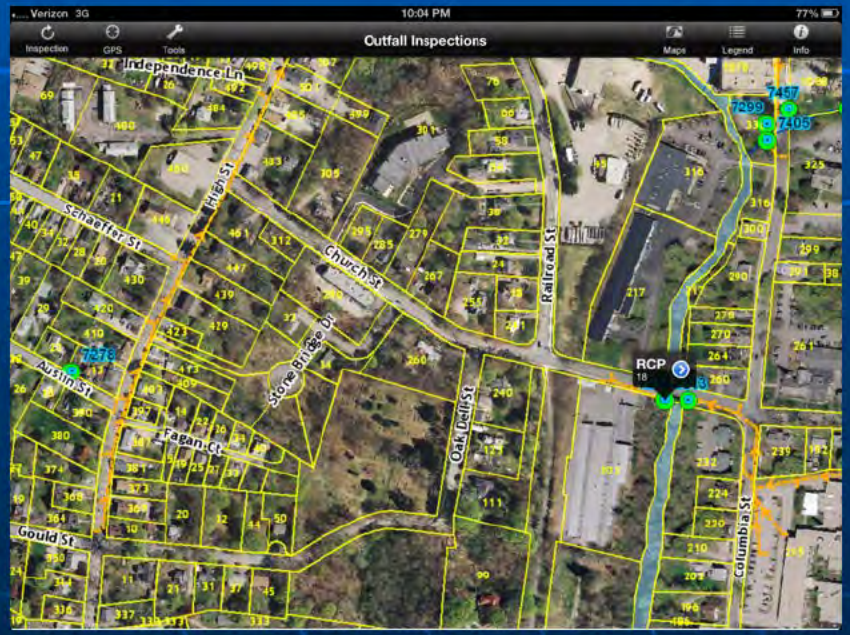
Inspection
GPS
Tools
Outfall Inspections
Maps
Legend
Info
Outfall Inspections
OUT_ID 7,214
PIPE DIAMETER 18
PIPE MATERIAL RCP
OUTFALL SHAPE CIRCULAR
PIPES SINGLE
OUTFALL TYPE HEADWALL
RECEIVING WB TYPE RIVER/STREAM
DEM LAND USE RESIDENTIAL
Schaeffer St
Austin St
Gould St
Columbia St
7299
7405
7457
7278
7214


Verizon 3G
10:04 PM
77%
Inspection
GPS
Tools
Outfall Inspections
Maps
Legend
Info
Independence Ln
Schaeffer St
High St
Church St
Railroad St
Stone Bridge Dr
Oak Dell St
Austin St
Fagan Ct
Gould St
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RCP
18
7299
7405
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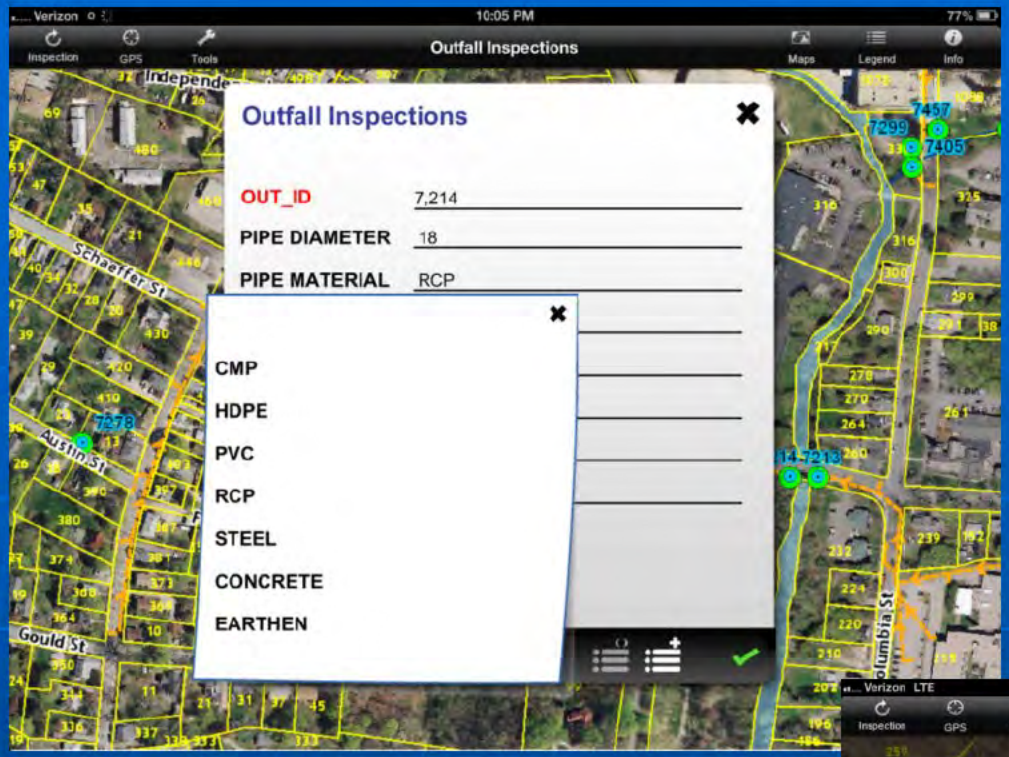
7278


Verizon
10:05 PM
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Inspection
GPS
Tools
Outfall Inspections
Maps
Legend
Info
Outfall Inspections
OUT_ID
7,214
PIPE DIAMETER
18
PIPE MATERIAL
RCP
CMP
HDPE
PVC
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EARTHEN
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Austin St
Gould St
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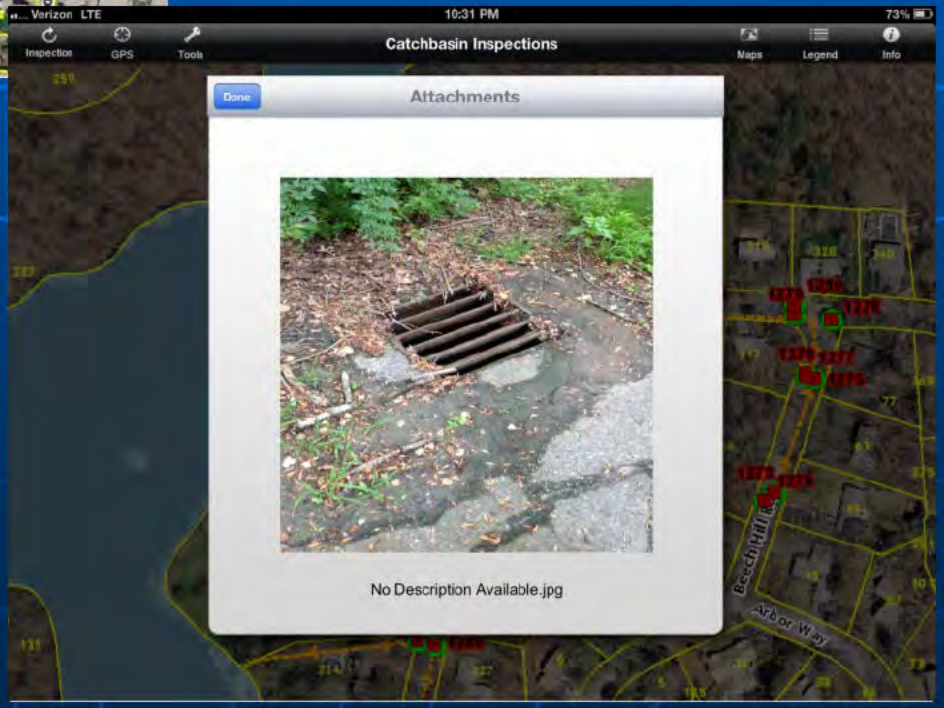
Verizon LTE
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Inspection
GPS
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Catchbasin Inspections
Maps
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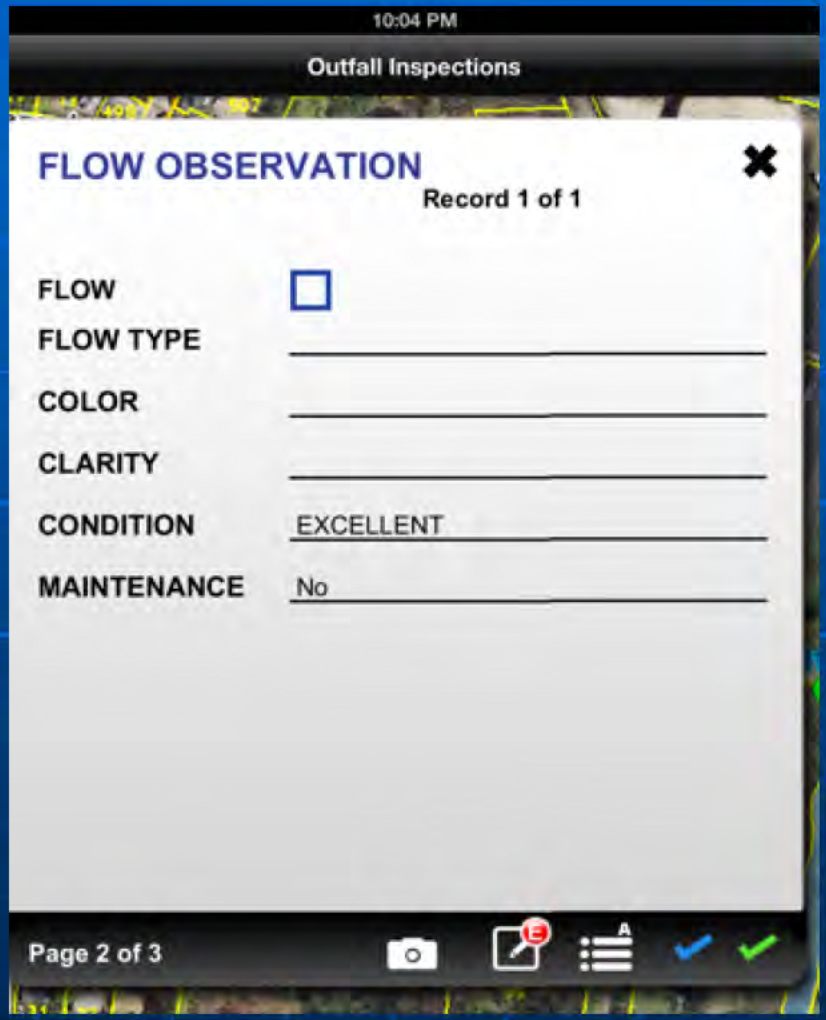
Done
Attachments
No Description Available.jpg
Beech Hill Rd
Arbor Way

Inspection Tables



Table

Outfall_Inspection

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9/20/2013 6:40:46 P	DiNobile	GOOD	<Null>	<Null>	NONE	<Null>	NONE	NONE	<Null>	NORMAL	<Null>	<Null>	<Null>	7415	INSPECTE
8/1/2013 12:43:39 P	Other	<Null>	Yes	<Null>	NONE	<Null>	NONE	NONE	<Null>	NONE	Yes	Yes	<Null>	7194	INSPECTE
9/24/2013 11:54:27	DiNobile	GOOD	<Null>	<Null>	NONE	<Null>	NONE	NONE	<Null>	NORMAL	<Null>	<Null>	<Null>	7119	INSPECTE
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8/1/2013 5:27:59 PM	Winkler	<Null>	<Null>	<Null>	NONE	<Null>	NONE	NONE	<Null>	NONE	<Null>	<Null>	<Null>	7164	INSPECTE
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9/25/2013 5:51:40 P	DiNobile	POOR	<Null>	<Null>	NONE	<Null>	NONE	NONE	<Null>	EXCESSIV	<Null>	<Null>	<Null>	7474	INSPECTE
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0 (0 out of 399 Selected)

Outfall_Inspection

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<featureurl/>
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<editrelatedtable>
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<quickmap name layers/>
<tool names>
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File Edit Search View Encoding Language Settings Macro Run Plugins Window ?

SouthKingstown_Stormwater_Config_V19.xml

```xml
<!--  Column in the Search Table that links to the zoomsearch layer -->
<gistableidlink attribute="REM_GIS_ID"></gistableidlink>
<!--  Column in the zoomsearch layer that links to the search layer -->
<gislayeridlink attribute="OUT_ID"></gislayeridlink>
<!-- Column in the Feature Class that links to the Related Table (See Relationship Class) -->
<gistablerelatedidlink attribute="OID"></gistablerelatedidlink>
<!-- Column in the Related Table that links to the Feature (See Relationship Class) -->
<relatedtableidlink attribute="OID"></relatedtableidlink>
<!-- Column in the Lookup Table that links to the Main Table -->
<lookuptableidlink attribute=""></lookuptableidlink>
<!-- Index of the Parcel Layer - Obtain from the REST Endpoint -->
<parcelfcindex index="2"></parcelfcindex>
<!-- Fields from the feature Service you want to allow to be edited.
ALL FIELD NAMES ARE CAP SENSITIVE - copy field names directly from the rest service field list -->
<editlayer editfields="OUT_ID,DIAMETER,MATERIAL,OUTFALL_SHAPE,PIPES,TYPE,REC_WB_TYPE,DEM_LANDUSE" layer="Outlets"></editlayer>
<!-- Primary and Secondary Headers for the Feature Popup-->
<featurepopupprimaryheader attribute="MATERIAL"></featurepopupprimaryheader>
<featurepopupsecondaryheader attribute="DIAMETER"></featurepopupsecondaryheader>
<!-- Fields from the Feature Attribute Form that must be filled out on the form -->
<requiredattributefields editfields="OUT_ID"></requiredattributefields>
<!-- Fields from the Feature Attribute Form that cannot be edited once they have been populated the first time -->
<attributefielddisableediting editfields="OUT_ID"></attributefielddisableediting>
<!-- Setup for the Inspection Forms.  There is a maximum of 4 Forms.  Each form can have a title, and Attributes associated wit
ALL FIELD NAMES ARE CAP SENSITIVE - copy field names directly from the rest service field list -->
<!-- MUST ALSO ENTER INSPECTION DATE ATTRIBUTE FOR DATE/TIME TO SHOW ON INSPECTION FORM-->
<editrelatedtable>
    <form name="GENERAL" editfields="INSPDATE,INSPECTOR,ODOR,FLOATABLES,STAINING,GROWTH,SEDIMENT,SCOURING,STATUS,COMMENTS"></fo
    <form name="FLOW OBSERVATION" editfields="FLOW,FLOWTYPE,COLOR,CLARITY,CONDITION,MAINTENANCE"></form>
    <form name="FIELD MEASUREMENTS" editfields="TEMP_,TEMP_UNITS,PH,CONDUCTIVITY,LAB"></form>
    <form name="" editfields=""></form>
</editrelatedtable>
<!-- Fields from the Inspection Form that must be filled out on the form -->
<!--Inspection Date Column name must be entered on first form for it to show-->
<requiredinspectionfields editfields="INSPECTOR,ODOR,FLOATABLES,STAINING,GROWTH,STATUS"></requiredinspectionfields>
<!--  Quickmaps are optional; if you do not set up any quick maps, remove the lines with <quickmap>
Specify the Name of the quickmap, and then the layers from the REST Service that you wish to be visible in that quickmap. -->
<quickmaps>
    <quickmap name="Basemap" layers="Parcel IDs,Addresses,Parcel Boundaries,Town Boundary,Towns,Road Names,Streams,Lakes and Po
    <quickmap name="Stormwater" layers="Parcel IDs,Addresses,Parcel Boundaries,Town Boundary,Towns,Road Names,Streams,Lakes and
    <quickmap name="Stormwater With Aerials" layers="Addresses,Parcels - Aerials,Town Boundary,Towns,Streams,Lakes and Ponds,Ro
</quickmaps>
<!--
    Tool options - Names ="Buffer,Add,Search" - Aliases can be set to anything
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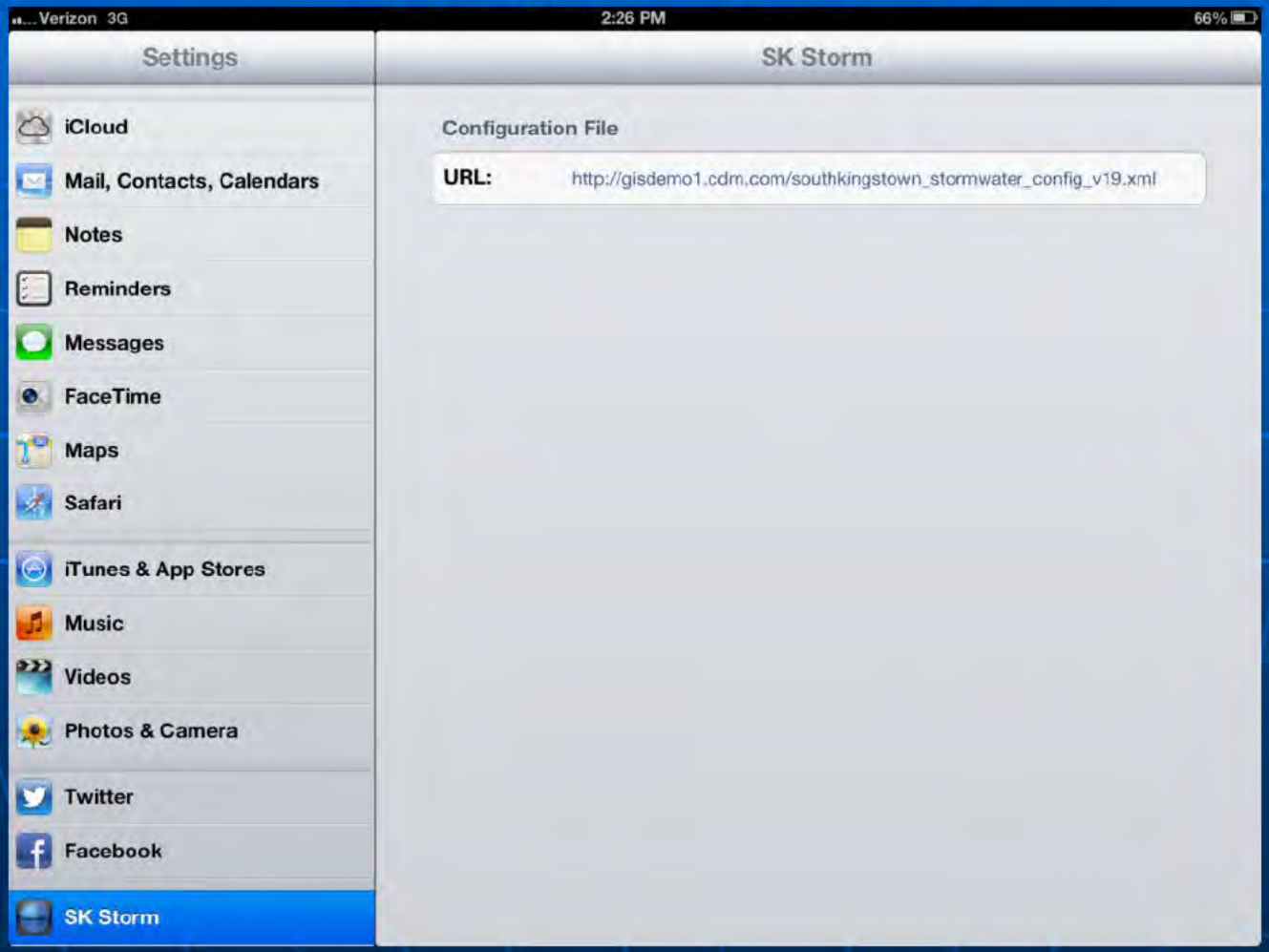
Need Another Inspection Type? Change the XML



Final Thoughts

- **Spottiness in 4G coverage**
  - Can be limiting in rural areas
  - Particularly in loading pictures
  - Get car charger
- **Invest in Protection**
  - Griffin Survivor Case
  - Otterbox Utility Case