Stormwater System Structure Maintenance

Using Collector App

2003 MS4 Permit Requirements for Mapping and Maintenance

- Minimum Control Measures
  - #3 - Illicit Discharge Detection and Elimination
    - Inspect all Catch Basins
    - Map Outfalls/Receiving Waters
  - #6 - Pollution Prevention and Good Housekeeping
    - **Stormwater system maintenance**

Collector App!

Paper Records

STORMWATER STRUCTURE MAINTENANCE LOG

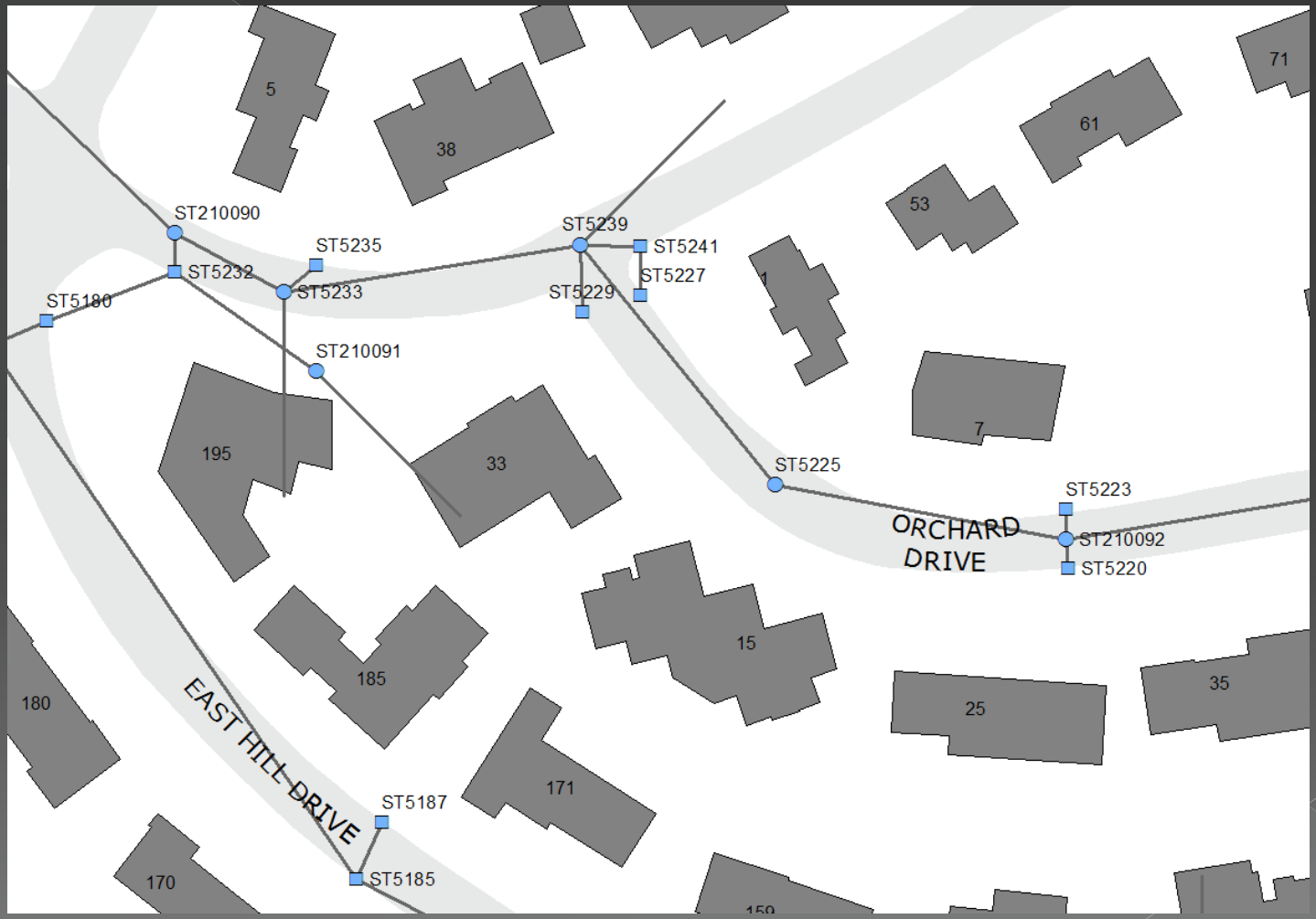
DATE: _____ VEHICLE NO: _____ DRIVER: _____

CIRCLE APPROPRIATE RESPONSE BELOW

STRUCTURE ID	LOCATION	DEBRIS DEPTH (Inches)	ODOR	COLOR	ACTIVE FLOW	STRUCTURE CONDITION	ILLICIT CONNECTIONS	COMMENTS
			None Slight Strong	Clear Not Clear	None Minimal Full	Satisfactory Poor	None Investigate	
			None Slight Strong	Clear Not Clear	None Minimal Full	Satisfactory Poor	None Investigate	
			None Slight Strong	Clear Not Clear	None Minimal Full	Satisfactory Poor	None Investigate	
			None Slight Strong	Clear Not Clear	None Minimal Full	Satisfactory Poor	None Investigate	
			None Slight Strong	Clear Not Clear	None Minimal Full	Satisfactory Poor	None Investigate	
			None Slight Strong	Clear Not Clear	None Minimal Full	Satisfactory Poor	None Investigate	
			None Slight Strong	Clear Not Clear	None Minimal Full	Satisfactory Poor	None Investigate	
			None Slight Strong	Clear Not Clear	None Minimal Full	Satisfactory Poor	None Investigate	

TONS OF SAND:_____ TONS OF SAND:_____ TONS OF SAND:_____

Paper Maps (Structure IDs)



Issues

- Time-Consuming Map Production
  - 1,000 Pages of Letter Size Maps
- Cumbersome to Use Paper Maps & Logs
- Limited Access to Structure IDs
  - 7800+ City Structures
  - Not All Work was Recorded
  - Reprint After Data Updates
- Convert Years of Paper Field Logs to DB
  - As Time is Available

Goals

- No More Paper!

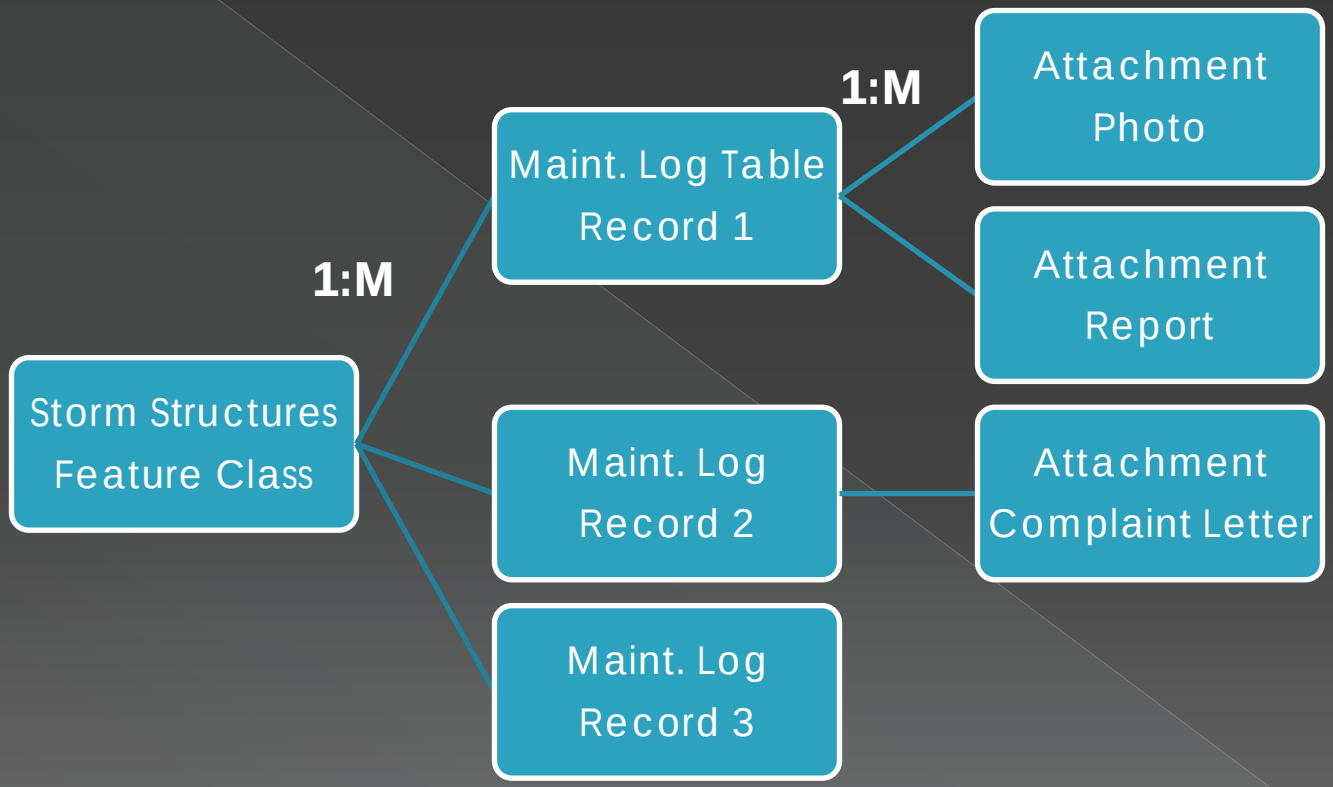
Solution

- Collector App
  - Field Access to Inventory
  - Create Work Records
  - Photos
  - Easy To Use
- Web App Builder
  - Convert Paper Logs from Desktop

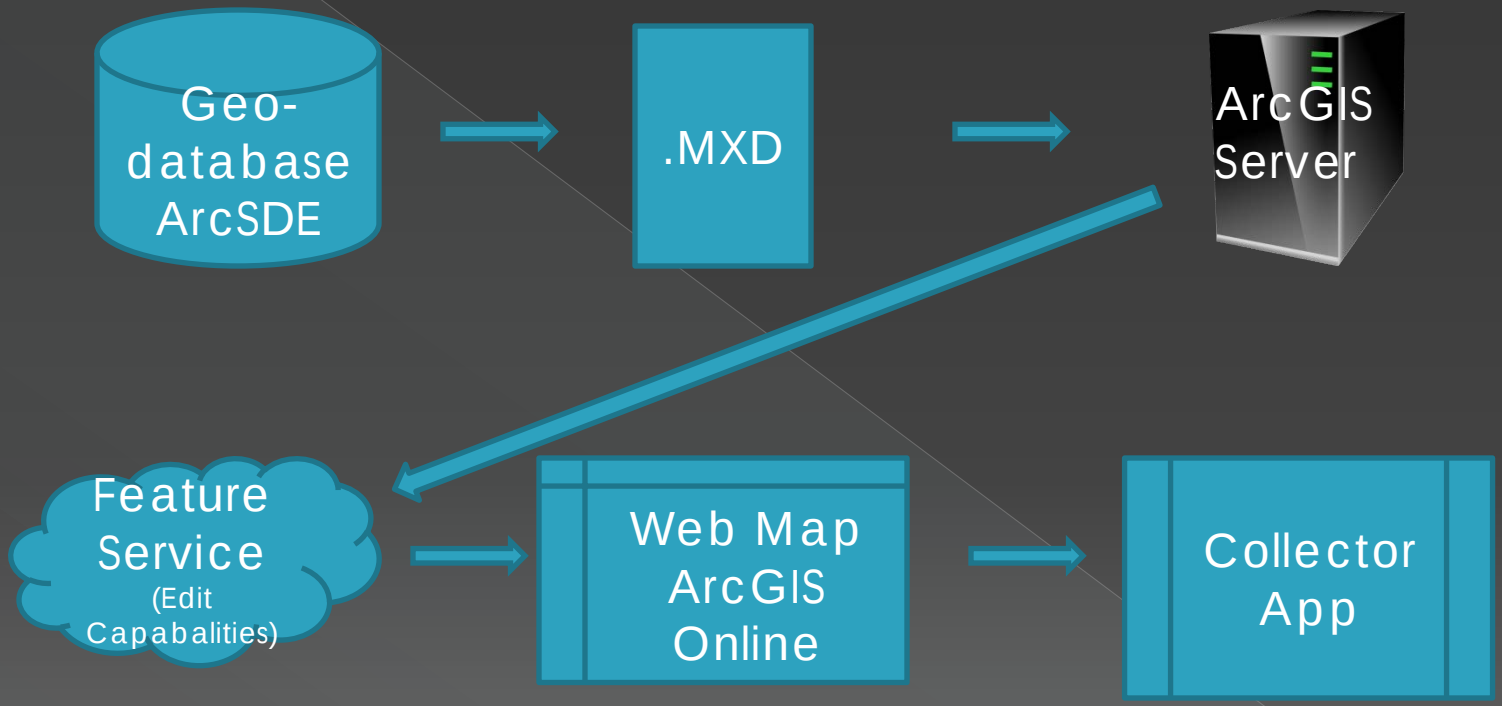
What Can Be Accomplished?

- Stormwater System Inventory Always Current
- Don't Have to Know Structure ID
- Work Performed is Recorded Immediately
- Can Take Updated Photos
- Generate Reports/Analysis

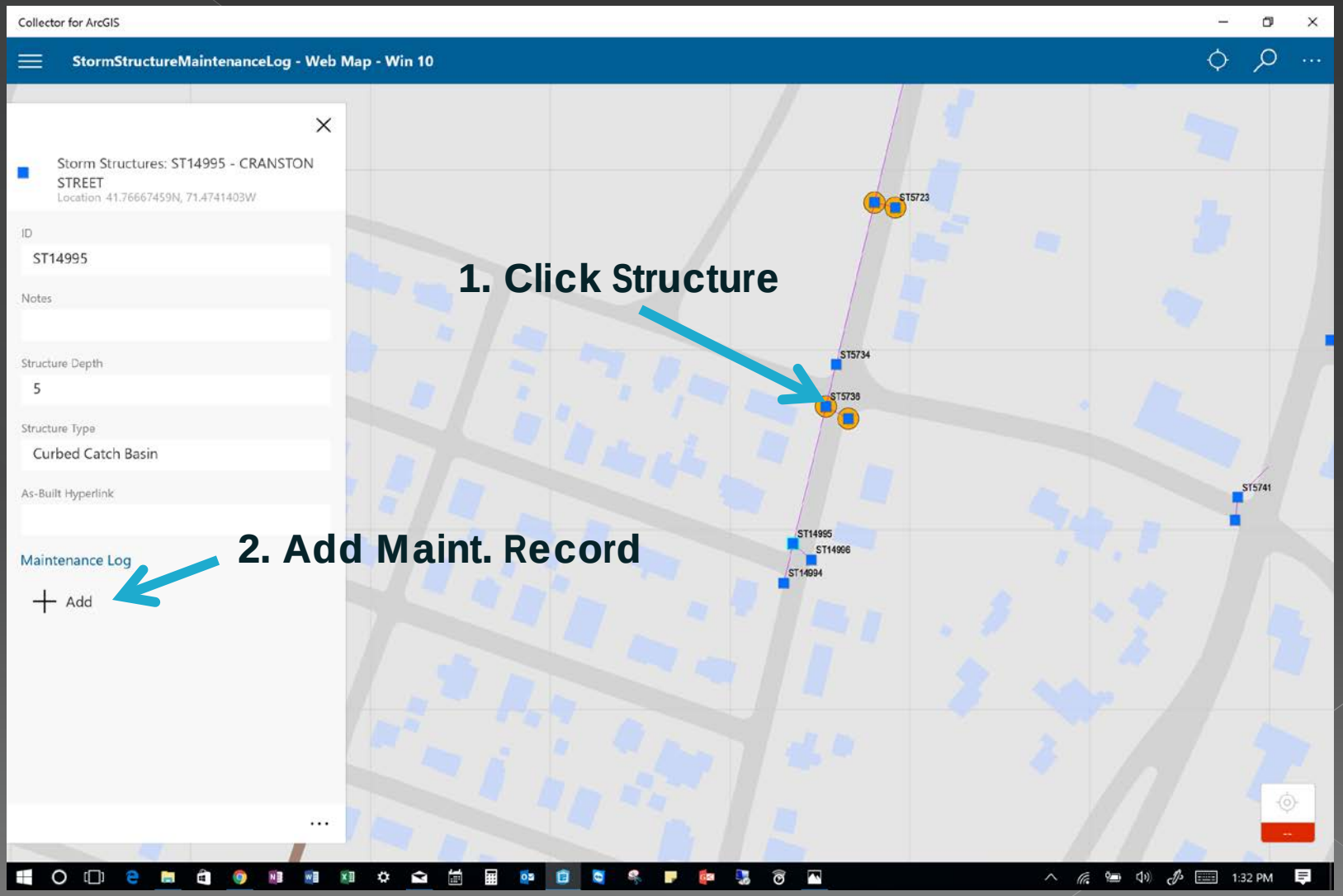
Data


Storm Structures Feature Class
1:M
Maint. Log Table Record 1
Maint. Log Record 2
Maint. Log Record 3
1:M
Attachment Photo
Attachment Report
Attachment Complaint Letter

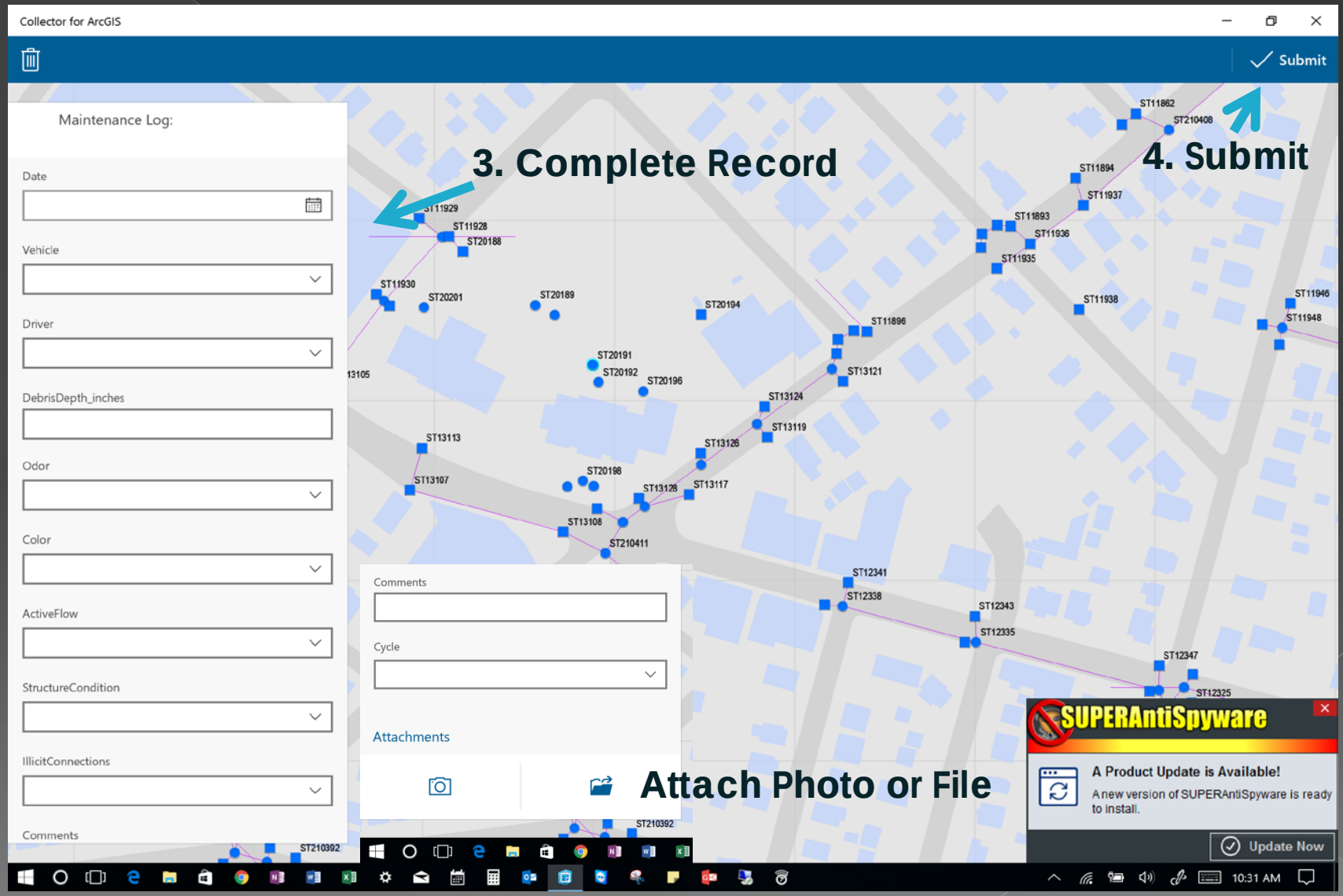
Collector Implementation



Workflow

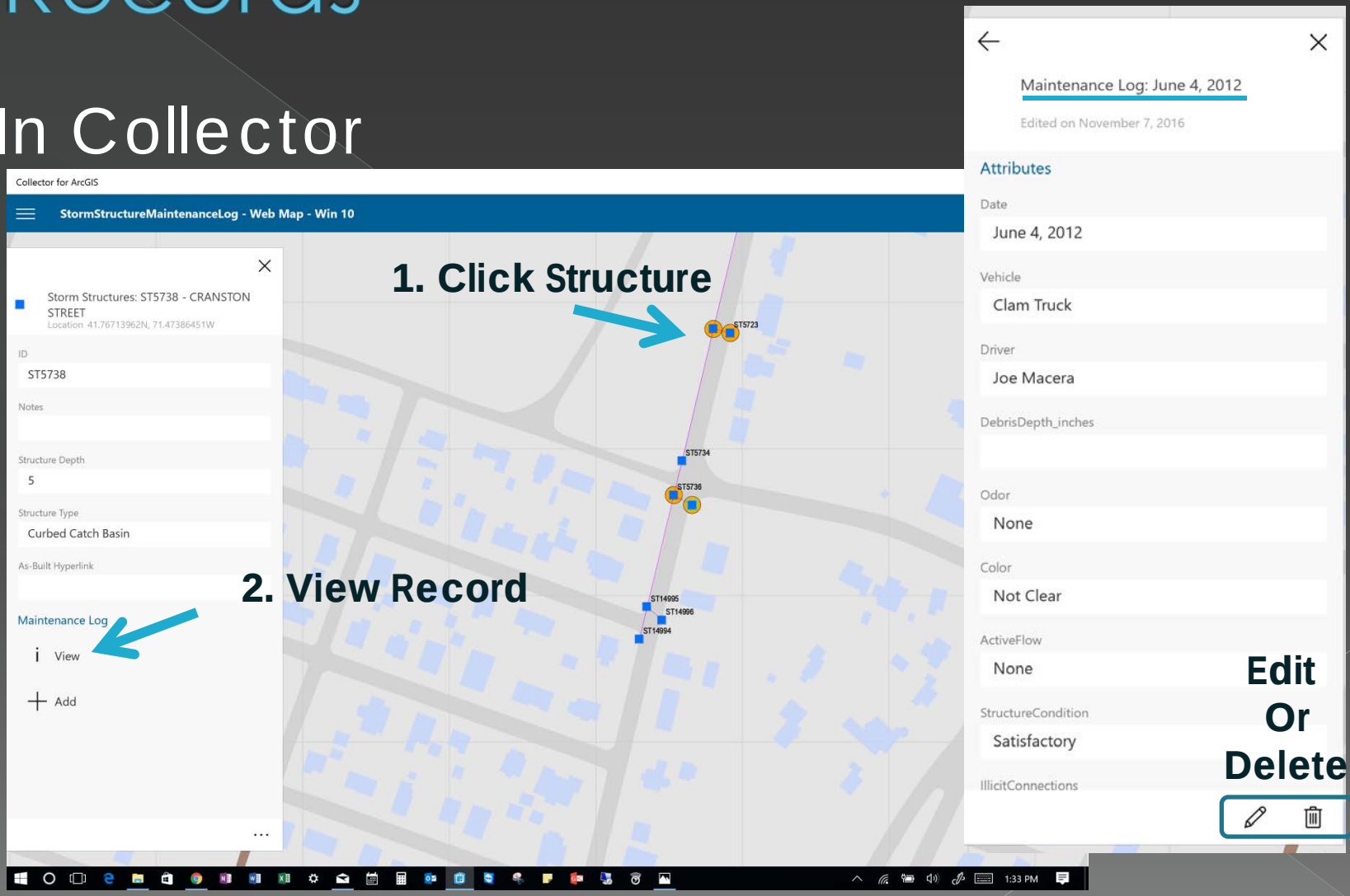

Collector for ArcGIS
StormStructureMaintenanceLog - Web Map - Win 10
Storm Structures: ST14995 - CRANSTON STREET
Location 41.76667459N, 71.4741403W
ID
ST14995
Notes
Structure Depth
5
Structure Type
Curbed Catch Basin
As-Built Hyperlink
Maintenance Log
Add
1. Click Structure
2. Add Maint. Record
ST5723
ST5734
ST5738
ST5741
ST14995
ST14996
ST14994
1:32 PM

Workflow


Collector for ArcGIS
Submit
Maintenance Log:
Date
Vehicle
Driver
DebrisDepth_inches
Odor
Color
ActiveFlow
StructureCondition
IllicitConnections
Comments
Cycle
Attachments
3. Complete Record
4. Submit
Attach Photo or File
SUPERAntiSpyware
A Product Update is Available!
A new version of SUPERAntiSpyware is ready to install.
Update Now
10:31 AM

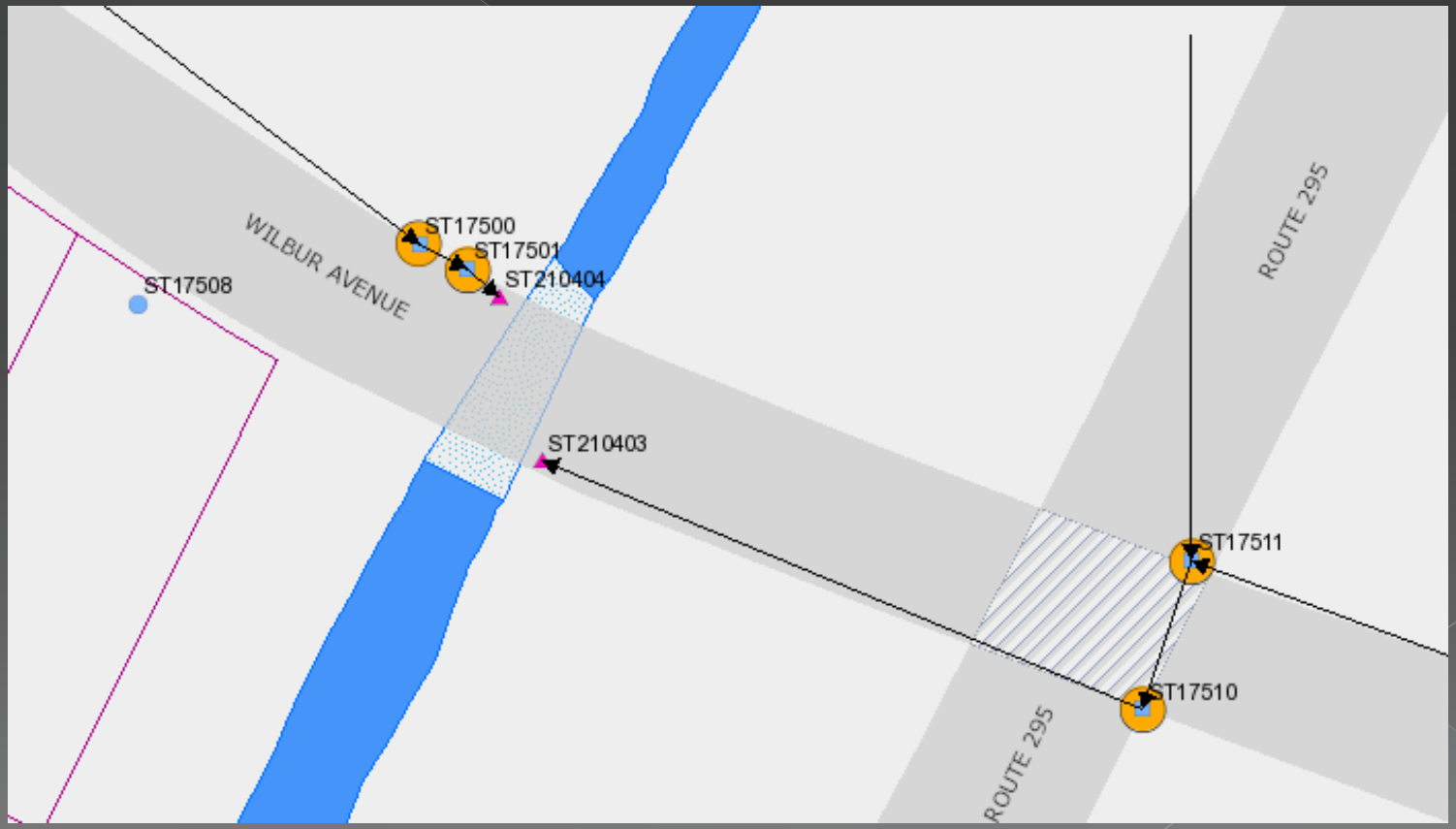
Displaying Maintenance Records

- In Collector



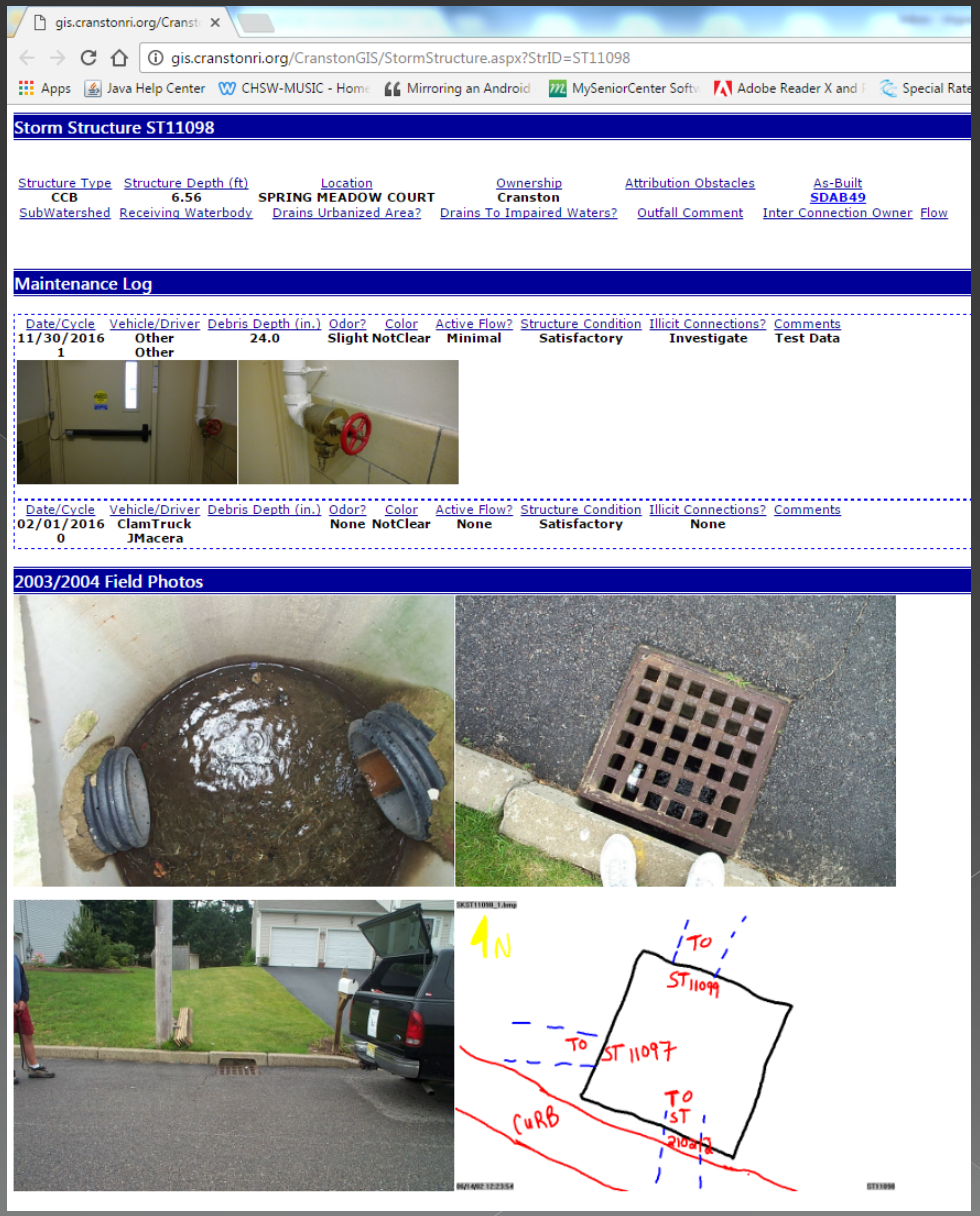
Displaying Maintenance Records

- GIS Layer



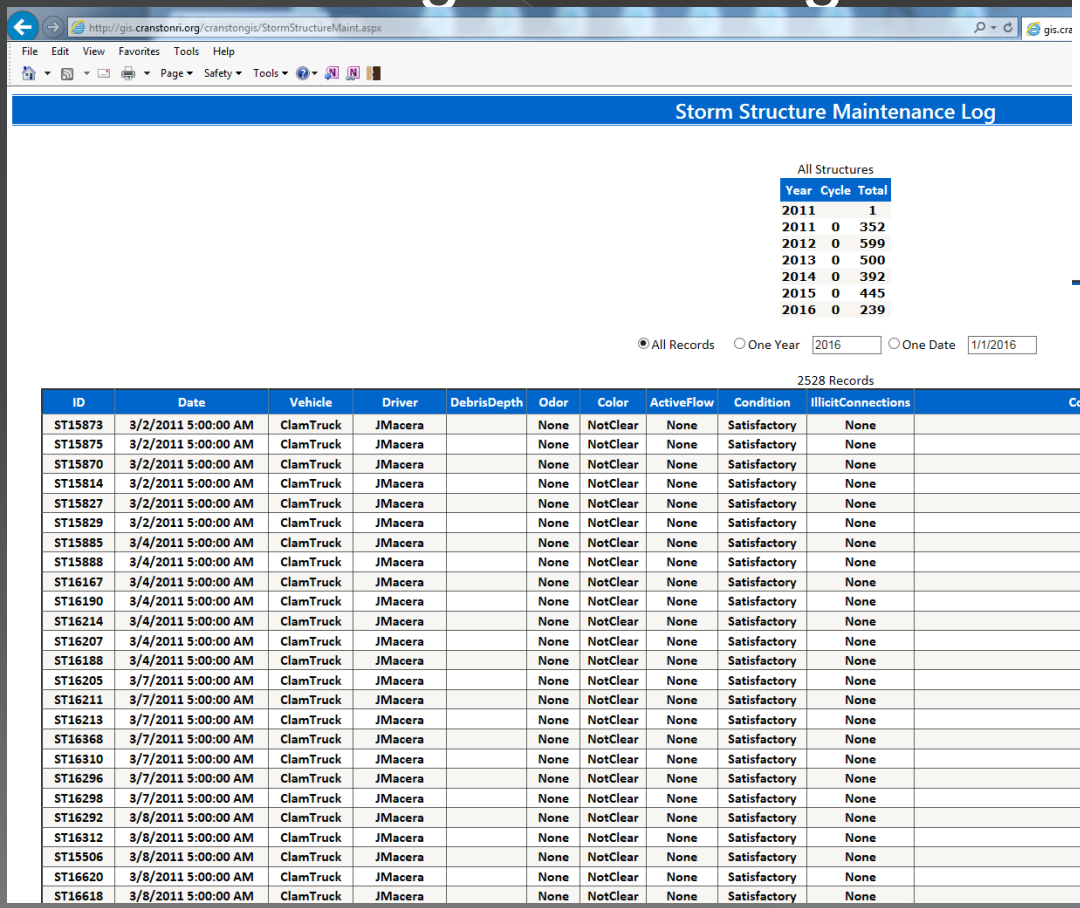
Displaying Maintenance Records

- Storm Structure Web Page
  - Attributes
  - Work Records & Photos
  - Historical Photos
  - As-Built Hyperlink



Displaying Maintenance Records

- Maint Log Web Page



All Structures

Year	Cycle	Total
2011		1
2011	0	352
2012	0	599
2013	0	500
2014	0	392
2015	0	445
2016	0	239

All Records One Year 2016 One Date 1/1/2016

2528 Records

ID	Date	Vehicle	Driver	DebrisDepth	Odor	Color	ActiveFlow	Condition	IllicitConnections	Comments	Cycle	created_date	last_edited_date
ST15873	3/2/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 6:01:37 PM	11/9/2016 6:02:06 PM
ST15875	3/2/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 6:02:21 PM	11/9/2016 6:02:50 PM
ST15870	3/2/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 6:03:04 PM	11/9/2016 6:03:28 PM
ST15814	3/2/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 6:03:53 PM	11/9/2016 6:04:24 PM
ST15827	3/2/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 6:04:35 PM	11/9/2016 6:05:00 PM
ST15829	3/2/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 6:05:25 PM	11/9/2016 6:05:49 PM
ST15885	3/4/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:04:57 PM	11/9/2016 8:15:48 PM
ST15888	3/4/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:05:32 PM	11/9/2016 8:06:02 PM
ST16167	3/4/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:06:18 PM	11/9/2016 8:06:40 PM
ST16190	3/4/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:10:57 PM	11/9/2016 8:11:23 PM
ST16214	3/4/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:11:59 PM	11/9/2016 8:12:23 PM
ST16207	3/4/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:12:41 PM	11/9/2016 8:15:21 PM
ST16188	3/4/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:13:21 PM	11/9/2016 8:13:43 PM
ST16205	3/7/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:16:49 PM	11/9/2016 8:17:16 PM
ST16211	3/7/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:18:46 PM	11/9/2016 8:19:10 PM
ST16213	3/7/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:19:29 PM	11/9/2016 8:19:56 PM
ST16368	3/7/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:20:12 PM	11/9/2016 8:20:39 PM
ST16310	3/7/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:21:03 PM	11/9/2016 8:21:26 PM
ST16296	3/7/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:21:39 PM	11/9/2016 8:22:06 PM
ST16298	3/7/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:22:18 PM	11/9/2016 8:22:41 PM
ST16292	3/8/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:43:16 PM	11/9/2016 8:44:04 PM
ST16312	3/8/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:44:37 PM	11/9/2016 8:44:59 PM
ST15506	3/8/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/9/2016 8:45:16 PM	11/9/2016 8:45:43 PM
ST16620	3/8/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/10/2016 2:43:42 PM	11/10/2016 2:44:17 PM
ST16618	3/8/2011 5:00:00 AM	ClamTruck	JMacera		None	NotClear	None	Satisfactory	None		0	11/10/2016 2:44:36 PM	11/10/2016 2:45:03 PM

What's Next

- Field Notes
- Outfall Inspections
- Water Quality Sampling
- Repairs
- Implement Workforce?

Questions

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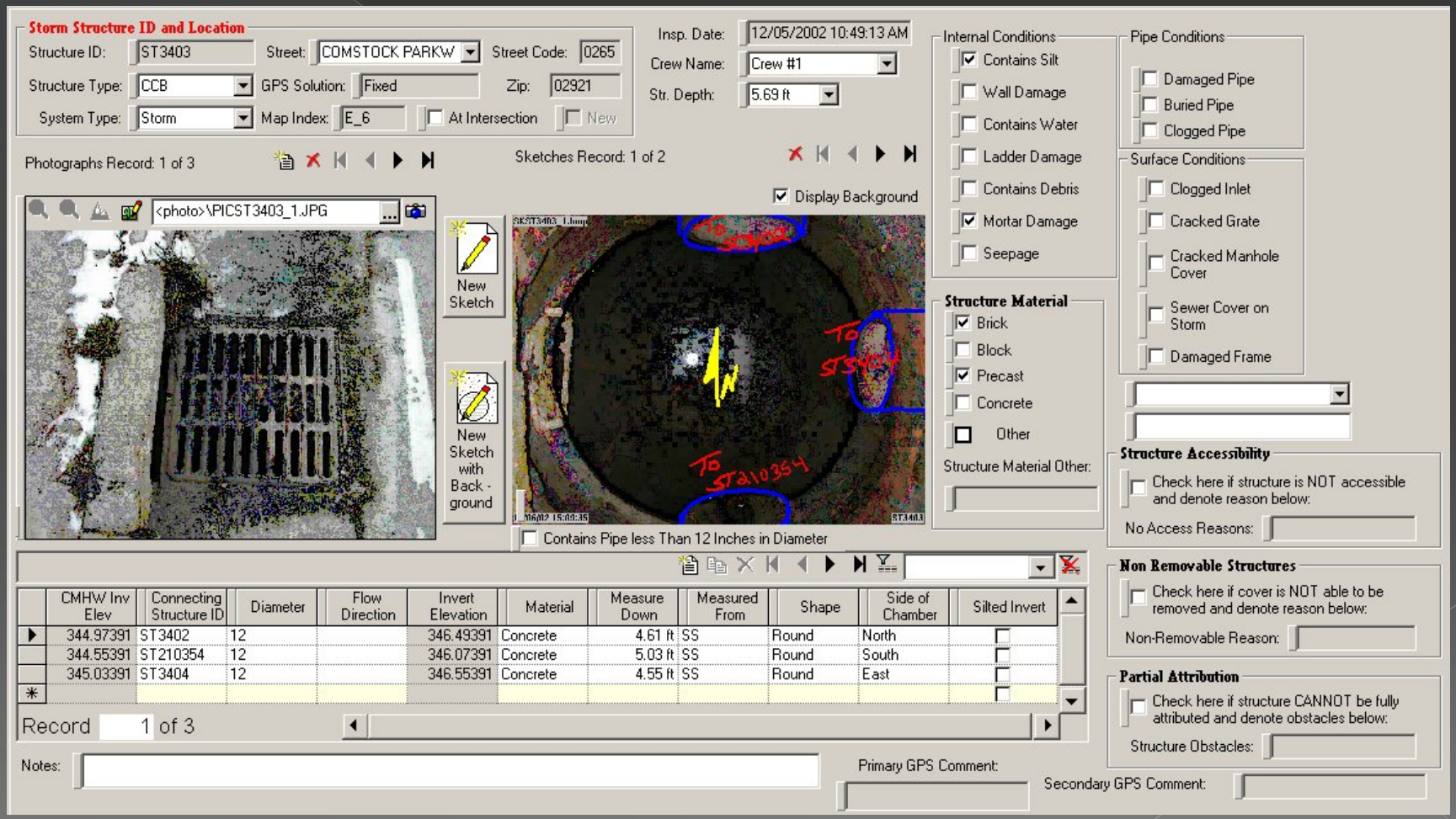
Initial Data Collection Form