

Leveraging Technology to Increase Catch Basin Maintenance Efficiency

Matt Bianchi, Utility Cloud (AESC)

John F. Lopes, P.E, Boston Water Sewer Commission

NEWEA 2016 ANNUAL CONFERENCE
January 26th, 2016

Value of Cloud Based Technology

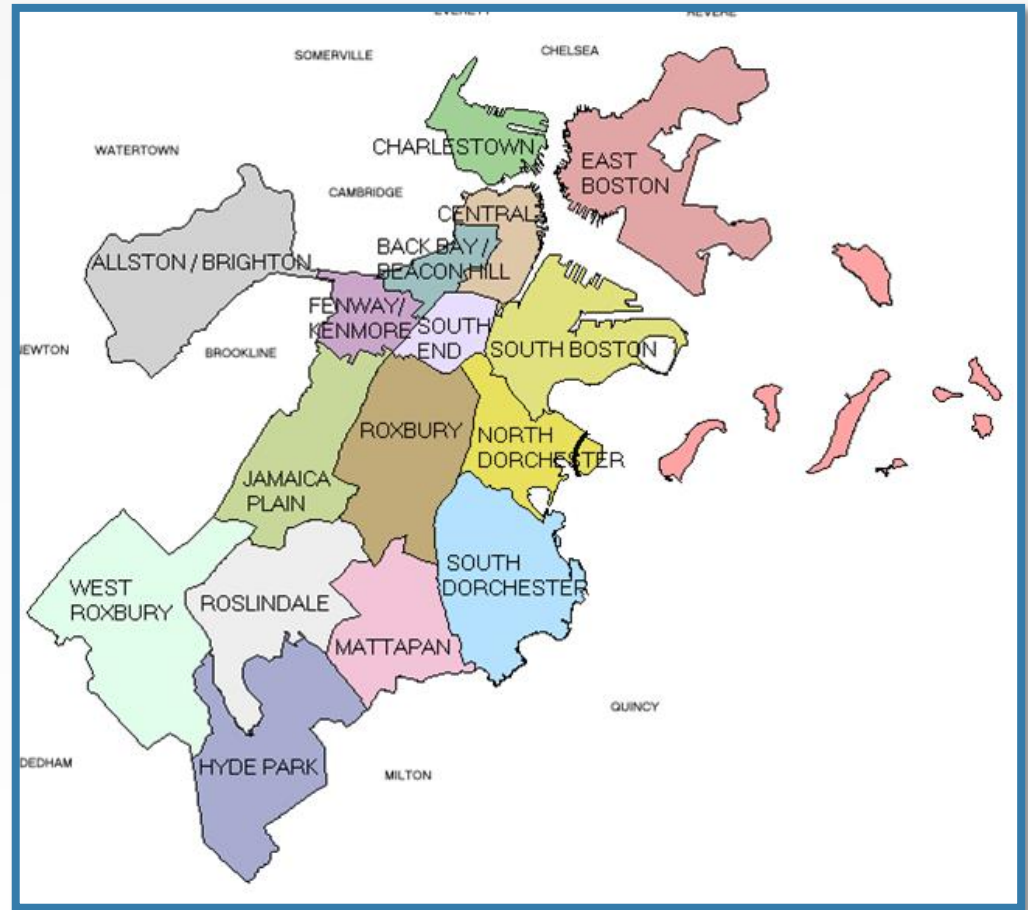
Benefits

- Streamline an organizations operations on one platform
- Gather and access your data from anywhere
- Secure Network for the safety of your files



Boston Water and Sewer Commission

- Oldest Water and Sewer System in New England
- 424 Miles of Storm Drainage
- 201 Storm Drain Outfalls
- Around 31,000 Catch Basins
- Drainage System Spans an area of 48 Square Miles



Boston Water and Sewer Commission



- U.S. Environmental Protection Agency (EPA)
- National Pollutant Discharge Elimination System (NPDES)
- Capacity, Management, Operations, Maintenance (CMOM)

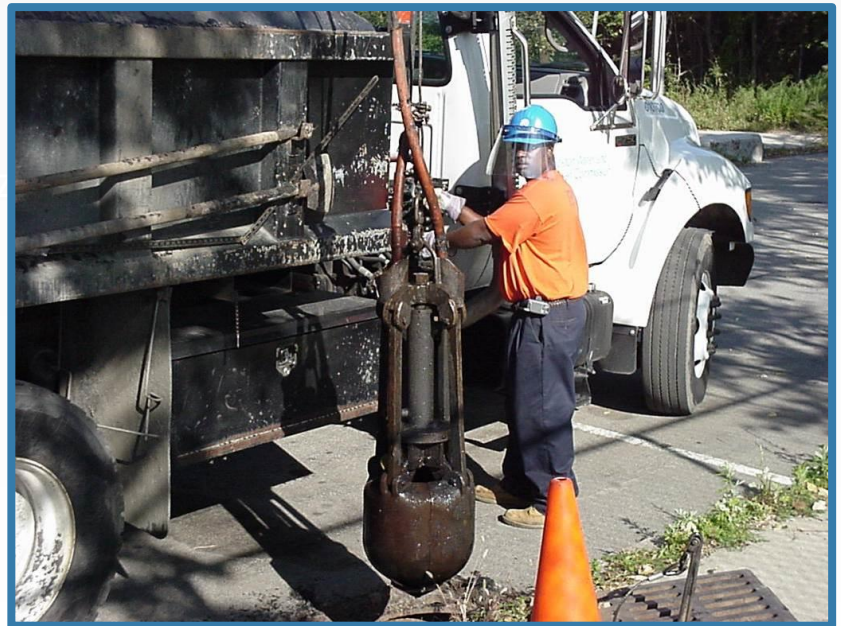
BWSC Daily Operations

- Completing Work

BWSC Inspection Crew

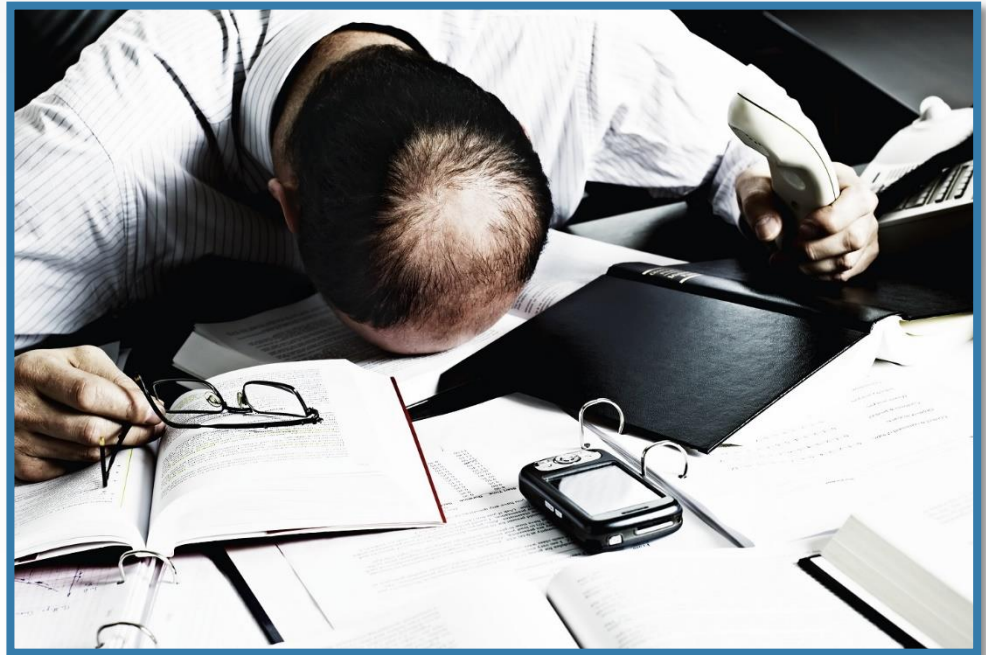


Contractor Crew



Operations Before Cloud Based Technology

- Paper Inspection Forms were completed in the field by the employees.
- Paper Cleaning Forms were completed by the contractors.
- Work was assigned by handing paper maps to the crews to complete



Operations Before Cloud Based Technology



- End of day Paper Forms are turned into the office
- Paper Forms are reviewed one at a time for missing forms or incorrect data
- Data Manually entered into Database
- Job entailed five or more clerks to complete the work per shift

Operations Before Cloud Based Technology

- Countless hours Spent on processing Paper Work
- Dealing with illegible, damaged, or lost paper work
- Wasting Time and Money without a Cloud Based Technology



Operations Before Cloud Based Technology

Workflow Compliance Report

Utility: Water | Asset Class: BWSC BASINS | Workflow: Cleaning

Start Date: 12/15/2015 | End Date: 12/15/2015

Primary Sort: Date | Secondary Sort: None

Refresh | Export

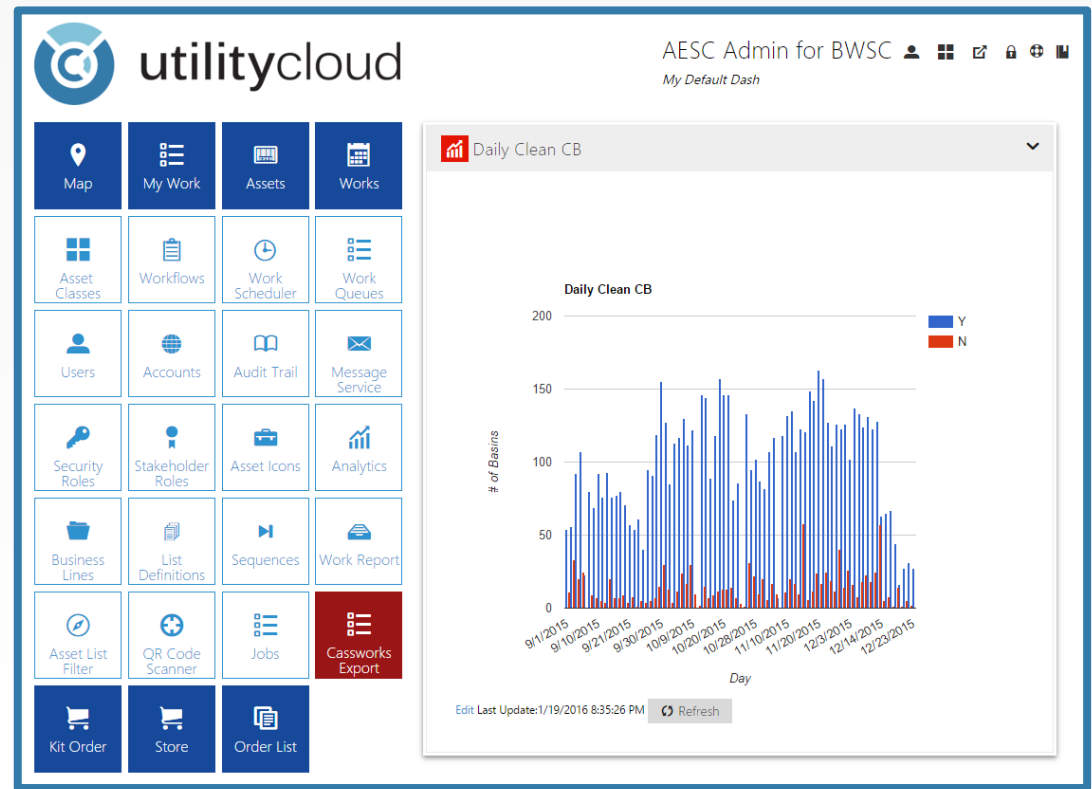
Date	User	Asset ID	Asset Description	ADDRESS	SCHEDULED TO BE CL
12/15/2015 1:43:47 PM	Paul Smith	25677	15HCB15	3368 Washington st	
12/15/2015 1:34:45 PM	Paul Smith	25375	15HCB200	3390 Washington st	
12/15/2015 1:26:51 PM	Paul Smith	34275	15HCB213	3275 Washington st	
12/15/2015 1:11:40 PM	Paul Smith	6479	15HCB43	Forest hills st	
12/15/2015 12:59:32 PM	Paul Smith	13248	15HCB34	38 Lourdes av	
12/15/2015 12:51:39 PM	Jimmy Sinatra	28682	9DCB57		
12/15/2015 12:50:30 PM	Paul Smith	126458	15HCB227	39 Lourdes av	
12/15/2015 12:45:57 PM	Jimmy Sinatra	11256	9DCB64		
12/15/2015 12:41:09 PM	Paul Smith	13247	15HCB31	37 Lourdes av	
12/15/2015 12:32:06 PM	Paul Smith	33555	15HCB207	Opposite 19 Lourdes av	
12/15/2015 12:29:57 PM	Derek Taylor	27512	17GCB103	Cranston st	

- Time for a change to streamlining data
- Mobile Cloud Based Technology
- Started using AESC's Utility Cloud in beginning of 2014

Operations Using Cloud Based Technology

Leveraging Cloud Based Technology

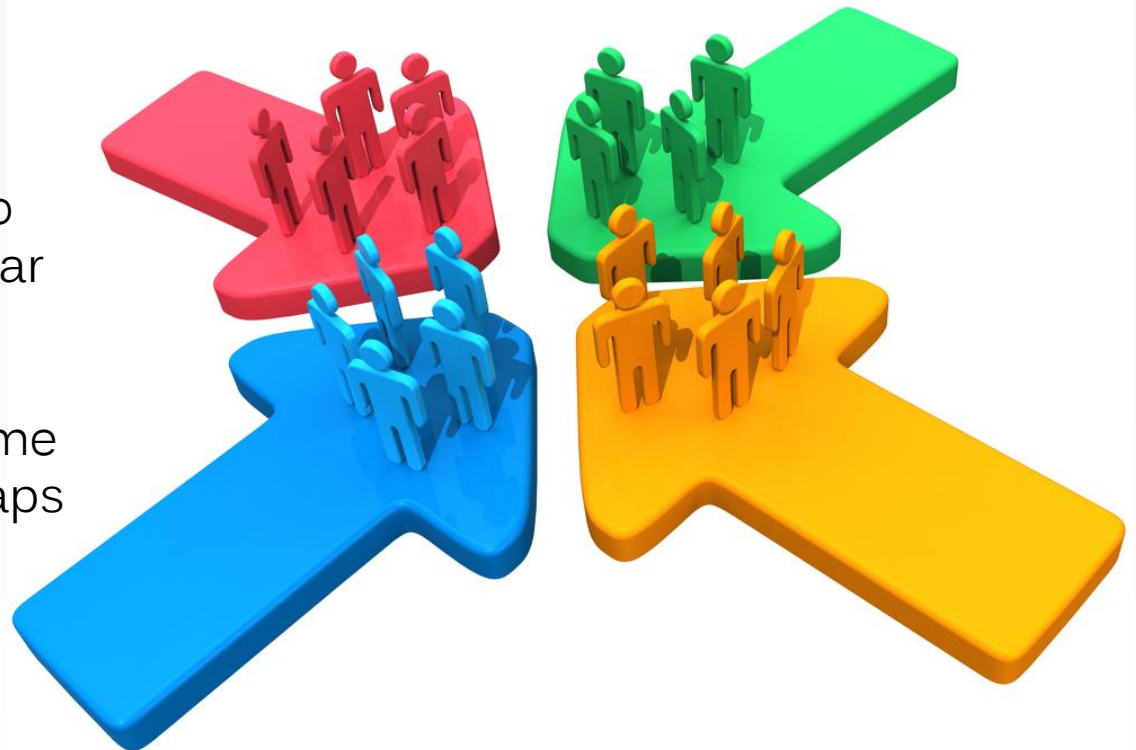
- Improving process
- Streamline Operations
- Save time and money



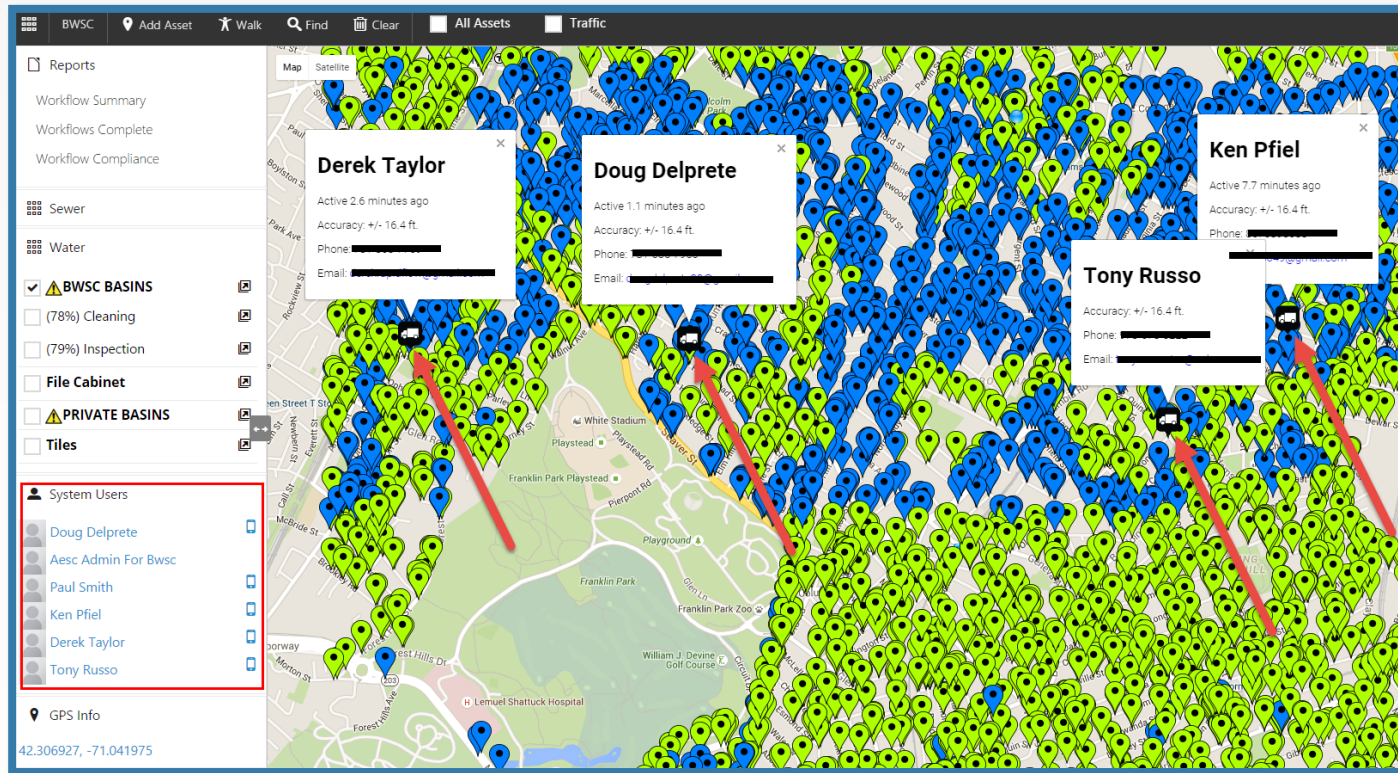
Operations Using Cloud Based Technology

Goal Number 1

- Bring everyone onto one platform for clear communication
- Eliminate wasted time collecting paper maps to perform work.



Operations Using Cloud Based Technology



- Become efficient by knowing where the crews are at all time.
- Users can be found on the map with their truck icons.

Operations Using Cloud Based Technology

Goal Number 2

Visualize

- Catch Basin Attributes in the field
- Work History of the Catch Basins
- Images and Videos of Catch Basins

Asset Details

10DCB26 (15513)

View Map Edit Work Request

Overview Work History Attachments Notes Asset Relationships Asset History

10DCB26 (15513)

Account: Water
Class: BWSC BASINS
Installed: 4/1/2011

Created Date: 12/23/2014
Created By: AESC Admin for BWSC

Attributes

OBJECTID:	15513
ANCILLARYR:	0
ENABLED:	1
FEATURE_ID:	1004910016
OWNER_CODE:	BWSC
PLACEMENT_:	MIGRATED
PLACEMENT1:	4/27/2007 12:00:00 AM
UPDATE_ID:	BlundoNR
UPDATE_DAT:	4/1/2011 12:00:00 AM
SYMBOL_ROT:	239.008
FACILITY_I:	10DCB26
BASIN_TYPE:	4
TRACE_CLAS:	0
SEWER_SYST:	2

Map Satellite

Highland

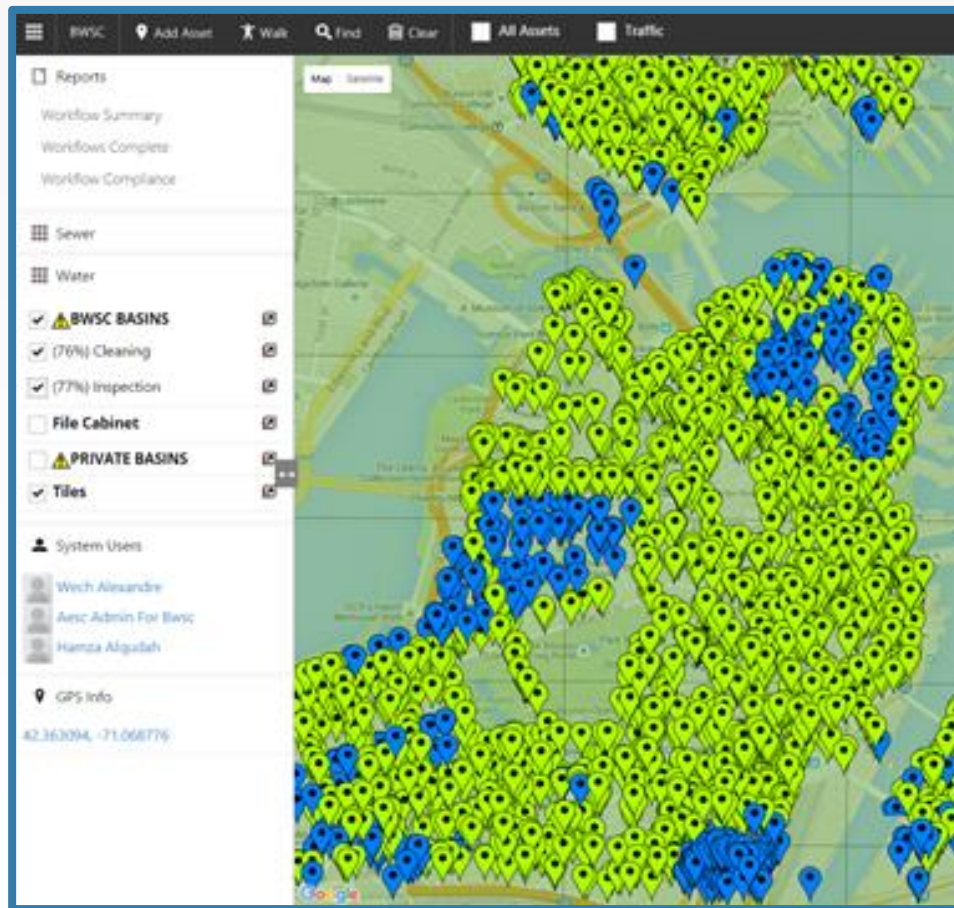
Lat: 42.2832892449416 Lon: -71.15578335362

Workflows

Cleaning

Inspection

Operations Using Cloud Based Technology



Goal Number 2

Know your Assets

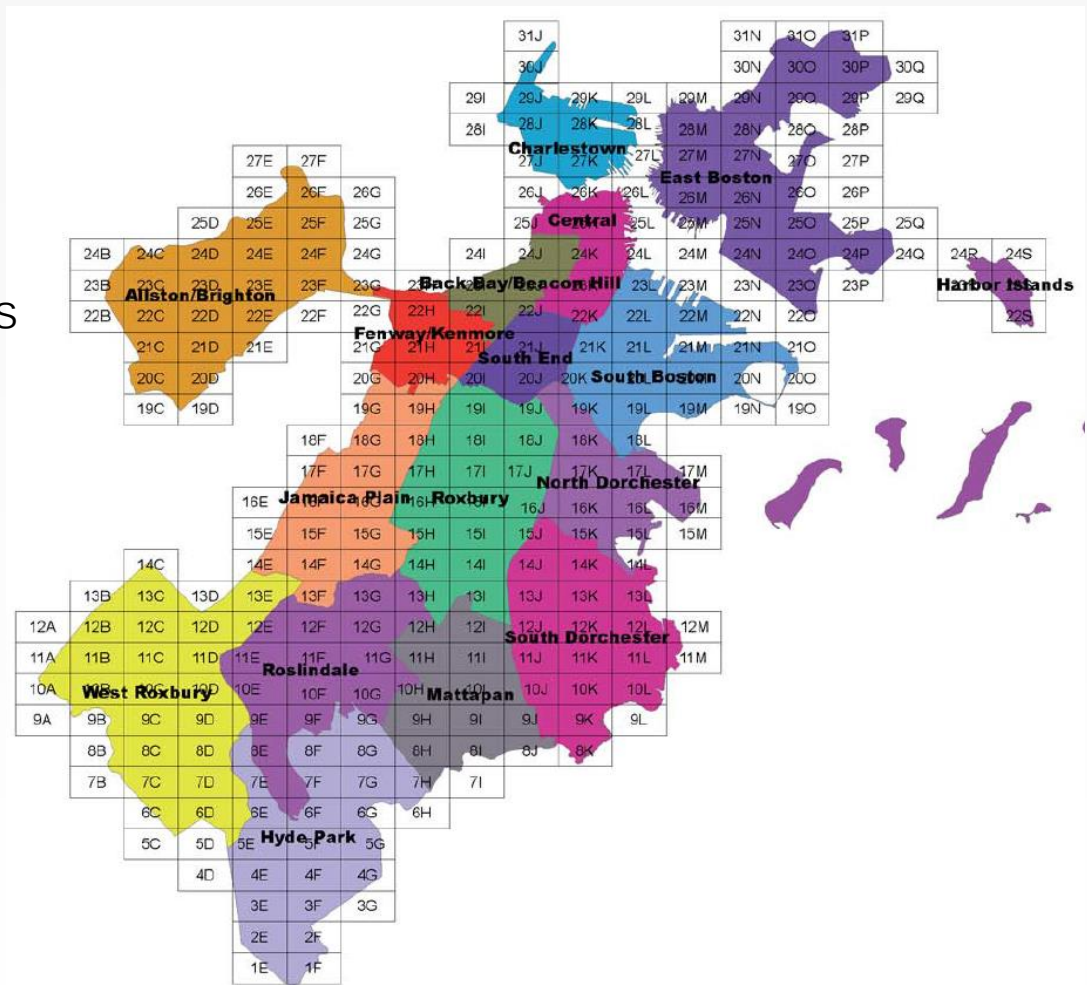
- Mapping and Visualizing Catch Basins.
- Knowing where BWSC Catch Basins in the field.
- Knowing where Private Catch Basins are in the field to avoid.

Operations Using Cloud Based Technology

Goal Number 2

Divide and Conquer

- Divides city into sections to delegate work.
- 277 Sections in Boston
- Prioritize Work

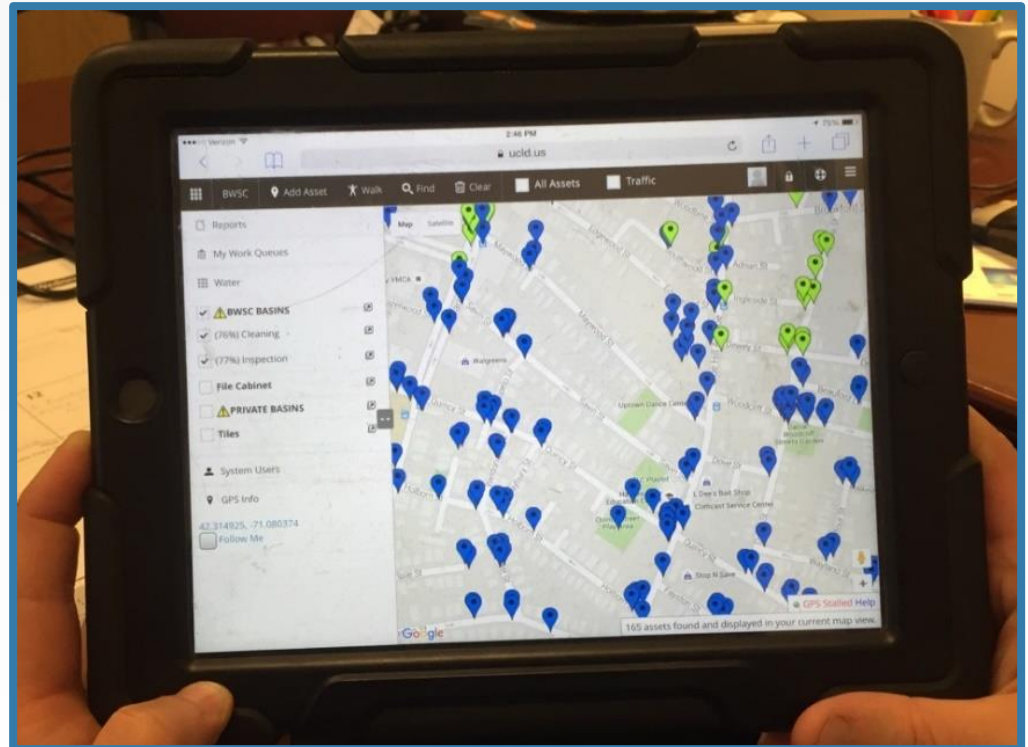


Operations Using Cloud Based Technology

Goal Number 3

Perform Work on Any Device

- With or Without Internet Connection
- On Smartphones
- On Tablets
- On Computers



Operations Using Cloud Based Technology

Goal Number 3

- Access Work History as soon as work is completed
- Save time by not driving to the office to turn in paper forms.

Asset Details

15ICB179 (32791)

View Map Edit Work Request

Overview Work History Attachments Notes Asset Relationships Asset History

Type	Date	Description	Status
WF	12/22/2015 12:13:33 PM	Inspection	View
WF	12/22/2015 11:13:29 AM	Cleaning	View

Operations Using Cloud Based Technology

Goal Number 4

Eliminate Paper Forms

- Save Cost of Paper Forms
- Save Time on the Process
- Provide a Positive impact on the Environment

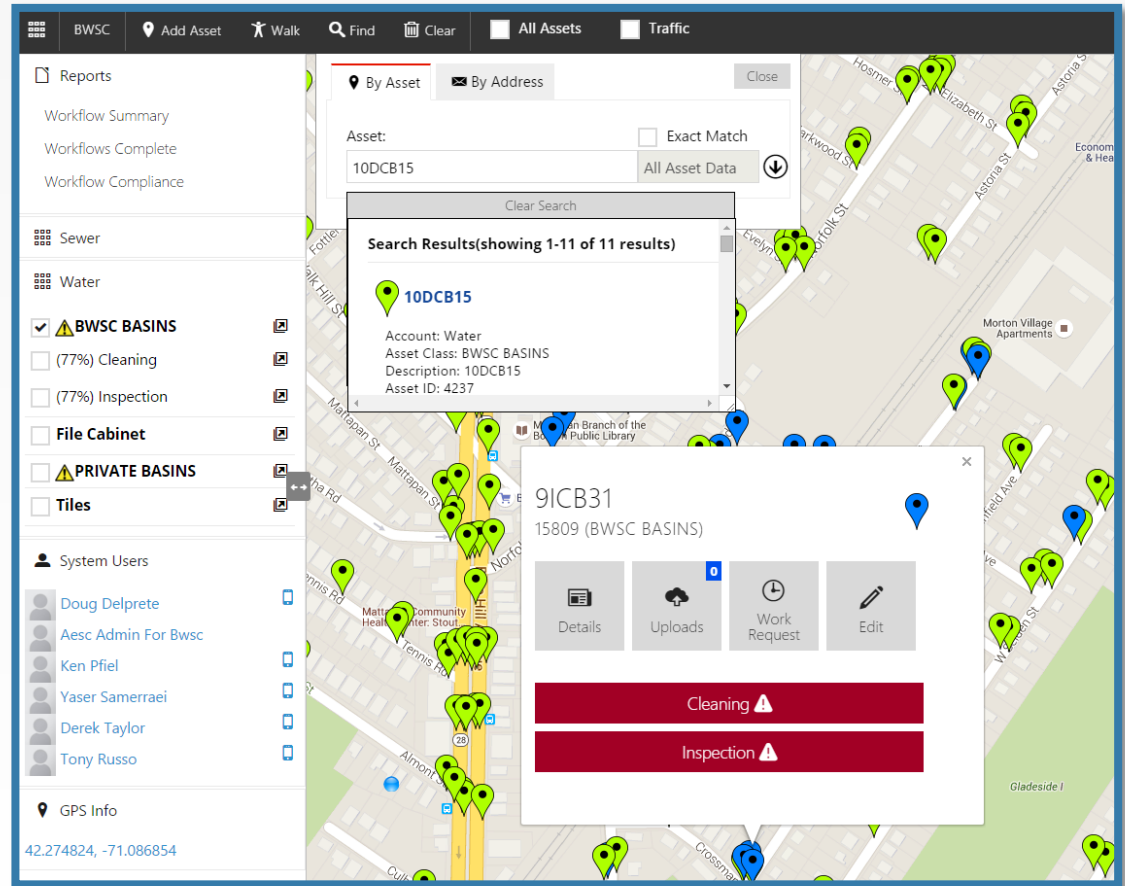


Operations Using Cloud Based Technology

Goal Number 4

Accessing Work in the Field

- Crews can locate themselves using the GPS in their tablets.
- Management is able to set up a proximity verification to ensure work is completed on the correct catch basin.



Operations Using Cloud Based Technology

Cleaning [EDIT]

Work completed on 08/26/2015 at 10:47 am by Paul Smith (Smitherov31@gmail.com)

Admin Timestamp:
08/26/2015 10:47 AM

Workflow Fields

ADDRESS:
Anita ter

CB INACCESSIBLE:
▼

CATCH BASIN TYPE:
T5 ▼

NOT TO GRADE:
Answer No for No Problem Found
N ▼

GRATE DAMAGED:
N ▼

COVER DAMAGED:
N ▼

CATCH BASIN CURB OPENING:
NONE ▼

DEPTH TO OUTLET:
INCHES
75

Asset Attributes Edit ▼

Title (Description)	Value
OBJECTID	95
ANCILLARYR	0
ENABLED	1
FEATURE_ID	1908910076
OWNER_CODE	BWSC
PLACEMENT_	MIGRATED
PLACEMENT1	4/27/2007 12:00:00 AM
UPDATE_ID	BlundoNR
UPDATE_DAT	3/31/2011 12:00:00 AM
SYNCH_FLAG	
SYMBOL_ROT	270
FACILITY_I	19HCB169
BASIN_TYPE	1
TRACE_CLAS	0
SEWER_SYST	2
SCUPPER_AN	N
GRATE_TYPE	D
COVER_TYPE	N/A
DONT_DUMP_	NONE
CURB_OPEN_	NONE
MATERIAL_C	BRICK
HOOD_TRAP_	STORM DRAIN HOOD
BASIN_DIAM	4
DEPTH_TO_O	84
DEPTH_TO_B	137
OUTLET1_DI	12
OUTLET2_DI	-999
ADDRESS_NU	294
STREET_FEA	3245
CROSS_STRE	254

Workflow History ▼

◀ ▶

Goal Number 4

Electronic Forms

- Custom Forms for Catch Basin Inspections
- Custom Forms for Catch Basin Cleaning
- Trigger Completion of Work Forms Automatically

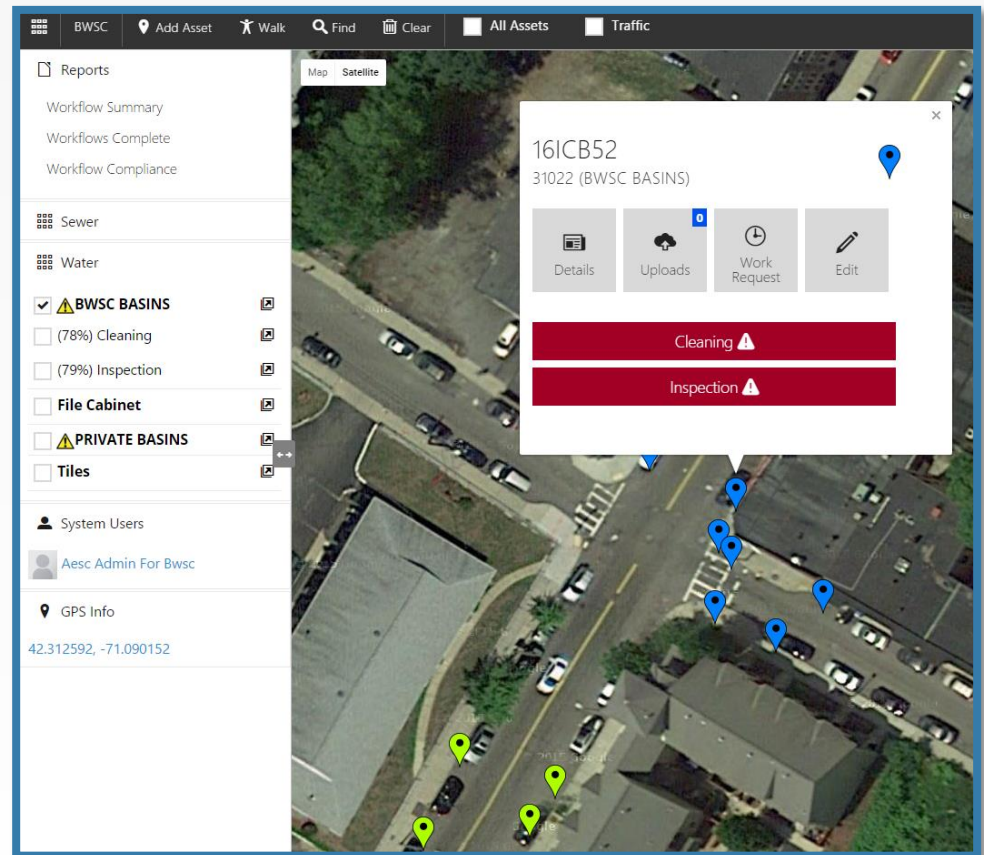
Operations Using Cloud Based Technology

Goal Number 4

Catch Basin Icons

Symbolically

- Show what inspections are completed on which Catch Basin
- Show which Catch Basins are completed



Operations Using Cloud Based Technology

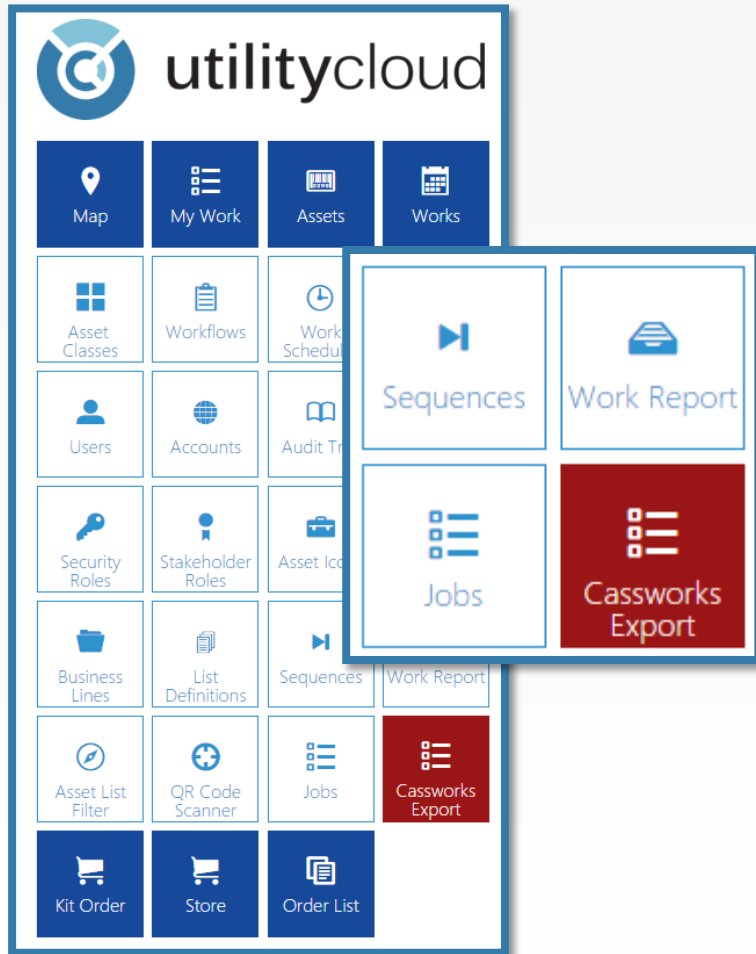
Goal Number 5

Streamlining Reports

- Export Data from the Cloud in Real Time to Excel
- Quick Review of Work Forms in a Single Spreadsheet
- Data Review Efficiency

16	uc_WorkflowDate	uc_WorkflowBy	uc_DEPTHTOOUTLE	uc_DEPTHTOSEDIMENTBEFORE	uc_DEPTHTOBOTTO	uc_DIDYOUCLE	uc_DEPTHTOSEDIMEN
17			T	CLEANING	M	ANCB	TAFTERCLEANING
17	9/1/2015 5:59	Derek Taylor	52	77	101	Y	101
18	9/1/2015 6:21	Derek Taylor	54	83	108	Y	108
19	9/1/2015 6:31	Mike Desmond		0		N	0
20	9/1/2015 6:38	Derek Taylor	54	83	109	Y	109
21	9/1/2015 6:55	Derek Taylor	45	23	45	Y	45
22	9/1/2015 6:56	Derek Taylor	53	83	105	Y	105
23	9/1/2015 7:09	Mike Desmond	31	80	101	Y	101
24	9/1/2015 7:12	Derek Taylor	54	83	108	Y	108
25	9/1/2015 7:39	Derek Taylor	45	79	104	Y	104
26	9/1/2015 7:53	Derek Taylor	45	78	104	Y	104
27	9/1/2015 7:55	Mike Desmond	37	83	105	Y	105
28	9/1/2015 7:56	Derek Taylor	49	83	108	Y	108
29	9/1/2015 8:05	Derek Taylor	47	83	107	Y	107
30	9/1/2015 8:07	Mike Desmond	39	76	100	Y	100
31	9/1/2015 8:18	Derek Taylor	55	81	106	Y	106
32	9/1/2015 8:29	Mike Desmond	34	79	104	Y	104
33	9/1/2015 8:32	Derek Taylor	54	81	106	Y	106
34	9/1/2015 8:33	Derek Taylor	47	79	107	Y	107
35	9/1/2015 8:49	Mike Desmond	23	78	102	Y	102
36	9/1/2015 8:52	Mike Desmond	32	82	64	Y	64
37	9/1/2015 8:55	Mike Desmond	34	71	94	Y	94
38	9/1/2015 8:56	Derek Taylor	57	79	105	Y	105
39	9/1/2015 8:57	Mike Desmond	35	65	88	Y	88
40	9/1/2015 8:59	Mike Desmond	35	71	96	Y	96
41	9/1/2015 9:11	Derek Taylor	54	83	108	Y	108
42	9/1/2015 9:18	Mike Desmond	38	84	105	Y	105
43	9/1/2015 9:26	Mike Desmond	28	69	93	Y	93
44	9/1/2015 9:28	Mike Desmond	38	95	106	Y	106
45	9/1/2015 9:31	Derek Taylor	54	83	107	Y	107
46	9/1/2015 9:31	Mike Desmond	35	79	106	Y	106
47	9/1/2015 9:33	Mike Desmond	36	82	101	Y	101

Operations Using Cloud Based Technology



Goal Number 5

Export Tool

- Customized tool to batch upload into BWSC's Work Order Management System
- One click vs one entry at a time saves BWSC time

Benefits From Using Technology

BENEFITS



Benefits From Using Technology

1. Access to data on one platform from any device to eliminate the need for paper maps, and records.
2. Visualize your data while in the field to get real time updates on them and your crews.
3. Ability to provide real time record of completed work in the field.
4. Efficiently store historic records to be pulled into a single database to complete reports
5. Eliminate paper work in the office and use the time more efficiently.

Questions and Answers

- Thank You for your time and interest.

CONTACT INFORMATION

Matt Bianchi

Implementation and GIS
Specialist

Utility Cloud (AESC)

utilitycloud.us

matt.bianchi@utilitycloud.us

T: (508)-395-6954