

# GIS Asset Management - Planning

Sara Sankowich

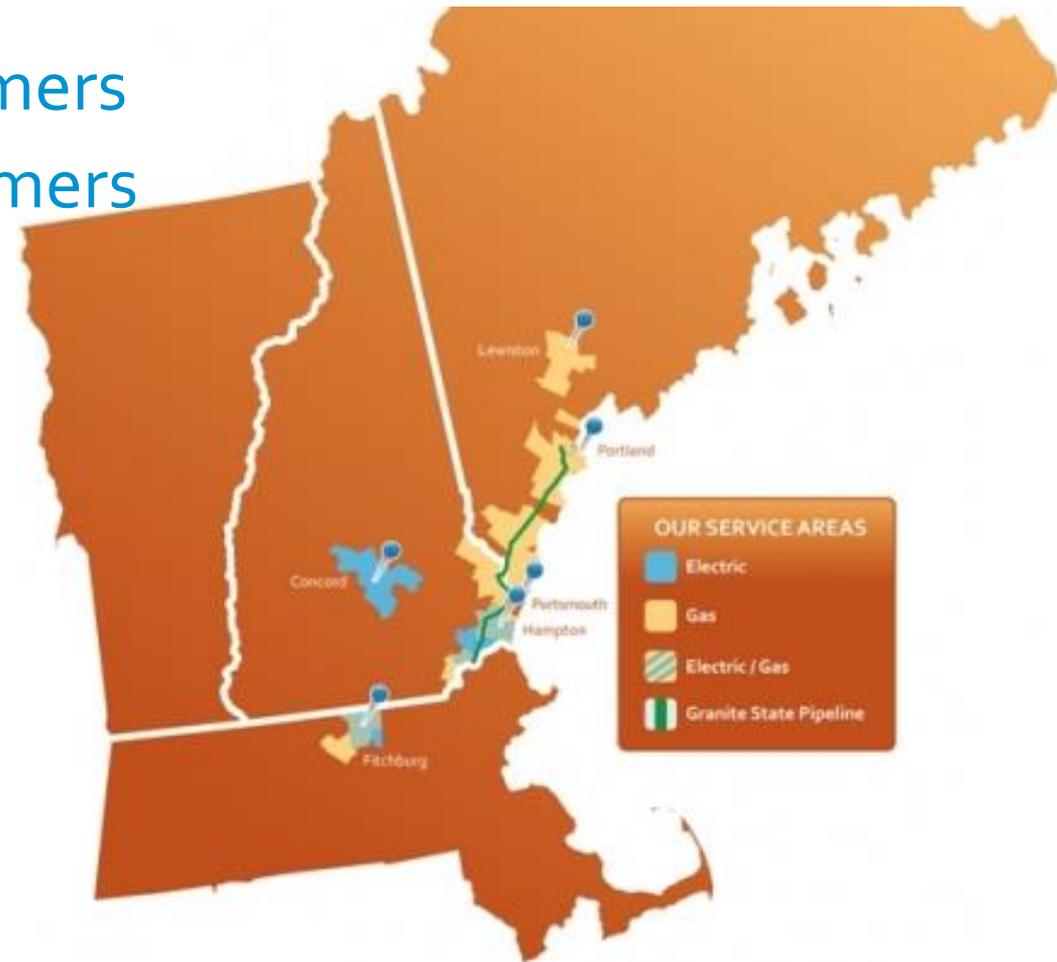
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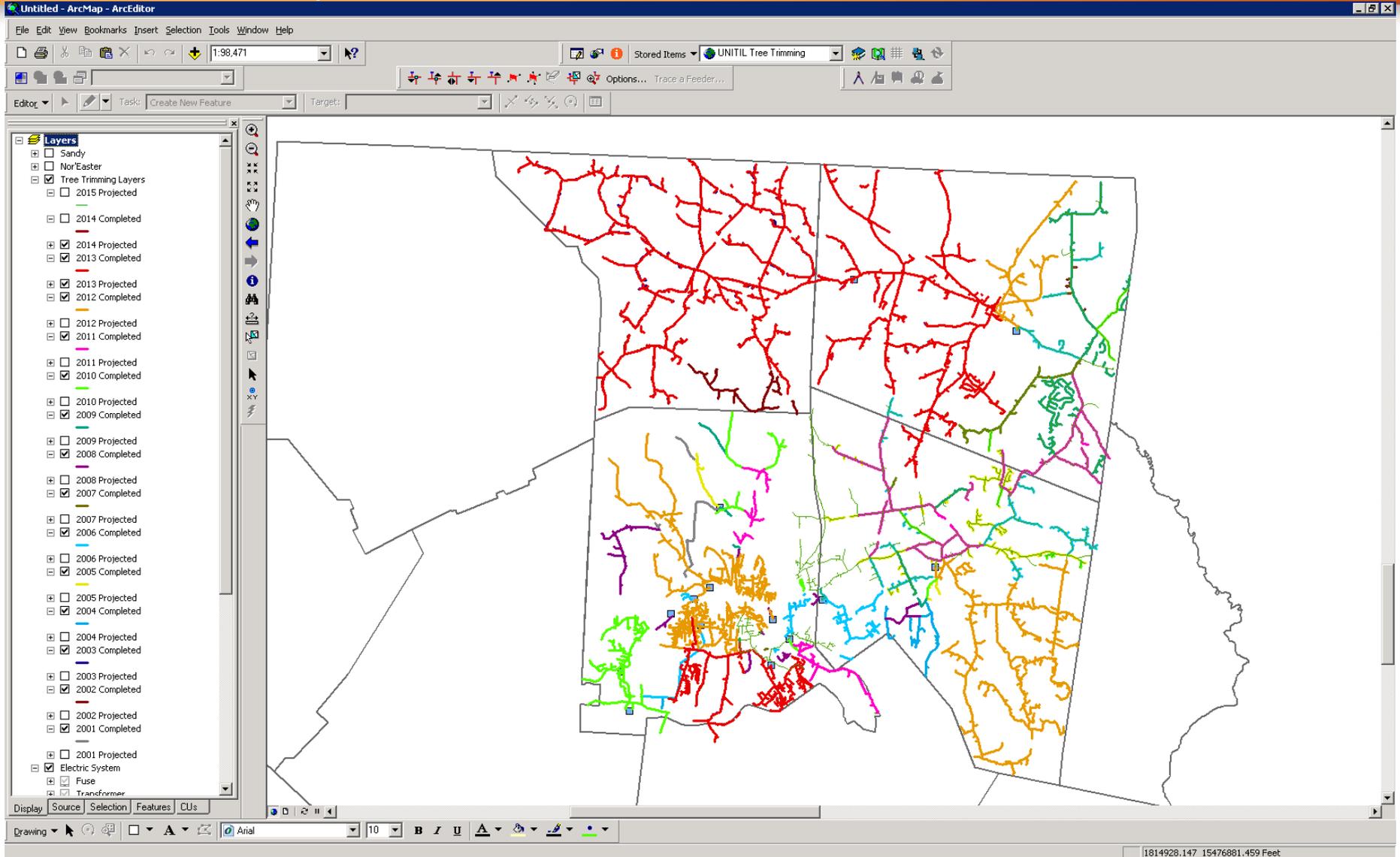
# Unitil Overview

- System Overhead Distribution
  - NH ~ 75,000 customers
  - MA ~ 30,000 customers
  - NH ~ 1,180 miles
  - MA ~ 420 miles



# Our Company's GIS

ESRI - ArcMap



# Our VM Software

## Work Studio – from GeoDigital

Unitil TEST - WorkStudio 8.3.119.0

WorkStudio Config Admin

Synch WorkPlanner Manage Projects Program Editor Veg Assessment New Job InfoCenter Complete Work in Excel Search for Address Save Map Actions Edit Job Header Open Selected Job View Documents Workflow

Synch Views WorkPlanner New Other Apps Search Save Map Selected Job

Print to PDF Export to Excel Collapse All

■ = You have ownership ■ = Server has ownership ■ = Someone else has owner

Drag a column header here to group by that column

Source	Work Order	Ext	Work Type	Assigned To	Forester	GF
Local	RW-100714-1808	@	Reactive Work	Sara		
Local	RW-082114-1806	@	Reactive Work	Sara		
Local	AP-041014-1733	@	Aerial Patrol	Sara		
Local	CM-041714-1735	@	Cycle Maintenance	Default\chris	Chris	

Click here to define a filter

By Job Work Order

Search Clear

4 records found

User: Default\sara Zoom In

# Our VM Software

GeoDigital



- VegWorks (companion mobile tool)
  - Runs in WorkStudio on the tablets

# What we use it for:

## Planning

- Annual Cycle Planning
- Work Planning for Specific Projects
  - Storm Resiliency Program
  - Reactionary Work – reliability based

*(we also can audit work on the tablet)*

- Customer refusal database / outage investigation database
- Next Steps – Annual Planning / Work planning our Sub-Transmission work

# Who uses it?

And How?



- I have WorkStudio (planning) on my laptop



- Both my foresters have a tablet with WorkStudio (mobile software)



- Paper work packets are handed to the crews.

# What I was looking for in a system:

## Planning

- Stand Alone Database (not just a layer in GIS)
- Does annual cycle pruning planning and tracking (and other work activity tracking)
  - Customizable cycle lengths – reminds you of work due
  - Uses our reliability metrics “tree model” to help choose work
  - Also can group by geography or other attributes

# Example of Annual Planning:

## 2015 Cycle Prune Work Plan – Capital Region

Manage Projects

WorkPlanner Config

Synch Change Start Date Reschedule Start Date

Synch Manage Selected Projects

WorkPlanner Views

- My New Projects
- My Projects Ready For Assignment
- Annual Plans
  - This Year
  - Next Year
  - All Work
- My Annual Plans

WorkPlanner Views Data

Export

Grid Chart

Work Program Cycle Start Date

WO	% Complete	Status	Region	Linename	Start Year	Start Date	Target Year	Target Date	Cust Serv	OH Mileage	# of Events
Work Program : Cycle Prune - Capital											
Cycle Start Date : 1/1/2014 (											
PR-040714-1660	0	In Progress	Capital Area Nr C22W1		2015	1/1/2015	2015	12/31/2015	499	4.42	1
PR-040714-1662		New	Capital Area Nr C7X1		2015	1/1/2015	2015	12/31/2015	160	2.63	1
PR-040714-1663		New	Capital Area Nr C7W3		2015	1/1/2015	2015	12/31/2015	876	23.14	33
PR-040714-1674		New	Capital Area Nr C15W1		2015	1/1/2015	2015	12/31/2015	966	16.72	35
PR-040714-1675		New	Capital Area Nr C14H2		2015	1/1/2015	2015	12/31/2015	668	3.85	0
PR-040714-1676		New	Capital Area Nr C14H1		2015	1/1/2015	2015	12/31/2015	93	1.02	1
PR-040714-1677		New	Capital Area Nr C13K4		2015	1/1/2015	2015	12/31/2015	1	1.68	1
PR-040714-1678		New	Capital Area Nr C13W2		2015	1/1/2015	2015	12/31/2015	470	7	132
PR-040714-1664		New	Capital Area Nr C6X3		2015	1/1/2015	2015	12/31/2015	1088	15.13	18
PR-040714-1665		New	Capital Area Nr C3H2		2015	1/1/2015	2015	12/31/2015	492	2.27	2
PR-040714-1666		New	Capital Area Nr C3H1		2015	1/1/2015	2015	12/31/2015	573	2.68	2
PR-040714-1667		New	Capital Area Nr C37X1		2015	1/1/2015	2015	12/31/2015	176	6.34	19
PR-040714-1668		New	Capital Area Nr C374X1		2015	1/1/2015	2015	12/31/2015	16	0.54	1
PR-040714-1669		New	Capital Area Nr C34X2		2015	1/1/2015	2015	12/31/2015	8	0.42	1
PR-040714-1670		New	Capital Area Nr C21W1P		2015	1/1/2015	2015	12/31/2015	408	1.79	1
PR-040714-1671		New	Capital Area Nr C1H3		2015	1/1/2015	2015	12/31/2015	601	2.31	1
PR-040714-1672		New	Capital Area Nr C1H1		2015	1/1/2015	2015	12/31/2015	311	0.75	1
PR-040714-1673		New	Capital Area Nr C15W2		2015	1/1/2015	2015	12/31/2015	357	5.85	7

Map

Manage Projects

Scenarios

Add Scenario to... Export Collapse All

Grid Chart

Region	Project	Start Date	Miles	Est Cost	NERC	Voltage
<No data to display>						

From Date >=

To Date <=

Search Clear

22 records found

User: Default\sara

Select

# Example of a Work Planned Project:

2014 MA Storm Resiliency Program (SRP)

The screenshot displays a software interface for field work planning. At the top, a title bar reads "Edit: RW-100714-1808 (In Progress)". Below it is a menu bar with "Assessment", "Other", and "Config". A toolbar contains icons for "To Crew", "Assessment Complete", "Header Info", "Add Unit To Selected Span", "Map Data", "Docs", "Save Map", "Toggle GPS Trail", "Search for Address", and "Delete".

On the left, a "Work Units" panel lists various tasks with red circular indicators showing counts: No Work Needed, Tree Refusal (10), Prune Refusal (1), Mowing, Herbicide, Pruning (5), Climbing, Flat Cutting (5), Side Trim, Cut Vines (1), Crane Removal, Overhang Removal, Tree Removal (475), Stump Grinding (4), Wood Removal (60), Tree Planting (28), Yard Repair, and Notification.

The central map shows a street grid including GALE STREET, HANCOCK STREET, SMITH STREET, and CLYDE STREET. Utility lines are overlaid on the map, with spans labeled 560 and 940. Several tree removal points are marked with green tree icons and labeled "Tree Removal - P1" and "Tree Removal - P2".

On the right, a details panel for span 560 shows: Span, Altitude 0, Span Width 49.21, and Span Length 197.28. Below this is a list of "Tree Removal" items with edit and delete icons.

A yellow callout box in the bottom right corner contains the text: "Shot of field work planning screen".

# Example of a Work Planned Project:

2014 MA Storm Resiliency Program (SRP)

The screenshot displays a GIS application window titled "Example of a Work Planned Project: 2014 MA Storm Resiliency Program (SRP)". The interface includes a toolbar with icons for "To Crew", "Assessment Complete", "Header Info", "Add Unit To Selected Span", "Map Data", "Docs", "Save Map", "Toggle GPS Trail", "Search for Address", and "Delete".

On the left, a "Work Units" panel lists various tasks with associated counts:

No Work Needed	Tree Refusal (10)
Prune Refusal (1)	Mowing
Herbicide	Pruning (5)
Climbing	Flat Cutting (5)
Side Trim	Cut Vines (1)
Crane Removal	Overhang Removal
Tree Removal (475)	Stump Grinding (4)
Wood Removal (60)	Tree Planting (28)
Yard Repair	Notification

The central map shows a residential street grid with labels for "33 HANCOCK ST", "43 CLYDE ST", "41 CLYDE ST", "15 CLYDE ST", "0 GALE ST", "33 CLYDE ST", "0 SMITH ST", "560", "940", "251 SUMMER ST", and "0 HORSESHOE PARK DR". Several tree removal work units are marked on the map, including "Tree Removal - P1" and "Tree Removal - P2".

On the right, a "Tree Removal" data entry panel contains the following information:

- # of Trees: 1
- Man-Hours: 0.00
- Priority: Priority 1
- Species: Red and Black Oak
- DBH: 13-16
- Unit Tree:
- Wood Removal:
- Address: 251 SUMMER ST
- City: FITCHBURG
- Notes: (15464457.024265, 1789170.82092)

A yellow callout box in the bottom right corner contains the text: "Shot of entering a work unit".

# Example of a Work Planned Project:

2014 MA Storm Resiliency Program (SRP)

The screenshot displays a GIS application interface. On the left, a vertical sidebar contains a 'Work Units' menu with buttons for 'No Work Needed', 'Prune Refusal', 'Herbicide', 'Climbing', 'Side Trim', 'Crane Removal', 'Tree Removal' (with a red '475' badge), 'Wood Removal' (with a red '60' badge), and 'Yard Repair'. The main window is titled 'Edit Unit' and has tabs for 'Unit', 'Approval', 'Refusal', 'Customer', 'Trim', 'Personnel', and 'General Info'. The 'Approval' tab is active, showing a form with the following fields and options:

- Approved:  Approval Date: 4/ 9/2015
- Text: I have been notified by Unitil's representative that the following work will be performed at the noted property location. (Check all that apply)
- Treatment of Stump(s) with EPA Registered Herbicide:  Remove Trees:
- Treatment of Vegetation with EPA Registered Herbicide:  Other (see comments):
- Comment:
- Property Owner:  Clear
- Unitil Agent:  Clear

At the bottom of the dialog box are 'Delete', 'Cancel', and 'OK' buttons. The background map shows a street grid with labels for '15 CLYDE ST', '1 CLYDE ST', '251 SUMMER ST', and 'HORSESHOE PARK DR'. On the right side of the map, there is a 'Tree Removal' panel with the following information:

- # of Trees: 1
- Man-Hours: 0.00
- Priority: Priority 1
- Species: Red and Black Oak
- DBH: 13-16 Unit Tree:
- Wood Removal:
- Address: 251 SUMMER ST
- City: FITCHBURG
- Notes: (15464457.024265, 1789170.82092)

A yellow box in the bottom right corner of the image contains the text: Shot of edit unit capability

# Example of a Work Planned Project:

2014 MA Storm Resiliency Program (SRP)

The screenshot displays a GIS application interface. On the left, a sidebar shows a 'Work Units' menu with buttons for 'No Work Needed', 'Prune Refusal', 'Herbicide', 'Climbing', 'Side Trim', 'Crane Removal', 'Tree Removal' (with a red '475' badge), 'Wood Removal' (with a red '60' badge), and 'Yard Repair'. The main window is titled 'Edit Unit' and has tabs for 'Unit', 'Approval', 'Refusal', 'Customer', 'Trim', 'Personnel', and 'General Info'. The 'Refusal' tab is active, showing 'Refusal:  Refusal Date: 4/ 9/2015' and 'Type: Aesthetic Reasons'. Below this is a 'Reason:' text field and a paragraph: 'The inability to manage vegetation to clearance standards significantly impacts the safety and reliability of the system. A Unitil employee will contact you to achieve proper vegetation clearance along the transmission right of way.' There is also a 'Comment:' text field. At the bottom of the dialog are 'Property Owner' and 'Unitil Agent' fields, each with a 'Clear' button. The map background shows a street layout with green polygons representing trees and orange lines representing utility lines. A sidebar on the right contains a 'Tree Removal' form with fields for '# of Trees' (value 1), 'Man-Hours' (value 0.00), 'Priority' (Priority 1), 'Species' (Red and Black Oak), 'DBH' (13-16), and 'Unit Tree: '. There are also fields for 'Wood Removal:', 'Address' (251 SUMMER ST), 'City' (FITCHBURG), and 'Notes' ((15464457.024265, 1789170.82092)). A yellow box in the bottom right corner contains the text 'Shot of edit unit capability'.

# Example of a Work Planned Project:

2014 MA Storm Resiliency Program (SRP)

The screenshot displays a GIS application interface. A central 'Edit Unit' dialog box is open, allowing for the modification of work unit details. The dialog is divided into sections for 'Property Owner' and 'Tenant', each with fields for 'First Name', 'Last Name', 'Address', 'Phone #', and 'City'. A 'Notification' dropdown menu is set to 'PERSONAL CONTACT'. The background map shows a street grid with labels such as '251 SUMMER ST' and '15 GLENDE ST'. A sidebar on the right features a 'Tree Removal' panel with the following fields: '# of Trees' (value: 1), 'Man-Hours' (value: 0.00), 'Priority' (dropdown: Priority 1), 'Species' (dropdown: Red and Black Oak), 'DBH' (dropdown: 13-16), and 'Unit Tree' (checkbox: checked). A yellow box in the bottom right corner contains the text 'Shot of edit unit capability'.

# Example of a Work Planned Project:

2014 MA Storm Resiliency Program (SRP)

		<b>RW-100714-1808 Assessment Sheet</b>			Page: 1 of 135
Area	<u>FGE</u>	Work Order	<u>RW-100714-1808</u>	Assessor	<u>Sara</u>
Region	<u>FITCHBURG AREA MA</u>				
Circuit Name	<u>F40W40</u>	Date Created	<u>9/16/2014</u>		

Work Planning Sheets - Given out with RFP

Site ID	Unit Description	Priority	Approval	Refusal	Address	City	Species	DBH	Comments
10	Tree Removal	Priority 1	Yes	No	405 BLOSSOM ST	FITCHBURG	Norway Maple	17-20	wants replacement trees (3) any Species wood Stays long pieces (978-790-4594)
	Pruning	Priority 1	Yes	No	415 BLOSSOM ST	FITCHBURG			Marlain Baudette Refused Removal Light trim on Small Norway Full spec on Street tree
	Wood Removal	Priority 1	Yes	No	406 BLOSSOM ST	FITCHBURG			
	Tree Removal	Priority 1	Yes	No	406 BLOSSOM ST	FITCHBURG	Cedar	13-16	Benard Westerling 978-342-1684 take wood
	Tree Removal	Priority 1	Yes	No	406 BLOSSOM ST	FITCHBURG	Norway Maple	13-16	(15472033.424608, 1786489.220004)
20	Tree Removal	Priority 1	Yes	No	405 BLOSSOM ST	FITCHBURG	Norway Maple	25+	(98-790-4594)
	Tree Removal	Priority 1	Yes	No	405 BLOSSOM ST	FITCHBURG	Norway Maple	17-20	(15472037.784887, 1786630.718185)
	Tree Removal	Not Given	Yes	No	0 ROSS ST	FITCHBURG	Norway Maple	13-16	(15472028.268483, 1786664.0256)
	Tree Removal	Priority 1	Yes	No	0 ROSS ST	FITCHBURG	Norway maple	21-24	(15472028.268483, 1786673.542004)
	Tree Removal	Not Given	Yes	No	405 BLOSSOM ST	FITCHBURG	Sugar Maple	17-20	Dead (978-790-4594) Garage is different owner
	Tree Removal	Priority 1	Yes	No	100 ROSS ST	FITCHBURG	Sugar Maple	13-16	
	Tree Removal	Not Given	Yes	No	100 ROSS ST	FITCHBURG	Sugar Maple	8-12	(15471976.526388, 1786924.437075)
	Tree Removal	Not Given	Yes	No	100 ROSS ST	FITCHBURG	Wild Cherry	17-20	(15471984.008475, 1786904.003902)



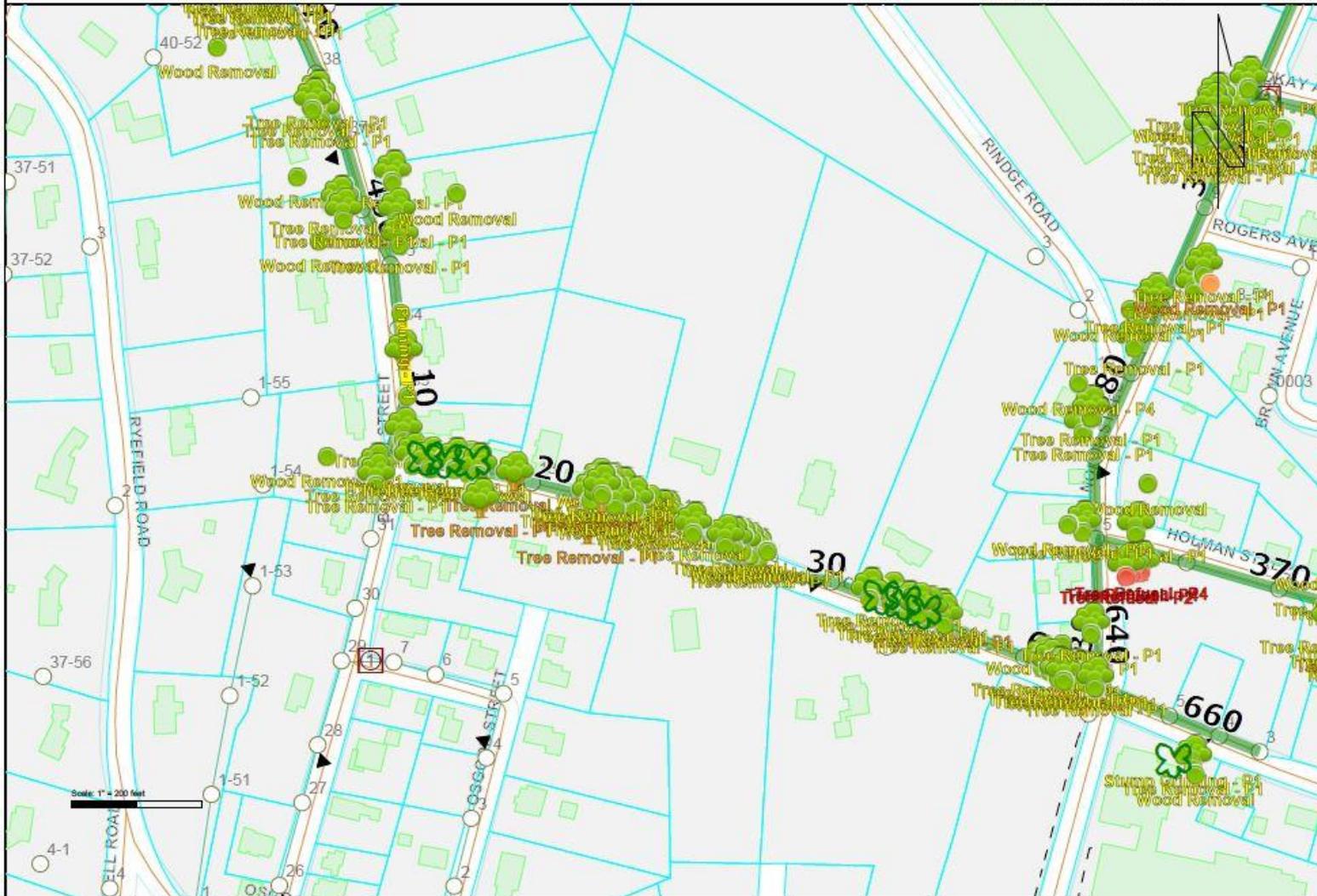
# Example of a Work Planned Project:

2014 MA Storm Resiliency Program (SRP)

RW-100714-1808 Assessment Sheet

Page: 51 of 135

Work Order RW-100714-1808



Work  
Planning  
Sheets -  
Given  
out with  
RFP

Unitil

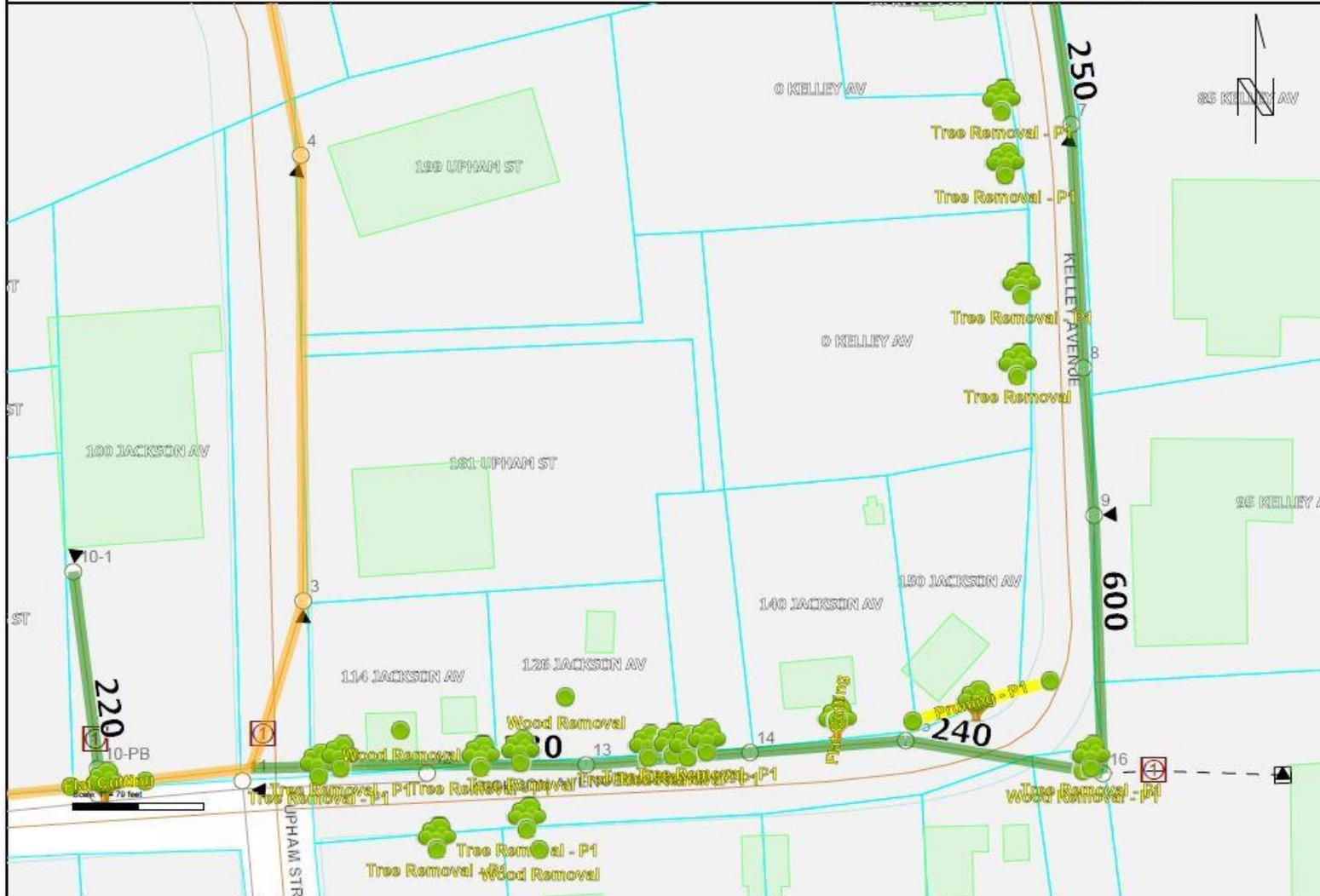
# Example of a Work Planned Project:

2014 MA Storm Resiliency Program (SRP)

RW-100714-1808 Assessment Sheet

Page: 84 of 135

Work Order RW-100714-1808



Work Planning Sheets - Given out with RFP



# Example of a Work Planned Project:

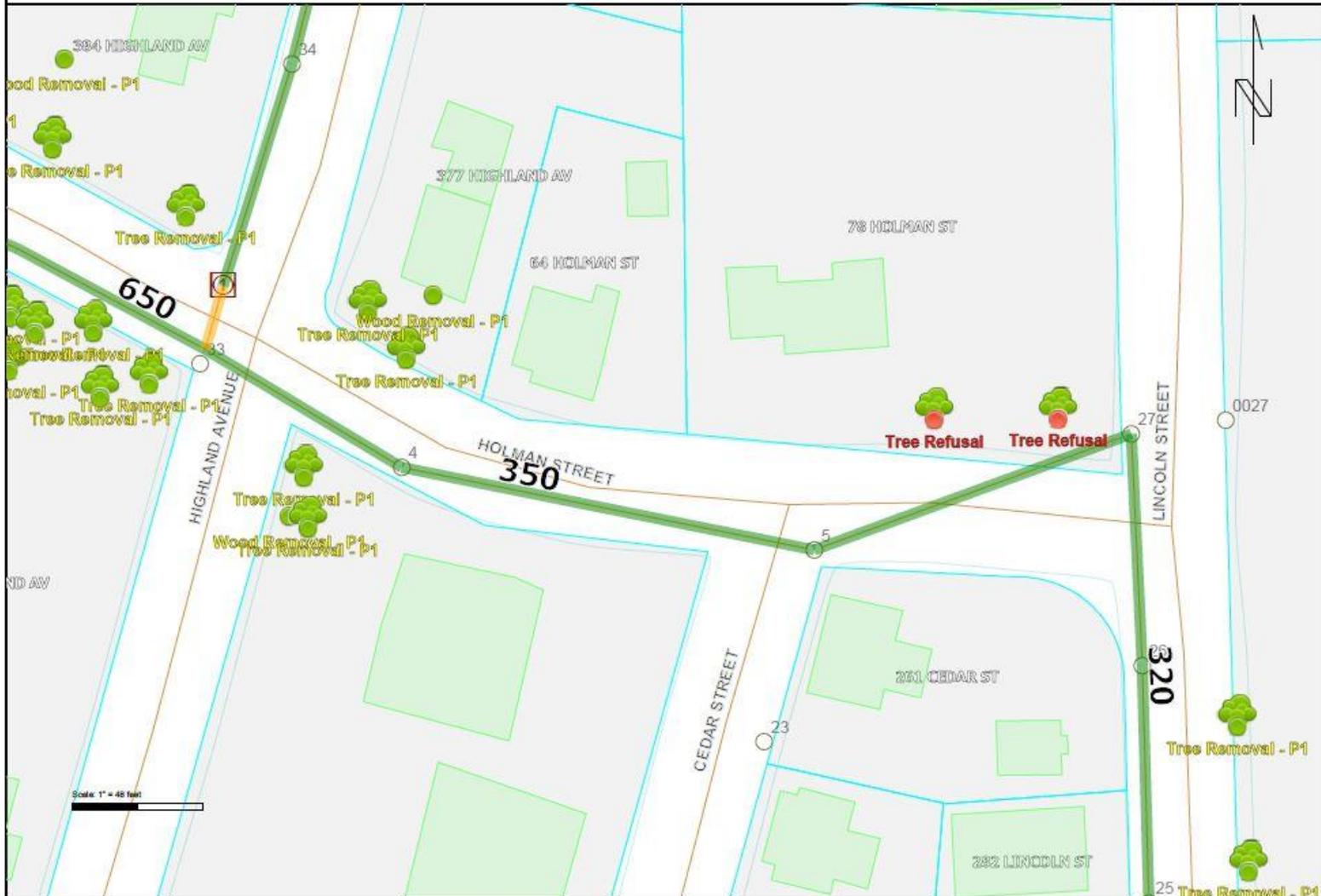
2014 MA Storm Resiliency Program (SRP)

RW-100714-1808 Assessment Sheet

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Work Order RW-100714-1808

Work  
Planning  
Sheets -  
Given  
out with  
RFP



Unitil

# Implementation Hurdles / Lessons Learned:

- The program captures data using overhead line “spans”.
- Our company does not define a span in GIS as pole to pole.
  - We found out that a “span” is often multiple poles. (from a device to another device, or as the engineers designed it)
  - This causes us a problem when spans are very long. (there is a lot of data attached to a span and it’s hard to organize and manage it in list view)
  - Our GIS group had to go in and break up all spans over 500ft long.

# Implementation Hurdles / Lessons Learned:

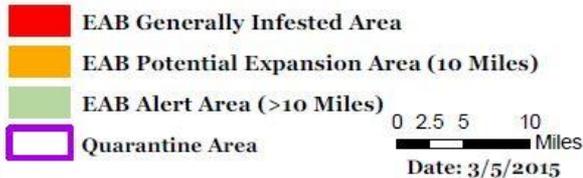
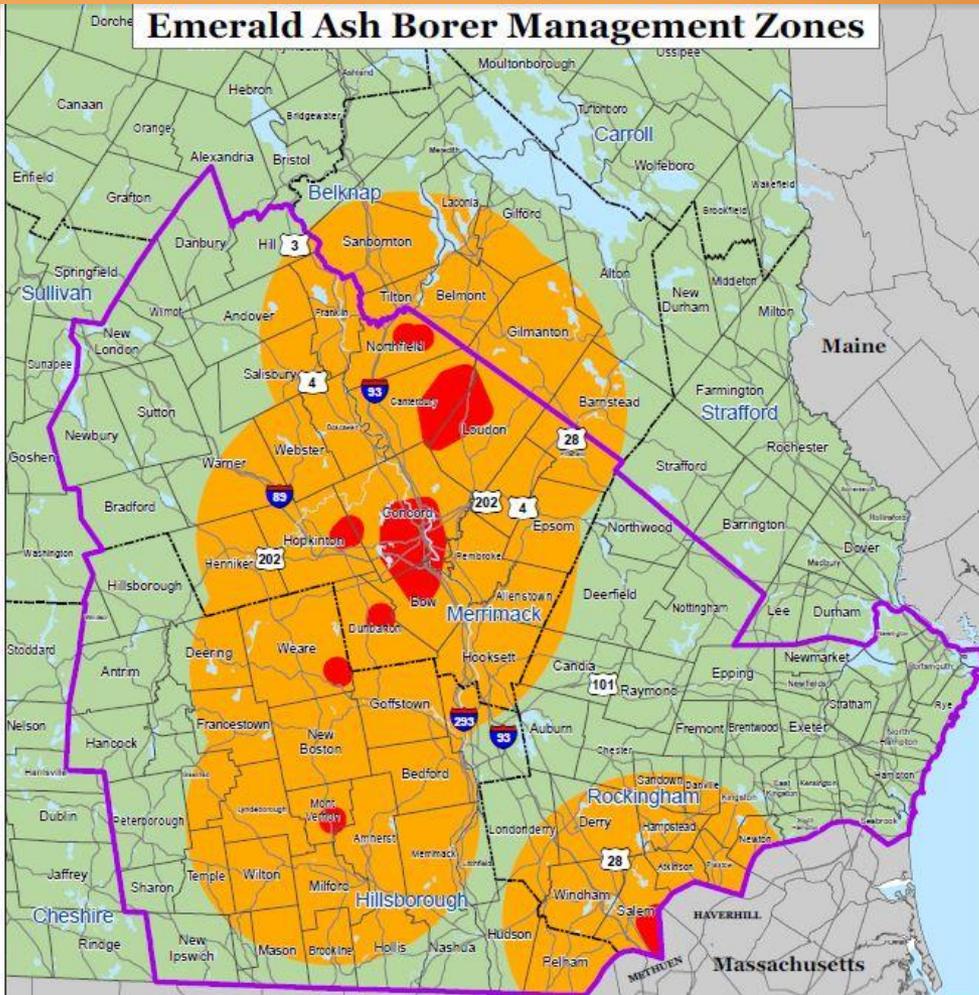
- It took a LONG time to implement
  - Hired April 2011 - immediately began process of software search
  - Not implemented until December of 2013
  - Most issues were on my end – time and manpower!
- Some of the functionality doesn't work if crews don't have tablets
  - We can take photos that are geo-located and attach to a particular work unit.
  - As of now, we can't give them to crew that doesn't have a tablet

# Implementation Hurdles / Lessons Learned:

- I still don't use all the capability that is available and functioning
  - Available reports, dashboard for other company people to view
  - It would be great if I could dedicate more time to learning to use it to it's fullest!



# Things I am looking for in the future:



- Risk prediction
- Storm footprint overlay
- Pest / disease footprint overlay

# Questions?

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