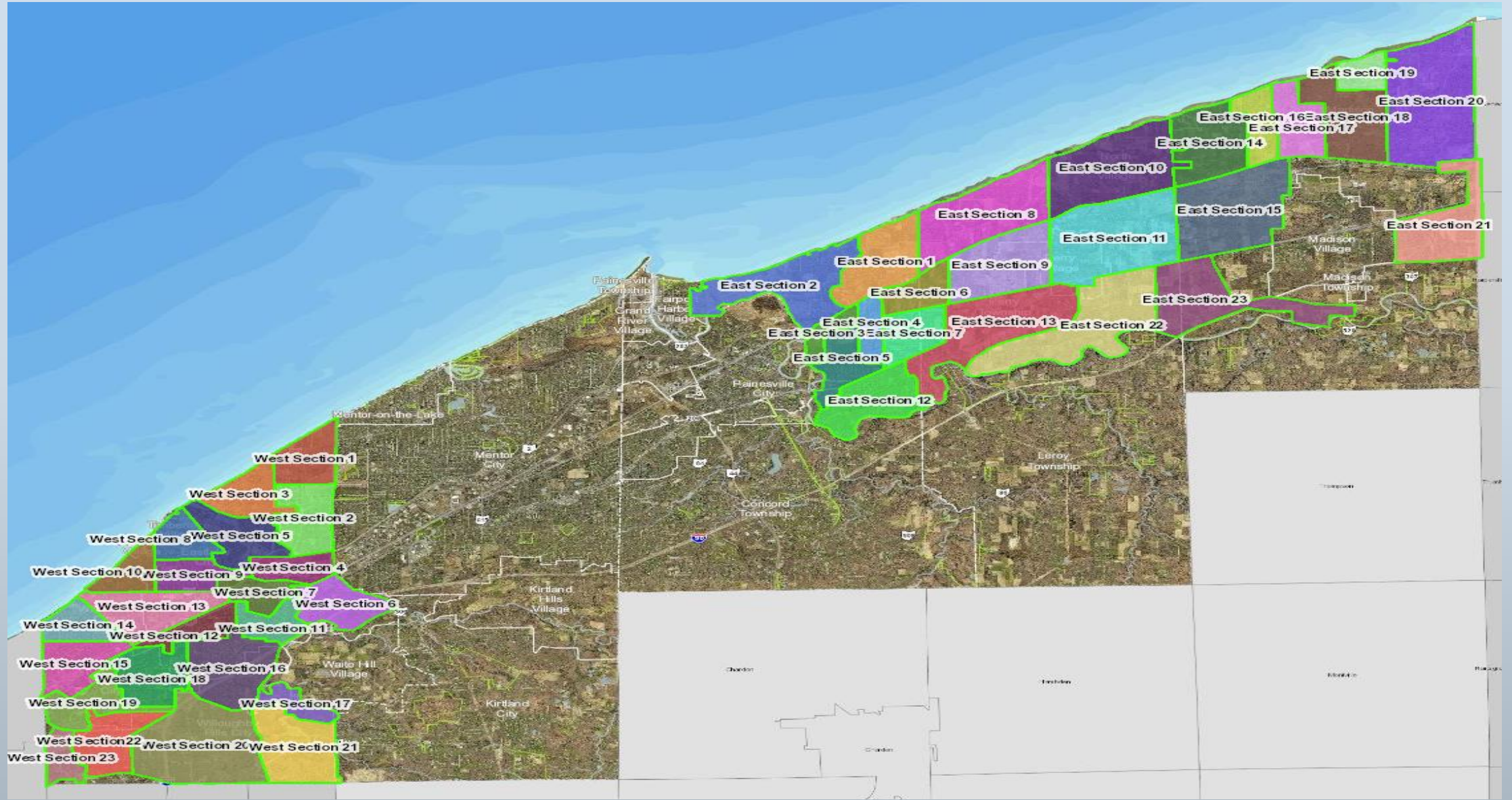


Lake County Department of Utilities Unidirectional Flushing Program



Aquarius Water Plant History

- Water Plant was put on line in 1985
 - Rated for 20MGD
 - Five High Service pumps
 - Three 8MGD pumps with Golden Anderson control valves
 - Two 4MGD pumps with Golden Anderson control valves
 - Valve issues
 - 2010 one 8MGD pump was converted to a VFD
 - 2011 second 8MGD pump was converted to a VFD
 - Set for pressure
 - Flow setting

Distribution System History

❖ **Cleveland Water**

Surface water fed from west to east

- Eastlake
- Lakeline
- Timberlake
- Wickliffe
- Willowick
- Willoughy Hills

❖ **Willoughby Water (Daniels Park)**

River water plant fed from south to north

- Willoughby

❖ **Aquarius Water Plant**

Surface Water feeds water east to west

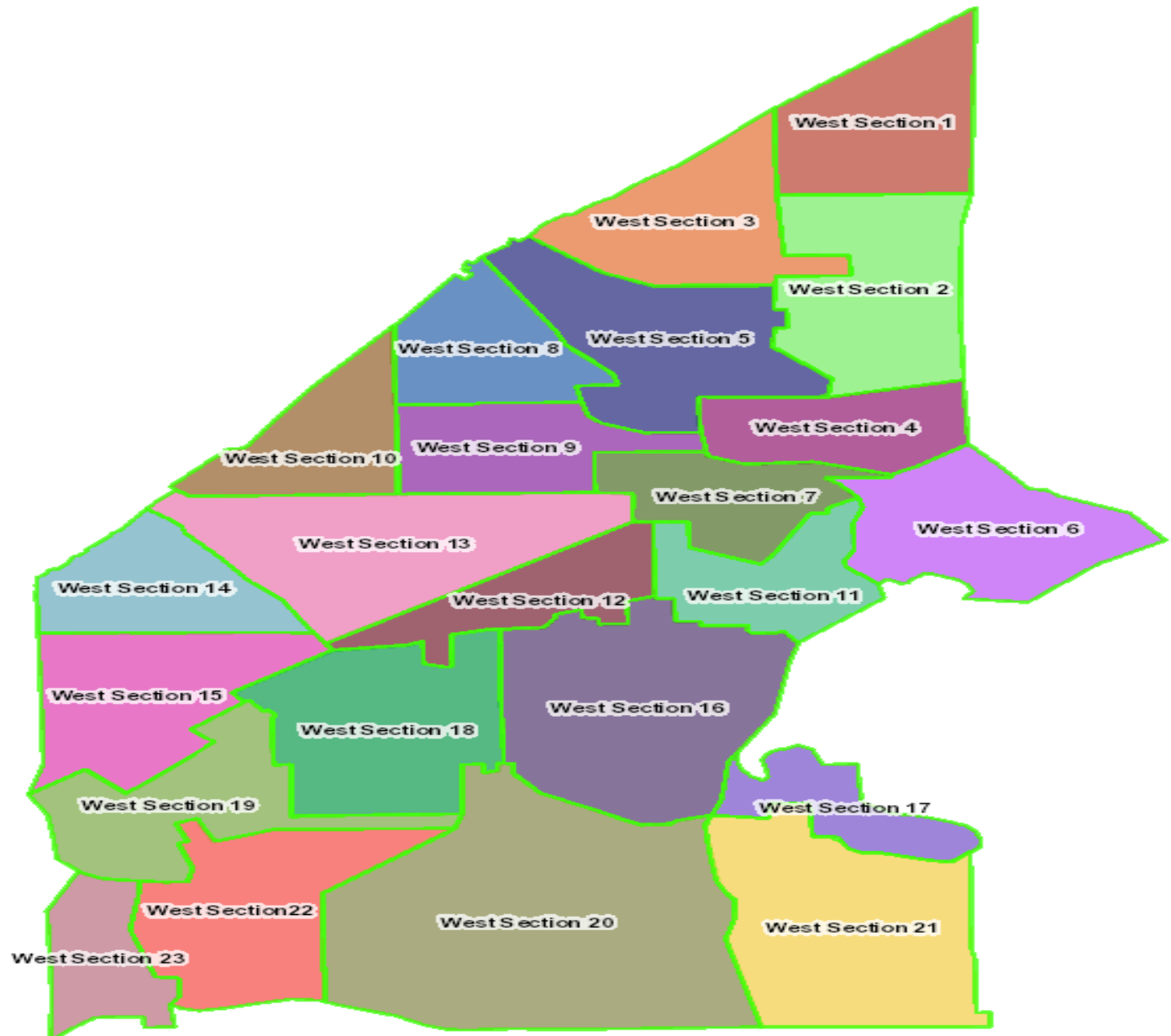
West Sub-district Pressure Districts



Why We Started?

- ❖ Inaccurate valve surveys
- ❖ Only distribution crews could turn valves and others needed to learn the distribution system
- ❖ Better communication
- ❖ Large employee turnover
- ❖ No touch policy

West Sub-district Unidirectional Flushing Sections



Unidirectional flushing

❖ Started in our East Sub-District in 2010

- 23 Sections
- Larger area
- Smaller Customer base
- Rural area
- Newer water mains

❖ West Sub-District

- 23 Sections
- Cleveland Suburbs
- Older water mains
- High population density



Personnel

❖ **Distribution Maintenance Crews**

- Prior to flushing
 - Locate valves
 - Raise valve boxes as needed
 - Clean valve boxes as needed

❖ **Quality Assurance Crew (3 man crew)**

- According to the flushing zones that have been established create work orders for the section being flushed
 - Multiple work orders may be needed
- Add assets on to work order and create inspections for each individual asset.

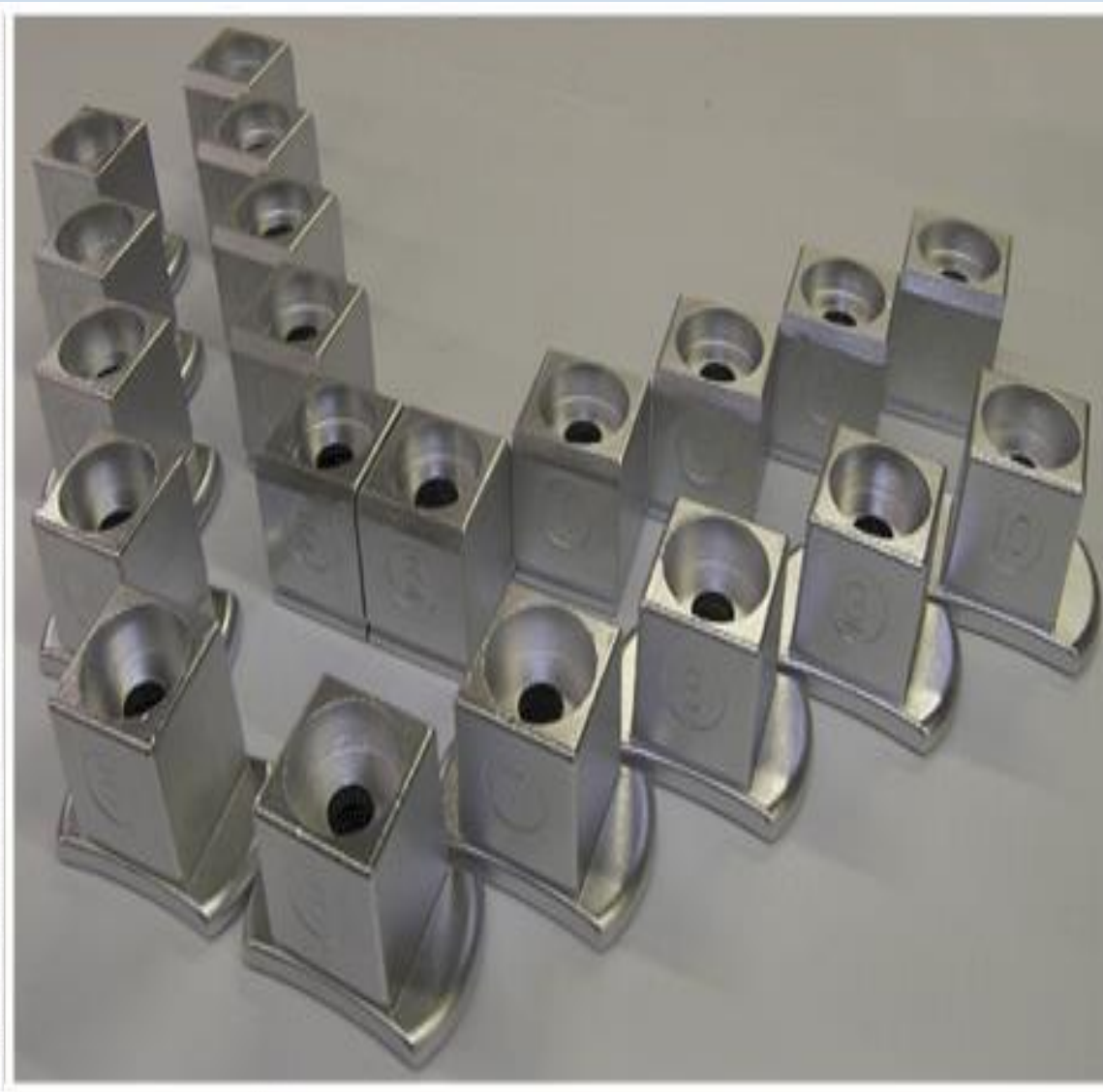
Equipment

❖ Valve Machine

- Jack Hammer
- Pressure washer
- GPS
 - Trimble Recon
 - Bluetooth antenna
- Valve Machine Software
- Valve Turner
- Vacuum
- 300 gallon holding tank
- Tool Box
- LPD Dechlor Tablets



Pro City Nut Replacement Kit

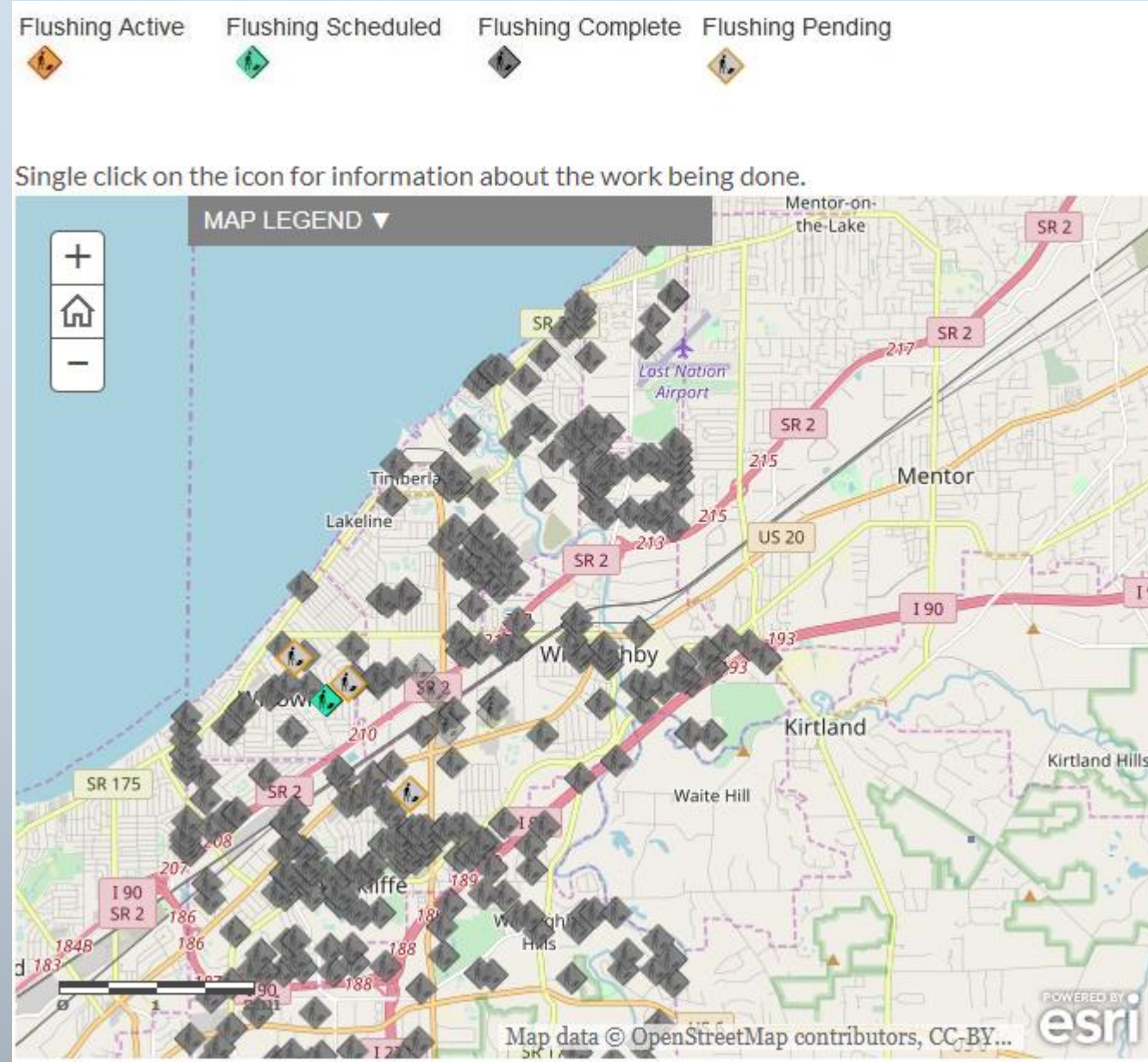


Flushing Commences

❖ Notification

- News Paper
- Webpage
- Fire Department
- City Personnel
- Utilities Personnel

❖ Updates



Work Orders Icons



Work Order

Work Order

Description: **Unidirectional Flushing**

Number: **20922**

Entity Type: **WPRESSURIZEDMAIN** Change

Category:

Initiated By: **SIMONE, WILLIAM L** Date: **03/15/2016 9:59 AM**

Status: **Closed** Priority: **Medium Low**

Requested By: **DIEMERT, JOHN S** Supervisor: **DIEMERT, JOHN S**

Submit To: **DIEMERT, JOHN S** Date: **03/15/2016 9:59 AM**

Projected Start: **03/15/2016 9:59 AM** Projected Finish: **03/29/2016 9:59 AM**

Opened By: **DIEMERT, JOHN S** Date: **10/26/2017 12:06:41 PM**

Closed By: **CUTLIP, JOHN** Date: **3/24/2016 9:34:59 AM**

Completed By: **DEBIASE, DOUG**

Actual Start: **03/21/2016 9:01 AM** Actual Finish: **03/21/2016 12:00 PM**

Stage: **Actual** Expense Type: **Maintenance**

Comments:
 no comments

Instructions: **4 in = 180 Gallons Per Minute**
6 in = 220 Gallons Per Minute
8 in = 392 Gallons Per Minute

Resolution: Reactive?

Location Information

WO Address: **8230 MORLEY RD**

Location Details: **8230 MORLEY RD**

City: **Concord Township**

Service Area: **Pinecrest** Pressure District: **Pinecrest**

X Location: **2,301,958.714** Y Location: **723,156.655**

Assets

Total Entities: 23

<input type="checkbox"/>	Asset	Asset Id	Asset Uid	Location	Warranty Date
<input type="checkbox"/>	WHYDRANT	10992	10992	8330 tewskbury	
<input type="checkbox"/>	WHYDRANT	10988	10988	tewskbury In	
<input type="checkbox"/>	WHYDRANT	10989	10989	8240 tewskbury In	
<input type="checkbox"/>	WHYDRANT	10990	10990	tewskbury In	
<input type="checkbox"/>	WHYDRANT	10948	10948	TEWKSBURY	
<input type="checkbox"/>	WPRESSURIZEDMAIN	20072	20072		
<input type="checkbox"/>	WPRESSURIZEDMAIN	20066	20066		
<input type="checkbox"/>	WPRESSURIZEDMAIN	20070	20070		
<input type="checkbox"/>	WPRESSURIZEDMAIN	20071	20071		
<input type="checkbox"/>	WPRESSURIZEDMAIN	20068	20068		
<input type="checkbox"/>	WPRESSURIZEDMAIN	17555	17555		
<input type="checkbox"/>	WPRESSURIZEDMAIN	73432	73432		

- Pink rows indicate inventory still under warranty.

Update Work Order XY when adding/removing assets?

Details

Project: **Dead End Flushing 2016** Account:

Project Tree

Contractor:

Update Map: Cancel Work Order:

Cancelled By: Date:

Cancel Reason:

Units Accomplished: **0** Description:

Lock Units Desc.:

Labor Cost: **\$0.00** Material Cost: **\$0.00**

Equipment Cost: **\$0.00** Permit Cost: **\$0.00**

Total WO Cost: **\$0.00**

Map Layer Fields

Work Cycle

Repeat: **Every**

Interval: **1** Years

From: **Projected Start Date**

Date Printed: Next Print Date: **3/14/2016**

Inspections

Inspection Id: 13 Work Order Id: [20922](#)

General Custom Fields

Hydrant Id: 10988 Inspected By:

Inspected On: 03/21/2016

Location: 8240 TEWKSBURY LN

X: 2301937.659 Y: 723579.404

Condition: Functioning Water Condition: Clear

Flow Class: B-500 to 999 gpm

Manufacturer: Kennedy

Model: Year:

Barrel Diameter: Number of Nozzles: 3

Seat Diameter: Update Map:

Nozzle Size

First: 2.5	Second: 2.5
Third: 4.5	Fourth:

Condition

Check those items that need repair.

Caps: <input type="checkbox"/>	Valve Seat: <input type="checkbox"/>
Chains: <input type="checkbox"/>	Branch Valve: <input type="checkbox"/>
Paint: <input checked="" type="checkbox"/>	Hydrant Valve: <input type="checkbox"/>
Stem: <input type="checkbox"/>	Packing: <input type="checkbox"/>
Pintle: <input type="checkbox"/>	Drainage: <input type="checkbox"/>
Nozzles: <input type="checkbox"/>	Was hydrant flushed: <input checked="" type="checkbox"/>

Comments

Repairs:

Comments:

Supervisor Comments:

Inspection Id: 13 Work Order Id: [20922](#)

General Custom Fields

Category: Unidirectional Flushing

Gallons Per Minute	392
Minutes Flushed	12
Total Gallons	4,704
Chlorine	0.8
System Pressure	90

REPAIRS/BREAKS

❖ Breaks

- Distribution crews are notified immediately and all flushing is stopped until repairs are made
- Work orders for the break are created by the distribution crews

❖ Repairs

- Service request are sent to the proper personnel via email immediately after inspections are completed
- Distribution crews are scheduled to fix or repair the asset that is not functioning properly

Solving problems

❖ Does not replace dead end flushing

- Minimum twice a year

❖ Issues

- Valves
 - Closed
 - Broken
 - Partially closed
 - Stainless bolts
- Hydrants
- Breaks
- Flooding
- Drainage

Financial Ramifications

❖ Valve Machine

- \$55,000

❖ Operating Nut replacement Tool

- \$4,000

❖ Hydrants

❖ Valves

- Most of the problems involved the operating nut

❖ Road Repair

- Upon completion of our first 3 sections we saved over \$110,000 on road repairs.

❖ Overtime

FAQ

- **What is the field crew doing and why?**
- **I lost water service. Why, and what do I do?**
- **Will I be paying for the water used in flushing?**
- **Why does flush water (hydrant or Sink) appear discolored?**
- **How do I get rid of the discolored appearance?**
- **Is the water safe to drink?**
- **Is this counterproductive to conservation?**
- **Does discharged water affect the environment?**
- **Why is the Utilities Department doing it? Aren't the water pipes clean?**
- **What else do Lake County Department of Utilities water customers need to know to prepare for the flushing process?**
- **Who do I call with questions?**