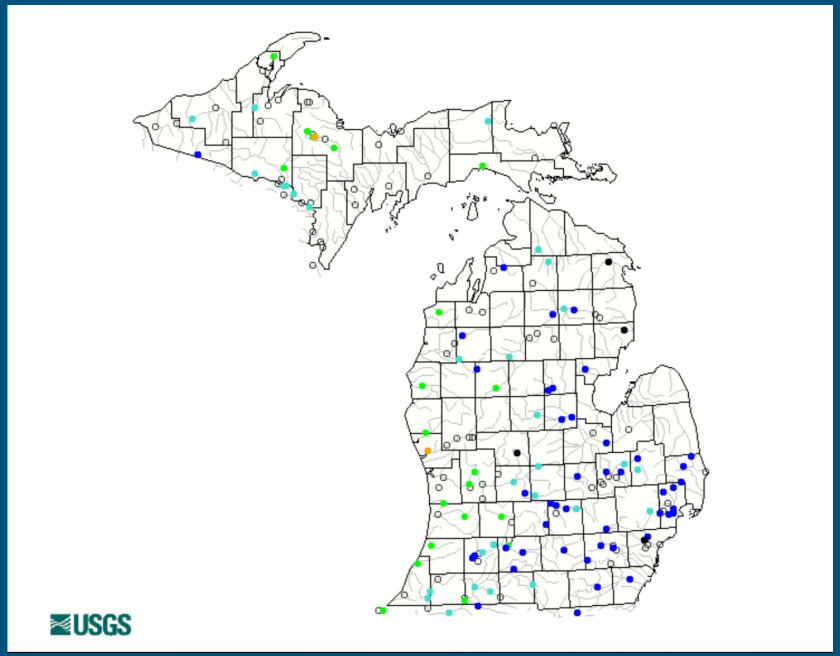
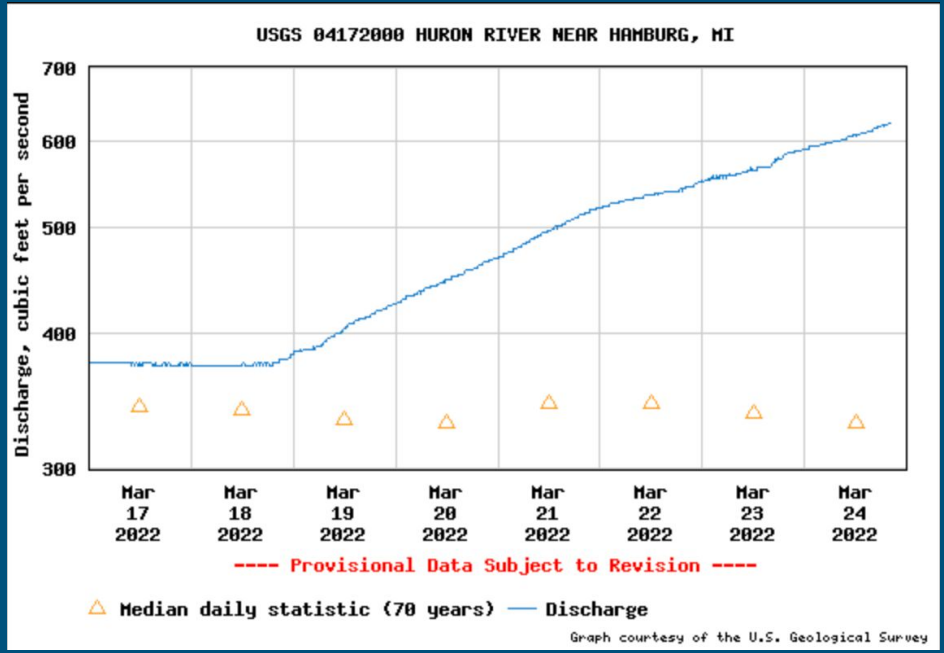
# Preventing Flooding Through Data Visualization

Digital Water Lab
at the University of Michigan - Ann Arbor

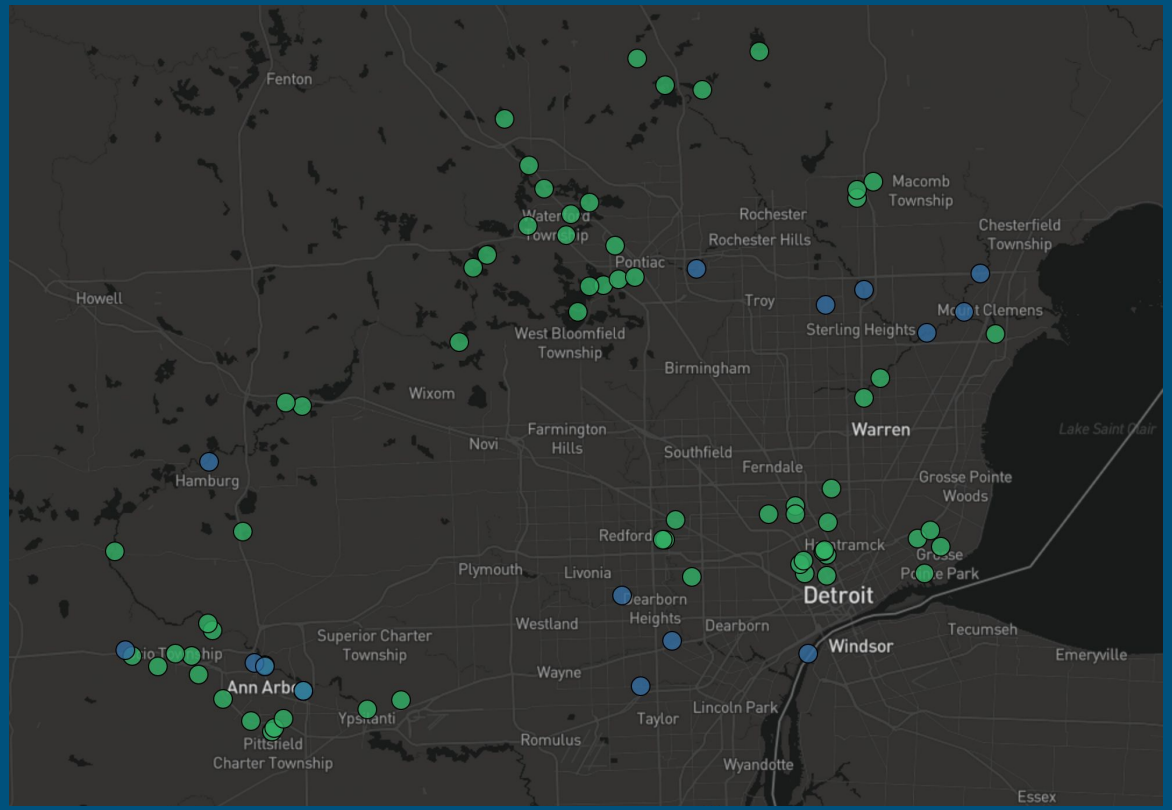
# Flooding

# USGS Gauges

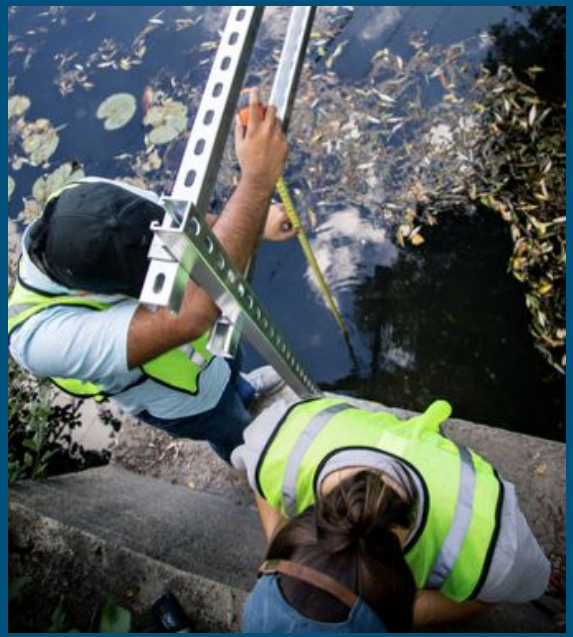

USGS


USGS 04172000 HURON RIVER NEAR HAMBURG, MI
Discharge, cubic feet per second
700
600
500
400
300
Mar 17 2022
Mar 18 2022
Mar 19 2022
Mar 20 2022
Mar 21 2022
Mar 22 2022
Mar 23 2022
Mar 24 2022
---- Provisional Data Subject to Revision ----
Median daily statistic (70 years)
Discharge
Graph courtesy of the U.S. Geological Survey

# Current Water Gauges

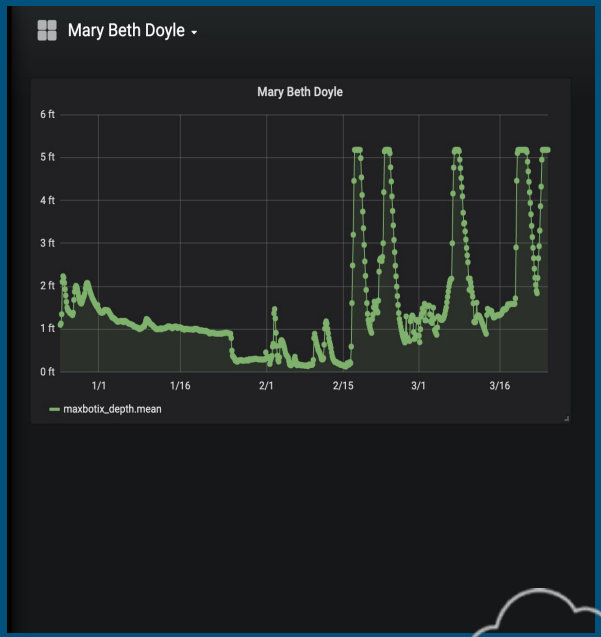


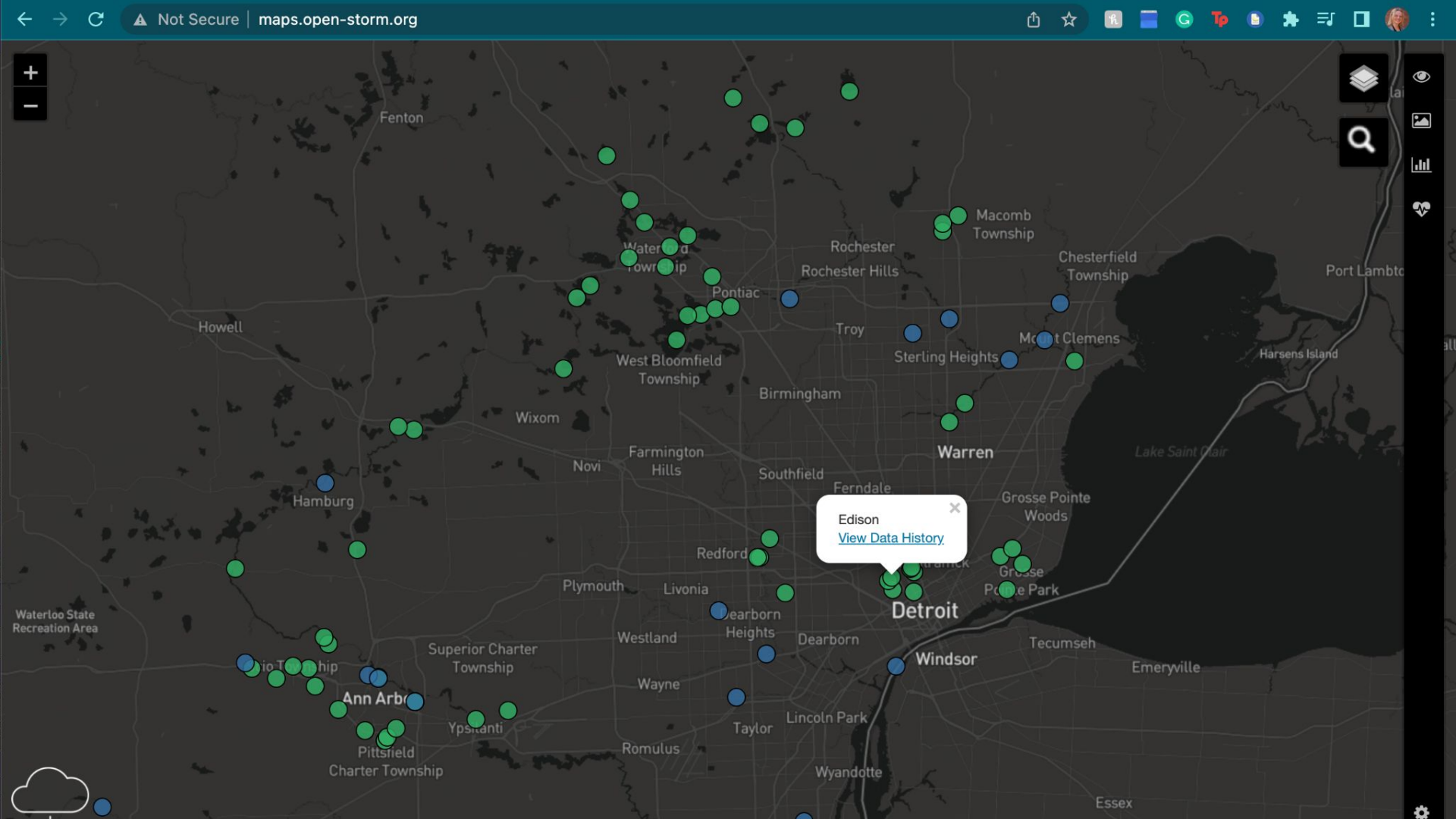
# Deploy

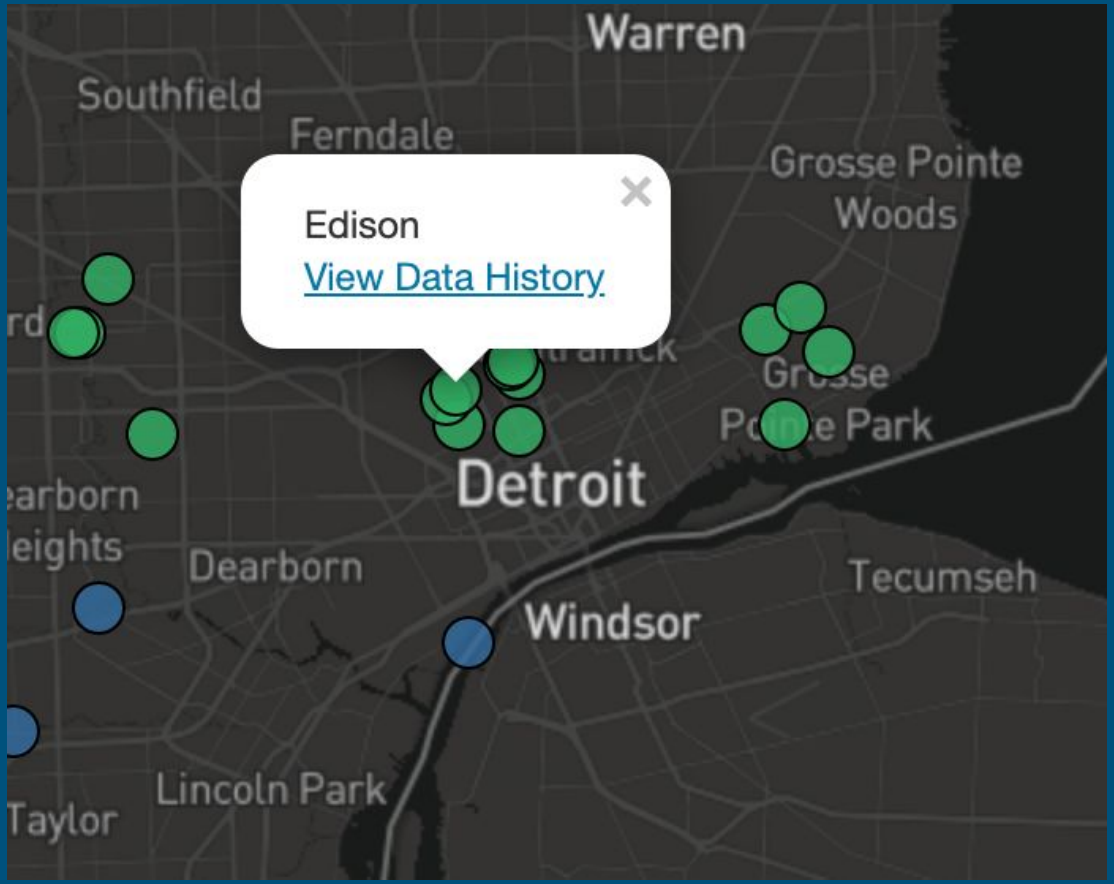


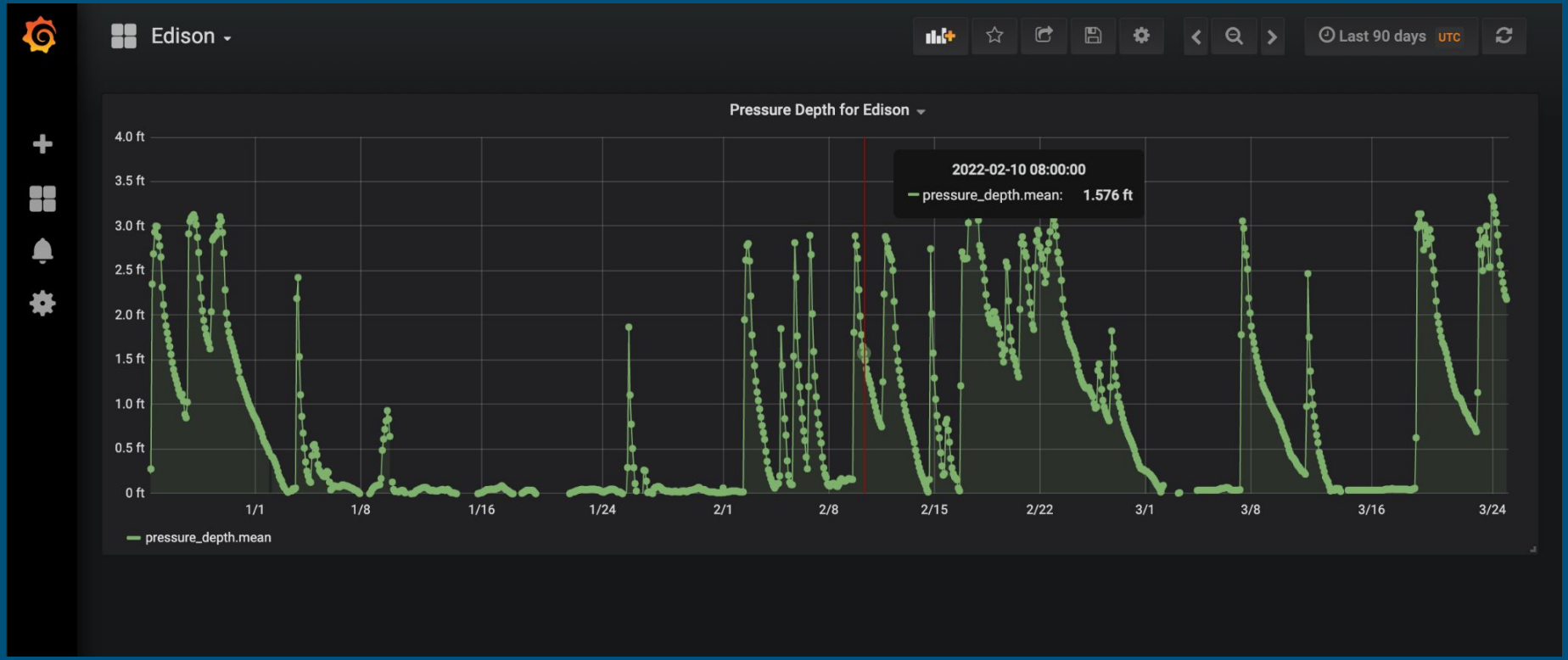
# Maintain

# Display Data

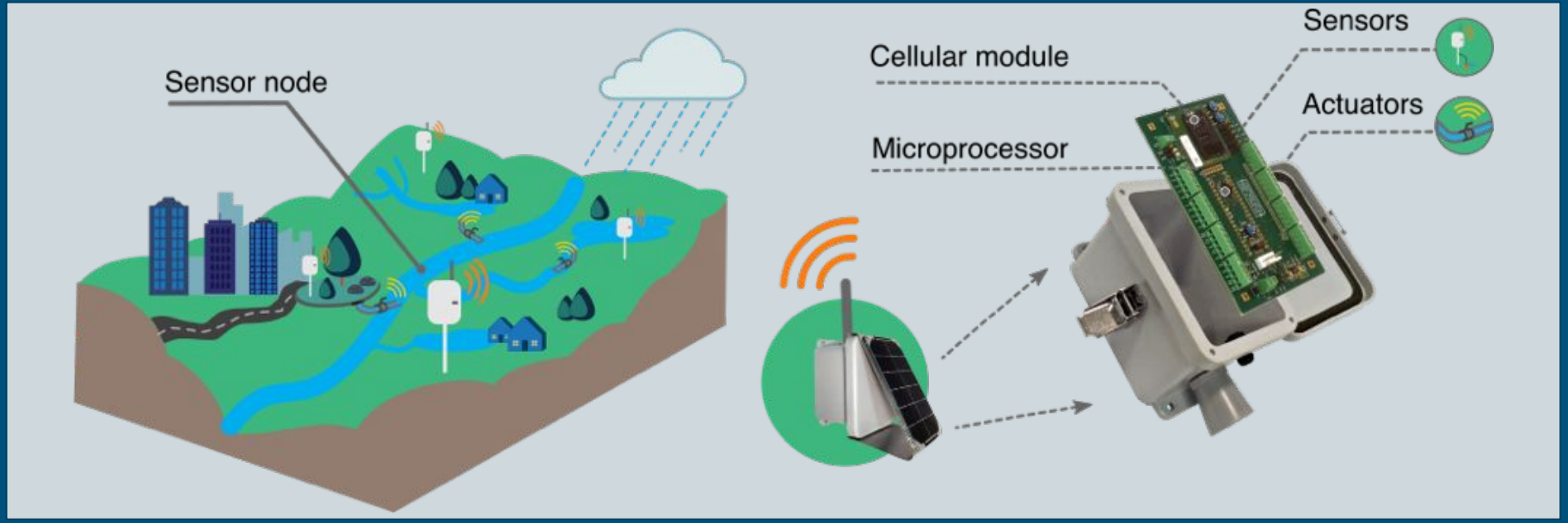



Not Secure | maps.open-storm.org
Fenton
Howell
Pontiac
Rochester
Rochester Hills
Macomb Township
Chesterfield Township
Troy
Sterling Heights
Harsens Island
West Bloomfield Township
Birmingham
Wixom
Farmington Hills
Novi
Southfield
Warren
Lake Saint Clair
Ferndale
Grosse Pointe Woods
Hamburg
Edison
View Data History
Redford
Plymouth
Livonia
Detroit
Waterloo State Recreation Area
Westland
Dearborn Heights
Dearborn
Windsor
Tecumseh
Emeryville
Superior Charter Township
Wayne
Ann Arbor
Ypsilanti
Taylor
Lincoln Park
Romulus
Pittsfield Charter Township
Wyandotte
Essex


Warren
Southfield
Ferndale
Grosse Pointe
Woods
Edison
View Data History
Detroit
Dearborn
Windsor
Tecumseh
Lincoln Park
Taylor


Edison
Last 90 days UTC
Pressure Depth for Edison
4.0 ft
3.5 ft
3.0 ft
2.5 ft
2.0 ft
1.5 ft
1.0 ft
0.5 ft
0 ft
2022-02-10 08:00:00
pressure_depth.mean: 1.576 ft
1/1
1/8
1/16
1/24
2/1
2/8
2/15
2/22
3/1
3/8
3/16
3/24
pressure_depth.mean

# Open Source, Open-Storm.org

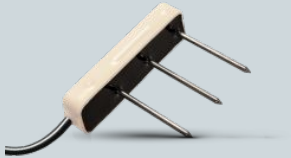


# Open Source, Open-Storm.org

## Measure

Depth

Rain



Soil Moisture

Water Quality

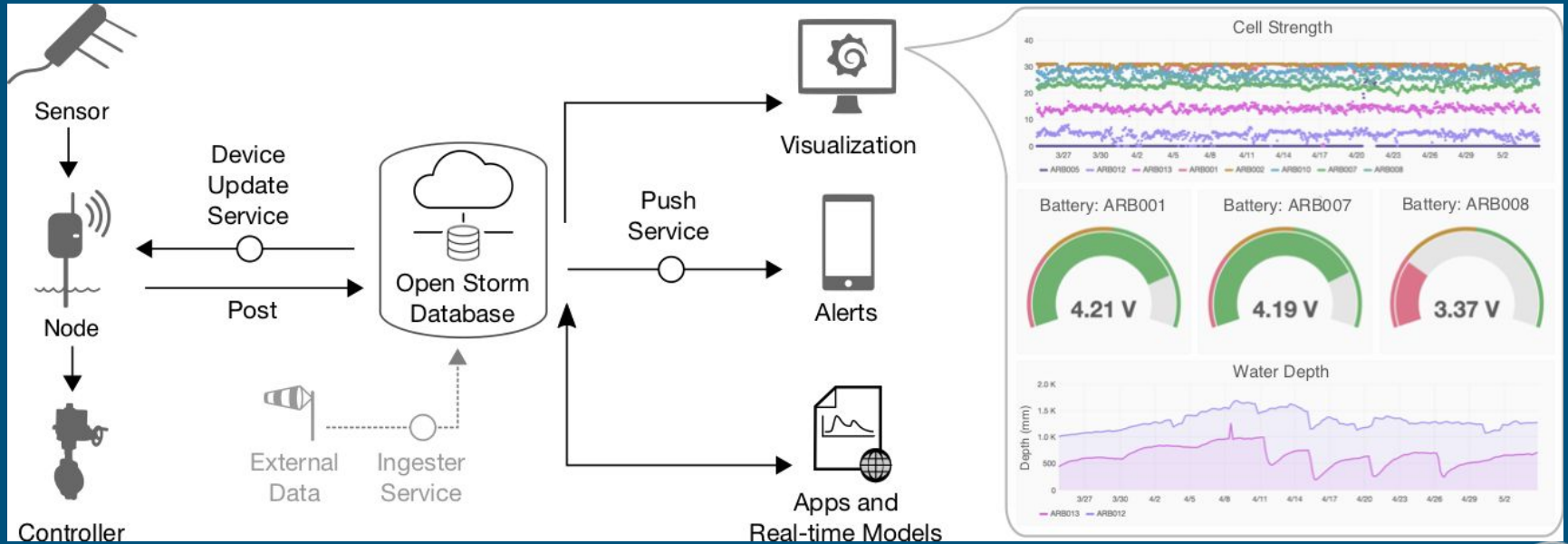
## Control

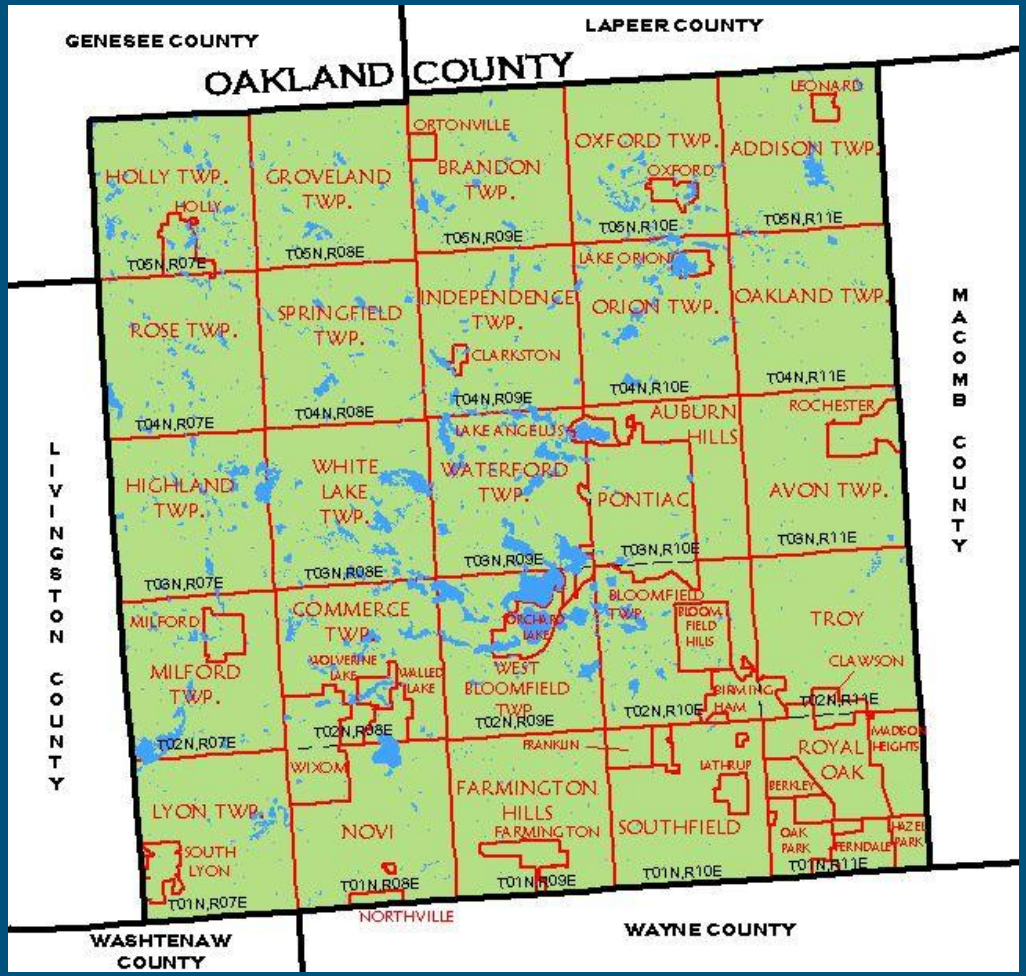
Valves

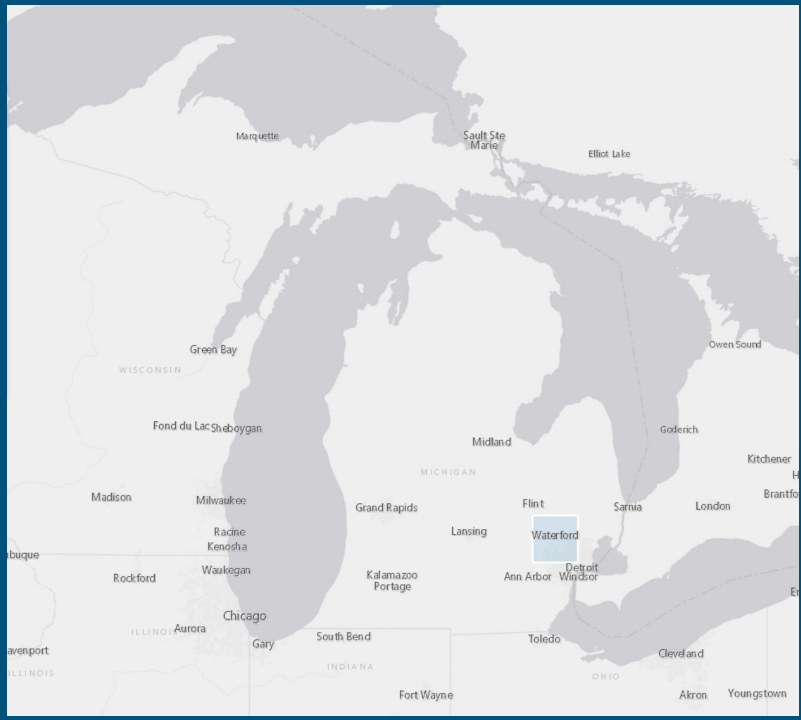
Gates

Automated Samplers

# Open Source, Open-Storm.org

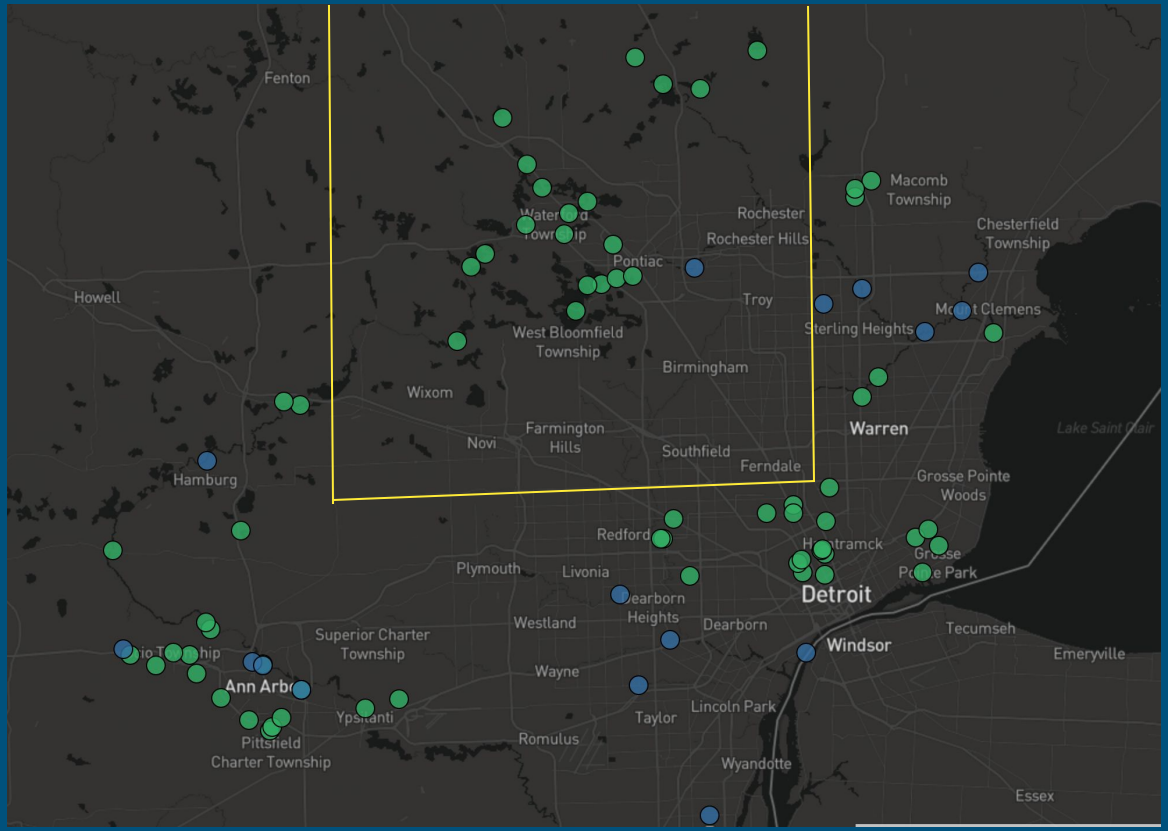




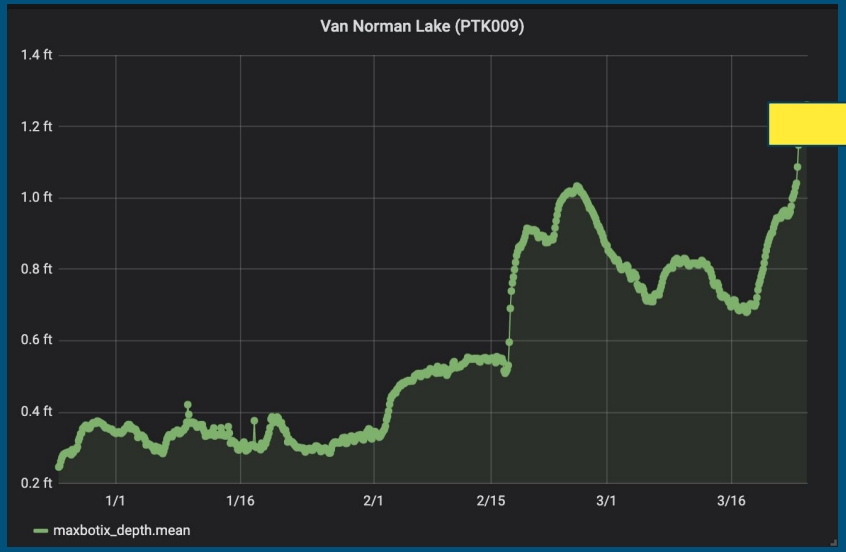



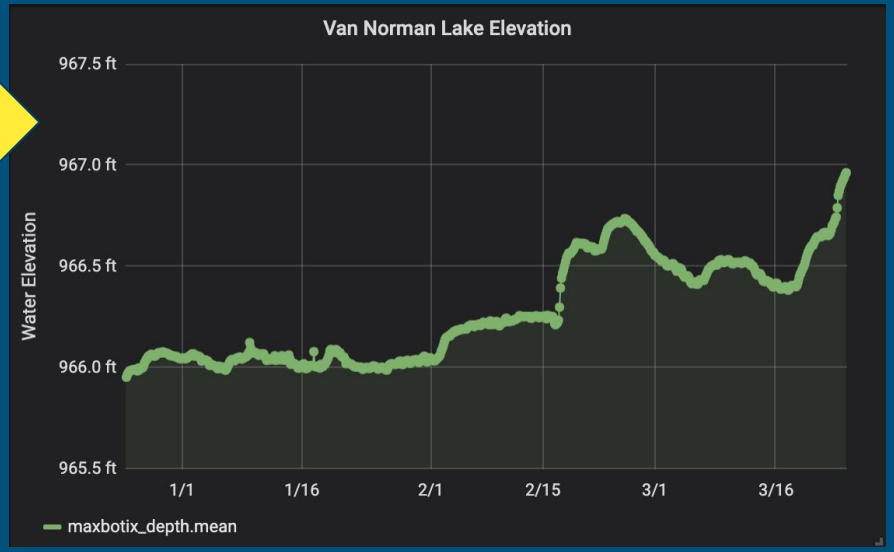

https://accessoakland.oakgov.com

# Oakland County



# Elevation


Van Norman Lake (PTK009)
1.4 ft
1.2 ft
1.0 ft
0.8 ft
0.6 ft
0.4 ft
0.2 ft
1/1
1/16
2/1
2/15
3/1
3/16
maxbotix_depth.mean


Van Norman Lake Elevation
967.5 ft
967.0 ft
966.5 ft
966.0 ft
965.5 ft
Water Elevation
1/1
1/16
2/1
2/15
3/1
3/16
maxbotix_depth.mean

# Summer

Oakland County Elevation Dashboard Summer
Last 30 days
Clinton River Lake Levels from Legal (Summer)
Difference in Level (ft)
1.0
0
-1.0
-2.0
-3.0
-4.0
2/25
2/28
3/3
3/6
3/9
3/12
3/15
3/18
3/21
3/24
current
Van Norman Lake 0.271
Sylvan Lake -0.565
Watkins Lake -0.924
Cemetary & Dollar Lake 0.475
Orchard Lake -0.002
Oakland / Woodhull Lake 0.268
Cass Lake -0.251
Bunny Run Lake -0.273
Indianwood Lake -0.152
Loon Lake 0.213
Williams Lake -0.501
Lakeville Lake -0.140
Waumegah Lake -0.111
Dawson's Millpond -0.815
Clinton River Devices
Clinton River
Summer Threshold: Red Line
Crystal Lake Elevation
918.0 ft
917.5 ft
Sylvan Lake Elevation
929.0 ft
928.5 ft

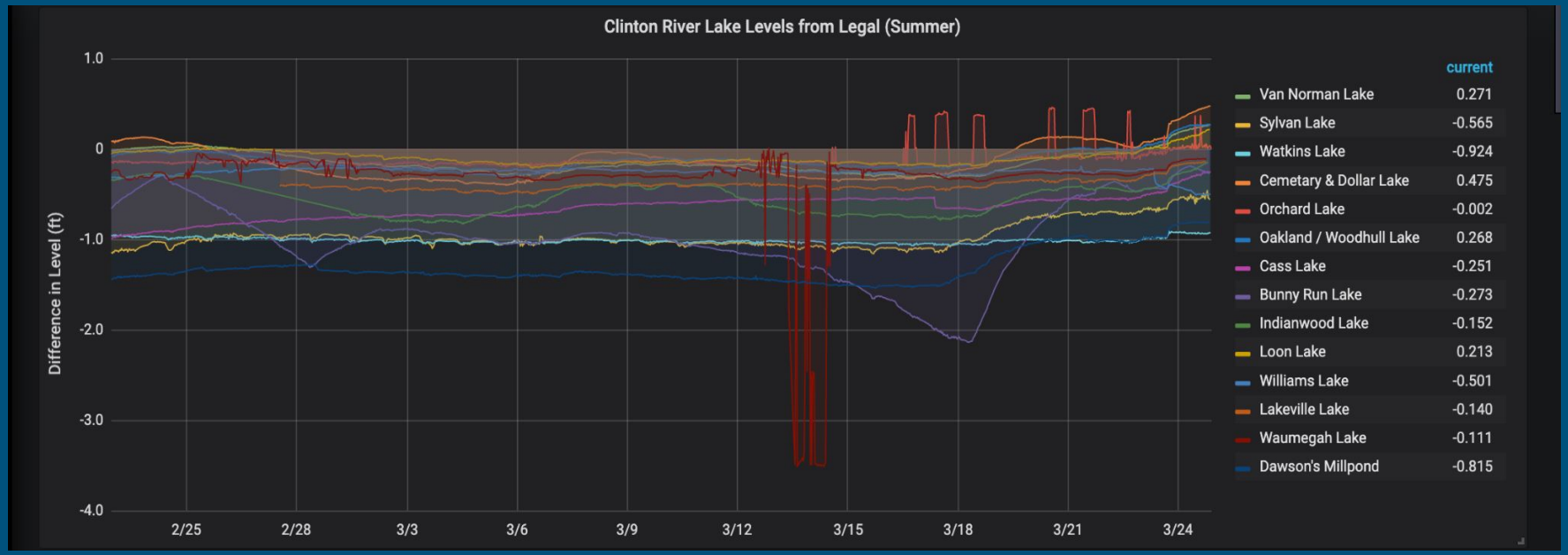
Dawsons Millpond Elevation
929.0 ft
928.5 ft
928.0 ft
927.5 ft
927.0 ft
926.5 ft
926.0 ft
925.5 ft
Water Elevation
3/1
3/8
3/16
3/24
maxbotix_depth.mean
Dollar Lake Elevation
969.5 ft
969.0 ft
968.5 ft
968.0 ft
967.5 ft
Water Elevation
3/1
3/8
3/16
3/24
maxbotix_depth.mean
Van Norman Lake Elevation
967.5 ft
967.0 ft
966.5 ft
966.0 ft
965.5 ft
Water Elevation
3/1
3/8
3/16
3/24
maxbotix_depth.mean
Orchard Lake Elevation
931.00 ft
930.75 ft
930.50 ft
930.25 ft
930.00 ft
929.75 ft
929.50 ft
Water Elevation
3/1
3/8
3/16
3/24
maxbotix_depth.mean

# Winter

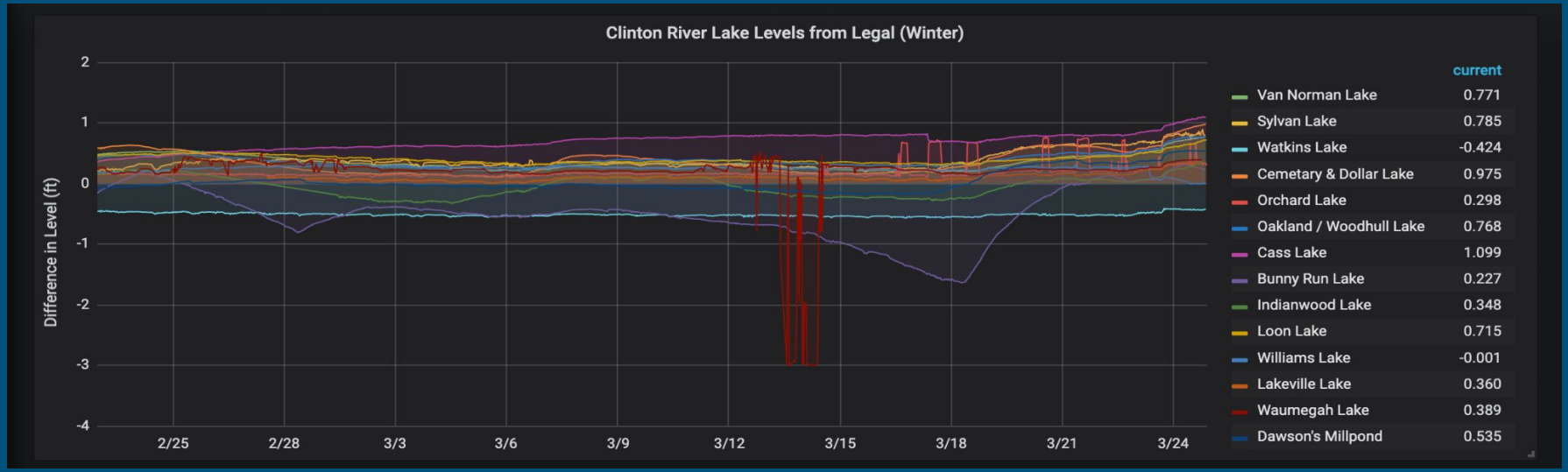
Oakland County Elevation Dashboard Winter
Last 30 days
Clinton River Lake Levels from Legal (Winter)
Difference in Level (ft)
current
Van Norman Lake 0.771
Sylvan Lake 0.785
Watkins Lake -0.424
Cemetary & Dollar Lake 0.975
Orchard Lake 0.298
Oakland / Woodhull Lake 0.768
Cass Lake 1.099
Bunny Run Lake 0.227
Indianwood Lake 0.348
Loon Lake 0.715
Williams Lake -0.001
Lakeville Lake 0.360
Waumegah Lake 0.389
Dawson's Millpond 0.535
Clinton River Devices
Clinton River
Winter Threshold: Blue Line
Crystal Lake Elevation
No data points
Water Elevation
Sylvan Lake Elevation

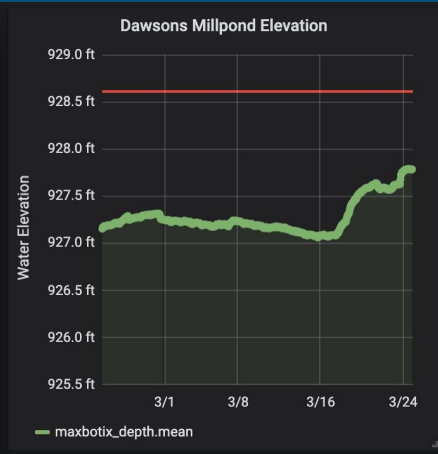
Dawsons Millpond Elevation
Dollar Lake Elevation
Van Norman Lake Elevation
Orchard Lake Elevation
Water Elevation
maxbotix_depth.mean

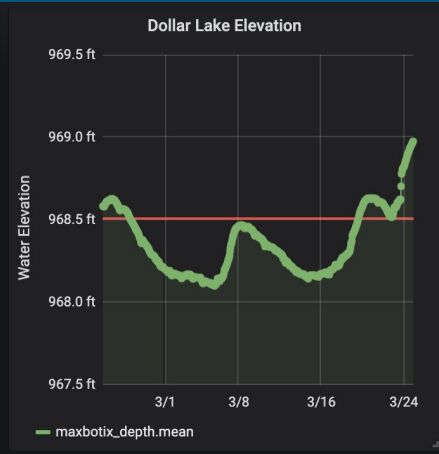
# Levels Above Legal

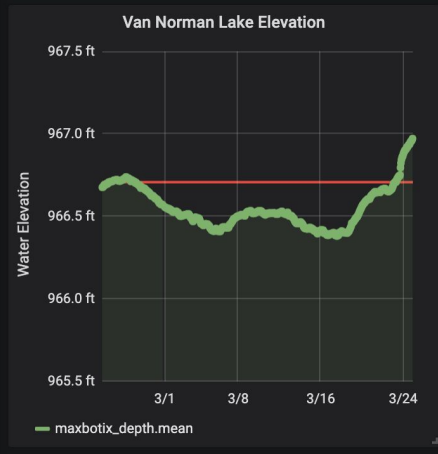


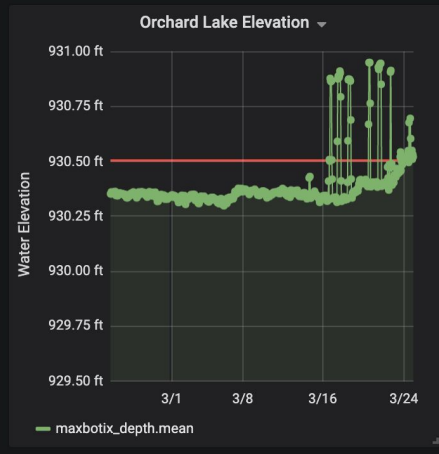
# Levels Above Legal

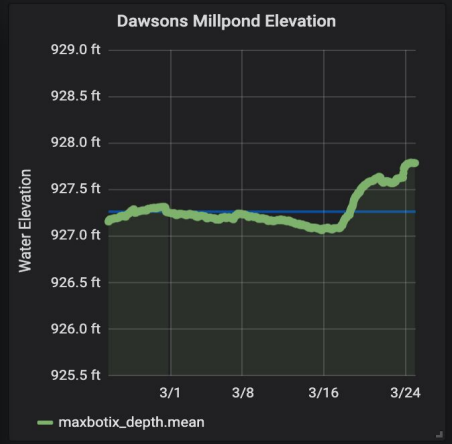



Dawsons Millpond Elevation
929.0 ft
928.5 ft
928.0 ft
927.5 ft
927.0 ft
926.5 ft
926.0 ft
925.5 ft
Water Elevation
3/1
3/8
3/16
3/24
maxbotix_depth.mean


Dollar Lake Elevation
969.5 ft
969.0 ft
968.5 ft
968.0 ft
967.5 ft
Water Elevation
3/1
3/8
3/16
3/24
maxbotix_depth.mean


Van Norman Lake Elevation
967.5 ft
967.0 ft
966.5 ft
966.0 ft
965.5 ft
Water Elevation
3/1
3/8
3/16
3/24
maxbotix_depth.mean


Orchard Lake Elevation
931.00 ft
930.75 ft
930.50 ft
930.25 ft
930.00 ft
929.75 ft
929.50 ft
Water Elevation
3/1
3/8
3/16
3/24
maxbotix_depth.mean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927.5 ft
927.0 ft
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Water Elevation
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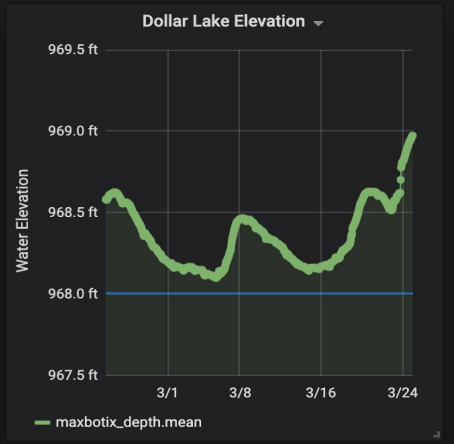
3/8
3/16
3/24
maxbotix_depth.mean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Water Elevation
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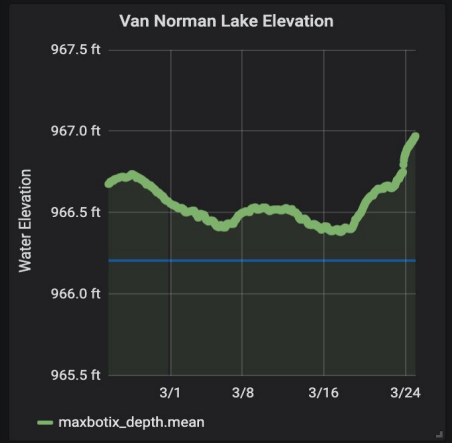
3/24
maxbotix_depth.mean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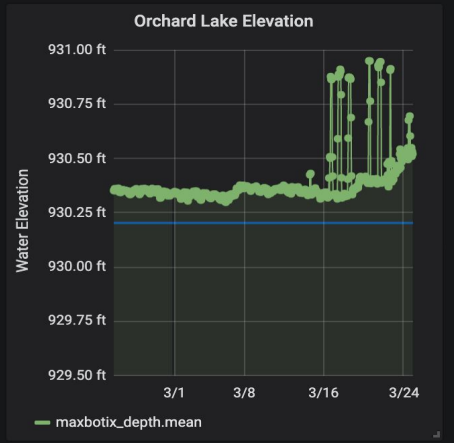
3/16
3/24
maxbotix_depth.mean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3/1
3/8
3/16
3/24
maxbotix_depth.mean

# User Experience

Interviews

Personas & Scenarios

Updated Design