

# 2014 Field Data Presentation and Triathlon



Huron  
River  
Watershed  
Council

# Agenda

- Volunteerism
- Adopt-A-Stream
- Water Quality Monitoring
- Quiz!!

# Volunteer Programming

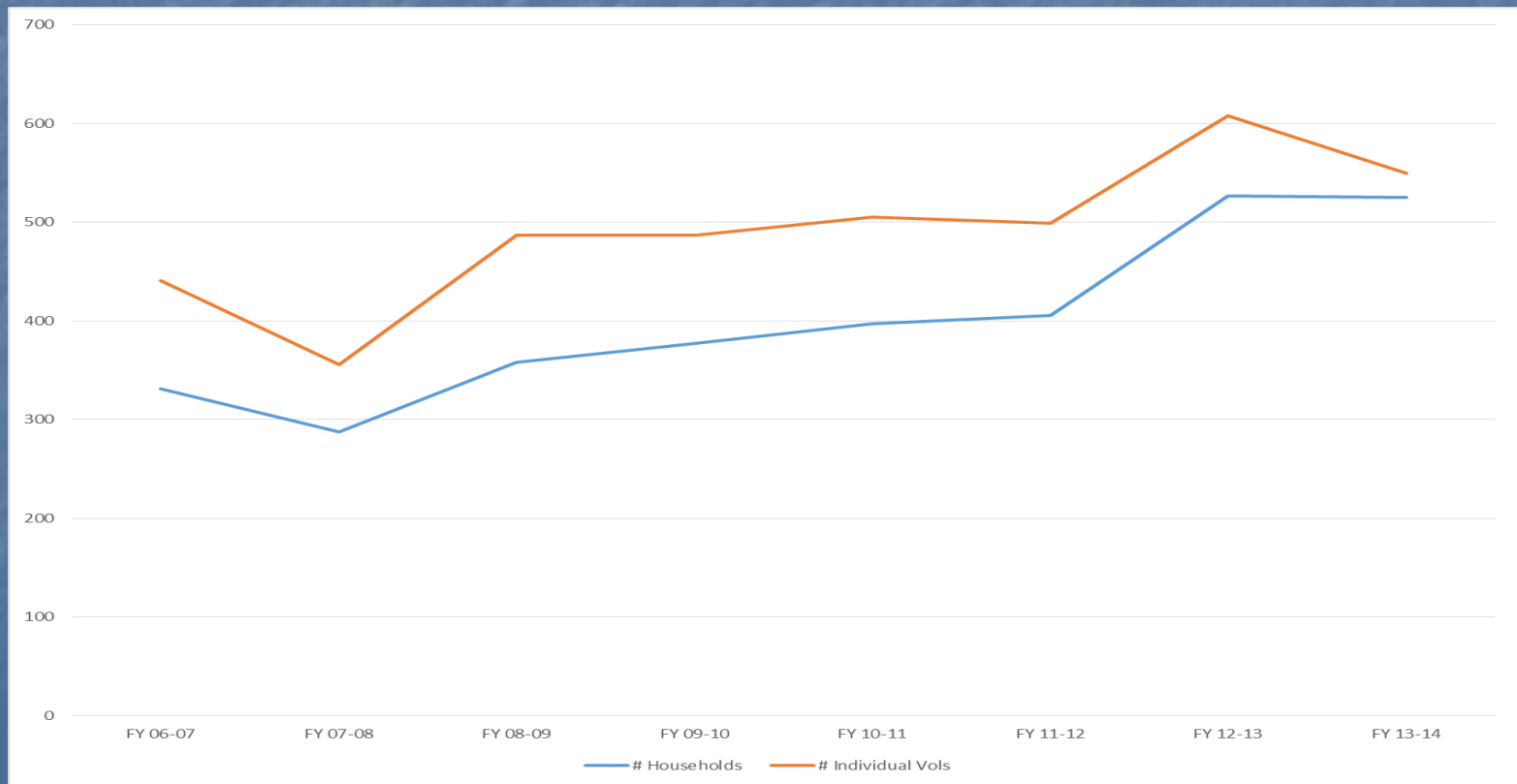
## Outline

- Volunteer program past and present
- Data
- Next Year

# HRWC Volunteer Database

# Overall Number of Volunteers

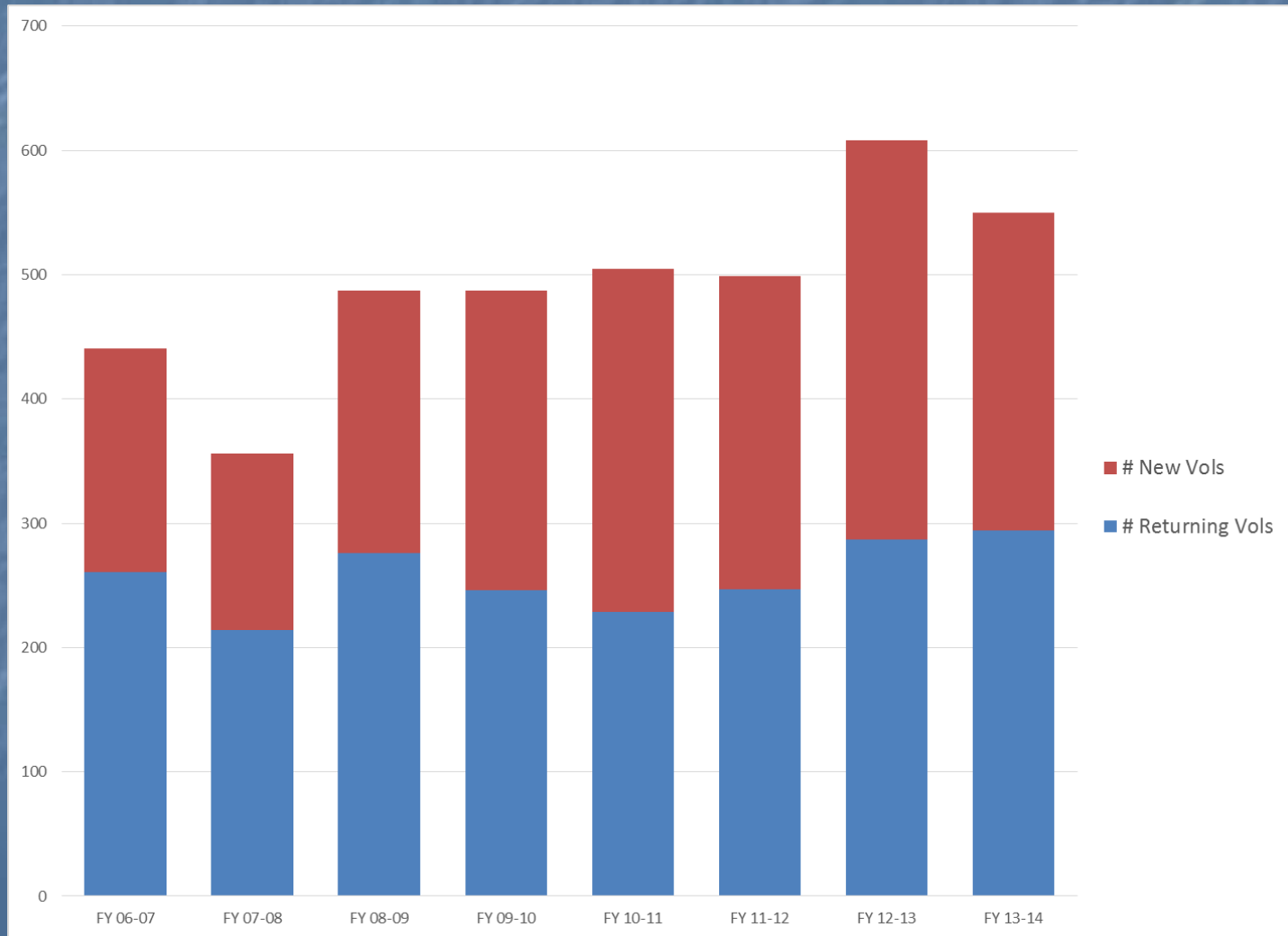
	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14
# Households	331	288	358	377	397	406	527	525
# Individual Vols	441	356	487	487	505	499	608	550



# New/Returning Volunteers

	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14
<b># New Households</b>	144	107	157	187	209	212	286	208
<b># New Vols</b>	180	142	211	241	276	252	321	256
<b># Returning Households</b>	188	181	201	188	188	193	240	317
<b># Returning Vols</b>	261	214	276	246	229	247	287	294
<b>Return Rate</b>	0.591837	0.601124	0.566735	0.505133	0.453465	0.49499	0.472039	0.534546

# Yearly Number Volunteers



# Top Ten Volunteers Overall (Total Instances)

Name	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Total Vol Instances
Dave Wilson	13	10	11	15	9	9	34	13	114
Don Rottiers	10	9	13	10	6	10	6	2	66
Dave Brooks	7	8	11	7	9	5	11	6	64
Korinne Wotell	0	0	0	0	0	5	49	10	64
Lee Burton	8	8	9	7	6	5	8	6	57
Michele Eickholt	7	9	5	10	17	6	1	0	55
Jana Smith	0	0	9	17	9	1	11	6	53
Michael Steele	0	1	17	17	16	1	0	0	52
Sharon Brooks	5	4	7	9	9	4	11	3	52
Dick Chase	0	0	7	12	8	8	8	5	48



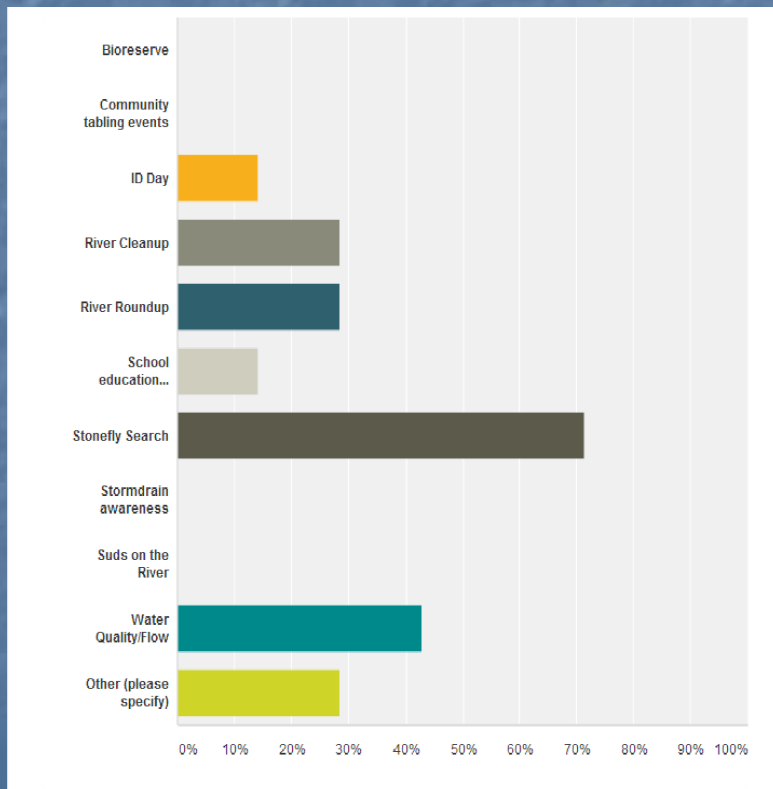
# Zip Analysis

City	FY 2011	FY 2012	FY 2013	FY 2014	Total Zip Instances
Ann Arbor	638	606	831	578	2653
Ypsilanti	146	70	111	82	409
Dexter	93	118	102	63	376
Brighton	101	96	125	38	360
Belleville	78	31	80	31	220
Chelsea	63	49	78	26	216
Whitmore Lake	3	19	95	32	149
Milford	42	24	37	17	120
Pinckney	28	24	33	23	108
Howell	33	8	38	20	99
South Lyon	25	9	18	13	65
Flat Rock	7	8	21	9	45
Fowlerville	17	9	10	6	42
Saline	12	4	4	5	25
Manchester	0	7	0	0	7

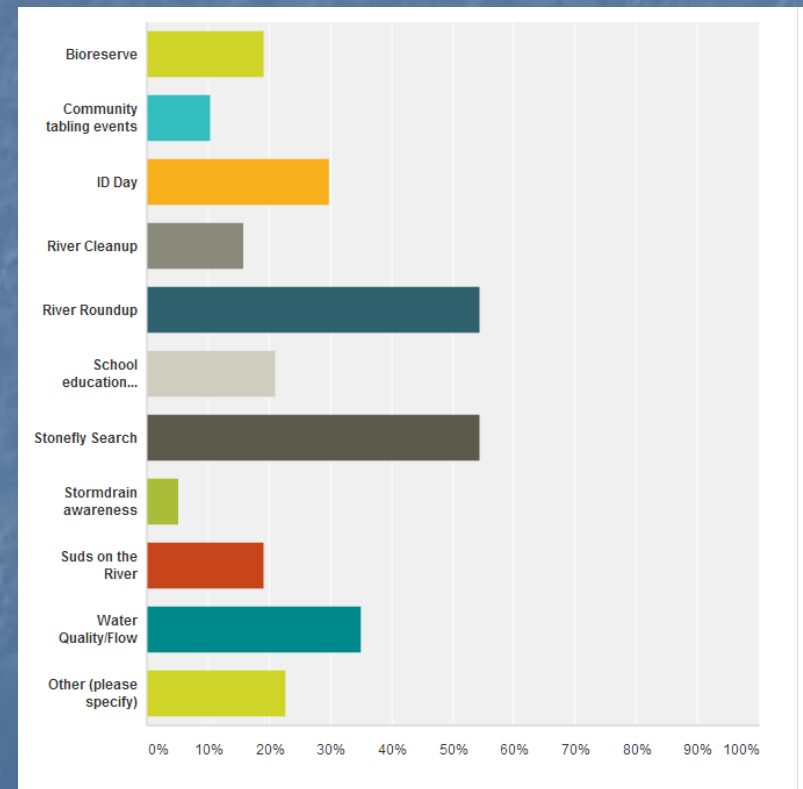
# HRWC Volunteer Survey

# Which HRWC event(s) have you volunteered in?

■ 2010-2011



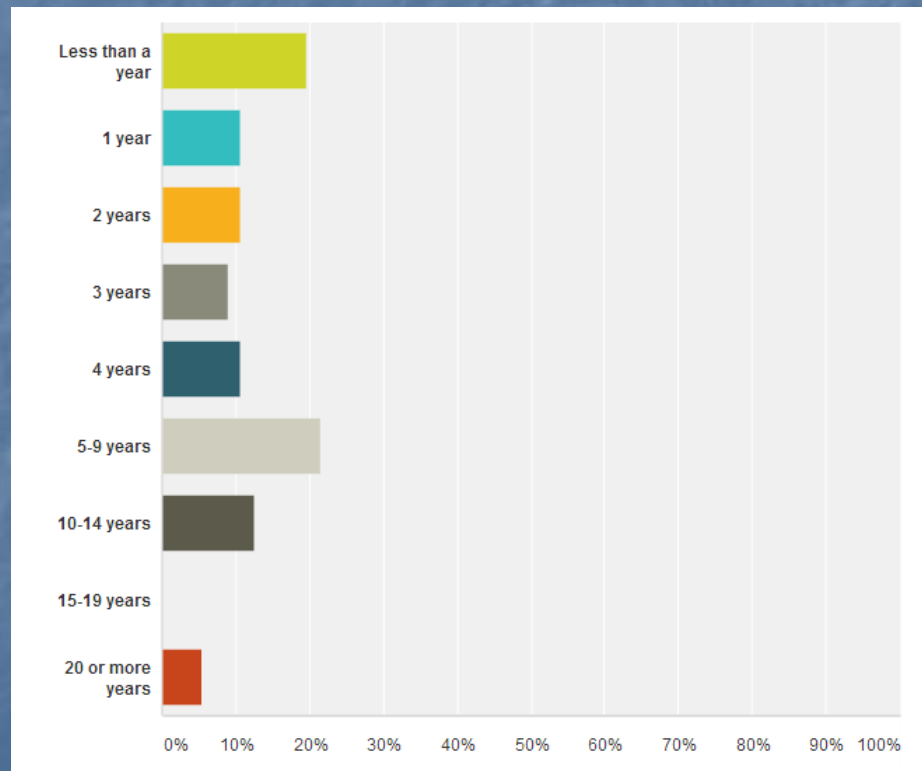
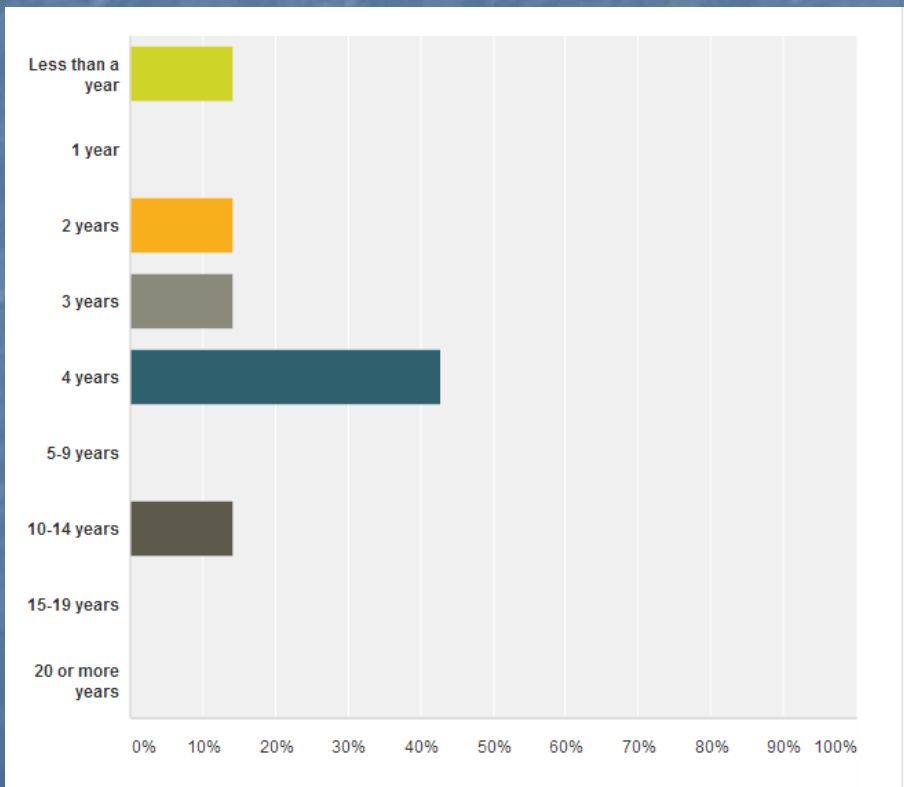
■ 2012-2013



# How long have you volunteered with the HRWC?

■ 2010-2011

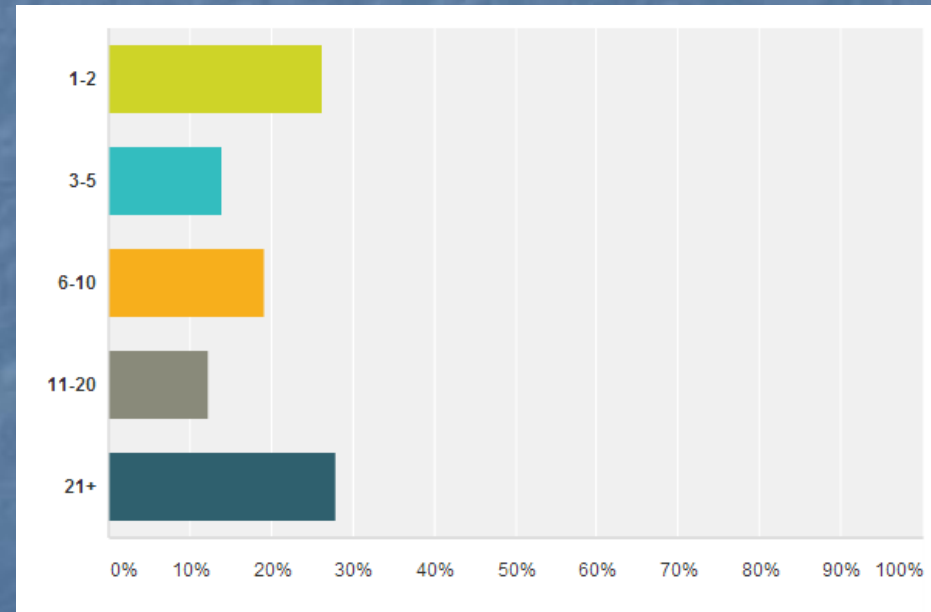
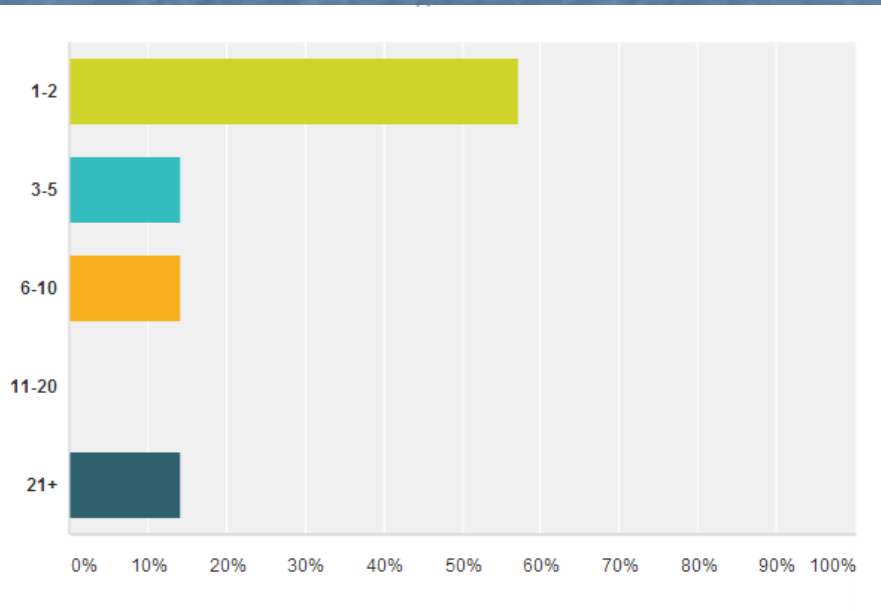
■ 2012-2013



# How many times have you volunteered with the HRWC?

■ 2010-2011

■ 2012-2013



# What motivated you to get involved with the HRWC?

- Improve Water, Environmental Quality
- Protect the Huron
- For Future Generations (Family)
- Because of Friends/Family
- School
- Nature/Outside
- Learn more about the Environment
  
- Shultz Announcement
- Jo Latimore Class
- Beer

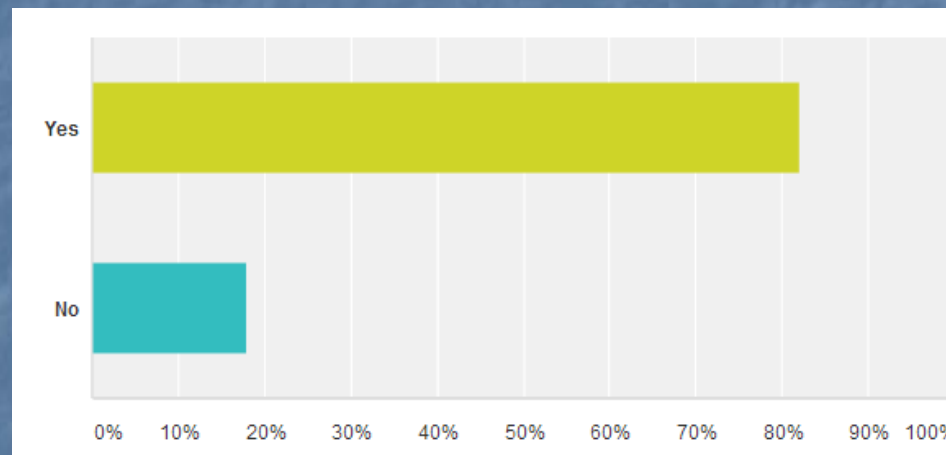
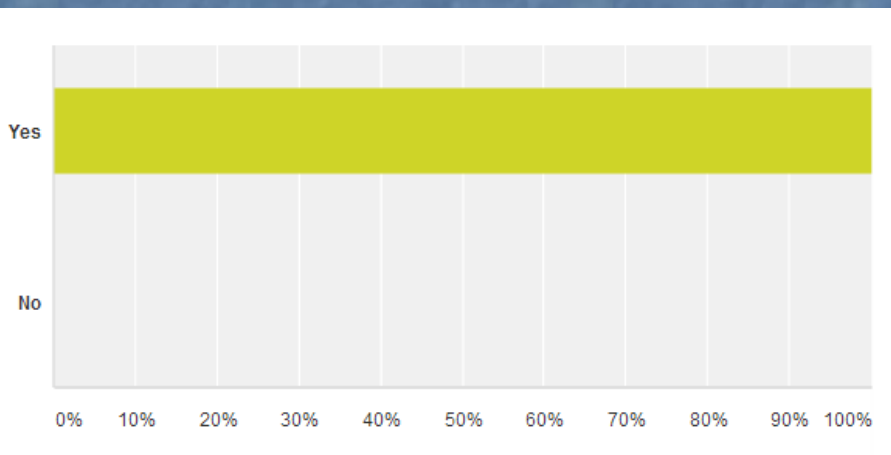
# What continues to motivate you?

- Passion to protect the Huron River
- Concerns for the Environment
- Great opportunities to volunteer and spend time outside
- Dedication of/to the HRWC employees

# Aside from volunteering with the HRWC, are you in anyway taking action on environmental issues?

■ 2010-2011

■ 2012-2013

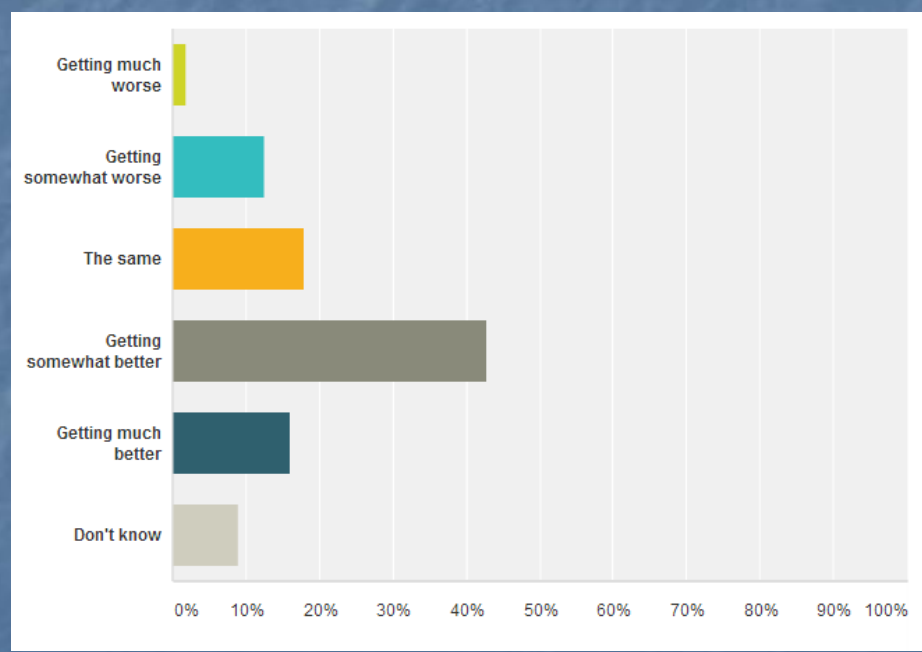
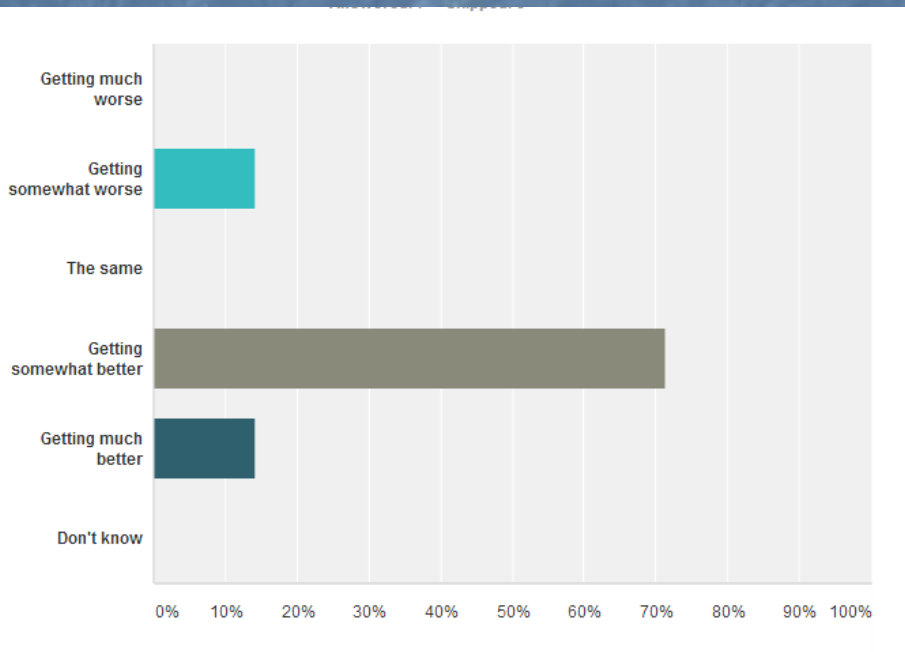




# What do you think of the quality of water in lakes, rivers, and streams in your community?

■ 2010-2011

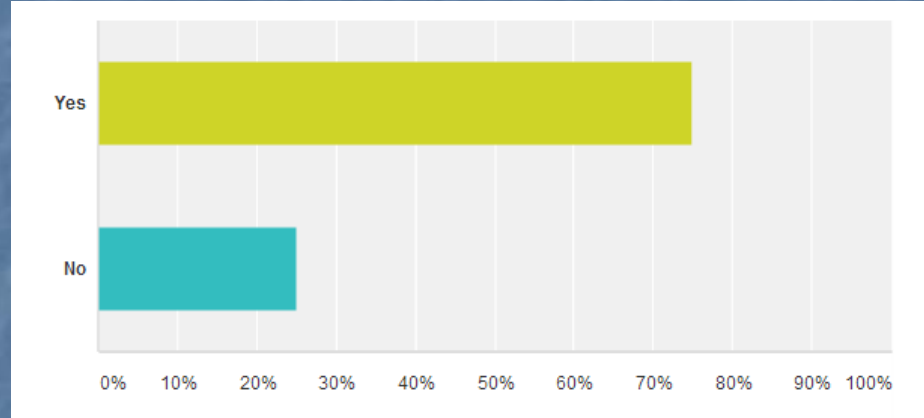
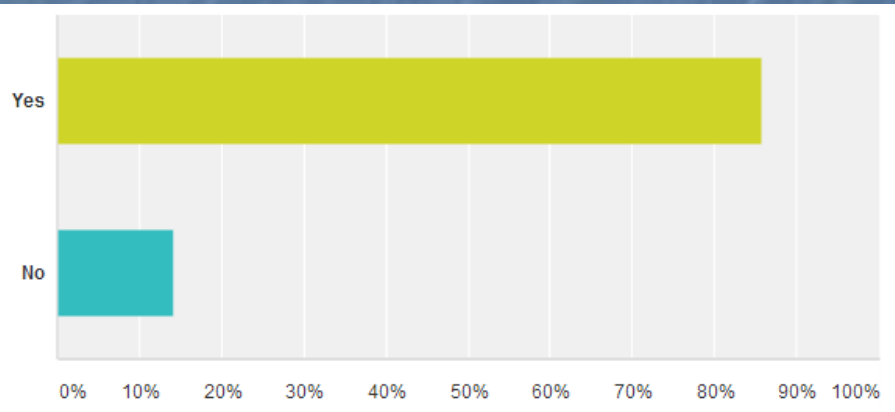
■ 2012-2013



# Do you volunteer at other organizations?

■ 2010-2011

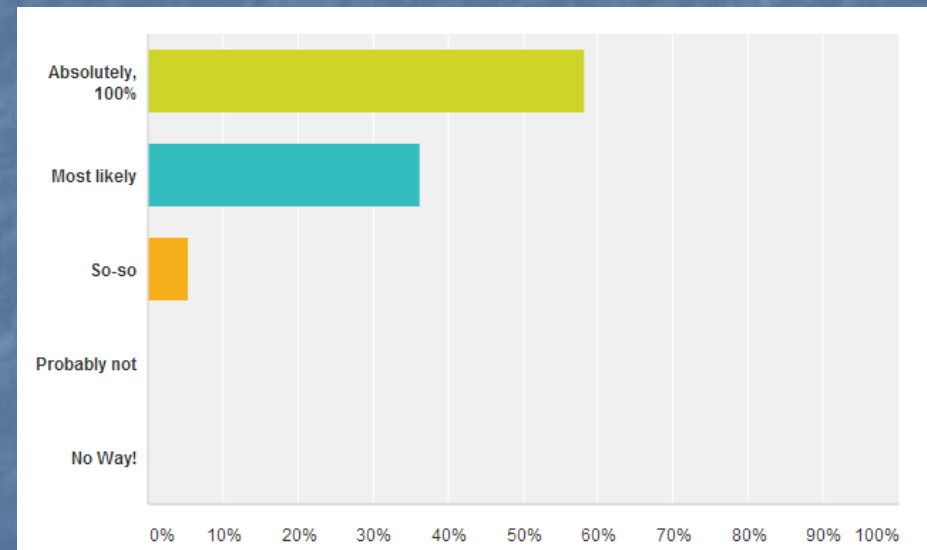
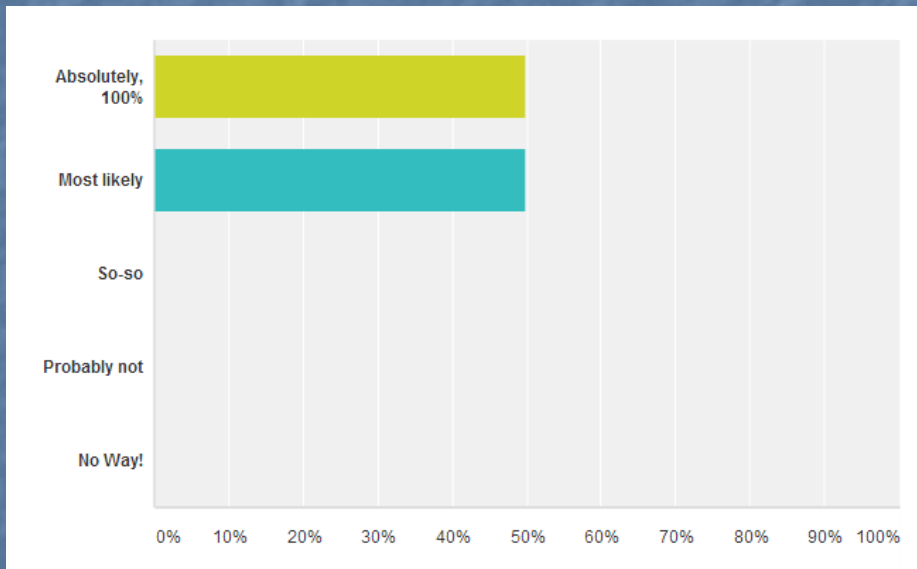
■ 2012-2013



# How likely are you to continue volunteering at the HRWC?

■ 2010-2011

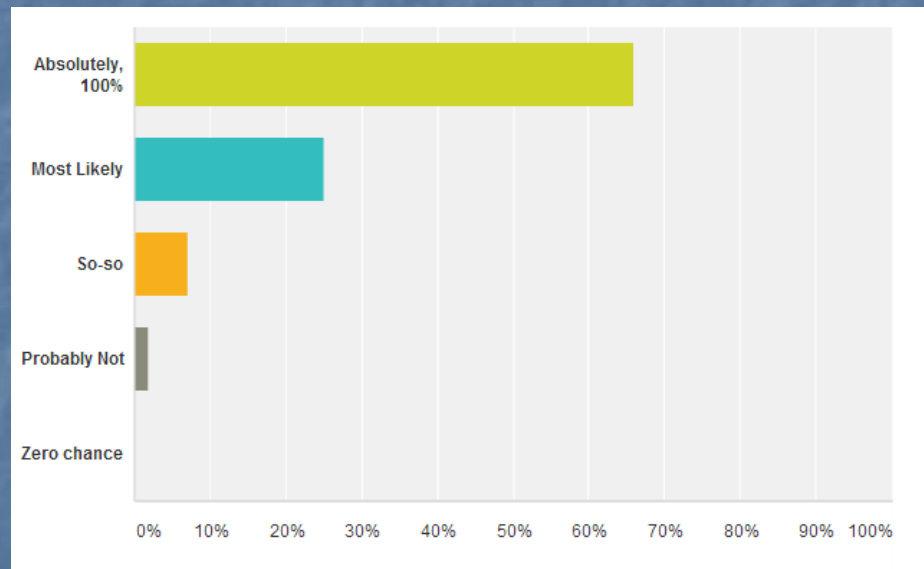
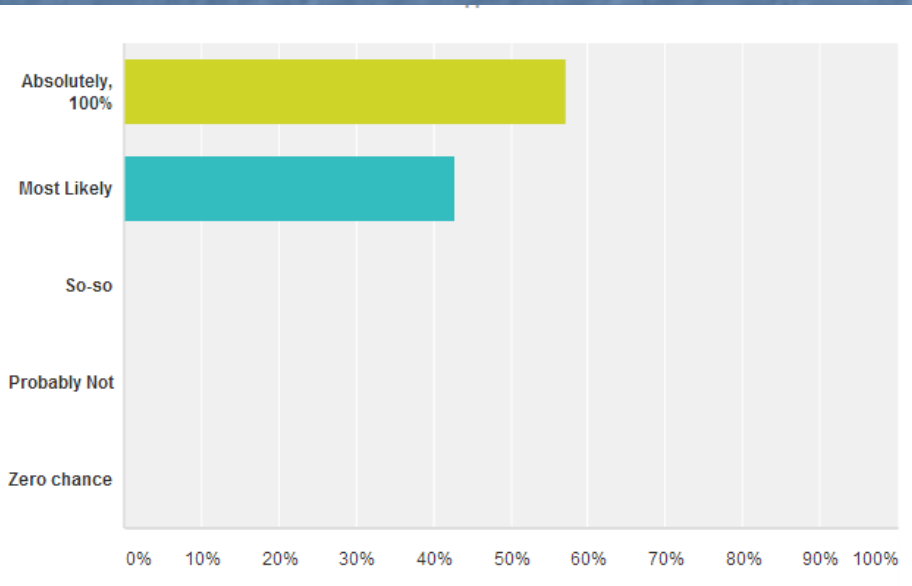
■ 2012-2013



# How likely are you to recommend volunteering at the HRWC with others?

■ 2010-2011

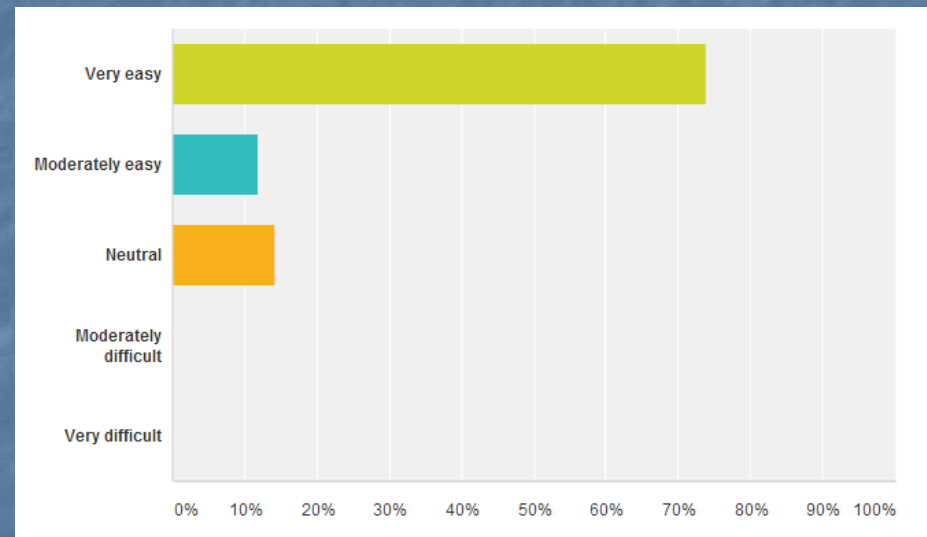
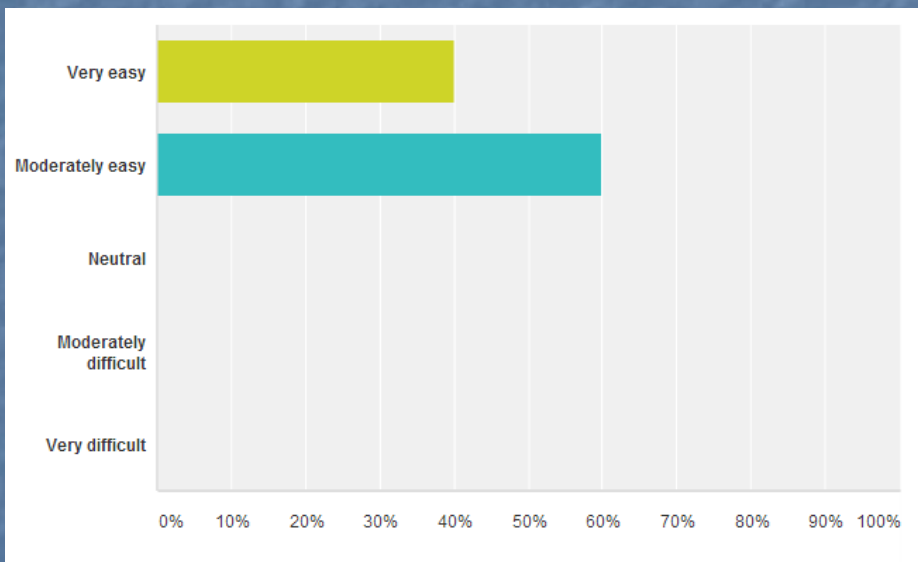
■ 2012-2013



# If you have participated in any volunteer trainings with HRWC, how easy was it to complete the training?

■ 2010-2011

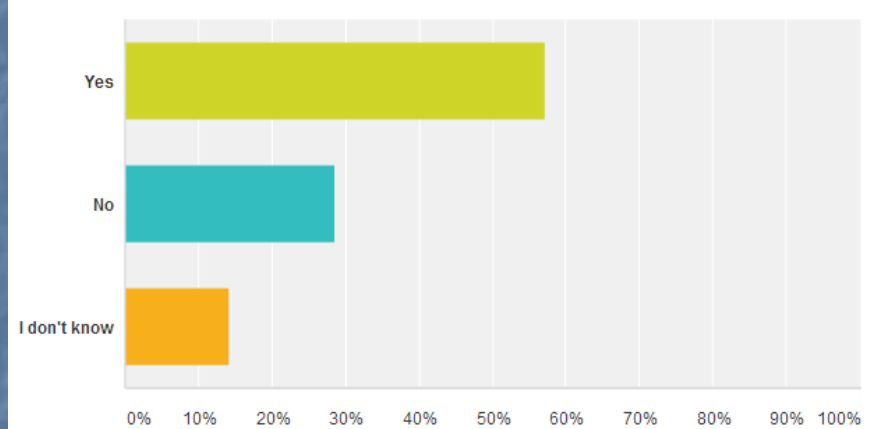
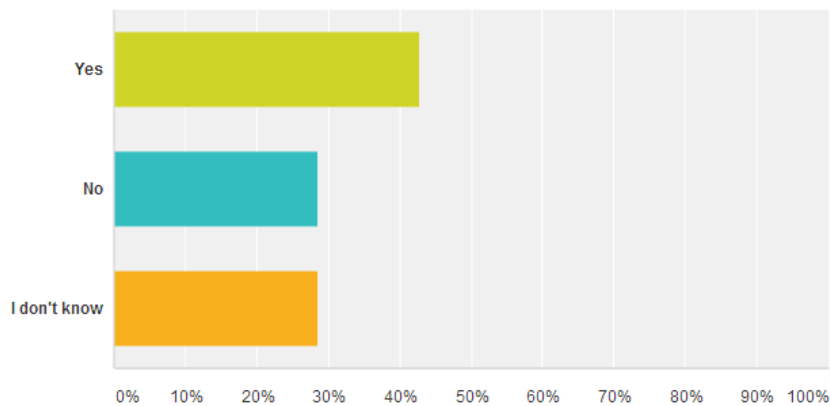
■ 2012-2013



# Are you an HRWC member?

■ 2010-2011

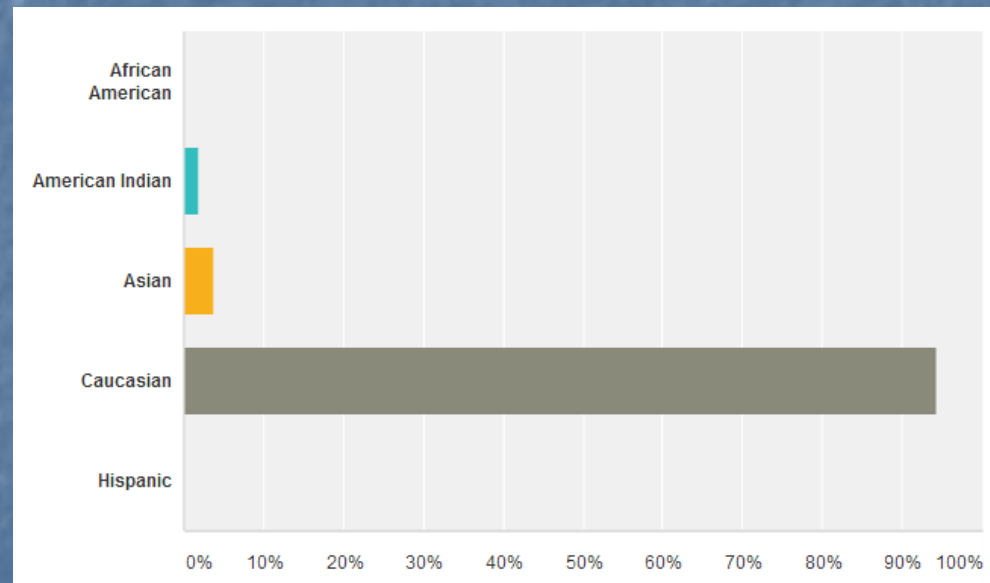
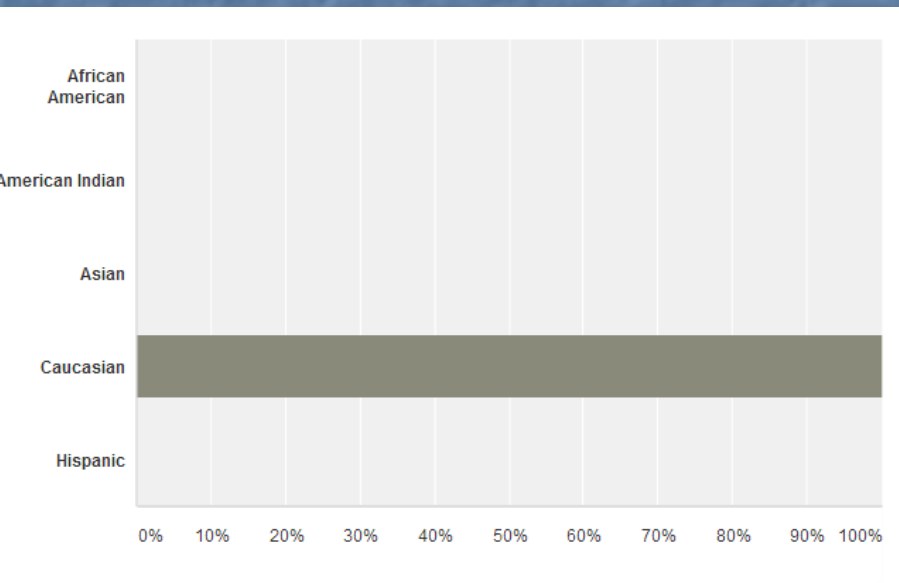
■ 2012-2013



# Of the following, which would you most closely identify yourself with?

■ 2010-2011

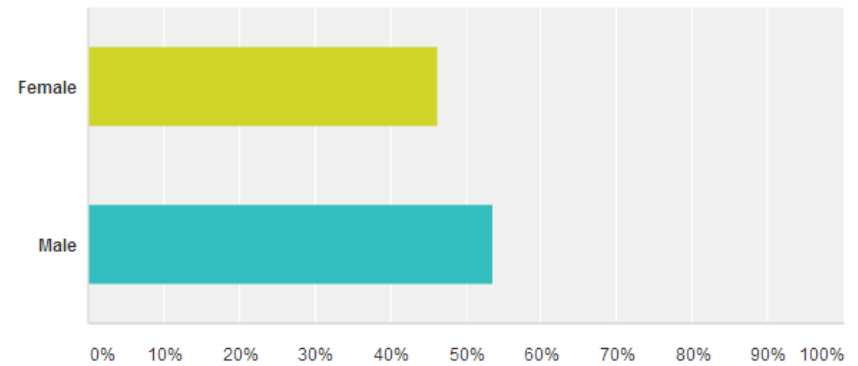
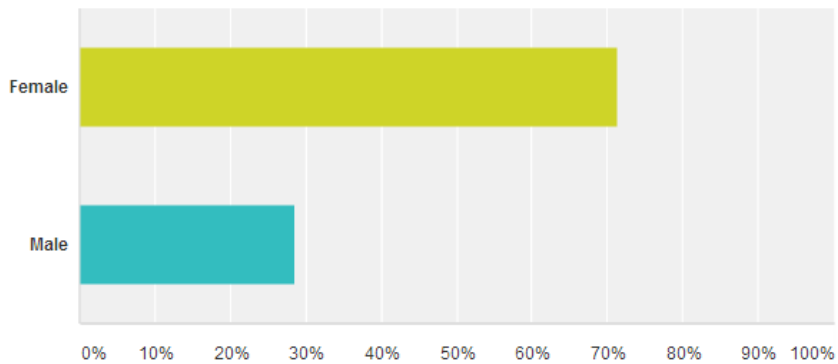
■ 2012-2013



# What is your gender?

■ 2010-2011

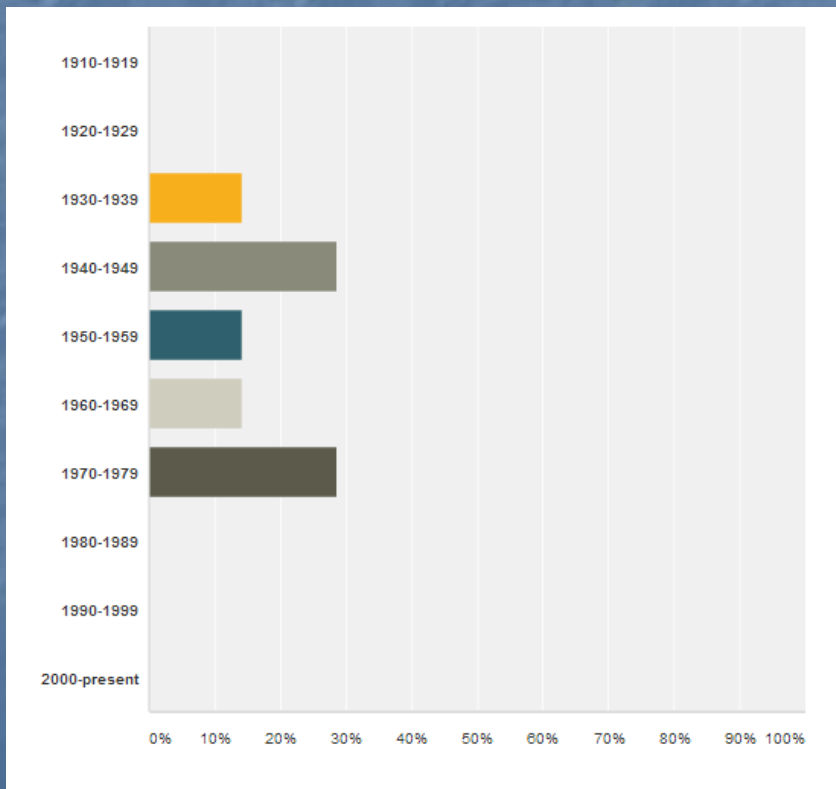
■ 2012-2013



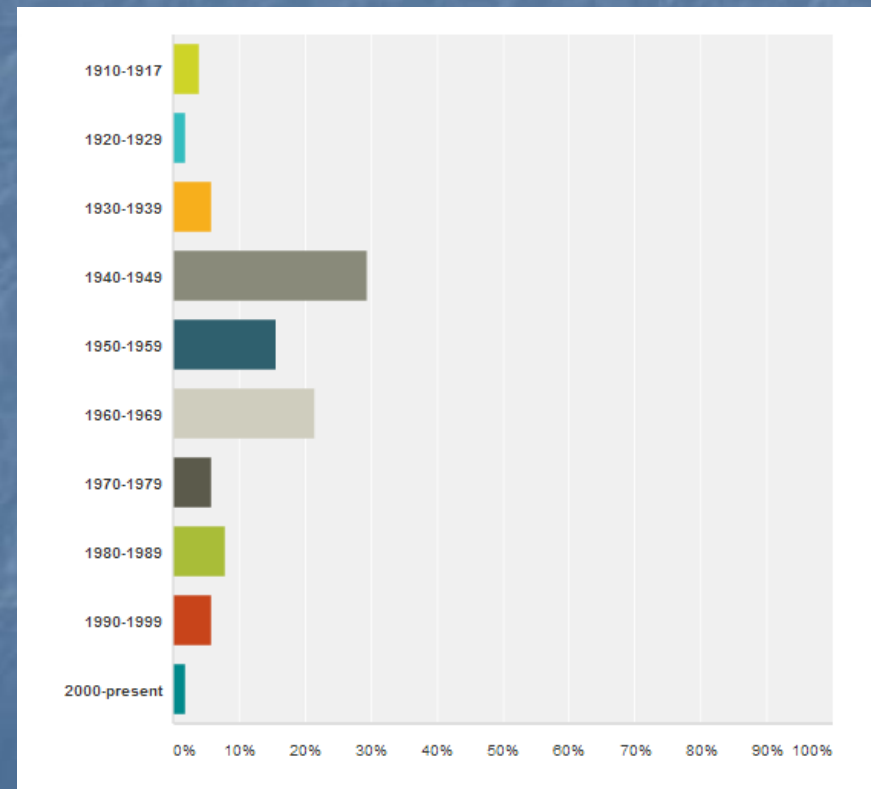


# What year were you born?

■ 2010-2011



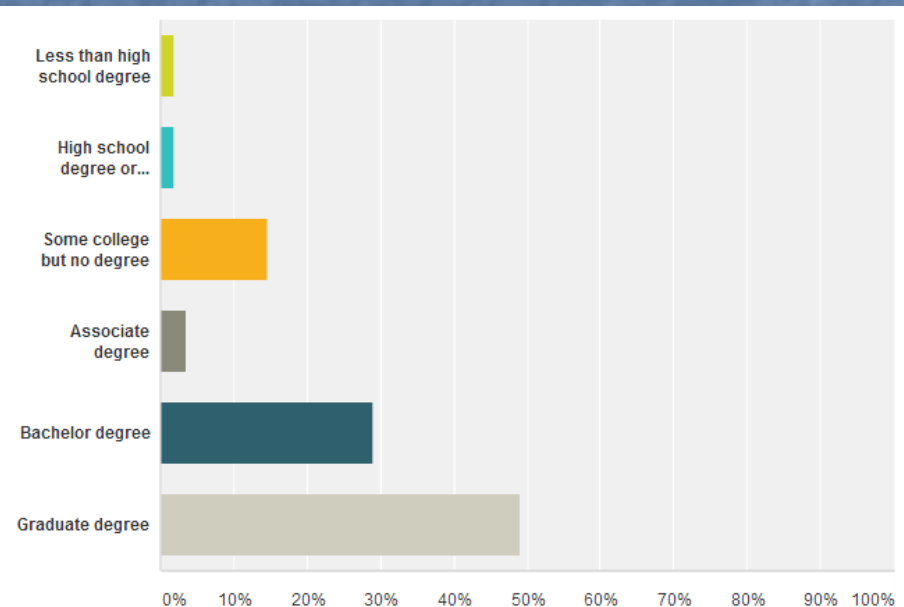
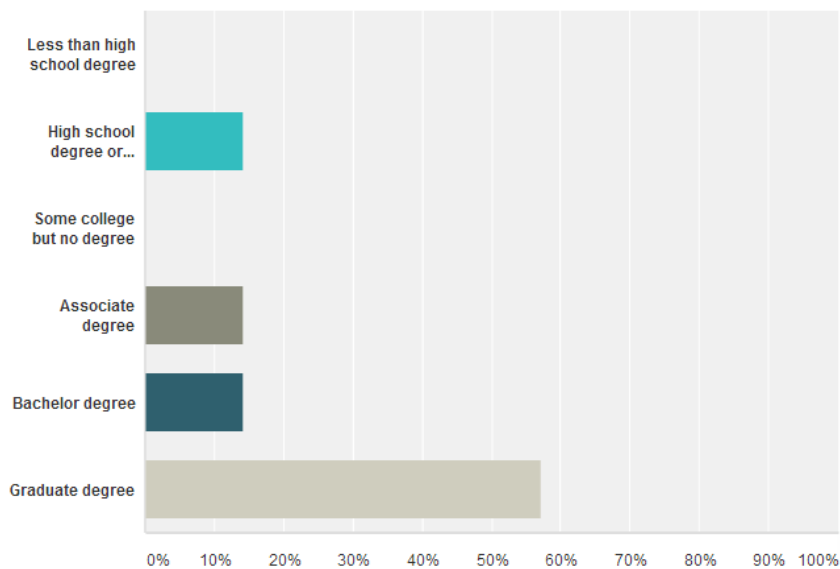
■ 2012-2013



# What is the highest level of school you have completed or the highest degree you have received?

■ 2010-2011

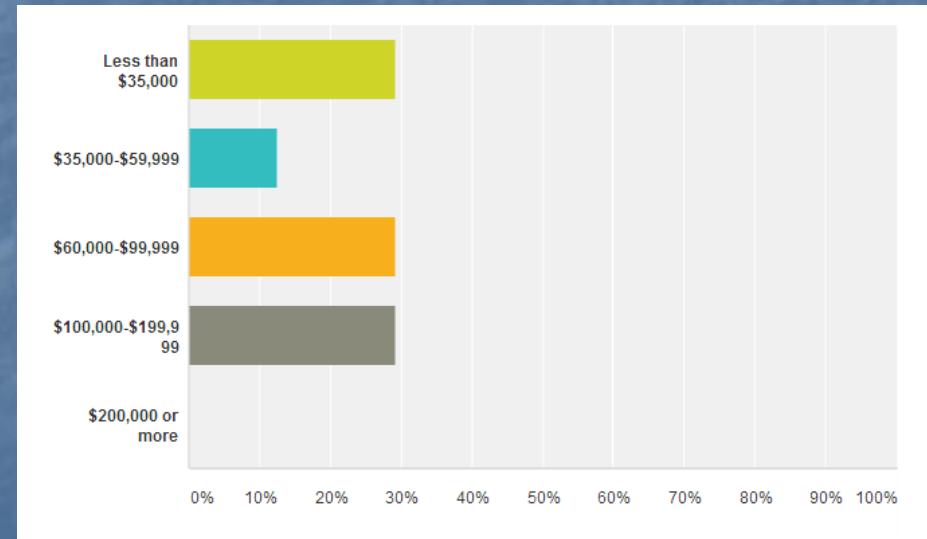
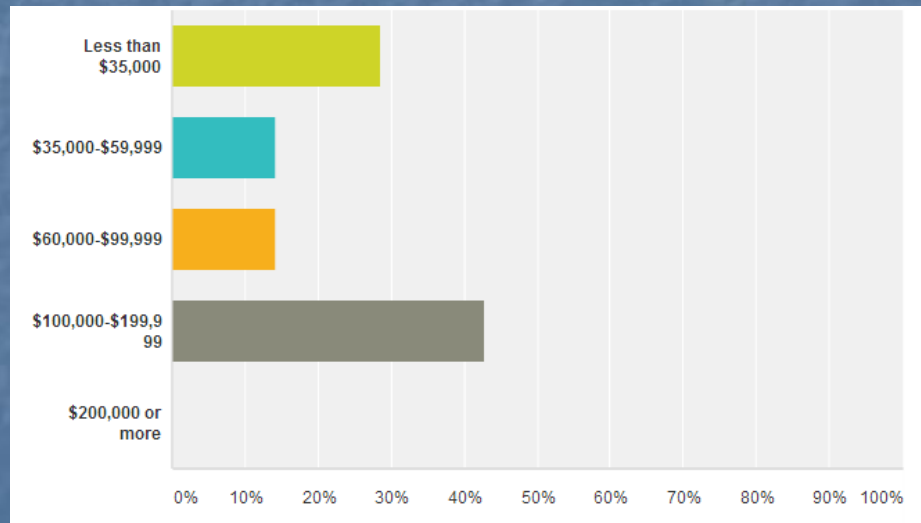
■ 2012-2013



# What is your approximate average household income?

■ 2010-2011

■ 2012-2013



2015 and Beyond...

Questions?

# Adopt-A-Stream

Volunteers conducting long term monitoring across the watershed

## Outline

- River Roundup
- Measuring and Mapping
- Creekwalking
- Case Study:  
Davis Creek





Volunteers are  
the backbone  
(& arms & legs)  
of HRWC  
monitoring

# River Roundups

2014:

82 samples taken in 2 River Roundups

0 sites sampled in the Stonefly Search

Process:

1. Volunteers sample stream for benthic macroinvertebrates
2. Volunteer and ID Expert sort, identify, and counts during ID Days
3. Paul verifies all identifications
4. Enter data into database
5. Look at results and overall trends

The results are used continuously throughout all of HRWC's activities to understand problems areas and direct management priorities. (along with all of our monitoring results).

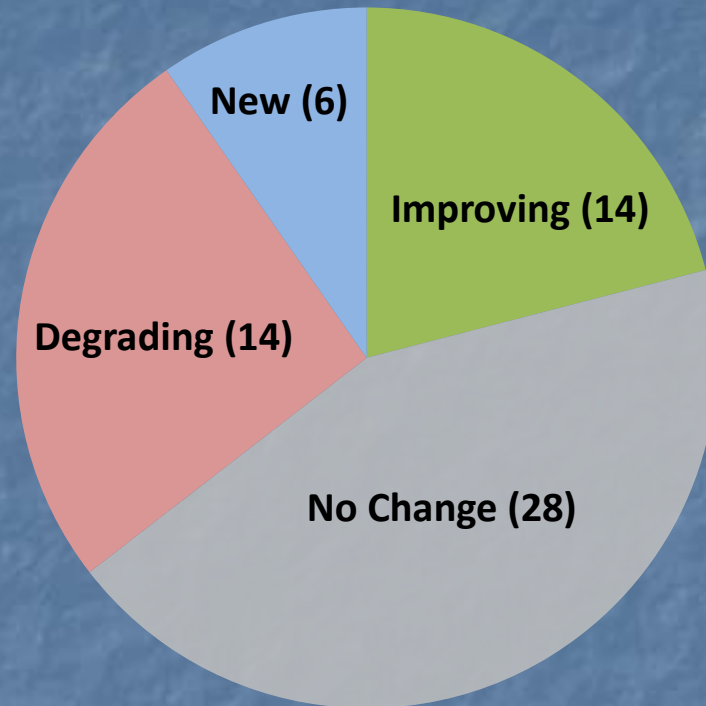




# Overall Trends

## Improving

Arms  
Boyden  
Fleming  
Huron Creek  
Huron River  
Malletts  
Mann  
Mill  
Woods



## Declining

Chilson  
Davis  
Horseshoe  
Norton  
Pettibone  
South Ore

Based on 62 sites selected  
to be representative of the watershed

# Measuring and Mapping Study 2014: What Do We Measure and Assess?

- Stream transects (substrate size, depths)
- Stream width (active edge and water's edge)
- Number of pools, riffles, and their lengths
- % of stable habitat and fine sediment
- % bare banks
- Plant abundance in stream and banks
- Riparian corridor width
- Bank angles
- In-stream plant abundance
- Odors and soap bubbles



# Stream Habitat 2014

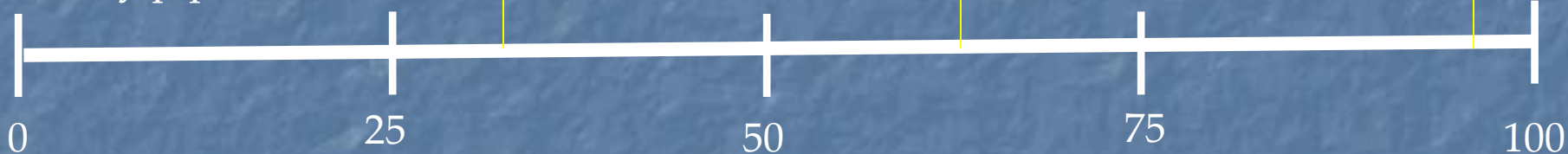
Worst site: 32, Mill @ Parker

Average for all sites: 67

Best site: 93, Huron @ White Lake

A muddy pipe

Pristine



Sites 2014	Score
Huron Creek	87
Honey Creek : Wagner	75
Huron River : Zeeb	63
Huron River : Commerce Rd	62

Sites 2014	Score
Portage : Rockwell Road	59
Mill Creek : Warrior Park	59
Letts Creek: M-52	52

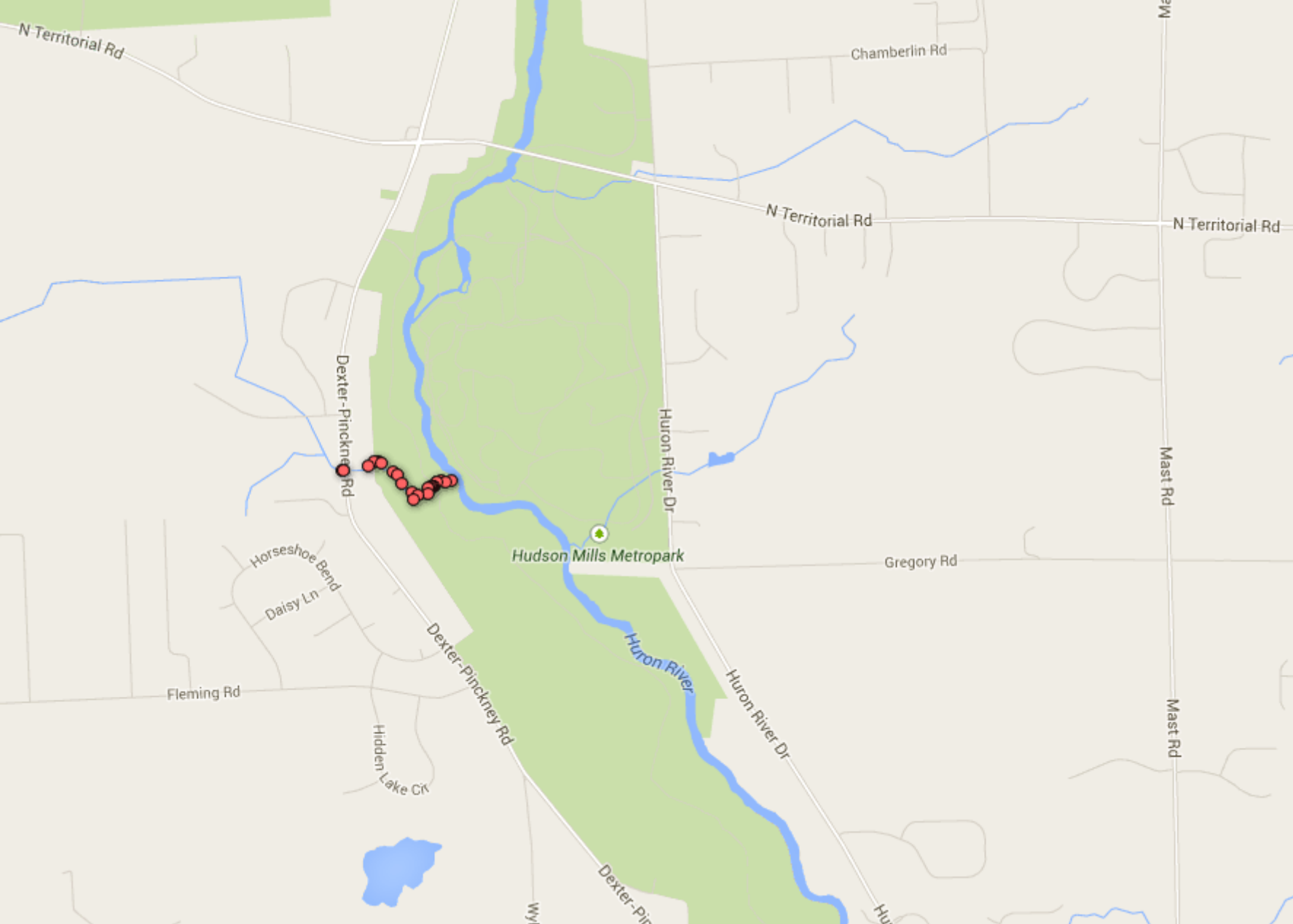
# What does a score of 87 mean?

## Huron Creek at Hudson-Mills Metropark



- Primarily cobbles and gravel
- Extensive vegetated riparian zone
- Little bank erosion
- No channel alteration (dredging, straitening)
- Why not a 100? Some areas of sand and muck reduce the score slightly.
- Very good diversity of insects in this stream.

# Where is Huron Creek?



# Creekwalking

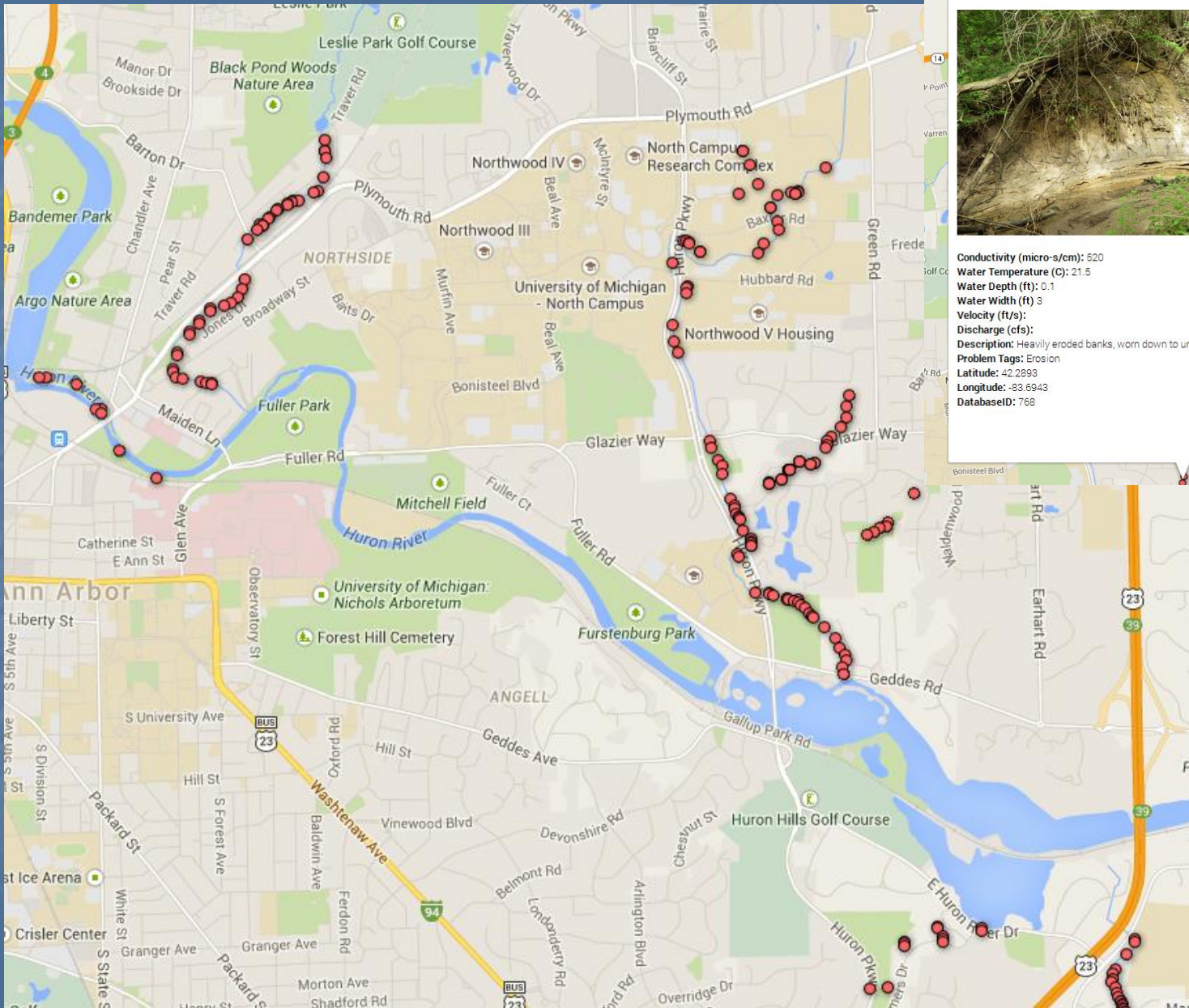
- Creekwalking– just finished 3<sup>rd</sup> field season.
- Goal: Expand our knowledge beyond our current sample sites, find problems, experience the beauty and diversity of a stream.
- 2012: 104 observations
- 2013: 321
- 2014: 518











Date: 30-Jun-14

### Tributary to Millers Creek



Conductivity (micro-s/cm): 520  
Water Temperature (C): 21.5  
Water Depth (ft): 0.1  
Water Width (ft): 3  
Velocity (ft/s):  
Discharge (cfs):  
Description: Heavily eroded banks, worn down to underlying sandstone. Greater than 10 feet tall.  
Problem Tags: Erosion  
Latitude: 42.2893  
Longitude: -83.6943  
DatabaseID: 768

Date: 30-Jun-14



## Tributary to Millers Creek



**Conductivity (micro-s/cm):** 520

**Water Temperature (C):** 21.5

**Water Depth (ft):** 0.1

**Water Width (ft)** 3

**Velocity (ft/s):**

**Discharge (cfs):**

**Description:** Heavily eroded banks, worn down to underlying sandstone. Greater than 10 feet tall.

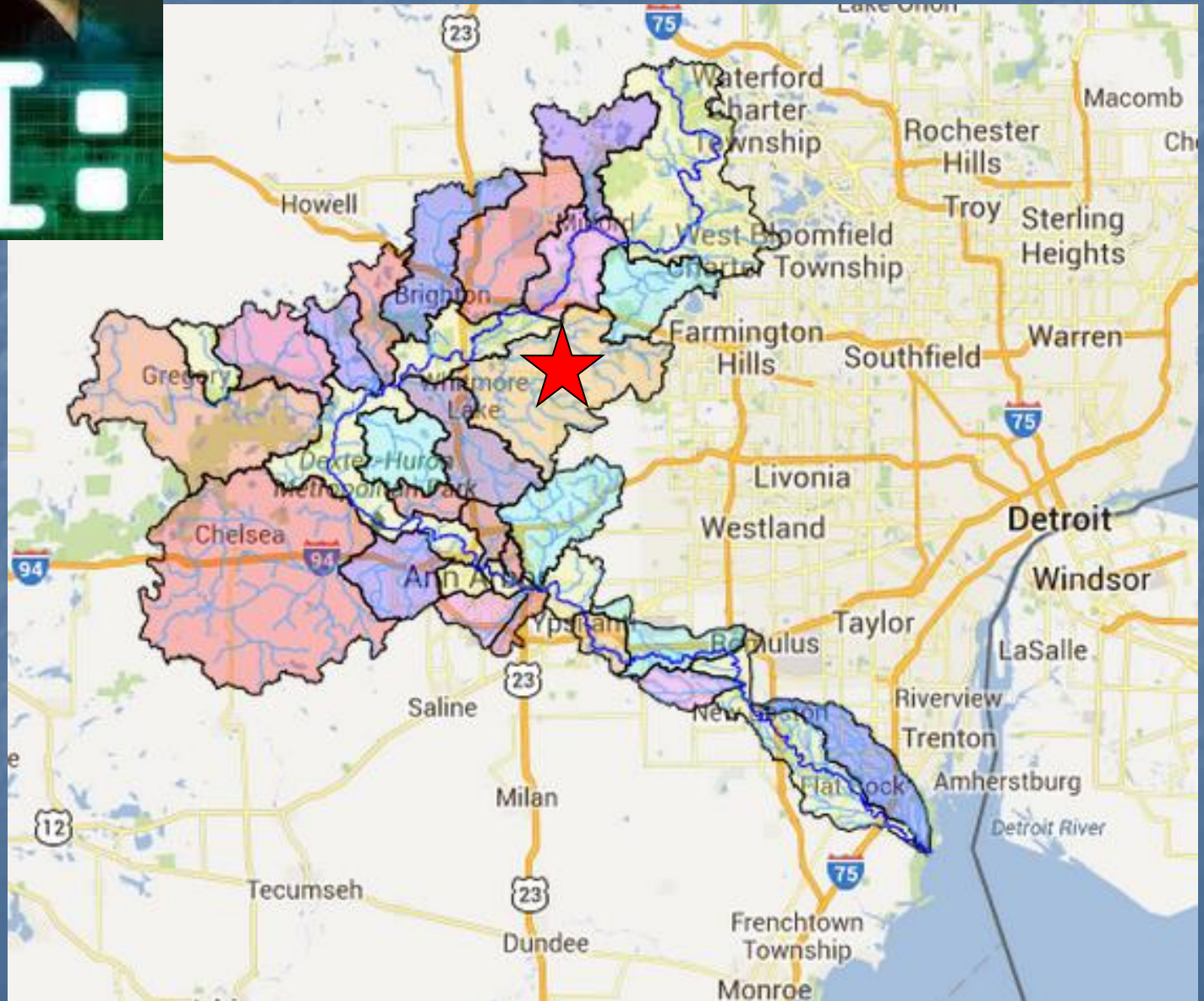
**Problem Tags:** Erosion

**Latitude:** 42.2893

**Longitude:** -83.6943

**DatabaseID:** 768

# Confusing Stream Investigations, Davis Creek edition



# Davis Creek sampling in October River Roundup

## **Davis Creek : Doane Road**

31 total specimens

- 5 total insect families
- 2 EPT families
- 0 sensitive families

## **Davis Creek : Pontiac Trail**

36 total specimens

- 7 total insect
- 3 EPT
- 1 sensitive

## **Greenock Creek : Rushton Road**

57 total specimens

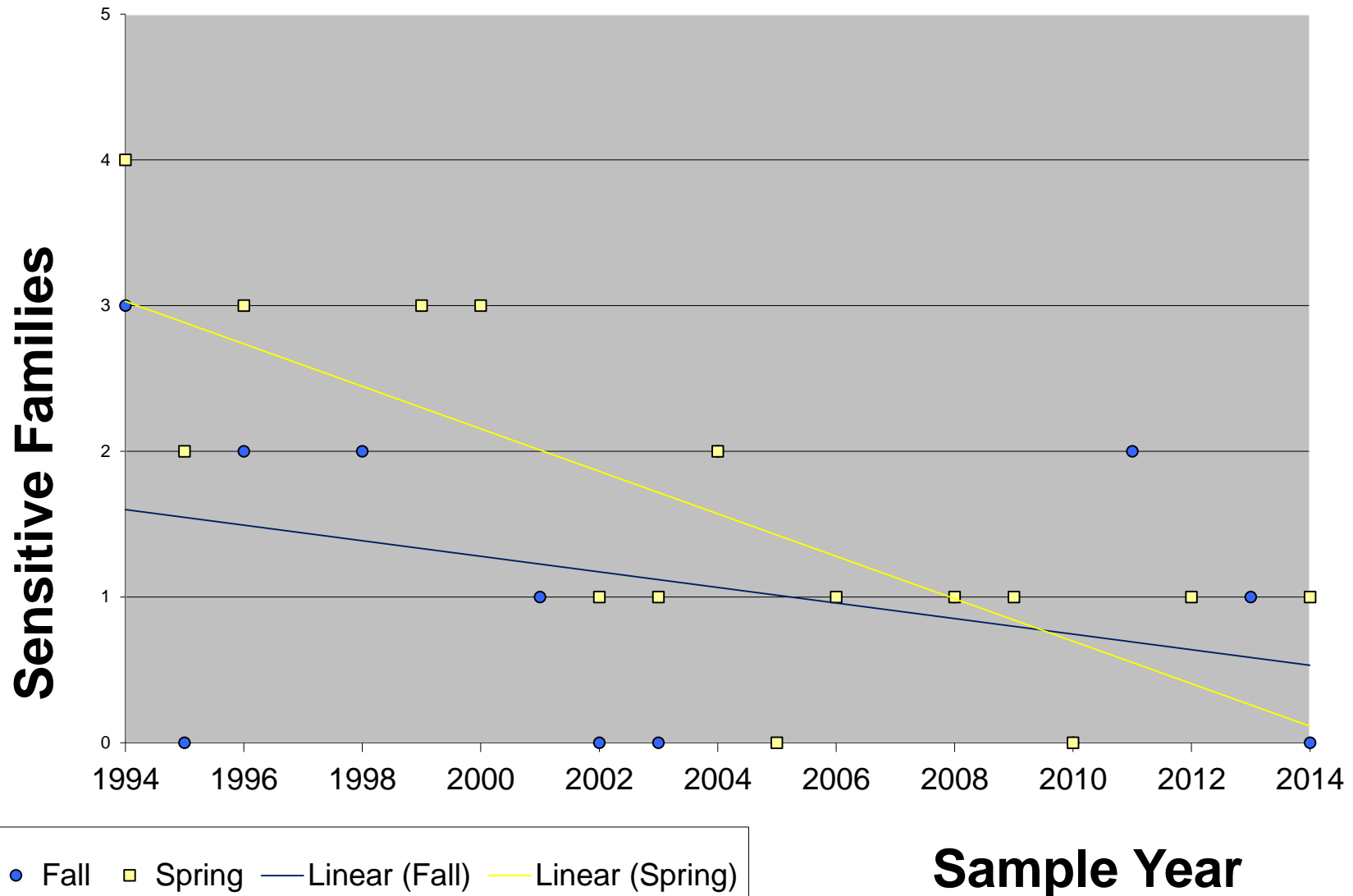
- 4 total insect
- 1 EPT
- 0 sensitive

## **Davis Creek: Silver Lake Road**

58 total specimens

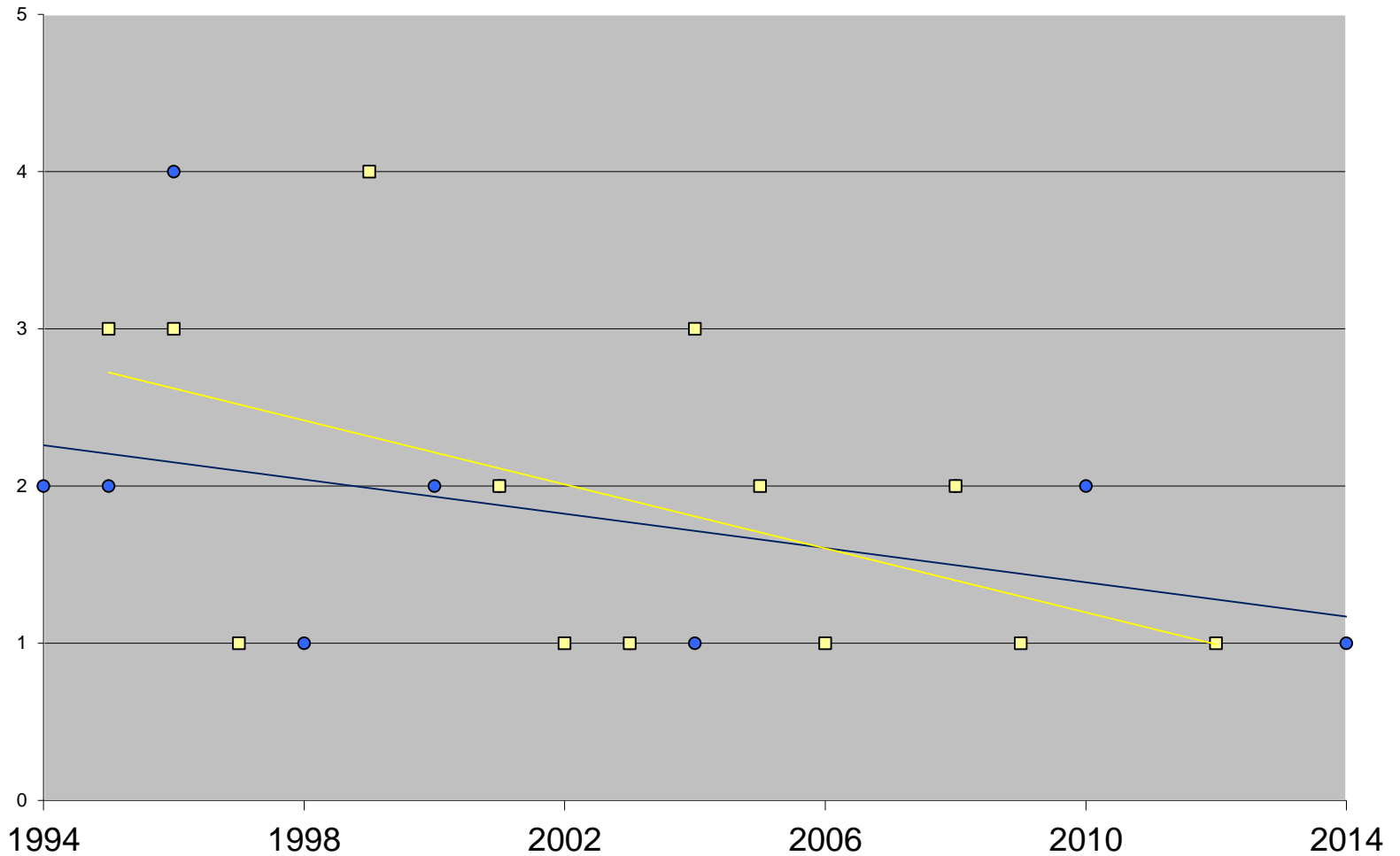
- 18 total insect
- 9 EPT
- 3 sensitive

# Davis Creek @ Doane Road



# Davis Creek @ Pontiac Trail

**Sensitive Families**



● Fall

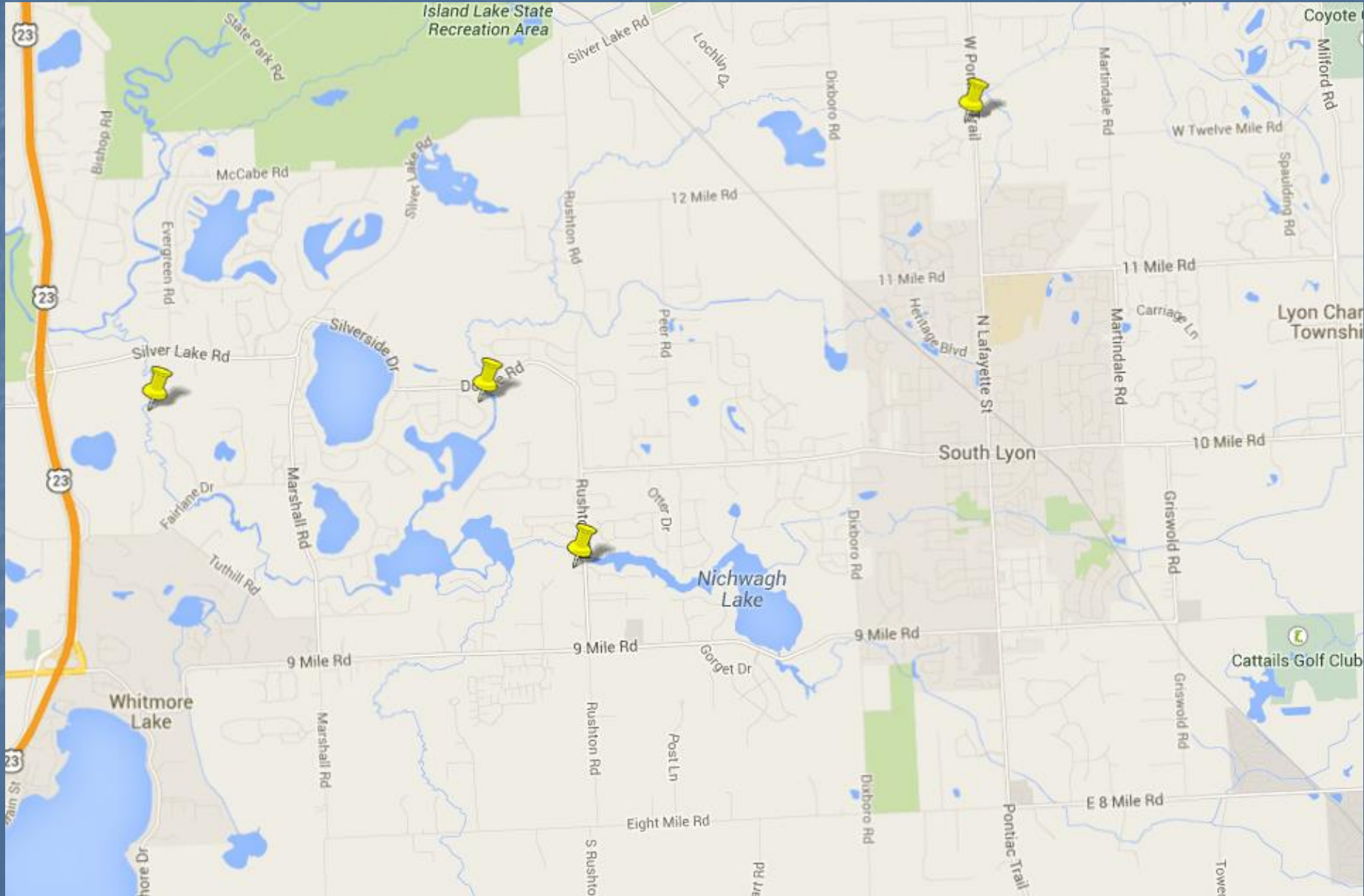
■ Spring

— Linear (Fall)

— Linear (Spring)

**Sample Year**

# Davis Creek site map



# Is this a habitat issue?

- Doane Rd: Score 79. Very good habitat, good rocky/sandy bottom, good riparian zone supplying plenty of woody debris.
- Pontiac Trail: Score 72. Slightly more sand but otherwise good habitat.





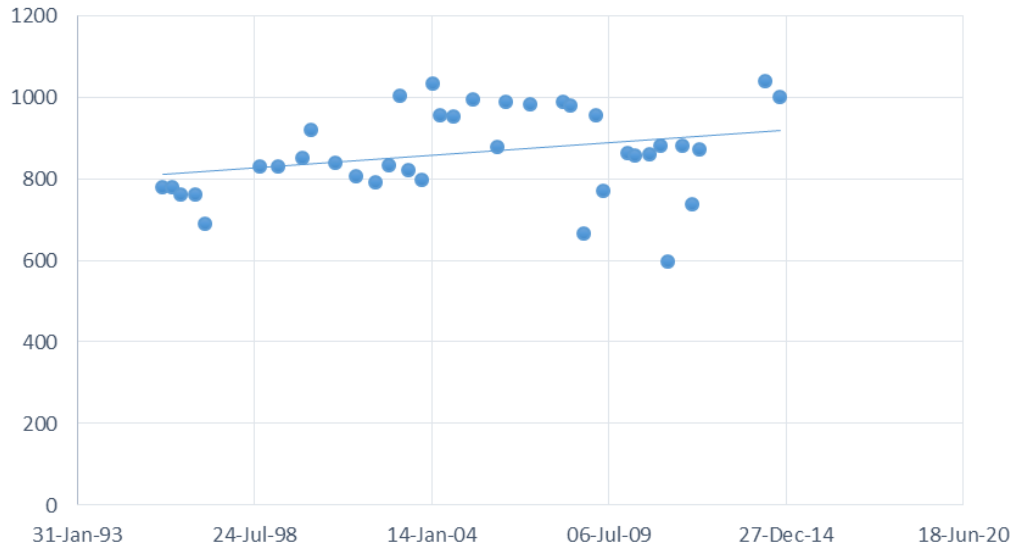
# Eyes on Creek: Creekwalking



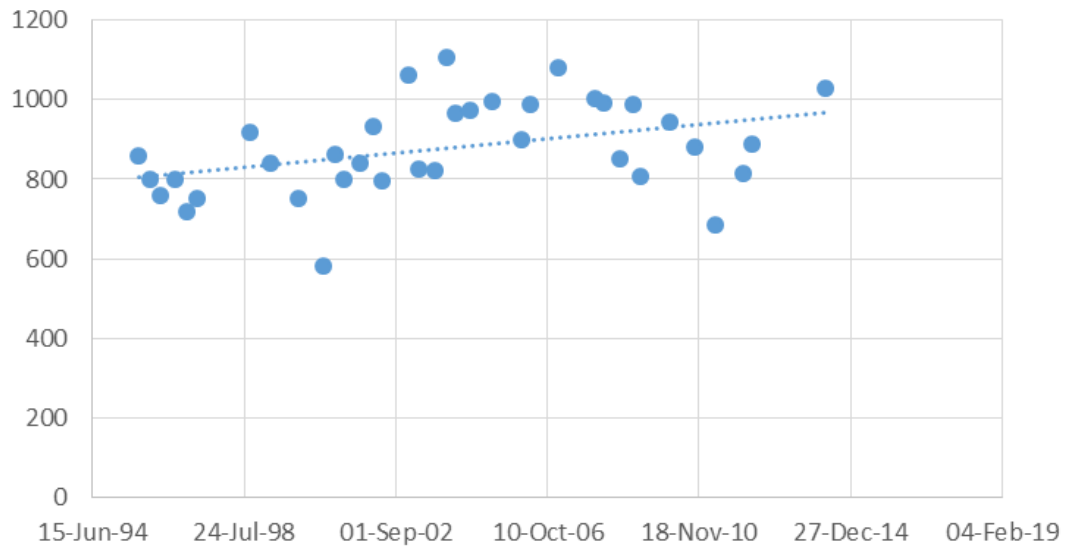
# What is dissolved in the water?

- Ric's WQ program has not sampled on this particular section of creek.
- His data shows no problems at the downstream Silver Lake Road site, where we have great insect life.
- His data does show elevated phosphorus on other upstream parts of Davis.
- Conductivity: Volunteers take water samples for conductivity at each River Roundup
- Conductivity is a proxy for total dissolved solids (TDS)
  - Inorganic salts & organic matter
  - Calcium, magnesium, sodium cations
  - Carbonate, chloride, phosphate, nitrate, sulfate anions
  - Herbicides, pesticides
  - Volatile organic chemicals (VOC's)
  - Humic/fulvic acids (tannins)

### Conductivity at Doane Rd



### Conductivity at Pontiac Trail





## Confusing Stream Investigations, Davis Creek edition

- Conclusion: I have not yet caught the bad guy at the end of this episode (maybe it's a recurring villain)
- A solid clue: Conductivity is going up, insects are going down.
- Future episodes
  - More creekwalking.
  - More water chemistry (total phosphorus, temperature, dissolved oxygen).
  - Possible water analysis to determine the dissolved constituents.

Questions?

# Water Quality Monitoring Program

Collect water quality information from tributaries to the Huron River to evaluate sources of problems and measure the degree of management success



Paid for with stormwater funds from:

- Middle Huron Partners and Stormwater Advisory Group
- Alliance of Downriver Watersheds

# Outline

- What was measured?
- Where?
- Important results
- How are the results being used?
- What's next?



# What was measured in 2014?

- 62 volunteers – THANKS!
- 281 sample sets collected
  - Nutrients (Phosphorus, Nitrogen)
  - Sediments (Total Suspended Solids)
  - Bacteria (*E. coli*)
  - Other (Dissolved Oxygen, pH, Temperature, Conductivity)
- 128 flow measures
- 104 investigative samples
- 10 storm samples



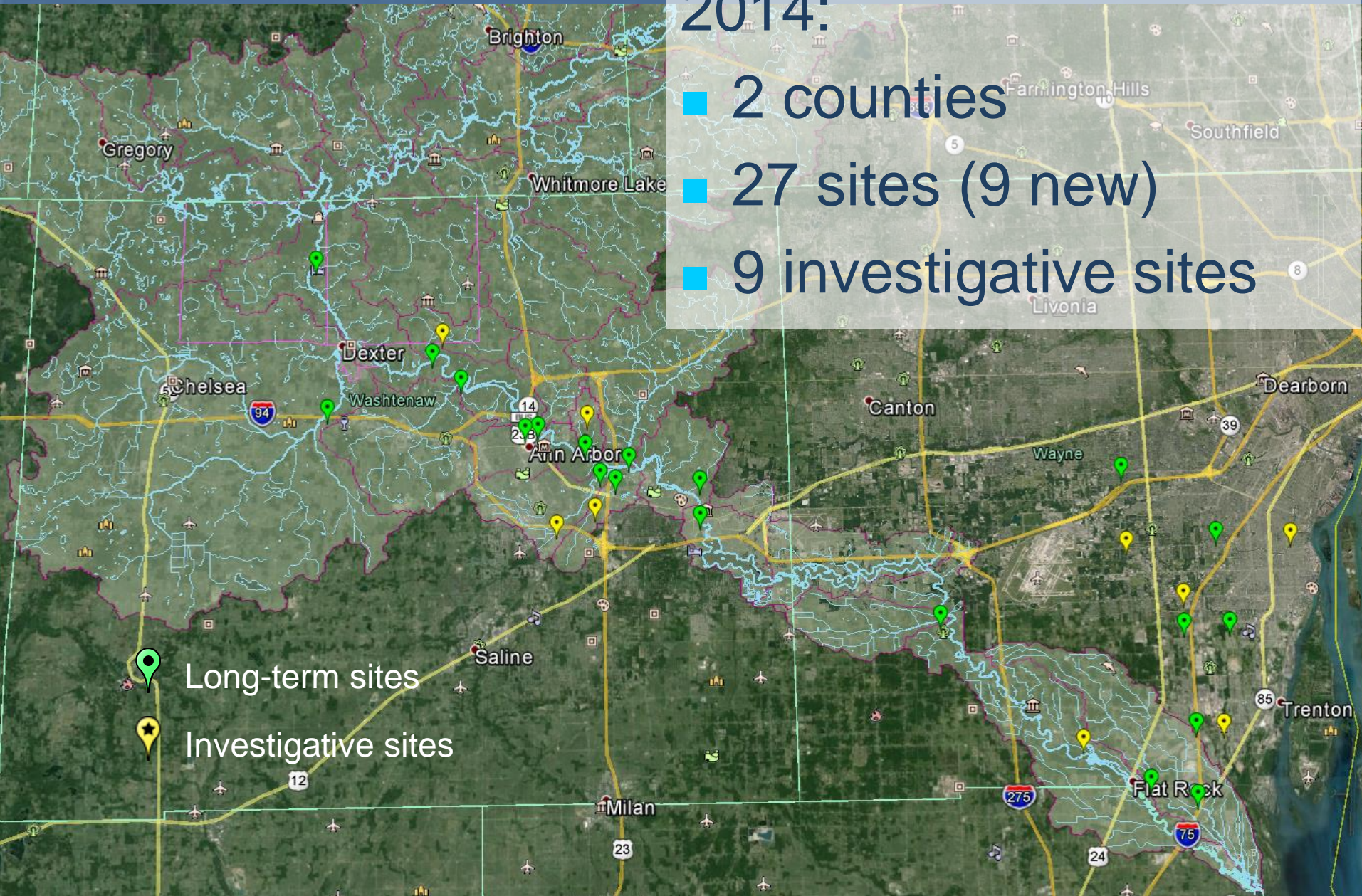
# WQ Program:

- 3 counties
- 71 sites
- 28 creeks, 5 river sites

- 
- Long-term sites
  - Investigative sites
  - Bacteria study sites

2014:

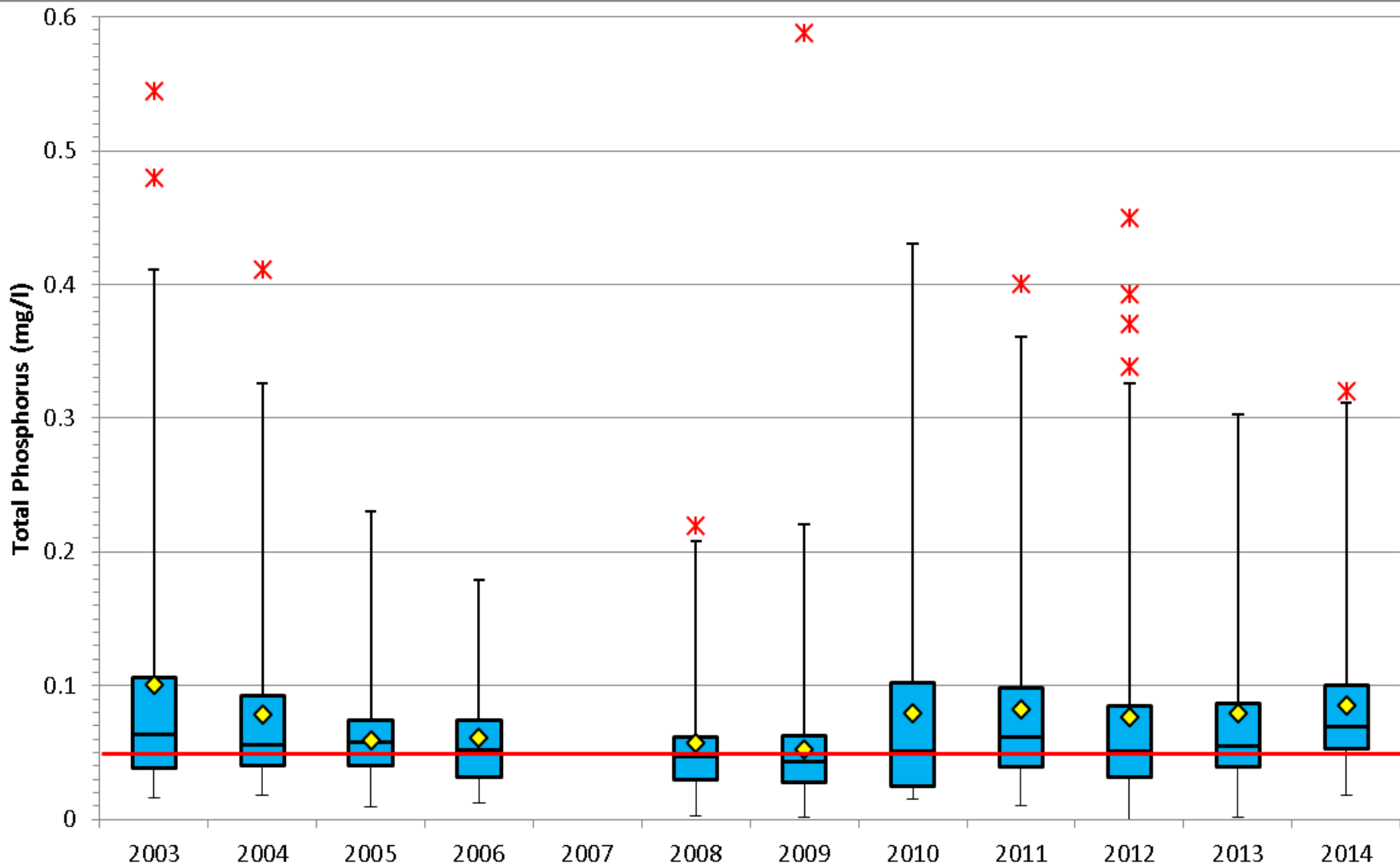
- 2 counties
- 27 sites (9 new)
- 9 investigative sites



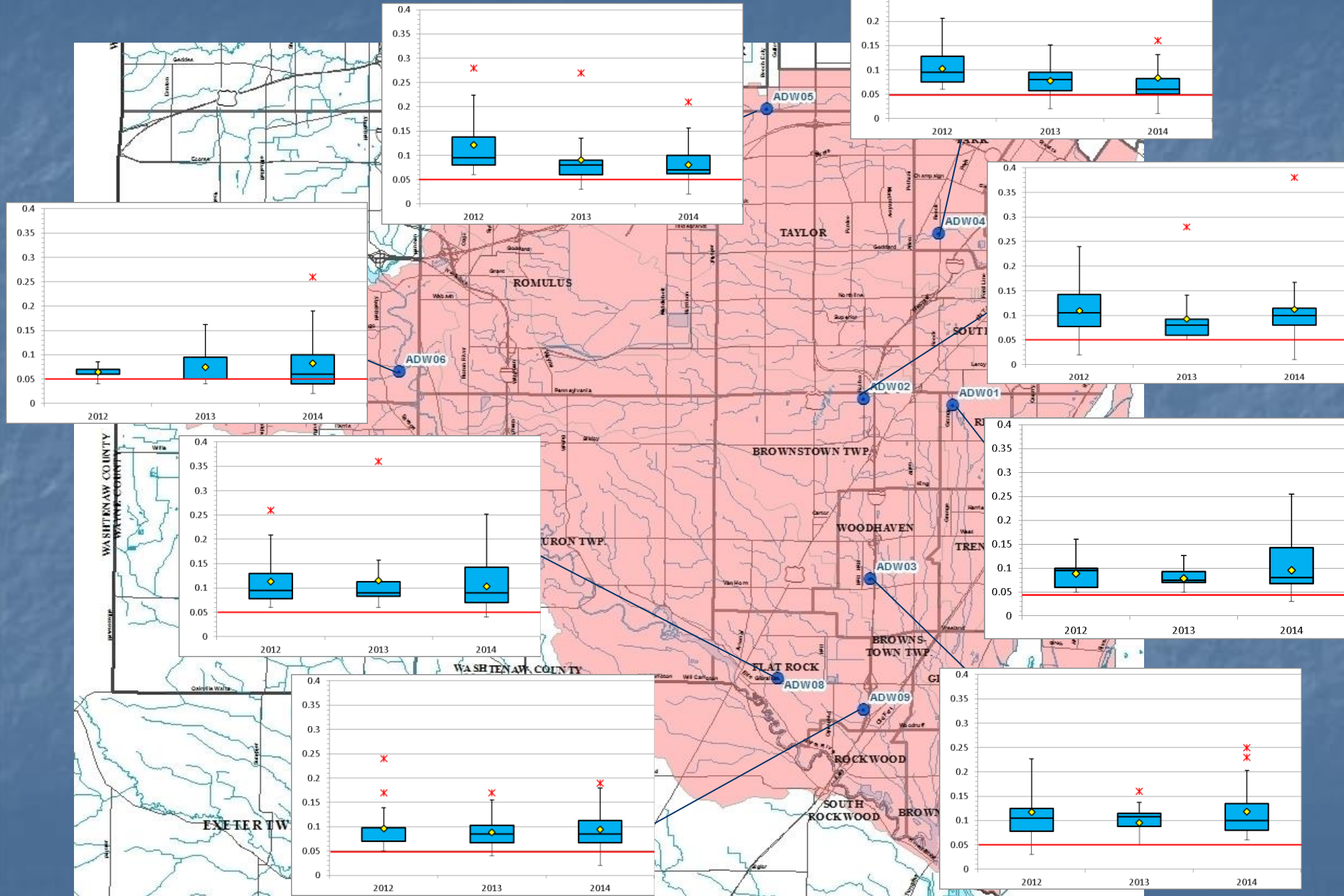
Long-term sites

Investigative sites

# Phosphorus (TP) in Middle Huron



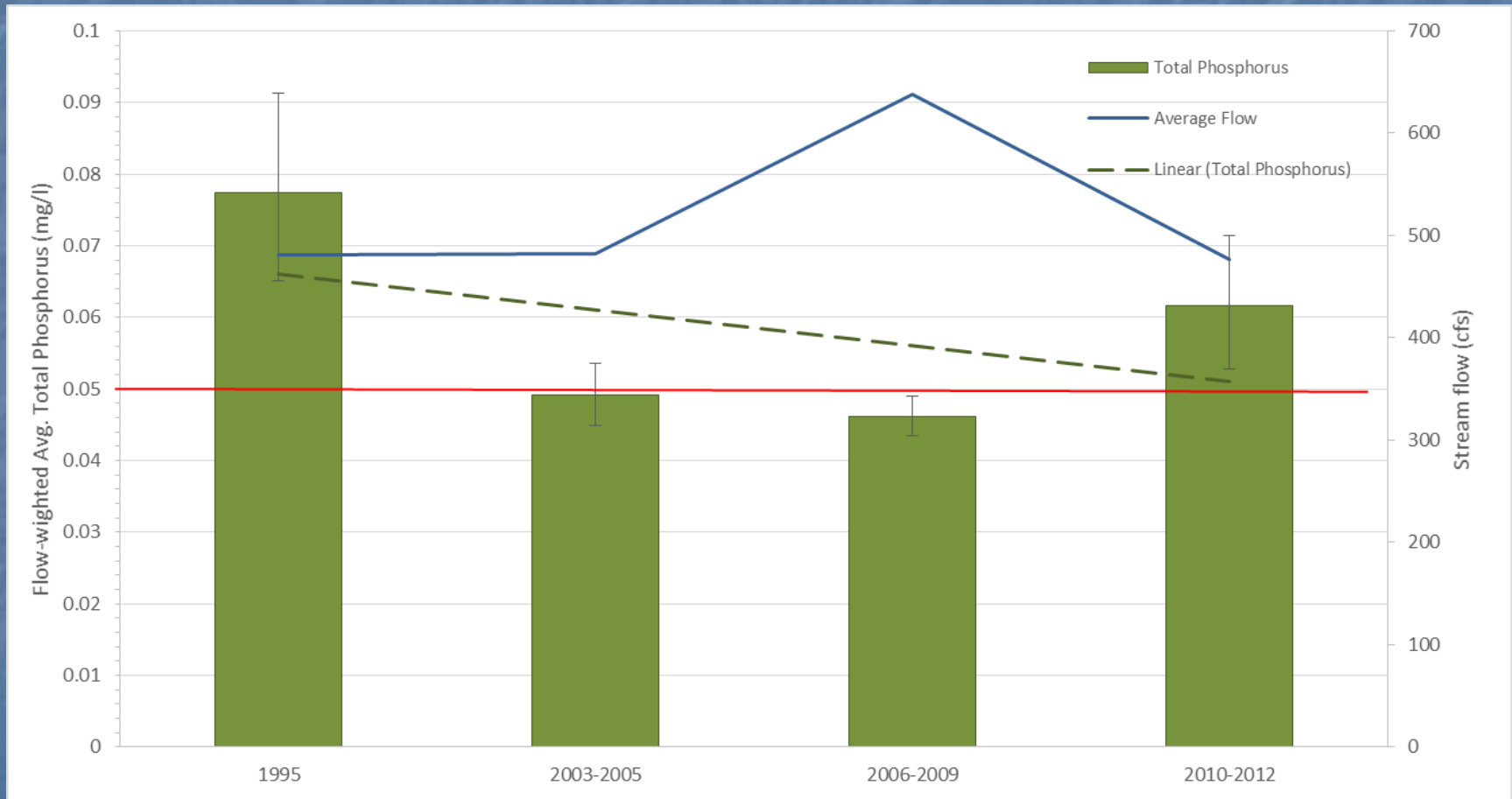
# Total Phosphorus in Wayne Co. (mg/L)



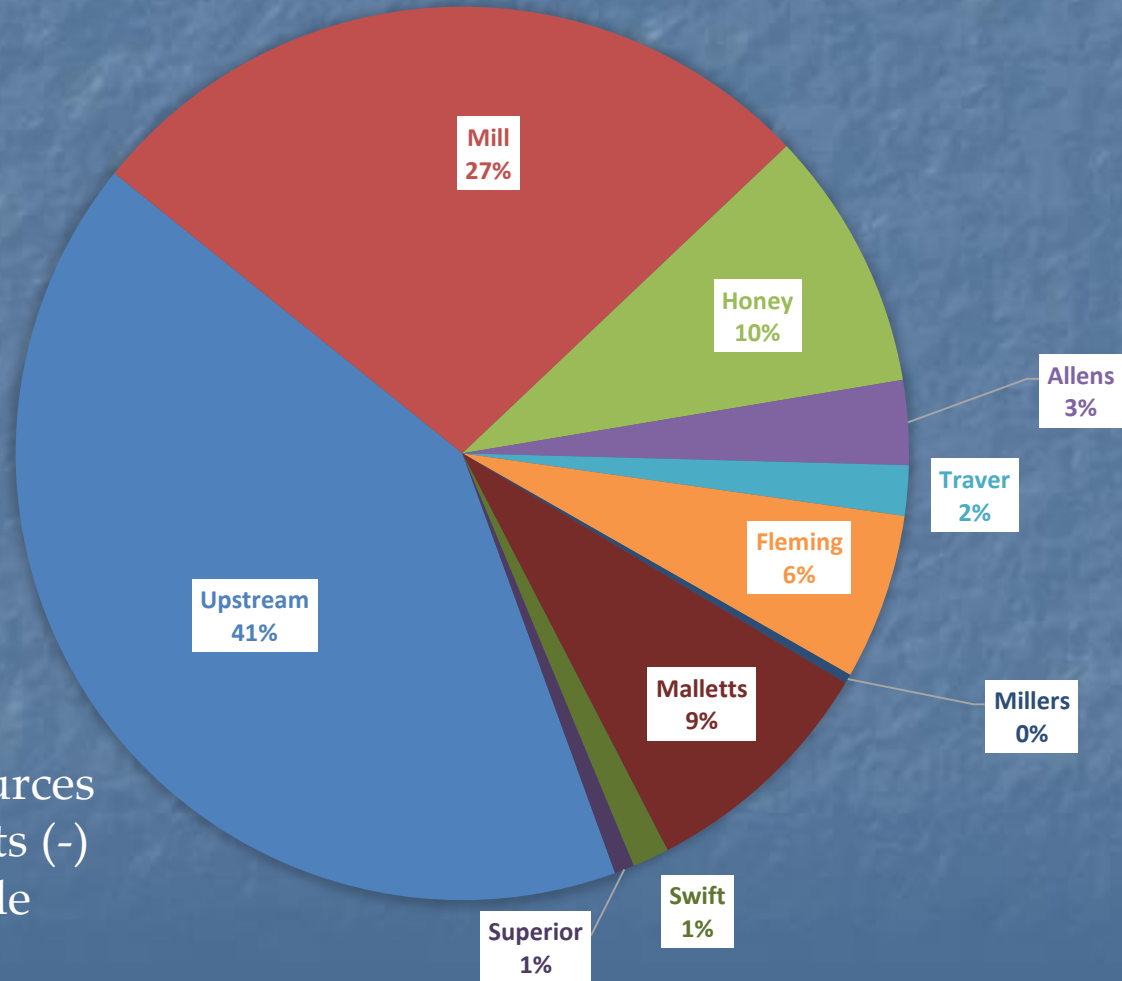
# P Load to Ford Lake



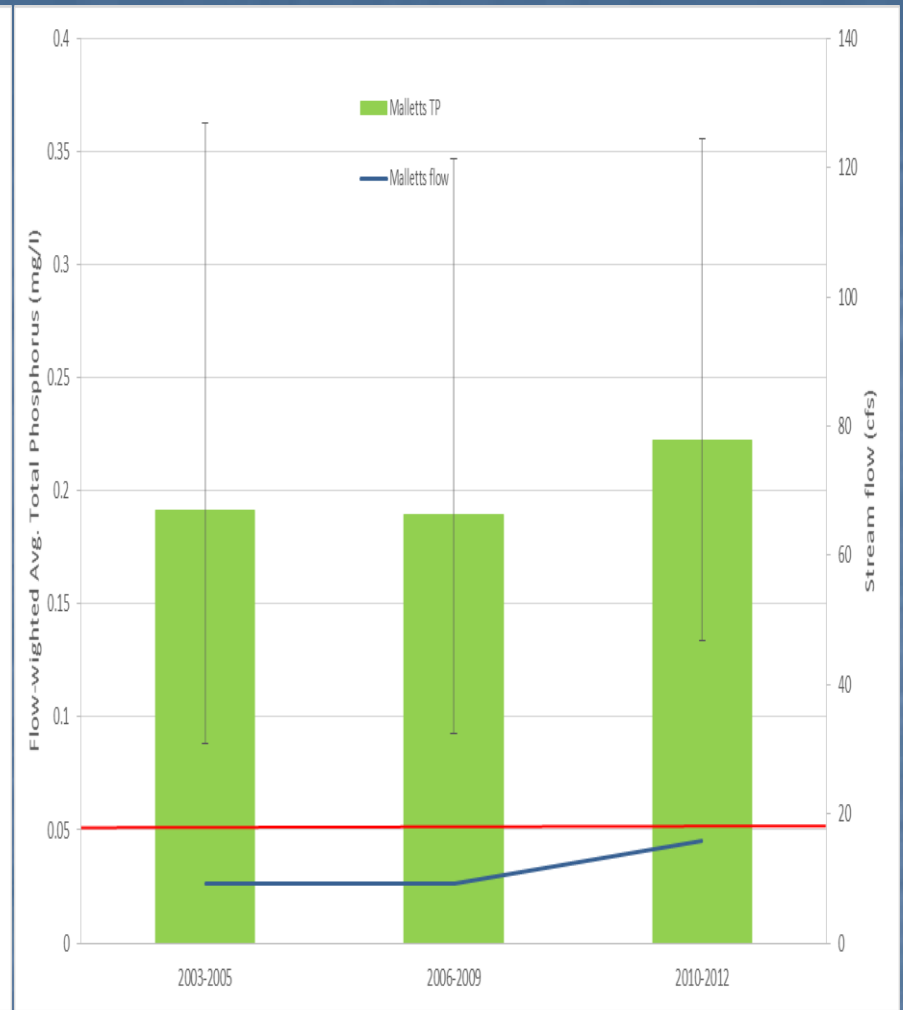
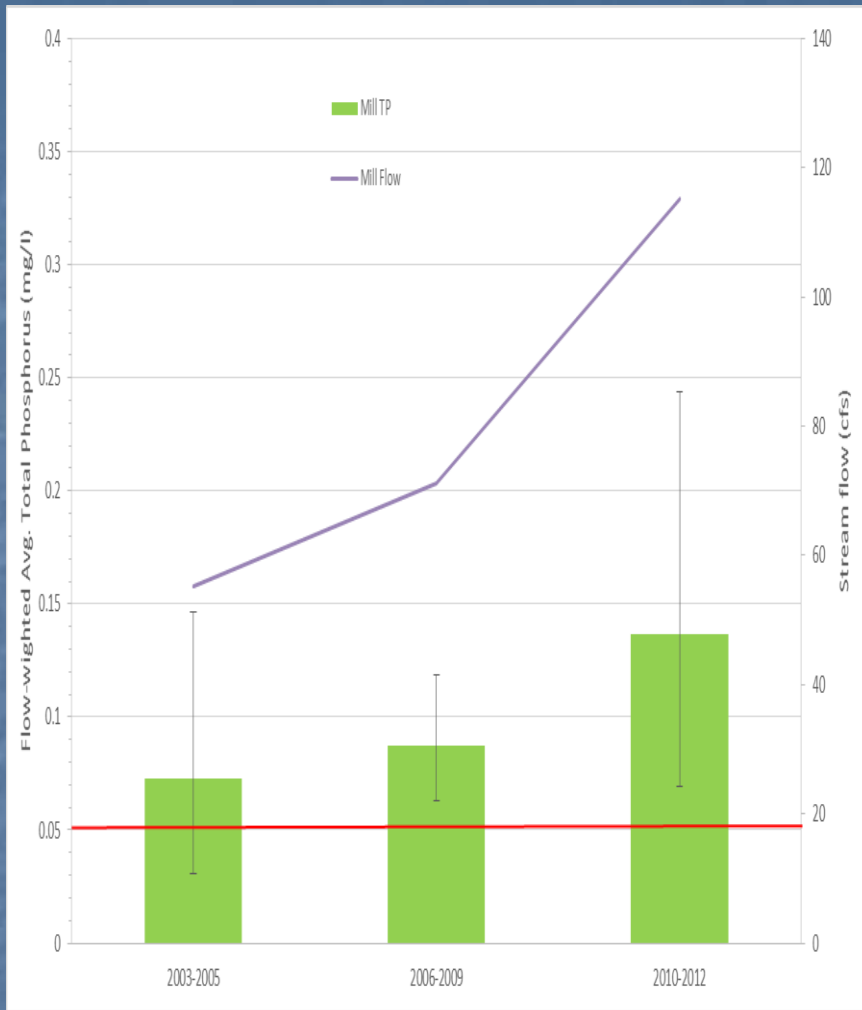
# Flow-adjusted P Concentration



# P Load by Tributary



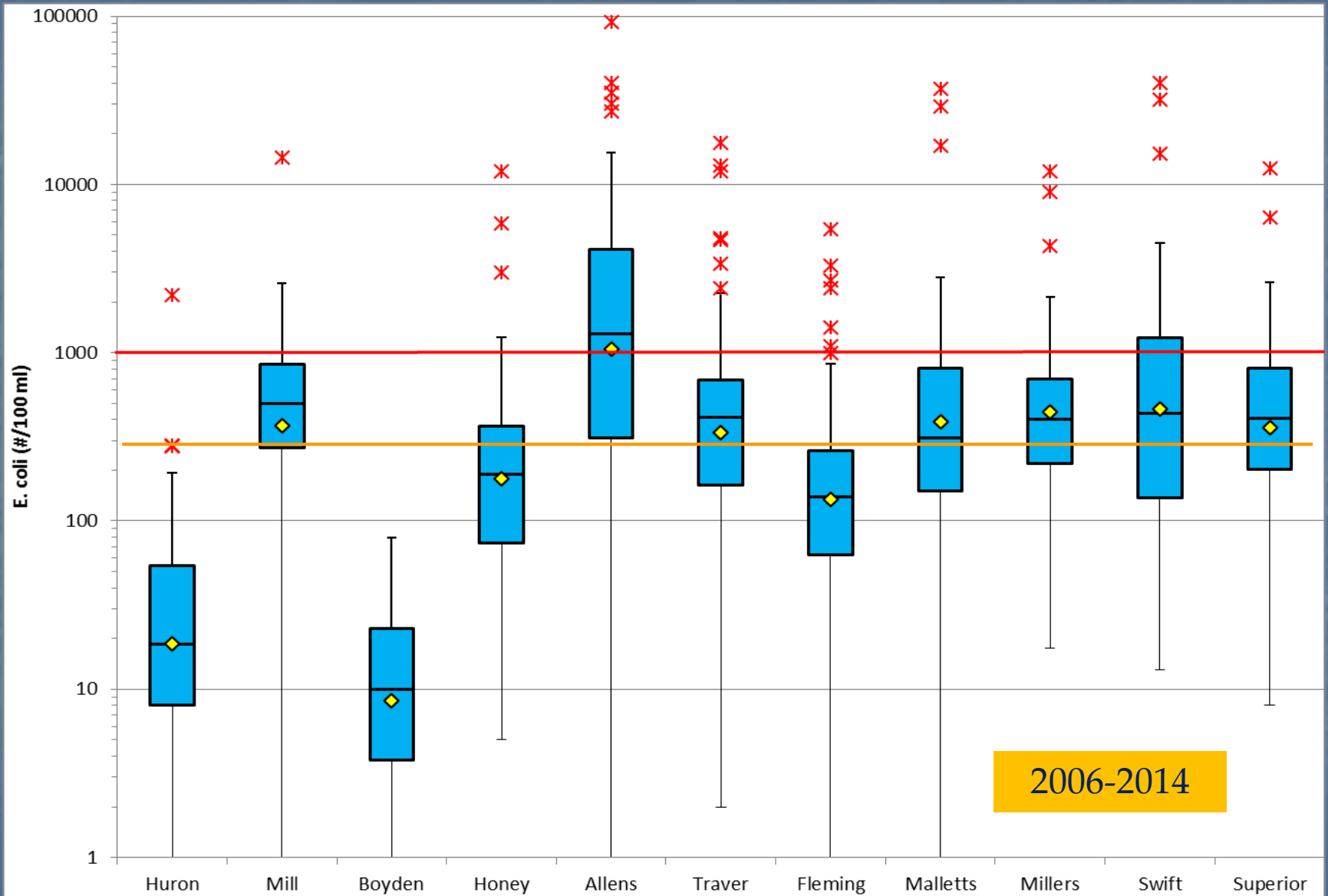
Collectively, point sources (+) and impoundments (-) **remove** P on the whole



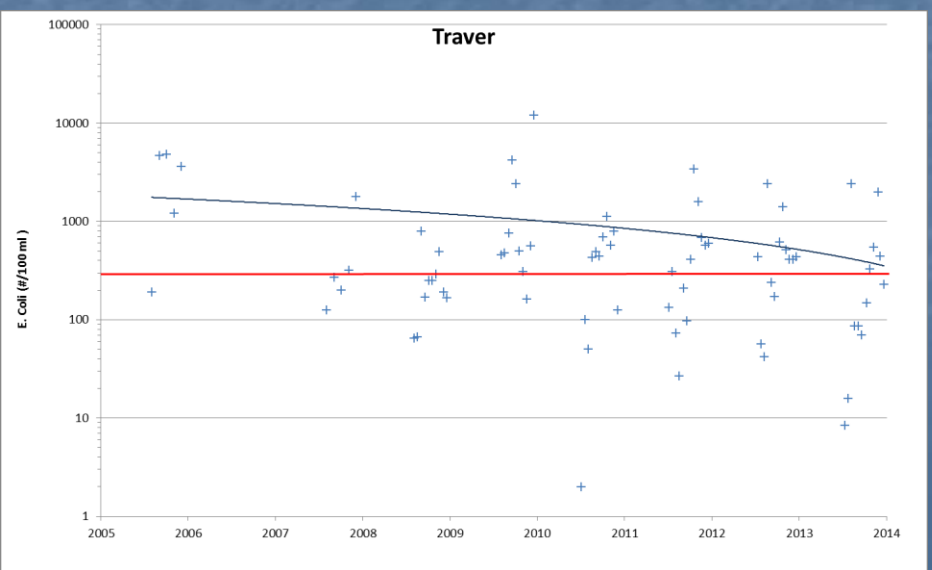
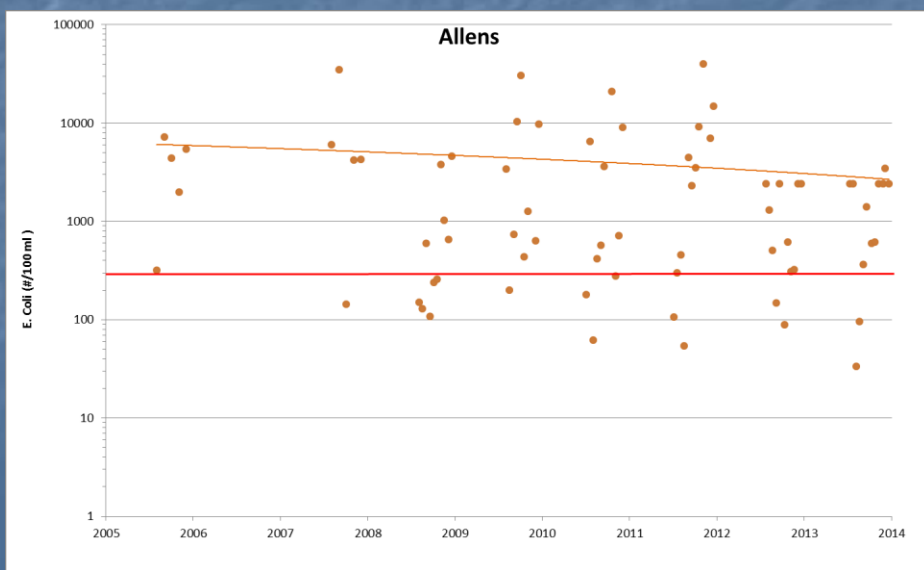
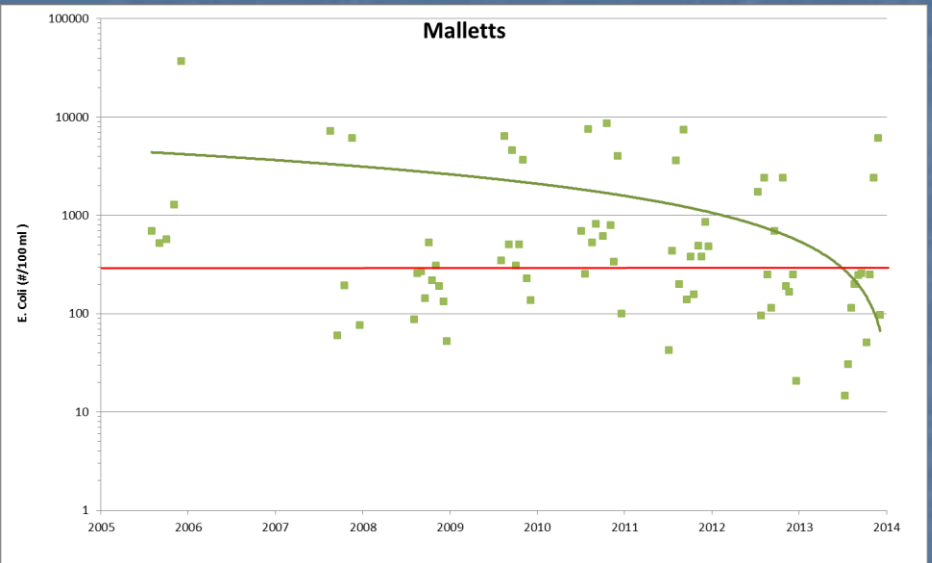
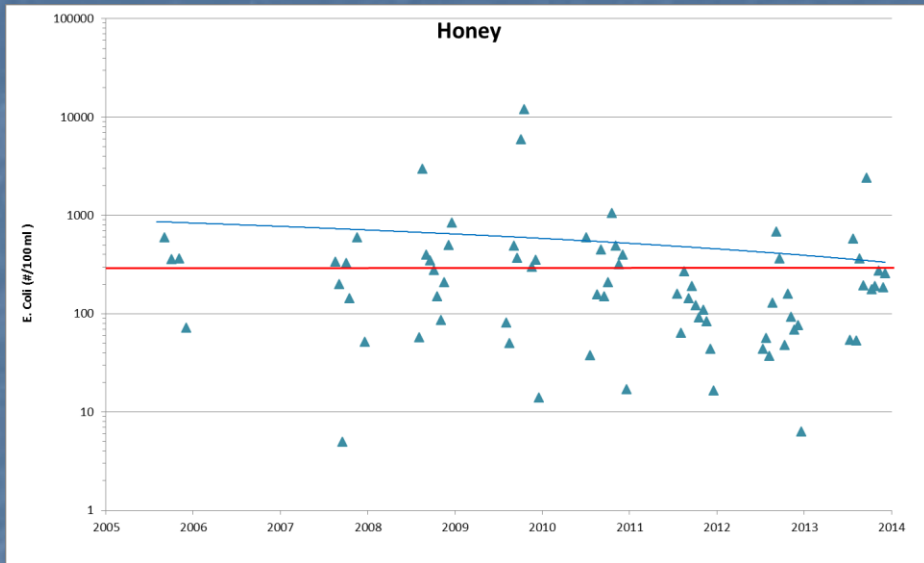
■ Concentration and load tell different stories



# *E. coli* in the Middle Huron

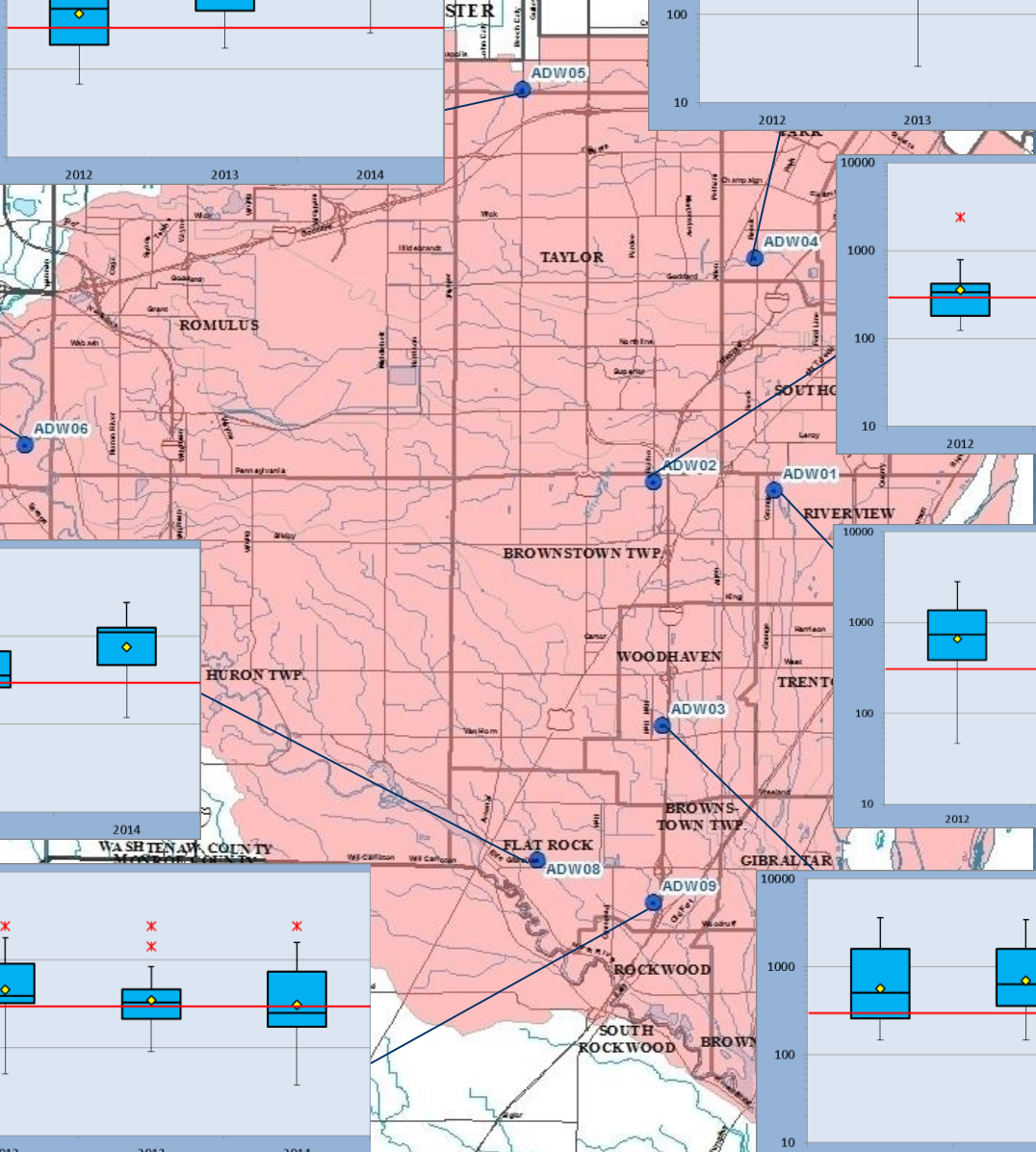
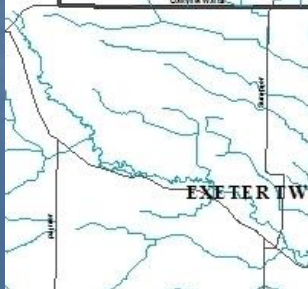
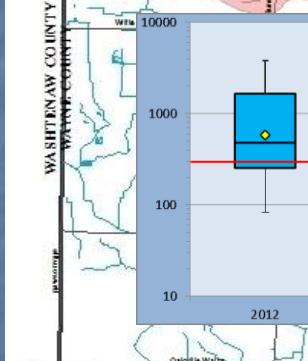
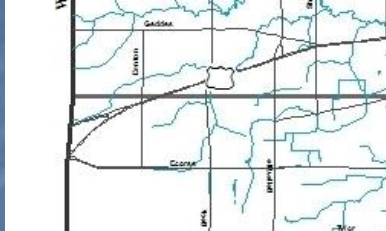
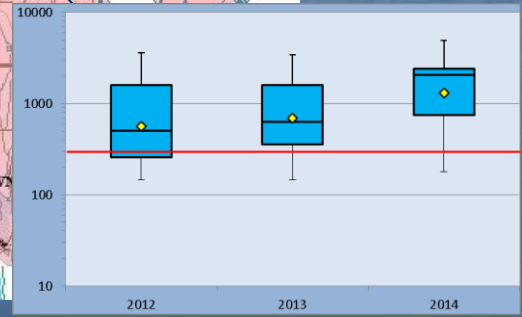
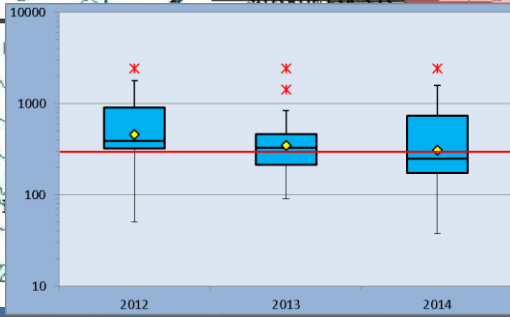
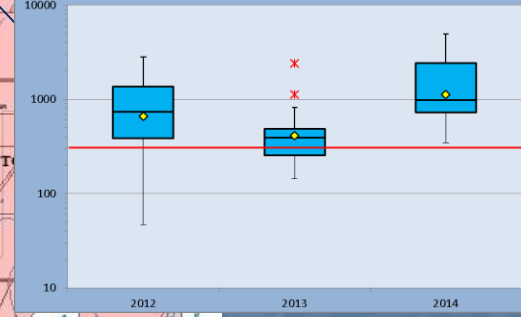
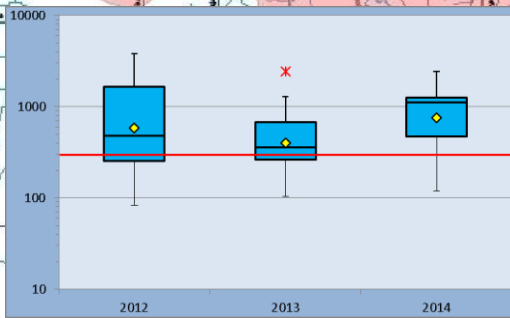
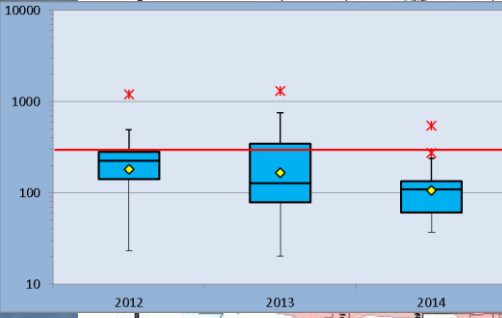
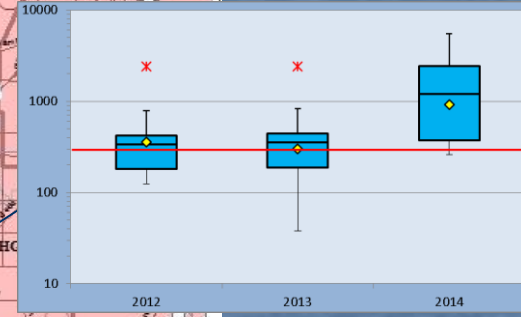
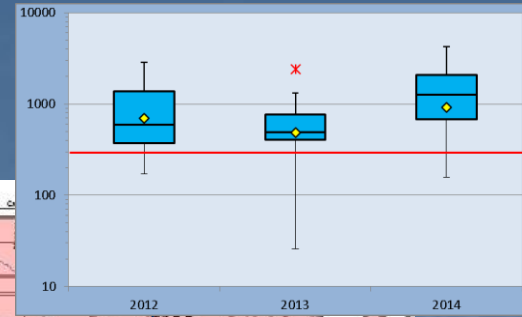
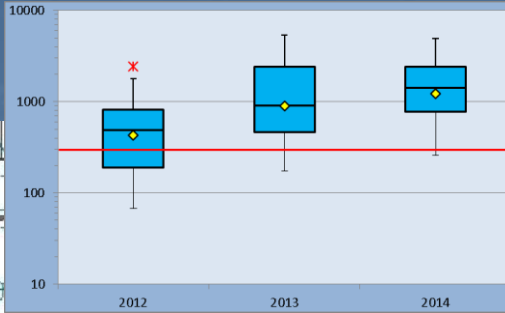


# Bacteria Trends

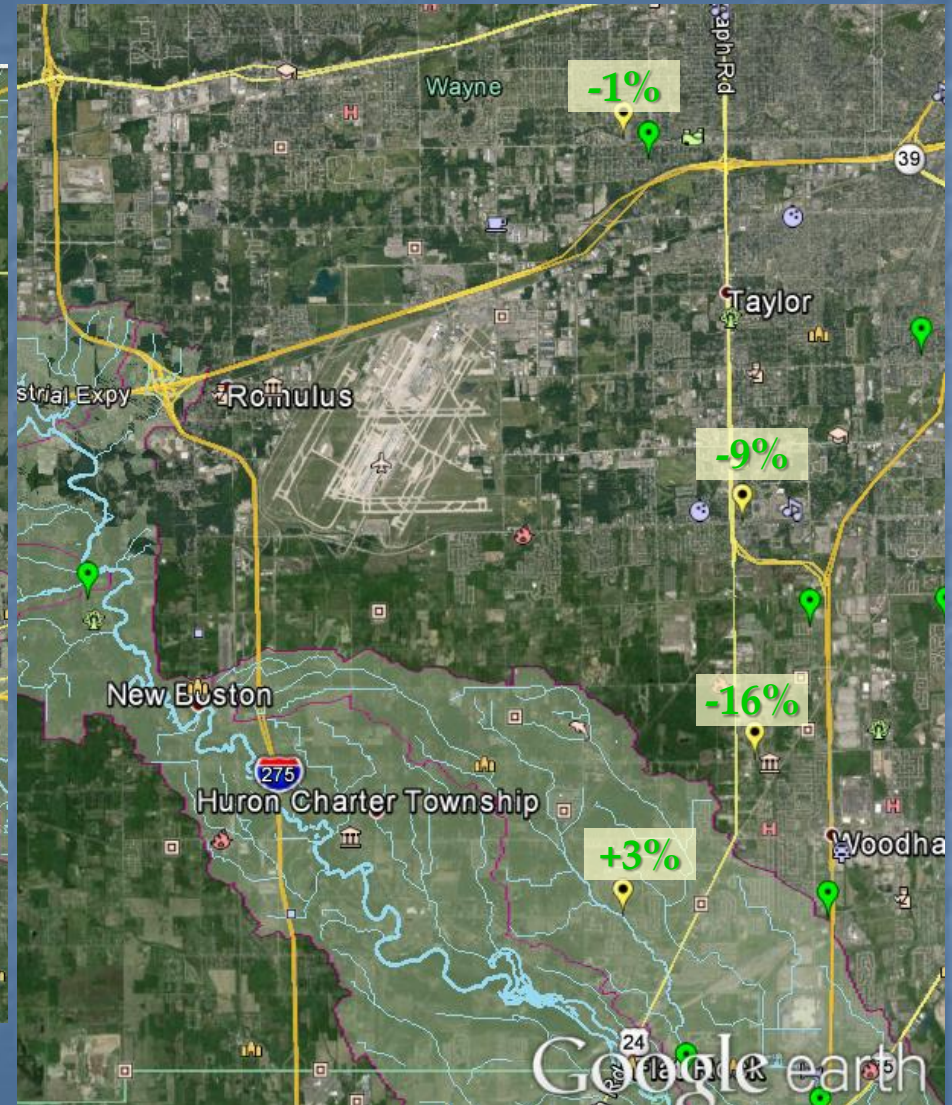
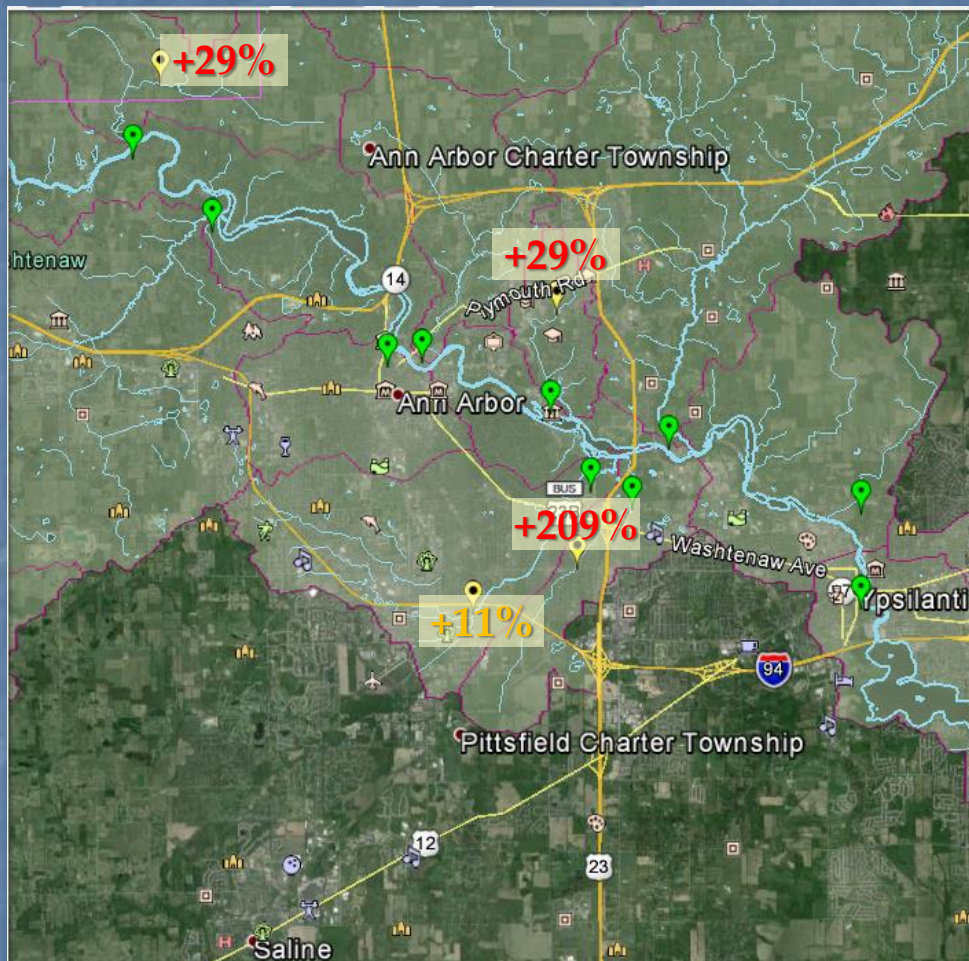


# E.Coli in Wayne

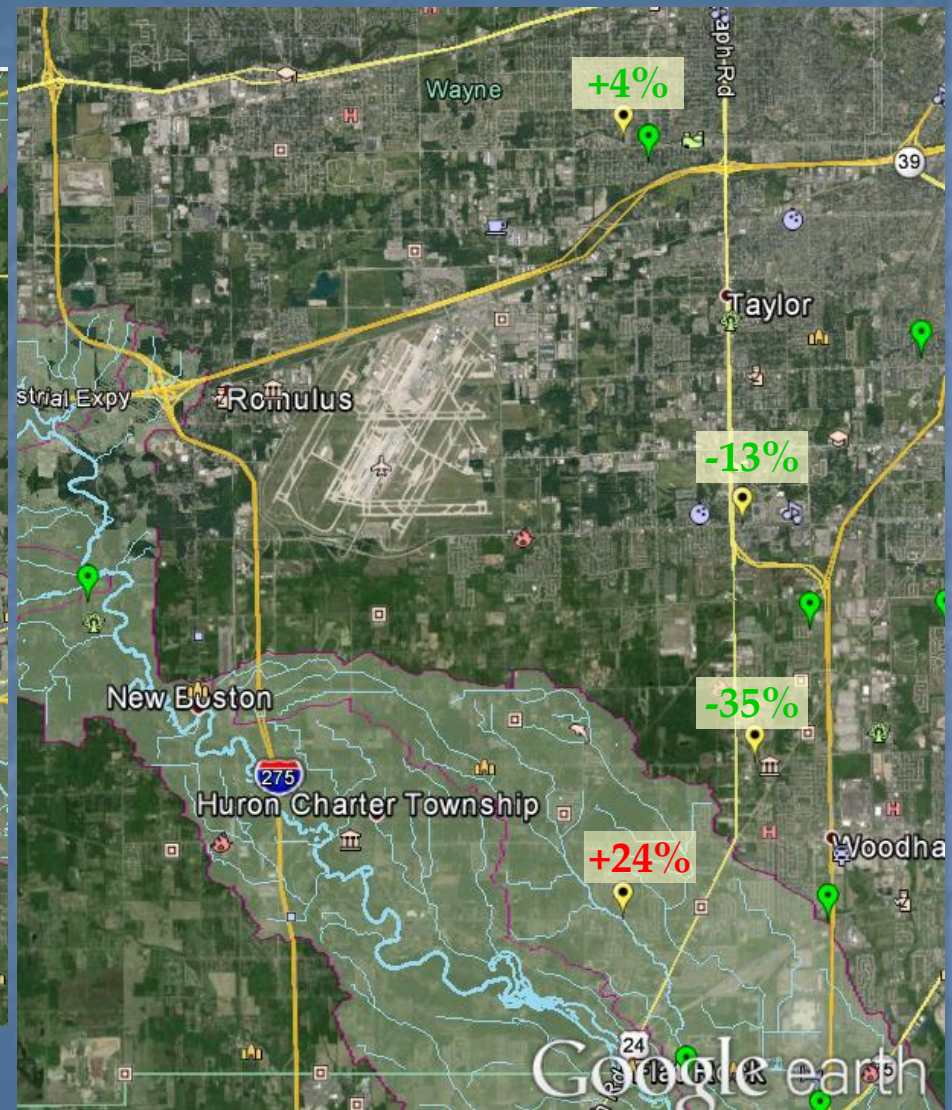
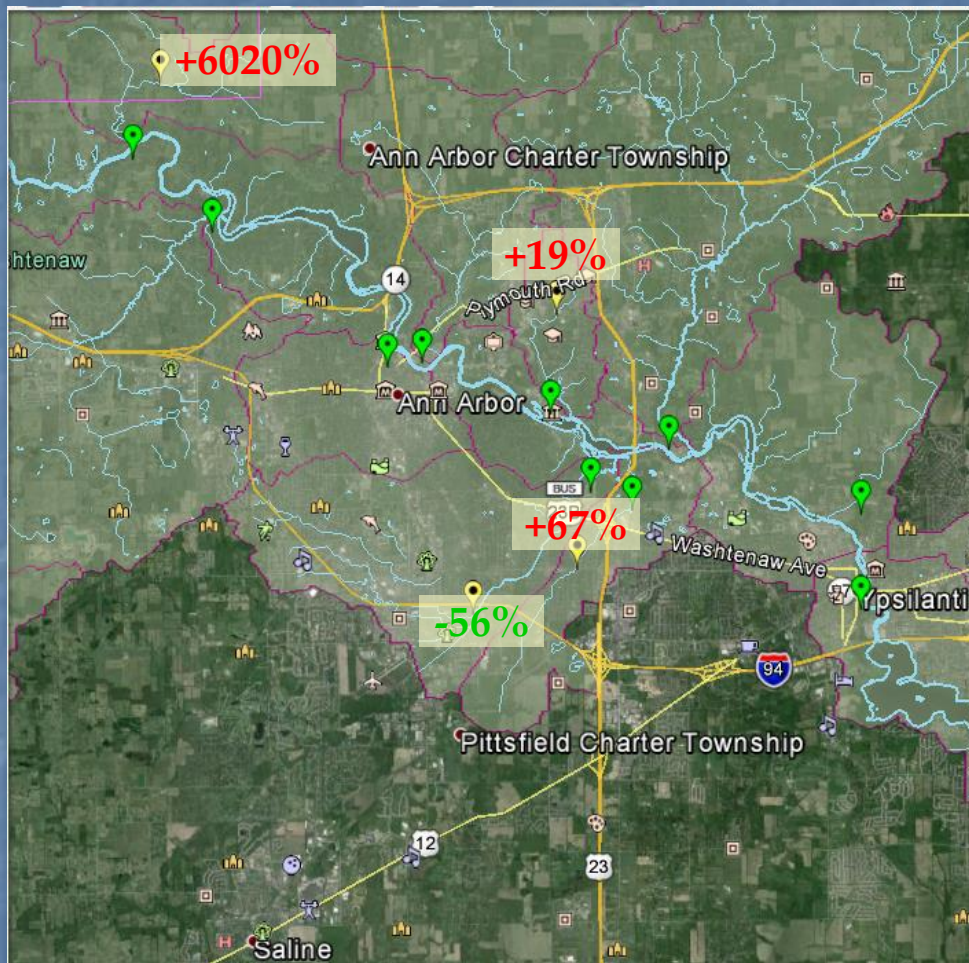
Co.  
(cfu/100 ml)



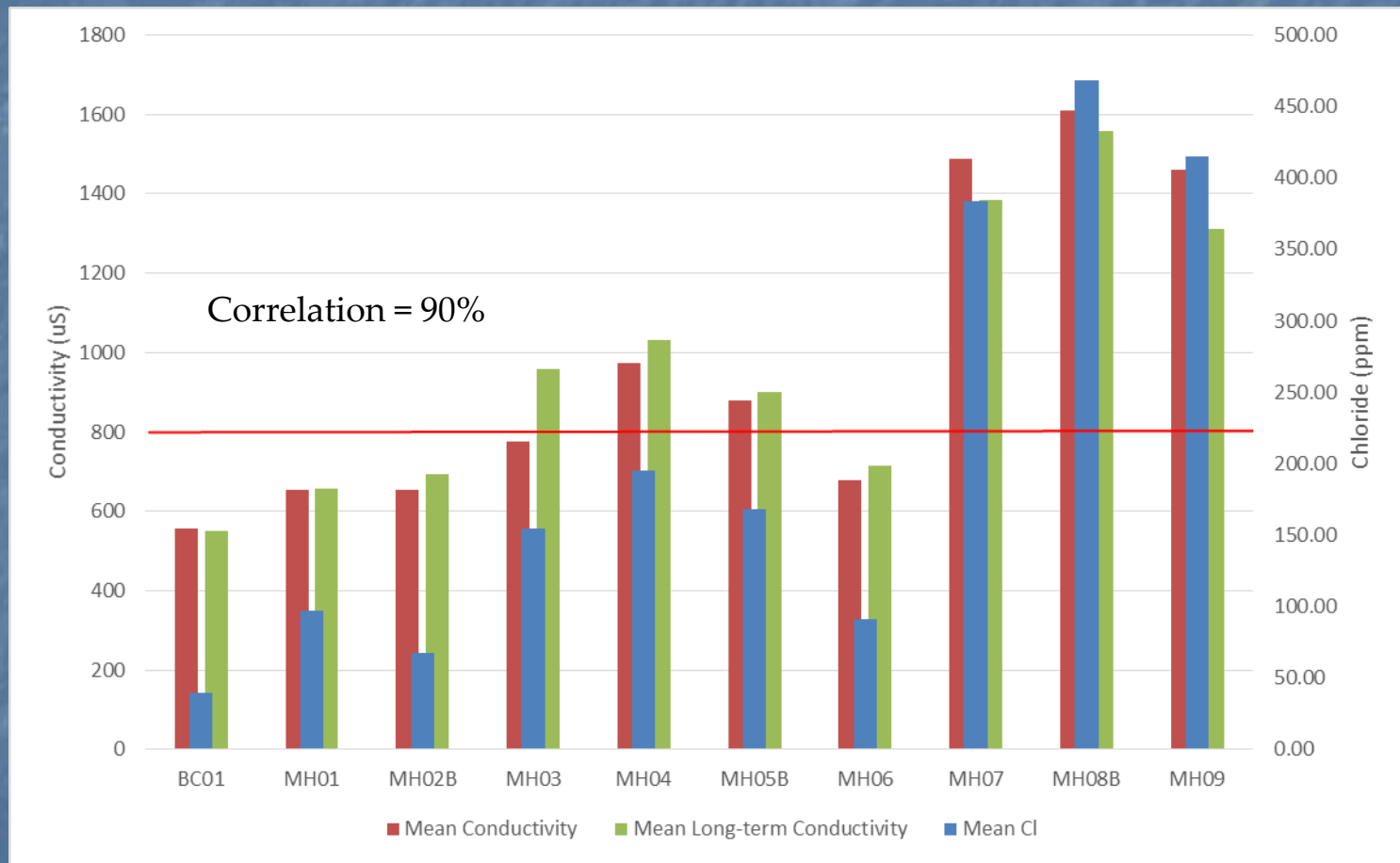
# Investigative Differences - TP



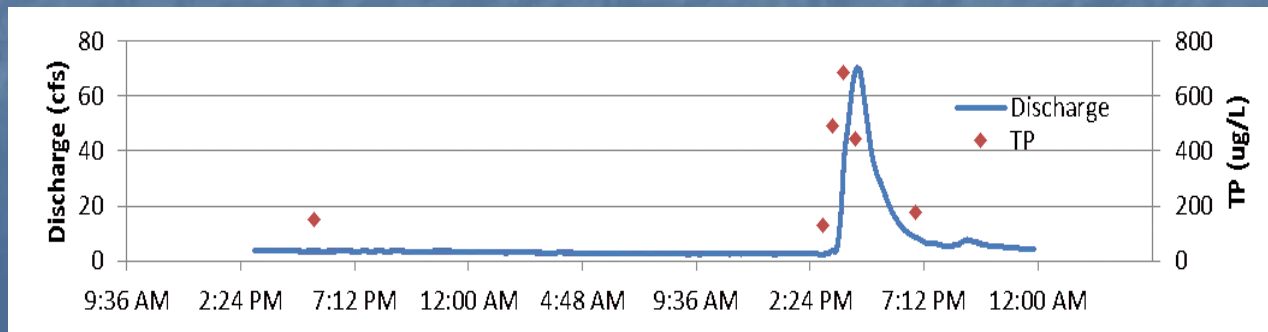
# Investigative Differences – *E. coli*



# Conductivity and Chloride



# New Auto-autosampler



# Other Parameters

- TSS: Below targets except occasionally during storms; very low in ADW
- DO: new samples in MH; good except at a few ADW sites
- pH: no problems
- Temperature: warm urban streams; cool where groundwater and riparian cover



# Summary of Results

- High flows push P loads up
- Phosphorus story is complicated
- ADW trends down at some sites; up at others
- Bacteria trending down in Middle Huron
- Chloride (salt) linked to high conductivity
- New storm data should be helpful

# How does our sampling get used?

- Samples were analyzed into raw results, then are used in several products:
  - Progress reports for municipalities
  - Watershed plans
  - Project proposals



# What's Next?

- Follow-up on key findings
- Complete reports
- Work with partners on strategies to address problems
- Plan for next year

Questions?

# HRWC Data Quiz

# HRWC Data Quiz

(Get 8/10 or you have to listen to  
the talks again)

Did Jason, Paul, or Ric use more graphs?

What does EPT stand for?

A. Early Pregnancy Test

B. European Poker Tour

C. Ephemeroptera-Plecoptera-Trichoptera

D. Emerson Power Transmission Corporation

E. English Placement Test

F. All of the above



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**F**

But **A** is definitely most applicable to our subject matter.

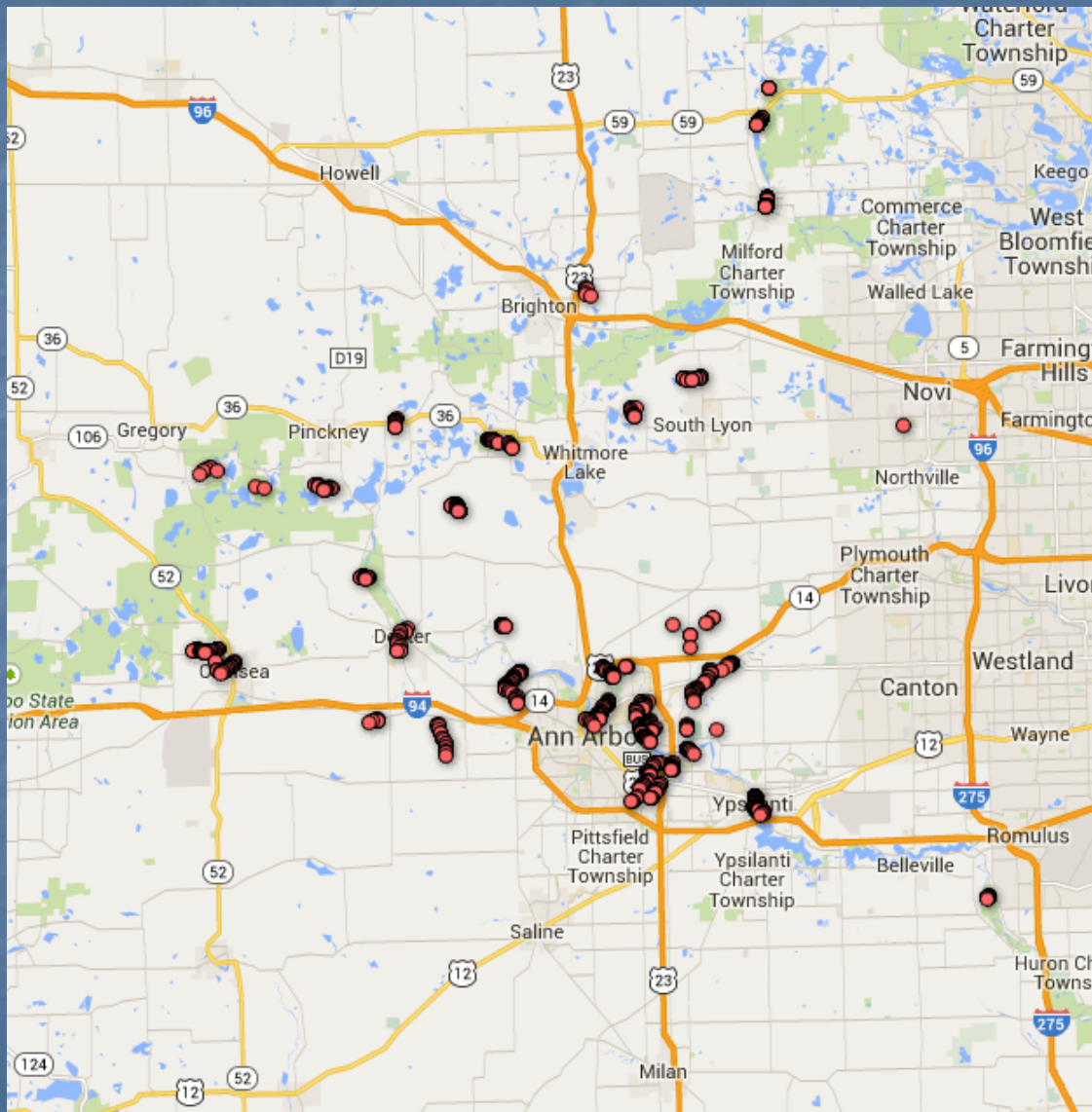
# Can flow monitoring be done during a storm?



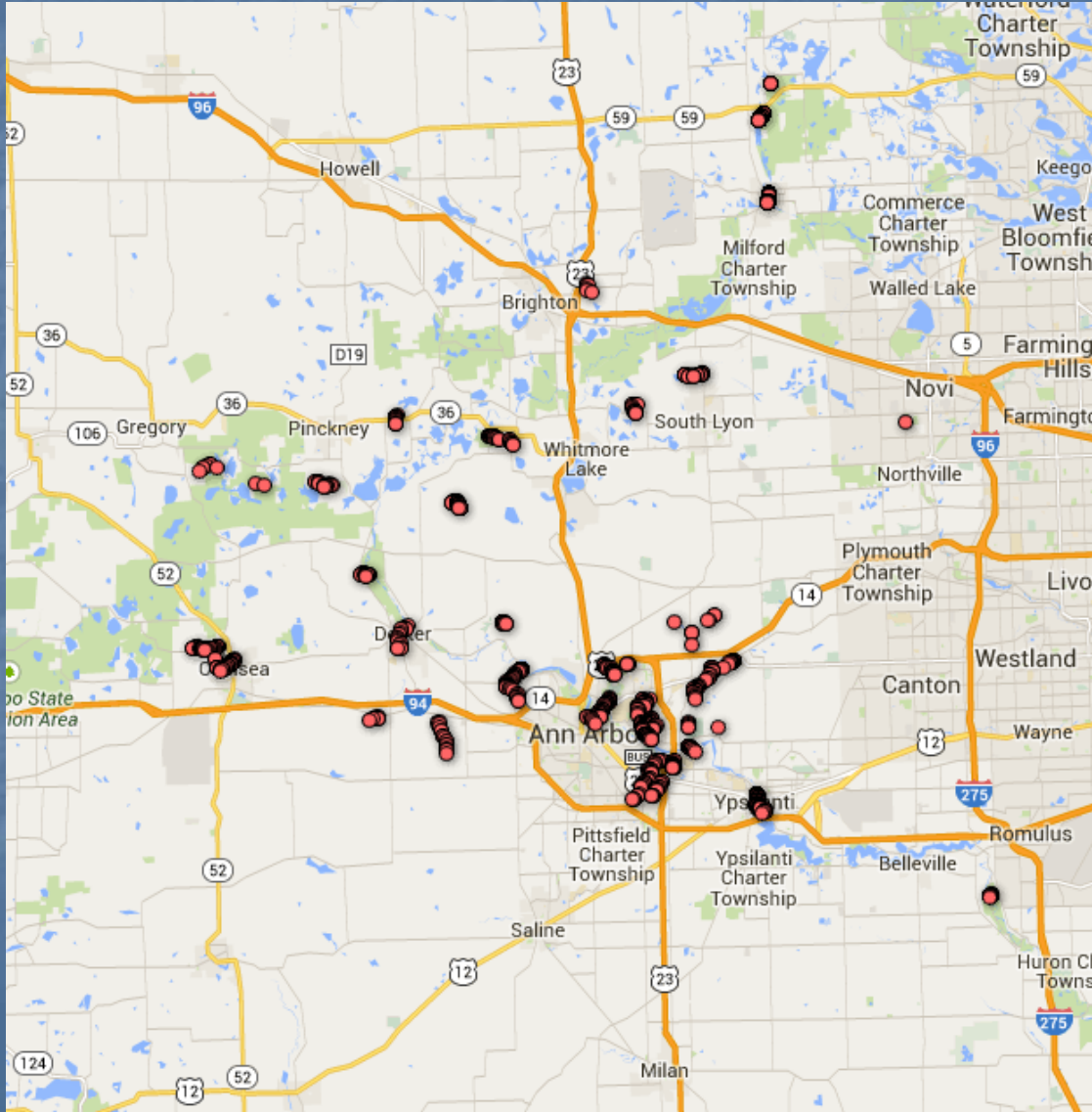
It's not a good idea to be standing in water holding a metal rod during a storm.



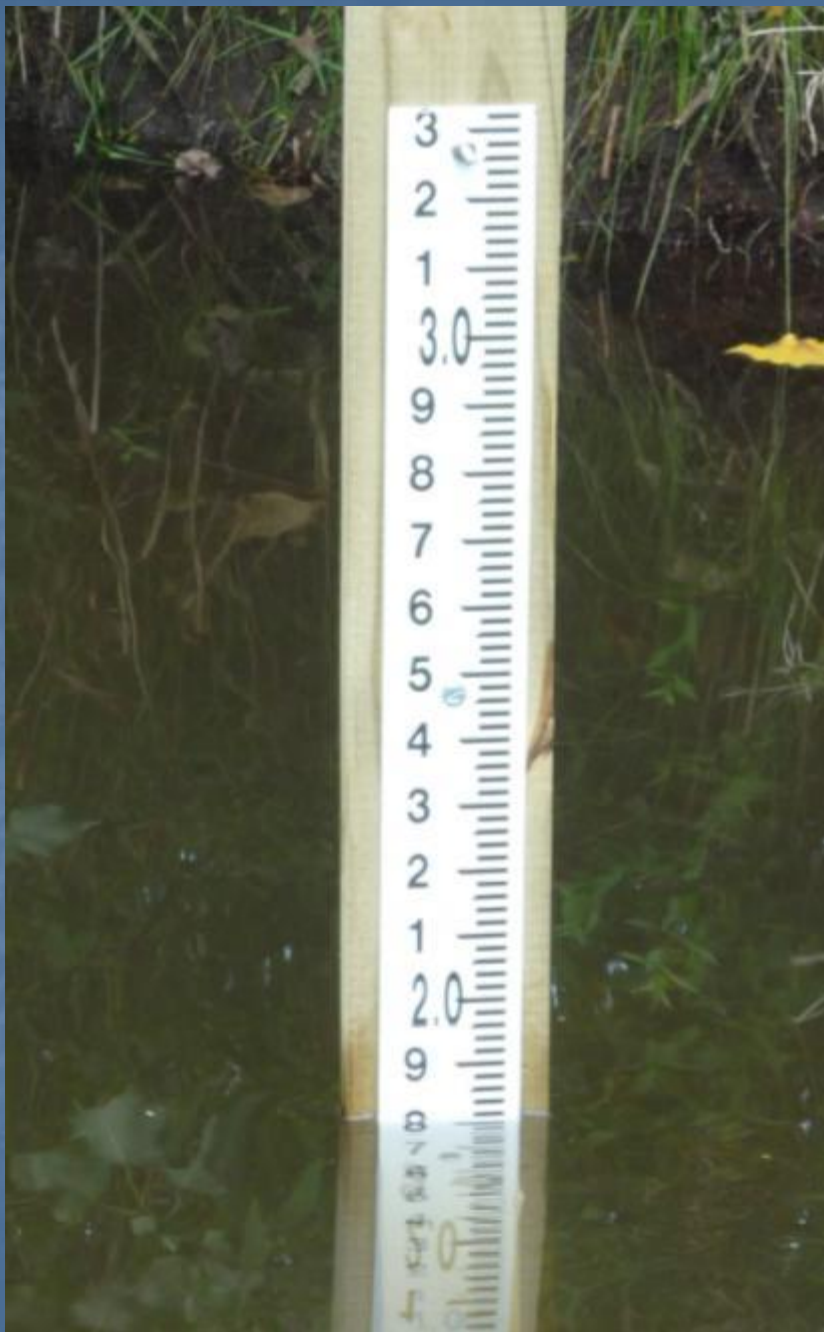
# Creekwalking: What is the website for you to check out the creekwalking data?



Creekwalking: What is the website for you to check out the creekwalking observations?



[www.hrwc.org/creekwalk](http://www.hrwc.org/creekwalk)



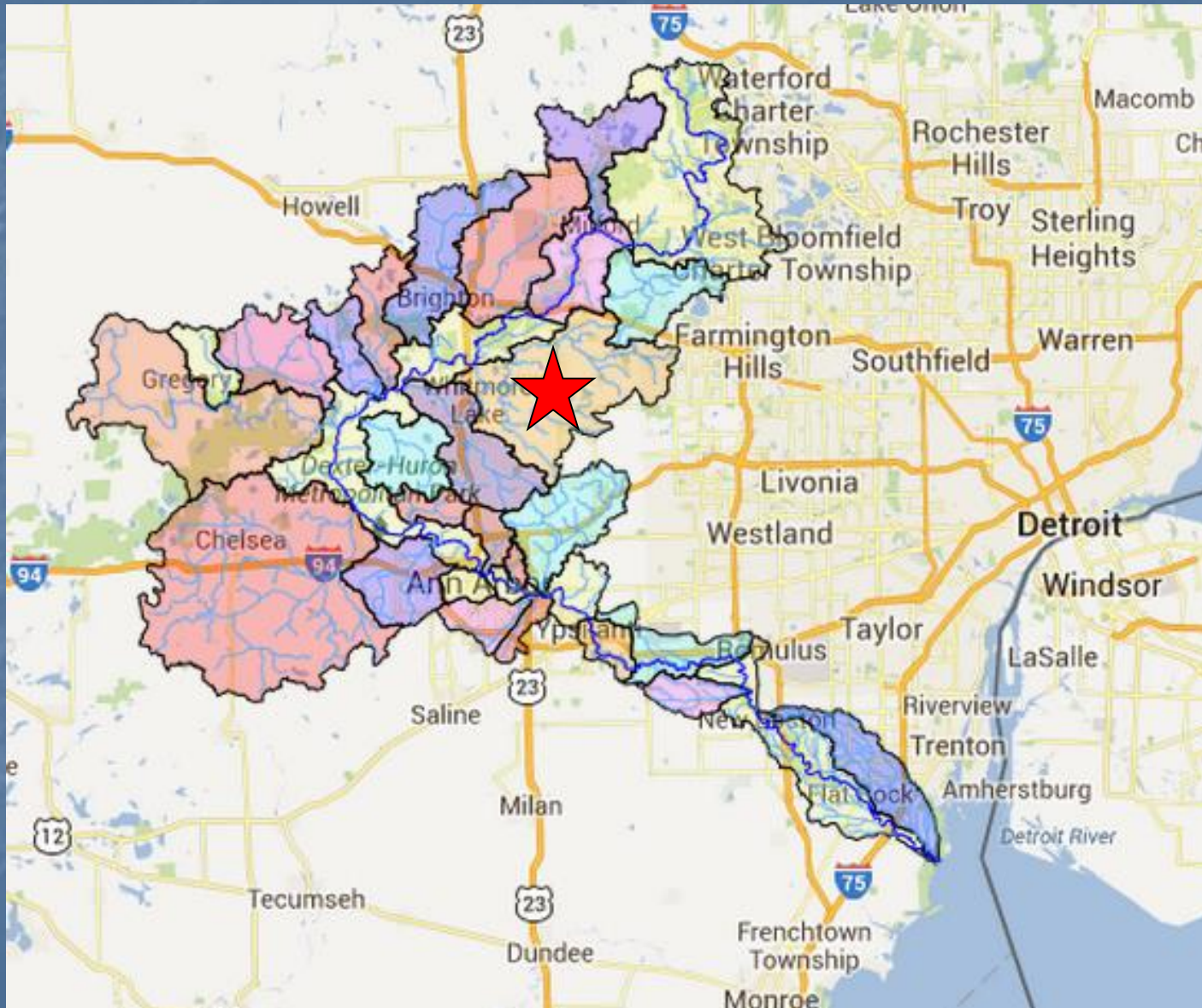
What is the  
water level  
here?







What creekshed is this? Davis!



Davis Creek's insect diversity problems are likely due to:

- A. Bad sampling
- B. Eroding banks and excessive sediment
- C. An unknown dissolved substance(s)
- D. Too much concentration on television analogies and not enough work



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C

And maybe

D

# Who is this fellow?



- A. Brandon, the U-M engineer who built the remote storm system.
- B. Buford, the homeless guy who lives in a pair of donated waders.
- C. Bradford, a DNR conservation officer who fined us.
- D. B-something, the guy who stole our equipment.

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# What is this thing used for?



- A. A seismic detector used for measuring the magnitude and location of earthquakes.
- B. A Soviet-era listening device.
- C. A water velocity sensor
- D. A fish electro-shocker

# What is this thing used for?



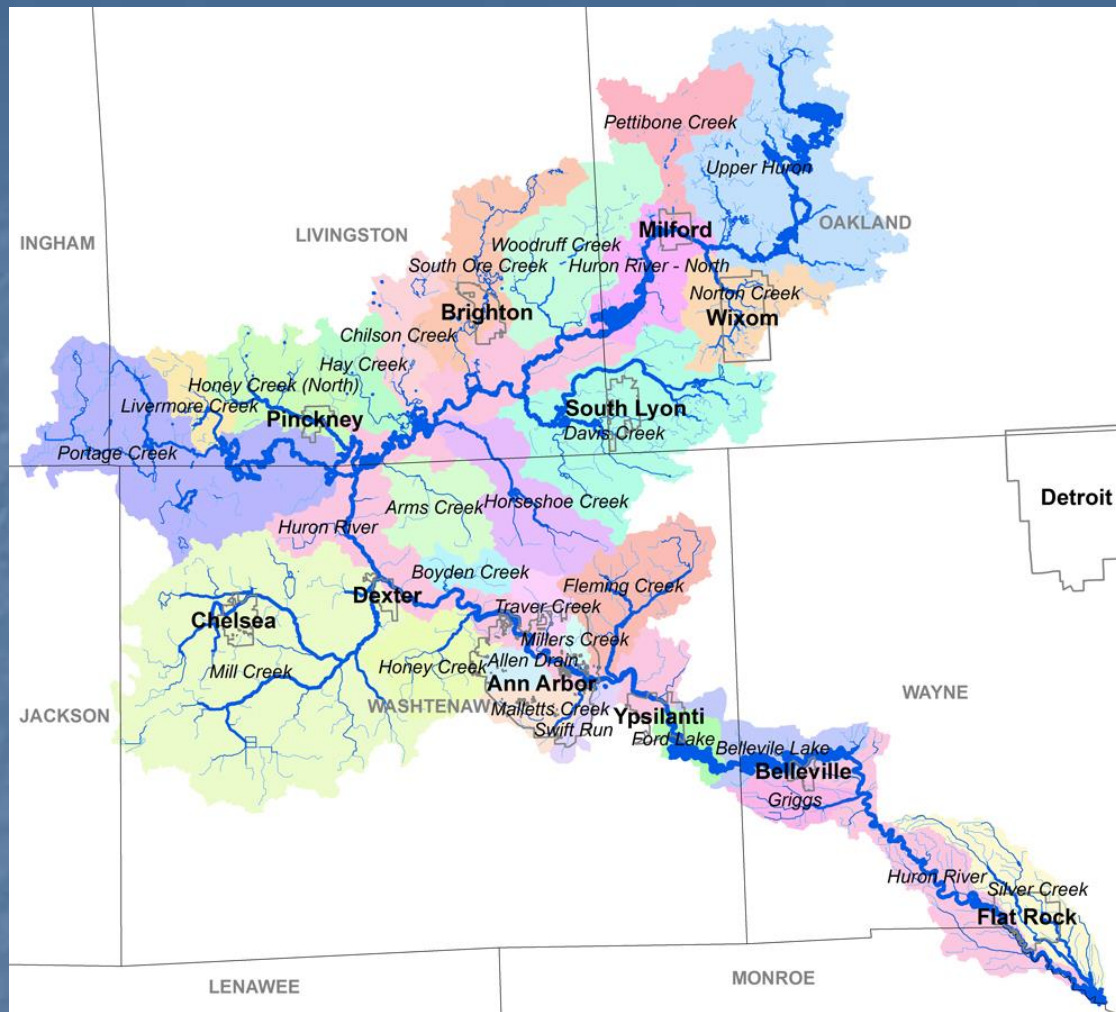
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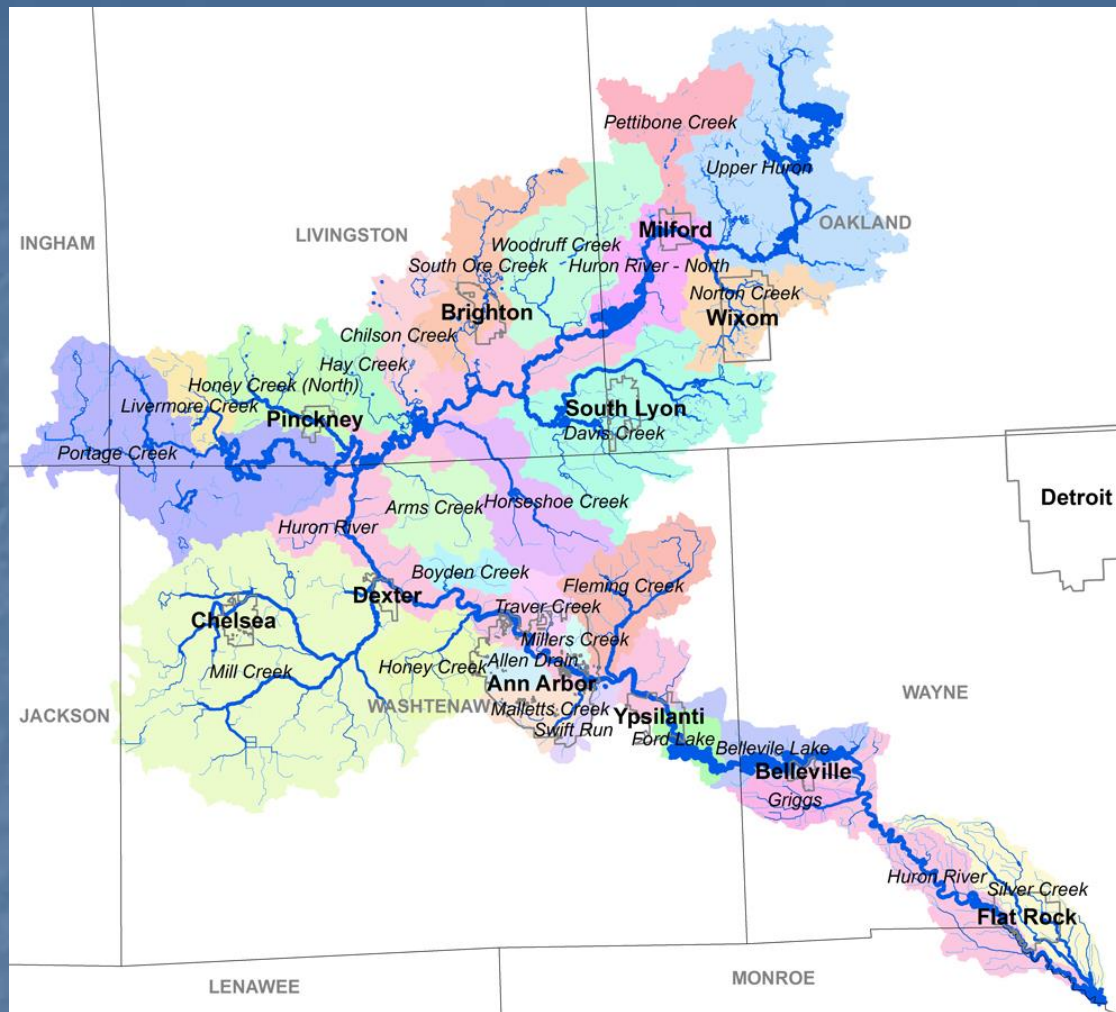
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But, we'd like to have any of the other 3!



The Huron River's main stem flows how far?  
 BONUS: Where does the Huron River originate  
 and to where does it eventually flow?





The Huron River's main stem flows 126 miles, from its origin at Big Lake and the Andersonville Swamp in Oakland County to its mouth at the shores of Lake Erie.

Thank you for your  
stewardship and  
membership!