Project Clarity
Wetland and Lake Monitoring Update

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Project Clarity
2015 Annual Monitoring Report

AWRI link:
http://www.gvsu.edu/wri/director/project-clarity-restoring-the-macatawa-watershed-77.htm

MACC link:
http://www.themacc.org/watershed/water-quality/

2016 Annual Report coming soon!
Overview

* Tributaries
  * Middle Macatawa, & Haworth properties
  * Water quality and flow
    * Storm and base flow samplings
* Lake Macatawa
  * Water quality monitoring
  * Fish community monitoring
Middle Macatawa

- Macatawa Down (USGS)
- Macatawa Up
- Peters Creek

Wetland Restoration Area
Haworth

North Up

Flow

North Down

Wetland Restoration Area
Tributary Sampling

- Frequency
  - Monthly base flow
  - Storm events
- Continuous measurements
  - Stage & discharge
  - Turbidity sondes
- General water quality
  - Such as: Dissolved Oxygen, Temperature, & Turbidity
- Nutrient analysis (water samples)
  - Phosphorus & Nitrogen
Middle Macatawa

- Macatawa Down (USGS)
- Macatawa Up
- Peters Creek
- Wetland Restoration Area
Tributary Sampling

- **Frequency**
  - Monthly base flow
  - Storm events
- **Continuous measurements**
  - Stage & discharge
  - Turbidity sondes
- **General water quality**
  - Such as: Dissolved Oxygen, Temperature, & Turbidity
- **Nutrient analysis**
  - Phosphorus & Nitrogen
Tributary Sampling

- Frequency
  - Monthly base flow
  - Storm events
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  - Stage & discharge
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- General water quality
  - Such as: Dissolved Oxygen, Temperature, & Turbidity
- Nutrient analysis
  - Phosphorus & Nitrogen
Tributary Turbidity Data
Total rain/hour was collected from the National Climatic Data Center (NCDC)
Tributary
Total Phosphorus Results
Total Phosphorus: Middle Macatawa Baseflow and Storm 2015

- Macatawa Up
- Peters Creek
- Macatawa Down
Total Phosphorus: Haworth Baseflow

2015

TP (µg/L)

North Up
North Down

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Overview

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* **Lake Macatawa**
  * Water quality monitoring
  * Fish community monitoring
Lake Macatawa Long-Term Monitoring Sampling

- **Frequency**
  - Spring, Summer and Fall
- **General water quality**
  - Dissolved Oxygen, Temperature, Turbidity, etc.
  - Secchi depth
- **Nutrients and algae**
  - Phosphorus & chlorophyll $a$
Historical Status
(1972*; 1982-2012†; 2013-2015‡)

Total phosphorus concentration (surface water), µg/L

*U.S. EPA; †MDEQ; ‡AWRI
Lake Mac Fish Community Structure
Lake Mac Fish Community Structure
Lake Macatawa Fish Monitoring
Fyke Nets
Lake Macatawa Fish Monitoring
Boat Electrofishing
Lake Macatawa Fish Monitoring
Boat Electrofishing
Lake Macatawa Fish Monitoring Results

**Fyke Netting**
- Bluegill: 30%
- Pumpkinseed: 16%
- Round goby: 13%
- Alewife: 8%
- White perch: 6%
- Other: 27%

**Total catch: 377**

**Boat Electrofishing**
- Yellow perch: 23%
- Pumpkinseed: 14%
- Spottail shiner: 13%
- Largemouth bass: 9%
- White sucker: 7%
- Walleye: 6%
- White perch: 7%
- Other: 21%

**Total catch: 160**
Lake Macatawa Fish Monitoring Results
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Questions? Email Maggie Oudsema at oudseemam@gvsu.edu