

Mid-Michigan Watershed Connections (MMWC) Summary of Meetings May - August, 2022

MMWC Introductions and Lesson 1

May 25 4:30 - 7:30 pm at Woldumar Nature Center

- Hiked to Grand River and heard about education programs of Woldumar Nature Center (particularly about stream testing program supported by General Motors) Outdoor .5
- Get to know each other activity and introductions of key organizers
- Project WET books distributed and two activities done focusing on features of watersheds
- Introduced concepts of tributaries, divides, headwaters and river mouths, drainage basins.
- Reviewed program expectations and support.
- Distributed SEA Grant watershed maps for Michigan and Great Lakes.



MMWC Lesson 2

July 6, 8:30 am - 4:30 pm at Okemos High School

- Teacher-led activities on water cycle, porosity and permeability of different soils.
- Introduced concepts of impermeable layers, zone of saturation, zone of infiltration, water table.
- Learned about water education resources and programs at Michigan EGLE.
- Broke into groups to work with groundwater models.
- Outside field exploration on infiltration testing, evapotranspiration, groundwater monitoring; tour of glacial features and how they affect water today; observe a green roof shed; discussed ways to study rain, snow, and soil moisture; toured several types of wetlands.
- Indoor activities to understand concept of water budget on both a lake and rivers; included demonstrations with a floodplain model where variables can be changed to understand flood risk.
- Presentation on the history of Lake Lansing, in preparation for July 7th educational event.
- Presentation by a teacher on microplastic study she had her students perform.



Teachers tour Tollgate Drain Storm Water Treatment Facility

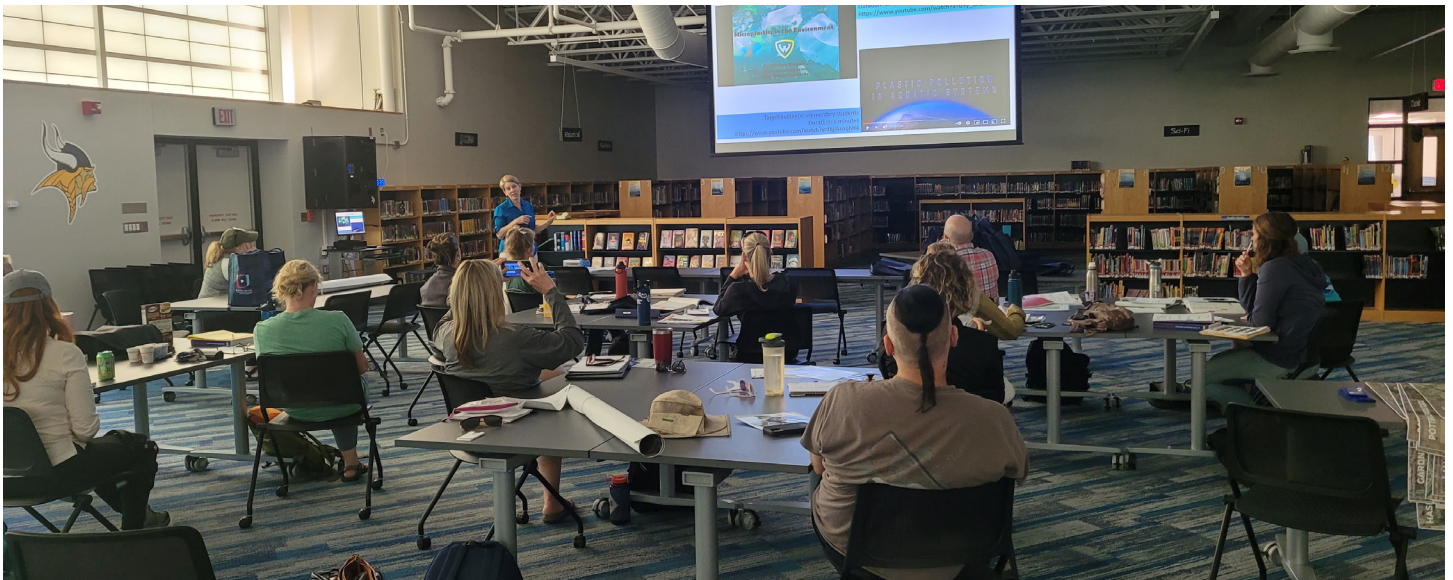


- Speakers talking about managing flood risks, including:
 - County emergency manager talking about safety measures that have to be taken related to flooding;
 - Michigan Department of Transportation engineer explaining work they have to do to reduce flood risk on highways;
 - Michigan EGLE Stormwater Manager talking about what schools and municipalities can do to minimize flood risk and water contamination.
- Travel to Tollgate Project in Lansing: a national model for urban storm water management.

MMWC Lesson 3

July 7, 8:30 am - 4:30 pm at Lake Lansing and Haslett Middle School

- Entire morning with LIMNO Project: shore and boat work to test water, learn about macroinvertebrates, watershed impacts on lake, fish ecology, recreation importance of lakes, and lake aging (oligotrophic, mesotrophic, and eutrophic lakes).
- Afternoon at Haslett Middle School included teacher-led WET activities.
- Speaker on groundwater research project, with implication for surface water quality.
- Speaker from County Department of Public Health talking about septic systems and maintenance.
- Speaker from Michigan EGLE on E. coli contamination issues.
- Speaker on microplastic issues: types, sources, how to sample and study.
- Introduction to Michigan Alliance for Environmental & Outdoor Education: membership and benefits.



MMWC Lesson 4

July 26, 8:30 am - 4 pm in Eaton Rapids

- Stream sampling and testing on Grand River: water chemistry tests, netting of macroinvertebrates, analysis of observations, mechanics of doing this with students.
- Tour with former mayor of town to see river shore protection; rain gardens and permeable pavement to protect river water quality; removal of low head dam to create a more natural stream and allow for kayaking rapids.
- Indoors afternoon included training on Augmented Reality Sandbox; teachers can borrow to use it with their students.
- Soil erosion demonstration.
- Visit farm to learn from farmer about decision making related to water, erosion control, and protecting local water.
- Observed a rural drainage project.



MMWC Lesson 5

July 27, 10 am - 4 pm visit to Muskegon and Lake Michigan

- Met staff at NOAA Great Lakes Environmental Research Lab to see boat and learn about work done by NOAA on Great lakes.
- Presentation by researchers at Annis Water Resources Institute (Grand Valley State University) to learn about both research and education programs there. Special presentation on the NOAA funded buoy gathering data on Muskegon Lake and how students can access the data and use it in the classroom.
- Presentation about Michigan Earth Science Teachers Association and resources (including grants) for teachers.
- Trip out on AWRI research ship to run tests on Muskegon Lake and Lake Michigan, analyze data, learn about invasive species, and impact of watershed on these lakes.
- On trip home, stopped in downtown Grand Rapids to meet with National Weather Service hydrologist at gaging station to learn about river stage measurements.



MMWC Lesson 6

July 29, 8:30 am - 4 pm in Lansing

Met at Tri-County Regional Planning Commission for teacher-led WET activities.

- Professor from Michigan State University Education Department led discussion on how to engage students in research/ investigations.
- Michigan Department of Health and Human Services scientist presentation on PFAS pollution.
- Moved to Fenner Nature Center for more teacher-led WET activities.
- Presentation on education programs offered by Fenner.
- Presentation by Michigan State Climatologist about changing climate patterns and impact on regional water cycle.
- Discussion of year ahead: expectations of participating teachers, fund support and how to apply for funds; data sharing options; decision making about future meetings.

MMWC Outreach Program STEM Camp

August 8, Lake Lansing, MSU Sailing Center

- Presented Lake Investigations in Michigan and Nature Observations (LIMNO), an outdoor science education program. Students observe lake conditions and gather samples; identify macroinvertebrates, test lake water for nitrates, phosphates, total dissolved solids/conductivity, temperature, dissolved oxygen, turbidity, e. coliform, etc. (LIMNO program began in 2015 via partnership with local science educators and supported by MidMEAC.)
- Participants of the LIMNO training learn to identify/describe:
 - Ecological health and trophic state of a lake.
 - At least four standard limnology tests and/or observations; explain the significance of each, and the types of professionals using these tests.
 - Describe both natural and human made events that impact the lake in terms of health and eutrophication
 - Explain how changes in health and eutrophication can impact the



At each of these meetings print materials were distributed and reviewed. Some of the handouts described possible student projects and resources to help with them. Others gave guidelines about engaging students in service projects or research, background material on topics we dealt with during workshops, and additional posters.



MMWC Outreach Program

August 22, 9 am - 3 pm, at Lake Lansing,

- Participants were non-formal educators from 12 counties in Michigan, spanning the state from Lake Michigan to Detroit area, and from the southern border north to Clare.
- Nineteen participants were from various settings such as conservation districts, nature centers, youth camps, city/county/regional park and recreation departments.
- Two staffers attended from a camp that works with handicapped youth, prompting productive brainstorming of ways to engage those youth (particularly blind students) in lake and watershed investigations.
- Morning devoted to LIMNO lake education program: shore and boat work to test water, learn about macroinvertebrates, watershed impacts on lake, fish ecology, recreation importance of lakes, and lake aging (oligotrophic, mesotrophic, and eutrophic lakes).
- Discussion followed regarding observations and broader watershed connections. Participants separated into groups based on type of work (e.g., conservation districts, nature centers, youth camps, parks and recreation departments, etc.) to discuss barriers and benefits to replicating LIMNO, and mission appropriateness in their settings.
- Groups reported key ideas and then various resources were shared with participants, including ideas for making their own equipment to keep expenses low were shared.

Up next: two 70 minute workshops at American Camping Association -Michigan Chapter fall professional development meeting October 6.

Mid-Michigan Watershed Connections Participants

First	Last	Org
Bridget	Booth	Haslett Middle School
Mary	Faurot	Potterville High School
Claudia	Foerg	U of D Jesuit High School
Mariah	Gaither	Sexton High School, Lansing
Evelyn	Gray	DeWitt Middle School
Jennifer	Grivins	Eaton Rapids High School
Kelsea	Hector	Eaton Rapids Middle School
Heather	Ingle	St. Mary, Williamston
Kelly	Joos	Lansing Christian High School
Amy	Menke	Mt. Hope Elementary, Lansing
Kari	McCormick	Ovid Elsie High School
Steve	Potter	Holt High School
Carlos	Salais	Waverly High School
Augustus	Schaefer	U of D Jesuit High School
Amy	Smithern	Gardner Middle School, Lansing
Amy	Tomkins	Sexton High School, Lansing
Brandon	Vince	Stockbridge High School
Marlo	Wiltse	Charlotte High School
Jessican	Woodward	Haslett High School
Eric	Zay	Eaton Rapids High School
Lori	Zemke	Stockbridge High School

