

WHAT IS THE EIGHTEENMILE CREEK AREA OF CONCERN (AOC) ?

Local, state and federal officials identified a section of Eighteenmile Creek as one of 42 “Areas of Concern” (AOC) in the Great Lakes Basin. Eighteenmile Creek received this designation because of poor water quality and contaminated sediments present throughout the watershed. Eighteenmile Creek’s long history of use by major industries in the area, especially near the City of Lockport and Town of Newfane, has played a large role in the present condition of the creek.

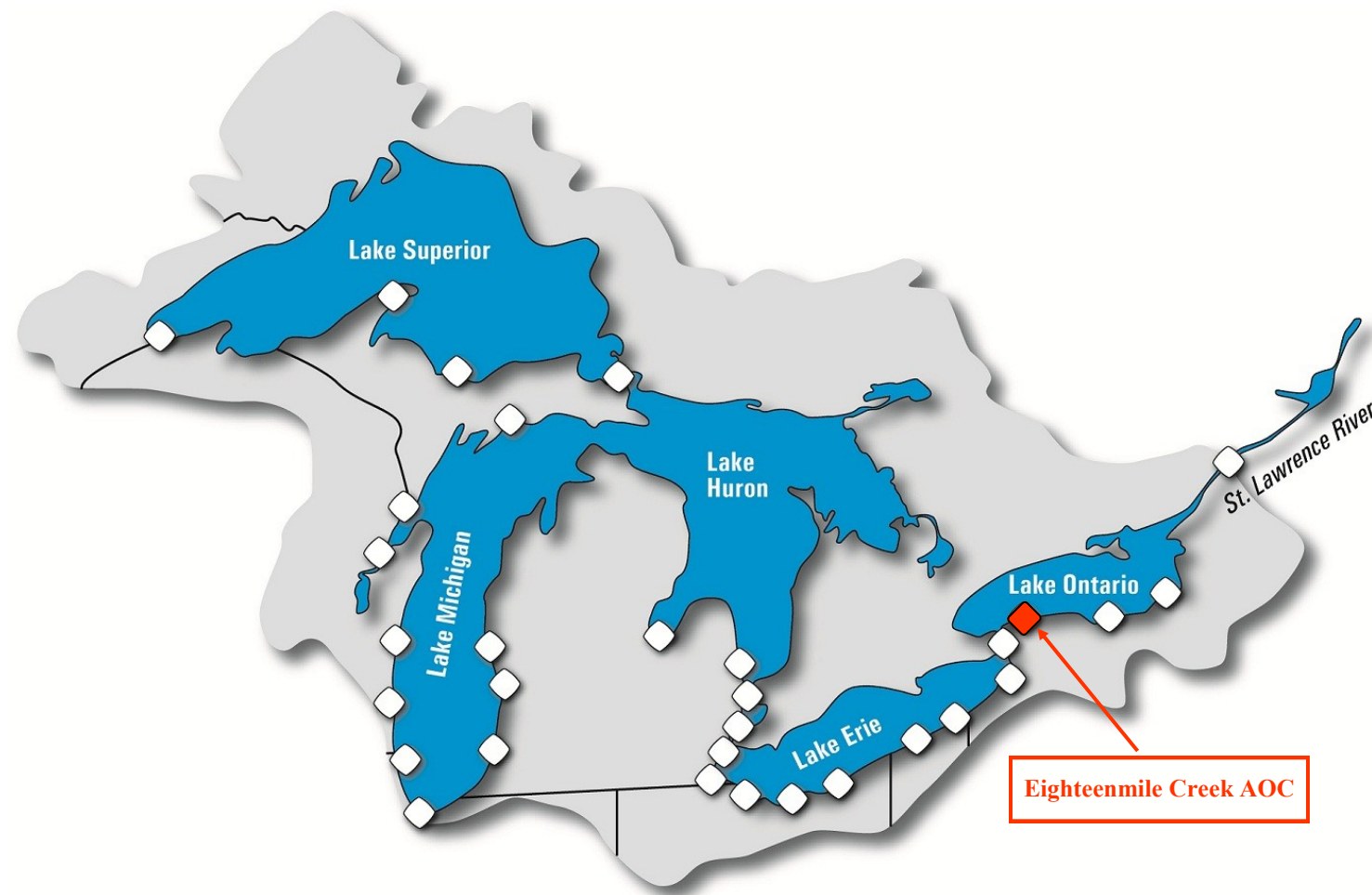
WHAT IS THE EIGHTEENMILE CREEK REMEDIAL ACTION PLAN (RAP) ?

A RAP is an integrated, whole ecosystem approach to remediating impaired water bodies. The RAP first identifies use impairments, their causes, and contaminant sources, using existing studies and data. Next, existing cleanup and regulatory programs which apply to the water body are identified. A coordinated cleanup strategy is then developed to eliminate the use impairments. The NYS Department of Environmental Conservation produced the Stage 1/2 RAP in 1997 in an effort to restore the integrity of the creek’s ecosystem.

WHAT IS THE EIGHTEENMILE CREEK REMEDIAL ADVISORY COMMITTEE (RAC) ?

The Eighteenmile Creek RAC is comprised of a group of local, state and federal stakeholders, representing industries, organizations and local communities with a vested interest in the health of Eighteenmile Creek. The RAC is responsible for implementing the RAP, monitoring restoration efforts, and assessing ongoing needs and conditions. After a brief hiatus, the RAC reconvened in 2005 and is currently making progress in moving the RAP forward.

EIGHTEENMILE CREEK AREA OF CONCERN



2020 REPORT CARD



Left: A catch and release fish processing station from the 2019 fish community study implemented by USGS.



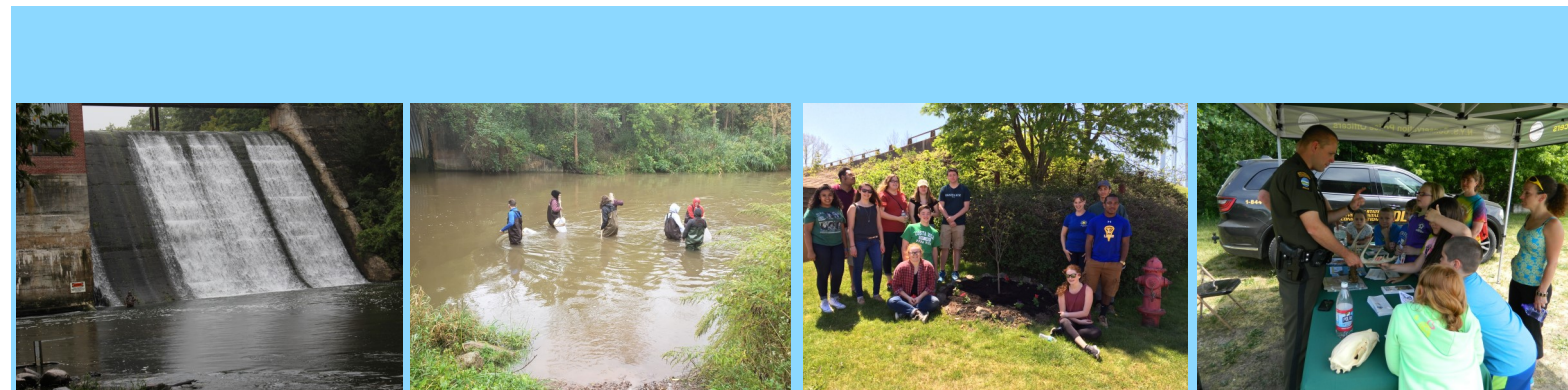
Right: A SUNY Brockport professor and graduate students preparing to collect fish for the mink prey study.



Left: SUNY Brockport graduate students preparing fish samples to be transported to the lab for processing.



Right: Fishermen enjoying the 2020 salmon run at Burt Dam.

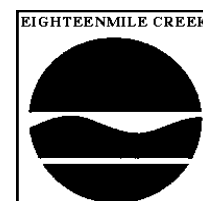
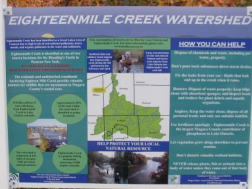


A COMPILATION OF SUCCESSES, IMPROVEMENTS & CURRENT CONDITIONS



FOR MORE INFORMATION
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2020 AOC Newsletter Update

Since 2020 has been a different year, we decided to provide a different type of update reviewing program success and the vision forward for this AOC. The bulk of the update will follow a Q&A format, with other topics being added in as necessary. Although COVID has cancelled many outreach events, programmatic goals are continuing to be reached for Eighteenmile Creek Area of Concern (AOC).

Are the results from the mink contaminant study ready yet?

In 2018, a study was initiated to determine the impairment status of mammals within Eighteenmile Creek. Previous studies of Beneficial Use Impairments (BUI) #3 (“Degradation of Fish and Wildlife Populations”) and BUI #5 (“Bird or Animal Deformities/Reproductive Problems”) found that there were no reproductive or physical impairments for fish, birds, amphibians, or reptiles, but found possible reproductive impairment for mammals. Research has proven that mink are especially sensitive to dioxin-like co-planar PCBs, dioxins and furans, which at part per billion concentrations in the diet cause reproductive failure. This study is assessing whether contaminants of concern are negatively impacting mink populations, causing reproductive problems, or increased incidences of deformities within the Eighteenmile Creek AOC and upstream creek area.

This assessment by SUNY Brockport was designed to sample either mink themselves or their prey to determine the impairment status of these BUIs. Since the size of the AOC is small, the shorelines are steep, and there is a significant amount of traffic surrounding the creek, it was decided to conduct a prey assessment. The prey assessment uses a mathematical model created by the Oak Ridge National Laboratory and adapted by SUNY Brockport to predict reproductive impairment or deformities using multiple samples of fish, crayfish, amphibians and Eighteenmile Creek water from different seasons. Samples were collected in Fall 2018, Spring 2019, Summer 2019, Fall 2019 and Spring 2020. A final report for this study is to be completed before the end of 2021. The US Army Corps of Engineers is also providing support for the Brockport project by providing fish and crayfish data from Oak Orchard Creek, which will be a reference site.

Have there been any recent milestones or goals the AOC has reached?

For 2020 in particular, this is a great question. There have been three major milestones the AOC has reached with the assistance of the EPA and NYSDEC: 1. Finalized new removal criteria for the remaining BUIs, 2. Removal of our first BUI: Restrictions on Dredging Activities, and 3. Designated the AOC as management actions complete.

Finalized new removal criteria for the BUIs: Developing an effective approach to addressing Beneficial Use Impairments (BUI) requires clear and measurable removal criteria. From 2018 to 2020, the Eighteenmile Creek coordination team, which includes Niagara County Soil and Water Conservation District (NCSWCD), United States Environmental Protection Agency (USEPA), and New York State Department of Environmental Conservation (NYSDEC), worked closely with BUI technical review leads and subject matter experts from United States Geological Survey (USGS), United States Army Corps of Engineers (USACE), and United States Fish and Wildlife Service (USFWS) to review the existing BUI removal targets listed in the Eighteenmile Creek Remedial Action Plan Stage II Update (2011) and develop updated removal criteria. Several factors specific to Eighteenmile Creek were considered, including previous assessments, end points that can be directly measured within the AOC, and using regional reference sites when appropriate.

Revised criteria for BUIs 3) Degradation of Fish and Wildlife Populations, and 5) Bird or Animal Deformities or Reproductive Problems were approved by the Remedial Advisory Committee (RAC) and submitted to USEPA Great Lakes National Programs Office (GLNPO) in August 2019. Updated criteria for BUIs 1) Restrictions on Fish and Wildlife Consumption, and 6) Degradation of Benthos followed with RAC and GLNPO approval in August 2020. Restrictions on Dredging BUI was not included in the updates since it was removed from the AOC in September 2020.

Removal of our first BUI: Restrictions on Dredging Activities: Removal of a BUI is no small task. You have to understand why the BUI was originally impaired, what work has been completed since listed as impaired, and determine if the previous work and/or other natural processes have been restored to prevent future impairment. It’s important to note that this BUI only applies in the Olcott Harbor. A review of multiple factors related to navigational dredging in Olcott Harbor, including sediment physical, chemical, and toxicological analysis, and recent and historical dredging permits, has shown little to no contaminant related dredging restrictions impacting the AOC. A geophysical survey was also completed by the US Army Corps of Engineers to show what types of sediments are in the bottom of the harbor. This information lends itself to show how water/sediment is moving in the harbor. The harbor survey showed northern areas comprised of mostly sand (likely washed in from Lake Ontario), while the southern parts of the harbor were fine grained sediments (from Eighteenmile Creek). Knowing this and the sampling results from the Town of Newfane dredging combines as two key pieces of proof that there is no impairment on dredging in the harbor. A full report describing the history and previous studies is available on eighteenmilerap.com.

Designated the AOC as management actions complete: The third major milestone reached is getting the AOC designated as “Management Action Complete”. In every AOC, the goal is to figure out what Great Lakes Restoration Initiative or Great Lakes Legacy Act actions (sediment remediation or habitat restoration) are needed to restore each BUI. When you know the projects that are needed and can give it a timeline, it is then designated as your management action list and sent to the EPA for approval. In order to remove Eighteenmile Creek AOC BUIs, remediation of source areas above Burt Dam is needed. The cleanup of source areas is being addressed through the EPA Superfund program, is not designated as an AOC management action. Since there are no known management actions below Burt Dam and the Superfund investigations/cleanup is ongoing, the NYS DEC with support of Niagara County Soil and Water and the Remedial Advisory Committee (RAC) submitted a letter stating no other management actions have been identified. The AOC program will continue to monitor the health of the creek as it pertains to the other BUIs that are still impaired. As the creek improves, BUIs will be removed accordingly.

Where are we at with the other BUIs?

The other BUIs are still impaired under the new removal criteria. It’s easiest to discuss these as their own separate topics.

BUI 1. Restrictions on Fish and Wildlife Consumption	
Removal Criteria:	There are no AOC-specific fish and wildlife consumption advisories issued by New York State
Discussion:	Fish above and below Burt Dam continue to have elevated levels of PCBs. After a discussion with NYS Department of Health (DOH), an AOC specific consumption advisory is expected to remain in place until remedial work is complete and there has been a declining trend in contaminant levels in fish. Knowing Superfund remedial work will take years to complete, this is a BUI that is unlikely to be removed in the near future.
BUI 3. Degradation of Fish and Wildlife Populations	
Removal Criteria:	Fish community metrics (e.g., diversity, abundance, biomass, and condition) are similar to reference site(s); AND Benthic macroinvertebrate community composition is within the range expected and similar to reference site condition; AND PCB concentrations in fish tissue and other prey are below thresholds likely to result in acute toxicity to fish or piscivorous wildlife (birds and mammals).
Discussion:	The first part of this removal criterion was addressed in the fish community study by USGS in 2019. In general, there are no major differences in fish community metrics between Eighteenmile Creek and Oak Orchard Creek. Since the fish communities are similar, this part of the criteria is considered to be met. Benthic macroinvertebrate communities were addressed in reports from 2013 and 2017. Minor differences in macroinvertebrate communities were found between Eighteenmile Creek and Oak Orchard Creek, but not at a level that would impact fish and wildlife on a population level. Since macroinvertebrate communities are similar to Oak Orchard Creek, this part of the criteria is also considered met. The third part of this criteria will likely be addressed with the mink study from SUNY Brockport. While Brockport is modeling chronic (long term) effects to mink from their prey, potential for acute (short term) effects will also be assessed to determine the status of this part of the criteria. Results of the Brockport study are expected sometime in 2021.
BUI 5. Bird or Animal Deformities/Reproductive Problems	
Removal Criteria:	PCB concentrations in fish tissue from comparable functional feeding groups are similar to reference site(s); OR PCB concentrations in fish and other prey are below tissue concentrations known to cause deformities or reproductive impairment in piscivorous wildlife.
Discussion:	It’s well known that resident fish in the AOC have elevated levels of PCBs. Therefore, this part of the BUI will not likely be met until after remediation is complete. The second criteria for deformities or reproductive impairment will be addressed in the SUNY Brockport mink study that should be complete before the end of 2021.
BUI 6. Degradation of Benthos	
Removal Criteria:	Benthic macroinvertebrate communities are “non-impacted” or “slightly impacted” according to NYSDEC indices; OR Benthic macroinvertebrate community condition is similar to unimpacted control sites of comparable physical and chemical characteristics; AND Toxicity of sediment-associated contaminants is similar to unimpacted control sites of comparable physical and chemical characteristics.
Discussion:	The first criteria uses DEC guidelines as a measuring stick, which is a good starting point for assessment. Previous studies have shown that both Eighteenmile Creek and a suitable reference site are slightly to moderately impacted by DEC guidelines, causing us to use the second and third criteria. Analysis of benthic macroinvertebrate community structure and sediment toxicity were generally similar between Eighteenmile and Oak Orchard Creek, although one site in the AOC ranked more poorly than other sites. A recent data review suggests that other factors such as seasonal eutrophication or poor habitat could be the cause of impairment. This BUI will be reviewed in 2021.