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Dear RAC Members:

With your assistance, the New York State Department of Environmental Conservation (NYSDEC) published the Eighteenmile Creek AOC Stage I/Stage II Remedial Action Plan (RAP) in August 1997. As you are aware, this document described the setting of the Eighteenmile Creek AOC, identified a set of Beneficial Use Impairments (BUIs) and their root causes, and outlined a remedial strategy for addressing these problems. Since then, the commitments made in the original RAP documents have been updated and modified through a variety of mechanisms. One such commitment which originated in the Stage I/Stage II RAPs was the development of specific endpoints or removal criteria for the identified BUIs.

The current removal criteria for the BUIs identified within the Eighteenmile Creek AOC were introduced in 2008. Shortly thereafter, Ecology and Environment, Inc. (E&E) comprehensively reviewed the commitments made in the original Stage I and Stage II (RAPs) and in March 2011 produced the *Interim Eighteenmile Creek Area of Concern (AOC) Strategic Plan for Beneficial Use Impairment (BUI) Delisting*. This document has served as a primary source of guidance for decision-making relating to the AOC. The Eighteenmile Creek AOC coordination team has relied upon it to track RAP implementation progress and to develop work plans for focused BUI assessments. One example of this is the ongoing mink study being conducted by SUNY Brockport within the AOC.

Over the past year, the Eighteenmile Creek AOC coordination team has focused its efforts on conducting a thorough review of the established removal criteria for the remaining BUIs. Following an initial review, the coordination team began to develop revised removal criteria for the “Degradation of Fish and Wildlife Populations” and “Bird/Animal Deformities or Reproductive Problems” BUIs. Throughout this process, the AOC coordination team was reliant upon the technical expertise provided by federal and state partner agencies, including the United States Army Corps of Engineers (USACE), United States Fish and Wildlife Service (USFWS), United States Geological Survey (USGS), and the New York State Department of Environmental Conservation (NYSDEC). Through close collaboration with federal and state partners, the proposed modifications to the removal criteria for both BUIs were successfully developed.

The Eighteenmile Creek AOC coordination team is confident that the revised removal criteria for these BUIs are Specific, Measurable, Attainable, Relevant, and Time-Based (SMART), and preserve the original commitments made in the Stage I/Stage II RAPs. We respectfully request that you review the attached documents describing the proposed BUI removal criteria modifications and underlying rationale in more detail and provide any comments or suggestions to us. The successful implementation of the Eighteenmile Creek RAP is reliant upon the continued engagement and support of the RAC. Thank you for your support, and we look forward to fulfilling the goals originally set in the Stage I/Stage II RAPs.

Sincerely,

The Eighteenmile Creek AOC Coordination Team

# Eighteenmile Creek AOC Modifications to BUI Removal Criteria

## BUI 3 Degradation of Fish and Wildlife Populations

### Current Criteria:

1. Fish and wildlife diversity, abundance, and condition are statistically similar to diversity, abundance and condition of populations at non- AOC control sites; AND
2. PCB levels in bottom-dwelling fish do not exceed the critical PCB tissue concentration for effects on fish (440 micrograms per kilogram [ $\mu\text{g}/\text{kg}$ ] of weight; Dyer et al. 2000).

### Proposed Criteria:

1. Fish community metrics (e.g., diversity, abundance, biomass, and condition) are similar to reference site(s); **AND**
2. Benthic macroinvertebrate community composition is within the range expected and similar to reference site condition; **AND**
3. 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).

### Criteria Change Discussion:

Historically there is very little wildlife population data for the AOC, making statistical comparisons to reference areas difficult. It should be noted that although Loss of Fish and Wildlife habitat (BUI #14) is not considered impaired for this AOC, large populations of piscivorous wildlife are unlikely to be present due to the small overall size of the AOC, including a narrow zone of upland habitat. As a result, previous wildlife surveys have been primarily qualitative in nature, and any future wildlife surveys would likely encounter the same limitation. For example, after a recent habitat assessment, researchers concluded that even with an expanded study area to include the stream corridor upstream of the AOC between Burt and Newfane Dams, it was unlikely enough mink would be captured for a robust statistical analysis.

As written, the second current criterion is intended to identify risks to aquatic biota and is not designed to be protective of piscivorous birds and mammals. The tissue concentration referenced (440  $\mu\text{g}/\text{kg}$  Dyer et al. 2000), is a screening criterion for chronic effects and may not be appropriate for assessing acute toxicity which could reduce populations of fish and wildlife.

The new criteria take into consideration that fish populations in the AOC and reference sites are relatively abundant, allowing for direct comparison of community indicators. This is reflected in the first proposed criterion which is relatively unchanged, the focus remains on relevant fish community metrics: diversity, abundance and condition (biomass has been added). Wildlife population metrics have been removed from this criterion.

Because of the limited population sizes of wildlife species of interest, alternative methods are needed to evaluate potential AOC related population impacts. Another population limiting factor could be loss of habitat, but if loss of fish and wildlife habitat is suspected as a cause of population degradation, BUI #14 would also be impaired. As stated in the 1997 RAP, "Because a considerable percentage of the Area of Concern is largely undisturbed and provides excellent habitat, this indicator is considered to be unimpaired". This leaves evaluation of prey communities, and consideration of toxicity thresholds, both of which are the focus of the proposed criteria. Presence of fish and benthic communities similar to non-AOC reference areas are not proof of healthy wildlife populations but demonstrate that AOC conditions are not impacting lower trophic levels. In addition, if PCBs do not accumulate to concentrations associated with population level impacts (acute toxicity endpoint\*) to fish and wildlife, this BUI can be restored.

\*Specific concentration endpoints will need to be determined through a review of current literature, other AOC metrics, superfund documents including risk assessments, and other relevant sources. Criteria will likely vary among species being assessed, i.e. some species may be more sensitive to PCBs. Numeric criteria should be updated as appropriate based on sound scientific justification.

## BUI 5 Bird or Animal Deformities or Reproductive Problems

### Current Criteria:

1. No reports of wildlife population deformities or reproductive problems from wildlife officials above expected natural background levels; **AND**
2. Contaminant levels in bottom-dwelling fish do not exceed the level established for the protection of fish-eating wildlife (NYSDEC Fish Flesh Criteria); **OR**
3. In the absence of fish data, the toxicity of sediment-associated contaminants does not exceed levels associated with adverse effects on wildlife (NYSDEC Fish & Wildlife Bioaccumulation Sediment Criteria).

### Proposed Criteria:

1. PCB concentrations in fish tissue from comparable functional feeding groups are similar to reference site(s); **OR**
2. PCB concentrations in fish and other prey are below tissue concentrations known to cause deformities or reproductive impairment in piscivorous wildlife.

### Criteria Change Discussion:

While it does not appear that any reports of wildlife population deformities or reproductive problems have been received to date, it is also not a metric that has been actively assessed. Any survey conducted to assess rates of deformities and reproductive problems would likely encounter the same issue discussed above for wildlife surveys at Eighteenmile Creek AOC. Likewise, expected regional background levels are not well known. Though it could be stated that this BUI criterion has been met, it could be viewed as an achievement by default.

A second issue with the current criteria is the reference to the NYSDEC Fish Flesh Criteria (0.11mg/kg for PCBs). The concern is that this value may not be attainable under regional conditions. Even the long-time reference site at Oak Orchard Creek, has exceeded this value in multiple instances.

The last of the current criteria provides a backup criterion in the case that fish data is unavailable. This is unnecessary, as there is an extensive database of historic and current fish tissue records. In general, metrics which are closer to the species of interest, are preferred over metrics which are further removed. In this case, wildlife prey provides a measurement endpoint at least one step closer than sediment.

The first notable change removes the first current criterion regarding population deformities beyond natural background levels. Any reports of deformities or reproductive problems, or lack thereof, should still be considered in the final justification for BUI removal. For the reasons cited above (data availability and relevance), the revised criteria focus on bird and animal prey species. The proposed first criterion, in keeping with IJC guidance, is consistent with the overall goal of returning AOC's to regional conditions. The focus is expanded from just "bottom-dwelling fish" to "comparable functional feeding groups". This allows for a more complete assessment of fish tissue concentrations consistent with historic and future fish collection strategies, while still acknowledging the tendency of bottom-dwelling fish to accumulate greater amounts of PCBs.

The proposed second criterion provides a future path for BUI removal in the case that there are observable differences in PCB concentrations between the AOC and reference areas, but AOC concentrations are still below levels associated with deformities or reproductive impairment in piscivorous wildlife\*.

\*Specific concentration endpoints will need to be determined through a review of current literature, other AOC metrics, superfund documents including risk assessments, and other relevant sources. Criteria will likely vary among species being assessed and may be different from levels associated with BUI #3 population impacts. Numeric criteria should be updated as appropriate based on sound scientific justification.

#### Path forward and next steps:

- BUI criteria
  - continue to engage subject matter experts (2/21 meeting attendees) to review and refine proposed BUI removal criteria
  - present revised BUI criteria, along with detailed rationale for suggested changes, to RAC for approval, and EPA for concurrence
- Data collection and analysis
  - develop sediment sampling strategy with USACE to update AOC sediment database
  - conduct fish community assessment
  - complete mink study
  - compile and review all recent fish tissue PCB data from AOC and reference sites, including 2018 EPA and DEC collection efforts
  - identify PCB tissue concentrations known to cause deformities or reproductive impairment in piscivorous wildlife (literature review, other AOCs)
- Re-evaluate current status of BUIs 3 and 5 based on above