

**December 2011 Addendum to Stage 1 and 2 Remedial Action Plans**  
***Rochester Embayment Area of Concern***  
**New York State**

**I. Purpose:**

This document briefly (a) outlines the existing Beneficial Use Impairments (BUIs), the purported causes and potential remedies as described in the Remedial Action Plan's (RAP) Combined Stage 2 Report published in September 1997, and (b) tentatively identifies a series of project-specific actions, either regulatory or non-regulatory, needed to accomplish the remedies and to ultimately justify re-designation of the BUI.

This document will be used to assist government and non-government organizations in focusing their efforts and funding opportunities on the most immediate "action-oriented" projects needed within the AOC, or its contributing watershed. Because this document has not undergone an extensive public consultation process, it should be considered as a preliminary planning piece of the overall RAP, subject to future changes as needed. In addition, this document will be used to support a more thorough strategic re-evaluation and planning process, currently underway in each AOC, in order to prioritize implementation projects specifically designed to address BUI delisting targets, and to direct public and non-public support as appropriate.

**II. RAP Management and Coordination**

The Monroe County Department of Public Health is currently funded via USEPA to coordinate the Rochester Embayment RAP through the end of 2014. Additional funding will be needed to continue the coordination beyond 2014. Contact person is Charlie Knauf at 585-753-5440.

**III. Current Beneficial Use Impairments, Likely Causes, Planned Remedies, Specific Actions**

**A. BUI – Restrictions on Fish and Wildlife Consumption.**

While there were three advisories discussed in the Stage I RAP for the Rochester AOC, two are in upper watershed areas not included in the strict IJC definition as part of the AOC (Canadice Lake for PCB, and Irondequoit Bay for PCB and Mirex), and the third is a lake-wide advisory for Mirex, PCBs, and Dioxin in all tributaries up to the first barrier impassable by fish.

**1. Known or Suspected Cause – Mirex, PCBs, and Dioxin**

The main source of Mirex to Lake Ontario is the Niagara River. There is documentation of contamination in sediments from Niagara to the Embayment. PCB sources were primarily major industries where the historical lack of

environmental control and improper disposal contaminated upland and water areas. Dioxin has been identified as a by-product of incomplete combustion during a manufacturing process. Its source has not been identified specifically but is generally attributable to industrialized areas similar to the lower Genesee. Both PCB's and Dioxins have also been indicated to originate from atmospheric deposition.

The Mirex plumes in the Rochester Embayment are of large area and are in areas that are likely to naturally encapsulate, and are not unique to the Embayment, mitigation is not an AOC based project.

PCB impacting the Lake originates in nearly all watersheds where it was employed, and is likely carried via atmospheric processes.

Dioxin is not indicated as originating from any specific manufacturing or disposal situation identified for the AOC, but is a by-product of incomplete combustion. It has been indicated that the larger rivers flowing into Lake Ontario like the Genesee are greater sources, but this primarily a factor of the contributory watershed sources and larger flow than any identified source within the AOC.

#### **a. Work/Study Completed**

- Areas of PCB contamination on the Westside of Rochester have been identified and the main source is in remediation, but this area is upstream of the AOC and is mainly captured by the Combined Sewer system.
- PCB equipment removal has been and is being undertaken by the local utility. A recommended project to accelerate PCB removal in industries and commercial operations was listed in the Stage II. Cost for removal, accomplished at the three SUNY Schools at SUNY expense during generation of Stage II, was 3 million dollars. 1997 estimate for inventory was approximately \$35,000.

#### **b. Future Needs**

- As sources of these contaminants are not AOC specific, and the consumption advisories are not AOC specific, it has been decided that this BUI will be proposed for removal based on appropriateness of remediation by a larger entity, the Lake Ontario Management Plan (LaMP).
- If a determination is made that data is needed on AOC specific contaminant levels, samples should be collected in the AOC of species indicated by NYSDEC fish and Wildlife personnel and USF+WS to be resident.

### **B. BUI Tainting of Fish and Wildlife Flavor**

According to the Stage I RAP, NYSDEC received a small number of complaints over a five year period from anglers fishing in the lower Genesee for salmonids.

#### **1. Known or Suspected Cause:**

Phenol is indicated by NYSDEC sources as the usual cause of tainting complaints. Phenol in the Genesee River likely originates from Coal Tar seeping

through the fractured bed rock from 19<sup>th</sup>-early 20th century coal gasification sites, and could be associated with industrial discharges to the river.

Remediation of Coal gasification sites will reduce source, but is unlikely to completely remediate materials already flowing through bedrock fractures.

**a. Work/Study Completed:**

- NYSDEC Region 8 Fisheries staff, Lake Ontario Research Unit Staff, and the Monroe County Fisheries Advisory Board have been contacted in recent years and no complaints of tainting have been received in the recent past.
- Monitoring of the lower Genesee River for Total Phenols conducted in the late 1990's showed occasional exceedence of the standards. This analysis was suspended at combination of the Monroe County Environmental Health Laboratory with the Department of Environmental Services Laboratory, and there is indication from the Laboratory that current detection limits are too high to resolve this issue.
- RIBS data collected by NYSDEC for Total Phenolics also showed occasional exceedence of the standards.

**b. Future Needs:**

- Discussion of this BUI with USEPA and NYSDEC staff is needed to determine if it should remain listed.
- The Stage II RAP contained a section on panel taste test submitted by the then current Regional Fisheries Manager.
- Resumption of Genesee River Water Column Phenol testing at \$5,000 per year has been indicated but preliminary review of analytical detection limits and methods leaves questions as to whether this would resolve this issue.
- A survey of anglers with non-AOC control group was included as a monitoring method in the Delisting Criteria at approximately \$10,000. The RAP Oversight Committee has indicated that this may not be the most reliable method for delisting due to the subjectivity of the respondents, and based on other surveys conducted this would cost in the neighborhood of \$12,000

**C. BUI – Degradation of Fish and Wildlife Populations**

**1. Known or Suspected Cause** – In the Stage I RAP, this was listed due to mink, which were reported in a NYSDEC study to be down on population and reproductive success all around the Lake, due to consumption of PCB contaminated fish.

**a. Work/Study Completed:**

- Studies completed by SUNY at Brockport researchers indicates that mink are present and surviving, in numbers comparable to inland sites, and it is the intent of the RAP Oversight Committee to propose this BUI for removal based on these studies

**b. Future Needs:**

- A project to acquire remaining parcels in the Braddock Bay FWMA vicinity to help preserve habitat continuity has been developed and submitted for funding by NYSDOS in conjunction with the Nature Conservancy, the Genesee Land Trust, the Town of Greece and the Town of Parma . This project has been estimated at approximately 2 million dollars in earlier estimations. and is the highest priority in this and the habitat categories
- The 1997 Stage II RAP contains numerous actions that can be tied to fish and wildlife populations including
  - acceleration of PCB removal,
  - Pollution prevention,
  - remediation of landfills and hazardous water sites,
  - remediation of sources within the Genesee gorge,
  - management of stormwater quality,
  - impervious surface reduction,
  - promotion of Agricultural BMPs,
  - many actions expected to have secondary benefits as well.
- All of the above actions have been at least initiated, most are ongoing water quality improvement projects, and many are not germane within the AOC, but are watershed based activities
- Suggestion has been made that habitat improvement for mink could be undertaken in Braddock Bay Fish and Wildlife Management Area (western Embayment) and the lower Genesee River wetlands. Detailed evaluation by USF+WS or NYSDEC and a habitat expert to design project would be needed to further this effort. Costs estimates for this work are not currently available.

#### **D. BUI – Fish Tumors and other Deformities**

**1. Known or Suspected Cause:** The suspected cause of this BUI would be contaminated sediments. This BUI was not listed in the Stage I and has been identified as undetermined up until the 2009 E+E report, when all BUI's were either listed or not, and undetermined BUI's were listed as impaired. If this were determined to be a problem, a likely cause would be PAH's, especially in the Genesee River, where the coal tar seeps would be likely source.

##### **a. Work/Study Completed:**

- A tumor study modeled on the study completed for Eighteen Mile Creek was conducted in the AOC in 2010. However brown bullhead, the species for determination, were not found during the late summer sampling period in the Genesee River, so all examined fish came from the Braddock Bay section of the AOC. US Fish and Wildlife Service has collected some fish for analysis as part of the Great Lakes Legacy Act determination being done in the Genesee River.

##### **b. Future Needs:**

- The AOC bullhead study found no evidence of tumors.

- If further collection is defined as needed for the Genesee River after report from USF+WS, a further study in that area would be needed. Based on costs for the preliminary study, and the need to time this work to the Spring Bullhead run from Lake Ontario, it is estimated that costs could exceed those on the original study, which cost ~\$70,000.
- If the GLLA project finds no evidence of contamination, supported by USF+WS, removal of this BUI will be pursued.

## **E. BUI – Bird or Animal Deformities or Reproductive Problems**

**1. Known or Suspected Cause:** In the Stage I RAP, this was listed due to mink, which were reported in a NYSDEC study to be down on population and reproductive success all around the Lake, due to consumption of PCB contaminated fish. While there was some discussion in the Stage I RAP of possible Bird deformities, reported incidences were associated with migratory birds, and there is no way to define where exposures occur. The BUI was written with water column chemical analysis as the preferred method of determination of status, but NYSDEC Standards for Wildlife were modified during the period of approval for the Stage II and Addenda, and are now set at levels that are below analytical detection limits.

### **a. Work/Study Completed:**

- The BUI was written with water column chemical analysis as the preferred method of determination of status, but NYSDEC Standards for Wildlife were modified during the period of approval for the Stage II and 1999 and 2002 Addenda, and are now set at levels that are below analytical detection limits. Some resolution of this issue at the NYSDEC is warranted for all AOC's, or this method of determination is no longer feasible.
- In studies completed at SUNY at Brockport, Mink are reported to be reproducing in the AOC. One incidence of jaw lesions in mink was reported in these studies, but as contaminants associated with problems are indicted to be associated with the entire lakeshore, this may not be an AOC specific problem.

### **b. Future Needs:**

- The 1997 Stage II RAP lists numerous actions that can be tied to this BUI including
  - acceleration of PCB removal, pollution prevention
  - remediation of landfills and hazardous water sites
  - remediation of sources within the Genesee gorge
  - management of stormwater quality
  - impervious surface reduction
  - promotion of Agricultural BMPs
  - many actions expected to have secondary benefits as well.
- All of the actions have been at least initiated, most are ongoing water quality improvement projects, and many are not germane within the AOC, but are watershed based activities.

- If questions remain concerning additional species, some entity should undertake a study applicable to all AOC's to determine if deformities or reproductive problems do exist, and if they are found what the causes are or might be. Especially for birds, who move so easily, documentation of a specific area causing any identified problem could be difficult.
- A full examination of this issue by USF+WS and NYSDEC biologists, or a contractor such as SUNY at Brockport, who applied for funding for such an effort in 2011, might lead to removal of this BUI for all or most NY AOC's.

## **F. BUI -Degradation of the Benthos**

### **1. Known or Suspected Cause**

Contaminants in Sediment of the Genesee River related to past WWTP discharges and industrial discharges. Accumulation of sediment on more suitable substrates for Invertebrates may also be a cause.

#### **a. Work/Study Completed:**

- Criteria for removal of this BUI included in the 2002 Stage II Addendum generated by Monroe County proposed use of NYSDEC indices and findings of non-impacted or slightly impacted status at sites in the Genesee River, Braddock Bay Irondequoit Bay and the open Lake. Since generation of that document, Irondequoit Bay has been excluded from the AOC.
- The Lower Genesee River is routinely monitored for invertebrates as part of the NYSDEC Rotating Intensive Basin Survey (RIBS). RIBS reports for 1990 indicted that the area of the Charlotte Docks ( Turning Basin) was severely impacted. Data collected for that same program, in 2005 and 2010, indicates that the lower Genesee River is meeting removal criteria.
- Sampling conducted under GLNPO grant GL97582701 (2007) found all sites to be slightly to moderately impacted. The quality status (slight or moderate impact) was approximately equally distributed in the River and Embayment and Braddock Bay with no apparent pattern to the distribution.

#### **b. Future Needs**

- The 1997 Stage II RAP and 2002 addenda suggested a project to collect benthic macroinvertebrates during spring, summer, and fall seasons for one year within the Rochester Embayment and its watershed. As the Genesee River is meeting BUI removal targets, and the contributory watershed is not considered germane to the AOC discussion, this effort could be limited to the Open lake area of the AOC. Estimates for such work in the 1997 Stage II RAP are between \$25,000 and \$30,000 and would need to be updated for inflation.
- It is unlikely that remedial work on the scale of the area of the Lake Ontario portion of the Rochester Embayment AOC would be economically feasible.
- If sources of stress to invertebrate populations are correctly identified as originating in the Genesee River, and the River is meeting BUI Removal

criteria, it can be assumed that with passage of time and maintenance and improvement of water quality, invertebrate populations will also become restored in the open lake portions of the AOC

- Completed NYSDEC RIBS reports for the 2005 sampling and the 2010 sampling would assist in preparing this BUI Removal proposal.

## **G. BUI - Restriction on Dredging Activities**

### **1. Known or Suspected Cause:**

The Stage I RAP listed the main causes of this BUI as “release of toxic chemicals to the river (e.g. ammonia, which is toxic to fish) to reduce incidents of increased oxygen consumption in the river, and to reduce the impact of re-suspended sediments and fecal coliform on the swimming beach” associated with overflow dredging.

#### **a. Work/Study Completed:**

- USACE analysis of navigation channel sediments conducted as part of its responsibilities for maintenance dredging in the Genesee River indicate that navigation channel sediments are meeting guidelines for open lake disposal.
- Phase I of a Great Lakes Legacy Act funded project to determine suitability of non-navigation channel sediments from areas where dredging would be desirable was conducted in fall 2011. Follow-up sampling will be completed in Summer 2012

#### **b. Future Needs:**

- To be determined after completion of Legacy Act project

## **H. BUI - Eutrophication or Undesirable Algae**

### **1. Known or Suspected Cause**

Excess nutrient, mainly phosphorus, discharged from Embayment tributaries and upstream in the Genesee River, trapped in the nearshore during the spring growing period by the thermal bar, and recycled through the nearshore environment by Dreissinid mussels and filamentous algae, mainly Cladophora and Spirogyra.

#### **a. Work/Study Completed:**

- This is documented as a problem in both AOC and non-AOC areas of western Lake Ontario, and is not unique to the Rochester Embayment.
- Sampling to define this problem has been conducted by the Lake Ontario Coastal Initiative (LOCI).
- Results of a multi-year study of the nearshore conducted by researchers from the Great Lakes Research Consortium and Ontario Ministry of Natural Resources are expected to be released in 2012 also demonstrating the lakewide nature of this problem, and the contributions of the Genesee River.

#### **b. Future Needs**

- This aspect of the BUI will be proposed for removal based on transfer to another authority (LaMP)
- A project to deal with the immediate effects at Ontario Beach and in the Charlotte neighborhood caused by the USACE navigation project has been proposed and is discussed in J.2.a. and b. and K.1. b.

**I. BUI - Restrictions on Drinking Water Consumption or Taste and Odor Problems  
BUI REMOVED - 2010**

**J. BUI - Beach Closings**

**1. Known or Suspected Cause:**

Coliform Bacteria are indicated as one cause of closings at Ontario beach. The Stage I RAP reports that early monitoring indicated that the major source of coliform was the Genesee River plume, but bacteria levels in the river have declined since the Combined Sewer Overflow Abatement Program in the Monroe County Pure Waters wastewater system. Streams tributary to the Lake to the west of the Beach, especially Slater Creek, have also been historically considered major sources of bacteria, but many of the problems leading to elevated bacteria in that system have also been eliminated. Other possible sources include birds (there is a large gull population and a growing goose population resident in warm months at Ontario Beach), bather load, boat discharges, and re-growth and re-suspension of bacteria associated with sediments, sand, and algae. At Durand Beach, reopened since the Stage I and II RAPS were written, tributaries in the immediate vicinity of the beach are one major source of bacteria in addition to the ones listed for Ontario Beach, and wildlife populations in the upstream park area, improper pet waste disposal in the upstream park area, and aging and possibly failing on-site wastewater treatment systems are indicated as possible bacterial sources.

**a. Work/Study Completed:**

- Sanitary Survey work for Ontario Beach was completed in the early 1970's as part of model development and application to NYSDOH for a permit to operate a bathing beach granted in 1976.
- Sanitary Survey work for Durand Beach was initiated in 2006 with the City of Rochester's action to reopen the Bathing Beach there, and has continued, with a planned project to search for cross connections in the Town of Irondequoit Storm sewer system set to begin in spring of 2012.
- Both beaches are monitored for environmental conditions and E. Coli bacteria on a daily basis throughout the operating season, generally from late June until Labor Day.
- Recent work conducted by American and Canadian researchers highlights differences between nearshore, offshore and embayment nutrient levels that indicate importance of local tributaries in the nearshore ecosystem.

**b. Future Needs**



- Continuation of inspection activities to identify failing septic systems, cross connections, and leaking sewers in the watershed areas tributary to the Embayment.
- Implementation of actions to discourage use of beach areas by gulls and geese, and to control bacterial impact from other wildlife in tributary areas.
- Continuation of educational activities geared toward making pet owners aware of their responsibility for cleaning up after their pets.
- Correction of problems identified through the Phase II NPDES Illicit Discharge Detection and Elimination Program.

## **2. Known or Suspected Cause:**

Filamentous Algae, mainly Cladophora, is a problem at Ontario Beach because the Pier associated with the USACE navigation project on the Genesee River acts as a barrier to lateral drift of the material

### **a. Work/Study Completed:**

- A symposium recommended in the Stage II RAP to define the causes and outline possible solutions was completed in 2002.
- A project to define the extent of the algae accumulation along the south shore of Lake Ontario was completed by Rochester Institute of Technology researchers in 2003. This project found that all hard substrate bottom areas surveyed were used as attachment sites by filamentous algal in the entire survey area from Sodus to Niagara Falls, indicating that this is not an AOC specific problem.
- A study in summer of 2011 completed by the USACE evaluated a pump system with discharge of pumped material to the Genesee River indicated that it was possible to clear accumulated algae from Ontario Beach and increase opening of the beach. Funding sources are currently being explored, and permit applications being developed for full time implementation.

### **b. Future Needs**

- Funding to contribute toward the pumping system solution to the aesthetic problem created at Ontario Beach by the USACE Navigation Project-estimated capital costs = \$400,000.

## **3. Known or Suspected Cause:**

Turbidity of the water in a bathing beach is a cause for closure both because it masks bacteria in the water from disinfection by Ultra Violet light waves, provides a substrate for bacterial growth, and also because it makes a swimmer in trouble more difficult for a lifeguard to see. Erosion in the main channel and tributaries of the Genesee River, mainly upstream of the AOC and Monroe County, produces sediments visible as the Genesee River plume where it enters Lake Ontario. Other fine particles form from decomposition of filamentous algae in the beach area. Turbidity is also caused by re-suspension of sediments and particles in wave events.

### **a. Work/Study Completed:**

- The USACE has completed a SWAT Model of the Genesee River indicating major subwatersheds that are sources of river sediments.
- Erosion inventories of some watershed tributaries have been completed by the Regional Planning Council.
- A number of bad erosion sites in Genesee tributary areas have been mitigated by the local Soil and Water Conservation Districts under funding from the Great Lakes Commission's Great Lakes Basin Program for Soil Erosion and Sediment Control.

**b. Future Needs**

- Existing non-navigation channel sediment in the AOC portion of the Genesee River is undergoing evaluation as a GLLA project.
- Implementation of sediment control projects in the upper watershed is expected to positively impact this BUI, but this will likely take time for the full benefits to accrue.
- Continued implementation of Agricultural Best Management Practices in the upper watershed

**K. BUI - Degradation of Aesthetics**

**1. Known or Suspected Cause**

Decomposing algae

**a. Work/Study Completed:**

- Survey by Health Department Staff, and presenters at the Algae Cause and Effects Symposium held in Rochester in 2003 agree that this is not isolated to the AOC.
- A study in summer of 2011 completed by the USACE evaluated a pump system with discharge of pumped material to the Genesee River indicated that it was possible to clear accumulated algae from Ontario Beach and increase opening of the beach. Funding sources are currently being explored, and permit applications being developed for full time implementation.

**b. Future Needs**

- Funding to contribute toward the pumping system solution to the aesthetic problem created at Ontario Beach by the USACE Navigation Project-estimated capital costs = \$400,000.

**2. Known or Suspected Cause**

Odor due to chemical seeps at the lower falls

**a. Work/Study Completed:**

- Suggested monitoring in the Stage II RAP has not been undertaken.
- During repairs to the RG+E Hydro facility at the lower falls in 2009, odors were detectable in the area. Further surveillance of this problem has not been possible due to an ongoing repair project to the tunnel that carries water to the generating station, which has kept all the flow in the river going over the falls for the last 2 years.

**b. Future Needs:**

- Continuation of NYSDEC efforts at upstream sites known to be coal tar sources.
- A project to dam fractured bedrock was suggested by USACE, but this was not reviewed favorably by the RAP Oversight Committee

### **3. Known or Suspected Cause**

Alewife die-offs and dead alewives on the shoreline

#### **a. Work/Study Completed:**

- NYSDEC Fisheries and USGS trawl programs have documented the decline in alewife Biomass along Lake Ontario

#### **b. Future Needs**

- This aspect of the BUI will be proposed for removal

### **4. Known or Suspected Cause**

Discarded Salmonids along the banks of the Genesee

#### **a. Work/Study Completed:**

- NYSDEC has enacted regulations prohibiting the discarding of fish carcasses along tributaries and the practice of snagging salmonids.
- Elimination of carcasses associated with normal death after spawning is unlikely without the elimination of stocking of pacific salmon species.

#### **b. Future Needs**

- This aspect of the BUI will be proposed for removal

### **5. Known or Suspected Cause**

Litter from CSO's and recreational users of lower Genesee River

#### **a. Work/Study Completed:**

- Coastal Cleanup programs have been implemented at most access points to the Lake and River within the Embayment.
- Public Education activities targeting littering have been undertaken as part of the Water Education Collaborative Water Hero campaign.

#### **b. Future Needs**

- Public Education specifically geared toward fisherpersons linking loss of access to littering is in discussion.
- Based on the limits of possibility within an urban area, this aspect of the BUI will be proposed for removal.

### **6. Known or Suspected Cause**

Suspended Sediment concentrations in the lower Genesee River (it should be noted that when this removal criterion was developed, Suspended Sediment was used interchangeably with Suspended Solids in the monitoring community, and as there is a large body of data pertaining to Suspended Solids concentrations, this term should be substituted) make the Genesee River appear perpetually muddy, and this sediment-rich plume affects the Rochester Embayment and down lake and offshore areas as well.

#### **a. Work/Study Completed:**

- Data gathered as part of the Monroe County/USGS cooperative indicates that this BUI is not met, but the major source of sediment is upstream of the AOC, as for the most part the river flows over bedrock confined to a gorge in the AOC and urban area..
- NRCS, USACE, and FLOWPA are working on projects to address these issues in the upper watershed

**b. Future Needs**

- This aspect of the BUI will be proposed for removal based on transfer to another authority (LaMP)

**L. BUI - Added Costs to Agriculture and Industry  
BUI REMOVED-2011**

**M. BUI - Degradation of Phytoplankton and Zooplankton Populations**

**1. Known or Suspected Cause**

Phenol and other chemicals; Suspended Sediments

**a. Work/Study Completed:**

- A 9 month study of zooplankton and phytoplankton toxicity was recently completed for the lower Genesee and the eastern and western embayment. Results of this study indicate that there is sediment or turbidity related toxicity in the AOC.

**b. Future Needs**

- Results of the limited study in relation to results of the Legacy Act Project may yield a project, or discussion may focus on whether the criteria is valid as expressed.
- If the discussion concludes that this BUI is sediment related, this aspect of the BUI will be proposed for removal based on transfer to another authority (LaMP).

**N. BUI - Loss of Fish and Wildlife Habitat**

Development of urban and suburban land uses in the areas adjacent to the AOC including filling of wetlands along the Genesee River mouth and in other areas adjacent to the embayment, deforestation and agriculture, and shoreline development were the major causes listed in the Stage I RAP, and are indicated as being, for the most part, irreversible.

An indicator approach as suggested by SOLEC was used in developing removal criteria.

**1. Known or Suspected Cause**

The first indicator was quantity and quality of federal or state designated wetlands

**a. Work/Study Completed:**

- A baseline study of wetlands was conducted in 2003.

**b. Future Needs**

- According to USF+WS reassessment of wetlands may be in process at a state or federal level.

## **2. Known or Suspected Cause**

Loss of Riparian Buffers

### **a. Work/Study Completed:**

- An examination of Aerial Photography to assess extent of buffer strips on Embayment tributaries was undertaken in 2005, however, subsequent to that effort, EPA GLNPO limited AOC discussion to the area immediately tributary to the river and lake, so this may no longer be germane to the BUI removal effort, and for any further effort along these lines an EPA QAPP would need to be developed.
- A discussion among involved agencies as the appropriateness of this criteria is necessary.

### **b. Future Needs.**

- Reassessment

## **3. Known or Suspected Cause**

Suspended Sediment in the Genesee River

### **a. Work/Study Completed:**

- See K.6.a.

### **b. Future Needs**

- See K. 6. b.

## **4. Known or Suspected Cause**

Invertebrate habitat is impaired as indicated by absence of indicator species

### **a. Work/Study Completed:**

- NYSDEC RIBS data has been collected on a five year rotating basis through 2009-10. While the last two reports have not been released, data indicates that the lower River has met the removal criteria, and will be proposed for removal.
- Data gathered as part of an EPA evaluation of the river and open lake portions of the embayment for suitability for sturgeon also indicates that the River has met removal criteria.
- Data for the open lake portion of the AOC is less conclusive.
- The current BUI removal criteria for this indicator focuses on presence of Hexagenia in the Genesee River, which is indicated in the invertebrate work done as part of the USF+WS sturgeon project.

### **b. Future Needs.**

- Reassessment of the Open Lake portion of the AOC for invertebrate population status- estimated cost needs to be determined, although the removal criteria included in the 2002 Stage II Addendum only deal with the lower river and streams.

## **5. Known or Suspected Cause**

Amphibian habitat impaired as indicated by diversity and density.

**a. Work/Study Completed:**

- The Bird Studies Canada Marsh Monitoring Program was the recommended monitoring method for this aspect of the BUI in the 2002 Stage II RAP addendum, and the program was implemented in 2005, and their report on the AOC's in the USA indicated that the AOC had met expected standards

**b. Future Needs**

- This aspect of the BUI will be proposed for removal and reviewed by DEC.
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**6. Known or Suspected Cause**

Fishery habitat impaired as indicated by unsuitability for Lake Sturgeon

**a. Work/Study Completed:**

- USF+WS has evaluated Genesee River habitat for Lake Sturgeon, reintroduced juvenile fish, and capture–recapture data indicates that the habitat is suitable for sturgeon.

**b. Future Needs**

- This aspect of the BUI will be proposed for removal and reviewed by DEC.
- Signage to inform anglers and encourage anglers about the threatened status of sturgeon and their important role in restoration by not harvesting fish has been proposed.

**7. Known or Suspected Cause**

Wildlife habitat is impaired as evidenced by reduction in mink populations

**a. Work/Study Completed:**

- See Discussions in C.1.a. and E.1

**b. Future Needs**

- This aspect of the BUI will be proposed for removal and reviewed by DEC.

**Table 1 Rochester AOC Status and Actions Needed for BUI Removal**

<b>BUI</b>	<b>Current Status</b>	<b>Additional Needs</b>	<b>Potential Lead Organization</b>	<b>Est. \$/Source</b>	<b>Years needed to complete BUI Removal</b>
<b>1. Restrictions on Fish and Wildlife Consumption</b>	IMPAIRED	BUI Removal Proposal	MC		1-2
<b>2. Tainting of Fish and Wildlife Flavor</b>	IMPAIRED	<ul style="list-style-type: none"> <li>• Phenol study, but also need indications that the current method of detection and detection limits are adequate for characterizing chlorinated and unchlorinated phenols at the level where tainting occurs; Also need discussion of RIBS data quoted in USACE report</li> <li>• Survey of Region 8 and NYSLO Fisheries staff says not a problem; since Angler Survey is an alternative to this, unnecessary</li> </ul>	MC/DEC	Cost per test data unavailable; MC lab unable to meet detection limits indicated by NYSDEC	2*

**Table 1 Rochester AOC Status and Actions Needed for BUI Removal**

<b>BUI</b>	<b>Current Status</b>	<b>Additional Needs</b>	<b>Potential Lead Organization</b>	<b>Est. \$/Source</b>	<b>Years needed to complete BUI Removal</b>
<b>3. Degradation of Fish and Wildlife Populations</b>	IMPAIRED	<ul style="list-style-type: none"> <li>• Survey for levels of bioaccumulative chemicals in wildlife prey and tissues;</li> <li>• Mink habitat restoration/improvement in the Braddock Bay Wildlife Management Area</li>   <li>• Also see Wetlands acquisition under Habitat BUI</li> </ul>	USF+WS/ NYSDEC/ MC	~150K  ~2,000,000 (under development as feasibility study by USACE)	
<b>4. Fish Tumors or Other Deformities</b>	IMPAIRED	BUI Removal proposal, based on SUNY study	MC		
<b>5. Bird / Animal Deform. or Reproductive Problems</b>	IMPAIRED	Needs attributable to <b>Degradation of Fish and Wildlife Populations</b>	See above	See above	
<b>6. Degradation of Benthos</b>	IMPAIRED	BUI Removal proposal, based on RIBS data, USGS BRD sturgeon habitat characterization, and GLNPO Sturgeon Habitat evaluation data	MC		1-2
<b>7. Restrictions on Dredging Activities</b>	IMPAIRED	Completion and data evaluation of ongoing Legacy Act project	GLNPO	TBD	2+



**Table 1 Rochester AOC Status and Actions Needed for BUI Removal**

<b>BUI</b>	<b>Current Status</b>	<b>Additional Needs</b>	<b>Potential Lead Organization</b>	<b>Est. \$/Source</b>	<b>Years needed to complete BUI Removal</b>
<b>8. Eutrophication or Undesirable Algae</b>	IMPAIRED	<ul style="list-style-type: none"> <li>USACE Algae Project implementation</li> <li>Propose BUI removal based on Nutrient sources mainly upstream and comparable near nearshore nutrient and Chl A levels in and out of AOC</li> </ul>	MCDES	~400K ( Capital costs: MC to cover O+M)	5+
			MC DPH		2
<b>9. Drinking Water Consumption Restrictions, or Taste and Odor Problems</b>	DELISTED	N/A			
<b>10. Beach Closings</b>	IMPAIRED	USACE Algae Project implementation	MCDES	~400K ( Capital costs: MC to cover O+M)	5+
<b>11. Degradation of Aesthetics</b>	IMPAIRED	<ul style="list-style-type: none"> <li>Decomposing Algae: USACE Algae Project implementation (see 8.)</li> <li>Lower Falls Coal tar seeps, and source monitoring</li> <li>Litter in Lower River area: Targeted with WEC under current USEPA grant</li> </ul>	RE RAC	10K	
			RE RAC		
<b>12. Added Costs to Agriculture or Industry</b>	DELISTED	N/A			

**Table 1 Rochester AOC Status and Actions Needed for BUI Removal**

<b>BUI</b>	<b>Current Status</b>	<b>Additional Needs</b>	<b>Potential Lead Organization</b>	<b>Est. \$/Source</b>	<b>Years needed to complete BUI Removal</b>
<b>13. Degradation of Phytoplankton and Zooplankton Populations</b>	IMPAIRED	<ul style="list-style-type: none"> <li>Conduct a sampling of the phytoplankton and zooplankton community.</li> </ul> Next steps in discussion with EPA and DEC		70K/ (E+E #)	2-5
<b>14. Loss of Fish and Wildlife Habitat</b>	IMPAIRED	<ul style="list-style-type: none"> <li>Conduct an assessment of state- and federally designated wetlands. Identify and rank critical habitats in the AOC for protection and restoration.</li> <li>Preservation of undeveloped wetland areas. Acquisition of remaining undeveloped wetland Parcels. This project is in application with NOAA</li> </ul>	USF+WS?  TNC, NYDOS, NYDEC	\$36,000  ~\$2,000,000 ( this number is a guess as TNC does not want to discuss prior to NYSDOS application)	