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## ATTACHMENT C

Selected Sources of Information on Aquatic Ecology

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## Niagara River Area of Concern - Excerpted from the USEPA website

'The Niagara River Area of Concern (AoC) is located in Erie and Niagara counties in western New York. This AoC extends from Smokes Creek near the southern end of the Buffalo Harbor, north to the mouth of the Niagara River at Lake Ontario. Past municipal and industrial discharges and waste disposal sites have been a source of contaminants to the Niagara River. A long history of development has also changed the original shoreline along much of the river, affecting fish and wildlife habitat. Habitat degradation and the survival of aquatic life in the AoC have been impaired by toxic chemicals such as PCBs, mirex, chlordane, dioxin, dibenzofuran, hexachlorocyclo-hexane, PAHs, and pesticides. Fish migration from Lake Ontario has an influence on the Niagara River community as does the related affects of invasive species. Metals and cyanides in the sediment prevent open lake disposal of bottom sediments dredged from the river. Sources and loadings of pollutant causing use impairments in the Niagara River include these sediments as well as inactive hazardous waste sites, combined sewer overflows, and other point and nonpoint sources. Contamination originating from discharges within Lake Erie's watershed contributes to effects in the Niagara River and Lake Ontario. These sources and river shoreline practices both contribute to the identification of use impairments for which remedial action is being taken to restore and protect beneficial uses.'

### Niagara River Beneficial Use Impairments

'Of the 14 beneficial uses, five are impaired for the Niagara River:

1. Restrictions on fish and wildlife consumption
2. Fish tumors or other deformities
3. Degradation of benthos
4. Restriction on dredging activities
5. Loss of fish and wildlife habitat'







'In addition two beneficial uses need further assessment to determined their status:

1. Degradation of fish and wildlife populations (further assessment needed)
2. Bird or animal deformities or reproduction problems (further assessment needed)'

'The major impairment is restrictions on fish and wildlife consumption, primarily due to PCB and dioxin contamination. Mirex and chlordane also are chemicals of concern contributing to the fish consumption restriction. These restrictions are part of a lakewide fish advisory for Lake Ontario. Niagara River benthos is also listed as degraded, likely due to the presence of contaminated sediment "hotspots" at certain tributary and nearshore areas. Contaminated sediment has also caused a restriction on open lake disposal of dredged material from the Niagara River. In the upper Niagara River, fish tumors have been reported and the loss of fish and wildlife habitat due to human activities has been dramatic. The extent of degradation of fish and wildlife populations, and the presence of bird or animal deformities or reproductive problems will require further investigations.'



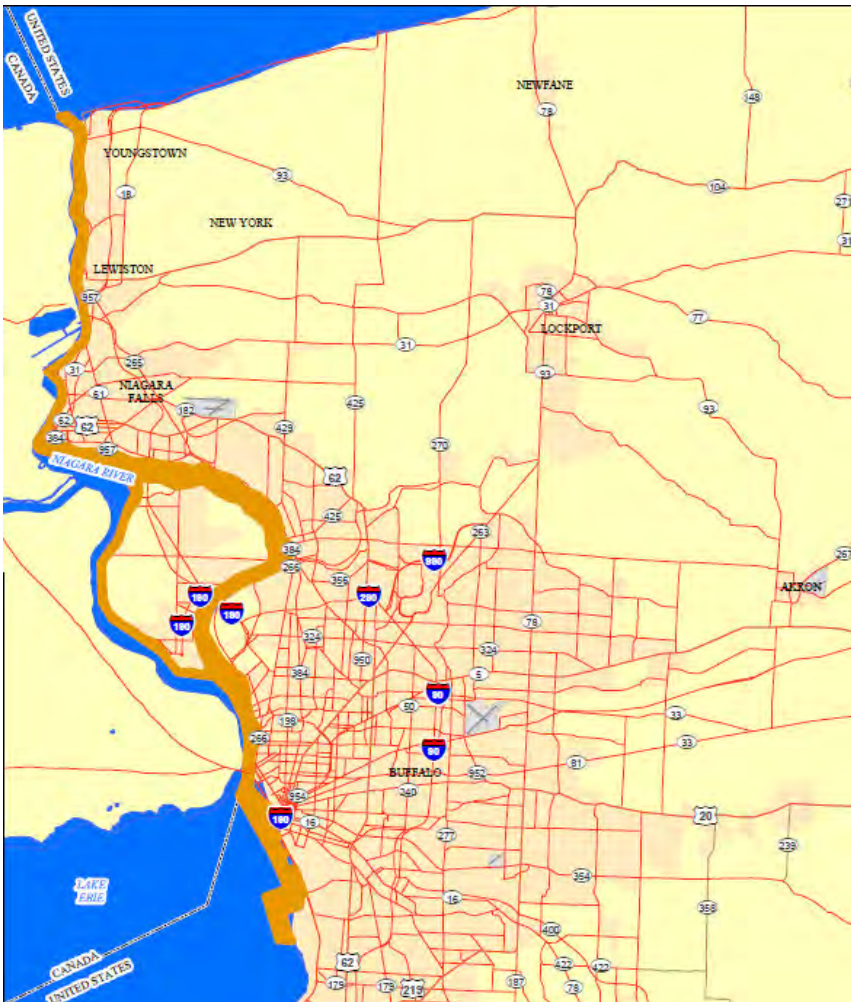
**LEGEND**

-  INTERNATIONAL BOUNDARY
-  MAJOR ROADS
-  SURFACE WATER
-  URBAN AREAS
-  EXTENT OF AREA OF CONCERN (NIAGARA RIVER REMEDIAL ACTION PLAN, SEPTEMBER, 1994)
-  WATERSHED

NOTE: AREA OF CONCERN BOUNDARY AS APPROVED BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION ON JULY 27, 2005.

SOURCE: MODIFIED FROM THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION 1994, AND ESRI, 2005.

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**NIAGARA RIVER, NEW YORK  
AREA OF CONCERN**

Great  
Lakes  
National  
Program  
Office



EFFECTS OF ALTERED WATER LEVELS AND FLOWS  
ON FISH IN THE GREAT LAKES CONNECTING CHANNELS

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February 1989

# Biological Services Program

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## ATLAS OF THE SPAWNING AND NURSERY AREAS OF GREAT LAKES FISHES Volume X - Niagara River

Great Lakes-St. Lawrence Seaway  
Navigation Season Extension Program



Fish and Wildlife Service  
U.S. Department of the Interior

Corps of Engineers  
U.S. Department of the Army

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OF GREAT LAKES FISHES

VOLUME x  
Niagara River

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