

The following table provides a brief overview of the impairment conclusions for the Lake Erie Lakewide Management Plan. More detailed information can be accessed in Section 4 of the LaMP 2000. **It should be noted that when an impaired beneficial use is identified in a particular basin in this summary table, it means that impairment is occurring somewhere in that basin, not necessarily throughout the entire basin referenced.**

Summary of Beneficial Use Impairment Conclusions, Lake Erie LaMP, April 2000

Use Impairment	Impairment Conclusions	Type of Impairment	Causes of Impairment
Fish & Wildlife Consumption Restrictions	Impaired	FISH* - sport fish consumption advisories in open and tributary waters of all basins; WILDLIFE - human consumption advisories for snapping turtles (including eggs) and waterfowl in NY waters, eastern basin	FISH - PCBs, mercury, lead, chlordane, and dioxins WILDLIFE - PCBs, chlordane, DDE, DDT and mirex
Tainting of Fish & Wildlife Flavor	Not Impaired	NONE	NONE
Degradation of Fish Populations	Impaired	unmet fish population objectives; loss of spawning/nursery area; loss of population diversity; rare, threatened, endangered and special concern species; reduced predatory function; unnaturally high fish community instability; inefficient use of food web energy	habitat loss and degradation; non-indigenous species (exotics); loss of forage fish availability; overexploitation; loss of native stocks/species, particularly keystone predators
Degradation of Wildlife Populations	Impaired	unmet wildlife population objectives; population fragmentation, isolation, and instability; loss or reduction in species indicative of quality habitat; loss of source populations; rare, endangered, threatened, and special concern species; accelerated rates of parasitism/predation; competition between wildlife/nonwildlife uses of a given habitat; changes to ground temperature and moisture conditions in forested areas; loss of travel lanes; loss of range/area-sensitive species (e.g. –amphibians & reptiles, rails, bitterns, sedge wrens, bald eagle)	fire suppression; logging; destruction and draining of wetlands; high water levels, storm surges; dredging/channel modifications, water taking, streambank/shoreline filling, hardening & backstopping; sediment/chemical/contaminant/nutrient loadings; navigation/boating activities; exotics
Fish Tumors or Other Deformities	Impaired	incidence rates of fish tumors or other deformities exceed rates at least impacted sites within the LE basin; presence of neoplastic or preneoplastic liver tumors in brown bullheads	PAHs (brown bullhead), unknown (other species)

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Animal Deformities or Reproduction Problems	Impaired	Exposure above effect levels in bald eagle, herring gull, cormorant, common tern & Eastern spiny softshell turtle; deformity impairments in mudpuppy; Likely impairment in mink, river otter, snapping turtle, and frogs and toads	PCBs and other organochlorines, dieldrin (eagles), DDE, PAHs (mudpuppy), nitrates (frogs and toads)
Degradation of Benthos	Impaired	Degraded benthic community (composition and interactions among components) compared to reference conditions; Dominant species indicate degraded environment; Keystone species absent or nearly gone: <ul style="list-style-type: none"> *all basins-unionid mussels, <i>Gammarus</i> amphipods; *east & central basins-<i>Diporeia</i> amphipods; *east and western basins - fingernail clams; *middle of western basin -<i>Hexagenia</i> (mayflies); unmet objectives for benthic density, biomass or productivity; toxicity to benthic organisms; elevated incidence of deformities or other abnormalities; contaminant burden is high enough that predators may be at risk of bioaccumulating toxics	contaminated sediments, non-indigenous species or exotics, loss and degradation of habitat particularly in wetlands
Restrictions on Dredging Activities	Impaired	dredged materials require confined disposal in certain tributary mouths and harbors of all basins	PCBs, heavy metals
Eutrophication of Undesirable Algae	Impaired	Maumee Bay, lake effect zones of Maumee/Ottawa Rivers, <i>western basin</i> ; nearshore and river mouth areas of Canadian <i>eastern basin</i> (excessive <i>Cladophora</i> ; P levels above Canadian guidelines in tributaries). Potentially impaired -lake effect zones of certain Ohio tributaries (degraded fish communities), <i>western and central basins</i> ; Rondeau Bay and nearby nearshore and river mouth areas, Canadian <i>central basin</i>	Phosphorus
Restrictions on Drinking Water Consumption or Taste & Odor Problems	Not Impaired	NONE	NONE
Recreational Water Quality Impairments	Impaired (nearshore areas, all basins)	Exceedances of bacterial guidelines established to protect human health	<i>E. coli</i> and/or fecal coliform, PAHs**, PCBs**

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Degradation of Aesthetics	Impaired	high turbidity; obnoxious odors; decaying <i>Cladophora</i> on the shoreline; seasonal fish die-offs because alewife/other exotics are not acclimated to colder winter water temperatures; hindrances to recreational use due to floating garbage and debris/zebra mussels.	Excessive <i>Cladophora</i> , point/non-point source stormwater runoff, excessive floating garbage and debris, dead fish, excessive zebra mussels on shoreline areas.
Added Costs to Agriculture or Industry	Not Impaired	NONE	NONE
Degradation of Phytoplankton & Zooplankton Populations	Impaired	PHYTOPLANKTON - <i>eastern basin</i> -total standing crop and photosynthesis are below the potential set by P loading in the nearshore; loss of keystone species; loss of trophic transfer to <i>Diporeia</i> ZOOPLANKTON - <i>eastern basin</i> -loss of dominant cold-water species; <i>Eastern and west-central basins</i> -reduction in mean size points to potential impaired trophic transfer; <i>west central basin</i> - <i>Bythotrephes</i> acts as an energy sink; <i>western and central basin</i> lake effect zones- habitat loss and degradation	Zebra and quagga mussel grazing; high planktivory
Loss of Fish Habitat	Impaired	unmet fish habitat objectives; loss of habitat diversity & integrity; loss of spawning/nursery areas; barriers to migration; changes in stream temperature, water quality, and hydrology; high turbidity; loss of aquatic vegetation; changes to benthic species composition;	destruction and draining of wetlands; dams, dikes, dredging/channel modifications, water taking; streambank/shoreline filling and hardening; sediment/chemical contaminant/nutrient loadings; navigation/ recreational boating activities; exotics, <i>Cladophora</i> fouling (eastern basin nearshore)

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Loss of Wildlife Habitat	Impaired	unmet wildlife habitat objectives; habitat fragmentation and loss of niches; loss of diversity and integrity; population demands exceed available habitat (e.g.- colonial waders that use the Lake Erie Islands); loss of stopover habitat along migratory corridors (birds, butterflies, bats); loss of cover for protection from predation; loss of or accelerated succession patterns; loss of area available for habitat expansion; loss of buffer functions between one habitat type and another; loss or reduction in quantity/quality of nesting/denning areas; loss or reduction in quantity/quality of food sources	fire suppression; logging; destruction and draining of wetlands; high water levels, storm surges; dredging/channel modifications, water taking, streambank/shoreline filling, hardening & backstopping; sediment/chemical contaminant/nutrient loadings; navigation/boating activities; exotics
<p><i>*Commercial fishermen in Ontario are prohibited from selling carp that are 32 cm or larger, due to PCBs.</i></p> <p><i>** PAHs are the basis for a human contact advisory in the Black River Ohio Area of Concern and PCBs are the basis for a human contact advisory in the Ottawa River (Maumee Area of Concern). These advisories were issued by the Ohio Department of Health and mean that it is not safe to go into the water in these areas.</i></p>			