A Request for the Delisting of the Degradation of Benthos Beneficial Use Impairment in the East Branch of the Black River, A Sub-watershed of the Black River Area of Concern

Submitted by the
Black River Remedial Action Plan Coordinating Committee

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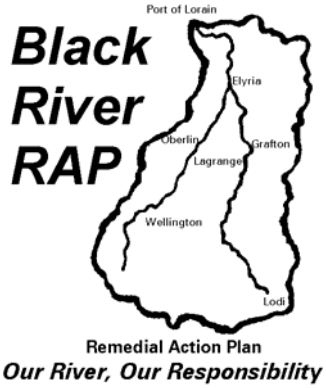

Delisting Criteria for the Degradation of Benthos Beneficial Use Impairment

To attain a level of consistency in the delisting processes for the four RAPs in Ohio, the state RAP coordinators have been developing delisting targets for each of the 14 beneficial use impairments. Their proposed document, *Delisting Targets for Ohio Areas of Concern,* states the Degradation of Benthos beneficial use is impaired if the Ohio EPA surveys reveal the benthic macro-invertebrate communities are in non-attainment of biological criteria.

Routine biological and water quality assessments of the surface waters of Ohio are conducted by the Ohio EPA utilizing a variety of chemical and bio-monitoring techniques. The agency monitors the health and community structure of benthic macro-invertebrates using the Invertebrate Community Index (ICI). The Ohio EPA has set attainment values for benthos for the different ecoregions in the state. In the ecoregions that include Ohio's Areas of Concern, the agency's ICI attainment value is 34 for Warmwater Habitat sites and 46 for Exceptional Warmwater Habitat sites. The Ohio delisting document proposes a Warmwater Habitat (WWH) attainment value as the delisting target for benthos because this value is typical for most of the state's rivers and streams and is the agency's restoration goal for the majority of the state's surface water resource management efforts.

The East Branch of the Black River

The East Branch of the Black River, and its tributary river systems, drains 215.6 mi^2 or about 46.3% of the Black River Area of Concern. The East Branch of the Black River is designated, by the Ohio EPA, as Warmwater Habitat. The headwaters are located in Medina County in Ohio as the East and West Forks of the East Branch. From the confluence of the Forks, the East Branch generally flows north into Lorain County until it merges with the West Branch in Elyria and forms the Black River mainstem. Typical land uses have been urban/suburban in the north and more rural/agricultural in the central and southern portions. Recently, the central and southern areas have been experiencing changing land uses as urban and suburban sprawl challenges the historic rural and agricultural nature. Increased development of the East Branch sub-watershed could adversely impact water and habitat quality.

The Degradation of Benthos Populations Beneficial Use Impairment in the East Branch of the Black River

Benthic macro-invertebrate data, as measured by ICI, available to the Black River Remedial Action Plan Coordinating Committee at the time of the Stage 1 Report (1994) revealed the benthic macro-invertebrate communities were impaired in specific stretches of the East Branch of the Black River. These impairments were attributed to the adverse effects of discharges from the Grafton wastewater treatment facility and sewer overflows in the collection system of City of Elyria's wastewater facility.

At the Grafton stretch of the East Branch, high levels of phosphorus in the effluent caused an impact to the biological communities immediately downstream of the discharge. Monitoring data in 1992 revealed the ICI values declined from "exceptional" (ICI=46) immediately upstream of the discharge location to "marginally good" (ICI=30) less than one half mile downstream of the discharge. The change in score was attributed to a decreased diversity in macro-invertebrates, an increase in pollution tolerant species and burned gills (associated with chlorine toxicity) on caddisflies. Grafton's wastewater treatment plant upgraded their treatment facility and since the upgrade, the benthic macro-invertebrate communities have recovered.

The City of Elyria, a member of the Black River Remedial Action Plan Coordinating Committee, has been developing a long term control plan for sewer overflows in their wastewater collection

system. Improvements to the City's collection system have resulted in a dramatic recovery of the benthic macro-invertebrate communities in the lower reaches of the East Branch. In 1982, the river segment at River Mile 0.1 revealed an ICI value of 6. By 1997, the ICI values had improved more than 760% and now meet the attainment value for Exceptional Warmwater habitat sites.

The temporal improvements in ICI values along the East Branch of the Black River can be seen in the following table:

River Mile	1982	1992	1997	2002
0.1	6	42	46	--
3.00	--	42	44	--
5.20/5.40	--	48	48	--
6.00	--	38	46	54
10.8	--	30	44	--
11.2	Grafton	WWTP	Outfall	Location
11.3	--	46	48	46
18.9	--	46	44	--
32.4	--	42	44	--
40.4	--	50	48	--

Table 1. ICI Scores for the East Branch of the Black River, by River Mile

The benthic macro-invertebrate communities at all sampling sites in the East Branch now exceed the state's ICI criteria for Warmwater Habitat sites and the proposed RAP delisting guideline. In many reaches, the current ICI scores approach or even exceed attainment values for Exceptional Warmwater Habitat sites. The RAP Committee is proud of the recovery and is working to protect the improvements.

Without a recognized delisting, the Black River RAP Coordinating Committee would be able to celebrate the noted improvements in benthos in the East Branch, but the Committee feels the acceptance of a formal change in status will give added weight to the RAP's protection efforts in this developing sub-watershed. A formal delisting would allow the RAP a better position in influencing local decision-makers to enact more environmental friendly development practices such as riparian setback ordinances, and/or "no net gain" in impervious surfaces or no increased runoff ordinances. These measures would be protective of the benthic macro-invertebrate communities as well as enhance the efforts to improve the water and habitat quality throughout the East Branch and the Black River Area of Concern. Therefore, the Black River RAP Coordinating Committee requests a delisting of the Degradation of Benthos beneficial use impairment in the East Branch of the Black River sub-watershed.