

2023 Biological BUI Sampling Results and Preliminary BUI Evaluations – Black River AOC



**Lake Erie
Commission**



**Environmental
Protection
Agency**

Biological BUI Overview

Biological BUIs include

- Degradation of Fish Populations
- Degradation of Benthos Populations
- Loss of Fish Habitat

BUI can be removed if:

- BUI meets removal targets
- BUI is due to natural rather than human causes
- BUI is not limited to the extent of the AOC but is typical of lake-wide or region-wide conditions
- BUI is caused by sources outside of the AOC

Biological BUI Metrics

Degradation of Fish Populations

- Index of Biotic Integrity (IBI)
- Modified Index of Well-Being (MIwb)

Degradation of Benthos Populations

- Invertebrate Community Index (ICI)
- Qualitative assessments (narrative scores)

Loss of Fish Habitat Evaluation

- Qualitative Habitat Evaluation Index (QHEI)

Data sources

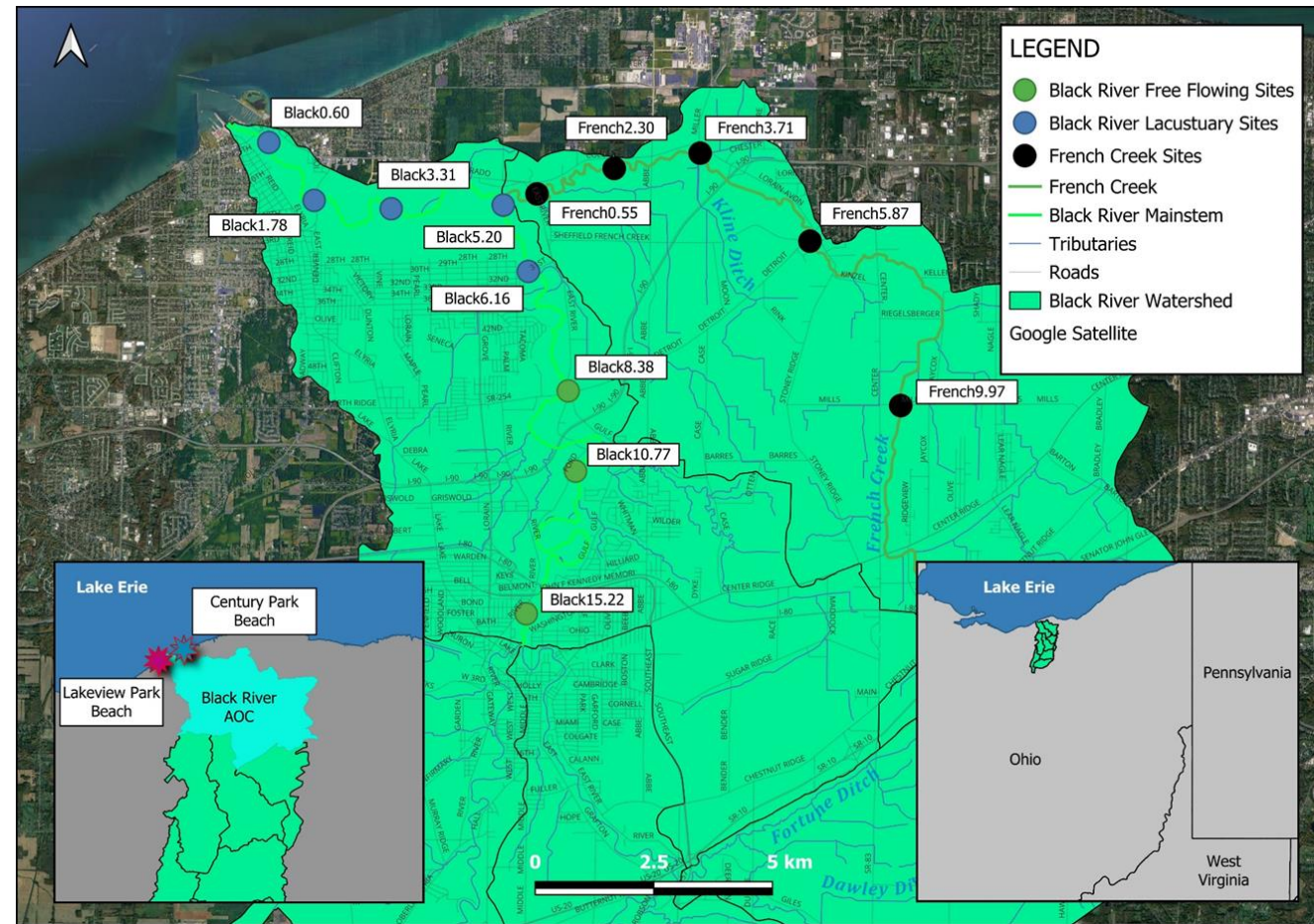
- **Ohio EPA, consultants, local and federal agencies**

BUIs are calculated by averaging scores across each assessment unit

2023 Black River AOC Biological Sampling

Midwest Biodiversity Institute (MBI) conducted fish, benthos, and habitat evaluations in 2023

- 5 sites in Black River Lacustrary
- 3 sites in Black River free-flowing
- 4 sites in French Creek wading (benthos and habitat only)
- 1 site French Creek headwater site



2023 Black River AOC Biological Sampling

Site ID	River Mile	IBI/LIBI	MIwb	ICI/LICI	%DELTS	QHEI/ LQHEI	AQLU Attain- ment Status ¹	BUI #3 Status	BUI #4 Status	BUI #6 Status	BUI #14 Status	Comments
Black River (Free flowing) 2023 - WWH Exisiting												
Black 15.22	15.22	40	8.5 ^{ns}	46	1.00%	72.8	FULL	NI	NI	NI	NI	Cascade Park
Black 10.77	10.77	40	9.4	46	0.35%	84.5	FULL	NI	NI	NI	NI	Ust. Elyria WWTP
Black 8.38	8.38	44	8.7	44	0.00%	76.8	FULL	NI	NI	NI	NI	at County Rd. 254
Black River Lacustuary ² 2023												
Black 6.16	6.16	34*	8.3	52	1.70%	51.7	PARTIAL	I	NI	NI	I	at N. 31st St.
Black 5.20	5.20	40*	7.5*	30*	1.10%	43.5	PARTIAL	I	NI	I	I	Ust. French Creek
Black 3.31	3.31	32*	8.3*	14*	1.20%	57.8	PARTIAL	I	NI	I	I	Ust. Turning Basin
Black 1.78	1.78	38*	8.4*	20*	1.00%	43.5	PARTIAL	I	NI	I	I	Ust. Henderson Dr.
Black 0.60	0.60	38*	8.6	14*	0.00%	58.5	PARTIAL	I	NI	I	I	Historic Fish Shelf
French Creek 2023 - WWH Exisiting												
French 9.97	9.97	38 ^{ns}	NA	P*	0.00%	41.0	NON-Poor	NI	NI	NI	I	Dst. Mills Rd.
French 5.87	5.87	-	NA	34	-	69.0	[FULL] ¹	-	-	-	NI	Ust. County Rd. 254
French 3.71	3.71	-	NA	40	-	73.5	[FULL] ¹	-	-	-	NI	Ust. Recreation Ln.
French 2.30	2.30	-	NA	36	-	83.0	[FULL] ¹	-	-	-	NI	Dst. French Creek WWTP
French 0.55	0.55	-	NA	36	-	82.5	[FULL] ¹	-	-	-	NI	Ust. East River Rd.

¹ Attainment status is reliant on the fish and macroinvertebrate assemblages combined - single assemblage results are in [parantheses].

² The lacustuary aquatic assemblages and habitat are assessed using the LIBI, LICI, and LQHEI.

* significant deparutre of use designation biocriterion pr BUI threshold.

^{ns} nonsignificant departure from use designation biocriterion.

NI - BUI not impaired; I - BUI Impaired

	Erie/Ontario Lake Plain (EOLP) - Biological Criteria_DELT_QHEI Thresholds						
	IBI - Headwaters	IBI - Boat	MIwb - Boat	%DELTS	ICI	QHEI-HW	QHEI-Boat
	40	40	8.7	1.30%	34	55	60
	Erie/Ontario Lake Plain (EOLP) - AOC Delisting Targets Free-Flowing						
	IBI - Headwaters	IBI - Boat	MIwb - Boat	%DELTS	ICI	QHEI-HW	QHEI-Boat
	36	36	8.2	3.00%	30	55	60
AOC Delisting Targets - Lacustuary							
	LIBI	MIwb	%DELTS	LICI	LQHEI		
	42	8.6	3.00%	34	55		

Biological BUI Evaluation

BUI Restoration Targets	Black Mainstem Lacustrary (0-6.6RM)		Black Mainstem Boat		Black Mainstem Wading		French Creek Wading		French Creek Headwaters	
	Target	Score	Target	Score	Target	Score	Target	Score	Target	Score
MIwb	8.6	7.4	8.2	8.7	7.5	8.9	7.5	7.6	-	-
IBI	42	35.1	36	41.5	34	36.5	34	34.4	36	38
ICI	34	14.8	-	-	30	45	30	32.5	30	8
QHEI	55	43.6	-	-	60	81.5	60	70.3	55	41

Biological BUI Evaluation

Black River biological limitations

- Habitat limitations - Shipping Channel
 - Vertical bulkheads
 - Limited/no riparian corridors
 - Urban and industrial land use
- Sites with fish shelves have shown improvement in fish scores
- Water quality impairments
 - Total dissolved solids
 - Organic enrichment
 - Elyria WWTP



Biological BUI Evaluation

French Creek headwater biological limitations

- Poor habitat (QHEI)
 - Historic channelization
 - Inundated w/ sandy silt and fine gravel
 - 70% developed land use
- Habitat restoration
 - Past or future projects?
 - Privately owned land?



Biological BUI Evaluation – Next Steps

Next Steps

Is this a region-wide issue?

- Non-AOC lacustraries
- Non-AOC headwaters

Water quality impairments

- Coming from outside of AOC boundary?
- Plans to address issues