

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Reach-level habitat characteristic results from selected sites during
low-flow conditions in the Lake Erie - Lake St. Clair Basin
(National Water-Quality Assessment Program)

Reach-level habitat surveys were conducted at 3 stream sites in the Lake Erie - Lake St. Clair Basin in 1998. Habitat data collected at the stream reach included 27 riparian and instream characteristics. Data were collected by use of methods for characterizing stream habitat as described by Meador and others (1993) as part of the National Water-Quality Assessment program. Specific sampling reaches were identified with geomorphic units (riffles, runs, or pools) occurring repetitively in the selected reach and, where possible, located upstream from bridges to limit effects from roads and channel modifications.

Data describing stream geomorphic features for riffles, runs, and pools include canopy, channel, substrate, bank, and floodplain measurements. Habitat features are abbreviated as follows: CC, concave upward; LN, linear; DA, debris avalanche; RF, rotational failure; BR, bedrock; BO, boulder; CO, cobble; GV, gravel; SA, sand; SI, silt; HP, hardpan; e, estimated.

Measurements were collected at six transects, one at each end of the reach and the other four at the midpoints of selected geomorphic units. At each of the transects, channel and substrate measurements were made at the thalweg and at two other stream locations equally spaced along the transect. Photos were taken to document each of the reach boundaries and the one transect that best represented the reach. A diagrammatic map of the reach was drawn to depict the location and type of geomorphic channel units, transects, habitat features, bank and floodplain characteristics, and biotic sampling locations. Additional surface-water and/or water-quality data for these sites can be found in the continuous-record sections of the Indiana, Michigan, New York, and Ohio Water Resources Data Reports.

CALENDAR YEAR 1998

STATION NUMBER	STATION NAME	Date	Drainage Area (mi ²)	Daily Discharge (ft ³ /s)	Reach - A Length (meters)	Percent Riffle	Percent Run	Percent Pool
04161820	CLINTON RIVER AT STERLING HEIGHTS, MI	08/12/98	309	e107	286	16	36	48
04193500	MAUMEE RIVER AT WATERVILLE, OH	09/09/98	6,330	864	535	33	47	20
04211820	GRAND RIVER AT HARPERSFIELD, OH	08/11/98	552	15	531	20	40	40

Reach-level habitat characteristic results for riffles

STATION NUMBER	Mean Channel Width (meters)	Mean Channel Depth (meters)	Mean Channel Velocity (ft/s)	Mean Channel Aspect (degrees)	Mean Canopy Angle (degrees)	Stream Bed Substrate Dominant	Stream Bed Substrate Sub-Dominant	Percent of Large Particles Embedded	Silt Present
04161820	15.2	0.76	1.46	125	46	SA	GV	60	Yes
04193500	190.0	0.28	1.29	40	158	BR	CO	<5	Yes
04211820	41.1	0.23	0.42	220	90	BR/CO	GV/SI	15	Yes

STATION NUMBER	Mean Bank Width (meters)	Mean Bank Height (meters)	Mean Bank Angle (degrees)	Bank Shape	Type of Bank Erosion	Percent of Bank Vegetated	Stream Bank Substrate Dominant	Stream Bank Substrate Sub-Dominant	Floodplain Width (meters)
04161820	2.9	1.0	41	LN/CC	DA	50	SA/CO	SI	36
04193500	8.5	0.6	12	LN	DA	75	BR/SI	SA	>50
04211820	5.6	1.5	25	LN/CC	DA	40	BR/SA	CO/SI	>50

STATION NUMBER	Woody Debris Present	Overhanging Vegetation Present	Undercut Banks Present	Boulders Present	Macrophytes Present	(Human) Rubbish Present	Channel Bars Present	Bank Shelves Present	Islands Present
04161820	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
04193500	No	No	No	No	Yes	No	Yes	Yes	Yes
04211820	Yes	No	No	Yes	No	No	Yes	Yes	No

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Reach-level habitat characteristic results for runs

STATION NUMBER	Mean Channel Width (meters)	Mean Channel Depth (meters)	Mean Channel Velocity (ft/s)	Mean Channel Aspect (degrees)	Mean Canopy Angle (degrees)	Stream Bed Substrate Dominant	Stream Bed Substrate Sub-Dominant	Percent of Large Particles Embedded	Silt Present
04161820	13.5	1.07	1.14	210	55	SA	SI/GV	75	Yes
04193500	208.0	0.31	1.62	23	163	BR	CO	<5	Yes
04211820	41.5	0.12	0.48	215	98	BR	BR	<5	Yes

STATION NUMBER	Mean Bank Width (meters)	Mean Bank Height (meters)	Mean Bank Angle (degrees)	Bank Shape	Type of Bank Erosion	Percent of Bank Vegetated	Stream Bank Substrate Dominant	Stream Bank Substrate Sub-Dominant	Floodplain Width (meters)
04161820	3.7	1.0	25	LN/CC	DA	60	SA	SI/HP	>50
04193500	5.3	0.8	18	LN	DA	70	SA/SI	BR/CO	>50
04211820	6.7	1.1	26	LN/CC	DA	50	CO/BR	GV/SA	>50

STATION NUMBER	Woody Debris Present	Overhanging Vegetation Present	Undercut Banks Present	Boulders Present	Macrophytes Present	(Human) Rubbish Present	Channel Bars Present	Bank Shelves Present	Islands Present
04161820	Yes	No	Yes	No	No	Yes	Yes	No	No
04193500	No	Yes	No	No	Yes	No	Yes	Yes	Yes
04211820	No	No	No	Yes	No	No	No	Yes	No

Reach-level habitat characteristic results for pools

STATION NUMBER	Mean Channel Width (meters)	Mean Channel Depth (meters)	Mean Channel Velocity (ft/s)	Mean Channel Aspect (degrees)	Mean Canopy Angle (degrees)	Stream Bed Substrate Dominant	Stream Bed Substrate Sub-Dominant	Percent of Large Particles Embedded	Silt Present
04161820	16.8	0.97	0.80	165	58	SA/BO	SI/GV	80	Yes
04193500	198.0	0.52	1.25	12	155	BR	CO	<5	Yes
04211820	40.4	0.26	0.19	180	73	BR	GV	25	Yes

STATION NUMBER	Mean Bank Width (meters)	Mean Bank Height (meters)	Mean Bank Angle (degrees)	Bank Shape	Type of Bank Erosion	Percent of Bank Vegetated	Stream Bank Substrate Dominant	Stream Bank Substrate Sub-Dominant	Floodplain Width (meters)
04161820	3.7	1.0	41	LN/CC	DA	60	SA	SI	>50
04193500	4.2	1.0	42	LN	DA	65	SA	SI/HP	>50
04211820	2.7	1.2	42	CC/LN	DA/RF	30	BR/CO	SA/SI	>50

STATION NUMBER	Woody Debris Present	Overhanging Vegetation Present	Undercut Banks Present	Boulders Present	Macrophytes Present	(Human) Rubbish Present	Channel Bars Present	Bank Shelves Present	Islands Present
04161820	Yes	No	Yes	No	No	Yes	Yes	No	No
04193500	Yes	No	Yes	No	Yes	No	No	Yes	Yes
04211820	Yes	No	No	Yes	No	No	No	Yes	No

REFERENCES CITED:

Meador, M.R., Hupp, C.R., Cuffney, T.F., Gurtz, M.E., 1993, *Methods for characterizing stream habitat as part of the National Water-Quality Assessment Program*: U.S. Geological Survey Open-File Report 93-408, 48 p.