

Level 3 Project Study Plan

2014 Nine-Mile Creek Environmental Monitoring

(1) Objectives

Nine-Mile Creek's drainage area includes the communities of South Euclid, University Heights, Cleveland Heights, East Cleveland, Cleveland, and Bratenahl. Nine-Mile is culverted from Lake Shore Boulevard to east of Belvoir Road at the border between the cities of Cleveland and Cleveland Heights. Upstream of this location the creek is open, and the "Nela Park" Branch, which enters the culverted mainstem of Nine-Mile Creek south of Belvoir, is also open.

Future construction projects in the Nine-Mile Creek watershed are anticipated to improve its water quality. The Northeast Ohio Regional Sewer District (NEORS)D) intends to conduct assessments prior to the beginning of these projects.

The purpose of this study is to collect baseline data in order to assess the downstream biological health of Nine-Mile Creek prior to the completion of the relief sewer at East 140th Street and Hayden Avenue. The Capital Improvement Project should eliminate or reduce the amount of sanitary sewage discharged to Nine-Mile Creek through Combined Sewer Overflow (CSO) 211 and CSO 212. These flow reductions should benefit the District's long-term CSO Control Plan goal of four or fewer overflows per year.

NEORS)D) will assess water chemistry and habitat, along with the fish and benthic macroinvertebrate communities. Fish and macroinvertebrate community health will be evaluated through the use of Ohio EPA's Index of Biotic Integrity (IBI), Modified Index of Well-Being (MIwb), and Invertebrate Community Index (ICI). An examination of the specific characteristics of the biological communities will be used in conjunction with water quality data, the NEORS)D) Macroinvertebrate Field Sheet, and Qualitative Habitat Evaluation Index (QHEI) results in order to identify impacts to the communities. Results will be compared to historic data to show temporal as well as spatial trends. Water chemistry data will also be compared to the Ohio Water Quality Standards to determine attainment of applicable uses (Ohio EPA, 2011)¹.

¹ See appendix H for a list of all references.

(2) Point/Nonpoint Sources

Point Sources	Nonpoint Sources
Storm Sewer Outfalls	Urban Runoff
Home Sewage Treatment Systems	Spills
NEORSD-owned CSOs	Agriculture
Sanitary Sewer Overflows	

A map has been provided in Section 6 to show point sources that may be influencing the water quality at each sample location. These sources of pollution, along with the nonpoint sources listed in the table above, may be impacting the health of the fish and benthic macroinvertebrate communities. Other factors that may influence ecological conditions during the study include periods of drought and periods of precipitation.

(6) Sampling Locations

The following electrofishing and macroinvertebrate sample location will be surveyed on Nine-Mile Creek during the 2014 field season. Benthic macroinvertebrate and water chemistry collection sites are located near the midpoint of each electrofishing zone, indicated by river mile, unless otherwise noted. GPS coordinates are recorded at the downstream end of each electrofishing zone.

Site Location	Latitude	Longitude	River Mile	Description	Quadrangle	Purpose
Nine-Mile Creek	41.5574565	81.59912283	0.40	Upstream of Lakeshore Boulevard	East Cleveland	Evaluate water chemistry, fish, habitat and macroinvertebrates

Overview Map



Nine-Mile Creek Environmental Monitoring

- Sample Point
- ~ Stream
- CSO Outfall
- Outfalls
- District Facility
- NEORSD C SO Combined Sewer
- NEORSD C SO Responsibility Sewer
- NEORSD Intercommunity Relief Sewer
- NEORSD INTERCEPTOR
- Local Combined Sewer
- Local Culverted Stream
- Local Sanitary Sewer
- Local Storm Sewer



0.1



Miles

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