

Level 3 Project Study Plan

2017 Euclid Creek Environmental Monitoring

(1) Objectives

Euclid Creek, a tributary to Lake Erie, is a relatively urbanized stream located in parts of Cuyahoga and Lake Counties, Ohio. In 2017, the Northeast Ohio Regional Sewer District (NEORSD) intends to conduct stream monitoring activities on the main branch of Euclid Creek.

The study objective at river miles (RMs) 0.55 and RM 1.65, on the main branch of Euclid Creek, will be to assess the attainment status of the stream segments. Stream monitoring at these sites will include fish community surveys, macroinvertebrate community surveys, habitat assessments and water chemistry sampling. The sites at RMs 0.55 and 1.65 are required under the Ohio Environmental Protection Agency (Ohio EPA) National Pollution Discharge Elimination System (NPDES) Permit No. 3PA00002*HD.

An additional objective at RMs 0.55 and 1.65 will be to collect pre- and post-construction data of three NEORSD Project Clean Lake capital improvement projects that will reduce the current amount of over 60 CSO discharges per year to less than 2 per year entering Euclid Creek. The Euclid Creek Pump Station Project is complete, as well as the Euclid Creek Tunnel. However, the Easterly Tunnel Dewatering Pump Station is not ready for flow from these CSO points. This deep pump station is currently being tested with clean water and will be introduced with CSO flows later this summer to finish testing. It is expected that these projects will start collection in the fall.

Stream monitoring activities will be conducted at each site by NEORSD Level 3 Qualified Data Collectors certified by Ohio EPA in Fish Community Biology, Benthic Macroinvertebrate Biology, Chemical Water Quality, and Stream Habitat Assessment. 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 NEORSD Macroinvertebrate Field Sheet, and Qualitative Habitat Evaluation Index (QHEI) results 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, 2017)¹. In addition, chlorophyll *a* levels in the creek may be measured at one location in the vicinity of a long-term data sonde station. The data sonde along with chlorophyll *a* results will provide a more comprehensive understanding of the relationship among algal production, nutrient levels, and dissolved oxygen diel swings in the creek. The data sonde is located on the downstream side of the Lakeshore Boulevard bridge in Cleveland, OH (Lat: 41.5822, Lon: -81.5590). This location is approximately 150 meters upstream of the site at RM 0.55.

(2) Point/Nonpoint Sources

Point Sources	Nonpoint Sources
Combined Sewer Overflows	Urban Runoff
Storm Sewer Outfalls	Landfills
Sanitary Sewer Overflows	Spills
Septic Tanks	Agriculture
NPDES Permitted Locations	

The map presented in Section 6 shows point sources that may be influencing the water quality at each sample location. These sources, along with the nonpoint sources listed in the table above, may be impacting the health of the fish and benthic macroinvertebrate communities in Euclid Creek. Other factors that may influence ecological conditions during the study include periods of drought or precipitation.

(3) Sampling Locations

The following sample locations will be surveyed on Euclid Creek during the 2017 field season. Benthic macroinvertebrate and water chemistry collection sites are located near the midpoint of each electrofishing zone, indicated by RM. GPS coordinates are recorded at the downstream end of each electrofishing zone.

Water Body	Latitude	Longitude	River Mile	Location Information	USGS HUC 8 Number Name	Purpose
Euclid Creek, Main Branch	41.5741	-81.5467	1.65	Upstream of Saint Clair Avenue	04110003 Ashtabula-Chagrin	Evaluate water chemistry, habitat, fish & macroinvertebrates in support of Ohio EPA Permit No. 3PA00002*HD
Euclid Creek, Main Branch	41.5833	-81.5594	0.55	Downstream of Lake Shore Boulevard	04110003 Ashtabula-Chagrin	Evaluate water chemistry, habitat, fish & macroinvertebrates in support of Ohio EPA Permit No. 3PA00002*HD

¹ See Appendix H for a list of references.



2017 Euclid Creek
 Study Plan
 Overview Map



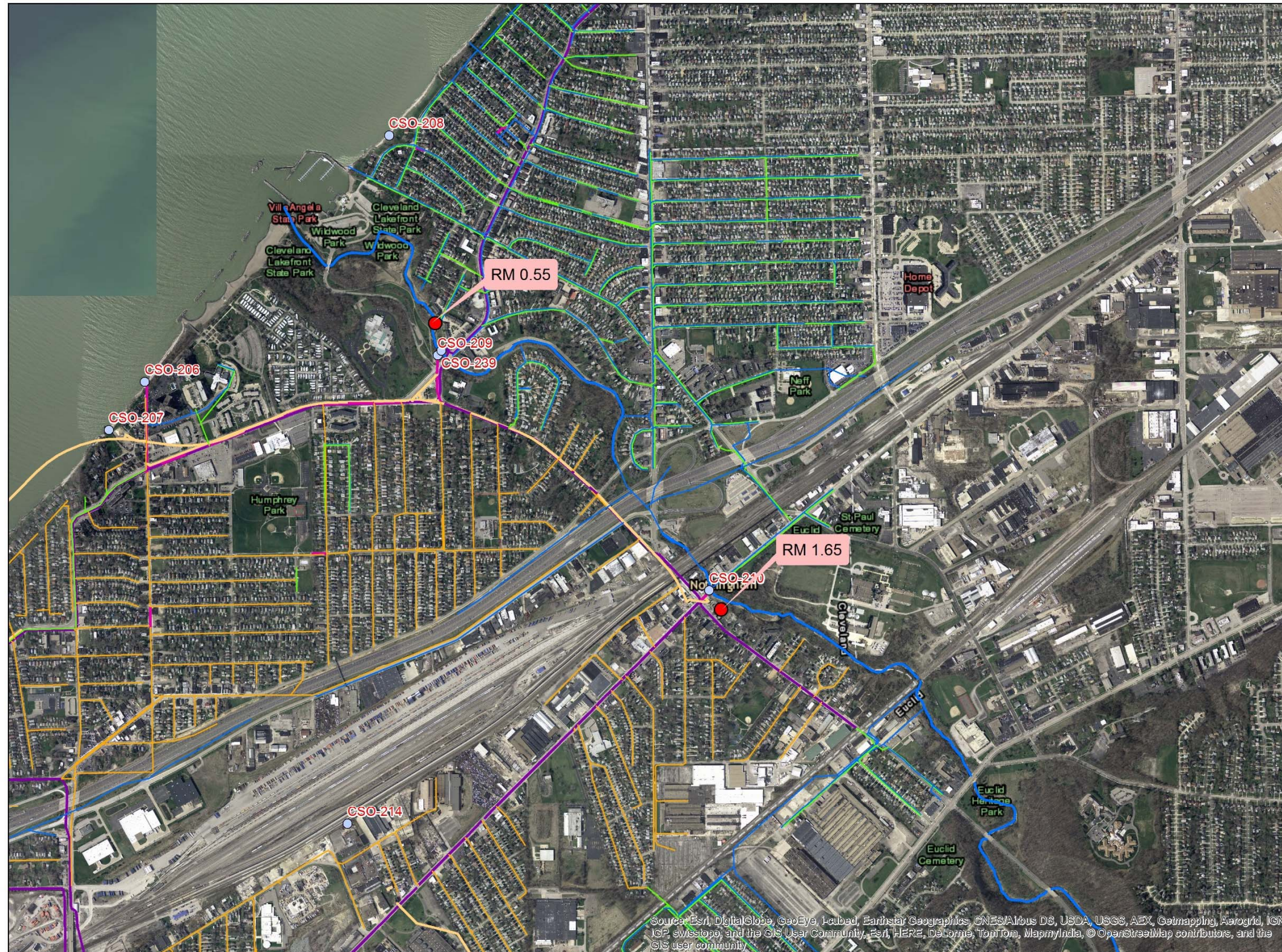
Legend

- Sample Points
- CSO Outfall
- Regional Drainage
- Local Combined Sewer
- Local Sanitary Sewer
- Local Storm Sewer
- NEORSD CSO Combined Sewer
- NEORSD CSO Responsibility Sewer
- NEORSD Intercommunity Relief Sewer
- NEORSD Interceptor
- District Facility



0.2
 Mile

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