

Level 3 Project Study Plan

2009 APR 19 AM 9:31

2010-2011 Lake Erie Background Water Quality Study Plan

(1) Objectives

In August of 2008, the Ohio Environmental Protection Agency (OEPA) provided draft revisions to water quality standards for interested party review (OEPA, 2008). The draft revisions contained proposed water quality criteria for chloride. After review of the proposed chloride criteria, NEORSD collected samples for chloride analysis from Southerly Wastewater Treatment Center (WWTC) during 2009. From the results of this analysis, it was determined that chloride could potentially become a compliance issue for Southerly WWTC. Additional information is needed to determine the potential impacts of the draft criteria at Southerly WWTC, which discharges into the Cuyahoga River, and at NEORSD's other two wastewater treatment facilities, which discharge directly into Lake Erie.

An objective of this study is to determine any background concentrations of chloride in Lake Erie near NEORSD's Easterly and Westerly Wastewater Treatment Plants (WWTP). This will allow wasteload allocations to be calculated for these facilities. Another objective of this study will be to conduct additional sampling and analysis from the location upstream of Southerly WWTC. This will establish a data set of background chloride concentrations in the Cuyahoga River and may be utilized to determine any trends in the data.

(2) Point/Nonpoint Sources

Point Sources	Nonpoint Sources
NPDES Permitted Locations	Urban Runoff
Stormwater Outfalls	

A map has been provided in Appendix A to show the sampling area.

(3) Parameters Covered

Water chemistry samples will be collected at each site. Appendix C lists the parameters to be tested along with the detection limits and practical quantitation limits. Field measurements for dissolved oxygen, pH, temperature, and conductivity will also be performed. A NEORSD Surface Water Condition Sampling Field Data Form will be completed at each site during each sampling event (Appendix D).

The City of Cleveland, Division of Water, stated that it will provide data for sulfate, chloride and hardness from each of the water treatment facilities intakes.

(4) Field Collection and Data Assessment Techniques

Water chemistry sampling will be completed at all NEORSD sites. Techniques used for water quality sampling and chemical analyses will follow the *Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices* (2009)¹. Chemical water quality samples from each site will be collected with two 4-liter disposable polyethylene cubitainers with disposable polypropylene lids and two 473-mL plastic bottles. All water quality samples will be collected as grab samples.

One duplicate sample and one field blank will be collected at randomly selected sites, at a frequency of not less than 10% of the total samples collected, for this study plan. If necessary, any equipment blanks that are needed will be performed at randomly selected sites at a frequency of 5% of the total samples submitted. Acid preservation of the samples, as specified in the NEORSD Analytical Services standard operating procedure for each parameter, will occur in the field.

Field analysis includes the use of either an YSI-556 MPS Multi-Parameter Water Quality Meter or YSI 600XL sonde to measure dissolved oxygen, water temperature, conductivity and pH. If the pH calibration fails to meet quality assurance/quality control (QA/QC) standards, a Hanna HI 98129 meter will be utilized instead to measure the pH. Specifications for these meters have been included in Appendix E.

Water chemistry data collected by NEORSD will be compared to Ohio Water Quality Standards to determine whether any excursions from the applicable water quality criteria have occurred. An overall characterization of the background water quality will only be made if at least six water quality samples have been collected from each site with at least half of the samples collected between the months of November to April.

(5) Sampling Locations

Water chemistry sampling will occur at the following locations. GPS coordinates are recorded at each location.

¹ See Appendix I for a list of all references.

NEORSD Sampling Locations

Site	Latitude	Longitude	Description	Purpose
Cuyahoga River	41.418329°	81.648108°	Upstream of Southerly WWTC	To obtain background concentrations for potential future permit limits
Lake Erie	41.492827°	81.737166°	Near Westerly WWTP	To obtain background concentrations for potential future permit limits
Lake Erie	41.571812°	81.591090°	Near Easterly WWTP	To obtain background concentrations for potential future permit limits

City of Cleveland, Division of Water locations.

Site	Latitude	Longitude	Description	Purpose
Lake Erie	41.547192°	81.763782°	Crown Water Intake	To obtain background concentrations in Lake Erie
Lake Erie	41.5472°	81.7638°	Garrett Morgan Water Intake	To obtain background concentrations in Lake Erie
Lake Erie	41.5484°	81.7504°	Baldwin Water Intake	To obtain background concentrations in Lake Erie
Lake Erie	41.6168°	81.6173°	Nottingham Water Intake	To obtain background concentrations in Lake Erie

Currently, the NEORSD samples are expected to be collected from shore with a bucket year round, since lake conditions during the winter will not always allow the utilization of a boat.

(6) Schedule

Water chemistry data collection will occur in 2010 and continue into 2011. Water quality samples will be collected a minimum of six times at each site between May 1, 2010, and May 1, 2011.

(7) QA/QC

The collection of sample duplicates will be compared using relative percent difference (RPD). The acceptable RPD for field duplicate samples will be ≤ 30 percent; results outside this range will trigger further evaluation and investigation into causes for disparities. RPD values above 30 percent, with results less than ten times the practical quantitation limit, will be reviewed on a case-by-case basis to determine if there is any merit for further investigation.

2010-2011 Lake Erie Background Water Quality Study Plan
 April 12, 2010

Water samples obtained for chemical analyses will be collected, labeled, and then placed on ice inside the field truck. Clean sampling techniques will be utilized as much as prudent. The field truck will remain locked at all times when not occupied/visible. Sampling activities, including sample time and condition of surface water sampled, will be entered in a field log book and on the NEORS D Surface Water Condition Sampling Field Data Form. The samples will then be delivered immediately to Analytical Services, at which time the samples will be transferred with a chain of custody to an authorized Analytical Services personnel. The Analytical Services Quality Manual and associated Standard Operating Procedures are on file with Ohio EPA. The Quality Assurance Officer at Analytical Service will send updates, revisions, and any information on document control to Ohio EPA as needed.

(8) Work Products

Within one year of completion of the project, the water chemistry results will be submitted to the Ohio EPA. Additionally, reports summarizing, interpreting, graphically presenting and/or discussing the water quality results may be prepared for internal use.

(9) Qualified Data Collectors

The following Level 3 Qualified Data Collectors (QDC) will be involved with this study:

Name	Address	Email Address	Phone Number	QDC Specialty(s)
John Rhoades ¹	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	rhoadesj@neorsd.org	216-641-6000	QDC – 008 CWQA
Cathy Zamborsky	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	zamborskyc@neorsd.org	216-641-6000	QDC – 009 CWQA
Seth Hothem	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	hothems@neorsd.org	216-641-6000	QDC – 010 CWQA
Kathryn Crestani	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	crestanik@neorsd.org	216-641-6000	QDC – 011 CWQA
Tom Zabloutny	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	zabloutnyt@neorsd.org	216-641-6000	QDC – 018 CWQA
Ron Maichle ²	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	maichler@neorsd.org	216-641-6000	QDC – 145 CWQA
Francisco Rivera	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	riveraf@neorsd.org	216-641-6000	QDC – 262 CWQA
¹ Lead Project Manager		² Chemical Water Quality Assessment (CWQA) Project Manager		

The following is a list of persons not qualified as a QDC who may be involved in the project. Prior to the start of sampling, a QDC will explain to each individual the proper methods for sampling. Sampling will only be completed under the direct observation of a QDC. The lead project manager will be responsible for

2010-2011 Lake Erie Background Water Quality Study Plan
 April 12, 2010

reviewing all reports and data analysis prepared by qualified personnel prior to completion.

Name	Address	Email Address	Phone Number
Nicholas Barille	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	barillen@neorsd.org	216-641-6000
Joseph Broz	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	brozj@neorsd.org	216-641-6000
Tim Dobriansky	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	dobrianskyt@neorsd.org	216-641-6000
Kyle Frantz	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	frantzk@neorsd.org	216-641-6000
Kristina Granlund	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	granlundk@neorsd.org	216-641-6000
Rae Grant	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	grantr@neorsd.org	216-641-6000
Eric Hinton	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	hintone@neorsd.org	216-641-6000
John Junkin	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	junkinj@neorsd.org	216-641-6000
Jillian Novak	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	novakj@neorsd.org	216-641-6000
Cathy O'Grady	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	ogradyc@neorsd.org	216-641-6000
Kevin Roff	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	roffk@neorsd.org	216-641-6000
Frank Schuschu	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	schuschuf@neorsd.org	216-641-6000
Wolfram vonKiparski	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	vonkiparskiw@neorsd.org	216-641-6000
Mark Matteson	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	mattesonm@neorsd.org	216-641-6000
Summer Co-op #2	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	Yet to be Determined	216-641-6000
Summer Co-op #3	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	Yet to be Determined	216-641-6000
Summer Co-op #4	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	Yet to be Determined	216-641-6000

- (10) Documentation of approval of project manager and other personnel as level 3 qualified data collectors

See attached documentation for Level 3 approvals for chemistry QDCs (Appendix F).

- (11) Contract laboratory contact information

None foreseen at this time.

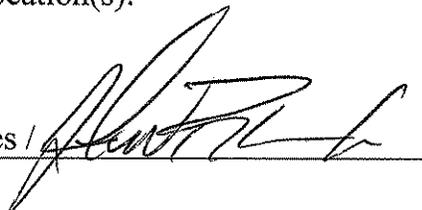
2010-2011 Lake Erie Background Water Quality Study Plan
April 12, 2010

(12) Copy of ODNR collector's permit

Not applicable to this Study Plan.

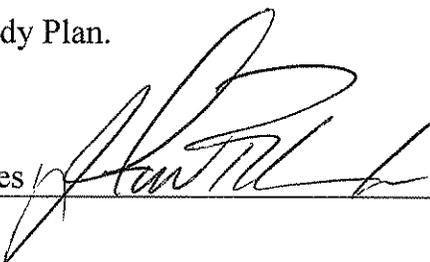
(13) Catalog Statement

A digital photo catalog of all sampling locations will be maintained for 10 years and will include photos of the specific sampling location(s), the riparian zone adjacent to the sampling location(s) and the general land use in the immediate vicinity of the sampling location(s).

Print/Signature: John W. Rhoades /  Date: 04/12/10

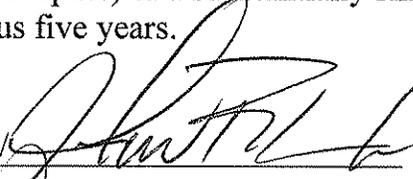
(14) Voucher Specimen Statement

Not applicable to this Study Plan.

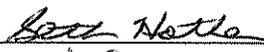
Print/Signature: John W. Rhoades /  Date: 04/12/10

(15) Trespassing Statement

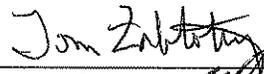
I have not been convicted or pleaded guilty to a Violation of section 2911.21 of the Revised Code (criminal trespass) or a substantially similar municipal ordinance within the previous five years.

Print/Signature: John W. Rhoades /  Date: 04/12/10

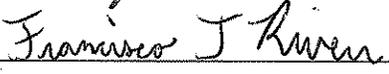
Print/Signature: Cathy Zamborsky /  Date: 4/12/10

Print/Signature: Seth Hothem /  Date: 4/12/10

Print/Signature: Kathryn Crestani /  Date: 4/12/2010

Print/Signature: Tom Zabloutny /  Date: 4 14 2010

Print/Signature: Ron Maichle /  Date: 04-12-10

Print/Signature: Francisco Rivera /  Date: 4/12/10

Appendix A

