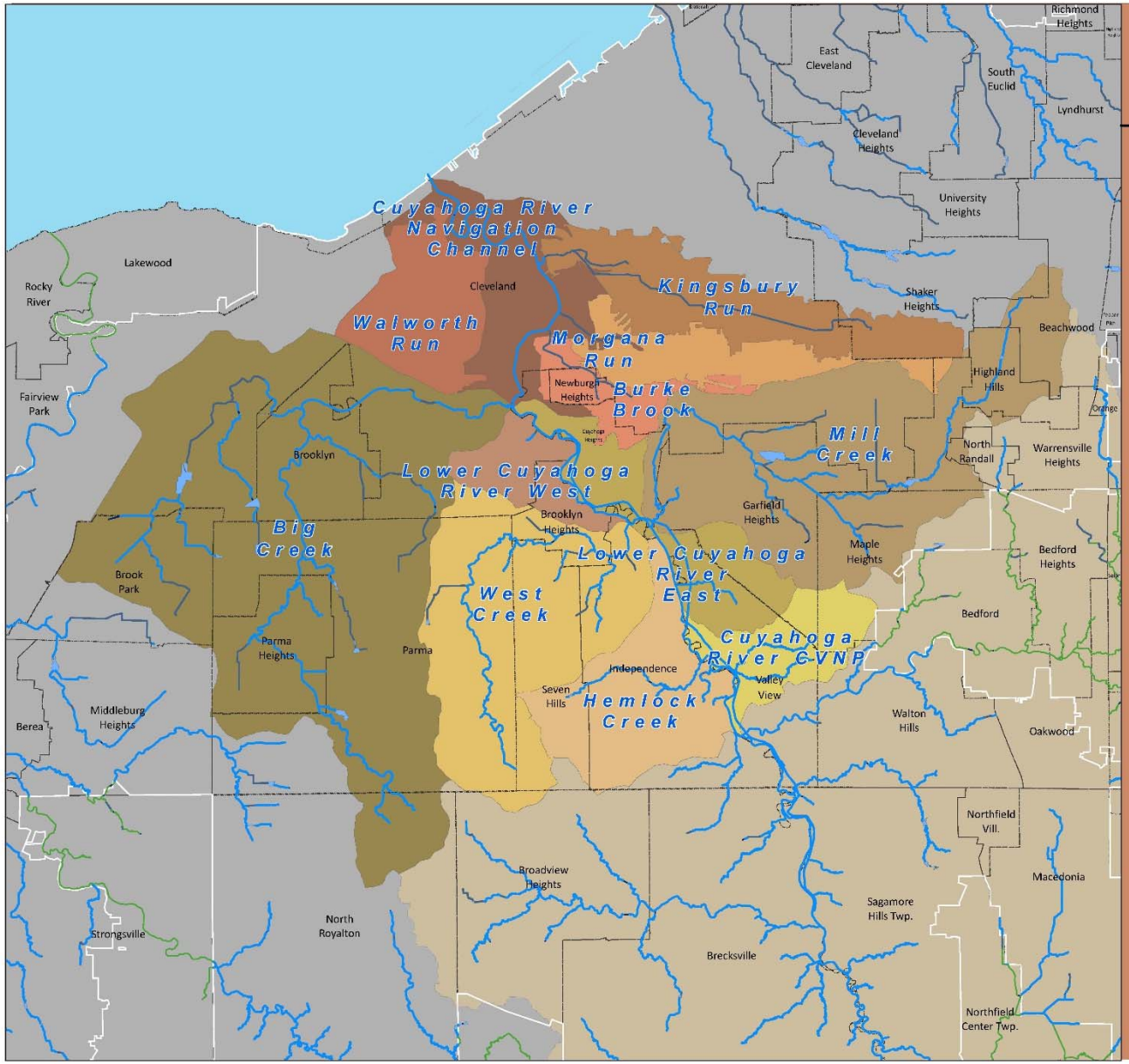


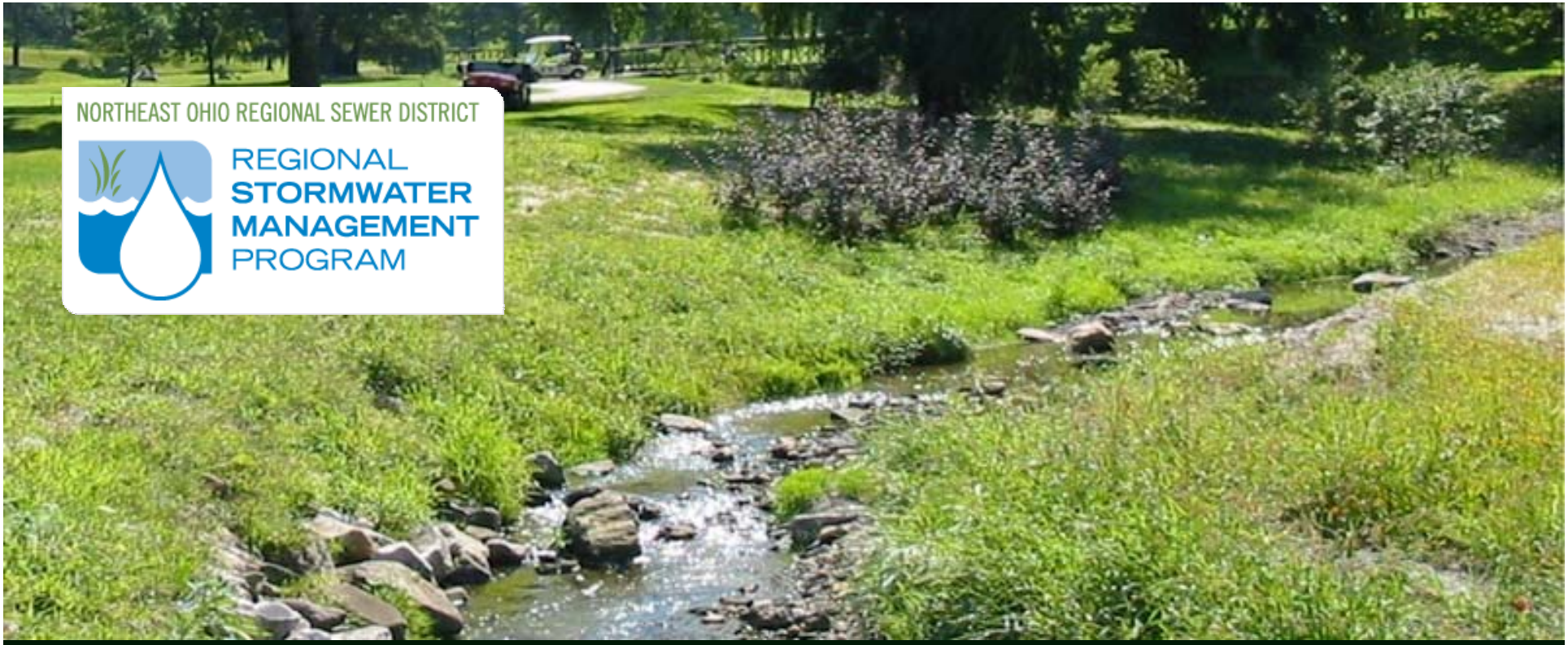
Cuyahoga River - North

- Regional Stormwater System in NEORSD Service Area
- Regional Stormwater System not in NEORSD Service Area
- Service Area
- Community
- District Culverted Stream

Northeast Ohio Regional Sewer District

Coordinate System : Ohio State Plane North
Datum: NAD 1983 , NAVD 1988
Projection: Lambert Conformal Conic
Sources: NEORSD GIS

Map Created: March 2017 **1:50,524**



Regional Stormwater Management Program

Watershed Advisory Committee

March 2017

Your Sewer District **Keeping our Great Lake great.**

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL
STORMWATER
MANAGEMENT
PROGRAM

Agenda

- Welcome
- Stormwater Construction Plan
- Stormwater Master Plans
- Stormwater Inspection and Maintenance
- Program Update
  - Community Cost-Share: Policy Update
  - Phase II Services
  - SW Plan Review – Common comments/issues

Stormwater Construction Plan 2016-2017

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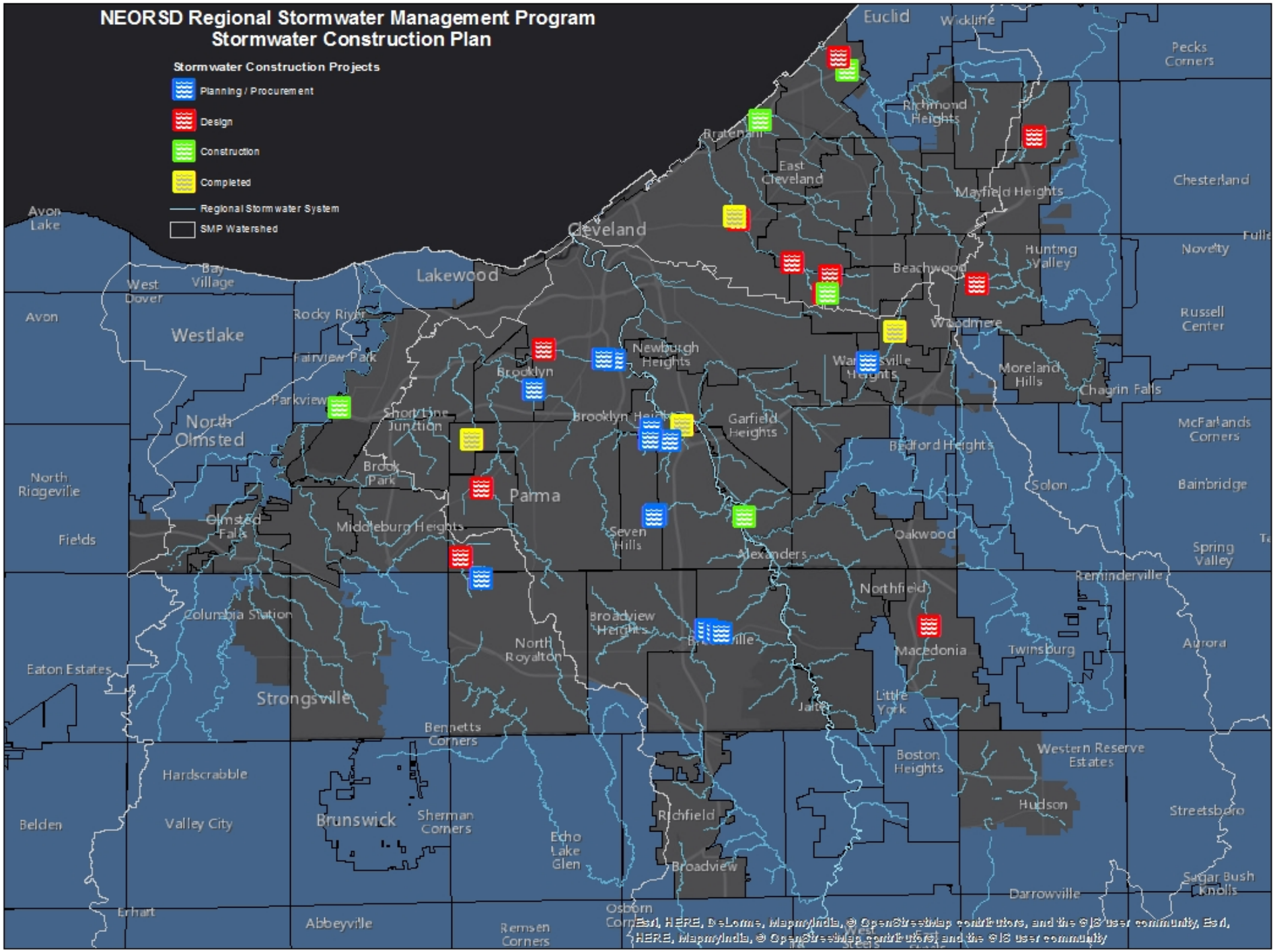
NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM


NEORSD Regional Stormwater Management Program
Stormwater Construction Plan
Stormwater Construction Projects
Planning / Procurement
Design
Construction
Completed
Regional Stormwater System
SMP Watershed
Euclid
Wickliffe
Pecks Corners
Richmond Heights
Bratenahl
East Cleveland
Mayfield Heights
Chesterland
Avon Lake
Cleveland
Hunting Valley
Novelty
Lakewood
Beachwood
Bay Village
West Dover
Avon
Rocky River
Russell Center
Westlake
Woodmere
Fairview Park
Newburgh Heights
Brooklyn
Moreland Hills
Chagrin Falls
Parkview
Shorehaine Junction
Brooklyn Heights
Garfield Heights
McFarlands Corners
North Olmsted
Bedford Heights
Brook Park
North Ridgeville
Parma
Solon
Bainbridge
Olmsted Falls
Middleburg Heights
Seven Hills
Oakwood
Fields
Alexanders
Spring Valley
Reminderville
Northfield
Columbia Station
Broadview Heights
North Royalton
Macedonia
Twinsburg
Aurora
Eaton Estates
Strongsville
Little York
Bennetts Corners
Western Reserve Estates
Boston Heights
Hardscrabble
Hudson
Streetsboro
Belden
Valley City
Brunswick
Sherman Corners
Richfield
Echo Lake Glen
Broadview
Sugar Bush Knolls
Darrowville
Erhart
Abbeyville
Osborn Corners
Remsen Corners
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

STORMWATER CONSTRUCTION PLAN

Stormwater Construction Plan
2017-2018

Scope Development & Procurement | Design | Bidding | Construction | Final Completion | Close-out

7-Mar-17

		Estimated Construction Cost	Jan. 2017	Feb. 2017	Mar. 2017	Apr. 2017	May 2017	Jun. 2017	Jul. 2017	Aug. 2017	Sep. 2017	Oct. 2017	Nov. 2017	Dec. 2017	Jan. 2018	Feb. 2018	Mar. 2018	Apr. 2018	May 2018	Jun. 2018	Jul. 2018	Aug. 2018	Sep. 2018	Oct. 2018	Nov. 2018	Dec. 2018
1311	Highland Park Golf Course Stream Restoration	$1,700,000																								
1413	Chevrolet Blvd. Detention Basin (Other Funding (grants, wastewater budget, community funded, etc.)	$1,700,000																								
1487	Shaw Brook Culverted Stream Rehabilitation (Other Funding (grants, wastewater budget, community funded, etc.)	$950,000																								
1364	Euclid Creek Concrete Spillway EC00008	$362,000																								
1365	Shaker - Green Lake Dredging DB00101	$1,523,000																								
1320	Shaker Lakes Dam Rehabilitations DB00056 & DB00101	$3,600,000																								
1410	Doan Brook Stream Stabilization DB00029	$2,500,000																								
1411	Big Creek Stabilization BC00032	$6,000,000																								
1409	Colombo Park BC00299	$1,600,000																								
1412	Cuyahoga River at Towpath Bank Stabilization CR00132	$1,600,000																								
1369	Beechers Brook and Pepper Creek Bank Stabilization CW00021 & CW00146	$4,750,000																								
1490	Hemlock Creek Bank Stabilization	$800,000																								
1491	Mill Creek Bank Stabilization MC00125	$370,000																								
1498	Baldwin Ck Bank Stabilization BD00259, BD00257	$1,200,000																								
TBD	Baldwin Ck Bank Stabilization BD00297	$300,000																								
1492	Emerald Pkwy Culvert Repair	$3,750,000																								
1496	Sioux Lane Culvert Replacement IC00079	$300,000																								
1502	Ridge Road (Stickney Creek) Bank Stabilization and Utility Repair ST00209	$1,000,000																								
TBD	Euclid Creek Flood Control Shoaling Removal	$500,000																								
1500	Chippewa Creek Bank Stabilization CC00030	$1,500,000																								
1499	Brecksville Condominium Stabilization CC00032	$300,500																								
1501	Brecksville Building Demolition CC00032	$20,000																								
TBD	SWD2014-0003 Big Creek Stabilization BC00004 and BC00010	$2,000,000																								
TBD	SWD2015-0008 West Creek Trash Rack Repair and Replacement	$300,000																								
TBD	SWD2016-0004 Bank Erosion Upstream of the Lancaster Bridge WC00067-68	$350,000																								
TBD	SWD2013-0020 West Creek Bank Stabilization WC00046-WC00066	$5,000,000																								
TBD	SWD2016-0018 Erosion and Bank Failure WB00108	$1,100,000																								
TBD	SWD2016-0017 Culvert Repair CC00157	$100,000																								
TBD	SWD2016-0014 Chippewa Creek Bank Erosion CC00122	$580,000																								
TBD	SWD2016-0020 North Royalton Culvert Repair BD00296	$1,400,000																								

Please note, this is current as of the indicated date. This schedule will undoubtably change. Please contact your Watershed Team Leader for the most current schedule for any particular project.

Northeast Ohio Regional Sewer District

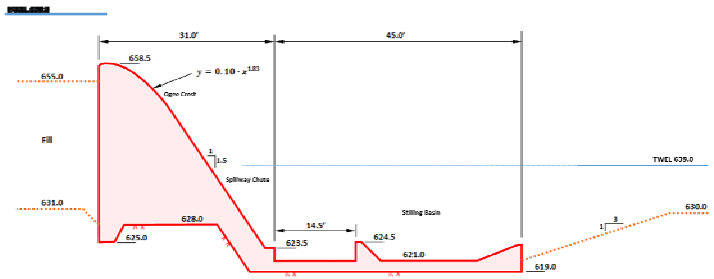
Big Creek Concrete Spillway Reconstruction and Bank Stabilization

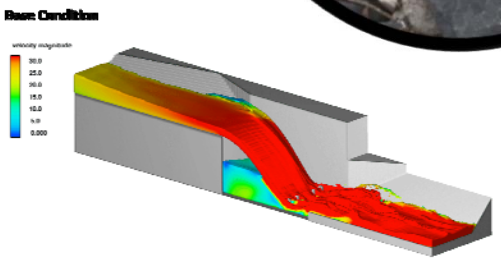
Construction commencing: 2019

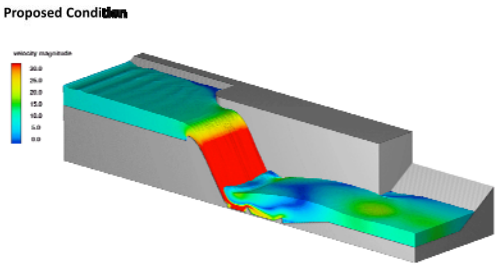
Est. Construction Cost: $6 M

Project Elements

- Spillway Replacement
- Bank Stabilization
- Concrete Channel Rehabilitation







Northeast Ohio Regional Sewer District

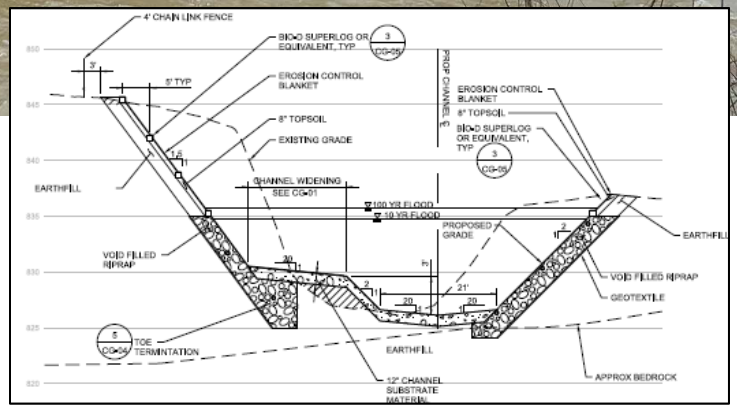
Colombo Park Bank Stabilization

Construction Commencing: Early 2018

Est. Construction Cost: $1.6 M

Project Elements:

- Stabilization of eroding bank to protect sanitary infrastructure
- Stabilization of stream bed to reduce downcutting
- Riparian and floodplain enhancement



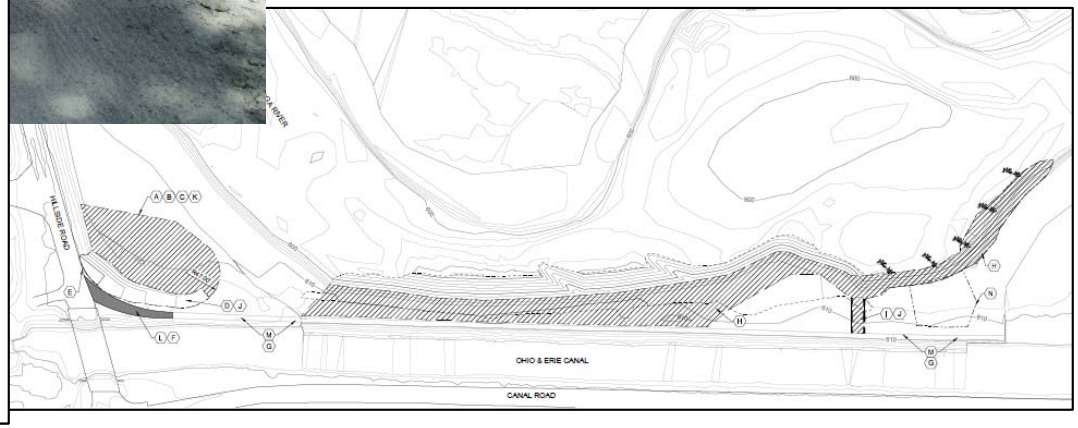
Cuyahoga River at the Towpath Bank Stabilization

Construction Commencing: April 2017

Est. Construction Cost: $1.82 M

Project Elements

- Riprap stabilization of 700 linear feet
- Large woody debris stream barbs
- Riparian enhancement
- Coordination with Cuyahoga Valley National Park



Baldwin Creek Bank Stabilization

Construction Commencing: Fall 2018

Est. Construction Cost: $600,000

Project Elements:

- Repair of failing retaining wall
- Repair of impacted utilities
- Floodplain expansion

Stickney Creek at Ridge Rd. Bank Stabilization

Design Commencing: 3Q 2017

Est. Construction Cost: $1,000,000

Issue to Address:

- Stream eroding and exposing 150 Lf of 66” brick sewer

Big Creek Stabilization BC00004 & BC00010

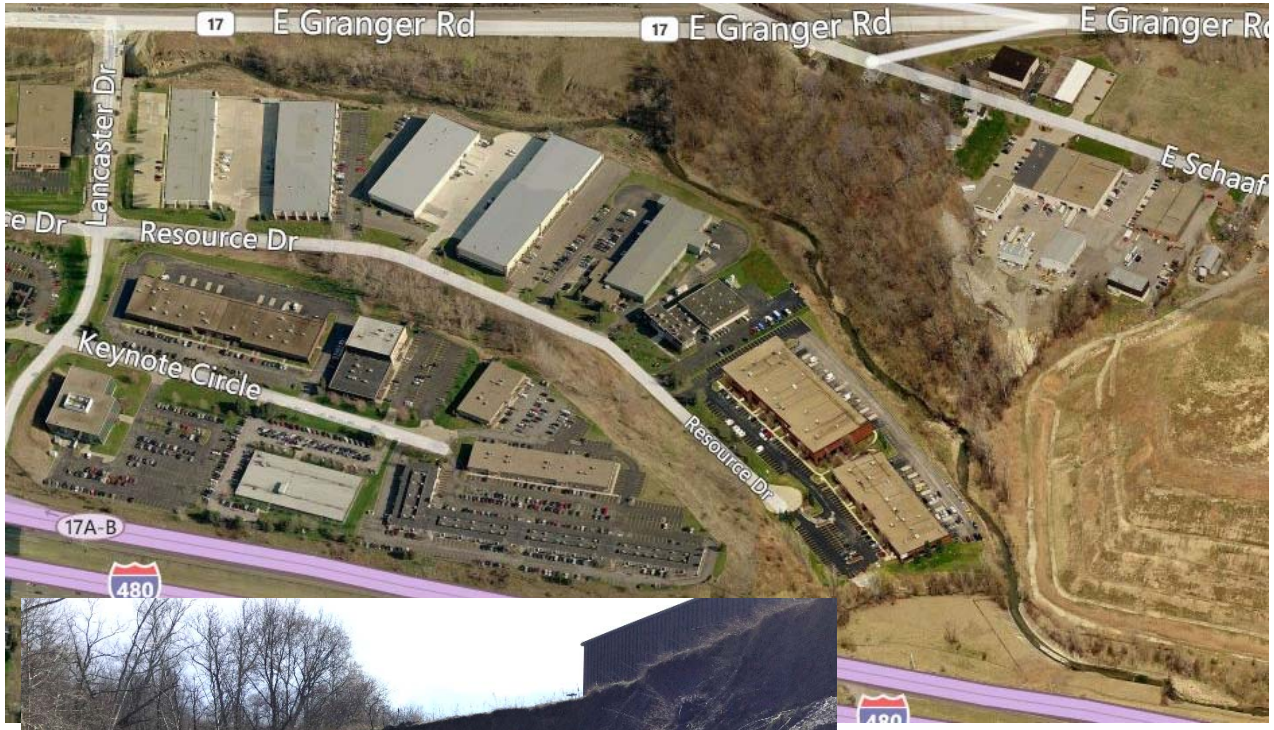
Planning/Procurement Commencing: 3Q 2017

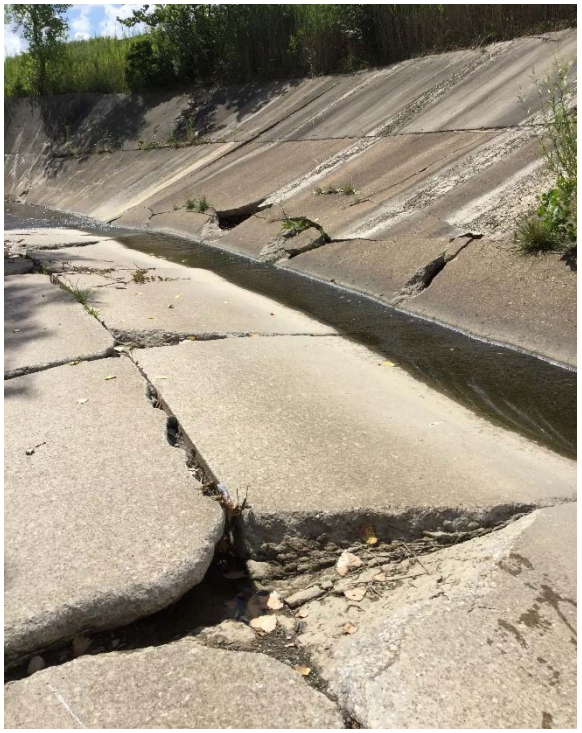
Est. Construction Cost: $2,000,000

Issue to Address:

- Stream eroding and destabilizing bank along railroad and parking lots.

West Creek Bank Stabilization
WC00046-WC00068





Planning/Procurement Commencing: 3Q 2017

Est. Construction Cost: $5M

Issue to Address:

- Stream eroding and destabilizing bank along railroad and parking lots.

West Creek Trash Rack Repair and Replacement

Planning/Procurement Commencing: 3Q 2017

Est. Construction Cost: $300,000

Project Elements:

- Replace the current racks with new racks
- Providing a permanent access to the racks for maintenance
- Repair the damaged bank

Sioux Lane Culvert Replacement, Macedonia

Stormwater Construction Plan

Annual Review Process

Your Sewer District **Keeping our Great Lake great.**

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

Stormwater Construction Plan Process

Stormwater Inputs

Further Analysis Projects

SW Master Plan Recommendations

Community Identified Project

Watershed Group Project

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

Stormwater Construction Plan
Community Nomination

Northeast Ohio Regional Sewer District

REGIONAL STORMWATER MANAGEMENT PROGRAM

COMMUNITY PROPOSED STORMWATER PROJECT INFORMATION SUBMITTAL

The following information is necessary for the Northeast Ohio Regional Sewer District (NEORSD) to evaluate proposed projects during the stormwater construction planning process under the Regional Stormwater Management Program. Complete information will aid in determining benefit to the Regional Stormwater System and facilitate the evaluation process. NEORSD may request additional information to gain a better understanding of the project. NEORSD can provide limited technical assistance for this submittal, however preliminary engineering studies are the responsibility of the community.

The submittal of this information is solely for the purposes of facilitating the Sewer District's evaluation of projects along the Regional Stormwater System proposed by communities. The submittal of this information does not obligate the Sewer District to participate in or implement the proposed project.

Community Information	
Community	
Project Contact Name and Title	
Address	
Phone Number	
Email Address	

Project Information	
Project Name	
Project Location (Address and Attached Location Map)	
Parcel Numbers	
Ownership	
Stream/Watershed	
Proposed Start Date	
Proposed Completion Date	
Project Cost	

NORTHEAST OHIO REGIONAL SEWER DISTRICT

COMMUNITY STORMWATER PROJECT INFORMATION FORM

Project Description (please attach or provide the following information)

1) **Project Summary**
Describe the project.
- Problem being addressed;
- Objectives and outcomes. Include explanation of the extent of specific improvements along the Regional Stormwater System;
- Vicinity maps, drawings, or figures of the site and the project;
- Other relevant project details that will facilitate NEORSD's review.

2) **Background Information**
Include studies and planning documents which support the need, and the proposed solution, if applicable.
- Site soils;
- Geotechnical studies;
- Wetlands, water quality, and listed species
- Preliminary hydrology and hydraulics (existing and proposed hydraulics to determine benefit to the Regional Stormwater System)
- Permitting (if initiated)
- Risks or constraints
- Known stakeholder outreach or input
- Current photos of the project site

3) **Budget Summary**
The Budget Summary should include details on materials and services including specific material cost and hourly rate. If there is a volunteer component, please identify the source of volunteers and the extent to which these volunteers are committed to the specific project. If outside funding is guaranteed, please include the amount to be paid from other sources. If outside funding is anticipated, please include information on sources, timelines, and likelihood. Include an engineer's estimate if available.

2

Stormwater Construction Plan

Community Nomination: Sioux Lane

Northeast Ohio Regional Sewer District

COMMUNITY/ORGANIZATION PROPOSED STORMWATER PROJECT INFORMATION SUBMITTAL

The following information is necessary for the Northeast Ohio Regional Sewer District (NEORSD) to evaluate proposed projects during the stormwater construction planning process under the Regional Stormwater Management Program. Complete information will aid in determining benefit to the Regional Stormwater System and facilitate the evaluation process. NEORSD may request additional information to gain a better understanding of the project. NEORSD can provide limited technical assistance for this submittal, however preliminary engineering studies are the responsibility of the community/organization.

The submittal of this information is solely for the purposes of facilitating the Sewer District's evaluation of projects along the Regional Stormwater System proposed by communities and/or organizations. The submittal of this information does not obligate the Sewer District to participate in or implement the proposed project.

Organization/Community Information	
Organization/Community	City of Macedonia
Project Contact Name and Title	Donald F. Sheehy, City Engineer
Address	22999 Forbes Road, Oakwood, Ohio 44146
Phone Number	440-439-1999
Email Address	[illegible]

Project Information	
Project Name	Sioux Lane Culvert Replacement
Project Location (Address and Attached Location Map)	Sioux Lane, between Chenook Run and Crow Drive
Parcel Numbers	Sioux Lane public right-of-way
Ownership	City of Macedonia
Stream/Watershed	Indian Creek
Proposed Start Date	09/15/16
Proposed Completion Date	10/15/16
Project Cost	$21[illegible],000.00

Sioux Lane Culvert Replacement
City of Macedonia
Proposed Storm Water Project Submittal
June 21, 2016

1) Project Summary

The Sioux Lane Culvert Replacement Project consists of the complete removal of the existing stream crossing, and installation of a concrete box culvert. The existing crossing consists of six CMP arches. The proposed concrete box will have an opening that is four feet in height and twenty feet in width. This project will address both the structural failings, and the hydraulic inefficiencies of the existing crossing. The existing CMP culverts are experiencing severe corrosion and joint separation, which is resulting in sinkholes on the roadway surface. The severity of these sinkholes has previously forced the City of Macedonia to close Sioux Lane to traffic. Given the structural deficiencies of the crossing, the City will need to proceed with the culvert replacement in the fall of 2016. The damage to the existing pipes has also resulted in partial blockages of the culvert, thus reducing the hydraulic capacity of the crossing. Finally, the six-barrel culvert design, and the relatively small opening size of each barrel, causes debris to gather at the upstream openings and further restrict flow. This causes the need for continual monitoring and cleaning of the culvert by both local and NEORSD forces. See attached mapping.

2) Background Information

NEORSD performed a complete inspection of this culvert on May 20, 2016, the results of which are on file. In addition, we have performed preliminary hydraulic calculations for this culvert replacement. In summary, replacing the existing six-barrel crossing with a 4' x 20' box culvert will lower the upstream water surface elevation immediately upstream of Sioux Lane by two inches. This culvert replacement will have no effect on water surface elevations downstream of Sioux Lane. See the tables below. All water surface elevations given in feet above sea level.

25 Year Storm Event					
	Approx. 300' Upstream	Immediately Upstream	Culvert	Immediately Downstream	Approx. 300' Downstream
Existing Conditions	1003.14	1002.89	---	1000.90	1000.43
Proposed Conditions	1003.04	1002.72	---	1000.90	1000.43

100 Year Storm Event					
	Approx. 300' Upstream	Immediately Upstream	Culvert	Immediately Downstream	Approx. 300' Downstream
Existing Conditions	1003.63	1003.41	---	1001.78	1001.44
Proposed Conditions	1003.50	1003.24	---	1001.78	1001.44

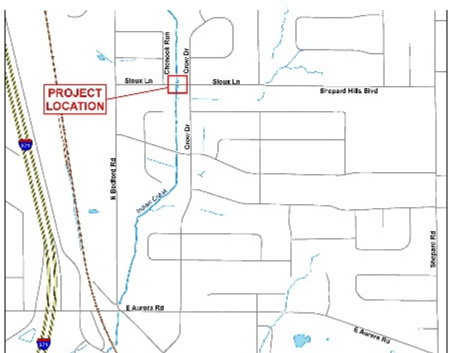
3) Budget Summary

The preliminary project cost estimate is $215,000.00. The NEORSD share for culvert and hydraulic improvements is estimated to be $174,000.00. The City of Macedonia share for other utility and pavement improvements is estimated to be $41,000.00.

SIOUX LANE CULVERT REPLACEMENT
CITY OF MACEDONIA
PRELIMINARY PROJECT COST ESTIMATE
June 24, 2016

Item	Description	Unit	Quantity	Unit Price	Total Price	Funding Breakdown: NEORSD	Local
	REPLACE WITH 4'x20' FOUR-SIDED BOX CULVERT						
1	EXISTING CMP CULVERT (6) REMOVAL	LUMP	1	$ [illegible]	$ [illegible]	$ [illegible]	
2	4'x20' CONCRETE BOX CULVERT INSTALLATION	LF	80	$ [illegible]	$ [illegible]	$ [illegible]	
3	ODOT 512 TYPE 2 MEMBRANE WATERPROOFING	SY	180	$ [illegible]	$ [illegible]	$ [illegible]	
4	HEADWALL INSTALLATION	EACH	2	$ [illegible]	$ [illegible]	$ [illegible]	
5	SUBGRADE UNDERCUT	CY	20	$ [illegible]	$ [illegible]	$ [illegible]	
6	HALF HEIGHT HEADWALL	EACH	2	$ [illegible]	$ [illegible]	$ [illegible]	
7	CATCH BASINS	EACH	2	$ 2,500.00	$ [illegible]		$ [illegible]
8	12" STORM SEWER	LF	40	$ [illegible]	$ [illegible]		$ [illegible]
9	WATER MAIN LOWERING	LUMP	1	$ 15,000.00	$ [illegible]	$ [illegible]	
10	SANITARY SEWER REPLACEMENT W/CASING	LF	[illegible]	$ [illegible]	$ [illegible]	$ [illegible]	
11	PAVEMENT PLANING (CHENOOK to CROW)	SY	1,300	$ 5.00	$ [illegible]		$ [illegible]
12	2" ASPHALT SURFACE COURSE	CY	[illegible]	$ [illegible]	$ [illegible]		$ [illegible]
13	CASTING ADJUSTED TO GRADE	EACH	2	$ 300.00	$ [illegible]		$ [illegible]
				Subtotal	$ [illegible]	$ [illegible]	$ [illegible]
				[illegible] Contingency	$ [illegible]	$ [illegible]	$ [illegible]
				Total Construction Cost	$ [illegible]	$ [illegible]	$ [illegible]
				Right-of-Way Acquisition	$ [illegible]		
				Engineering	$ 10,000.00		
				Construction Staking	$ [illegible]		
				[illegible]	$ [illegible]		
				Construction Inspection	$ [illegible]		
				Total Professional Services	$ 17,000.00	$ [illegible]	$ [illegible]
				TOTAL PRELIMINARY PROJECT COST ESTIMATE	$ 214,615.00	$ 173,876.17	$40,738.83

Note:
The costs shown represent an estimate of probable construction costs prepared in good faith and reasonable care. Chagrin Valley Engineering, LTD. has no control over the costs of [illegible] materials or equipment, nor over competitive bidding.



Date: 5/21/2016
Vicinity Map
Sioux Lane Culvert Replacement
City of Macedonia, Ohio
CVE CHAGRIN VALLEY ENGINEERING, LTD

Proposed Improvements
Sioux Lane Culvert Replacement
City of Macedonia, Ohio
CVE CHAGRIN VALLEY ENGINEERING, LTD

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

Scoring for Project Prioritization

Analysis Components

- Financial
- Social/Reputational
- Compliance
- Environmental
- Safety

2 years=	50 points
5 years=	20 points
10 years=	10 points
25 years=	5 points
50 years=	1 points
100 years=	0 points

Stormwater Construction Plan

Northeast Ohio Regional Sewer District

Show Project Summaries

2017 - 2021 Stormwater Program Summary As of Jan 31, 2017

Project Name and Location	RFP(1)	Design(2)	Award of Construction	Construction Est.($M)
Stormwater				
Cuyahoga North				
Colombo Park Stream Restoration- BC00299	N/A	N/A	16-Nov-17	$1.2
Big Creek Stabilization BC00032	N/A	N/A	4th Quarter 2018	$4.0
Cuyahoga River at Towpath Bank Stabilization CR00132	N/A	N/A	16-Mar-17	$1.3
Cuyahoga River North SWMP	04-Aug-16 A	02-Feb-17 A	N/A	N/A
Hemlock Creek Bank Stabilization HC00038 & BD00042	N/A	N/A	4th Quarter 2018	$1.2
Mill Creek Bank Stabilization MC00125	N/A	N/A	4th Quarter 2018	$0.4
Ridge Road (Stickney Creek) Bank Stabilization and Utility Repair ST00209	18-May-17	17-Aug-17	N/A	$1.0
West Creek Bank Stabilization WC00046-WC00066	02-Nov-17	1st Quarter 2018	1st Quarter 2020	$5.1
Mill Creek Erosion Control MC 00057 & MC00135	N/A	N/A	4th Quarter 2020	$0.7
Big Creek - West Branch Bank Stabilization BC00351, WB00072 & WB00104	N/A	N/A	1st Quarter 2021	$0.4
Big Creek Stabilization BC00004 and BC 00010	N/A	N/A	4th Quarter 2019	$2.0
West Creek Trash Rack Repair and Replacement	19-Oct-17	1st Quarter 2018	N/A	$0.3
Bank Erosion Upstream of the Lancaster Bridge WC00067-68	05-Oct-17	1st Quarter 2018	1st Quarter 2020	$0.4
Hawthorn Creek DS Renaissance Pkwy HA00295	N/A	N/A	2nd Quarter 2020	$0.1
Erosion and Bank Failure WB00108	N/A	N/A	4th Quarter 2019	$1.1
Floodplain Restoration/Bank Stabilization in Highland Hills Park MC00133	4th Quarter 2019	1st Quarter 2020	N/A	$0.3

http://www.neorsd.org/communitystormwaterresources.php

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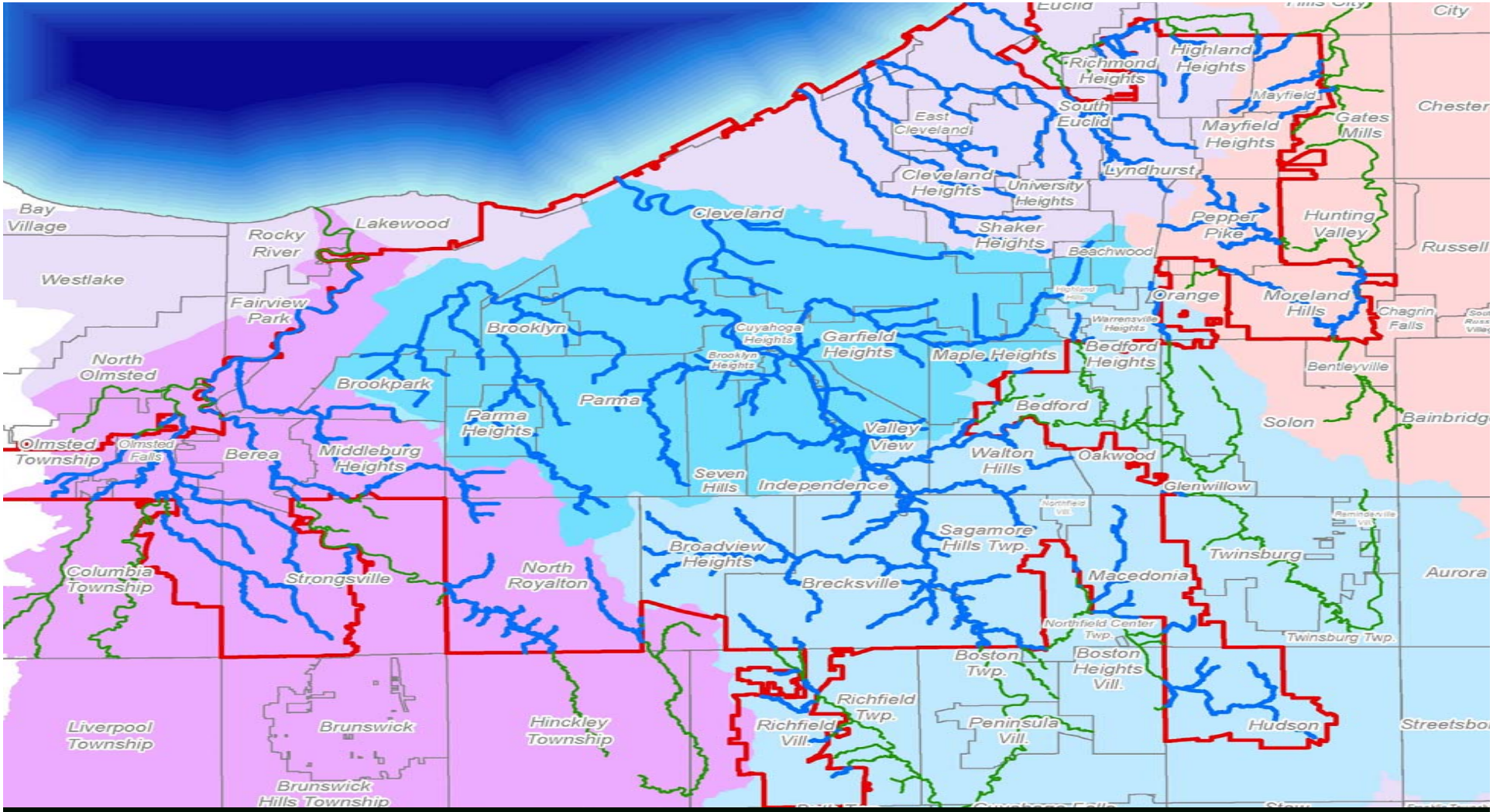
NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM



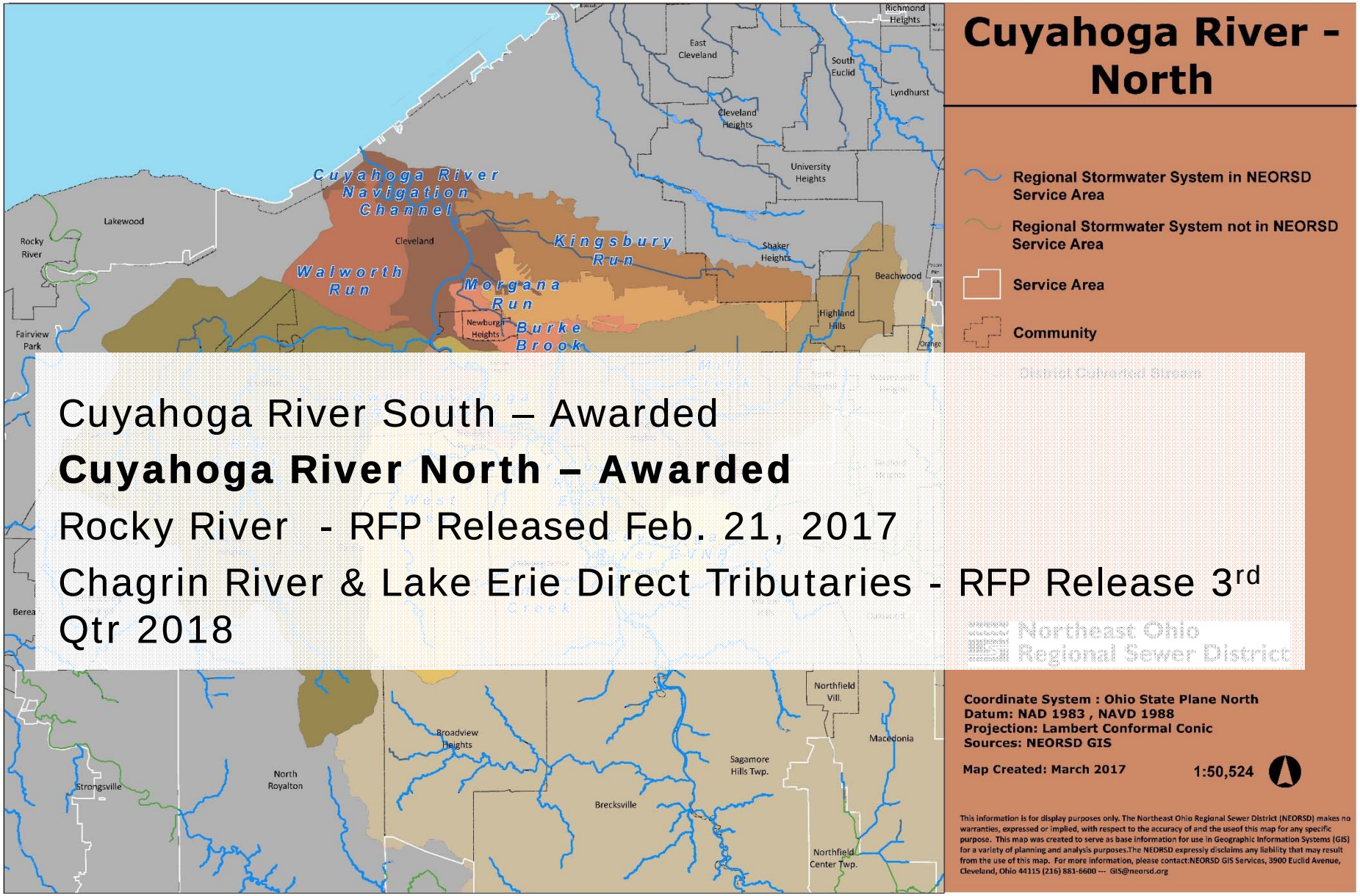
Stormwater Master Plan

Your Sewer District **Keeping our Great Lake great.**

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

Stormwater Master Plans
Goals and Objectives

- Multi-objective, watershed approach to developing solutions for broad suite of problems
- Prioritized list of construction and maintenance projects at the Watershed-level and Program-level
- Identification of early action projects



Cuyahoga River South – Awarded

Cuyahoga River North – Awarded

Rocky River - RFP Released Feb. 21, 2017

Chagrin River & Lake Erie Direct Tributaries - RFP Release 3rd Qtr 2018

Stormwater Master Plan
Standards Update

Section	Major Refinements	Schedule
PERFORMANCE EVALUATION Regional Stormwater System		
Asset Condition and Criticality	Criteria for stream structural stability	March 2017
Data Collection & Management	Member community data requests	
Inspection	Field data collection parameters	
Monitoring	Rainfall for long-term model simulations	
Modeling Strategy & Standards	Design storms, runoff parameters, testing/calibration/validation	
Project ALTERNATIVE EVALUATION & RECOMMENDATIONS		
Acceptable Level of Risk	Pending pilot SWMP findings	June 2017
Alternatives Evaluation		
Master Plan Recommendations		
Prioritization		

Cuyahoga River North
Schedule

- Awarded to CH2M Hill, NTP Feb. 10
- 30 month Study
- Field Work to begin April 2017
- Spherical Imagery - March/April 2017
  - http://www.qsisphere.com/LowerMcCleay/tour.html?startscene=53&startactions=lookat(-315.1,4.24,140,0,0);
- Opportunity for Local Stormwater System SWMP

Cuyahoga River North Communication

- Member Community Work Plans - May 2017
- The Watershed Team Leader will contact you to inform you of any work in the watershed and serve as the point of contact between the communities and the District

Matt Scharver
Senior Watershed Team Leader
ScharverM@neorsd.org
216-881-6600 x6880

Rachel Webb
Senior Watershed Team Leader
WebbR@neorsd.org
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Chippewa Creek – Broadview Heights

Stormwater Inspection and Maintenance

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Stormwater Inspection & Maintenance

All actions begin with an Inspection

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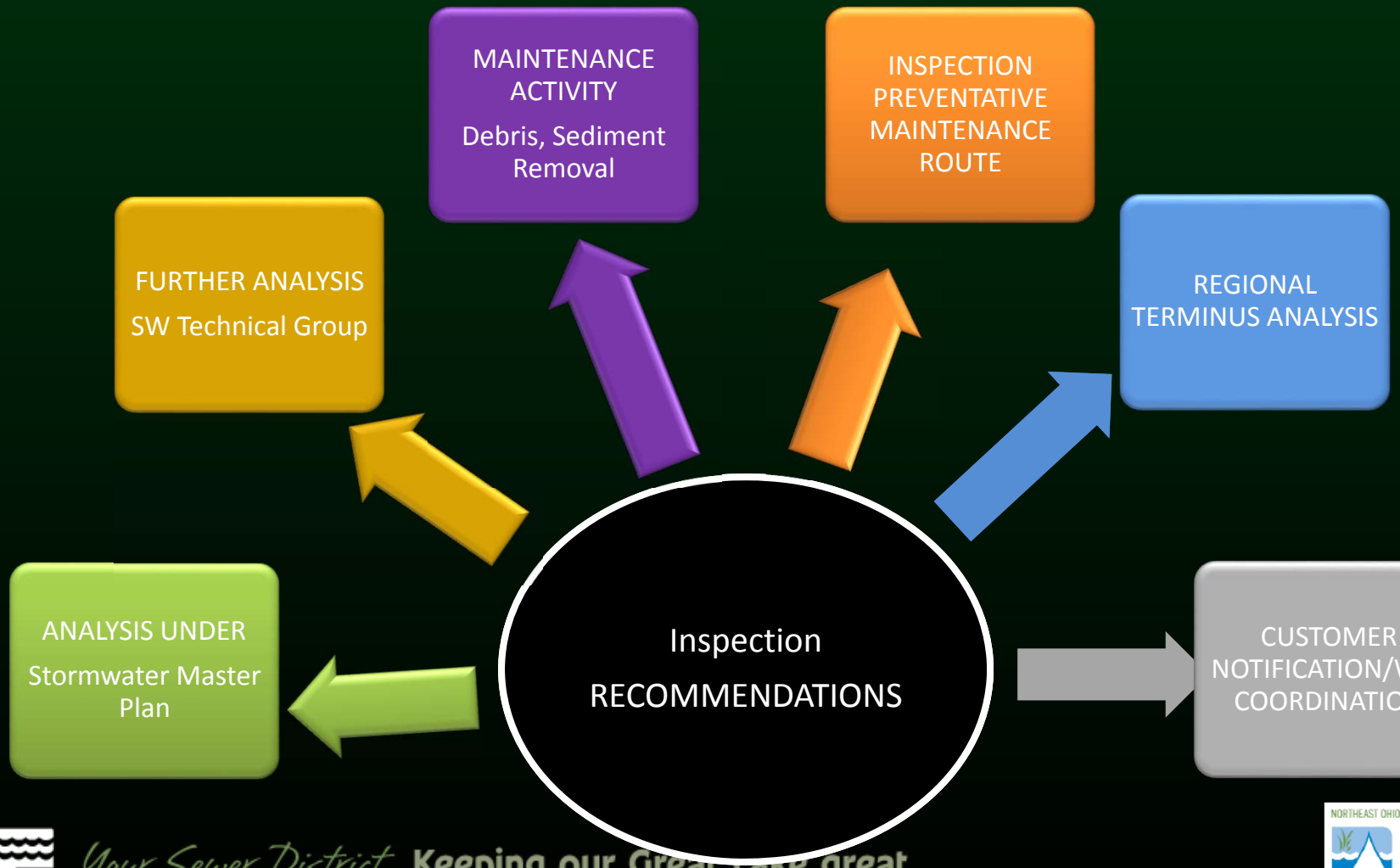
Stormwater Inspection & Maintenance

Inspection Recommendations



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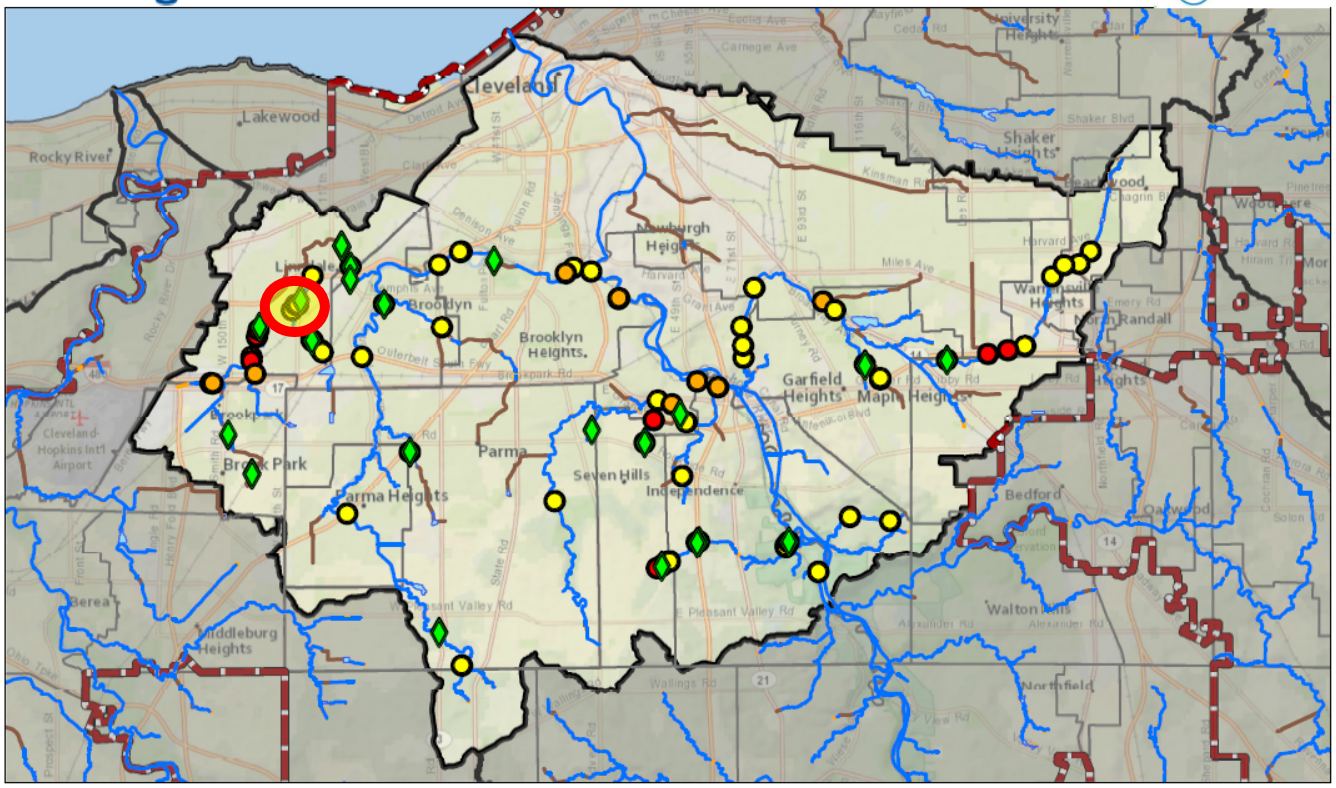
Stormwater Inspections

Cuyahoga River – North: 2016 Summary

Northeast Ohio Regional Sewer District

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM



Cuyahoga River North Watershed
Monitoring Sites and
2016 Customer Inquiries

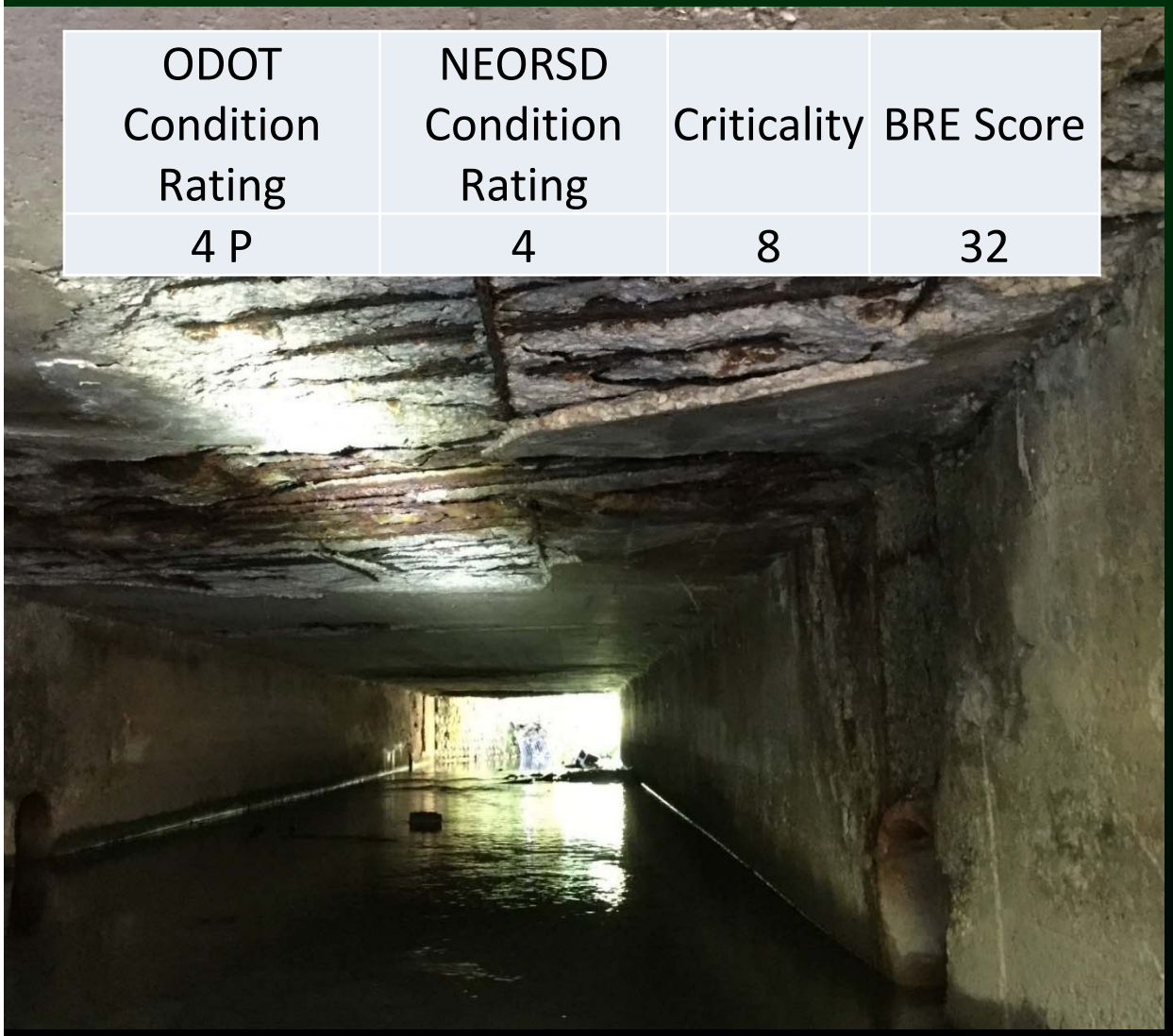
24 Customer Inquiries
(**132** in Service Area)

68 sites currently being monitored
(**190** in Service Area)

Stormwater Inspections

Cuyahoga River – North: Big Creek – West Branch

ODOT Condition Rating	NEORSD Condition Rating	Criticality	BRE Score
4 P	4	8	32



Asset #: WB00071
Cleveland
W. 130th Street
BTU: Arterial Road

Structural Integrity:

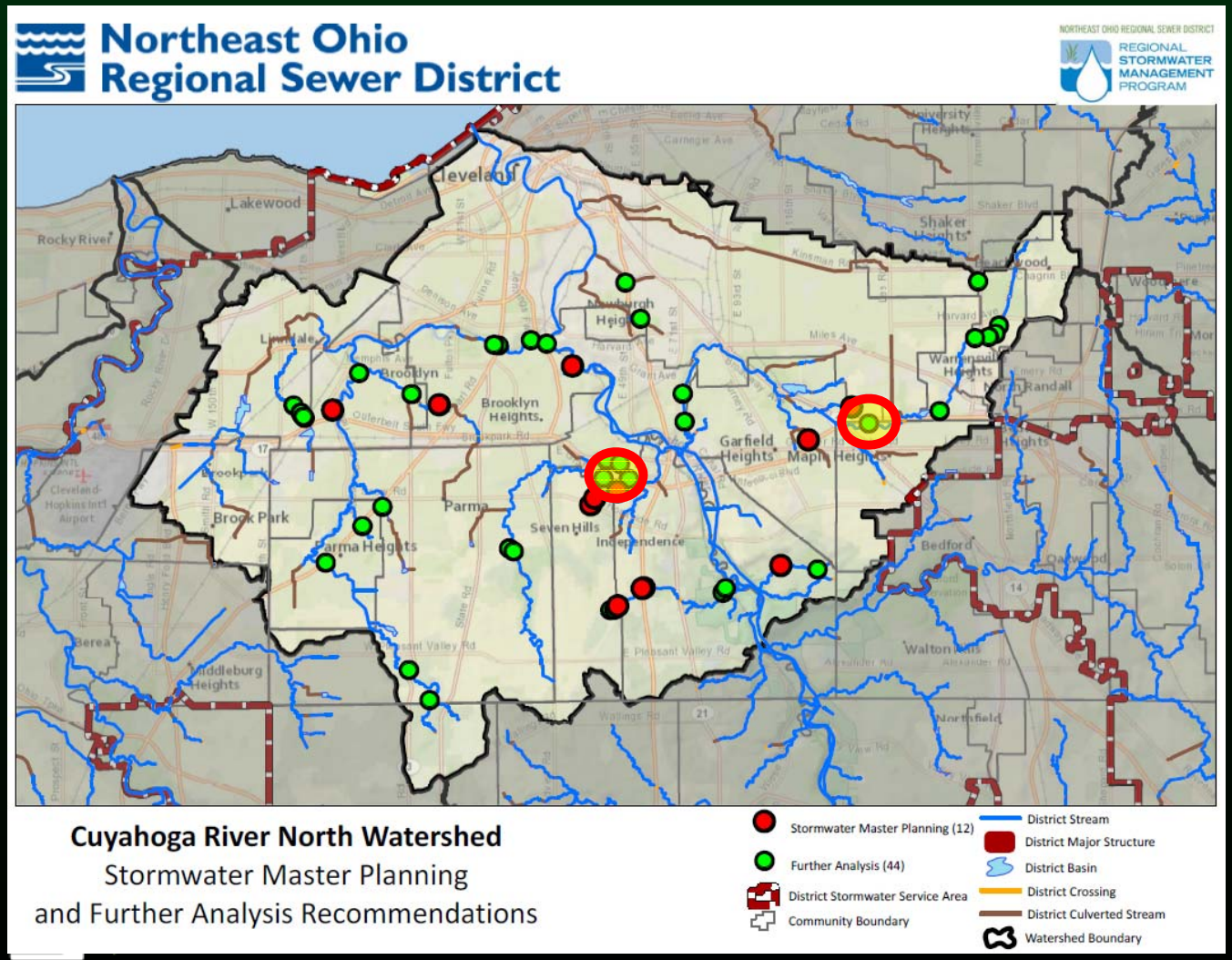
- Extensive spalling with exposed reinforcement
- Section loss on headwall
- Retaining wall rotated towards channel

Recommendation:

- ✓Monitoring
- ✓Notify Owner (on County CIP)

Stormwater Inspection: Further Analysis/SW Master Plan

Cuyahoga River – North: 2016 Summary



12 Assets recommended for SW Master Plan (**37** in Service Area)

44 assets recommended for Further Analysis (**120** in Service Area)

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Stormwater Inspections: Further Analysis

Cuyahoga River – North: Mill Creek

BEHI Rating	NBS Rating	NEORSD Condition Rating	Criticality	BRE Score
Moderate	High	4	6	24

Asset #: MC00103
Maple Heights
Greenhurst Drive
BTU: Local Road

Structural Integrity:

- Eroding bank

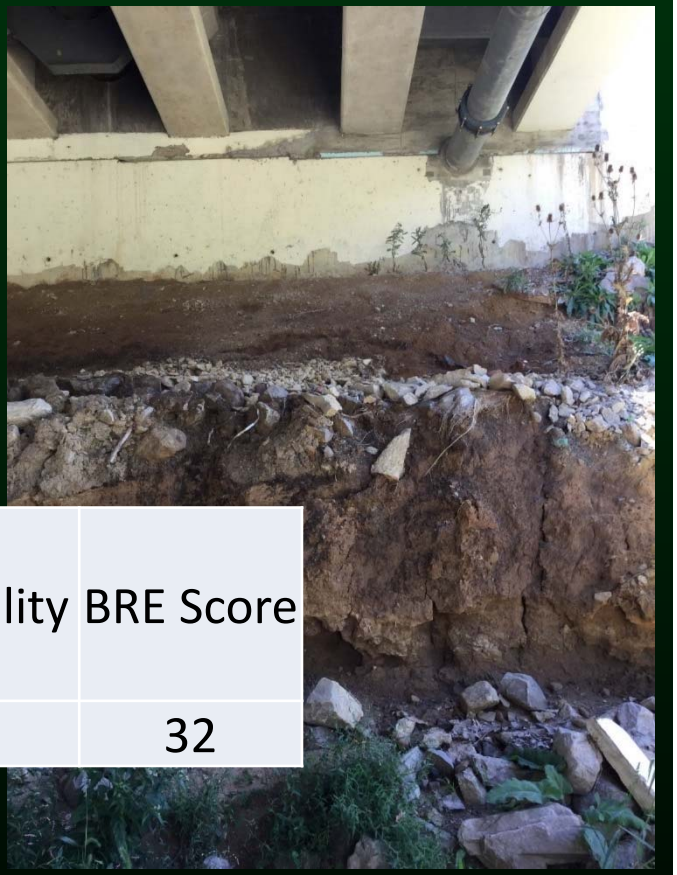
Recommendation:

- ✓Further Analysis
- ✓Monitoring

Stormwater Inspections: Further Analysis

Cuyahoga River – North: West Creek

Asset #: WC00067
Brooklyn Heights
Lanaster Drive
BTU - Arterial Drive



BEHI Rating	NBS Rating	NEORSD Condition Rating	Criticality	BRE Score
Moderate	High	4	8	32

Structural Integrity:

- Geotechnical failure
- Scour at bank
- Rip rap scoured away

Recommendation:

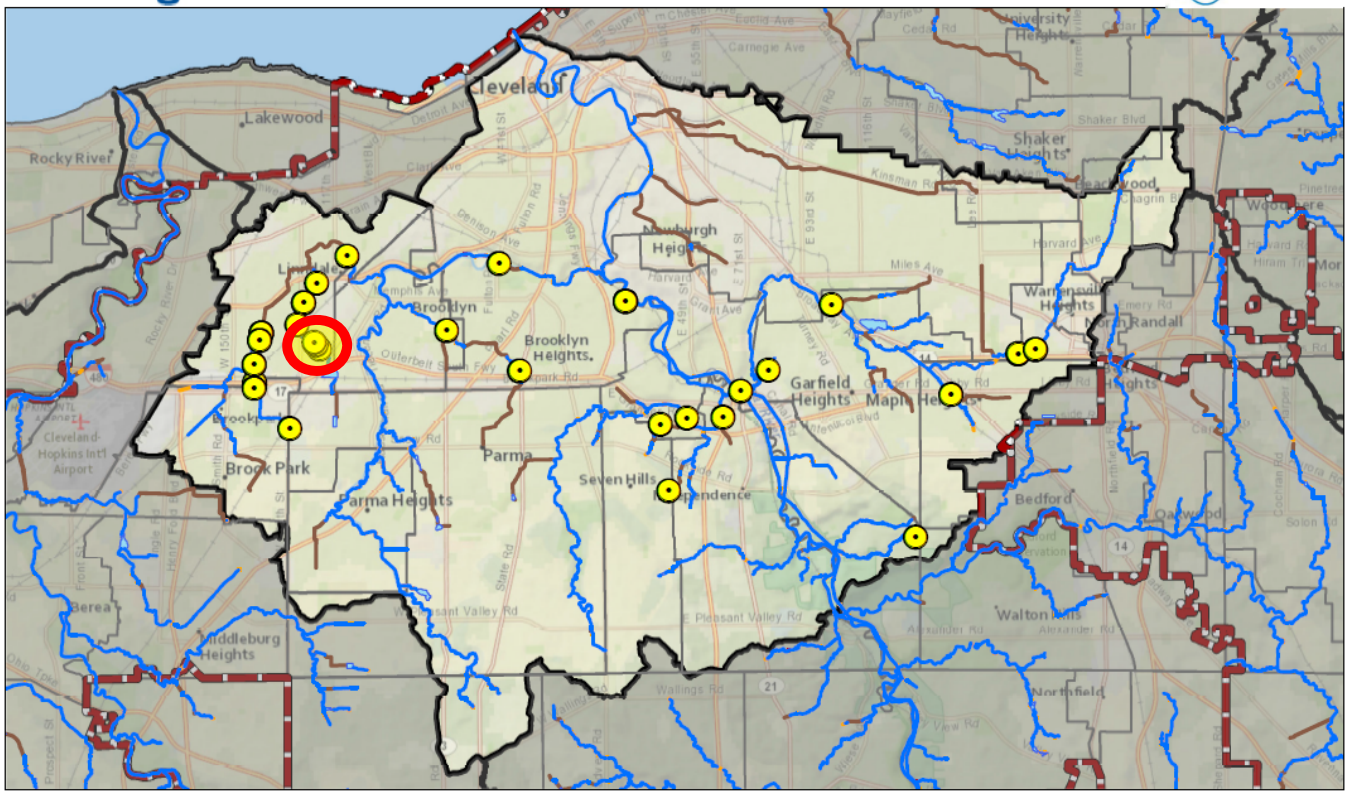
- ✓Further Analysis
- ✓Monitoring
- ✓Notify Owner

Stormwater Maintenance

Cuyahoga River – North: 2016 Summary

Northeast Ohio Regional Sewer District

NORTHEAST OHIO REGIONAL SEWER DISTRICT REGIONAL STORMWATER MANAGEMENT PROGRAM



Cuyahoga River North Watershed
2016 Maintenance Projects

Maintenance Locations (39)
District Stormwater Service Area
Community Boundary
Watershed Boundary
District Stream
District Major Structure
District Basin
District Crossing
District Culverted Stream

39 Maintenance projects (**112** in Service Area)

1,075 CY sediment and debris removed (**3,646** CY in Service Area)

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Stormwater Maintenance

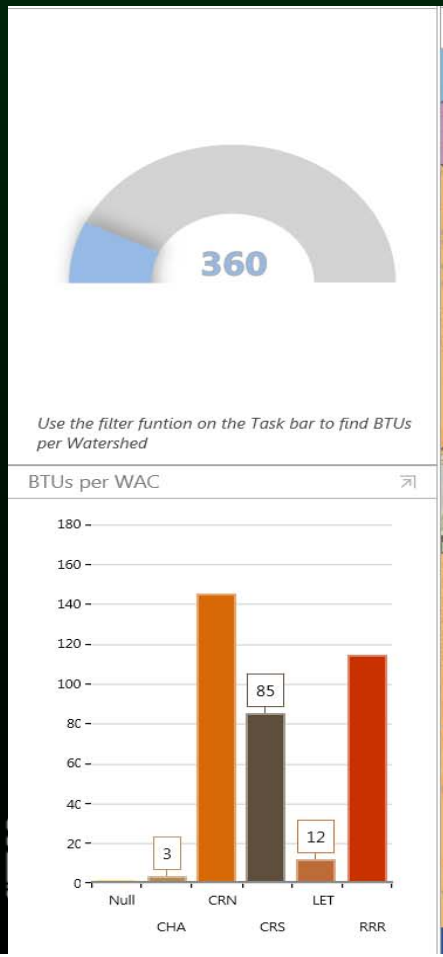
Cuyahoga River – North: Big Creek - West Branch

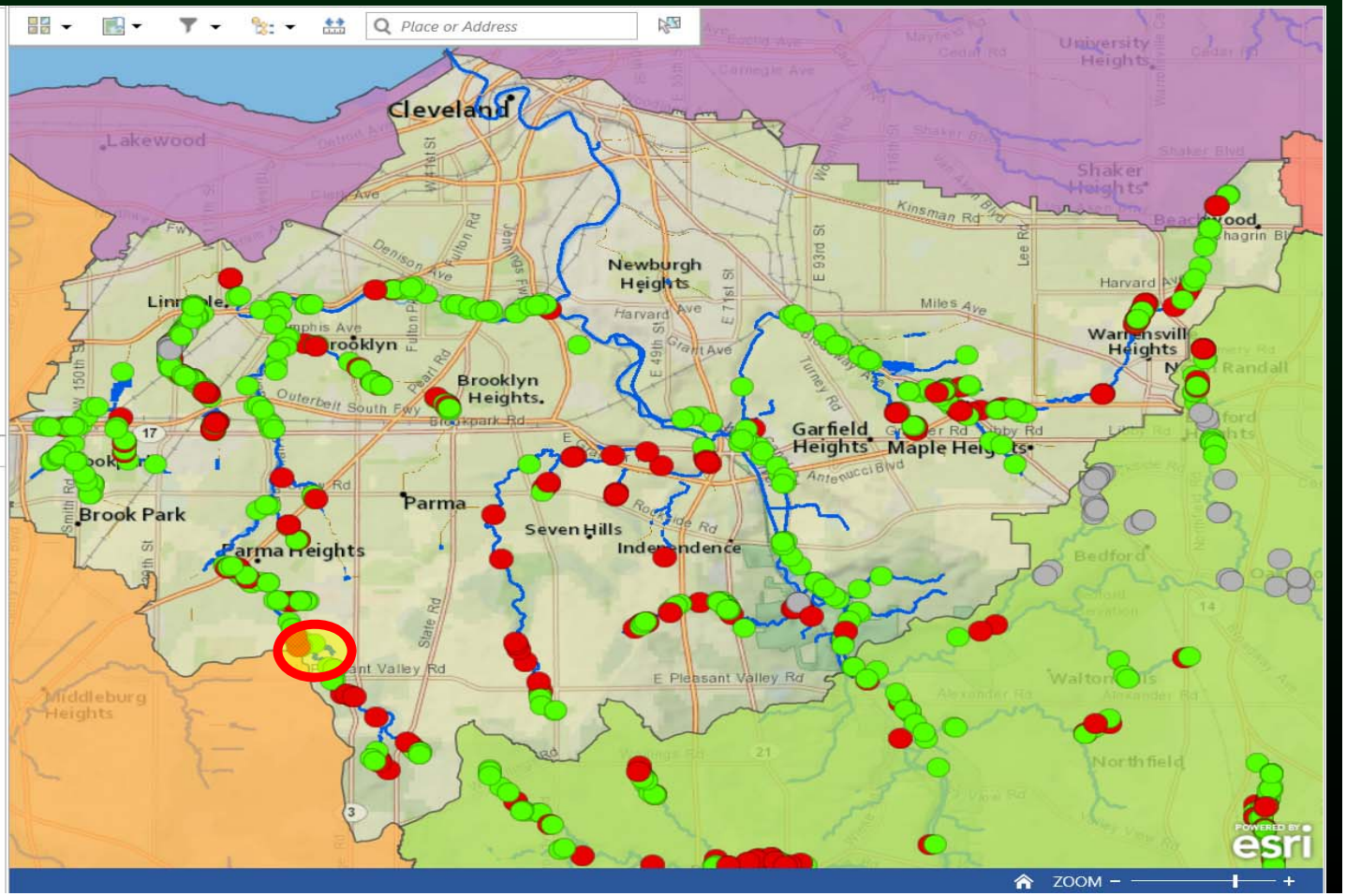
Asset ID: WB00094
Community: Cleveland
Maintenance Project: Sediment Removal (40 CY)

Potentially Threatened Infrastructure: Buildings, Transportation and Utilities (BTU)

145 BTUs (out of 651) along streams in Cuyahoga River North are recommended for SW Master Plan assessment

360 BTUs (out of 1,979) in Service Area recommended to date

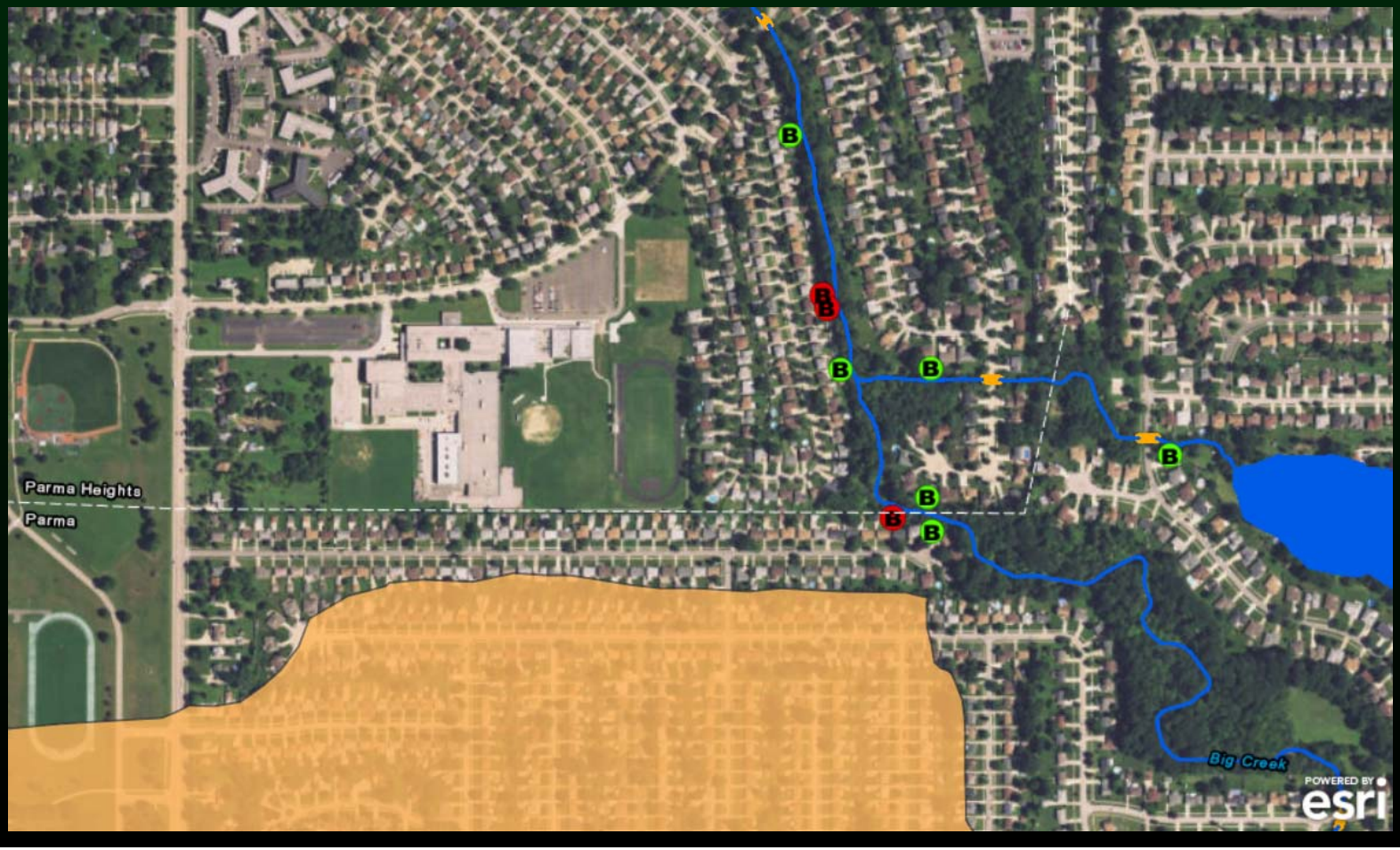




Threatened Infrastructure: BTUs

Cuyahoga River - North: Big Creek

Communities: Parma, Parma Heights
BTUs: Residential – Detached Garages



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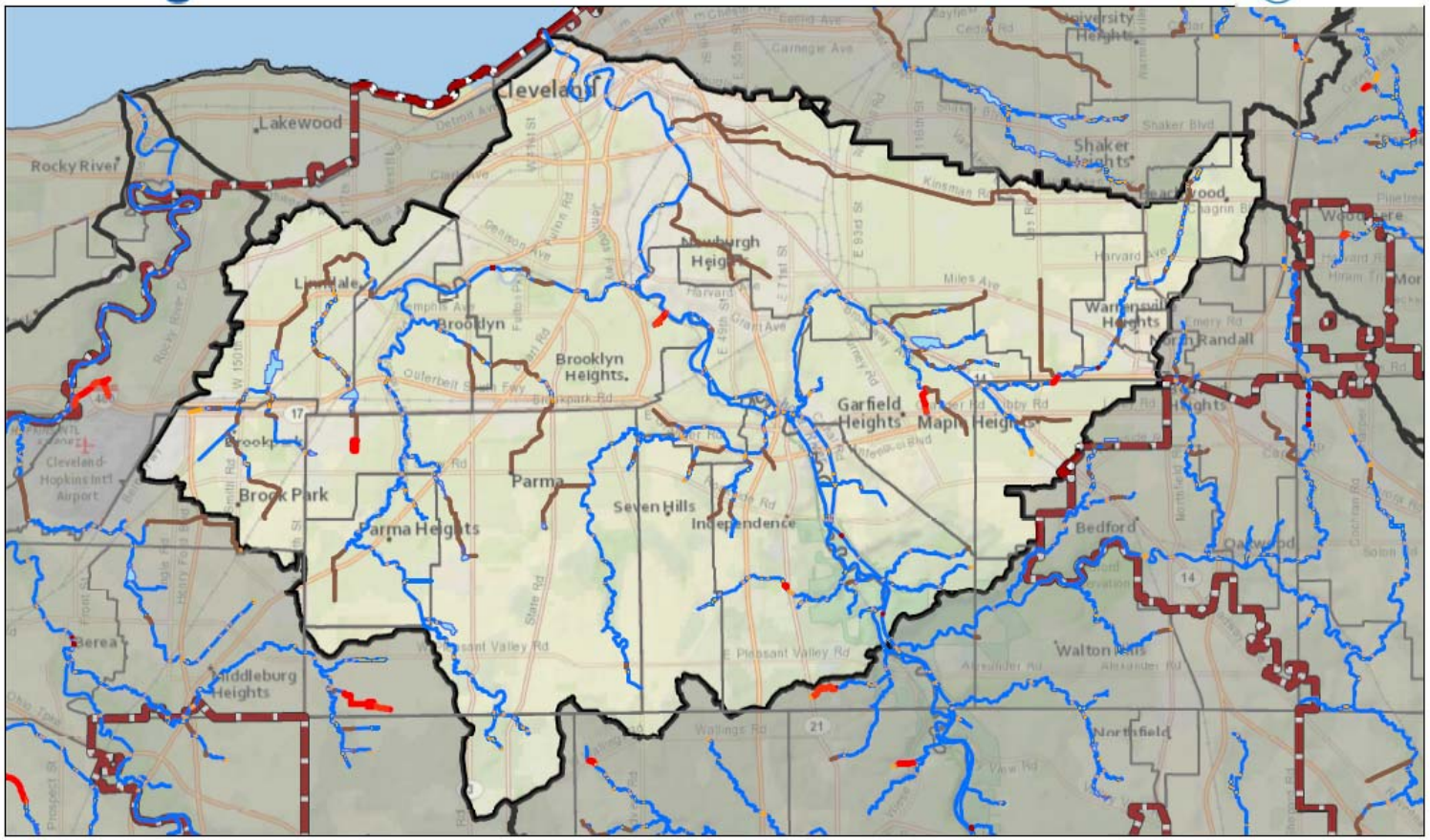
REGIONAL STORMWATER MANAGEMENT PROGRAM

Regional Stormwater System
New Assets (Mostly Terminus Extensions)

Northeast Ohio Regional Sewer District

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM



Cuyahoga River North Watershed
New Regional Stormwater System
Assets Added in 2016-Present

- New Assets Added in 2016-Present
- District Stormwater Service Area
- Community Boundary
- Watershed Boundary
- District Stream
- District Major Structure
- District Basin
- District Crossing
- District Culverted Stream

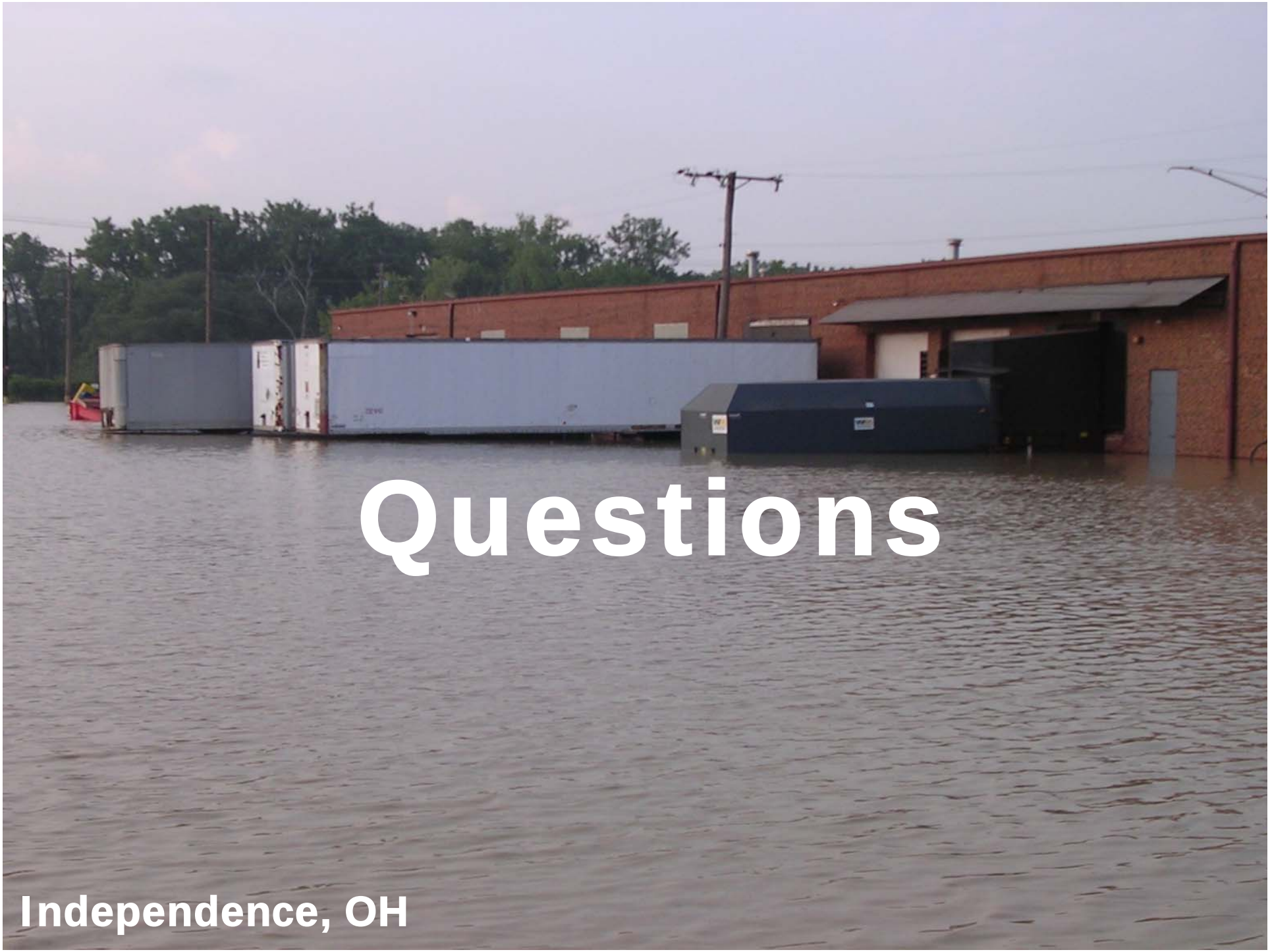
NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

Stormwater Inspection & Maintenance 2017 Agenda

- Continuing to collect RSS data:
  - Record drawings
  - Responsible party infrastructure: culverted streams, bridges, culverts, basins, major structures
  - Gather historical inspections reports
- **Data request to be made via Member Community Work Plans and individual agency requests**

Stormwater Inspection & Maintenance 2017 Agenda

- Planning to pilot new maintenance project types:
  - Basin Dredging
  - Structural Repair
  - Streambank Stabilization (small scale/low cost/low risk)
- Looking for potential locations
- **Contact SWIM representative (Mark Link, George Remias) with ideas**


Questions
Independence, OH

Community Cost-Share

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REGIONAL STORMWATER MANAGEMENT PROGRAM

Community Cost-Share

- $9,946,579.37 available across communities
- 32 approved projects, totaling $3,041,990.58
- 6 completed projects, totaling $199,529.74
- Vendor Registration
  http://www.neorsd.org/isupplier_homepage.php
- Policy Update

Community Cost-Share

Policy Update Example – Shaker Heights

- Allocation Agreement: Underground Stormwater Detention
- Construction Costs $750,000
  - City to apply for reimbursement annually over seven (7) years

Community Cost-Share

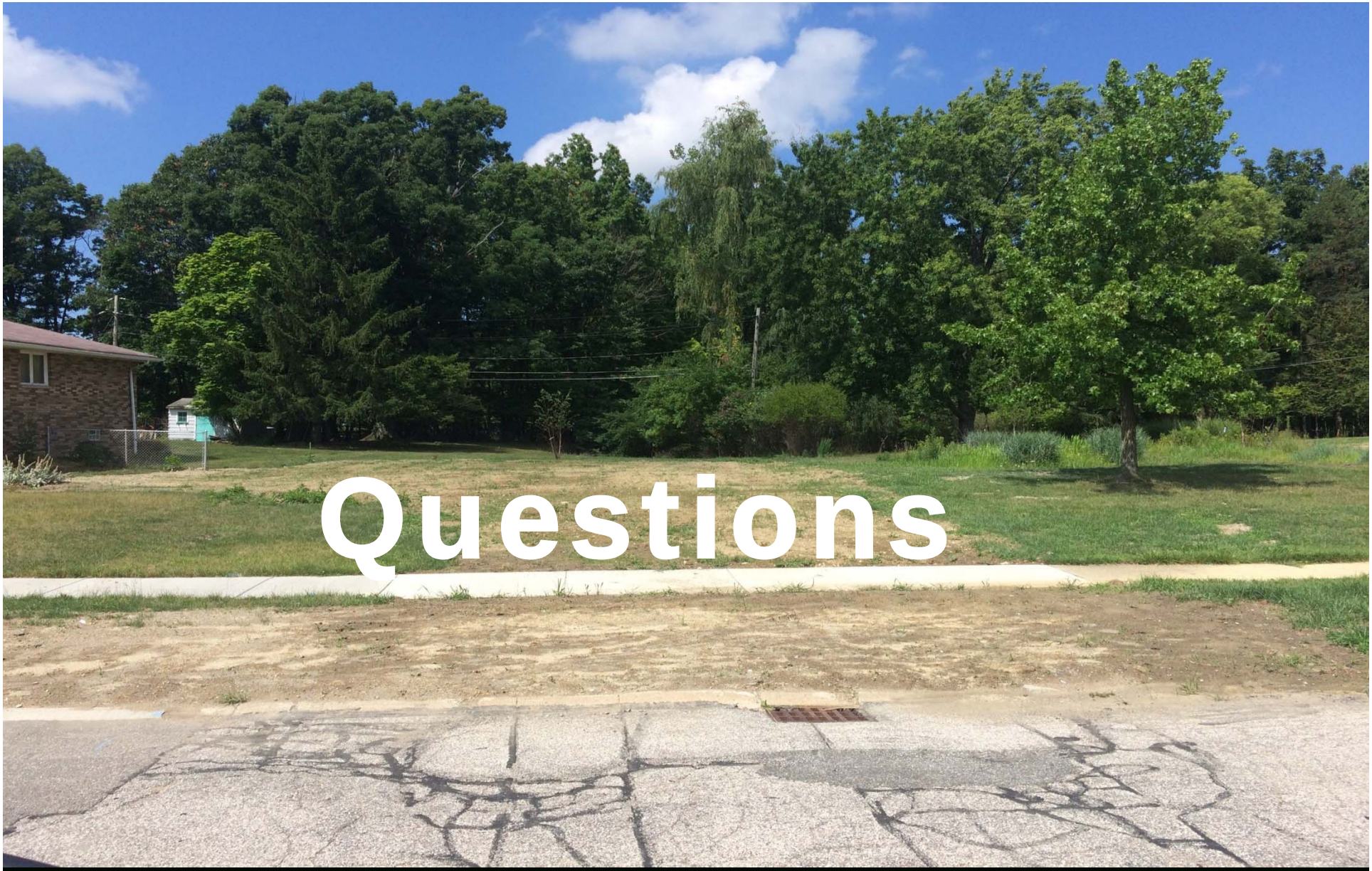
Policy Update Example - Parma

- Allocation Agreement: Equipment Purchase
  - Jet/Vacuum Machine: $550,000
  - Mechanical Broom Sweeper: $200,000
  - Maintenance: $40,000 x 5 years = $ 325,000
- Total = $1,075,000
- Application Approved January
- Apply for $215,000/year reimbursement as funds accrue

Community Cost-Share
Policy Update

Allocate CCS funds to a project before funds have accumulated in the Member Community's CCS account

1. Submit CCS application for the project to WTL
2. District reviews application for compliance with CCS Policy
3. Execute CCS project agreement with District for allocation of CCS funds
4. Implement project
5. Submit reimbursement request to District for CCS funds
6. Repeat step 5 until the Member Community has requested and received the total amount needed for project



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Title V Requires Phase II Support Services for Certain MCM's

- MCM #1: Public Education and Outreach
- MCM #2: Public Participation and Involvement
- MCM #3: Illicit Discharge Detection and Elimination
- MCM #6: Pollution Prevention/Good Housekeeping for Municipal Operations

Providing Services with Established Providers

- Cuyahoga County Board of Health
  - 48 communities offered services
  - 1 community has declined
- Cuyahoga Soil & Water Conservation District
  - 48 communities offered services
  - 1 community has declined

Title V – SW Mgmt Plan Review

Recurring Issues/Comments

- Lack of detail on SCM outlet structure to guard against “leaks”
  - Ensure wall penetrations, and weir wall inserts/seams are watertight
- SCM inspection & maintenance plans
  - Lack of detail to define dredging needs to maintain function of the SCM
- Considerations to maximize future stormwater fee credits

Title V – SW Mgmt Plan Review

Recurring Issues/Comments

- Incorrect WQv calcs for redevelopment
  - Calculate minimum required WQv for the site as a whole
  - SCMs must be designed for the WQv of its watershed - must meet or exceed the minimum required WQv
- Inaccurate drainage area delineations and curve number interpretations
  - Need to account for offsite run-on


Questions
Highland Park Golf Course Stream Restoration, Highland Hills

What's Next…

- WAC Meetings
  - Lake Erie/Chagrin River: March 13
  - Cuyahoga River – North: March 15
  - Cuyahoga River – South: March 20
  - Rocky River Watershed: March 22

- Next Round in October 2017

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

Questions

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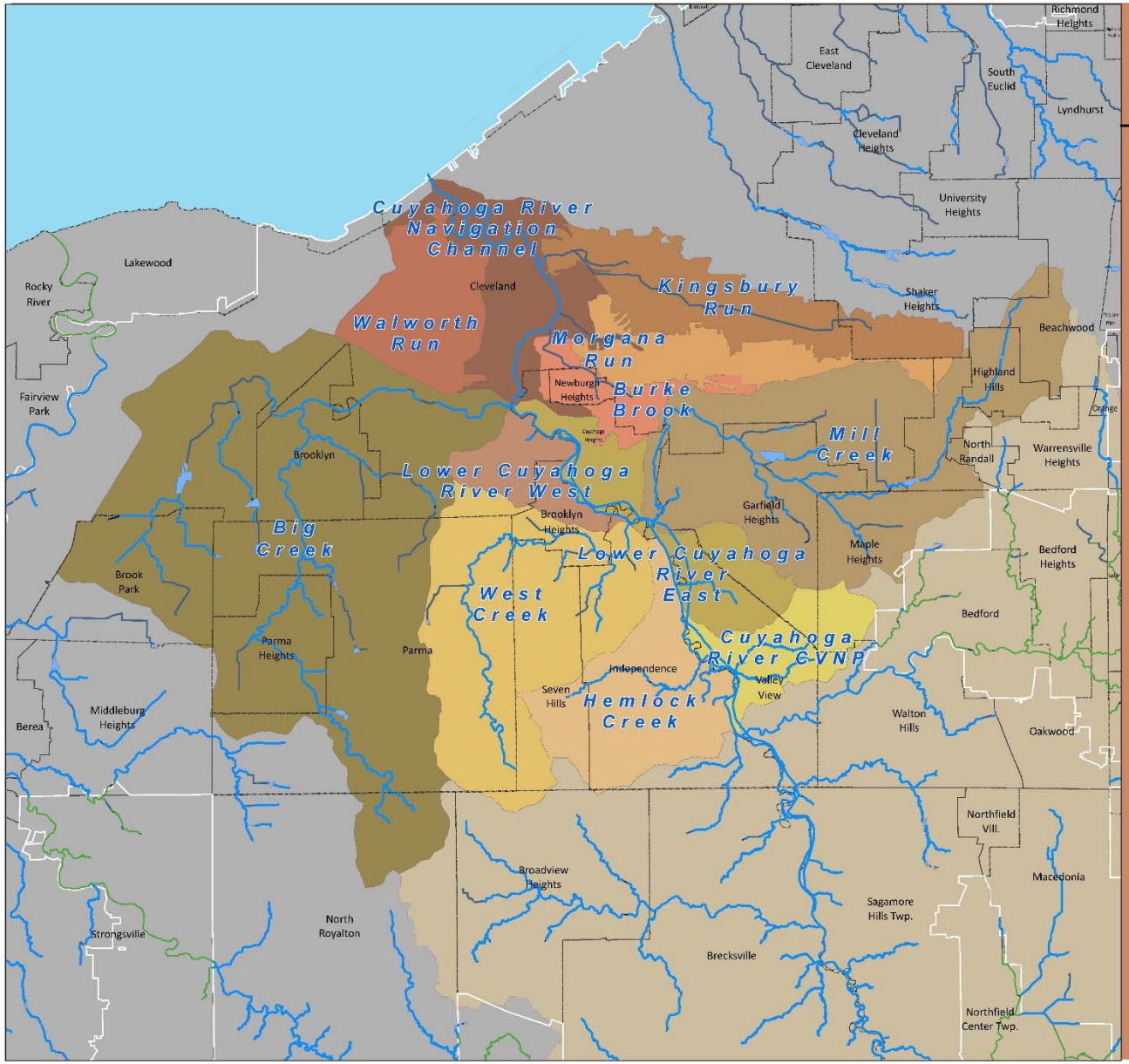
Stormwater Program: Community Resources

http://www.neorsd.org/communitystormwaterresources.php



Cuyahoga River - North

- Regional Stormwater System in NEORSD Service Area
- Regional Stormwater System not in NEORSD Service Area
- Service Area
- Community
- District Culverted Stream

Northeast Ohio Regional Sewer District

Coordinate System : Ohio State Plane North
Datum: NAD 1983 , NAVD 1988
Projection: Lambert Conformal Conic
Sources: NEORSD GIS

Map Created: March 2017 **1:50,524**