

Watershed Advisory Committee

Cuyahoga River South

October 17, 2019

NORTHEAST OHIO REGIONAL SEWER DISTRICT



REGIONAL
STORMWATER
MANAGEMENT
PROGRAM

Agenda

- Sewer District Updates
- Stormwater Master Plan
- Stormwater Inspection and Maintenance
- Stormwater Design & Construction
- Stormwater Nomination Process
- Special Feature – Echo Lane Project

Program Highlights

Frank Greenland, Director of Watershed Programs

Matt Scharver, Deputy Director of Watershed
Programs

Community Cost-Share: 2019

- CCS Funds Balance (9/30/2019) \$25,180,562
- 53 projects w/ executed agreement \$ 8,728,844
- 12 projects w/ agreements in progress \$ 550,771
- 18 approved allocation agreements \$ 9,886,368
- CCS Funds available to Member Comm. \$ 6,014,579

35 of 55 Member Communities currently participating

50 of 55 Member Communities have participated

Community Cost-Share Project Story Map

Community Cost Share StoryMap

A Story Map

Navigate using the tabs below. Select your Community and select the projects for more information!



Community Cost Share

Beachwood

Bedford Heights

Broadview Heights

Brookpark

Brooklyn Heights

Cleveland

Cleveland Metroparks



5 Baldwin Creek Bank Stabilization

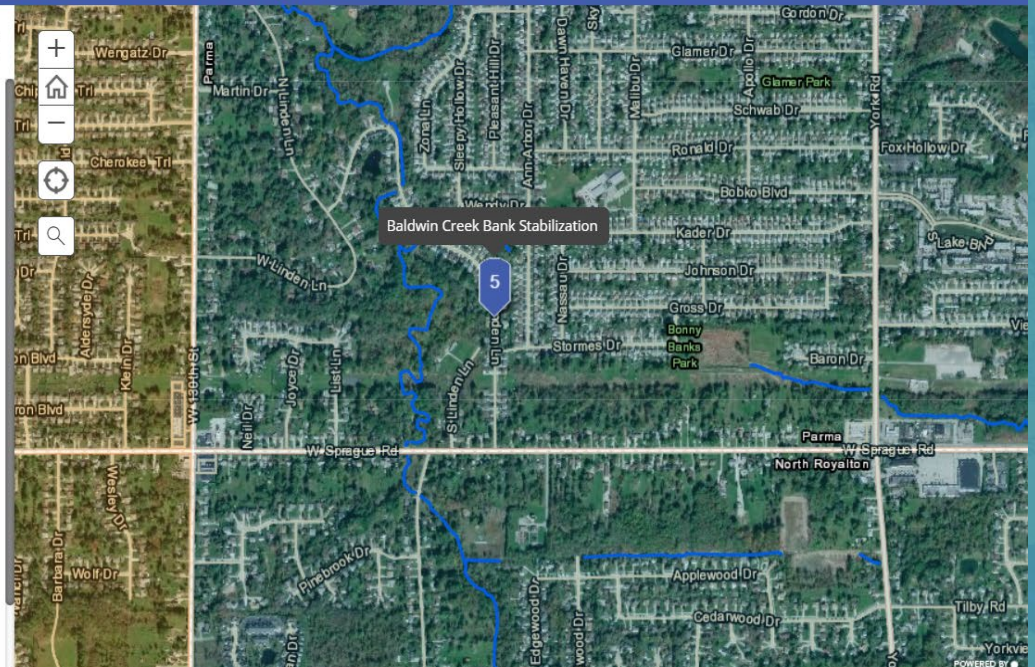


Community: Parma

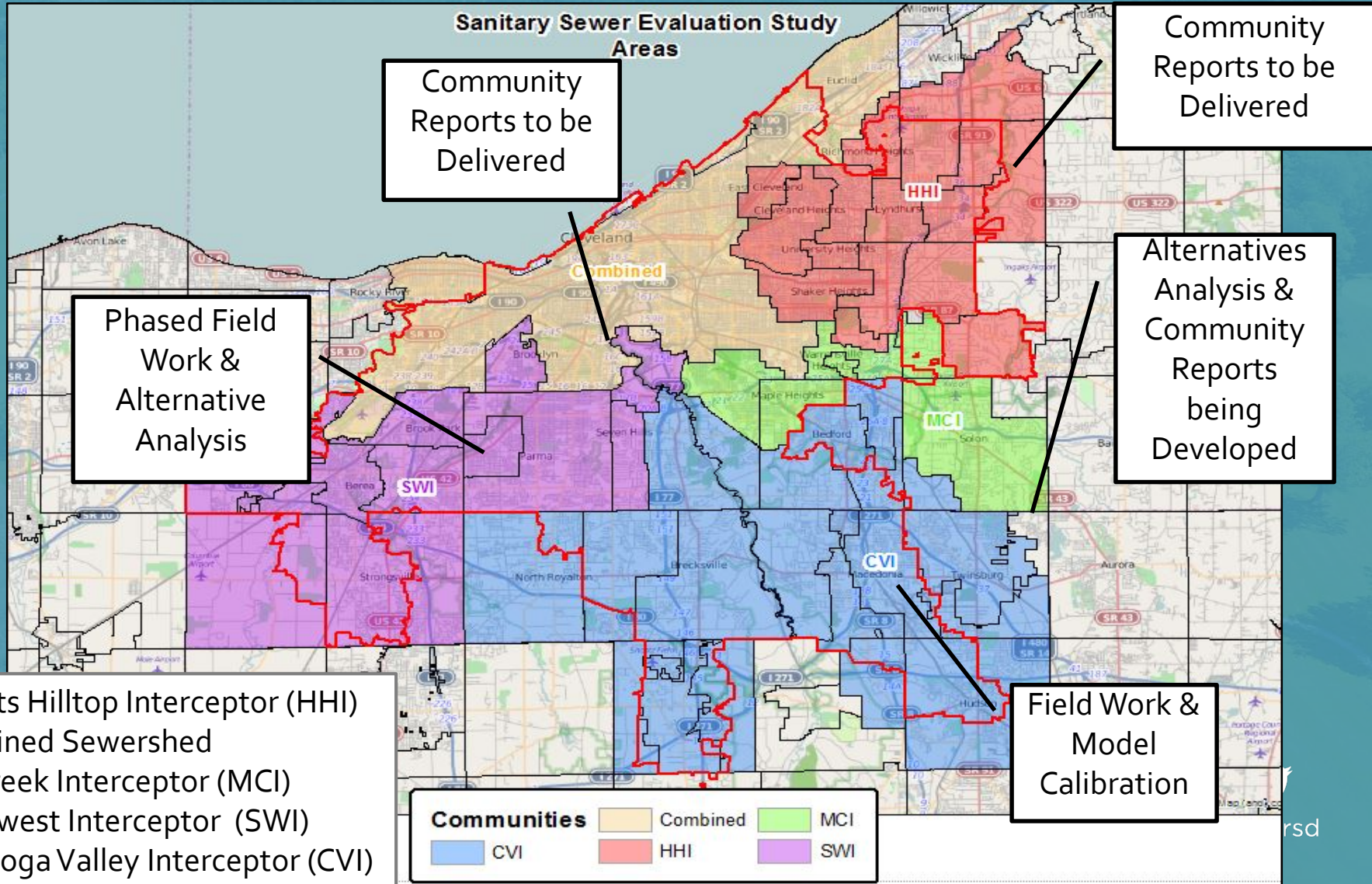
Project start date: 6/1/18.

Project end date: 6/1/19.

Allotted Funds: \$126,098.97



Local Sewer System Evaluation Studies



Member Community Infrastructure Program

- Grant funding for local sanitary sewer rehabilitation targeted at reducing basement backups and human health issues
- LSSES early action project alternatives for the Southwest & Cuyahoga Valley Interceptor Area
- RFP will be released February 6, due on May 11
- MCIP Workshop March 13 (10am – noon) at the Watershed Stewardship Center

Cost-saving Programs

- *Summer Sprinkling*
 - *Average winter consumption*
- *Crisis Assistance*
 - *\$300 sewer credit*
 - *Experienced financial hardship within last 6 months*

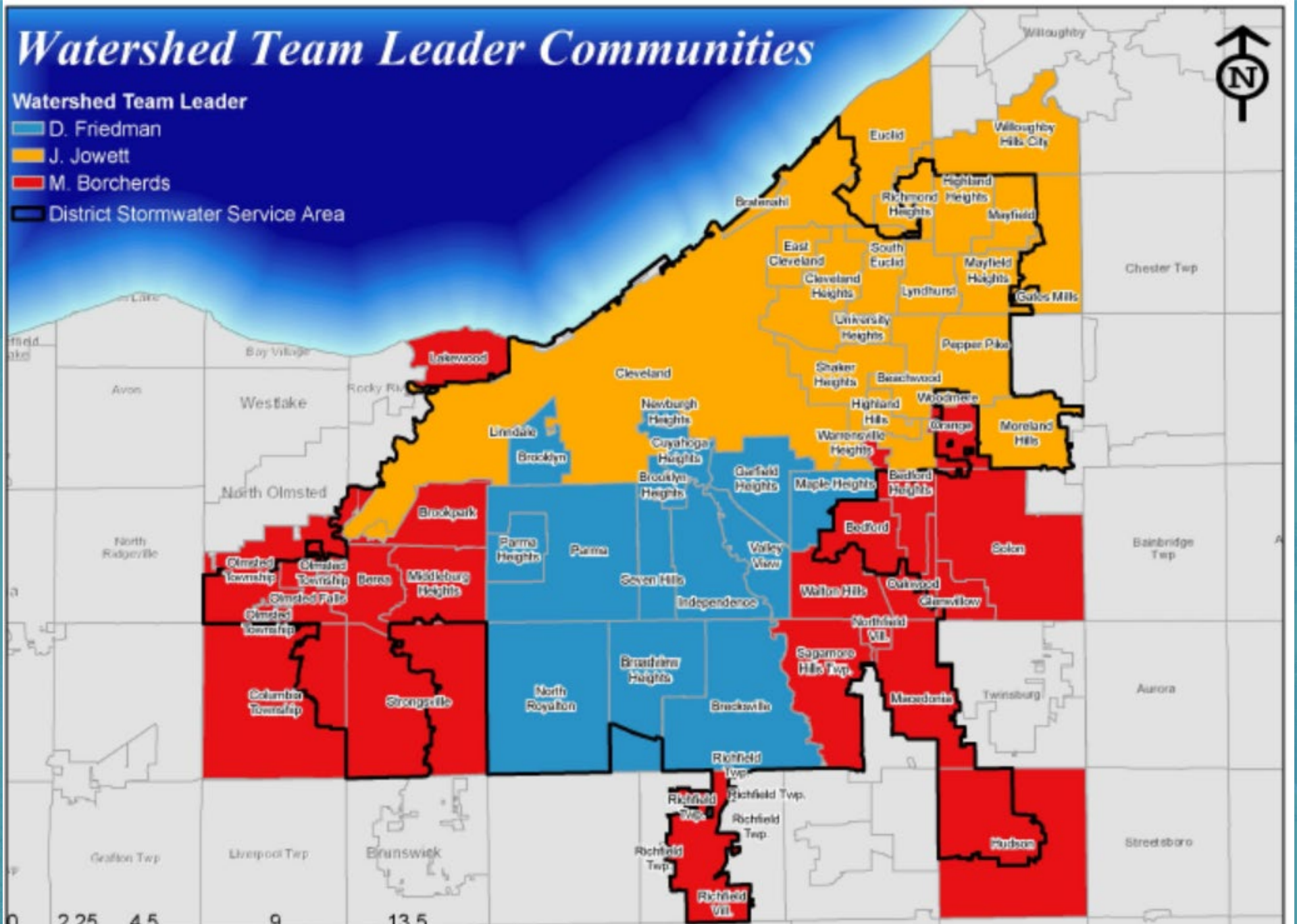
Cost-saving Programs

- *Homestead*
 - 65 and older *or* permanently disabled
 - Household income must not exceed \$33,500
- *Affordability*
 - Annual income is at or below 200% of the poverty level

Watershed Team Leader Communities

Watershed Team Leader

- D. Friedman
- J. Jowett
- M. Borchers
- District Stormwater Service Area



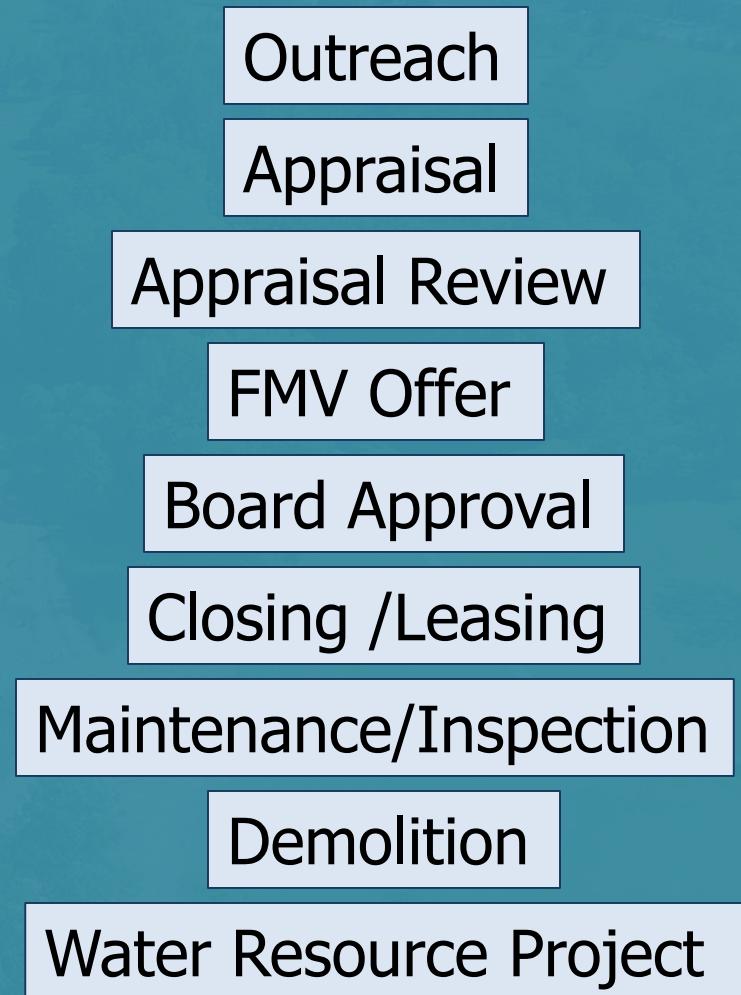
Map Created: September 2017

Water Resource Project Property Acquisition

Program Goals

- Support Design and Construction project needs
- Mitigate the threat of erosion and flooding
- Protect functioning regional stormwater assets
- Leverage acquisition dollars through partnerships

Acquisition Process



Water Resource Project Property Acquisition

Success to date: Threat Mitigation/ Asset Protection

- Flood / Erosion Mitigation: 25 homes
- Stream / Riparian length protected: 1.5 Miles

Success to date: Partnerships

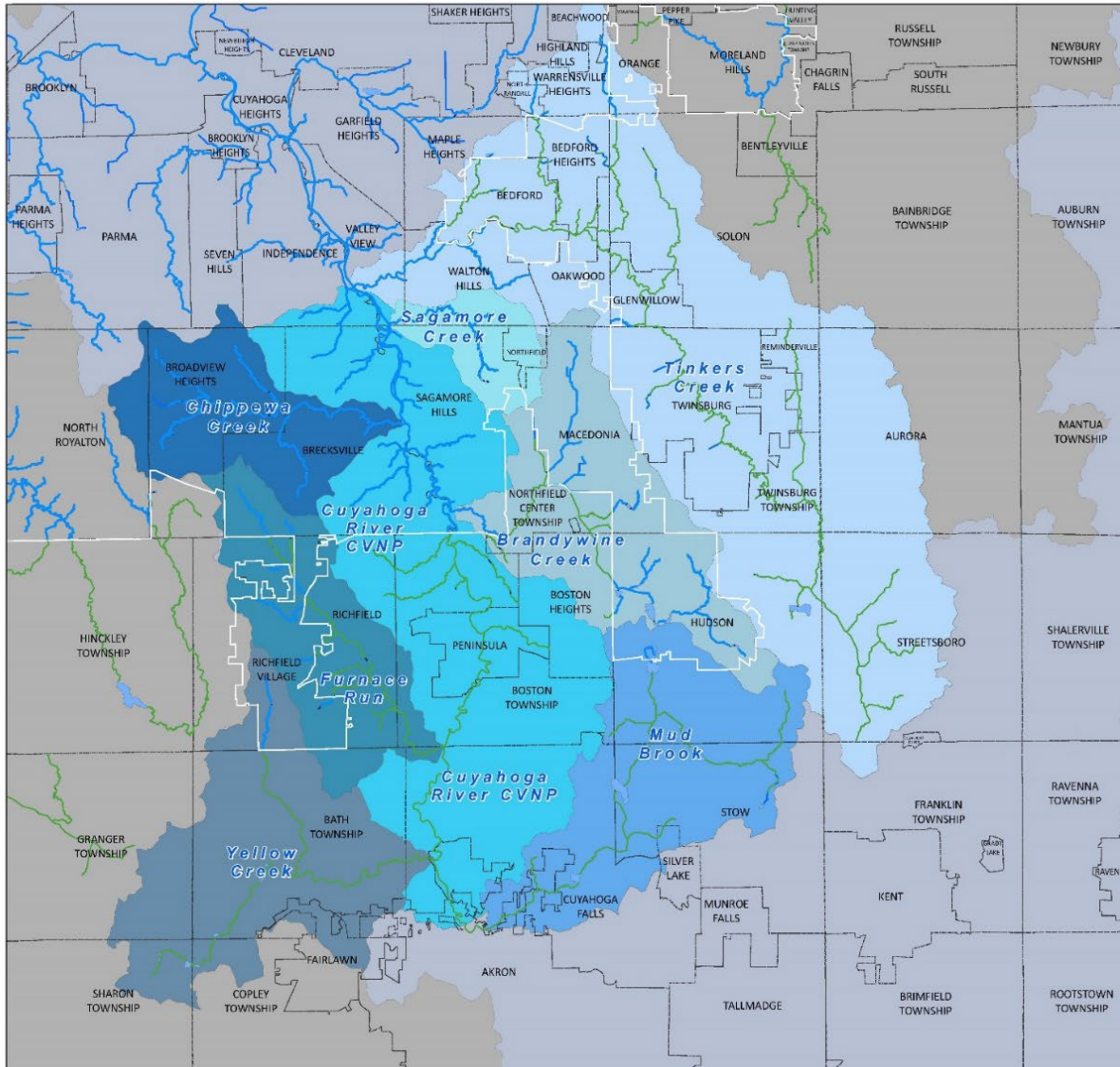
- Flood / Erosion Mitigation: 17 homes
- District Dollars invested: \$518,904.00
- Dollars Leveraged: \$2,742,399.00







Looking forward

- 2020 and 2021
 - 52 Properties contributing to approx. 16 projects

Stormwater Master Plan



Cuyahoga River - South

-  Regional Stormwater System in NEORS D Service Area
-  Regional Stormwater System not in NEORS D Service Area
-  Service Area
-  Community



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

Map Created : October 2017

1:72,379



This information is for display purposes only. The Northeast Ohio Regional Sewer District (NEORS D) makes no warranties, expressed or implied, with respect to the accuracy of and the use of this map for any specific purpose. This map was created to serve as base information for use in Geographic Information Systems (GIS) for a variety of planning and analysis purposes. The NEORS D expressly disclaims any liability that may result from the use of this map. For more information, please contact NEORS D GIS Services, 3900 Euclid Avenue, Cleveland, Ohio 44115 (216) 883-6600 — GIS@neorsd.org

Stormwater Master Planning (status through 9/25/2019)

Cuyahoga River South

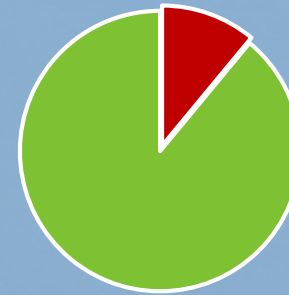
Completion Date: June 2019



100 % Complete

Cuyahoga River North

Completion Date: December 2019



89% Complete

Rocky River

Completion Date: April 2020



74.5% Complete

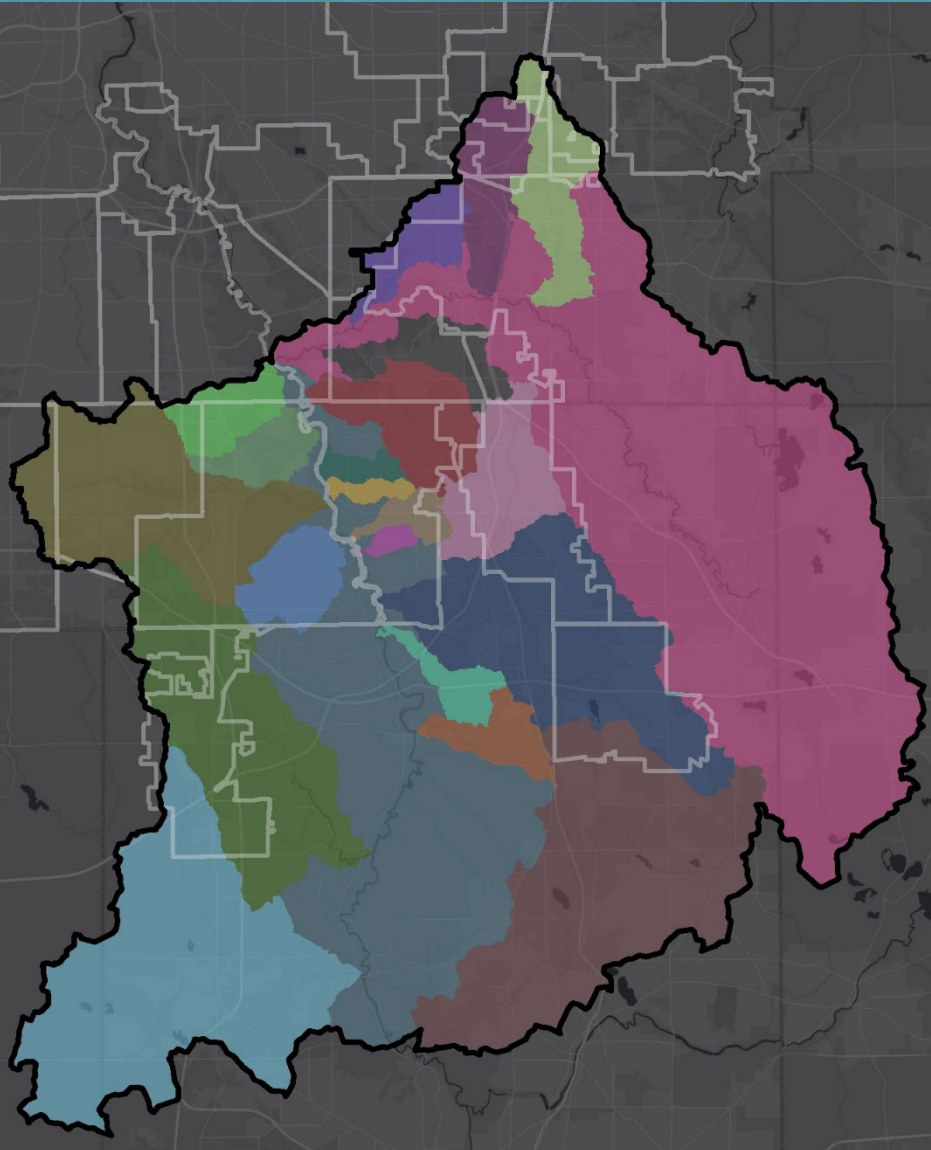
Chagrin River / Lake Erie Tribs

Completion Date: May 2021



34% Complete

Cuyahoga River South SWMP



Total Study Area

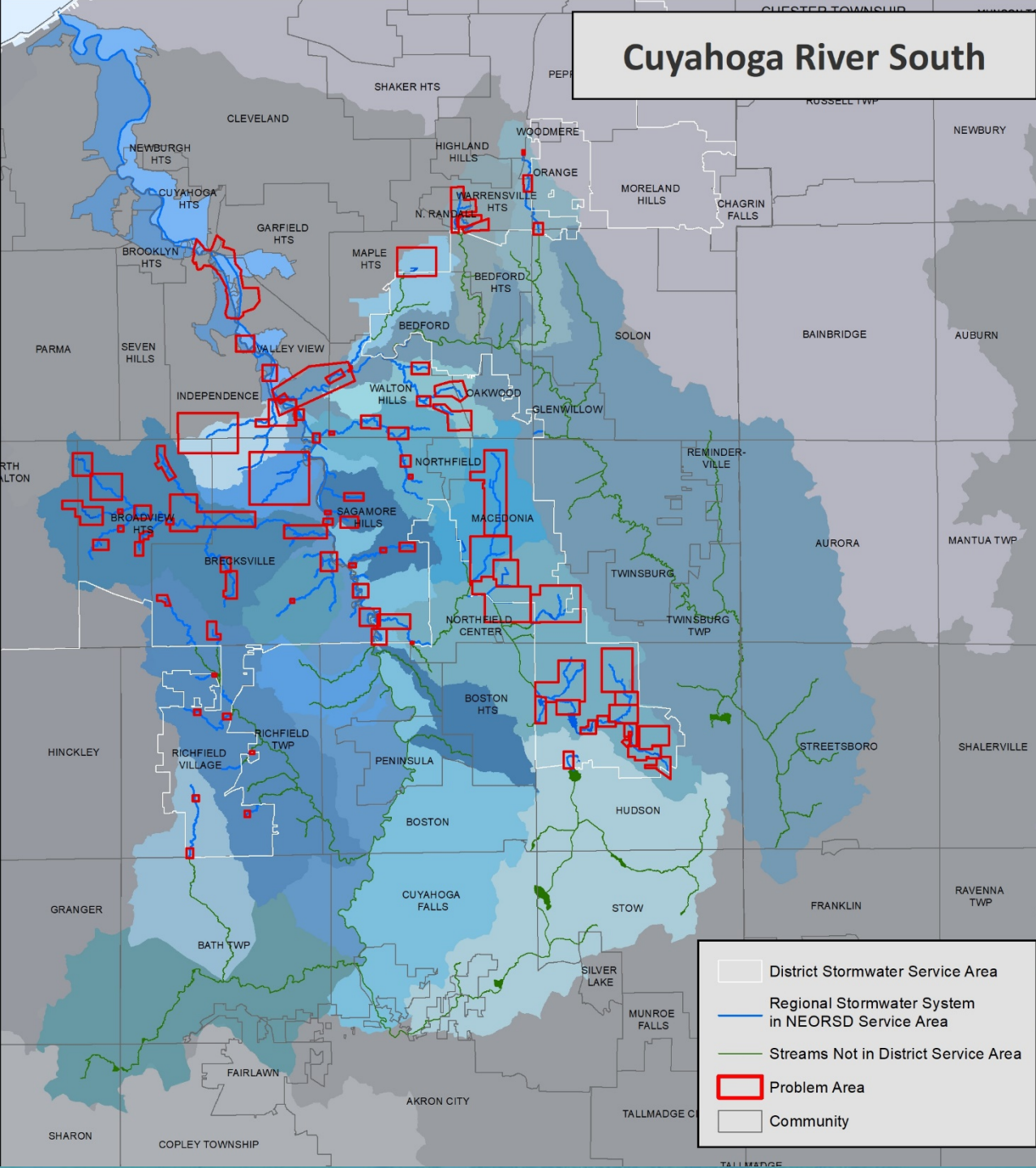
- 184,000 acres
- 9 Subwatersheds in the SWSA
- 24 WAC Member Communities

**Budget: \$5.20 Million
Complete**

Cuyahoga River South

Cuyahoga River South Stormwater Master Plan

80+ Problem Areas with Planning Level Recommendations



Implementing Master Planning Recommendations

Baseline Recommendations (policy recommendations to community, or small bank/channel protection, monitor, or structural repairs):

- Small Scale SWIM Project
- SW Construction Plan Prioritization
- Refer recommendation to owner to implement

Implementing Master Planning Recommendations

System Enhancement

Recommendations (large RSS projects):

- SW Construction Plan prioritization – Problem Area preferred alternative will be:
 - Prioritized and scheduled,
 - Identified for property acquisition,
 - Submitted for advanced planning, or
 - Deferred

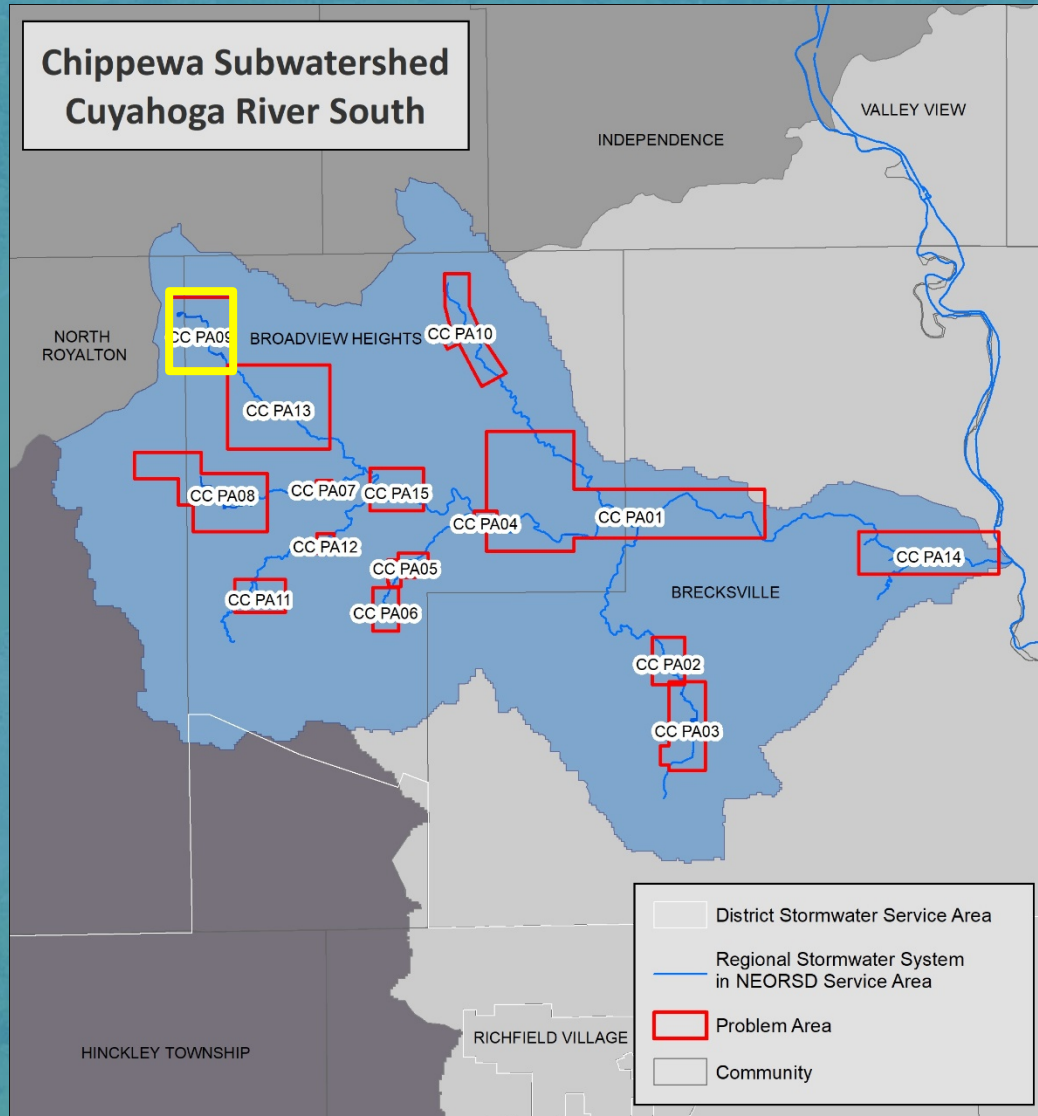
Implementing Master Planning Recommendations

Community Reports:

- Overview of SWMP study
- Planning level recommendations within each community for...
 - Baseline projects
 - System Enhancements

WTLs will deliver reports during a scheduled community meeting

CRS SWMP - First Out Project



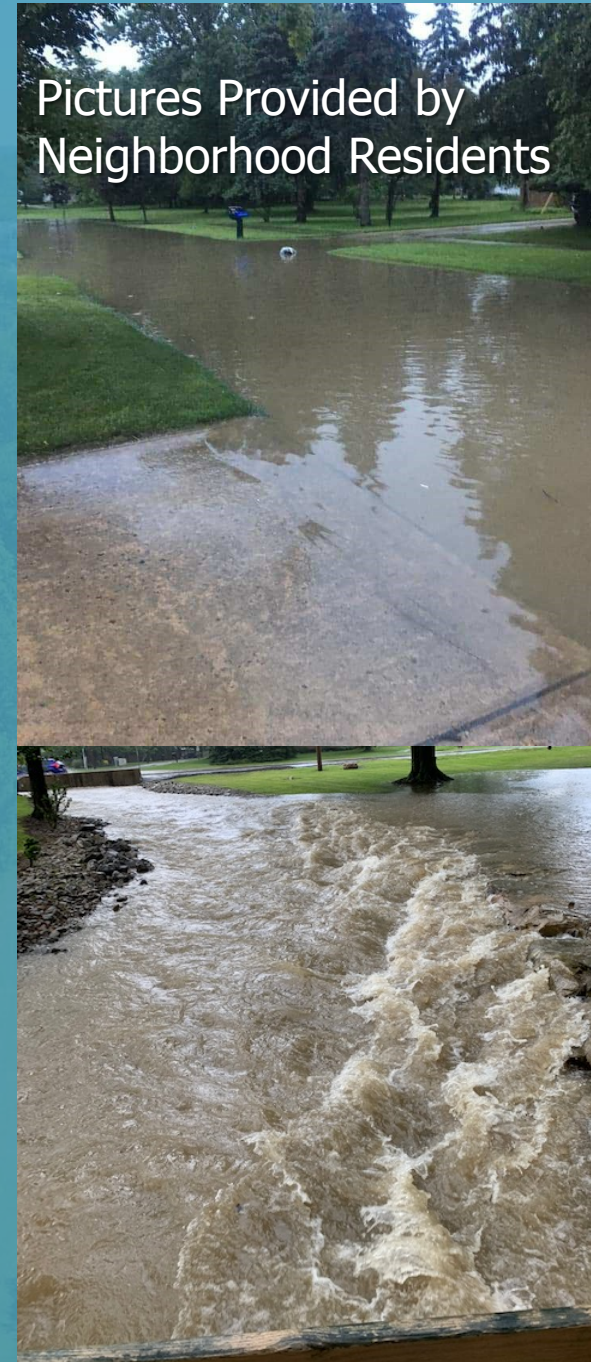
- Chippewa Creek Problem Area CC-PA09
- Echo Lane area on border between North Royalton and Broadview Heights

Chippewa Creek - CC PA09

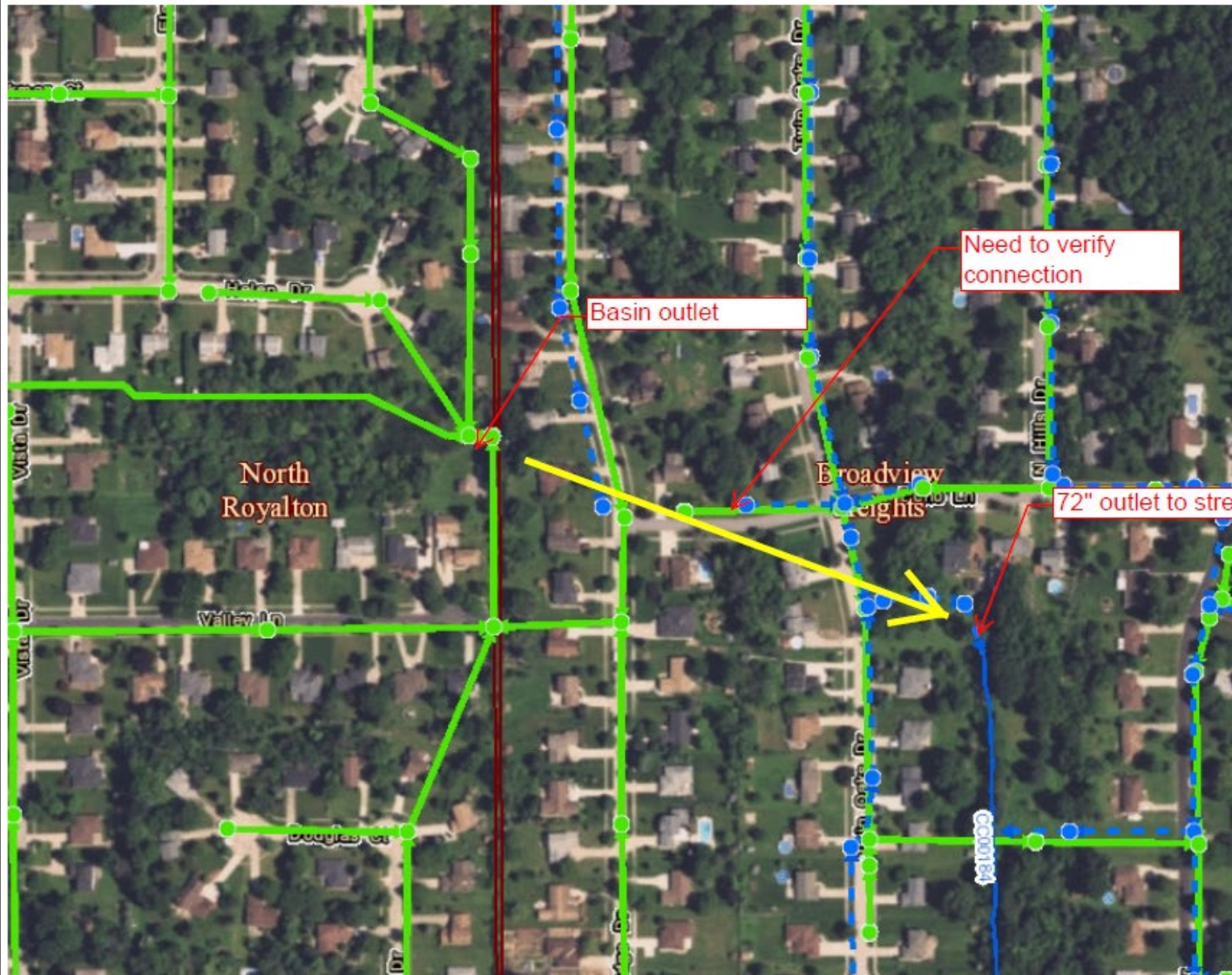
Broadview Heights/North Royalton

- Community request due to repeated flooding – November 2016
- SWIM inspection and recommendation – November 2016: *Determine if should be included in RSS. If yes, refer to SWMP.*

Pictures Provided by
Neighborhood Residents



Basin Inspection- Broadview Heights/North Royalton



Legend

- All Industrial Users
- RSS Artificial Flow Path
- RSS Closed Conduit
- RSS Stream
- RSS Basin
- Local Manhole
- Sludge
- OverUnder
- Combined
- CSO Overflow
- Culverted Stream
- Sanitary
- STORM
- Local Sewer Pipe
- COMBINED
- CSO OVERFLOW
- CULVERTED STREAM
- FORCE
- SANITARY
- SANITARY OVERFLOW
- STORM
- Municipal Boundary

1:4,513



Coordinate System: Ohio State Plane North Feet
Datum: NAD 1983 (NAVD 1988)
Projection: Lambert Conformal Conic

Sources: NEORSD Collection System GIS, Cleveland GIS, Cuyahoga County GIS, Summit County Auditor and DOEB, Lorain County Auditor, Lake County GIS

Map Created: 11/14/2016

Notes

CC00184
1632029.01
ITL #224920

This information is for display purposes only. The Northeast Ohio Regional Sewer District makes no warranties, expressed or implied, with respect to the accuracy of and the use of this map for any specific purpose. This map was created to serve as base information for use in Geographic Information Systems for a variety of planning and analysis purposes. The District expressly disclaims any liability that may result from the use of this map. For more information, please contact: Jeffrey Duke, P.E., GISP (Technical Services) 3900 Euclid Avenue, Cleveland, Ohio 44115 (216-881-6600)

Problem Area

CC PA09

- CRS SWMP reviewed
 - RSS terminus extension - stream drainage area < 300 acres, but inter-community drainage causing flooding
- Problem Area includes:
 - Stormwater basin
 - Two Culverts through private property
 - Flooding impacts to 8 homes and 4 roads



Problem Area

CC PA09

Preferred Alternative:

- A101- Enlarge and deepen the basin
- A102 - 1,200 lf of channel restoration w/connected floodplain
- A103 - Demolish existing culverted stream; create 630 linear feet of channel restoration with connected floodplain



**Northeast Ohio
Regional Sewer District**

Problem to Project Timeline

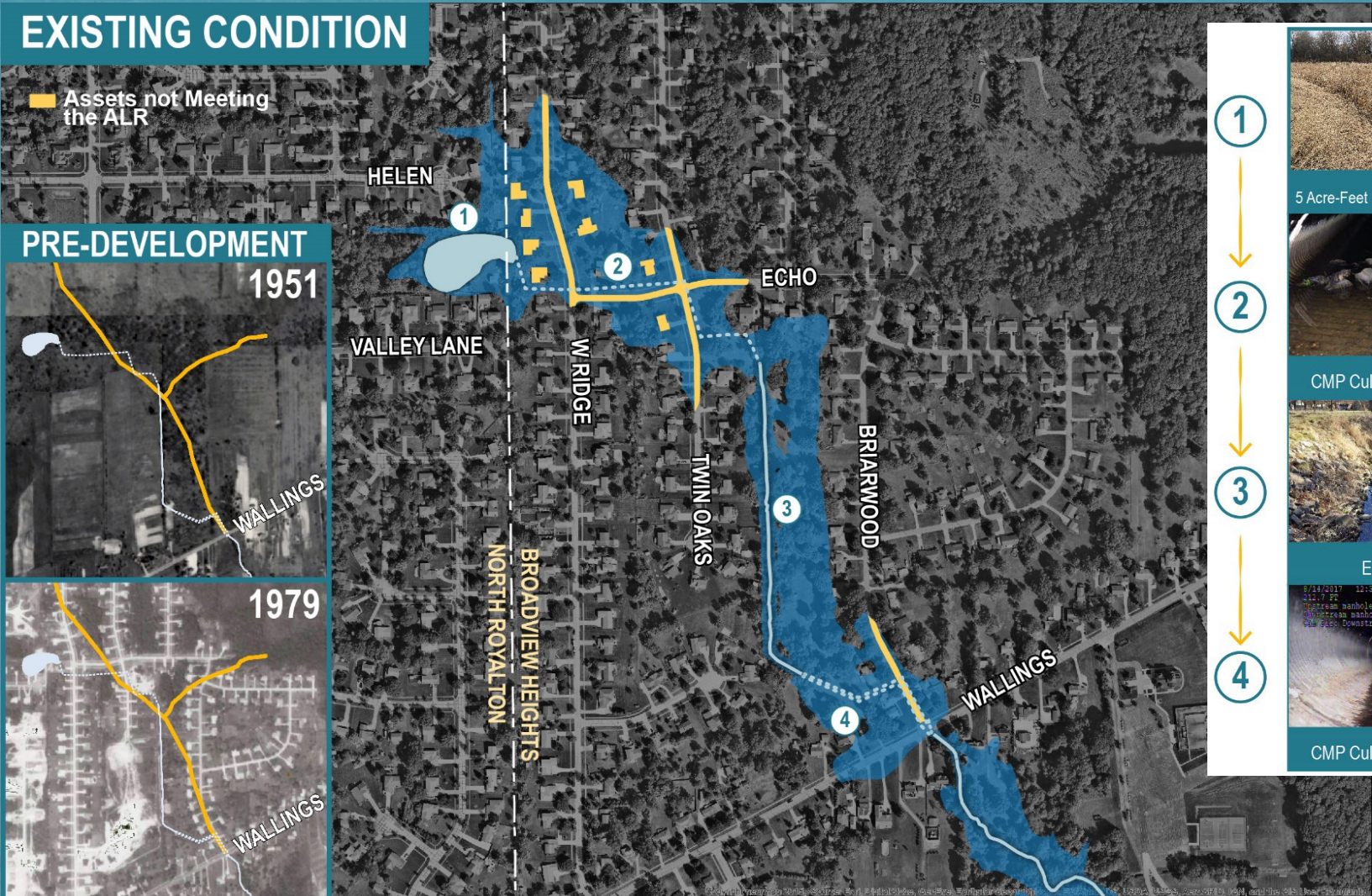
- SW Construction Plan prioritization - *Fall 2018*
- RFP Preparation - *January to March 2019*
- Proposals due - *April 2019*
- Flow monitoring by District began - *July 2019*
- Consultant selected and design started - *September 2019*



Problem Area Components

EXISTING CONDITION

Assets not Meeting the ALR



PRE-DEVELOPMENT

1951



1979



1



CC00231
5 Acre-Feet Detention Basin

2



CC00230
CMP Culverted Stream

3



CC00184
Existing Stream

4

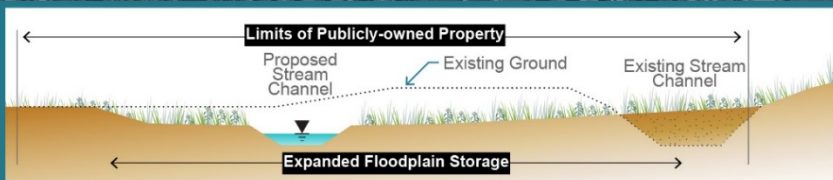
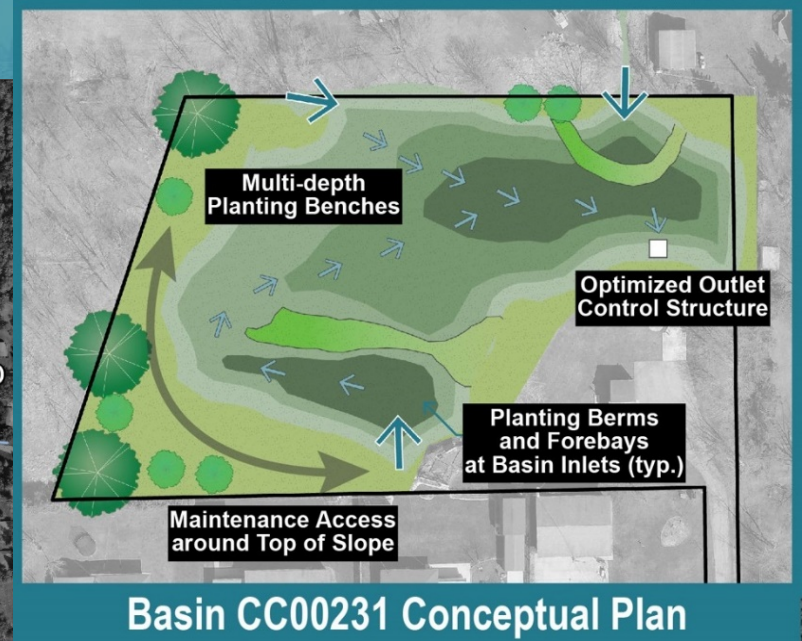


CC00183
CMP Culverted Stream



@neorsd

Proposed Project



Stream CC00184 Conceptual Cross Section Looking Downstream

Project Goals

- Reduce flood risks to residential structures and roads
- Improve hydrology of basin by maintaining baseflow and regulating storm flow
- Increase channel roughness and sinuosity and reconnect channel to floodplain
- Biological and chemical water quality goals to be determined following collection of baseline data by WQIS

Design to Construction Timeline

- Detailed data collection: *September 2019 to February 2020*
- Complete design: *Summer 2021*
- Planned construction: *Late 2021/early 2022*
- Potential to accelerate construction of basin-related project elements

Questions



**Northeast Ohio
Regional Sewer District**



@neorsd

SWIM Update



State of the Infrastructure: Stream Cuyahoga River South: Chippewa Creek

Asset ID: CC00084

Broadview Heights: South of Wallings Rd.

Stream Structural BRE=12

BTU Structural BRE=16



State of the Infrastructure: Crossing Cuyahoga River South: Chippewa Creek

Asset ID: CC00055

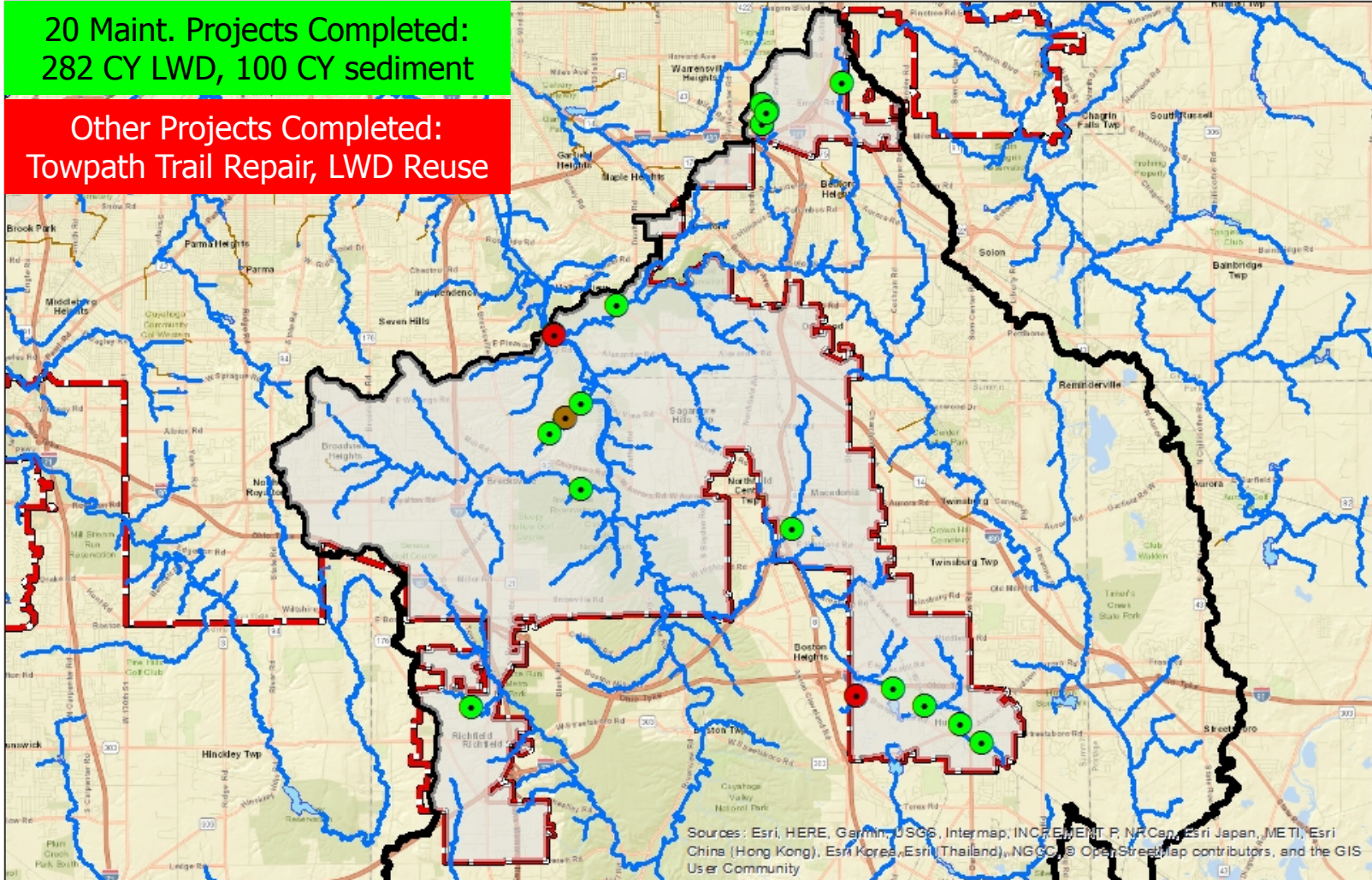
Brecksville: Highland Drive

Structural BRE=24



20 Maint. Projects Completed:
 282 CY LWD, 100 CY sediment

Other Projects Completed:
 Towpath Trail Repair, LWD Reuse



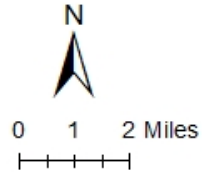
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGIS, © OpenStreetMap contributors, and the GIS User Community

Date: 10/2/2019

Cuyahoga River South
 Maintenance Projects
 Along the Regional Stormwater System
 20 Completed Projects

- Stream
- Culverted Stream
- Crossing
- Basin
- Major Structure

- Maintenance Type**
- Debris Removal - 282 cubic yards
 - Other
 - Sediment Removal - 100 cubic yards
 - WAC Watershed
 - District Stormwater Service Area



State of the Infrastructure: Maintenance

Ohio & Erie Canal

Asset ID: CE00035

Valley View: Canal Road at Tinkers Creek

Structural BRE= 15



Debris Maintenance: Small Tribs. Southwest Cuyahoga River

Asset #: CW00012

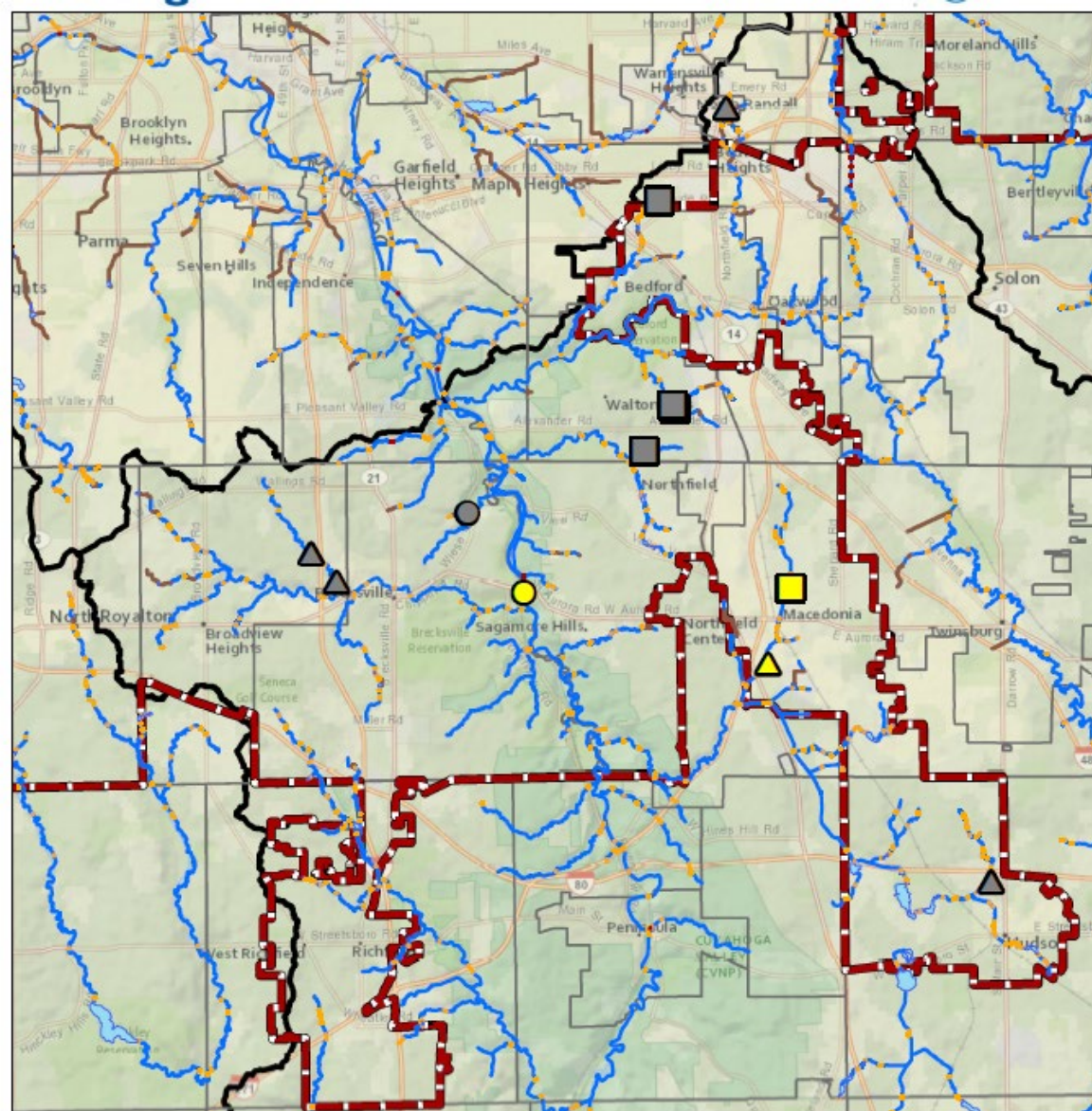
Brecksville: Settlers Passage

Debris BRE=18



SWIM Small-Scale Projects

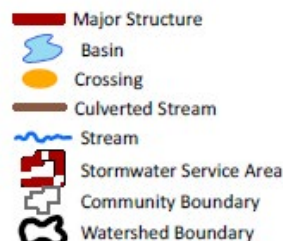
- 3 Projects Completed
 - Macedonia
 - Sagamore Hills
 - Macedonia
- 9 Projects Approved
- Several projects will be nominated later this year



Cuyahoga River South 2019 Small-Scale Projects

Map Created 10/01/2019

	Project Type	Completed	Approved
●	Dredging	1	1
▲	Streambank Stabilization	1	4
■	Structural	1	4
	Total	3	9



July 5th Storm Response Summary

Rainfall Stats

	Peak 5min	Peak 10min	Peak 15min	Peak 30-min	Peak 1-hr	Peak 2-hr	Peak 5min	Peak 10min	Peak 15min	Peak 30min	Peak 1-hr	Peak 2-hr
Rain Gage	in	in	in	in	in	in	in	in	in	in	in	in
SWI-RG03	0.18	0.28	0.33	0.54	0.98	1.04	4-mo	3-mo	2-mo	4-mo	1-yr	6-mo
SWI-RG06	0.16	0.25	0.31	0.45	0.47	0.51	3-mo	2-mo	2-mo	2-mo	<2-mo	
SWI-RG08	0.54	0.94	1.33	1.93	2.86	3.22	25-yr	25-yr	25-yr	50-yr	100-yr	50-yr
SWI-RG10	0.19	0.27	0.33	0.47	0.53	0.53	6-mo	2-mo	2-mo	2-mo	2-mo	
SWI-RG11	0.26	0.5	0.72	1.16	1.38	1.38	1-yr	1-yr	2-yr	5-yr	2-yr	1-yr
SWI-RG12	0.37	0.66	0.83	1.3	1.73	2.1	5-yr	5-yr	2-yr	5-yr	10-yr	10-yr
SWI-RG14	0.16	0.3	0.45	0.71	0.81	0.94	3-mo	4-mo	6-mo	9-mo	6-mo	4-mo
Brook Park	0.15	0.25	0.34	0.4	0.4	0.4	3-mo	2-mo	2-mo			
Mayfield Heights	0.13	0.21	0.28	0.35	0.44	0.44	2-mo					
Moreland Hills	0.16	0.29	0.35	0.39	0.41	0.41	3-mo	3-mo	3-mo			
North Royalton	0.36	0.68	0.99	1.55	1.72	2.29	2-yr	5-yr	10-yr	10-yr	10-yr	10-yr
Parma	0.35	0.59	0.79	1.34	1.63	1.64	2-yr	2-yr	2-yr	10-yr	5-yr	2-yr
Richfield	0.16	0.24	0.28	0.31	0.35	0.37	3-mo	2-mo				
Shaker Heights	0.2	0.28	0.31	0.56	0.79	0.8	6-mo	3-mo	2-mo	4-mo	6-mo	3-mo
South Euclid	0.23	0.43	0.48	0.56	0.57	0.57	9-mo	1-yr	6-mo	4-mo	2-mo	
Strongsville Foltz	0.17	0.31	0.4	0.51	0.58	0.58	4-mo	4-mo	4-mo	3-mo	2-mo	

July 5th Storm Response Summary

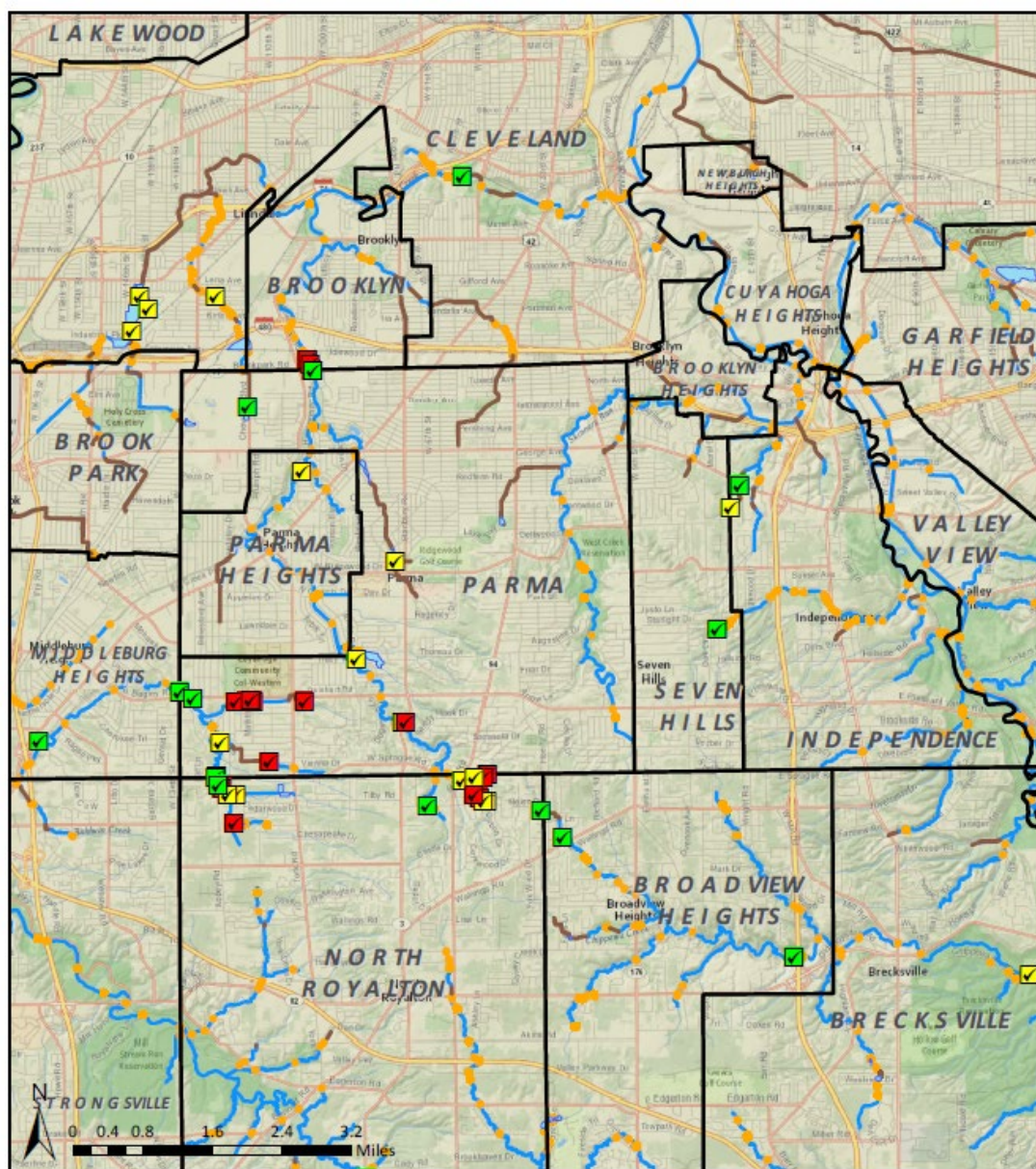
Rainfall Figure



Resident's house looking east on Ridge Road

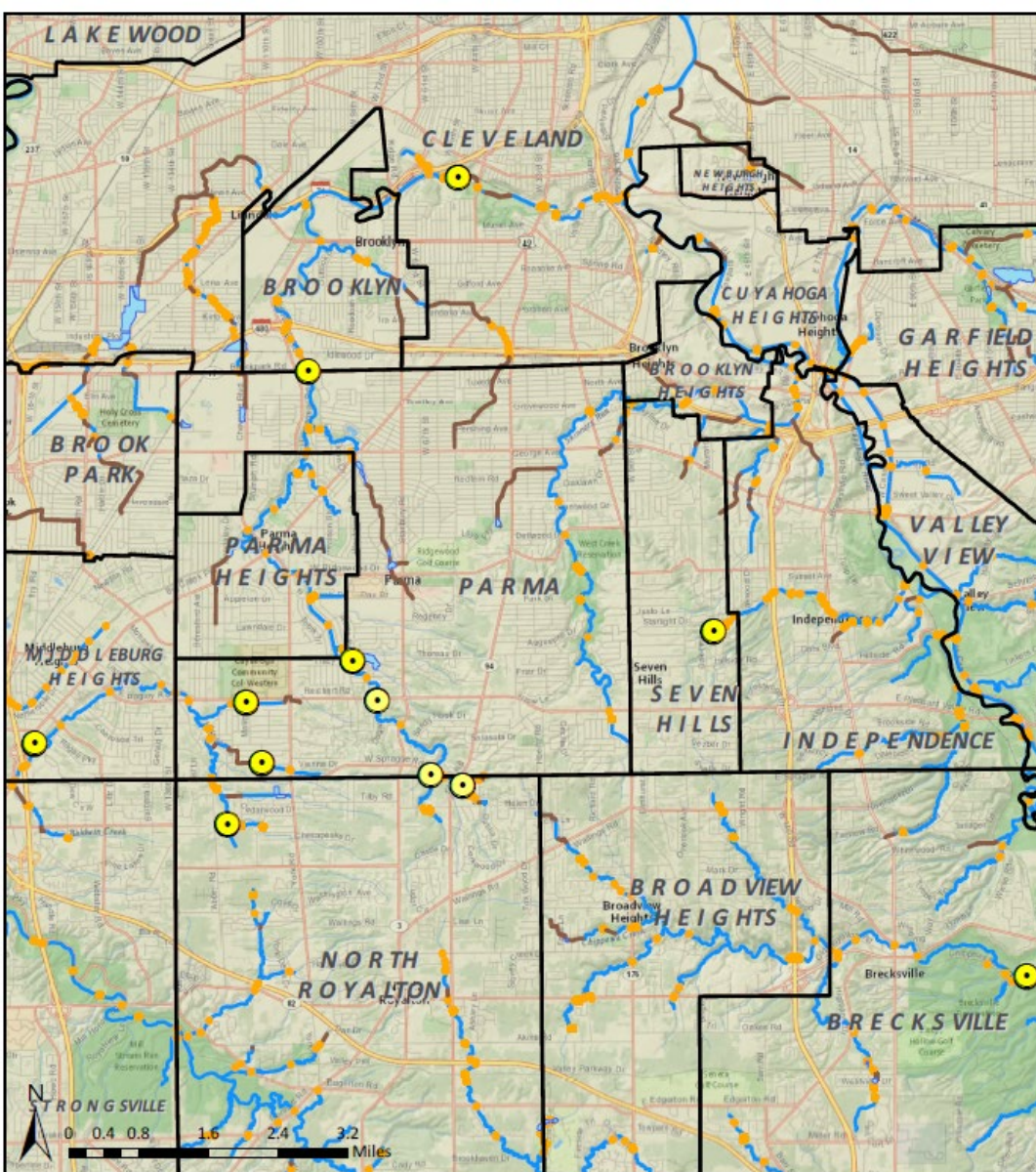
July 5th Storm Response Inspection Summary

- 51 Sites field visited
- 22 sites flooded
- Hardest hit areas were near RGs with peak rainfall



July 5th Storm Response Maintenance Summary

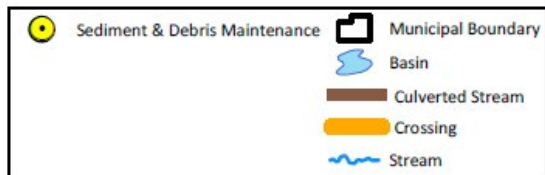
- 12 sites with sediment or debris maintenance
- 362 CY removed



July 5, 2019 Rain Event
Regional SWIM Maintenance

Map Created: October 08, 2019

 Northeast Ohio
Regional Sewer District



State of the Infrastructure Structural Integrity

ASSET CLASS TYPE	RSS COUNT	Condition Score Count	Percent Inspected	Report Card Grade (Avg Structural Condition)	Assets with Structural Condition 4 or 5	Assets with Structural BRE > 19
SWSA	2,873	2,231	78%	B-	450	267
Stream	1469	912	62%	B-	217	0
Crossing	1084	1062	98%	B-	143	168
Culverted Stream	208	151	73%	C	68	74
Basin	96	93	97%	B-	20	23
Major Structure	16	13	81%	B-	2	2

State of the Infrastructure Structural Integrity

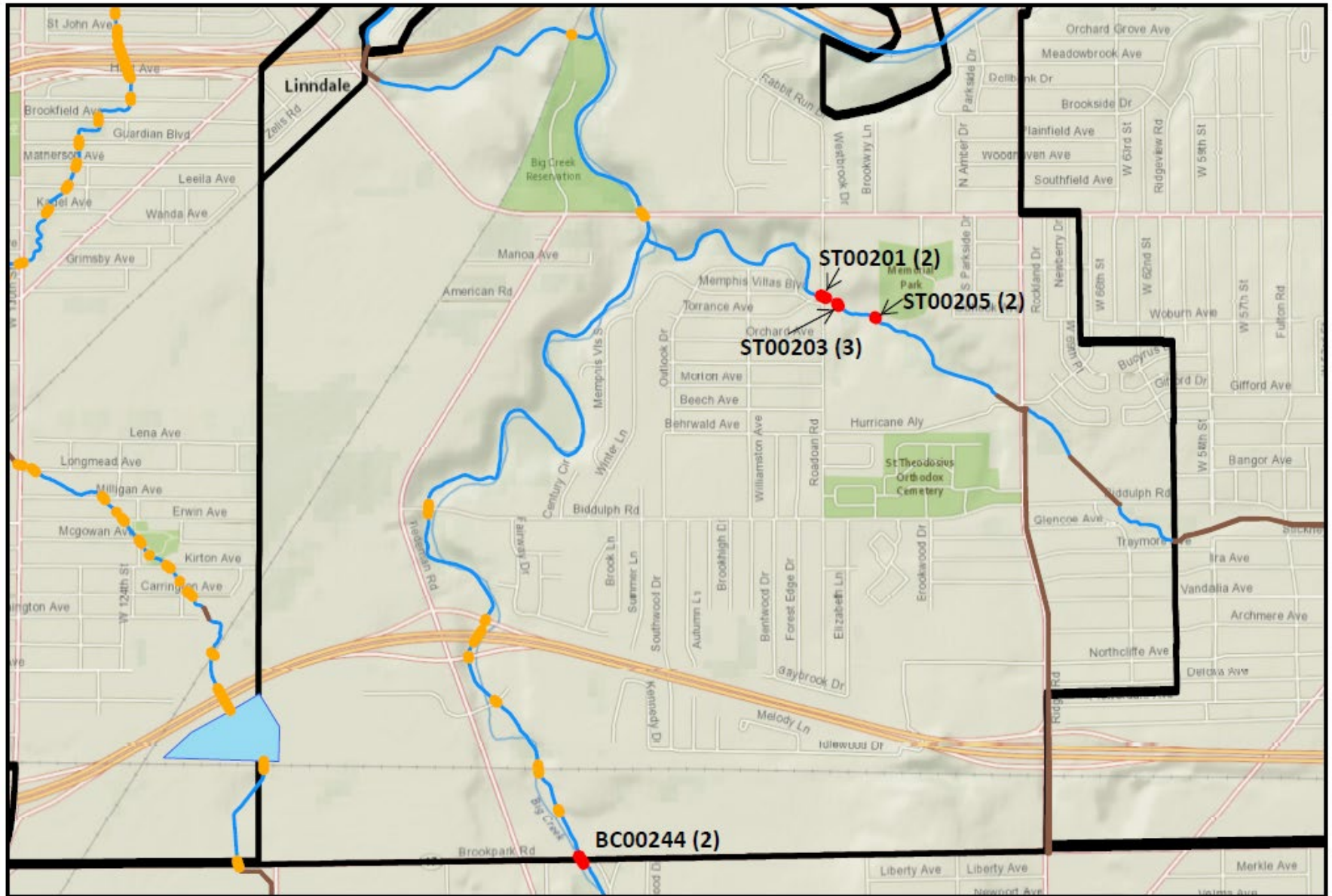
ASSET CLASS TYPE	RSS COUNT	Condition Score Count	Percent Inspected	Report Card Grade (Avg Structural Condition)	Assets with Structural Condition 4 or 5	Assets with Structural BRE > 19
CRS	719	536	75%	C+	133	85
Stream	385	215	56%	B-	62	0
Crossing	286	276	97%	C+	56	70
Culverted Stream	25	24	96%	C	12	11
Basin	21	21	100%	C+	3	4
Major Structure	2	0	0%	0	0	0

Community Crossing Meeting

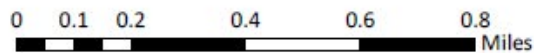
Meeting Objectives:

- Review SWIM's Structural Condition Assessment
- Confirm Community's Ownership or Maintenance Responsibilities
- Discuss Crossings and Recommended Repairs
- Understand Community's Schedule to Address Known issues
- Discuss Potential Next Steps

Brooklyn Responsible Party Crossings: Structural Condition Scores



Map Created: 09/10/2019



- Brooklyn Responsible Party Crossings (4)
- Other Responsible Party Crossings (10)

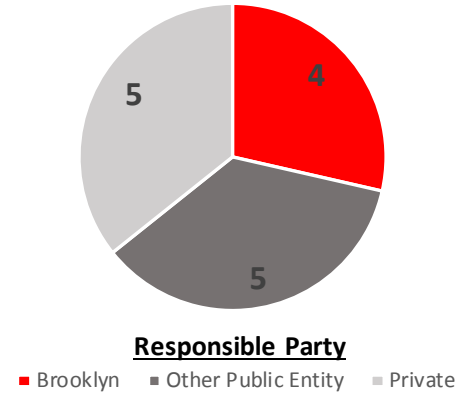
- Basin
- Culverted Stream
- Stream

- Municipal Boundary



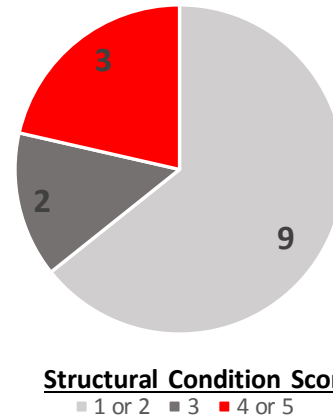
Responsible Party	Crossing Count
Brooklyn	4
ODOT	3
Public (Cuyahoga County)	2
Private (Railroad)	3
Private (Commercial)	2
Total	14

Crossing Count by Responsible Party



Structural Score	Crossing Count
1 or 2	9
3	2
4 or 5	3
Total	14

Crossing Count by Structural Condition Score



Brooklyn Crossings (4s & 5s)	
Asset ID	Steet
NONE	

Stormwater Design and Construction Program

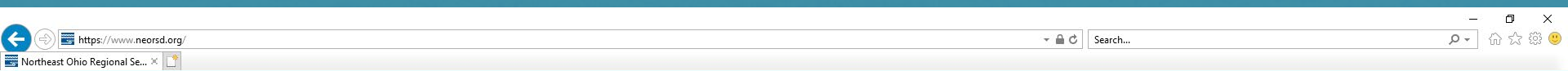


**Northeast Ohio
Regional Sewer District**



@neorsd

Stormwater Storymap



NOTICE: Southerly Electrical Infrastructure I

Doing business with us ▸

Industrial Customers ▸

Engineering & Construction

Plan Review

Procurement

Register as a New Vendor /
iSupplier Login

Bids and Proposals: Active,
Closed, and Awarded

Business Opportunity Program:
Get certified

Event Calendar

GovDeals Surplus Items

Capital Improvement Plan

Stormwater Construction
Program

Opportunity Corridor on-site
stormwater management
strategy report

*qualify for a lower
? We can help.*

ograms

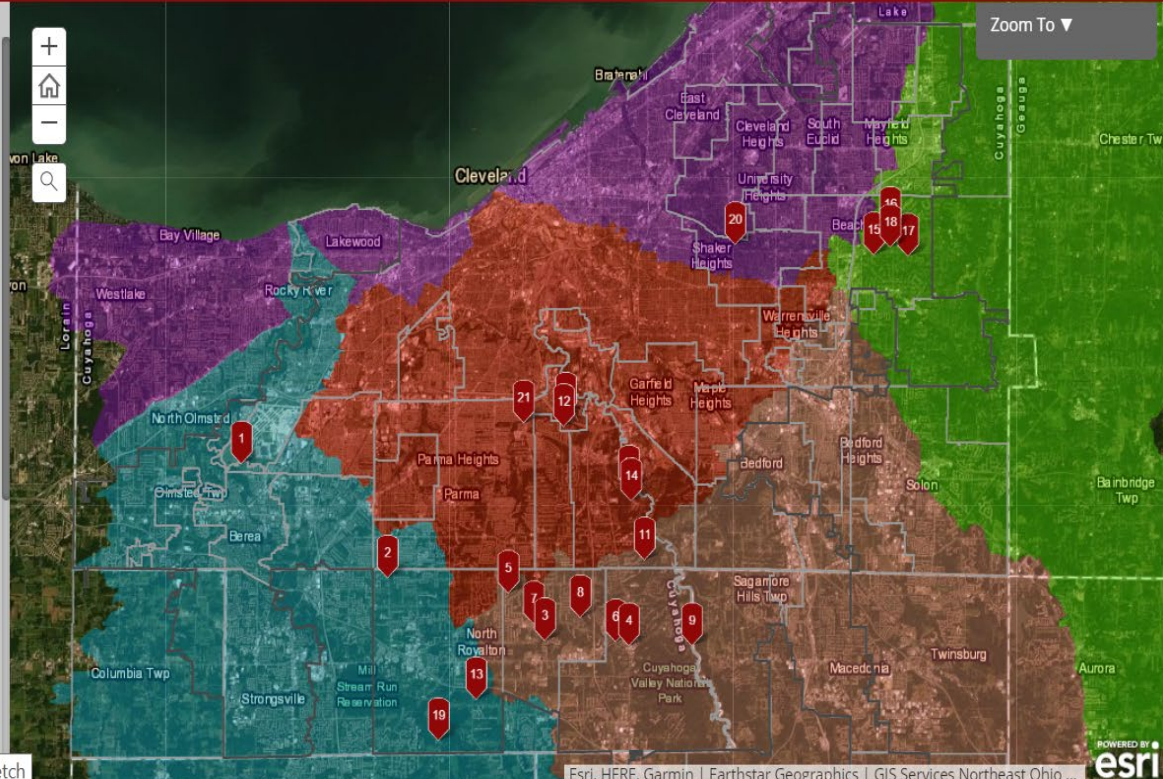
NEORSD Stormwater Design & Construction Program

Navigate using the tabs below and by clicking the images to view more details on our completed, current design, and current construction stormwater projects. Zoom in to view satellite imagery and Regional Stormwater System features (e.g. streams, culverts, conduits, etc). Use the "Zoom To" drop down menu to locate your watershed.



- All Projects
- Design**
- Construction
- Complete

 1 Abram Creek Trash Rack Repair	 2 Baldwin Creek Stabilization Near Abb...	 3 Chippewa Creek Bank Erosion Near HOA...	 4 Chippewa Creek Bank Stabilization at Route 21
 5 Chippewa Creek Flood Reduction Near Echo...	 6 Chippewa Creek Stabilization at...	 7 Chippewa Creek Stream Stabilization Near...	 8 Chippewa Creek Stream Stabilization Near...
 9 Cuyahoga River Bank Stabilization Brecksville	 10 Cuyahoga River Bank Stabilization at Railway...	 11 Cuyahoga River Tributary Bank...	 12 Debris Racks and Access Road Improvements in...










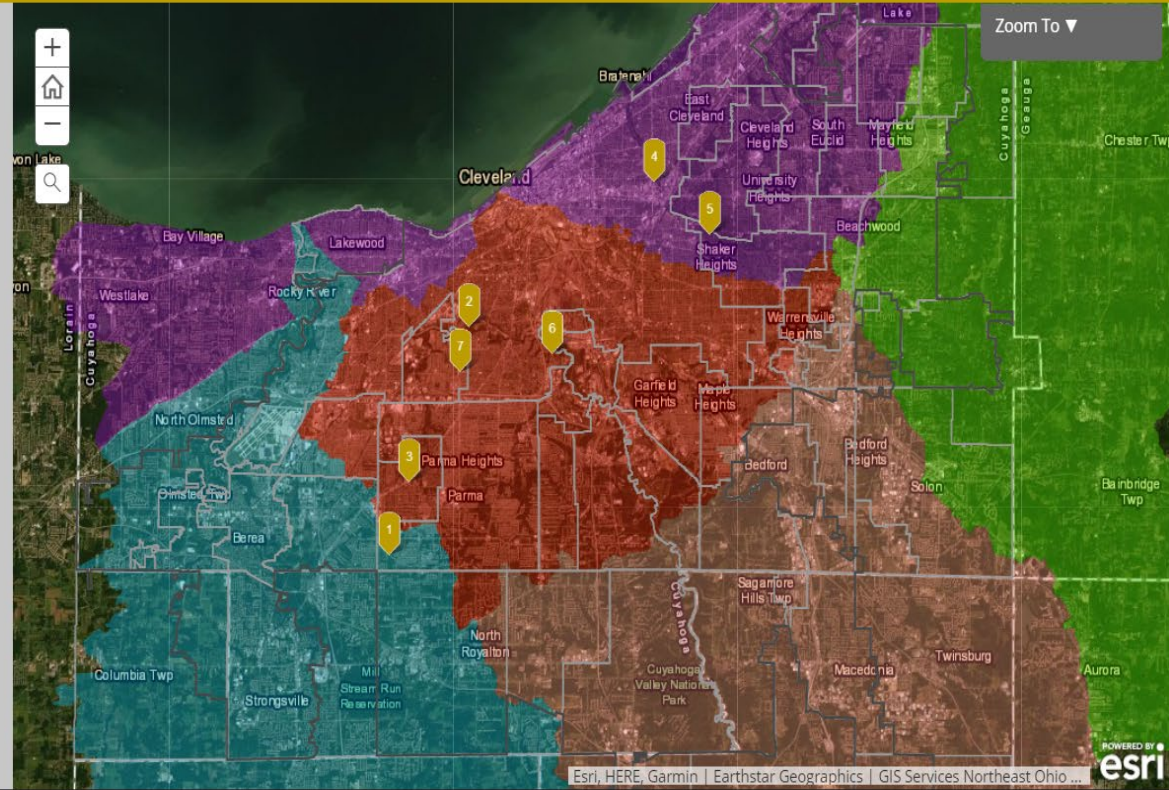
NEORSD Stormwater Design & Construction Program

Navigate using the tabs below and by clicking the images to view more details on our completed, current design, and current construction stormwater projects. Zoom in to view satellite imagery and Regional Stormwater System features (e.g. streams, culverts, conduits, etc). Use the "Zoom To" drop down menu to locate your watershed.



- All Projects
- Design
- Construction
- Complete

 1 Baldwin Creek Bank Stabilization at East...	 2 Big Creek Stabilization	 3 Colombo Park Stream Restoration	 4 Doan Brook Stream Bank Stabilization
 5 Shaker Lakes Dam Rehabilitation Phase I...	 6 Spring Creek Culvert Rehabilitation	 7 Stickney Creek Restoration and Utility...	



Design



Chippewa Creek – Stabilization near Condominiums

Goals:

- Arrest bank erosion to protect assets
- Improve stream function
- Expand floodplain on left bank

Current Design Phase:

90% Design

Est. Construction Cost:
\$1,230,000

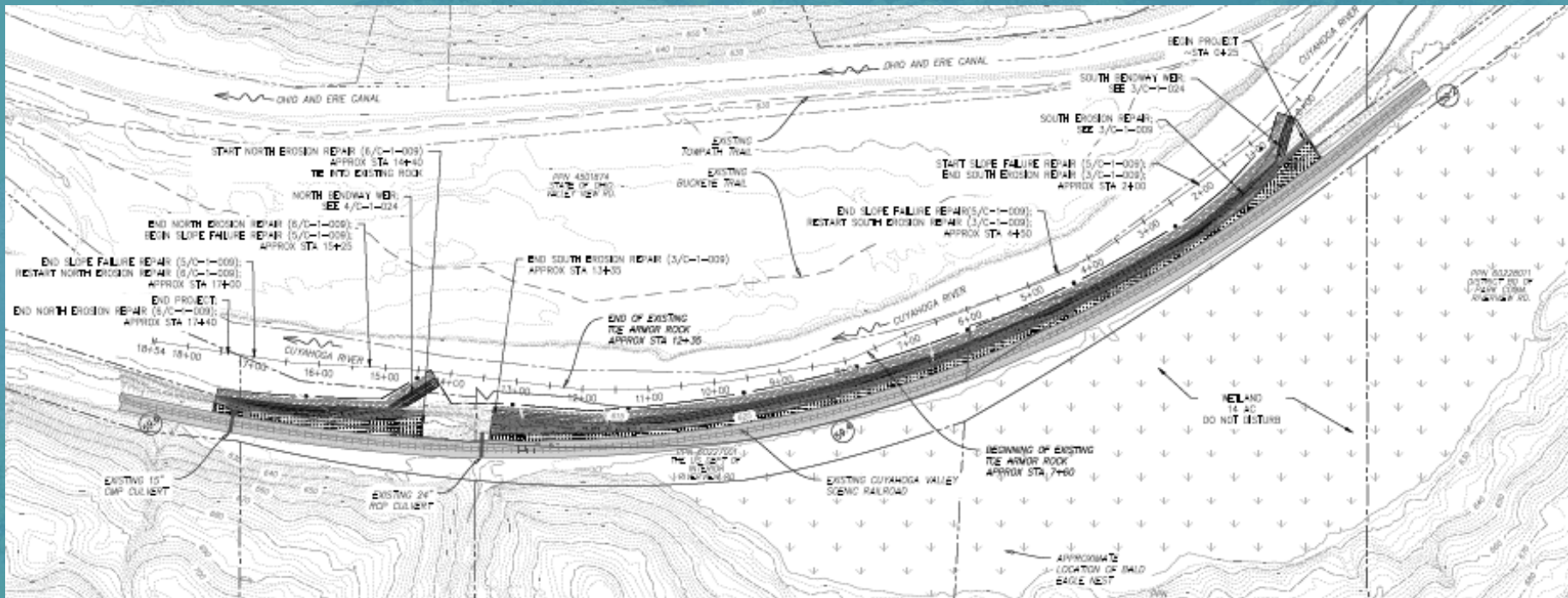


Cuyahoga River – Stabilization in Brecksville

Goals:

- Stabilize left riverbank along CVSR
- Reduce sediment loading

Current Design Phase:
50% Design
Est. Construction Cost:
\$1,650,000



Chippewa Creek – Restoration near Broadview Road

Goals:

- Stabilize stream banks
- Improve stream function
- Upsize existing crossing
- Protect transportation & utility assets

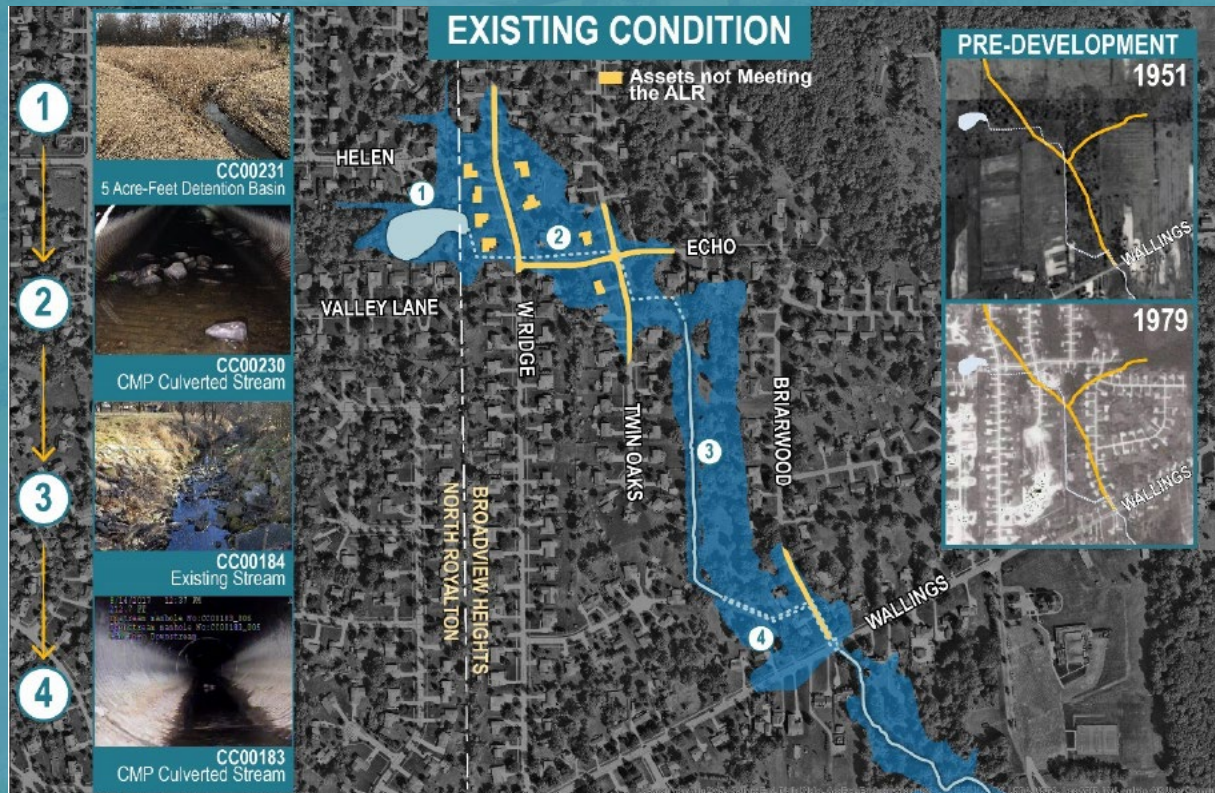
Current Design Phase:
Pre-Design

Est. Construction
Cost: \$1,162,000



Chippewa Creek – Flood Reduction near Echo Lane

To be discussed later as Feature Project



Pepper Luce at Shaker Blvd Culvert Deterioration

Goals:

- Alleviate flooding of Shaker Blvd and nearby homes
- Improve stream function

Current Design Phase:
Final Design

Total Project Cost: \$750,000



Pepper Luce at Shaker Blvd Culvert Deterioration

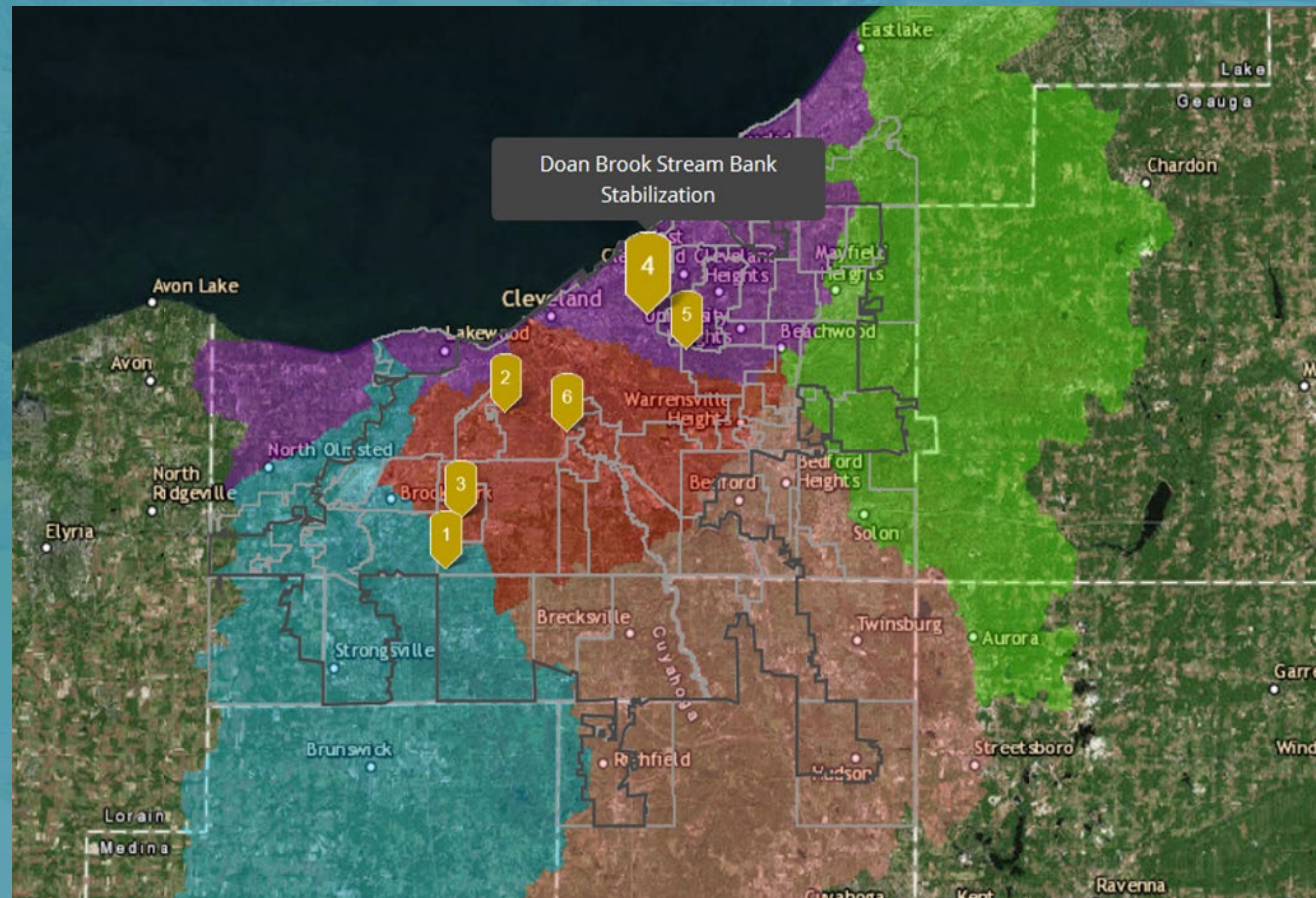


Construction



1410_Construction Update

Doan Brook Streambank Stabilization in Cleveland adjacent to MLK Blvd
Doan Brook is tributary directly to Lake Erie



Doan Brook Streambank Stabilization



- *1000lf stream rehabilitation*
- *Tie in from Nord Family Greenway to MLK Culvert*
- *\$2.4M Construction Cost*

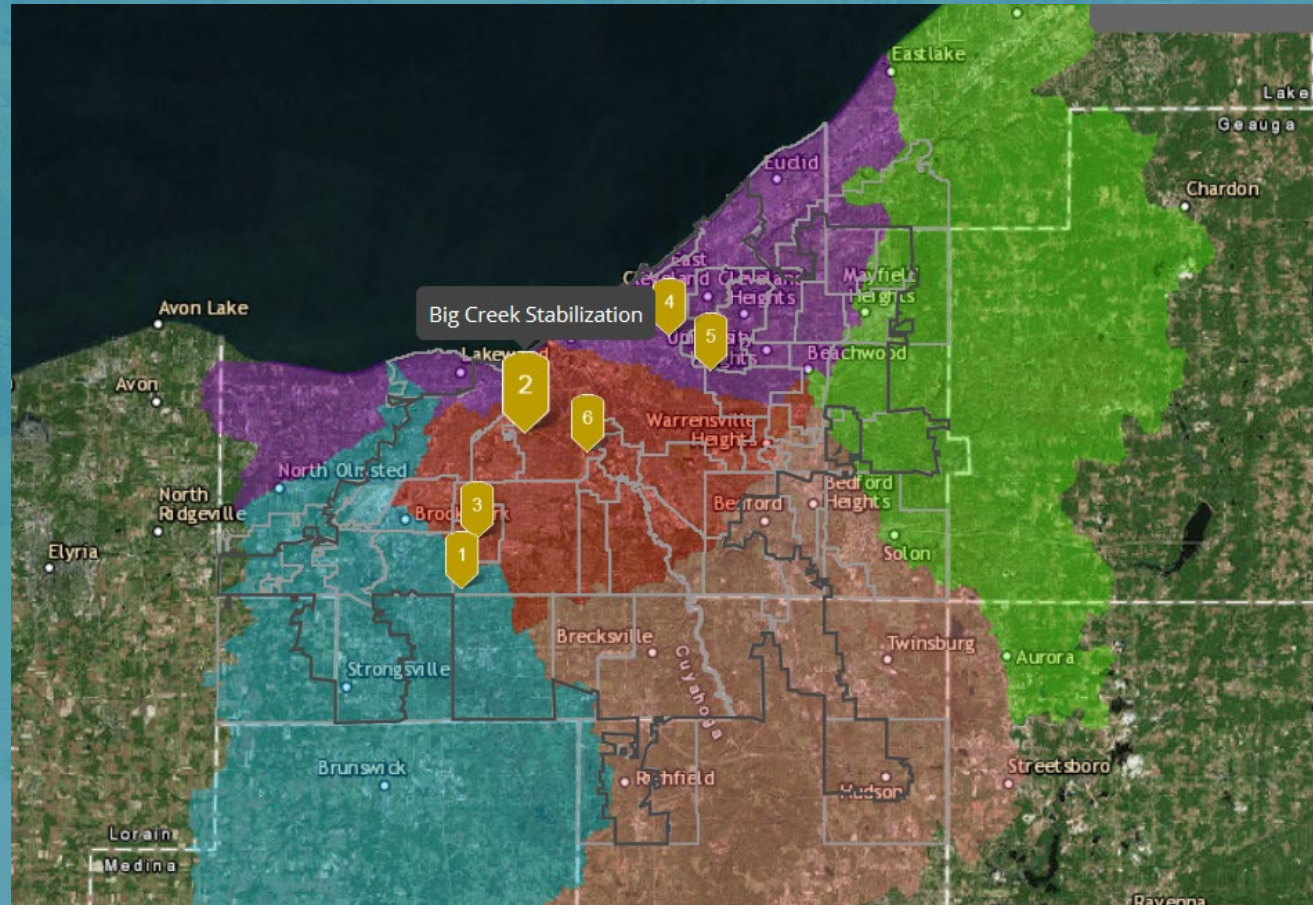
Doan Brook Streambank Stabilization



1411_Construction Update

Big Creek Stabilization in Cleveland; tributary to Cuyahoga River

When I-71 was constructed in 1966, Big Creek was straightened



Big Creek Stabilization



- *Remove 1200lf of concrete lined channel*
- *Remove 30ft tall drop structure and replace with rock channel design*
- *\$6.5M Construction Cost*

Big Creek Stabilization



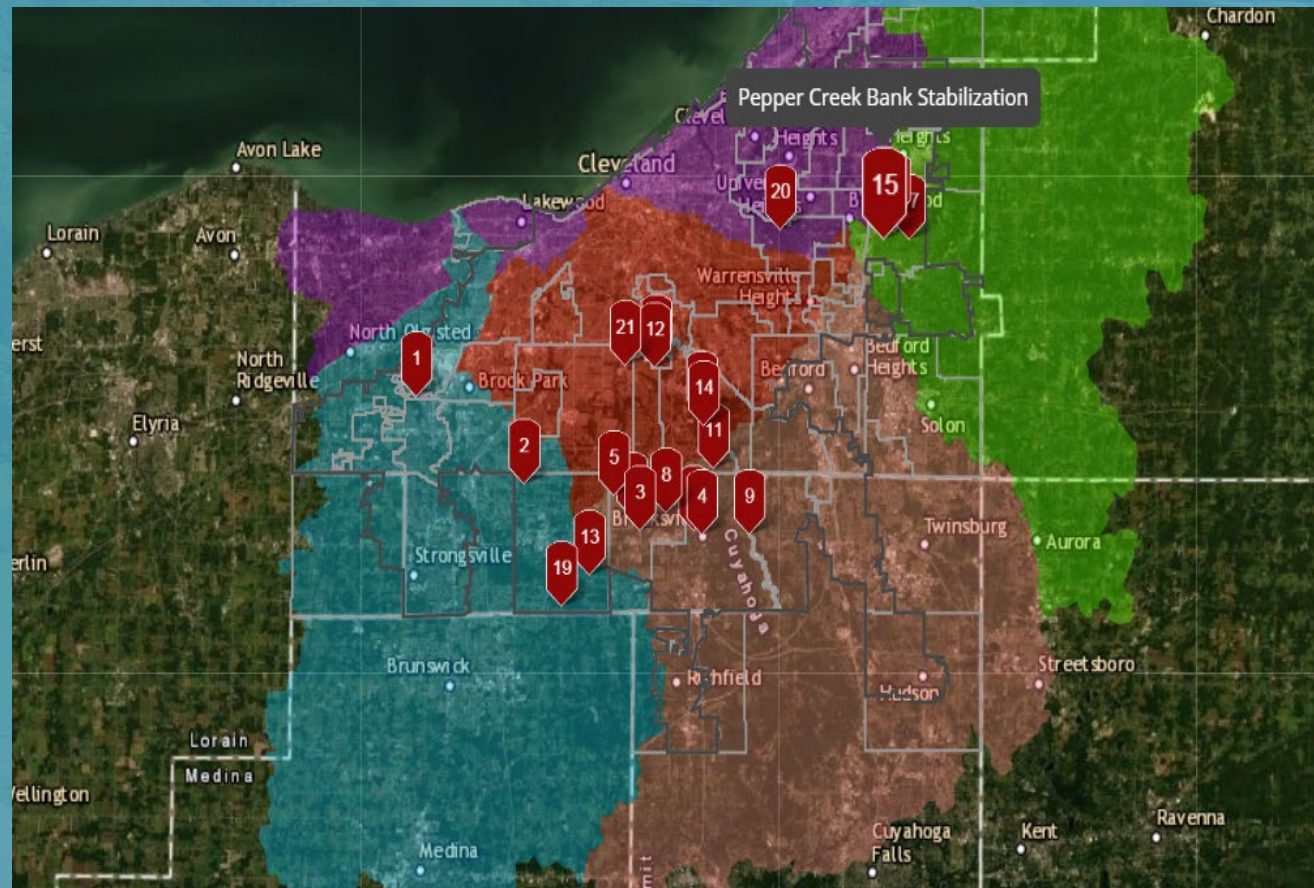
**Northeast Ohio
Regional Sewer District**



1369_Construction Update

Pepper Creek Bank
Stabilization in
Pepper Pike;
tributary to
Chagrin River

Severely eroding
stream segment
near Shaker
Blvd.



Pepper Creek Bank Stabilization



- *Restore 850LF feet of stream*
- *Reestablish a more natural stream alignment*
- *\$1.1M Construction Cost*



**Northeast Ohio
Regional Sewer District**



**NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL
STORMWATER
MANAGEMENT
PROGRAM**

Pepper Creek Bank Stabilization



Pepper Creek Bank Stabilization

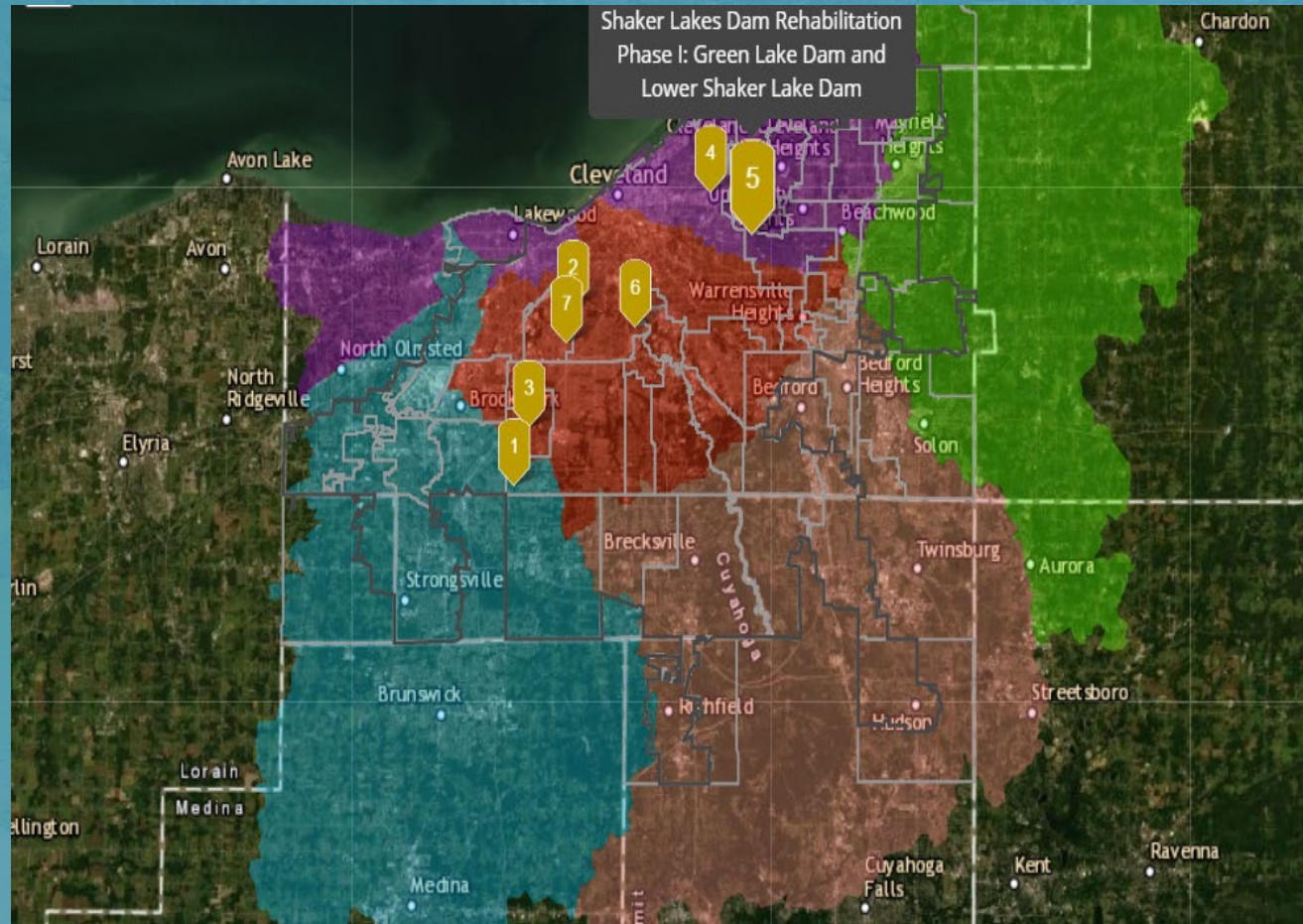


**Northeast Ohio
Regional Sewer District**



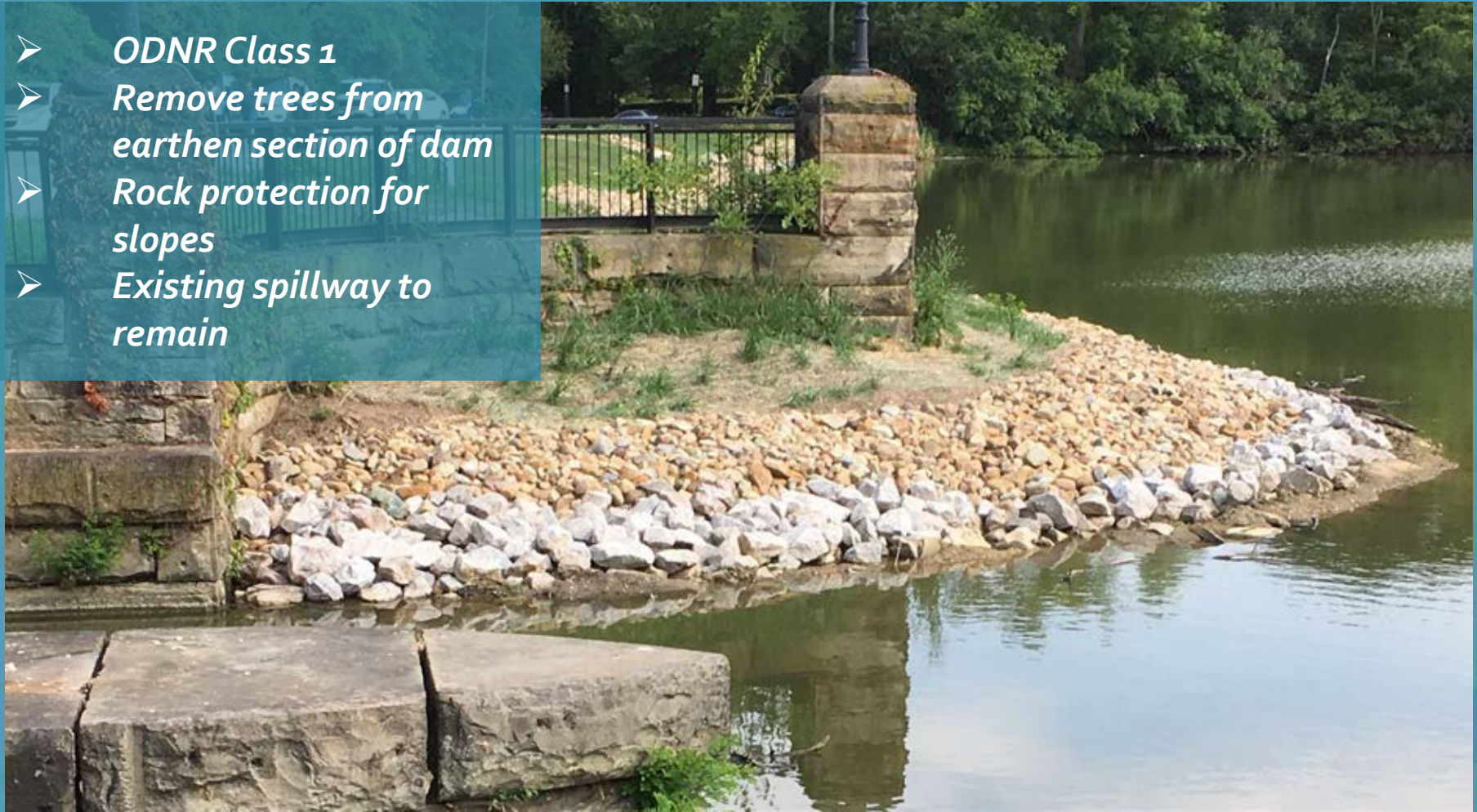
1565_Construction Update

Dam improvements in Cleveland Heights and Shaker Heights Helping community compliance with ODNR Dam Safety Program



Lower Lake Dam Rehabilitation

- *ODNR Class 1*
- *Remove trees from earthen section of dam*
- *Rock protection for slopes*
- *Existing spillway to remain*

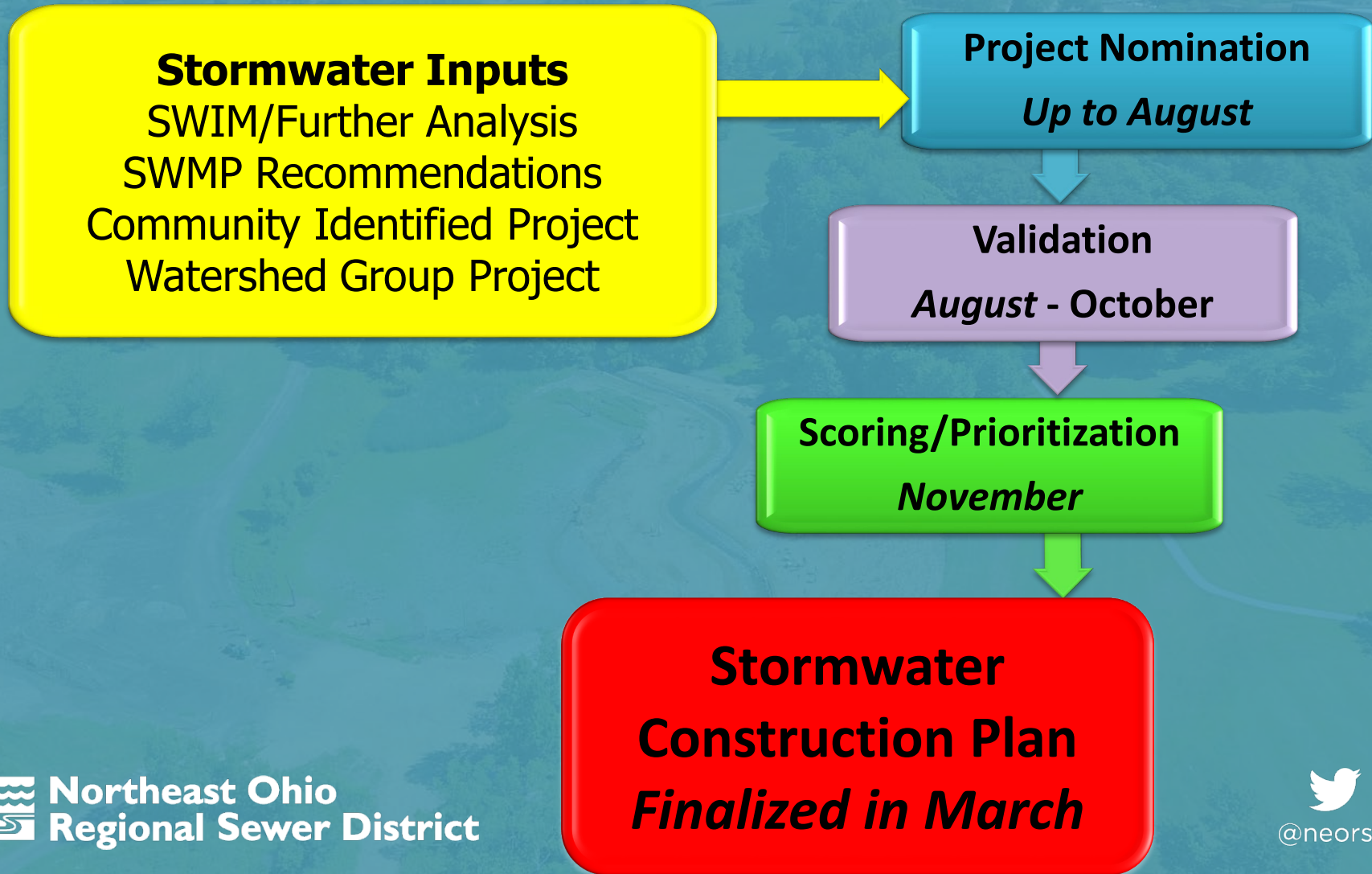


Green Lake Dam Rehabilitation



- *ODNR Class 2*
- *Previously a dredging project*
- *New CIP primary 75lf spillway*
- *Between historic preservation sites*

Stormwater Nomination Process



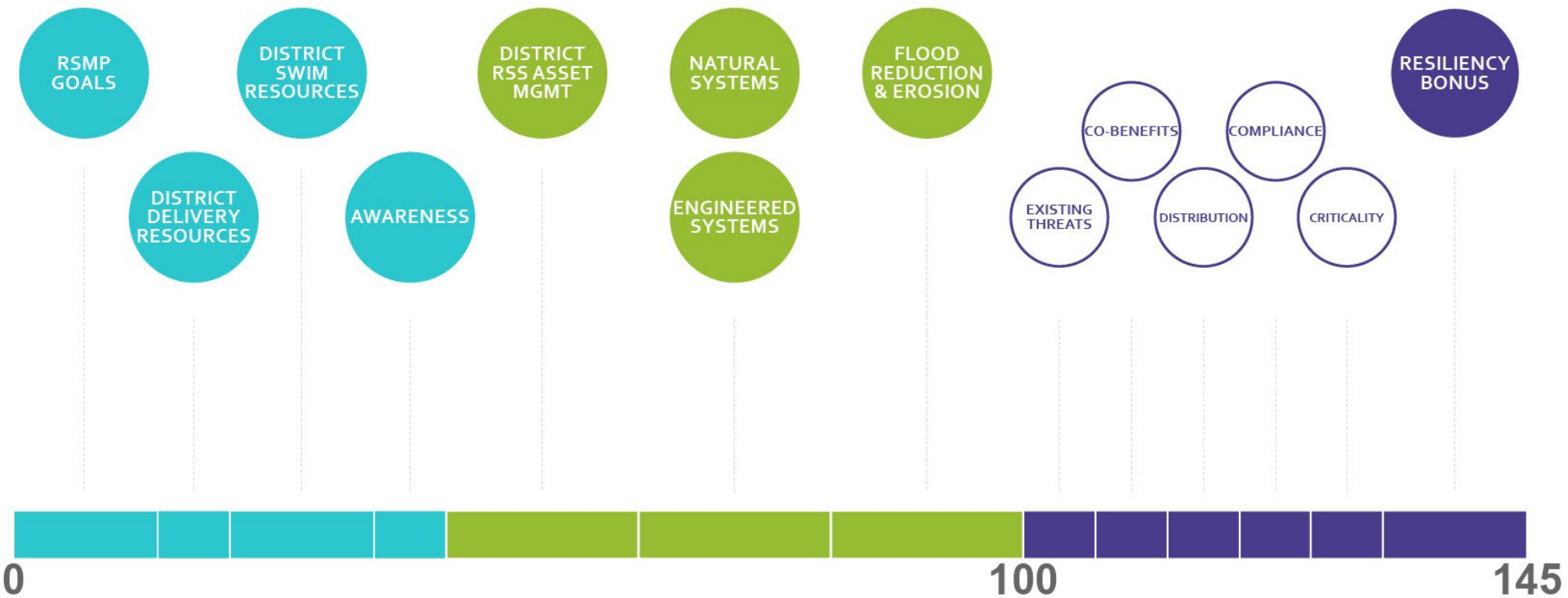
Nomination Process

- Previous risk-based system



Nomination Process

- Benefit-based system



Nomination Process

- Project Nomination Numbers
 - **80** new project nominations in 2019
 - Includes **73** from SWMPs
 - **20** reevaluated from previous years

Questions



WTL Contact

Meiring Borchers
216.881.6600 Ext. 6159
Cell: 440 409 1766
borcherdsm@neorsd.org



Stormwater Program: Community Resources
<http://www.neorsd.org/communitystormwaterresources.php>