

Watershed Advisory Committee

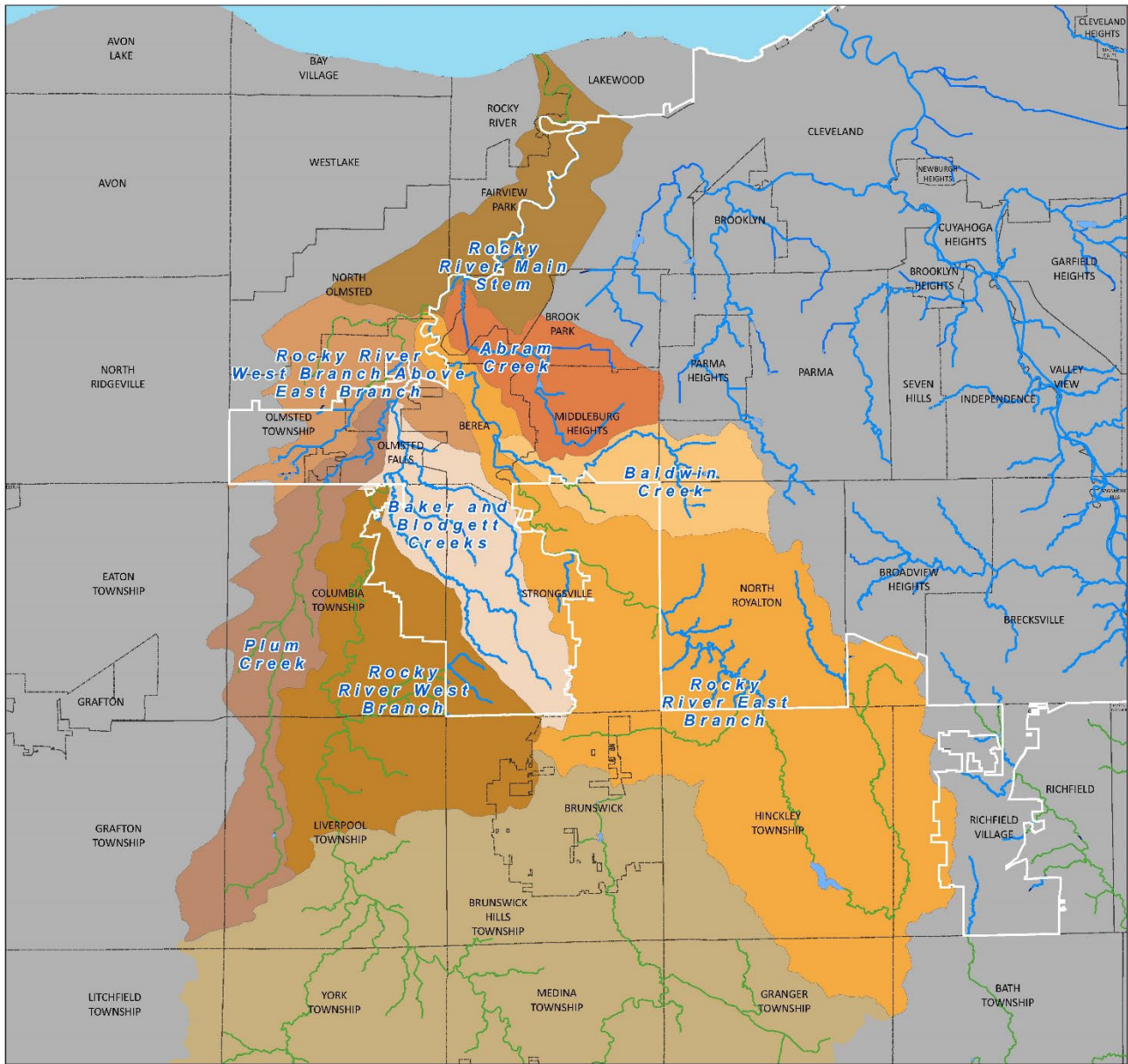
Rocky River

October 10, 2019





NORTHEAST OHIO REGIONAL SEWER DISTRICT



REGIONAL
STORMWATER
MANAGEMENT
PROGRAM



Rocky River Watershed

-  Regional Stormwater System in NEORSR Service Area
-  Regional Stormwater System not in NEORSR Service Area
-  Service Area
-  Community



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

Map Created: October 2017 **1:66,551** 

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Agenda

- Sewer District Updates
 - Community Cost-Share
 - Local Sewer System Evaluation Studies
 - Member Community Infrastructure Program
 - Affordability Program
 - Water Resource Project Property Acquisitions
- Stormwater Master Plan
- Stormwater Inspection and Maintenance
 - Maintenance Activity Update
 - State of Infrastructure Update
 - Community Crossing Meetings Update
 - 7/5 Urgent Storm Response
- Stormwater Design & Construction
 - 2019 Stormwater Highlights
 - Stormwater Design Projects
 - Stormwater Construction Projects
- 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

49 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

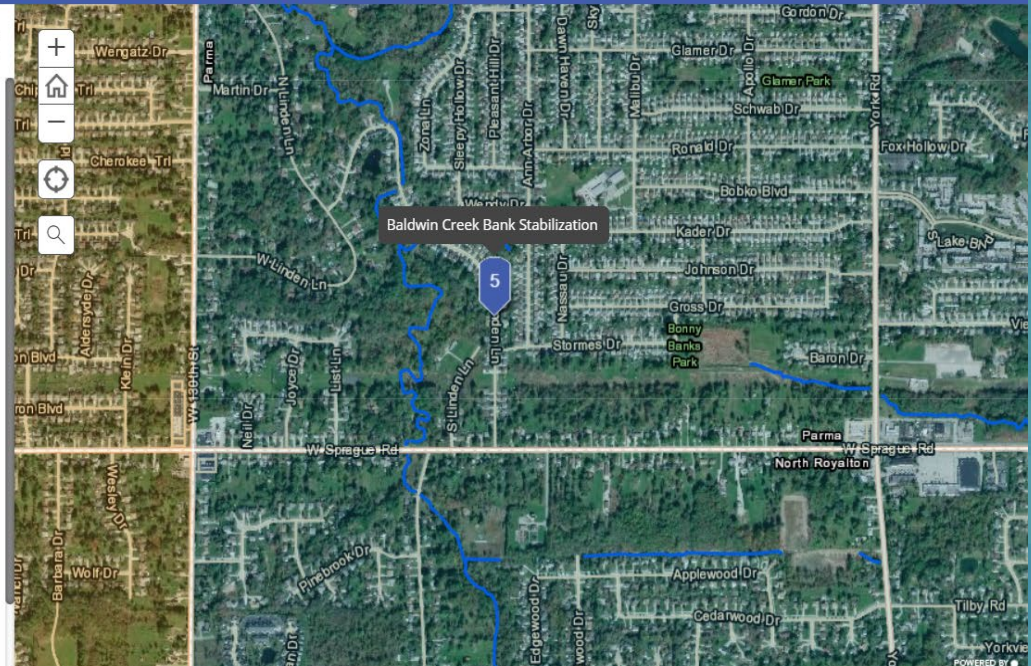


Community: Parma

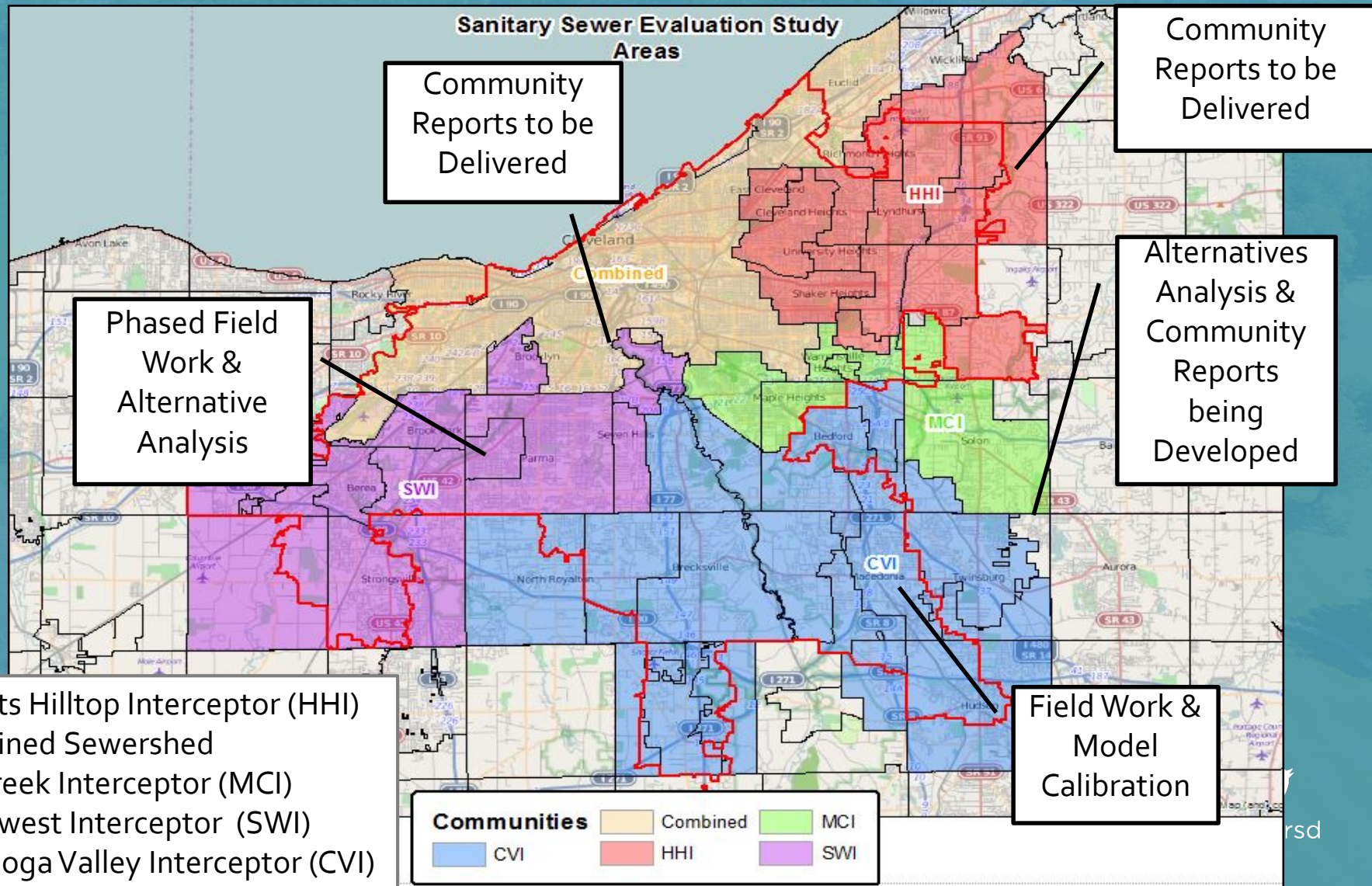
Project start date: 6/1/18.

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 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*

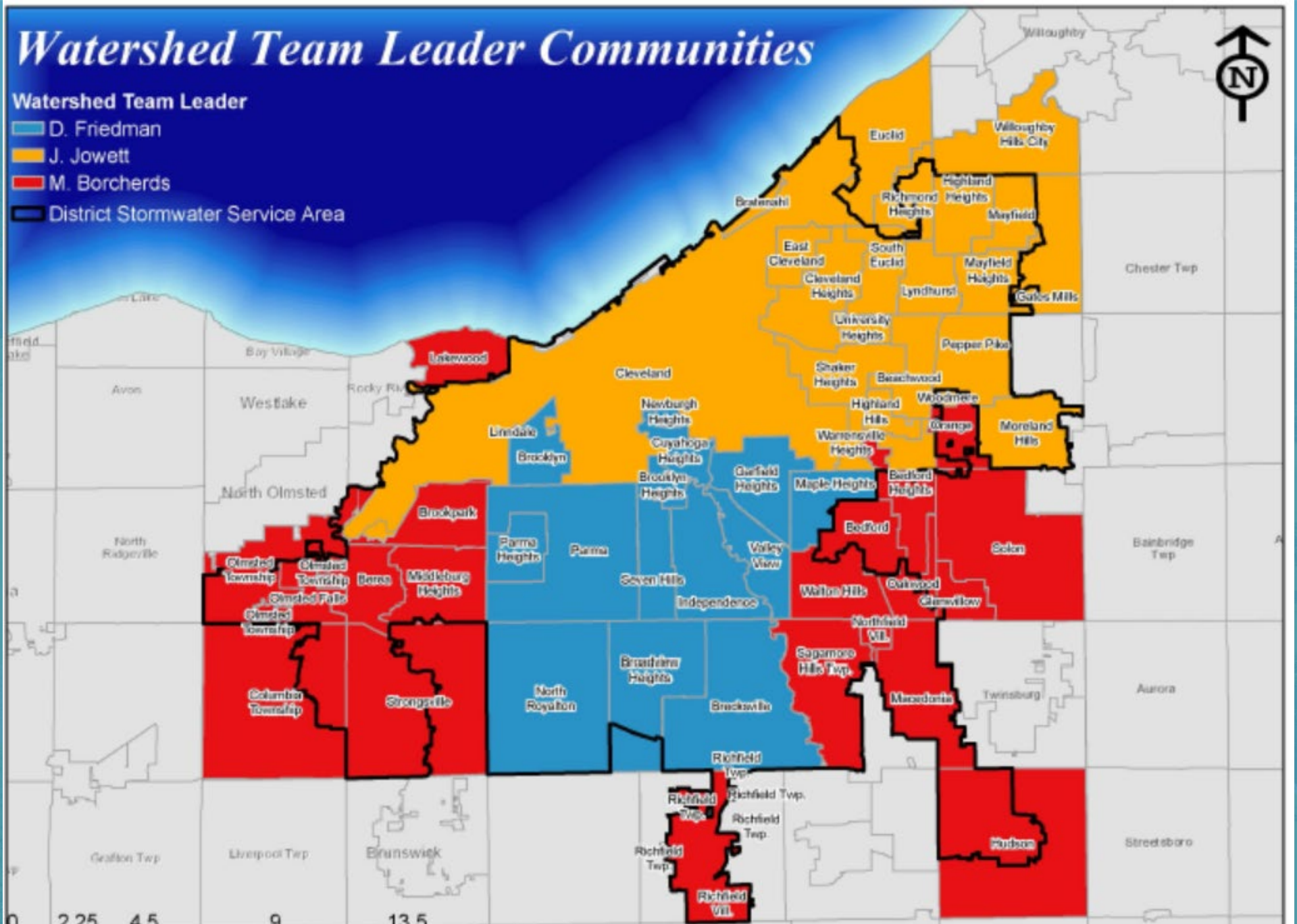
Cost-saving Programs

- *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
- Develop long term stormwater program acquisition strategy

Property tracking improvements:

- Updated property interest database
- Creation of Acquisition Referral Request system
- Creation of real-time property inspection App
- Proactive MLS (multiple listing service) monitoring in project areas

Programmatic improvements:

- Lease management and tenant communications
- Security and emergency protocols for leased and vacant property
- Property acquisition cost estimating and budget analysis
- Vacant property maintenance assignment 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

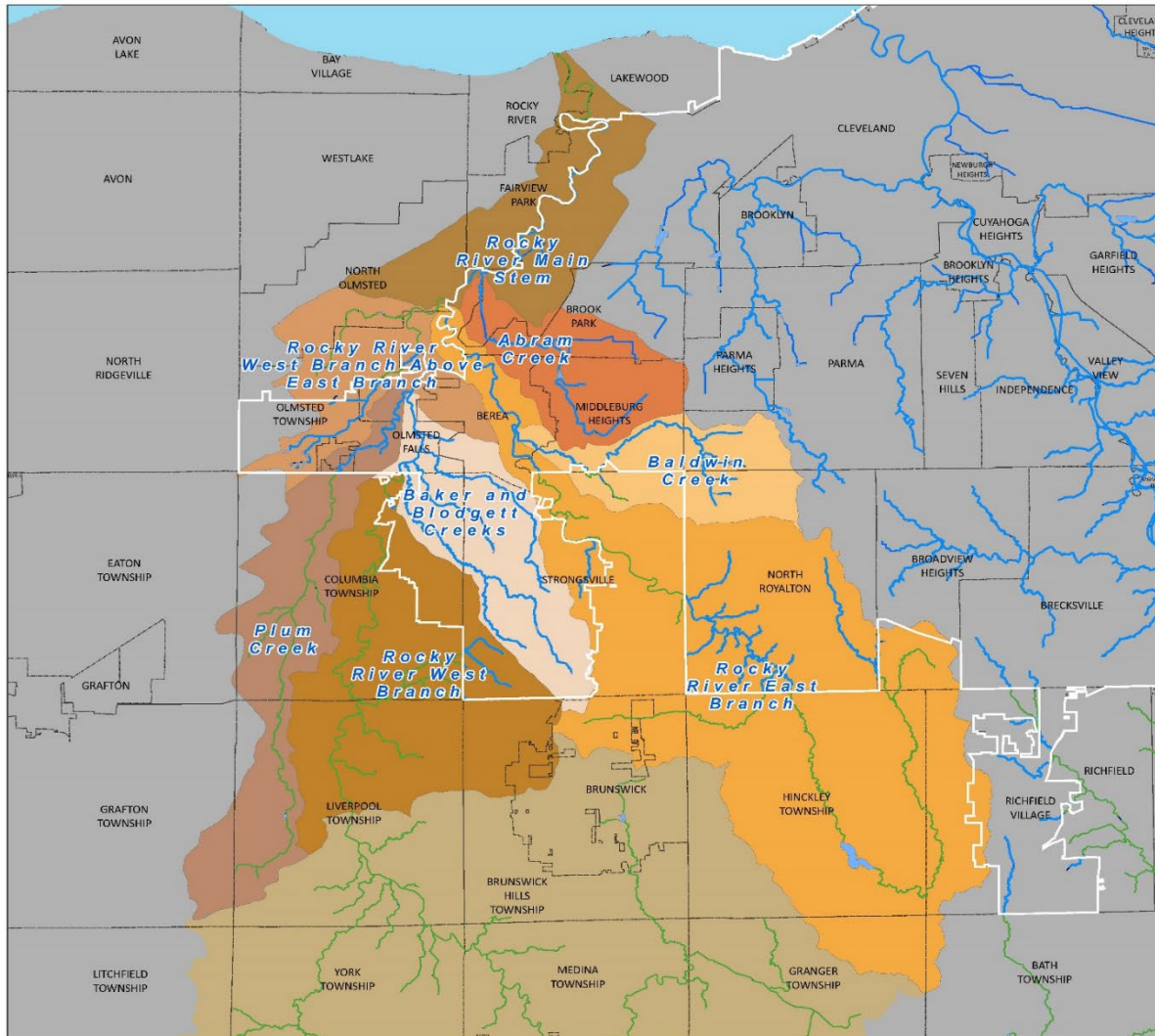
- Flood / Erosion Mitigation: 17 homes
- District Dollars invested: \$518,904.00
- Dollars Leveraged: \$2,742,399.00



Looking forward

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

Stormwater Master Plan



Rocky River Watershed

-  Regional Stormwater System in NEORS Service Area
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-  Community

 **Northeast Ohio Regional Sewer District**

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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

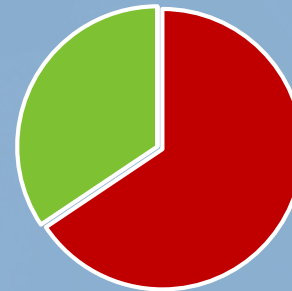
Completion Date: April 2020



74.5% Complete

Chagrin River / Lake Erie Tribs

Completion Date: May 2021



34% Complete

Stormwater Master Plan

Field Work Project Status



Status – 100% Complete

- **Data Collection & Inspection – Complete**
 - Abram Creek
 - Baker Creek
 - Baldwin Creek
 - Blodgett Creek
 - French Creek
 - Plum Creek
 - Rocky River Mainstem
 - Rocky River East & West Branch
 - Basins

Stormwater Master Plan

Modeling & Problem Identification Project Status

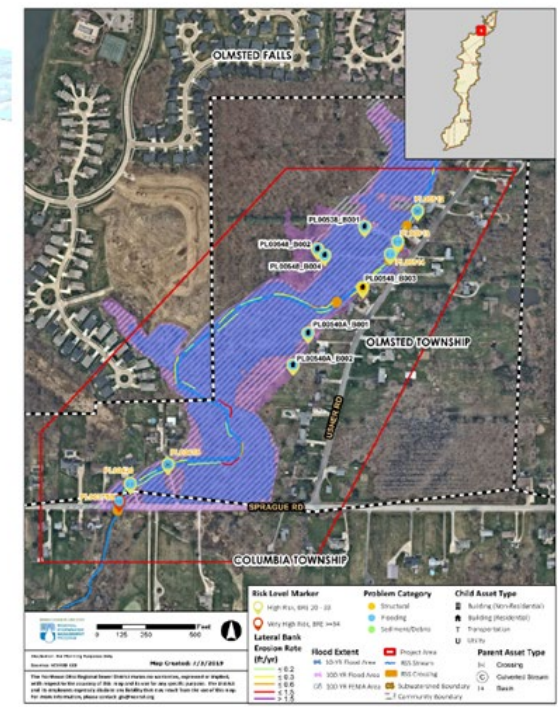
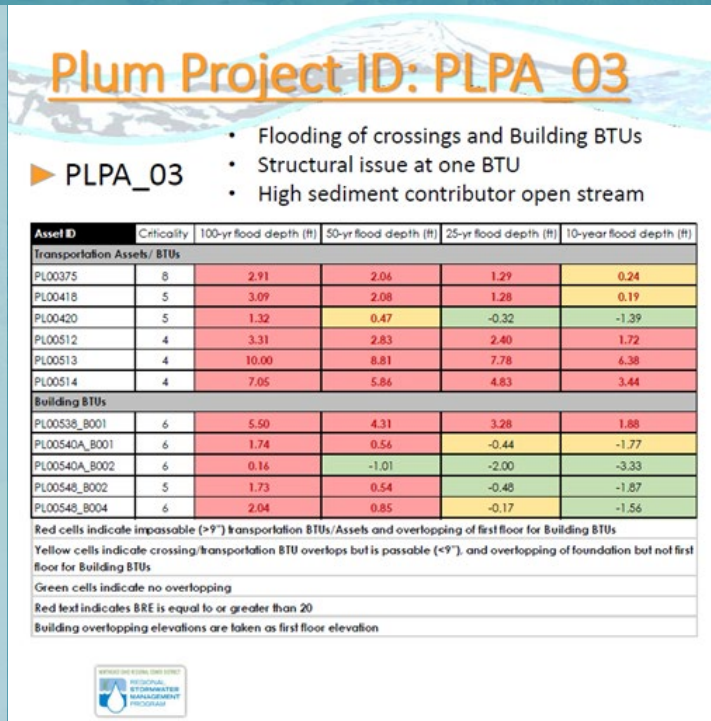
Status: 85% Complete

Watersheds Complete

- Abram Creek
- Baker Creek
- Baldwin Creek
- Blodgett Creek
- Plum Creek
- Rocky River East Branch

Watersheds – in progress

- French Creek
- Rocky River Main Branch
- Rocky River West Branch



Stormwater Master Plan

Alternative Evaluation Project Status

Status: 51% Complete

Watersheds – Complete

- Abram Creek
- Baker Creek
- Baldwin Creek

Watersheds – In Progress

- Blodgett Creek
- French Creek
- Plum Creek
- Rocky River Main Branch
- Rocky River East & West Branch

BDPA06

Noted Problems

Asset ID	Criticality	100-yr flood depth (ft)	50-yr flood depth (ft)	25-yr flood depth (ft)	10-year flood depth (ft)
Transportation Assets/ BTUs					
BD00251_T002	6	0.8	-0.1	-1.1	-1.9
BD00251	6	0.6	-0.5	-1.7	-2.6
BD00253	6	1.8	1.3	0.7	-0.1
BD00255	6	2	1.5	1	0.3
BD00399_T001	6	2.2	1.6	1.2	0.6
BD00391_T001	5	1	0.6	0.6	0.3
BD00391_T002	5	1.2	0.9	0.6	0.3
BD00391_T003	5	1.7	1.5	1.3	1
BD00391_T004	5	1.6	1.3	1.1	0.8
BD00391_T005	5	1.6	1.4	1.1	0.8
Building BTUs					
BD00250_B009	6	0	-5.1	-5.3	-5.7
BD00252_B004	6	0.5	-0.5	-1.6	-2.5
BD00254_B002	4	3.1	2.4	2	1.2
BD00254_B004	4	3.3	2.8	2.2	1.4
BD00254_B005	4	2.2	1.7	1.1	0.3
BD00254_B010	4	0.2	-0.3	-0.9	-1.8
BD00368_B001	4	2.4	1.9	1.4	0.8
BD00368_B004	4	1.4	1.1	0.7	0
BD00370_B001	6	0.1	-0.4	-0.9	-1.5
BD00370_B002	4	2.5	2	1.5	0.9
BD00373_B001	4	2.4	1.9	1.4	0.8
BD00373_B002	4	2.6	2.1	1.6	1
BD00376_B001	6	0.1	-0.4	-0.9	-1.4
BD00378_B007	6	0.1	-0.1	-0.4	-0.7
BD00397_B004	6	0.3	-0.2	-0.8	-1.7
BD00397_B001	4	3	2.5	1.9	1.1
BD00397_B002	6	0.7	0.2	-0.5	-1.3
BD00399_B002	4	2	1.5	0.9	0.1
BD00399_B004	6	0.2	-0.3	-1	-1.8
BD00391_B002	5	0	-0.2	-0.5	-0.8
BD00391_B003	5	-0.2	-0.5	-0.7	-1.1
BD00391_B003	6	0.7	0.4	0.2	-0.2
BD00391_B005	6	1.3	1.1	0.8	0.5
BD00391_B006	5	-0.5	-0.8	-1	-1.4
BD00391_B008	5	-0.5	-0.7	-1	-1.4

Alternative 1 Results

Asset ID	Criticality	New BFE	100-yr flood depth (ft)	50-yr flood depth (ft)	25-yr flood depth (ft)	10-year flood depth (ft)
Transportation Assets/ BTUs						
BD00251_T002	6	12	-1.66	-2.30	-3.08	-3.71
BD00251	6	24	-1.67	-2.31	-3.09	-3.72
BD00253	6	18	-0.51	-0.86	-1.29	-1.79
BD00255	6	18	-0.80	-1.17	-1.53	-2.13
BD00399_T001	6	18	-0.08	-0.45	-0.81	-1.41
BD00391_T001	5	10	-1.79	-2.13	-2.35	-2.30
BD00391_T002	5	10	-2.75	-3.00	-3.01	-2.99
BD00391_T003	5	15	-0.52	-1.63	-2.74	-3.16
BD00391_T004	5	15	-0.62	-1.83	-3.05	-3.43
BD00391_T005	5	24	-0.72	-1.93	-3.15	-3.53
Building BTUs						
BD00250_B009	6	6	-4.81	-5.04	-5.28	-5.64
BD00252_B004	6	6	-1.84	-2.46	-3.26	-3.89
BD00254_B002	4	—	acquired	acquired	acquired	acquired
BD00254_B004	4	—	acquired	acquired	acquired	acquired
BD00254_B005	4	8	-0.11	-0.49	-0.89	-1.39
BD00254_B010	4	6	-2.15	-2.53	-2.93	-3.43
BD00368_B001	4	16	-0.29	-0.64	-0.98	-1.49
BD00368_B004	6	18	-1.07	-1.36	-1.66	-2.19
BD00370_B001	6	18	-2.58	-2.92	-3.21	-3.71
BD00370_B002	4	16	-0.15	-0.49	-0.78	-1.28
BD00373_B001	4	—	acquired	acquired	acquired	acquired
BD00373_B002	4	16	-0.05	-0.38	-0.67	-1.10
BD00376_B001	6	6	-2.51	-2.76	-2.93	-3.04
BD00378_B007	6	12	-1.57	-2.12	-2.36	-2.42
BD00391_B002	5	8	-1.24	-2.35	-3.44	-3.88
BD00391_B003	5	8	-3.65	-3.90	-3.91	-3.99
BD00391_B005	5	8	-1.07	-2.28	-3.50	-3.88
BD00391_B006	5	8	-3.64	-4.85	-6.07	-6.45
BD00391_B007	5	8	-3.44	-4.57	-4.77	-4.85
BD00391_B008	5	8	-1.87	-2.00	-2.12	-2.27
BD00397_B001	4	16	0.67	0.30	-0.11	-0.60
BD00397_B002	6	18	-1.66	-2.03	-2.44	-2.93
BD00397_B004	6	18	-2.03	-2.40	-2.81	-3.30
BD00399_B002	4	8	-0.31	-0.64	-0.95	-1.56
BD00399_B004	6	12	-2.17	-2.53	-2.91	-3.35

Stormwater Master Plan

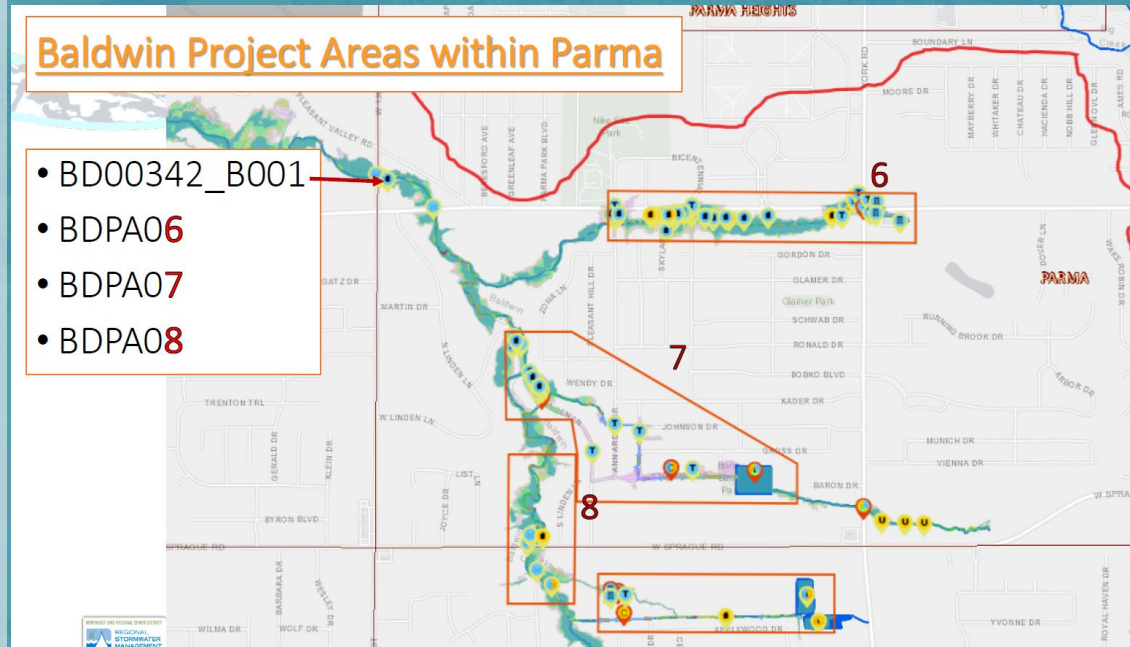
Member Community Communication

Problem Area Reviews

- Provide a SWMP status update particular to member community
- Discuss problem area(s) identified from the SWMP study
- Confirm flooding/erosion results with community officials
- Discuss potential alternatives to address identified problem areas

Baldwin Project Areas within Parma

- BD00342_B001
- BDPA06
- BDPA07
- BDPA08



Stormwater Master Plan

Member Community Communication

Completed Review Meetings

- Cleveland Metro Parks
- Brook Park
- Middleburg Heights
- North Royalton
- Parma

Upcoming Review Meetings

- Berea
- Cleveland
- Columbia Township
- Cuyahoga County
- Olmsted Falls
- Olmsted Township
- Strongsville
- Ohio Department of Transportation – District 12
- Ohio Turnpike Commission



Stormwater Master Plan

Big Creek Parkway – Alternatives Planning



Stormwater Master Plan

Big Creek Parkway – Existing Conditions

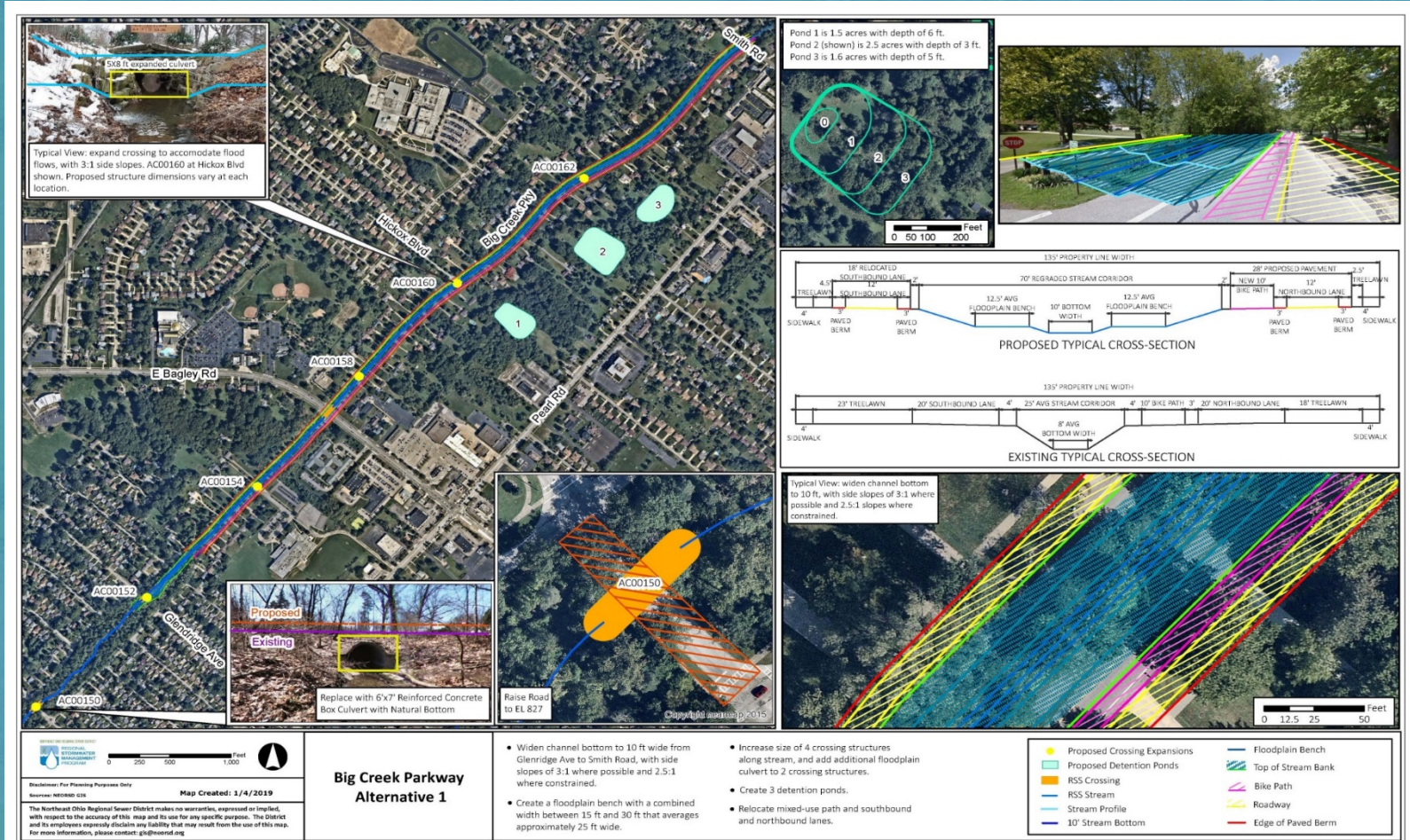
Asset ID	Problem Asset Type	Issue(s)
AC00150	Crossing	Hydraulic: overtopping in 100-year event, exceeds entrance/exit velocity in 2-year event
AC00152	Crossing	Structural: crossing inspection revealed poor cover and concrete conditions Hydraulic: overtopping in 100-year event, exceeds entrance/exit velocity in 2-year event
AC00154	Crossing	Hydraulic: overtopping in 100-year event
AC00158	Crossing	Hydraulic: overtops in 100-year event
AC00160	Crossing	Hydraulic: overtops in 100-year event
AC00162	Crossing	Hydraulic: overtops in 100-year event
AC00153	Open Stream and BTU – Transportation	Hydraulic: child asset AC00153_T001 overtops in the 100-year event
AC00155	Open Stream and BTU – Transportation	Hydraulic: child asset AC00155_T001 overtops in the 100-year event
AC00159	Open Stream and BTU- Buildings	Hydraulic: child asset AC00159_B001 is predicted to suffer flooding damage in the 100-year storm
		Hydraulic: child asset AC00159_B002 is predicted to suffer flooding damage in the 100-year storm
		Hydraulic: child asset AC00161_B006 is predicted to suffer flooding damage in the 100-year storm
AC00161	Open Stream and BTU- Building	Child asset AC00161_B010 is predicted to suffer flooding damage in the 100-year storm
		Child asset AC00161_B014 is predicted to suffer flooding damage in the 100-year storm

Under existing conditions, street flooding begins in ~2-year design storm



Stormwater Master Plan

Big Creek Parkway – Alternative 1



Big Creek Parkway Alternative 1

- Widen channel bottom to 10 ft wide from Glenridge Ave to Smith Rd, with side slopes of 3:1 where possible and 2.5:1 where constrained.
- Create a floodplain bench with a combined width between 15 ft and 30 ft that averages approximately 25 ft wide.
- Increase size of 4 crossing structures along stream, and add additional floodplain to 2 crossing structures.
- Create 3 detention ponds.
- Relocate mixed-use path and southbound and northbound lanes.

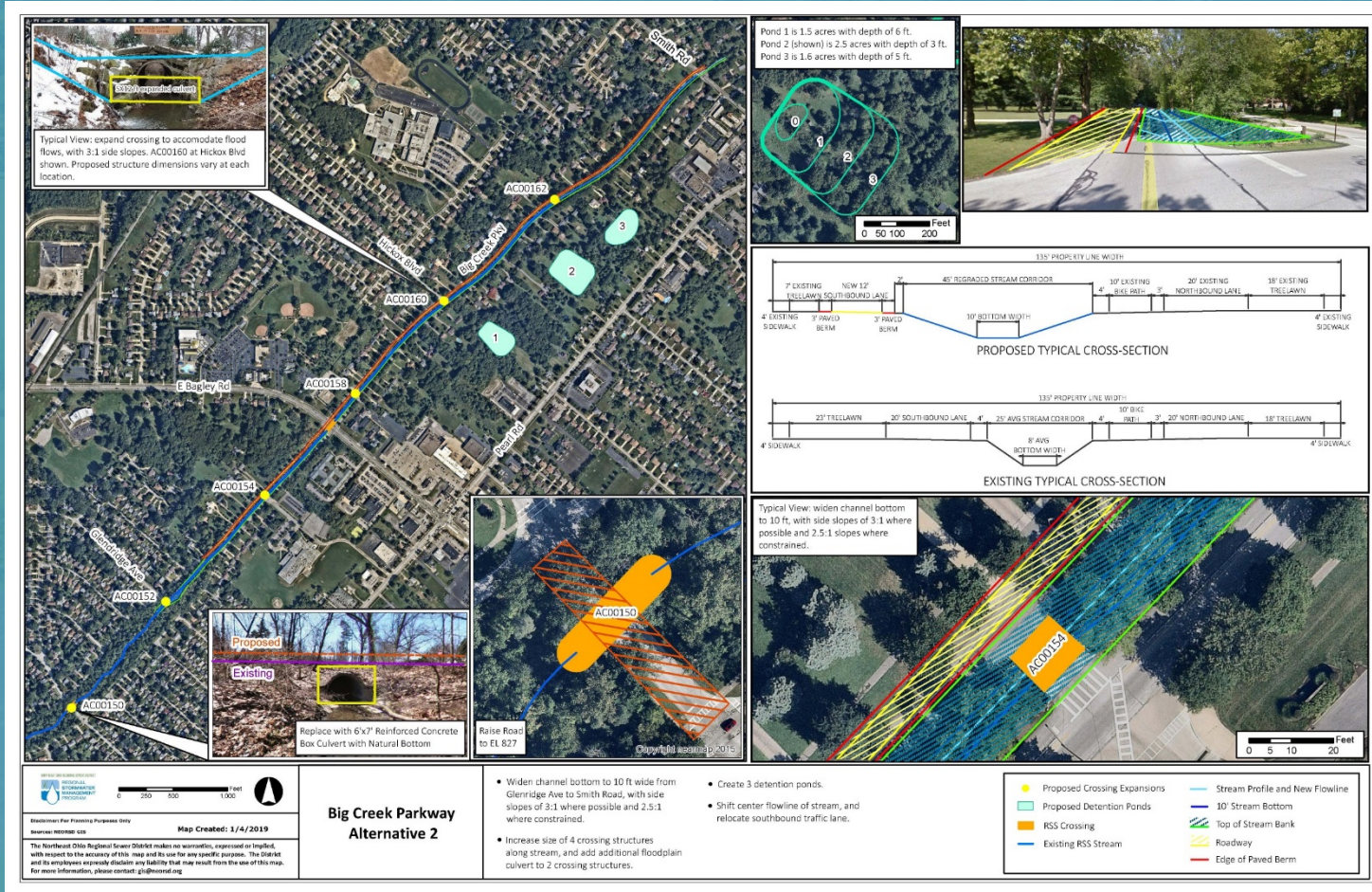
Stormwater Master Plan

Alternative 1 Level of Service Estimation

	Modeled Alternative	Description	Estimated LoS	Notes
	1	Maximized (70') channel widening with relocation of both lanes and bike path, surface detention basins (3 Middleburg Heights offline basins) and upsize restrictive crossings	100-yr	<ul style="list-style-type: none"> -Significantly decreases peak flow downstream in the 100-year -Opportunity to configure new basins to also decrease peak flow in smaller, more frequent rain events -Channel widening to 70' provides sufficient room to establish a stable channel pattern and incorporate riffle/pool sequences -Lowers bank height ratio, increases floodplain connectivity -Low flow channel increases average depth, providing temperature/DO benefit -Establishment of floodplain benches and establishment of a low flow channel provide a way to increase hyporheic exchange and promote denitrification -Provides opportunity to establish native floodplain vegetation -Crossing replacements provide an opportunity to establish natural bottom crossings, floodplain culverts
Phasing Considerations	1a	Surface detention basins (3 Middleburg Heights offline basins)	~10-yr	AC00162 and AC00154 still overtop preventing it from achieving a full 10-yr level of service. Significantly decreases peak flow downstream.
	1b	Maximized (70') channel widening with relocation of both lanes and bike path and upsize restrictive crossings	100-yr	Significantly increases peak discharge downstream and there are no good locations to create detention storage to offset increases.
	1c	Maximized (70') channel widening with relocation of both lanes and bike path and surface detention basins (3 Middleburg Heights offline basins)	~100-yr	AC00160 and AC00162 still overtop preventing it from achieving a full 100-yr level of service. Significantly decreases peak flow downstream

Stormwater Master Plan

Big Creek Parkway – Alternative 2



Stormwater Master Plan

Alternative 2 Level of Service Estimation

	Modeled Alternative	Description	Estimated LoS	Notes
	2	Widen channel (to 45') with relocation of southbound lane, upsize restrictive crossings, and surface detention basins (3 Middleburg Heights offline basins)	100-yr	<ul style="list-style-type: none"> -Downstream peak flow increases slightly for a short distance in the 100-year, however flood risk is not increased to the point where it causes a problem -Opportunity to configure new basins to also decrease peak flow in smaller, more frequent rain events -Channel widening to 45' provides little to no room for meanders, riffle/pool sequencing; although some benefits to habitat could be realized, Abram Creek remains mostly a conveyance channel in this alternative -Crossing replacements provide an opportunity to establish natural bottom crossings, floodplain culverts
Phasing Considerations	2a	Surface detention basins (3 Middleburg Heights offline basins)	~10-yr	AC00162 and AC00154 still overtop preventing it from achieving a full 10-yr level of service. Significantly decreases peak flow downstream.
	2b	Widen channel (to 45')	~10-yr	AC00160 and AC00162 still overtop preventing it from achieving a full 10-yr level of service.
	2a+2b	Widen channel (to 45') with relocation of southbound lane and surface detention basins (3 Middleburg Heights offline basins)	~25-yr	Significantly decreases peak flow downstream. AC00162 and AC00154 still overtop preventing it from achieving a full 25-yr level of service.
	2c	Widen channel (to 45') with relocation of southbound lane and upsize restrictive crossings	25-yr	Significantly increases peak discharge downstream and there are no good locations to create detention storage to offset increases.

Stormwater Master Plan

Alternative 1 & 2 Cost Estimations

Big Creek Pkwy Alternative 1 Cost

- Total: \$21.6M
- Basins only: \$2M
 - Basin 1: \$680k
 - Basin 2: \$525k
 - Basin 3: \$670k

(Additional grouped costs bring basins total to \$2M)

Big Creek Pkwy Alternative 2 Cost

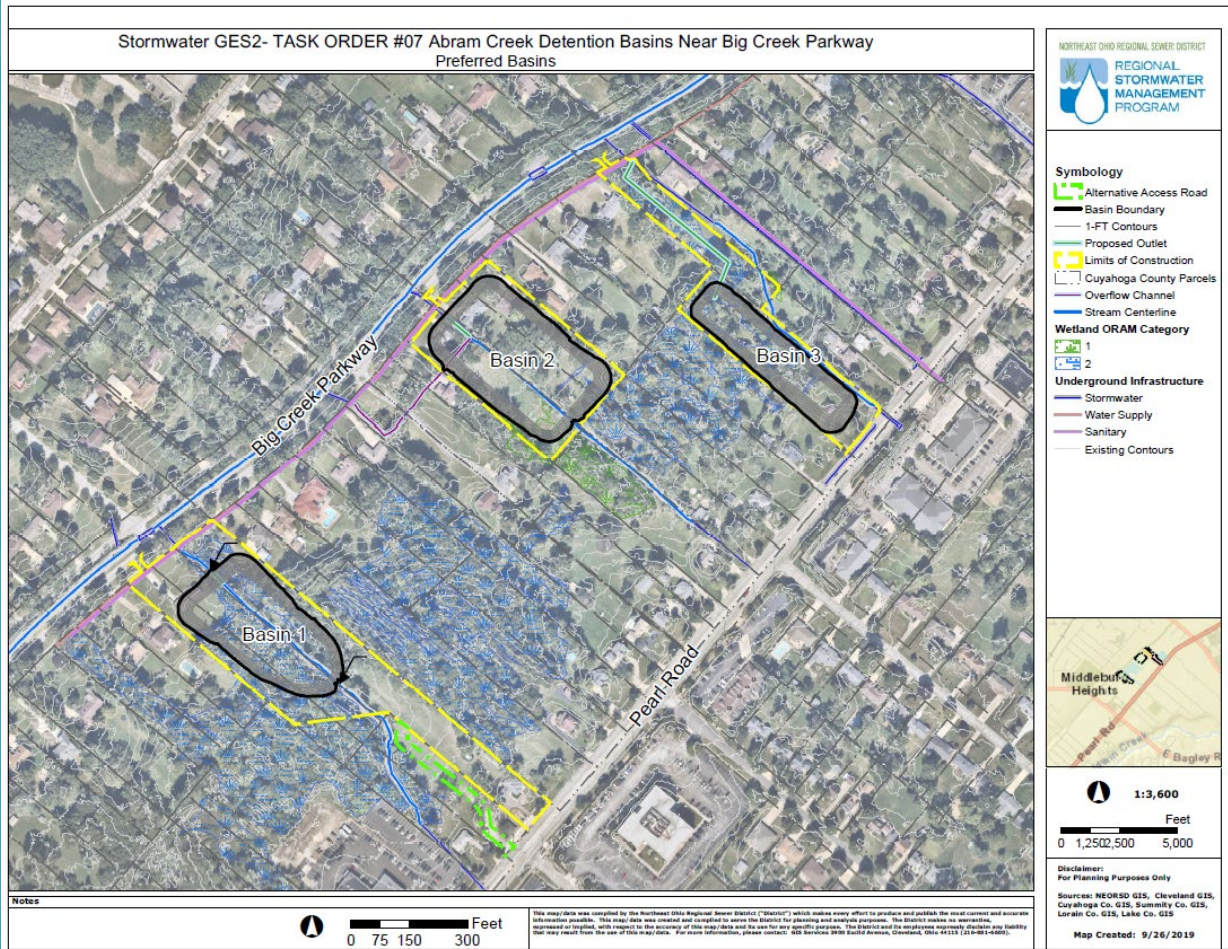
- Total: \$14.7M
- Basins only: \$2M
 - Basin 1: \$680k
 - Basin 2: \$525k
 - Basin 3: \$670k

(Additional grouped costs bring basins total to \$2M)

Cost estimates include design, construction, and contingency, but do not include property acquisition.

Stormwater Master Plan

Proceeding with Advanced Planning




Questions

SWIM Update



Asset : BK00189
Strongsville
Drake Road
Structural BRE= 32



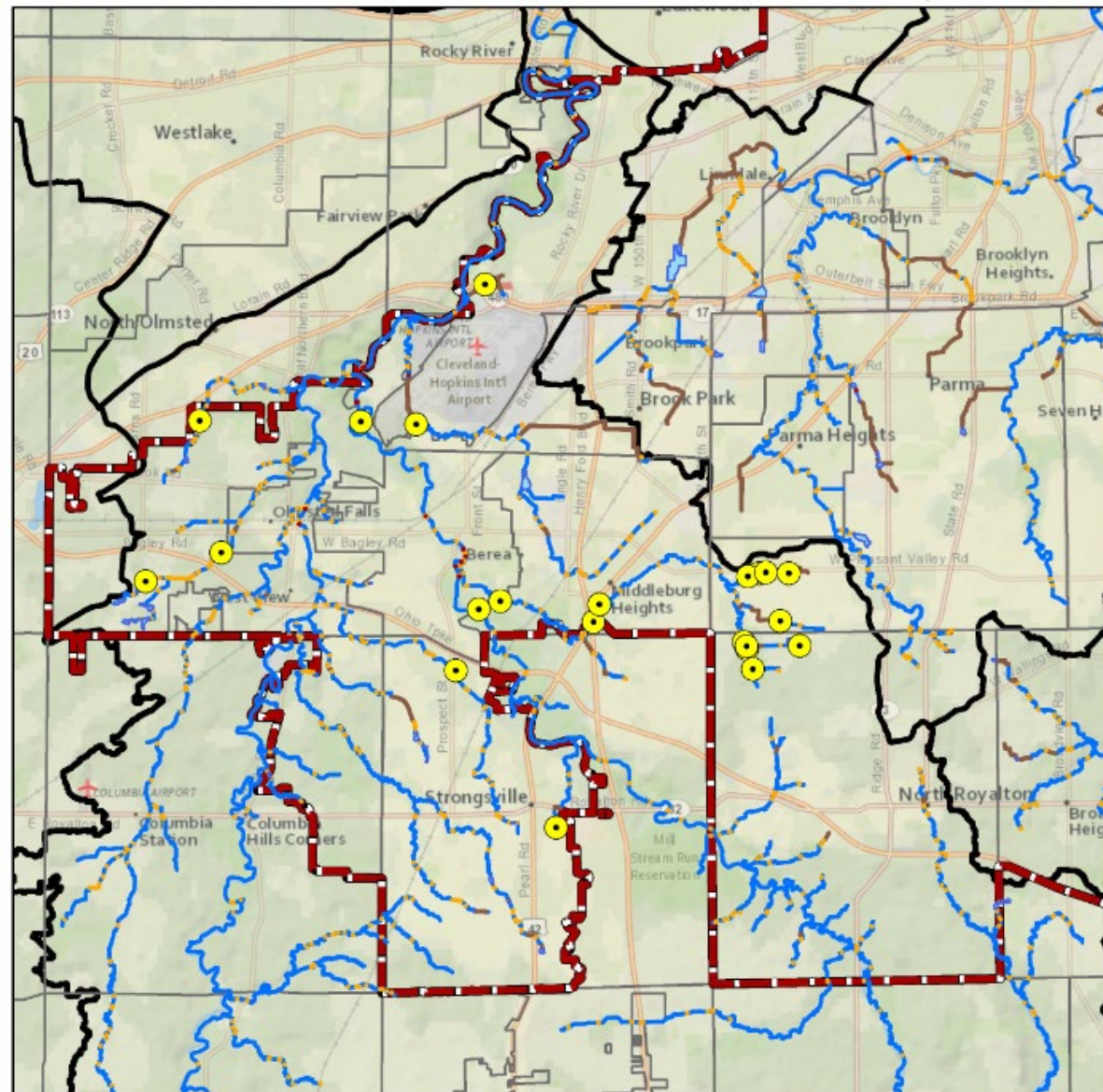
A photograph of a stream with a dark building on the left bank and a wooded area in the background. The stream is in the foreground, with a dark, possibly black, building on the left bank. The building has several windows and a blue dumpster in front of it. The background is a wooded area with bare trees. The stream is surrounded by dry grass and brush. The water is dark and reflects the sky. The overall scene is in a rural or semi-rural setting.

Asset : BK00238
Columbia Township
Clarke Road
Structural BRE= 32

Recommendation: Monitor, Nominate for Bank Stabilization Project.

SWIM 2019 Maintenance

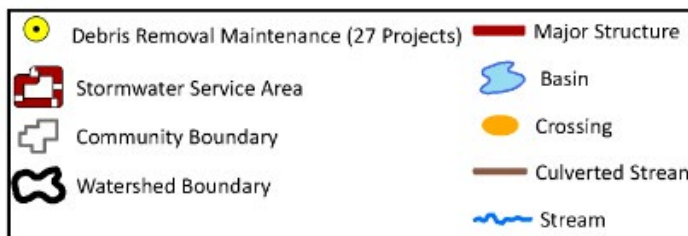
- 27 Projects Completed
- 444 Cys LWD removed



Rocky River Watershed 2019 Maintenance Projects

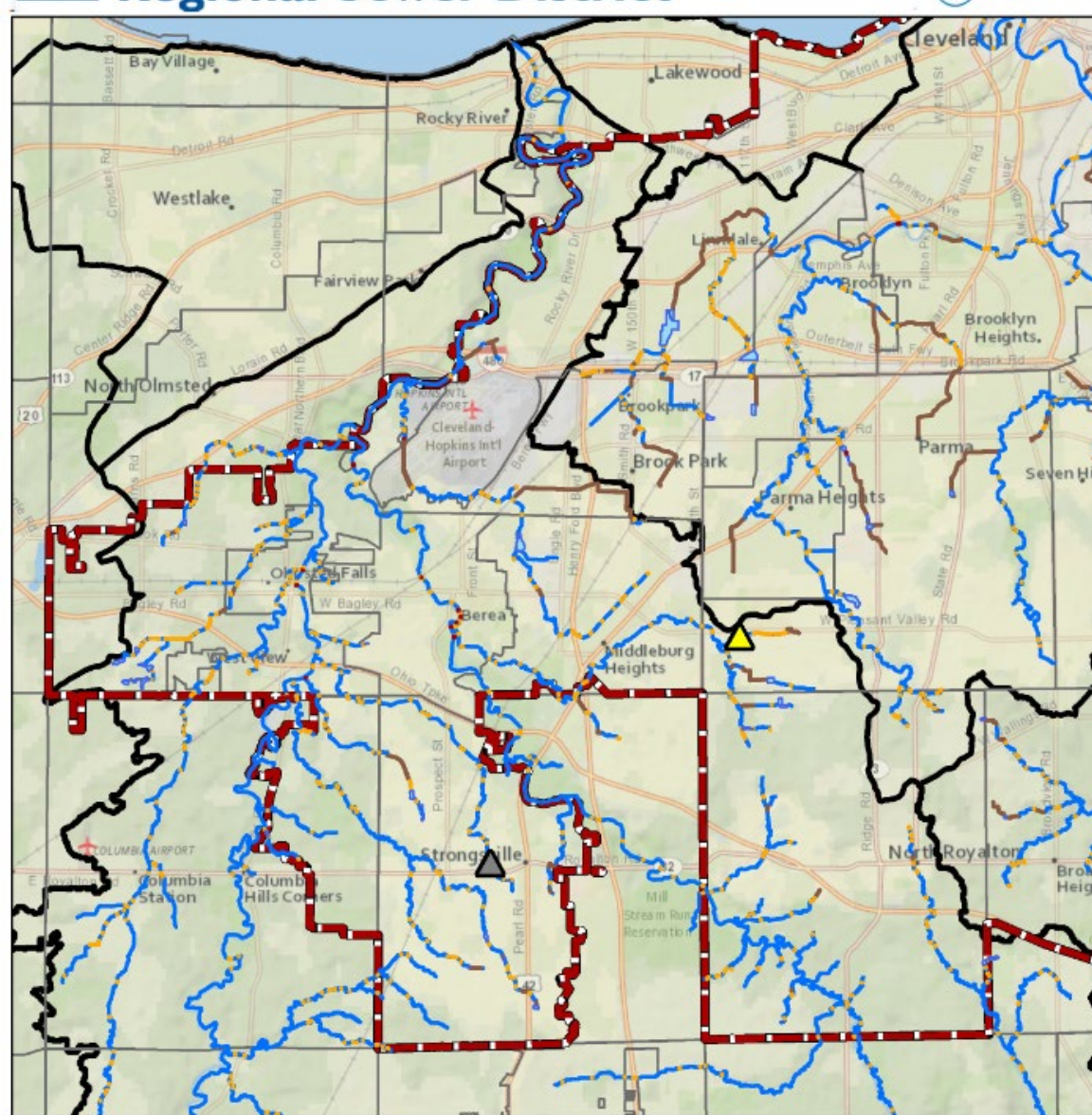
Map Created 09/27/2019

Debris Removed: 444 CY



SWIM Small-Scale Projects

- 1 Project Completed
BD00250 (Bank Stabilization)
- 1 Project Approved
BL00148 (Structural)
- Several projects will be nominated later this year



Rocky River Watershed 2019 Small-Scale Projects

Map Created 10/01/2019

	Project Type	Completed	Approved
●	Dredging	0	0
▲	Streambank Stabilization	1	1
■	Structural	0	0
	Total	1	1



Debris Maintenance: Baldwin Creek

Asset #: BD00233

Middleburg Hts: I-71 Crossing Club

Debris BRE=45



Debris Maintenance: Minnie Creek

Asset #: MN00102

Olmsted Twp: Columbia Park

Debris BRE=12



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

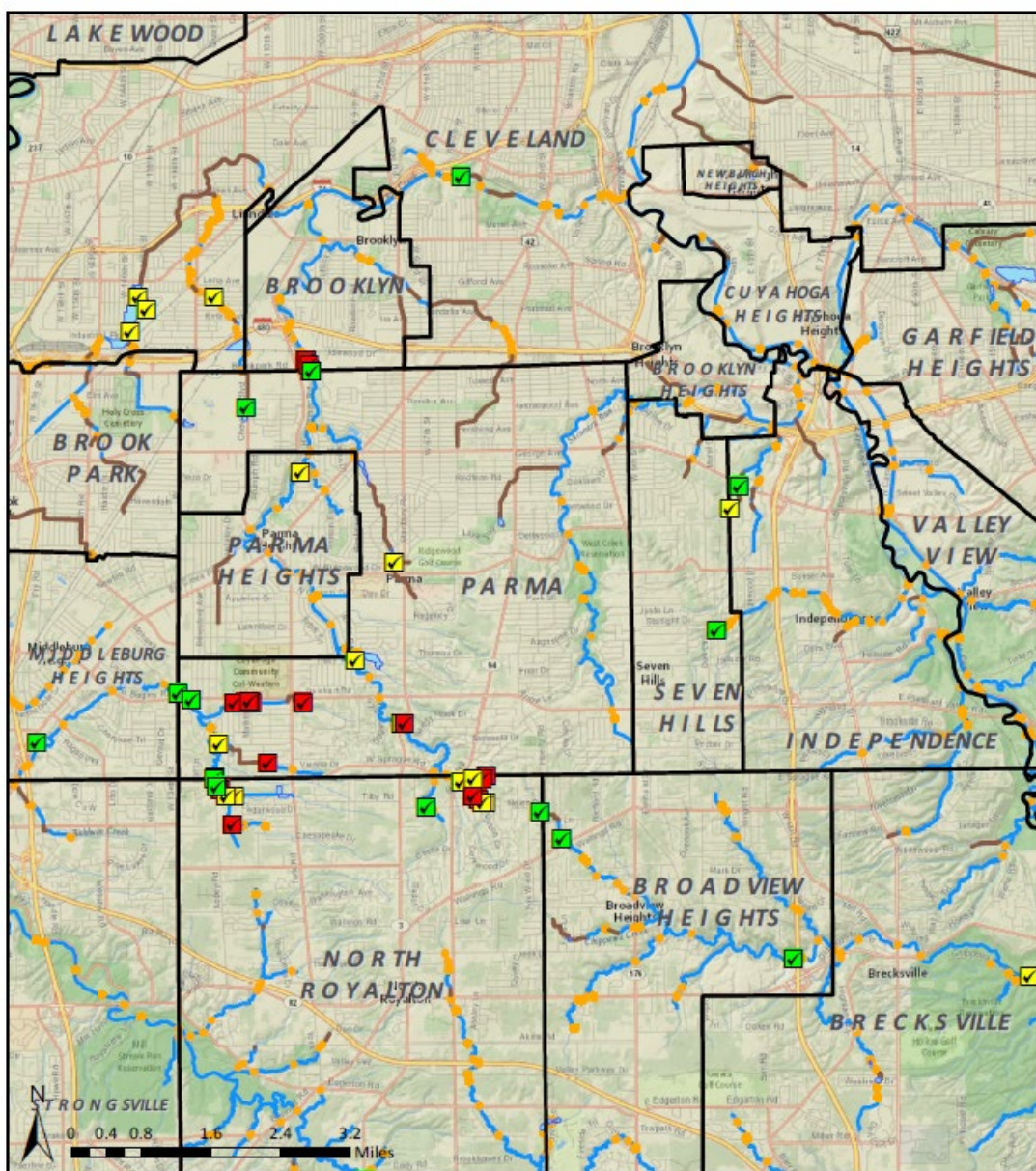
Rainfall Figure



Resident's house looking east on Ridge Road

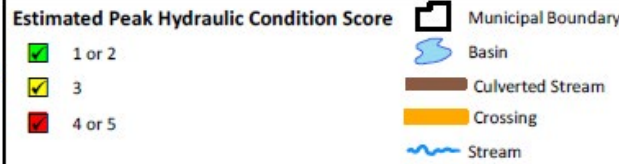
July 5th Storm Response Inspection Summary

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



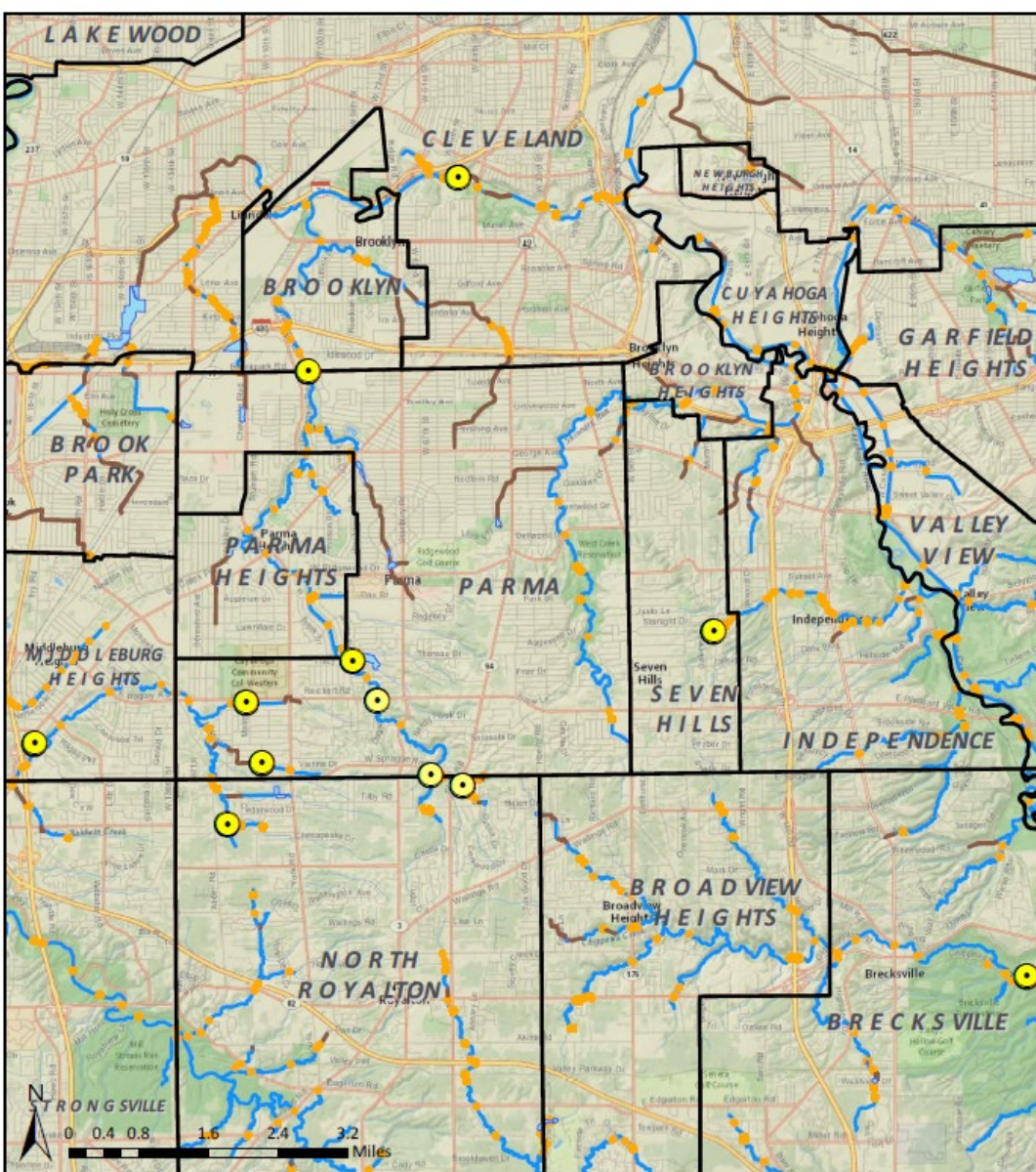
July 5, 2019 Rain Event Regional SWIM Field Response

Map Created: September 25, 2019



July 5th Storm Response Maintenance Summary

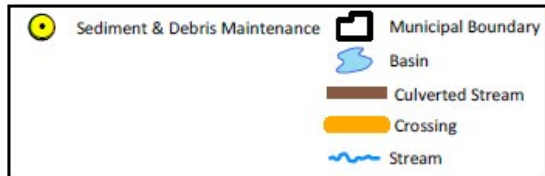
- 12 sites with sediment or debris maintenance
- 362 CY removed



July 5, 2019 Rain Event
Regional SWIM Maintenance

Map Created: October 08, 2019

 Northeast Ohio
Regional Sewer District




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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

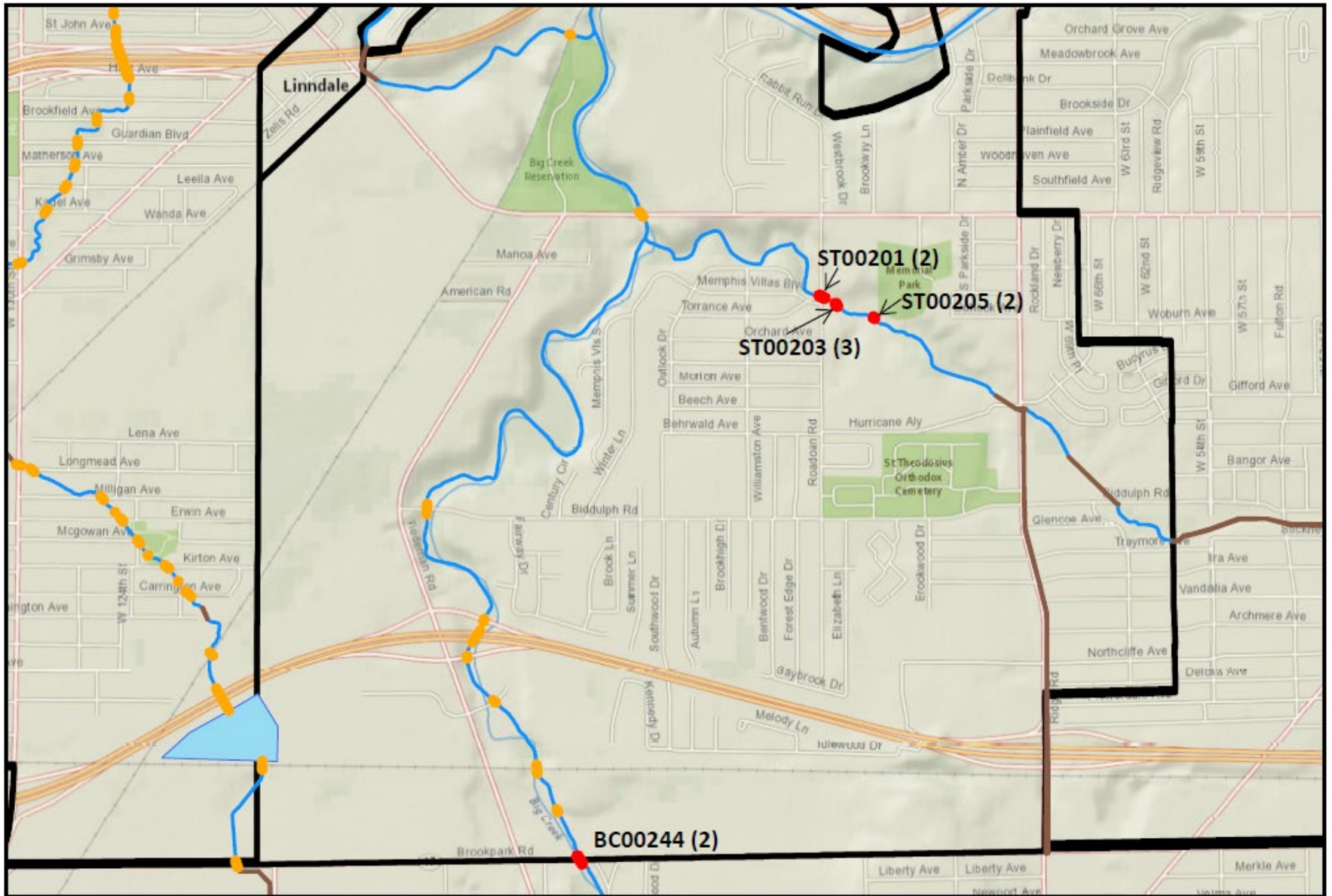
RRR	721	551	76%	B-	85	55
ASSET CLASS TYPE	RSS COUNT	Condition Score Count	Percent Inspected	Report Card Grade (Avg Structural Condition)	Assets with Structural Condition 4 or 5	Assets with Structural BRE > 19
Stream	377	209	55%	B-	40	0
Crossing	279	279	100%	B	25	31
Culverted Stream	31	29	94%	C+	8	12
Basin	28	28	100%	C	11	11
Major Structure	6	6	100%	B-	1	1

Community Crossing Meeting

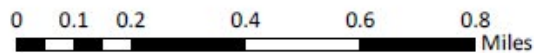
Meeting Objectives:

- 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)

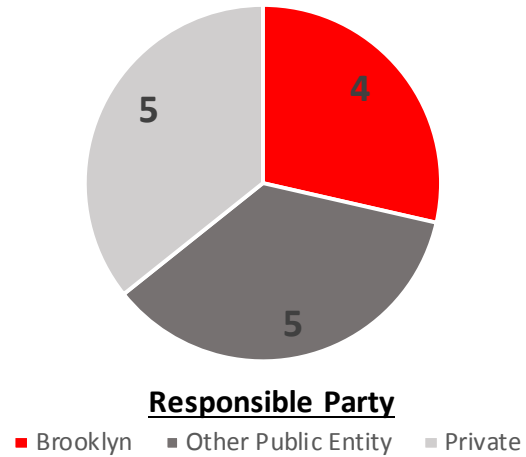
- Basin
- Culverted Stream
- Stream

- Municipal Boundary



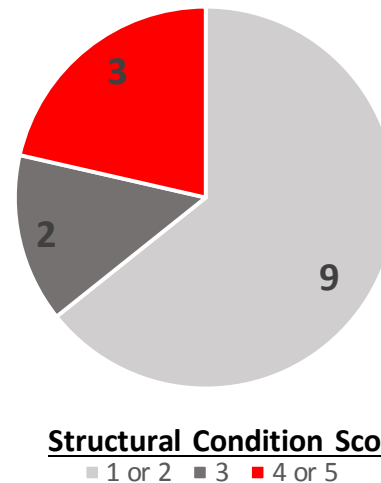
Responsible Party	Crossing Count
Brooklyn	4
ODOT	3
Public (Cuyahoga County)	2
Private (Railroad)	3
Private (Commercial)	2
Total	14

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

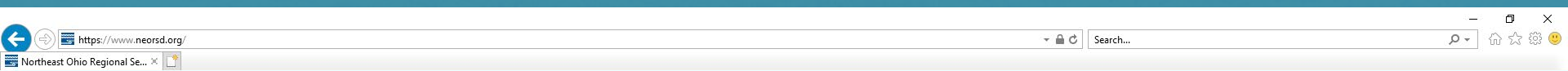


**Northeast Ohio
Regional Sewer District**



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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

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

Map showing project locations across the Northeast Ohio Regional Sewer District. Watersheds are color-coded: purple (Cleveland area), red (Parma area), teal (Cuyahoga River area), and green (Cuyahoga River area). Project locations are marked with numbered red pins (1-21). The map includes a search bar, zoom controls, and a 'Zoom To' dropdown menu.

Snip & Sketch








Esri, HERE, Garmin | Earthstar Geographics | GIS Services Northeast Ohio... **esri**

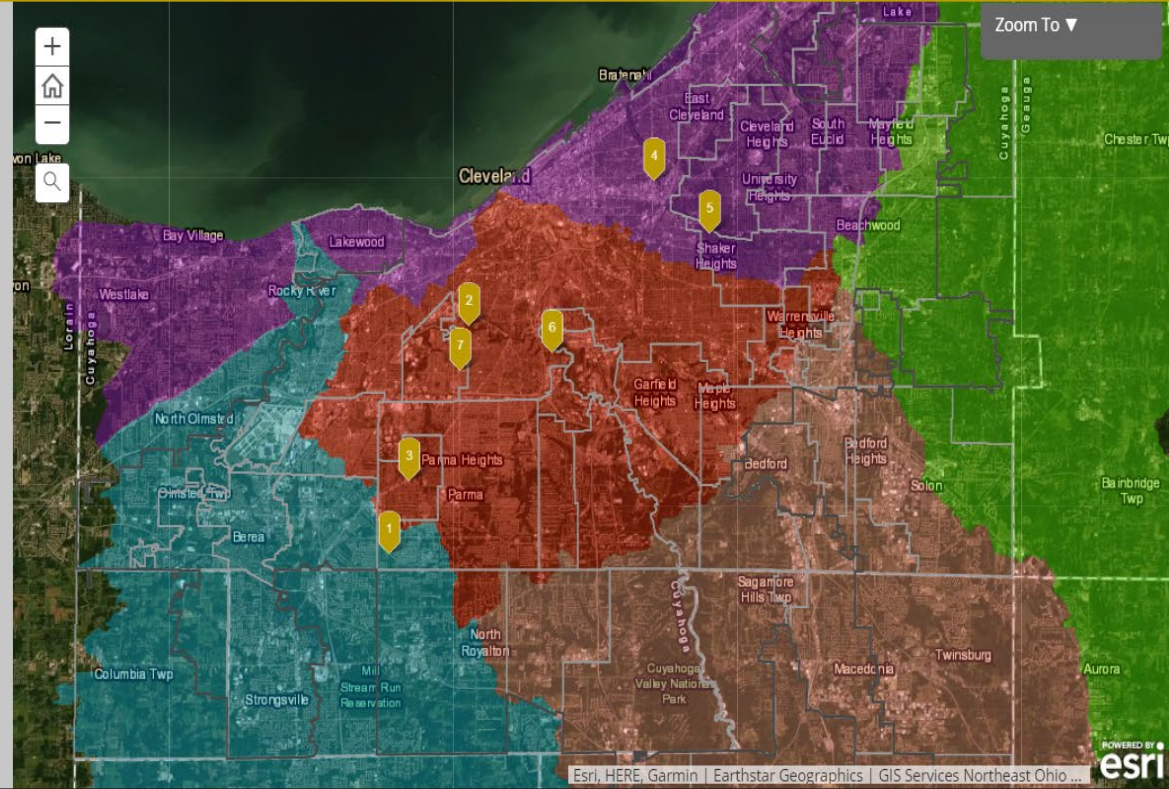
NEORSD Stormwater Design & Construction Program


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...	



Esri, HERE, Garmin | Earthstar Geographics | GIS Services Northeast Ohio ... 

Design

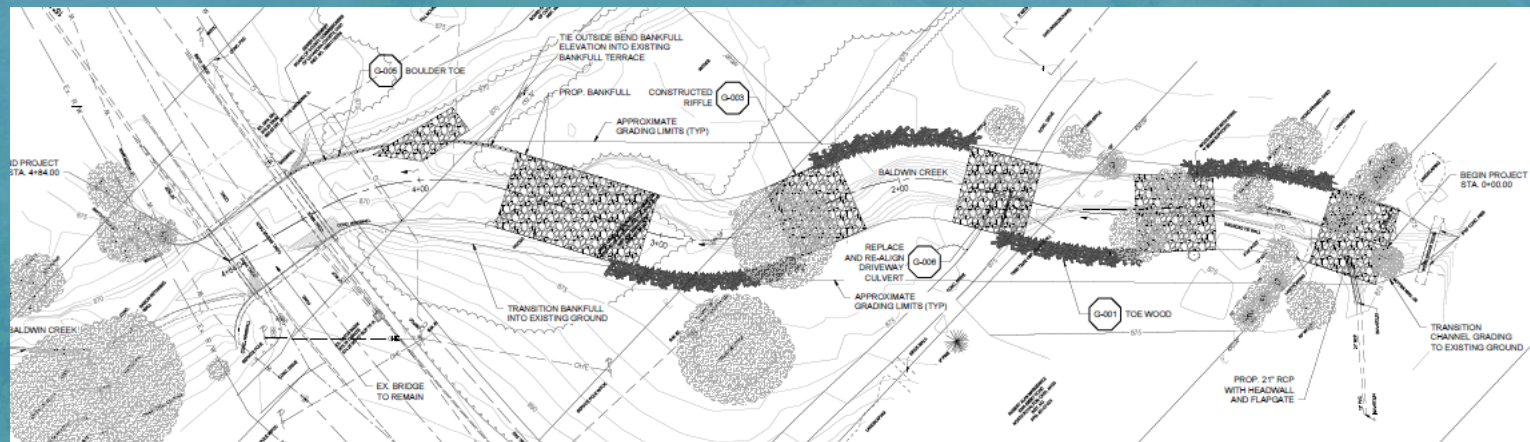


Baldwin Creek – Stabilization near Abbey Road

Goals:

- Stabilize stream banks from lateral and vertical erosion
- Improve stream function
- Upsize existing crossing

Current Design Phase: 30% Design
Est. Construction Cost: \$330,000



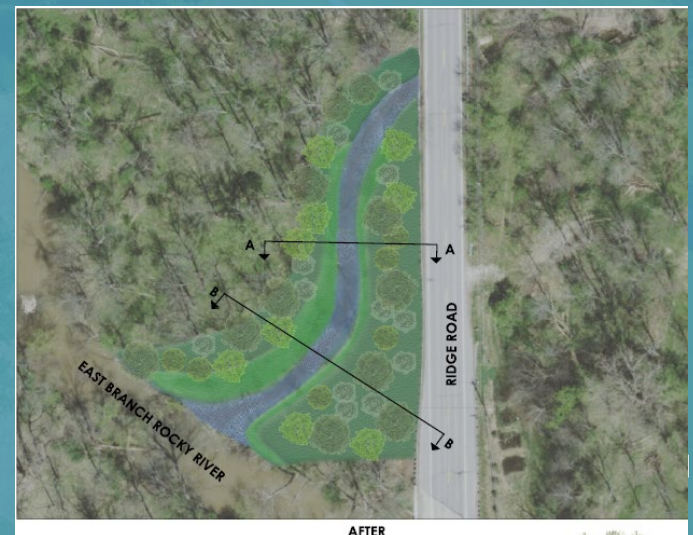
Baldwin Creek – Stabilization along Ridge Road

Goals:

- Relocate channel to reduce future erosion risks
- Improve stream function and habitat
- Mitigate risk to Ridge Road embankment



Current Design Phase: 90% Design
Est. Construction Cost: \$430,000



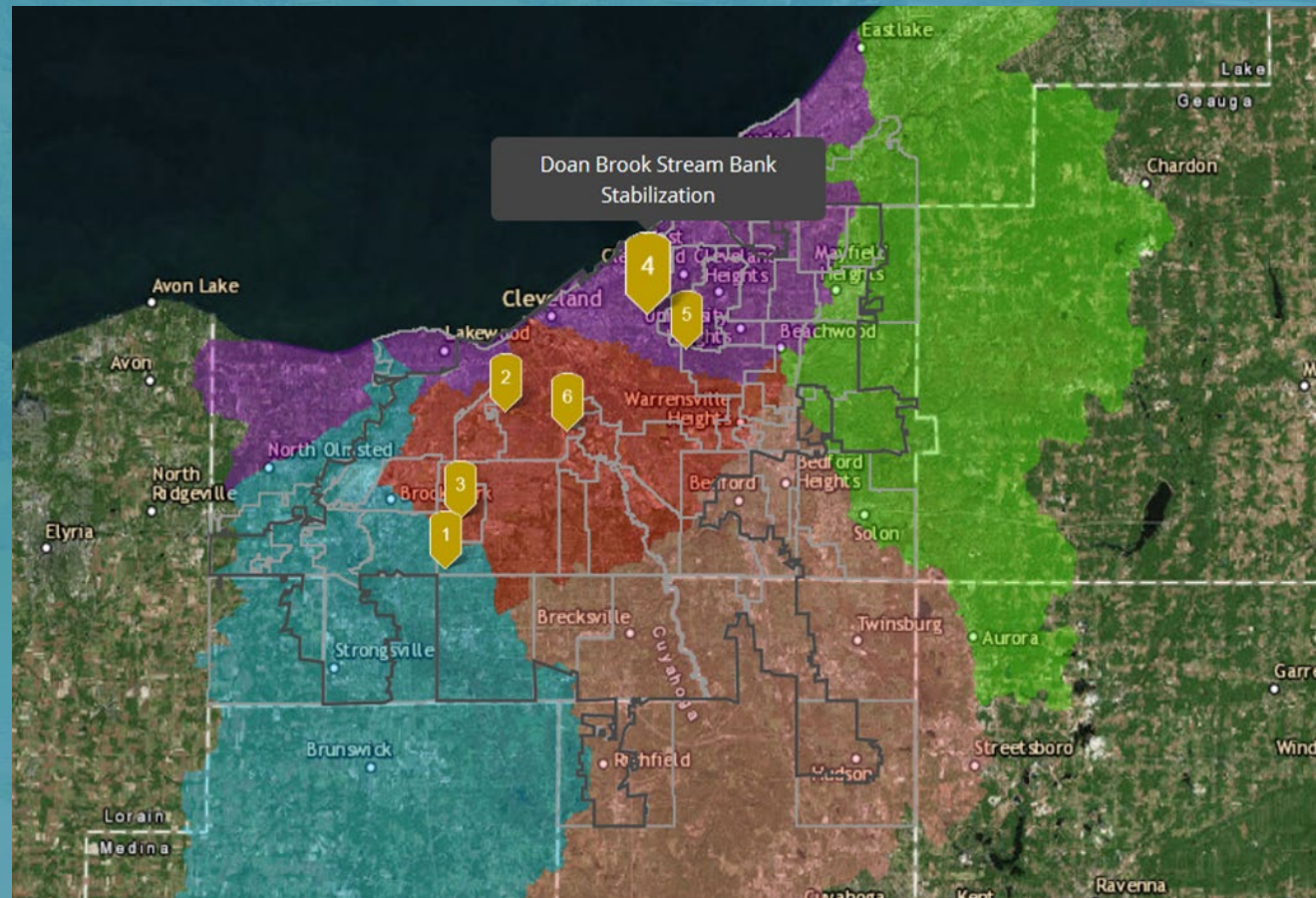
Construction



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*

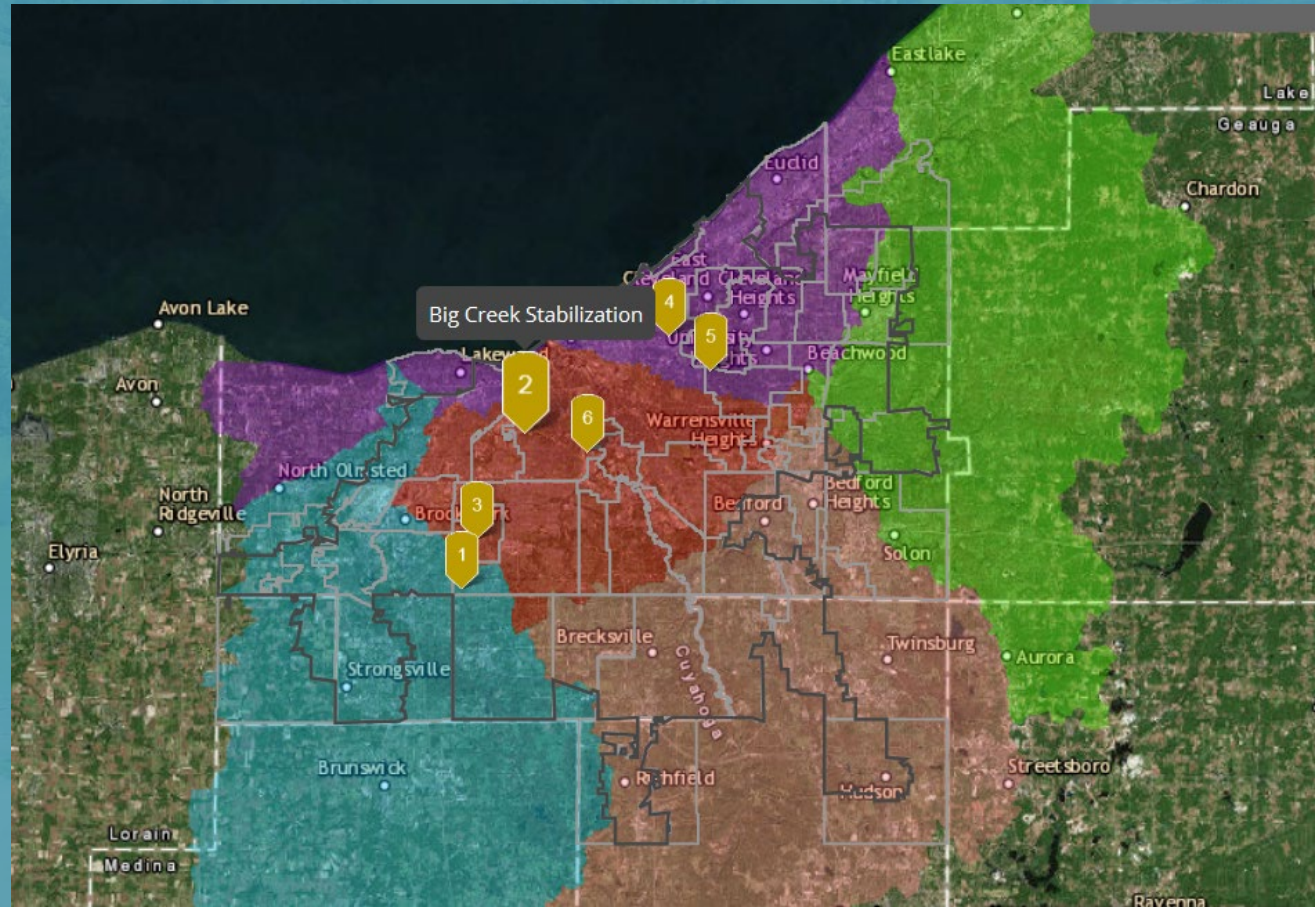
Doan Brook Streambank Stabilization



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



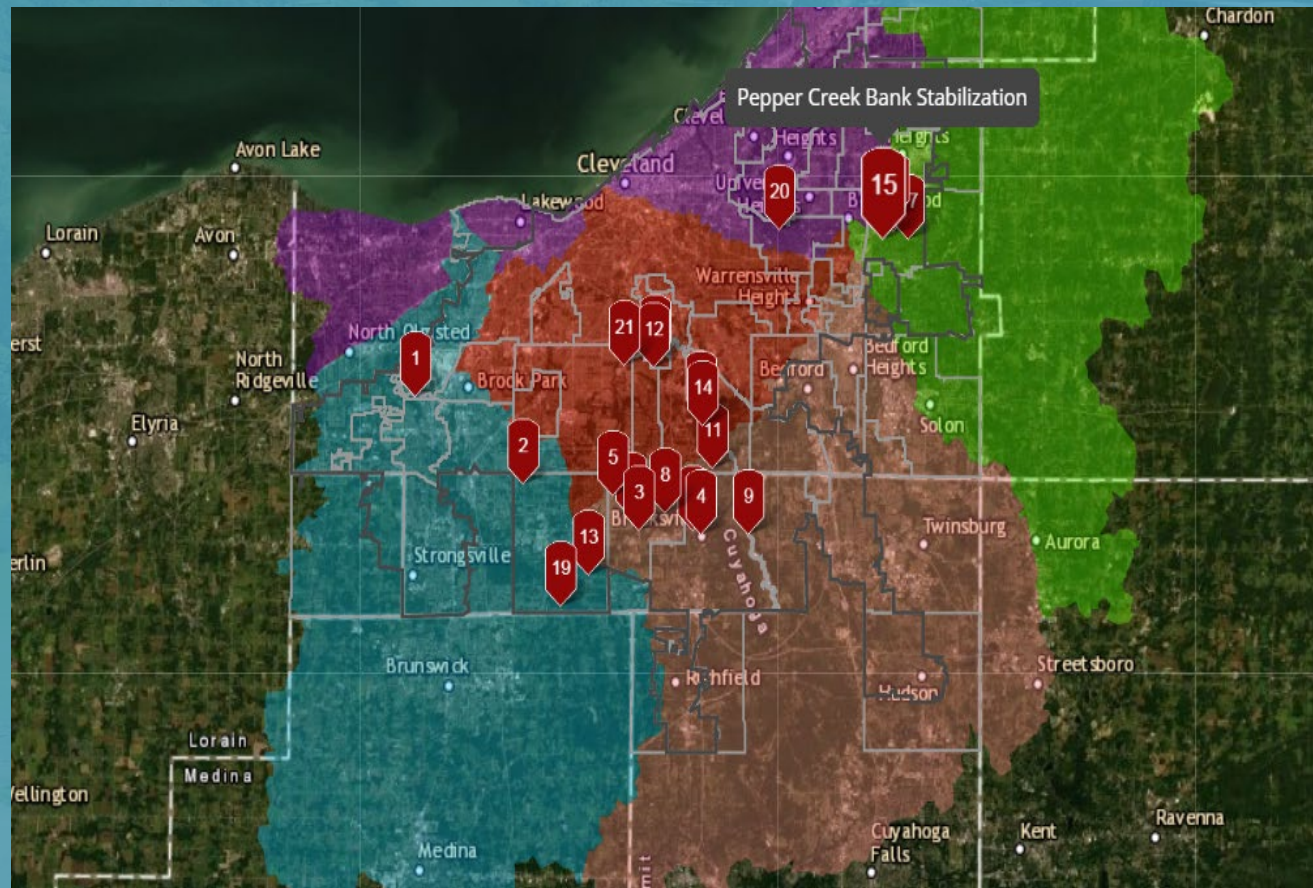
Big Creek Stabilization



1369_Construction Update

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

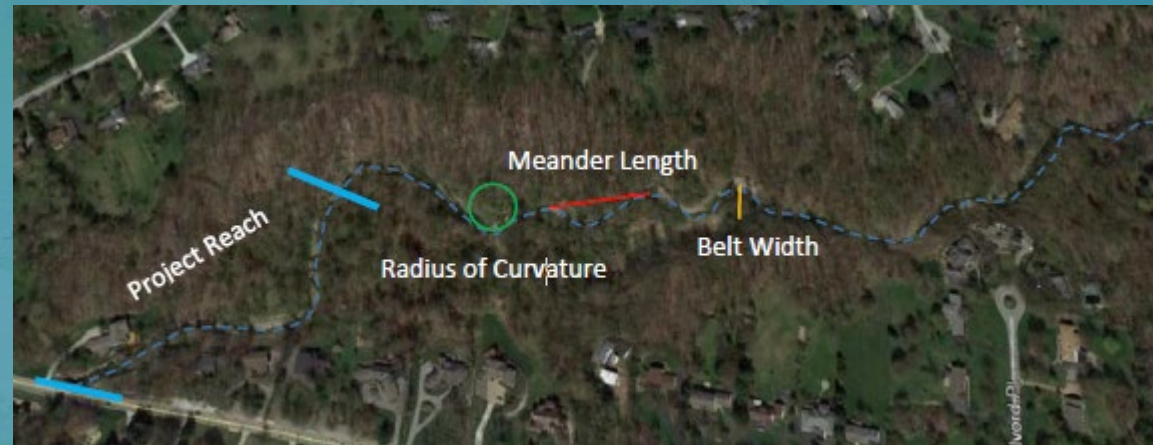
Severely eroding
stream segment
near Shaker
Blvd.



Pepper Creek Bank Stabilization



- *Subject reach was significantly modified to accommodate construction of Shaker Boulevard Bridge and residential home sites*



Pepper Creek Bank Stabilization



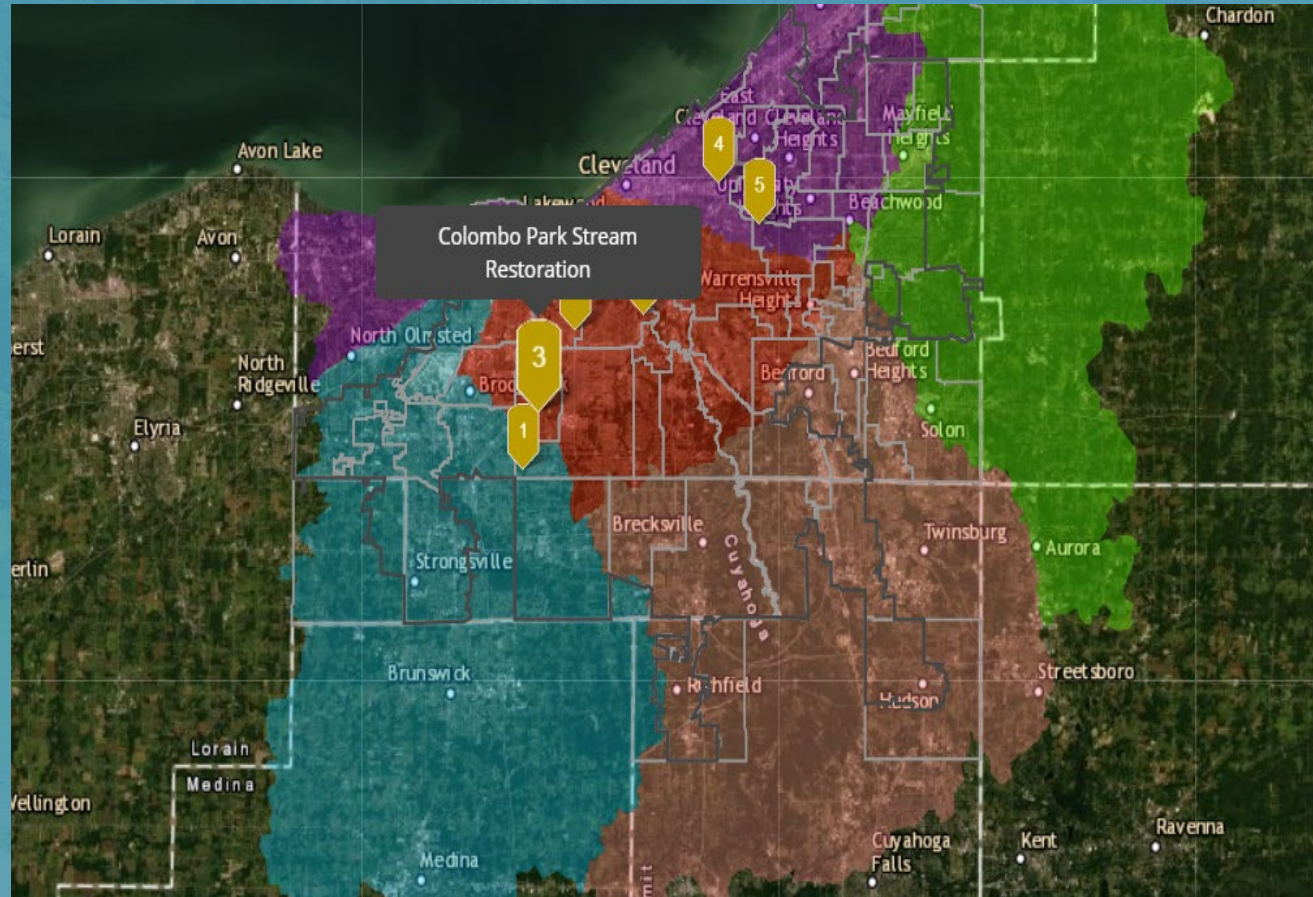
Pepper Creek Bank Stabilization



1409_Construction Update

Colombo Park Stream
Restoration in
Parma Heights;
tributary to
Cuyahoga River

Threatened
Sanitary Sewer
infrastructure



Colombo Park Stream Restoration



- *400 lf of stream restoration*
- *New soldier pile wall to protect park and sanitary structure*
- *\$1.5M Construction Cost*

Colombo Park Stream Restoration

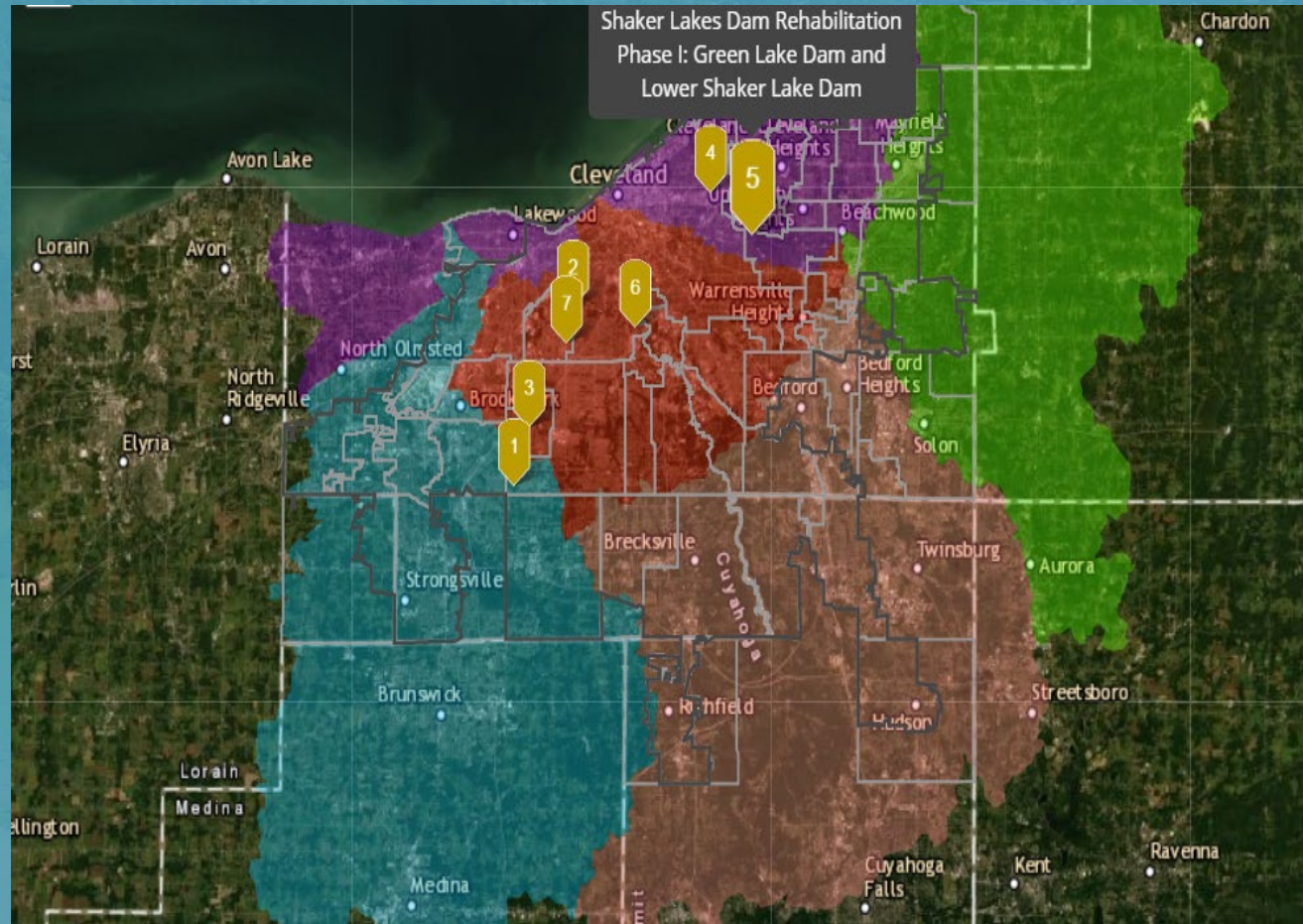


Colombo Park Stream Restoration



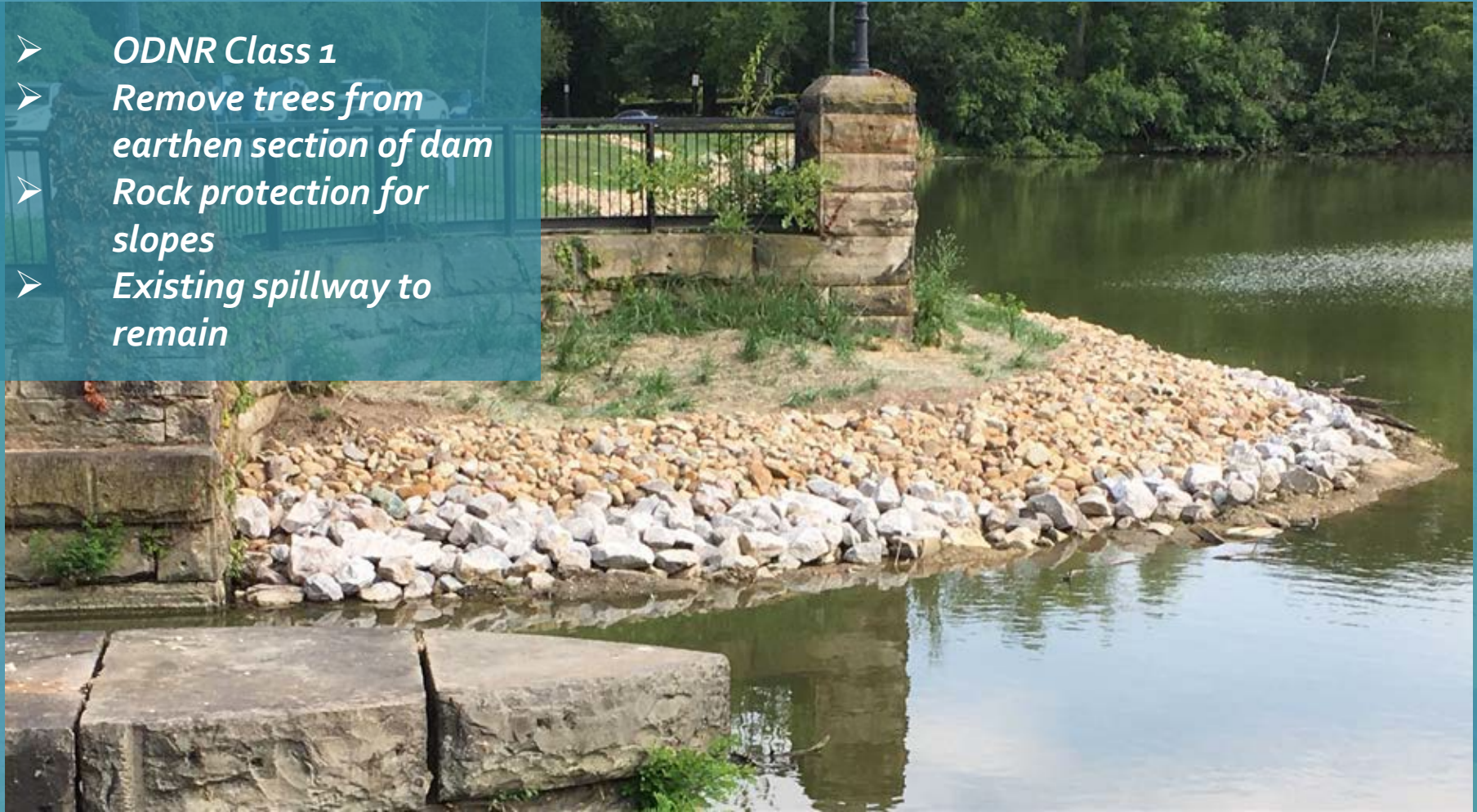
1565_Construction Update

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*

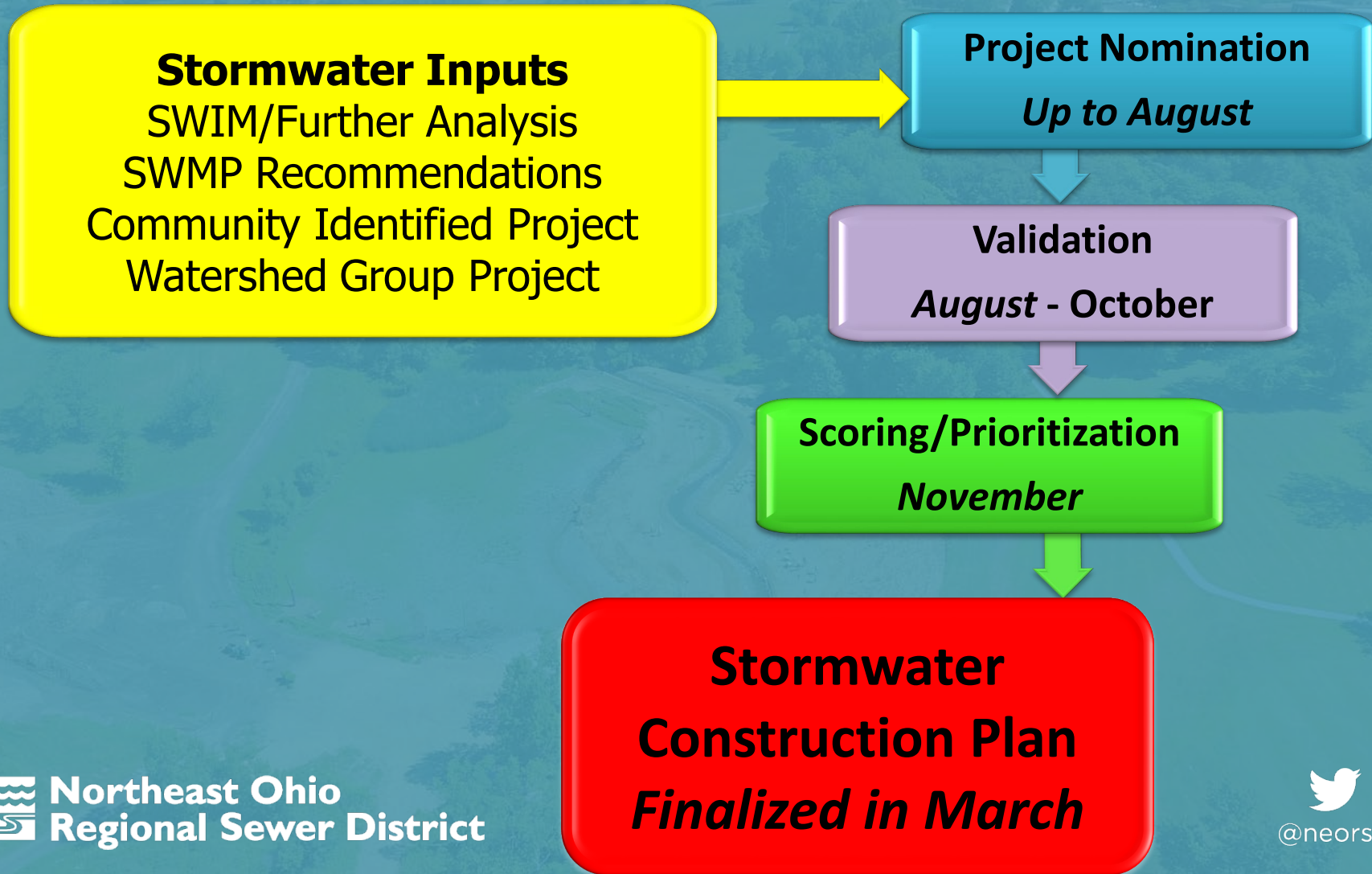


Green Lake Dam Rehabilitation



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

Stormwater Nomination Process



Nomination Process

- Revised Project Validation and Scoring
 - Project benefits
 - Data driven
 - Input from WTL, WTS, SWIM, and SWMPs

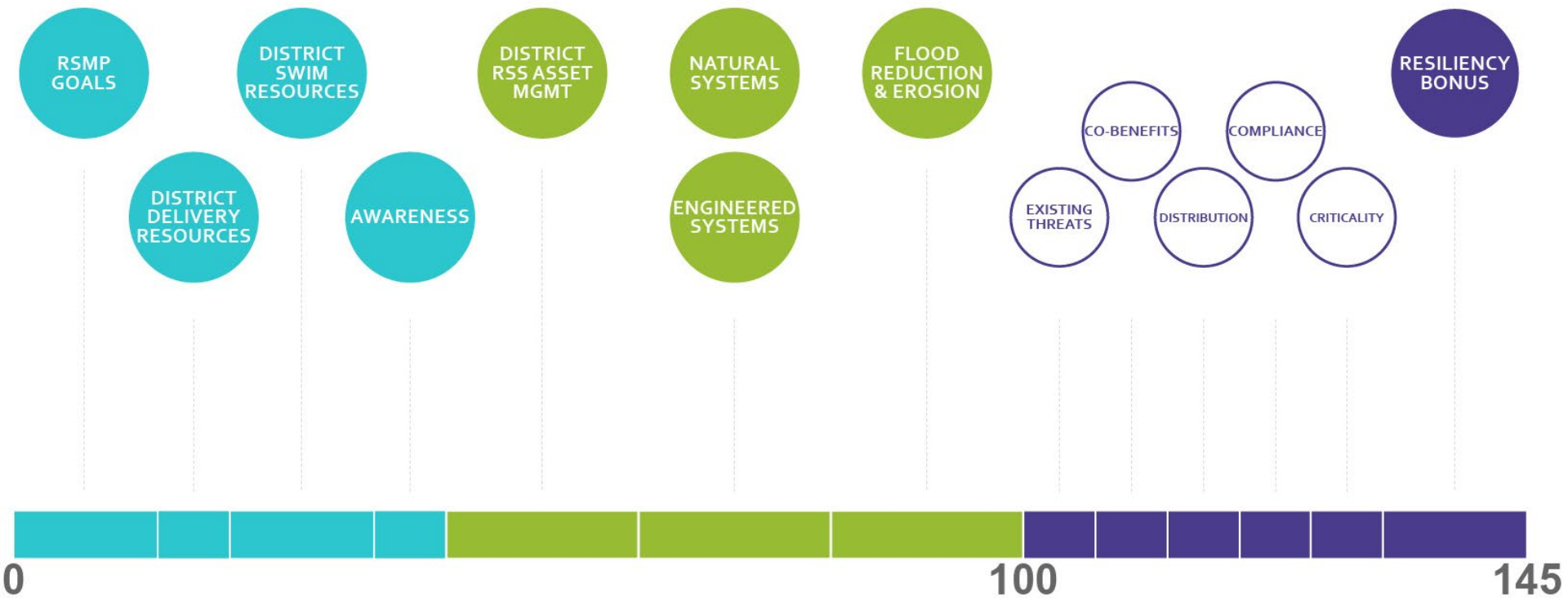
Nomination Process

- Previous risk-based system



Nomination Process

- Benefit-based system

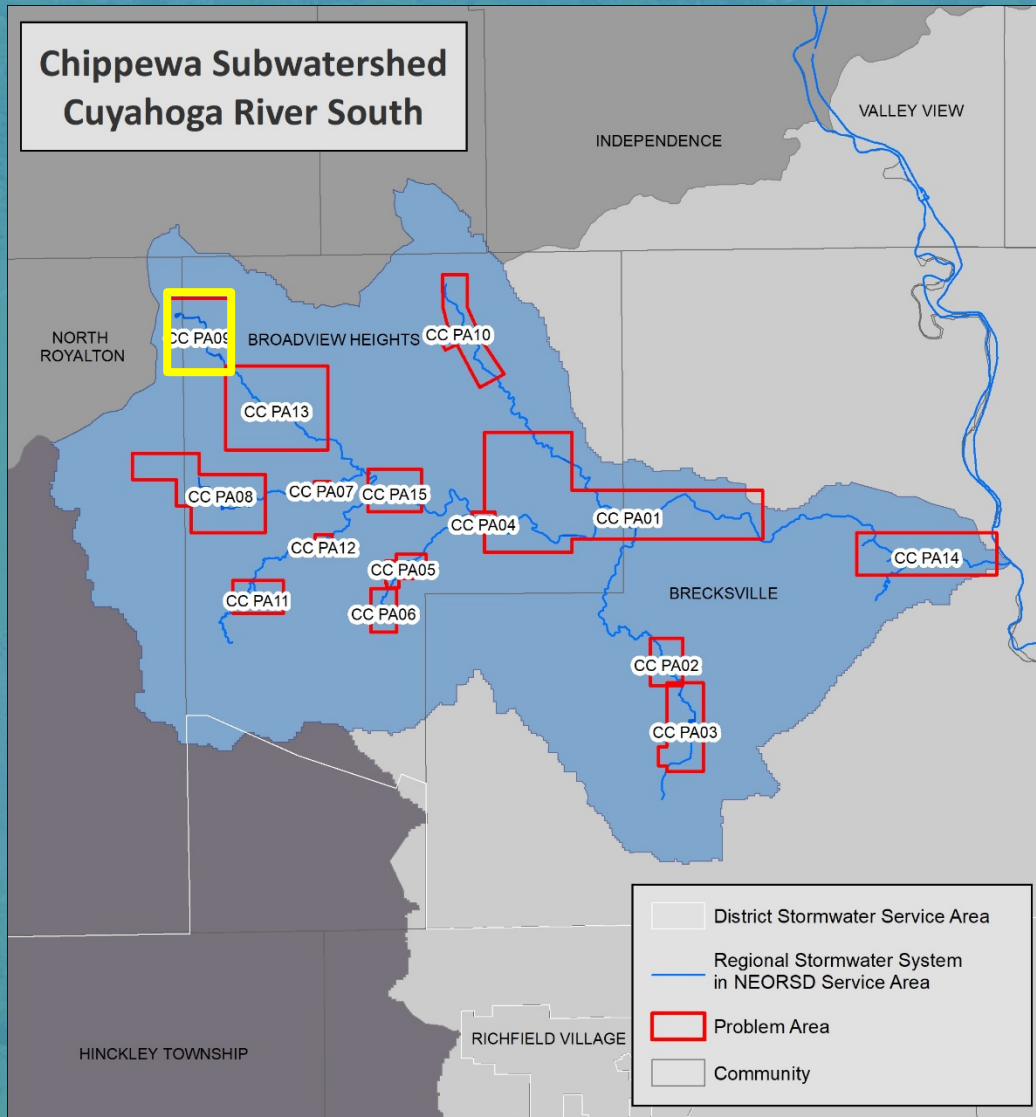


Nomination Process

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

Questions

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

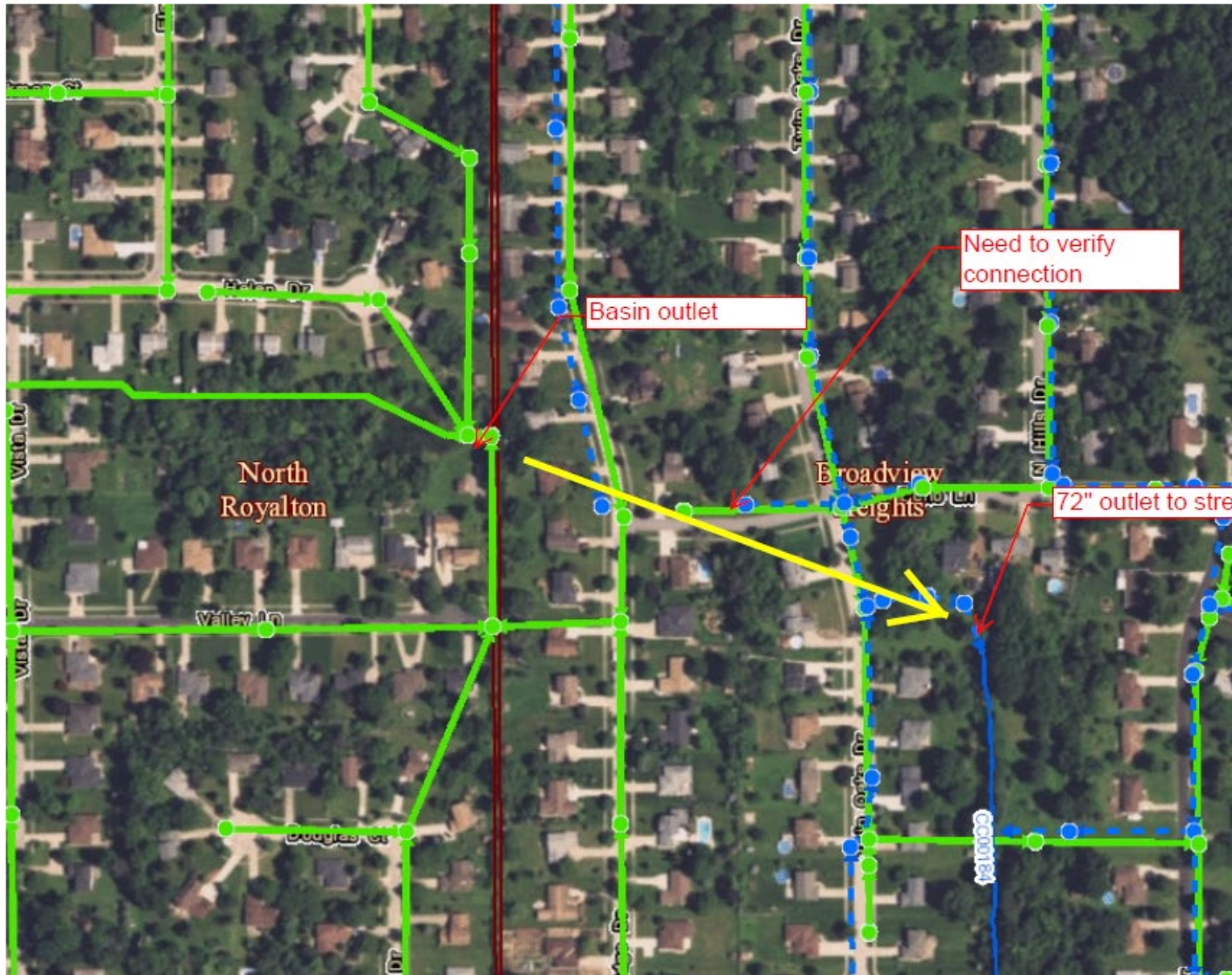
Broadview Heights/North Royalton

- 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
UTL #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

Problem to Project Timeline

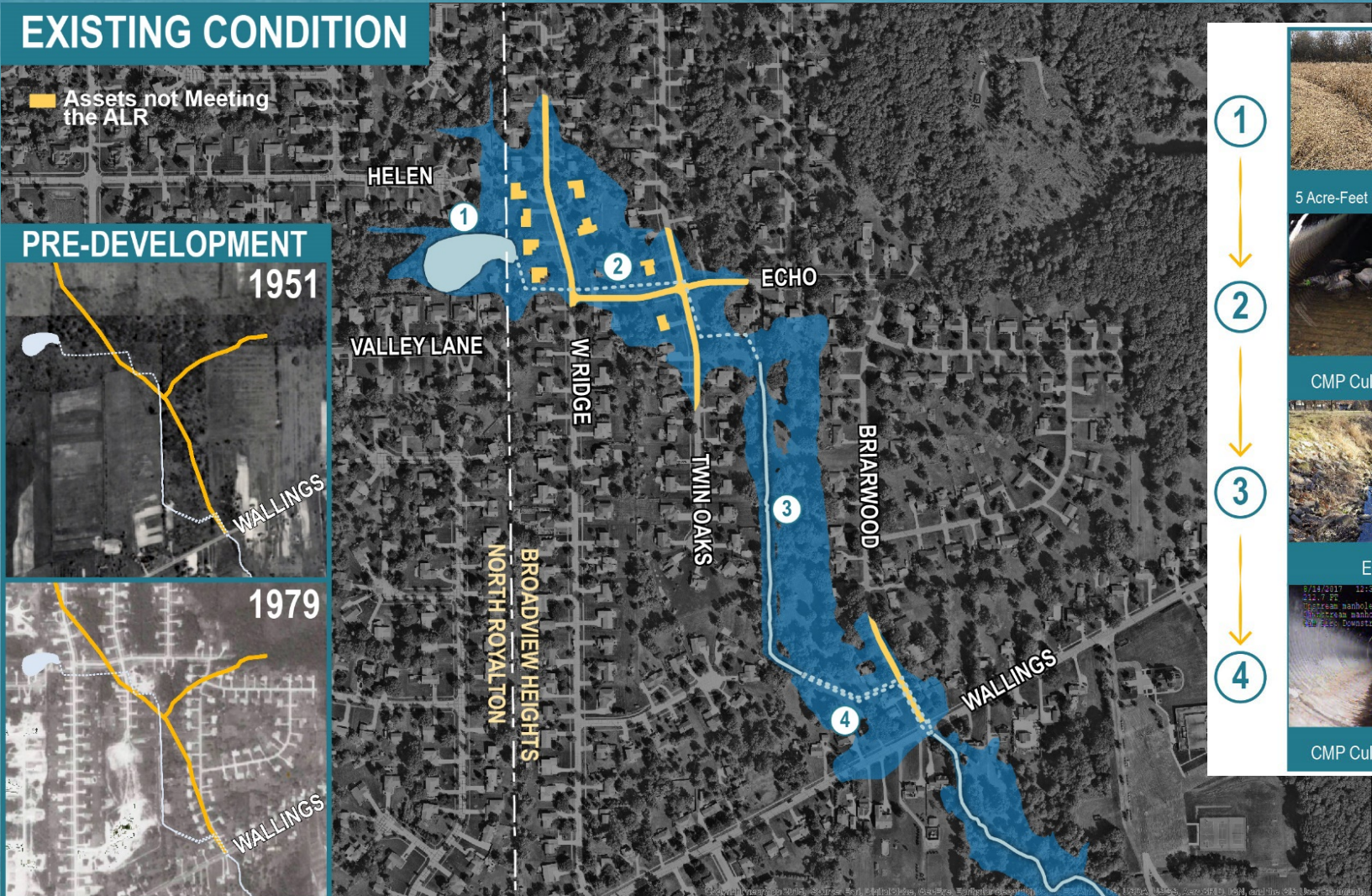
- SW Construction Plan prioritization - *Fall 2018*
- RFP Preparation - *January to March 2019*
- Proposals due - *April 2019*
- Flow monitoring by District began - *July 2019*
- Consultant selected and design started - *September 2019*



Problem Area Components

EXISTING CONDITION

Assets not Meeting the ALR



PRE-DEVELOPMENT

1951



1979

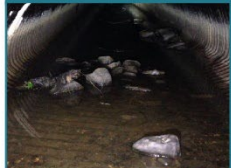


1



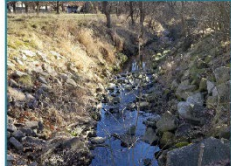
CC00231
5 Acre-Foot Detention Basin

2



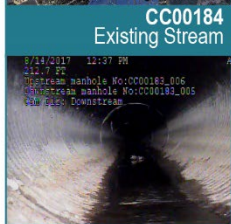
CC00230
CMP Culverted Stream

3



CC00184
Existing Stream

4



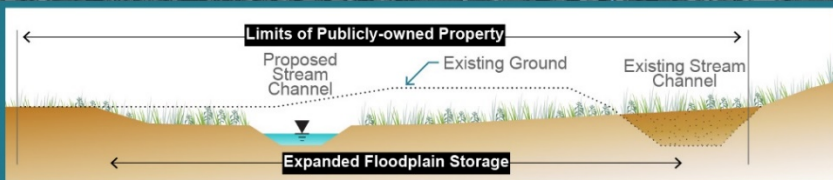
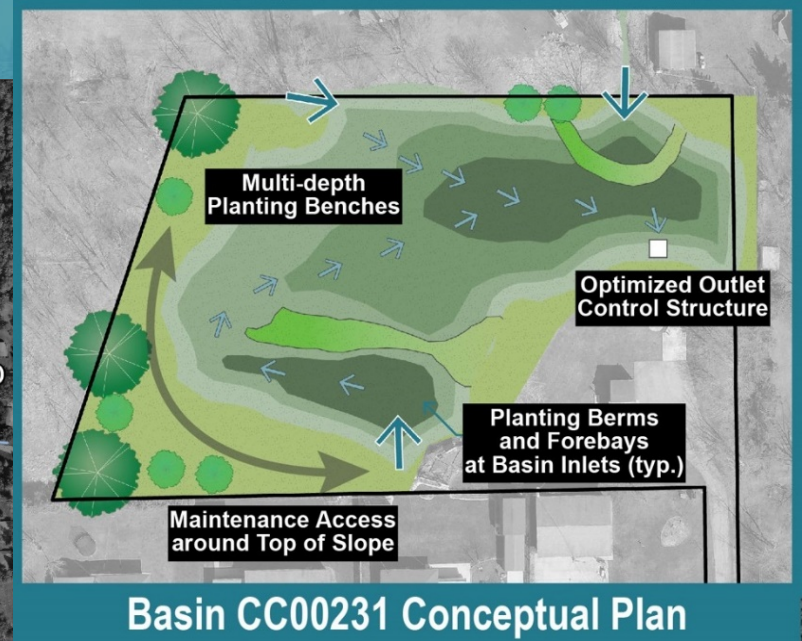
CC00183
CMP Culverted Stream

5/21/2017 12:37 PM
Site ID
Upstream manhole No:CC00183_006
Downstream manhole No:CC00183_005
Flow Rate: Downstream



@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



WTL Contact

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



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