

Watershed Advisory Committee
Rocky River
October 18, 2018

NORTHEAST OHIO REGIONAL SEWER DISTRICT

REGIONAL STORMWATER MANAGEMENT PROGRAM

Northeast Ohio Regional Sewer District

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Agenda

- Sewer District Updates
 - Community Cost-Share
 - Local Sewer System Evaluation Studies
- Stormwater Master Plan
- Stormwater Inspection and Maintenance
 - Urgent Response Process
 - Problems to Projects
 - Community Meetings on Crossings and Culverts
- Stormwater Construction Plan
 - 2018 Project Updates
 - 2019 Annual SW Construction Plan Review
 - Construction Project Oversight

Community Cost-Share

- CCS Funds Balance (8/31/2018) \$ 22,039,931
- 67 approved projects \$ 9,150,615
- 17 approved allocation agreements \$ 7,539,502
- CCS Funds available to Member Comm. \$ 5,349,814

30 of 55 Member Communities currently participating

Community Cost-Share Project Ideas

Examples of the Community Cost-Share Program

The Community Cost-Share Program provides funding to Member Communities for Community-specific sewer management projects. To implement the Community Cost-Share Program, the Northeast Ohio Regional Sewer District has formed a financial account termed "Community Cost-Share Account" for the aggregation and dissemination of funds derived from Stormwater Fee collected in each Member Community.

25% of the total annual Stormwater Fee collected in each Member Community is allocated to the Community Cost-Share Account for each Member Community. The Community Cost-Share Account is under the control of the District, with reimbursement of funds to Member Communities through a grant application and reimbursement process. To access Community Cost-Share Program funds, Member Communities must remain in compliance with Title V Stormwater Management Code. A Community Cost-Share Program Project must clearly promise to implement the goals and objectives of the District set forth in Title V and must be intended to address current or potential non-point source flooding, erosion, and water quality problems.

Map Information:

WRI_Communities

- Beachwood
- Beeford
- Beeford Heights
- Berea
- Bratenhall
- Brecksville
- Broadview Heights
- Brook Park
- Brooklyn
- Brooklyn Heights
- Cleveland
- Cleveland Heights

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Local Sewer System Evaluation Studies

Sanitary Sewer Evaluation Study Areas

community work plans

modeling/alternatives

field work

modeling/alternatives

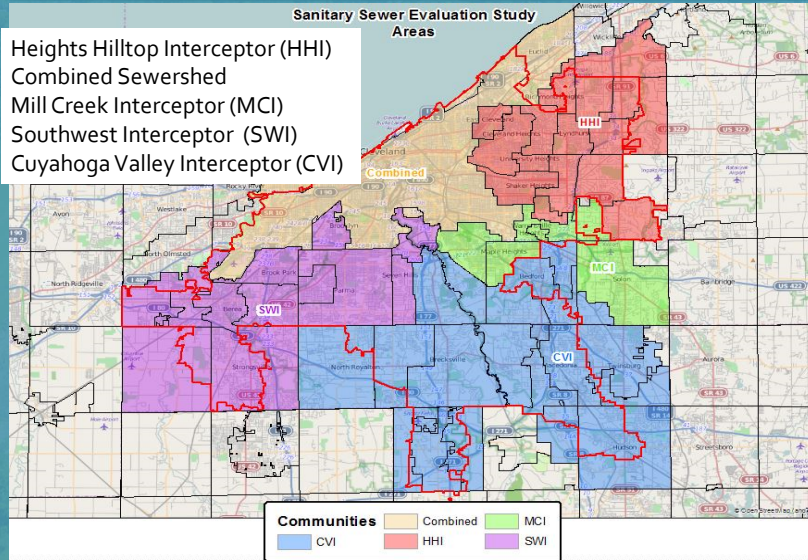
field work

Heights Hilltop Interceptor (HHI)
 Combined Sewershed
 Mill Creek Interceptor (MCI)
 Southwest Interceptor (SWI)
 Cuyahoga Valley Interceptor (CVI)

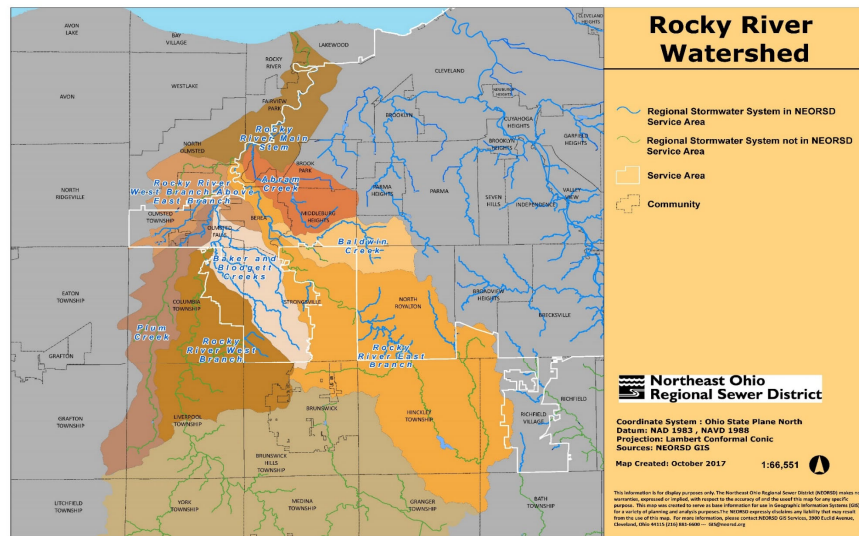
Communities

- CVI
- HHI
- MCI
- SWI
- Combined

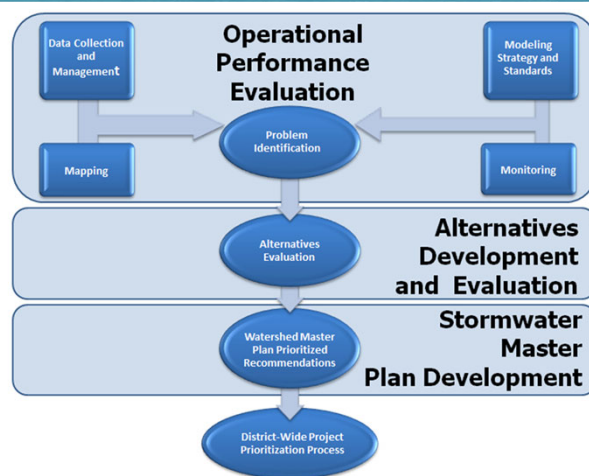
Sewer System Evaluation Studies



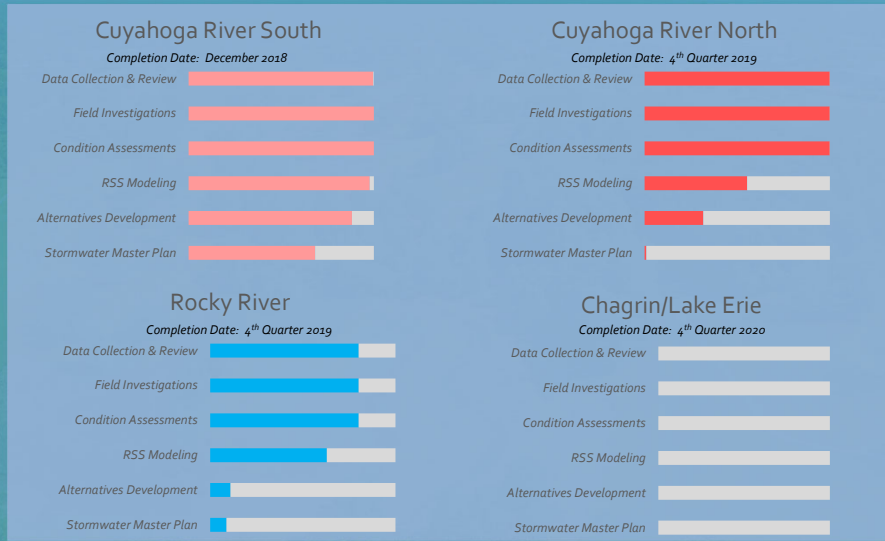
Stormwater Master Plan



Stormwater Master Plan Study Process



Stormwater Master Planning (status through 9/30)



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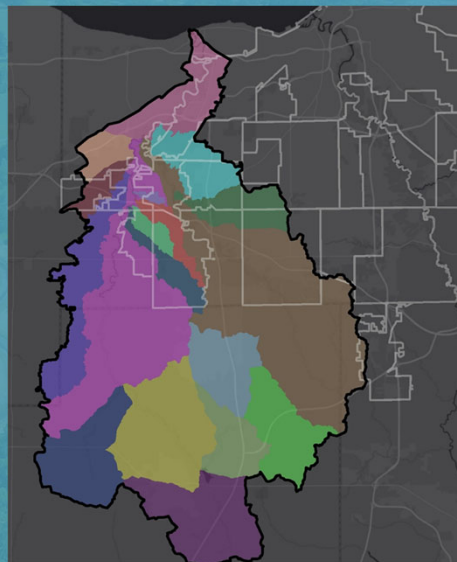
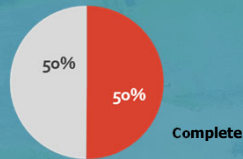


Stormwater Master Plan Study Area

Total Study Area

- 187,000 acres
- 46,000 acres within SWSA
- 7 Subwatersheds in the SWSA
- 13 WAC Member Communities

Budget: \$4.45 Million



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Stormwater Master Plan

Field Work Project Status



Task Item Status – 80% Complete

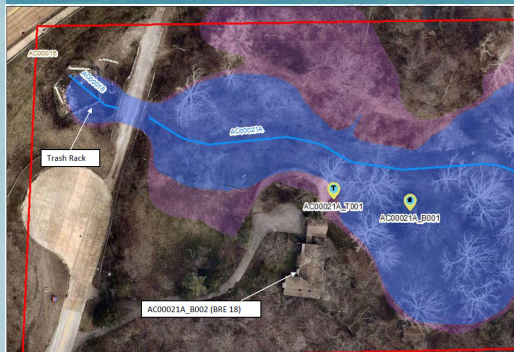
- Survey work (646 cross sections)
- Culverted Stream Inspection (5.3 miles)
- Open Channel Streams (52 miles)
- Crossings (198 total)
- Major Structures (10 total)
- Basins (15 total)
- High Water Mark Monitoring
- Spherical Imagery (104 stream miles)

Stormwater Master Plan

Modeling & Problem Identification Project Status

Task Item Status: 63% Complete

- Abram Creek - Model & Problem ID Complete
- Baker Creek – Model & Problem ID Complete
- Baldwin Creek Model & Problem ID - in progress
- Blodgett Creek – Model – in progress
- Plum Creek – Model – in progress
- Rocky River Main Branch – in progress
- Rocky River East & West Branch – in progress
- RSS Terminus Changes: 20 approved – Additional 8.5 miles



Stormwater Master Plan

Alternative Evaluation Project Status

Task Item Status: 11% Complete

- Abrams Creek – In Progress
- Baker Creek – In Progress
- Big Creek Parkway - Complete
- Basin Evaluations – In Progress



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Stormwater Master Plan

Level of Service Evaluation

Sam's Club – Brooklyn, Ohio – Big Creek Subwatershed

Problem:

- Stormwater inundation and impacts to Sam's Club, Brookpark Road & surrounding areas including fueling station
- Brookpark Road overtops around a 1-yr. storm
- Sam's Club parking lot begins to flood between the 2- and 5- yr storms
- Water enters the Sam's Club Building around the 10-yr storm



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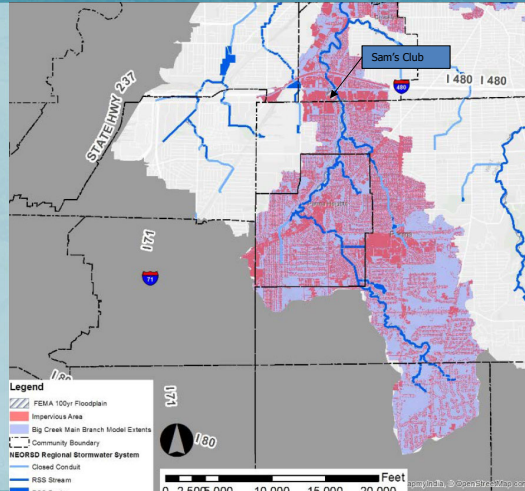
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Stormwater Master Plan

Level of Service Evaluation

Problem Overview

- Sam's Club building & parcel site within both the 100-year FEMA & CRN SWMP model floodplains
- Total Drainage Area 8781 acres
- Percent Impervious 38% acres
- Problem Area Specific - Target volume to manage for 100-year LOS 1,800 acre-feet or $\approx 1,361$ football fields
- Watershed-wide: Target volume to manage for 100-yr LOS 3,300 acre-feet or 2,496 football fields



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Stormwater Master Plan

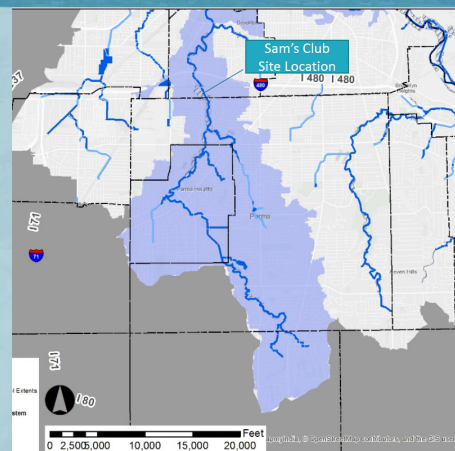
Level of Service Evaluation

No upstream development at all

- All impervious area (development) removed
- Review 100-yr design storm (CRN SWMP parameter)
- Review depth at Sam's Club entrance 767.3

Results

- Inundation depth 1 ft above Sam's Club entrance elevation



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Stormwater Master Plan

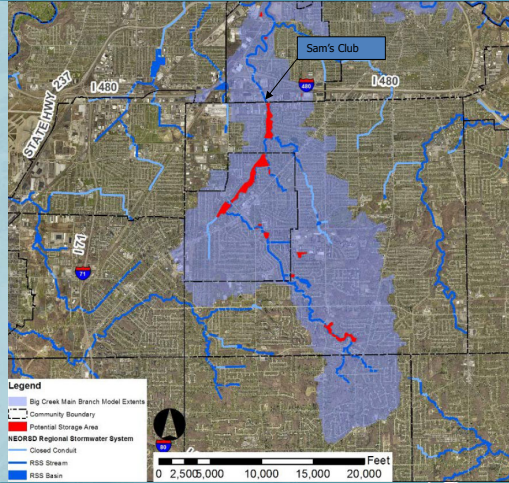
Level of Service Evaluation

Use open land areas –regardless of current ownership

- Review 100-yr design storm (CRN SWMP parameter)
- Review depth at Sam’s Club entrance 767.3

Results

- Potential open area is about 440 acres
- Needed storage of 1,500 acre-ft exceeds potential
- Current watershed does not have enough open areas to address levels of flooding
- Available open areas at Walmart locations for storage opportunities can not remedy issues

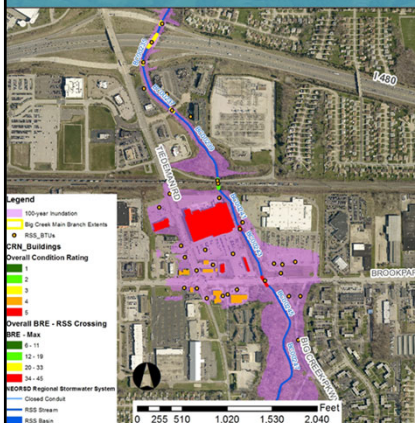


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Stormwater Master Plan

Level of Service Evaluation – Mitigation Options



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- **<2-year Scenarios**
 - Current conditions (Do Nothing)
 - Raise Brookpark Road
 - Channel re-alignment south of Brookpark Rd
 - Sam’s Club/Walmart bridge removal
- **<5-year Scenario (New)**
 - CSX crossing modification
- **<10-year Scenario**
 - Channel widening into Walmart parking lot
- **<25-year Scenario (New)**
 - Channel widening into Walmart parking, CSX crossing upsizing & width increase at Brookpark Rd
- **Results:**
 - Increased floodplain storage from <2-yr to <25-yr LOS (up to <10-yr with channel widening only)
 - Inundation depths reduced by about 1 inch at 100-yr
 - Downstream problem areas show increase inundation depths

Stormwater Master Plan

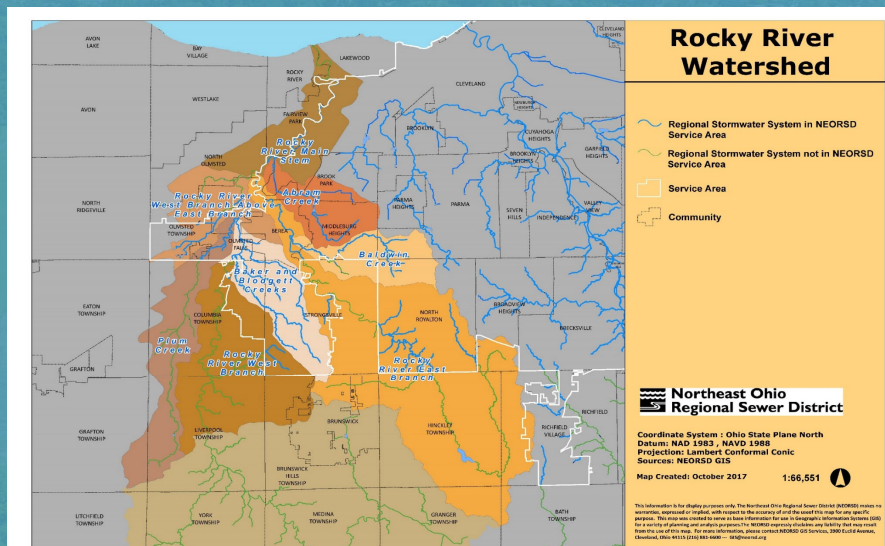
Community Communication

- Member Community Work Plans
- Meet with communities
 - Problem Area Review
- Recommendations and Community Report

Your Watershed Team Leader serves as the point of contact between the communities and the District



Questions



Stormwater Inspection and Maintenance (SWIM)



SWIM Agenda

- Introduce SWIM Team Members
- Urgent Storm Event Response Process
- Small Scale Maintenance Projects
- Upcoming Community Meetings on Crossings

Westside SWIM Team

- **Mark Link**
Supervisor
- **Christina Silea**
Inspector
- **Nikki Velez**
Inspector
- **Claire Posius**
Project Coordinator
- **Martina Jozanovic**
*Data Maintenance
Administrator*

Eastside SWIM Team

- **Keith McClintock**
Supervisor
- **Jon Brauer**
Inspector
- **Anne Roberto**
Inspector
- **Mark Hornyak**
Project Coordinator
- **Eric Baker**
*Data Maintenance
Administrator*

SWIM Agenda

- Introduce SWIM Team Members
- Urgent Storm Event Response
Process
- Small Scale Maintenance Projects
- Upcoming Community Meetings on
Crossings

SWIM Progress Status

Urgent Storm Response Case Study

April 15, 2018 Storm Event

SWIM Urgent Storm Event Response Process

- Review Advanced Warning Notifications
 - e.g., National Weather Service
- Field Check and Clean Known Problem Assets Prior to Storm
- Track Rainfall for Size of Storm (e.g., 10-yr, 24-hr) & Monitor Live Field Data for Evidence of Flooding
- Analyze Media, Customer & Member Community reported flooding

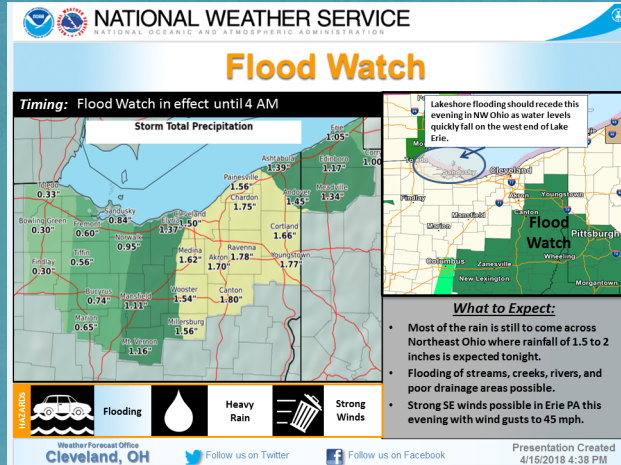
SWIM Urgent Storm Event Response Process

- Immediately Field Inspect Problem Assets Upon Receded Flooding
- Mobilize Contractors for Post-Storm Event Response Maintenance

Urgent Storm Event Response Case Study

April 15-16, 2018

Review of Advanced Warning Notifications



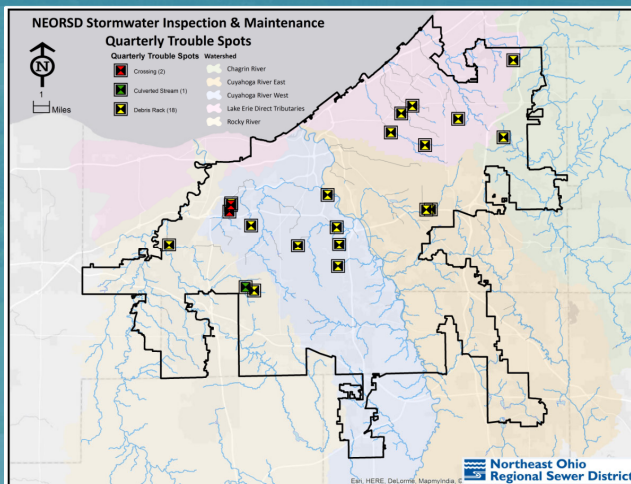
4/15/18 NWS Notifications received at 5:02 PM (Sunday) immediately prior to the storm

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Sites SWIM Routinely Checks for Debris and Prior to Large Storms with Advanced Warning

SWIM routinely visits 21 sites for debris maintenance



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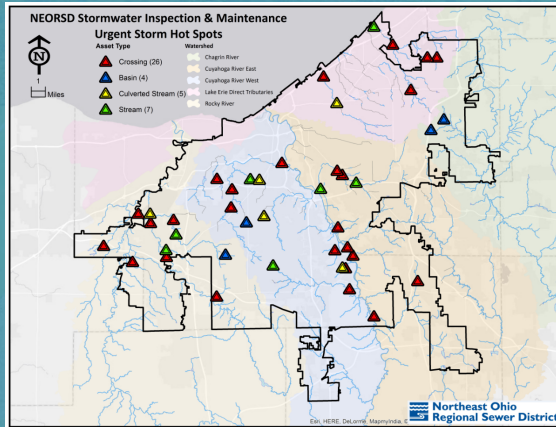
April 14, 2018: Debris Rack is Clear Before the Storm Event



April 16, 2018: Peak Storm and Debris Accumulated on Rack



Immediately Field Inspected Problem Assets Upon Receded Flooding



SWIM has a list of 42 known sites that are prone to flooding

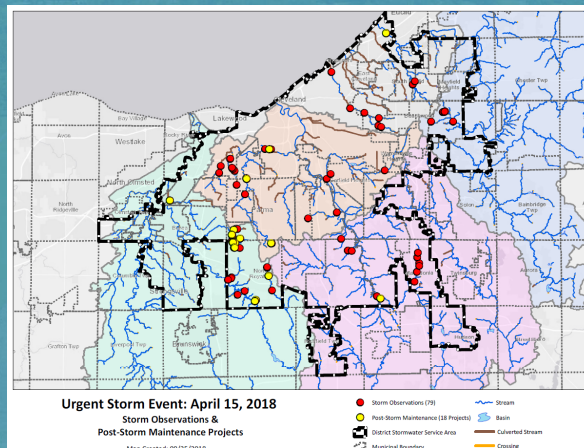
Field inspected when reported heavy rainfall, high streams, or media reports of flooding in the area

Additional sites are added based on media reports or field observations

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Mobilized Contractors to Perform Post-Storm Response Maintenance



79 site inspections

18 debris removal projects (many the same day as inspection)

Average yardage of debris was low compared to previous removals due to preventative maintenance

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Rocky River: Rocky River East Branch
Member Community: North Royalton
Asset ID: RY00434
Maintenance Project: Debris Removal (10 CY)

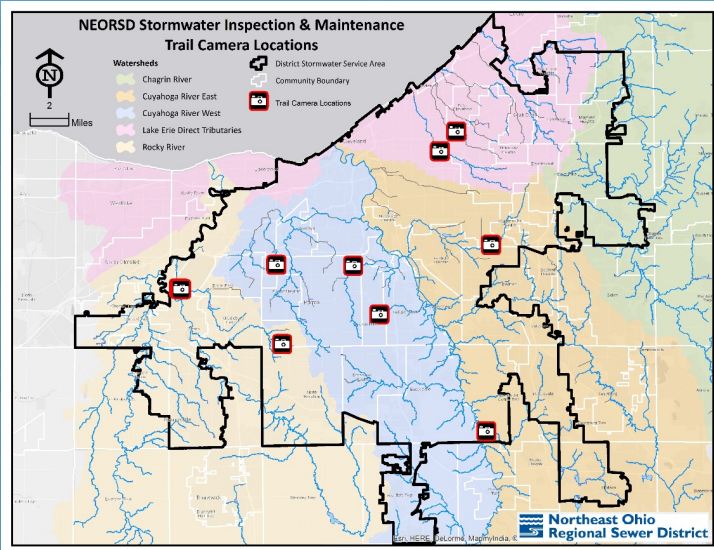


Debris was removed the same day it was inspected

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Using Trail Cameras to Support the RSMP



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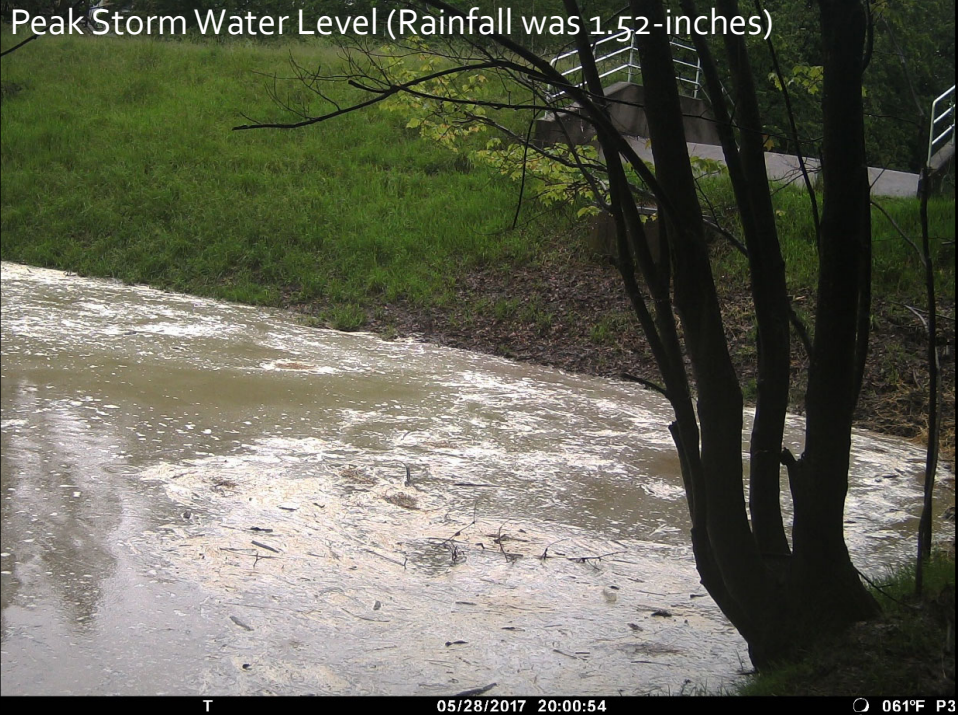


Post Storm (80 Cubic Yards of Sediment & Debris)



Post Storm Event Response

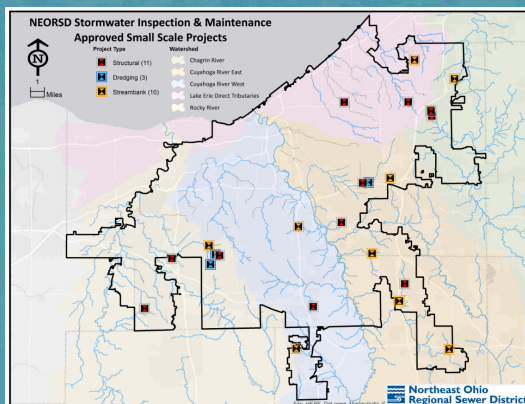




SWIM Agenda

- Introduce SWIM Team Members
- Urgent Storm Event Response Process
- **Small Scale Maintenance Projects**
- Upcoming Community Meetings on Crossings

Small Scale Maintenance Projects



21 small scale maintenance projects are underway as a pilot preventative maintenance program

- 11 Structural Maintenance projects
- 10 Streambank Stabilization projects

**Small Scale Maint Project: Structural Repair
Rocky River: Baker Creek**

Asset #: BK00228
Strongsville: Lunn Road
Structural BRE = 24



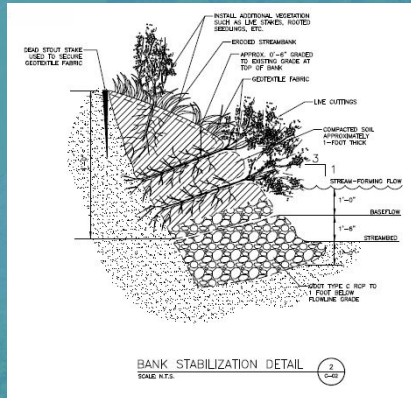
**Small Scale Maint Project: Structural Repair
Rocky River: Baker Creek**

Asset #: BK00526
Columbia Township: 2484 Redfern Road
Structural BRE = 9



Small Scale Maint Project: Streambank Stabilization Rocky River: Baker Creek

- Lay banks to a stable slope
- Install live branch layering and rock toe protection



SWIM Agenda

- Introduce SWIM Team Members
- Urgent Storm Event Response Process
- Small Scale Maintenance Projects
- Upcoming Community Meetings on Crossings

Upcoming Community Meetings to Discuss State of RSS Crossings

District Stormwater Service Area

2018 SWSA Structural Integrity Report Card	SWSA Subwatersheds
A	12
B	38
C	5
D	1
F	0
Total	56

The District continues to inspect RSS assets (55%)

Almost all RSS crossings have been inspected

Meetings will review SWIM findings and next steps for implementation and financing

- 327 SWSA RSS assets with Condition Rating = 4 or 5
- 63 SWSA RSS Crossing assets Condition Rating = 4 or 5



Upcoming Community Meetings to Discuss State of RSS Crossings

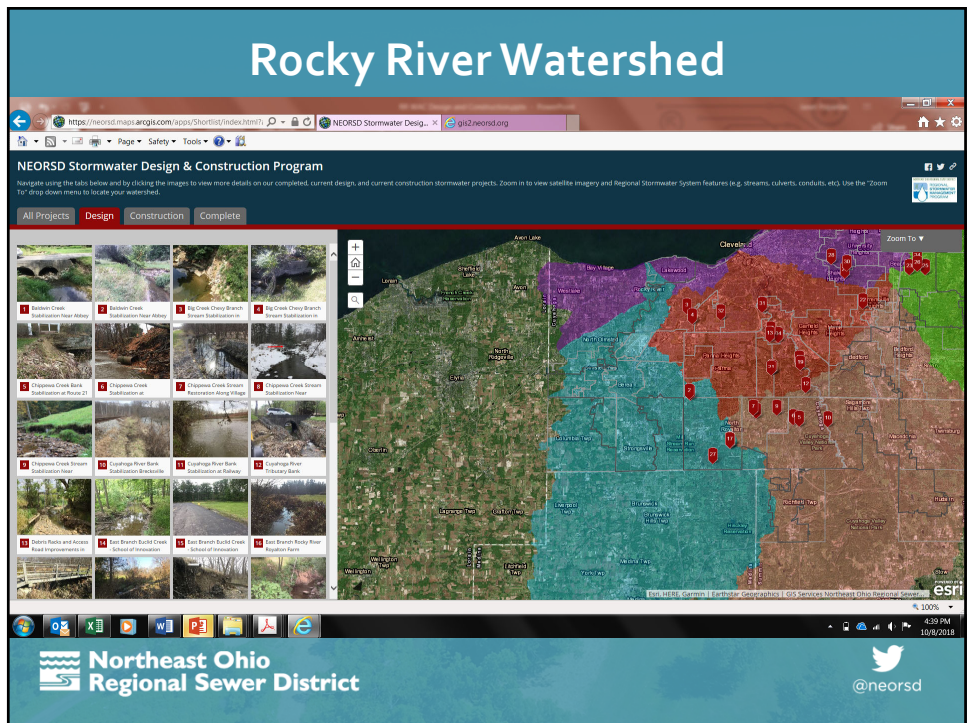
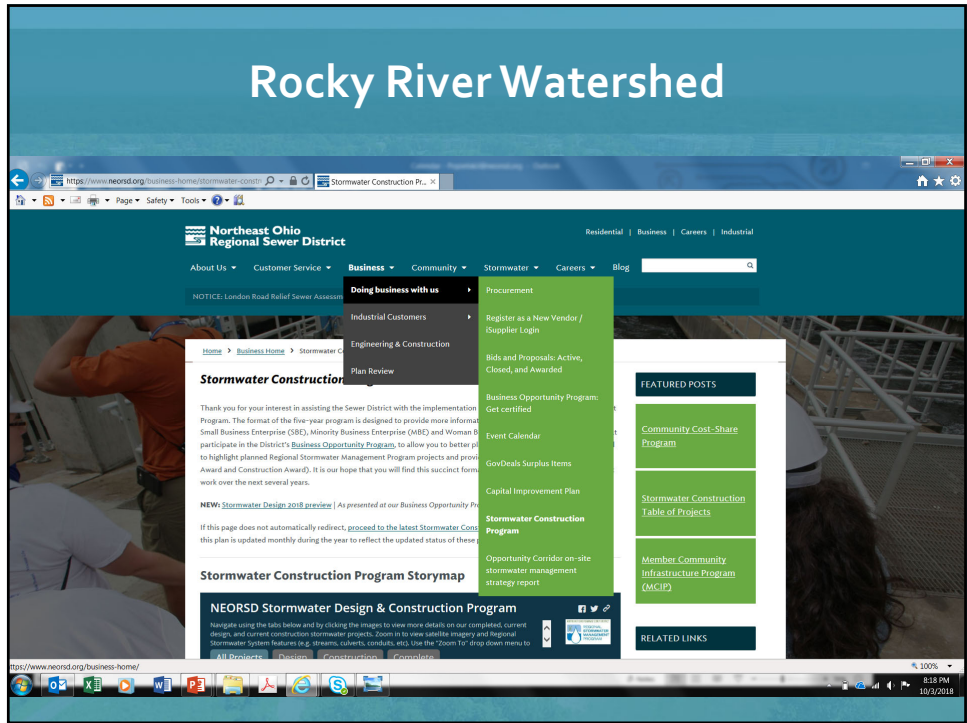
2018 Cuyahoga River North WAC Structural Integrity Report Card

ASSET CLASS TYPE	RSS COUNT	COND SCORE COUNT	Percent Inspected	Report Card Grade (per structural integrity condition)	Average Structural Integrity Condition	AVG BRE
RSS SUBTOTAL	1,070	451	42%	B	2.26	12.00
BASIN	20	15	75%	B+	1.9	11.1
CROSSING	325	199	61%	B	2.1	14.9
CULVERTED_STREAM	83	40	48%	C+	2.6	20.6
Major Structure	6	1	17%	D	4.0	36.0
STREAM	636	196	31%	B-	2.4	7.2

- 101 CRN RSS assets with Condition Rating = 4 or 5
- 13 CRN RSS Crossing assets with Condition Rating = 4 or 5

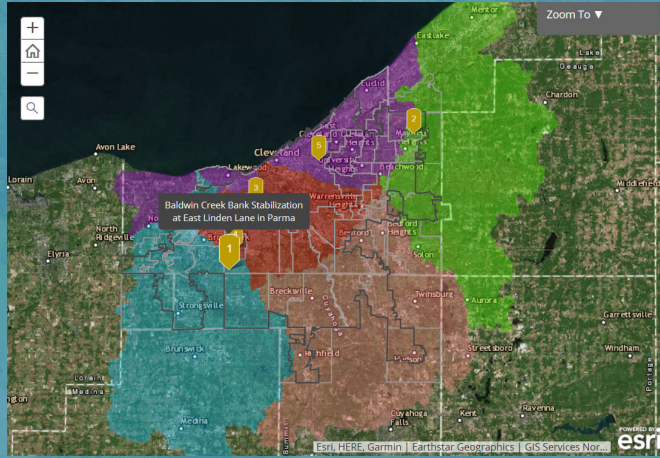






Rocky River Watershed Construction

Baldwin Creek Bank Stabilization at East Linden Lane in Parma



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NEORS Stormwater Design & Construction Program

Project Name: Baldwin Creek Bank Stabilization at East Linden Lane in Parma

Community: Parma

Watershed Team Leader: D. Friedman

Watershed: Rocky River

Subwatershed: Baldwin Creek

Summary: This project will improve in-stream habitat and reduce stream energy by constructing riffle pool structures along approximately 500 linear feet of Baldwin Creek in

BALDWIN CREEK BANK STABILIZATION AT EAST LINDEN LANE

Parma, Ohio

ROCKY RIVER WATERSHED

BALDWIN CREEK SUBWATERSHED

Project Details

Asset Numbers:
BE00021
PC00146
BD00257
BD00259

Contract Type:
Design/Build

Construction Cost:
\$3,278,780

Anticipated Substantial Completion:
2nd QTR 2019

Watershed Team Leader:
FriedmanD@neorsd.org

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REGIONAL STORMWATER MANAGEMENT PROGRAM

SUMMARY

This project will improve in-stream habitat and reduce stream energy by constructing riffle pool structures along approximately 500 linear feet of Baldwin Creek in the City of Parma.

It will also replace failing retaining walls and a headwall to protect City of Parma infrastructure and private property assets.

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NEORS D Stormwater Design & Construction Program

27 Rocky River Tributary Stabilization and Re-alignment Along Ridge Road

Project Name: Rocky River Unnamed Tributary Stream Stabilization and Re-alignment along Ridge Road
 Community: North Royalton
 Watershed Team Leader: D. Friedman
 Watershed: Rocky River
 Subwatershed: Rocky River East
 Summary: The project will address ongoing bank erosion that is beginning to encroach on

ROCKY RIVER TRIBUTARY STABILIZATION / REALIGNMENT ALONG RIDGE ROAD NORTH ROYALTON, OHIO

SUMMARY

The project will address ongoing bank erosion that is beginning to encroach on the Ridge Road ROW as the stream is attempting to re-establish a more natural meander pattern.

Engineering alternatives include re-aligning a portion of the channel away from the road embankment or stabilizing the channel and embankment in place.

Project Details

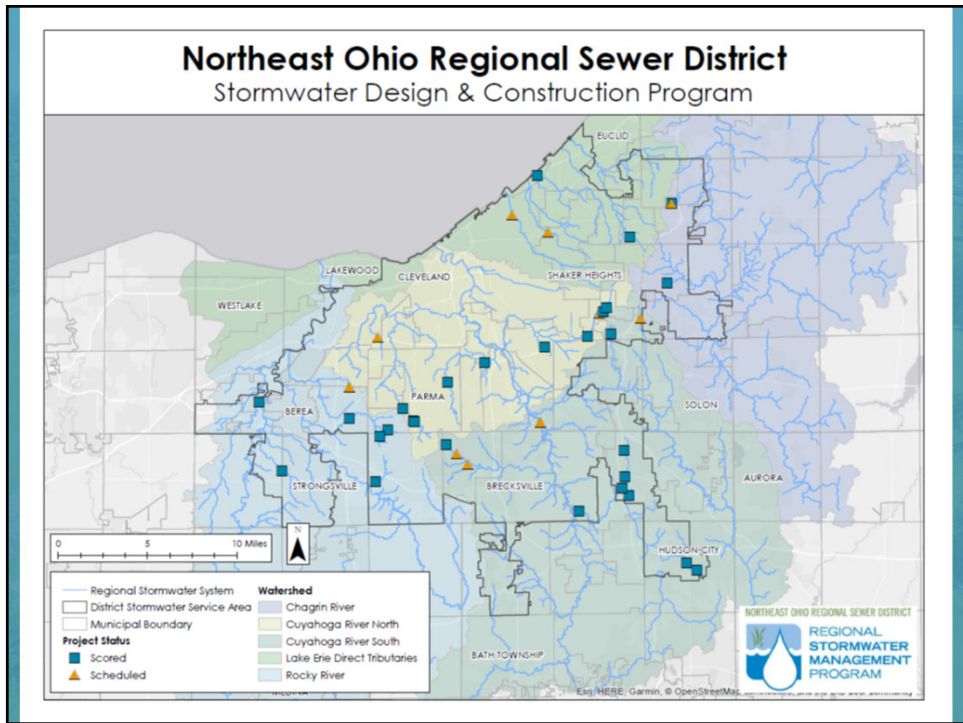
Asset Number:
RY00434

Contract Type:
GES/Bid/Build

Construction Cost:
\$785,000

Anticipated Construction NTP:
3RD QTR 2019

Watershed Team Leader:
FriedmanD@neorsd.org



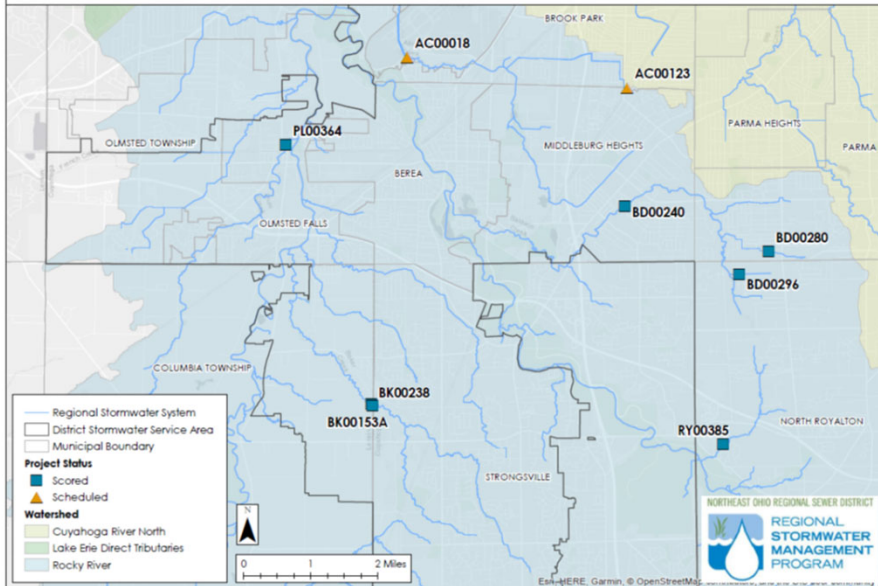
New Design and Construction Projects Rocky River

	Proposed Project Name	RSS Asset ID(s)	WAC Watershed	Subwatershed	Project Community	Total BRE
1	Baldwin Creek Restoration upstream from the Stormes Drive Basin in Parma	BD00280	Rocky River	Baldwin Creek	Parma	72
2	Baldwin Creek - Stream Realignment and Sanitary Sewer Protection - Middleburg Heights	BD00240	Rocky River	Baldwin Creek	Middleburg Heights	63
3	Baldwin Creek_North Royalton Culvert Repair - BD00296	BD00296	Rocky River	Baldwin Creek	North Royalton	61
4	Channel Realignment at Baker Creek Farm in Columbia Twp	BK00238, BK00153A	Rocky River	Baker Creek	Columbia Township	33
5	Rocky River Stream Stabilization and Sewer Protection in North Royalton	RY00385	Rocky River	Mainstem	North Royalton	32
6	Plum Creek Wall Stabilization in Olmsted Falls	PL00364	Rocky River	Plum Creek	Olmsted Falls	13

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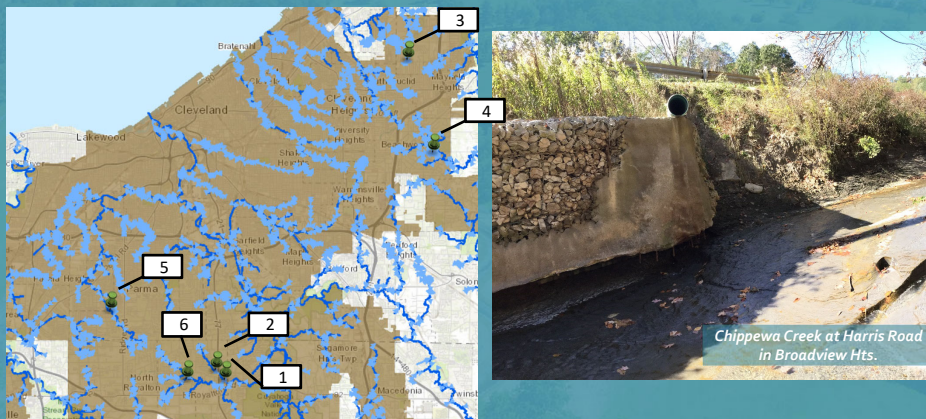
NEORS D Stormwater Design & Construction Program Rocky River Watershed



Project Delivery Methods

- GES- Bid-Build
- Design-Bid-Build
- Design-Build
- Small Scale Projects
 - Under \$50K
 - \$50K-\$250K

Multi-Site Streambank Stabilization



Metrics of Success

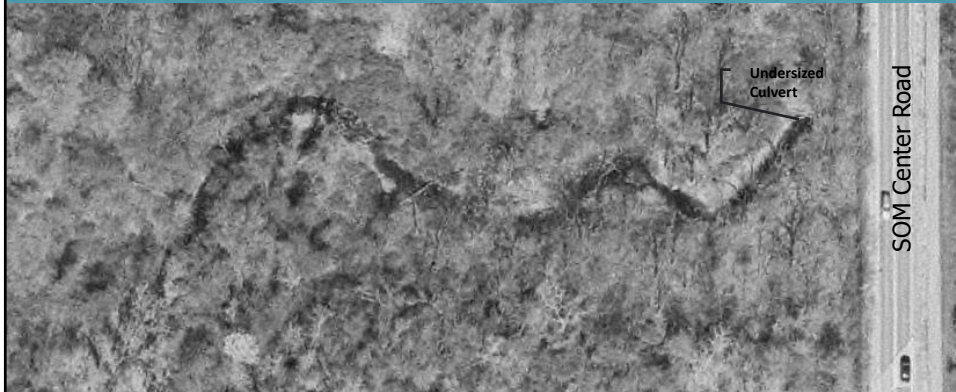
- 9,336 LF of Stream Restored/Stabilized
- 23,725 Tons of Sediment Removed
- 6.6 Acres of Floodplain Reconnected
- 575 LF of Culverts Repaired/Replaced

- Property Interests Obtained
 - 2 Fee Simple Acquisitions (18 acres)
 - 17 Permanent Easements Acquired

Beecher's Brook Bank Stabilization



Beecher's Brook Culvert 2002



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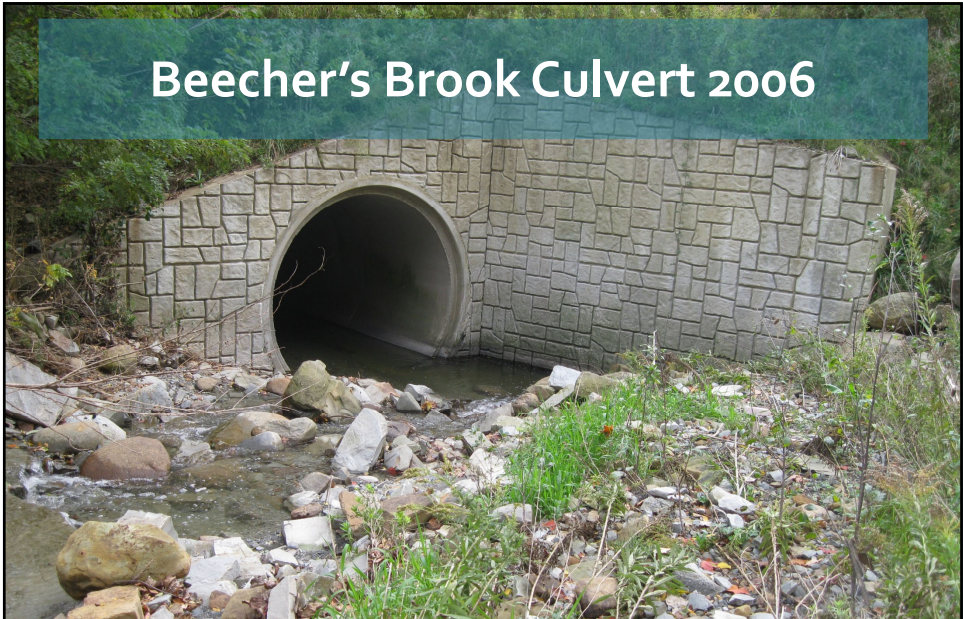
Beecher's Brook Culvert 2002



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Beecher's Brook Culvert 2006

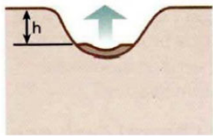


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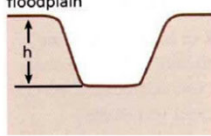


CHANNEL EVOLUTION MODEL (SIX STAGES) Simon and Hupp, 1986

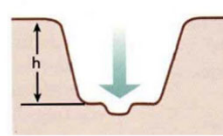
Class I. Sinuous, Premodified
 $h < h_c$



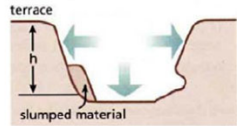
Class II. Channelized*
 $h < h_c$



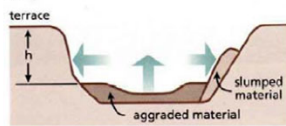
Class III. Degradation
 $h < h_c$



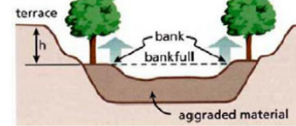
Class IV. Degradation and Widening
 $h > h_c$



Class V. Aggradation and Widening
 $h > h_c$



Class VI. Quasi Equilibrium
 $h < h_c$

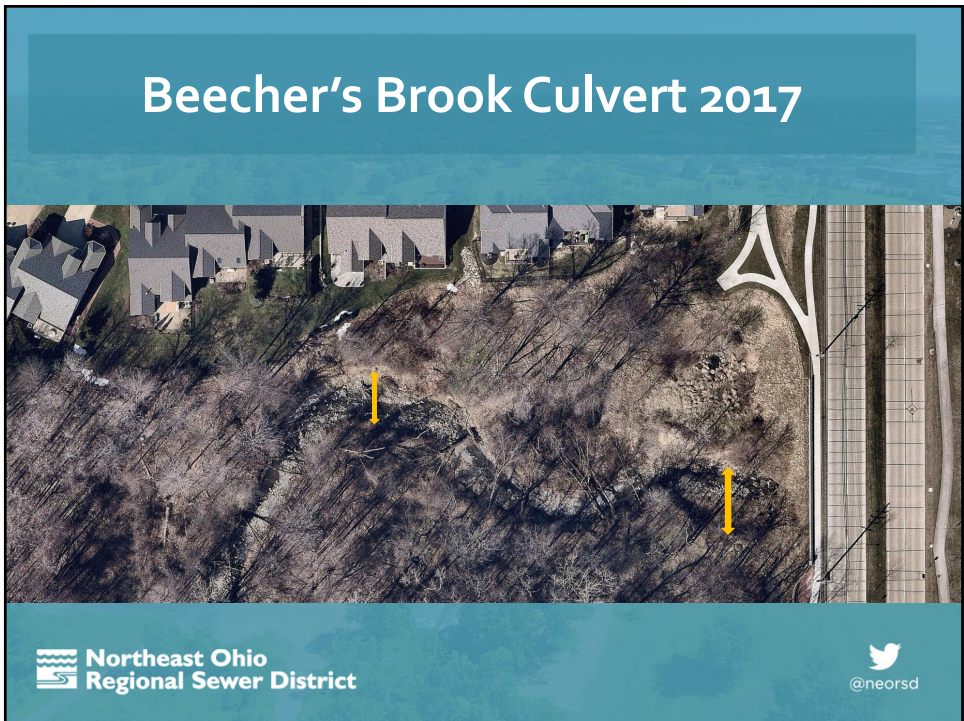


*Anthropogenic

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What's Next

- District Stream Restoration Site Visit
 - October 25 (Thursday) from 2 to 3 pm
 - Meet at 6700 Beta Drive, Mayfield OH, 44143
- Annual WAC Representative Designation – January 2019
- Next WAC Meeting – March 2019

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>