

Watershed Advisory Committee

Lake Erie Direct Tributaries

Chagrin River

March 2018



Northeast Ohio Regional Sewer District



Agenda

- Regional SW Program Updates
 - Illicit Discharge Detection and Elimination – 2017 Update
 - Watershed Partners Service Agreement
 - District Plan Review
- Stormwater Master Plan
- Stormwater Inspection and Maintenance
 - Inspections and Activities
 - Urgent Storm Response Process
 - Long-term Monitoring of Assets
- Stormwater Construction Plan
 - 2018 Projects
 - Permanent and Temporary Easement Policy
 - Conservation Planning and Land Acquisition

Illicit Discharge Detection & Elimination

- What is community's role?
 - Title III and IV: sanitary overflows from any source, including illicit connections, are prohibited
 - Phase II MS₄ permit compliance
- Services provided by the District
 - BOH outfall screening/sampling for *E. coli* and flow
 - Assistance with source tracking through BOH and Water Quality and Industrial Surveillance group



Illicit Discharge Detection & Elimination Summary of 2017 Sampling

- Outfalls Inspected = **4,148**
- Outfalls with *E. coli* >10,000 MPN/100 mL = **140**
- Outfalls with flow >10,000 GPD = **65**



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Illicit Discharge Detection & Elimination What to expect in 2018

- Notifications from NEORSD about problem outfalls
- Coordination meetings with community, NEORSD, and Ohio EPA
- Mapping update: Addition of outfalls in culverted streams
 - Cuyahoga County BOH to start with pilot community
 - More accurate MS₄ maps
 - Better data for source tracking

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2018 Central Lake Erie Basin Collaborative Services

Provide strategic implementation of the District's Regional Stormwater Management Program. Work includes:

- Development of a stormwater fee credit assistance program
- Development of a stormwater fee tree credit to compliment municipal & regional tree canopy recovery goals



2018 Central Lake Erie Basin Collaborative Services

Provide strategic implementation of the District's Regional Stormwater Management Program. Work includes:

- Assist the District with the implementation of Stormwater Master Plan recommendations
- Assist Member Communities in updating parking lot and downspout disconnection codes

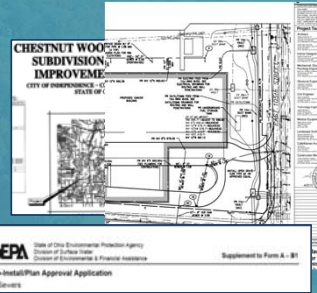
NEORSD Plan Review

Beginning March 5...

All submissions of plans for review will be made online through the District's Plan Review page. For information on how to register and submit plans go to...

www.neorsd.org/business-home/community-discharge-permit-program-cdpp-plan-review/

The new submission process will simplify and streamline the plan review timeline and make it easier for applicants to obtain information about requirements for review and status of a review in process. For more info contact:



Mary Maciejowski
maciejowskim@neorsd.org
216-881-6600 x6466

Rob Stoerkel
stoerkelr@neorsd.org
216-881-6600 x6802

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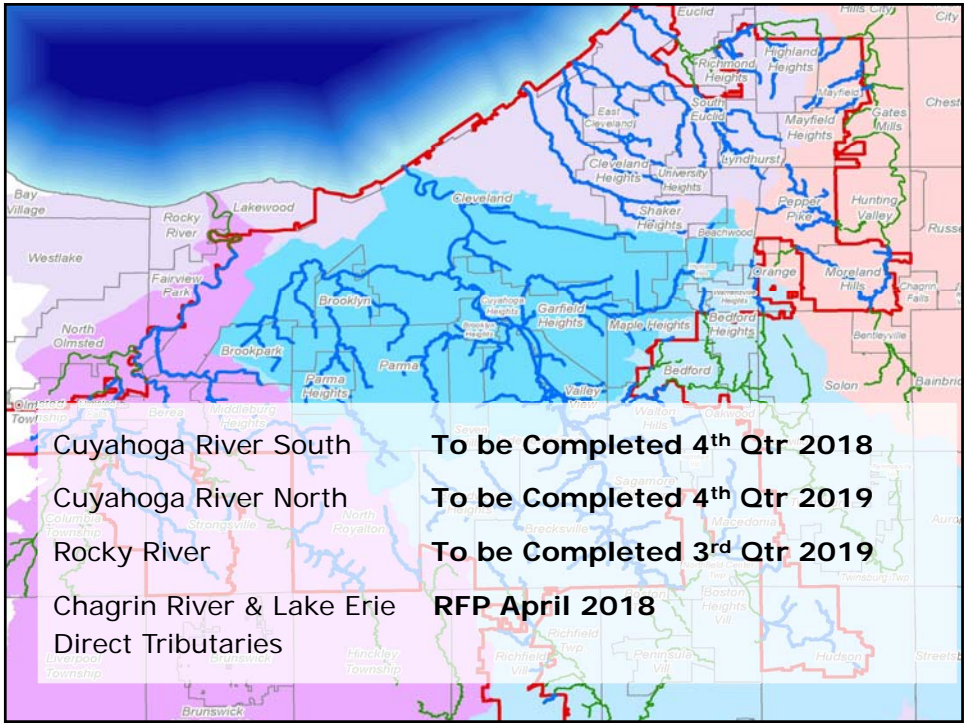
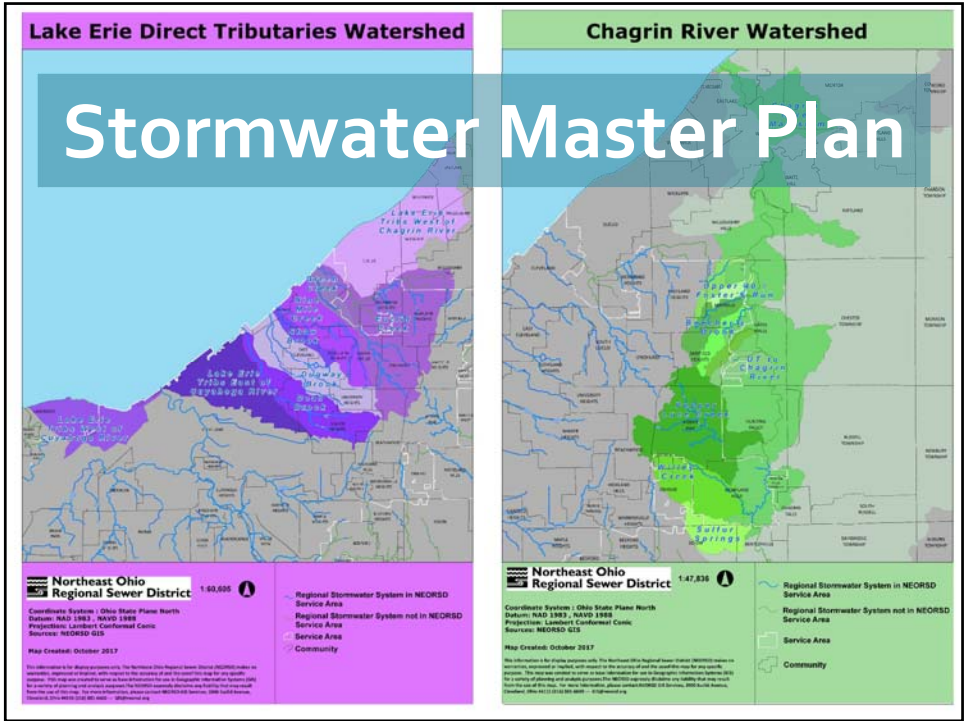


Questions



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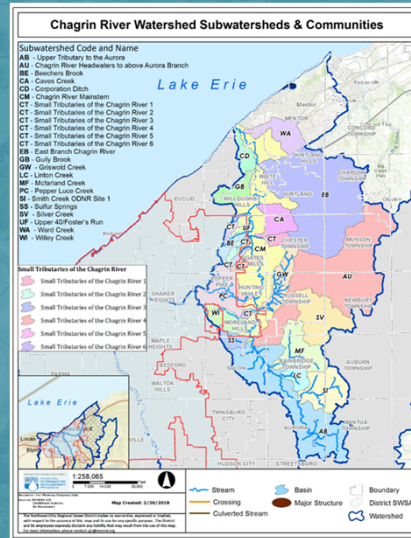


SW Master Plan

Chagrin River Watershed

Chagrin River Study Area -
169,520 acres

- 15,090 acres in service area
- 11 of 24 Subwatersheds in service area
- 10 Member Communities



SW Master Plan

Chagrin River Watershed

Study area includes all or parts of the following member communities:

- Beachwood
- Gates Mills
- Highland Heights
- Lyndhurst
- Mayfield Village
- Mayfield Heights
- Moreland Hills
- Orange Village
- Pepper Pike
- Solon



SW Master Plan

Chagrin River Watershed

The study area includes the following sub-watershed areas:

- Upper Tributaries to the Aurora
- Chagrin River Headwaters above Aurora Branch
- **Beechers Brook**
- Caves Creek
- Corporation Ditch
- **Chagrin River Mainstem**
- Chagrin River Small Tributaries 1-6 (CRST 2 - 6 in service area)
- East Branch Chagrin River
- Gully Brook
- Griswold Creek
- Linton Creek
- McFarland Creek
- **Pepper Luce Creek**
- Smith Creek ODNR Site 1
- **Sulfur Springs**
- Silver Creek
- **Upper 40/Foster's Run**
- Ward Creek
- **Willey Creek**

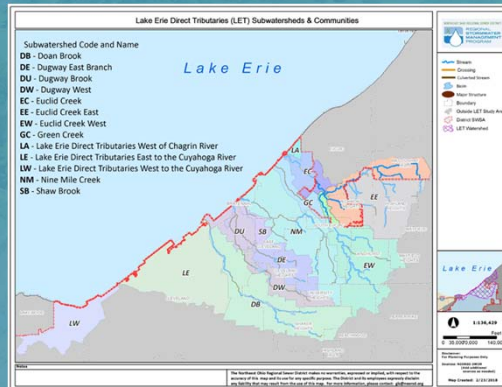


SW Master Plan

Lake Erie Direct Tributaries

Lake Erie Tributaries
Study Area: **47,798** acres

- 43,526 acres in service area
- 13 Subwatersheds
- 17 Member Communities



SW Master Plan

Lake Erie Direct Tributaries

The study area includes the following sub-watershed areas:

- **Beachwood**
- Bratenahl
- Cleveland
- Cleveland Heights
- East Cleveland
- Euclid
- **Highland Heights**
- Lakewood
- Lyndhurst
- **Mayfield Village**
- **Mayfield Heights**
- **Pepper Pike**
- Richmond Heights
- Shaker Heights
- South Euclid
- University Heights
- Willoughby Hills

SW Master Plan

Lake Erie Direct Tributaries

The study area includes the following sub-watershed areas:

- Doan Brook
- Dugway Brook
- Dugway East Branch
- Dugway West
- Euclid Creek
- Euclid Creek East
- Euclid Creek West
- Green Creek
- Lake Erie Tributaries – East
- Lake Erie Tributaries - Central
- Lake Erie Tributaries - West
- Nine Mile Creek
- Shaw Brook

SW Master Plan

Chagrin River / Lake Erie Tributaries



- Significant work thru March 2018
 - RFP General Scope Development
 - Informal meetings with interested consulting firms
- Upcoming Milestones:
 - RFP Release – April 2018
 - Proposal Request – May 2018
 - Expected Consultant Notice to Proceed in August 2018
- Chagrin River/Lake Erie Direct Tributaries SW Master Plan Project Budget: \$8M

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*Stormwater Inspection
and Maintenance (SWIM)*

Terminology Review

- Asset Class Types:
 - Streams (Open)
 - Crossings (Bridges/Culverts)
 - Culverted Streams (Long Reaches of Buried Pipe)
 - Basins (Dry/Wet, Regulated/Unregulated)
 - Major Structures (Low Head Dams/Drop Structures/Locks)
- Acronyms:
 - ALR – Acceptable Level of Risk
 - RSS – Regional Stormwater System
 - BTU – Building, Transportation, Utility Assets along the RSS
 - BEHI/NBS – Bank Erosion Hazard Index/Near Bank Stress
 - SWSA – Stormwater Service Area

Chagrin River 2017 Inventory Update



Asset Class Type	RSS (Assets)	RSS (Miles)
Streams	163	24
Crossings	118	1
Culverted Streams	8	1
Basins	7	-
Major Structures	0	-
Total	296	26
SWSA	3,699	443

*CHA RSS: 26 Miles in 2016
Service Area RSS: 405 Miles in 2016

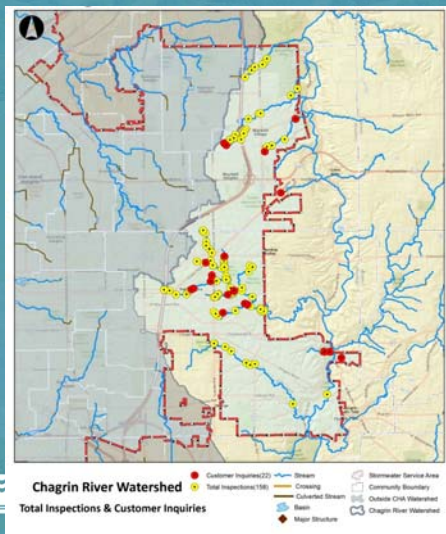
Lake Erie Tributaries 2017 Inventory Update



Asset Class Type	RSS (Assets)	RSS (Miles)
Streams	294	35
Crossings	203	3
Culverted Streams	61	32
Basins	21	-
Major Structures	1	-
Total	580	70
SWSA	3,699	443

*70 Miles of RSS in 2016
Service Area RSS: 405 Miles in 2016

SWIM Inspections: Chagrin 2017 Summary



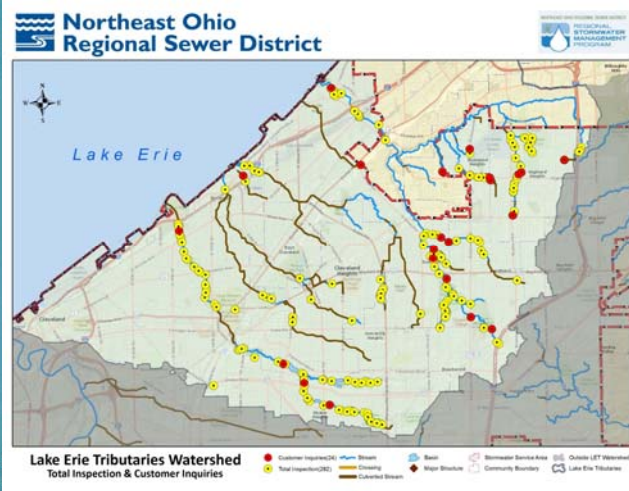
158 Total Inspections
(1,299 in Service Area)

22 Customer Inquiries
(174 in Service Area)

61% of RSS Assets
Inspected in Chagrin
watershed



SWIM Inspections: Lake Erie Tributaries 2017 Summary



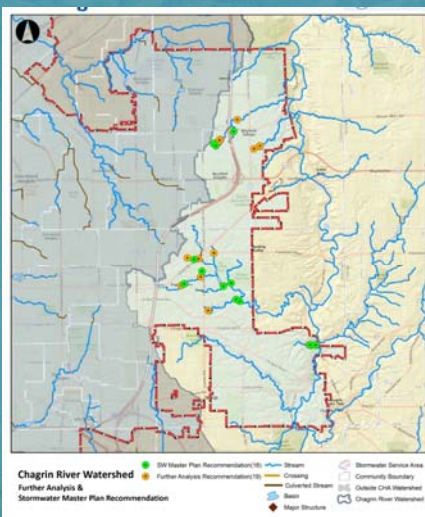
292 Total Inspections
(1,299 in Service Area)

24 Customer Inquiries
(174 in Service Area)

55% of RSS Assets Inspected
in Lake Erie Tribs.



SWIM Recommendations: Chagrin 2017 Summary

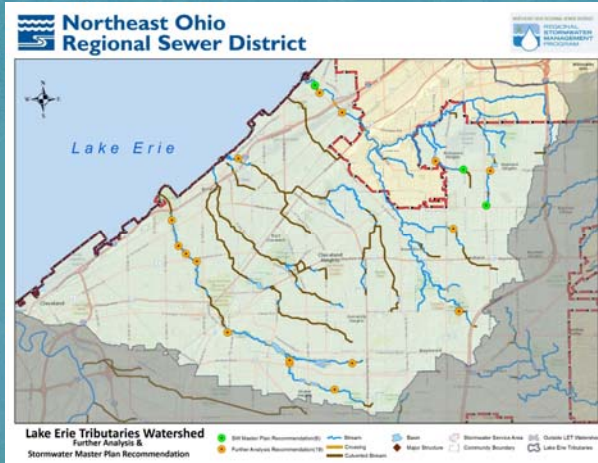


16 Assets recommended for SW Master Plan
(161 in Service Area)

19 Assets recommended for Further Analysis
(180 in Service AREa)



SWIM Recommendations: Lake Erie Tribs 2017 Summary



6 Assets
recommended for
SW Master Plan
(161 in Service Area)

19 Assets
recommended for
Further Analysis
(180 in Service Area)

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Stormwater Inspections Chagrin River: Pepper-Luce Creek

Asset #: PC00238
Pepper Pike
Near Oak Knoll Drive
BTU- private footbridge, exposed utility

Structural Integrity:
Left bank lateral erosion has
exposed bridge supports and
10" exposed utility

**Recommendation: Further Analysis, Monitor (6-month), Notify
Owner, Notify OUPS**

Stormwater Inspections Lake Erie Tributaries: Doan Brook

Structural Integrity:

- Significant delamination along crown with corroding rebar exposed
- Corroding rebar along invert
- Visible backfill at local storm outlets

Asset #: DBoo110
Shaker Heights, Edenhurst Road
BTU: Culvert

Recommendation: Monitor (Annual), Further Analysis, Notify Owner

Stormwater Inspections Lake Erie Tributaries: Euclid Creek West Branch

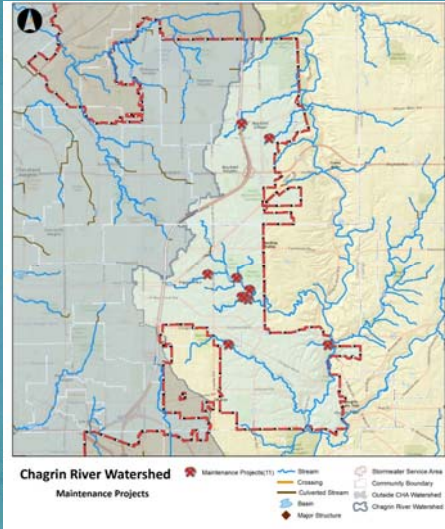
Structural Integrity:

- Failed concrete bank protection on RR
- Erosion undercuts RL bank near residence and attached deck (3' from TOB)

Asset #: EW00072
South Euclid
Emerson Road
BTU: Residence

Recommendation: Monitor (Annual), Further Analysis

SWIM Maintenance: Chagrin 2017 Summary

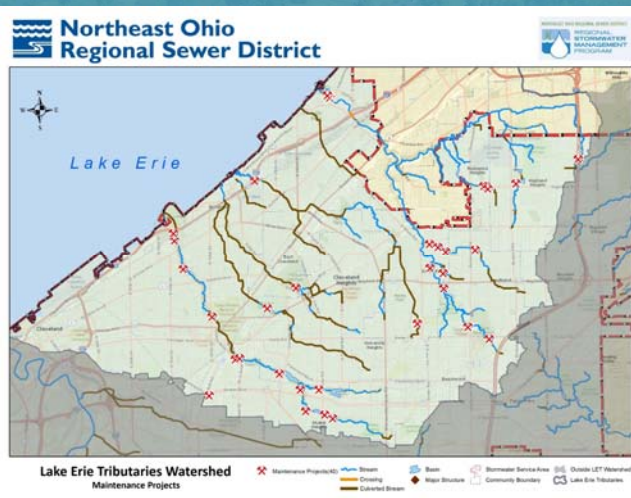


11 Maintenance projects
(236 in Service Area)

301 CY sediment and debris removed
(9,179 CY in Service Area)



SWIM Maintenance: Lake Erie Tribs 2017 Summary



40 Maintenance projects
(236 in Service Area)

2,479 CY sediment and debris removed
(9,179 CY in Service Area)



Stormwater Maintenance

Lake Erie Tributaries: Euclid Creek East

Highland Heights

Asset ID: EE00320

Maintenance Project: Sediment (180 CY) and Debris Removal (24 CY)



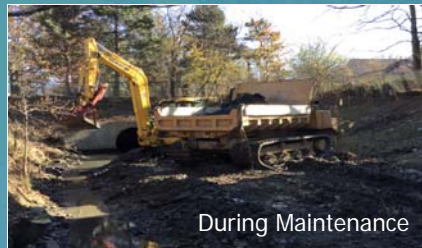
Stormwater Maintenance

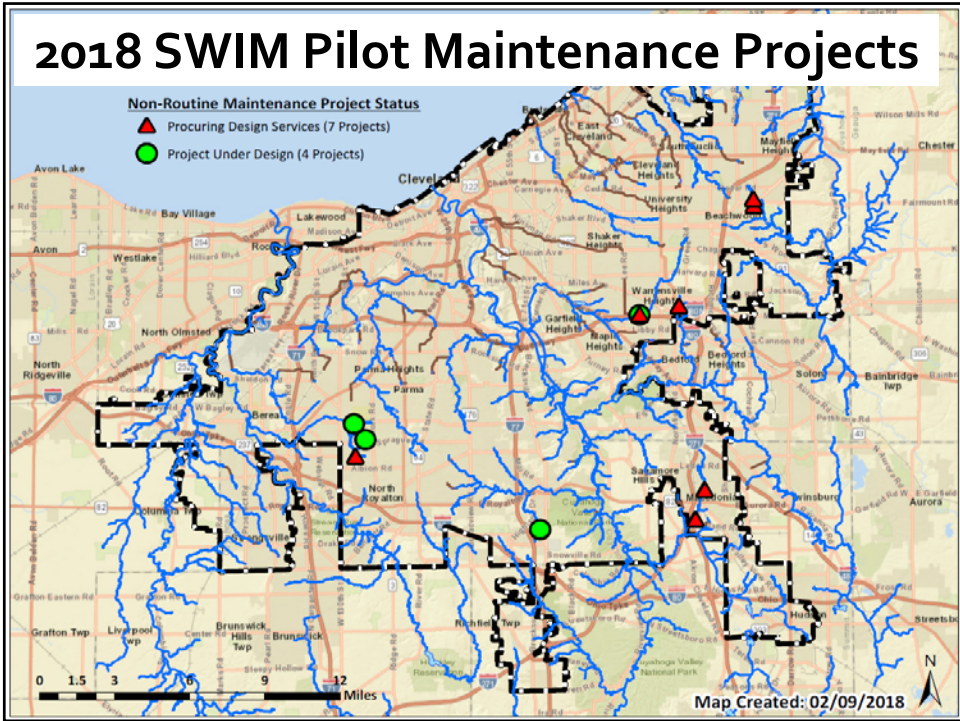
Lake Erie Tributaries: Euclid Creek East

Highland Heights

Asset ID: EE00220

Maintenance Project: Sediment Removal (250 CY)

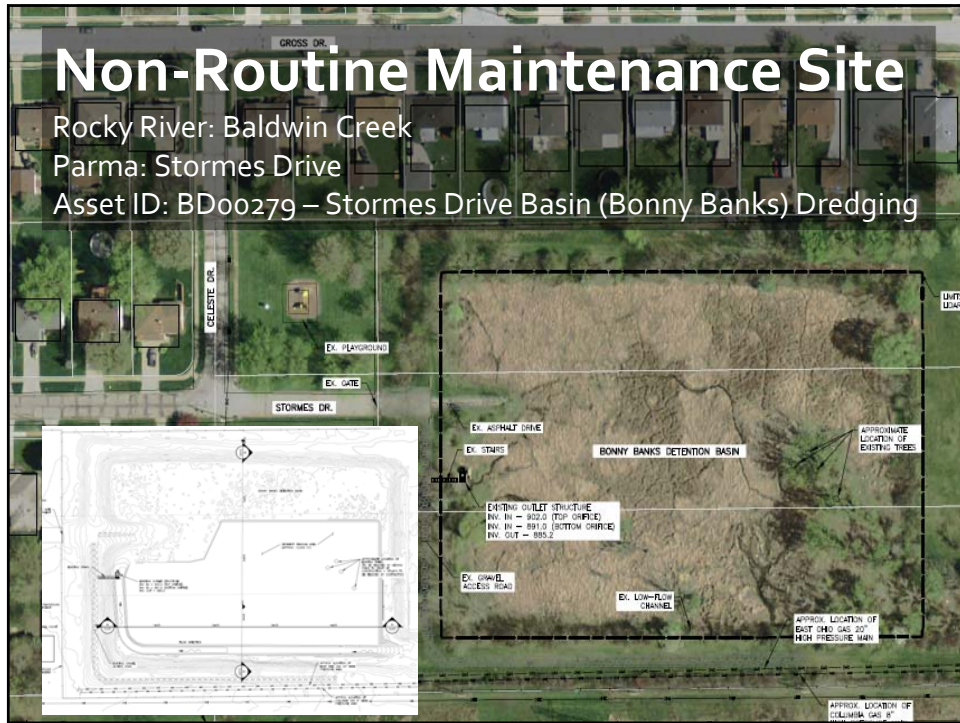




Non-Routine Maintenance Site

Rocky River: Baldwin Creek
Parma: W Pleasant Valley Road
Asset ID: BD00250 – Streambank Stabilization

1 BANK STABILIZATION SECTION



SWIM Urgent Storm Response

- Review any Advanced Warning Notification (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) and Monitoring data for Evidence of Flooding (monitoring data)
- Review any media, customer, or Member Community reported flooding

Please notify us of any flooding along RSS!

SWIM Urgent Storm Response

- Field Check areas of concern, which can expand depending upon extent of flooding
- Conduct any recommended field maintenance activities, once water level permits safe access for Contractors
- Any observable structural issues are assessed. If a structural failure appears imminent, then both owner and senior District staff are notified for potential emergency declaration and resolution

SWIM Urgent Response

Cuyahoga River South – Indian Creek

Macedonia: Crow Road

430 CY of debris removed over 12 properties in 9 days

Calendar of Events

11/5/17 – Micro Burst Storm event hit

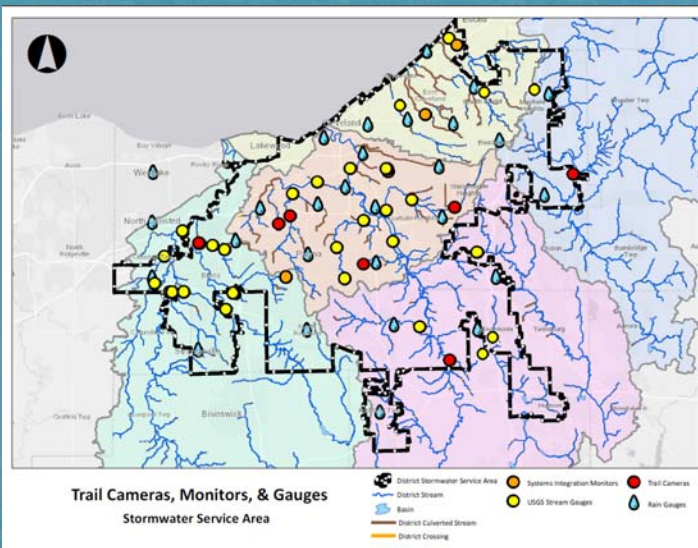
11/6/17 – SWIM inspections began

11/8 – 11/14/17 – RiverReach Construction Clean-up

SWIM Long Term Monitoring

- Goal is to better understand:
 - RSS storm event response (Flooding)
 - Changes due to new hydrology or Maintenance & Construction projects
- Currently Using Two Types of Monitors:
 - Stage Monitors
 - Trail Cams

SWIM Long Term Monitoring



SWIM 2018 Planned Activities

- Implement Recommended Maintenance Projects from SW Master Plans
- Continue Piloting Non-Routine Maintenance Projects
- Inspect and Inventory RSS assets and BTUs without condition scores
- Request Record Drawings from Member Communities (Basins and Crossings)

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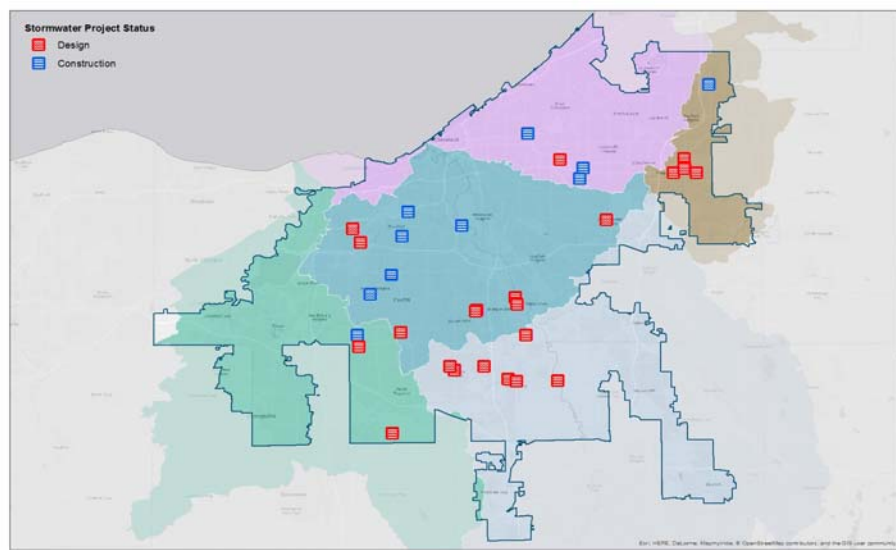
Stormwater Construction Plan



Indian Creek
Sioux Lane
Macedonia
Culvert Project

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2018 Stormwater Design and Construction Projects



Stormwater Construction Completed

1365 Green Lake Dredging

Final Construction Cost: \$3,263,069

- 11,252 Tons of sediment removed including five 55 gallon drums of golf balls
- Turtles will be returned home in spring



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Stormwater Construction Completed

1514 Euclid Creek Flood Control Shoaling Removal

- Excavation completed on 12/23/17 with final stabilization to be completed in April/May
- 12,625 Tons of sediment removed from the channel



2018 Stormwater Construction

Project Number	Project Name	RSS Asset ID(s)	WAC Watershed	Subwatershed	Project Community	Construction NTP
1320	Shaker Lakes Dam Rehabilitation	DB00056 & DB00101	LED	Doan	Shaker Hts. and Cleveland Hts.	5-Apr-18 (Ant. June 2018)
1369	Beechers Brook Bank Stabilization (Design-Build)	BE00021	Chagrin River	Beechers	Mayfield Village	15-Mar-18
1369	Baldwin Creek Bank Stabilization (Design-Build)	BD000259	Rocky	Baldwin	Parma	19-Apr-18
1515	Spring Creek Culvert Rehabilitation	SP00002	Cuyahoga River North	Spring	Cleveland	10-May-18
1410	Doan Brook Stream and Bank Stabilization	BD 00029	LED	Doan	Cleveland	24-May-18
1409	Colombo Park Stream Restoration- BC00299	BC00299	Cuyahoga River North	Big Creek	Parma Hts	8-Jun-18
1520	Lower Twin Lakes Dam Repair	BC000261B	Cuyahoga River North	Big Creek	Parma	29-Jun-18
1411	Big Creek Stabilization	BC00032	Cuyahoga River North	Big Creek	Cleveland	13-Jul-18
1502	Stickney Creek at Ridge Road- Stream Relocation and Utility Repair (Design-Build)	ST00209	Cuyahoga River North	Stickney	Brooklyn	26-Oct-18

Stormwater Construction Upcoming Construction

1410 Doan Brook Bank Stabilization

Request to Advertise: Mar. 1

Estimated Construction Cost: \$2.8M



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Stormwater Construction Upcoming Construction

1320 Shaker Lakes Dam Rehabilitation

Request to Advertise: Mar. 15

Estimated Construction Cost: \$5.2M



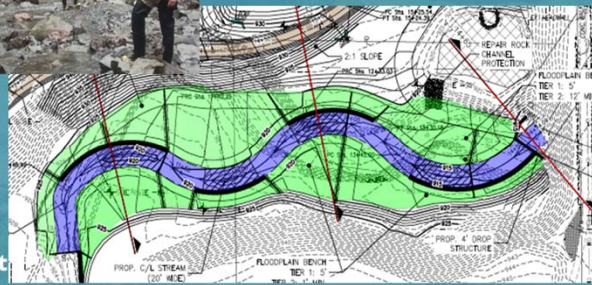
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Stormwater Construction Upcoming Construction



1369 Beechers Brook Bank Stabilization
Design-Build
 Anticipated GMP Request: April 5
 Estimated Construction Cost: \$1.5M



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2018 Stormwater Design

Project Priority	Proposed Project Name	WAC Watershed	Subwatershed	Project Community	Highest BRE	Design NTP
1	Chippewa Creek Bank Stabilization DS Rt 21 - CC00030 Chippewa Creek Bank Stabilization at Condominium- CC00032	Cuyahoga River South	Chippewa Creek	Brecksville	72	30-Jan-18 (2 Sites Combined)
2	NEW SWIM Debris Racks, Access and Easements	Various	Various	Various	NA	26-Feb-18
3	Hemlock Creek and Mill Creek Bank Stabilization - HC00038, HC00040, HC00042, MC00125- Preliminary Design	Cuyahoga River North	Hemlock Creek	Seven Hills	69	1-Apr-19
4	Unnamed Trib. to E. Br. Rocky River Ridge Road Bank Erosion - RY00434 Baldwin Creek North Royalton Bank Erosion and Failing Private Crossing BD00291	Rocky River	Rocky River East Tribs Baldwin Creek	North Royalton	80	19-Apr-18 (2 Sites Combined)
5	Unnamed Trib to Cuyahoga Failed Gabions CH00156	Cuyahoga River North	Cuyahoga River West Unnamed	Independence	61	29-May-18
6	Hemlock Creek Stream Erosion at HC00005	Cuyahoga River North	Hemlock Creek	Independence	69	29-May-18 (3 Sites Combined)
	Cuyahoga River Erosion at BTU CY00103C_T001	Cuyahoga River North	Mainstem (west)	Independence	51	
7	Cuyahoga River Left Bank Erosion near CVNP RR - CY00219	Cuyahoga River South	Mainstem (west)	Brecksville	50	31-Jul-18 (2 Sites Combined)
	Pepper Luce Erosion and Deterioration - PC00145	Chagrin River	Pepper Luce Creek	Pepper Pike	69	
8	Pepper Luce Gates Mills Blvd Culvert Deterioration PC00218	Chagrin River	Pepper Luce Creek	Pepper Pike	69	31-Jul-18 (2 Sites Combined)
9	Big Creek West Branch Stabilization -WB00108, WB00072, WB00104	Cuyahoga River North	Big Creek	Parma	59	25-Jul-18
	Chippewa Creek Erosion Near Local Sewer CC00170	Cuyahoga River South	Chippewa Creek	Broadview Heights	42	
	Chippewa Creek Gabion Failure BTU CC00191_001 Chippewa Creek Bank Stabilization at SWM Facility - CC00082	Cuyahoga River South	Chippewa Creek	Broadview Heights	42	4th Qtr 2018 (3 Sites Combined)

Stormwater Construction

Ongoing Design



Pepper Luce at Shaker Blvd
Culvert Deterioration

Agreement with City to
Design/Construct

Estimated Cost: \$\$750,000M

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Stormwater Construction Plan

Track Progress

NEORS Stormwater Design & Construction Program

Navigate using the tabs below and by clicking the images to view more details on our completed, current, and planned stormwater projects. Zoom in to view satellite imagery.

All Projects Complete Design Construction

<http://neorsd.org/stormwaterplan>

Easement Policy

Stormwater Construction Plan Projects

- Easements or permanent property rights will be required for all projects
- Owner compensation
 - Private Property owners may be paid for the easements based on fair market value established by appraisals
 - Member communities will not be compensated as outlined in the Service Agreements

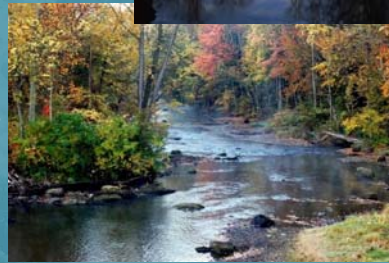
Easement Policy

Inspection, Operation, Maintenance and Monitoring

- No easement needed
 - Activities in ROW
 - Activities in an existing easement which can be assigned to the District
- Permanent easement – installation of materials or facilities (i.e. stone)
- Right-of-Entry/temporary easement - sufficient for most debris/sediment removal
- No compensation

Conservation Planning and Property Acquisition

- Design and Construction
 - Early design concept input
 - Landowner negotiation
 - Eliminate non-sustainable land use
- Planning
 - SW Master Plan Protection Recommendations
 - Acquisition Strategy w/ partners
 - Protect / Enhance sustainable land use



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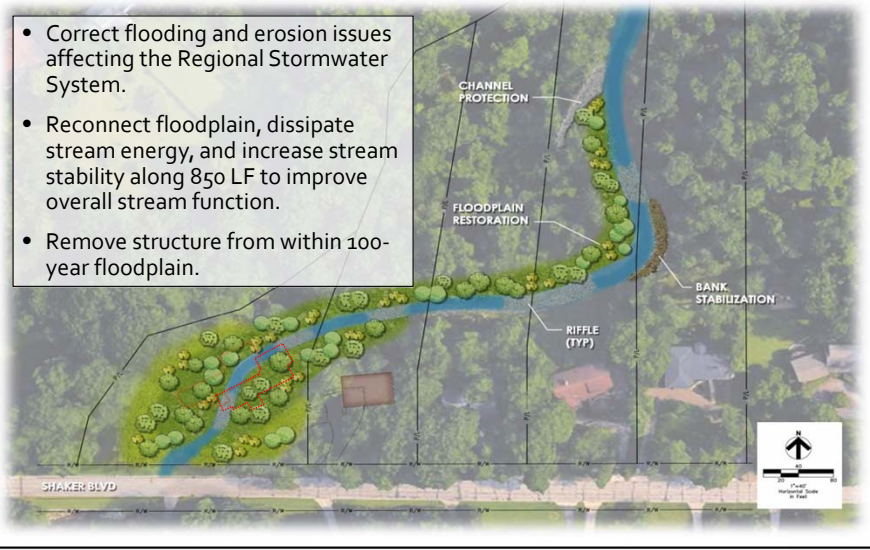


Pepper Creek Restoration Pepper Pike



Pepper Creek Restoration Project Concept

- Correct flooding and erosion issues affecting the Regional Stormwater System.
- Reconnect floodplain, dissipate stream energy, and increase stream stability along 850 LF to improve overall stream function.
- Remove structure from within 100-year floodplain.

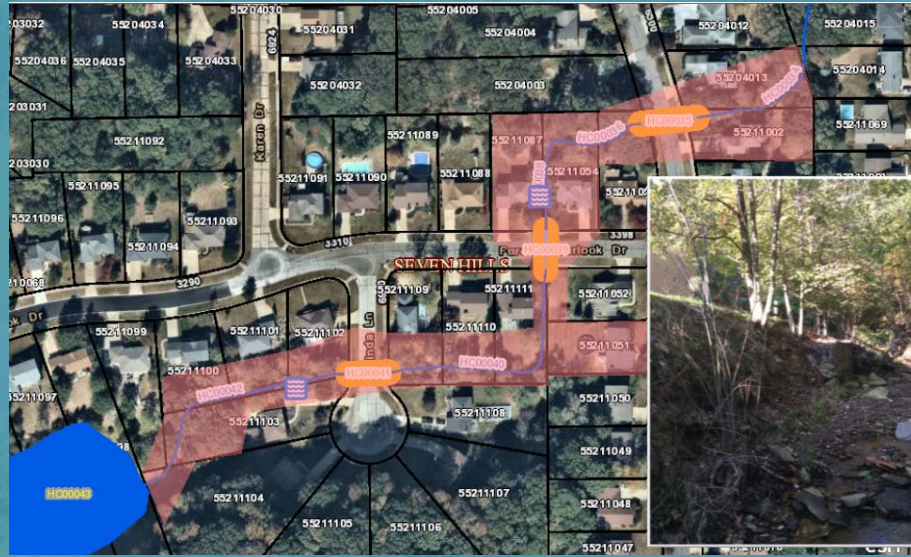


Mill Creek Stream Restoration at Cricket Lane Warrensville Heights



Hemlock Creek Restoration

Seven Hills



Questions

Jeff Jowett
216-881-6600 Ext. 6881
jowettj@neorsd.org

Rachel Webb
216-881-6600 Ext. 6645
webbr@neorsd.org



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

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