

# Watershed Advisory Committee

## March 2018

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

**Northeast Ohio Regional Sewer District**

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# 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 MS<sub>4</sub> 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 MS<sub>4</sub> 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

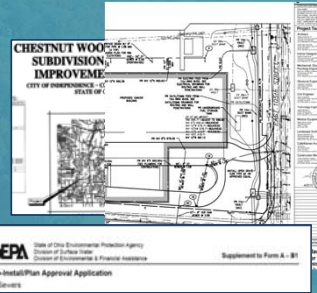
# NEORSD Plan Review

## 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/](http://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:



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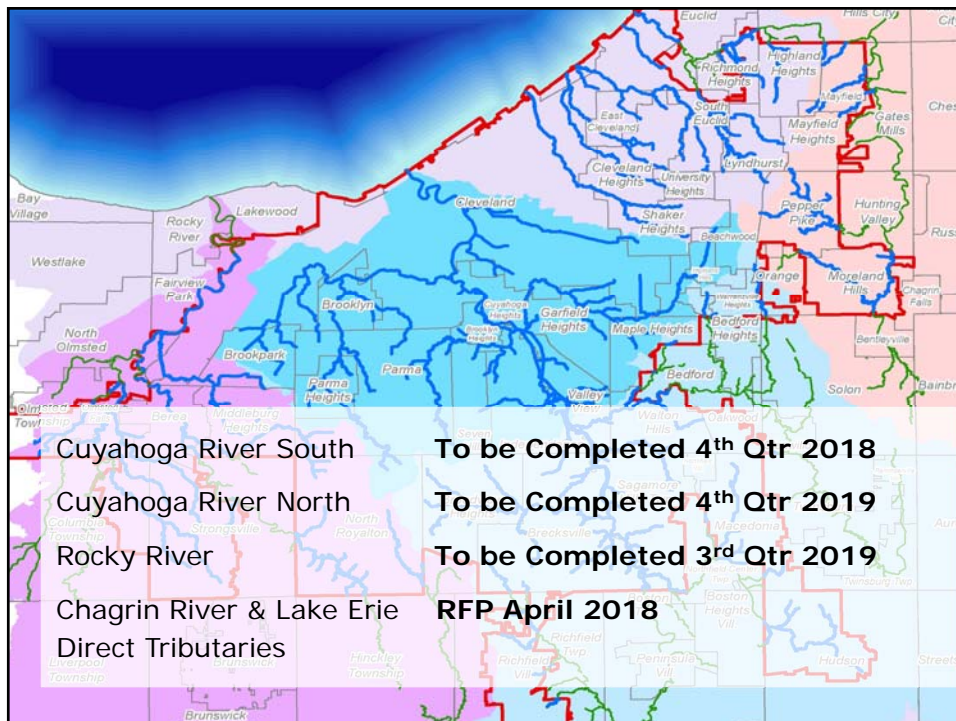
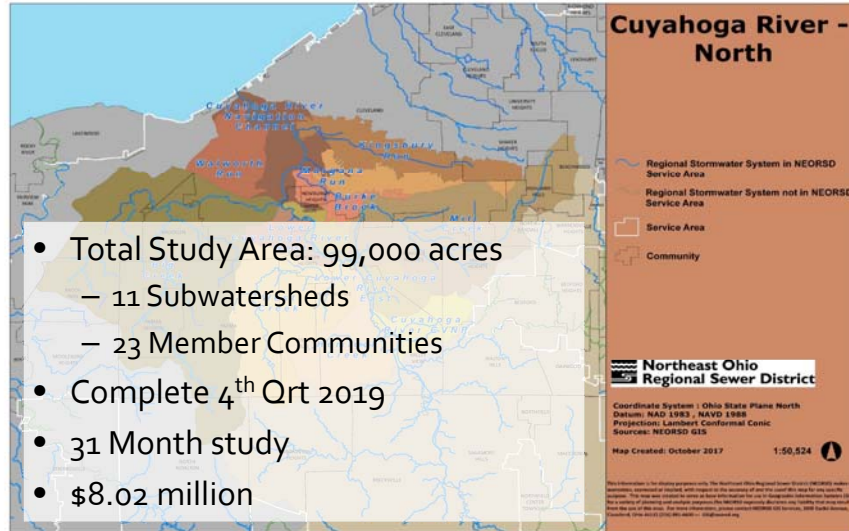
# Questions



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# Stormwater Master Plan

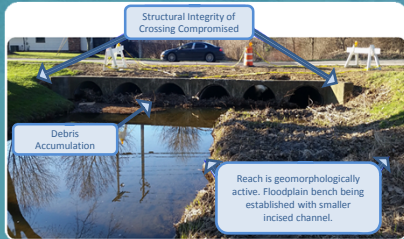




# Stormwater Master Plans

## Goals and Objectives

### Operational Performance Evaluation



### Modeling & Alternatives Evaluation

Alternatives Evaluation (Chapter 8)	
<b>Screen SCMs</b> <ul style="list-style-type: none"> <li>• ID Opportunities/Constraints</li> <li>• Protect Existing Function</li> <li>• Increase Function                             <ul style="list-style-type: none"> <li>✓ Reduce Runoff/ Restore Stream-Floodplain</li> <li>✓ Enhance Storage – Conveyance</li> </ul> </li> <li>• Buyout/Reduce ALR</li> <li>• Formulate 2 Alternatives</li> </ul>	<b>Evaluate Alternatives</b> <ul style="list-style-type: none"> <li>• Size to achieve ALR</li> <li>• Estimate cost</li> <li>• Define multiple benefits</li> <li>• ID Business Case (TBL)</li> <li>• Select Alternative</li> <li>• Check watershedwide performance</li> </ul>

### Recommendations and Report



Results: **Prioritized list of construction and maintenance projects**



# SW Master Plan

## Field Work

Essentially complete

- Open Channel Streams
- Culverted Streams – 36 miles
- Crossings
- Major Structures
- Storage Basins



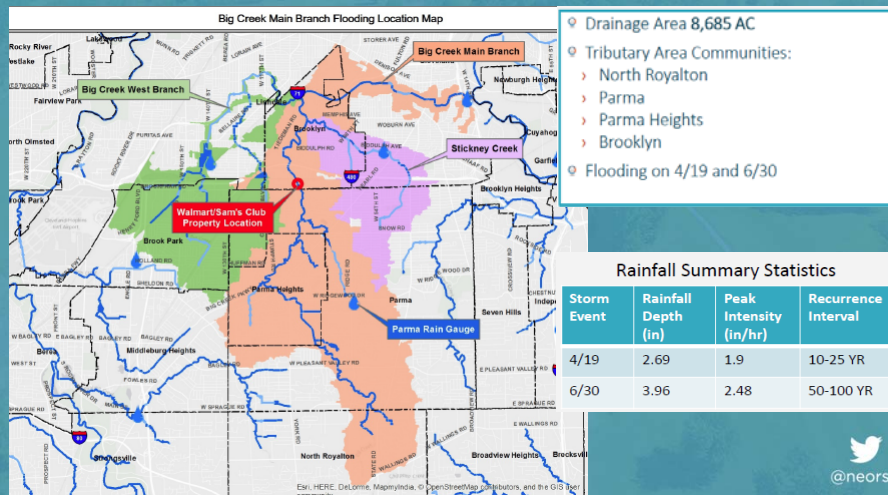
# SW Master Plan Modeling

- Work on models underway – through end of 2018
  - Big Creek, including main branch, west branch and Stickney Creek
  - West Creek and Mill Creek
  - Other Cuyahoga tributaries
- Using wastewater model to inform SWIM model in combined area
- Using GIS for visual aid to model flood inundation areas and high risk BTU assets to identify problem areas

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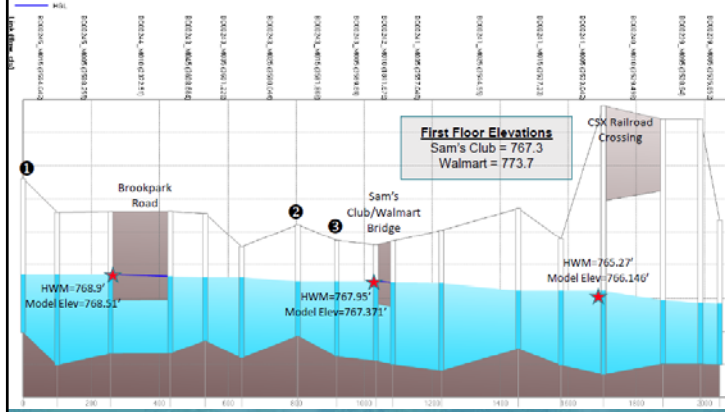
# SW Master Plan Modeling – Big Creek



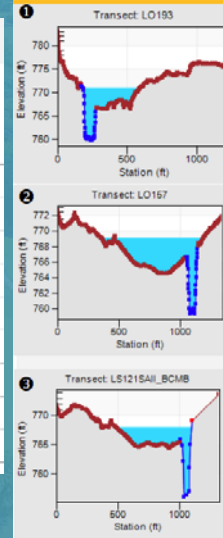


# SW Master Plan Modeling – Big Creek

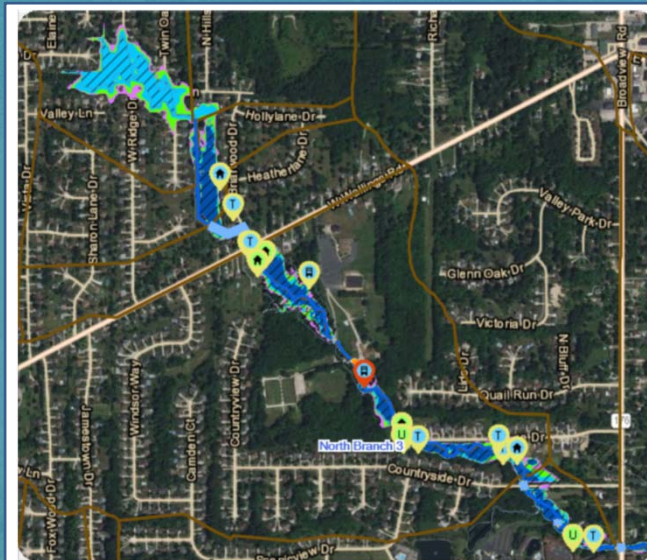
## Brooklyn/Sam's Club Profiles – April 19<sup>th</sup>



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# SW Master Plan Problem Identification - using GIS



**Risk Level Marker**

- High Risk, BRE 20 - 33
- Very High Risk, BRE >=34

**Problem Category**

- Structural
- Flooding
- Erosion

**Asset Type**

- Building (Non-Residential)
- Building (Residential)
- Transportation
- Utility

**Stream reaches w/ less than full function**

- Vertical
- Lateral
- Both

**Flood Area**

- 10-year
- 25-year
- 50-year
- 100-year

# SW Master Plan

## Alternatives Evaluation - 2019

- Opportunities / Constraints
- Protect Existing Function and/or Increase Function
  - Reduce runoff / restore stream-floodplain
  - Enhance storage-conveyance
- Property Acquisition
- Size to achieve acceptable Level of Risk
- Define multiple benefits, including water quality
- Check watershed-wide performance
- Community input

# SW Master Plan

## Community Communication

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

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



## Terminology Review

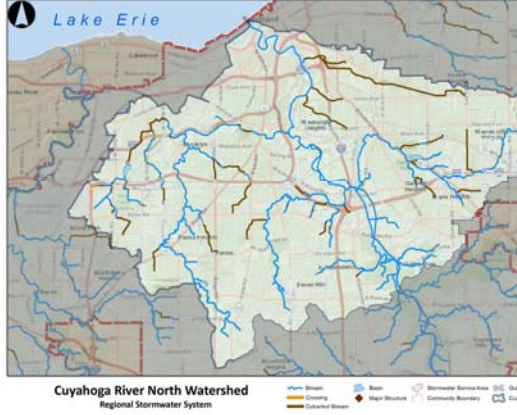
- Asset Class Types:
  - Streams (Open)
  - Crossings (Bridges/Culverts)
  - Culverted Streams (Long Reaches of Buried Pipe)
  - Basins (Dry/Wet, Regulated/Unregulated)
  - Major Structures (Low Head Dams/Drop Structures/Locks)
- Acronyms:
  - ALR – Acceptable Level of Risk
  - RSS – Regional Stormwater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



# Cuyahoga River North

## 2017 Inventory Update

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Asset Class Type	RSS (Assets)	RSS (Miles)
Streams	635	89
Crossings	319	6
Culverted Streams	75	36
Basins	15	-
Major Structures	7	-
<b>Total CRN*</b>	<b>1,051</b>	<b>131</b>
<b>Service Area</b>	<b>3,699</b>	<b>443</b>

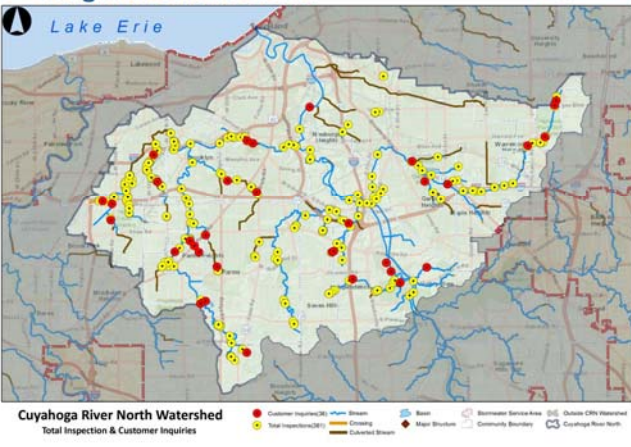
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\*CRN RSS: 118 Miles in 2016  
Service Area RSS: 405 Miles in 2016

# SWIM Inspections

## 2017 Summary

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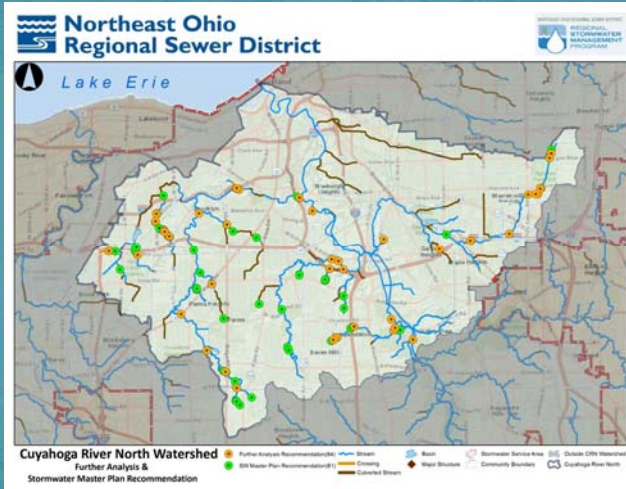
**361 Total Inspections** (1,299 in Service Area)

**36 Customer Inquiries** (174 in Service Area)

**42% of RSS assets inspected**

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# SWIM Recommendations 2017 Summary



**64** Assets recommended for SW Master Plan

(161 in Service Area)

**81** Assets recommended for Further Analysis

(180 in Service Area)



## Tributary to Cuyahoga River

Asset #: CU00129  
Valley View Woods Park  
Structural BRE= 21

### Structural Integrity:

Damaged gabions, heavy rust and pinholes in CMP barrel, active water infiltration, undermined concrete at outlet and deep scour hole

### Recommendation:

Further Analysis, Monitor (Annual), Notify Owner



# SWIM Maintenance

## 2017 Summary



**84 Maintenance projects**  
(236 in Service Area)

**2,331 CY sediment and debris removed**  
(9,179 CY in Service Area)



# Stormwater Maintenance

Cuyahoga River North: West Creek  
Independence

Asset ID: WC00017

Maintenance Project: Large Woody Debris Removal (80 CY)





# Stormwater Maintenance

Cuyahoga River North: Mill Creek

Cleveland/Warrensville Heights

Asset ID: MC00117

Maintenance Project: Large Woody Debris Removal (35 CY)



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# Stormwater Maintenance

Cuyahoga River North: Mill Creek

Independence

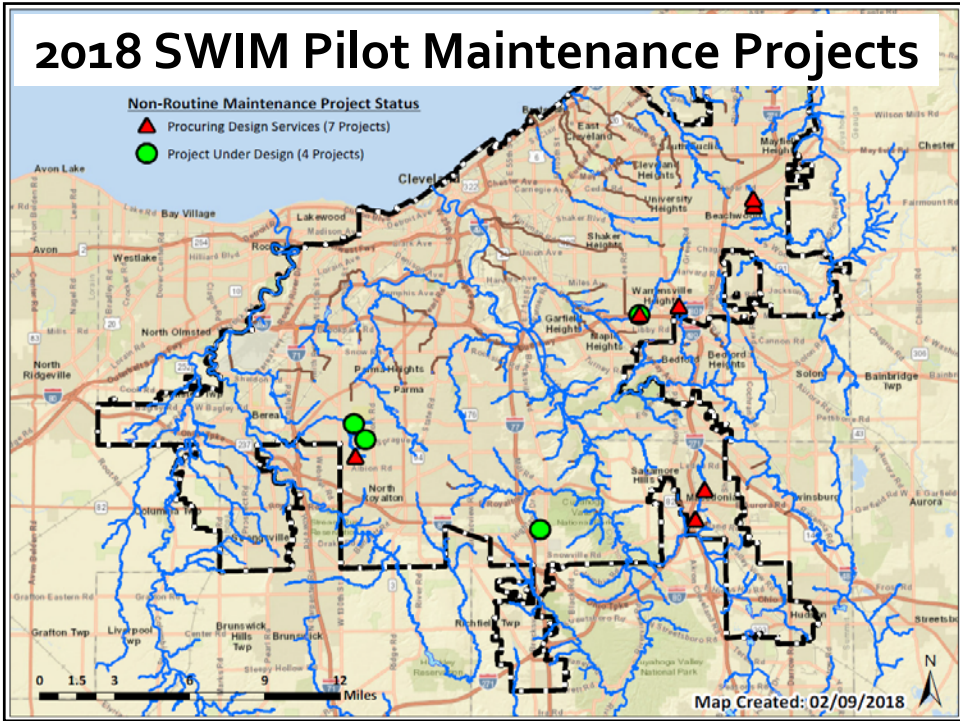
Asset ID: MC00043

Maintenance Project: Large Woody Debris Removal (28 CY)



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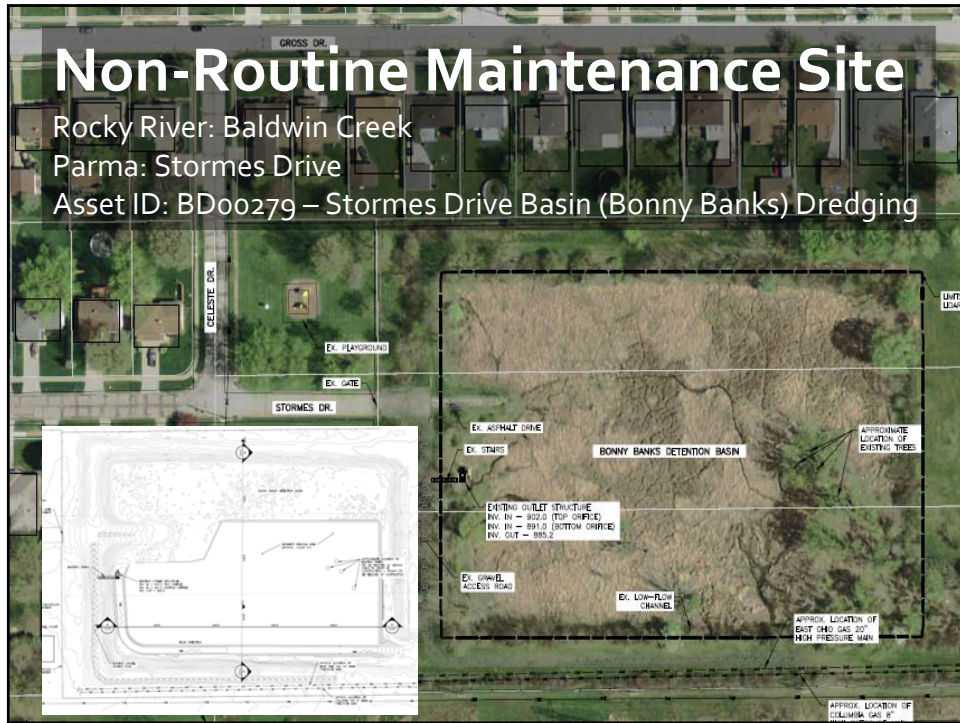




## Non-Routine Maintenance Site

Rocky River: Baker Creek  
Parma: W Pleasant Valley Road  
Asset ID: BK00250 – Streambank Stabilization





## 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

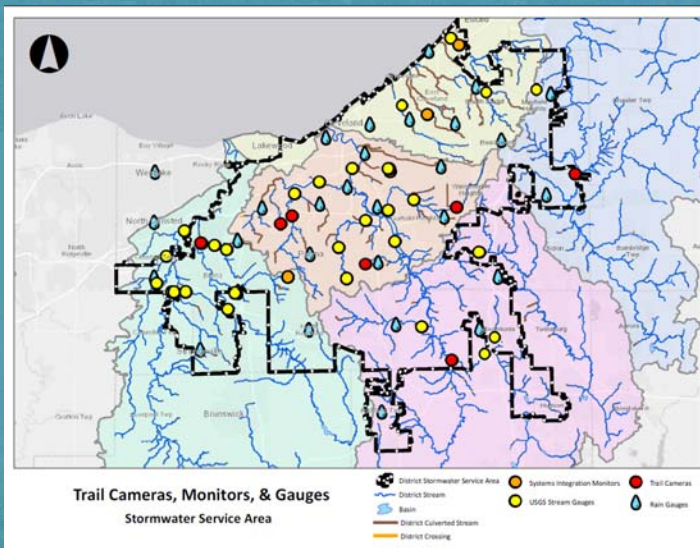
11/6/17 – SWIM inspections began

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

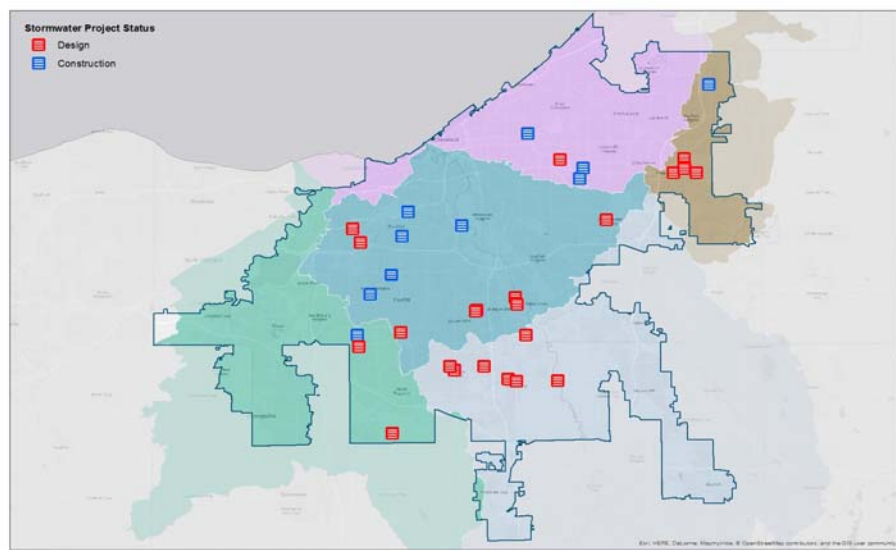


Indian Creek  
Sioux Lane  
Macedonia  
Culvert Project

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# 2018 Stormwater Design and Construction Projects



## Stormwater Construction Completed

### Cuyahoga River Towpath Bank Stabilization

Final Construction Cost: \$1,614,921.81

- 1,100 Feet of river bank stabilized to arrest erosion
- Used bioengineering techniques and native vegetation for habitat enhancement



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# 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

### Colombo Park Bank Stabilization

Anticipated Request to Advertise: April 5, 2018

Estimated Construction Cost: \$1.5M



# Stormwater Construction

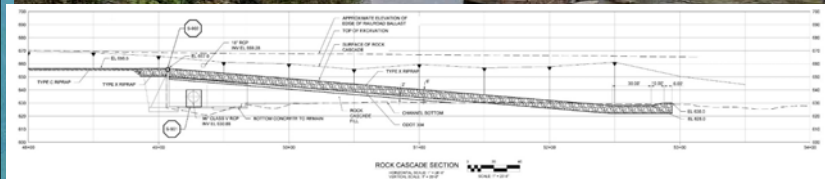
Upcoming Construction



## Big Creek Bank Stabilization

Anticipated to Advertise: June 2018

Estimated Construction Cost: \$7.3M



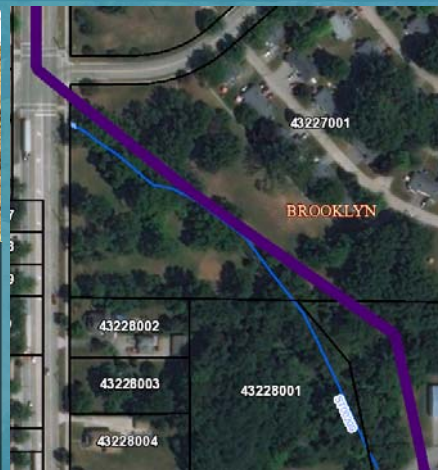
# Stormwater Construction

Upcoming Construction



## Stickney Creek Stream Relocation and Utility Repair at Ridge Road in Brooklyn

Anticipated Construction NTP- Oct. 2018



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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	Cuyahoga River South	Chippewa Creek	Brecksville	72	30-Jan-18 (2 Sites Combined)
	Chippewa Creek Bank Stabilization at Condominium- CC00032					
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	Rocky River	Rocky River East Tribs	North Royalton	80	19-Apr-18 (2 Sites Combined)
	Baldwin Creek North Royalton Bank Erosion and Failing Private Crossing BD00291		Baldwin Creek			
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	
	Cuyahoga River Left Bank Erosion near CVNP RR - CY00219	Cuyahoga River South	Mainstem (west)	Brecksville	50	
7	Pepper Luce Erosion and Deterioration - PC00145	Chagrin River	Pepper Luce Creek	Pepper Pike	69	31-Jul-18 (2 Sites Combined)
	Pepper Luce Gates Mills Blvd Culvert Deterioration PC00218					
8	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	4th Qtr 2018 (3 Sites Combined)
9	Chippewa Creek Gabion Failure BTU CC00191_001	Cuyahoga River South	Chippewa Creek	Broadview Heights	42	4th Qtr 2018 (3 Sites Combined)
	Chippewa Creek Bank Stabilization at SWM Facility - CC00082					

## Stormwater Construction Upcoming Design



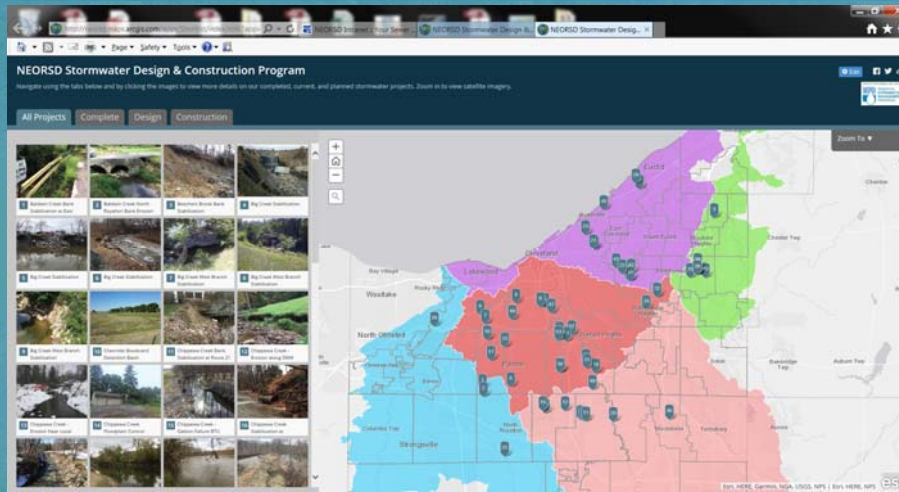
### 1524 West Creek Bank Stabilization

Status: Proposals Received

Estimated Construction Cost: \$6.6M

# Stormwater Construction Plan

## Track Progress



<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

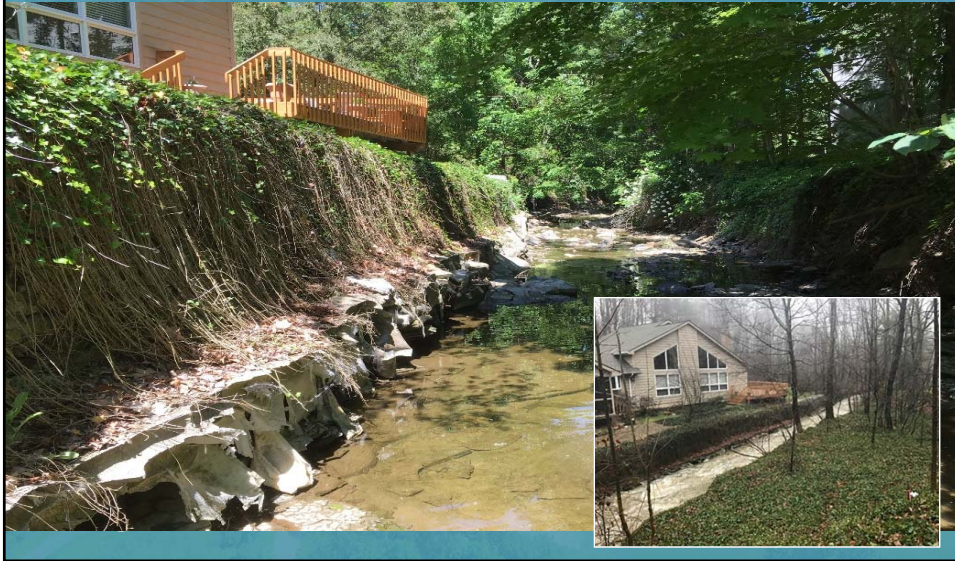
- Design and Construction
  - Early design concept input
  - Landowner negotiation
  - Eliminate non-sustainable land use
- Planning
  - SW Master Plan Protection Recommendations
  - Acquisition Strategy w/ partner
  - Protect / Enhance sustainable land use





# Pepper Creek Restoration

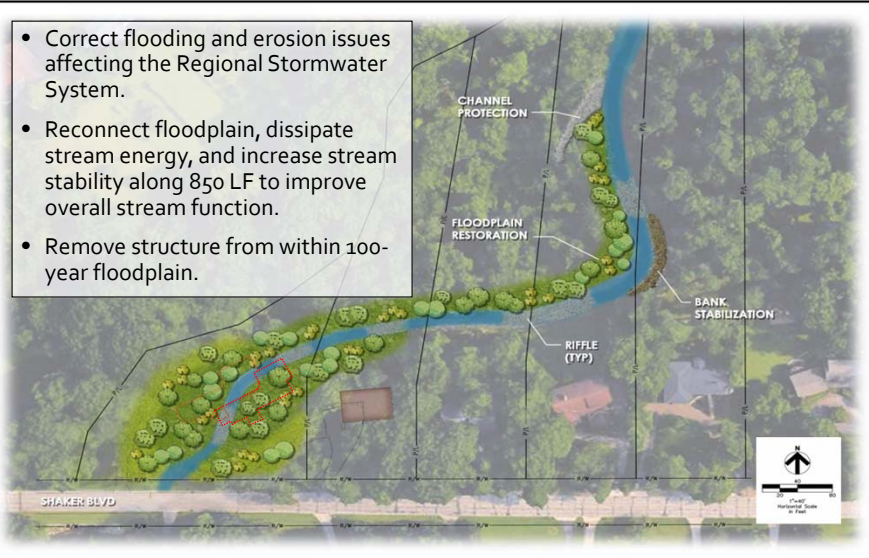
## Pepper Pike



# 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.



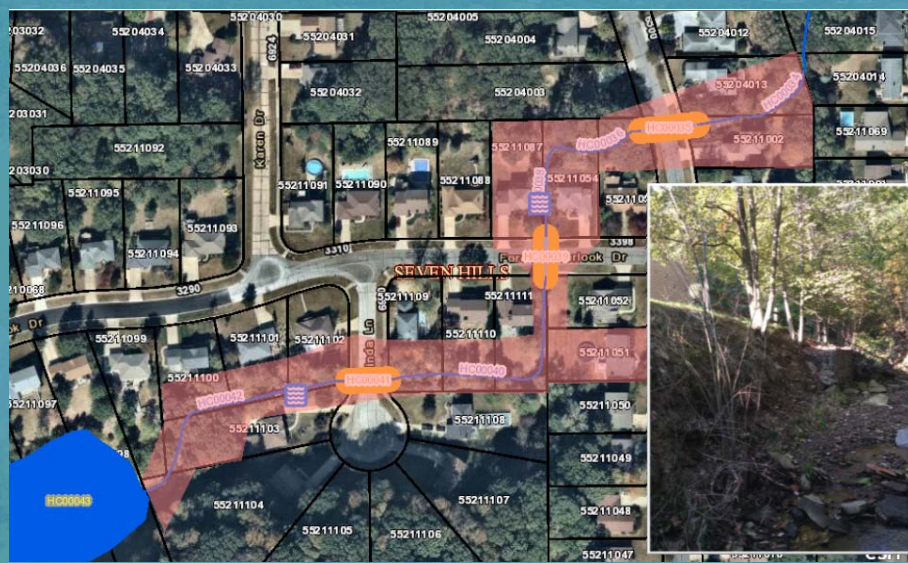
# Mill Creek Stream Restoration at Cricket Lane

Warrensville Heights



# Hemlock Creek Restoration

Seven Hills





# Questions

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**Stormwater Program: Community Resources**

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

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