

# *Watershed Advisory Committee*

## *Cuyahoga River North*

### *March 9, 2021*

NORTHEAST OHIO REGIONAL SEWER DISTRICT



REGIONAL  
STORMWATER  
MANAGEMENT  
PROGRAM

# Agenda

- Welcome & Introduction
- Water Resource Project Acquisition
- Report a Flood Tool (RAFT) - **Feature**
- Master Planning
- Strategic Support
- Inspection and Maintenance
- Design & Construction
- Looking Ahead



# Program Highlights

Frank Greenland, Director of Watershed Programs

Matt Scharver, Deputy Director of Watershed Programs

# Community Cost-Share: 2021

CCS Funds Balance (2/28/21) \$29,939,495

CCS funds available \$18,138,054

| Year1        | CCS Spent           |
|--------------|---------------------|
| 2016         | \$72,190            |
| 2017         | \$2,626,418         |
| 2018         | \$4,218,308         |
| 2019         | \$9,178,445         |
| 2020         | \$6,940,369         |
| 2021         | \$1,232,573         |
| <b>Total</b> | <b>\$24,269,243</b> |

# Community Cost-Share: 2021

## Changes to Title V

The District is proposing minor changes to Title V Stormwater Management Code, Chapter 9 – Community Cost-Share Program (CCS). The language change will provide clarity in the implementation of the CCS Program.

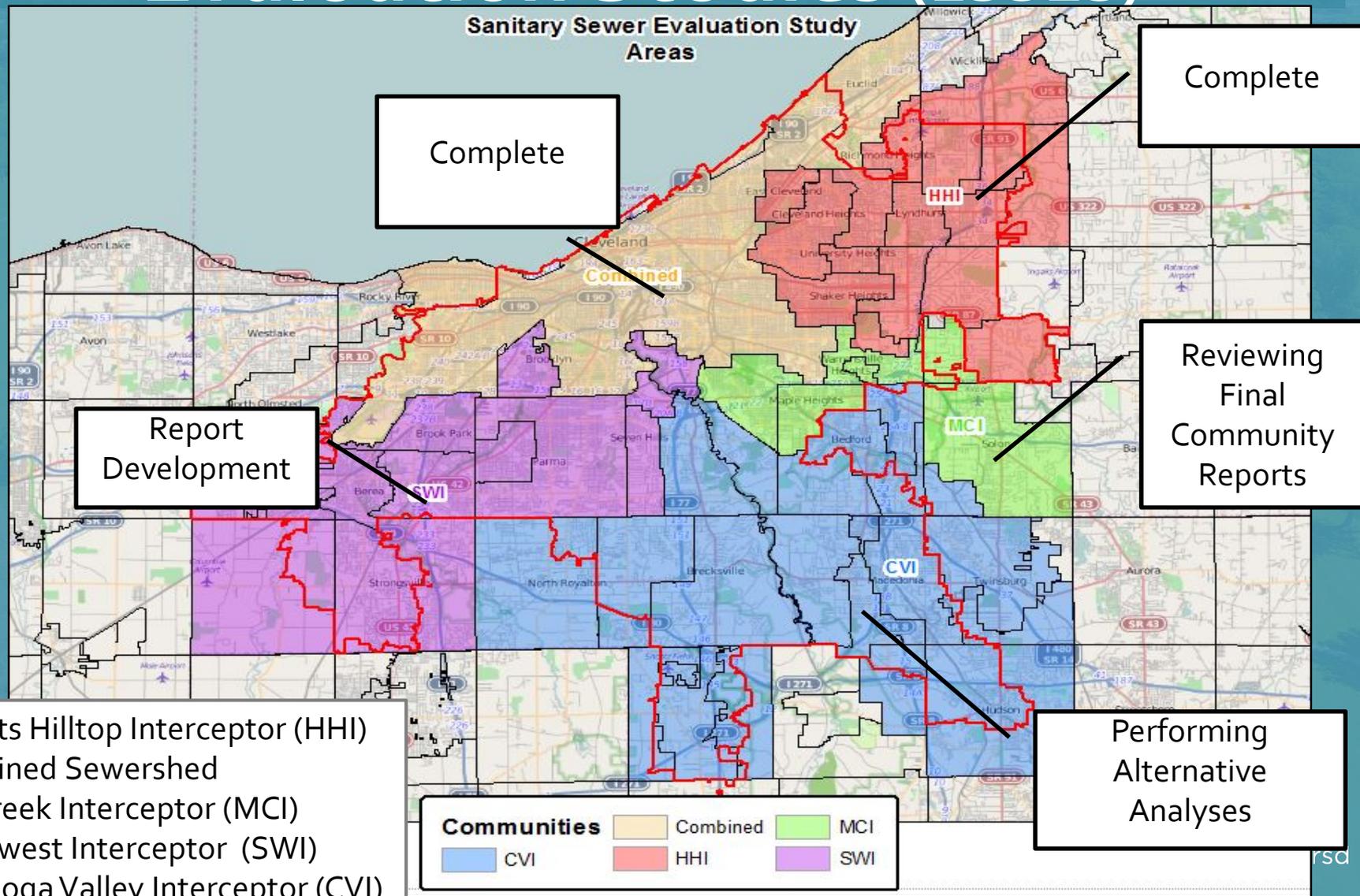
\* NEORSD Title V Stormwater Management Code - *Change #1:*

**Section 5.0903:** Eligible Community Cost-Share Program Activities – Member Communities may use Community Cost-Share Program funds for **design**, construction, operation, and maintenance of their Local Stormwater System... (the word “design” added for clarity)

\*NEORSD Title V Stormwater Management Code - *Change #2:*

- **Section 5.0905 (b):** Member Communities may accumulate up to five (5) years of Community Cost-Share funds. Member Communities must apply by **December 31<sup>st</sup>** of Year Five to be able to receive their funds from Year One. (changed from July 1<sup>st</sup> to December 31<sup>st</sup> to allow for five (5) full years)

# Local Sewer System Evaluation Studies (LSSES)



# 2022 MCIP Funding

- 2022 MCIP funding level to be determined

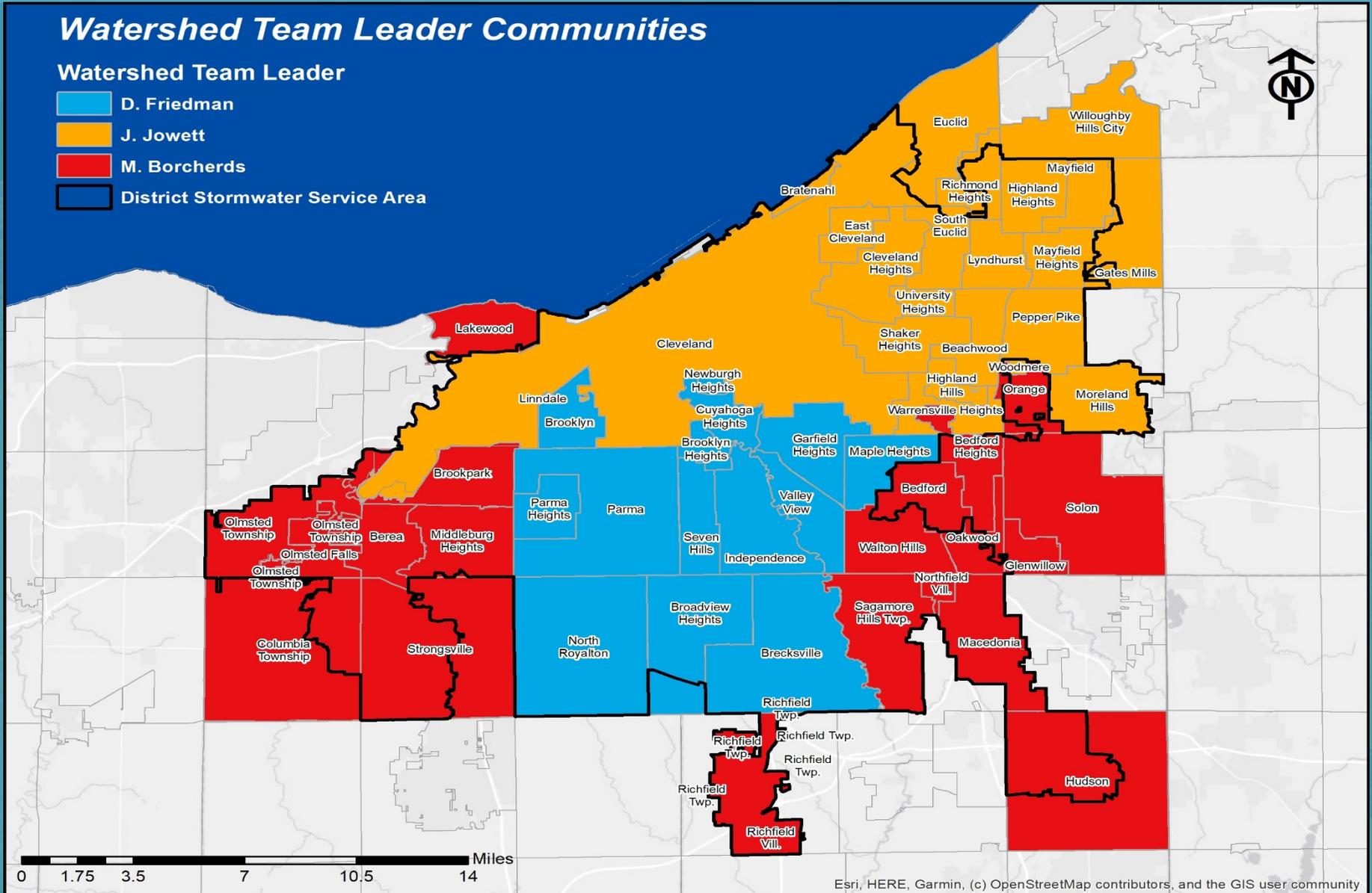
## Implementation Schedule:

- March: RFP Released
- April 22-29: Pre-Proposal Meetings
- May 21: MCIP Submissions Due Date
- June – July: Proposal Review Meetings
- September: Recommendations Presented to Bd

# Watershed Team Leader Communities

## Watershed Team Leader

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



0 1.75 3.5 7 10.5 14 Miles

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

# Questions



Big Creek in Parma – Problem Area BC-PA-03

# 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

## Success to date: Threat Mitigation/ Asset Protection

- Fee Simple : 45/ \$ 9,674,651
- Permanent Easements: 93/ \$740,605

## Success to date: Partnerships

- Flood / Erosion Mitigation: 23 homes
- District Dollars invested: \$1,818,904
- Dollars Leveraged: \$4,761,969



## Acquisition Process

Outreach

Appraisal

Appraisal Review

FMV Offer

Board Approval

Closing /Leasing

Maintenance and  
Inspection

Demolition

Water Resource  
Project



## Questions?

Lilah Zautner, Project Manager for Property Acquisition  
zautnerl@neorsd.org  
216.299.2751

# Report a Flood Tool

Northeast Ohio Regional Sewer District

## Report a Flood Tool

Basement Flooding & Street Flooding



### Report A Flood Tool

Click anywhere on this tab to record a flooding event in Survey123. A new page will be loaded that contains the survey.

[Report Flooding Event](#)

# Report a Flood Tool – What is it?

- A web based data collection form managed by the District, available through the District's ArcGIS Online Platform
- Associated Web Application showing the locations of flooding incidents
- Data can also be collected via a custom excel sheet or paper form

# Report a Flood Tool - Form

- Basement Flooding ▶ \_\_\_\_\_
- Yard Flooding ▶ \_\_\_\_\_
- Street Flooding ▶ \_\_\_\_\_
- Additional Comments/Pictures ▶ \_\_\_\_\_

## Basement Flooding ▾

Where is the water coming from?

|                                      |                                 |   |
|--------------------------------------|---------------------------------|---|
| <input type="checkbox"/> Floor Drain | <input type="checkbox"/> Toilet | <input type="checkbox"/> Sink                         |
| <input type="checkbox"/> Windows     | <input type="checkbox"/> Doors  | <input type="checkbox"/> Foundation<br>(Walls/Floors) |

Describe the characteristics of the water

|                                      |                                  |                                      |
|--------------------------------------|----------------------------------|--------------------------------------|
| <input type="checkbox"/> Clear       | <input type="checkbox"/> Muddy   | <input type="checkbox"/> Slight Odor |
| <input type="checkbox"/> Strong Odor | <input type="checkbox"/> No Odor | <input type="checkbox"/> Other       |

If "Other" is selected please describe the characteristics of the water

How deep was the water (in inches)?

|                              |                              |                              |
|------------------------------|------------------------------|------------------------------|
| <input type="radio"/> 0-6"   | <input type="radio"/> 6-12"  | <input type="radio"/> 12-24" |
| <input type="radio"/> 24-36" | <input type="radio"/> 36-48" | <input type="radio"/> >48"   |

How long was the water in basement (hours)?

|                                 |                                  |                                   |
|---------------------------------|----------------------------------|-----------------------------------|
| <input type="radio"/> 0-4 Hours | <input type="radio"/> 4-12 Hours | <input type="radio"/> 12-24 Hours |
| <input type="radio"/> >24 Hours |                                  |                                   |

How often has this occurred in the past year?

# Report a Flood Tool - Map

Report a Flood Tool Map with ArcGIS Web AppBuilder

Find address or place

0.2mi

-81.694 41.423 Degrees

Report\_a\_Flood\_SSES\_Points | Report A Flood Tool | Municipal Boundary

Options | Filter by map extent | Zoom to | Clear selection | Refresh

| start_time | end_time | username | email | Name | Street Number/Street Name | Community | Phone Number | Email | What is your preferred contact method? | Today's Date | Date    |
|------------|----------|----------|-------|------|---------------------------|-----------|--------------|-------|--|--------------|---------|
|            |          |          |       |      | 3204 Portman Ave          | Cleveland |              |       |  |              | 6/29 PM |

210 features 0 selected

# Report a Flood Tool - Questions

- How can I access the RAFT form?
- Will other people be able to access the data?
- Will training be offered?



# Report a Flood Tool - Benefits

- Centralized repository for recording flooding incidents in a consistent format;
- Understand what types of issues are occurring, how frequently, and where;
- Prioritize projects based on incident type and frequency; and
- Help validate hydraulic models

# Report a Flood Tool - Contacts

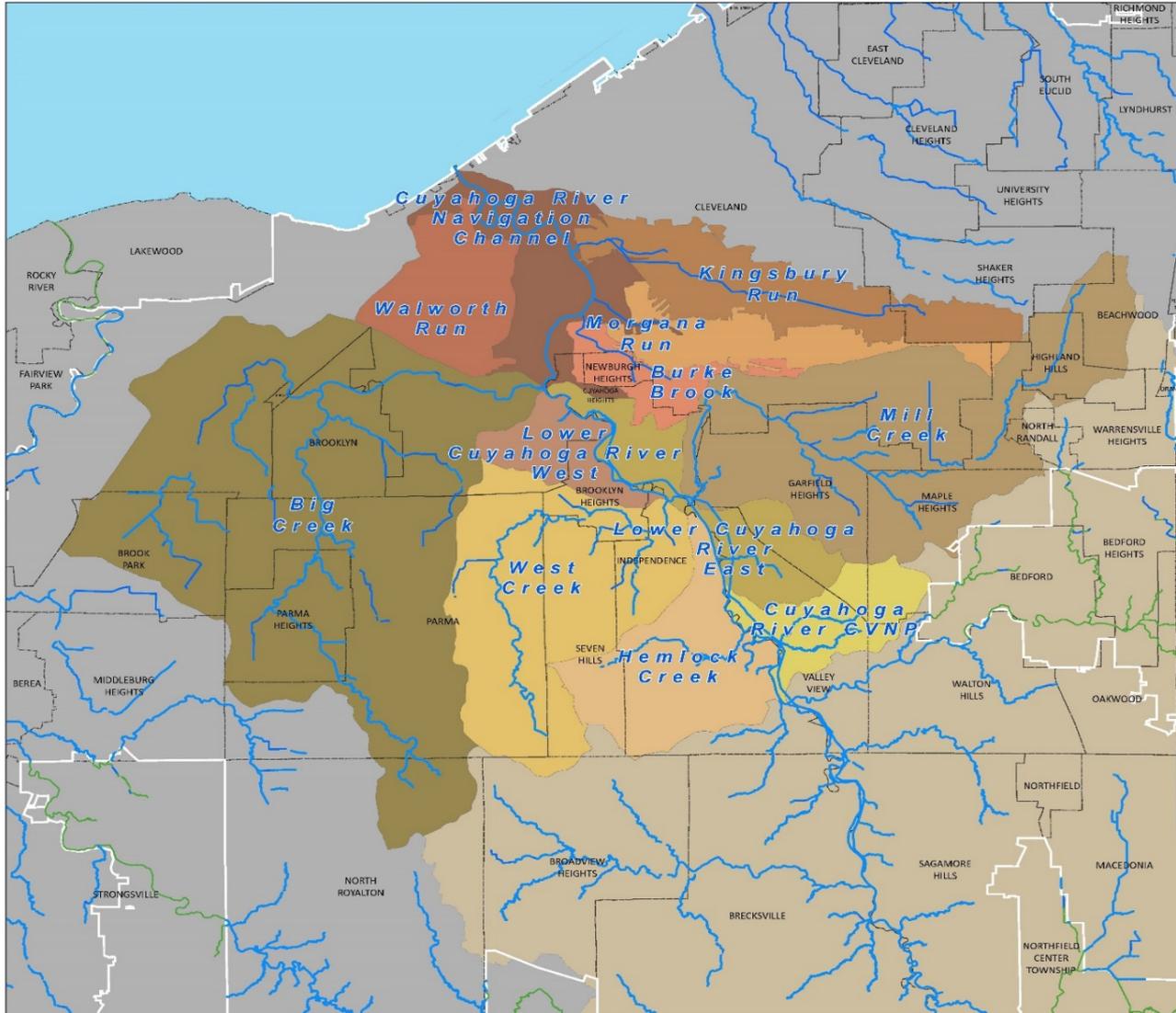
Eric J. Baker, GISP

[bakere@neorsd.org](mailto:bakere@neorsd.org)

or

[gis@neorsd.org](mailto:gis@neorsd.org)

# Stormwater Master Plan



## Cuyahoga River - North

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

 **Northeast Ohio  
Regional Sewer District**

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

Map Created : October 2017

1:50,524



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# Stormwater Master Planning (Status through 2/22/2020)

## Cuyahoga River South

Completion Date: June 2019



■ Remaining ■ Completed  
**100 % Complete**

## Cuyahoga River North

Completion Date: July 2020



■ Remaining ■ Completed  
**100% Complete**

## Rocky River

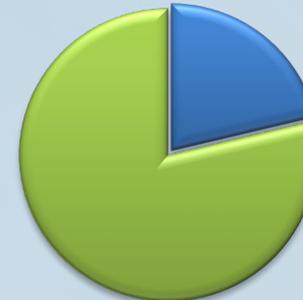
Completion Date: November 2020



■ Remaining ■ Completed  
**100% Complete**

## Chagrin River / Lake Erie Tribs

Completion Date: September 2021



■ Remaining ■ Completed  
**78% Complete**

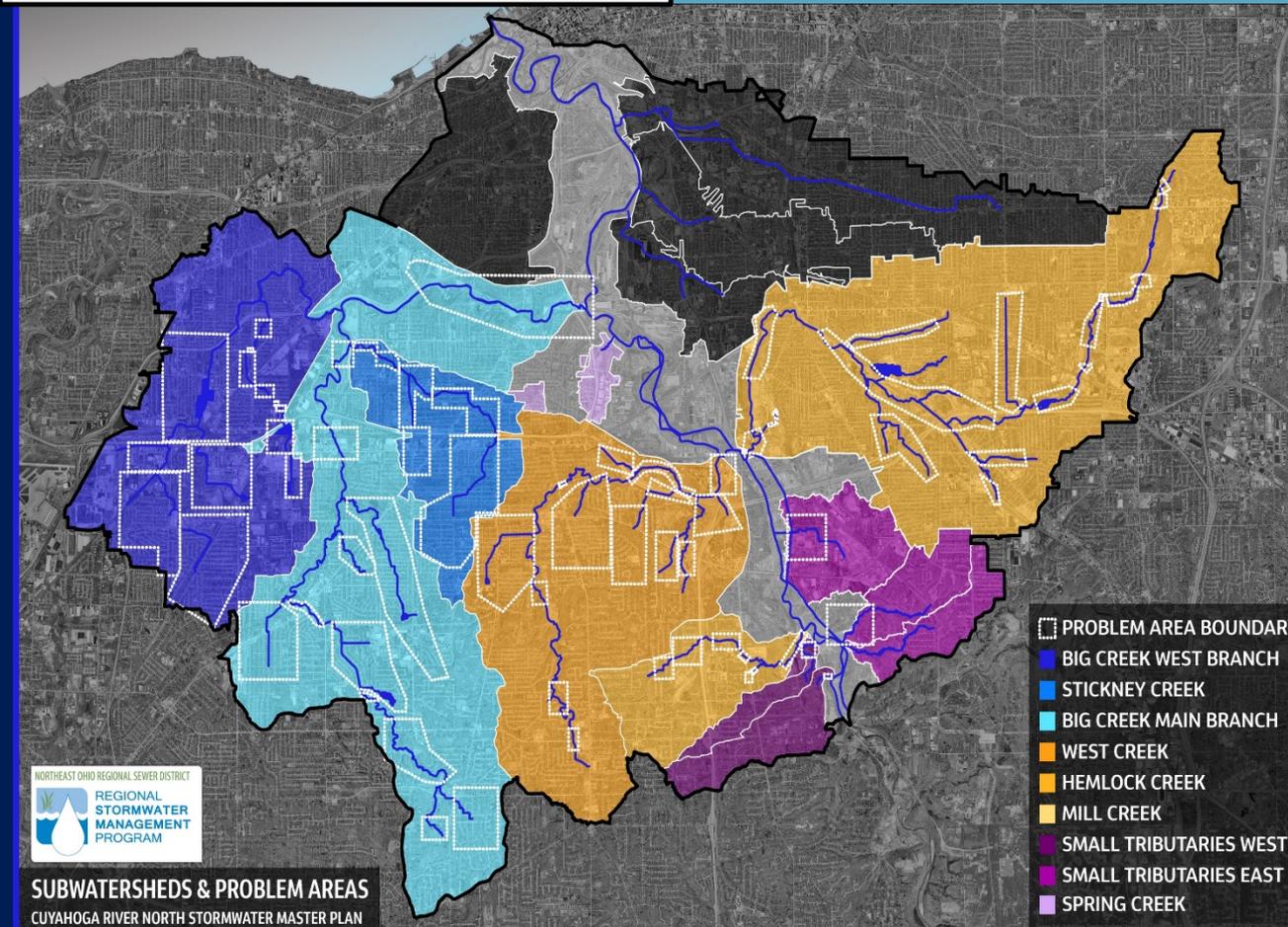
# Cuyahoga River North

# Cuyahoga River North Stormwater Master Plan

70+ Problem Areas with planning level recommendations nominated to SW Construction Plan

~\$544 Million in construction costs

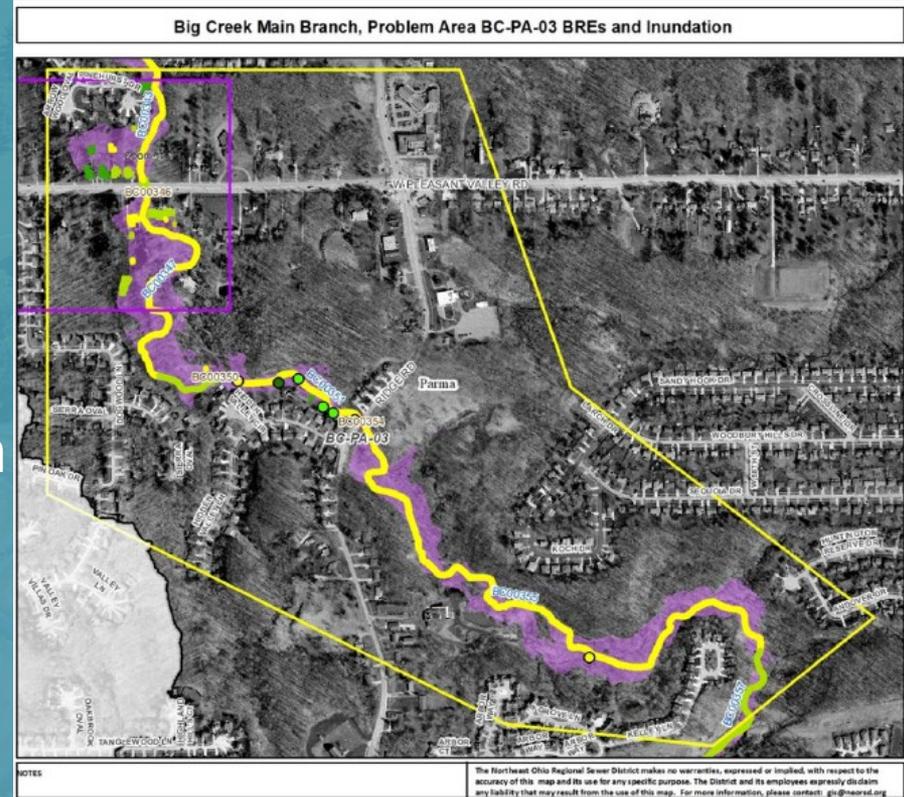
Community Reports distributed in 2020



# Cuyahoga River Stormwater Master Plan Design & Construction Phase

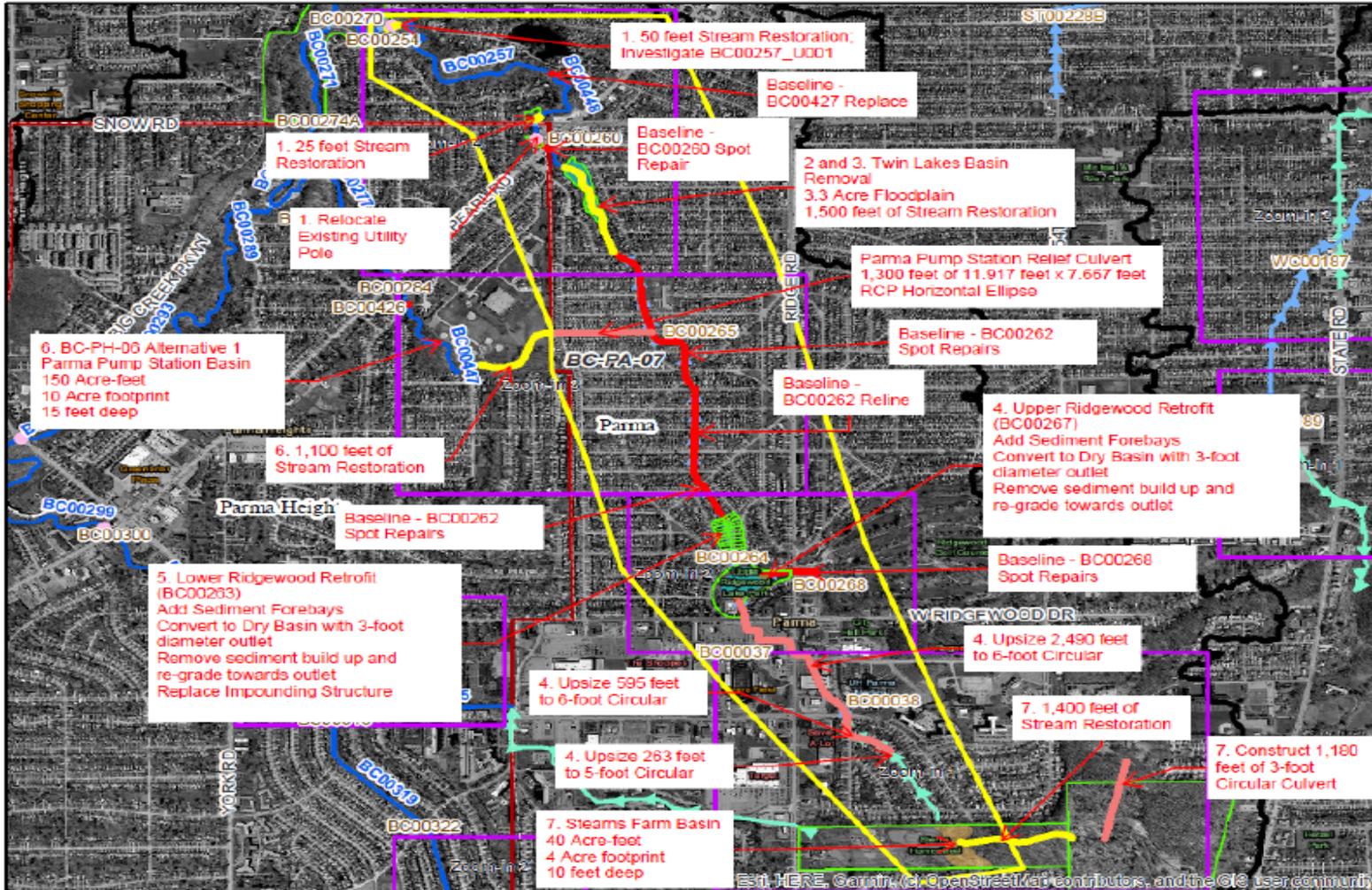
Projects initiated based on SW Master Plan recommendations:

- Big Creek Flood Reduction near Sprague Road (BC-NR-02)
- Big Creek Stream Restoration Upstream and Downstream of Ridge Rd (BC-PA-03)
- Big Creek Phase 1 SWMP Project Area 7 - Ridgewood Basins in Parma (BC-PA-07)

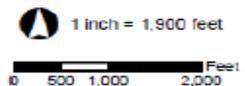


# Advanced Stormwater Planning

## Problem Area BC-PA-07: Alternative 1



- Legend**
- Problem Area
  - Map Extent
  - Utility
  - Culvert Modification
  - Stream Restoration
  - Easement
  - Dry Detention
  - Floodplain
  - Structural\_Repair-Alt 1
  - Municipality
  - Subwatershed
  - Regional Stormwater System
    - Closed Conduit
    - Stream
    - Crossing
    - Basins
    - Culverted Stream
    - Major Structures
    - LSS Model Conduit



Disclaimer: For Planning Purposes Only  
 Sources: NEORD GIS  
 Ohio Department of Transportation, Cuyahoga County

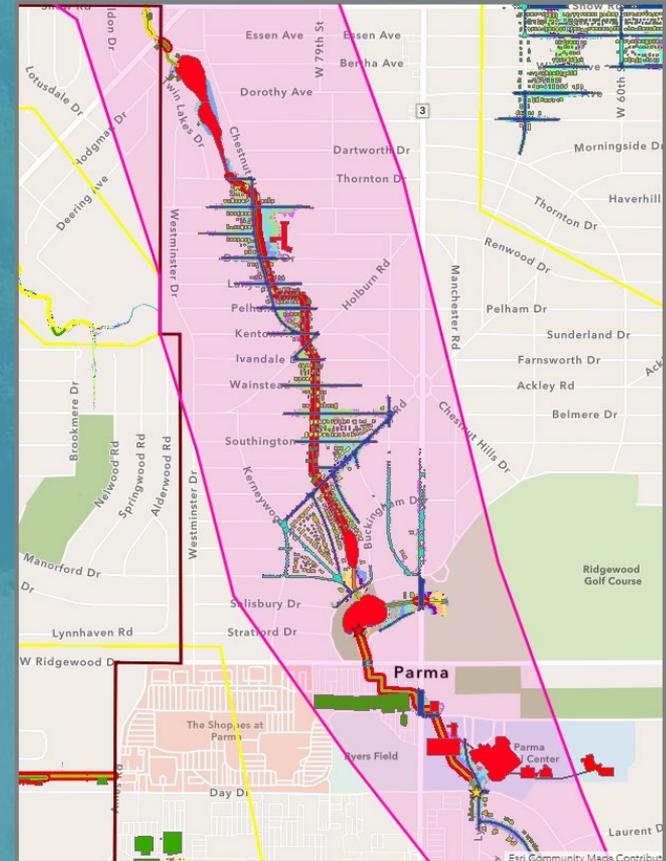
Map Created: 8/29/2019

**NOTES**

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# ASP: Problem Area BC PA 07

- SWMP Recommended Alternative:
  - 20+ project components
  - Estimated at \$36,148,000
- ASP Objectives:
  - Break apart alternative, package components, & orchestrate defined sequence
  - Include Upper Ridgewood improvements and benefits
  - Review/consider LOS goals to maximize benefit vs. costs



# Questions

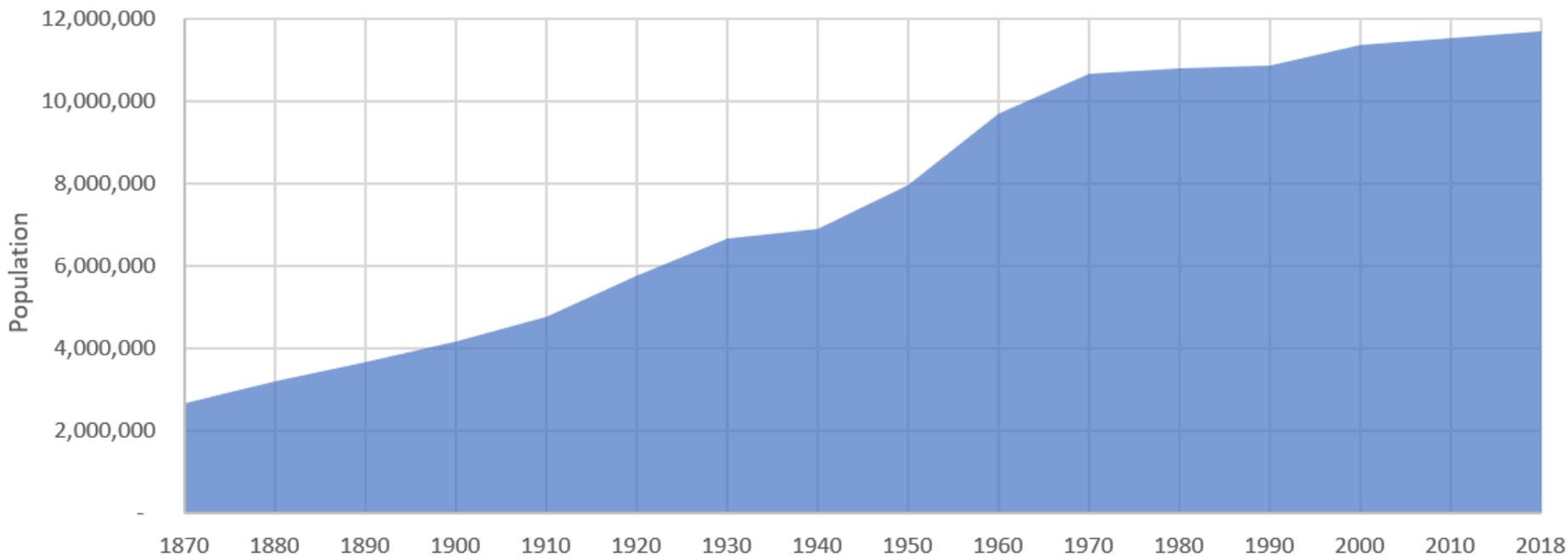


**Hemlock Creek (HC00034), Seven Hills  
East of Donna Rae Drive**

# Stormwater Strategic Support Roles & Responsibilities

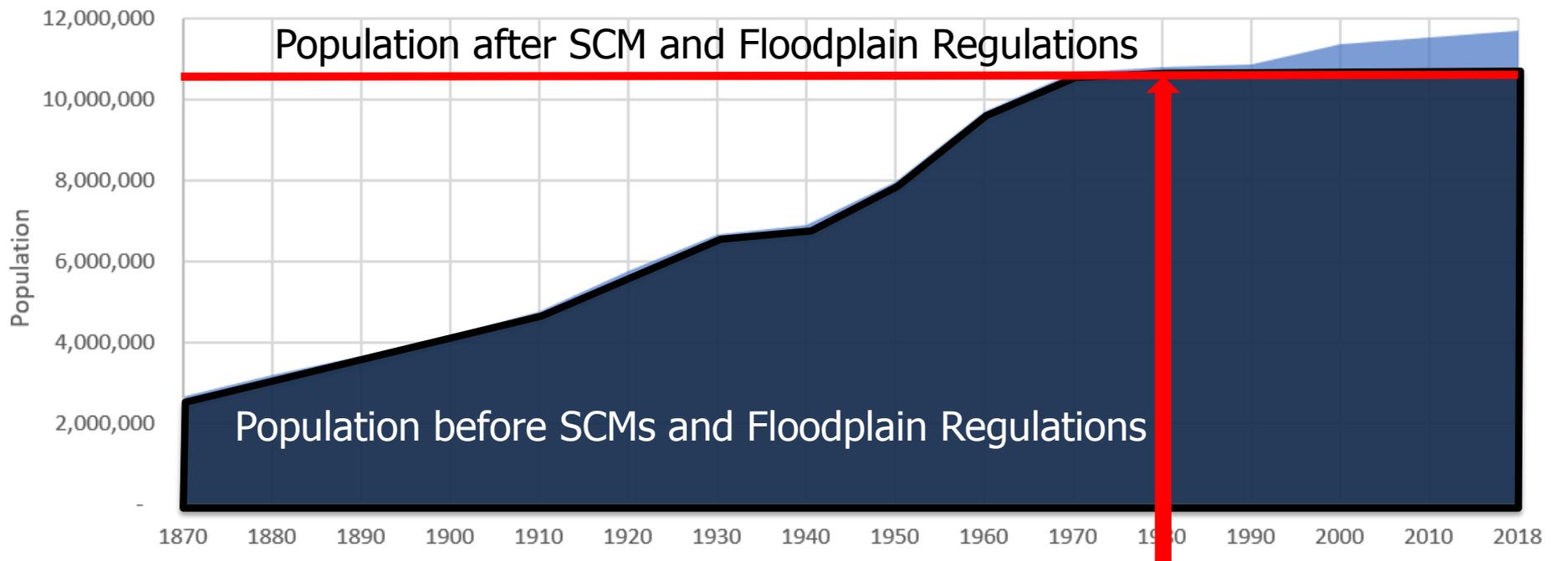
- Manage the RSMP Stormwater Planning Level Models
- Assign stormwater related risk (and its probability) to help prioritize and phase RSMP Construction Projects
- Support the District's urgent storm response and reporting
- Provide assistance to local stormwater issues with RSS benefits

# Ohio's Population and Stormwater Management Regulations By Decade



| Pipe Capacity          | < 2-yr Capacity |  | 2-yr to 5-yr Capacity |               | 5-yr to 10-yr Capacity |  |
|------------------------|-----------------|--|-----------------------|---------------|------------------------|--|
| Floodplain Regulations | No Regulations  |  |                       | FEMA 100-yr   | Stream Setback         |  |
| SCMs                   | No Regulations  |  |                       | Flood Control | WQV                    |  |

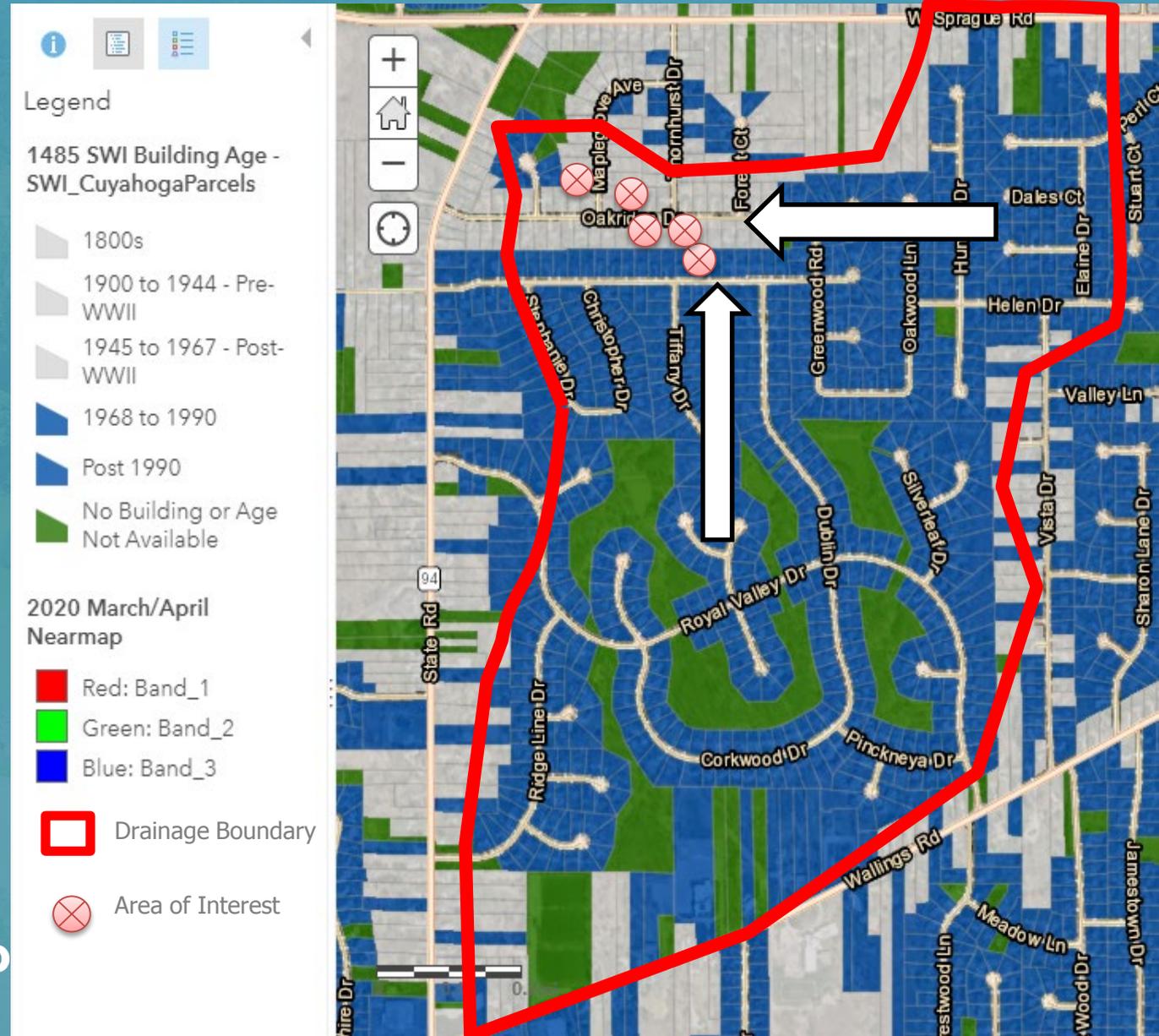
# Ohio's Population and Stormwater Management Regulations By Decade



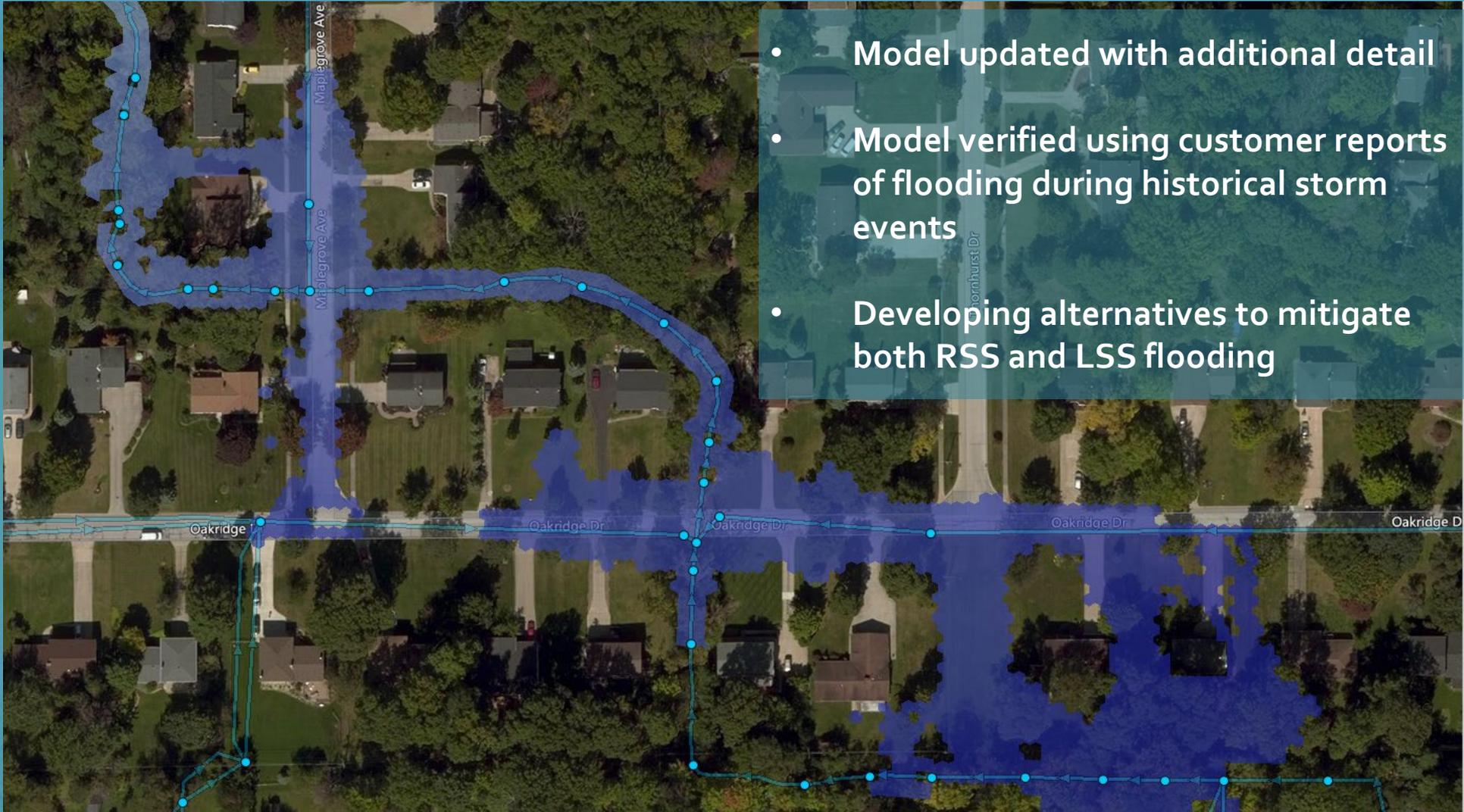
|                        |                 |  |                       |  |                        |                |
|------------------------|-----------------|--|-----------------------|--|------------------------|----------------|
| Pipe Capacity          | < 2-yr Capacity |  | 2-yr to 5-yr Capacity |  | 5-yr to 10-yr Capacity |                |
| Floodplain Regulations | No Regulations  |  | No Regulations        |  | FEMA 100-yr            | Stream Setback |
| SCMs                   | No Regulations  |  | No Regulations        |  | Flood Control          | WQV            |

# Development History

- Nearly all the houses upstream of the flooded properties were built later
- Several houses were built without any SCMs
- Some SCMs were constructed for flood control purposes

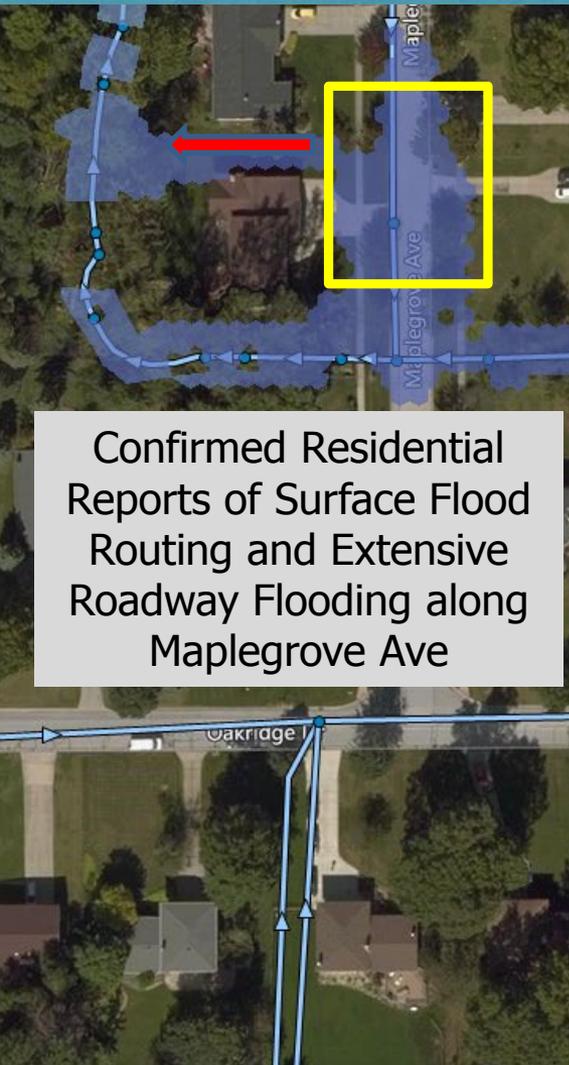


# Big Creek North Royalton Problem Area [BCNRo2]



- Model updated with additional detail
- Model verified using customer reports of flooding during historical storm events
- Developing alternatives to mitigate both RSS and LSS flooding

# April 16, 2018 Urgent Storm Event: Street Flooding



# General Topic: Informative Flooding Photos Building, Street, & Property Flooding



Hemlock Creek, Seven Hills

# General Topic: Informative Flooding Photos

## Property Flooding



Hemlock Creek, Seven Hills

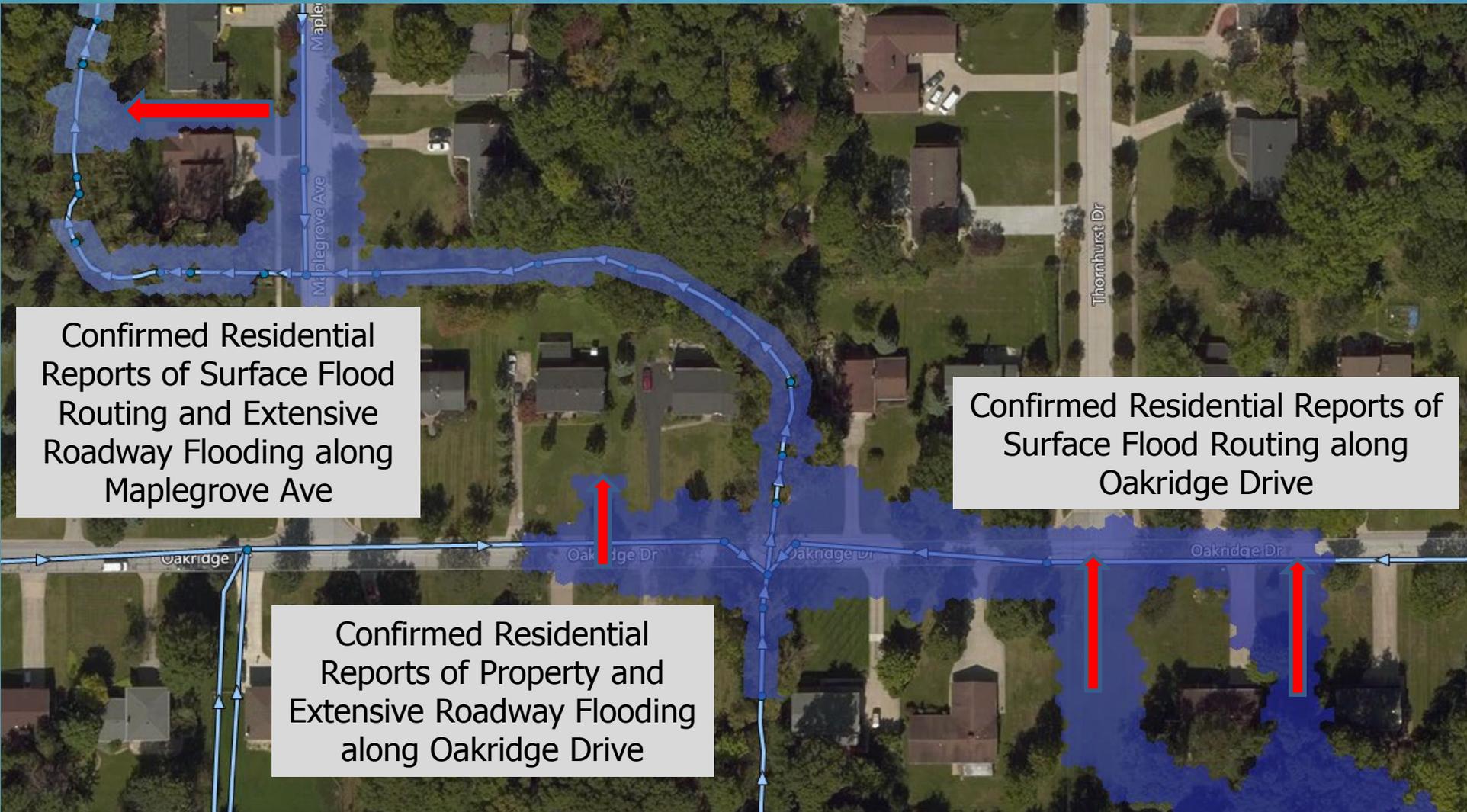
# General Topic: Informative Flooding Photos

## Building Flooding



Hemlock Creek, Seven Hills

# April 16, 2018 Urgent Storm Event: Street Flooding

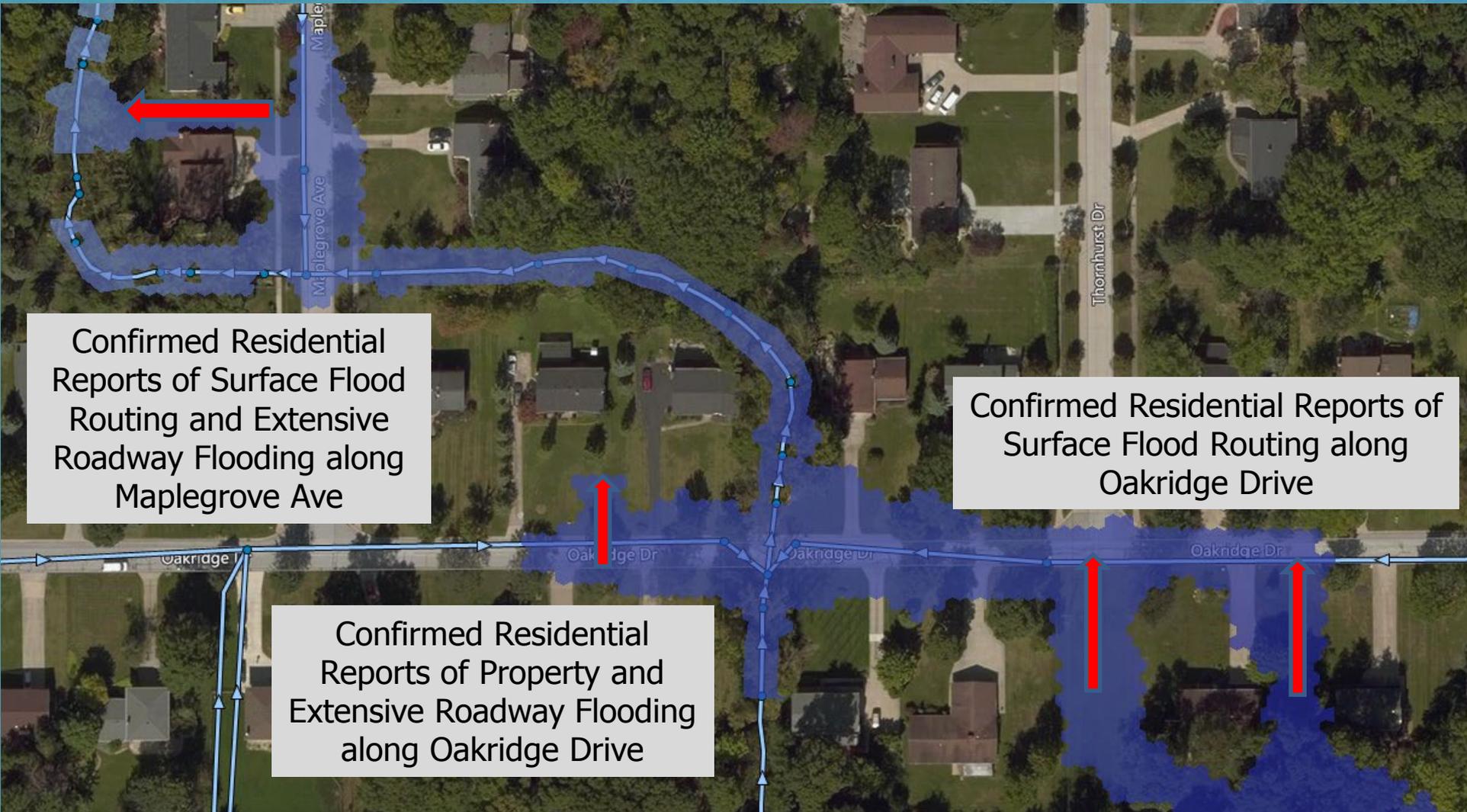


Confirmed Residential Reports of Surface Flood Routing and Extensive Roadway Flooding along Maplegrove Ave

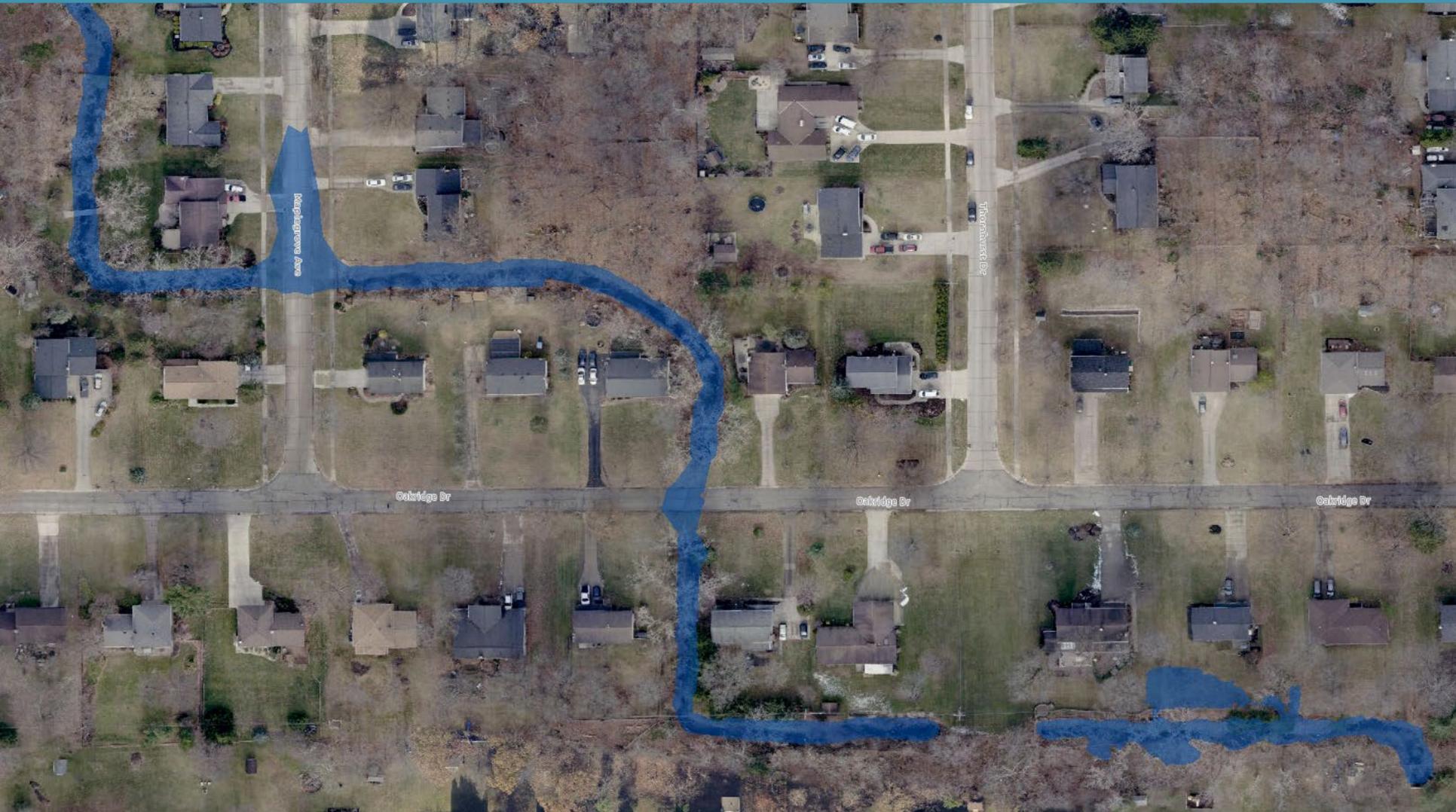
Confirmed Residential Reports of Surface Flood Routing along Oakridge Drive

Confirmed Residential Reports of Property and Extensive Roadway Flooding along Oakridge Drive

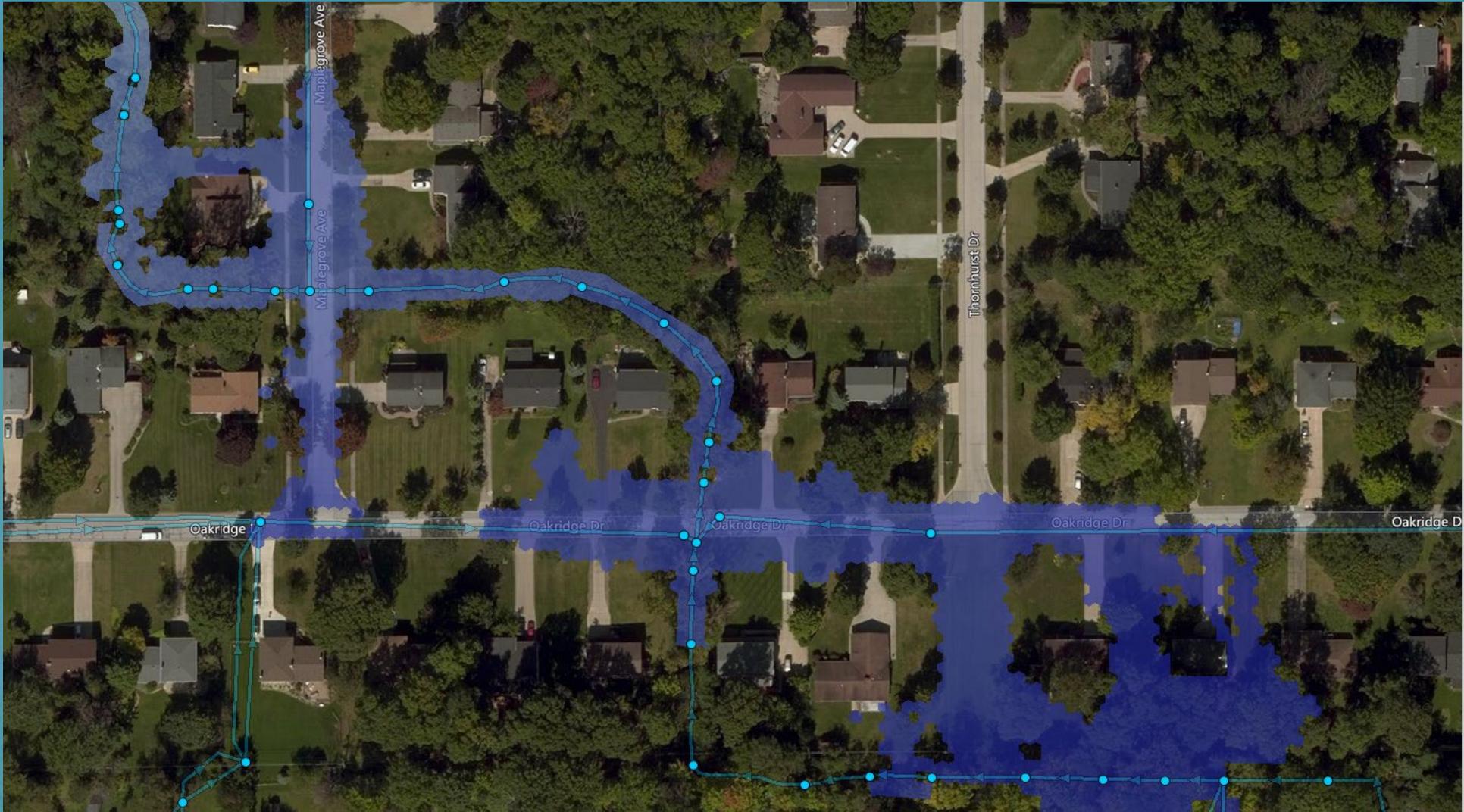
# April 16, 2018 Urgent Storm Event: Street Flooding



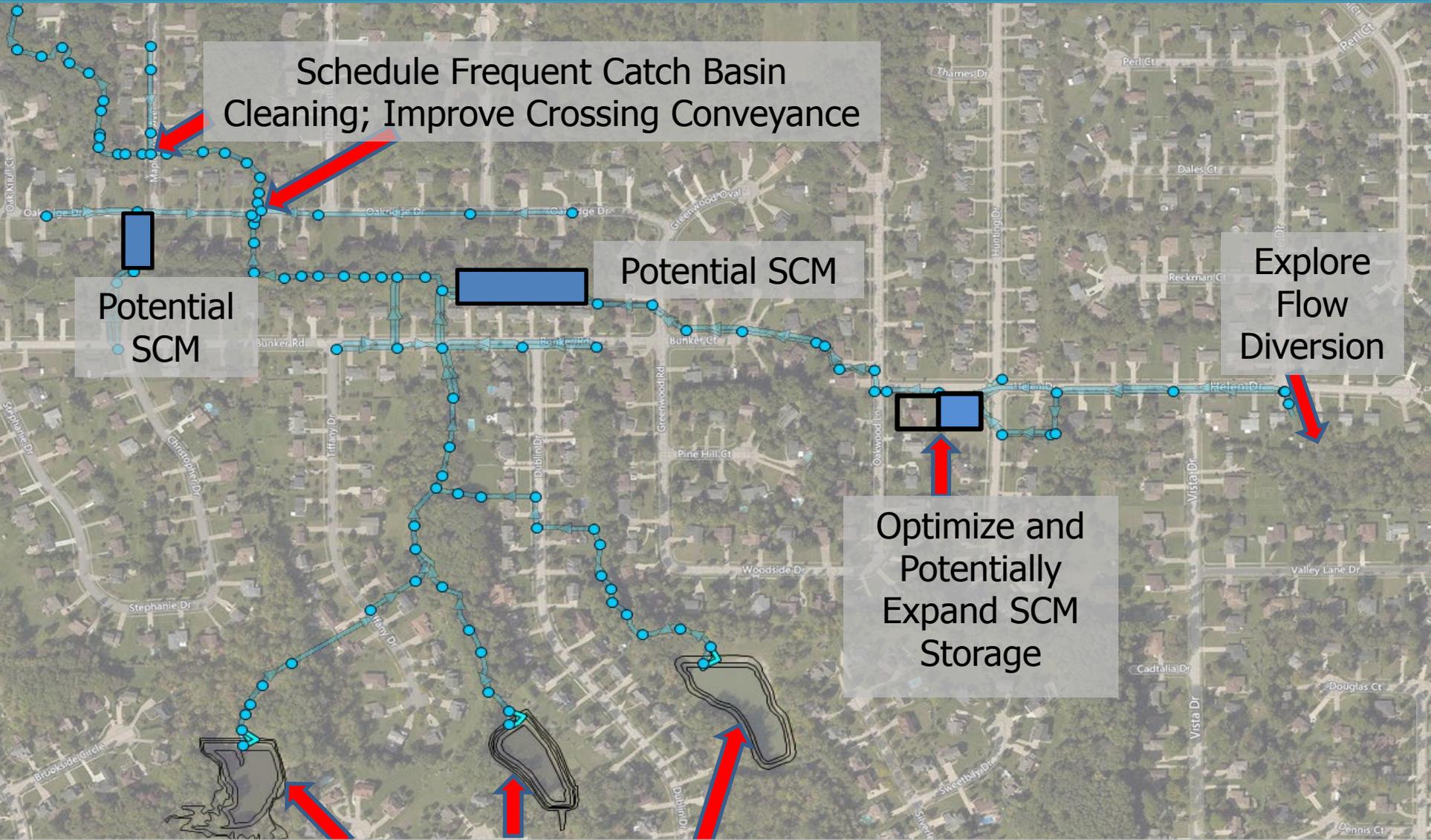
# CRN SWMP Model: 10-year design storm



# Updated Model: 10-year design storm



# BCNR02: Alternative Development & Evaluation



# Questions

**Maplegrove Avenue  
Crossing Outlet**



# Stormwater Inspection & Maintenance (SWIM)

- Inspection Program
- Root Cause Failure Analysis (RCFA)
- Maintenance Program

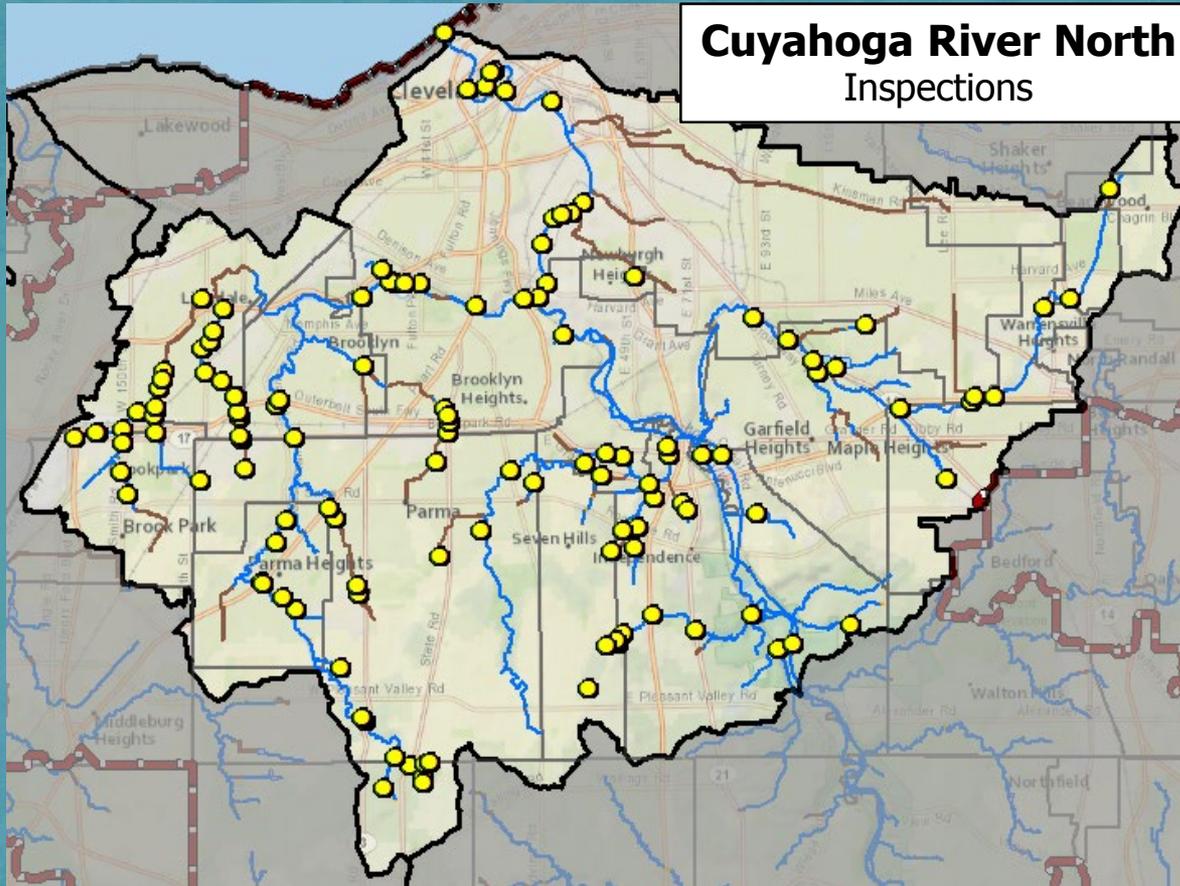
# SWIM

## 2021 Inspection Program



# SWIM

## 2021 Inspection Program



**Completed Inspections**  
**10/2020 - 02/2021**  
**142 Total Inspections**

- 109 SWIM Inspections
- 33 Responsible Party Benchmark Inspections

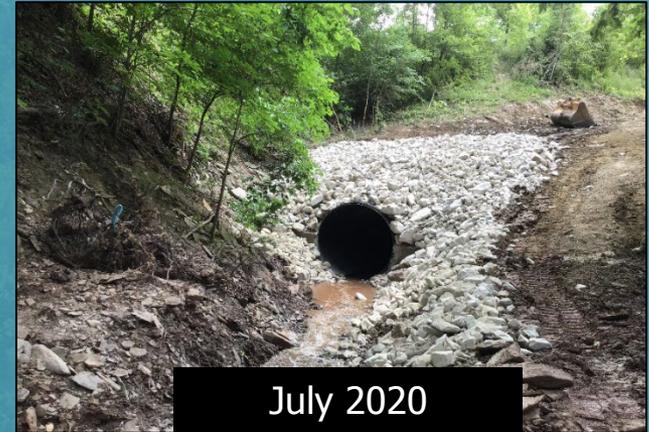


# SWIM

## 2021 Inspection Program



West Creek  
Independence



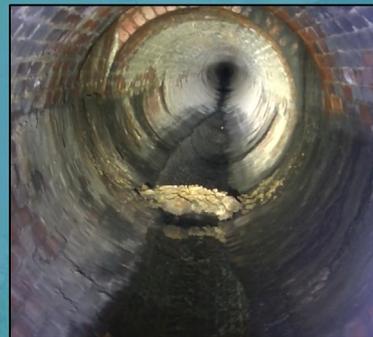


# SWIM

## 2021 Inspection Program



Stickney  
Creek  
Brooklyn  
Cleveland



# SWIM

## 2021 Inspection Program



Tributary to  
Cuyahoga River  
Independence





# SWIM

## 2021 Inspection Program



**Chevy Branch  
Big Creek  
Cleveland**





# SWIM

## Root Cause Failure Analysis (RCFA)

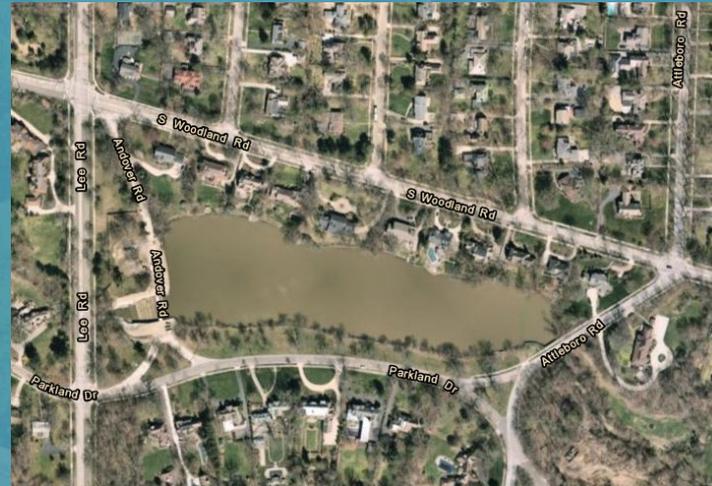


# SWIM

## Root Cause Failure Analysis (RCFA)

### *Problem Identification*

- Green Lake in Shaker Heights, Doan Brook Subwatershed
- Systemic erosion throughout the upstream tributary
- Sediment accumulation in Green Lake requires repeated maintenance



# SWIM

## Root Cause Failure Analysis (RCFA)

### *Data Collection*



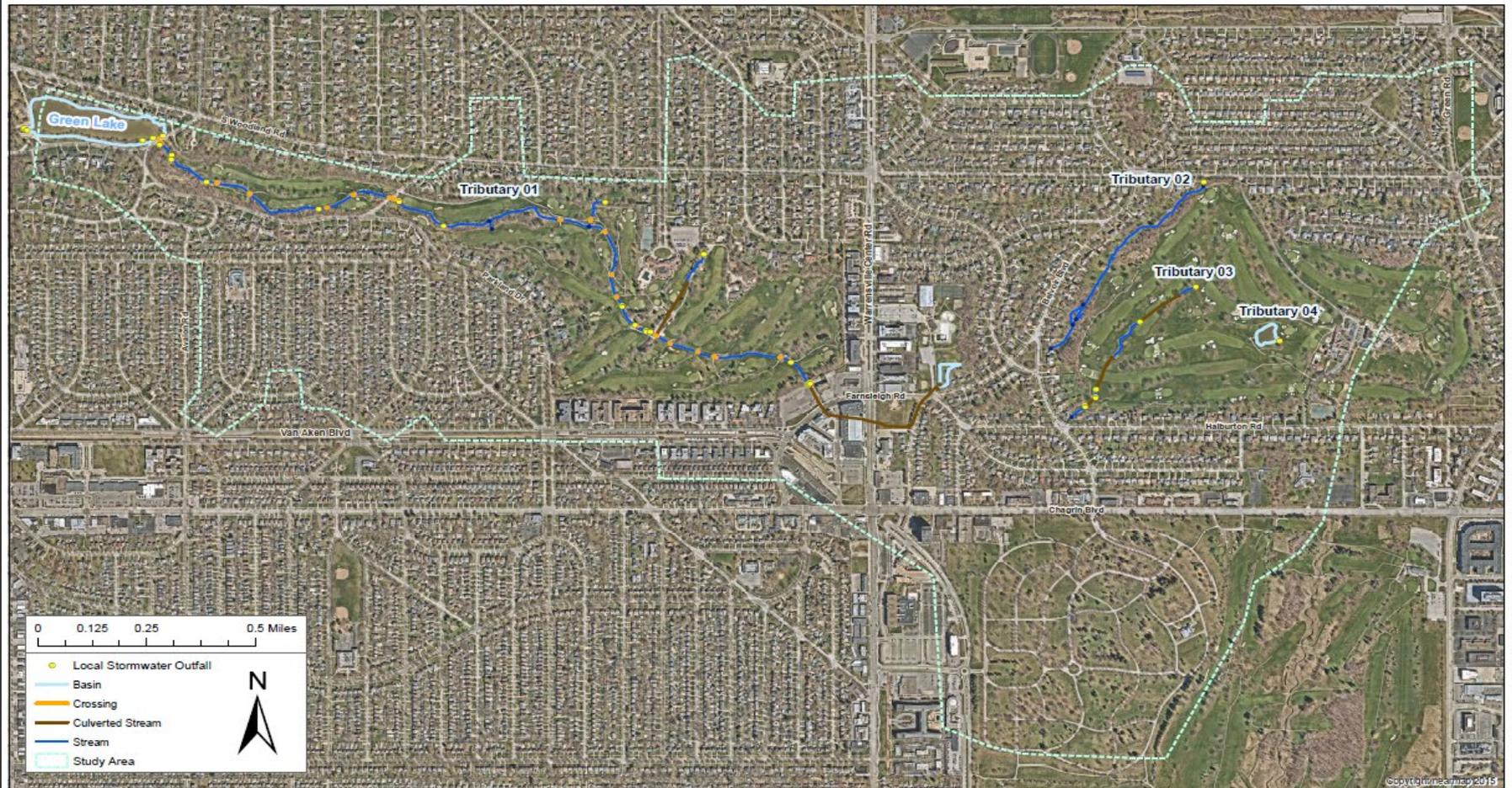
- Goal: Identify the source of the sediment.
- Mapped the drainage area to Green Lake, including all outfalls 12" or greater in diameter.
- Performed STEPL analysis on all stream segments draining to Green Lake
- Height and length measured on each eroding bank
  - Assigned a Lateral Recession Rate for each bank, ranging from .01' to .5' per year based on bank material and surface protection (lack thereof).
- Calculated volume of sediment from each segment.

# SWIM

## Root Cause Failure Analysis (RCFA)

### Study Area

**Green Lake Local Stormwater System Assets**  
Overall View of Tributaries Within Study Area

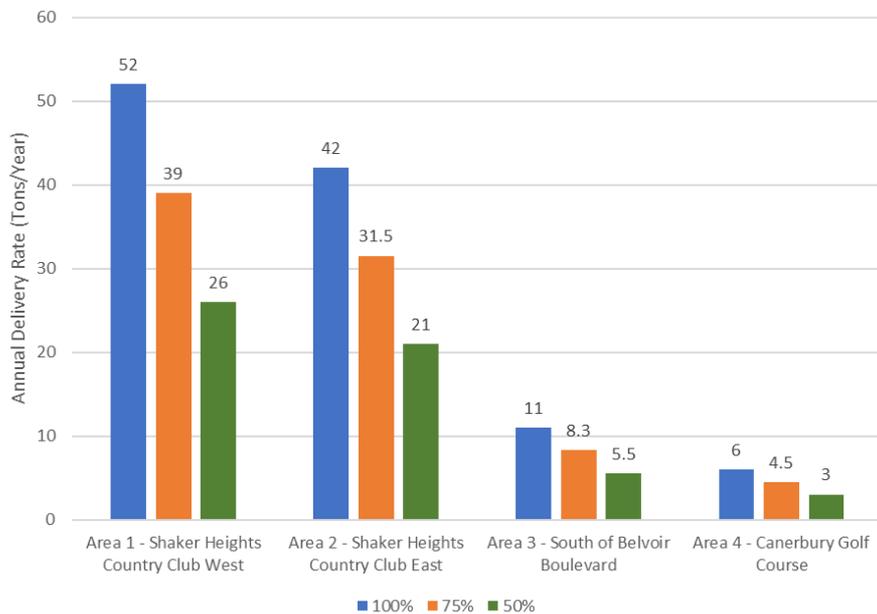


# SWIM

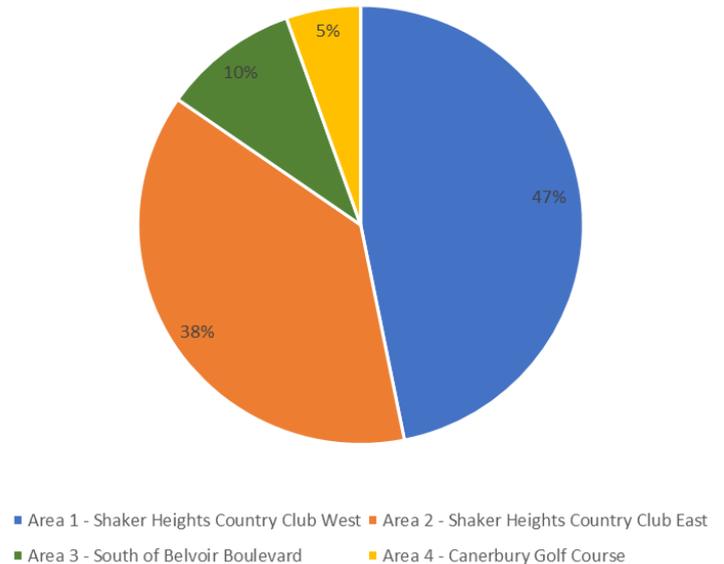
## Root Cause Failure Analysis (RCFA)

### Data Analysis

Annual Delivery Rate of Sediment to Green Lake (Tons/Year)



Percentage of Total Sediment Load to System



# SWIM

## Root Cause Failure Analysis (RCFA)

### *Recommendations*

Address the top 5 “worst offenders”

- Incorporate streambank stabilization projects prioritized by highest sediment contributors.
- Projects incorporate grading back the banks to more gradual slopes, installation of native plantings with dense root structures, establishing clearly defined riparian buffer zones, installation of rip-rap protection, and hard armament where necessary.



# SWIM

## Root Cause Failure Analysis (RCFA)

### *Recommendations*

Reduce stormwater runoff into the local system

- Best management practices incorporated throughout the upstream watershed communities can redirect and reduce stormwater volumes entering the local system.
- Examples include rain gardens, bioswales, bioretention basins, permeable pavers, and underground storage detention chambers.





# SWIM

## 2021 Maintenance Program



# SWIM

## 2021 Maintenance Program

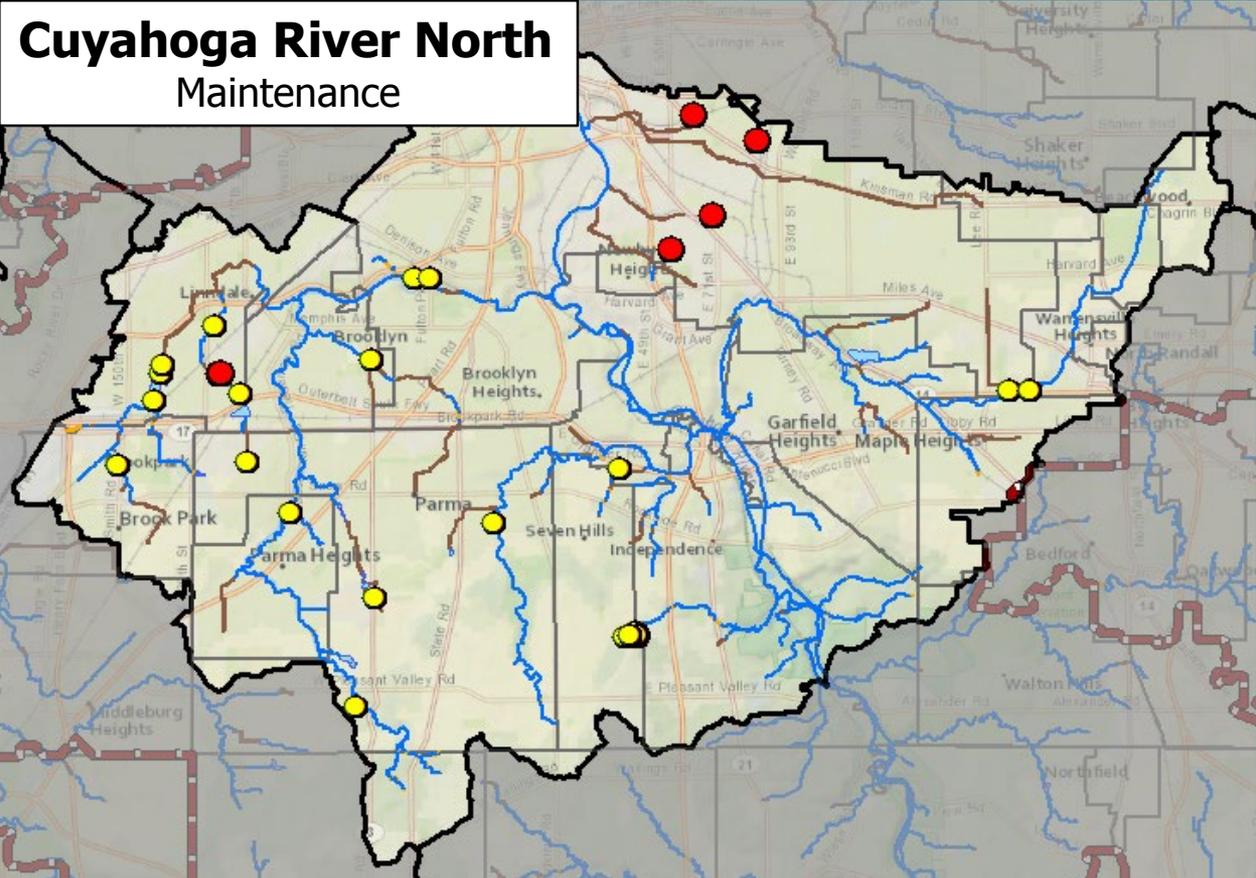
### Cuyahoga River North Maintenance

### 10/2020 – 02/2021 Maintenance Projects

| Project Type      | Projects (Count) | Debris Removed (CY) | Sediment Removed (CY) |
|-------------------|------------------|---------------------|-----------------------|
| Sediment & Debris | 24               | 328                 | 48                    |
| Other             | 7                |                     |                       |
| <b>Total</b>      | <b>31</b>        | <b>328</b>          | <b>48</b>             |

**Maintenance Type**

-  Other
-  Debris/Sediment Removal
-  Watershed Boundary
-  Stream
-  Major Structure
-  Basin
-  Crossing
-  Culverted Stream
-  Stormwater Service Area
-  Community Boundary



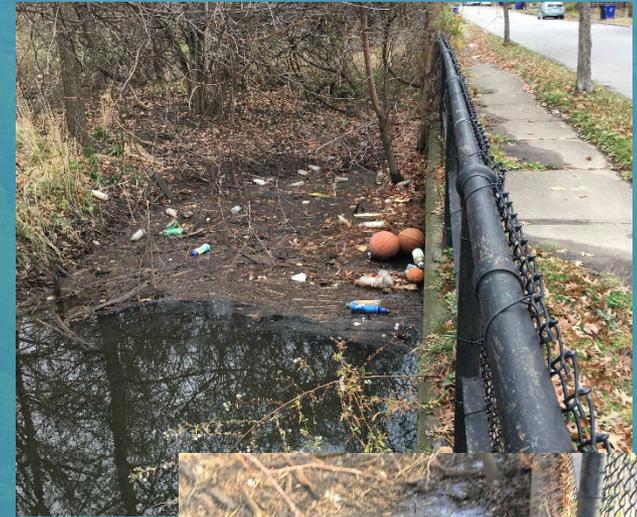
# SWIM Maintenance Task

## Big Creek Floodplain Cleanup



# SWIM Maintenance Task

## Milligan Restoration Area Cleanup



# SWIM Maintenance Task

## Tributary to Baldwin Creek



# Questions?

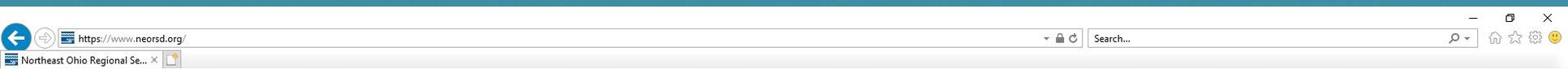


# Stormwater Design and Construction Program

Stickney Creek



# 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*

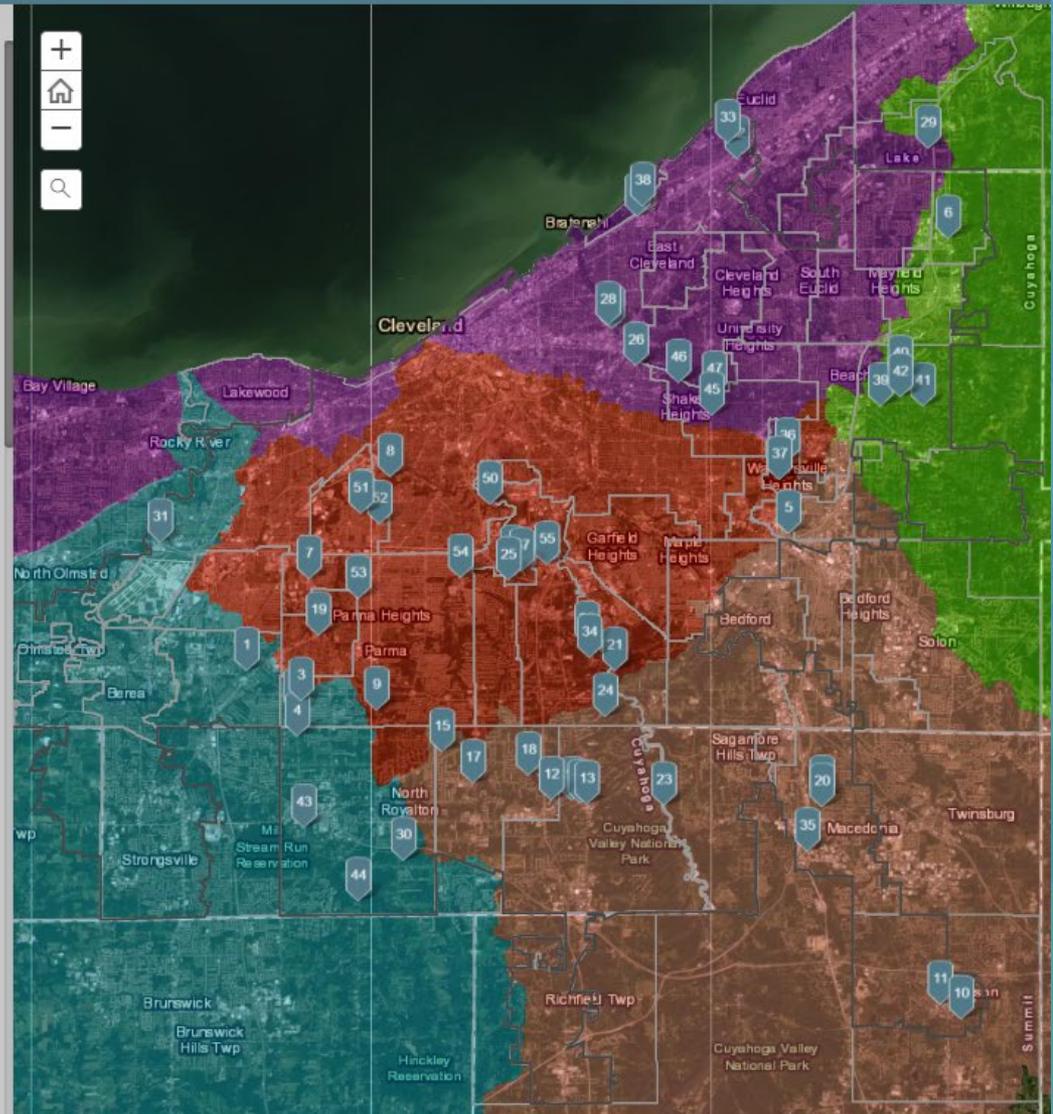
# NEORSD Stormwater Design & Construction Program

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 watershed.

- All Projects
- Design
- Construction
- Complete

THE EAST OHIO REGIONAL SEWER DISTRICT  
**REGIONAL STORMWATER MANAGEMENT PROGRAM**

|    |   |    |   |    |  |    |  |
|----|---|----|---|----|--|----|--|
| 1  | Abram Creek / Big Creek Parkway Detention...  | 2  | Baldwin Creek Bank Stabilization at East... | 3  | Baldwin Creek Bank Stabilization at Pleasan... | 4  | Baldwin Creek Stabilization Near Abb...        |
| 5  | Bear Creek Culvert Removal                    | 6  | Beechers Brook Bank Stabilization           | 7  | Big Creek Chevrolet Boulevard Detention...     | 8  | Big Creek Stabilization                        |
| 9  | Big Creek Stream Stabilization Upstream...    | 10 | Brandywine Creek - Barlow Community...      | 11 | Brandywine Creek - Owen Brown Bridge...        | 12 | Chippewa Creek Bank Stabilization at Harris... |
| 13 | Chippewa Creek Bank Stabilization at Route 21 | 14 | Chippewa Creek Floodplain Control...        | 15 | Chippewa Creek Flood Reduction Near Echo...    | 16 | Chippewa Creek Stabilization at...             |
| 17 | Chippewa Creek Stream Stabilization Near...   | 18 | Chippewa Creek Stream Stabilization Near... | 19 | Colombo Park Stream Restoration                | 20 | Culvert Repair at Berkshire Drive              |



# Projects in Design and Construction

| Project Name  | City           | Next Step/Submittal | Estimated Construction NTP | Estimated Construction Cost |
|---|----------------|---------------------|----------------------------|-----------------------------|
| West Creek Bank Stabilization by Sandpiper Drive          | Parma          | Construction        | 17-Jun-20                  | \$ 1,295,090.00             |
| Chippewa Creek Stabilization at Condominiums              | Brecksville    | Construction        | 28-Aug-20                  | \$ 1,282,013.50             |
| Rocky River Trib Re-alignment along Ridge Road            | North Royalton | Construction        | 1-Dec-20                   | \$ 438,471.10               |
| Pepper Luce Creek Stabilization Near Lander Road          | Pepper Pike    | Construction        | 23-Nov-20                  | \$ 593,034.90               |
| Doan Brook Culvert Debris Removal                         | Cleveland      | Construction        | 10-Nov-20                  | \$ 543,900.00               |
| Strongsville SR82 Culvert                                 | Strongsville   | Construction        | 1-Jan-21                   | \$ 500,000.00               |
| Debris Racks and Access Road Improvements                 | various        | GMP                 | 1-Apr-21                   | \$ 1,500,000.00             |
| Rocky River Stabilization & Sewer Protection              | North Royalton | Bid Docs            | 1-Sep-21                   | \$ 839,000.00               |
| Chippewa Creek Stabilization Route 21                     | Brecksville    | Bid Docs            | 15-Sep-21                  | \$ 1,295,000.00             |
| Chippewa Creek Stream Stabilization near Broadview Road   | Broadview Hts  | Bid Docs            | 29-Sep-21                  | \$ 1,738,000.00             |
| Baldwin Creek Stabilization near Abbey Road               | North Royalton | 100% Design         | 18-Aug-21                  | \$ 775,600.00               |
| Bear Creek Culvert Improvements                           | North Randall  | Bid Docs            | 16-Feb-22                  | \$ 1,021,900.00             |
| Big Creek Flood Reduction near Sprague Road               | various        | 90% Design          | 17-Nov-21                  | \$ 742,000.00               |
| Pepper Luce Creek Stabilization Near Gates Mills Blvd     | Pepper Pike    | 90% Design          | 5-Jan-22                   | \$ 2,200,000.00             |
| West Creek Stabilization                                  | Brooklyn Hts   | 90% Design          | 19-Jan-22                  | \$ 16,554,000.00            |
| Abram Creek - Big Creek Prky Flood Reduction Phase 1      | Middleburg Hts | -                   | 2021                       | \$ 787,938.00               |
| Brandywine Creek Barlow Dam Improvements                  | Hudson         | 70% Design          | 1-Oct-21                   | \$ 1,354,000.00             |
| Chippewa Creek Flood Reduction Project Near Echo Lane     | Broadview Hts  | 60% Design          | 23-Mar-22                  | \$ 8,200,000.00             |
| Brandywine Creek - Owen Brown Bridge Replacement          | Hudson         | 50% Design          | 2022                       | \$ 1,106,500.00             |
| Big Creek Phase 1 BCPA07 - Ridgewood Basins               | Parma          | 50% Design          | 2-Feb-22                   | \$ 1,000,000.00             |
| Baldwin - Stormes Drive Basin                             | Parma          | 50% Design          | 16-Mar-22                  | \$ 2,500,000.00             |
| Abrams Creek Flooding at Sheldon Road                     | various        | FUNDING             | 2023                       | \$ 2,000,000.00             |
| Hemlock - Seven Hills Phase 1                             | Seven Hills    | Design RFP          | 1-Dec-22                   | \$ 2,000,000.00             |
| Hemlock Creek near Hemlock Road                           | Independence   | D/B RFQ/RFP         | 2023                       | \$ 1,200,000.00             |
| Shaker Lakes Dam Modifications: Phase II - Upper Lake Dam | various        | Final Design        | 1-Mar-22                   | \$ 8,500,000.00             |
| Big Creek Near Ridge Road                                 | Parma          | Pre-Design BODR     | 2023                       | tdb                         |

For this meeting, we will focus mostly on projects under construction, and briefly discuss in-house design projects.

- 7 projects under construction contract
- 20 projects in some procurement or design phase
- 4 projects under reimbursement contract to community

\* Upcoming projects subject to change



# What Do Stream Restoration Projects Look Like?

## What Do Stream Restoration Projects Look Like?

Beechers Brook Stabilization Project in Mayfield Village:



Stickney Creek Stream Restoration & Utility Repair Project in the City of Brooklyn:



Baldwin Creek Stabilization Project in the City of Parma:



## What are the Typical Components of Stream Restoration Projects?



### Rocks

Sometimes referred to as "riprap," rocks are used to stabilize streambanks and line the bottom of the stream to make it less vulnerable to erosion. Sizing of the rocks depends on the amount of flow that the stream experiences. Limestone and sandstone are commonly used.



### Pools & Riffles

Pools are deeper sections of the stream usually built on the outside of bends. Riffles are shallow areas of the stream with protruding rocks at the surface. Both structures work together to reduce the energy of the stream.



### Floodplains

Floodplains are areas where streams can flow out of their main channels during large storm events to provide some temporary flood storage and dissipation of stream energy. After a large storm event, water on the floodplains will infiltrate or slowly flow back into the stream channel. Floodplains also have a positive impact on water quality by allowing sediment and nutrients to settle out and not be carried downstream.

### Vegetation

Vegetation typically installed on stream restoration projects include:

- Trees and shrubs;
- Live stakes, which are woody cuttings harvested from trees in the dormant season. They are installed along streambanks and develop dense root systems to help hold the soil together and minimize future erosion;
- Herbaceous plugs and seeding.



# Pepper Luce Creek at Lander Road City of Pepper Pike

## Pepper Luce Creek Streambank Stabilization

- Arrest streambank erosion
- Protect utility assets
- Create & expand floodplain

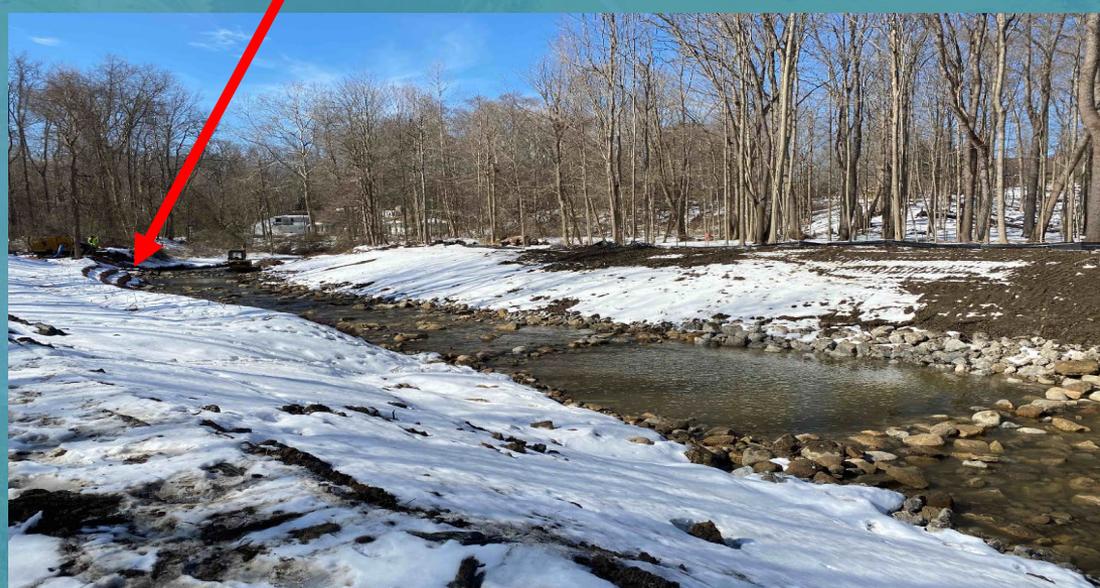
|                                   |                |
|-----------------------------------|----------------|
| <u>Professional Service Firm:</u> | Jacobs         |
| <u>Contractor:</u>                | Tucson         |
| <u>Construction Phase:</u>        | NTP - 11/23/20 |
| <u>Bid Estimate:</u>              | \$760,000.00   |
| <u>Award:</u>                     | \$593,034.90   |



**Failed gabion baskets &  
streambank erosion**

# Pepper Luce Creek at Lander Road City of Pepper Pike

- Purchased 1 residential property and acquired easements on several others
- Installation of Fabric Encapsulated Soil Lifts (FESLs)
- Expanding floodplain
- Tied into gabions at downstream end of project (had to shorten project due to easement refusal from 1 property owner)



# Pepper Luce Creek at Lander Road City of Pepper Pike

*before*

*after*



# *Doan Brook Culvert Debris Removal*

*Remove 1950 cubic yards*



# Doan Brook Culvert Debris Removal

Construction Complete

Doan Brook Culvert in Cleveland

University Circle around Euclid Ave and Chester Ave



before



after

# Chippewa Creek Stabilization at Condominiums in Brecksville



- *Eroding streambank within 12 ft of the condominiums*
- *Erosion within 6 ft of local sanitary sewer*
- *Stream infrastructure more cost effective than acquisition*
- *Construction Award: \$1,282,013*
- *Excavate Floodplain on left bank*

# *Chippewa Creek Stabilization at Condominiums in Brecksville*



0073\_1499\_SSCC\_11-24-20\_Retaining Wall\_SW.JPG

# West Creek Stabilization by Sandpiper Drive

- *Stream infrastructure more cost effective than acquisition*
- *Large area of property impacted including large trees*
- *Construction Award: \$1,295,090*

# *West Creek Stabilization by Sandpiper Drive*

*Construction Complete*



# *City of North Royalton - Ridge Road Repair and Rocky River Tributary Stabilization*

**Problem:** Bank erosion adjacent to Ridge Road

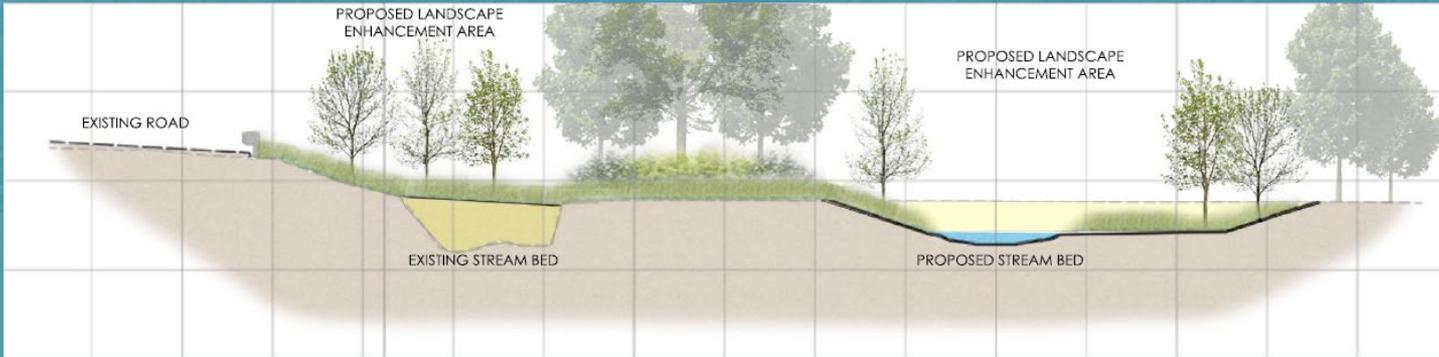
**Project benefit to RSS:**

- Reduces sediment deposition
- Creates a new stable stream channel

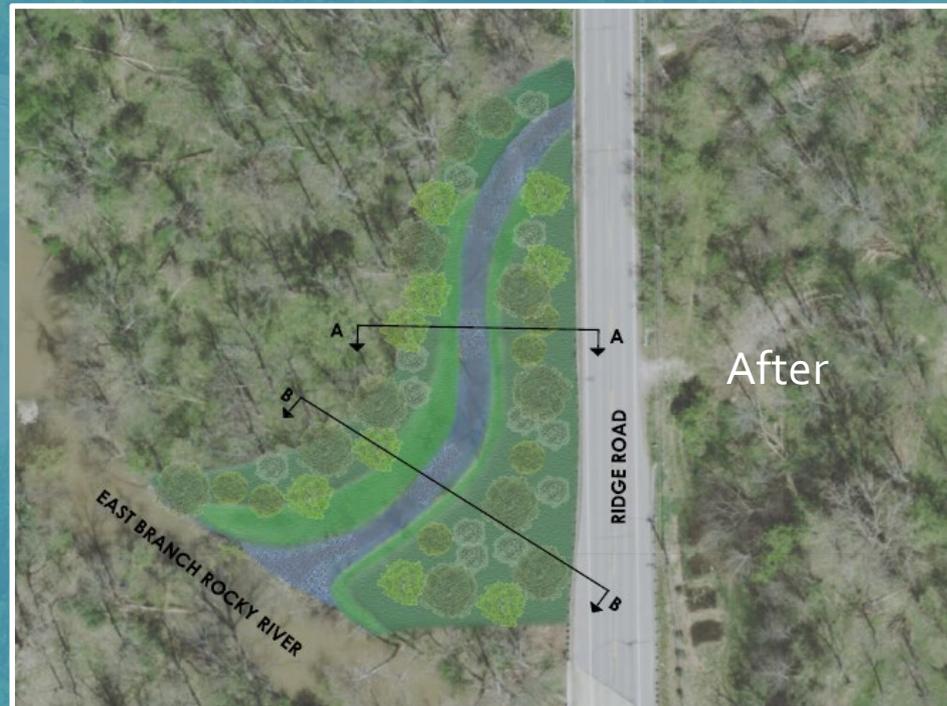
**Construction Award:**  
\$438,471



# City of North Royalton - Ridge Road Repair and Rocky River Tributary Stabilization



Before

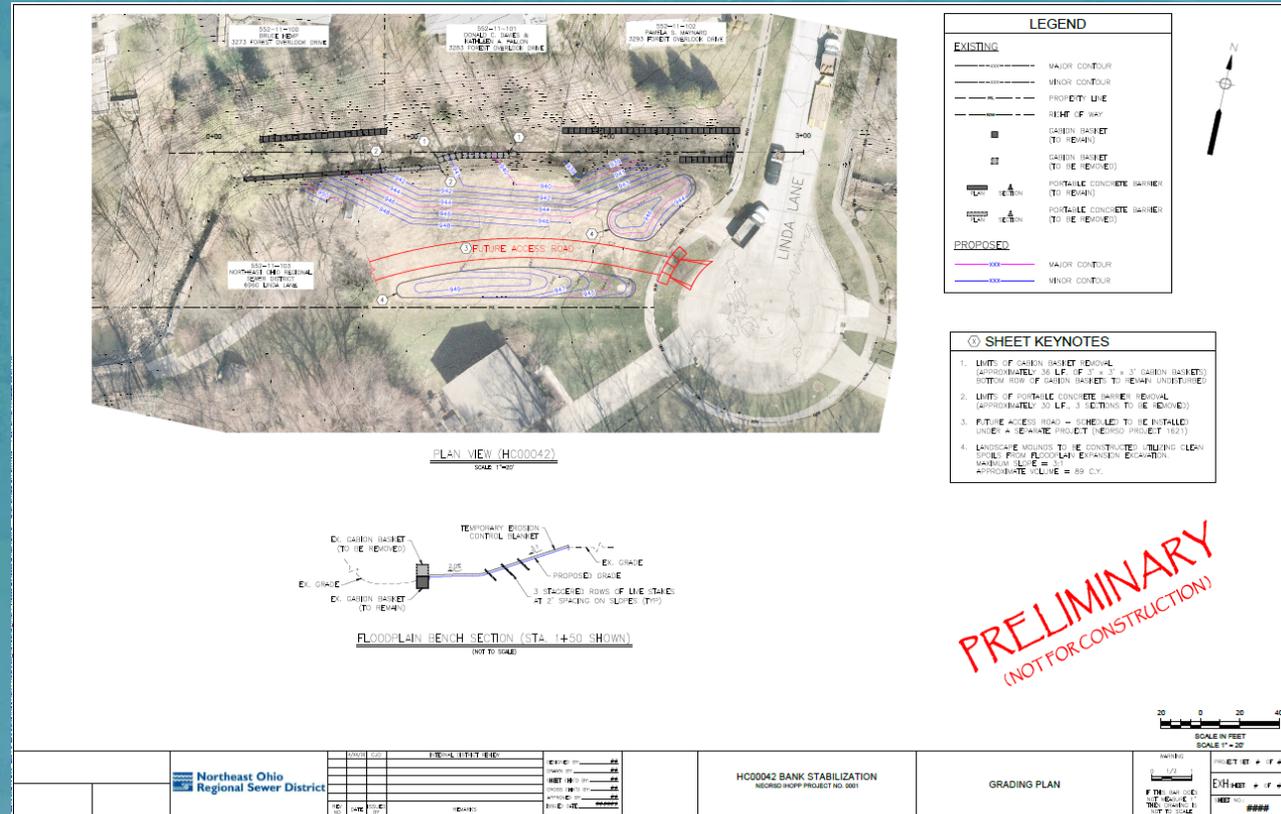


After

# In-House Design Projects

## Hemlock Creek in Seven Hills

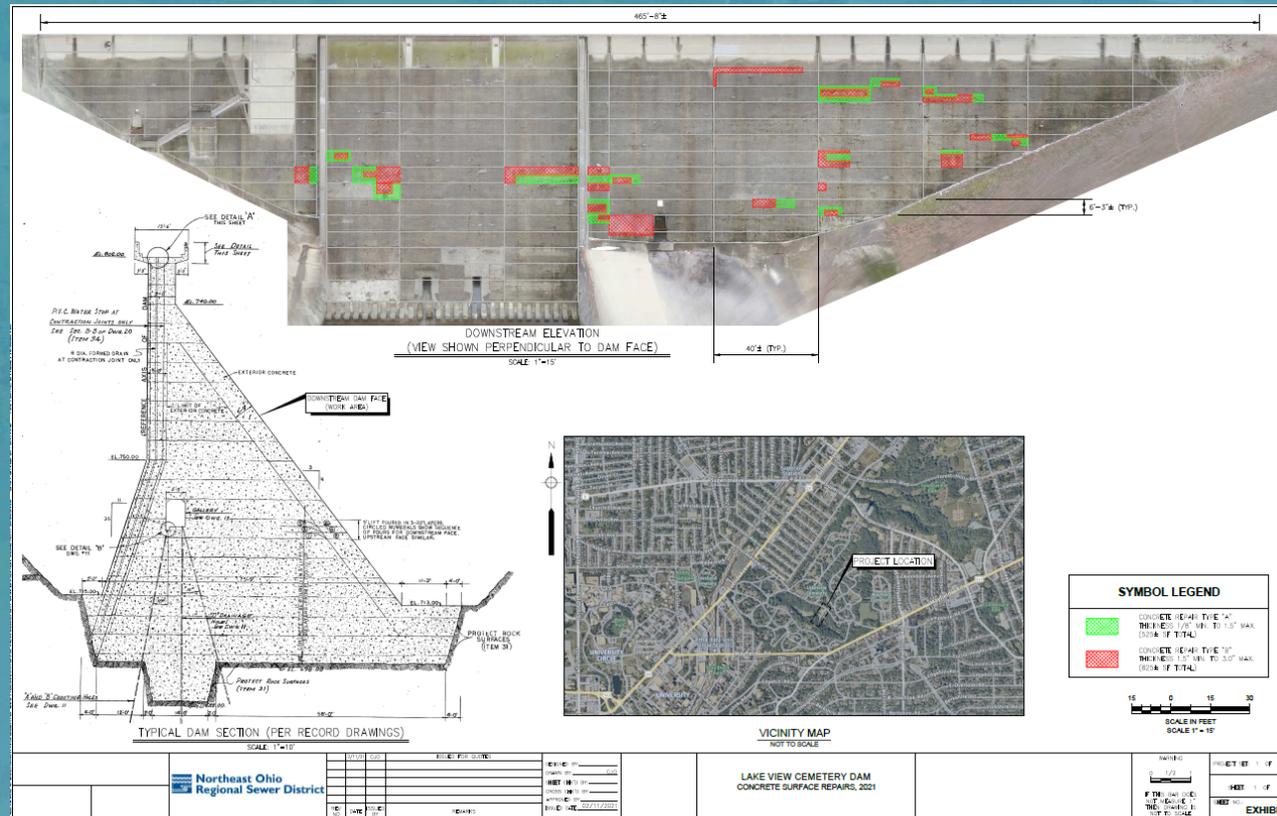
- Excavate and grade south bank of stream to increase cross section and create more floodplain area to reduce energy on north eroding bank
- To be constructed 2<sup>nd</sup> Qrt 2021



# In-House Design Projects

## Lakeview Dam Repairs

- ODNR inspection report maintenance items
- Concrete surface repairs on downstream face of dam
- Air vent modifications
- To be constructed 2021



# Questions

Pepper Luce Creek

A photograph of a small, clear stream flowing through a rocky bed in a lush, green forest. The water is clear and reflects the surrounding trees. The banks are covered in tall grass and dense foliage. The stream is surrounded by a dense forest of green trees, and the water is clear and blue. The rocks are grey and brown, and the grass is green and tall. The overall scene is a peaceful, natural landscape.



# Cost-Saving Programs

- *Crisis Assistance*
  - *Up to \$300 sewer credit*
  - *Experienced financial hardship within last 6 months (loss of job, loss of income, death in family, medical expenses, etc.)*

# 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

*Customer Service: (216) 881-8247*

# Cost-Savings Programs

**NOTICE:** March 11, 2021 Final Meeting  
March 11, 2021 Final Meeting  
discussions and decisions  
meeting begins. [Find out more.](#)

Got Questions? FAQ ▶

Billing, Rates & Account  
Information ▶

Cost-Saving Programs ▶

About Your Sewers: Common  
Problems and Responsibilities

Contact Us / Ask Us

COVID-19 emergency, and in accordance with House Bill 404, signed into law by Governor DeWine, the  
attended through video conference that allows the public to electronically observe and hear the  
ard. If you wish to address the committee, please use the Q&A option on the livestream before the  
l.m.

Ways to Save On Your Bill

Homestead

Affordability

Crisis Assistance

Summer Sprinkling

Learn what it takes to  
protect our Great Lake

# WTL Contact

**Donna Friedman**

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[friedmand@neorsd.org](mailto:friedmand@neorsd.org)



***Stormwater Program: Community Resources***

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