



Addressing Urban Watershed Issues

Euclid Creek and Rocky River Watersheds, Cuyahoga County

Jared Bartley & Claire Posius










**Rocky River & Euclid Creek
Watershed Coordinators**

Cuyahoga Soil & Water Conservation District



Mission: To advocate and implement best management practices for conservation of land and aquatic resources in a developed environment through education, stewardship, and technical assistance.

Central Lake Erie Watersheds

-  Lake Erie Coastal Tributaries
-  Huron River
-  Vermilion River
-  Black River
-  Rocky River
-  Chagrin River
-  Grand River
-  Ashtabula River
-  Conneaut Creek

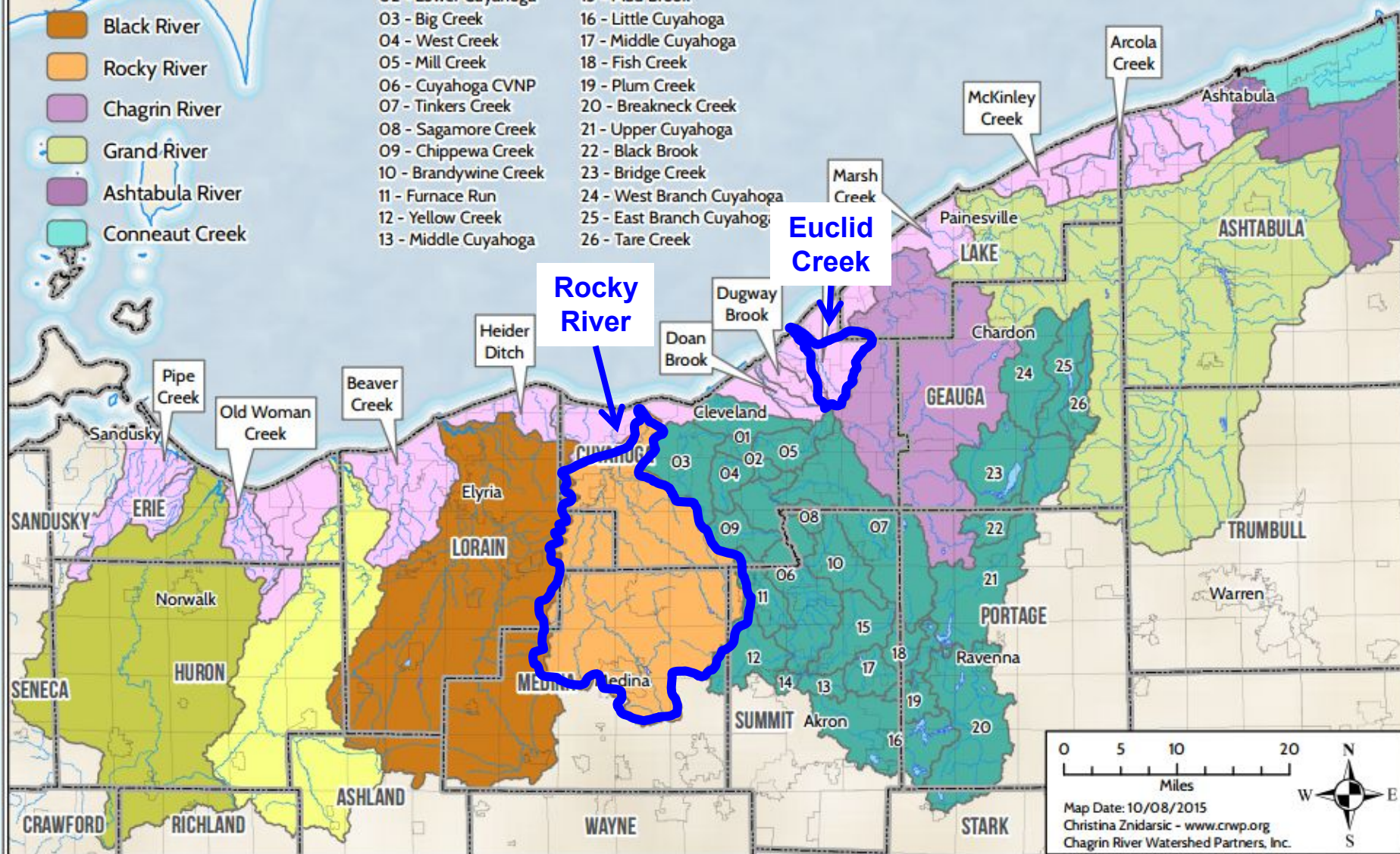
Cuyahoga River

Cuyahoga River Subwatersheds

- | | |
|-----------------------|---------------------------|
| 01 - Cuyahoga Channel | 14 - Sand Run |
| 02 - Lower Cuyahoga | 15 - Mud Brook |
| 03 - Big Creek | 16 - Little Cuyahoga |
| 04 - West Creek | 17 - Middle Cuyahoga |
| 05 - Mill Creek | 18 - Fish Creek |
| 06 - Cuyahoga CVNP | 19 - Plum Creek |
| 07 - Tinkers Creek | 20 - Breakneck Creek |
| 08 - Sagamore Creek | 21 - Upper Cuyahoga |
| 09 - Chippewa Creek | 22 - Black Brook |
| 10 - Brandywine Creek | 23 - Bridge Creek |
| 11 - Furnace Run | 24 - West Branch Cuyahoga |
| 12 - Yellow Creek | 25 - East Branch Cuyahoga |
| 13 - Middle Cuyahoga | 26 - Tare Creek |

We all live in a watershed!

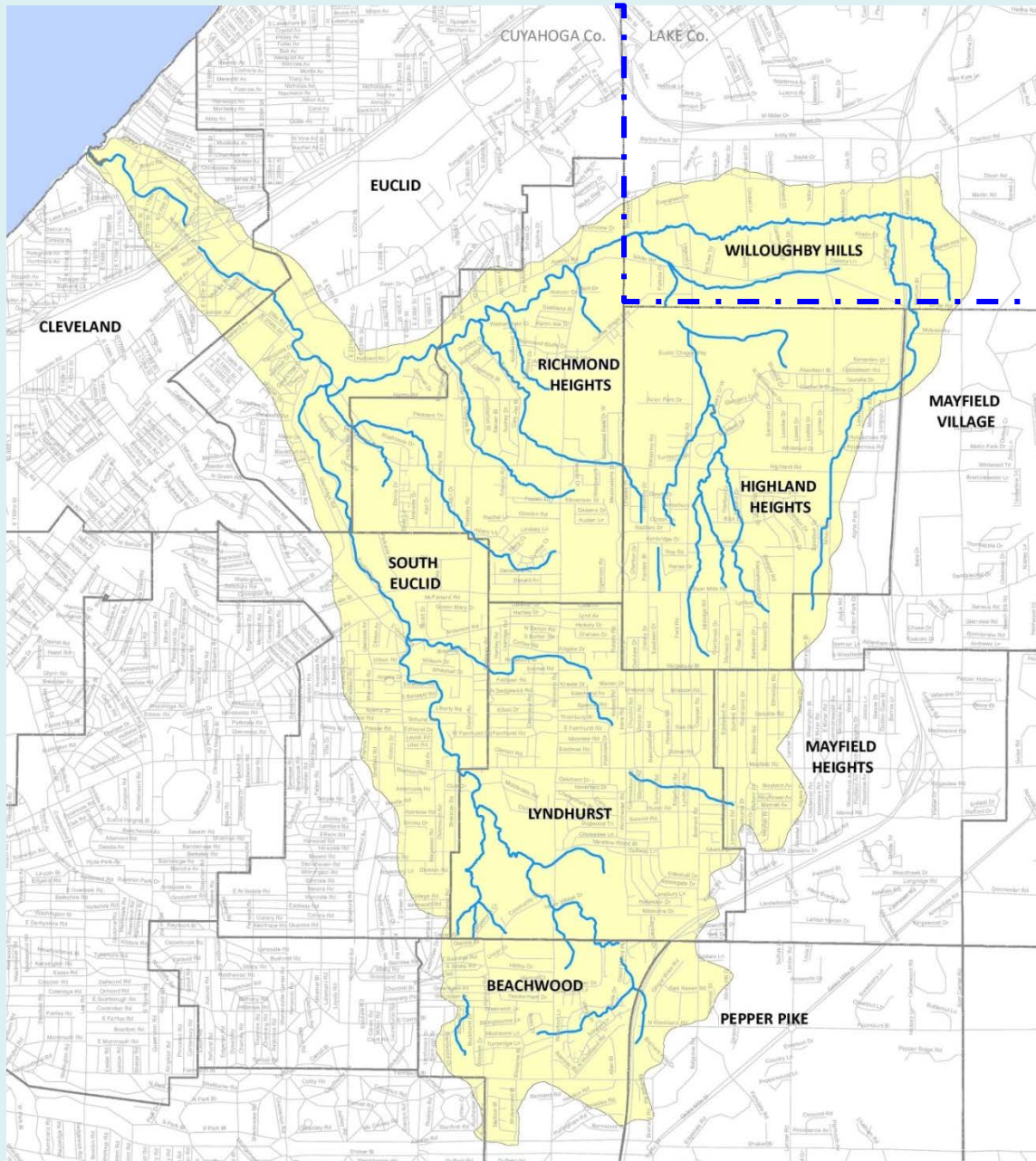
Contact any of our participating watershed organizations to learn ways you can get involved!



0 5 10 20
Miles

Map Date: 10/08/2015
Christina Znidarsic - www.cwvp.org
Chagrin River Watershed Partners, Inc.

Challenges of Urban Watershed Work



The Euclid Creek Watershed

- 34 miles of stream
- 24 square miles
- All or part of **12 municipalities in 2 counties**
- Population of ~63,500
- Land Cover:
 - **51% residential**
 - 14% undeveloped
 - 12% roads/highways
 - 9% protected open space
 - 2-4% commercial, industrial, institutional

Challenges of Urban Watershed Work

East 185th Street Spillway Retrofit and Restoration Project

- Large agency coordination, hydromodification challenges, deteriorating infrastructure



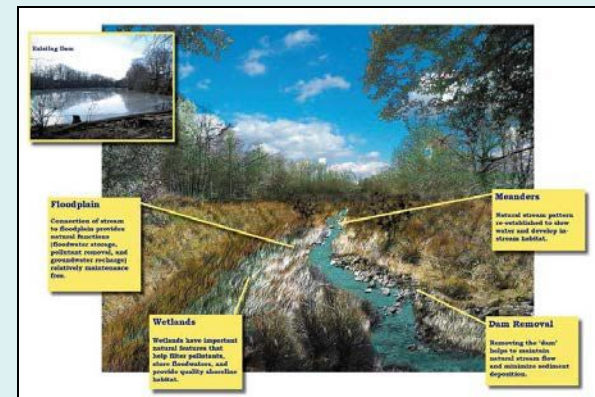
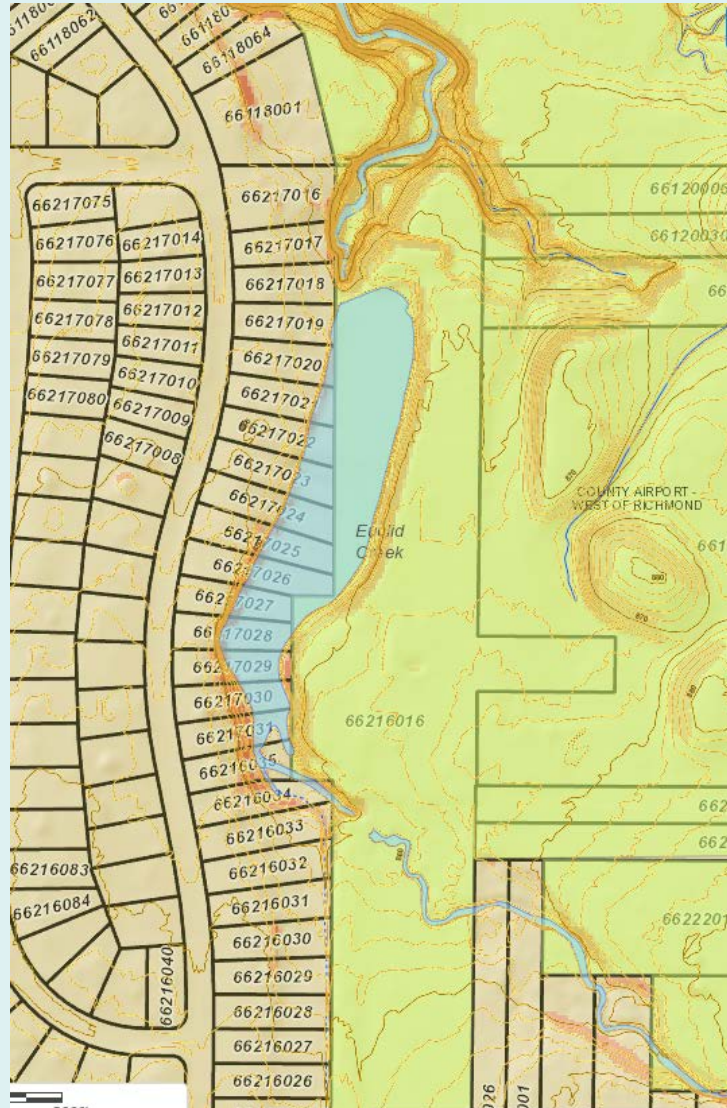
E. 185th St. Spillway Photo



Challenges of Urban Watershed Work

Mayfair Lake Dam Removal and Stream Restoration Project

- Mayfair Lake impacts 14 residential property owners and Cuyahoga County Airport



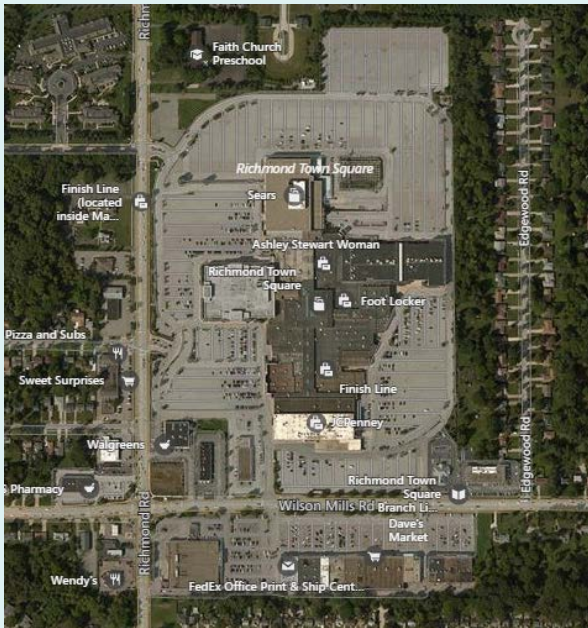
Mayfair Lake Restoration Rough Concept

Challenges of Urban Watershed Work

Stormwater Issues from Development Prior to USEPA Phase 2 Stormwater Program to address Nonpoint Source Runoff



Too Much Pavement, Costly to Remove/Retrofit



Underperforming Shopping Malls with Excess Parking



Aging Industrial Uses, 99% Impervious

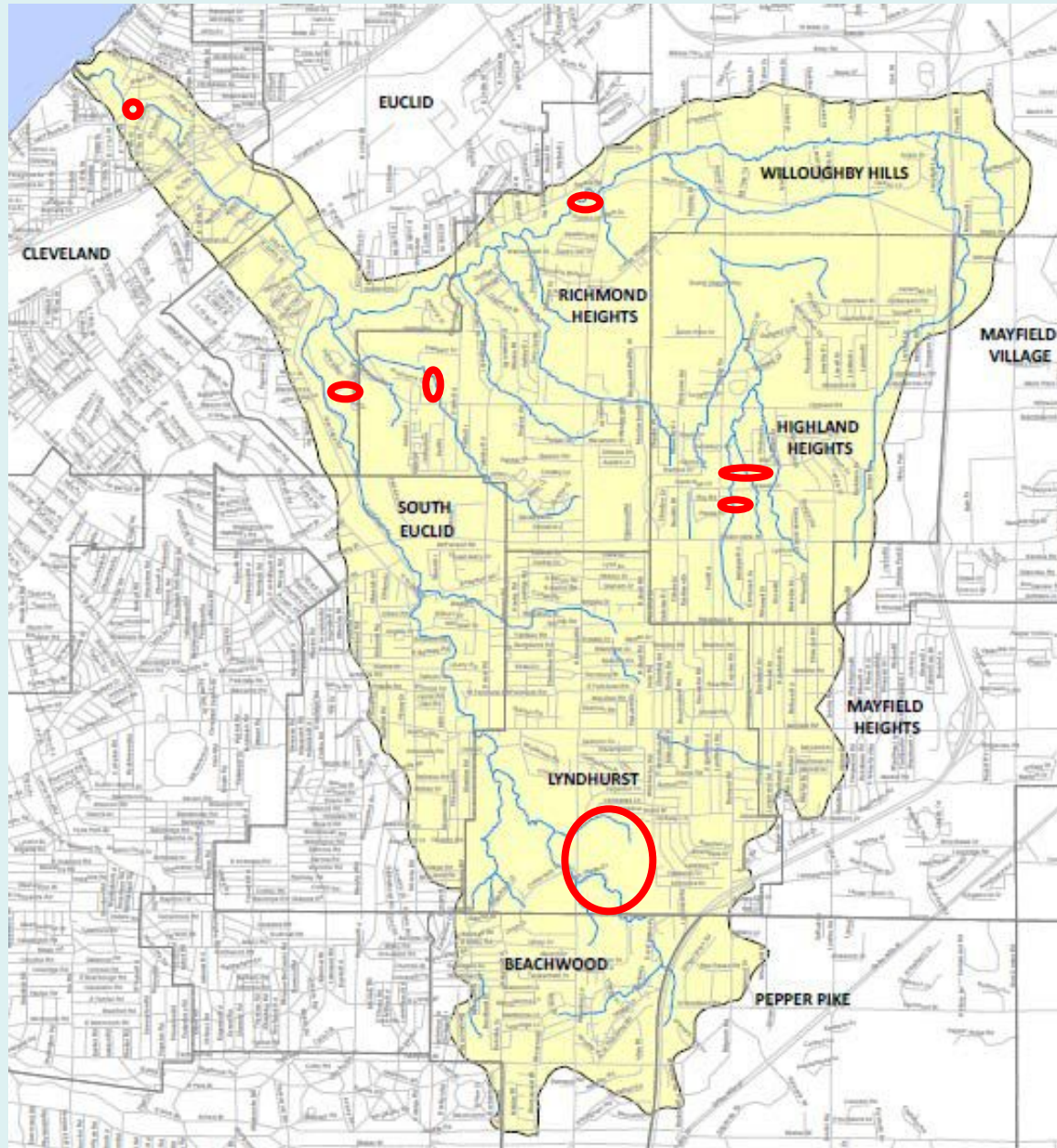


Linear Shopping Corridors with Vacancies and Underutilized Parking/Pavement

Challenges of Urban Watershed Work

**Land Protection
Opportunities Rare
and Costly in
Built-out Watersheds**

**7 properties protected
totaling 207 acres
in 10 years of implementing
Euclid Creek WAP**



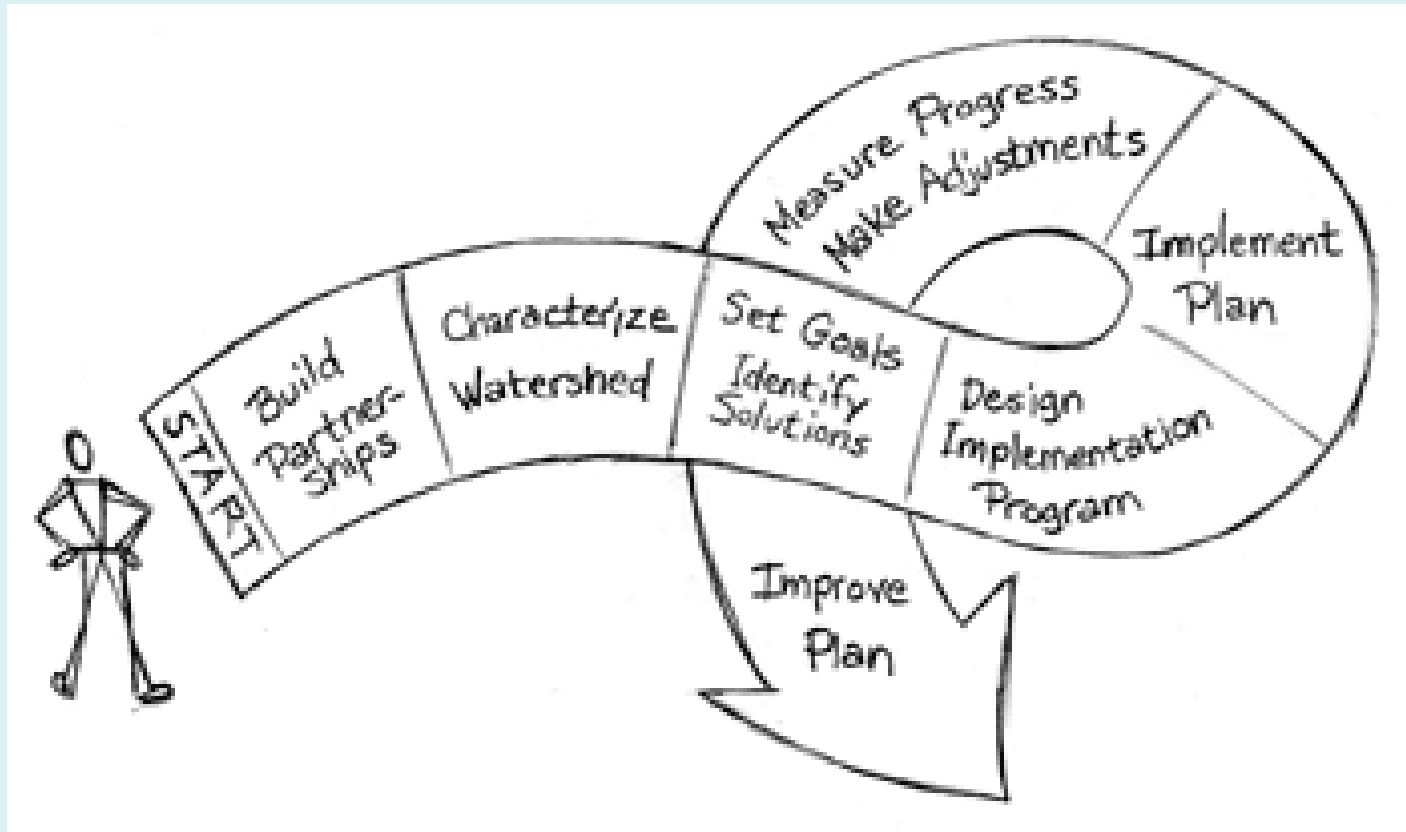
Cuyahoga SWCD Watershed Program



Three Main Objectives

1. Watershed Planning and Implementation
2. Stream and Watershed Technical and Project Assistance to Communities, Agencies and Nonprofit Organizations
3. Outreach and Education

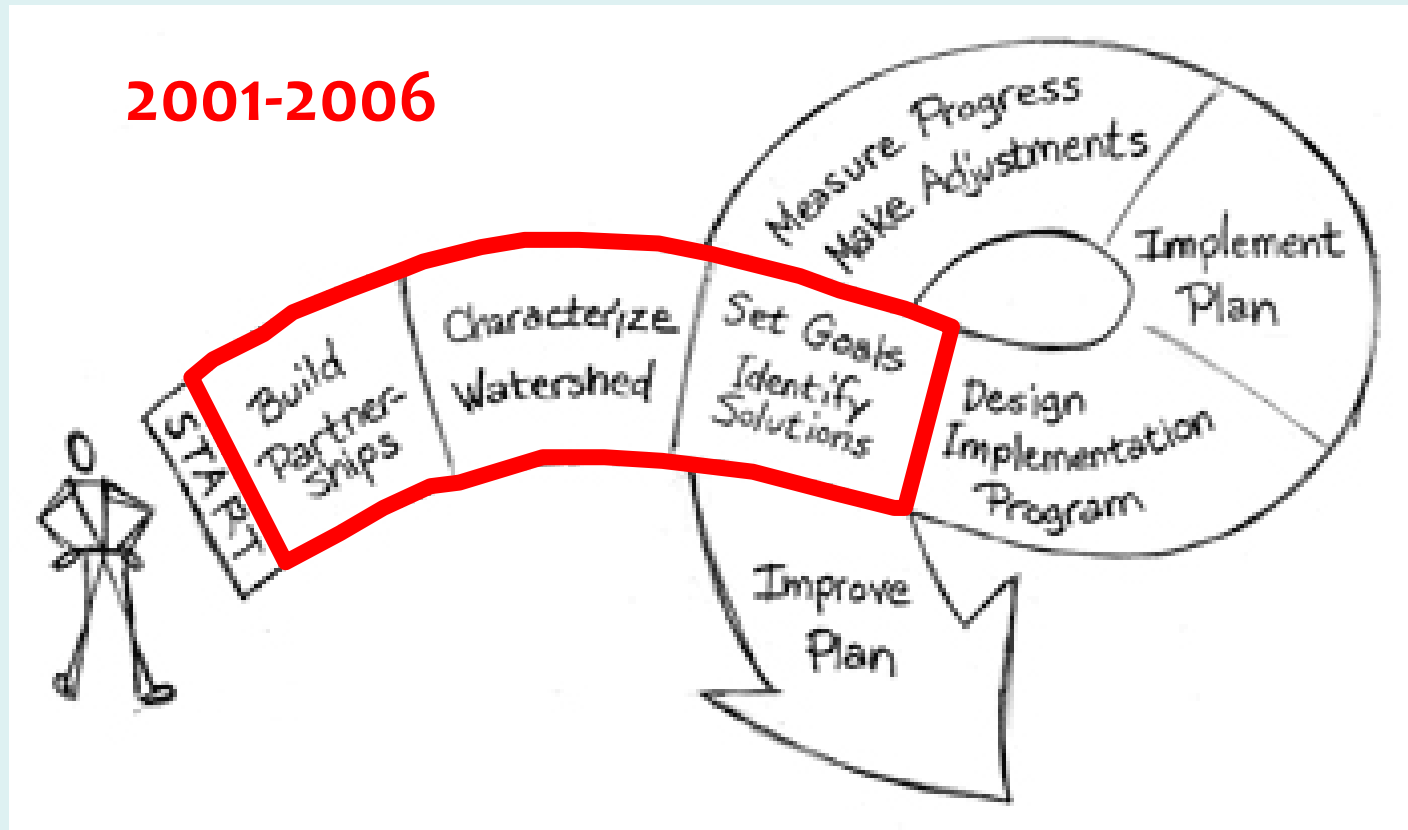
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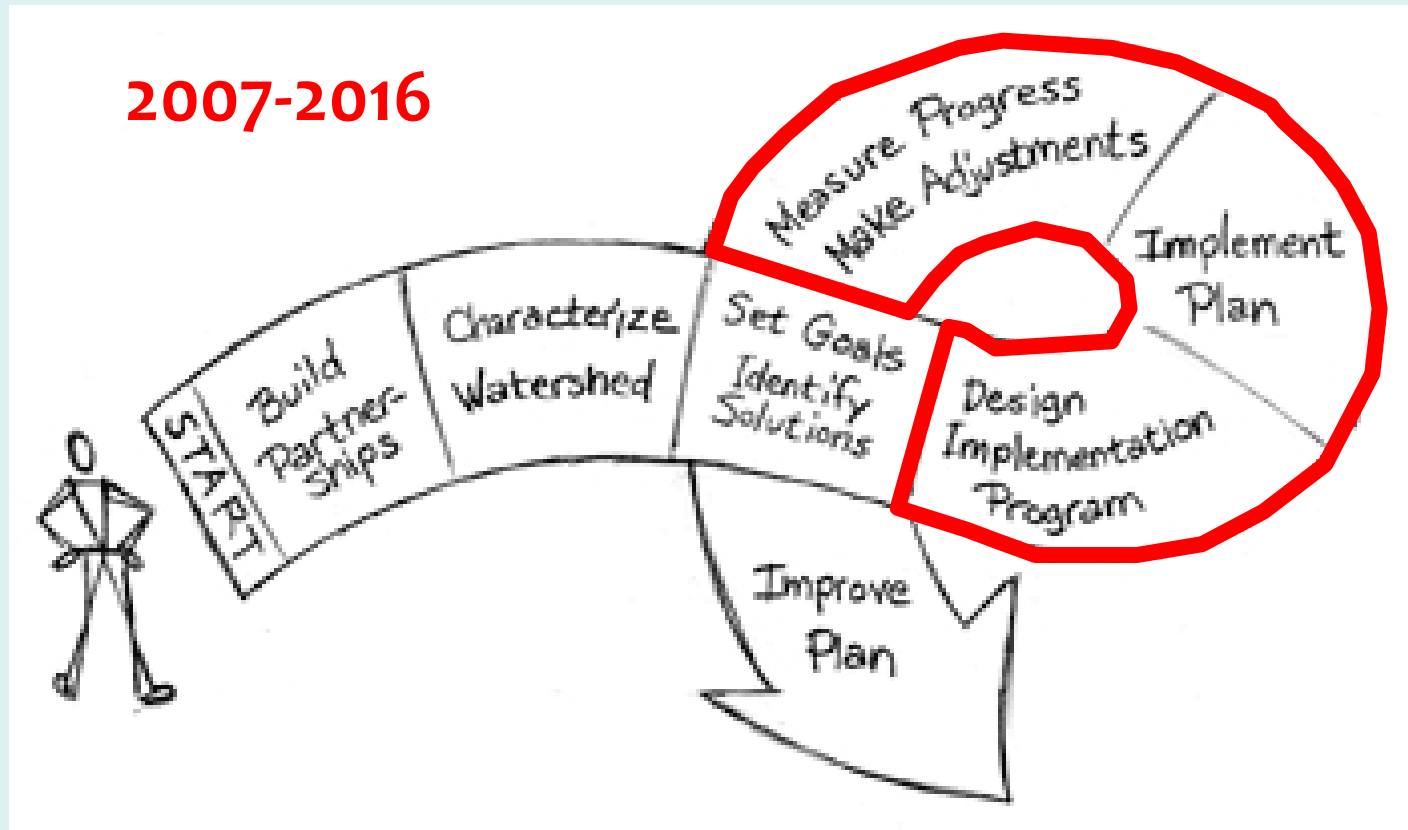
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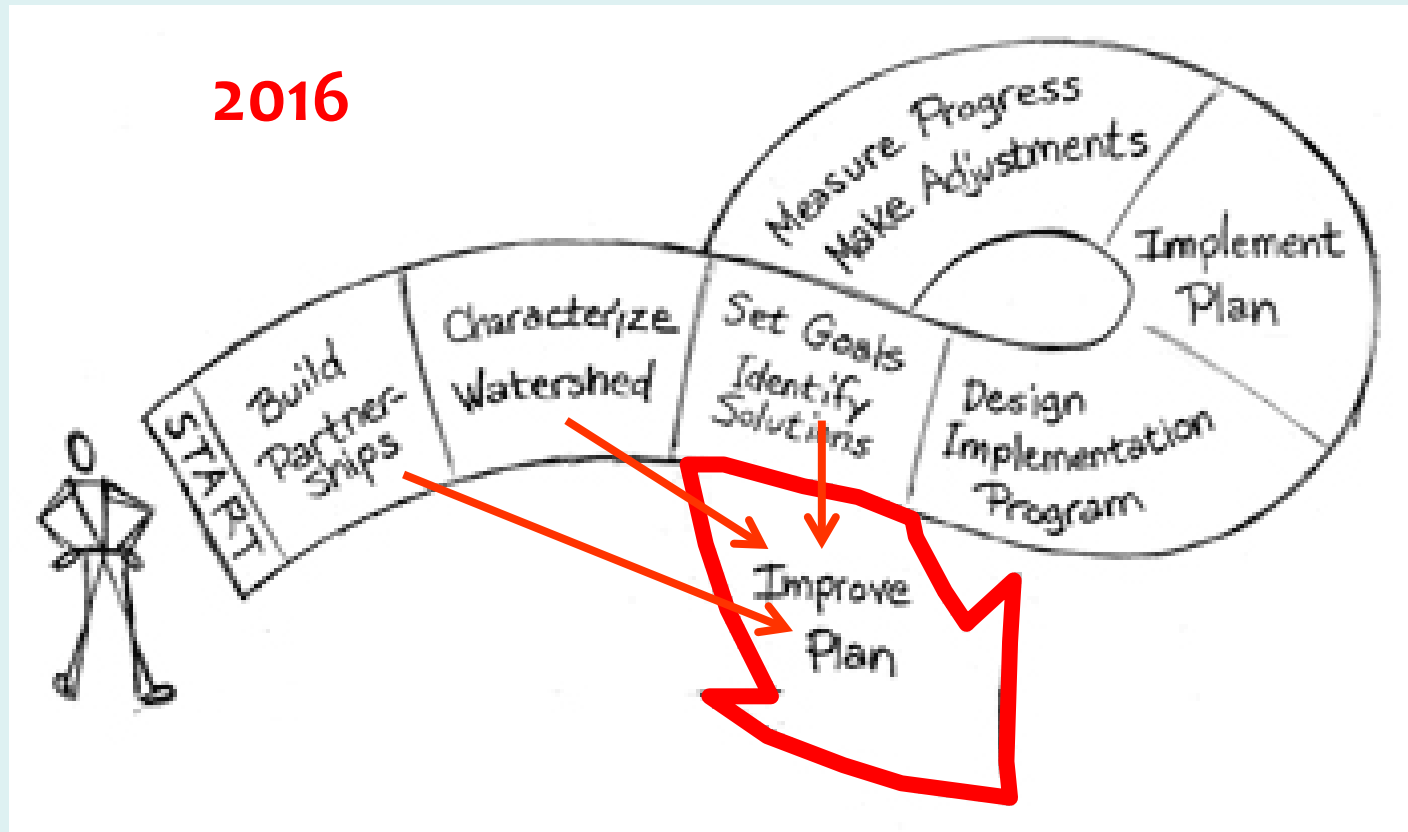
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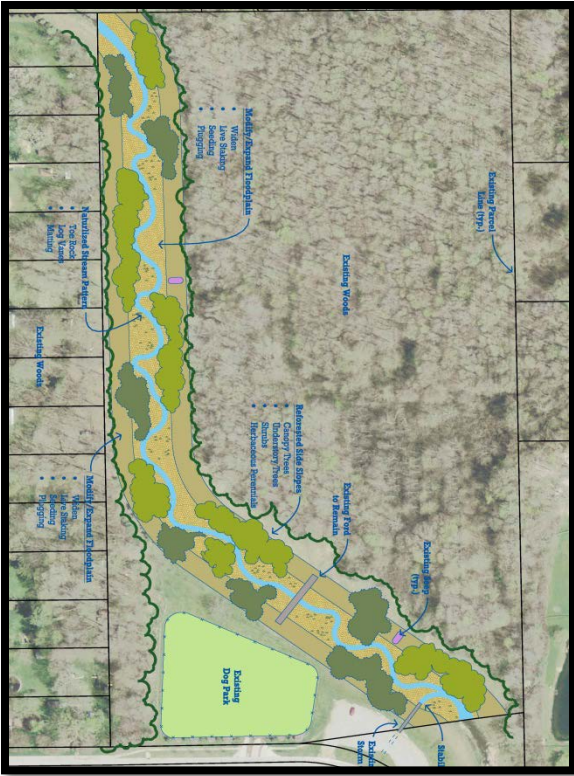
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Cuyahoga SWCD Watershed Program



- Project Development and Management
- Coordinating with landowners, municipalities partner organizations and funders – find complimentary priorities
- Identifying funding sources and technical resources
- Grant writing and management

Three Main Objectives

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3. Outreach and Education

Cuyahoga SWCD Watershed Program

- Instill value of watershed approach
- Priorities often involve protecting property or infrastructure, or solving site-specific problems
- Great opportunity for education and building relationships
- Could improve chances for future collaboration on watershed priorities in the community



Three Main Objectives

1. Watershed Planning and Implementation
2. Stream and Watershed Technical and Project Assistance to Communities, Agencies and Nonprofit Organizations
3. Outreach and Education

Cuyahoga SWCD Watershed Program



- Public Education/Public Involvement for Municipal Stormwater Permits
- Supports objectives 1 & 2
- Targeted audiences and messages based on desired outcomes or behavior changes
- Extremely important aspect of the program due to the high number of private properties along streams or other critical areas

Three Main Objectives

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3. Outreach and Education

Cuyahoga SWCD Urban Watershed Solutions



Barrier Removal

Cuyahoga SWCD Urban Watershed Solutions



Barrier Removal

Cuyahoga SWCD Urban Watershed Solutions



Functional Floodplains

Cuyahoga SWCD Urban Watershed Solutions



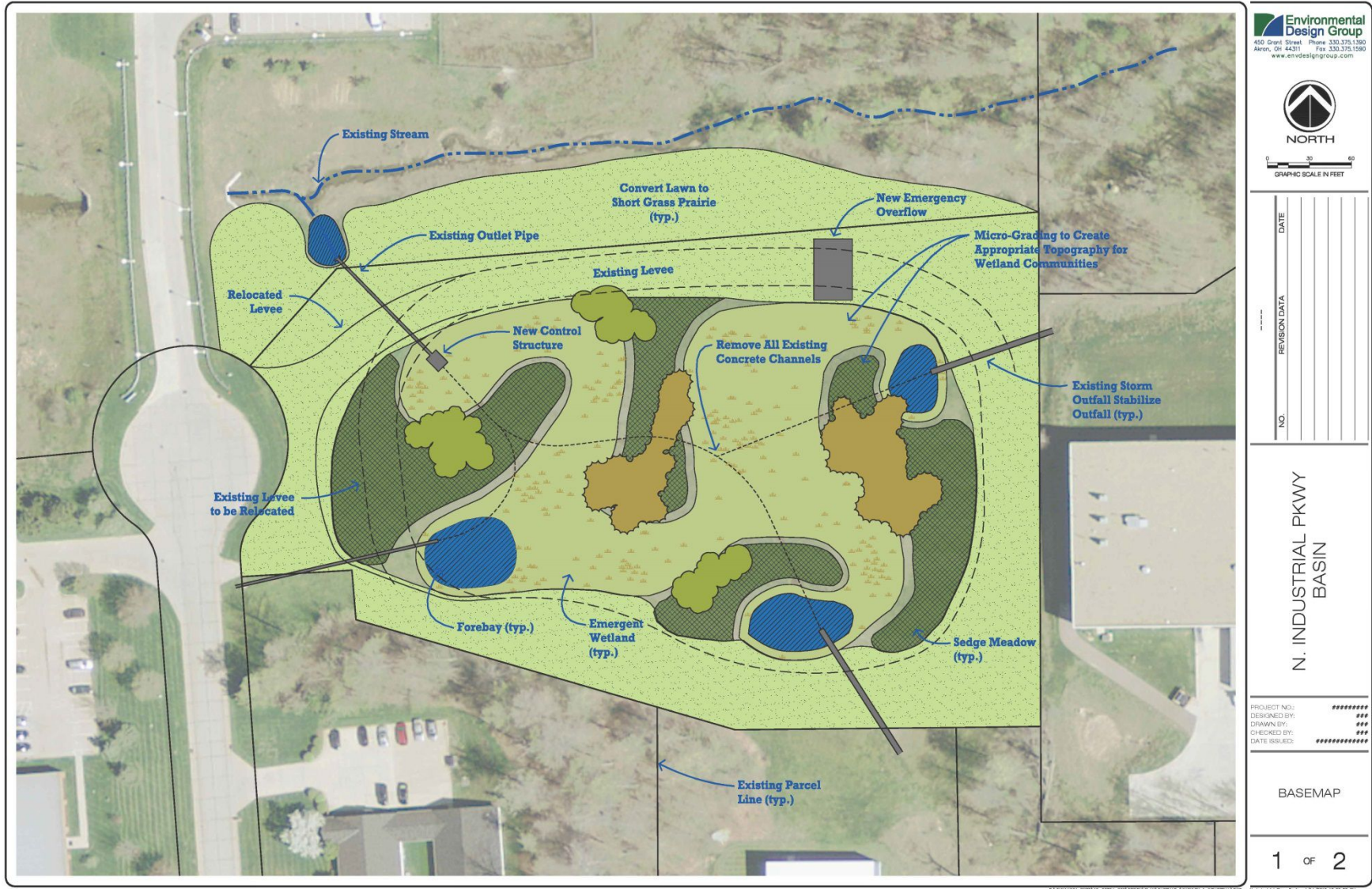
Functional Floodplains

Cuyahoga SWCD Urban Watershed Solutions



Stormwater Management & Retrofits

Cuyahoga SWCD Urban Watershed Solutions



Stormwater Management & Retrofits

Cuyahoga SWCD Urban Watershed Solutions



Riparian Reforestation

Cuyahoga SWCD Urban Watershed Solutions



Focus on the Headwaters (the ones you have left, anyway!)

Successful Urban Restoration Projects

Euclid Creek East Branch Dam Removal Project, 2006-2011

\$670,000 for design, engineering and construction of dam removal

- **5 grant sources**
 - US Fish & Wildlife Service – Fish Passage Program
 - ODNR, Division of Wildlife
 - ODNR, Division of Wildlife through USFWS
 - Ohio EPA, Water Resource Restoration Sponsor Program (WRRSP) (as match for Ohio EPA 319 Program)
 - Ohio EPA 319 Program
- **1930's dam created to impound water for YMCA camp swimming area**
- **Removed fish passage impediment**
- **Restored 700 linear feet of stream and restored stream grade and geometry**
- **Opened up 2.6 miles of stream for fish passage**



Successful Urban Restoration Projects

Wildwood Wetland Restoration Project, 2010-2014

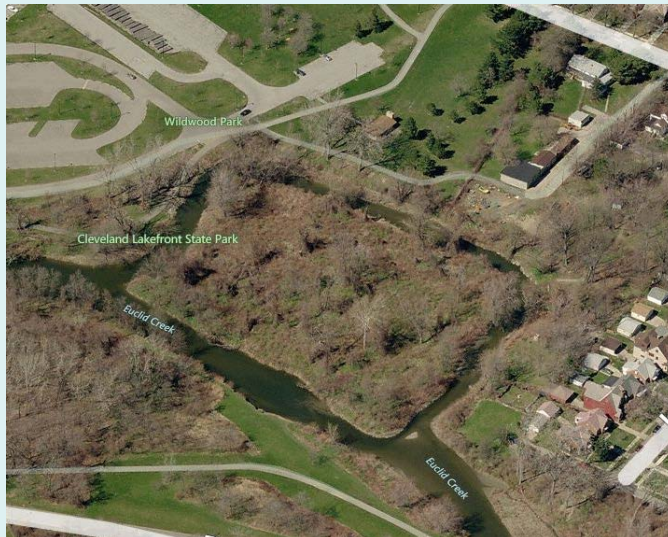
1.4 million Great Lakes Restoration Initiative / US EPA funded restoration

Started August, 2012; Completed December, 2013; Monitored Site 2014

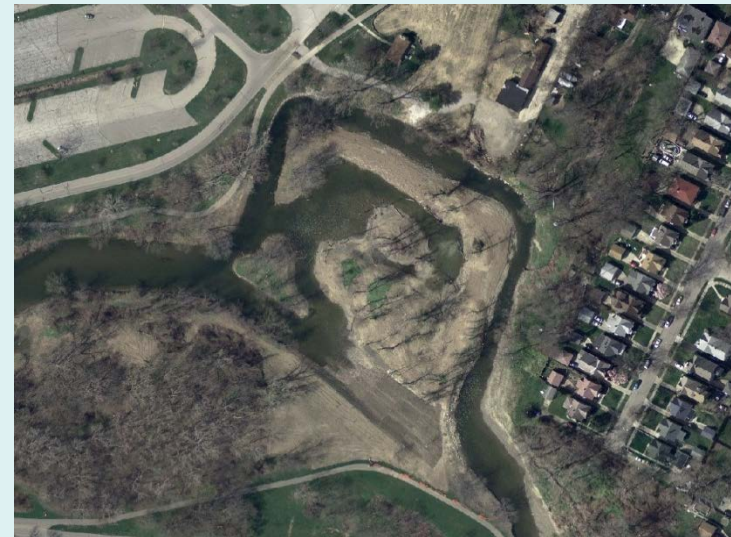
- Restoration Deliverables
 - Channel Restoration 1,100 ft
 - Floodplain Restoration 1.16 acres
 - Lacustrine Wetland 2.33 acres in 5 areas
 - Bank Stabilization 435' in 3 areas
 - Invasive Control / Riparian Enhancement 3.2 acres



Oxbow/Duck Island Site Location Map



Before aerial – Duck Island before restoration



After aerial – wetland restoration during construction

Successful Urban Restoration Projects

Wildwood Wetland Restoration Project, 2010-2014

5 Years of Monitoring Required

- Report compiled and submitted to Army Corps annually

Monitoring Coordination with Project Partners

- Fish Monitoring – NEORSD
- Macroinvertebrate Sampling – NEORSD
- Habitat (QHEI) – NEORSD & OEPA
- Vegetative Sampling-Cleveland Metroparks
- Visual Erosion Monitoring, post-storm events - CSWCD
- Morphology/Cross Section Evaluation-Cleveland WPC & NEORSD & CSWCD
- Annual Photos/Observations-NEORSD & CSWCD



Photo 12. Sample Point 3 (SP3) location looking northwest

Successful Urban Restoration Projects

Stopping Sediment at its Source in the Rocky River Grant

Cuyahoga SWCD received \$400,000 grant from Great Lakes Commission

- Focus on Cover Crops tow of the upper, agricultural subwatersheds
- Focus on Streambank Erosion in Baldwin Creek
- Total sediment load reduction of nearly 10,000 tons



Successful Urban Restoration Projects

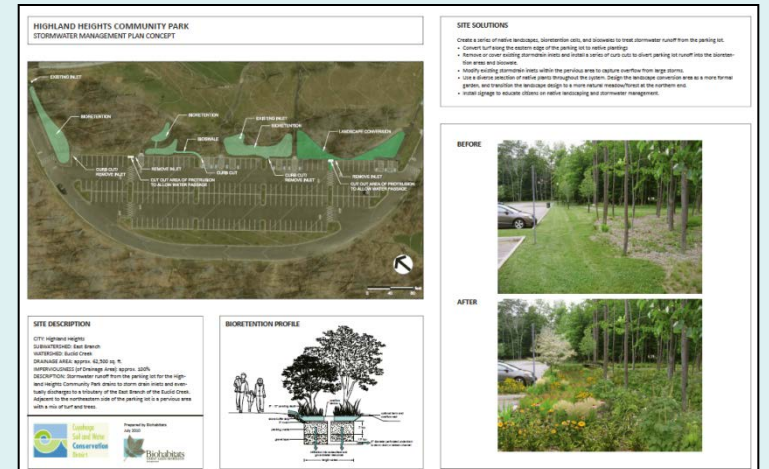
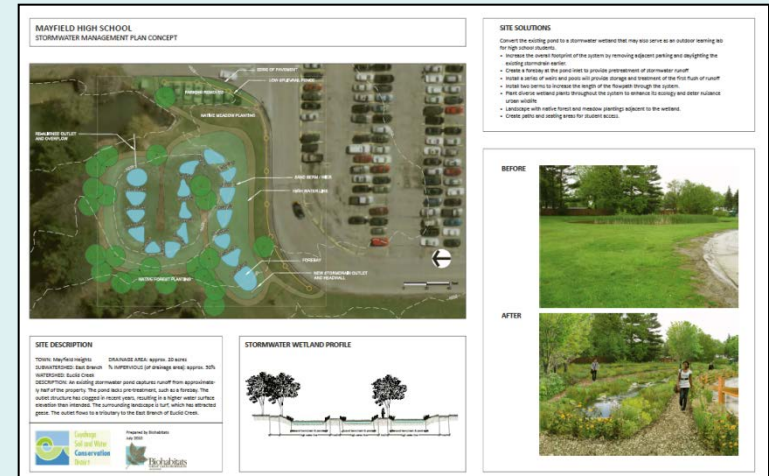
Stormwater Retrofit Implementation Project

- SWCD received NFWF funding to conduct assessment, inventory and to develop concept plans for top two sites

Storm Water Retrofit Opportunities Inventory
Final Site Prioritization for East Branch and West Branch of Euclid Creek
June 2010

Site ID	City	Potential for Treatment			Pot. Ecol. / Cmty. Benefits			Site Constraints				Total	Description
		drainage area treated	impervious area treated	land use treated	pot. ecol. / cmty. project	treatment & AOC	support other restoration activities	access for construction / maintenance	conflict with utilities	ecological context	project for future consideration		
EB_003	HIGHLAND HEIGHTS	13.2	15.0	10.0	15	0	5	15	2.5	10	5	90.7	Highland Hts. Community Park
EB_001	MAYFIELD	11.9	15.0	7.1	15	0	5	15	2.5	10	5	86.5	Mayfield High School
EB_008	HIGHLAND HEIGHTS	15.0	7.5	8.1	7.5	0	5	15	5	10	2.5	75.6	Light Industrial Park at 5335 Avion Park Dr.
EB_006	HIGHLAND HEIGHTS	15.0	15.0	7.1	0	0	5	15	5	5	5	72.1	Highland Hts. Drainage Pond (west of City Hall)
EB_005	HIGHLAND HEIGHTS	4.8	6.1	7.1	15	0	5	15	2.5	10	5	70.5	Highland Hts. Municipal Complex
EB_011	HIGHLAND HEIGHTS	15.0	15.0	9.1	7.5	5	0	0	5	5	0	61.6	Highland Hts. Drainage Pond (between Burwick and Miner)
EB_002	HIGHLAND HEIGHTS	1.6	2.0	7.1	15	0	0	15	5	10	5	60.7	Milridge Elementary School
EB_009	HIGHLAND HEIGHTS	0.5	0.6	7.1	7.5	0	5	15	5	10	2.5	53.2	Norman Nobel Inc., at 5507 Avion Park Drive
EB_007	HIGHLAND HEIGHTS	2.6	3.2	8.1	0	0	5	15	5	10	0	48.9	Norman Nobel Inc., Micromachine/Medtech, at 5340 Avion Park Dr.

WB_022	RICHMOND HEIGHTS	15.0	15.0	7.1	15	5	5	15	2.5	10	2.5	92.1	Richmond Town Square Mall
WB_004	BEACHWOOD	15.0	10.6	7.1	15	0	5	15	5	10	5	87.7	Fairmount Elementary School
WB_017	LYNDHURST	10.0	15.0	7.1	15	0	5	15	5	10	5	87.1	Hawken School
WB_005	BEACHWOOD	6.4	15.0	7.1	15	0	5	15	5	10	2.5	81.0	Beachwood Municipal Complex
WB_019	LYNDHURST	5.9	13.8	7.1	15	0	5	15	2.5	10	5	79.2	Brush High School
WB_006	BEACHWOOD	8.0	15.0	7.1	15	0	5	7.5	5	10	5	77.5	Beachwood High School
WB_005	BEACHWOOD	6.4	15.0	7.1	7.5	0	5	15	5	10	5	76.0	Beachwood Municipal Complex
WB_023	BEACHWOOD	5.0	10.5	7.1	15	0	5	15	5	10	2.5	75.0	Young Israel of Beachwood Synagogue
WB_015	LYNDHURST	3.9	9.2	7.1	15	0	5	15	2.5	10	5	72.7	Lyndhurst Municipal Complex
WB_003	BEACHWOOD	8.5	15.0	10.0	0	0	5	15	5	10	0	68.5	Apartments between Gorge Zeiger and David Myers roadways
WB_011	LYNDHURST	1.5	3.6	10.0	15	0	5	15	5	10	2.5	67.6	Brainerd Park
WB_016	LYNDHURST	1.5	3.5	7.1	15	5	0	15	5	10	5	67.0	South Euclid-Lyndhurst Board of Education Bldg.
WB_012	MAYFIELD HEIGHTS	1.3	3.0	7.1	15	0	5	15	5	10	5	66.3	Lander Elementary
WB_010	LYNDHURST	0.2	0.5	7.1	15	0	5	15	5	10	2.5	60.3	Sunview Elementary School
WB_002	BEACHWOOD	4.1	9.5	7.1	0	0	5	15	5	10	0	55.7	Cleveland Clinic Medical Office
WB_020	LYNDHURST	7.4	0.0	9.2	0	5	0	7.5	2.5	0	0	31.6	City Owned Property (Bennetts), Lyndhurst



Successful Urban Restoration Projects

Green Infrastructure Demonstration Projects

Greenwood Farm, Richmond Heights, 2013

- City received \$187,000 in Ohio EPA SWIF funding
- Installed several types of permeable pavement drive and parking areas and several bioretention areas



South Euclid Municipal Complex Parking Lots, 2012 & 2014

- City received \$166,015 in 2012 and \$144,655 in 2014 through OEPA SWIF program
- Retrofitted front (2013) and rear (2014) parking lots with permeable pavers



Successful Urban Restoration Projects

Turf to Wildflower Meadow Conversion

Brainard Park Wildflower Meadow, 2006

- City converted 2 acres of underutilized turf grass to a native wildflower meadow (technical assistance and seed from Ohio Prairie Nursery, Hiram, OH)
- Meadow **Ecological Benefits**: provides storm water retention function, residents can enjoy aesthetically pleasing garden, and beautiful wildflowers provide habitat and food resources to wildlife
- Meadow **Taxpayer Savings**: minimal maintenance as mowing, watering and weeding are not required



Schaeffer Park Wildflower Meadow, 2010

- City converted 1 acre of underutilized turf grass in park to a native wildflower meadow



Successful Urban Restoration Projects

Volunteer Riparian & Understory Plantings

Richmond Heights Municipal Complex, 2013

- Planted 67 trees, 500 saplings along 770' of Claribel Creek – 0.4 acre area – 167 volunteers



Redstone Run Upland Riparian Planting, Richmond Heights, 2013

- 43 volunteers planted 40 massive trees and shrubs in area where home once stood to reforest upland riparian area



Successful Urban Restoration Projects

Streamside Tree & Shrub Planting Program, Watershed-Wide, 2015

\$13,700 in Lake Erie Protection Fund funding for watershed-wide streamside reforestation program

- 429, 3-gallon trees and 4,725 tree and shrub seedlings distributed to 90 streamside property owners to plant
- 2.17 miles of stream properties enrolled
- 89% of sites inspected were planted successfully
- Volunteer help and Lyndhurst Service Garage for storing trees critical to program success!



Trees and shrubs planted along tributary will help stabilize stream bank and cool stream over time



Volunteers cutting deer protection fencing for the trees



Volunteers helped participants load trees in car at Lyndhurst City Hall



Chris Vild (above) and Chad Clink showed participants how to correctly plant trees and seedlings



Thank You!

Any Questions?

Jared Bartley

Rocky River Watershed Coordinator

myRockyRiver.ning.com

Claire Posius

Euclid Creek Watershed Coordinator

www.EuclidCreekWatershed.org

Cuyahoga Soil & Water Conservation District

216-524-6580

