

Implementation Strategies for reducing NPS Nutrient Impacts



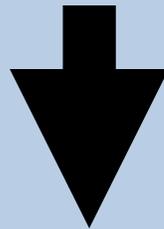
Ohio's Clean Water Goal



... to successfully achieve designated aquatic life use in 100% of Ohio's large rivers by 2020 ...

Ohio's clean water goal

... can be further refined to ...

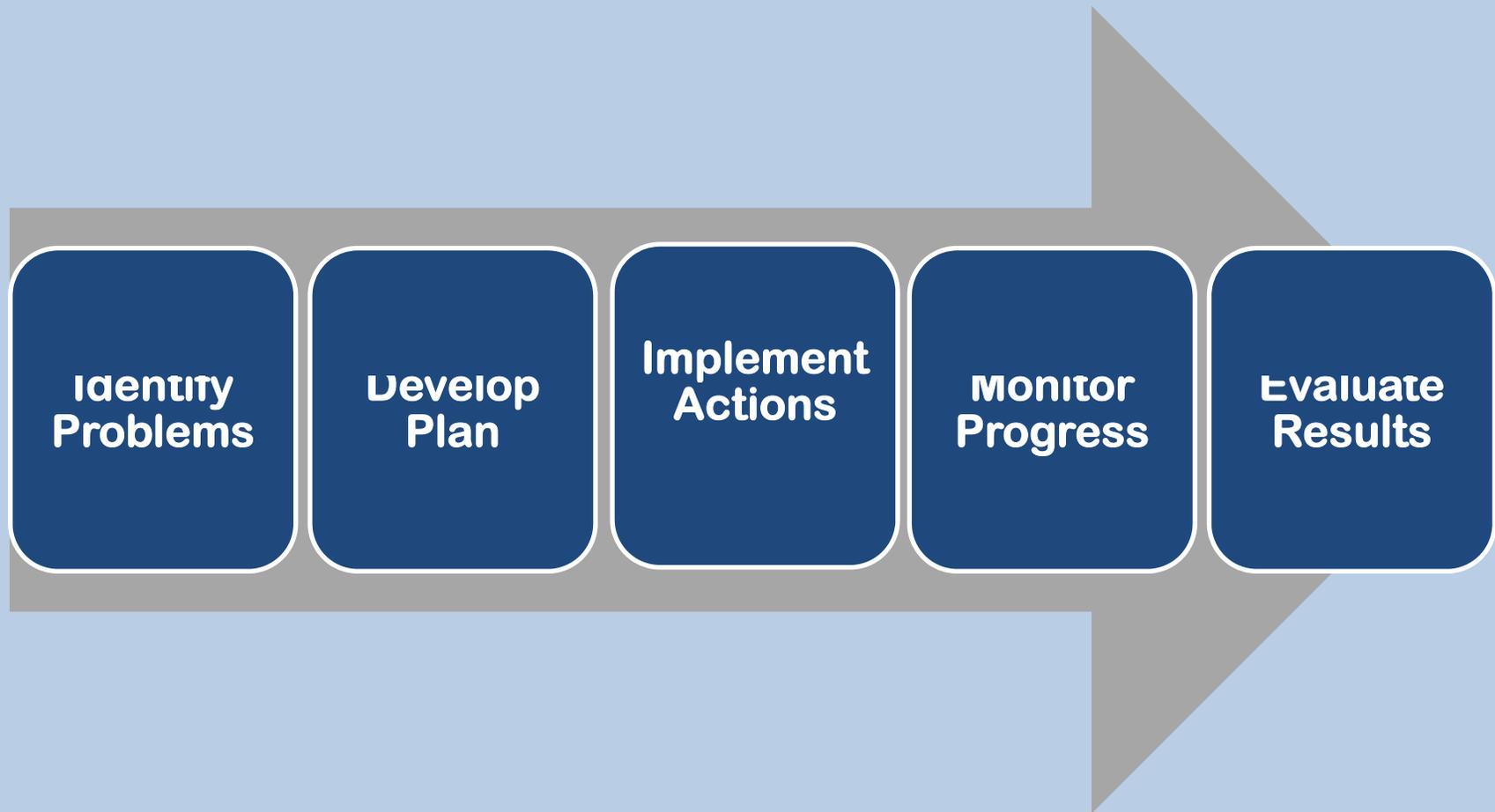


restore impaired waters
protect high quality waters
reduce NPS pollution

Implementation Strategic Balance



TMDL & Watershed Planning Process



**Implement
Actions**

It sounds SO simple!

Gibson's Hierarchy of Implementation Purgatory

**Advocates
Support
Money
Experience
Authority**

**Cranky Butts
Murphy's Law
Bad Weather
Change Orders
Bureaucracy**

People



Planners are NOT implementers

Plan globally—Implement locally

Getting started is harder than getting done!

Planning is a science--implementation is art!

Process

**Okay, so implementation is hard.
What else do we need to know?**

- 1. What needs done?**
- 2. Where will it be most effective?**
- 3. Who are the primary implementers?**
- 4. What does success look like?**

What needs to be done?

Planners (TMDL writers) and implementers need to speak the same language.

Standardized DELIVERABLES		
Objectives	Deliverables	Units
Stream Restoration	Restore Stream Channel using NCD	Linear Feet
	Install in-stream Habitat Structures	Structures
	Install Grade Structures	Structures
Agricultural BMPs	Plant Cover/Manure Crops	Acres
	Install Controlled Drainage System	Acres
	Install Livestock Exclusion Fencing	Linear Feet

What's been done?

Standardized deliverables allow implementers an ease of reporting using common terminology

Implementation Progress Report			
Deliverables	Units	Goal	Complete
Restore Stream Channel using NCD	Linear Feet	1,200	1,400
Install in-stream Habitat Structures	Structures	3	0
Install Grade Structures	Structures	2	2
Plant Cover/Manure Crops	Acres	12,000	6,000
Install Controlled Drainage System	Acres	125	125
Install Livestock Exclusion Fencing	Linear Feet	5,200	0

Where will it be most effective?

Fitting the practice to critical areas



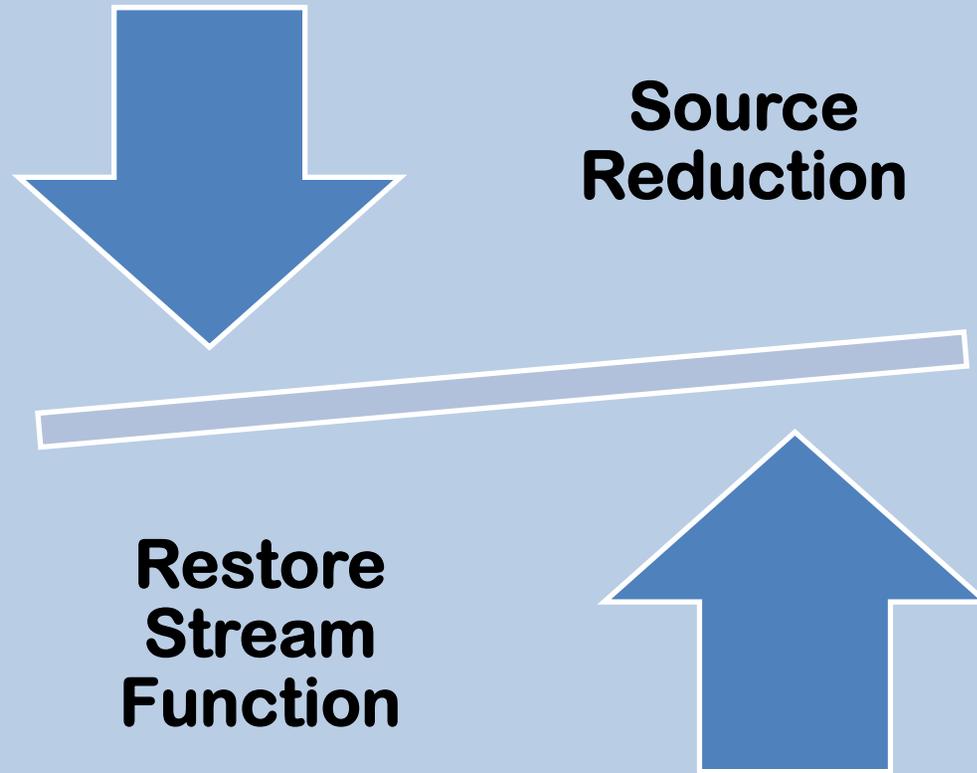
A buffer strip along the small stream flowing past this feedlot is NOT going to solve the problem at hand.



**Local Governments
Park Districts
Land Managing NGO's
Golf Courses
Farmers
Other Agencies**

Who are the primary implementers?

Nutrient Reduction NPS Implementation strategies



Nutrient Impaired Stream Strategies



Source Reduction Strategies

Ag BMP's ... Myths & Realities

Practices Ranked by Water Quality Effectiveness	Ranked by 2009 Ohio EQIP Contracts
Critical Area Planting (342)	Waste Storage Facilities (313)
Riparian Forest Buffer (391)	Livestock Fencing (382)
Herbaceous Riparian Buffer (390)	Heavy Use Area Protection (561)
Filter Areas (393) (NOT CP-21)	Access Road (560)

Effectiveness based upon an analysis of BMP's ability to enhance:

Water Storage
Slow Water Release
Nutrient Retention and Cycling
Sediment Retention

Source Reduction Tools

Reducing nutrients at the source is challenging yet critical to improving water quality.



Cover Crops

Holmes County SWCD
Completed under provisions of
#08(h)EPA-33



Exclusion Fencing

OSU Extension
Completed under provisions of
#02(h)EPA-11

Erosion Control Tools

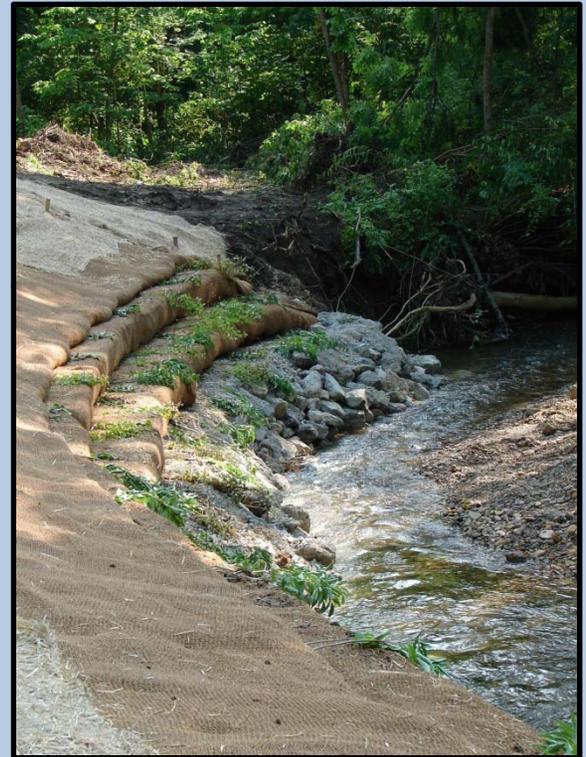
Streambank Stabilization



Honey Creek
Miami Co. SWCD
#06(h)EPA-06



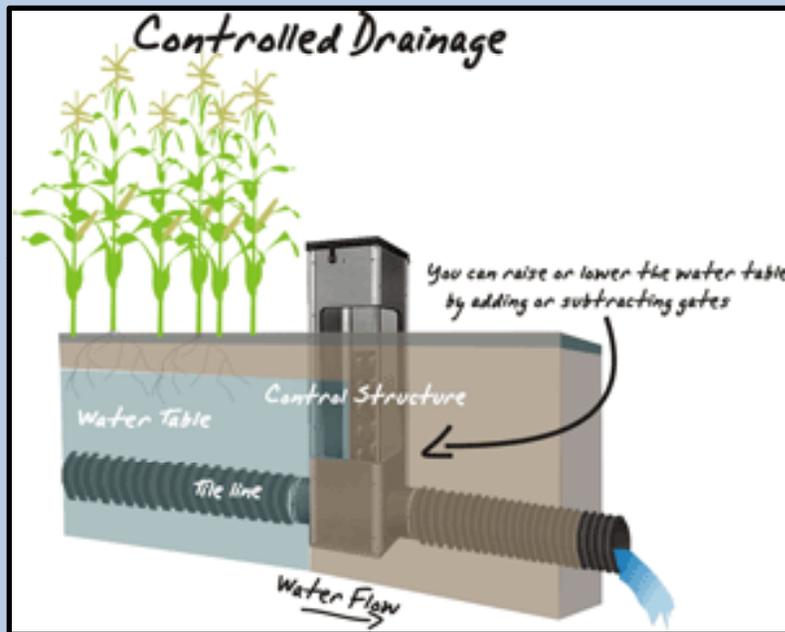
Little Miami River
Warren Co. SWCD
#07(h)EPA-23



Little Miami River
Greene Co. SWCD
#02(h)EPA-13

Drainage Management Tools

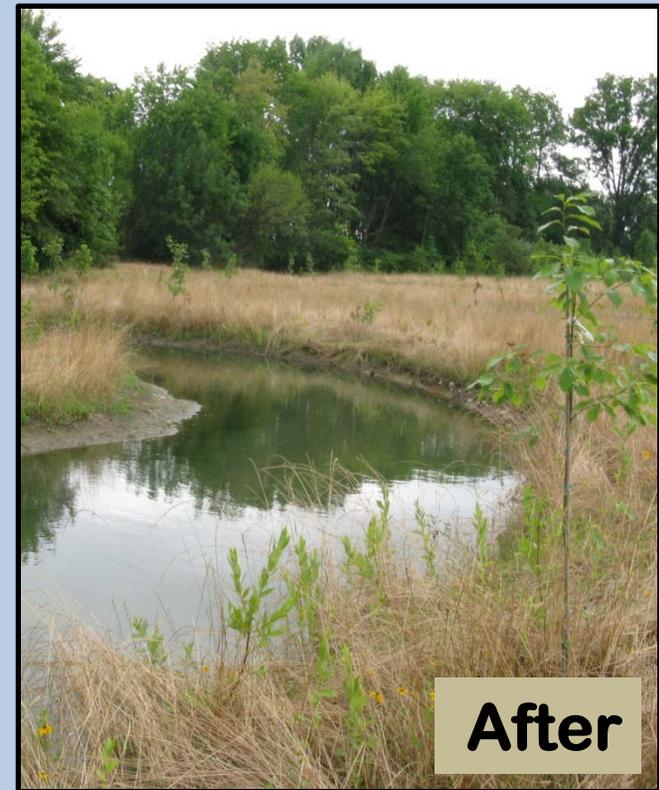
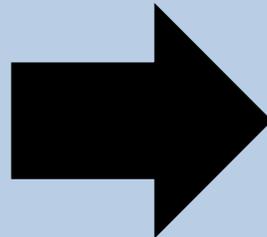
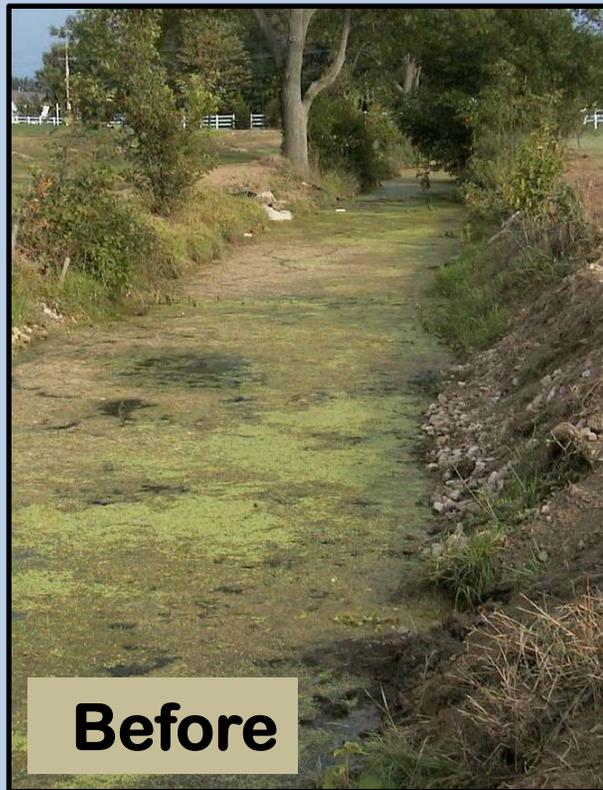
Reducing the rate and amount of runoff provides important nutrient reduction and water quality benefits.



Controlled drainage is a practice that is gaining momentum as a tool for mitigating the impacts of tile drainage.

In-Stream Management Tools

Restoring natural function and flow dramatically enhances a stream's assimilation of nutrient loads.



Restoration of Clover Groff Run
City of Columbus
Completed under provisions of #08(h)EPA-18

Restoring Stream Function as a nutrient reduction tool



Powderlick Run

Pre-Restoration Assimilative Capacity N= 0.29 mg/L per hour

Post Restoration Assimilative Capacity N=11.9 mg/L per hour

Urban NPS Implementation Strategies

Stormwater Management

- Retention
- Infiltration
- Reduce Erosion
- BMP Retrofits

Regulatory Practices

- Riparian Zones
- BMP Incentives
- Fertilizer Rules
- Permits
- Land Use

Riparian Management

- Wetlands
- Natural Flow
- Urban Forests
- Floodplains

Stormwater Mgmt Tools

Rain Gardens

Attractive and effective tools for reducing the rate and amount of stormwater runoff.



Village of Glenwillow
Village Government Complex
Completed under provisions of
#10GLRI-CUY-82

Stormwater Mgmt Tools—Green Roof

City of Dublin

Completed under provisions of
#10SWIF-044



This green roof serves as a stormwater management tool as well as an important educational tool for the city of Dublin.

Stormwater Mgmt Tools

Pervious Pavement



Bath Twp. Government Complex

Completed under provisions of
#10SWIF-012

Total Costs: \$34,560

Stormwater Mgmt Tools Wetland Treatment Areas

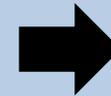


Geauga County Parks

Completed under provisions of #10(h)EPA-08

Nutrient Impaired Stream Strategies

Restore



Stream Channels
Wetland Areas
Riparian Forests
Natural Flow
Eroding Banks

Protect



Wetland Areas
Riparian Forests
Floodplains
Stream Channels

Erosion
Manure Application
Stormwater Runoff
Livestock Access



Reduce

Close the Implementation Loop!



Acknowledge Success!!!

Success inspired future success

#10SWIF-044

**Dublin Community
Recreation Center-
Green Roof
Demonstration
Project**

Project Sponsor
City of Dublin
Surface Water Improvement
\$50,650 SWIF Funds

Local Project Contact
Michelle Crandall
City of Dublin
5200 Emerald Parkway
Dublin, OH 43107

Environmental Results

Installed 2300 square feet of a green roof plant system on the city's Recreation Center building

Installed 2 rainwater harvesting systems to use for watering the green roof



Division of Surface Water
Nonpoint Source Program
614-644-2020

#06(h)EPA-23
#06(h)EPA-35
#08(h)EPA-16

**Stillwater River Low
Dam Removal**

Project Sponsor
Five Rivers Metroparks
Federal Section 319(h) Grant
\$900,548 Federal (total)
\$603,832 Local Match (total)

Local Project Contact
Joe Zimmerman
Five Rivers Metroparks
1375 E. Siebenthaler Ave.
Dayton, OH 45414

Environmental Results

Removed Englewood low dam in the Stillwater River
Restored 7000 linear feet of stream channel and 2 acres of riparian trees and shrubs

Conducted dam mitigation and restoration workshop



Division of Surface Water
Nonpoint Source Program
614-644-2020





Questions?

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