



Buffalo Creek Clean Water Partnership

Stakeholder Meeting #4
January 16, 2013

Presentation Outline

1. Watershed Planning Process – Where are we?
2. Coordinated Pollutant Monitoring Program
3. Presentation on Pollutant Load Reductions
4. Vision Statement
5. Wrap Up

Watershed Planning Process

Watershed planning is an iterative, adaptive, collaborative and participatory process.

Steps:

- Build partnerships.
- Characterize the watershed to identify problems.
- Set goals and identify solutions.
- Design an implementation program.
- Implement the watershed plan.
- Measure progress and make adjustments.

Coordinated Pollutant Monitoring Program

#1 priority voted by our members was water quality

Project: Conduct sediment and water quality sampling.
Coordinate MS4 water quality testing.

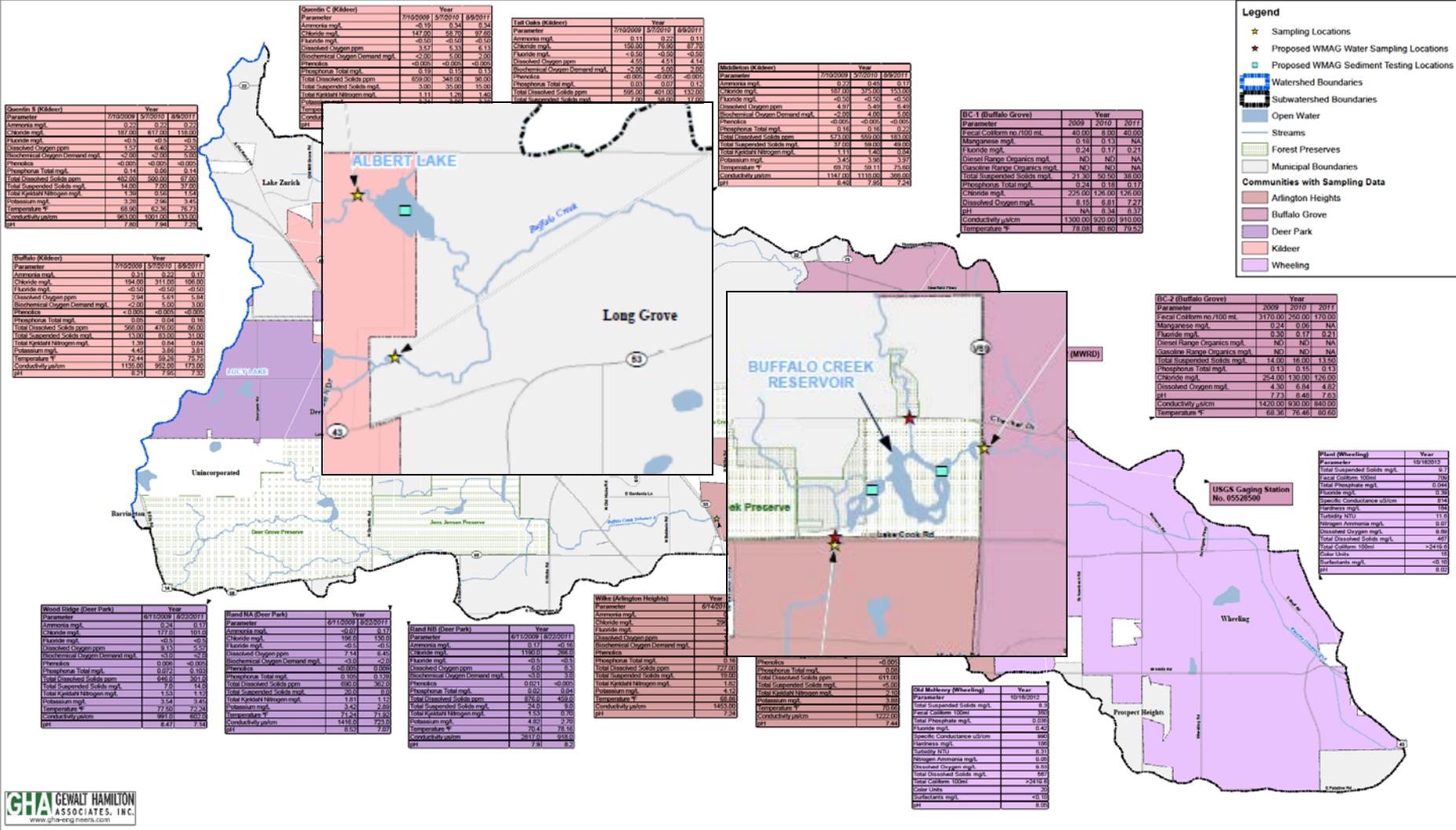
Goal: To pinpoint sources of impairments.

Status: \$10,000 Watershed Management Assistance
Grant from SMC.

March 2013 – October 2014

Water Quality Monitoring Data Collection Summary

- Arlington Heights
- Buffalo Grove
- Deer Park
- Deerfield
- Wheeling
- Lake Zurich
- Long Grove
- Palatine
- Prospect Heights
- Elmhurst
- MWRD
- Forest Preserve Districts
- LCDOT
- IDOT
- Palatine Township
- Vernon Township
- Wheeling Township



Parameter	2009	2010	2011
Ammonia mg/L	0.22	0.22	0.22
Chloride mg/L	187.00	617.00	118.00
Fluoride mg/L	4.91	4.91	4.91
Dissolved Oxygen ppm	1.57	6.48	7.30
Biochemical Oxygen Demand mg/L	-2.00	-2.00	-2.00
Phosphorus mg/L	-0.00	-0.00	-0.00
Phosphorus Total mg/L	0.19	0.19	0.19
Total Dissolved Solids ppm	609.00	340.00	96.00
Total Suspended Solids mg/L	0.00	30.00	15.00
Total Kjeldahl Nitrogen mg/L	1.39	0.54	1.54
Potassium mg/L	3.39	7.46	3.43
Temperature °F	68.94	62.36	76.73
Conductivity µm/cm	963.00	1001.00	133.00
pH	7.80	7.80	7.25

Parameter	2009	2010	2011
Ammonia mg/L	0.31	0.26	0.17
Chloride mg/L	194.00	311.00	106.00
Fluoride mg/L	-0.10	-0.10	-0.10
Dissolved Oxygen ppm	7.94	5.61	5.84
Biochemical Oxygen Demand mg/L	-2.00	-2.00	-2.00
Phosphorus mg/L	-0.00	-0.00	-0.00
Phosphorus Total mg/L	0.09	0.04	0.18
Total Dissolved Solids ppm	560.00	435.00	66.00
Total Suspended Solids mg/L	11.00	53.00	31.00
Total Kjeldahl Nitrogen mg/L	1.39	0.54	0.94
Potassium mg/L	3.45	3.66	3.81
Temperature °F	72.44	58.24	75.72
Conductivity µm/cm	1195.00	952.00	173.00
pH	8.41	7.90	7.49

Parameter	2009	2010	2011
Ammonia mg/L	0.21	0.13	0.13
Chloride mg/L	177.00	101.00	8.00
Fluoride mg/L	4.91	4.91	4.91
Dissolved Oxygen ppm	5.13	5.57	5.57
Biochemical Oxygen Demand mg/L	-2.00	-2.00	-2.00
Phosphorus mg/L	0.09	-0.00	-0.00
Phosphorus Total mg/L	0.07	0.10	0.10
Total Dissolved Solids ppm	446.00	301.00	144.00
Total Suspended Solids mg/L	7.00	14.00	14.00
Total Kjeldahl Nitrogen mg/L	1.53	1.15	1.15
Potassium mg/L	3.41	3.42	3.42
Temperature °F	77.50	72.30	72.30
Conductivity µm/cm	847.00	649.00	649.00
pH	8.41	7.49	7.49

Parameter	2009	2010	2011
Ammonia mg/L	-0.02	0.17	0.17
Chloride mg/L	192.00	150.00	150.00
Fluoride mg/L	-0.10	-0.10	-0.10
Dissolved Oxygen ppm	7.14	6.42	6.42
Biochemical Oxygen Demand mg/L	-2.00	-2.00	-2.00
Phosphorus mg/L	0.09	-0.00	-0.00
Phosphorus Total mg/L	0.09	0.00	0.00
Total Dissolved Solids ppm	692.00	367.00	367.00
Total Suspended Solids mg/L	20.00	8.00	8.00
Total Kjeldahl Nitrogen mg/L	1.11	1.11	1.11
Potassium mg/L	3.42	2.89	2.89
Temperature °F	71.24	71.60	71.60
Conductivity µm/cm	1418.00	723.00	723.00
pH	8.50	8.20	8.20

Parameter	2009	2010	2011
Ammonia mg/L	0.17	-0.16	-0.16
Chloride mg/L	198.00	268.00	268.00
Fluoride mg/L	-0.10	-0.10	-0.10
Dissolved Oxygen ppm	6.00	6.30	6.30
Biochemical Oxygen Demand mg/L	-2.00	-2.00	-2.00
Phosphorus mg/L	0.09	-0.00	-0.00
Phosphorus Total mg/L	0.02	0.04	0.04
Total Dissolved Solids ppm	676.00	462.00	462.00
Total Suspended Solids mg/L	34.00	9.00	9.00
Total Kjeldahl Nitrogen mg/L	1.53	0.70	0.70
Potassium mg/L	4.82	7.70	7.70
Temperature °F	70.40	78.16	78.16
Conductivity µm/cm	2017.00	933.00	933.00
pH	7.90	8.20	8.20

Parameter	2009	2010	2011
Ammonia mg/L	0.11	0.22	0.11
Chloride mg/L	150.00	78.00	87.70
Fluoride mg/L	-0.10	-0.10	-0.10
Dissolved Oxygen ppm	4.50	4.51	4.14
Biochemical Oxygen Demand mg/L	-2.00	-2.00	-2.00
Phosphorus mg/L	-0.00	-0.00	-0.00
Phosphorus Total mg/L	0.03	0.07	0.12
Total Dissolved Solids ppm	595.00	461.00	132.00
Total Suspended Solids mg/L	2.00	30.00	30.00

Parameter	2009	2010	2011
Ammonia mg/L	0.22	0.43	0.13
Chloride mg/L	187.00	315.00	133.00
Fluoride mg/L	-0.10	-0.10	-0.10
Dissolved Oxygen ppm	4.97	5.43	6.49
Biochemical Oxygen Demand mg/L	-2.00	-2.00	-2.00
Phosphorus mg/L	0.16	0.16	0.16
Phosphorus Total mg/L	0.16	0.16	0.16
Total Dissolved Solids ppm	672.00	600.00	183.00
Total Suspended Solids mg/L	37.00	59.00	49.00
Total Kjeldahl Nitrogen mg/L	1.11	1.46	1.54
Potassium mg/L	3.45	3.50	3.37
Temperature °F	69.76	59.11	75.62
Conductivity µm/cm	1147.00	1119.00	369.00
pH	8.46	7.85	7.29

Parameter	2009	2010	2011
Fecal Coliform no./100 ml	40.00	8.00	40.00
Manganese mg/L	0.19	0.13	NA
Fluoride mg/L	0.24	0.17	0.21
Diesel Range Organics mg/L	ND	ND	NA
Gasoline Range Organics mg/L	ND	ND	NA
Total Suspended Solids mg/L	21.30	50.10	38.00
Phosphorus Total mg/L	0.24	0.18	0.17
Chloride mg/L	225.00	126.00	126.00
Dissolved Oxygen mg/L	8.15	8.81	7.27
pH	NA	8.34	8.37
Conductivity µm/cm	1300.00	920.00	910.00
Temperature °F	78.08	80.60	79.52

Parameter	2009	2010	2011
Fecal Coliform no./100 ml	3170.00	250.00	170.00
Manganese mg/L	0.24	0.16	NA
Fluoride mg/L	0.30	0.17	0.21
Diesel Range Organics mg/L	ND	ND	NA
Gasoline Range Organics mg/L	ND	ND	NA
Total Suspended Solids mg/L	14.00	18.00	13.50
Phosphorus Total mg/L	0.13	0.15	0.13
Chloride mg/L	254.00	130.00	130.00
Dissolved Oxygen mg/L	4.30	6.84	4.82
Dissolved Oxygen mg/L	7.73	6.46	7.63
Conductivity µm/cm	1420.00	940.00	840.00
Temperature °F	68.36	78.46	80.60

Parameter	10/16/2012
Total Suspended Solids mg/L	0.70
Total Phosphate mg/L	0.040
Fluoride mg/L	0.39
Specific Conductance µm/cm	154
Hardness mg/L	154
Turbidity NTU	11.0
Ammonia mg/L	0.00
Dissolved Oxygen mg/L	8.89
Total Dissolved Solids mg/L	497
Total Coliform 100ml	>2410.0
Color Units	16
Turbidity mg/L	<0.10
pH	8.03

Parameter	10/16/2012
Total Suspended Solids mg/L	8.13
Fecal Coliform 100ml	360
Total Phosphate mg/L	0.034
Ammonia mg/L	0.42
Specific Conductance µm/cm	860
Hardness mg/L	160
Turbidity NTU	8.33
Nitrogen Ammonia mg/L	0.00
Dissolved Oxygen mg/L	8.90
Total Dissolved Solids mg/L	560
Total Coliform 100ml	>2410.0
Color Units	16
Turbidity mg/L	<0.10
pH	8.00

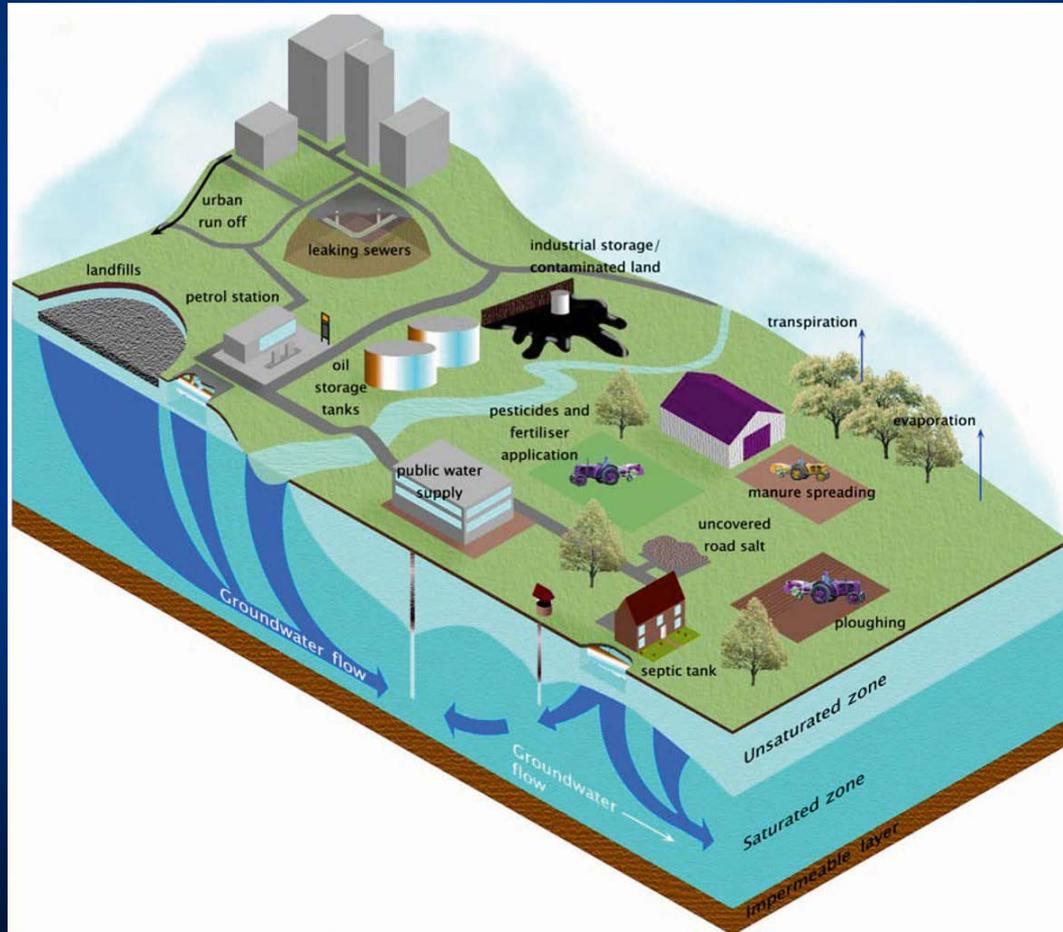
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SOCIETIES, INC.
www.gha-engineers.com

Buffalo Creek Clean Water Partnership

Water Quality Testing Map Buffalo Creek Watershed



Presentation on Pollutant Load Reductions

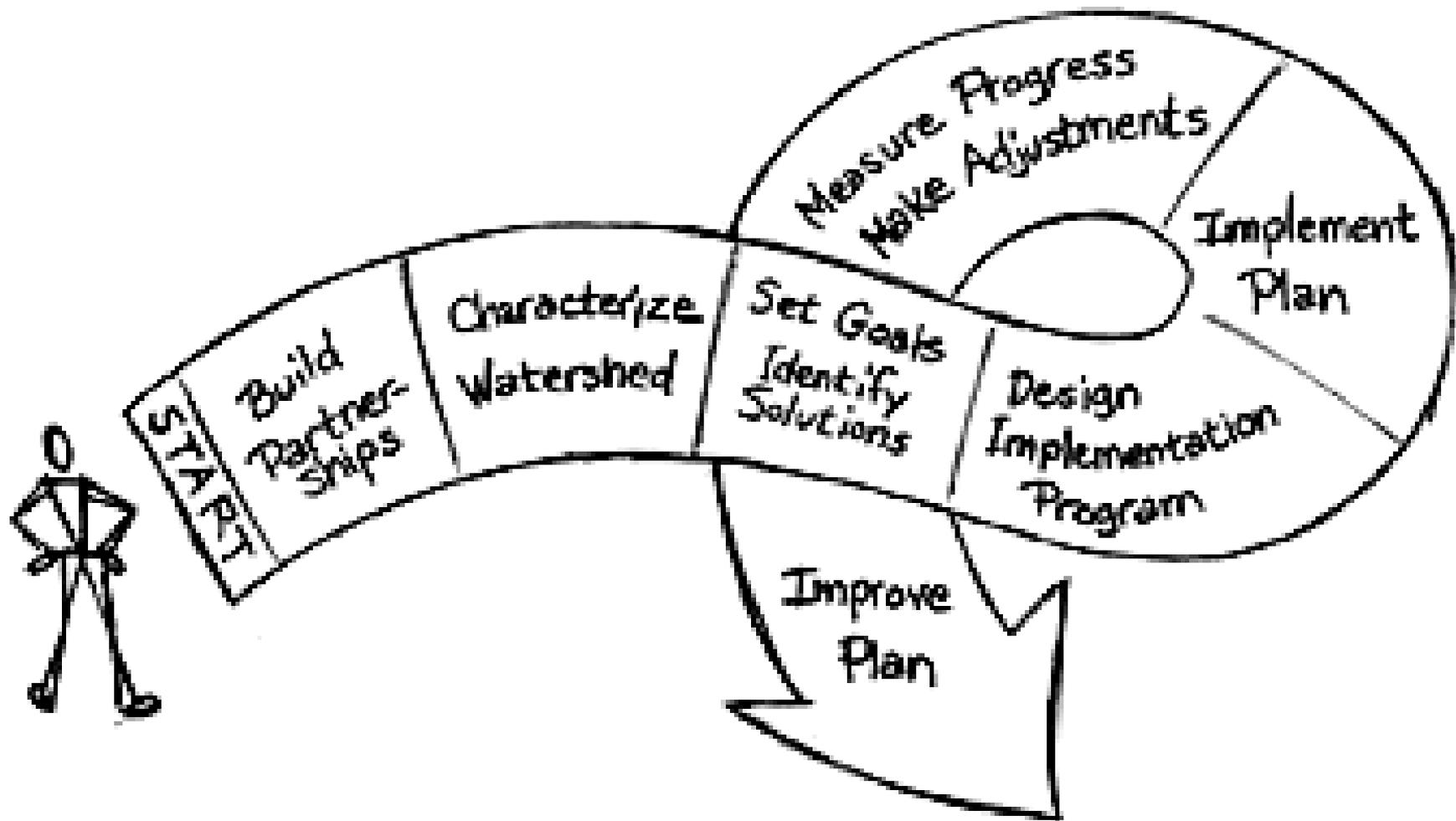


EPA's Watershed Management Planning Approach – Using Data to Solve Problems

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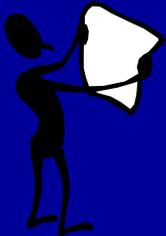


Watershed Management Planning



The Process:

Watershed Planning Steps



STEP 1

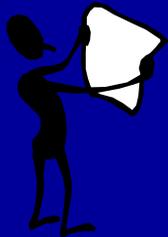
BUILD PARTNERSHIPS

- ID stakeholders & issues of concern
- ID scope of effort & planning area
- Set preliminary goals

Waukegan Harbor, Illinois
August 7, 2009



Watershed Planning Steps



STEP 1 BUILD A TEAM

- ID stakeholders
- ID issues
- ID scope
- Set priorities
- Conduct

STEP 2 CHARACTERIZE WATERSHED

- Gather existing data
- ID data gaps
- Collect additional data, if needed
- ID causes and sources
- Estimate pollutant loads

Problem Solving Framework

Practical Approach

★ Connect data with actions ...

✓ WHY the concern

✓ WHAT reductions are needed

✓ WHERE are the sources

✓ WHO needs to be involved

✓ WHEN will actions occur



Problem Solving Framework

Here's one way...
(there are many)

Duration Curve Method:
Back to Basics - using hydrology to develop solutions

Duration Curve Analysis

Advantages



Context to interpret monitoring data



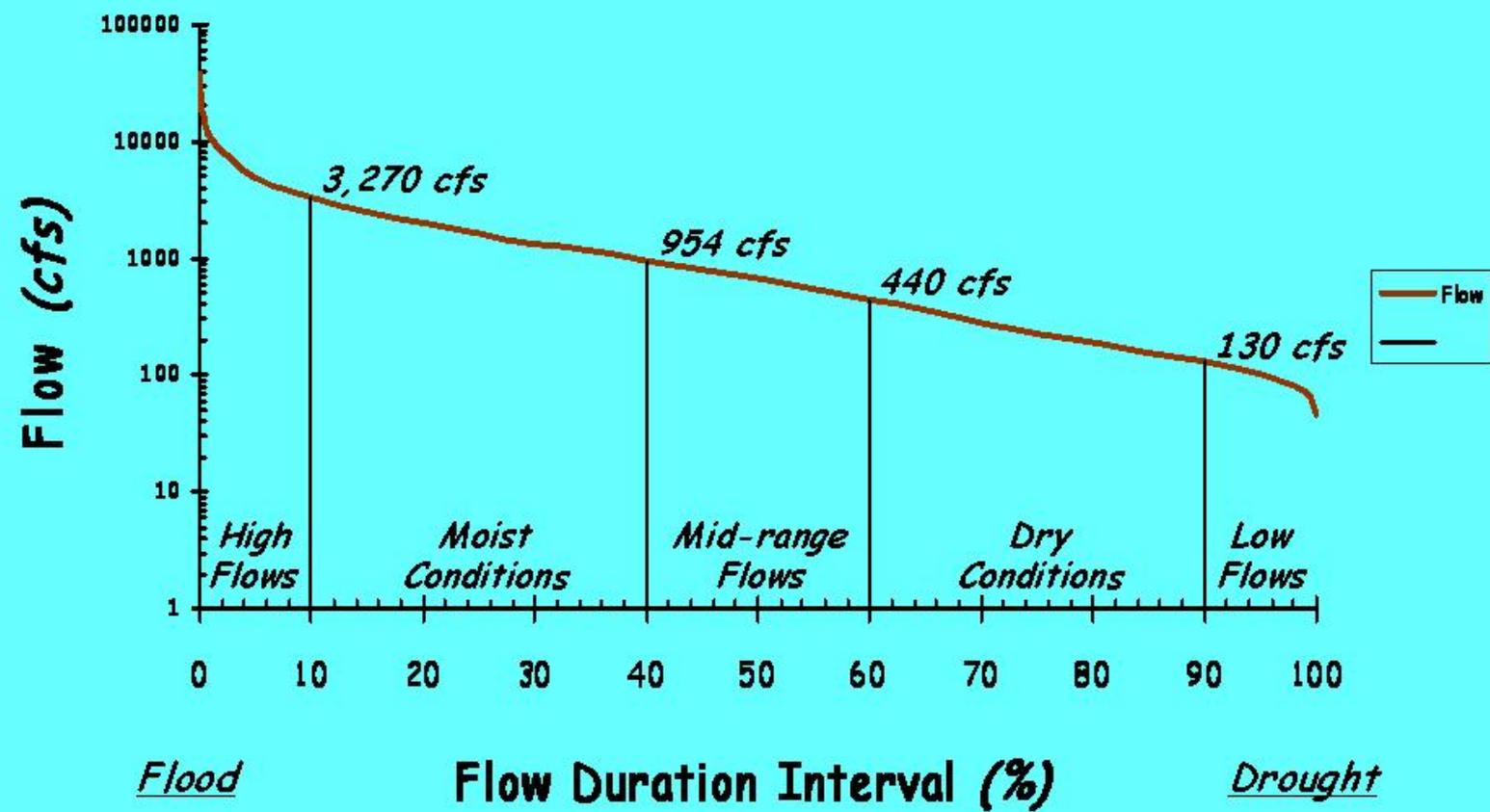
Help guide implementation

- Targeted Participants
- Targeted Programs
- Targeted Activities
- Targeted Areas

Flow Duration Curves

Basic Form

Salt Creek near Greenview, IL
Flow Duration Curve
USGS Gage: 05582000



Flood

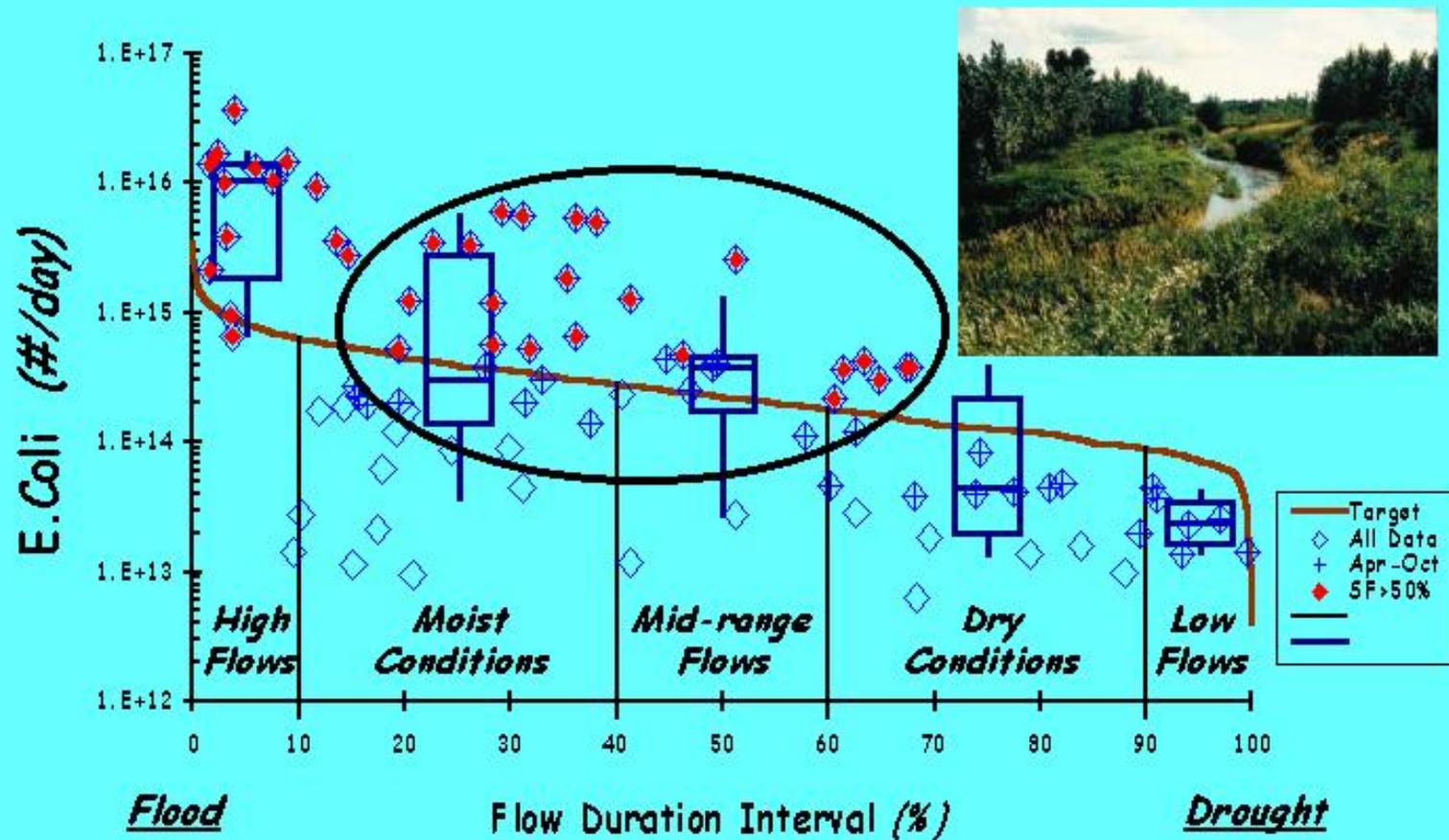
Flow Duration Interval (%)

Drought

Water Quality Patterns

Contributing Areas

Willow Creek near Turkey Gap
Sample Load Duration Curve

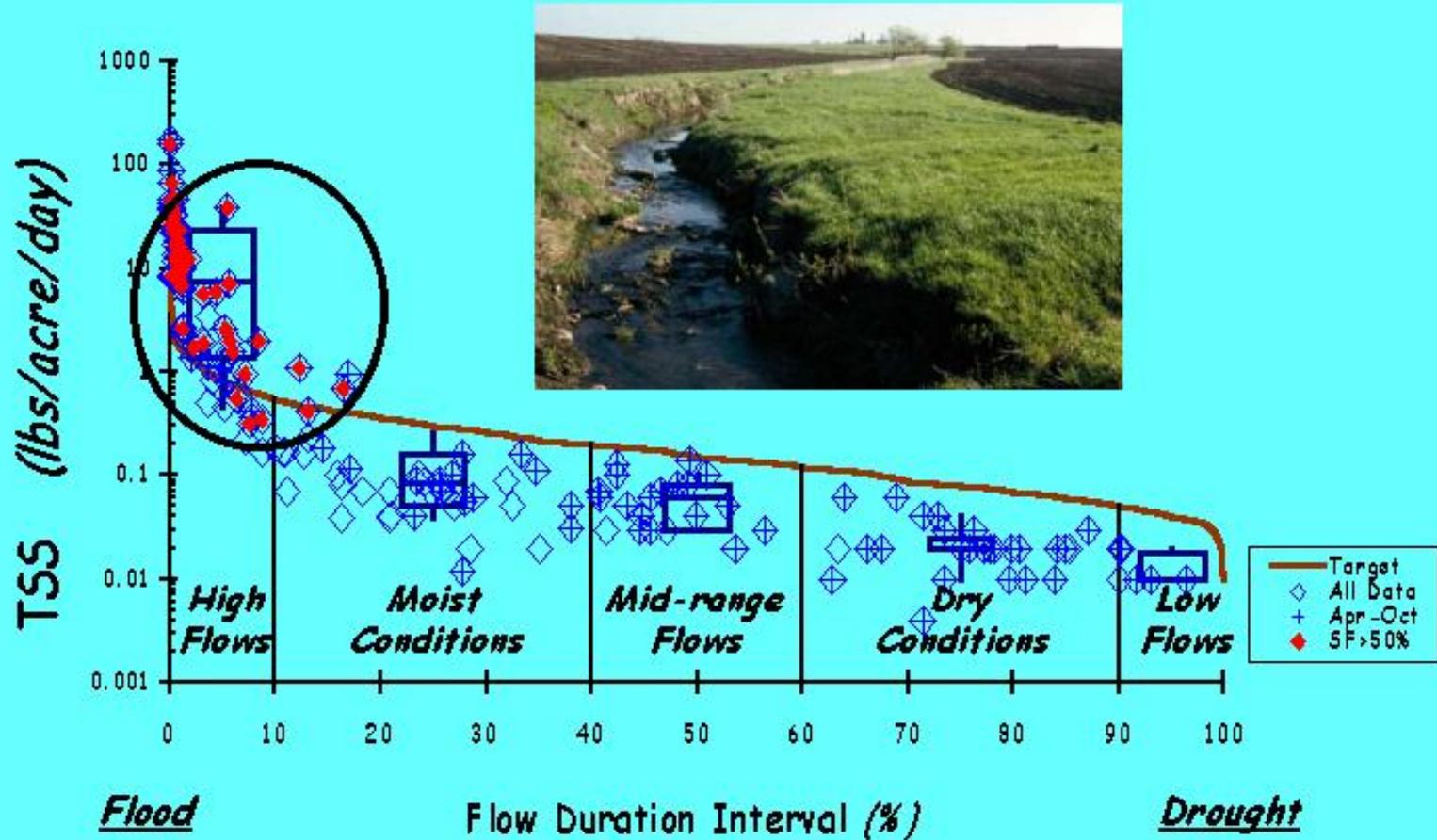


TARGETED Programs: *Riparian Buffers (e.g. CRP, CREP)*

Water Quality Patterns

Delivery Mechanisms

Rock Creek near Moose Junction
Sample Yield Duration Curve



TARGETED Areas: *Streambank Erosion, Bank Stability*

Watershed Management Planning

Success Stories

Watershed Management Plan Success Story – Carrier Creek, Michigan



U.S. ENVIRONMENTAL PROTECTION AGENCY

Section 319 Nonpoint Source Success Stories



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Michigan: Carrier Creek

Stabilizing Streambanks and Restoring Wetlands Improves Habitat

[Waterbody](#) | [Problem](#) | [Project Highlights](#) | [Results](#) | [Partners & Funding](#)

Waterbody Improved

Carrier Creek, a tributary to the Grand River, flows through a rapidly developing area near Lansing, Michigan. Historic channelization and more recent urban runoff resulted in eroding stream banks, high sedimentation rates, and degraded aquatic habitat for fish and macroinvertebrate communities. Extensive stream restoration and storm water retention activities have resulted in increased fish taxa at two monitoring locations.



Physical Assessments

Carrier Creek, Michigan

- Stagnant water
- Flow obstructions
- Loss of natural morphology
- Lack of understory vegetation



Erosion Assessments

Carrier Creek, Michigan

- Majority of erosion in previously dredged stretches
- Culverts, discharge pipes causing erosion
- Adjacent construction



Culverts & Discharge Pipes

Carrier Creek, Michigan



Establishing Native Vegetation

Carrier Creek, Michigan



Removal of Debris

Carrier Creek, Michigan



New Channel (before and after)

Carrier Creek, Michigan



Watershed Management Plan

Success Story - Cuyahoga River Watershed

Cuyahoga River, Ohio

Primary Causes of Impairment:

Low Dissolved Oxygen

Habitat Alteration

Hydromodification



Watershed Management Plan

Success Story - Cuyahoga River Watershed

Cuyahoga River, Ohio

Action Items Needed:

Remove or Modify Dams

Revise WWTP Permits

Re-naturalize modified streams



Watershed Management Plan

Success Story - Cuyahoga River Watershed

Cuyahoga River, Ohio

Results

Middle Cuyahoga River	Pre -Project	Post Project
Index of Biological Integrity (IBI)	28	44
Qualitative Habitat Evaluation Index (QHEI)	51	79

Watershed Management Plan

Success Story - Cuyahoga River Watershed

Cuyahoga River, Ohio

Results



For Watershed Management – Most of All, You Need Patience



BCCWP Watershed Based Plan *Vision Statement*



Vision Statement #1

Twenty years from now the Buffalo Creek watershed planning and management efforts will be a water environment success story with reduced erosion, improved water quality, thriving wildlife, decreased flooding and the beauty of native vegetation which will enhance the effective use and preservation of the entire area.

“Buffalo Creek will no longer be an eye sore, but a place that families will be able to enjoy for its beauty and recreational activities”

Vision Statement #2

To achieve a healthy sustainable watershed by improving water quality through refined stormwater management; natural area preservation, restoration and management; groundwater recharge protection; utilization of green infrastructure; and control of invasive species. To achieve improved watershed conditions so all lands and waterways safely receive, store, and release clean water for the good of all people, wildlife and natural resources in the Buffalo Creek Watershed and ultimately the Des Plaines River Watershed. To achieve this vision by 2040 through community led and agency supported implementation of local and watershed-wide plans and projects.

2013 BCCWP Volunteer Activities

- Water quality testing
- Volunteer Lake Monitoring
- Stream Assessments
- RiverWatch Stream Monitoring
- Photo record of Buffalo Creek and tributaries
- Habitat work at Deer Grove FP and Rylko Park

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- Water quality testing
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- RiverWatch Stream Monitoring
- Photo record of Buffalo Creek and tributaries
- Habitat work at Deer Grove FP and Rylko Park
- Membership
- Surveillance
- Policy and advocacy

Get Involved!

To get involved, contact:

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Marcy.Knysz@cardno.com

www.buffalocreekcleanwater.org

Wrap Up

Next Meeting in Early May
- Volunteers for hosting??

Thank you for
participating!

