West Creek:
From Management to Implementation Plan

Report to
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Introduction

Pursuant to a grant from the Lake Erie Protection Fund ("LEPF"), the Delta Institute and the West Creek Preservation Committee ("Committee") have partnered to create an Implementation Strategy and Plan ("Strategy and Plan") to protect and restore the West Creek watershed ("Watershed").

This Report is divided into three distinct sections. Section I documents the process the Committee and Delta Institute used to develop the implementation priorities and plan. Section I can be used as a framework for future such efforts that use a collaborative process and merge information from several sources to identify Watershed priorities and objectives. Section II outlines the implementation strategy (priorities), plan and five-year timeline. Section II will also fulfill part of the Committee's requirements under Section 319 of the federal Clean Water Act ("CWA"). Section III is an appendix containing resources that can be used in future watershed implementation efforts. This Report fulfills the LEPF grant requirements.

The West Creek Watershed is located in northeast Ohio within the Cuyahoga River watershed. The main stem runs nine miles and the watershed encompasses 14 miles of land area. The Committee's past efforts and its development of the West Creek Valley Management Plan ("Management Plan") established the foundation for understanding the watershed and the components that have shaped the Watershed's present and future characteristics. As the community recognized the need for focused efforts towards watershed protection and restoration, the Committee embarked on the 319 program process, including hiring a Watershed Coordinator and establishing a Watershed Council.

SECTION I – PROCESS DOCUMENTATION

Step I – Identify Preliminary Issues

Delta used three sources to target the water quality issues most prevalent within the Watershed: 1) Review of Ohio Environmental Protection Agency's ("OEPA") priorities (from reports completed under Sections 305b and 303d of the CWA); 2) Solicitation of the Committee's and community's concerns and on-going work efforts; and 3) Identification of the Management Plan's findings and recommendations. The following issues were derived from each of the three sources.

A. Sources

305b and 303d Priorities – (OEPA, Total Maximum Daily Load (TMDL), Committee)

- Nutrient enrichment
- Aquatic habitat modification
- Stream channel and riparian degradation

Committee/ Community Input

- Failing septic systems – phosphates, bacteria
- Deteriorating and ineffective sanitary sewer overflow pipes
- Land development patterns throughout the watershed that threaten habitat and streams
- Damaged riparian habitat and streamside erosion
- Historical land uses (landfills, dams, septics) that inhibit attainment

Management Plan Findings/Recommendations

- Failing septic systems
- Stream and riparian modification
- Suburban runoff
- Impervious cover exceeding desired state of a healthy watershed
- Invasive species inhibiting healthy riparian habitat and diversity
- Land use and zoning patterns burying tributaries and restricting the full service of the floodplain
- Uncharacterized landfills
- Dam structures limiting the natural flow regime
- Severe erosion along the entire West Creek corridor

B. Preliminary Critical Issue Areas

These issues are grouped into three critical areas that limit the Creek's water quality attainment capacity.

- Pollutant loading from deteriorated and failing infrastructure (such as septic systems and Sanitary Sewer Overflows (SSOs))

- Loss of the Creek's habitat and the hydrologic regime (due to loss of riparian areas, invasive species, dams, and inappropriate land use)

- Alteration of stream quantity and quality (due to urban/suburban development patterns that result in increased runoff and stream modification)

Step II – Target Preliminary Watershed Protection and Restoration Goals

Following input from the Committee, the Watershed coordinator, and the Technical Committee (comprised of representatives from state, regional and local public agencies), goals were established that form the framework for developing a strategy to address the critical issues. The three initial goals and sub-goals are as follows:

A. Eliminate Illicit Discharges of pollutants through new infrastructure investments

- Prioritize SSO pipe discharges and improve older storm and sanitary systems.
- Eliminate or reduce discharges from failing septic systems.
- Reduce/Prevent site waste stream discharges to stream corridor (landfills).

B. Sustain and Restore the West Creek Habitat

- Protect and restore aquatic communities, habitats, stream channels and floodplain.
- Maintain wetlands and related vegetative systems.
- Reduce the spread of invasive species to re-establish quality landscape and stream habitats.

C. Protect the Stream Corridor and its Watershed through Better Land Management

- Prevent and reduce increase of runoff volume from existing and new development.

- Increase erosion control and protection of riparian and floodplain areas.
- Utilize stormwater management practices to offset the urban impacts to the stream.
- Remove existing structures to restore stream function and habitat.
- Limit removal and burial of all streams and tributaries feeding into the watershed.
- Develop guidelines for land disturbance and property stewardship activities.

Step III – Outline Initial Recommended Actions
These are definitive actions that are needed to improve the Watershed's water quality, and they define how to achieve the goals outlined in Step II. The Committee, the Delta Institute, and the Technical Committee developed these actions, and they provide a baseline to present to the community for input. Ultimately, these are integrated into the Implementation strategy.

A. Expand Education and Partnerships for Watershed Communities

B. Develop a Land Development Ordinance

C. Invest and maintain infrastructure improvements for Sanitary, Stormwater and Septic Structures.

D. Establish Riparian Setbacks and Restore Floodplain

E. Establish Practices to Improve Stormwater Management

F. Remove Structures from Creek to Restore Habitat

G. Assess and Remediate Landfills Advance Visions Plan for Trail Development, Stream Restoration and Economic Development.

H. Establish monitoring system to measure progress and sustain current information of Creek condition.

I. Integrate West Creek Action Plan recommendations into community Comprehensive Plans.

Step IV - Establish and Prioritize Action Items through Public Process
The Delta Institute and the Committee conducted a public meeting with the assistance of the Ohio State University Extension Service to establish community priorities for implementation. The actions and goals identified in Steps II and III that the Technical Committee developed were presented to the community for prioritization and discussion. Activity 1 below solicited new actions, and Activity 2 below lists the key actions and identifies their priority status based on input from the community meeting.

West Creek Public Meeting Results – March 4, 2004
Activity 1: New Issues to Consider in Plan Formation:
ATV Destruction
Clean-up of debris/trash necessary
Define uses for Park Preserve and best places for trail in relation to creek needs.
Match park preserve resources with user groups.

Limit areas of access in Gannett land.
Enforce and educate on ordinances for ATV's.
Limit and prevent ATV access into park preserve.
Eliminate paintball activities. It degrades resource.
Need more concrete trail development plans.
Need more flora and fauna surveys.
Concern of open water areas resulting in warm water temperatures in stream.
Concern of Rockside Woods rezoning and its loss of natural resources.
Recommend action for acquisition and ownership of land to protect the resource.
Need more staff and funding resources.
Need to educate a diversity of groups on guidance for alternative development practices and techniques.
Need city building codes to improve water resources.
Collaborate with Seven Hills.
Develop more curriculum and programming on creek resources to teach stewardship.
Conduct mass plantings and restoration projects similar to wetland project in preserve.
Expand WCPC on programs to get people accessible to the resources.
Need road salt control.
Need more community assistance and people to help in effort.
Engage free manpower from schools, universities and eagle scouts.
Educate community leaders such as engineers and city officials)
Need to reach out to all watershed communities.

Activity 2: Prioritization of Actions

Action	1st Priority	2nd Priority	3rd Priority
Education	7	4	0
Ordinances	4	0	3
Infrastructure	2	0	0
Riparian Areas	5	5	5
Stormwater	1	2	0
Habitat	3	3	0
Landfills	2	1	0
Trails & Economics	5	0	1
Monitoring	3	0	1
Integrate into Community Plan	3	0	0

Other issues of note that the public identified as possible priorities were the need for more people to be involved in preservation efforts and property acquisition/ownership.

Sources

The following references were utilized in developing this Draft:

Raccoon Creek Watershed Action Plan, 2003
Rockaway River Sustainable Watershed Plan (New Jersey), Rockaway River Watershed Cabinet, 2000
West Creek Preservation Website www.westcreek.org
OEPA Lower Cuyahoga River TMDL, 2003
West Creek Valley Management Plan (CPC), 2001
Cahill & Associates Website WWW.THCAHILL.COM
Center for Watershed Protection website WWW.CWP.ORG

SECTION II -- WEST CREEK IMPLEMENTATION STRATEGY AND PLAN

This section outlines the final Implementation Strategy and Plan to protect and restore the Watershed. Four main priorities have been identified as areas in which to focus efforts within the Watershed in the coming years. Each priority section defines the problem and why it is a priority; identifies objectives and action items to meet the objectives; and sets indicators to measure achievement of the priority goals. The Strategy and Plan also contains a five-year implementation timeline. This section will be incorporated into Sections 5, 6, and 7 of Appendix 8 of the Watershed Plan submitted by the Committee under its 319 requirements.

Priority 1: Expand Education Efforts to Reach Diverse Audiences of the Watershed

Problem: As an urban and suburban watershed, there are many different sectors that contribute to water quality conditions, which include local governments, developers, businesses, private property owners and recreational users. Secondly, there are a number of diverse audiences that include city engineers, developers, businesses, schools, park preserve users and adjacent homeowners that will require different communication tools to target how these groups can play the most effective role in local stewardship. Although the Committee's work and other community efforts have made contact with these audiences and elicited support from a number of sectors, expansion of education and communication will strengthen these initial efforts for a truly watershed-wide effort. These expanded efforts will need to be realized through new partnerships and volunteer efforts.

Objective 1: Inform local decision makers about the value and impacts of Watershed protection.

Action Items:
Provide local governments with information and tools to partner in Watershed efforts.

- Advance the efforts of the newly formed Watershed Council to actively engage the local governments.
- Present information to City engineers, Planning Commissions and Development Directors on Watershed goals through meetings and workshops.

Indicators:

- Number of local governments participating in Watershed Council meetings.
- Number of local officials participating in Watershed workshops/meetings
- Number of local officials receiving information and brochures on Watershed efforts.

Objective 2: Engage local citizens to actively participate in stewardship efforts.

Action Items:

- Expand school curriculum activities within the West Creek Preserve ("Preserve").
- Create and add new programs through volunteers to provide nature walks and educational sessions on natural resources of the Preserve.
- Direct two volunteer efforts to implement projects in the Watershed annually.

Indicators:

- Number of citizens participating in restoration/volunteer events.
- Number of schools participating in West Creek programs.
- Number of participants in new programs to promote and educate about West Creek resources.

Objective 3: Create new partnerships with local businesses and developers

Action Items
- Develop a stewardship standard that local businesses and developers can utilize in their development decisions.
- Meet with five developers and twenty new businesses to introduce the Watershed to them and build upon existing Corporate Sponsorship Program as area for additional staffing or resources.

Indicators:
- Number of developers meeting with the Committee and local governments to gain information on the Watershed.
- Number of developers participating in Committee preservation and restoration efforts.
- Number of businesses receiving information on the Watershed.

Priority 2: Sustain and Restore the West Creek Habitat

Problem: The Watershed has two habitat issues related to water quality: protection and restoration. West Creek is fortunate to have large areas within the Preserve and along the streambanks with a relative amount of existing riparian and forested areas. However, as the communities continue to be developed and redeveloped, these lands will become more threatened with elimination and/or alteration. Secondly, the watershed is highly developed, and there have been detrimental impacts to the stream's quality such as lack of vegetative cover, presence of dams and drainage tunnels and loss of wetlands and forest cover for infiltration needs. Preserving the areas that remain and restoring critical degraded areas will be essential to improving the future water quality of the stream.

Objective 1: Protect and restore riparian areas, stream channels, and floodplains and the habitats associated with them. These habitats include the vegetative, aquatic and wildlife communities associated with these landscape types.

Action Items:
- Continue acquisitions and easement activity in riparian areas by promoting benefits and incentives for property owners to participate and targeting acquisition and easement areas most beneficial to restore based upon the URS Engineering Study and Davey Resource Report.
- Work with local governments to implement and strengthen riparian setback ordinances that will reflect each individual community's watershed characteristics.
- Target areas for restoration as a result of Davey Resource & URS reports.
- Obtain funding for restoration efforts in upper reaches of the Watershed near Brooklyn Heights.
- Determine how restoration of habitat can be integrated with economic development activities and management plan concepts in three main locations: Pleasant Valley & Broadview; Snow & Broadview; and Granger Road.

- Target restoration/protection activities in headwater stream areas of the Watershed.

Indicators:
- Number of new macroinvertebrates and aquatic species in West Creek.
- Number of riparian corridor feet protected both in width and length.
- Number of local governments adopting and implementing riparian setbacks.
- Number of acquisition/easement agreements established.
- Number of miles protected under acquisition/easement agreements.
- Number of headwater stream miles protected/restored.

Objective 2: Maintain wetlands and related vegetative systems.

Action Items:
- Work with local governments to adopt wetlands setback ordinance.
- Establish a system to provide developers or communities to utilize in a "no net loss" of wetlands in the watershed.
- Utilize Cuyahoga County Remedial Action Plan's wetland information.

Indicators:
- Number of local governments adopting wetland setback ordinance.
- Quantity of wetlands retained as part of "no net loss" strategy within the Watershed.
- Number of projects and acres that restore or re-establish wetlands within the Watershed.
- Number of residents provided educational materials on wetlands

Objective 3: Reduce the spread of invasive species and re-establish diverse habitats.

Action Items:
- Conduct a comprehensive biological survey to identify problem areas with a high concentration of invasive species.
- Align these problem areas with other restoration issues as outlined by the Davey and URS reports.
- Develop one annual volunteer effort for the next five years targeted on plantings and removal of invasive species.
- Continue to monitor wildlife patterns through volunteer network.
- Develop publication/brochure on benefits of native landscaping practices to communities.

Indicators:
- Reduction in the number of acres of invasive species within the Watershed, specifically along the Creek corridor.
- Number of native plantings and acres re-established in the Watershed.
- Number of acres protected by open space preservation.
- Number of bird and other wildlife species introduced and residing in the Preserve and along Creek corridor.
- Number of residents reached on the benefits and resources for native landscaping practices.

Objective 4: Remove Creek structures to restore habitat.

Action Items:
- Remove all non-essential dams and structures within stream channel.
- Assess retrofit alternatives for maintained structures in future rehab projects.

Indicators:
- Number of structures removed
- Quantity of increased fish populations.

Priority 3: Promote Improved Land Management Implementation

Problem: The Watershed will continue to develop and redevelop in the years to come due to its older structures as well as pockets of forested land ripe for new suburban development. The Watershed is already close to 30% impervious; additional impervious cover or destruction of forest will greatly impact how West Creek handles these increases to lost natural resources. In addition, headwater streams and tributaries have been linked to the health of the main stem of a watershed. If new development eliminates or redevelopment does not restore these waterways, the Watershed will struggle to retain its resources for the community to enjoy for recreation. Finally, land management practices such as All Terrain Vehicle (ATV) use in the Preserve are further limiting the Watershed's ability to maintain its resources and will impose additional stress if not managed properly.

Objective 1: Prevent and reduce increase of runoff volume from existing and new development.

Action Items:
- Identify infiltration practice techniques for new and existing development and locate funding/partnerships for implementation.
- Develop an ordinance for communities to utilize to reduce parking lot requirements.
- Create educational workshops on alternative impervious cover techniques and the benefits.

Indicators:
- Acres of impervious cover reduced.
- Number of Best Management Practices ("BMPs") implemented.
- Number of local governments adopting parking lot reductions and BMPs in local zoning and code requirements.
- Number of detention basin retrofits complete to increase infiltration capacity.

Objective 2: Increase erosion control and land stabilization

Action Items:
- Establish an information sharing network on Phase II Stormwater progress.
- Encourage local government adoption of hillside and slope protection ordinances.

Indicators:
- Number of community Phase II stormwater plans being adopted and implemented.
- Number of streambank feet stabilized and protected from erosion.

- Number of hillside/slope protection ordinances adopted by local governments.

Objective 3: Identify and address land use policies and practices that limit restoration and protection of West Creek water resources.

Action Items:
- Develop a land development ordinance.
- Identify which land use ordinances inhibit water resource protection and restoration.

Indicators:
- Number of communities adopting land development ordinance.
- Number of communities adopting Action Plan
- Degree of reduction in stream alterations
- Number of acres not disturbed or restored during development.

Priority 4: Eliminate Illicit Discharges of Pollutants through New Infrastructure Investments

Problem: The Watershed has a series of problems arising from illicit discharges that detrimentally impact its attainment status and prevent water quality improvement. Land development, and the related infrastructure, in the Watershed largely occurred during the 1940's and 50's. Naturally, this fifty year old infrastructure has begun to age, and illicit discharges to the stream from failing sanitary sewer outfalls or other pollution sources have resulted. Additionally, outlying areas of the Watershed historically were predominantly rural and operated using home septic systems that were also installed 40 to 50 years ago. These aging systems are now also failing causing increased fecal and e coli bacterial discharges into the creek.

Objective 1: Target harmful sanitary sewer overflow pipe discharges for improvements.

Action Items:
- Assess and locate pollution sources based on sewer outflow locations.
- Identify applicable strategy to eliminate or reduce discharge.
- Pursue funding to conduct improvements.

Indicators:
- Number/percentage of illicit discharge sources eliminated.
- Number of illicit discharge overflow pipes replaced and/or improved.

Objective 2: Eliminate or reduce the discharges from failing septic systems.

Action Items:
- Utilize state funds to connect septic systems in Parma to community sewer system.
- Identify funding to eliminate or reduce septics in Seven Hills.
- Improve existing septics through education brochures and outreach to property owners for assistance in maintenance procedures.

Indicators:
- Number/percentage of septic systems connected to community sewer system.
- Reduced concentrations of fecal and e coli counts in stream.

- Number of property owners improving existing sewer systems
- Number of property owners receiving educational information on septic maintenance.

The following table assembles the action items related to each priority and sets forth timeframes and partners needed to accomplish those activities within the next five years.

Priorities and Activities	Timeframe Years 1-5	Partners
Priority One: Expand Education		
1.Advance efforts of Watershed Council	Yrs 1-2	Watershed Council, OSU Extension
2.Present info to city engineers, planning commissions and dev dir.	Yr 2	Cuyahoga County Planning Commission, Cuyahoga SWCD,[1] OSU extension, OEPA,[2] Cuyahoga RAP[3]
3.Expand school curriculum	Yr 1-5	Tri-C, Local School Districts
4.Create and add new volunteer programs	Yr 1 - 3	
5. Direct two volunteer efforts.	Yr 1-5	
6. Stewardship standard for businesses and developers.	Yr 3	Chamber of Commerce, Ohio Canal Corridor
7. Meet with five developers and twenty businesses.	Yrs 1-5	
Priority 2: Sustain and Restore Habitat		
8. Continue acquisitions and easements.	Yrs 1-5	Trust for Public Land, Cuyahoga SWCD
9. Strengthen riparian setbacks.	Yrs 1-2	Cuyahoga SWCD, NOACA[4]
10. Target areas for restoration.	Yrs 1-3	NEORSD,[5] Cuyahoga SWCD
11. Obtain funding for restoration efforts	Yrs. 1-3	NEORSD, Cuyahoga SWCD, Cuyahoga RAP
12. Integrate habitat restoration with economic development in three locations	Yrs. 4-5	Watershed Council
12. Target activities in headwater streams.	Yrs 1-2	OEPA, Cuyahoga SWCD
14. Work with govts to adopt wetland setback ordinance.	Yrs 2-3	Watershed Council
15. Establish no net loss system for wetlands with developers.	Yrs 3-4	Cuyahoga RAP, OEPA
16. Conduct biological survey.	Yr 2	Cleveland Museum of Natural History,

[1] Soil and Water Conservation District
[2] Ohio Environmental Protection Agency
[3] Remedial Action Plan
[4] Northeast Ohio Areawide Coordinating Agency
[5] Northeast Ohio Regional Sewer District

		Cleveland Metroparks, National Park Service, Local Universities
17. Conduct volunteer effort to remove invasive species.	Yr 1-5	CMNH,[6] Cleveland Metroparks, NPS,[7] The Nature Conservancy
18. Monitor wildlife patterns.	Yrs 1-5	Cleveland Metroparks
19. Develop publication on native landscaping practices.	Yr 3	Cuyahoga SWCD, Cleveland Museum of Natural History
20. Remove all non-essential dams.	Yr 3-5	NEORSD, ODNR,[8] ODOT[9]
21. Assess retrofit alternatives for structures.	Yr 5	ODNR, NEORSD
Priority 3: Promote Improved Land Management Implementation		
22. Identify infiltration practice techniques.	Yr 3	NOACA, Cuyahoga SWCD
23. Develop ordinance to reduce parking requirements.	Yr 4	NOACA, Cuyahoga SWCD, Cuyahoga RAP, Chagrin Watershed Partners, Cuyahoga County Planning Commission
24. Create workshops on alternative impervious cover techniques.	Yr 5	NOACA
25. Establish Info sharing on Phase II	Yr 1-2	Watershed Council
26. Adoption of hillside and slope protection measures.	Yr 1 -2	Cuyahoga County Planning Commission
27. Develop a land development ordinance.	Yr 3-4	Cuyahoga County Planning Commission, Cuyahoga SWCD
28. Identify land use ordinances inhibiting water resource protection.	Yr 2	
Priority 4: Eliminate Illicit Discharges of Pollutants		
29. Locate pollution sources of sewer outfalls.	Yr 1-2	NEORSD, Cuyahoga County Board of Health
30. Identify strategy to eliminate.	Yr 2-3	NEORSD
31. Pursue Funding	Yr 4	
32. Connect septic systems in Parma to community sewer system.	Yr 1-2	Cuyahoga County Board of Health
33. Identify funding to eliminate and reduce septics in Seven Hills.	Yr 2-4	Cuyahoga County Board of Health
34. Improve existing septics through education and outreach.	Yrs 1-5	Cuyahoga County Board of Health

[6] Cleveland Museum of Natural History
[7] National Park Service
[8] Ohio Department of Natural Resources
[9] Ohio Department of Transportation

Conclusion

This work effort will help the Committee and the Watershed communities target funding, identify staffing needs and maximize improvements in a timely fashion. Below are some overarching principles that are recommended to help integrate these activities and thus maximize achievement of the priorities and action items.

- Strengthen/Enhance the role of the Watershed Council to make decisions on projects and priorities. The Council should become an active decision-making body which will engage the local communities to work collectively and collaboratively in making improvements.
- Align land acquisition projects with restoration and land development priority areas. Location of land acquisition projects should impact the locations most necessary to Watershed health improvement.
- Match BMPs with outreach to developers and city officials. BMPs should be matched with specific locational needs, so that pilot project BMPs illustrate and complement outreach efforts.
- Ensure funding and implementation projects serve multiple benefits. State funding for other projects should also include watershed improvements; for instance, when ODOT invests in infrastructure, ensure the watershed's priorities and activities are embedded in those projects.

Section III -- Appendix: Implementation Resources

This list provides resources that focus on developing watershed priorities, action items and implementation strategies. These resources contain established implementation tools and procedures that can be helpful in future efforts to formulate implementation plans.

Land Development Ordinances & Practices Resources

Ohio Lake Erie Commission – Balanced Growth Ordinances. Provides extensive information and guidance on model zoning ordinances that directly relate to improving Lake Erie watershed resources.
http://www.epa.state.oh.us/oleo/modelzoningsummary.pdf

J. William Thompson and Kim Sorving, Sustainable Landscape Construction Handbook 2000.

Milwaukee River Basin Responsible Development Guide. The focus is on water quality.
http://clean-water.uwex.edu/plan/

Cahill & Associates – Nationally recognized engineering firm on sustainable solutions for urban stormwater management. They have a number of patented techniques that could be applied in the West Creek watershed. www.thcahill.com

Center for Watershed Protection. Contains numerous resources on watershed protection and that can support data resources and tools for improving watershed health.
www. cwp.org

Center for Sustainable Communities. Provides extensive information on emerging activities involving various aspects of improving communities and model zoning ordinances. http://www.sustainable.doe.gov/welcome.shtml

Habitat Restoration

Wild Ones Handbook – Provide locally based information on native landscaping practices that can easily be applied to backyards. Go to www.for-wild.org with a chapter in Columbus.

Ohio State University Extensions Service also provides information on Ohio Native Plants http://ohioline.osu.edu/b865/

Society of Ecological Restoration – a professional organization providing a baseline on restoration concepts and resources for expertise on stream and plant restoration methods. www.ser.org