

SG-134-a

Biocriteria Study and Riparian Corridor Assessment Report

***West Creek
Cuyahoga County, Ohio***

Table of Contents

Introduction.....	1
Description of Study Area.....	1
Secondary Source Review	2
Topography	4
Watersheds	4
Floodplains.....	4
Wetlands.....	5
Soils.....	6
Rare, Threatened, and Endangered Species	7
Field Surveys	8
Aquatic Ecological Survey.....	8
Aquatic Habitat.....	9
Water Chemistry.....	12
Benthic Macroinvertebrates.....	13
Fish Communities.....	14
Stream Geomorphology.....	16
Riparian Corridor Assessment	17
Survey of Plants and Plant Communities	17
Upland Plant Communities	18
Wetland Plant Communities	20
Survey of Listed and Unique Species.....	21
Rare Plants	21
Observed and Potential Impacts to West Creek.....	21
Preservation Areas	24
Potential Enhancement Areas	24
Future Studies	27

Tables

1. Soil Types Found Within the West Creek Study Area	6
2. Water Quality Analytical Laboratory and Field Results: West Creek (September, 2000).....	13
3. Stream Morphology Data for West Creek	16

Figures

1. Habitat Quality Along West Creek	10
2. Macroinvertebrate Health: Invertebrate Community Index (ICI).....	14
3. Fish Community Health: Index of Biotic Integrity (IBI)	15

Summary Maps

1. Overview of Study Area	3
2. Location of Special Study Areas.....	11
3. Plant Communities and Land Cover Types	19
4. Observed and Potential Impacts to West Creek.....	23
5. Recommended Preservation and Enhancement Areas.....	26

Appendices

A. Location of Site on Cuyahoga County Highway Map	
B. Location of Site on USGS Topographic Map	
C. Location of Site on National Wetlands Inventory (NWI) Map	
D. Location of Site on Soil Survey Map	
E. Report from Ohio Department of Natural Resources Division of Natural Areas and Preserves	
F. Qualitative Habitat Evaluation Index (QHEI) Data Sheet	
G. Data Collected by Ohio EPA for Year s 1992 and 2000	
H. Data and Report from Northeast Ohio Regional Sewer District	
I. Macroinvertebrate Taxa Lists and Index Calculations for Davey Resource Group	
J. Fish Taxa Lists and Index Calculations for Davey Resource Group	
K. Vegetative Communities and Species Lists	
L. Photographs	
M. Riparian Corridor Mapping	
N. References	
O. Davey Resource Group Personnel Profiles	

Executive Summary

Vegetation Communities

A variety of vegetation communities exist along West Creek. Most significant are the upland woods, which should be preserved. Successional woods, shrub thickets, and upland old fields are also common within the study area. A surprising number of undisturbed areas are found within this urbanized area.

Wetlands

Relatively few wetlands occur along West Creek. They are mostly small and isolated. The wetlands range from low to moderate quality and include lowland woods, scrub/shrub wetlands, and wet meadows.

Water Quality

Overall, the water quality of West Creek is indicative of degraded conditions. At most sites, biological communities and biological indices fall below standards set for WWH in this region of the state. However, several sites are at the higher end of non-attainment which strongly suggests West Creek may still be capable of supporting well-balanced aquatic communities.

Although riparian and habitat disturbances are certainly adding to the poor water quality of West Creek. This is probably not the greatest factor limiting West Creek and preventing it from achieving its WWH designation. Throughout most of its reach, West Creek supports good physical habitat. Most of the stream maintains a vegetated riparian corridor and there is ample instream habitat for fish and aquatic wildlife. Despite these good conditions, fish and macroinvertebrate communities fall below expected standards. In these circumstances, it is likely some unseen factor (chemical pollutants) that is impacting water quality and preventing biological communities from achieving their true potential.

Enhancement

The results of this study suggest that water quality is limited by a combination of factors. Point and non-point sources of pollution, failing septic systems, riparian disturbances, and instream modifications all act in concert to lower the quality of water of West Creek. Efforts to improve these conditions should focus on activities within the entire watershed, identification of pollution sources, and restoration of degraded physical conditions.

Efforts that address both instream habitat and watershed characteristics could potentially improve the water quality of West Creek, establish a balanced ecosystem, and restore this stream to full attainment of Warmwater Habitat criteria.

Preservation

The West Creek watershed is largely developed and many of its smaller tributaries have been culverted, deforested, or channelized. Every effort should be made to preserve all remaining natural areas within the watershed and especially along the riparian corridor of West Creek and its associated tributaries. The benefits of these natural areas are well documented and have profound benefits for protecting water quality.