

APPENDIX H

**ADDITIONAL 319 UPDATE
INFORMATION**

APPENDIX H.1

PUBLIC MEETING EXHIBITS

PUBLIC MEETING 1



HAMILTON COUNTY DRAINAGE BOARD, CITY OF CARMEL and the TOWN of WESTFIELD

SIGN-IN SHEET FOR COOL CREEK WATERSHED STUDY

Location: Cool Creek Nature Center Auditorium, 2000 E. 151st Street, Carmel, In

Consultant: Clark-Dietz, Inc. **Presenters:** Hans Peterson, P.E.

Date: 4/13/2005 **Start Time:** 7:00 PM **End Time:**

	FIRST NAME (Please print)	LAST NAME (Please print)	ADDRESS (Please print)	PHONE #	EMAIL (Please print)
1.	CARRIE	COUGHTON	TOWN OF WESTFIELD	816-5577	ccough@westfieldin.org
2.	Ted	Engelbrecht	502 Wind Skip Circle Westfield	879-5095	ted@westfieldin.com
3.	Paul Stacey	Woodward	9311 E. 221 st St. Carmel	989-8135	
4.	JammyLamb	Rulon	9990 E 256 th Cicero	984-3902	
5.	Sarah	Baxter	419 N East St. Indy 46002	317-460-7245	sbaxter@williams-cmc.com
6.	KURT	WANNINGER	TOWN OF WESTFIELD	846-5452	
7.	Amanda	Foley	City of Carmel	571-2441	
8.	Bentley	Carstensen	10826 E 166 th St Noblesville	770-9075	
9.	Eric	Carstensen	10826 E 166 th St Noblesville	770-9075	
10.	JIC	Meard	15466 Oak Rd Carmel	846-6257	MICHAEL@meard.com
11.	Bob	Thompson			
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					

PUBLIC MEETING SUMMARY

Project: Cool Creek Watershed Management Plan
Date: April 13, 2005
Time: 7:00 p.m.
Location: Cool Creek Nature Center Auditorium
2000 E. 151st Street, Carmel, In
Staff Attendees: Bob Thompson – Hamilton County
Hans Peterson – Clark Dietz
Sam Robertson – Clark Dietz

A public information meeting was held to introduce the update of the Cool Creek Watershed Management Plan. Approximately 13 people attended the meeting. A list of attendees who signed in is attached to this meeting summary. The following is a summary of the meeting and follow up question and answer period.

Bob Thompson kicked off the meeting by introducing the project and the consultant preparing the management plan, Clark Dietz.

Hans Peterson gave a presentation covering the Cool Creek Watershed Study including summary of the findings, alternatives, and recommended solutions. Following the presentation the floor was opened to questions and/or comments from the public. The following were the general questions and answers:

- Is Cool Creek an impaired Stream?
Yes, it is on the latest IDEM 303(d) list of impaired streams, with E. coli being the parameter of concern.
- What contaminants were found during sampling?
Somewhat high levels of nutrients (nitrogen and phosphorus) were found for the spring storm that was sampled. Potential sources include residential and/or agricultural fertilizers. Higher levels were found in the upper watershed sampling location, which may point to agricultural sources. E. coli was also found to be above full body contact limits (235 cfu/100 ml).
- Are the contaminants due to Golf Courses? How many golf courses are there in the watershed?
High levels of containments were found upstream of the only golf course in the watershed.
- Is there funding set aside to clean up damage along the stream due to ice storms?
Currently there is no funding set aside for this type of damage, unless the damage was in a stream reach that is on a regulated drain maintenance fund.

Meeting Minutes

Cool Creek Watershed Management Plan

4/13/05

Page 2

- Is Cool Creek on a County regulated maintenance fund?
The main channel of Cool Creek is not currently on a regulated drain maintenance fund. Some of the smaller tributary drains may be on a fund. It was noted that residents can petition the County to have a drain place on a maintenance fund.
- Where is money coming from for the project?
Funding for projects will be a challenge and will have to be a combination of funds. Grants and regulated drain funds were mentioned. The current upgrade of the Cool Creek Plan is being funded under a Section 319 Grant administered by IDEM. It may be feasible to obtain Section 319 grants for some implementation projects as well. Stormwater fees are also being considered by many communities in Indiana, particularly as a result of increased emphasis on stormwater quality (Phase II NPDES requirements). The County is also looking to coordinate with developers to help share costs of stormwater BMPs.
- How Many watersheds are in Hamilton County?
It was estimated that are perhaps a dozen watersheds the size of Cool Creek in Hamilton County. Watersheds can be divided into sub-watersheds, so it is difficult to identify a specific number.
- Will willow trees take over the channel eventually if not controlled?
Recommendations for stream bank stabilization will require selective plant species to avoid the problem that can occur when willow trees become invasive.
- Invasive species such as Honey Suckle are very damaging. Is there any chance for an “adopt a stream” program to help remove some of these species along stream reaches? *This was generally thought to be a good idea and perhaps the County could work with local citizens in this effort.*
- What is being done to address the beaver problem?
If the beaver problem is located in a regulated drain, Hamilton County has a trapper under contract to remove the beavers.
- How closely are you working with the Soil and Water Conservation?
Hamilton County is working closely with the SWCD which is an organization of Hamilton County. SWDC was the organization responsible for the pilot stream bank stabilization project completed in Cool Creek Park.
- Is INDOT working with IDNR on the S.R. 31 improvements to included some type of wetland plants instead of the usually grass plantings?
INDOT is now a Phase II stormwater permittee and as such, they are now required to consider stormwater quality impacts in the project planning and construction.

Meeting Minutes

Cool Creek Watershed Management Plan

4/13/05

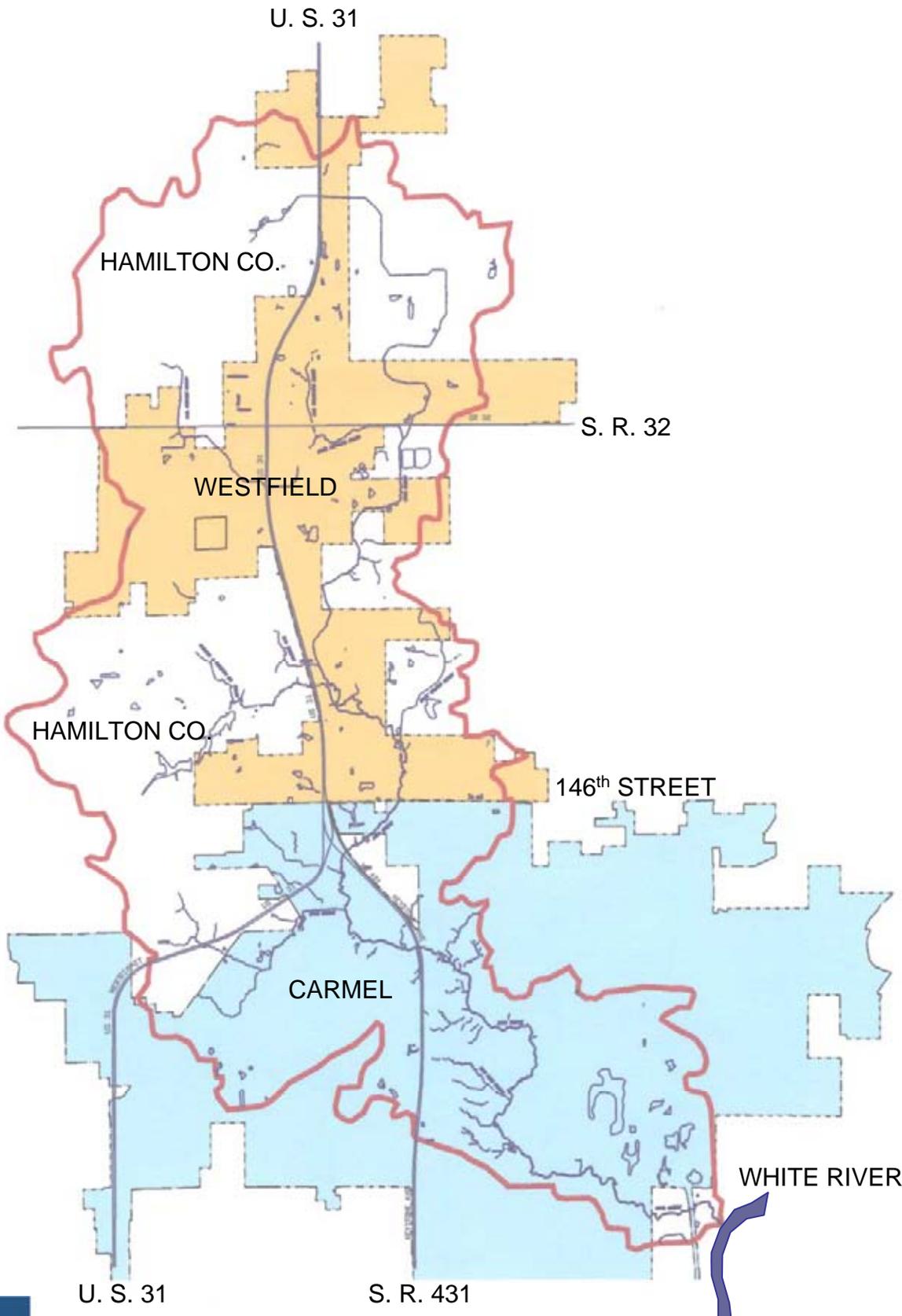
Page 3

- Is there a way wetlands can be used as retention?
Yes the county is currently looking at regional detention ponds that act as retention and have wetland incorporated.
- Do lakes such as Morris Reservoir improve water quality and has there been testing upstream and downstream of reservoirs to determine this?
In general lakes improve water quality by providing quiescent settling conditions. The Morse Reservoir may have been recently sampled because it is a reservoir used to supply source water for drinking water. It was mentioned that Dr. Tedesco of IUPUI Center for Earth and Environmental Science is involved in a water quality research partnership with US Filter Indianapolis Water to evaluate nutrients in three reservoirs (including Morse Reservoir).
- Are there old wetland areas that have been drained for agricultural use that can be turned back into wetlands?
Recently several farm field drains (in the northern part of the County) have failed and the fields have reverted into wetlands.

Two stations with watershed maps were setup and occupied by project personnel to discuss individual problems, concerns, or questions. Several individual concerns were recorded. Of particular note was a suggestion by a citizen (Ted Engelbrecht) identifying a the southeast corner of 161st Street and Westfield Boulevard (north of Cool Creek Park). This site is apparently owned by the Town of Westfield and could be a good location for a constructed wetland. He also mentioned it may be possible to locate BMPs at the Washington Elementary School west of Grassy Branch Road.

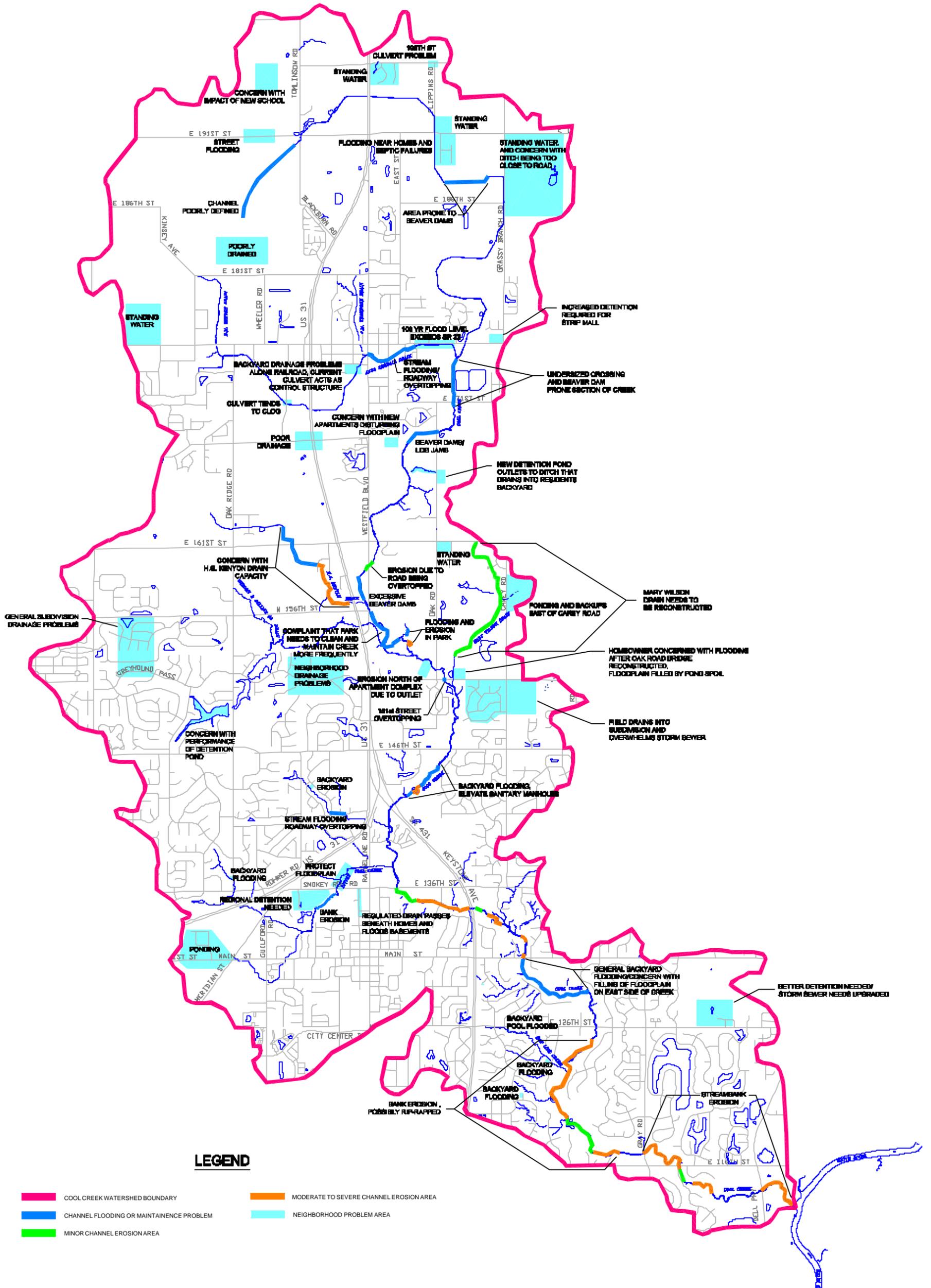
Cool Creek Watershed





Clark Dietz

COOL CREEK WATERSHED



LEGEND

- COOL CREEK WATERSHED BOUNDARY
- CHANNEL FLOODING OR MAINTENANCE PROBLEM
- MINOR CHANNEL EROSION AREA
- MODERATE TO SEVERE CHANNEL EROSION AREA
- NEIGHBORHOOD PROBLEM AREA



NOT TO SCALE

COOL CREEK WATERSHED MANAGEMENT PLAN
FIGURE 3-1
PROBLEM AREA MAP

Cool Creek Watershed Management Plan



City of Carmel



Town of Westfield



Hamilton County



Public Meeting
Section 319 Grant
April 13, 2005



Agenda

- Cool Creek Watershed Overview
- Previous Cool Creek Planning Efforts
- Public Input
 - Questions
 - Specific Problem Areas
 - Overall Watershed Concerns
 - Priorities
- Closing / Follow Up




What is a Watershed?

A watershed is the area of land that drains to a particular point along a stream

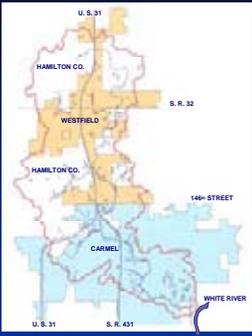


Water for Watershed Protection



Cool Creek Watershed Overview

- Drainage Area ~ 23.7 mi.²
- From 199th Street to White River, near 116th Street
- Large Portions of Westfield and Carmel and parts of unincorporated Hamilton County
- Lower watershed mostly developed, upper watershed experiencing rapid growth



The map shows the watershed boundary in orange, covering parts of Hamilton County, Westfield, and Carmel. Key streets like U.S. 31, S.R. 32, 146th Street, and White River are labeled.

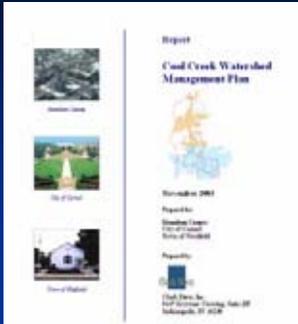
Cool Creek Watershed Overview

- Approximately 15 miles of watercourse
- Approximately 50 to 60 percent urbanized
- Impervious area estimate:
 - Urbanized Areas 40 – 50 %
 - Overall watershed 20 – 30 %



An aerial photograph of the watershed area with a red outline indicating the boundary.

Previous Cool Creek Planning Efforts



Purpose of Previous Planning Efforts (2003 Plan)

- Address Existing Stormwater Flooding Problems
- Prevent Future Problems as the Watershed Continues to Develop
- Compliance with New Federal Regulations Governing Stormwater Quality



Scope of the Previous Study

- Inventory and Problem Identification
- Problem Analysis
- Solution Development
- Recommendations

Inventory & Problem Identification

Map & Plans

- GIS
- USGS
- National Wetland Inventory
- Flood Insurance Rate
- Zoning Maps
- Aerial Photographs



<http://www.co.hamilton.in.us/gis/start.html>

Inventory & Problem Identification

Previous Reports & Studies

- IDNR Memorandum – Grassy Branch
- Hydraulic Report for Village Farms Wilfong
- Countryside Overall System Drainage Report
- Soil Survey of Hamilton County, Indiana
- FEMA Flood Insurance Study
- US 31 Improvement Project documents

Inventory & Problem Identification

Ordinances & Standards

- Consistent Stormwater Management Controls.
- Detention Facility Requirements.
- Downstream Channel Protection.
- Water Quality Enhancement.
- Prohibition on Development in Floodplains.

Inventory & Problem Identification

Public Input

- Public Meetings
- Developer Input
- Interviews with:
 - Local Staff
 - Citizens



Inventory & Problem Identification

Problem Area Map

See Map

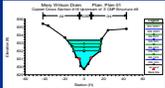
Problem Analysis

- Water Quantity Evaluation
 - Hydrologic/hydraulic modeling
 - Impacts of future development
- Water Quality Evaluation
 - Sampling
 - Existing conditions
 - Policies impacting future conditions

Problem Analysis

Hydrologic/Hydraulic Analysis

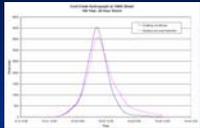
- Assess the volume and rate of runoff for various storm events
- Evaluate existing stormwater conveyance and storage facilities
- Evaluate stormwater runoff impacts from future development
- Determine appropriate control measures

Problem Analysis

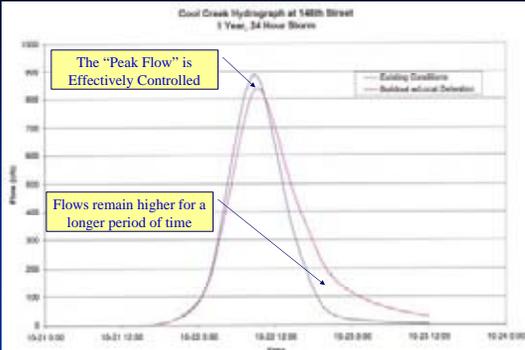
Effects of Urbanization

- Higher peak flows as a result of urbanization
- County detention policy is effective in controlling peak flows
- Longer flow durations
- More frequent "bank-full" conditions tend to exacerbate erosion




Problem Analysis

Effects of Urbanization



Problem Analysis

Hydraulic Evaluation

Conveyance Problems in the Upper Reaches of Cool Creek and its Immediate Tributaries

Examples



*Inadequate bridge –
171st St. over Cool
Creek*



*Culverts filled with
sediment - Walter
Street and Walter Court*



*Inadequate culverts –
Camel Drive over Hot
Lick Creek*

Problem Analysis

Stream Channel Evaluation



*Severe erosion along lower
reach of Cool Creek*



*Floodplain encroachments constrict flow
and increases downstream erosion*

Stream Information
Compiled on Inventory Maps

Problem Analysis

Water Quality Evaluation

Entailed:

- Review of the Riparian Corridor
- Assessment of Floodplain Development
- Water Quality Sampling



Problem Analysis

Riparian Corridor

Protects Water Quality and Preserves Stream's Natural Characteristics



*Forested Riparian Buffer along
Cool Creek East of S. R. 431*



*No Riparian Buffer – Cool Creek
South of 191st Street*

Problem Analysis

Floodplain Development

Prohibit development in floodplain to help preserve existing buffers and natural flood storage



Problem Analysis

Water Quality Sampling Locations





- 186th Street
- 146th Street
- 116th Street

Solution Development

Land Use Planning Recommendations

- **Detention Requirements**
Improve control of smaller storms (first flush)
- **Stream Buffer Ordinance**
Grass filter strips, preservation
- **Floodplain Protection**
Prohibit fill in the floodplain
- **Other Best Management Practices**
Improve water quality

Recommendations

Cost of Improvements

Stream Flooding/ Roadway Overtopping Solutions -	\$2,720,000
Neighborhood Solutions -	\$100,000
Streambank Erosion Solutions -	\$570,000
Regional Detention Solutions -	\$5,100,000
Total of All Solutions -	\$8,490,000

Recommendations

Implementation

- Coordinate water quality recommendations with NPDES / Rule 13 program
- Implement bridge/culvert improvements projects in conjunction with planned roadway projects
- Implement neighborhood projects as local funding allows
- Coordinate streambank stabilization projects with local property owners
- Coordinate regional detention solutions with planned development projects
- *Obtain additional input on improvements and funding, priorities (this project – Section 319)*



Problem Analysis

Water Quality Sampling Conclusions

- Pollutant constituents and concentrations in Cool Creek – generally comparable to other urban streams across country
- Nutrients levels somewhat high, possibly from excess fertilizer
- Bacteria levels exceed standards for recreational contact during wet weather (*problem is common to nearly all urban watersheds*)
- Stormwater Best Management Practices will help improve water quality

Solution Development

- Stream Flooding/Road Overtopping Solutions
- Neighborhood Problem Solutions
- Stream Bank Erosion Solutions
- Regional Stormwater Detention
- Future Land Use & Planning Recommendations

Solution Development

Streambank Flooding/Road Topping Solutions

- Replace 171st Street Bridge and Regrade Roadway
- Regrade Roadway at 151st Street bridge
- Replace Gurley Street bridge (Anna Kendall Drain)
- Replace Cherry Street bridge (Anna Kendall Drain)



Solution Development

Streambank Flooding/Road Topping Solutions

- Replace SR 32 Culvert (J.M. Thompson Drain)
- Replace Culvert Downstream of US 31 (Highway Run)
- Add Culvert to US 31 (Highway Run)
- Replace Walter Street and Walter Court Culverts (Highway Run)
- Replace Private Drive Culvert between Walter Street and Walter Court (Highway Run)
- Replace Thornberry Drive Culvert (Highway Run)



Solution Development

Neighborhood Problem Solutions

- Replace Carmel Drive Culvert (Hot Lick Creek)



Solution Development

Streambank Erosion Solutions

Restoration Projects at:

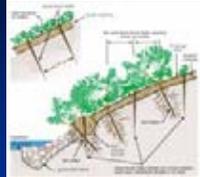
- Highway Run –
 - Downstream of Stonehedge Drive
- H.G. Kenyon Drain –
 - Downstream of Rolling Court
- Cool Creek –
 - Upstream of confluence with the White River,
 - Downstream of Gray Road (at bend),
 - Upstream and downstream of Hot Lick Creek
 - Upstream of 131st Street (Main Street) and
 - Upstream of Keystone Avenue



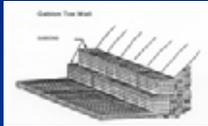
Streambank Stabilization Techniques



Riprap and Live Stakes (Joint Plantings)
Source: Federal Interagency Stream Restoration Working Group, 1998



Brushmattress Technique (Source: USDA-NRCS 1996)

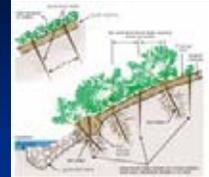


Source: Chattanooga Public Works Department

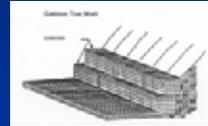
Streambank Stabilization Techniques



Riprap and Live Stakes (Joint Plantings)
Source: Federal Interagency Stream Restoration Working Group, 1998



Brushmattress Technique (Source: USDA-NRCS 1996)



Source: Chattanooga Public Works Department

Cool Creek Demonstration Project (Hamilton County SWCD)



Cool Creek Demonstration Project (Hamilton County SWCD)



Solution Development

Regional Stormwater Detention

- Two (2) off-line Regional Detention Basins to Control the Magnitude of Stormwater Flows and Reduce downstream channel erosion
 - Immediately Downstream of 171st Street
 - West of Grassy Branch Road
- Retrofit existing regional on-line detention provided by RR embankment on Anna Kendall Drain

Solution Development

Regional Stormwater Detention



Press Release

Contact: Robert Thompson, RIA
Phone: (317) 776-8495

FOR IMMEDIATE RELEASE

HAMILTON COUNTY PARKS TO HOST COOL CREEK WATERSHED PUBLIC MEETING

The Hamilton County Surveyor's Office invites the public to participate in a meeting to discuss stormwater management issues in the Cool Creek Watershed. On April 13th a public meeting will be held at 7 PM in the Cool Creek Nature Center Auditorium, 2000 E. 151st Street in Carmel.

On January 1st, the Surveyor's Office obtained a Section 319 Watershed grant to work with Clark Dietz, a local environmental firm, to identify stormwater pollution reduction strategies in the Cool Creek Watershed. To help us develop the watershed management plan, we would like feedback from the community on key issues identified in the original Cool Creek Study plan as well as additional concerns that may not have been identified. Key areas of interest include:

- Existing stormwater problems in the watershed (Stream bank erosion, flooding, etc.)
- The effect of urbanization on water quality (Cool Creek is on the State's list of impaired water bodies)
- Best Management Practices (ways to reduce stormwater pollution)

Hamilton County believe that the residents of the Cool Creek Watershed play a critical role in improving water quality in the watershed and that public input is vital in developing a watershed management plan. For further information contact:

Robert Thompson, Program Manager, Hamilton County Surveyors Office
E-mail: RCT@co.hamilton.in.us
Telephone: (317)776-8495
Fax: (317)776-9628

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- New [Online Service](#) available! [Report-a-Polluter](#) (4/7/2005)
- [Cool Creek Watershed Public Meeting](#) (3/29/2005)
- [New Food Regulations](#) Available for 2004-5 (12/27/2004)
- [Surveyor's Office - New Form Requirements](#) (12/27/2004)
- [2004 Election Results](#) (11/3/2004)

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Meetings and Events: 

Meetings & Events:

- [Hamilton County Board of Zoning Appeals Meeting \(4/19/2005\)](#)
- [Community Corrections Board Meeting \(4/21/2005\)](#)
- [Commissioner's Meeting \(4/25/2005\)](#)
- [Drainage Board Meeting \(4/25/2005\)](#)
- [Solid Waste Board \(4/25/2005\)](#)

[Parks & Recreation Calendar](#)

April 2005						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
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Westfield Public Works Department

2700 E. 47th Street
Westfield, IN 46074
931-487-4100

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- Westfield

HAMILTON COUNTY SURVEYOR'S OFFICE

One Hamilton County Square, 2nd Floor
Indianapolis, Indiana 46202
Phone: (317) 776-8455
Fax: (317) 776-9628

Press Release

CONTACT: Robert Thompson, RLA FOR IMMEDIATE RELEASE
PHONE: (317) 776-8455

HAMILTON COUNTY BARRKS TO HOST COOL CREEK WATERSHED PUBLIC MEETING

The Hamilton County Surveyor's Office invites the public to participate in a meeting to discuss stormwater management issues in the Cool Creek Watershed. On April 15th a public meeting will be held at 1 PM in the Cool Creek Nature Center Auditorium, 2000 E. 151st Street in Carmel, IN.

On January 16th, the Surveyor's Office obtained a Section 319 Watershed grant to work with Clark Dietz, a local environmental firm, to identify stormwater pollution reduction strategies in the Cool Creek Watershed. To help us develop the watershed management plan, we would like feedback from the community on key issues identified in the original Cool Creek Study plan as well as additional concerns that may not have been identified. Key areas of interest include:

- Existing stormwater problems in the watershed (obvious bank erosion, flooding, etc.)
- The effect of urbanization on water quality (Cool Creek is on the State's list of impaired water bodies)
- Best Management Practices (ways to reduce stormwater pollution)

Hamilton County believes that the residents of the Cool Creek Watershed, which includes the Carmel, Westfield and Unincorporated communities of Hamilton County, play a critical role in improving water quality in the watershed and that public input is vital in developing a watershed management plan. For further information contact:



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 Office of Water Quality

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Return to IDEM

NEW! - Section 205(j) Solicitation for Proposals for FFY 2005 - **NEW!**

NEW! - Hamilton County Parks to host Cool Creek watershed public meeting. - **NEW!**

The Watershed Management Section administers the Clean Water Act Section 104(b)(3), 205(j), and 319 programs which provide federal funding for watershed planning, water quality management planning, NDEP

PUBLIC MEETING 2

PUBLIC MEETING SUMMARY

Project: Cool Creek Watershed Management Plan
Date: December 14th, 2005
Time: 7:00 a.m.
Location: Cool Creek Nature Center
Attendees: Bob Thompson – Hamilton County Surveyor’s Office
Hans Peterson – Clark Dietz
Sam Robertson – Clark Dietz
Sky Schelle – IDEM
Amanda Foley – City of Carmel
Amanda Smith – Hamilton County Parks & Recreation Dept.
Carrie Cason – Town of Westfield

On December 14th, 2005, a public meeting was held at the Cool Creek Park Nature Center to present to the public the final Cool Creek Watershed Management Plan. A list of the attendees is attached to this summary. Attendees included project stakeholders only. No public participants came to the meeting and the presentation was not given since the project stakeholders had previously seen the presentation materials. Mr. Thompson would have the presentation put on the County’s website and also see if Carmel and Westfield could do the same.

Cool Creek Watershed Management Plan

Public Meeting
Cool Creek Nature Center
December 14, 2005



Agenda

- Cool Creek Watershed Overview
- IDEM Section 319 Grant Requirements
- Recent Watershed Activities
- Section 319 Updates to the Cool Creek Plan
- Summary, What's Next
- Input/Feedback/Questions



Public Meeting
Cool Creek Watershed Management Plan Update
December 14, 2005

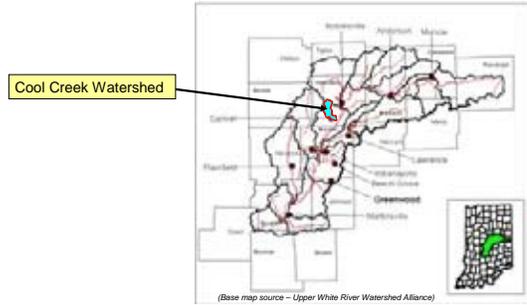
Project Overview

- Section 319 Grant
 - Section 319(h) of Clean Water Act provides funding for projects that reduce nonpoint source water pollution
 - Cool Creek 319 Grant - January 1, 2005 to December 31, 2005
- Grant Contract Tasks
 - Produce a Watershed Management Plan (Update to November 2003 Plan)
 - Stakeholder Committee Meetings (4)
 - Interviews (Hamilton County, Westfield, Carmel)
 - Public Meetings (2)
 - Newspaper Articles (4)



Public Meeting
Cool Creek Watershed Management Plan Update
December 14, 2005

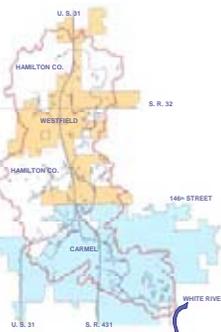
Cool Creek Watershed



Public Meeting
Cool Creek Watershed Management Plan Update
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Public Meeting
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December 14, 2005

Cool Creek Watershed

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Public Meeting
Cool Creek Watershed Management Plan Update
December 14, 2005

Recent Watershed Activities



April 2005



September 2005

Streambank Restoration – Cool Creek Park
by Hamilton County SWCD



Public Meeting
Cool Creek Watershed Management Plan Update
December 14, 2005

Recent Watershed Activities



April 2005



September 2005

Streambank Restoration – Cool Creek Park
by Hamilton County SWCD



Public Meeting
Cool Creek Watershed Management Plan Update
December 14, 2005

Recent Watershed Activities



April 2005



September 2005

Streambank Restoration – Cool Creek Park
by Hamilton County SWCD



Public Meeting
Cool Creek Watershed Management Plan Update
December 14, 2005

Recent Watershed Activities



April 2005



September 2005

Streambank Restoration – Cool Creek Park
by Hamilton County SWCD



Public Meeting
Cool Creek Watershed Management Plan Update
December 14, 2005

Recent Watershed Activities



- Removal of Invasive Species in Cool Creek Park
 - Brush Honeysuckle
 - Garlic Mustard Plant
- On-Going Program by Hamilton County Parks and Recreation Department



Public Meeting
Cool Creek Watershed Management Plan Update
December 14, 2005

Recent Watershed Activities



PERIOD	EMIS/TYPE	COUNTY	PERMIT	DEPARTMENT	AGENCY	AGENCY	RECEIVING	REASON	ACTIVITY
10/1/05	WATER	HAMILTON	WATER	WATER	WATER	WATER	WATER	WATER	WATER



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Recent Watershed Activities



Cool Creek polluted
 By Bob Newman | Editor
WESTFIELD — Runwater mixed with stop residue apparently created a toxic substance that killed fish in Cool Creek Wednesday.
 About 70 to 100 fish were killed, and the water for about five miles was discolored. According to Barry Sneed, a public information officer at the Indiana Department of Natural Resources, water laden with ammonium nitrate flowed into a storm sewer outlet at South Elevator, located at 1315 State Road 32 East in Westfield. Workers from that agency were called to the scene after local officials found the source of the spill. They were still investigating Thursday.
 "At this time, we don't believe there are any continuing effects," Sneed said Thursday afternoon.
 An area resident called the Town of Westfield's public works department complaining that a creek had turned black and smelled like petroleum, said Kurt Warringer, operations manager for the Department of Public Works.
 The public works department located the source of the problem and called the state agency.



Fish kill toll grows
 By Bob Newman | Editor
WESTFIELD — The number of fish killed Wednesday after Westfield residents dumped black water into a storm sewer outlet increased to more than 100 fish, according to a state environmental official.
 John Stone of the Indiana Department of Natural Resources (IDNR) said Monday afternoon that he counted 70 through 100 dead fish, including bluegill, white bass, yellow perch, muskellunge, largemouth bass and common carp in the creek.
 "A significant number of fish died and the toll could rise, depending on the weather," Stone said. "The water is becoming more turbid, and it's difficult to see the fish. It's important to continue to monitor the water quality and to report any additional fish deaths to the public works department."
 "I hope the rain stops so the water can settle and the fish can breathe," Stone said. "I hope the rain stops so the water can settle and the fish can breathe."
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Cool Creek Watershed Management Plan Updates

- Adding New Chapter 9.0 to address Section 319 requirements
- Keeps the integrity/history of the original 2003 document
- Final report will be available on Hamilton County Surveyor's website (hard copies will also be available)



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Chapter 9.0 Contents

- 9.1 Project Introduction
- 9.2 Watershed Description
- 9.3 **Water Quality Evaluation and Benchmarks**
- 9.4 **Problem Statements and Goals**
- 9.5 Critical Area Identification
- 9.6 **Implementation Measures**
- 9.6 Evaluating, Monitoring, and Adapting the Plan

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Water Quality Benchmarks



- Utilized sampling data from 2003 Cool Creek Plan
 - 2002
- IDEM Assessment Branch Data
 - 1992, 1996, and 2001
- Volunteer Monitoring (Hoosier River Watch)
 - 2001, 2002, 2004, 2005

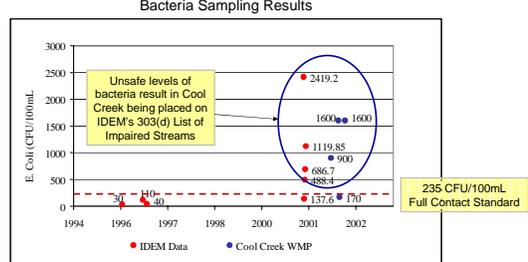
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Water Quality Benchmarks (2003 Cool Creek Plan)

Parameter	Typical Max Reported Value Required in Watershed	100m Stream Crossing				500m Stream Crossing				1000m Stream Crossing			
		06/2002	06/2003	02/2004	04/2004	06/2002	06/2003	02/2004	04/2004	06/2002	06/2003	02/2004	04/2004
BOD	mg/L	10	10	10	10	10	10	10	10	10	10	10	10
DO	mg/L	5	5	5	5	5	5	5	5	5	5	5	5
Temp	°C	20	20	20	20	20	20	20	20	20	20	20	20
TSS	mg/L	100	100	100	100	100	100	100	100	100	100	100	100
Ammonia	mg/L	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Nitrate	mg/L	10	10	10	10	10	10	10	10	10	10	10	10
Phosphate	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chlorophyll a	µg/L	100	100	100	100	100	100	100	100	100	100	100	100
Salinity	mg/L	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hardness	mg/L	100	100	100	100	100	100	100	100	100	100	100	100
Calcium	mg/L	100	100	100	100	100	100	100	100	100	100	100	100
Magnesium	mg/L	100	100	100	100	100	100	100	100	100	100	100	100
Lead	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Copper	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nickel	mg/L	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Zinc	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05

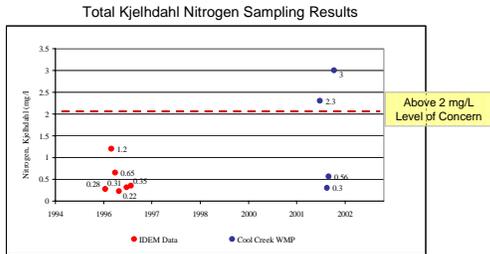
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Water Quality Benchmarks (IDEM Assessment Branch Data)



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Water Quality Benchmarks (IDEM Assessment Branch Data)



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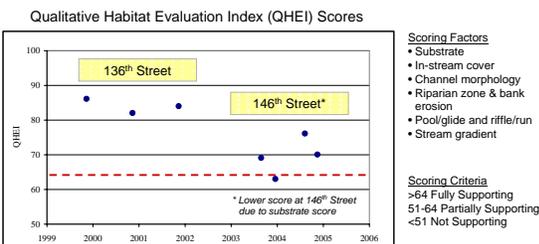
Water Quality Benchmarks (IDEM Assessment Branch Data)

- Benthic aquatic macroinvertebrate Index of Biotic Integrity (mBI)
- Biological survey designed to quantify the quality of benthic aquatic macroinvertebrate communities
 - Sampling conducted in 1992
 - Cool Creek at 116th Street
- Interpretation
 - Fully Supporting: mBI ≥ 4
 - Partially Supporting: mBI < 4 and ≥ 2
 - Not Supporting: mBI < 2
- Cool Creek Score: 4 (Fully Supporting)



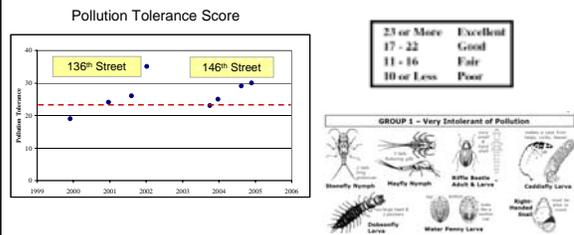
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Water Quality Benchmarks (Volunteer Monitoring – Habitat Data)



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Water Quality Benchmarks (Volunteer Monitoring – Biological Data)



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Problem Statements and Goals

- Key Problems
 - Streambank Erosion
 - Sedimentation
 - Elevated nutrients in wet weather runoff
 - Bacteria (now listed as non-supportive for primary contact on 305(b) report, on 303(d) list for E.Coli)
 - Flooding problems
 - Loss of Ecological Diversity in Riparian Areas

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Goals and Implementation Measures

1. Develop comprehensive erosion and sediment control program in Carmel and Westfield (ordinance, plan review, inspection, enforcement)
 - All three entities (Hamilton Co., Carmel, Westfield) currently developing programs, will be responsible on January 1, 2006
2. Implement the Regional Stormwater Quality Facilities identified in the plan to reduce downstream channel erosion and reduce non-point source pollutant levels (bacteria, sediment, nutrients, metals)
 - Two sites currently under design
 - Oak Manor
 - 161st Street and Westfield Blvd.

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Goals and Implementation Measures

3. Provide public education and outreach to residents and business in Cool Creek Watershed to promote good watershed behavior (disposal of pet waste, proper lawn chemical use, illicit discharges, etc.)
 - All three entities are already doing as part of Rule 13
 - <http://www.co.hamilton.in.us/services.asp?id=3921&entity=2200>
 - <http://www.ci.carmel.in.us/government/deptcommunityrelations3.html>
 - <http://www.westfield.in.gov/egov/apps/directory/list.exe?path=divs&action=47&DD=8-47>
4. Repair/restore severe channel erosion in the lower reaches of Cool Creek to improve aquatic habitat, reduce sedimentation, and protect public and private facilities
 - Demonstration project in Cool Creek Park, target additional high priority areas, promote SWCD cost share programs



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Goals and Implementation Measures

5. Reduce impact of urbanization by modifying stormwater detention policy to control smaller storms and treat the first flush of runoff
 - New design standards required January 1, 2006
6. Continue Hamilton County Parks and Recreation Department water quality and ecological enhancement programs
 - Service learning projects, invasive species removal, water quality sampling, stream clean ups, etc.
7. Provide sanitary sewer service to the limited neighborhood areas in Westfield still on septic systems
 - Five neighborhoods in Westfield, have plans to sewer areas as funds allow



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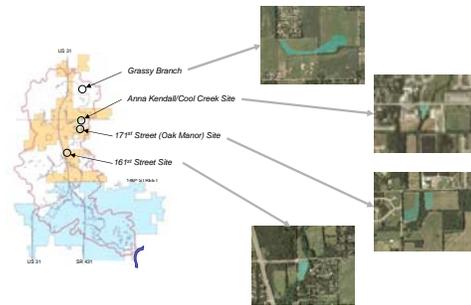
Goals and Implementation Measures

8. Implement consistent floodplain development restrictions by adopting necessary legal authority
 - County has restrictive floodplain ordinance, Carmel and Westfield considering restrictions
9. Construct the bridge and culvert conveyance improvement projects to reduce flood hazards
 - As local funds allow, complete in conjunction with roadway projects
10. Improve riparian habitat in upper watershed by establishing stream buffers as areas are developed adjacent to Cool Creek
 - Work with developers in planning stages to incorporate stream buffers into site development plans



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Regional Water Quality Facilities



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Regional Water Quality Facilities

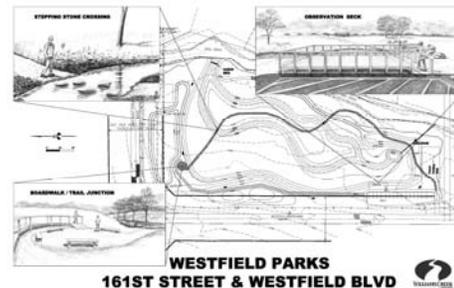


Oak Manor
Stormwater Quality
Facility



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Regional Water Quality Facilities



WESTFIELD PARKS
161ST STREET & WESTFIELD BLVD



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High Priority Streambank Erosion Areas



Cool Creek upstream of confluence with White River



Cool Creek upstream and downstream Hot Lick Creek



Cool Creek upstream of 131st Street



Cool Creek downstream of Gray Road



Cool Creek upstream of Keystone Avenue



H.G. Kenyon Drain downstream of Rolling Court



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Summary

Mission Statement

Preserve and improve the overall health of the Cool Creek watershed by addressing existing stormwater quantity and quality concerns and by proactively guiding future stormwater management practices and decisions.

- What's Next?
 - Begin Implementing Goals and Action Plans
 - On-Going Stakeholder Involvement
 - Explore Funding Opportunities
 - Continue Sampling and Field Observations
 - Monitor Effectiveness of Proposed Measures
 - Re-visit, Update Plan as Needed



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Input, Feedback, Questions?



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News Briefs

Posted: 12/14/05 - 11:23:20 am EST

Meeting on Cool Creek watershed set

The Hamilton County Surveyor's Office invites the public to attend a meeting to discuss findings and provide additional feedback on the Cool Creek watershed management plan at 7 p.m. tonight in the Cool Creek Nature Center Auditorium, 2000 E. 151st Street in Westfield.

Topics of discussion include existing stormwater problems in the watershed, the effect of urbanization on water quality, ways to reduce stormwater pollution and reduction of invasive species.

For further information, contact Program Manager Robert Thompson at the Hamilton County Surveyor's Office,

776-8495.

New church to offer gift wrapping

DeerCreek Community Church, a new church in Fishers, is partnering with three Fishers Cynthia's Hallmark Shops to offer free gift wrapping of purchases made at Cynthia's from 11 a.m. to 2 p.m. Saturday.

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