VFC Index - Watershed (Plan)

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IDEM Document Type: Plan

Document Date: 7/1/2003

Security Group: Public

Project Name: Pitcher Lake WMP

Plan Type: Watershed Management Plan

HUC Code: 05120113 Lower Wabash

Sponsor: Pitcher Lake PPL and Posey County SWCD

Contract #: 00-221

County: Posey

Cross Reference ID: 15855560; 15855558

Comments:

Additional WMP Information

Checklist: 2003 Checklist

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Fiscal Year: 2001

IDEM Approval Date: 7/1/2003

EPA Approval Date:

Project Manager: Amy Henninger

1.0 INTRODUCTION

This Watershed Management Plan addresses the conditions determined by the preliminary assessment of the Pitcher Lake / Whipple Ditch Watershed carried out by the Pitcher Lake Steering Committee. It also provides a roadmap for determining additional watershed concerns and educating all stakeholders on the importance of protecting and improving water quality in the watershed. It is anticipated that this plan will be updated annually to reflect changes and progress made in conjunction with the implementation phase of the project.

1.1 Watershed Overview

The Pitcher Lake / Whipple Ditch watershed consists of 11,851.5 acres in Posey County, Indiana. The watershed is located in the southwest portion of the county in Black township, near the town of Mount Vernon. Pitcher Lake and the surrounding lowland forest constitute an ox-bow lake wetland system in the Lower Wabash Division. Two major waterways, Pitcher Ditch and Whipple Ditch, both flow into Pitcher Lake. The longer waterway, Whipple Ditch, is 4.5 miles from the headwaters to the wetlands. The lake is approximately 3/4 mile long and 1/8 mile wide. The watershed empties directly into the Wabash River, with the lake lying less than 1/4 mile from the river.

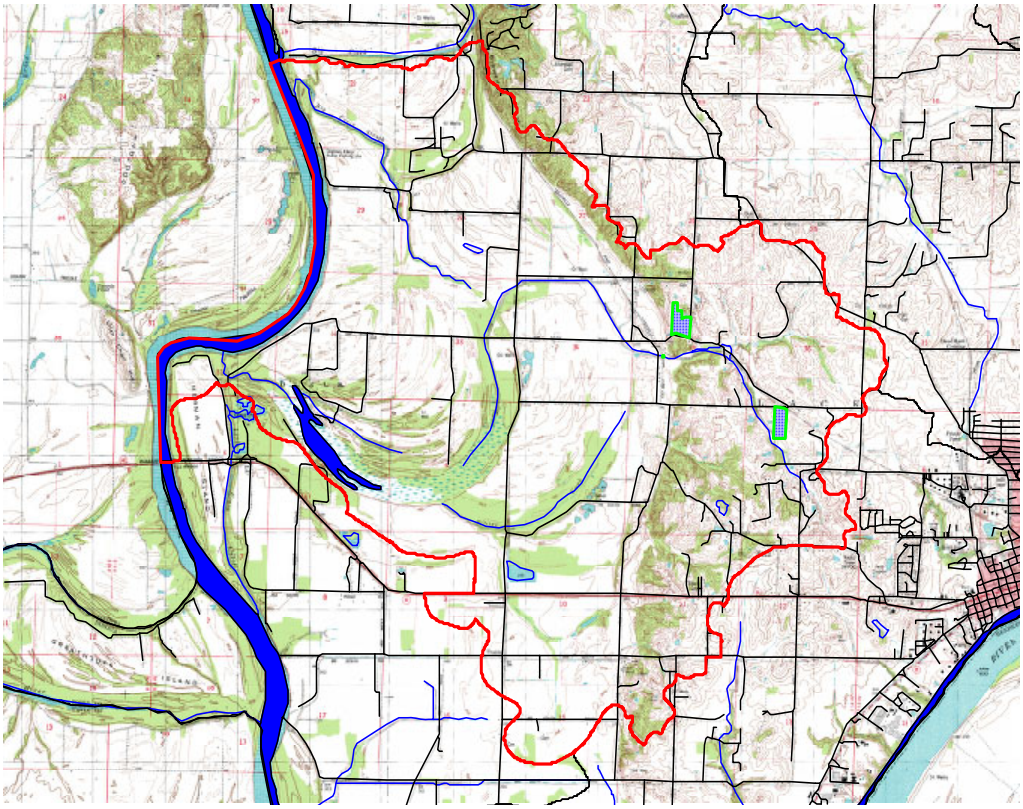
The lowland section of the watershed covers 8180.5 acres (69%), with forests covering roughly 18%. The majority of the forested area is in one contiguous block surrounding Pitcher Lake and its wetlands. The soil consists of two types: the upper terrace consisting of the Elkinsville-Wheeling-Vincennes association with A slopes predominating, and the lower bottoms consisting of the Nolan-Newark-Petrolia association with A slopes predominating. Few of these soils are HEL. The primary land use in this area is row-crop agriculture and timber production. Most of the forest and lake is privately owned for recreational uses. There is a small sand and gravel quarry upstream of the lake area.

The upland area covers 3671 acres (31%), with forests covering roughly 23%. The valley wall consists of Bloomfield-Princeton soils with a preponderance of C and D slopes, with HEL classes 1 and 2. The majority of this area is forested, with many small fragments of forest mixed with grasslands and housing. Behind the immediate valley wall the Alford-Sylvan-Iona soil association predominates. B, C, and D slopes, with HEL classes 1 and 2, cover over 60% of the upper watershed. The primary land use in this portion of the watershed is row-crop agriculture.

There are scattered oil production sites in both the upland and river bottoms of the watershed. Located in the Illinois Basin, the entire region has a long history of oil production.

The boundaries of the watershed are shown in Figure 1. The watershed is identified by the 14-digit Hydrologic Unit Code (HUC) 05120113120010.

Pitcher Lake Watershed



2 0 2 4 Miles

HUC 05120113120010

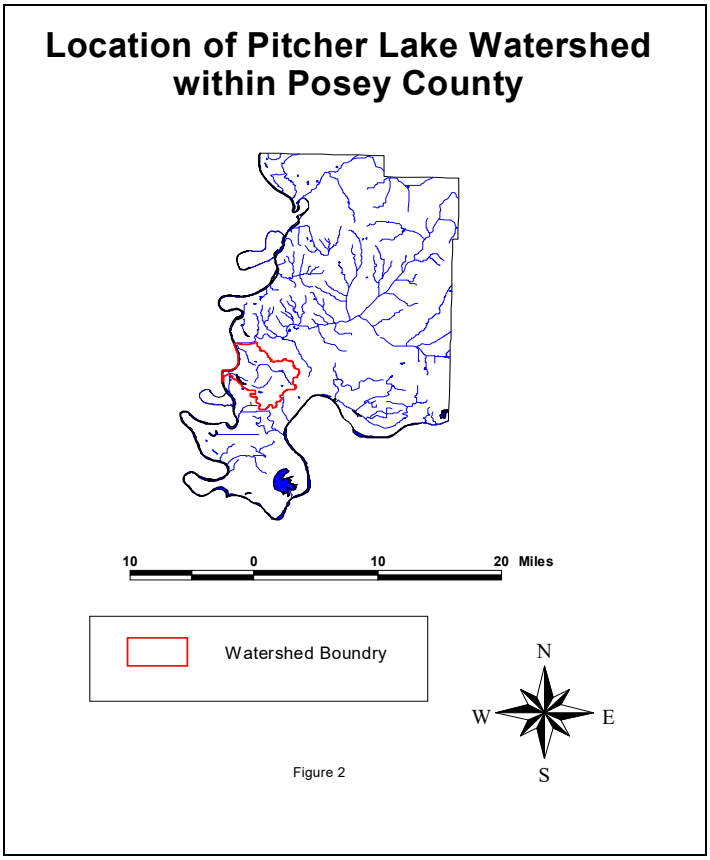
14 Digit Hydrologic Unit Area
Waterbodies
Streams

N
W E
S

Prepared by: Geralyn Bradley
Date: 05/25/03

Figure 1

Figure 2 shows the location of the Pitcher Lake Watershed within Posey County.



Land use practices within the watershed's 11,851.5 acres are defined as follows:

Pitcher Lake	373.8 acres	3.2%
Streams	342.7 acres	2.9%
Cropland	4545.7 acres	38.3%
Pasture	2594.6 acres	21.9%
Forested Wetland	1330.6 acres	11.2%
Non-Forested Wetland	1191.2 acres	10.0%
Deciduous Forest	878.4 acres	7.4%
Residential land	231.4 acres	2.0%
Transitional Areas	120.2 acres	1.0%
Quarries & Pits	101.4 acres	0.9%
Evergreen Forest	89.1 acres	0.8%
Unclassified Areas	52.5 acres	0.4%

These numbers were calculated with the aid of aerial photographs on file with the Posey County Soil and Water Conservation District, and GIS analysis of Posey County data using ArcView GIS software. Figure 4 shows the distribution of these land uses within the watershed.

1.2 Pitcher Lake Watershed Project

1.2.1 Formation and Determination of Stakeholders. In 1997, the Posey County Soil and Water Conservation District (SWCD) identified the Pitcher Lake / Whipple Ditch Watershed as an important watershed in Posey County. In the fall of 1999, the SWCD polled residents of the watershed regarding resource conservation concerns in the area. Following up on the results of the poll, a public meeting was held in January of 2000, with all residents of the watershed invited to attend. Thirty-five (35) landowners attended this first meeting. The SWCD, assisted by a representative of IDEM, discussed with the attendees the desirability of initiating an organized effort to identify resource issues in the watershed. A core group of residents agreed to serve on a steering committee to assess perceived water quality problems in the watershed and potential remedial actions. The major perceived problems were decreased water levels in the lake due to siltation, contamination due to illegal refuse dumping, and petroleum and brine contamination from oil production sites located throughout the watershed. Current members of the steering committee are listed in Appendix A. Appendix B is a list of technical experts and organizations who have provided support to the steering committee in furthering the goals of the project.

Pitcher Lake Watershed
Steering Committee

Utilizing mailing lists compiled by Farm Service Agency (FSA) and SWCD, a database of landowners and operators has been compiled. The goal was to identify at least 50% of watershed stakeholders. A total of 125 names are included in the database, which represents nearly 100% of the landowners or operators within the watershed. Appendix C is a list of the currently identified organizational stakeholders.

All interested stakeholders are invited to attend quarterly public meetings. Meetings are announced in the local newspaper and also posted in the local library.

1.2.2 Mission and Vision Statements. To guide the Pitcher Lake Watershed Project in developing ideas and programs to improve the water quality within the watershed, the steering committee has formulated vision and mission statements.

The Vision: *Prospering agricultural and wildlife communities in harmony with the residents of the Pitcher Lake / Whipple Ditch watershed.*

The Mission: *To build a partnership to develop and implement a watershed plan that benefits the natural resources of the Pitcher Lake / Whipple Ditch watershed.*

1.2.3 Project Objectives. Based on the information and data available, and input from public meetings, the Pitcher Lake Steering Committee and stakeholders have together identified the following objectives:

- To identify sources of water quality impairments.
- To educate landowners and operators about water quality issues within the watershed and generate interest and commitment in implementing effective remedial action.
- To assist landowners and operators with planning and installation of sustainable practices that provide water quality benefits for the long term.
- The completion of at least one demonstration site utilizing Best Management Practices (BMP) that enhance natural resources. Demonstration site(s) will be established using cost-share funds provided in the grant.
- Completion of a brine damage inventory, in cooperation with the Southwest Indiana Brine Coalition.

2.0 PROBLEMS & CONCERNS

2.1 Background

The major identified stress on water quality in the watershed is siltation. A 1980 report by then District Conservationist, Jesse Wilcox, concluded that a problem with erosion and sedimentation existed. The lake and surrounding wetlands receive a substantial silt load that is leading to sedimentation of the lake. Summer water levels reach extremely shallow levels, leading to an increase in emergent vegetation in previously open water areas. One local landowner has stated that thirty years ago the water was chest high. In contrast, a fish count conducted by U.S. Department of Fish and Wildlife biologist Tom Stefanavich in July 2002 revealed that the average depth of the lake is now only a foot and a half. A need for frequent dredging in the drainage systems leading to the lake points to a significant amount of soil movement from the uplands to the lowlands. The movement of the siltation directly affects the Wabash River, since the lake empties directly into the river. There is concern about how these changes will affect the future recreational value of the lake, as well as the endangered species that inhabit the watershed: the swamp rabbit, northern copper-bellied water snake, and the bald cypress.

2.2 Causes and Sources

Sediment from the upland region of the watershed are causing Pitcher Lake to fill up and threatening the wildlife habitat and recreational value. The sediment is a by-product of erosion and settling of flood waters. This sedimentation is coming from the following areas:

a) Cropland located in the upland areas of the watershed (predominately HEL acres under row crop agriculture)
b) Ditch banks
c) Back water flooding
d) Steep side slopes and draws located in woody, vegetated areas in the upland areas of the watershed

2.3 Cropland Erosion Calculations

Gully erosion rate: After sampling 3upland agricultural fields, there are an average of 60 gullies per 10 fields. There are approximately 98 upland crop fields. An average of 60 gullies per 10 fields applied to 98 upland fields equals 588 potential gullies. The average gullies are 146.4' L by 5.5' top W by 2.2' bottom W by 2.9' D, which equals 14 tons of sediment per year. This figure times the 588 gullies equals 8232 potential tons/yr. of gully sediment load.

Ditch bank erosion rate: After walking one mile of stream, we identified 12 sites that averaged 10.9 tons of sediment per site. 12 sites per mile times the total 6.5 miles of stream equals 78 potential sites. Seventy-eight (78) sites times 10.9 tons of sediment per site equals a potential ditch bank sediment load of 850.2 tons/yr.

Flood water sediment deposition: We don't have documentation or deposition rates. However, cropland scour erosion in the bottoms is not present after flooding of the Wabash River (information from local farmers on the Steering Committee).

The primary source of the silt appears to be sheet, rill, and gully erosion occurring in row-crop fields in the upper reaches of the watershed. The upland portion of the watershed has a high percentage of HEL slopes, and the primary land use is row-crop agriculture. No-till farming trends have followed state averages, with a decline in total acres under no-till. An additional source of silt is from streambank erosion occurring in incised ditches in the upper reaches of the watershed. Flash flooding and heavy water flows from increased housing, industry, and road development are becoming more common.

2.4 Additional Concerns

Additional identified stresses and their sources are:
Petroleum and brine contamination. Annual flooding from the Wabash River overflows oil well sites, with subsequent release of oil and brine from these sites. Brine releases have caused additional soil damage and ground-water contamination in the upper portion of the watershed.

Illegal dumping. Road-side dumping is common in the watershed and flooding concentrates the refuse in the main body of the lake and the surrounding wetlands.

2.5 Priority Area

It is recognized that no single conservation practice will solve the sedimentation problem. The best approach is to implement a total resource conservation system that controls both gully and sheet and rill erosion. The priority area to implement best management practices is the upland cropland fields which contain approximately 1160 acres.

3.0 GOALS & DECISIONS

3.1 Sedimentation

In order to reduce soil erosion within the watershed and decrease the rate of sedimentation in the lake, the Steering Committee aims to achieve a 10% increase in the amount of farmland employing BMPs within the 2-year contract period. To this end, the Committee plans to provide up to 75% cost share to landowners implementing BMPs on their land. Depending on specific land characteristics, appropriate BMPs for erosion control on agricultural land may include conservation cropping sequence, crop residue management and conservation tillage, cover crops, grassed waterways, vegetative filter strips, and water and sediment control basins.

As part of any cost share plan, farmers would be encouraged to compliment any structural conservation practices by implementing no-till or conservation tillage (minimum 30% residue) systems.

The Steering Committee will design individual cost share programs focusing on erosion control potential and high visibility. The plans will be reviewed and approved by Chris Lee, District Team Leader, NRCS, and Darrell Rice, District Conservationist. Committee members and the Watershed Coordinator will work closely with landowners throughout the plan implementation process.

Whipple Ditch after bank stabilization

It is estimated that the cost share programs will require $52,000, exclusive of indirect expenses and non-federal match amounts. The vice-Chairman of the Steering Committee will be responsible for the administrative aspects of the cost-share program.

As additional activities, it is expected that the Army Corps of Engineers will study the quality of the lake and provide recommendations to the Steering Committee concerning potential restoration projects. The Committee will also partner with the Posey County Solid Waste District and the Surveyor's Office in grade stabilization and tree planting.

3.2 Brine Contamination

Remediation activities associated with brine and petroleum contaminated sites is primarily the responsibility of the Southwest Indiana Brine Coalition (SWIBC). The Steering Committee and Watershed Coordinator will continue to partner with SWIBC to report problem sites and provide landowners with contact information and educational materials, as supplied by SWIBC. A total of $8800 (both direct and indirect expenses) has been budgeted for these activities.

3.3 Illegal Dumping

Building on the success of the watershed clean-up day held in the spring of 2002, the Committee will sponser and organize an annual watershed clean-up event. Donations of labor and supplies will be solicited from local organizations and merchants for the clean-up activities. The Posey County Solid Waste District and the County Highway Department will partner with the Steering Committee in this effort. Eleven hundred ($1100) dollars is budgeted for the clean-up day activities. The majority of the expenses associated with this effort will be covered by cash match and in-kind services provided by local businesses and the public.

3.4 Legal Matters

It is the opinion of the Steering Committee that no permits, fees, or easements will be required for any of the activities described in this section. No land acquisitions are contemplated at this time.

4.0 MEASURING PROGRESS

4.1 Indicators and Monitoring

Goal #1: Achieve a 10% increase in the amount of farmland employing BMPs within the 2-year contract period. Progress toward this goal will be measured by calculating the total agricultural acreage for which new BMPs have been adopted. This will be compared with the farmland acreage employing BMPs at the end of Phase I of this project in June 2003. Adoption of additional BMPs on a site with existing BMPs will count toward the percentage increase. The resulting sediment load reductions will be calculated. Landowners and producers will be responsible for maintaining installed practices. The Steering Committee will be responsible for spot-checking sites to ensure that BMPs are being properly employed and maintained.

Goal #2: Partner with the Southwest Indiana Brine Coalition. Progress will be measured by documenting newly identified problem sites reported to SWIBC. Newly identified sites will be added to the GIS map of the watershed. Maintenance and monitoring criteria are the responsibility of SWIBC.

Goal #3: Reduce the impact of illegal dumping in the watershed and increase public awareness of the problem. The main indicator of success for this activity will be the amount of refuse (tonnage, cubic yards) collected during each of the two annual clean-up days held during the grant period. This data will be supplied by the Posey County Solid Waste District. Public awareness will be gauged by the number of volunteers participating in the clean-up day activities, and by the amount of cash match and in-kind services provided by local businesses and organizations. Tracking of these indicators will be the responsibility of the Watershed Coordinator.

4.2 Plan Evaluation

Each year at the March annual meeting, the watershed plan will be reviewed by the Steering Committee in order to evaluate and approve any changes to the plan. The Watershed Coordinator is responsible for updating the plan as needed to reflect approved changes or adaptations. Updates will be distributed to all members of the Steering Committee and any other interested parties, as requested. Progress toward accomplishment of the goals and objectives of the plan will be communicated through quarterly reports provided by the Coordinator to the Steering Committee Chairman, SWCD Board, and IDEM.

5.0 CONTACT INFORMATION

All records and documents pertaining to this plan will be kept by the Watershed Coordinator. All requests for information should also be referred to the Coordinator. The current Coordinator is:

Geralyn Bradley
Posey County SWCD
1805 Main Street
Mt. Vernon, IN 47620
(812) 838-4191, ext. 3
E-mail: gebradle@evansville.net

APPENDIX A

Pitcher Lake Watershed Steering Committee

Bret Dausman, Chairman
4639 N. Blackford Road
Mt. Vernon, IN 47620
(812) 838-6221

Kenny Broadhead, Vice-Chairman
6600 Upton Road
Mt. Vernon, IN 47620
(812) 838-4770

Woodrow McFadin, Secretary
1414 Upper Upton Road
Mt. Vernon, IN 47620
(812) 838-5891

Dennis Angel, Posey County SWCD liaison
2825 Ashford Road
Mt. Vernon, IN 47620
(812) 838-5204

David Beste
771 Copperline Road
Mt. Vernon, IN 47620
(812) 838-0517

Tom Weilbrenner
7501 Weilbrenner Road
Mt. Vernon, IN 47620
(812) 838-5630

APPENDIX B

Providers of Technical Assistance

Nancy Baker
United States Geological Survey
Bloomington, IN

Greg K. Blumhoff
Information Systems Manager
Purdue University
West Lafayette, IN

Paul Breeze
Posey County Surveyor
126 E. Third Street
Mt. Vernon, IN 47620

Chris J. Johannsen
Director, Laboratory for Applications of Remote Sensing
Purdue University
West Lafayette, IN

Tom Mosley
Region 15 Planning Commission
Petersburg, IN

Jane Ruhl
United States Army Corps of Engineers
Louisville, KY

Denny Schafer
Posey County Board of Health
126 E. Third Street
Mt. Vernon, IN 47620

Dr. Tom Straw, PhD
Professor Emeritus
Western Michigan University
Kalamazoo, MI

APPENDIX C

Stakeholders in the Pitcher Lake Watershed

Posey County SWCD
1805 Main St.
Mt. Vernon, IN
(812) 838-4191

Posey County Farm Service Agency
1805 Main St.
Mt. Vernon, IN
(812) 838-4191

Posey County USDA-NRCS
1805 Main St.
Mt. Vernon, IN
(812) 838-4191

Posey County Health Department
126 E. Third St.
Mt. Vernon, IN
(812) 838-1328

Posey County Surveyor
126 E. Third St.
Mt. Vernon, IN
(812) 838-1328

Posey County Drainage Board
331 Walnut St.
Mt. Vernon, IN
(812) 838-1311

Posey County Area Planning Commission
126 E. Third St.
Mt. Vernon, IN
(812) 838-1323

Posey County Highway Department
1203 Brittlebank Rd.
Mt. Vernon, IN
(812) 838-1334

Posey County Solid Waste District
400 Brown St.
Mt. Vernon, IN
(812) 838-1613

Posey County Purdue University Extension Service
126 E. Third St.
Mt. Vernon, IN
(812) 838-1331

Hoosier River Watch
5785 Glenn Rd.
Indianapolis, IN
(317) 541-0617

Alexandrian Public Library
115 W. Fifth St.
Mt. Vernon, IN
(812) 838-3286

Four Rivers Resource Conservation & Development
715 S. Ninth St.
Petersburg, IN
(812) 354-6808

Sugar Ridge Fish and Wildlife Area
2310 E. State Road 364
Winslow, IN
(812) 789-2724

Southwest Indiana Brine Coalition
3728 E. State Highway 64
Winslow, IN
(812) 789-1066

STATE STAKEHOLDERS

Indiana Department of Environmental Management
100 N. Senate Ave.
P.O. Box 6015
Indianapolis, IN

Agricultural Liaison
(317) 232-8587

Air Quality
(317) 232-0178

Compliance and Technical Assistance
(317) 232-8172

Enforcement
(317) 233-5529

Environmental Response
(317) 308-3017

Pollution Prevention and Technical Assistance
(317) 232-8172

Solid and Hazardous Waste Management
(317) 233-3656

Water Management
(317) 232-8670

Indiana Department of Natural Resources
402 W. Washington St.
Indianapolis, IN

Division of Soil Conservation
(317) 232-4150

Division of Fish and Wildlife
(317) 232-4080

Division of Forestry
(317) 232-4105

Division of Historic Preservation and Archaeology
(317) 232-1646

Division of Water
(317) 232-4160

Division of Public Information and Education
(317) 232-4200

Division of Soil Conservation
(317) 233-3870

Division of Oil and Gas
(317) 232-4055

Indiana State Department of Health
2 N. Meridian St.
Indianapolis, IN
(317) 233-1325

APPENDIX D

List of Acronyms

BMP: Best Management Practice

FSA: Farm Service Agency

GIS: Geographic Information System

HEL: Highly Erodeable Land

IDEM: Indiana Department of Environmental Management

NRCS: Natural Resources Conservation Service

SWCD: Soil and Water Conservation District

SWIBC: Southwest Indiana Brine Coalition

APPENDIX E

Calendar of Past and Planned Events

Event	Date
Watershed Tour	Feb. 20, 2002
Watershed Clean-Up Day	Mar. 27, 2002
Display: Posey Co. SWCD Annual Meeting	Feb. 4, 2002
Display: Posey Co. 4-H Annual Fair	July 2002
Watershed Field Day	May 28, 2003
Watershed Clean-Up Days	Spring 2004 & 2005
Display: Posey Co. SWCD Annual Meeting	Feb. 2004
Display: Posey Co. 4-H Annual Fair	Summer 2003 & 2004
Watershed Field Day	Spring 2005

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