VFC Index - Watershed (Plan)

Program: Watershed

IDEM Document Type: Plan

Document Date: 3/22/2002

Security Group: Public

Project Name: Sand Creek WMP

Plan Type: Watershed Management Plan

HUC Code: 05120206 Upper East Fork White

Sponsor: Decatur County SWCD

Contract #: 00-222

County: Decatur

Cross Reference ID: 22901920; 15827845

Comments: Jennings, Jackson, Bartholomew

Additional WMP Information

Checklist: 2003 Checklist

Grant type: 319

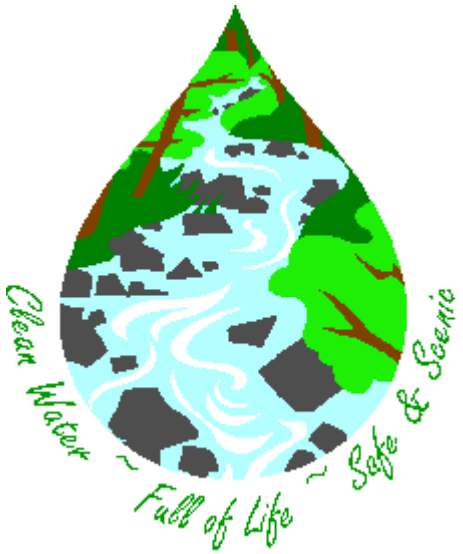
Fiscal Year: 2001

IDEM Approval Date: 3/22/2002

EPA Approval Date:

Project Manager: Kathleen Hagan

SAND CREEK WATERSHED PROJECT



Watershed Management Plan
Planning for Future Generations
1999-2009

Sponsored by:
The Decatur County and Jennings County
Soil and Water Conservation Districts

108 Smith Road
Greensburg, IN 47240
(812) 663-8685 ext 3
www.sandcreekwatershed.com

2600 N State Hwy 7
North Vernon, IN 47265
(812) 346-3411 ext 3
www.seidata.com/~jennings

TABLE OF CONTENTS

For more information about the Sand Creek Watershed Project, please contact:

The Sand Creek Watershed Project

c/o Decatur Co. SWCD **&** **c/o Jennings Co. SWCD**

108 Smith Road, Greensburg IN 47240 - 2600 N State Hwy 7, North Vernon, IN 47265

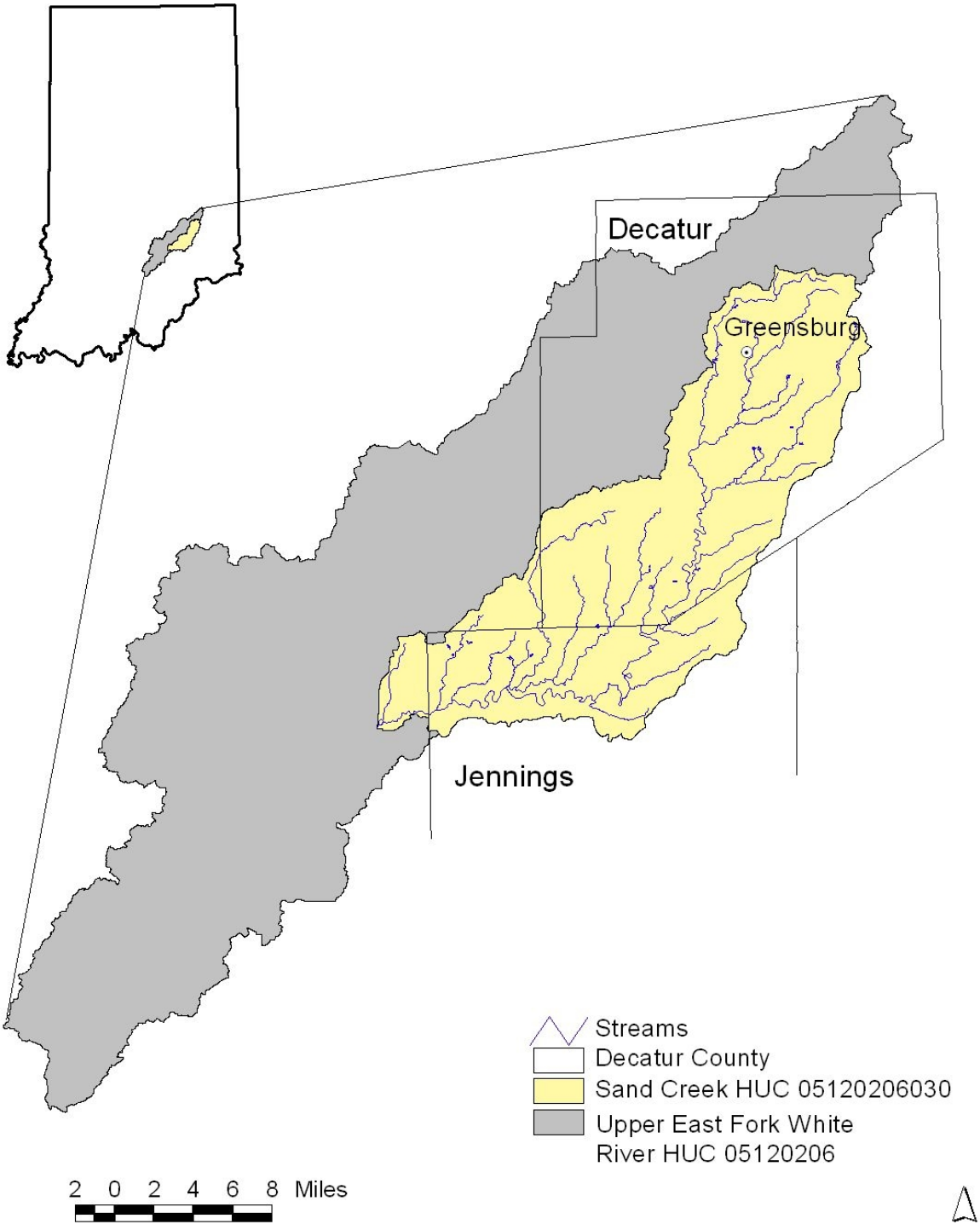
Phone: (812) 663-8685 ext. 3 **Phone: (812) 346-3411 ext 3**

Fax: (812) 663-9261 **Fax: (812) 346-4237**

www.sandcreekwatershed.com **www.seidata.com/~jennings**

This publication was made possible through funding from the Indiana Department of Environmental Management and the U. S. Environmental Protection Agency.

Sand Creek Watershed



INTRODUCTION

The Sand Creek Watershed Project is a locally-led planning and educational effort focused on the natural resources of the Sand Creek Watershed. In 1997, community members gathered at a public meeting sponsored by the Decatur County Soil and Water Conservation District (SWCD) to initiate the project. It has remained in the hands of a Steering Committee made up of local farmers, businesspersons, and representatives from city and county agencies and organizations, and has been supported by area businesses and industry as Project Partners.

This document lays out the vision and plan for the future of the Sand Creek Watershed. As human population and activities continue to place more stress on our natural resources, the quality of our water and soil is placed at great risk. As concerned citizens living within the Sand Creek Watershed, we see the need to take action to improve and protect these resources for current and future use. By this action we also enhance and preserve the quality of life for our communities.

We look forward to continued cooperation in planning for the future of the upper and lower watershed.

Our Vision:

Clean Water, Full of Life, Safe and Scenic

Our Mission:

Lead the community in ways to improve the Sand Creek Watershed

PROJECT INTRODUCTION

A watershed is an area of land that water flows over and under on the way to a particular waterbody. A unique number is assigned to identify each level of watersheds in the United States. The Sand Creek Watershed 11-digit HUC, or Hydrologic Unit Code is 05120206030. (See Figure 1 – page 7)

The Sand Creek Watershed covers 140,000 acres, which is located in Decatur, Jennings, Bartholomew and Jackson Counties in the south eastern part of Indiana. However, for the purpose of this Plan, the Sand Creek Watershed Project will refer to the counties of Decatur and Jennings. The Sand Creek Watershed is the drainage area for the city of Greensburg and the town of Westport, as well as the small communities of Letts, Sardinia, Alert, Waynesburg, Brewersville and Scipio. Sand Creek serves as the primary drinking water source for the town of Westport.

The watershed drains into the main stem of Sand Creek. The following lakes are also located within the watershed:

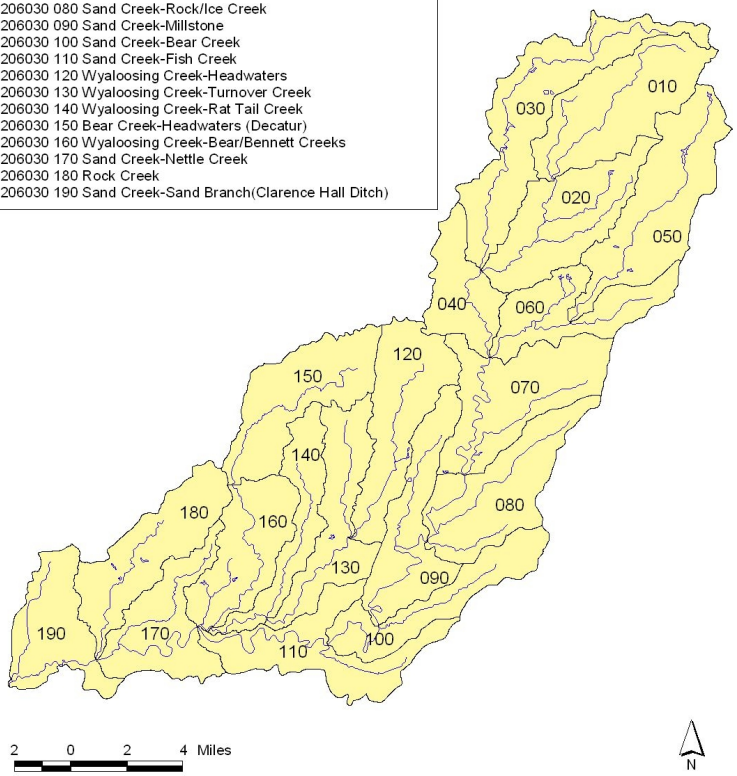
- ✓ The Greensburg Reservoir State Fishing Area Lake (23 acres)
- ✓ The Greensburg City Park Lake (4 acres)
- ✓ Lake McCoy (approximately 33 acres)

Concerns about the water quality in the Sand Creek Watershed were raised at the first stakeholder meeting held in 1997. Interest in taking action to address the water quality issues of the Sand Creek Watershed was ignited by high fluoride levels found in the water taken in at the Westport Water Treatment Plant as well as concern over excess nitrates, phosphates, and chemicals from farmland and urban runoff. Subsequent public meetings and field days have also shown public concern for water quality in the Sand Creek Watershed. A 319 grant made available through the Indiana Department of Environmental Management was applied for by the Decatur County Soil & Water Conservation District. This enabled the hiring of a coordinator. The Sand Creek Watershed Steering Committee was officially formed in October of 1999. During 2002 Jennings County SWCD joined with Decatur County SWCD for a Lake and River Enhancement (LARE) grant to enhance water quality for Decatur and Jennings Counties. Sub-committees were formed to address technical, educational and financial aspects of the project. Subsequent stakeholder meetings have been held throughout the Sand Creek Watershed to identify watershed pressures. The stakeholder meetings were attended by representatives from the City of Greensburg, local industry, members of the agricultural community including agri-business as well as other residents of the Sand Creek Watershed. The main concerns identified at the stakeholder meetings were:

1.) Sedimentation
2.) Nutrient Runoff
3.) Lack of Environmental Education.

Sand Creek Watershed
05120206030

14-Digit HUCs	HUC Name
5120206030 010	Sand Creek-Gas Creek
5120206030 020	Sand Creek-Lost Creek
5120206030 030	Muddy Fork
5120206030 040	Sand Creek-Gaynorsville
5120206030 050	Cobbs Fork-Headwaters
5120206030 060	Cobbs Fork-Jordan Creek
5120206030 070	Sand Creek-Penther Creek
5120206030 080	Sand Creek-Rock/Ice Creek
5120206030 090	Sand Creek-Millstone
5120206030 100	Sand Creek-Bear Creek
5120206030 110	Sand Creek-Fish Creek
5120206030 120	Wyaloosing Creek-Headwaters
5120206030 130	Wyaloosing Creek-Turnover Creek
5120206030 140	Wyaloosing Creek-Rat Tail Creek
5120206030 150	Bear Creek-Headwaters (Decatur)
5120206030 160	Wyaloosing Creek-Bear/Bennett Creeks
5120206030 170	Sand Creek-Nettle Creek
5120206030 180	Rock Creek
5120206030 190	Sand Creek-Sand Branch(Clarence Hall Ditch)



Within the first year of the project, Steering Committee members and project staff began to inventory and gather information on land use and perceived threats or impairments in order to focus their actions. They also concentrated their efforts in the following areas:

Sub-Committees: Sub-Committees were formed to address technical, educational and financial aspects of the project. The Steering Committee has drawn special interest and expertise as being stakeholders.

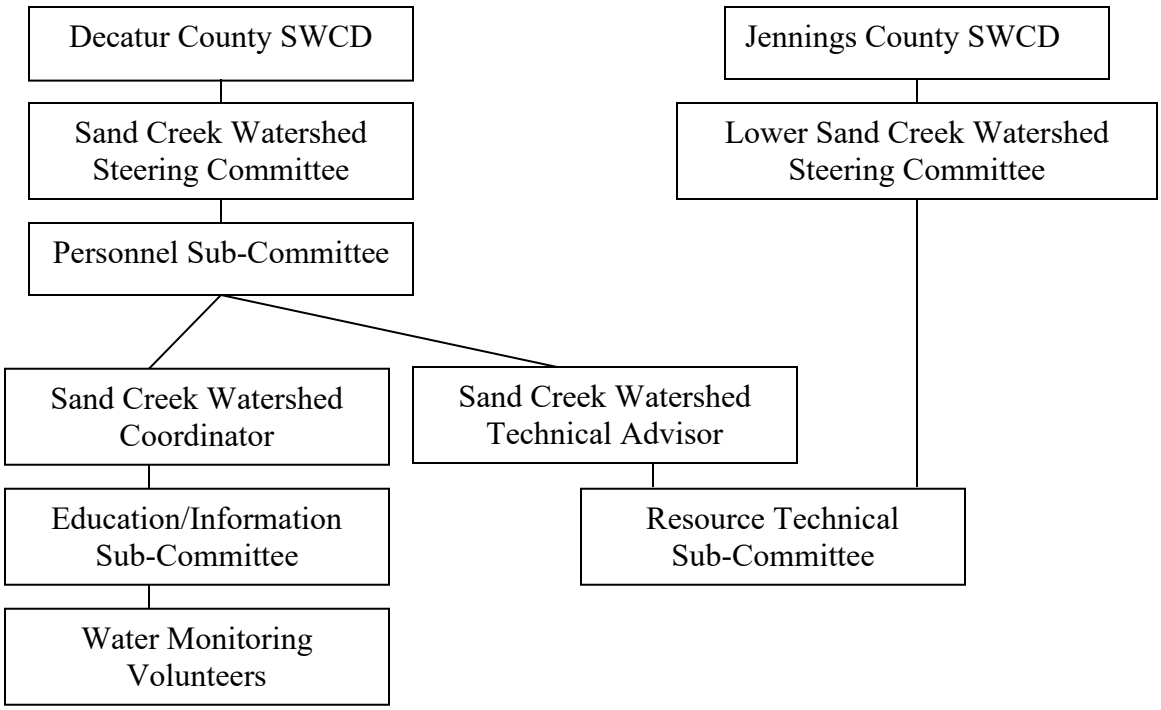
Watershed Education: newspaper articles, information brochures and pamphlets, school programs, public presentations and a web site (www.sandcreekwatershed.com) have been developed.

Water Quality Monitoring: the enlistment of area high school students and a boy scout troop to help assist in monitoring four sites for physical, chemical, and biological indicators of water quality. The LARE grant will give us a second set of water monitoring data done by an environmental company.

The Sand Creek Watershed Project involved community members from many different areas to work on this plan.

Watershed Planning: the development of a comprehensive watershed management plan to address water quality problems in a manner that is acceptable to all stakeholders.

Sand Creek Watershed Membership Structure:



Concerns about the water quality in the Lower Sand Creek Watershed were raised at a stakeholder meeting held in 2003. The natural resource issues of the Lower Sand Creek Watershed consist of groundwater contamination, stream bank erosion, sheet and rill erosion, gully erosion, overgrazing, illegal dumping and excess nutrients entering Sand Creek.

When developing this plan, the Steering Committees considered all the users of the land and water within the watershed in order to take actions that balanced the needs of the many stakeholders. Listed below are the most common uses that impact the water and land resources in the watershed.

Water Body Uses

- ✓ Drinking water for the town of Westport
- ✓ Recreation: fishing, canoeing, and swimming
- ✓ Terrestrial and aquatic wildlife habitat
- ✓ Municipal wastewater discharge (the city of Greensburg and the town of Westport both discharge wastewater from sewage treatment plants into Sand Creek)
- ✓ Industrial processes
- ✓ Livestock

Land Base Uses

The Rural Land Base

- ✓ Crop production
- ✓ Production and care of livestock
- ✓ Timber production and tree farming
- ✓ Private residences and their septic systems
- ✓ Municipal and agricultural waste application
- ✓ Wildlife habitat

The Urban/Suburban Land Base

- ✓ New and existing residential and commercial developments
- ✓ Infrastructure associated with new and existing residential and commercial developments (including roads, parking lots, pipes, etc.)
- ✓ Industrial production
- ✓ Recreation
- ✓ Municipal parks
- ✓ Golf courses

This shows the famous tower tree on the County Courthouse located in Greensburg in Decatur County.

Land Use History

Decatur County was named for Commodore Stephen Decatur, 1804 hero of Tripoli often remembered for his toast " Our Country, may she always be right; but our country, right or wrong!" He also fought heroically in the War of 1812.

Decatur County was organized December 31, 1821. Greensburg is the county seat. Tradition says that Mrs. Thomas A. Hendricks named this town in honor of her old hometown in Pennsylvania. The Courthouse is famous for the tree growing from its clock tower.

Located southeast of Indianapolis, Decatur County has within its boundaries some of the finest limestone quarries in the state. Much of the county's 378 square miles are rich farmland. The city of Greensburg is forty-seven miles southeast of the state capital of Indianapolis. A railroad, airport, and Interstate 74 provide the chief transportation facilities.

Jennings County was named after the first governor of Indiana, Jonathan Jennings. Jennings County is home to 10,000 acres of beautiful public lands. The Muscatatuck River almost surrounds the town of Vernon, making it the smallest county seat in Indiana.

The watershed has been sculpted by four glacial periods. The fourth such period known as the Wisconsin glacier left the topography less rolling in the northwestern two-thirds of the watershed.

During the 1800's a water powered woolen mill was erected in Brewersville using the water from Sand Creek. In 1890 the center of population was located in the Sand Creek Watershed approximately two miles north and east of Westport.

Water Quality Information

Sand Creek is on the Indiana State Board of Health's *Fish Consumption Advisory List* for several species of fish because of the presence of mercury and/or PCB's in fish samples. (See Appendix C and F3 map)

The Steering Committee has listed the following concerns within the Sand Creek Watershed. We have begun to address these concerns through education and land treatment projects.

E.coli:

- The Decatur County Board of Health has observed levels of E. coli ranging from 900 colonies/100 mL to 1800 colonies/100 mL (beaches are closed when E. coli levels are over 235 colonies/100 mL). High levels of E. coli have also been found by volunteer monitors at sites throughout the watershed. The Quality Assurance Project Plan (QAPP) for the volunteer monitoring program and results of testing are in Appendix D.

Sedimentation:

- Watershed inventories and visual observations show stream bank, gully, sheet/rill erosion, insufficient erosion control at construction sites and intensive agriculture are contributing to degraded water quality. Sedimentation has been visually observed obstructing the habitat within the streams of the Sand Creek Watershed. As evidenced by stream assessments, the habitat has been impaired by excessive substrate embeddedness.

Debris in Creek:

- The Sweep the Creek annual program has collected approximately 10 tons of debris, which had been illegally dumped in the watershed.

Nutrient/Pesticides:

- Runoff or nonpoint source pollution is of critical concern due to excessive levels of nitrates and sediments containing phosphates, and pesticides entering the creek. Nitrate and phosphate levels are usually over the state average, and nitrate is often above the drinking level standard (Appendix D). Atrazine levels exceeding the Surface Water Quality Standard have occurred during periods of heavy rain. (See Appendix E for levels of Atrazine, Alachlor and Acetachlor at the Westport Water Treatment Plant.) Excess nutrients and sediment degrade the habitat for aquatic species, while different chemicals and oils present in the runoff could make the water unsuitable as a drinking water source.
- The presence of abandoned wells within the watershed provides a direct access for potential ground water contamination from nutrient and other toxins.

Fluoride:

- High fluoride levels detected at the Westport Water Treatment Plant was initially the cause for concern. The steering committee after investigation determined that the levels of fluoride concentration found in 1999 were partly due to drought conditions. The issue of fluoride contamination is not a concern at this time.

Problem Statements:

I. Nonpoint source runoff of nutrients and sediment is impairing the water quality in the watershed's streams.

II. Lack of education in the watershed has been apparent from the public's limited connection to the watershed community. This has been evident by illegal dumping, littering and the absence of education on conservation issues in local schools and in the media.
* Illegal dumping and littering is prevalent within the Cobb's Fork tributary and other locations within the Sand Creek Watershed.
* Current educational programs are not proactive in educating our community about their role in conservation.

In order to address these concerns and protect the quality of life in the Sand Creek watershed, we have developed the following goals and action plan.

Sand Creek Watershed Project Goals

Goal 1:

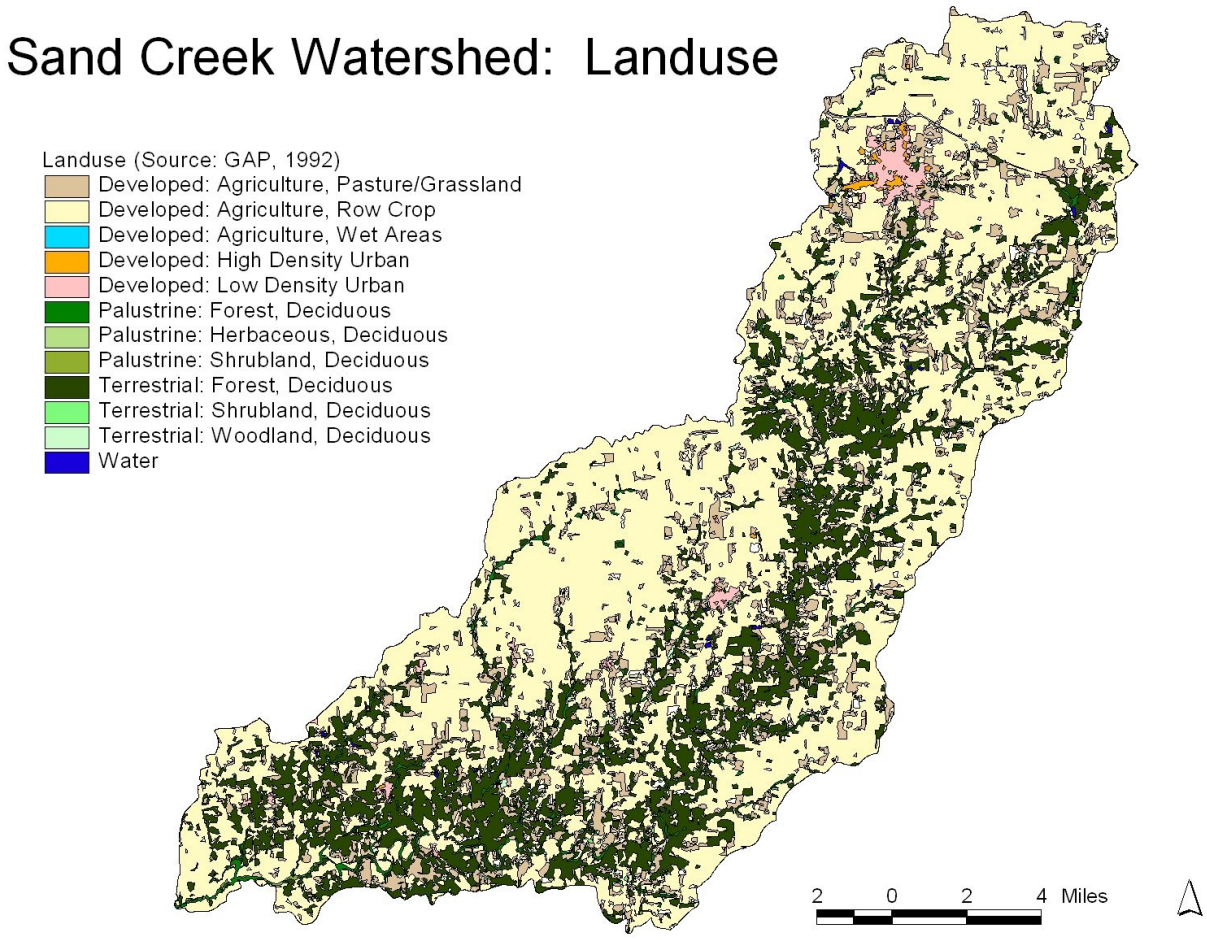
Improve the natural resources and promote stewardship in the Sand Creek Watershed.

Goal 2:

Inform and educate the Sand Creek Watershed community about preserving, protecting, and conserving the natural resources of this area.

Goal 3:

Develop a stable, long-term organization that will support the activities and programs necessary for project success.



Agriculture

Agricultural land makes up 113,843 acres or 81% of the watershed. Because agriculture is the primary land use in the watershed, nonpoint source pollution from farmland is of major concern when discussing the protection of our water quality. Excess nitrates, phosphates, pesticides and E. coli can be introduced into waterways through poor management of crops and livestock.

Primary soil types for the upper Sand Creek Watershed are Clermont-Avonburg, Cincinnati-Rossmoyne and Miami-Xenia-Williamstown, both formed in loess and glacial till on uplands. The latter is usually highly erodible and subject to rill and gully erosion.

Primary soil types for the lower Sand Creek Watershed is Clermont-Avonburg, Fincastle and Cincinnati-Rossmoyne, all are subject to rill erosion and the steeper slopes are prone to gully erosion.

Erosion is the largest threat to water and soil quality in our watershed. Not only does it degrade the productivity of our soil, but excess nutrients and chemicals bonded to soil particles get flushed into our streams through runoff. Sediment in our streams interferes with healthy aquatic plant life and fish. At the covered bridge at Westport, much of the creek bed is over 75%

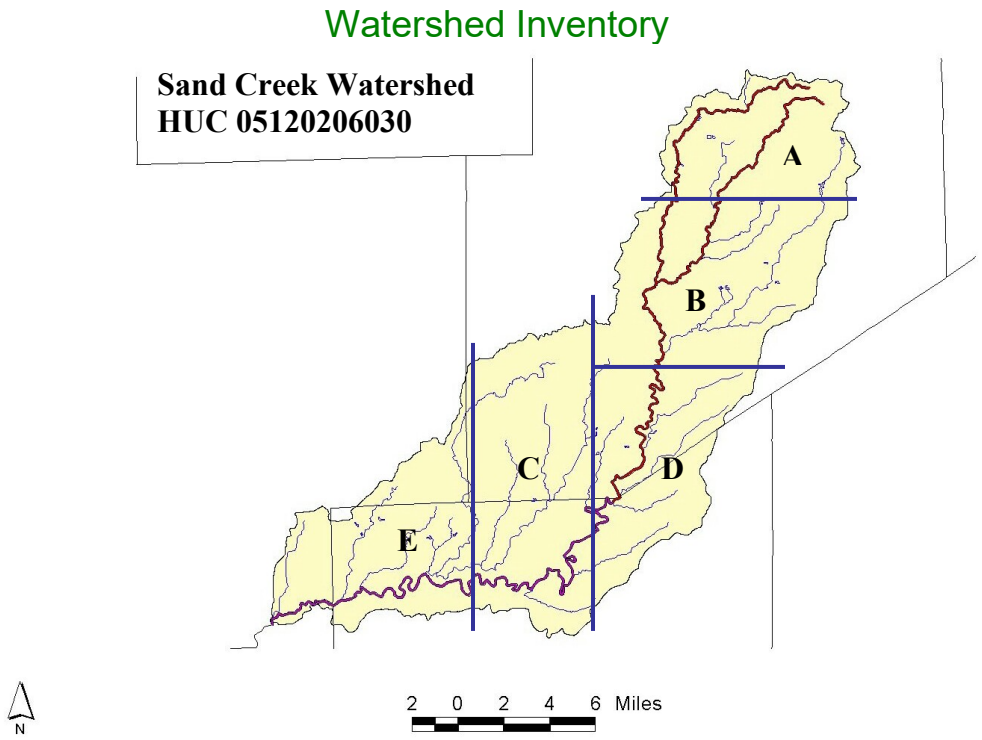
embedded and heavy silting has occurred. Monitoring has also shown elevated nitrogen and phosphorus levels in the spring, and these levels could be tied to agriculture.

According to the 2000 crop transect numbers; approximately 44% of farmland in the watershed is eroding at or above 'T', the tolerable limit of soil loss to ensure continued productivity. Seventeen percent of our farmland is eroding at **three** times the tolerable level (T). The average T for Sand Creek Watershed is 3.5 tons/acres/year. This means we are losing at least 10 tons/acre/year on 17% of our farmland, and 3.5 – 10 tons/acre/year on the other 27% of fields eroding above T.[1] Ephemeral gully erosion is also a concern on 40% of the cropland. Erosion can be significantly reduced on cropland through the use of conservation tillage, installing and maintaining healthy buffer strips along waterways, and taking highly erodible land (HEL) out of production. HEL is defined by the USDA as having at least 1/3 of the field acreage in highly erodible soils. Highly erodible soils have been determined based on slope and erodibility factors.

Table 1: Erosion Rate of Crop Fields, YR 2000

Crop	< 'T'	0-1 'T'	1-2 'T'	2-3 'T'	> 3 'T'
Corn	38%	26%	7%	7%	21%
Soybeans	80%	4%	4%	2%	10%

'T' = tolerable limit of erosion at which nature can reproduce soil sustainable for production



[1] Based on Universal Soil Loss Equation

The assessment of the following areas was completed through windshield surveys and aerial photo assessment during the spring and summer of 2001.

Section A

This area encompasses the headwaters of Sand Creek, Cobb's Fork and Muddy Fork in the northern part of the Sand Creek watershed. Land use is agriculture for soybean and corn production along with cattle and at least one small-scale hog producer. There is very little conservation tillage, especially on some of the rolling hills just south of the community of Kingston. We observed around a third to half of the soybean fields were no-tilled but only one no-till cornfield. Several examples of gully erosion were found near 350 E between the head of Sand Creek and Cobb's Fork. We calculate there is a potential need for approximately 9 waterways in this section and about 22,800 feet of filterstrips or buffers along the streambanks.

In several pasture areas, there is evidence of cattle and hog access to streams and along much of the streambank, moderate to severe bank erosion is present. Just east of Kingston there is a project with one landowner underway to fence livestock away from the streambank, with funding provided by a Water Quality Improvement Grant from the State.

Section B

The central section of the watershed, extending from just below Greensburg to around County Road 800S encompasses the lower halves of Muddy and Cobb's Forks and Gas Creek and the middle portion of Sand Creek. Traveling south, the land becomes much more hilly and forested. While still mostly agriculture with row crops, there are more small residential parcels and woodland areas than the northern section. Riparian zones are much wider and more numerous as well. Assessment suggests that there is the potential for 22,000 feet of filterstrips in this section.

Areas of concern include at least one site where hogs have access to the streams and there is some erosion present, and a few construction sites with no erosion control measures in place. (One site in particular had high erosion potential.)

Section C

The area covers the headwaters of Bear, Rattail and Wyaloosing creeks, in Decatur County, and flows southwest to the confluence with Sand Creek in Jennings County. Like the rest of the watershed, crops are mainly corn and soybeans and the land is flat to gently rolling hills. Much of the stream banks have adequate buffer in this area, except for one portion along the western tributary of Wyaloosing. There is potential for 52,000 feet of filterstrip in this area.

Section D

This is the southeastern most section of the watershed, including the main stem of Sand Creek, Panther and Jordan Creeks. It is heavily wooded in Decatur County and intensively crop land in Jenning County.

Section E

This area mostly in Jennings County consisting of a high percentage of pasture and woodland. The cropland is predominately no-till in this section. The need for buffers along the stream bank is not as critical as other areas of the watershed.

Watershed Assessment

Conservation tillage leaves at least 30% crop residue cover on the field at planting time and includes no-till in which the ground is not tilled or cultivated. Leaving adequate residue on the soil will reduce runoff, allowing the water to better infiltrate to plant roots, and will increase the organic matter in the soil. Transition from traditional tillage systems can be difficult, but farming costs may decrease and long-term soil health is greatly improved. If the proper support and incentives are made available to producers, we can significantly increase the amount of acres in conservation tillage in the watershed. Inventory/assessments throughout the watershed shows that increased conservation tillage is needed, but with special interest in critical areas B, C & D. An incentive plan that would pay farmers (in a corn-bean rotation) for three years of no-till corn could result in up to six total years of no-till. No-till for soy beans is already a widely accepted practice, so additional incentives may not be needed for those years of the rotation.

Buffer strips are areas of land along field edges or waterways planted in permanent grass or trees. This vegetation filters runoff and traps sediment and pollutants before they enter water. Filter strips, contour strips, riparian buffers (consists of trees, shrubs and grasses) and grassed waterways are all different kinds of buffers that can be installed to reduce erosion and runoff. Government programs, such as the Conservation Reserve Program (CRP) and LARE offer financial and technical assistance to landowners to install buffer strips and address HEL concerns

Grassed waterways are just one practice designed to slow soil erosion and runoff of nutrients.

Assessments of aerial photos and driving inventories of the watershed currently show that Sections A & C in the project areas has the most need of buffer areas along streams. There are critical areas in other sections but these are not as concentrated as in Section A & C. Marketing filter strip programs and creating other incentives will be initially focused in Section A & C and progress downstream from there.

Livestock operations can have negative impact on water quality in other ways. Improper manure management can lead to an increase in fecal matter introduced into Sand Creek and its tributaries. Livestock are an important part of our agricultural production in Decatur and Jennings Counties. There are approximately 8,500 head of cattle and 66,500 head of hogs in the watershed, and not all operations are large enough to be regulated by the State. We need to encourage and support proper nutrient management, specifically the process of storage and disposal of animal waste. Manure management is important to reduce the amounts of harmful bacteria and excess nitrogen and phosphorus making their way into waterways used for fishing and recreation. Severe streambank erosion is another problem incurred where livestock have free access to streams.

Once again, assessments of the watershed show that livestock access to the stream seems to be most visible in Sections A & D, with smaller critical areas in other sections. Projects to fence

livestock away from streams and provide alternative water sources would help address some of the impact in these areas.

In order to work with landowners on implementing conservation practices that will help improve water quality and the overall health of our natural resources, the project needs more staff to meet with landowners, market various programs, and assist with the planning and design of individual projects. Hiring a Watershed Technician to assist SWCD/NRCS and other project staff in implementing conservation practices is critical to the success of the project.

In order to improve and protect soil and water resources, the Steering Committee hase developed the following objectives and actions designed to increase the knowledge and use of best management practices on the farmland in our watershed.

Objective 1:

Enable the Decatur Co. SWCD, Jennings Co. SWCD and other project partners to handle increased workload involved in implementing natural resource objectives.

Action	Person Responsible	Completion Date	Budget
Develop job description for Watershed Technician	Steering Committee, SWCD	Accomplished Summer 2001	
Using 319 funds, hire Watershed Technician	Decatur Co. SWCD	Accomplished October 2001	
Apply for 319 Grant funding for lower Sand Creek Watershed	Jennings Co. SWCD	October 2003	Staff Time

Objective 2:

Improve water and soil quality through education and promotion of best management practices on our agricultural lands.

Action	Person Responsible	Completion Date	Budget
Provide newsletter/paper articles or radio news events on water quality issues	Watershed Coordinator, Watershed Technician	Through 2009	Staff Time
Through the course of the project, provide 5 field days/seminars covering agricultural BMP's including: • Nutrient mgmt. • Pest mgmt. • Conservation buffers	Coordinator, SWCD, Watershed Tech	Through 2009	Staff Time

Objective 3:

Increase conservation tillage in watershed area by 12,500 acres through 2009. This will create a sediment load reduction of 28,591 tons/year. (See F5 chart)

Action	Person Responsible	Completion Date	Budget
Provide 4 conservation tillage field days	Coordinator, SWCD, Watershed Tech	By 2009	Staff Time
Provide No-till Panel Discussion on local radio station	Coordinator, veteran no-till farmers	Accomplished March 2000	Staff Time
Annual No-till event for area farmers to network regarding no-till practices	Watershed Tech, veteran no-till farmers	2001-2009	Staff Time
Apply for cost-share funds from LARE, EQIP and 319 programs to provide landowners further incentives to increase conservation tillage.	Decatur Co. SWCD and Jennings Co. SWCD	LARE: Jan. 31st - Annually EQIP: On-Going 319: October 1st Bi-Annually	Staff Time
Publicize results of annual Crop Residue Transects in appropriate media, emphasizing the relationship between acres of conservation tillage and predicted soil loss. Connect to water quality.	Watershed Tech, Decatur Co. SWCD and Jennings Co. SWCD	On-going	Staff Time

Objective 4:

Apply filter strips/riparian buffer to remaining 9 miles of streambank that has inadequate buffer area.
This will create a sediment load reduction of 62 tons/year. (See F4 Chart)

Action	Person Responsible	Completion Date	Budget
Apply for LARE/319 funding (supplemental to CRP cost-share)	Coordinator, SWCD	Jan. 31st - Annually, 319: October 1st Bi-Annually	Staff Time
Market CRP/LARE programs through personal letters, newsletters, radio	Watershed Tech	Through 2009	Staff Time

Objective 5:
Apply 30 miles of grassed waterways to address ephemeral/gully erosion by 2009. This will create a sediment load reduction of 684 tons/year. (See F7 Chart)

Action	Person Responsible	Completion Date	Budget
Assist NRCS staff in implementing federal programs	Watershed Tech, Decatur Co. SWCD and Jennings Co. SWCD	October 2001 to September 2009	Staff Time
Market CRP/LARE programs through personal letters, newsletters, radio	Watershed Tech	Through 2009	Staff Time

* The Sand Creek Watershed Plan is an evolving document, as objectives are met and new concerns are addressed. The accomplishment page is updated with each new edition.

Woodlands

Maintaining and replanting trees and shrubs along Sand Creek and its tributaries can be an important conservation effort.

Woodlands are a very valuable natural resource of the Sand Creek watershed. Woodlands play a direct or indirect role in everyone's lives as well as the whole environment. Besides being the largest oxygen producers on the earth, woodlands protect and improve water quality.

Woodlands provide wildlife habitat, wood products, as well as a valuable recreational resource.

Woodlands occupy approximately 19,790 acres in the watershed. For the most part, wooded parcels are scattered throughout the watershed and located along Sand Creek and its tributaries in the southern watershed area.

The majority of woodlands are owned privately. Assisting landowners by providing them with resources to improve their woodlands through forestry best management practices (BMP's) will help enhance a significant part of the watershed. Woodlands are a renewable resource; proper management provides the landowner an excellent economic return while keeping all the benefits listed earlier. One well managed hardwood forest study showed a yield increase of $184/acre/year in the timber value, with the timber volume nearly doubling in twelve years.

Our plan is to further the education and implementation of tree planting, timber stand improvement and more riparian areas (woodlands along the banks of streams and rivers) to landowners on a voluntary basis. Through the Sand Creek watershed project partnership, technical and financial assistance will be offered. Programs available are the Classified Forest Program, USDA Conservation Reserve Program, LARE, and the 319 grant program.

[1] Marshal County Mill Pond Demonstration Woodland 1999 Report

Objective 1:

Educate woodland owners on the economic and environmental importance of sustainable forest land.

Action	Person Responsible	Completion Date	Budget
Hold a field day for woodland owners	Watershed Tech	On-Going	Staff Time
Articles in newsletter/newspaper	Watershed Tech	2 articles/yr	Staff Time
Develop Woodland Information/Management booklet specific to the Sand Creek Watershed	Coordinator	Accomplished October 2001	Staff Time

Objective 2:

Seek funds to assist landowners in the development of timber management practices that include BMP's and timber stand improvement. (See F6 Chart)

Action	Person Responsible	Completion Date	Budget
Apply for Stewardship grant	Decatur Co. SWCD and Jennings Co. SWCD	Annually	Staff Time

Objective 3:

Provide financial assistance on 50 acres of tree planting by 2009. This will create a sediment load reduction of 269 tons/year.

Action	Person Responsible	Completion Date	Budget
Apply for LARE funds for tree planting on critical areas	Decatur Co. SWCD and Jennings Co. SWCD	LARE- Jan 31st annually	Staff Time

Objective 4:

Increase number of woodland acres enrolled in the Classified Forest Program from 930 acres to 1180.

Action	Person Responsible	Completion Date	Budget
Market the program through field days, articles, mailings and personal contact	Watershed Technician/ Decatur Co. SWCD and Jennings Co. SWCD	By 2009	Staff Time

*The Sand Creek Watershed Plan is an evolving document, as objectives are met and new concerns are addressed. The accomplishment page is updated with each new edition.

Wildlife and Fisheries

The terrain immediately adjacent to Sand Creek and its tributaries provides a good portion of Sand Creek Watershed wildlife habitat. In many places, this area provides ample water and more vegetative cover for food and shelter than elsewhere in the watershed. However, in some places, development or row crops extend right up to the creeks leaving little or no habitat. As one moves farther from the existing riparian corridors along the creek and stream banks, the amount and diversity of the habitat decreases. As pressures from increased suburban/urban development and more intensive cropping of farmland continue, we may see greater negative impacts on wildlife habitat in both size and diversity.

Currently, concerns are focused on improving overall wildlife habitat. Much of the habitat was lost when fencerows on farmland were taken out and this has had a negative impact on the overall wildlife populations. The populations of many other species such as deer, geese and turkey seem to be stable or flourishing. The Department of Natural Resources does list a few state-endangered species for the Sand Creek Watershed. These include: the Bachman's sparrow, the Great Blue heron, the bobcat, and the American badger. On the other end of the spectrum, the beaver populations have grown to a point that they are considered a nuisance species in some areas.

The federal Conservation Reserve Program (CRP) and Wildlife Habitat Improvement Program (WHIP) provide us avenues by which to address the wildlife habitat improvement within the watershed. In both of these programs, marginal farmland is taken out of production. On WHIP land, incentives are paid to implement land treatments that will restore or improve wildlife habitat. With CRP land, the incentives are aimed at taking marginal land out of production, but we can strongly encourage plantings that will provide enhanced wildlife habitat as well as erosion control.

Fishing is an important recreational activity in the Sand Creek watershed. Fishery areas in the watershed include the 23-acre Greensburg Reservoir State Fishing Area, the 4-acre City Park Lake, Sand Creek and its tributaries. Protecting and enhancing the quality of aquatic life in the watershed provides valuable recreation opportunities and enhanced quality of life.

A 1994 IDNR Fish Management Report for Sand Creek (compiled by Fisheries Biologist Larry Lehman) indicate adequate water quality for the diversity of species present but states a need for restoration and improvement of riparian areas to ensure the continued health of the current fish populations. Volunteer monitoring of macroinvertebrates on the main stem of Sand Creek and three tributaries indicates fair to good water quality for aquatic life.

Sedimentation run-off into Sand Creek causes high turbidity, increasing the water temperature and depleting the water of the necessary oxygen necessary to sustain aquatic life.

Species of fish present in the watershed (both stocked and naturally occurring) include: small- and large-mouthed bass, bluegill, white suckers, redear sunfish, channel catfish, common carp, black and white crappie, and yellow bullheads. The 2002 Indiana Fish Consumption Advisory has placed restrictions of varying degrees on black redhorse, spotted sucker, white sucker, yellow bullhead and rock bass species because of mercury and/or PCB contamination.

Objective 1:

Provide at least two educational events and seek financial resources to promote and improve wildlife habitat in the watershed.

Action	Person Responsible	Completion Date	Budget
Provide two Wildlife Habitat Workshops	Coordinator, Watershed Tech	Accomplished March 2000 and July 2003	Staff Time
Publish at least one news article per year educating the public on wildlife issues within the watershed	Watershed Tech	Through 2009	Staff Time

Objective 2:

Increase CRP/WHIP acreage for which the primary purpose is to benefit wildlife to 250 acres by 2009. *

Action	Person Responsible	Completion Date	Budget
Promote continuous and general CRP and WHIP programs at field days, personal letters, newsletters, radio	Decatur Co.SWCD and Jennings Co. SWCD/NRCS staff and INDNR	Through 2009	Staff Time

* Includes acreage in any CRP practice where high quality wildlife cover was selected.

***The Sand Creek Watershed Plan is an evolving document, as objectives are met and new concerns are addressed. The accomplishment page is updated with each new edition.**

Recreation

Outdoor recreation is a very important component to the quality of life in a community. Decatur and Jennings Counties has less than 500 acres of public outdoor recreational areas available to its residents. One hundred thirty acres is the statewide average of recreation acres per 1000 people, and the county average is just 10 acres per 1000 people.[2] Facilities within the watershed include the Greensburg City Lake and Park, the Greensburg Reservoir, the Westerkamp Property (80 acres), and parks and playgrounds in most of the smaller communities.

As a whole, Sand Creek Watershed lacks outdoor recreation opportunities that utilize our natural resources such as fishing and public access areas on Sand Creek, hiking trails and natural areas for education and recreation. Access to water recreation is also limited by full body contact restrictions because of poor water quality. The improvement and preservation of Sand Creek will provide more recreational opportunities, such as hiking, canoeing, fishing, bird-watching, etc.

[2] Figures taken from the Indiana Statewide Comprehensive Outdoor Recreation Plan (SCORP), Executive Summary 1994-1999.

Objective:

Partner with City of Greensburg to help enhance the recreational opportunities in the Sand Creek Watershed.

Action	Person Responsible	Completion Date	Budget
Plan scope of project in cooperation with the City of Greensburg.	Coordinator	Fall 2001-Spring 2009	Staff Time
Seek funding, in-kind donations and manpower from local businesses and organizations to complete improvements	Coordinator/Steering Committee	Spring 2002-Fall 2009	Staff Time

Urban Issues

The geographic scope of this project covers the Sand Creek Watershed. While the land use is primarily agricultural (81%), the two largest urban areas of Decatur County are located within the Sand Creek Watershed, the City of Greensburg and the Town of Westport. About 7,800 acres in the watershed can be considered residential/urban—including high-density housing, commercial, industrial and low-density housing. The impact of activities taking place in these areas contribute significantly to both the point source and non-point source (NPS) pollution, therefore we must raise awareness of urban as well as agricultural water quality issues.

In terms of population, 69% of Decatur County residents live in the Sand Creek watershed. 21% of Jennings County residents live in the Sand Creek watershed. Using 1996 population figures from the IUPUI Education website[3], the total population of the watershed is approximately 23,639 (based on township populations), and almost 70% of these are residents of Greensburg or Westport. A critical aspect to these population figures is that Greensburg saw a 9% population increase between 1990 and 1996. While this increase in urban residents in not as fast as in other areas of the state, it does indicate significant growth, and growth usually corresponds with increased development.

A construction site like this future housing subdivision can significantly contribute to sediment in the streams if erosion control practices are not used. Much education is needed in this area.

Development can have direct negative impacts on water quality through increased erosion when the ground is disturbed during construction and increased runoff from impervious surfaces (roads, parking lots, buildings). Runoff from impervious surfaces channels contaminants like oils, salts and other chemicals directly into surface water. This increased runoff can contribute to flooding and slower regeneration of ground water. Other urban/residential non-point source pollution (pollution that cannot be traced to a single point, like a pipe) includes chemicals and fertilizers applied to lawns and golf courses, litter and debris, and dumping into storm drains.

In general, as populations increase, there is greater pressure on existing resources—whether they are natural resources such as open land and suitable drinking water or related infrastructure

[3] Http://www.iupui.edu/it/ibrc/Population/CITYEST/allcities.html

such as community water treatment plants or individual septic systems. It is important that decisions regarding development and land use are proactive regarding the protection of water and land resources. This is why increased awareness of urban water quality issues is vital to the success of our project.

Objective:
Implement storm drain marking program that will cover 75% of the storm drains in Greensburg and Westport.

Action	Person Responsible	Completion Date	Budget
Write letters to the Mayor of Greensburg and the Town Council of Westport requesting cooperation with the activity.	Steering Committee /Coordinator	On-Going	Staff Time
Order supplies	Coordinator	On-Going	$5,000
Recruit youth groups and volunteers from area organizations	Coordinator	On-Going	Staff Time
Apply markers to drains	Coordinator/Volunteers	Summer 2003 & 2004	Staff & Volunteer Time

EDUCATION

Public Outreach

A key component to the Sand Creek Watershed Project is public outreach. Addressing water quality/conservation concerns from a watershed approach affects everyone living within the watershed boundaries, and great effort must be made to ensure involvement from all sectors of the community. A primary function of this project is to increase public awareness of impairments to the health of the watershed and our quality of life, as well as solutions that will conserve and protect.

Objective 1:
To increase readership of the Sand Creek Notes from 1850 to 3500 by 2009.

Action	Person Responsible	Completion Date	Budget
Increase mailing list by gathering names at civic meetings and project-sponsored workshops/field days and from organizations such as the Greensburg Chamber of Commerce and The Independent Westport Area Business Association .	Coordinator	On-going	Staff Time
Secure funding from sponsors and grants to cover increased costs.	Coordinator	On-going	Staff Time

Objective 2:
To build a successful outreach program on water quality issues.

Action	Person Responsible	Completion Date	Budget
Provide at least 24 media releases by newspaper or radio per year	Coordinator, Watershed Tech	Bi-Monthly	$5,000
Put up printed signs and displays in high traffic areas and at public events.	Coordinator, Watershed Tech.	On-going	$500
Create a library of education resources for use by our target audiences	Coordinator	On-going	$5,500
Make/obtain 3-D tabletop model of the Sand Creek Watershed projects for use in educational programs	Coordinator	On-going	$300

Objective 3:
Develop and present programs to demonstrate good watershed management practices.

Action	Person Responsible	Completion Date	Budget
Provide field day every two-three years discussing septic system maintenance and latest alternative technologies (3 field days total)	Coordinator/Technical Committee/Health Dept.	2002 to 2009	Staff Time
Develop and implement a stream bank stabilization demonstration area	Watershed Tech, Technical Committee	April 2002 to September 2003	$3,500
Hold 2 workshops on water quality/conservation and non-point urban pollution	Coordinator, Watershed Tech	Sept. 2001 to June 2003	Staff Time

Objective 4:
Hold a yearly clean up event on Sand Creek or tributaries.

Action	Person Responsible	Completion Date	Budget
Organize a "Sweep the Creek", enlisting volunteers from throughout the watershed community.	Coordinator	Annually	In-Kind Donations

Objective 5:
Continue gathering information on water quality impairments in the watershed to further inform and update the Sand Creek community on current water quality issues.

Action	Person Responsible	Completion Date	Budget
Identify high risk non-point source areas (i.e. failing septic systems, golf courses) through various monitoring / inventory efforts	Coordinator, Health Depts.	On-going	Staff Time

Schools

Often conservation efforts come down to changing mindsets and habits formed over a lifetime. This is why education, especially at early ages is such an important part of environmental stewardship. By giving teachers and students the knowledge and tools they need to form strong stewardship ethics and practices, we have a greater chance for real, long-term change. When we demonstrate the connections between our actions and impacts on water quality, we can encourage the students to make good choices in their lives now. We also set the foundation for future leaders to make wise environmental decisions.

Students from South Decatur High School look for macroinvertebrates that will help assess the current aquatic community.

The students in the Sand Creek watershed are spread through nine schools, Greensburg, North Decatur, and South Decatur Community Schools, and St. Mary's Catholic School in Decatur County as well as Jennings County schools, Scipio and Sand Creek Elementary. Our plan is to target elementary school classes with comprehensive watershed education programs. Students from the high schools have been enlisted to assist in our volunteer water-monitoring program through Hoosier Riverwatch (see Appendix D). We will also seek to involve extracurricular groups when possible, such as Girl Scouts or Boy Scouts, Little Hoosier Groups and 4-H.

Objective 1:

Provide at least 400 student hours per year of water quality/conservation education using a watershed approach.

Action	Person Responsible	Completion Date	Budget
Develop a watershed approach activities manual for teachers to use in area classrooms	Coordinator	September 2003	Staff Time
Implement a watershed education program in all schools in the Sand Creek Watershed	Coordinator	October 1999 to August 2005	Staff Time
Collaborate with area schools to implement watershed education program at outdoor labs	Coordinator/Watershed Tech	October 2001 to Sept. 2005	Staff Time
Seek funding to create financial awards to support teachers who develop solid conservation/water quality education programs for their students.	Coordinator/ Educator	October 2001 to Sept. 2005	Staff Time

Objective 2:
Implement water quality monitoring programs and record data at four different sites within the watershed.

Action	Person Responsible	Completion Date	Budget
Monitor four sites on a bi-monthly basis using Hoosier Riverwatch Volunteer Stream Monitoring Manual in cooperation with area high school students	Coordinator/ Certified Monitors	October 1999 to December 2009	Staff & Volunteer Time
Send data to Hoosier Riverwatch/ put in database	Coordinator/ Certified Monitors	October 1999 to December 2009	Staff Time
Obtain and replenish HACH monitoring kits through 2005 for participating groups	SWCD	October 2000 to September 2003	$1,000

ORGANIZATIONAL

Currently the Sand Creek Watershed Project has a strong, active Steering Committee and adequate funding for staff and basic project implementation. However, to ensure program success, we must find ways to build and keep community involvement on all levels and secure funding for projects through 2009. Both people and money are critical resources for our organizational stability.

Objective 1:
Seek financial resources to support staffing, activities and programs.

Action	Person Responsible	Completion Date	Budget
Develop funding strategy/targets	Grant/Financial Subcommittee	On-going	Staff Time
Build relationships with local/regional funding organizations	Coordinator, Steering Committee	On-going	Staff Time

Objective 2:
Encourage participation in committee/sub-committee activities and programs.

Action	Person Responsible	Completion Date	Budget
Recruit key individuals for each sub-committee	Coordinator, Subcommittees	On-going	Staff Time

REFERENCES

2002 Indiana Fish Consumption Advisory. Prepared jointly by the Indiana Department of Natural Resources, the Indiana State Department of Health, and the Indiana Department of Environmental Management, Indianapolis, IN.

Indiana Agricultural Statistics 1999-2000. Compiled by the Indiana Agricultural Statistic Service, West Lafayette, IN.

Logging and Forestry BMP's for Water Quality in Indiana—Field Guide. Published by the IDNR, Division of Forestry, Indianapolis, IN.

Project CLEAR Steering Committee. Northern Laughery Creek Watershed Management Plan. Project CLEAR, Versailles, IN.

ACCOMPLISHMENTS

1999-2000

- Formed steering committee; established vision and mission for the project.
- Identified current concerns or impairments to the health of the watershed.
- Cleaned up historic illegal dumpsite, 'Little Africa', with the help of Best Way of Indiana, Decatur County Highway Department and Indiana Conservationists Unite.
- Held first Wildlife Workshop.
- Organized 2 *Sweep the Creek* events, involving around 100 volunteers and gathering over 5 tons of trash.
- Increased readership of newsletter to 3200 people.
- Made presentations to many community organizations, including the Greensburg City Council, Greensburg Water Board, Greensburg Optimists, Lions, and Rotary Clubs, Business and Professional Women's Club, Chamber of Commerce, and The Independent Westport Area Business Association.
- Established a volunteer water-monitoring program with the cooperation of area high school teachers and students.

2001

- Completed the Sand Creek Watershed Management Plan.
- Held "Nutrient Management Workshop" for farmers and producers in the watershed.
- Brought 5-week watershed education series to 3rd grade classes in Greensburg Community School system
- Sponsored 3rd annual Sweep the Creek.
- Initiated storm drain marking project and covered over 100 drains in the Greensburg area.
- Participated in No-Till/Wildlife Field day hosted by the Decatur County SWCD.

2002

- Sponsored 4th annual Sweep the Creek with over 100 volunteers present – collected over 5 tons of trash.
- Implemented educational programs in all the six elementary schools in the watershed.
- Purchased an Enviroscape model to use in watershed education.
- Held Natural Resource Conservation Field Day
- Increased the number of Steering Committee members
- Held Woodland Field Day
- Held Industrial/Urban meeting with key business operations managers.
- Developed Educational materials information packet for the educators in the watershed.

2003

- Sponsored 5th annual Sweep the Creek with over 65 volunteers present – collected over 1 ton of trash.
- Held Student Wildlife/Conservation Day for 373 6th grade students in the county.
- Certified 14 more water monitors with Riverwatch training.
- Project awarded "21st Century Partners in Clean Water" award.
- Coordinator awarded Indiana Wildlife Federation, "Water Conservationist of the Year" award.
- Established streambank stabilization project on Gas Creek in Greensburg, IN.
- Increased no-till cropland by 10%.
- Held no-till field day and Wildlife field day at South Decatur High School wetland area.

APPENDIX A—Glossary

BMP: best management practice

Conservation Tillage: method of tilling the soil that leaves at least 30% of the previous crop's residue on soil surface after planting that current crop.

CRP: Conservation Reserve Program, a federal incentive program that promotes the installation of various conservation practices on agricultural land.

E. coli: a bacterium of the intestines of warm-blooded animals, including humans, that is used as an indicator of the possible presence of disease producing organisms.

EQIP: Environmental Quality Incentives Program, a federal program that provides technical and financial assistance to address conservation practices in designated priority areas.

Eutrophication: a process by which oxygen is severely depleted in a body of water as the result of the rapid growth then die-off of algae or other aquatic plants.

Filterstrips: vegetated areas designed to catch sediment and other pollutants running off of erodible soils.

FIP: Forestry Improvement Program, financial assistance program aimed at timber stand improvement.

Flouride: a mineral that can occur both naturally in the soil and water and can be present in discharge from certain industries. It is also often added to drinking water in small amounts to fight tooth decay, but exposure to large amounts can contribute to bone disease.

Grassed waterways: gently sloped trenches, planted with grass, that help slow down runoff and absorb excess water and any eroding soil.

HEL: highly erodible land

IDEM: Indiana Department of Environmental Management, the state regulatory agency on environmental issues.

IDNR (DNR): Indiana Department of Natural Resources

LARE: Lake and River Enhancement, a grant program through the Indiana Department of Natural Resources.

Nitrogen (or nitrates): a nutrient needed in moderate amounts by plants and animals. Excessive amounts of nitrogen can cause algal blooms, which lead to depleted oxygen levels in the water. The drinking water standard for nitrogen is 10 ppm or less.

Nonpoint source pollution: a type of pollution whose source is not readily identifiable as any one particular point, such as pollution caused by runoff from streets or agricultural land.

No-till planting: method of farming where the soil is not tilled and seeds are planted without turning the soil.

NRCS: Natural Resources Conservation Service, a federal agency that provides technical assistance for conservation programs

Phosphorus: an essential plant nutrient that, in excessive amounts, can contribute to eutrophication.
Point source pollution: pollutants originating from a specific or "point" source, such as a pipe, vent or culvert.

Riparian: an area adjacent to the bank of a stream, river, pond or other water body.

RMZ: Riparian Management Zone, a buffer strip next to a stream, river, pond or other water body.

T-value: the tolerable limit of erosion above which nature cannot reproduce soil fertile enough for sustainable production.

SWCD: Soil and Water Conservation District, a local agency that provides assistance with soil and water conservation issues

Watershed: all the land area that drains into a particular body of water.

WHIP: Wildlife Habitat Improvement Program, a voluntary federal program for landowners who want to develop and improve fish and wildlife habitat on their land.

WWTP: waste water treatment plant

APPENDIX B—
Steering Committee Members / Project Partners

Steering Committee:

- Bob Dawson, Farmer
- Bob Hauser, Decatur Co. Rural Water
- Clifford Byard, Westport Town Board
- Dan Markham, Greensburg Daily News
- Darrell Breedlove, District Forester
- Debbie Martin, Project Treasurer
- Dennis Weber, Decatur C. Rural Water
- Don Yager, Farmer- Farm Bureau
- Nicole Wolff, Decatur Co. Health Dept.
- Ed Baumgartle, KOVA Fertilizer
- Alex Case, Premier Ag
- Nicole Wolff, Dec. Co. Board of Health
- John Dwiggins, Jr., Wildlife Educator
- Max Maudlin, Farmer
- Peg Polanski, Attorney/Riparian Landowner
- Steve Delph, District Conservationist
- Tom Menkedick, Farmer-County Commissioner
- Toni Collins, Mainsource Bank
- Carla Kramer, Teacher
- Susan Ricke, Step Ahead Coordinator

Supporting Agencies:

- Decatur County Soil and Water Conservation District (SWCD)
- Indiana Department of Environmental Management (IDEM)
- Natural Resource Conservation Service (NRCS)
- Decatur County Farm Service Agency (FSA)
- Indiana Department of Natural Resources (IDNR)

The following Project Partners have sponsored our efforts in many different ways and we appreciate their support.

- Wal Mart
- South Decatur High School
- Greensburg High School
- North Decatur High School
- ABC Forest Management
- Jackson Office Equipment
- Delta Faucet
- Delta Faucet—Indianapolis
- Greensburg Daily News
- GECOM Corporation
- Best Way of Indiana
- 5/3 Bank
- McLean Screenprinting
- Paul R. Nahmias, D.D.S.
- Witkemper Insurance Group
- First Federal
- Pepsi
- Greensburg Rotary Club
- The Independent Westport Area Business Association
- Main Source Bank
- NTN Corporation
- O'Mara Foods, Inc.
- 5K Corporation
- Decatur County REMC
- Game Plan Graphics
- Evans Beef
- Farm Credit Services
- Hilliard Lyons
- Rust Wholesale
- Staples
- Baltus Electronics
- Westport Dairy Queen
- State Farm Insurance
- Don Meyer Ford
- KB Specialty Foods
- Langeland Farms
- Obermeyer & Young
- Green Signs Company
- Hubers Meat Locker
- Vanderbur's Greenhouse
- Medical Multi-Specialty Clinic
- Greensburg Fraternal Order of Police
- KOVA Fertilizer
- ReMax
- Decatur Developmental Industries
- MASCO Supply Services
- River Valley Resources
- Scout Troop 573
- Greensburg Area Chamber of Commerce

APPENDIX C—Fish Consumption Advisory Information

The following are excerpts from the 2000 Indiana Fish Consumption Advisory publication

SUMMARY

Don't stop eating fish. It is a good source of protein that is low in saturated fat. You can maximize the benefits and minimize the risk of eating contaminated fish by following the fish advisory to help you make informed choices about:

- what types of fish you eat,
- where you fish,
- how you prepare fish for cooking, and
- how to moderate the amount and frequency of fish you consume.

Fish are good for you and are good to eat. But some fish may take in contaminants from the water they live in and the food they eat. Some of these contaminants build up in fish and you over time. These contaminants could harm you, so it is important to keep your exposure to these contaminants to a minimum by following the fish advisory. The advisory helps you plan what fish to keep as well as how often and how much sport fish you should eat. This advisory is not intended to discourage you from eating fish, but it should be used as a guide to reduce your risk of eating contaminated fish.

Long-lasting contaminants such as polychlorinated biphenyls (PCBs), DDT, and mercury build up in your body over time. It may take months or years of regularly eating contaminated fish to build up to amounts that are a health concern. Health problems, which may result from the contaminants found in fish, range from small changes in health that are hard to detect, to birth defects and cancer. Mothers who eat highly contaminated fish for many years before becoming pregnant may have children who are slower to develop and learn. The meal advice in this advisory is intended to protect children from those potential developmental problems. Adults are less likely to have health problems at the low levels that affect children.

Group 1—Unrestricted consumption. One meal per week for women who are pregnant or breastfeeding, women who plan to have children, and children under the age of 15
Group 2—One meal per week (52 meals per year) for adult males and females. One meal per month for women who are pregnant or breastfeeding, women who plan to have children, and children under the age of 15.
Group 3—One meal per month (12 meals per year) for adult males and females. Women who are pregnant or breastfeeding, women who plan to have children, and children under the age of 15 do not eat.
Group 4—One meal every 2 months (6 meals per year) for adult males and females. Women who are pregnant or breastfeeding, women who plan to have children, and children under the age of 15 do not eat.
Group 5—No consumption (DO NOT EAT)

APPENDIX D—Volunteer Water Quality Monitoring Program

11-Digit HUC: 05120206-030
START DATE: October 1999
QAPP: ARN—98-104 (Approved by IDEM 10/29/99)

SUMMARY:
The Sand Creek Watershed Project began monitoring four sites in October and November of 1999. The initial coordinator, Brian Ingmire submitted a Quality Assurance Project Plan (QAPP)[1] to IDEM and enlisted the help of three area high school classes in monitoring three of the sites. There was a short lapse in monitoring during the summer of 2000, while the project was without a coordinator. The following coordinator, Andrea Bongen, resumed the testing in October of 2000. Monitoring is planned to continue through 2003.

METHOD:
Advanced chemical (HACH), physical and biological testing are carried out according to Hoosier Riverwatch (HR) guidelines and our QAPP. There is always a Level II certified monitor present during sampling.

TRAINING: The coordinator and two of the three high school teachers involved received Level II certification under the HR program. Some students also received level I or II certification. At the beginning of each semester, the coordinator spends up to three class periods instructing students on water quality issues and testing methods.

DATA REPORTING:
The new Hoosier Riverwatch database came on line in November of 2000. All current tests results are entered directly into the database, which can be searched and viewed by anyone with Internet access. Original data sheets are still kept on file at the Decatur Co. SWCD. Old data is still in the process of being entered.

[1] The QAPP outlines all methods and procedures of the Sand Creek monitoring program and is on file at the Decatur County SWCD office.

Sand Creek Watershed
Water Quality Monitoring Program

Site 1 (HR site #68)—Muddy Fork

HUC: 05120206-030-030
Lon: 85 deg 30 min 53 sec W
Lat: 39 deg 21 min 4 sec N
Intersection of Muddy Fork and C.R. 100 North

Results:

Date	CQHEI*	PTI**	WQIR***	Flow-cfs	Dissolved Oxygen-ppm,% Sat	*E*. Coli-col/mL	pH	BOD5-mg/L	Temp Δ	Phospate, Total-mg/L	Nitrate-mg/L	Turbidity-NTU's
10/19/99			78	.54	12.1, 115%	100	8	—	1	.2	4.4	—
11/12/99			65	—	10, 85%	600	8.5	3	-1.1	0.6	8.8	—
3/15/00			56	5.74	16.5, 135%	1000	6.7	3.7	.5	.9	50.6	—
5/15/00		12	53	11.42	11, 130%	900	7.9	2.8	.5	2.3	75.2	—
11/1/00	57	25	71	21.2	13, 122%	475	8.3	1	0	.2	30.8	—
12/05/00			58	—	15.5, 117%	25	8.1	1.5	—	.13	30.8	—
2/20/01	52	20	53	6.9	14, !30%	4500	8	0	—	.24	30.8	—
3/28/01			61	2.36	17.5, >140%	75	8.3	3	—	.15	22	—
4/18/01	55	11	68	6.01	16, 130%	8	8.3	1	—	.8	40	—
5/23/01			65	6.36	12.5, 125%	330	8.1	1.5	—	.3	33	—
6/8/01			79	37.05	10.5, 110%	0	7.8	2.5	—	.35	35	—

*** Citizens Qualitative Habitat Index—Hoosier Riverwatch method for assessing physical characteristics; there is no rating scale for results at this time.**

**** Pollution Tolerance Index —Hoosier Riverwatch rating for macroinvertebrate sampling: 23 or more is Excellent, 17-22 is Good, 11-16 is Fair, 10 or less is Poor.**

***** Water Quality Index Rating—Hoosier Riverwatch rating of chemical test results: 90%-100% is Excellent, 70%-90% is Good, 50%-70% is Medium, 25%-50% is Bad, <25% is Very Bad.**

Sand Creek Watershed
Water Quality Monitoring Program

Site 2 (HR site #71)—Gas Creek

HUC: 05120206-030-010
Lon: 85 deg 29 min 14 sec W
Lat: 39 deg 19 min 25 sec N
On property of Dan Roach, 850 S C.R. 60 SW

Results:

Date	CQHEI*	PTI**	WQIR***	Flow-cfs	Dissolved Oxygen-ppm,% Sat	*E.* Coli-col/mL	pH	BOD5-mg/L	Temp Δ	Phospate, Total-mg/L	Nitrate-mg/L	Turbidity-NTU's
10/28/99			59		9, 93%	1200	7.8	3.5	.5	1	65.8	—
12/2/99			63		8.25, 80%	3000	8.2	—	8.5	2	61.6	—
12/7/99			45		9, 87%	3800	8.8	3.5	8.8	4	59.4	—
1/15/00			51		10.5, 93%	1400	7.8	3.2	8.4	13	48.4	—
2/12/00			51		7, 58%	1200	8.1	2.5	4	1.3	31.5	—
3/11/00			51		8.5, 80%	1200	8.75	—	2	1.8	39.6	—
4/8/00			51		14, 130%	12000	7.8	—	3	3.2	35.2	—
5/18/00			60		9, 105%	1100	7.6	2.1	1	2.1	44.1	—
10/7/00	81		63		10, 105%	5860	7.9	—	5	1.45	3.96	—
11/11/00		19	56	31.7	8.3, 76%	4250	7.8	.3	4	4.6	3.1	—
12/9/00			62	—	9.7, 82.3%	—	7.3	1.67	5	4.3	4.4	—
2/10/01			63	—	10.7, 98%	300	7.6	3	8	2.4	3.52	—
3/10/01		9	57	11.93	8.3, 68.3%	1266	7.5	1	2	3.5	18	—
4/7/01			64	21.48	9.5, 95%	1071	7.7	3.67	4.5	3.5	1.5	—
5/5/01	83	15	59	10.44	6.3, 63%	—	7.7	2.67	-2	5	23	—
6/16/01			72	13.86	9, 100%	0	7.8	6	—	2	16	—

*** Citizens Qualitative Habitat Index—Hoosier Riverwatch method for assessing physical characteristics; there is no rating scale for results at this time.**

**** Pollution Tolerance Index —Hoosier Riverwatch rating for macroinvertebrate sampling: 23 or more is Excellent, 17-22 is Good, 11-16 is Fair, 10 or less is Poor.**

***** Water Quality Index Rating—Hoosier Riverwatch rating of chemical test results: 90%-100% is Excellent, 70%-90% is Good, 50%-70% is Medium, 25%-50% is Bad, <25% is Very Bad.**

Sand Creek Watershed
Water Quality Monitoring Program

Site 3 (HR site #116)—Cobbs Fork

HUC: 05120206-030-060
Lon: 85 deg 31 min 14 sec W
Lat: 39 deg 13 min 47 sec N
Intersection of Cobbs Fork and C.R. 60 SW

Results:

Date	CQHEI*	PTI**	WQIR***	Flow-cfs	Dissolved Oxygen-ppm,% Sat	*E*. Coli-col/mL	pH	BOD5-mg/L	Temp Δ	Phospate, Total-mg/L	Nitrate-mg/L	Turbidity-NTU's
10/21/99			71		15.5, 137%	100	8	—	.7	.14	13.2	—
11/4/99			74		12, 109%	100	8.3	2.5	1	.14	11	—
2/7/00			77		15.5, 90%	20	7.8	2.2	1	.18	13.2	—
3/9/00			63		15.5, >140%	50	7.8	2.1	1	.2	50.6	—
4/10/00			86		11.5, 110%	0	7.5	—	2	.2	13	—
5/20/00			78		8.5, 95%	20	7.3	1	1	.2	36	—
10/25/00			63	14.98	8, 93%	50	7.4	.5	0	.05	6	—
2/1/01	61	7	77	42.69	13, 96%	57	7.9	2	—	.05	.7	63
3/14/01			73	38.04	16, 120%	50	8.3	2	—	.05	8	40
4/30/01			60		13.5, >140%	1039	8.3	4	—	.2	3	—
5/10/01		15	74	24.38	13, 140%	150	7.6	4	—	0	1	0
6/22/01			67	58.33	10, 110%	0	8.1	5	—	.8	>44	80

*** Citizens Qualitative Habitat Index—Hoosier Riverwatch method for assessing physical characteristics; there is no rating scale for results at this time.**

**** Pollution Tolerance Index —Hoosier Riverwatch rating for macroinvertebrate sampling: 23 or more is Excellent, 17-22 is Good, 11-16 is Fair, 10 or less is Poor.**

***** Water Quality Index Rating—Hoosier Riverwatch rating of chemical test results: 90%-100% is Excellent, 70%-90% is Good, 50%-70% is Medium, 25%-50% is Bad, <25% is Very Bad.**

Sand Creek Watershed
Water Quality Monitoring Program

Site 4 (HR site #69)—Sand Creek

HUC: 05120206-030-030
Lon: 85 deg 32 min 44 sec W
Lat: 39 deg 10 min 0 sec N
At covered bridge, just north of C.R. 1100 S and Sand Creek intersection

Results:

Date	CQHEI*	PTI**	WQIR***	Flow-Cfs	Dissolved Oxygen-ppm,% Sat	*E.* Coli-col/mL	pH	BOD5-mg/L	Temp Δ	Phospate, Total-mg/L	Nitrate-mg/L	Turbidity-NTU's
11/10/99			74	6.96	12.5, 115%	0	8.9	2.5	0	1	19.8	—
12/7/99			75		16.5, 123%	0	8.5	2.5	1.1	.8	22	—
3/10/00		17	64	9.67	15.5, 142%	0	8	3.2	1	1.3	44	—
5/20/00			61	23.27	12, 135%	200	8.1	2	0	1.5	33	—
10/12/00	47		71		11, 113%	100	8.5	1	—	.54	22	—
11/29/00			59		18, 140%	250	8.4	2	—	.48	30.8	—
2/28/01			65		17, 135%	541	8.5	1.5	—	.28	15.25	—
3/30/01			76		14, >115%	66	8.6	0	—	.08	11	—
4/30/01			—		16.5, >140%	396	8.4	—	—	.35	9	—
5/29/01			68		11, 120%	198	8.3	1	—	.3	30	—
6/22/01			67		10, 110%	0	7.9	6	—	1.5	13	100

*** Citizens Qualitative Habitat Index—Hoosier Riverwatch method for assessing physical characteristics; there is no rating scale for results at this time.**

**** Pollution Tolerance Index —Hoosier Riverwatch rating for macroinvertebrate sampling: 23 or more is Excellent, 17-22 is Good, 11-16 is Fair, 10 or less is Poor.**

***** Water Quality Index Rating—Hoosier Riverwatch rating of chemical test results: 90%-100% is Excellent, 70%-90% is Good, 50%-70% is Medium, 25%-50% is Bad, <25% is Very Bad.**

APPENDIX E—Chart of Pesticide Levels

Stream Assessments--Site I

Background: April 26, 2001. Sunny with temperatures around 70 degrees. It rained approximately 4 or 5 days ago, which was approximately .3 of an inch. Location: Co. Rd. 500 South to 600 South, section 5 on Forest Hill topographical map. Water temperature 56 degrees Fahrenheit. Inventory completed by Andy Ertel, Jim Dunaway and Andrea Bongen.

This stream and riparian site appears to be in good quality. The channel appears to change in substrate 4 different times within 1 ½ miles surveyed. The stream has a pool-riffle sequence with approximately ***twenty*** different riffle areas. There is green algae on the limestone substrate areas and on many of the rock riffle areas. There are no large vascular plants located within the stream. Sediment (sand) bars have formed closer to the bridge at Co. Rd. 600 South

Wildlife seem well represented; observed were numerous water snakes, minnows, fingerlings, 10-14" bass, and 18" suckers throughout the segment. Canada geese, mallard and wood ducks were also present.

The area has a number of different wildflowers scattered within the vegetation. The stream banks are in good condition. Some banks are protected by a species that appears similar to rushes. Past stream bank erosion problems were addressed by placing large concrete pieces in numerous spots. One poured concrete structure still exists in good condition protecting the county road. Closer to Co. Rd. 600S, limestone riprap has been placed on approximately 200 feet of stream bank very recently.

Three bags of trash, one mattress, and a chair have been thrown either in the stream or within the vegetation area along the stream. Smaller pieces of trash are scattered throughout the segment, but not excessive.

Three field tile outlets are located in the channel banks. One outlet pipe has fallen off, due to stream flow and erosion.

Suspected impairments within this segment are **nutrients** and **sediment**.

Site II:

Background: May 1, 2001. Sunny day temperatures around 75 degrees. Rained approximately 10 days ago, which was approximately .3 of an inch. Location: section 23 and 26 on Greensburg topographical map. Inventory completed by Andy Ertel, Jim Dunaway and Kathleen Hagen.

The stream section scored in the **good** category using the stream visual assessment protocol technique. The channel bottom was limestone with green algae attached to the substrate. The stream has a pool-riffle effect. There is a limestone ledge approximately three feet in height that helps oxygenate the water. The area was well vegetated which provides a canopy over the stream and reduces temperatures in the summer time. Stream grade appeared to be 1 to 2 percent. Water clarity was clear.

The stream supports a variety of fish from minnows and small catfish to small mouth bass. Red-winged black birds, snakes, and a large hawk were sighted in the segment area.

As the stream migrates south the limestone begins to disappear, larger pools and less riffles occur and the channel widens. More sandy deposits form, algae is not present and the flow slow down. Stream bank erosion is minimal.

Located on the bank is an old axle with two tires attached.

Suspected impairments within this segment are **nutrients** and **sediments.**

Summary: These assessments should be done again in the summer. These areas appear to be in good to excellent condition and provide excellent habitat for a variety of aquatic and terrestrial wildlife. Grassed filter and more riparian buffers could enhance the areas even more and minimize any additional sediment loads.

Watershed Inventory (windshield survey)

Location: Washington township area (northeast headwaters).

Spring 2001 has been a dry and above temperatures year. The cropland fields are either no-till or chisel, field cultivator, planter systems (however, little to no residue). On some cropland fields where the rainfall runoff concentrates, a gully or cutting back is occurring at the creek location. The vegetation along the creeks within the cropfields are minimal in many areas, ranging 3 to 8 feet.

There are approximately 3 to 4 cattle operations on pasture with accessibility to the creek for a water supply. On this warm day, cattle were present in the creek. Ditch bank erosion ranges from very little to moderate concern.

Did not see any effluent problems from septic systems. For the most part, houses are distant from each other.

Summary: Increased implementation of conservation tillage, filter strips, possible nutrient management, livestock exclusion, and alternative water sources would increase the potential for better water quality and protect the soil resources. Conservation planning and technical assistance on individual farms would create a more in depth inventory of critical areas.

Sand Creek Watershed
Impaired Waterbodies (Draft)

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form.
If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	KH	WWS
Project ARN:	00-222	95-992
Landowner Initials:	MF	HJK
Date practices completed:	7/24/2003	8/8/1999

Please check which BMPs apply:

- ☑ Agricultural Field Practices
- ☑ Filter Strips

RUSLE	Before Treatment	After Treatment	Example Before Treatment	Example After Treatment
Rainfall-Runoff Erosivity Factor (R)	160	160	120	120
Soil Erodibility Factor (K)	0.24	0.24	0.35	0.35
Length-Slope Factor (LS)	0.16	0.16	0.44	0.44
Cover Management Factor (C)	0.29	0.013	0.7	0.5
Support Practice Factor (P)	1	1	0.775	0.11
Predicted Avg Annual Soil Loss (ton/acre/year)	1.78	0.08	10.03	1.02

		Example
Contributing Area (acres)	65.5	14

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	62	85
Phosphorus Load Reduction (lb/year)	96	100
Nitrogen Load Reduction (lb/yr)	191	200

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	2	92
Phosphorus Load Reduction (lb/year)	7	114
Nitrogen Load Reduction (lb/yr)	12	227

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	64	177
Phosphorus Load Reduction (lb/year)	102	214
Nitrogen Load Reduction (lb/yr)	203	427

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	KH	WWS
Project ARN:	00-222	95-992
Landowner Initials:	WRF	HJK
Date practices completed:	7/3/2003	8/8/1999

Please check which BMPs apply:

☑ Agricultural Field Practices
☐ Filter Strips

RUSLE	Before Treatment	After Treatment	Example Before Treatment	Example After Treatment
Rainfall-Runoff Erosivity Factor (R)	160	160	120	120
Soil Erodibility Factor (K)	0.46	0.46	0.35	0.35
Length-Slope Factor (LS)	0.42	0.42	0.44	0.44
Cover Management Factor (C)	0.29	0.055	0.7	0.5
Support Practice Factor (P)	1	1	0.775	0.11
Predicted Avg Annual Soil Loss (ton/acre/year)	8.96	1.70	10.03	1.02

		Example
Contributing Area (acres)	12500	14

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	26303	85
Phosphorus Load Reduction (lb/year)	31544	100
Nitrogen Load Reduction (lb/yr)	63057	200

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	4001	92
Phosphorus Load Reduction (lb/year)	8512	114
Nitrogen Load Reduction (lb/yr)	15856	227

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	30305	177
Phosphorus Load Reduction (lb/year)	40057	214
Nitrogen Load Reduction (lb/yr)	78913	427

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	KH	WWS
Project ARN:	00-222	95-992
Landowner Initials:	MF	HJK
Date practices completed:	7/24/2003	8/8/1999

Please check which BMPs apply:
- ☑ Agricultural Field Practices
- ☐ Filter Strips

			Example	
RUSLE	Before Treatment	After Treatment	**Before Treatment**	**After Treatment**
Rainfall-Runoff Erosivity Factor (R)	160	160	**120**	**120**
Soil Erodibility Factor (K)	0.35	0.35	**0.35**	**0.35**
Length-Slope Factor (LS)	0.6	0.6	**0.44**	**0.44**
Cover Management Factor (C)	0.29	0.013	**0.7**	**0.5**
Support Practice Factor (P)	1	1	**0.775**	**0.11**
Predicted Avg Annual Soil Loss (ton/acre/year)	9.74	0.44	**10.03**	**1.02**

		Example
Contributing Area (acres)	50	**14**

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	269	**85**
Phosphorus Load Reduction (lb/year)	292	**100**
Nitrogen Load Reduction (lb/yr)	584	**200**

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	8	**92**
Phosphorus Load Reduction (lb/year)	20	**114**
Nitrogen Load Reduction (lb/yr)	37	**227**

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	277	**177**
Phosphorus Load Reduction (lb/year)	312	**214**
Nitrogen Load Reduction (lb/yr)	621	**427**

Agricultural Fields and Filter Strips

Please fill in the gray areas below. Once you have successfully estimated the sediment and nutrient load reductions, please print two (2) copies of this worksheet. Attach both copies to the 319A or 319U cost-share form. If you have any questions, please contact Wes Stone (317/233-6299).

These may include:
Prescribed Grazing
Residue Management, Mulch Till
Conservation Crop Rotation
Conservation Cover
Cover and Green Manure
Critical Area Planting
Stripcropping, Contour
Stripcropping, Field
Filter Strips

		Example
IDEM Project Manager:	KH	WWS
Project ARN:	06-222	95-992
Landowner Initials:	MF	HJK
Date practices completed:	7/24/2003	8/8/1999

Please check which BMPs apply:

☑ Agricultural Field Practices
☐ Filter Strips

RUSLE	Before Treatment	After Treatment	Example Before Treatment	Example After Treatment
Rainfall-Runoff Erosivity Factor (R)	160	160	120	120
Soil Erodibility Factor (K)	0.35	0.35	0.35	0.35
Length-Slope Factor (LS)	0.6	0.6	0.44	0.44
Cover Management Factor (C)	0.29	0.013	0.7	0.5
Support Practice Factor (P)	1	1	0.775	0.11
Predicted Avg Annual Soil Loss (ton/acre/year)	9.74	0.44	10.03	1.02

		Example
Contributing Area (acres)	145.4	14

The portion of the treated field which contributes eroded soil to the waterbody. The contributing area is defined by the runoff flowpath and by topography and may differ in size from the actual treated field.

Please select a gross soil texture:

- ○ Clay (clay, clay loam, and silt clay)
- ◉ Silt (silt, silty clay loam, loam, and silt loam)
- ○ Sand (sand, sandy clay, sandy clay loam, sandy loam, and loamy sand)
- ○ Peat

Estimated Load Reductions for Agricultural Field Practices

	Treated	Example
Sediment Load Reduction (ton/year)	684	85
Phosphorus Load Reduction (lb/year)	763	100
Nitrogen Load Reduction (lb/yr)	1526	200

Estimated Additional Load Reductions through Filter Strips

	Filter Strips	Example
Sediment Load Reduction (ton/year)	21	92
Phosphorus Load Reduction (lb/year)	52	114
Nitrogen Load Reduction (lb/yr)	97	227

Total Estimated Load Reductions

	Total	Example
Sediment Load Reduction (ton/year)	705	177
Phosphorus Load Reduction (lb/year)	815	214
Nitrogen Load Reduction (lb/yr)	1623	427