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UPPER PATOKA RIVER WATERSHED

MANAGEMENT PLAN

Patoka River at Assessment Site #1

Prepared for
Indiana Department of Environmental Management
By
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Four River Resoure Conservation & Development Area, Inc.

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1.1 Initiation

The project was first initiated through a partnership between the Dubois County Soil & Water Conservation District (SWCD) and the Four Rivers Resource Conservation & Development Area (RC&D). The area was chosen to evaluate the water quality that presently exists and to implement further improvements for the drinking water for Jasper and surrounding communities that is drawn from the Patoka River at the City of Jasper. Livestock operations in Dubois County, where the watershed is primarily located, had also been found to have soil test levels of phosphorous amounts exceeding what is required for crop production. The Patoka Lake Water District is expanding water service to the area which could encourage further rural residential development. In addition, the low permeability of the soils and steep slope causes the surface water runoff to have an increased chance for transportation of contaminates and impairments into the Patoka River.

1.2: Funding

The project was funded through the EPA 319 grant program. The Dubois County SWCD provided in-kind services and matching funds as part of the agreement. The RC&D provided staffing and collected technical data and public input in developing the plan. IDEM provided consulting services in the preparation of the plan as did other agencies on a voluntary basis including the Indiana State Department of Agriculture (ISDA), the Purdue Cooperative Extensive Service, and the Natural Resource Conservation Services (NRCS).

1.3: Public Input and Initial Concerns

The project staff over the course of the grant period solicited input through 7 public meetings. These meetings were advertised through local SWCD mailings and in the local newspaper. Information on concerns was collected through focus group meetings and interviews with project participants within the impacted area. Other input was obtained through supervisor meetings and locally-led meetings arranged and/or facilitated by the Dubois County SWCD and associated staff. A steering committee was formed to be the ultimate decision makers in the plan-writing process.

To kick off the project, a list of initial concerns was gathered at public steering committee and stakeholder meetings, and through meetings with Dubois SWCD staff, NRCS staff & technical resources, Dubois County SWCD supervisors, and Dubois County Health Department staff. The following is a summarized list of the initial concerns:

- *E. coli* (and other associated pathogens)
- Jasper & Beaver Lakes
- Runoff contaminated by livestock
- Livestock in streams
- Septic systems
- Farming too close to the stream (no buffers)
- Nutrient management
- Soil erosion

1.4: Steering Committee & Selection Method

The nomination and acceptance process for the steering committee was created by the watershed coordinator and evaluated by the Dubois County SWCD executive director and Four Rivers RC&D coordinator. An announcement was made in the local newspaper that nominations were being accepted. Nomination forms were created and mailed to local individuals that had previously shown interest in the plan as well as made available at the Dubois County SWCD office. At a public meeting following the announcements and mailings held on March 16th, 2006, the nominations were presented to those in attendance and a unanimous vote was required to accept the nominees as steering committee members. Five members were selected at this time as well as one additional member selected at a public meeting held on April 25th, 2006. The nominees and their interests or reason for being involved in the planning process were listed on the nomination forms and listed in *Table 1.4-A: Steering* Committee.

Steering Committee Member	**Professional Position or Reason to be Involved**
Jeanne Melchior	Educator at Vincennes University-Jasper
Jason Small	Dubois County SWCD Supervisor, owner of Small and Small Seeds
Roger Seger	President of Wabash Valley Foods, Owner of poultry in the watershed
Greg Seng	Farmer and landowner in the watershed
Ed Hollinden	Water Treatment Superintendent, Jasper Municipal Utilities
Shawn Werner	Dubois County Health Department Environmental Specialist

Table 1.4-A: Steering Committee

1.5: Water Monitoring & Watershed Inventory

Water monitoring was conducted by the RC&D staff as part of the project to identify relationships between management practices and land use and its impacts on water quality. The monitoring also established baseline conditions that can be used to evaluate the progress of the plan.

The monitoring focused on nutrients (nitrogen and phosphorous), pathogens (*E. coli*), dissolved oxygen, water clarity (turbidity), and water conditions (temperature & pH). These parameters were chosen because they reflect land use conditions that were the focus of this study at its initiation. The monitoring was done according to a QAPP developed by RC&D and approved by IDEM prior to monitoring. The

QAPP is included in appendix C. A watershed inventory was conducted to verify concerns and identify possible sources affecting water quality. They also provide baseline conditions that can be used to evaluate the success of the plan through future monitoring.

1.6: Vision Statement

During a meeting held on November 27th, 2006 the stakeholder and steering committee group present developed a vision statement:

> *By 2020, the Upper Patoka River Watershed will be properly managed through the use of conservation practices such as forests and filter strips to protect this resource for the future. There will be a good balance between land use and environmental impact to keep the river free from pollutants harmful to fish, animals, or humans.*

2.1: Location of Watershed HUC unit 05120209020

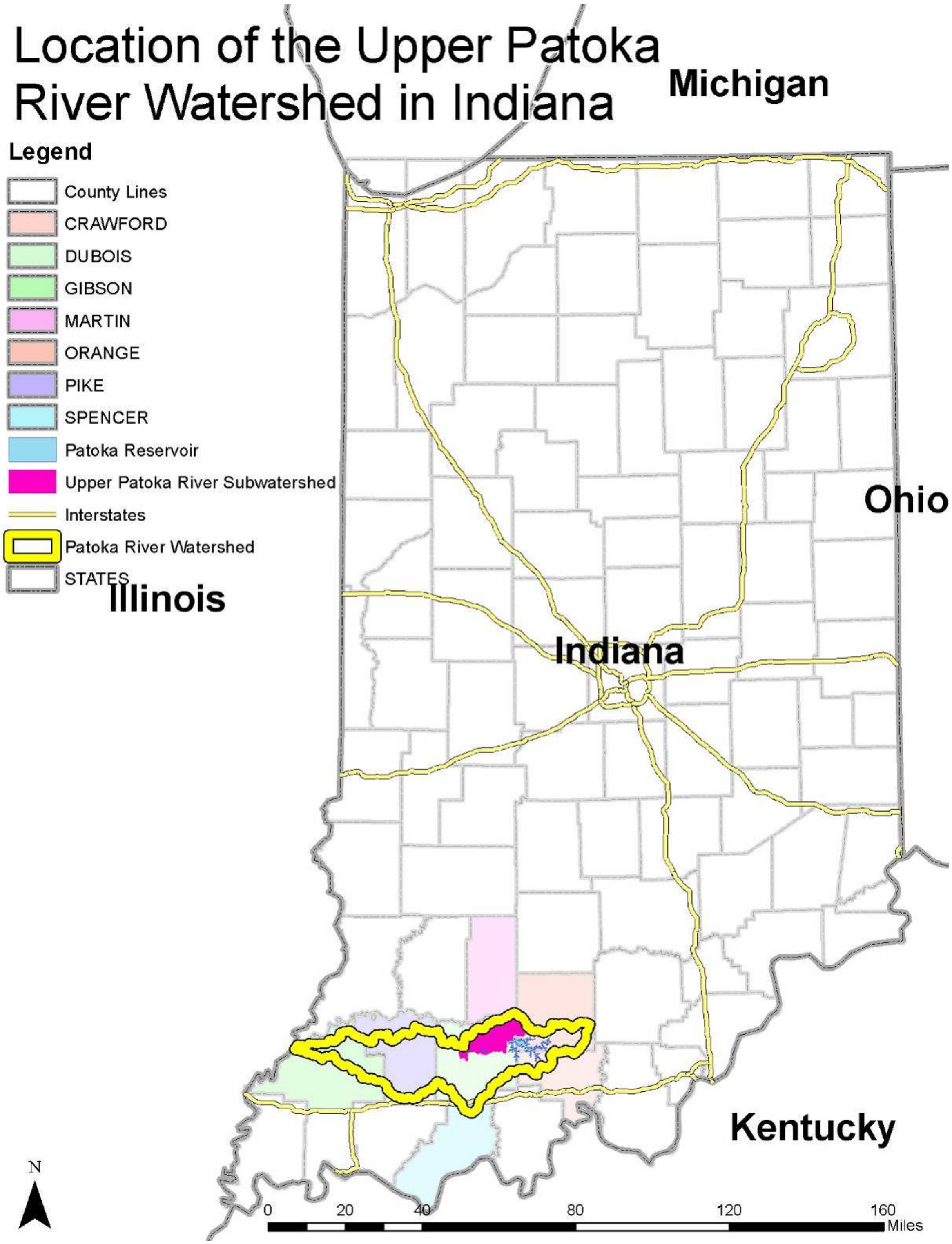

Figure 2.1-A: Location of the Upper Patoka River Watershed in Indiana

The watershed HUC unit 05120209020 drains the northeastern section of Dubois county as well as small parts of Orange and Martin counties. *Figure 2.1-A: Location of the Upper Patoka River Watershed in Indiana* shows the location of the study area. It is 71,311 acres. It makes up approximately 22% of Dubois County, 3% of Orange County, and 0.5% of Martin County. 87% of the drainage lies in Dubois County, 12% lies in Orange County, and 1% lies in Martin County. Its major drainage channel is a section of the Patoka River extending from Patoka Lake to the City of Jasper. The watershed is part of the larger Patoka River Watershed (HUC 05120209) which extends east of Patoka Lake and West-Southwest of Jasper until the River drains into the Wabash River near Mt. Carmel, IL. As the upper most watershed of the Patoka River it is commonly known as the Upper Patoka River Watershed. *Figure 2.1-B: Location of the Upper Patoka River Watershed in the Patoka River Basin* shows the Location of the study area within the larger 8-digit Patoka River Watershed.

A number of smaller streams carry water to the Patoka within the study area including Dillon Creek, Cane Creek, Davis Creek, Polson Creek, Bauer Creek, Bailey Creek, Sugar Creek, George Creek, Teder Creek, Beaver Creek, Long Ditch, Calumet stream, and Buffalo stream.

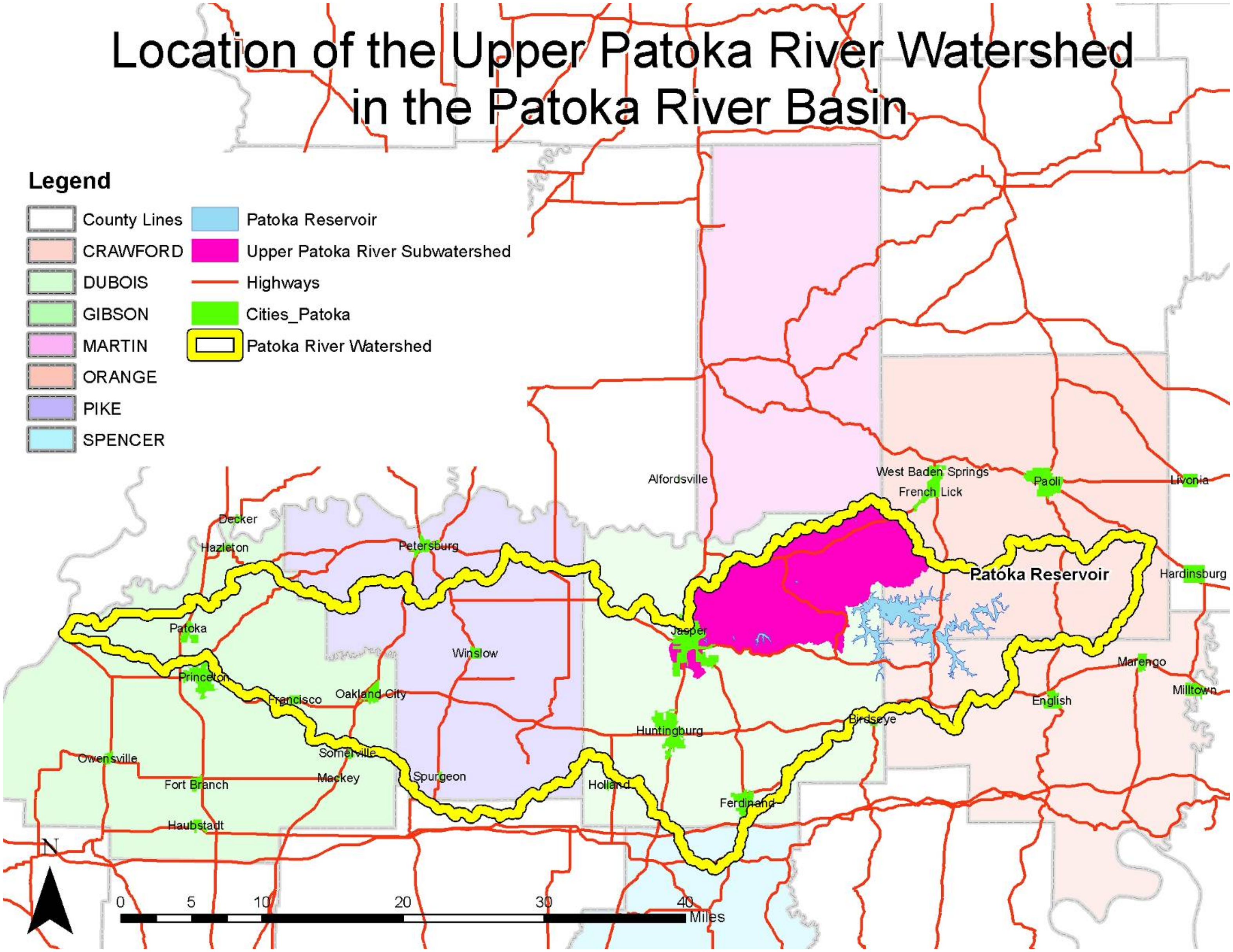

Figure 2.1-B: Location of the Upper Patoka River Watershed in the Patoka River Basin

2.2: Sub-watersheds

The Upper Patoka River Watershed is subdivided into 8 - 14-digit HUC watersheds. Sample points were chosen to reflect water quality in each of the sub-watersheds. *Figure 2.2-A: Sub-watersheds & Sample Point Locations* shows the locations of sub-watershed and sample points on a road map of the project area. *Table 2.2-A: Sub-watershed & Sample Point Locations* list the 8 sub-watersheds, their HUC code, name, receiving water bodies and testing points contained in the areas.

HUC unit code	Name	Receiving waterbodies	Sample point #	% of Upper Patoka River Watershed
05120209020010	Patoka River – Lost Ridge	Patoka River	1	6.2%
05120209020020	Dillon-Cane Creek	Dillon Creek	2	18.8%
		Cane Creek	3	
		George Creek	None	
05120209020030	Davis Creek	Davis Creek	4	12.7%
		Sugar Creek	6	
05120209020040	Patoka River – Dubois	Patoka River	7	11.7%
		Unnamed Tributary	10	
		Leistner Creek	9	
05120209020050	Polson-Bauer Creek	Polson Creek	8	12.5%
		Bauer Creek	5	
		Bailey Creek	None	
05120209020060	Patoka River – Long Ditch	Patoka River	13 14	12.1%
05120209020070	Beaver Creek	Beaver Creek	None	9.2%
		Beaver Lake	12 (outfall)	
		Teder Creek	11	
05120209020080	Patoka River-Calumet Run	Buffalo Stream	16	16.6%
		Calumet Lake	None	
		Jasper Brook	None	
		Jasper (Idlewild) Lake	15 (outfall)	
		Lottes Lake	None	
		Patoka River	None	

Table 2.2-A: Sub-watersheds & Sample Point Locations

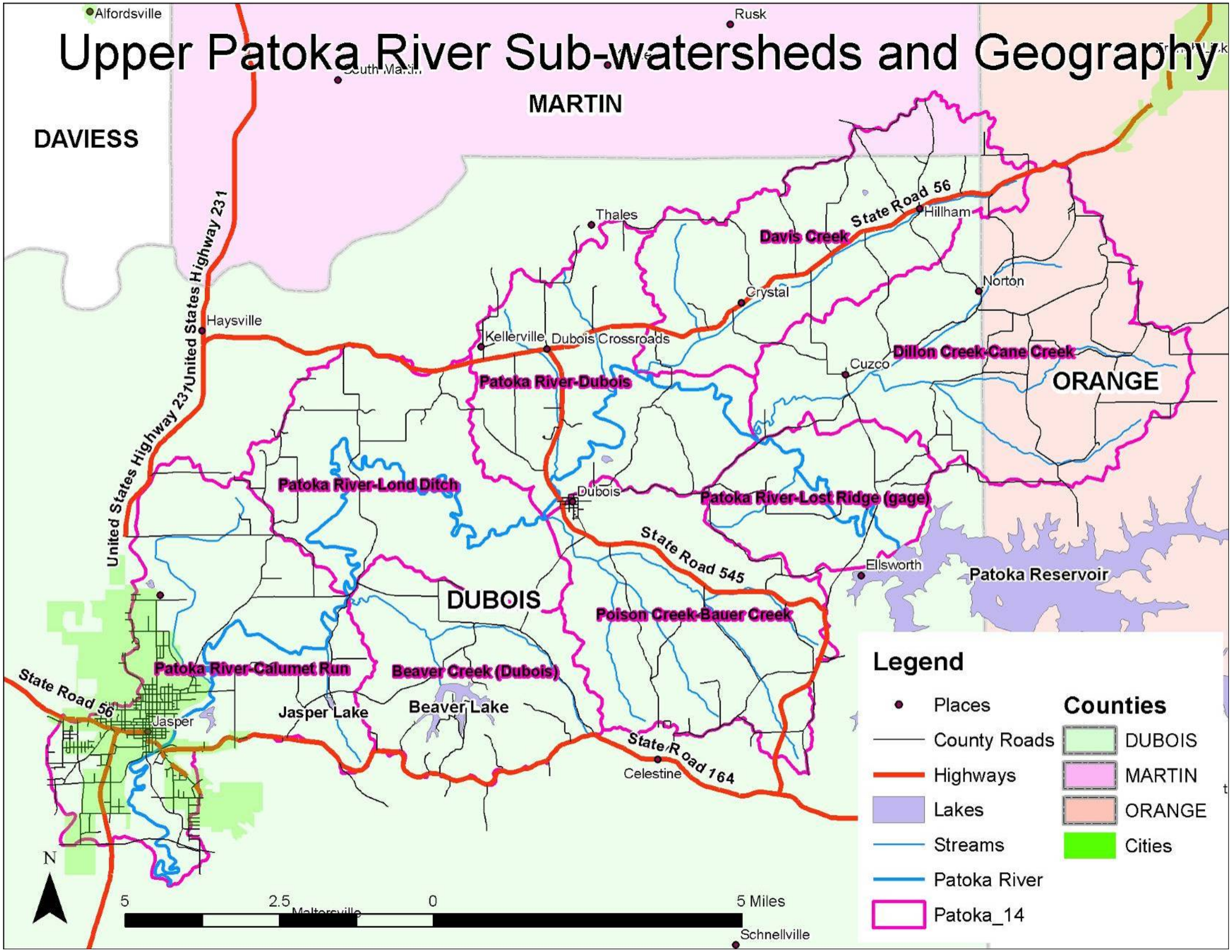

Figure 2.2: Patoka River Sub-watersheds and Geography

Bedrock is found below the soil at varying depths. Its formation and components determine its characteristics. Bedrock generally blocks the downward passage of percolating groundwater and can affect the drainage and hydrology of its superseding land. The pH of surface water is affected when groundwater passing over the bedrock discharges to the surface. The bedrock of the Upper Patoka Watershed consists mostly of the Raccoon Creek group with small amounts of the Buffalo Wallow and Stephensport groups towards the northeast. Limestone aquifers that may cause natural increases in pH exist in the eastern section of the watershed in parts of the Polson-Bauer Creek, Davis Creek, Dillon-Cane Creek, and Patoka River-Lost Ridge Sub-watersheds.

Raccoon Creek

In the Raccoon Creek group shale and sandstone compose more than 95 percent, and clay, coal, and limestone make up nearly all the rest; small amounts of chert and sedimentary iron ore are in the lower part of the group. Shale is more common than sandstone, and most of it is light-gray to dark-gray shale and soft nonsilty shale to hard silty and sandy shale. A small amount of black fissile shale is also present. The sandstone is mostly fine grained; coarse-grained size is rare. Where the sandstone is present in the subsurface, massive crossbedded sandstone seems to be most common. The Raccoon Creek Group generally thickens toward the southeast but in some places has thickness variations of more than 300 feet (91 m) because of irregular unconformity on the surface of underlying rocks. It ranges in thickness from less than 100 feet (30 m) in some locations in Parke and Vermillion Counties to more than 1,000 feet (305 m) in Vanderburgh County. It crops out in southwestern Indiana along the easternmost margin of Pennsylvanian rocks.

Buffalo Wallow

The Buffalo Wallow Group is dominantly shale, mudstone, and siltstone, but it also contains prominent beds of sandstone and limestone, some of which are laterally extensive. The group exhibits its maximum surface thickness of about 270 feet (82 m) near Tobinsport on the Ohio River in the subsurface its maximum thickness is about 750 feet (200 m) in Posey County. It thins progressively and is truncated northward as a result of pre-Pennsylvanian erosion, so that in the subsurface its northern margin crosses southwestern Sullivan County, Daviess County, and northeastern Dubois County. Along the outcrop it reaches no farther north than southwestern Orange County.

Stephensport

The Stephensport Group consists of about equal parts of limestone, shale, and cliff-forming sandstone. The total thickness of the Stephensport Group is 130 to 230 feet (40 to 70 m).

2.4: Soils

STATSGO soils database defines soils in the watershed as belonging to Zanesville-Wellston-Gilpin, Dubois-Otwell-Peoga, Stendal-Bonnie-Birds, and Wellston-Berks-Gilpin soil groups. Wellston and Gilpin soils may have bedrock at up to 30 inches below the soil surface and steep slopes causing increased runoff. The slow permeability of lake bed soils such as Dubois and Peoga also contribute to high runoff. More detailed information about the soils and soil groups is available in the Dubois County Soil Survey. Through the soils data, factors have been established to estimate soil erosion from sheet and rill erosion. This is particularly important on crop fields because they experience this type of erosion on a significant level due to tillage and other traffic on the field. The K factor refers to the erodibility of the soil and the LS factor is a factor of slope and topography. *Table 2.4-A: LS and K Factors* shows minimum, maximum, and average K and LS factors for crop fields in the watershed.

LS and K Factors	
Minimum K	0.24
Average K	0.351792
Maximum K	0.55
Minimum LS	0.053
Average LS	1.411846
Maximum LS	19.5

Table 2.4-A: LS and K Factors

2.5: Climate

January	February	March	April	May	June	July	August	September	October	November	December	Annual
2.91	2.78	4.06	4.48	4.75	4.56	5.54	3.85	3.34	2.95	4.24	3.41	45.87

Table 2.5-A: Monthly Precipitation (Inches) normals for Jasper IN 1971-2000

January	February	March	April	May	June	July	August	September	October	November	December	Annual
28.9	33.4	43.4	53.8	53.2	71.8	75.8	74.2	67.4	55.8	44.9	33.9	53.9

Table 2.5-B: Monthly Mean Temperature normals (Fahrenheit) for Dubois,IN 1971-2000

Table 2.5-A: Monthly Precipitation Normals for Jasper, IN 1971-2000 and *Table 2.5-B: Monthly Mean Temperature Normals* indicate the average (normal) precipitation, in inches and temperature, in Fahrenheit. As indicated in the tables, precipitation is at its highest in the months of July, June, May, and April. Temperature is at its highest in the months of July, August, June, and September.

2.6: Natural History

The Interior Plateau and Interior River Valleys and Hills level III ecoregions exist in the watershed with the Interior Plateau ecoregion dominating. Within the Interior Plateau, the flora and fauna communities in the watershed can be more narrowly defined as the Crawford Uplands Level IV ecoregion. The Interior River Valley and Hills ecoregion can be more narrowly defined in the watershed as the Southern Wabash Lowlands level IV ecoregion. *Table 2.6-A: Ecoregions in the Watershed* describes the ecoregions in details and shows the percent of the watershed made up by each ecoregion.

Ecoregion	Description	% Contribution to the Watershed
Crawford Uplands Level IV Ecoregion	The Crawford Uplands ecoregion is heavily dissected by medium to high gradient streams and is more rugged and wooded than Ecoregion 71b (Mitchell Plains). Oaks are found on well-drained upper slopes, mixed mesophytic forest occurs in coves as well as on north facing slopes, and specialized plant communities dominate the eastern sandstone-limestone cliffs. General farms occur especially in the west and in the wider valleys.	9
Southern Wabash Lowlands Level IV Ecoregion	The Southern Wabash Lowlands ecoregion is undulating to rolling and has many wide, shallow valleys. It lies to the south of Ecoregion 72b (Glaciated Wabash Lowlands) and its pre-Wisconsinan till plain; relict dunes and wind-blown silt deposits occur in the west, and shale and sandstone bedrock is exposed in the east. The Southern Wabash Lowlands is further characterized by its long growing season and neutral to acid soils. Originally, oak-hickory forests grew on the well drained upland soils while western mesophytic forests occurred on more poorly-drained soils; some southern plants reached their northern distributional limit in the Southern Wabash Lowlands.	81

Table 2.6-A: Ecoregions in the Watershed

2.7: Land Use

Dubois County was first settled in 1801 by Europeans. At this time, the watershed was almost entirely forested with a few hilltop barrens and a limited amount of wetland prairies in the lowlands. *Table 2.7-A: Land use by Sub-watershed (2005 inventory)* shows the current land-use statistics. Land designated as “other” includes roads, low-density residential areas, and agricultural facilities such as storage and feeding houses.

Sub-watershed	% Woods	% Cropland	% Grassland/Grazelands	% Urban	% Other
Lost Ridge	49.97	25.27	12.2	0	12.56
Dillon-Cane Creek	55.22	16.79	10.57	0.08	17.34
Davis Creek	66.17	12.43	8.68	0	12.72
Patoka River-Dubois	41.62	22.21	12.52	0.25	23.4
Polson-Bauer Creek	36.95	12.9	20.83	0.98	28.34
Long Ditch	37.72	33.57	12.51	0	16.2
Beaver Creek	50.5	23.4	11.77	0	14.32
Calumet Run	30.89	30.47	9.47	3.78	25.39
TOTAL	46.3	22.13	12.31	0.64	18.78

Table 2.7-A: Land-use By Sub-watershed (2005 Inventory)

The majority of the eastern section of the watershed is made up of steep, forested hills and pasture. Moving west, cropland increases, occurring mostly in the broad bottomlands along the major streams and on some relatively flat hilltops. The major crops are soybean and corn, as well as a small amount of winter wheat. Hay is often rotated to increase soil fertility. The majority of the urban and light residential areas occur in and surrounding the city of Jasper, in addition to small amounts in and around the towns of Dubois, Hillham, north of Celestine and Cuzco. Jasper, Dubois, and Celestine all use a municipal sewer system for wastewater treatment. The rest of the town and rural residents rely on onsite wastewater treatment systems.

There is also a high concentration of Animal Feeding Operations (AFOs), being mostly poultry houses and 2 swine operations. The animal waste may be spread on nearby adjacent land as fertilizer or transported off site to other crop or pasture land. Based on the IDEM Office of Land Quality Confined Feeding Operation database, there are 44 permitted AFOs in the Upper Patoka River Watershed. There is also one Confined Animal Feeding Operation (CFO) permitted by the USEPA. There are also several AFOs that have animal numbers below the level that IDEM or the EPA requires a permit.

2.8: Reservoirs and Artificial Lakes

The watershed contains a number of small ponds and lakes, mostly privately owned. The largest lakes are Idlewild (sometimes known as Jasper Lake), Beaver Creek Reservoir (also called Beaver Lake), Calumet Lake, and Lottes Lake. Beaver Lake is listed as a secondary water source for the city of Jasper though it has not served that purpose since the construction of Patoka Lake in the 70s. Before Patoka Lake was created, the area experienced much more frequent flooding and periods of low flow during the summer when it was difficult to support the population using the Patoka River alone. During these times, water was released from Beaver Dam to supplement the water supply. The City of Jasper Water Department is currently responsible for the maintenance of the dam. Beaver Lake is now used for recreational purposes and low-density residential.

Lots are available around Beaver Lake where renters may build “summer houses” that are used only seasonally. The Jasper Parks Department & Beckman Properties rent the lots. The remaining area surrounding the lake is owned privately and is used as a summer home, a year-round residence, farmed, or wooded. Idlewild Lake is totally privately owned by Idlewild Lake Inc., has a higher number of houses occupied year-round, and also a small amount of farmland surrounding the lake.

2.9: Public Land Ownership & Other Designations

2.9.1: Buffalo Flats Nature Preserve

The Nature Conservancy purchased a piece of bottomland swamp forest along Buffalo Stream in the Calumet Run sub-watershed near Jasper to protect the small population of Western Cottonmouth existing there. It was later dedicated a state nature preserve. It is the only known population of Western Cottonmouth in Indiana.

2.9.2: MS4 (Permitted Separated Municipal Sewers) Areas

The city of Jasper of Jasper has an MS4 permit from IDEM for its separated storm and sanitary sewer system. The specifics of the MS4 permit are detailed in their storm water management plan. It was created and is maintained by the City of Jasper Storm Water Board. The City has jurisdiction in reviewing erosion control at construction sites under the direction of the storm water coordinator. The boundaries of the MS4 area are the same as the boundaries for the city of Jasper.

2.9.3: The City of Jasper

The City of Jasper owns several properties in and surrounding the city of Jasper, including an area near Beaver Lake where the City Parks Department provides cabins for an annual rental fee. It also owns property near Idlewild Lake where they operate a youth camp. The property near Idlewild Lake includes no lakeshore land. The locations of the properties are shown in *figure 2.8-B: City of Jasper Properties in the Upper Patoka River Watershed*.

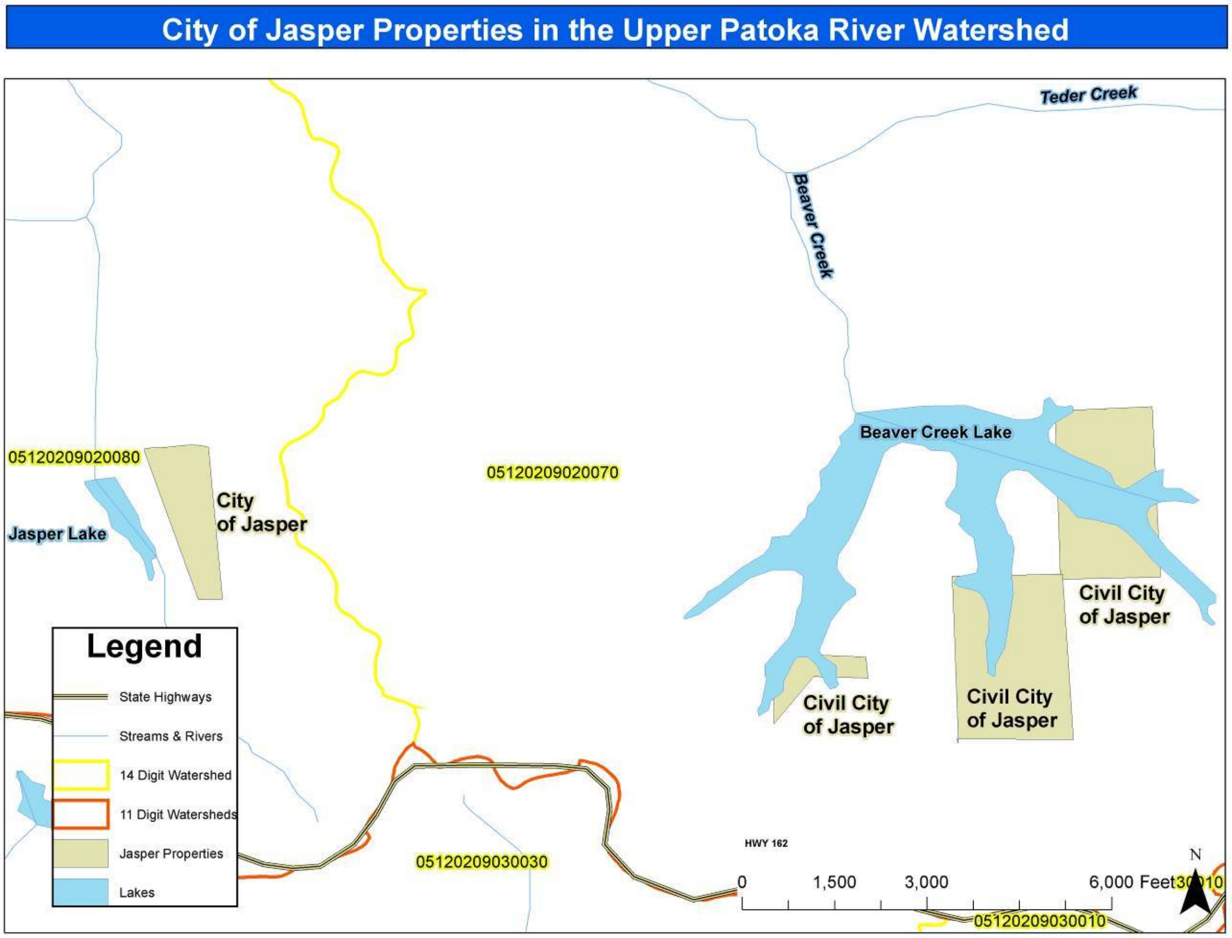

Figure 2.8-B: City of Jasper Properties in the Upper Patoka River Watershed

3.1: Concerns from Previous Studies

Previous studies have identified several concerns in the Upper Patoka River Watershed. The concerns are listed in *Table 3.1-A: Concerns from Previous Studies*
.

Concern	Location	Identified by (date)	Comments
Amount of manure produced by livestock	Patoka River watershed (Dubois County)	Pitstick (1999)	Patoka River Watershed Restoration Action Strategy, Final Draft 2000 – Fields must be aggressively managed because some fields are approaching phosphorous levels of 1000 ppm.
Storage of manure	Patoka River watershed (Dubois County)	Pitstick (1999)	Patoka River Watershed Restoration Action Strategy, Final Draft 2000 – Manure is stored on the top of a hill until a time to apply. Vegetative buffers may not exist to filter runoff before it enters a stream.
Septic system failure	Patoka River watershed (Dubois County)	Oeding (1999)	Patoka River Watershed Restoration Action Strategy, Final Draft 2000 – Many septic systems are not functioning properly due to high-water table, depth to rock or fragipan, and slopes of over 15%.
Septic System straight pipe discharges	Patoka River watershed (Dubois County)	Oeding (1999)	Patoka River Watershed Restoration Action Strategy, Final Draft 2000 – Older homes may be equipped with on-site wastewater disposal systems that are connected to drain tiles or other surface outlets.
Manure produced greater than assimilative capacity of farmland	Dubois County	USDA Economic Research Service (2001)	Confined Animal Production and Manure Nutrients – Dubois county livestock is found to produce 75% of the nitrogen needed for farm production and over 100% of the Phosphorous needed. Report states “the greater amount of excess nutrients in the area, the greater the risk of water quality impairment.”

Table 3.1-A: Concerns from Previous Studies

Note: Patoka River Watershed Restoration Action Strategy, Final Draft was prepared by IDEM

3.2: LARE Beaver Lake Study

Although not initially the focus of study, the outlet of Beaver Creek Reservoir exhibited high ammonia nitrogen and low dissolved oxygen during the water monitoring rounds. It also became a frequent topic when citizens attending meetings were asked to list their concerns. Beaver Creek Reservoir was also the

topic of LARE funded study undertaken in 1990 due to concerns about algae and aquatic weeds that had been present since the 1950s. Extensive testing, modeling, and a watershed inventory were conducted through the study. *Figure 5.3-A: Beaver Creek Reservoir: 1990 Study Sample Points & Study Areas* indicates the locations of lakeside property owners, sample points from the 1990 study and the sub-watersheds that the sample points reflect. The ownership is shown in different colored boxes; the sample points as squares, circles, etc.; and the sub-watershed areas as black.
The watersheds were numbered starting at the far left (west) and moving counter-clockwise around the lake.

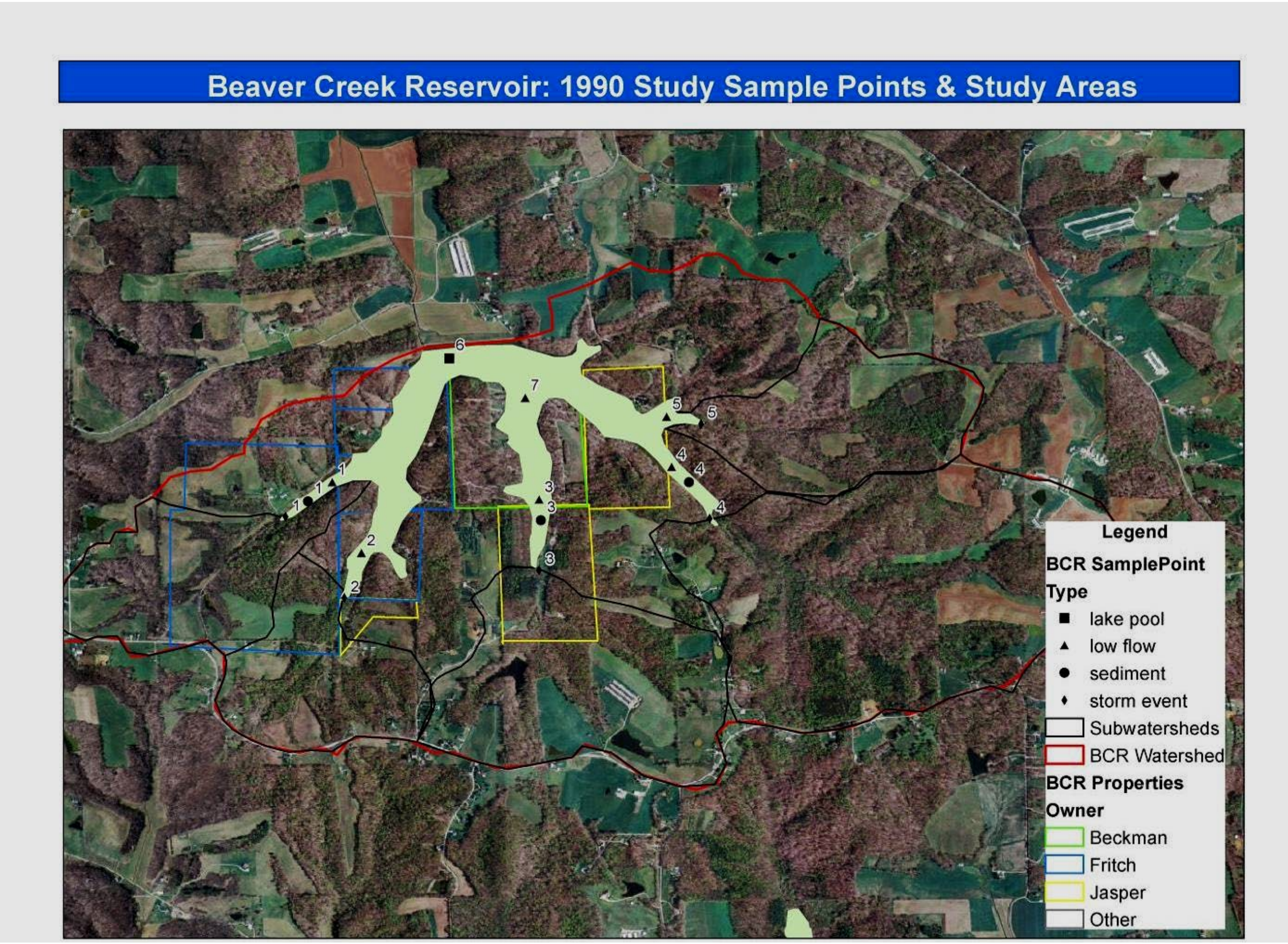

Figure.3.2-A: Beaver Creek Reservoir: 1990 Sample Points & Study Areas

During the study, fecal coliform and nutrient contamination was found to be extensive throughout the lake. Results shown in *Table 3.2-A: Bacteria Testing on Beaver Creek Reservoir: 1990* indicates that 3 of the 7 sample points had high levels of disease causing bacteria at the time of the study. Bacteria found at sample points BC-5 and BC-1 was found to be from mostly or entirely human sources and bacteria found at sample point BC-4 was found to be from a mix of human and livestock sources by analyzing the ratio of fecal coliform to fecal strep.

SAMPLE ID	DATE	FECAL COLIFORM C/100 ml	FECAL STREP C/100 ml	RATIO FC/FS
POOL (BC-6)	02 Oct 89	130	12	N/A
BC-1	02 Oct 89	1200	48	25
BC-2	02 Oct 89	62	20	N/A
BC-3	02 Oct 89	45	30	1.5
BC-4	02 Oct 89	246	132	1.9
BC-5	02 Oct 89	230	25	9.1
BC-7	02 Oct 89	84	8	N/A

Table 3.2-A: Bacteria Testing on Beaver Creek Reservoir: 1990

Sampling was also done to test for nutrient contamination. Results at sample point BC-3 were found to be high. These are shown in *Table 3.2-B: Nutrient Testing on Beaver Creek Reservoir: 1990.*

SAMPLE ID	DATE	NH_3-N mg/Kg	NO_3-N mg/Kg	TKN mg/Kg	DP mg/Kg	TP mg/Kg	TS
BC-1	09 Aug. 89	90.9	<0.05	1140	<0.05	284	67%
BC-2	09 Aug. 89	52.4	<0.05	1060	<0.05	351	68%
BC-3	09 Aug. 89	209.0	<0.05	2100	<0.05	466	56%
BC-4	09 Aug. 89	89.9	<0.05	1380	<0.05	320	64%

Table 3.2-B: Nutrient Testing on Beaver Creek Reservoir: 1990

Possible sources listed in the 1990 study include the prevalence of HEL soils in the lake's watershed (99% of farmed and grazed land), a turkey farm, hog farms, cropping land using conventional tillage, gullies forming in steep wooded areas, and onsite wastewater treatment systems. The onsite wastewater treatment systems used around the lake include septics, holding tanks, and outhouses. At the time the study was done very few users lived around the lake year-round. The lakeshore properties were said to be under the management of three owners: Beckman, Fritch, and the City of Jasper. The property owners rent lots to users who may develop them according to preference. In total 168 lots were rented between the three owners. A survey was conducted to learn about water use and waste disposal. 49% of lot renters only use lots during vacations and weekends. 68% carry in water and 27% have hook-ups to Dubois County water. 58% have an outhouse for waste disposal. 2% are year round residents. 20% have holding tanks for sewage disposal and 4% have septic tanks.

During the inventory conducted during the current project, the farmland was found to be following all conservation practices. No streams were without buffers. It suspected that one or more of the hog operations identified during the 1990 study are no longer in operation.

Conservation tillage has also increased. On the other hand, attendees at the meetings and representatives from the Dubois County Health Department note that it is likely that much more people are using municipal water hook-ups instead of carrying water in and more are living on the lake year round. Holding tanks and septic systems are a significant source of nutrient and *E. coli* pollution since as the health department reports, not all people have their tanks pumped indicating that there is an overflow pipe that empties into the lake. This is especially significant when the resident is served by a municipal water source. In general agricultural sources in the watershed seem to have decreased in impact while residential and recreational sources have increased.

Water monitoring as part of the Upper Patoka River Watershed study, described further in the next section, occurred only at the outlet of Beaver Creek Reservoir and not at any of the storm event, low flow, pool locations. The nearest to the Upper Patoka River Watershed study sample points is the lake pool sample 6. The lake pool sample did not show high fecal coliform levels when the low flow and storm event samples indicating that Upper Patoka River Watershed study sample point at the outlet may not be effective in verifying pathogen hotspots elsewhere in the lake. Nutrients were not tested at the lake pool sample point during the LARE study.

Since there has not been obvious evidence of improvements since the LARE study was completed, concerns about Beaver Lake voiced during public meetings are expected to be valid. *E. coli* concerns cannot be directly attributed to on-site waste water disposal systems through the Upper Patoka River Watershed study water monitoring, but a new concern arises over the ability of the testing conducted at the outlet to educate residents of the level of pathogens in the lake.

3.3: Water Monitoring

Water monitoring was conducted by the RC&D staff and IDEM's Office of Water Quality – Assessment Branch to identify relationships between land management practices and their impacts on water quality. The monitoring also established baseline conditions that can be used to evaluate the progress of the plan.

The monitoring evaluated the effect on water quality of contaminants related to nutrient loading (nitrate, orthophosphate), pathogen loading (*E. coli*), sediment loading (total suspended solids), water clarity (turbidity), and water conditions (dissolved oxygen, temperature, & pH). These are all common contaminants found in rural watersheds similar to the Upper Patoka River. The monitoring conducted by RC&D staff was done according to a QAPP developed by RC&D and approved by IDEM prior to monitoring. The QAPP is included in appendix C. In addition, during two sampling rounds, staff from the IDEM Office of Water Quality Assessment Branch were added to the monitoring team and tested for Chloride, Chemical Oxygen Demand, Coliforms, *E. coli*, Hardness, Nitrate+Nitrite, Ammonia nitrogen, Total Phosphorous, Sulfate, Total Dissolved Solids, Total Suspended Solids. The additional data allowed the data collected by the RC&D staff to be checked against the collection and analysis methods used by the state. In addition, the two rounds of evaluating for total suspended solids allowed for the analysis of sediment loading, a constituent less accurately represented by turbidity. A watershed inventory (detailed in later sections) was also conducted to verify concerns and identify possible sources affecting water quality. Together they also provide baseline conditions that can be used to evaluate the success of the plan through future monitoring.

The water quality monitoring program was conducted from April 11 2005-through May 2006, according to protocol established in the approved QAPP. Samples were collected at the 16 locations identified in the QAPP on 4-11-05, 6-14-05, 10-20-05, and 5-9-06. The locations of the sample points with respect to the 14 digit HUC sub-watersheds is shown in *Table 3.2-A: Water Monitoring Sample Points & Sub-watersheds.* Grouping sample points by sub-watershed is a convenient way to summarize the data and will continue to be used when evaluating throughout the plan.

<table>
<tr><th>HUC unit code</th><th>Name</th><th>Receiving waterbodies</th><th>Sample point #</th></tr>
<tr><td>05120209020010</td><td>Patoka River – Lost Ridge</td><td>Patoka River</td><td>1</td></tr>
<tr><td rowspan="3">05120209020020</td><td rowspan="3">Dillon-Cane Creek</td><td>Dillon Creek</td><td>2</td></tr>
<tr><td>Cane Creek</td><td>3</td></tr>
<tr><td>George Creek</td><td>None</td></tr>
<tr><td rowspan="2">05120209020030</td><td rowspan="2">Davis Creek</td><td>Davis Creek</td><td>4</td></tr>
<tr><td>Sugar Creek</td><td>6</td></tr>
<tr><td rowspan="3">05120209020040</td><td rowspan="3">Patoka River – Dubois</td><td>Patoka River</td><td>7</td></tr>
<tr><td>Unnamed Tributary</td><td>10</td></tr>
<tr><td>Leistner Creek</td><td>9</td></tr>
<tr><td rowspan="3">05120209020050</td><td rowspan="3">Polson-Bauer Creek</td><td>Polson Creek</td><td>8</td></tr>
<tr><td>Bauer Creek</td><td>5</td></tr>
<tr><td>Bailey Creek</td><td>None</td></tr>
<tr><td>05120209020060</td><td>Patoka River – Long Ditch</td><td>Patoka River</td><td>13
14</td></tr>
<tr><td rowspan="3">05120209020070</td><td rowspan="3">Beaver Creek</td><td>Beaver Creek</td><td>None</td></tr>
<tr><td>Beaver Lake</td><td>12 (outfall)</td></tr>
<tr><td>Teder Creek</td><td>11</td></tr>
<tr><td rowspan="6">05120209020080</td><td rowspan="6">Patoka River-Calumet Run</td><td>Buffalo Stream</td><td>16</td></tr>
<tr><td>Calumet Lake</td><td>None</td></tr>
<tr><td>Jasper Brook</td><td>None</td></tr>
<tr><td>Jasper (Idlewild) Lake</td><td>15 (outfall)</td></tr>
<tr><td>Lottes Lake</td><td>None</td></tr>
<tr><td>Patoka River</td><td>None</td></tr>
</table>

Table 3.3-A: Water Monitoring Sample Points & Sub-watersheds

To evaluate and summarize the data, it is compared against Indiana Water Quality Standards, where available, and benchmarks used in similar studies elsewhere. For *E. coli*, the grab sample standard of < 235 colonies/100 mL is used. For Nitrate, the state standard of < 10 mg/L is used. Orthophosphate was evaluated as part of the study using the Hach method, but when this test was compared against IDEM's testing of identical samples for total phosphorous in their lab most orthophosphate samples came out higher than the lab test for total phosphorous. It is not possible for orthophosphate levels to be significantly higher than total phosphorous since it is a component of total phosphorous. In fact when all the orthophosphate levels were compared to total phosphorous tested in a lab, there could be no correlation found among high or low samples. For this reason, the orthophosphate data will not be used and instead the total phosphorous lab test done on two of the sampling rounds will be used to evaluate the phosphorous component of the nutrient loading. The desired level for total phosphorous that will be used is 0.17 since this is the level used in the Wabash River TMDL. The standard for ammonia nitrogen in Indiana varies based on temperature and pH. The detail of this standard can be found in Indiana administrative code. The standard for oxygen is > 5 mg/L and the standard for pH is between 6 and 9 (unitless). The desired level for Total Suspended Solids is set at 30 mg/L to match the Wabash River TMDL. An appropriate standard for turbidity could not be found, and many of the parameters tested by IDEM were not included because they did not have application to this study. Where parameters were tested by both IDEM and the RC&D staff, those tested by the RC&D staff were used in the analysis *Table 3.3-B: Benchmark Analysis of 2005-2006 Water Monitoring Data* shows the results of this analysis.

			Percent Exceeding Standard or Desired Level						
HUC	Name	Samples Taken	*E. coli*	DO	pH	Nitrate	Total Phosphorous	Total Suspended Solids	Ammonia Nitrogen
10	Patoka River - Lost Ridge	4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
20	Dillon-Cane Creek	8	0.0%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%
30	Davis Creek	8	25.0%	0.0%	25.0%	0.0%	0%	0.0%	0.0%
40	Patoka River - Dubois	12	25.0%	0.0%	0.0%	8.3%	0%	0.0%	16.7%
50	Polson - Bauer Creek	8	0.0%	12.5%	12.5%	0%	0%	0.0%	12.5%
60	Patoka River - Long Ditch	8	0.0%	0.0%	0.0%	12.5%	0%	75.0%	12.5%
70	Beaver Creek	11	9.1%	18.2%	9.1%	18.2%	25.0%	0.0%	18.2%
80	Patoka River - Calumet Run	8	37.5%	12.5%	12.5%	0.0%	75.0%	75.0%	25.0%

Table 3.3-B: Water Monitoring Benchmark Analysis

The analysis shows samples exceeding standards or other desired levels for *E. coli,* dissolved oxygen, pH, nitrate, total phosphorous, total suspended solids and ammonia nitrogen.

This analysis supports all initial concerns listed in section 1.3. *E. coli* levels were found unsafe for swimming in 4 of the 8 sub-watersheds. Samples exceeding ammonia nitrogen were found at the outlet of Beaver Lake, and samples were in excess of both the pH and ammonia nitrogen standard at the outlet of Jasper Lake making up 2 of the 5 sub-watersheds exceeding ammonia standards and 1 of the 4 sub-watersheds exceeding pH standards. Livestock areas are common in all sub-watersheds and runoff contaminated by livestock could cause any of the samples to fall outside the *E. coli* standard when any untreated manure is washed into streams. Samples could go beyond any of the remaining standards, which are all nutrient related, as a result of the nutrient excess produced by livestock in the watershed. Livestock in streams causes soil erosion and contamination with *E. coli*, and though the desirable level for total suspended solids was not surpassed during sampling, eroded soil often carries nutrients and access sites may have caused any of the two sub-watersheds impaired for phosphorous. As detailed in section 3.10, sub-watersheds with the highest cattle access points also were impaired for *E. coli*. No direct evidence for contamination by septic systems was found in the same manner as the cattle access points described in the watershed inventory, but interviews and public input provided anecdotal support for the possibility of septic system failure as a source for nutrient or *E. coli* related impairments discovered during sampling. Farming too close to the stream can be cited as a source for nutrient transport to the streams via erosion or transport of soluble nutrients such as nitrate, a cause of impairment in four sub-watersheds. In cases where manure is applied, the risk is increased for *E. coli* impairments. Nutrient management is more of a solution than a concern, and is listed to stress the importance of soil nutrient levels in creating nutrient related water quality issues when suspended sediment levels alone are not above those that are considered to impair aquatic life. Soil erosion allows for the transport of nutrients bound to soil and organic matter and compounds the oxygen demand of algae growth caused by high nutrient levels, evidence in the 4 sub-watersheds impaired for the dissolved oxygen standard.

3.4: Designated Uses for Waterways in Watershed

Statewide designated use classifications apply to all waterway segments in the watershed. These designated uses included:

- Surface waters of the state are designated for full-body recreation contact in the months of April-October
- All waters will be capable of supporting a well-balanced, warm water aquatic community
- All waters, which are used for public or industrial water supply, must meet the standards for those uses at the point the water is withdrawn.
- All waters, which are used for agricultural practices must meet the minimum surface water quality requirements.
- All waters in which naturally poor physical characteristics (including lack of sufficient flow), naturally poor or reversible man-induced conditions, which came into existence prior to January 1, 1983, and having been established by use attainability analysis, public comment period, and hearing may qualify to classified for limited use and must be evaluated for restoration and upgrading at each triennial review of this rule.
- All waters, which provide unique aquatic habitat, which are an integral feature of an area of exceptional natural beauty or character, or which support unique assemblages of aquatic organisms may be classified for exceptional use.

3.5: Special Designations-Exceptional Use

The Patoka River from Patoka Reservoir to its confluence with the South Fork of the Patoka River is designated an outstanding river identified as having outstanding ecological, recreational, or scenic significance.

3.6: Water Monitoring Conducted by Dubois County SWCD

The Dubois County SWCD monitors the Patoka River quarterly near Jasper Lake. Dissolved oxygen, *E. coli*, pH, biochemical oxygen demand, water temperature, total phosphate, nitrate, and turbidity are tested. Indiana water quality standards were exceeded for total phosphate (< 0.3 mg/L) on 2/3 of the samples to date. No other parameters were exceeded. Current results may be found at the Hoosier Riverwatch website: www.hoosierriverwatch.com.

3.7: Participation in USDA farm bill Programs

CRP provides cost-share on the creation of grassed and tree-lined buffer strips next to streams and tree and grass plantings on highly erodible soils. It also pays landowners the soil rental rates for the areas where the practices are applied over a 10 year contract period. The map shows areas under contract in the year 2006. Some contracts expire in 2007. EQIP provides cost-share on a variety of conservation practices including, but not limited to, exclusion fencing for streams, WASCOB/dry dam systems, tree and grass plantings, manure stack buildings, improvements to grazing lands, and several other conservation practices designed by NRCS staff. Only cropland and grazing lands are eligible for EQIP and CRP programs. A summary of the participation in cost-share programs is shown in *Table 3.7-A: Amount of CRP & EQIP contracts in the Watershed.*

Upper Patoka Watershed	
total acres	80,000
acres of cropland + grassland	22810.93

Environmental Quality Incentives Program (EQIP)	
Total Acres in Contract	311
Percent of All Cropland + Grassland under EQIP contract	1.36%
Most Popular Resource Concern	Grazing Lands Health

Conservation Reserve Program (CRP)	
Total Acres	119.5
Percent of All Cropland + Grassland Under CRP contract	0.52%
Most Popular Practice	CP21 - Filter Strip

Table 3.7-A: Amount of CRP & EQIP Contracts in the Watershed

3.8: Use of Conservation Tillage

Conservation tillage decreases soil loss by increasing the amount of cover during times when fields are normally bare (such as immediately after planting). *Figure 3.8-A: Conservation Tillage in the Watershed* shows the utilization of conservation tillage practices over the past 10 years based on yearly tillage inventories conducted by SWCD staff. Conservation tillage practices have increased by 15-20% since the study began 10 years ago thanks to education efforts and the increased availability of proper implements and seed strains.

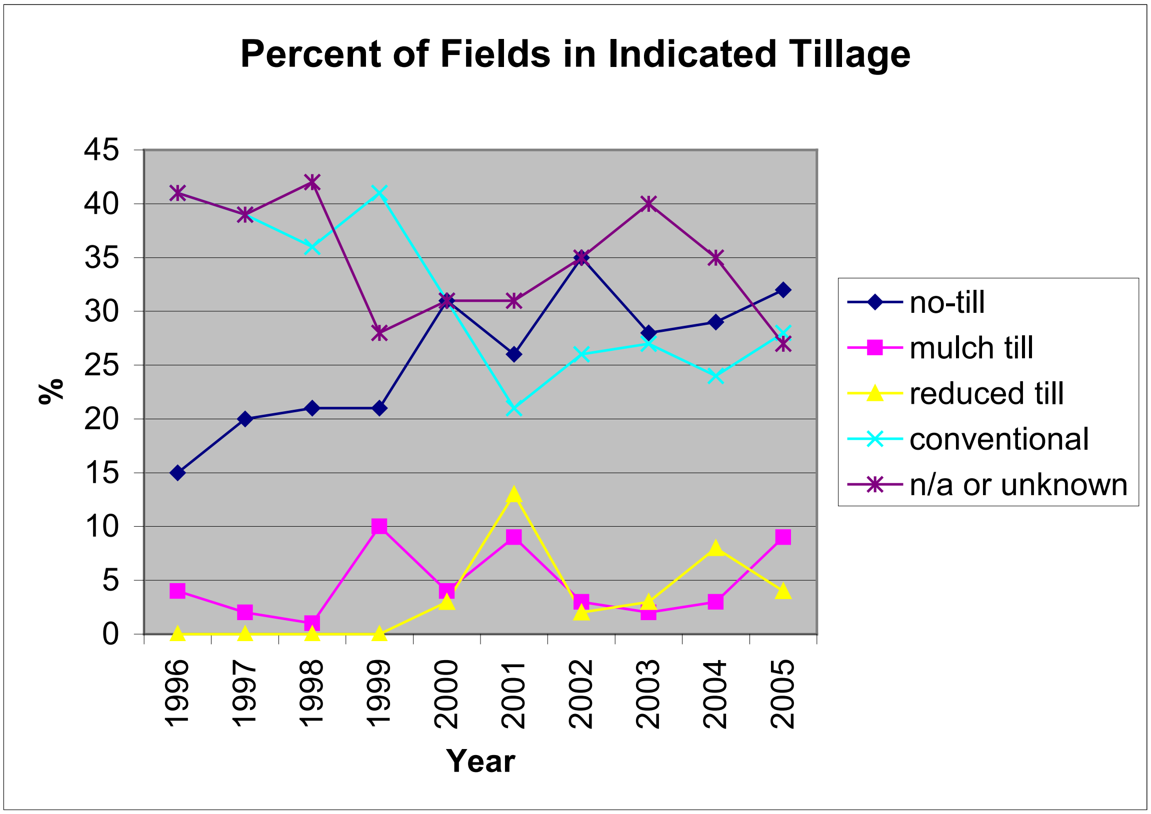

Table 3.8-A: Conservation Tillage Use in the Watershed

On the other hand, no-till levels are only at about 32%, while the amount of highly erodible cropland in the watershed designated by the Farm Service Agency is about 57%. This means that 25% of the steepest, most erodible crop fields are not using no-till*. No-till farming has shown to reduce soil erosion by significant levels and the highly erodible fields are likely to contribute the most erosion. Soils eroding from these fields may also be carrying high amounts of nutrients to waterways resulting in some of the public concerns detailed in the study.

*Some no-till fields may have been in a double-cropped winter wheat/soybean rotation and would therefore have been recorded as n/a or unknown in the chart above.

3.9: Riparian Buffers

A Riparian buffer is most simply a strip of trees and other vegetation along streams and other water bodies. Riparian buffers filter sediment, nutrients, and other potentially harmful chemicals before they enter waterways. Riparian buffers also cool water and slow stream flows especially during flood conditions increasing the infiltration of rainfall to groundwater.

Using 2005 aerial photos and on-the-ground inventories, the locations of riparian buffers was determined. Overall for the 39.17 miles of the main channel of the Patoka River within the Upper Patoka River Watershed, 31 miles have effective riparian buffers for shading and cooling the water. Of the 52 miles of perennial streams that make up the major tributaries to the Patoka River, 27 miles contain effective riparian buffers for shading and cooling the water. Of all perennial streams (main stem

& tributaries), 39.9 miles of the 91.2 miles have a vegetative buffer less than 50 ft wide. In addition 28.2 miles of ephemeral streams and ditches were found to have vegetative buffers less than 50 ft. Using the inventory the amount of cropland and pasture next to an unbuffered waterway segment was determined. Approximately 44% of total crop land was next an unbuffered stream segment and 12% of total pasture was next to an unbuffered stream segment. Riparian buffers filter agricultural runoff including reducing nutrient and sediment delivery to stream by up to 75%. The findings support the concern that some are farming too close to the stream. The summary of the Riparian buffer inventory findings is shown below in *Table 3.9-A: Riparian Buffer Inventory Summary.*

Riparian Buffer Inventory Summary	
Miles of Perennial Streams without Buffers	**48.07**
Miles of Ephemeral Streams and Ditch without Buffers	**28.2**
Total Miles of Waterways without Buffers	**76.27**
Acres of Crop fields without Buffers	**7066**
Percent of Crop fields without Buffers	**44%**
Acres of Pastures without Buffers	**1026**
Percent of Pastures without Buffers	**12%**

Table 3.9-A: Riparian Buffer Inventory Survery

3.10: Results from Windshield Inventory for Cattle Access to Streams

During the watershed inventory, an assessment was made of the amount of cattle directly accessing or coming near a stream. Instances where livestock were seen actually accessing the waterway or where certain evidence of stream bank erosion from cattle exist are indicated by livestock access events. Livestock that were seen near a waterway without a fence excluding them or where possible evidence such as trampled vegetation along the stream exists are considered possible access events. The results are shown in *table 3.9-A: Results of Inventory for Livestock Access Events*

	livestock access events	possible access events
Total	22	12

Table 3.10-A: Results of Inventory for Livestock Access Events

3.11: Atrazine Studies

An Atrazine monitoring program was conducted during 2004 and overseen by the City of Jasper. Atrazine is a herbicide used on 80% of corn fields across the state and may cause human health problems when found in drinking water at high levels. Water taken from the Patoka River at the point of the drinking water uptake and finished drinking water were both tested. The average level for pre-treated water was 0.68 ppb (parts per billion) and the average for treated drinking water was 0.28 ppb. These scores are below the threshold of 3.0 ppb, the Atrazine maximum contamination level. Two pre-treated water samples exceeded the threshold, but no treated water exceeded the maximum.

Note: This study was conducted in cooperation of the City of Jasper and American Cyanamid Co. Inc and was not an identified item of concern in this study. The data is provided as further clarification of information that may be of public concern. The question of the results was asked by someone during a meeting of the watershed committee. All indicators were that no water was distributed to the public for consumption that even approached a threshold level. American Cyanamid is conducting a number of these types of monitoring programs across the United States. The reason they selected this watershed was because the city uses raw water from the stream as their public water supply. They have used those criteria nationally.

Problem Statements: Identification, Location, & Magnitude

Chapter 4:

4.1: Nutrient & Sediment Concern

4.1.1: Problem Statement for Nutrient Concerns

Nutrient Related Concern	Validated
Jasper & Beaver Lakes	*Sections 3.3, Section 3.2*
Runoff Contaminated by Livestock	*Sections 3.1, 3.3, 3.9, 3.10*
Livestock in streams	*Sections 3.3, 3.10*
Septic systems	*Section 3.2*
Farming too close to the stream	*Sections 3.3, 3.9*
Nutrient Management	*Section 3.1, 3.3*
Soil Erosion	*Section 3.3, 3.8*

Problem Statement: Recent water testing shows water in the Upper Patoka River to be not supporting designated uses because of nutrient and sediment concerns. All but two of the eight sub-watersheds were found to be exceeding Indiana Water Quality Standards and other accepted threshold levels for one or more of Total Suspended Solids, pH, total phosphorous, nitrate, and ammonia nitrogen.

Stressors:

Steep slopes with high runoff
High concentration of livestock including poultry and cattle
Lack of information about the impact of nutrient sources

Sources:

High nutrient levels in soils from manure application
Runoff of organic and synthetic fertilizer from cropfields un-filtered by vegetated riparian areas
Soil loss from cropland
Soil loss from pastures
Livestock with access to waterways and ponds
Failing septic systems or other wastewater collection systems

Other Concerns:

The source of high pH and ammonia nitrogen in Beaver Lake and Jasper Lake and the source of high ammonia nitrogen and pH in Polson Creek could not be accurately determined through the monitoring efforts of this project. Only Jasper Lake of the three waterbodies exceeded any standards or desired levels to protect aquatic life and drinking water quality for total phosphorous or nitrate, exceeding total phosphorous during 1 of the 2 sample events. As discussed above, high ammonia nitrogen and high pH are more commonly associated with algae blooms, which caused by high levels of phosphorous and nitrate, limiting nutrient for plant growth. Direct sources of these water quality criteria may exist, or a more stringent standard may need to be set due to environmental variables that affect algae growth such as shade, temperature, or oxygen level.

To establish a magnitude for the overall level of nutrient problem, a ranking system was developed. Total phosphorous, pH, Nitrate, and Ammonia Nitrogen are four water quality constituents that can be used to establish the level of impairment or degradation, from nutrient related problems. Nitrate and total phosphorous are two nutrients that at high levels come directly from nutrient sources, from either commercial fertilizer or manure. Ammonia Nitrogen can originate from commercial fertilizer and manure as well, but is more often a product of the nitrogen cycle that occurs when oxygen levels are low and nitrogen converted by bacteria builds up as ammonia nitrogen rather than being converted to nitrate, a process that requires 3 parts oxygen for every part nitrogen. High pH is commonly associated with algae blooms, a byproduct of high nutrient levels in streams with no shade. Waterways showing impairments based on this ranking system are likely to not support some aquatic habitats. Algae blooms, a result of high levels of the nutrients of concern, cause periods of low dissolved oxygen that can make the water unsuitable for more sensitive aquatic species that need higher oxygen levels. In addition, high nitrate and phosphorous levels increase water treatment costs, of particular importance in the Upper Patoka River Watershed since a drinking water uptake is located at the outlet of the watershed.

Each sub-watershed was given a point for each of the four water quality constituents related to the nutrient problem (pH, ammonia nitrogen, total phosphorous, and nitrate) that exceeded desired levels in over 10% of the samples and half a point for each that exceeded on at least one sample, but less than 10% of the total samples. Sub-watersheds showing the greatest amount of impairments through this method are give a rank of (I), most impaired. The next most impaired are given a rank of (II) and the sub-watersheds with the least amount of impairment, but still having some constituents exceeding desired levels are given a rank of (III). The results are shown in *Table 4.1.2: Nutrient Problem Impairment Levels by Sub-watershed.* Two of the sub-watersheds, Patoka River-Calumet Run (I) and Beaver Creek (I) exceeded levels for 3 or more nutrient related water quality constituents. Three sub-watersheds, Patoka River-Dubois (II), Patoka River-Long Ditch (II), and Polson-Bauer Creek (II) exceeded desired levels on 2 of the water quality constituents. Davis Creek (III) exceeded the desired levels for one of the constituents.

Sub-watershed	Rank
Patoka River - Lost Ridge (010)	No impairment
Dillon-Cane Creek (020)	No impairment
Davis Creek (030)	III
Patoka River - Dubois (040)	II
Polson-Bauer Creek (050)	II
Patoka River - Long Ditch (060)	II
Beaver Creek (070)	I
Patoka River - Calumet Run (080)	I

Table 4.1.2: Nutrient Problem Impairment Levels by Sub-watershed

4.1.2 Nutrient Problem Sources: Location & Magnitude

The relative magnitude of each problem source is evaluated in *Table 4.1.2: Nutrient Problem Sources: Relative Magnitude* to determine what sources have the greatest potential for restoration. The sub-watershed ranking established in section 4.1.1 is shown here on the chart as colors. Red columns are those sub-watersheds that were ranked (I) (greatest impairment). Yellow columns are sub-watersheds ranked (II) and the green column is the sub-watershed ranked (III) (least impaired). The relative magnitude for the "high nutrient levels in soils" source is determined by the percent of the sub-watershed made up of land listed in a Confined Feeding Operation permit to fulfill the requirement for spreading acres. High phosphorous levels are especially likely in areas where poultry manure is applied to satisfy all or part of a crops nitrogen requirement, since poultry manure is very high in phosphorous. Soils high in nutrient cause an even greater nutrient problem when they erode into waterways than soils with a more average nutrient level. The relative magnitude of the source "runoff of organic & synthetic fertilizer" is evaluated by the percent of the sub-watershed with un-buffered cropland. Cropland adjacent to a stream or ditch without a vegetative buffer provides a direct conduit for high-nutrient fertilizer runoff to enter a stream. A buffer would partially filter this runoff and bring waterways to an acceptable nutrient level. The relative magnitude of the source "soil loss from crop land & pasture" is evaluated by the % of HEL fields. These fields are expected to experience the most erosion, loading soil with attached nutrients into streams. It's estimated that 25% of these fields in each sub-watershed are being tilled and experiencing significant erosion. Pastures on HEL ground may also be used to grow harvested forage crops that can experience significant erosion if they are being tilled. The relative magnitude of the source "soil loss from crop land & pasture" is also evaluated by the percent of the sub-watershed made up of livestock areas with little or no vegetation. These areas may be near watering sources, in shade or other lounge areas, or around feeding areas. When there is inadequate vegetation on these areas, significant erosion can occur in the form of gullies and sheet/rill erosion. These areas are also likely to contain higher amount of manure and have more nutrients attached to the soil. The relative magnitude of the source "livestock with access to ponds and waterways" is evaluated by the percent of the watershed made up of stream side pastures with out fencing to exclude cattle from streams.

Sub-watershed	**010**	**020**	**030**	**040**	**050**	**060**	**070**	**080**
High Nutrient Levels in Soils: % CFO Spreading Acres	18.43%	0.31%	6.45%	15.54%	20.48%	10.10%	22.66%	1.66%
Runoff of Organic & Synthetic Fertilizer: % Un-buffered Cropland	14.05%	3.82%	4.36%	10.35%	13.61%	19.23%	8.18%	44.93%
Soil Loss from Cropland & Pasture: % HEL fields	18.30%	3.94%	6.31%	21.52%	18.28%	22.48%	23.79%	22.65%
Soil Loss from Cropland & Pasture: % Livestock areas without vegetation	0.04%	1.56%	0.14%	0.41%	0.72%	2.43%	0.24%	0.26%
Livestock with access to ponds & waterways: % Stream side pastures without fencing	0.28%	0.13%	0.09%	0.35%	1.96%	1.06%	0.70%	0.33%

Table 4.1.2: Nutrient Problem Sources: Relative Magnitude

The sources with the greatest relative magnitude by area are “high nutrient levels in soils,” “runoff of organic & synthetic fertilizer,” and “soil loss cropland & pasture.” These sources have the greatest impact and the greatest potential for restoration, but addressing livestock areas without vegetation and “livestock with access to ponds & waterways” still may result in significant progress towards water quality goals depending on the location and other factors not known at the time of this study.

4.2: Pathogen Concern

4.2.1: Problem Statement for Pathogen Concerns

Pathogen Related Concern	Validated
Jasper & Beaver Lakes	*Beaver Lake Study*
Runoff Contaminated by Livestock	*Sections 3.3, 3.9, 3.10*
Livestock in streams	*Sections 3.3, 3.10*
Septic systems	*Section 3.2*
E .coli	*Section 3.3*

Problem Statement: Recent water testing shows 3 of the 8 sub-watersheds in the Upper Patoka River to be not supporting and 1 of the 8 to be only partially supporting recreational use due to pathogens. This is due to elevated levels of *E. coli,* an indicator of the presence of pathogens and a microorganism found in the gut of all warm-blooded animals.

Stressors:

A lack of buffers near livestock areas and areas where organic fertilizer is used
High concentration of livestock including poultry and cattle
Lack of information about impacts of pathogen sources

Sources:

Runoff of organic fertilizer from crop fields un-filtered by vegetated riparian areas
Livestock with access to waterways and ponds
Inadequate vegetation on pastures, especially around water and other “lounging” areas
Failing septic systems or other wastewater collection systems

Other Concerns:

The potential for septic system to cause *E. coli* standards to be exceeded, especially in Beaver and Jasper Lakes could not be confirmed or denied through the monitoring program. The Beaver Lake Study described in detail in *Section 3.2* showed that the “pool” sample, the sample nearest to the Upper Patoka River Watershed sampling point did not reflect high fecal coliform levels when they appeared nearer to the shoreline near homes and where tributaries entered the lake. Localized *E. coli* problems may exist that were not detected during the study Also, since both lakes are used for full-body contact recreation, a more thorough approach to monitoring and educating the public is desired.

To establish a magnitude for the overall level of pathogen problem, a ranking system was developed. Each sub-watershed was given a point if the state standard for *E. coli,* an indicator of pathogen contamination was exceeded on greater than 10% of the samples and half a point if it was exceeded on at least one sample, but less than 10% of the total samples. Sub-watersheds showing the greatest amount of impairments through this method are given a rank of (I), most impaired. The next most impaired are given a rank of (II), least impaired. The results are shown in *Table 4.2.2: Pathogen Problem Impairment Levels by Sub-watershed.* Three of the sub-watersheds, Davis Creek, Patoka River-Dubois, and Calumet Run exceeded levels for *E. coli* on more than 10% of samples. Beaver Creek sub-watershed exceeded the standard on at least one sample, but less than 10% of the total samples.

Sub-watershed	Rank
Patoka River - Lost Ridge (010)	No impairment
Dillon-Cane Creek (020)	No impairment
Davis Creek (030)	I
Patoka River - Dubois (040)	I
Polson-Bauer Creek (050)	No impairment
Patoka River - Long Ditch (060)	No impairment
Beaver Creek (070)	II
Patoka River - Calumet Run (080)	I

Table 4.2.2: Pathogen Problem Impairment Levels by Sub-watershed

4.2.2 Pathogen Problem Sources: Location & Relative Magnitude

The relative magnitude of each problem source is evaluated in *Table 4.2.2: Pathogen Problem Sources: Relative Magnitude* to determine what sources have the greatest potential for restoration. The sub-watershed ranking established in section 4.2.1 is shown here on the chart as colors. Red columns are those sub-watersheds that were ranked (I) (greatest impairment). Yellow columns are sub-watersheds ranked (II) (least impaired). The relative magnitude of the source "runoff of organic fertilizer" is evaluated by the percent of the sub-watershed in a CFO spreading area and with un-buffered cropland or pasture/forage crop. Cropland, pasture, or land used for growing forage crops where manure has been applied adjacent to a stream or ditch without a vegetative buffer provides a direct conduit for pathogen containing runoff to enter a stream. A buffer would partially filter this runoff and keep potential pathogens out of waterways. The relative magnitude of the source "Inadequate vegetation on pastures" is also evaluated by the percent of the sub-watershed made up of livestock areas with little or no vegetation. These areas may be near watering sources, in shade or other lounge areas, or around feeding areas. When there is inadequate vegetation on these areas, there is nothing to slow down or filter runoff containing manure. These areas are also likely to contain higher amount of manure and have more pathogens attached to the soil. The relative magnitude of the source "livestock with access to ponds and waterways" is evaluated by the percent of the watershed made up of stream-side pastures with out fencing to exclude cattle from streams.

Sub-watershed	**010**	**020**	**030**	**040**	**050**	**060**	**070**	**080**
Runoff of organic fertilizer: % Cropfields in CFO	0.27%	0.00%	0.00%	0.72%	0.09%	0.00%	0.23%	0.00%

spreading acres without vegetated riparian areas								
Runoff of organic fertilizer: % Pastures and forage crops in CFO spreading acres without vegetated riparian areas	10.47%	0.00%	1.09%	0.99%	1.45%	5.24%	6.83%	0.00%
Inadequate vegetation on pastures: % Livestock areas without vegetation	0.04%	1.56%	0.14%	0.41%	0.72%	2.43%	0.24%	0.26%
Livestock with access to ponds & waterways: % Pastures with Stream Access	0.28%	0.13%	0.09%	0.35%	1.96%	1.06%	0.70%	0.33%

Table 4.2.2: Pathogen Problem Sources: Relative Magnitude

The magnitude of the sources of the pathogen problem is evenly distributed across the sub-watersheds. No sources are dominant, and its likely than any of the sources provide a good potential for achieving water quality goals upon remediation. The most important will be those that are near a stream and near to the farthest downstream point in the area in need of reductions.

5.1: Nutrient Concerns

5.1.1: Pollutant loads

Using the water monitoring data and flow estimated from the Patoka River gage at Jasper, loading for total phosphorous, nitrate, and total suspended solids was established. Total phosphorous, total suspended solids and nitrate are the most important of the water quality constituents related to the water quality problem since they drive the algae blooms and low oxygen conditions that are also responsible for the high pH and ammonia nitrogen levels.

Total Phosphorous (Pound/Year)			
	Current Load	Target Load	Reduction Needed
Patoka River - Lost Ridge (010)	127.8805128	127.8805128	0
Dillon-Cane Creek (020)	752.2526774	752.2526774	0
Davis Creek (030)	604.6191843	604.6191843	0
Patoka River - Dubois (040)	568.7923396	568.7933561	36.5
Polson-Bauer Creek (050)	494.0096032	494.0099386	0
Patoka River - Long Ditch (060)	557.3152831	557.3154368	0
Beaver Creek (070)	834.538945	796.3268307	38.2
Patoka River - Calumet Run (080)	2459.387037	1806.968848	652.4
Nitrate (Pounds/Year)			
Sub-watershed	Current Load	Target Load	Reduction Needed
Patoka River - Lost Ridge (010)	11912	11912	0
Dillon-Cane Creek (020)	21558	21558	0
Davis Creek (030)	28304	28304	0
Patoka River - Dubois (040)	42088	32403	9685
Polson-Bauer Creek (050)	15063	15063	0
Patoka River - Long Ditch (060)	36372	26605	9767
Beaver Creek (070)	23448	19531	3917
Patoka River - Calumet Run (080)	6820	6820	0
Total Suspended Solids (Tons/Year)			
Sub-watershed	Current Load	Target Load	Reduction Needed
Patoka River - Lost Ridge (010)	725	725	0
Dillon-Cane Creek (020)	687	687	0
Davis Creek (030)	310	236	74
Patoka River - Dubois (040)	1240	867	374
Polson-Bauer Creek (050)	292	192	100
Patoka River - Long Ditch (060)	4014	3283	730
Beaver Creek (070)	438	317	121
Patoka River - Calumet Run (080)	231	127	103

Table 5.1.1: Sediment & Nutrient Loads

To determine the load, the concentration of the constituents was multiplied by the flow to get a load in pounds per hour for each sample point location. This was then divided by the acres of the area draining to the sample point and an average yearly load per acre was established. GIS data was then used to establish an average load for each sub-watershed listed in *Table 5.1.1: Sediment & Nutrient Loads* as "Current Load." Sample points that exceeded state standards or desired levels were evaluated further to determine the reduction needed based on the amount that the concentration exceeded the state standard. The reduction for each event was then averaged for the year and the new target load for all the sample points was averaged to get "target load." The difference between the target load and the current load is the "reduction needed." Reduction is needed for total phosphorous in 3 of the 8 sub-watersheds. The area in need of reduction is discussed in the next section *critical areas.* Three of the eight sub-watersheds have areas that are in need of nitrate reduction.

5.1.2: Critical Areas

Figure 5.1.2-A: Yearly Phosphorous Reductions Needed to Achieve Desired Levels shows the location of the areas that must achieve reduction in order to attain water quality standards or desired levels. The method used to obtain these levels is discussed in section *5.1.1: Pollutant Loads.* As discussed in *Section 5.1.1*, half of the sub-watersheds had areas that were in need of restoration, areas where a reduction was needed to achieve the water quality standards or desired levels. The relative amount of reduction needed is displayed as either red for high (~ 600 pounds per year) or yellow for low (~ 40 pounds per year). Areas not in need of phosphorous reductions are shown as hollow or have no color.

From the figure it is obvious that the most reductions are needed in the Patoka River-Calumet Run sub-watersheds. The areas within the Patoka River – Dubois and Beaver Creek Sub-watersheds need the least reductions, but still may be important in attaining desired levels of total phosphorous unless restoration attempts exceed needed reductions in other sub-watersheds (this may also be confirmed through *Table 5.1.1* which shows the total reduction needed of all the areas in need). Since there is no indication that one sub-watershed or another may have more willing landowners, all areas in need of reductions are considered critical areas and should be given equal priority until reductions are achieved. Once reductions are achieved priority should go towards other areas still in need of reductions.

Figure 5.1.2-B: Yearly Nitrate Reductions Needed to Achieve Desired Levels shows the location of the areas that must achieve reduction in order to attain water quality standards or desired levels. The method used to obtain these levels is discussed in section *5.1.1: Pollutant Loads.* As discussed in *Section 5.1.1*, three sub-watersheds had areas that were in need of restoration, areas where a reduction was needed to achieve the water quality standards or desired levels. The relative amount of reduction needed is displayed as either red for high (~9000 pounds per year), orange for medium (~1000 pounds per year), or green for low (< 900 pounds per year). Areas not in need of nitrate reductions are shown as hollow or have no color.

From the figure it is obvious that the most reductions are needed in the Beaver Creek and Patoka River-Long Ditch sub-watersheds (this may also be confirmed through *Table 5.1.1* which shows the total reduction needed of all the areas in need). Some reduction is also need in the Patoka River-Dubois Sub-watershed. All are important in attaining desired levels of nitrate, and only the orange area in Beaver Creek has a potential to impact any of the other areas needing reduction. Since there is no indication that one sub-watershed or another may have more willing landowners, all areas in need of reductions are considered critical areas and should be given equal priority until reductions are achieved. Once reductions are achieved priority should go towards other areas still in need of reductions.

Figure 5.1.2-C: Yearly Total Suspended Solids Reduction Needed to Achieve Desired Levels shows the location of the areas that must achieve reduction in order to attain desired levels. The relative amount of reduction is displayed as either red for high (126 – 600 tons per year), orange for medium (85 – 125 tons per year), or green for low (25 – 75 tons per year). Areas not in need of total suspended solids reductions are shown as hollow or have no color

From the figure it is clear that the most reductions are needed in the Patoka River – Long Ditch sub-watersheds (this is also confirmed through *Table 5.1.1* which shows the total reduction needed of all areas in need). Areas in the Patoka River – Calumet Run, Beaver Creek, and Patoka River – Dubois subwatersheds all need considerable reductions. Only a small amount of reduction is needed in the Polson – Bauer Creek and Davis Creek Sub-watersheds.

In addition to the criteria above, ammonia nitrogen and pH were also used to evaluate priority areas. High levels of ammonia nitrogen and pH are most often associated with algae blooms and precede the eventual decomposition of the bloom that leads to low dissolved oxygen conditions unsuitable for fish life. Using the Indiana water quality standard for ammonia nitrogen (varies based on pH and temperature) and pH (must be > 6 and < 9), priority areas for excessive algae growth were established. By targeting sediment and nutrient loading and/or site specific practices such as establishing riparian buffers or eliminating stagnant water in these priority areas, water quality can be improved. The priority areas for excessive algae growth based on this criteria is shown in *Figure 5.1.2-D: Priority Areas for Excessive Algae Growth Based on Ammonia Nitrogen and pH.*

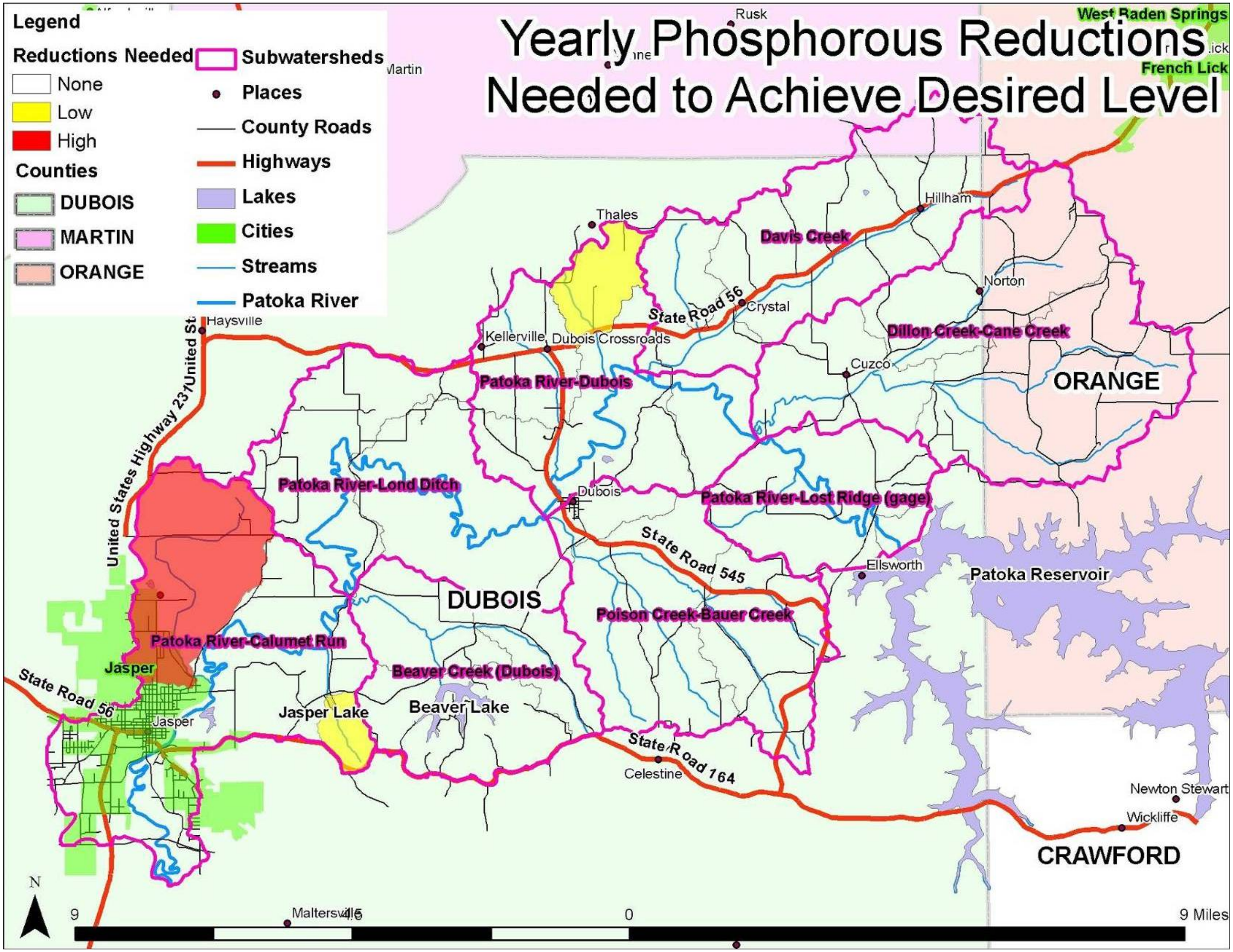

Figure 5.1.2-A: Yearly Phosphorous Reductions Needed to Achieve Desired Levels

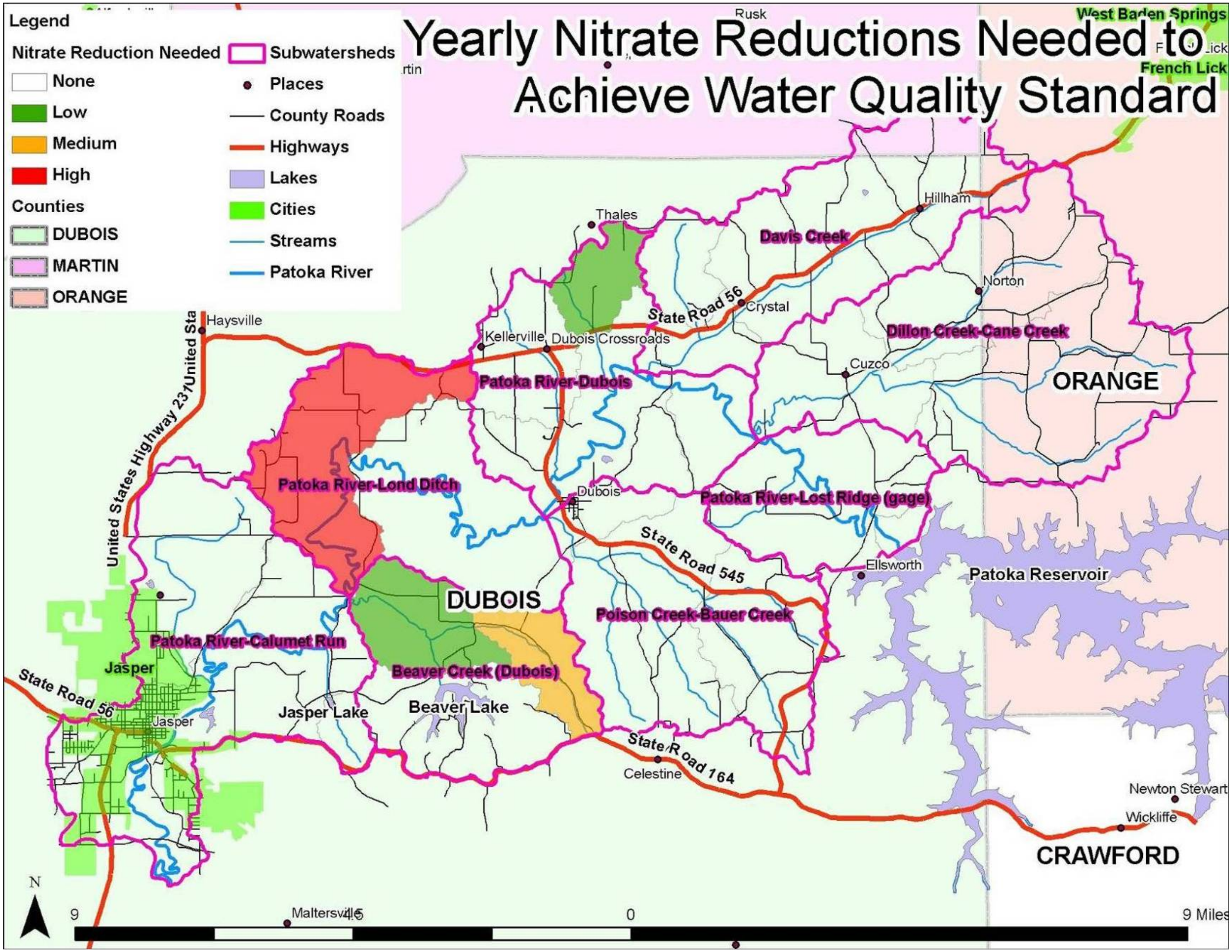

Figure 5.1.2-B: Yearly Nitrate Reductions Needed to Achieve Desired Levels

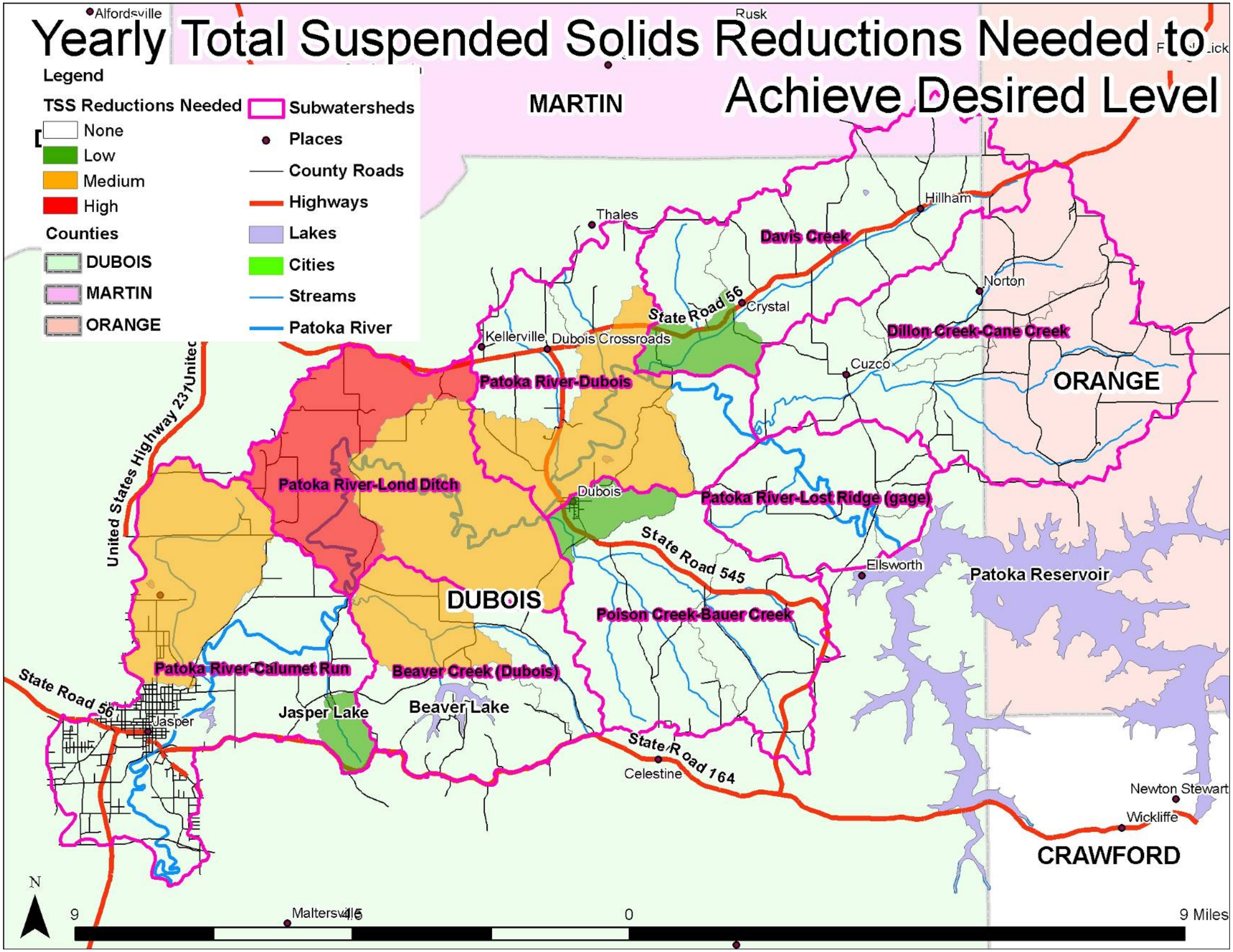

Figure 5.1.2-C: Yearly Total Suspended Solids Reduction Needed to Achieve Desired Levels

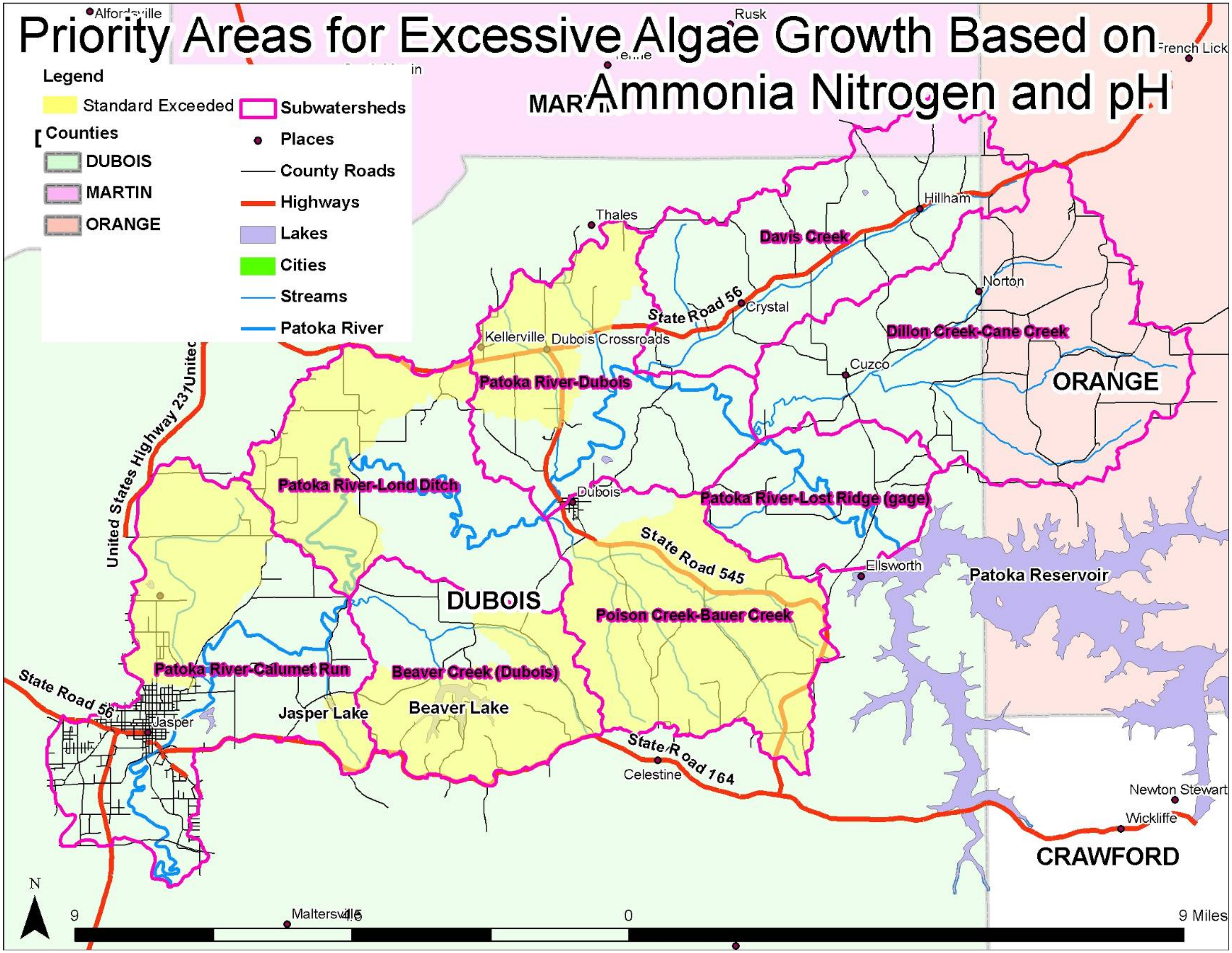

Figure 5.1.2-D: Priority Areas for Excessive Algae Growth Based on Ammonia Nitrogen and pH

5.2: Pathogen Concerns
5.2.1: Pollutant Loads

The same method described in *Section 5.1.1* is used to determine critical areas for *E. coli*. *Table 5.2.1: E. coli Loads* shows the results of this analysis. Reduction is needed for *E. coli* in 4 of the 8 sub-watersheds. The area in need of reduction is discussed in the next section *critical areas.*

***E. coli* (Thousand Colony Forming Units/Year)**			
HUC_14	Current Load	Target Load	Reduction Needed
Patoka River - Lost Ridge (010)	2014460.624	2014460.624	0
Dillon-Cane Creek (020)	7745516.715	7745516.715	0
Davis Creek (030)	10758863.92	9442817.922	1316046
Patoka River - Dubois (040)	8764509.279	7373192.982	1391316
Polson-Bauer Creek (050)	4026774.699	4026776.492	0
Patoka River - Long Ditch (060)	6232848.167	6232849.783	0
Beaver Creek (070)	5601790.03	5399477.248	202313
Patoka River - Calumet Run (080)	17829171.41	10026024.71	7803147

Table 5.2.1: E. Coli Loads

5.2.2: Critical Areas

Figure 5.2.2: Yearly E. coli Reductions Needed to Achieve Desired Levels shows the location of the areas that must achieve reduction in order to attain water quality standard. The method used to obtain these levels is discussed in section *5.1.1: Pollutant Loads.* As discussed in *Section 5.1.2*, four sub-watersheds had areas that were in need of restoration, areas where a reduction was needed to achieve the water quality standards or desired levels. The relative amount of reduction needed is displayed as either red for high (1.2 – 1.4 billion colonies per year) or yellow for low (< 300 million colonies per year). Areas not in need of *E. coli* reductions are shown as hollow or have no color.

From the figure it is obvious that the most reductions are needed in the Patoka River – Calumet Run and Davis Creek sub-watersheds (this may also be confirmed through *Table 5.2.1* which shows the total reduction needed of all the areas in need). Significant reduction is also needed in the Patoka River-Dubois and Beaver Creek Sub-watersheds. All are important in attaining water quality standards for *E. coli*, none of the areas are upstream and thus do not have a potential to impact any of the other areas needing reduction. Since there is no indication that one sub-watershed or another may have more willing landowners, all areas in need of reductions are considered critical areas and should be given equal priority until reductions are achieved. Once reductions are achieved priority should go towards other areas still in need of reductions.

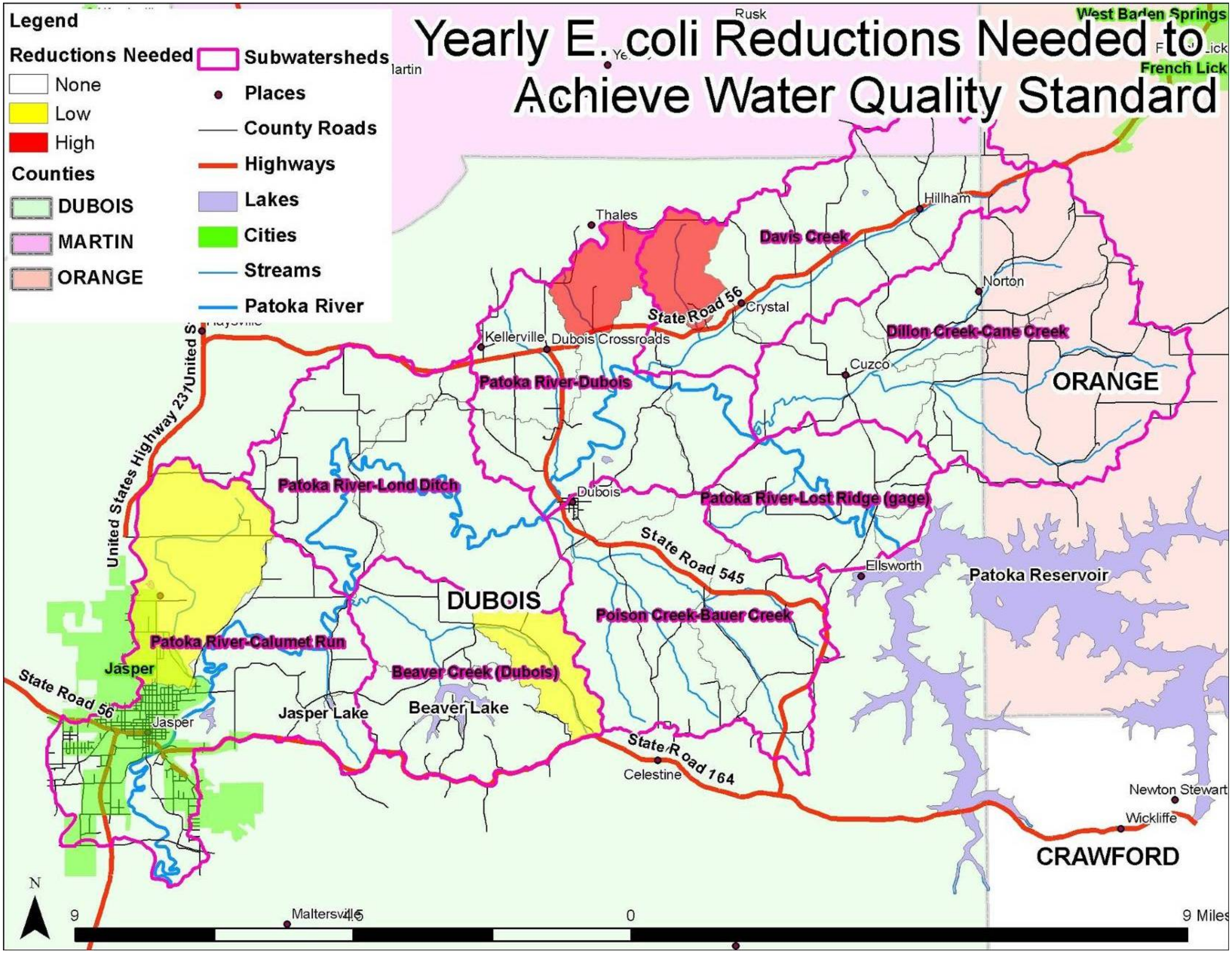

Figure 5.2.2: Yearly E. coli Reductions Needed to Achieve Desired Levels 6: Goals & Indicators

6.1: Nutrient Goals

Water Quality Goals

The ten year goal for nutrients is that all the sub-watersheds be supporting of state aquatic life and drinking water quality standards, and other desired levels specified in the plan. This will be achieved primarily by the reduction of the two nutrient related water quality criteria most likely to cause nutrient related problems, nitrate and phosphorous. Phosphorous loads to waterways will be reduced from the current load of 3.2 tons per year to the target load of 2.9 tons per year, resulting in an overall reduction of about 0.3 tons per year. As a result of the reduction in nitrate and phosphorous, it is expected that standards for ammonia nitrogen, dissolved oxygen and pH within these areas will also be met.

Other Goals

In the areas where monitoring did not indicate a need to reduce nitrate or phosphorous yet standards for ammonia nitrogen and pH were exceeded, demonstration projects will be established to highlight practices that eliminate excessive algae growth with the end result of achieving ammonia nitrogen and pH standards through reducing algae in the critical areas.

A monitoring program will be established on Beaver and Jasper Lake in cooperation with landowners and the City of Jasper to identify the source of the impairments detected at the outlets, provide information to the community, and within five years a more specific plan to address the problem (if necessary) will be developed. Within 2 years, recommended BMPs or other measures will be determined in cooperation with landowners and community groups to address the impairment and within 10 years the standard for ammonia nitrogen and pH will be met on at least 10% of samples evenly spaced across one year.

6.1.1: Indicators

The indicators of the water quality goals for nutrient will obviously be the actual water quality constituents including most importantly total phosphorous and nitrate. In addition, pH, ammonia nitrogen, and dissolved oxygen levels should continue to be monitored to establish that the reductions, when accomplished, were sufficient to also protect waterways for being impaired due to these other criteria and that individual load reductions for other nutrient related criteria do not need to be established to protect aquatic life.

For the "other goals" involving demonstration projects to address excessive algae growth, interim measures will include tasks that are accomplished involving:

- Landowners/community groups identified and contacted within impacted area
- Identification of demonstration site
- Establishment of a demonstration project
- Field day or tour held with attendance from landowners within the critical areas
- Follow-up and technical assistance provided to attendees
- Adoption of recommended BMPs or other measures by other landowners in the priority areas
- Attainment of water quality standards for ammonia nitrogen and pH

For the "other goals" involving Beaver and Jasper Lake, interim measures will include tasks that are accomplished involving:

- Development of a monitoring program
- Implementation of the monitoring program
- Number of outreach events, mailing, newsletter/newspaper articles, or other media releases used to inform the public
- Increase in awareness as determined from interviews at events such as the SWCD annual meeting and SWCD monthly supervisors meeting.
- Amount of input provided by the community
- Development of a plan to address problems identified during the monitoring program
- Implementation of the plan (if needed)
- Attainment of ammonia nitrogen and pH standard

6.2: Pathogen Goals

Water Quality Goals

The five year goal for nutrients is that all the sub-watersheds exceeding standards for *E. coli* will meet the standard of 235 colonies/100 mL. Overall, a reduction of 10.7 billion colonies loaded to streams per year must be achieved to reduce the current load of 63.0 billion colonies to a target load of 52.3 billion colonies

The specific load reductions required to achieve this goal are described in section 5.2.1.

Other Goals

A monitoring program will also be established on Beaver and Jasper Lake in cooperation with landowners and the City of Jasper to identify whether or not *E. coli* levels are unsafe for swimming, to educate residents on the results and of the potential for contamination even if levels are not exceeded during the sample rounds, and if necessary to recommend BMPs or other measures to address any problems found. If problems are found recommendations should be made within two years.

6.2.1: Indicators

The indicator of the water quality goals for Pathogens will be the *E. coli* levels in streams and lakes.

For the "other goals" involving Beaver and Jasper Lake, interim measures will include tasks that are accomplished involving:

- Development of a monitoring program
- Implementation of the monitoring program
- Outreach events, mailing, newsletter/newspaper articles, or other media releases used to inform the public

- Increase in awareness as determined from personal interviews at events such as the SWCD annual meeting, SWCD monthly supervisors meeting, etc.
- Amount of input provided by the community
- Development of a plan to address problems identified during the monitoring program
- Implementation of plan

7.1: Nutrient Goal

7.1.1: Recommended BMPs and locations for water quality goals

Using the IDEM/EPA Region 5 Pollutant Load Reduction Model (http://it.tetratech-ffx.com/stepl/STEPLmain_files/Region%205%20manual05.pdf) for estimating pollutant load reduction and the relative magnitude of each source described in Chapter 5, the best BMPs to achieve the reductions needed in each sub-watershed was determined. The Region 5 Model was used because of its simplicity and the amount of data available. The relative magnitudes were used to ensure that that the recommended amount of BMPs to apply doesn't exceed the sources and to choose a BMP that will increase the chance for adoptions since adoption is unlikely to be 100%. The results are shown in *Table 7.1.1: Recommended BMPs and locations.* The table shows the recommended BMPs, but as land use changes and more data is available through one-on-one interviews, other BMPs may seem more applicable due to cost, landowner choice, or more efficient pollutant reductions. All recommended BMPs should be done in the critical areas for each sub-watershed

The BMPs chosen are also common BMPs that have had been successfully implemented in the watershed or near the watershed on other fields. These include no-till farming, nutrient management planning, filter strips, fencing, livestock watering systems, and livestock watering pads. The loading was evaluated using the Region 5 model. For fields changing to no-till it is assumed that the default C value for Dubois County in the model is the cover that is occurring prior to adoption of no-till. The default LS and K values were also used. This gives an average reduction that is good for estimating how much will be needed. Once landowners are identified, modeling should be done with more detailed information about the particular field and cropping history. The estimated reduction for nutrient management planning could not be established with the Region 5 model and without more information about the nutrient content of the soil and the types, timing, and amounts of nutrient application. For example, switching from ammonia nitrate liquid application to anhydrous ammonia or incorporating manure can have a drastic effect on the amount of nitrate that runs off into the stream. To estimate the reduction due to cattle exclusion it was assumed that the area near the stream access point has less than 40% cover since lounging is likely to occur near the stream and that after the practices are installed the affected area will have 90% or greater cover from the establishment of grasses or installation of watering pads that stabilize the soil.

Overall, to achieve the reductions needed to attain the goals, a total of 17 fields (332 acres) will need to switch to no-till farming practices, 14 fields (268 acres) should have nutrient management plan developed and followed, buffer strips should be established adjacent to the stream on 19 fields (15.6 acres of filter strips), and 3 pastures (10 acres) should have grazing plans developed, likely including some sort of cattle exclusion, alternative watering system, and/or watering pads.

Sub-watershed	Recommended BMPs	Amounts	Estimated load reductions
Patoka River – Dubois	Change to no-till farming on HEL fields	3 fields (60 acres)	1281 pounds/year N
			639 pounds/year P
			744 tons/year sediment
	Nutrient management planning on no-till fields	10 fields (200 acres)	Variable N
			Variable P
	Filter Strips on un-buffered fields	4 fields (7.9 acres of filter strips)	1528 pounds/year N
			820 pounds/year P
			1528 tons/year sediment
Patoka River – Long Ditch	Change to no-till farming on HEL fields	8 fields (160 acres)	3416 pounds/year N
			1704 pounds/year P
			1984 tons/year sediment
	Filter Strips on un-buffered fields	7 fields (5.1 acres of filter strips)	6104 pounds/year N
			3269 pounds/year P
			1704 tons/year sediment
Beaver Creek	Grazing plan, cattle exclusion, watering systems, & watering pad	3 pastures (10 acres affected)*	177 pounds/year N
			87 pounds/year P
			103 tons/year sediment
	Change to no-till farming on HEL fields	4 fields (68 acres)	1476 pounds/year N
			736 pounds/year P
			856 tons/year sediment
	Filter strips on un-buffered fields	4 fields (2.6 acres of filter strips)	1804 pounds/year N
			723 pounds/year P
			902 tons/year sediment
	Nutrient management planning on no-till fields	4 fields (68 acres)	Variable
			Variable
Patoka River- Calumet Run	Filter strips on un-buffered fields	4 fields (100 acres)	1564 pounds/year N
			836 pounds/year P
			782 tons/year sediment
	Change to no-till farming on HEL fields	2 fields (34 acres)	144 pounds/year N
			78 pounds/year P
			84 tons/year sediment
Polson-Bauer Creek	Filter Strips on un-buffered fields	1 field (1.1 acre of filter strip)	172 pounds/year N
			92 pounds/year P
			74 tons/year sediment
Davis Creek	Filter Strips on un-buffered fields	1 field (1.5 acre of filter strip)	237 pounds/year N
			127 pounds/year P
			103 tons/year sediment

** This measure also satisfies reductions needed for the pathogen problem*

Table 7.1.1: Recommended BMPs and locations

This scenario represents the most basic approach to achieving the water quality goals. Additional practices may be necessary to accomplish the recommended BMPs or may enhance their benefit. A number of other BMPs exist that may be used in place of the recommended BMPs to accommodate a landowners existing conservation plan. These include but are not limited to:

- Increase in the amount of manure hauled outside of the watershed
- Grazing management plans
- stream crossings for livestock
- Installation of treatment systems for bare feeding or watering areas
- Installation of concrete pads or other corrective measures for bare feeding and watering areas
- Installation of erosion control structures including drop pipes, WaSCoBs, grassed waterways, etc.
- Stablilization of gullies
- Conversion of fields excessively high in phosphorous to permanent cover
- Creation or repair of ponds in livestock areas
- Extension of municipal sewer lines to include more areas or creation of smaller public treatment systems such as wetland systems
- Increase in the number of people upgrading or regularly servicing septic systems
- Creation of manure and animal storage and composting facilities

7.1.2: Recommendations for "other goals"

As described in Chapter 6, the "other goals" for the nutrient problem involve establishing a monitoring programs specific to Beaver Lake and Jasper Lake. This monitoring program should determine the source and impact of ammonia nitrogen and pH impairments as it relates to the public interest. Project leaders may look to members of the NRCS, SWCD, ISDA, DNR or other partner agencies for technical assistance to identify specific actions that have been proven to reduce algal growth or determine more stringent threshold levels for the loading of phosphorous and nitrogen.

In any of the areas defined as critical for excessive algae growth based on ammonia nitrogen and pH, demonstration projects should address sediment and nutrient loading or other factors that limit algae growth such as water stagnation or canopy cover. Sites should be chosen where excessive algae growth exists to demonstrate how different practices can keep nutrients out of streams and slow algae growth that hurts water quality. Any of the recommended or other BMPs listed above may be appropriate depending on the site chosen.

7.2: Pathogen Goals

7.2.1: BMPs and Other Recommended Measures for Water Quality Goals

To accomplish the water quality pathogen goals described in Chapter 6, a number of BMPs and measures are appropriate including but not limited to:

- riparian filter strips in areas where manure is applied
- Increase in the amount of manure hauled outside of the watershed

- Grazing management plans
- Fencing, watering systems, and stream crossings for livestock
- Installation of treatment systems for bare feeding or watering areas
- Installation of concrete pads, critical plantings, or other corrective measures for bare feeding and watering areas
- Maintenance or upgrading of lagoons or ponds in livestock areas that may be contributing pathogens
- Extension of municipal sewer lines to include more areas or creation of smaller public treatment systems such as wetland systems
- Increase in the number of people upgrading or regularly servicing septic systems

7.2.2: Recommended BMPs and locations for water quality goals

An appropriate method of modeling reduction in *E. coli* could not be found since the amount can be so variable. Runoff contaminated by manure can range from a low as 200 colonies per 100 mL to as high as 100,000 colonies per 100 mL depending on a wide variety of environmental variables and magnitudes. Instead, common sense will be used to estimate reductions. In most cases, the only observed source of *E. coli* was small and isolated. The most obvious source was identified as cattle with access to stream or pastures will large bare areas especially where feeding or watering occurs. The following BMPs are the recommended BMPs based on these assumptions and monitoring should continue to verify that the sources were correctly identified. Other ways of establishing the best locations within the critical areas for the BMPs include interviews with landowners or observing cattle to determine the amount of time spent and activities occurring while cattle are in streams or on bare areas of the pasture. The recommended BMPs and locations are described in *Table 7.2.2: Recommended BMPs and Locations.*

Sub-watershed	Recommended BMPs	Amount
Davis Creek	Grazing plan, cattle Exclusion, watering systems, & watering pad	2 pastures (7 acres affected)
Patoka River – Dubois	Grazing plan, cattle exclusion, watering systems, & watering pad	2 pastures (7 acres affected)
Beaver Creek	Grazing plan, cattle exclusion, watering systems, & watering pad	3 pastures (10 acres affected)
Patoka River – Calumet Run	Grazing plan, cattle exclusion, watering systems, & watering pad	3 pastures (10 acres affected)

Table 7.2.2: Recommended BMPs and Locations

Overall, 10 pastures (34 acres affected) should adopt grazing plans and install fencing, water systems, and/or water pads.

7.2.3: Recommendations for "other goals"

As described in Chapter 6, the other goals for the pathogen problem involve further monitoring of Jasper and Beaver Lake to establish with more certainty that *E. coli* is not exceeding the recreational standard while the lakes are being used for full contact recreation. Landowners, the city of Jasper, and the county health department should be central in developing a monitoring program that will ensure the safety of users of the lake by monitoring the levels of *E. coli*. If problems are found then the public should be notified through public meetings, the media, and mailings, paying particular attention to communicate the problem and the magnitude of the problem correctly and simply. The community should then be closely involved in developing a plan to remedy any problems that are found. Monitoring points should be chosen to reflect the areas most used for full body contact recreation.

Goal	Objective	Time of completion	Cost	Possible Funding Sources	Technical Assistance and input	Responsible parties
Sediment & Nutrient and Pathogen	Hire a watershed coordinator or technician	1 month	\$120,000-\$140,000 over 2 and a half years	Section 319 Grant, Dubois County, City of Jasper, ISDA Division of Soil Conservation Clean Water Indiana grant	IDEM Watershed Section, ISDA-DSC	Dubois County SWCD
Sediment & Nutrient and Pathogen	Develop guidelines for a cost-share plan to help landowners with costs of BMPs	3 months	Staff Included in coordinator cost and \$500 for advertising and holding meetings	Section 319 Grant, Dubois County, City of Jasper, ISDA Division of Soil Conservation Clean Water Indiana grant	NRCS, IDEM Watershed Section, ISDA-DSC, crop consultant, nutrient management planners, landowners	Watershed Coordinator, landowners, Dubois SWCD, IDEM Watershed Section
Sediment & Nutrient	Identify possible landowner(s) for demonstration projects	3 months	Staff Included in coordinator cost	Section 319 Grant, Dubois County, City of Jasper, ISDA Division of Soil Conservation Clean Water Indiana grant	NRCS, IDEM Watershed Section, ISDA-DSC, landowners	Watershed Coordinator, Dubois SWCD
Sediment & Nutrient and Pathogen	Develop a monitoring program for Beaver Lake and Jasper Lake, to study *E. coli,* ammonia nitrogen and pH	3 months	Staff Included in coordinator costs and \$500 for advertising and meetings	Section 319 Grant, Dubois County, City of Jasper, ISDA Division of Soil Conservation Clean Water Indiana grant	Watershed Coordinator, Dubois County SWCD, NRCS, IDEM, ISDA-DSC, landowners, water testing laboratory representative, EPA	City of Jasper, Dubois County Health Department, Lake associations

Sediment & Nutrient	Install demonstration project(s)	12 months	Variable	Section 319 Grant, Dubois County, ISDA-DSC Clean Water Indiana grant	NRCS, IDEM Watershed Section, ISDA-DSC, crop consultants, nutrient management planners,	Watershed Coordinator, Landowners, Dubois County SWCD
Sediment & Nutrient and Pathogen	Complete monitoring program	15 months	Staff included in coordinator costs	Section 319 Grant, Dubois County, City of Jasper, ISDA-DSC CWI grant	Watershed Coordinator, Dubois County SWCD, landowners, NRCS, ISDA-DSC, IDEM, EPA	City of Jasper, Dubois County Health Department, Lake associations
Sediment & Nutrient	Host tour or field day to highlight demonstration projects targeting landowners in the priority areas	20 months	Staff included in coordinator costs & $100-500 for mailings & advertising	Section 319 Grant, Dubois County, ISDA-DSC CWI grant	landowners, NRCS, ISDA-DSC, IDEM, Purdue Extension	Watershed Coordinator, Landowners, Dubois County SWCD
Sediment & Nutrient	Follow-up with field day or tour attendees to determine interest in additional practices	22 months	Staff included in coordinator costs	Section 319 Grant, Dubois County, ISDA-DSC CWI grant	landowners, NRCS, ISDA-DSC, IDEM, Purdue Extension	Watershed Coordinator, Landowners, Dubois County SWCD
Sediment & Nutrient and Pathogen	Develop recommendations based on additional monitoring	24 months	Staff included in cost of coordinator and $500 for advertising and holding meetings	Section 319 Grant, Dubois County, City of Jasper, ISDA-DSC CWI grant	Watershed Coordinator, Dubois County SWCD, landowners, NRCS, ISDA-DSC, IDEM, EPA	City of Jasper, Dubois County Health Department

Sediment & Nutrient and Pathogen	Installation/adoption of recommended BMPs in Chapter 7	27 months	Base cost: $20,243 – 25,573	Section 319 Grant, Dubois County, City of Jasper, ISDA-DSC CWI grant, BMP challenge, DNR LARE, NRCS	NRCS, IDEM Watershed Section, ISDA-DSC, crop consultants, nutrient management planners,	Watershed Coordinator, Landowners, Dubois County SWCD
Sediment & Nutrient and Pathogen	Evaluate plan and make additions or corrections	30 months	Staff included in cost of coordinator and $500 for advertising and holding a meeting	Section 319 Grant, Dubois County, City of Jasper, ISDA-DSC CWI grant	NRCS, IDEM Watershed Section, ISDA-DSC, City of Jasper, Landowners, Dubois County Health Department	Watershed Coordinator, Dubois County SWCD

7.3.1: Hiring a Watershed Coordinator/Technician

Interim milestones

- Funding secured
- Position advertised
- Interviews conducted
- Position filled

Cost estimate is based on previous watershed coordinator costs.

7.3.2: Develop Guidelines for a Cost-Share Program

Interim milestones

- Meeting with parties responsible and those providing technical assistance/input
- Public meeting for landowners to announce cost-share opportunity and gather input announced
- Public meeting held
- Personal interviews conducted with landowners in critical areas
- Guidelines for cost-share announced

Cost is based on the cost of postage, meeting space, newspaper ads and newsletter articles.

7.3.3: Identify Possible Landowners for Demonstration Projects

Interim milestones

- Sites identified with observed or expected excessive algae growth
- Personal interviews conducted with landowners
- Need for funding established based on possible projects
- Cost-share opportunities discussed with possible landowners

7.3.4: Develop a Water Monitoring Program for Beaver Lake and Jasper Lake

Interim milestones

- Meeting with parties responsible and those providing technical assistance/input
- Public meeting for landowners to discuss monitoring and gather input announced
- Public meeting held
- Number attending meeting
- Personal interviews conducted with landowners in areas of the water monitoring
- Willing landowners identified to assist in gathering data
- Sampling location and schedule identified
- Monitoring plan shared with technical partners for review

Cost is based on the cost of postage, meeting space, newspaper ads and newsletter articles.

7.3.5: Install Demonstration Projects

Interim milestones

- Project designed based on site needs
- Expected load reduction based on load reduction spreadsheet tool or other appropriate model
- Site documented before construction
- Projects installed

Cost varies based on practices to be installed

7.3.6: Complete Monitoring Program

- Reagents purchased and/or labs identified to run tests
- Samples collected according to schedule
- Results shared with public and technical partners

Cost based on the cost of reagents used in previous monitoring programs and the cost of labs for additional testing.

7.3.7: Host Tour or Field Days and Follow-up with Attendees

Interim milestones

- Event developed in cooperation with landowners
- Landowners in critical areas contacted about event
- Number attending
- Number considering implementing similar project

Cost is based on the cost of postage, meeting space, newspaper ads and newsletter articles

7.3.8: Develop recommendations based on additional monitoring

- Meeting with parties responsible and those providing technical assistance/input
- Analysis conducted to determine additional measures needed
- Public meeting for landowners to discuss results and gather input announced
- Public meeting held
- Number attending meeting
- Personal interviews conducted with landowners in areas of the water monitoring
- Recommendations shared with technical partners and public
- Recommendations added to the watershed management plan with a schedule of completion

7.3.9: Installation/Adoption of Recommended BMPs

- Landowners identified for BMPs
- Landowners contacted
- Number of landowners showing interest once cost-share is available
- Landowners provided technical assistant by technical partners/crop consultants in switching to no-till and/or adopting nutrient management planning
- Number of landowners signed up for BMP Challenge
- Number/acres of filter strip installed
- Acres of farmland switched to no-till
- Acres of farmland adopting nutrient management plans
- Number of pastures adopting grazing management plans
- Amount of fencing, alternative watering systems, or other corrective measures installed on pastures

Costs

Filter Strips: $150/acres * 18.2 acres = $2730 (more cost may be encountered if a forest buffer is used or if stabilization of gullies or streambank erosion is needed)

No-till: $20/acres * 332 acres = $6640 (additional cost is likely to be encountered for landowners requesting assistance from crop consultant or needing equipment modifications).

Nutrient Management Planning: 268 acres * $20 = $5360

Grazing plan: $20/acre * 34 acres = $680

Fencing: 10 pastures * 1944 feet per pasture * $0.13 = $2513.80

Alternative Watering Systems: 10 pastures * $232-$765/unit = $2320 - $7650

7.3.10: Evaluate Plan and Make Additions or Corrections

- Number of interim milestones completed or not completed summarized
- Public meeting advertised/announced
- Public meeting held to discuss accomplishment and results of 2 and a half years of implementation
- Number of people attending meeting
- Additions or corrections added to plan and plan made available to the community
- Number of places plan is available for review by the public
- Number of additional landowners interested in implementing more BMPs
- Need determined for additional funding

Cost is based on the cost of the meeting and advertisements for the meeting

Chapter 8: Monitoring Effectiveness & Updating the Plan

8.1: Evaluating the Plan

The plan should be evaluated once a year to track progress and communicate the accomplishments to the public. The Dubois County SWCD and the watershed coordinator should get help from the original steering committee in evaluating the plan. A final evaluation of the first phase of the plan should be conducted after two and a half years to establish needed correction based on the additional montoring conducted on Beaver Lake, Jasper Lake, and Polson Creek and to establish additional funding that may be needed.

8.2: Tracking Indicators

8.2.1: Water Quality monitoring

Water quality monitoring at the sample points tested in the 2005-2006 monitoring should be tested again after 5 years of implementation to evaluate the effectiveness of the BMPs/measures installed or adopted. Total phosphorous, total nitrogen, nitrate, ammonia nitrogen, pH, dissolved oxygen, and *E. coli* should be tested. The HACH kit may be used for all but total phosphorous, total nitrogen, and *E. coli*. Total phosphorous and total nitrogen should be done by an outside lab, and *E. coli* should be tested using Easygel Coliscan plus. Monitoring should be conducted four times over a year by the Dubois County SWCD and results should be shared with the original steering committee and the public. If impairments are found, loading calculations should be redone and changes in the watershed should be determined to make corrections and additions to the watershed plan.

8.2.2: Milestones

BMPs and other practices adopted or implemented should be evaluated using the Region 5 pollutant load estimation tool and RUSLE2 (if necessary). Nutrient management planning should be evaluated based on the anticipated reduction in nutrients applied, especially nitrate, and possibly soil nutrient levels. Spot check should be conducted to identify landowners adopting BMPs without technical assistance if they are in the critical areas.

Acknowledgements

Several individuals & agencies were instrumental in the creation of this plan including:

Bart Pitstick, District Conservationist, NRCS
Jim Peter, Extension Educator, Purdue Cooperative Extension Service
Judi Brown, Executive Director, Dubois County SWCD
Colt VanNatta, Livestock Specialist, Four Rivers RC&D
Dave Elgin, Coordinator, Four Rivers RC&D
Denise Tuggle, Program Assistant, Four Rivers RC&D
Beverly Osgatharp, Clerical, Four Rivers RC&D
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Dubois County Farm Service Agency Staff
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Wes Garris, Stormwater Coordinator, City of Jasper
Adam Vaal, GIS Specialist, City of Jasper
Dubois County Health Department
Joe Craig, Practical Resource Consultants, Inc.
Rick Obenshain, Four Rivers RC&D
Joe Neukam, Four Rivers RC&D
Levi Brown, Four Rivers RC&D
Jack Welp, Dubois County SWCD
Glenn Menke, Dubois County SWCD
Alan Weyer, Dubois County SWCD
Jason Small, Dubios County SWCD
Sam Oxley, Dubois County SWCD
Larry Vollmer, Dubois County Commissioners
Jason Tower, Superintendent, SIPAC

References; IDEM's Patoka River Watershed Restoration Strategy, Final Draft 2000

UPPER PATOKA RIVER WATERSHED MANAGEMENT PLAN

APPENDICES

Patoka River at Assessment Site #1

Prepared for
Indiana Department of Environmental Management
By
Blair Borries
Four River Resoure Conservation & Development Area, Inc.

Appendix A
Raw Public Input Results

Stakeholders present at the 11/15/05 public meeting were given a survey with the following numbered questions. Their responses are shown in the bulleted section below each question.

11/15/05 Patoka Watershed Meeting Survey Results

1. **Which critical areas do you think are causing the greatest damage?**

    - **The *E.coli* I believe would cause the most damage over time**
    - **Jasper Lake & Beaver Lake should be tested & results presented at the next meeting**
    - **Identify exposed problems & remedies then address with landowners only**
    - **Livestock contamination runoff**
    - **Cattle in stream**
    - **Septic systems**
    - **Farming too close to the streams**
    - **Animals having channel access**

2. **What do you think should be the goal of pollution reduction for this project?**

    - **Work on identifying sources & work on both management & education of setbacks.**
    - **Test water, identify problem areas, suggest possible solutions, communicate with landowners**
    - **Lagoons**
    - **Water supply assistance to farmers**
    - **Investigate the *E.coli*, check bmp's & get more of the farmers involved**

3. **Which measures/practices should be implemented with this project?**

    - **Setbacks for manure applications & fixing failing septics which both cause the elevated *E.coli***
    - **To date two problem sources have been communicated: cattle in streams & a hog pit**
    - **Hog & turkey houses**
    - **Manure dry stacks**
    - **Assisting with developing CNMP**

4. **Other comments**

    - **Disclose practices that prevent cattle in streams and publicize those solutions**

• If you are doing a watershed study, it is vital to also consider heavy metals such as mercury
& lead and chemicals like PCB's etc. Since these have been identified in fish and in Patoka Lake upstream, it should be investigated. Industrial chemicals need to be identified as well. This may be expensive, but a water quality study would not be complete without this data as well.
• More involvement is needed. Should not reflect the ideas of the leaders in the group exclusively. One suggestion is to split people up into groups of 3 – 4 and have them brainstorm. Get those ideas out on the table.

Example Goals from 11/2/06 Dubois Co. SWCD Supervisors Meeting

Dubois County SWCD supervisors were asked to come up with potential goals for the livestock, soil erosion, and forestry problem areas for the Upper Patoka River Watershed based on their experience with the watershed study. The section of the meeting was facilitated by the watershed coordinator. The results are summarized below. They were not asked to rank in any way. This page was presented as a handout to steering committee members and stakeholders present at the 11/27/06 meeting when final goals were decided.

Livestock Goals

Action	Target	Votes Received	Amount Recommended/Number Reached
Increase	Stream buffers	1	None provided
	Stream Crossings (for livestock)	1	None provided
	Watering Facilities	1	None provided
	Manure transported outside the watershed	1	25%
	Use of rotational grazing	2	10%, none provided
	Grazing plans completed by a specialist	1	None provided
	Specialist assisted manure management planning	1	10 farms
Decrease	Livestock access to waterways	3	100%, 90%, none provided
	E. coli concentrations in *E. coli*	1	50%
	Stockpiling manure outside	1	None provided
	Stocking rates in pastures	1	10%

Educate	Livestock owners about soil Phosphorous levels in the watershed	1	None provided
	Livestock owners about benefits of rotational grazing	1	All
	Livestock owners about benefits of cattle exclusion from streams	1	All
	Livestock owners about benefits of feedlot BMPs	1	All
	Livestock owners about E. Coli levels in waterways	1	None provided

Soil Erosion Goals

Action	Target	Votes Received	Amount Recommended/Number Reached
Increase	Cover Crops	3	50%, 20%
	Conservation Tillage	3	50%, 20%, none provided
	No-till on HEL land	1	Achieve 100%
	Marginal Cropland Converted to Forest or Pasture	3	25%, none provided, none provided
	Grassed Waterways	2	20%, none provided
	Diversion Structures/water and Sediment control Basin	2	20%, 25%
	Stream-side buffers	2	25%, None provided
Educate	Landowners on the benefits of buffering streams.	1	None provided

	Everyone about the problem and related solutions	1	None provided

Forestry goals

Action	Target	Votes Received	Amount Recommended/Number Reached
Increase	Tree Planting Acreage	1	10%
	Use of good forestry best management practices	1	50%
	Incentives to reforest marginal cropland	1	None provided
Educate	Landowners about forestry management thorough field days	1	None provided

PATOKA RIVER WATERSHED

Dubois County, Indiana
HUC 05120209020

APPENDIX B

FIELD DATA SHEETS

Data from study by Four Rivers RC&D
Completed by Practical Resource Management
Joe Craig

- Stream analysis parameters
- Map of data locations
- Sampling points
- Sub-watershed maps
- Monitoring worksheet summary
- Chemical monitoring worksheets
- Water quality indexing worksheets
- CFS computations

STREAM ANALYSIS PARAMETERS

pH

pH is an indication of acidic or alkaline nature of the water. It is a mathematical relationship indicating the concentration of hydrogen ions in the water. It is measured with a pH meter after calibration to known standards. The scale ranges from 0 (acidic) to 14 (alkaline) with 7 being neutral. Aquatic organisms are sensitive to pH, especially during reproduction. A pH range of 6.5 to 8.2 is considered optimal. As an example, the pH of vinegar is about 3 and the pH of ammonia is about 11.

Things that can affect pH:

- Run off from acidic or alkaline sources
- Run off after agricultural lime application
- Algae blooms raise pH

Dissolved Oxygen

Aquatic life requires oxygen. Dissolved oxygen is therefore an important indicator of stream health. Fish normally require a minimum DO level of 3 ppm. Typical normal range is 5 to 15 ppm. Since DO is affected by temperature, the most useful number is the % saturation. This tells us how much oxygen is in the water versus how much could be in the water at that given temperature.

Things that can affect DO concentrations are:

- Temperature
- Turbulence
- Plant growth (photosynthesis)
- Decaying organic matter
- Ammonia

E. coli

E. coli is a bacterium found in the fecal matter from warm-blooded animals, including humans. The bacteria are naturally present in the digestive tract. However, the bacteria along with other pathogens can lead to serious illnesses if ingested or entered through a wound, eyes, etc. High levels are an indicator of the probability that someone could become ill.

Things that effect E. coli concentrations are:

- Human waste from improperly functioning septic systems
- Pet wastes, wildlife and waterfowl wastes
- Livestock and manure runoff from fields or lagoons

Orthophosphate

Orthophosphate is one form of phosphate that is dissolved in the water and readily available for aquatic plant uptake. Thus it is an indicator for the potential of algae blooms, which ultimately leads to a serious reduction in dissolved oxygen. Total Phosphate levels are in the typical range of 0.01 to 0.17 ppm. The Indiana average is 0.09 ppm.

Things that can affect Phosphate levels are:

- Manure sources
- Fertilization
- Septic tank effluent
- Soaps

Nitrate

Nitrogen occurs in the water as nitrate, nitrite, and ammonia. Nitrates are essential for plant growth and like phosphate, can lead to extraordinary algae blooms and aquatic plant growth, leading ultimately to a reduction in dissolved oxygen when the plants decay. Normal stream levels are below 4 ppm.

Things that can affect nitrate concentrations are:

- Manure sources
- Fertilization
- Sewage

Ammonia Nitrogen

Ammonia is a form of nitrogen that plants use for growth. However, at high concentrations, it is poisonous to animals and humans. It is a natural degradation product of manures and the decay of organisms.

Things than affect ammonia concentrations are:

- Fertilization
- Manure sources
- Dead animals and organisms

Turbidity / Transparency

Turbidity is the relative clarity of water and is measured by viewing a column of water vertically and reducing the length of that column until an image is visible at the bottom. Turbidity should not be confused with color. Materials suspended in the water absorb and scatter light. These materials may include algae, clay, silt, organic matter, and other suspended solids. Turbidity inhibits the penetration of sunlight to aquatic plants, raise temperature, and thereby affect dissolved oxygen.

Things that can affect turbidity are:

- Soil erosion
- Algae
- Organic matter

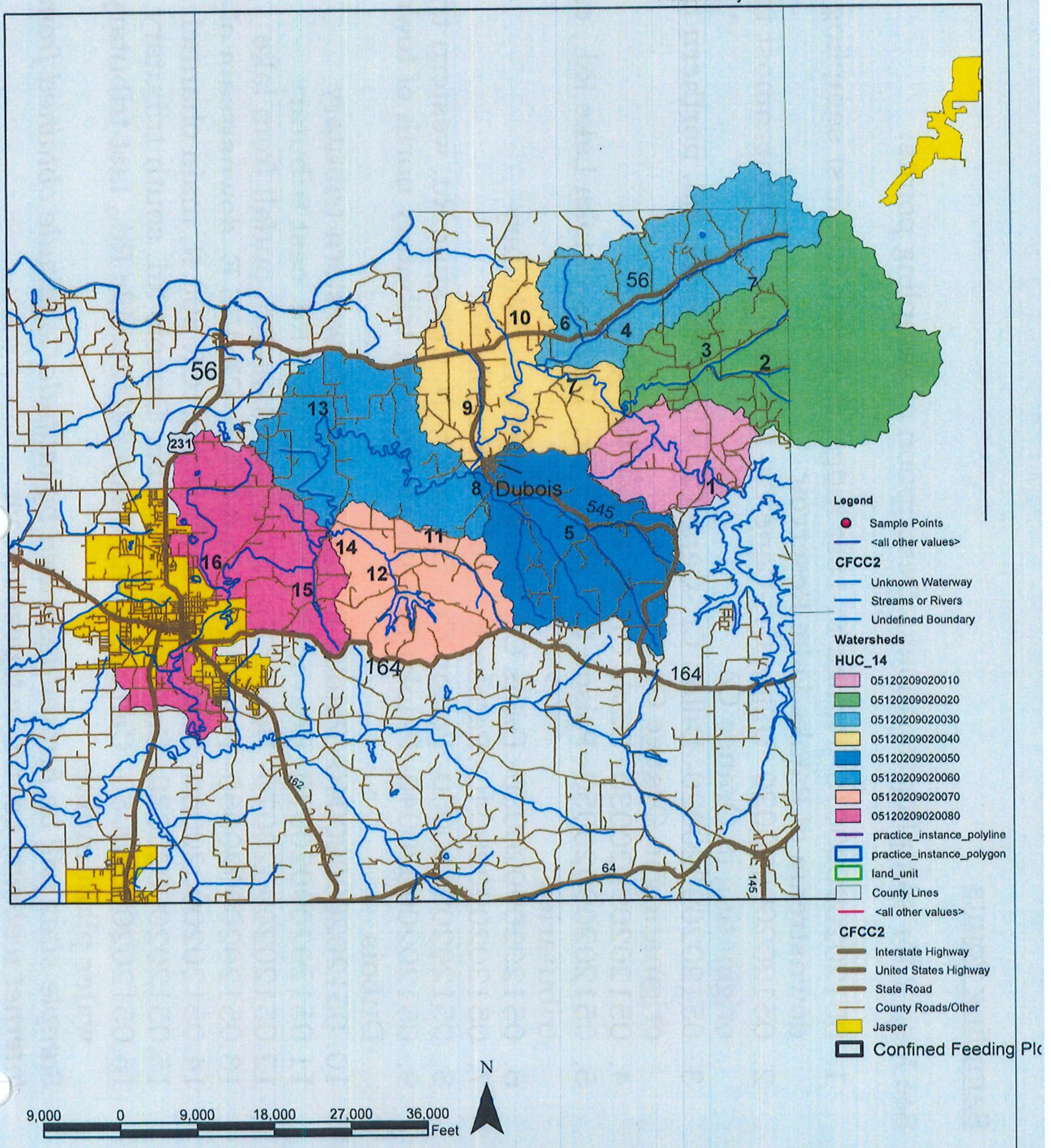
Patoka River Watershed Management Area

Customer(s): FOUR RIVERS R C & D

Field Office: JASPER SERVICE CENTER

Agency:

Assisted By: Levi Brown



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Sampling Points

See Map 2 for sampling locations. Description of sampling points:

1. 05120209020010- Patoka R.-Lost Ridge; S. Cuzco Rd. first sampling point downstream of Patoka Lake Reservoir
2. 05120209020020- Dillon Cr.-Cane Cr; E. Cuzco Rd. southernmost tributary originating in Orange Co.
3. 05120209020020- Dillon Cr.-Cane Cr; Cuzco-Norton Rd. northern tributary originating in Orange Co.
4. 05120209020030- Davis Cr; W. Cuzco Rd. X SR 56
5. 05120209020050- ~~Poison~~ Polson Cr.- Bauer Cr; Dubois-Patoka Lake Rd., eastern tributaries
6. 05120209020030- Davis Cr; SR 56, northern tributary
7. 05120209020040- Patoka R.- Dubois; Dubois Rd.
8. 05120209020050- Poison Cr.- Bauer Cr; N. Celestine Rd. western tributaries
9. 05120209020040- Patoka R.-Dubois; SR 545, tributary north of town of Dubois
10. 05120209020040- Patoka R.-Dubois; SR 56, western tributary
11. 05120209020070- Beaver Cr.; Jasper-Dubois Rd. east tributary
12. 05120209020070- Beaver Cr.; Jasper-Dubois Rd. outfall from lake
13. 05120209020060- Patoka R.- Lond Ditch; CR 175 E, downstream of NPDES
14. 05120209020060- Patoka R.- Lond Ditch; CR 300 N, main channel
15. 05120209020080- Calumet Run; Jasper-Dubois Rd. south tributary
16. 05120209020080- Calumet Run; Jasper-Kellerville Rd., last tributary before water plant intake.

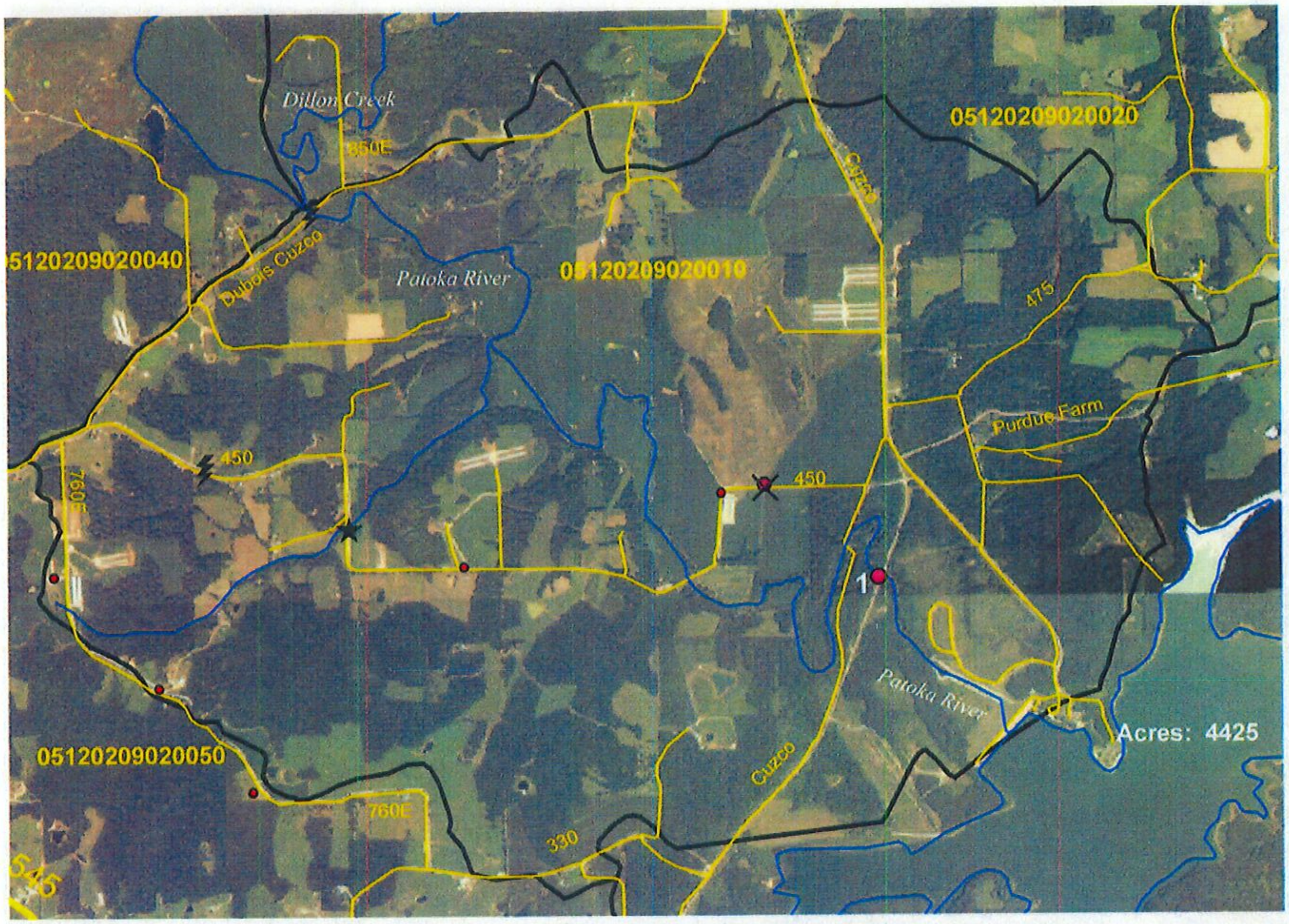
Sample sites will be further described by latitude/longitude obtained from GPS or Internet website, i.e. www.topozone.com

Monitoring Sites
Patoka River Watershed

HUC = 05120209020

IDEM ARN A305-4-129

Site Number	14 Dig HUC	Longitude	Latitude	Physical Description
1	010	38.4419	86.7147	1st point below reservoir
2	020	38.4731	86.6970	S trib from Orange Co
3	020	38.4769	86.7099	N trib from Orange Co
4	030	38.4879	86.7564	W Cuzco x SR 56
5	050	38.4220	86.7653	E tribs of Poison/Bauer Cr.
6	030	38.4858	86.7670	N trib Davis Cr x SR 56
7	040	38.4721	86.7754	Patoka R x Dubois Rd
8	050	38.4276	86.7922	Poison/Bauer Cr x Jasper-Dubois Rd
9	040	38.4628	86.8082	Trib N of Dubois x SR 545
10	040	38.4856	86.7974	W trib x SR 56
11	070	38.4168	86.8338	E trib Beaver Cr x Jasper-Dubois Rd
12	070	38.4049	86.8443	Outfall from Beaver Lake x Jasper-Dubois Rd
13	060	38.4560	86.8712	Patoka R x CR 175 E downstream of 2 NPDES
14	060	38.4230	86.8714	Patoka R x CR 300 N
15	080	38.4002	86.8777	S trib Calumet Run x Jasper-Dubois Rd
16	080	38.4046	86.9181	Calumet Run x Jasper-Kellerville Rd



Legend

- Sample Points
- Possible Access Points
- No Buffer Points
- Good Buffer Points
- Decent Buffer Points
- Cow Access Points
- Confined Feeding Operations

Roads

- <all other values>

CFCC2

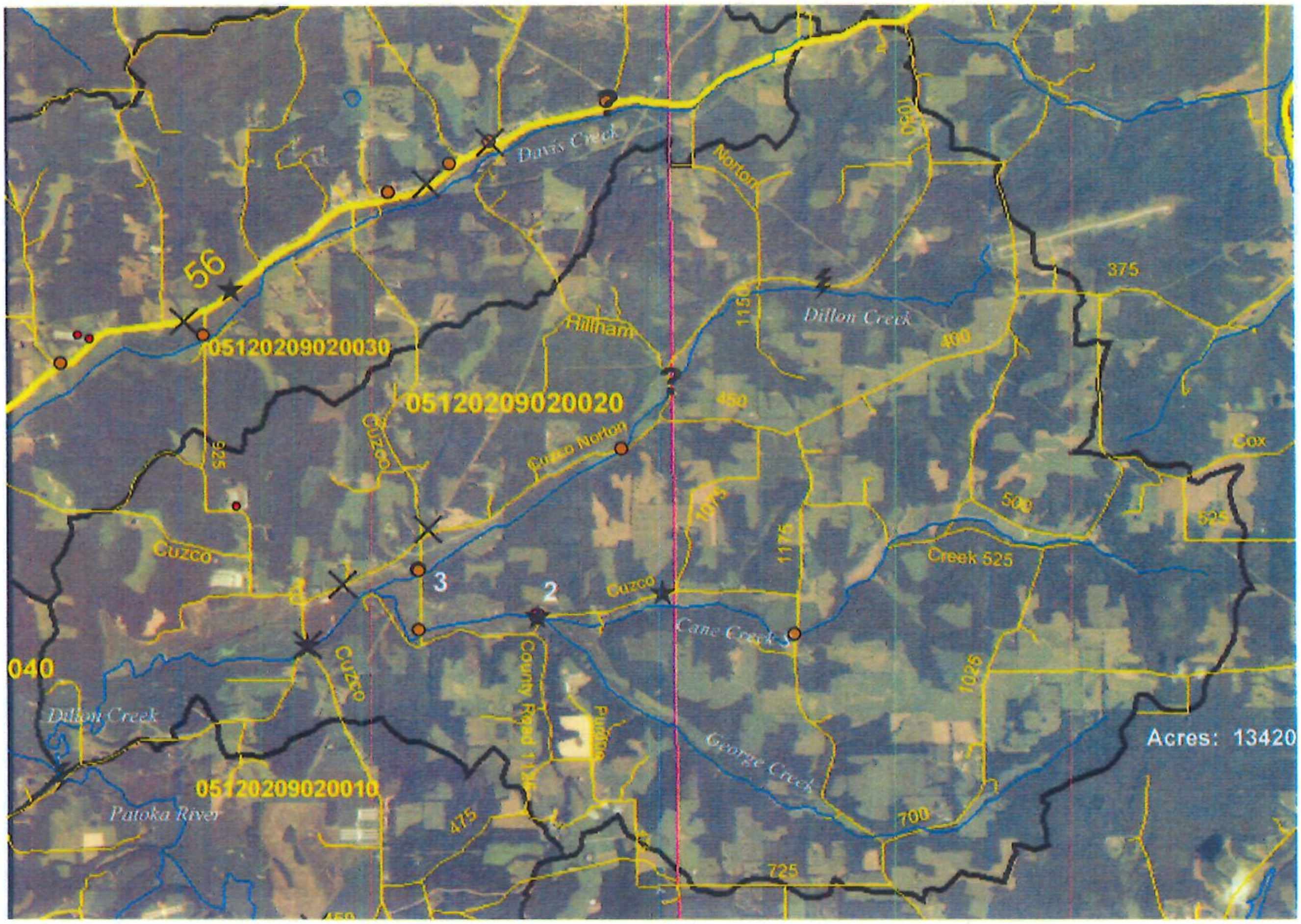
- Interstate Highway
- United States Highway
- State Road
- County Roads/Other

Waterways

- <all other values>

CFCC2

- Unknown Waterway
- Streams or Rivers
- Undefined Boundary
- County Lines



Legend

- Sample Points
- Possible Access Points
- No Buffer Points
- Good Buffer Points
- Decent Buffer Points
- Cow Access Points
- Confined Feeding Operations

Roads

- <all other values>

CFCC2

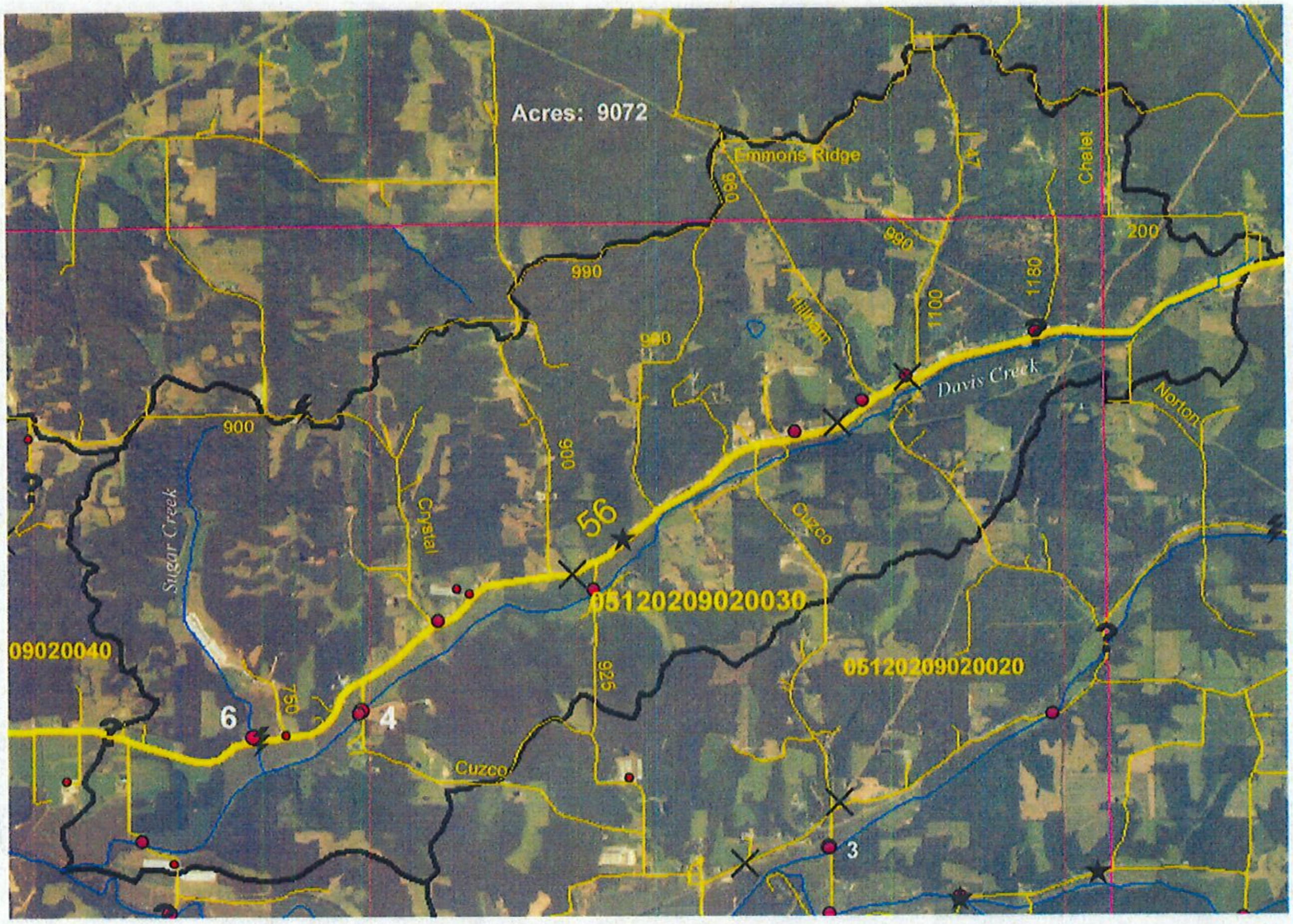
- Interstate Highway
- United States Highway
- State Road
- County Roads/Other

Waterways

- <all other values>

CFCC2

- Unknown Waterway
- Streams or Rivers
- Undefined Boundary
- County Lines



Legend

- Sample Points
- ? Possible Access Points
- X No Buffer Points
- ★ Good Buffer Points
- Decent Buffer Points
- Cow Access Points
- Confined Feeding Operations

Roads

- <all other values>

CFCC2

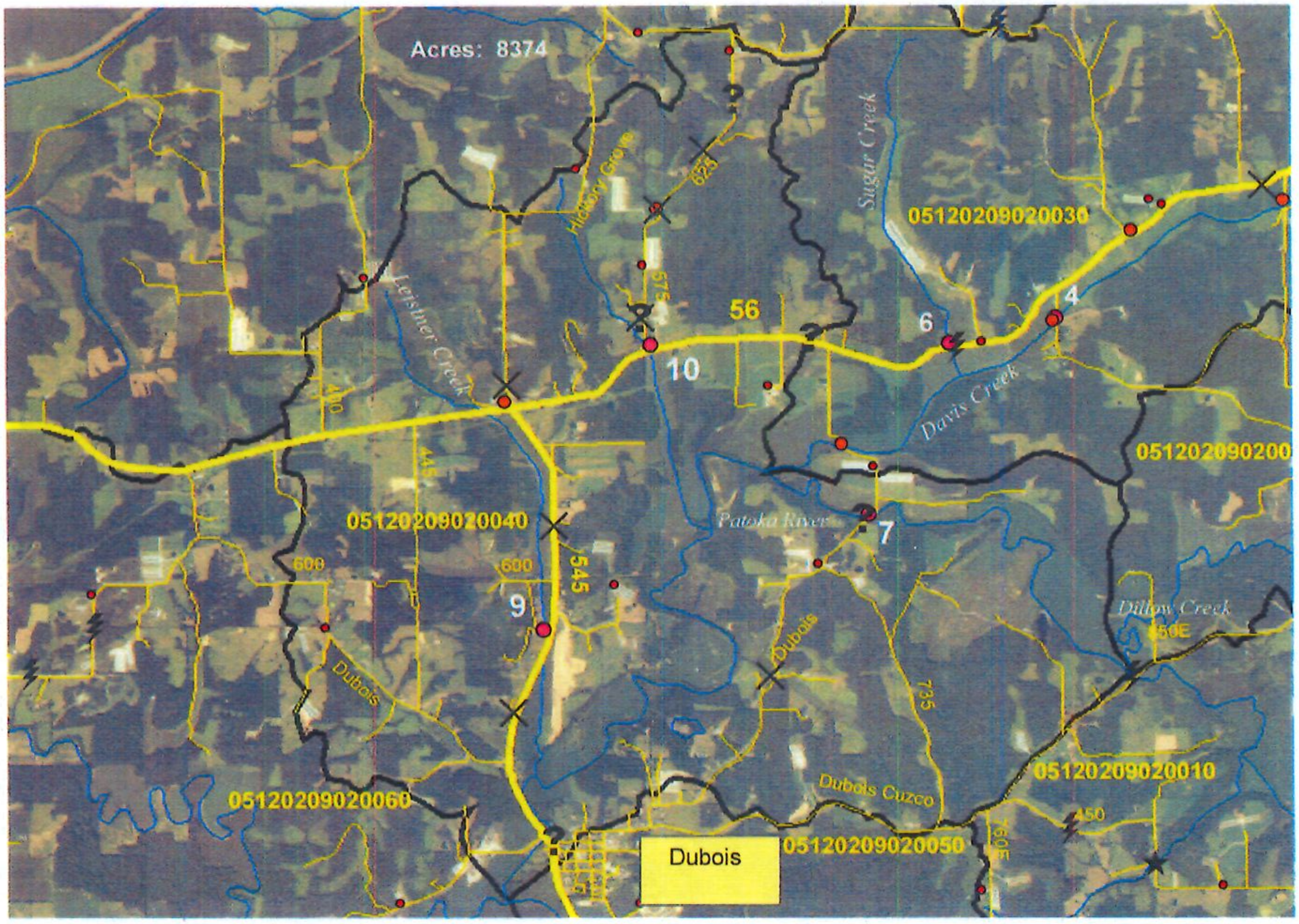
- Interstate Highway
- United States Highway
- State Road
- County Roads/Other

Waterways

- <all other values>

CFCC2

- Unknown Waterway
- Streams or Rivers
- Undefined Boundary
- County Lines



Legend

- Sample Points
- Possible Access Points
- No Buffer Points
- Good Buffer Points
- Decent Buffer Points
- Cow Access Points
- Confined Feeding Operations

Roads

- <all other values>

CFCC2

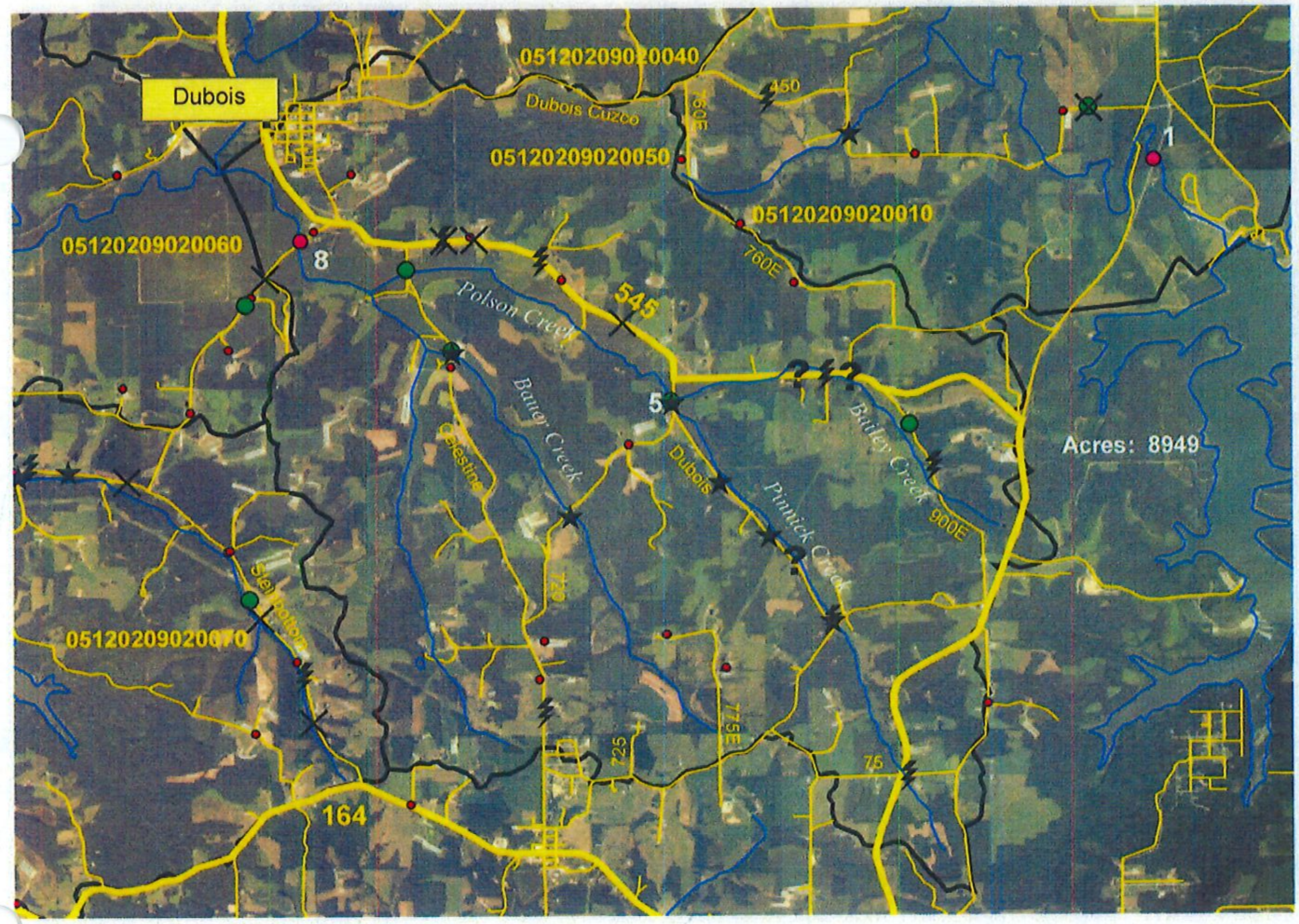
- Interstate Highway
- United States Highway
- State Road
- County Roads/Other

Waterways

- <all other values>

CFCC2

- Unknown Waterway
- Streams or Rivers
- Undefined Boundary
- County Lines



Legend

- Sample Points
- Possible Access Points
- No Buffer Points
- Good Buffer Points
- Decent Buffer Points
- Cow Access Points
- Confined Feeding Operations

Roads

- <all other values>

CFCC2

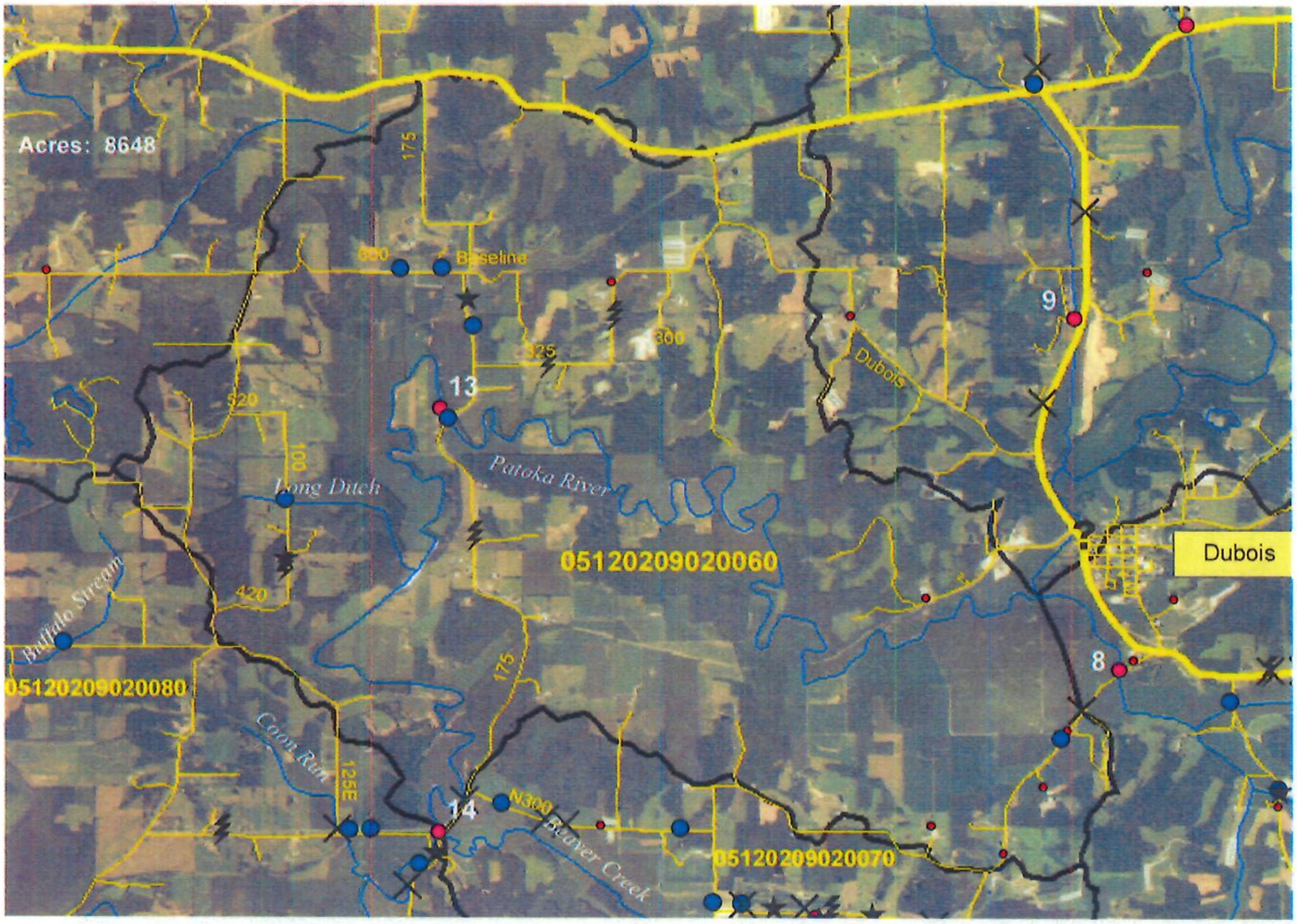
- Interstate Highway
- United States Highway
- State Road
- County Roads/Other

Waterways

- <all other values>

CFCC2

- Unknown Waterway
- Streams or Rivers
- Undefined Boundary
- County Lines



Legend

- Sample Points
- Possible Access Points
- No Buffer Points
- Good Buffer Points
- Decent Buffer Points
- Cow Access Points
- Confined Feeding Operations

Roads

- <all other values>

CFCC2

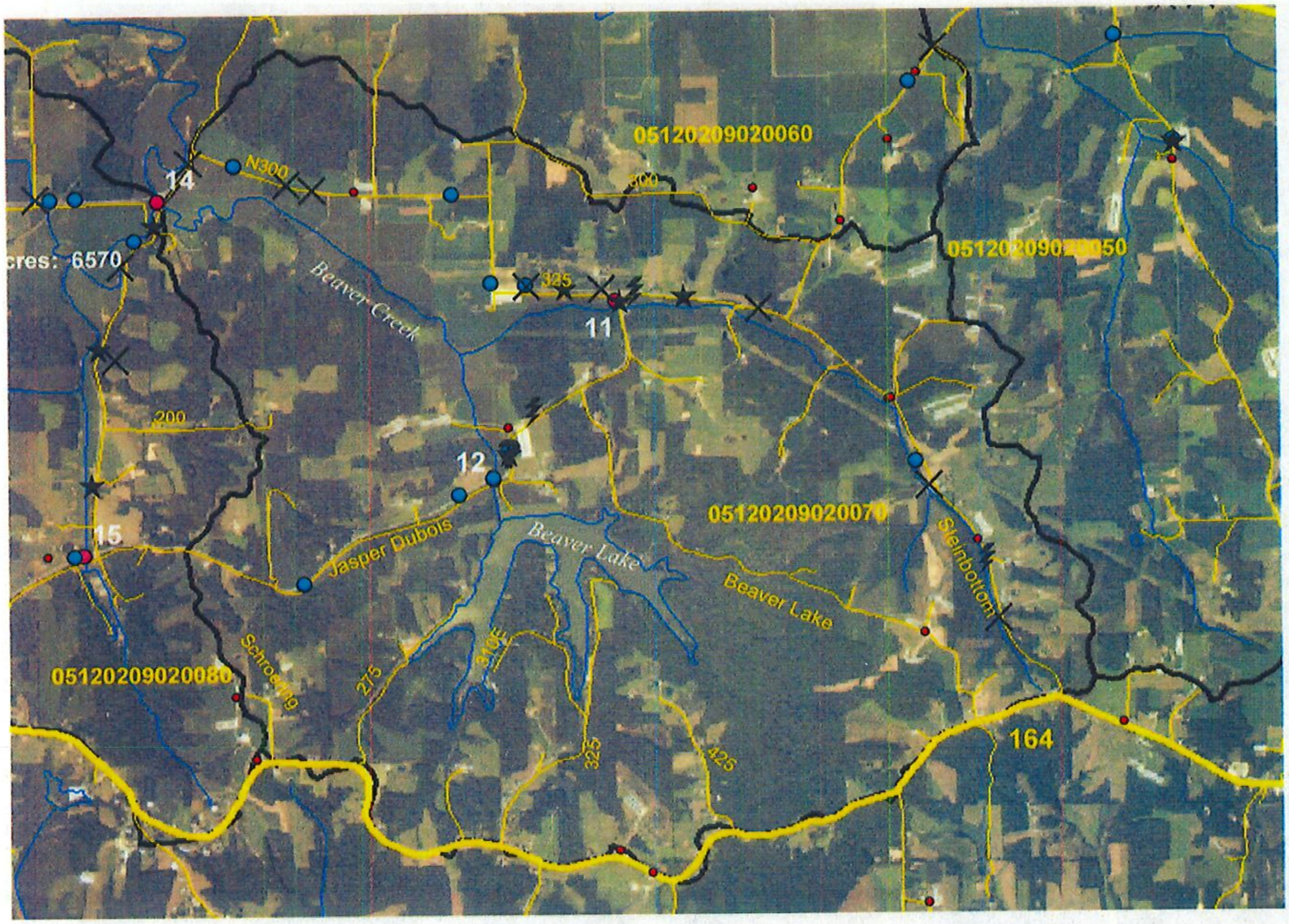
- Interstate Highway
- United States Highway
- State Road
- County Roads/Other

Waterways

- <all other values>

CFCC2

- Unknown Waterway
- Streams or Rivers
- Undefined Boundary
- County Lines



Legend

- Sample Points
- Possible Access Points
- No Buffer Points
- Good Buffer Points
- Decent Buffer Points
- Cow Access Points
- Confined Feeding Operations

Roads

- <all other values>

CFCC2

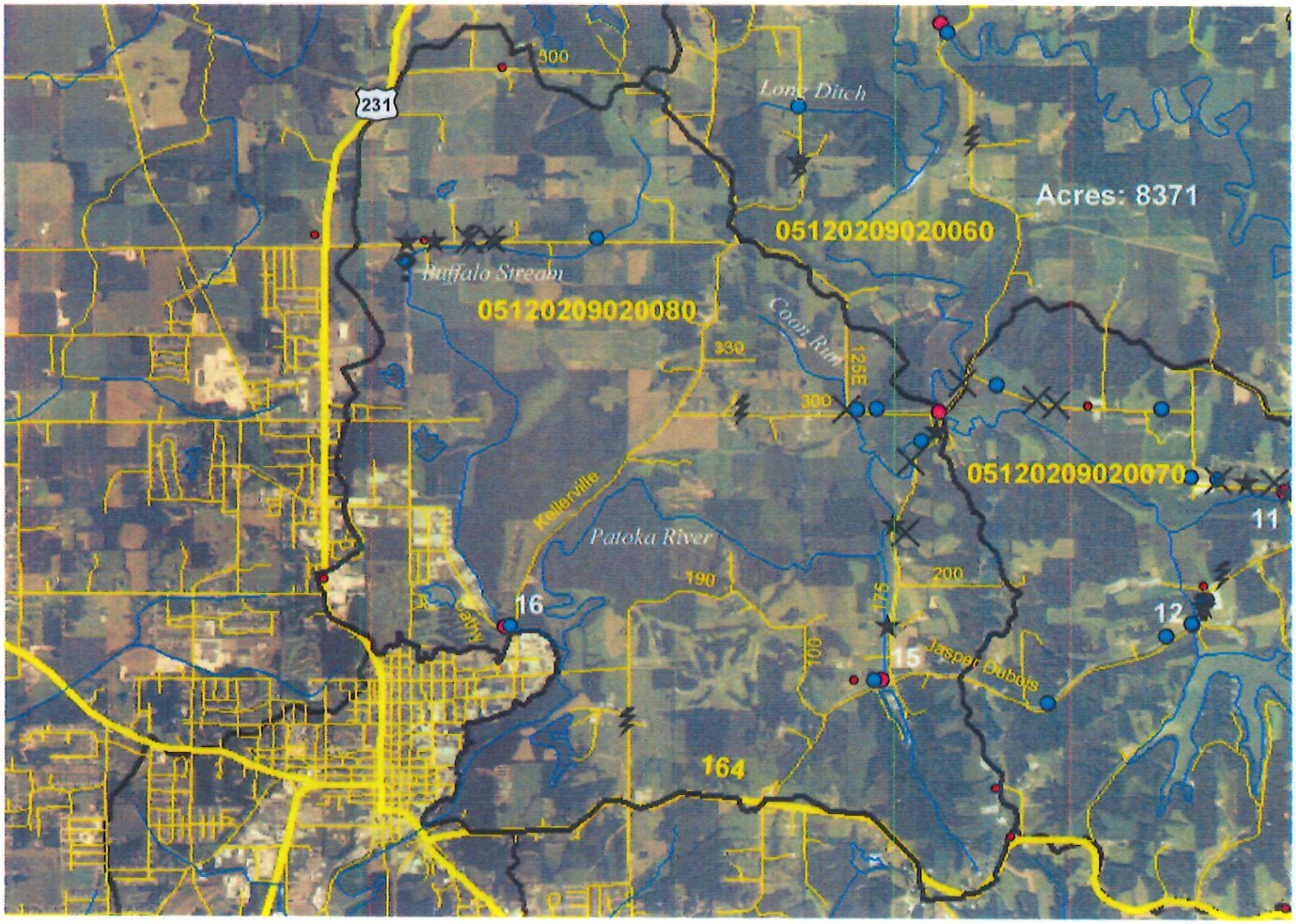
- Interstate Highway
- United States Highway
- State Road
- County Roads/Other

Waterways

- <all other values>

CFCC2

- Unknown Waterway
- Streams or Rivers
- Undefined Boundary
- County Lines



Legend

- Sample Points
- ? Possible Access Points
- No Buffer Points
- Good Buffer Points
- Decent Buffer Points
- Cow Access Points
- Confined Feeding Operations

Roads

- <all other values>

CFCC2

- Interstate Highway
- United States Highway
- State Road
- County Roads/Other

Waterways

- <all other values>

CFCC2

- Unknown Waterway
- Streams or Rivers
- Undefined Boundary
- County Lines

Long Ditch

Total Woods	Total Croplands	Total Grassland	Total Urban	Other
2211.008445	1118.349417	539.802873	0	555.839265
Percentage:	**Percentage:**	**Percentage:**	**Percentage:**	**Percentage:**
49.97%	25.27%	12.20%	0.00%	12.56%

Dillon-Cane Cr

Total Woods	Total Croplands	Total Grassland	Total Urban	Other
7410.690913	2252.754187	1418.068075	11.366159	2327.120666
Percentage:	**Percentage:**	**Percentage:**	**Percentage:**	**Percentage:**
55.22%	16.79%	10.57%	0.08%	17.34%

Davis Creek

Total Woods	Total Croplands	Total Grassland	Total Urban	Other
6003.054485	1127.324651	787.437078	0	1154.183786
Percentage:	**Percentage:**	**Percentage:**	**Percentage:**	**Percentage:**
66.17%	12.43%	8.68%	0.00%	12.72%

Crystal Bridge

Total Woods	Total Croplands	Total Grassland	Total Urban	Other
3485.426638	1859.582015	1048.834977	20.749553	1959.406817
Percentage:	**Percentage:**	**Percentage:**	**Percentage:**	**Percentage:**
41.62%	22.21%	12.52%	0.25%	23.40%

Polson-Bauer

Total Woods	Total Croplands	Total Grassland	Total Urban	Other
3306.308102	1154.54234	1864.240766	87.783692	2536.1251
Percentage:	**Percentage:**	**Percentage:**	**Percentage:**	**Percentage:**
36.95%	12.90%	20.83%	0.98%	28.34%

Long Ditch

Total Woods	Total Croplands	Total Grassland	Total Urban	Other
3262.095592	2903.475784	1081.770903	0	1400.657721
Percentage:	**Percentage:**	**Percentage:**	**Percentage:**	**Percentage:**
37.72%	33.57%	12.51%	0.00%	16.20%

Beaver Creek

Total Woods	Total Croplands	Total Grassland	Total Urban	Other
3318.077148	1537.607318	773.456346	0	940.859188
Percentage:	**Percentage:**	**Percentage:**	**Percentage:**	**Percentage:**
50.50%	23.40%	11.77%	0.00%	14.32%

Calumet Run

Total Woods	Total Croplands	Total Grassland	Total Urban	Other
2585.844283	2550.696398	792.99114	316.022129	2125.44605
Percentage:	**Percentage:**	**Percentage:**	**Percentage:**	**Percentage:**
30.89%	30.47%	9.47%	3.78%	25.39%

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 11 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # __ __ __ __ __ __ __ __ __ __ __ __ __ __

Stream/River Name Patoka River Site ID #1

(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test	*Test Results*	*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	____ mg/L 120 % saturation	90	X	.18	=	16.2
E. coli	0 colonies/100mL	98	X	.17	=	16.7
pH	7.94 units	85	X	.12	=	10.2
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	____ mg/L		X	.11	=	
Nitrate (NO_3)	.09 mg/L	97	X	.10	=	9.7
Turbidity	15 NTU's	70	X	.09	=	6.3
		TOTALS		0.66		59.1

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 89.5

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4/11/05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ____________

End Time ____:____ (am/pm) # Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________________________

Watershed Name ______________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Cane Creek (Please do not abbreviate.) Site ID #2 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	______	mg/L					
Dissolved Oxygen	135	% saturation	81.5	X	.18	=	14.67
***E.* coli**	120	colonies/100mL	43.4	X	.17	=	7.378
pH	7.63	units	90.6	X	.12	=	10.87
B.O.D. 5	______	mg/L	______	X	.12	=	______
H_2O Temp Change	______	change in°C	______	X	.11	=	______
Total Phosphate	______	mg/L	______	X	.11	=	______
Nitrate (NO_3)	.044	mg/L	97	X	.10	=	9.7
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		48.9

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 74.12

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 11 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _

Strēam/River Name Dillow Creek (Please do not abbreviate.) Site ID #3 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	110	% saturation	95	X	.18	=	17.1
***E.* coli**	20	colonies/100mL	63	X	.17	=	10.71
pH	7.87	units	86	X	.12	=	10.32
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		54.23

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 82.17

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 11 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Davis Creek (Please do not abbreviate.) Site ID #4 (Above ID numbers are required.)

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs.: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results		*Q-Value*		*Weighting Factor*		*Calculation*
	____ mg/L					
Dissolved Oxygen	130 % saturation	85	X	.18	=	15.3
***E.* coli**	20 colonies/100mL	63	X	.17	=	10.71
pH	8.43 units	70	X	.12	=	8.4
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	____ mg/L		X	.11	=	
Nitrate (NO_3)	.176 mg/L	97	X	.10	=	9.7
Turbidity	15 NTU's	70	X	.09	=	6.3
		TOTALS		.66		50.4

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 76.4

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # ________

Stream/River Name Pinnick Creek (Please do not abbreviate.) Site ID #5 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	147	% saturation	50	X	.18	=	9
***E.* coli**	0	colonies/100mL	98	X	.17	=	16.7
pH	9.08	units	44.2	X	.12	=	5.3
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.35	mg/L	96.5	X	.10	=	9.65
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		46.9

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 71.1

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 11 / 05
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ________
Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Sugar Creek (Please do not abbreviate.) Site ID #6 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	______	mg/L					
Dissolved Oxygen	150	% saturation	50	X	.18	=	9
E. coli	450	colonies/100mL	28.5	X	.17	=	4.85
pH	9.25	units	40	X	.12	=	4.8
B.O.D. 5	______	mg/L	______	X	.12	=	______
H_2O Temp Change	______	change in°C	______	X	.11	=	______
Total Phosphate	______	mg/L	______	X	.11	=	______
Nitrate (NO_3)	3.5	mg/L	77.5	X	.10	=	7.75
Turbidity	15	NTU's	70	X	.09	=	6.3

TOTALS .66 32.7

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 49.5

Bad

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 11 / 05 (MM DD YY) Begin Time ___:___ (am/pm) # Adults ______
End Time ___:___ (am/pm) # Students ______

Certified Monitors' Names __________ Volunteer ID ______

Organization Name __________

Watershed Name __________ Watershed # _ _ _ _ _ _ _ _ _ _

Stream/River Name Patoka River @ Dubois Rd. Site ID #7
(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	120	% saturation	90	X	.18	=	16.2
***E.* coli**	40	colonies/100mL	56.5	X	.17	=	9.6
pH	7.71	units	90	X	.12	=	10.8
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.176	mg/L	97	X	.10	=	9.7
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		52.6

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 79.7

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4/20/05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________ Volunteer ID ________

Organization Name ________

Watershed Name ________ Watershed # ________

Stream/River Name Polson Creek (Please do not abbreviate.) Site ID #8 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	____	mg/L					
Dissolved Oxygen	128	% saturation	86	X	.18	=	15.48
***E.* coli**	20	colonies/100mL	63	X	.17	=	10.71
pH	8.35	units	73	X	.12	=	8.76
B.O.D. 5	____	mg/L	____	X	.12	=	____
H_2O Temp Change	____	change in°C	____	X	.11	=	____
Total Phosphate	____	mg/L	____	X	.11	=	____
Nitrate (NO_3)	.26	mg/L	97	X	.10	=	9.7
Turbidity	15	NTU's	70	X	.09	=	6.3

TOTALS .66 50.95

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 77.19

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 20 / 05 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________

End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ________________________   Volunteer ID ________

Organization Name ________________________

Watershed Name ________________________   Watershed # _ _ _ _ _ _ _ _ _ _

Stream/River Name Leistner Creek (Please do not abbreviate.)   Site ID #9 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	100	% saturation	99	X	.18	=	17.82
E. coli	40	colonies/100mL	56.3	X	.17	=	9.57
pH	7.33	units	92.4	X	.12	=	11.09
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.11	mg/L	97	X	.10	=	9.7
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		54.49

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 82.6

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 12 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Unnamed tributary to Patoka River Site ID #10

(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	____	mg/L					
Dissolved Oxygen	100	% saturation	99	X	.18	=	17.8
E. coli	200	colonies/100mL	37	X	.17	=	6.29
pH	6.85	units	84.8	X	.12	=	10.2
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	16.5	mg/L	41.2	X	.10	=	4.12
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		44.7

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 67.7

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 20 / 05 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________

End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ________________   Volunteer ID ________

Organization Name ________________________________

Watershed Name ________________   Watershed # _ _ _ _ _ _ _ _

Stream/River Name Teder Creek (Please do not abbreviate.)   Site ID #11 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen		mg/L					
	120	% saturation	90	X	.18	=	16.2
E. coli	80	colonies/100mL	48.2	X	.17	=	8.2
pH	7.78	units	87.87	X	.12	=	10.54
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.05	mg/L	93.8	X	.10	=	9.38
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		50.6

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 76.7

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name Beaver Creek (Please do not abbreviate.) Site ID #12 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	135	% saturation	81.5	X	.18	=	14.67
***E.* coli**	0	colonies/100mL	98	X	.17	=	16.66
pH	8.63	units	61.8	X	.12	=	7.42
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.92	mg/L	94.32	X	.10	=	9.43
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		54.48

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 82.6

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # ________

Stream/River Name Patoka River - Seitz Bridge (Please do not abbreviate.) Site ID #13 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen		mg/L					
	110	% saturation	95	X	.18	=	17.1
***E.* coli**	20	colonies/100mL	63	X	.17	=	10.71
pH	7.19	units	91.9	X	.12	=	11.028
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.22	mg/L	97.12	X	.10	=	9.712
Turbidity	18.3	NTU's	64	X	.09	=	5.76
			TOTALS		.66		55.5

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 84.1

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Patoka River (Please do not abbreviate.) Site ID #14 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	97	% saturation	98.4	X	.18	=	17.7
***E.* coli**	20	colonies/100mL	63	X	.17	=	10.71
pH	7.36	units	92.5	X	.12	=	11.1
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	18.6	NTU's	63.7	X	.09	=	5.73
			TOTALS		.66		55.06

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 83.43

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _ _ _

Stream/River Name Jasper Lake Outflow (Please do not abbreviate.) Site ID #15 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	116	% saturation	92	X	.18	=	16.56
***E.* coli**	0	colonies/100mL	98	X	.17	=	16.66
pH	9.70	units	27.4	X	.12	=	3.28
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.35	mg/L	96.6	X	.10	=	9.66
Turbidity	18	NTU's	64.4	X	.09	=	5.796
			TOTALS		.66		51.96

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 78.73

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 4 / 20 / 05
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ____________
Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________

Watershed Name ______________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Calumet Run (Please do not abbreviate.)

Site ID #16 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	90	% saturation	95	X	.18	=	17.1
***E.* coli**	200	colonies/100mL	37	X	.17	=	6.29
pH	7.14	units	91.4	X	.12	=	10.97
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.88	mg/L	94.48	X	.10	=	9.4
Turbidity	35	NTU's	48	X	.09	=	4.32
			TOTALS		.66		48.13

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 72.9

Good

IDEM# WPA020-0029

Lat 38° 26' 51.18"
Long 86° 42' 88.1"

Date 4-11-05

Time 9:00 am

Chemical Monitoring Work Sheet

Stream Name and Site ID: Patoka River #1

Air Temp °C

Water Temp 18 °C suspect

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				120	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	11	12		11.5	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	7.14 (out)	7.91	7.97	7.94	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	– 18	–	–	– 18	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	.09			.09	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0	0		0	none
Ammonia Nitrogen	mg/L	0	0		0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

IDEM# WPA020-0030

Lat 38° 28' 37.5"
Long 86° 41' 81.7"

Date 4/11/05

Time 11:30 am

Chemical Monitoring Work Sheet

Stream Name and Site ID: Cane Creek #2

Air Temp °C

Water Temp 18 °C suspect

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	135			135	Avg > 5 mg/L
	mg/L	13			13	> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	120			120	< 235 colonies/ 100 mL
pH	units	7.63			7.63	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	.044			.044	< 44 mg/L
Transparency (Tube)	cm	760			760	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ________						
Other ________						

IDEM# WPA020-0033

Lat 38° 28' 60.8"
Long 86° 42' 58.3"

Date 4-11-05

Time 12:30 pm

Chemical Monitoring Work Sheet

Stream Name and Site ID: Dillon Creek #3

Air Temp °C

Water Temp 20 °C suspect

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	110			110	Avg > 5 mg/L
	mg/L	10			10	> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	20			20	< 235 colonies/ 100 mL
pH	units	7.87			7.87	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ________						
Other ________						

IDEM# WPA020-0034

Lat 38° 29' 26.6"
Long 86° 45' 37.7"

Date 4/11/05

Time 2:00pm

Chemical Monitoring Work Sheet

Stream Name and Site ID: Davis Creek #4

Air Temp °C

Water Temp 20 °C suspect

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	130			130	Avg > 5 mg/L
	mg/L	12			12	> 4 mg/L; > 7 mg/L for trout
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	20			20	< 235 colonies/ 100 mL
pH	units	8.54	8.31		8.43	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F; < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.176			0.176	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.8			0.8	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Lat 38° 25' 33.9"
Long 86° 45' 92.4"

Chemical Monitoring Work Sheet

Date 4/20/05

Time 10:30am

Stream Name and Site ID Pinnick Creek #5

Air Temp °C

Water Temp 22 °C suspect

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				147	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	13			13	
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	9.08			9.08	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.35			0.35	< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0	0		0	none
Ammonia Nitrogen	mg/L	0	0		0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

IDEM# WPA020-0037

Lat 38° 29' 13.7"
Long 86° 46' 02.4"

Chemical Monitoring Work Sheet

Date 4-11-05

Time 3:00 pm

Stream Name and Site ID: Sugar Creek #6

Air Temp °C

Water Temp 20 °C suspect

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	150			150	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	14			14	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	500	400		450	< 235 colonies/ 100 mL
pH	units	9.25			9.25	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	3.5			3.5	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.5	0.5		0.5	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

IDEM# WPA020-0038

Lat 38° 28' 31.9"
Long 86° 46' 53.8"

Chemical Monitoring Work Sheet

Date 4-11-05

Time 4:00 pm

Stream Name and Site ID: Patoka River #7

Air Temp °C

Water Temp 16 °C suspect

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	120			120	Avg > 5 mg/L
	mg/L	12			12	> 4 mg/L; > 7 mg/L for trout
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	40			40	< 235 colonies/ 100 mL
pH	units	7.71			7.71	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F; < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.176			0.176	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Lat 38° 26' 11.5"
Long 86° 48' 26.9"

Chemical Monitoring Work Sheet

Date 4-20-05

Time 11:30 am

Stream Name and Site ID: Polson Creek #8

Air Temp °C

Water Temp 18 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				128	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	13	12	12	12.3	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	20			20	< 235 colonies/ 100 mL
pH	units	8.35			8.35	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.26			0.26	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.3			0.3	none
Ammonia Nitrogen	mg/L	0.3			0.3	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Lat 38° 27' 78.8"
Long 86° 48' 48.9"

Chemical Monitoring Work Sheet

Date 4-20-05

Time 9:15 am

Stream Name and Site ID: Leistner Creek #9

Air Temp °C

Water Temp 16 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				100	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10			10	
Avg DO (original) − DO after 5 days BOD 5-day (difference)	mg/L	−	−	−	−	none
E. Coli	colonies/ 100 mL	40			40	< 235 colonies/ 100 mL
pH	units	7.33			7.33	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp Temperature Change	°C	− 16	−	−	− 16	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.11			0.11	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.2	0.2		0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

IDEM# WPA-0020-0041

Lat 38° 29' 14.0"
Long 86° 47' 85.7"

Date 4-12-05

Time 7:30 am

Chemical Monitoring Work Sheet

Stream Name and Site ID: Unnamed Tributary to Patoka River #10

Air Temp °C

Water Temp 20 °C suspect

Current Weather: ☐ Clear/Sunny ☑ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				100	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	9	9	9	9	
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	200			200	< 235 colonies/ 100 mL
pH	units	6.84		6.86	6.85	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	15.4		17.6	16.5	< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.14		0.2	0.17	none
Ammonia Nitrogen	mg/L	0		0	0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Lat 38° 24' 97.0"
Long 86° 50' 04.6"

Chemical Monitoring Work Sheet

Date 4-20-05

Time 12:30 pm

Stream Name and Site ID: Tedar Creek #11

Air Temp °C

Water Temp 18 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				120	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	11	12		11.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	80			80	< 235 colonies/ 100 mL
pH	units	7.78			7.78	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.05			1.05	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.4			0.4	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Lat 38° 24' 30.4"
Long 86° 50' 65.1"

Date 4-20-05

Time 1:30pm

Chemical Monitoring Work Sheet

Stream Name and Site ID: Beaver Creek #12

Air Temp °C

Water Temp 19 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				135	Avg > 5 mg/L
	mg/L	13	13	12	12.7	> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	8.63			8.63	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.88	0.96		0.92	< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0.1			0.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ________						
Other ________						

Lat 38° 27' 31.3"
Long 86° 52' 23.5"

Chemical Monitoring Work Sheet

Date 4-20-05

Time 4:10 pm

Stream Name and Site ID: Patoka River, Seitz Bridge #13

Air Temp ____ °C

Water Temp 16 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				110	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	11			11	
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	20			20	< 235 colonies/ 100 mL
pH	units	7.16	7.21		7.19	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.22			0.22	< 44 mg/L
Transparency (Tube)	cm	40	40		40	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.34			0.34	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Lat 38° 25' 41.3"
Long 86° 52' 27.9"

Date 4-20-05

Time 3:20pm

Chemical Monitoring Work Sheet

Stream Name and Site ID: Patoka River #14

Air Temp °C

Water Temp 16 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				97	Avg > 5 mg/L
	mg/L	10	9	10	9.7	> 4 mg/L > 7 mg/L for trout
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	20			20	< 235 colonies/ 100 mL
pH	units	7.36				Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0	0			< 44 mg/L
Transparency (Tube)	cm	40	38	38	38.6	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.4			0.4	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Lat 38° 24' 02.2"
Long 86° 52' 65.9"

Date 4-20-05

Time 2:30 pm

Chemical Monitoring Work Sheet

Stream Name and Site ID: Jasper Lake Outflow #15

Air Temp °C

Water Temp 22 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				116	Avg > 5 mg/L
	mg/L	11	10	10	10.3	> 4 mg/L > 7 mg/L for trout
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	9.72	9.69		9.70	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.35			0.35	< 44 mg/L
Transparency (Tube)	cm	42				none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.36			0.36	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Lat 38° 24' 27.9"
Long 86° 55' 06.2"

Date 4-20-05

Time 5:00pm

Chemical Monitoring Work Sheet

Stream Name and Site ID: Calumet Run #16

Air Temp °C

Water Temp 22 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				90	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8	8		8	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	200			200	< 235 colonies/ 100 mL
pH	units	7.14			7.14	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.88			0.88	< 44 mg/L
Transparency (Tube)	cm	20	22	25.5	22.5	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.8			0.8	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Lat 38° 24' 27.9"
Long 86° 55' 06.2"

Date 4-21-05

Time 9:00am

Chemical Monitoring Work Sheet

Stream Name and Site ID: Duplicate Sample/Calumet Run #16

Air Temp °C

Water Temp NA °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation					Avg > 5 mg/L; > 4 mg/L; > 7 mg/L for trout
	mg/L				NA	
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	260			260	< 235 colonies/ 100 mL
pH	units	7.25			7.25	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F; < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	2.2			2.2	< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.84			0.84	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 4-12-05	Chemical Monitoring Work Sheet	Air Temp °C
Time 1:00pm	Stream Name and Site ID: Blank / Blank De-Ionized Water	Water Temp °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation					Avg > 5 mg/L; > 4 mg/L; > 7 mg/L for trout
	mg/L	NA			NA	
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL					< 235 colonies/ 100 mL
pH	units	NA			NA	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F; < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 4-21-05	Chemical Monitoring Work Sheet	Air Temp °C
Time 10:30 am	Stream Name and Site ID: Blank / Blank De-ionized Water	Water Temp °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	NA				Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L					
Avg DO (original) − DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL					< 235 colonies/ 100 mL
pH	units	NA				Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________ Volunteer ID ________

Organization Name ____________

Watershed Name ____________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name Patoka River (Please do not abbreviate.) Site ID #1 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	81	% saturation	88.8	X	.18	=	15.98
***E.* coli**	0	colonies/100mL	98	X	.17	=	16.66
pH	7.45	units	92.8	X	.12	=	11.14
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	16.38	NTU's	66.35	X	.09	=	5.97
			TOTALS		.66		59.56

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 90.24

Excellent

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________ Volunteer ID ________

Organization Name ____________

Watershed Name ____________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Cane Creek (Please do not abbreviate.) Site ID #2 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	____	mg/L					
Dissolved Oxygen	91	% saturation	95.5	X	.18	=	17.19
***E.* coli**	80	colonies/100mL	48.2	X	.17	=	8.194
pH	7.0	units	90	X	.12	=	10.8
B.O.D. 5	____	mg/L	____	X	.12	=	____
H_2O Temp Change	____	change in°C	____	X	.11	=	____
Total Phosphate	____	mg/L	____	X	.11	=	____
Nitrate (NO_3)	4.4	mg/L	68	X	.10	=	6.8
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		49.28

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 74.67

GOOD

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ________
Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _ _ _ _

Stream/River Name Dillon Creek (Please do not abbreviate.)

Site ID #3 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	92	% saturation	96	X	.18	=	17.28
E. coli	80	colonies/100mL	48.2	X	.17	=	8.194
pH	7.21	units	92.03	X	.12	=	11.044
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.1	mg/L	93.6	X	.10	=	9.36
Turbidity	15.33	NTU's	67.6	X	.09	=	6.084

TOTALS .66 51.962

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 78.73

GOOD

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ____________

End Time ____:____ (am/pm) # Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________

Watershed Name ______________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Davis Creek (Please do not abbreviate.) Site ID #4 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen		mg/L					
	90	% saturation	95	X	.18	=	17.1
***E.* coli**	120	colonies/100mL	43.4	X	.17	=	7.378
pH	7.23	units	92.1	X	.12	=	11.05
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	7.92	mg/L	56.82	X	.10	=	5.682
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		47.51

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 71.99

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name Pinnick Creek (Please do not abbreviate.) Site ID #5 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen		mg/L					
	96	% saturation	97.8	X	.18	=	17.6
E. coli	140	colonies/100mL	41.8	X	.17	=	7.106
pH	7.69	units	90.15	X	.12	=	10.8
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	2.2	mg/L	89	X	.10	=	8.9
Turbidity	15.75	NTU's	67.1	X	.09	=	6.039
			TOTALS		.66		50.47

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 76.47

GOOD

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ____________

End Time ____:____ (am/pm) # Students ____________

Certified Monitors' Names ____________________ Volunteer ID ____________

Organization Name ____________________

Watershed Name ____________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Sugar Creek (Please do not abbreviate.) Site ID #6 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	93	% saturation	96.5	X	.18	=	17.37
E. coli	200	colonies/100mL	37	X	.17	=	6.29
pH	7.21	units	92.03	X	.12	=	11.044
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	4.4	mg/L	68	X	.10	=	6.8
Turbidity	15.33	NTU's	67.6	X	.09	=	6.084
			TOTALS		.66		47.59

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 72.1

GOOD

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY) Begin Time ___:___ (am/pm) # Adults ______
End Time ___:___ (am/pm) # Students ______

Certified Monitors' Names ______ Volunteer ID ______

Organization Name ______

Watershed Name ______ Watershed # ______

Stream/River Name Patoka River (Please do not abbreviate.) Site ID #7 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			Q-Value		Weighting Factor		Calculation
		mg/L					
Dissolved Oxygen	63	% saturation	63.7	X	.18	=	11.47
E. coli	240	colonies/100mL	35.66	X	.17	=	6.06
pH	6.81	units	83.35	X	.12	=	10.00
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	7.92	mg/L	56.8	X	.10	=	5.68
Turbidity	39	NTU's	45.6	X	.09	=	4.1
			TOTALS		.66		37.32

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 56.54

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ________
Students ________

Certified Monitors' Names ________ Volunteer ID ________

Organization Name ________

Watershed Name ________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name Polson Creek Site ID #8
(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	____	mg/L					
Dissolved Oxygen	88	% saturation	93.8	X	.18	=	16.9
***E.* coli**	220	colonies/100mL	36.33	X	.17	=	6.2
pH	7.70	units	90	X	.12	=	10.8
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	2.01	mg/L	89.95	X	.10	=	8.995
Turbidity	15	NTU's	70	X	.09	=	6.3

TOTALS .66 49.155

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 74.48

GOOD

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________

End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ________________   Volunteer ID ________

Organization Name ________________

Watershed Name ________________   Watershed # ________

Stream/River Name Leistner Creek   Site ID #9

(Please do not abbreviate.)   (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	101	% saturation	98.8	X	.18	=	17.78
E. coli	160	colonies/100mL	40.2	X	.17	=	6.83
pH	7.55	units	92.25	X	.12	=	11.07
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.32	mg/L	92.72	X	.10	=	9.27
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		51.26

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 77.67

GOOD

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY)

Begin Time ____:____ (am/pm)

End Time ____:____ (am/pm)

Adults ____________

Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________

Watershed Name ______________________ Watershed # _ _ _ _ _ _ _ _ _ _ _ _ _ _

Stream/River Name Unnamed Tributary to Patoka River (Please do not abbreviate.) Site ID #10 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	88	% saturation	93.8	X	.18	=	16.88
***E.* coli**	180	colonies/100mL	38.6	X	.17	=	6.56
pH	7.30	units	92.33	X	.12	=	11.08
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	8.8	mg/L	54.36	X	.10	=	5.436
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		46.26

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 70.09

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY)

Begin Time ____:____ (am/pm)

End Time ____:____ (am/pm)

Adults ________

Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # _ _ _ _ _ _ _ _ _ _ _

Stream/River Name Teder Creek (Please do not abbreviate.) Site ID #11 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	91	% saturation	95.5	X	.18	=	17.19
***E.* coli**	60	colonies/100mL	51.4	X	.17	=	8.74
pH	7.39	units	92.63	X	.12	=	11.12
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	13.2	mg/L	45.88	X	.10	=	4.59
Turbidity	15	NTU's	70	X	.09	=	6.3

TOTALS .66 47.93

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 72.62

GOOD

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY)　　Begin Time ____:____ (am/pm)　　# Adults ________

End Time ____:____ (am/pm)　　# Students ________

Certified Monitors' Names ____________________　　Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________　　Watershed # _ _ _ _ _ _ _ _

Stream/River Name Beaver Creek (Please do not abbreviate.)　　Site ID #12 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	____	mg/L					
Dissolved Oxygen	82	% saturation	89.6	X	.18	=	16.13
***E.* coli**	20	colonies/100mL	57.8	X	.17	=	10.71
pH	7.63	units	91.05	X	.12	=	10.93
B.O.D. 5	____	mg/L	____	X	.12	=	____
H_2O Temp Change	____	change in°C	____	X	.11	=	____
Total Phosphate	____	mg/L	____	X	.11	=	____
Nitrate (NO_3)	.97	mg/L	94.12	X	.10	=	9.4
Turbidity	15	NTU's	70	X	.09	=	6.3
			TOTALS		.66		53.48

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 81.02

GOOD

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 15 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Potoka River (Please do not abbreviate.) Site ID #13 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	______	mg/L					
	55	% saturation	49.5	X	.18	=	8.91
E. coli	100	colonies/100mL	45	X	.17	=	7.65
pH	6.67	units	78.45	X	.12	=	9.41
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	4.84	mg/L	65.8	X	.10	=	6.58
Turbidity	19.1	NTU's	43.92	X	.09	=	3.95
			TOTALS		.66		36.51

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 55.31

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________
End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ________________   Volunteer ID ________

Organization Name ________________

Watershed Name ________________   Watershed # _ _ _ _ _ _ _ _

Stream/River Name Beaver Creek Outlet to Patoka River   Site ID #14
(Please do not abbreviate.)   (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	____	mg/L					
	65	% saturation	71.5	X	.18	=	12.87
***E.* coli**	80	colonies/100mL	48.2	X	.17	=	8.19
pH	6.81	units	83.35	X	.12	=	10.00
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	10.56	mg/L	50.1	X	.10	=	5.01
Turbidity	29.8	NTU's	53.16	X	.09	=	4.78
			TOTALS		.66		40.86

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 61.91

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 14 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Jasper Lake Outflow (Please do not abbreviate.) Site ID #15 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen	75	% saturation	82.5	X	.18	=	14.85
E. coli	80	colonies/100mL	48.2	X	.17	=	8.194
pH	7.48	units	92.93	X	.12	=	11.15
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.14	mg/L	93.44	X	.10	=	9.34
Turbidity	43	NTU's	43.2	X	.09	=	3.89
			TOTALS		.66		47.43

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 71.86

GOOD

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 15 / 05 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________

End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ____________________   Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________   Watershed # _ _ _ _ _ _ _ _

Stream/River Name Calumet Run (Please do not abbreviate.)   Site ID #16 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	____	mg/L					
Dissolved Oxygen	47	% saturation	39.1	X	.18	=	7.04
***E.* coli**	160	colonies/100mL	40.2	X	.17	=	6.83
pH	6.86	units	85.1	X	.12	=	10.21
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.105	mg/L	97.58	X	.10	=	9.76
Turbidity	19.5	NTU's	62.6	X	.09	=	5.63
			TOTALS		.66		39.48

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 59.81

Medium

Chemical Monitoring Work Sheet

Date: 6-14-05

Time: 8:45 am

Stream Name and Site ID: Patoka River #1

Air Temp: °C

Water Temp: 21 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				81	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	7.0	8.0		7.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	7.45			7.45	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	52.0	51.5		51.75	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ____________						
Other ____________						

Chemical Monitoring Work Sheet

Date 6-14-05

Time 9:30am

Stream Name and Site ID: Cane Creek #2

Air Temp °C

Water Temp 23 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	91			91	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8.0			8.0	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	80			80	< 235 colonies/ 100 mL
pH	units	7.0			7.0	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	4.4			4.4	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6-14-05

Time 10:10 am

Stream Name and Site ID: Dillon Creek #3

Air Temp °C

Water Temp 22 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				92	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8.5	8		8.25	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	80			80	< 235 colonies/ 100 mL
pH	units	7.21			7.21	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.1			1.1	< 44 mg/L
Transparency (Tube)	cm	57	59		58	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 6-14-05

Time 10:55 am

Chemical Monitoring Work Sheet

Stream Name and Site ID: Davis Creek #4

Air Temp °C

Water Temp 22 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	90			90	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8	8		8.0	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	120			120	< 235 colonies/ 100 mL
pH	units	7.23			7.23	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	7.92			7.92	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.36			0.36	none
Ammonia Nitrogen	mg/L	0.05			0.05	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6-14-05

Time 2:45 pm

Stream Name Pinnick Creek
and Site ID #5

Air Temp °C

Water Temp 26 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	96			96	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8.0			8.0	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	140			140	< 235 colonies/ 100 mL
pH	units	7.69			7.69	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	2.2			2.2	< 44 mg/L
Transparency (Tube)	cm	55	56		55.5	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.3			0.3	none
Ammonia Nitrogen	mg/L	0.1			0.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6-14-05

Time 12:30pm

Stream Name and Site ID Sugar Creek #6

Air Temp °C

Water Temp 29 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				93	Avg > 5 mg/L
	mg/L	8	7	7	7.33	> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	200			*200	< 235 colonies/ 100 mL
pH	units	7.21			7.21	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	4.4			4.4	< 44 mg/L
Transparency (Tube)	cm	58	58		58	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.92			0.92	none
Ammonia Nitrogen	mg/L	0.1			0.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

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*Total coliforms estimated @ 5,600 per 100 mL

Chemical Monitoring Work Sheet

Date 6-14-05

Time 12:00 pm

Stream Name Patoka River
and Site ID #7

Air Temp °C

Water Temp 23 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				63	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	5.5	5.5		5.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	240			*240	< 235 colonies/ 100 mL
pH	units	6.81			6.81	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	7.92			7.92	< 44 mg/L
Transparency (Tube)	cm	20	21		20.5	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.5			0.5	none
Ammonia Nitrogen	mg/L	0.1			0.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

*Total Coliforms Estimated @5,600 per 100ml

Chemical Monitoring Work Sheet

Date 6-14-05

Time 2:15pm

Stream Name and Site ID Polson Creek #8

Air Temp °C

Water Temp 25 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	88			88	Avg > 5 mg/L
	mg/L	7.5			7.5	> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	220			220	< 235 colonies/ 100 mL
pH	units	7.70			7.70	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	2.01			2.01	< 44 mg/L
Transparency (Tube)	cm	760			760	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.7			0.7	none
Ammonia Nitrogen	mg/L	0.1			0.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date	6-14-05
Time	1:45pm

Chemical Monitoring Work Sheet

Stream Name and Site ID: Leistner Creek #9

Air Temp ____ °C

Water Temp 26 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	101			101	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8.5			8.5	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	160			160	< 235 colonies/ 100 mL
pH	units	7.55			7.55	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.32			1.32	< 44 mg/L
Transparency (Tube)	cm	760			760	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.4			0.4	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6-14-05

Time 1:30 pm

Stream Name and Site ID: Unnamed Tributary To Patoka River #10

Air Temp °C

Water Temp 27 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				88	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	7.0	7.5		7.25	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	180			*180	< 235 colonies/ 100 mL
pH	units	7.30			7.30	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	7.92	9.68		8.80	< 44 mg/L
Transparency (Tube)	cm	>60	>60		>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.6			0.6	none
Ammonia Nitrogen	mg/L	0.2			0.2	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ________						
Other ________						

*Total Coliforms Estimated @5,600 per 100 ml

Chemical Monitoring Work Sheet

Date 6-14-05

Time 3:15pm

Stream Name and Site ID Teder Creek #11

Air Temp °C

Water Temp 23 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	91			91	Avg > 5 mg/L; > 4 mg/L; > 7 mg/L for trout
	mg/L	8.0			8.0	
Avg DO (original) – DO after 5 days = BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	60			60	< 235 colonies/ 100 mL
pH	units	7.39			7.39	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp = Temperature Change	°C	–	–	–	–	< 5° F; < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	13.2			13.2	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.92			0.92	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6-14-05

Time 3:45 pm

Stream Name and Site ID: Beaver Creek #12

Air Temp °C

Water Temp 25 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	82			82	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	7.0			7.0	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	20			20	< 235 colonies/ 100 mL
pH	units	7.63			7.63	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.97			0.97	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.10			0.10	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date	6-15-05
Time	9:30 am
Stream Name and Site ID	Patoka River #13
Air Temp	°C
Water Temp	19 °C

Current Weather:	☑ Clear/Sunny	☐ Overcast	☐ Showers	☐ Rain (Steady)	☐ Storm (Heavy)
Weather in past 48 hrs:	☑ Clear/Sunny	☐ Overcast	☐ Showers	☐ Rain (Steady)	☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				55	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	5.5	5.0		5.25	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	100			100	< 235 colonies/ 100 mL
pH	units	6.67			6.67	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	4.84			4.84	< 44 mg/L
Transparency (Tube)	cm	19.0	19.2		19.1	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.64			0.64	none
Ammonia Nitrogen	mg/L	0.1			0.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6/14/05

Time 4:30 pm

Stream Name and Site ID: Patoka River #14

Air Temp °C

Water Temp 21 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	65			65	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	6.0	6.0		6.0	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	120			120	< 235 colonies/ 100 mL
pH	units	6.71			6.71	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	17.6			17.6	< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.64			0.64	none
Ammonia Nitrogen	mg/L	0.30			0.30	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6-14-05

Time 4:50 pm

Stream Name and Site ID: Beaver Creek Outlet to Patoka River #14A

Air Temp °C

Water Temp 25 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	65			65	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	5.5			5.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	80			80	< 235 colonies/ 100 mL
pH	units	6.81			6.81	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	10.56			10.56	< 44 mg/L
Transparency (Tube)	cm	25	26		25.5	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.34			0.34	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6-14-05

Time 4:05pm

Stream Name and Site ID: Jasper Lake Outflow #15

Air Temp °C

Water Temp 24 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	75			75	Avg > 5 mg/L
	mg/L	6.5	6.5		6.5	> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	80			80	< 235 colonies/ 100 mL
pH	units	7.48			7.48	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.14			1.14	< 44 mg/L
Transparency (Tube)	cm	20	17		18.5	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	1.0			1.0	none
Ammonia Nitrogen	mg/L	0.2			0.2	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6/15/05

Time 10:15 am

Stream Name and Site ID: Calumet Run #16

Air Temp °C

Water Temp 20 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				47	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	5	4	4	4.3	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	160			160	< 235 colonies/ 100 mL
pH	units	6.86			6.86	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.1	0.11		0.105	< 44 mg/L
Transparency (Tube)	cm	34	32		33	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.68	0.64		0.66	none
Ammonia Nitrogen	mg/L	0.3			0.3	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6-15-05	Stream Name and Site ID: Blank Deionized Water	Air Temp °C	
Time 1:00 pm		Water Temp °C	

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				NA	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	NA				
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	0				< 235 colonies/ 100 mL
pH	units	NA				Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0				< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0				none
Ammonia Nitrogen	mg/L	0				.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date	6-20-05
Time	7:00 am
Stream Name and Site ID	Sugar Creek #6
Air Temp	°C
Water Temp	°C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation					Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L					
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	3500				< 235 colonies/ 100 mL
pH	units					Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L					< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L					none
Ammonia Nitrogen	mg/L					.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ____________						
Other ____________						

sampled by Elgin

Chemical Monitoring Work Sheet

Date	6-20-05
Time	7:00am
Stream Name and Site ID	Patoka River #7
Air Temp	°C
Water Temp	°C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation					Avg > 5 mg/L
	mg/L					> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	600				< 235 colonies/ 100 mL
pH	units					Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L					< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L					none
Ammonia Nitrogen	mg/L					.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______________						
Other ______________						

sampled by Elgin

Date 6-20-05

Time 7am

Chemical Monitoring Work Sheet

Air Temp °C

Water Temp °C

Stream Name and Site ID Unnamed Tributary to Patoka River #10

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation / mg/L					Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
Avg DO (original) – DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	1000				< 235 colonies/ 100 mL
pH	units					Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp = Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L					< 44 mg/L
Transparency (Tube) / Turbidity (from chart use in database entry)	cm / NTU/JTU					none
Orthophosphate	mg/L					none
Ammonia Nitrogen	mg/L					.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ________						
Other ________						

sampled by Elgin

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ___:___ (am/pm) # Adults ______

End Time ___:___ (am/pm) # Students ______

Certified Monitors' Names ____________________ Volunteer ID ______

Organization Name ____________________

Watershed Name ____________________ Watershed # __ __ __ __ __

Stream/River Name Patoka River (Please do not abbreviate.) Site ID #1 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	8	mg/L					
Dissolved Oxygen	80	% saturation	88	X	.18	=	15.84
E. coli	75	colonies/100mL	49	X	.17	=	8.33
pH	6.91	units	86.5	X	.12	=	10.38
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change	16	change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.80
Turbidity	15	NTU's	68	X	.09	=	6.12
			TOTALS		.66		50.47

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 76.5%

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10/ 20/ 05
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ____________
Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________

Watershed Name ______________________ Watershed # _ _ _ _ _ _ _ _ _ _ _

Stream/River Name Cane Creek (Please do not abbreviate.) Site ID #2 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results		*Q-Value*		*Weighting Factor*		*Calculation*
	4.5 mg/L					
Dissolved Oxygen	45 % saturation	36.5	X	.18	=	6.57
***E.* coli**	0 colonies/100mL	98	X	.17	=	16.66
pH	6.83 units	83	X	.12	=	9.96
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	____ mg/L		X	.11	=	
Nitrate (NO_3)	0.18 mg/L	91	X	.10	=	9.10
Turbidity	14 NTU's	74.4	X	.09	=	6.7
			TOTALS	.66		48.99

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 74.2%

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10/ 20/ 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________
End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # ________

Stream/River Name Dillon Creek (Please do not abbreviate.) Site ID #3 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	8.0	mg/L					
Dissolved Oxygen	75	% saturation	82.5	X	.18	=	14.85
E. coli	50	colonies/100mL	53	X	.17	=	9.01
pH	7.5	units	93	X	.12	=	11.16
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	68	X	.09	=	6.12
			TOTALS		.66		50.94

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 77.2%

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _ _ _ _

Stream/River Name Davis Creek Site ID #4

(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results		*Q-Value*		*Weighting Factor*		*Calculation*
	8.0 mg/L					
Dissolved Oxygen	75 % saturation	82.5	X	.18	=	14.85
E. coli	0 colonies/100mL	98	X	.17	=	16.66
pH	7.42 units	92.8	X	.12	=	11.14
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	____ mg/L		X	.11	=	
Nitrate (NO_3)	0 mg/L	98	X	.10	=	9.8
Turbidity	15 NTU's	68	X	.09	=	6.28
			TOTALS	.66		58.73

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 89%

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Pinnick Creek (Please do not abbreviate.) Site ID #5 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			Q-Value		Weighting Factor		Calculation
	9.5	mg/L					
Dissolved Oxygen	93	% saturation	96.16	X	.18	=	17.31
***E.* coli**	0	colonies/100mL	98	X	.17	=	16.66
pH	7.87	units	84	X	.12	=	10.08
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	68	X	.09	=	6.28

TOTALS .66 60.13

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 91.1%

Excellent

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Sugar Creek (Please do not abbreviate.) Site ID #6 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	15	mg/L					
Dissolved Oxygen	150	% saturation	50	X	.18	=	9.0
***E.* coli**	0	colonies/100mL	98	X	.17	=	16.66
pH	8.77	units	52	X	.12	=	6.24
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	68	X	.09	=	6.28

TOTALS .66 47.98

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 72.7%

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ____

End Time ____:____ (am/pm) # Students ____

Certified Monitors' Names ____ Volunteer ID ____

Organization Name ____

Watershed Name ____ Watershed # ____

Stream/River Name Patoka River (Please do not abbreviate.) Site ID #7 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			Q-Value		Weighting Factor		Calculation
	7.0	mg/L					
Dissolved Oxygen	70	% saturation	77	X	.18	=	13.86
E. coli	50	colonies/100mL	53	X	.17	=	9.01
pH	7.23	units	92	X	.12	=	11.04
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0.18	mg/L	91	X	.10	=	9.1
Turbidity	19	NTU's	63	X	.09	=	5.67
			TOTALS		.66		48.68

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 73.6%

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05
MM DD YY

Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Polson Creek (Please do not abbreviate.) Site ID #8 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	3.0	mg/L					
Dissolved Oxygen	28	% saturation	18.6	X	.18	=	3.35
***E.* coli**	100	colonies/100mL	45	X	.17	=	7.65
pH	7.29	units	92	X	.12	=	11.04
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	68	X	.09	=	6.28

TOTALS .66 38.12

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 57.8%

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # _ _ _ _ _ _

Stream/River Name Leistner Creek (Please do not abbreviate.) Site ID #9 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

"No Flow"

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
		mg/L					
Dissolved Oxygen		% saturation		X	.18	=	
***E.* coli**		colonies/100mL		X	.17	=	
pH		units		X	.12	=	
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)		mg/L		X	.10	=	
Turbidity		NTU's		X	.09	=	

TOTALS ________ ________

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING ☐

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name UnNamed Tributary (Please do not abbreviate.) Site ID #10 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	5	mg/L					
Dissolved Oxygen	50	% saturation	43	X	.18	=	7.74
***E.* coli**	100	colonies/100mL	45	X	.17	=	7.65
pH	7.18	units	92	X	.12	=	11.04
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0.18	mg/L	91	X	.10	=	9.1
Turbidity	15	NTU's	68	X	.09	=	6.28

TOTALS .66 41.81

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 63.3%

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ______
End Time ____:____ (am/pm) # Students ______

Certified Monitors' Names ______________________ Volunteer ID ______

Organization Name ______________________

Watershed Name ______________________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name Teder Creek (Please do not abbreviate.) Site ID #11 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	3.5	mg/L					
Dissolved Oxygen	35	% saturation	25	X	.18	=	4.5
E. coli	750	colonies/100mL	24.5	X	.17	=	4.17
pH	7.15	units	91.5	X	.12	=	10.98
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	25	NTU's	57	X	.09	=	5.13

TOTALS .66 34.58

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 52.4%

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Beaver Creek (Please do not abbreviate.) Site ID #12 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	2.0	mg/L					
Dissolved Oxygen	19	% saturation	12.5	X	.18	=	2.25
***E.* coli**	75	colonies/100mL	49	X	.17	=	8.33
pH	7.07	units	90	X	.12	=	10.80
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	68	X	.09	=	6.28
			TOTALS		.66		37.46

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 56.8%

Medium

www.HoosierRiverwatch.com

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 21 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # ________

Stream/River Name Patoka River - Seitz Bridge (Please do not abbreviate.) Site ID #13 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test	*Test Results*	*Q-Value*		*Weighting Factor*		*Calculation*
	7.0 mg/L					
Dissolved Oxygen	66 % saturation	68.6	X	.18	=	12.35
***E.* coli**	200 colonies/100mL	37	X	.17	=	6.29
pH	7.23 units	92	X	.12	=	11.04
B.O.D. 5	mg/L		X	.12	=	
H_2O Temp Change	change in°C		X	.11	=	
Total Phosphate	mg/L		X	.11	=	
Nitrate (NO_3)	0.97 mg/L	94	X	.10	=	9.4
Turbidity	36 NTU's	47	X	.09	=	4.23
		TOTALS		.66		43.31

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 65.6%

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ______________

End Time ____:____ (am/pm) # Students ______________

Certified Monitors' Names ______________________________ Volunteer ID ______________

Organization Name ______________________________

Watershed Name ______________________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Patoka River (Please do not abbreviate.) Site ID #14 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	7.0	mg/L					
Dissolved Oxygen	69	% saturation	65.9	X	.18	=	11.86
***E.* coli**	75	colonies/100mL	49	X	.17	=	8.33
pH	7.2	units	92	X	.12	=	11.04
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.54	mg/L	92	X	.10	=	9.2
Turbidity	38	NTU's	46	X	.09	=	4.14

TOTALS .66 44.57

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 67.5%

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10/ 20/ 05
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ________
Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # ________

Stream/River Name Beaver Creek (Please do not abbreviate.) Site ID 14A (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	10.5	mg/L					
Dissolved Oxygen	10.3	% saturation	98.5	X	.18	=	17.73
E. coli	25	colonies/100mL	60.7	X	.17	=	10.32
pH	8.36	units	69	X	.12	=	8.28
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	2.64	mg/L	87	X	.10	=	8.7
Turbidity	15	NTU's	68	X	.09	=	6.28
			TOTALS		.66		51.31

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 77.7%

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 20 / 05 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________

End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Jasper Lake - Outfall (Please do not abbreviate.)   Site ID #15 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	7.0	mg/L					
Dissolved Oxygen	72	% saturation	79.2	X	.18	=	14.26
***E.* coli**	75	colonies/100mL	49	X	.17	=	8.33
pH	8.11	units	79	X	.12	=	9.48
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	45	NTU's	42	X	.09	=	3.78
			TOTALS		.66		45.65

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 69.2%

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 10 / 21 / 05 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ______________
End Time ____:____ (am/pm)   # Students ______________

Certified Monitors' Names ______________________________   Volunteer ID ______________

Organization Name ____

Watershed Name ______________________________   Watershed # __ __ __ __ __ __ __ __

Stream/River Name Calumet Run   Site ID #16
(Please do not abbreviate.)   (Above ID numbers are required.)

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs.: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	3.0	mg/L					
Dissolved Oxygen	28	% saturation	18.6	X	.18	=	3.35
***E.* coli**	350	colonies/100mL	32.5	X	.17	=	5.53
pH	6.9	units	87	X	.12	=	10.44
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0.6	mg/L	95.5	X	.10	=	9.55
Turbidity	11	NTU's	75	X	.09	=	6.75

TOTALS .66   35.62

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 54.0%

Medium

Date 10/20/05	Chemical Monitoring Work Sheet	Air Temp 14 °C
Time 9 AM	Stream Name PATOKA RIVER and Site ID #1	Water Temp 16 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				80	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8	8		8	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL		75		75	< 235 colonies/ 100 mL
pH	units	6.87	6.96		6.91	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0	0		0	< 44 mg/L
Transparency (Tube)	cm	>60	>60		>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.16	0.16		0.16	none
Ammonia Nitrogen	mg/L	0.1	0.1		0.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 10:05 Am

Stream Name and Site ID CANE CREEK #2

Air Temp 14.5 °C

Water Temp 15.4 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				45	Avg > 5 mg/L
	mg/L	4.5			4.5	> 4 mg/L > 7 mg/L for trout
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	6.83			6.83	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	0.18			0.18	< 44 mg/L
Transparency (Tube)	cm	13	15		14	none
Turbidity (from chart use in database entry)	NTU/JTU				52	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 10/20/05

Time 11:55

Chemical Monitoring Work Sheet

Stream Name and Site ID: DILLON CREEK #3

Air Temp 15.5 °C

Water Temp 12.5 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				75	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8.0			8.0	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	50			50	< 235 colonies/ 100 mL
pH	units	7.50			7.50	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0				< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 11:35 AM

Stream Name and Site ID DAVIS CREEK #4

Air Temp °C

Water Temp 13.5 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				75	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8.0			8.0	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	7.42			7.42	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ________						
Other ________						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 1:50 PM

Stream Name and Site ID PINNICK CREEK #5

Air Temp °C

Water Temp 15 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				93	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	9.5			9.5	
Avg DO (original) − DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	7.87			7.87	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	> 60			> 60	none
Turbidity (from chart use in database entry)	NTU/JTU				< 15	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 1:50 PM

Stream Name and Site ID PINNICK CREEK #5 (DUPLICATE SAMPLE)(INDOORS)

Air Temp °C

Water Temp 15 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				NA	Avg > 5 mg/L > 4 mg/L
	mg/L	NA			NA	> 7 mg/L for trout
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	NA			NA	< 235 colonies/ 100 mL
pH	units	7.79			7.79	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	NA			NA	none
Turbidity (from chart use in database entry)	NTU/JTU	NA			NA	
Orthophosphate	mg/L	0.1			0.1	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date	10/20/05
Time	12:00
Stream Name and Site ID	SUGAR CREEK #6
Air Temp	°C
Water Temp	16 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	(HEAVY	ALGAE	GROWTH)	150	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	15	15		15	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	0	0	0	0	< 235 colonies/ 100 mL
pH	units	8.77			8.77	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 12:35 PM

Stream Name and Site ID PATOKA RIVER #7

Air Temp °C

Water Temp 16 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				70	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	7.0			7.0	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	50			50	< 235 colonies/ 100 mL
pH	units	7.23			7.23	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.18			0.18	< 44 mg/L
Transparency (Tube)	cm	40	38	38	38.7	none
Turbidity (from chart use in database entry)	NTU/JTU				19	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 2:15 PM

Stream Name and Site ID POLSON CREEK #8

Air Temp °C

Water Temp 15 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				28	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	3.0			3.0	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	100			100	< 235 colonies/ 100 mL
pH	units	7.29			7.29	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				< 15	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 2:45 PM

Stream Name and Site ID LEISTNER CREEK #9

Air Temp °C

Water Temp °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	No	FLOW			Avg > 5 mg/L
	mg/L					> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL					< 235 colonies/ 100 mL
pH	units					Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L					< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L					none
Ammonia Nitrogen	mg/L					.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 10/20/05	# Chemical Monitoring Work Sheet	Air Temp °C
Time 1:10 PM	Stream Name and Site ID UNNAMED TRIBUTARY TO PATOKA RIVER #10	Water Temp 15 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				50	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	5			5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	100			100	< 235 colonies/ 100 mL
pH	units	7.18			7.18	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.18			0.18	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.4			0.4	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 3:00 PM

Stream Name and Site ID TEDER CREEK #11

Air Temp °C

Water Temp 16 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				35	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	3.5			3.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	750			750	< 235 colonies/ 100 mL
pH	units	7.15			7.15	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	27	28		27.5	none
Turbidity (from chart use in database entry)	NTU/JTU				25	
Orthophosphate	mg/L	0.4			0.4	none
Ammonia Nitrogen	mg/L	1.1			1.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 3:20 PM

Stream Name and Site ID BEAVER CREEK #12

Air Temp °C

Water Temp 17 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [x] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				19	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	2.0			2.0	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	75			75	< 235 colonies/ 100 mL
pH	units	7.07			7.07	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.24			0.24	none
Ammonia Nitrogen	mg/L	1.7			1.7	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/21/05
Time 9:45 AM

Stream Name and Site ID PATOKA RIVER, SEITZ BRIDGE #13

Air Temp °C
Water Temp 14 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)
Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				66	Avg > 5 mg/L; > 4 mg/L; > 7 mg/L for trout
	mg/L	7.0			7.0	
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	200			200	< 235 colonies/ 100 mL
pH	units	7.23			7.23	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F; < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.97				< 44 mg/L
Transparency (Tube)	cm	22	22		22	none
Turbidity (from chart use in database entry)	NTU/JTU				36	
Orthophosphate	mg/L	0.3			0.3	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date			Air Temp °C
10/21/05			
Time 9:45AM	Stream Name and Site ID	PATOKA RIVER, SEITZ BRIDGE #13 DUPLICATE (INDOORS)	Water Temp NA °C

Chemical Monitoring Work Sheet

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				NA	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	NA			NA	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL					< 235 colonies/ 100 mL
pH	units	7.28			7.28	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.88			0.88	< 44 mg/L
Transparency (Tube)	cm				NA	none
Turbidity (from chart use in database entry)	NTU/JTU				NA	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 4:20

Stream Name and Site ID PATOKA RIVER #14

Air Temp °C

Water Temp 15 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				69	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	7.0			7.0	
Avg DO (original) − ~~DO after 5 days~~ BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	75			75	< 235 colonies/ 100 mL
pH	units	7.2			7.2	Avg 6-9
Temp at Your Site − ~~Upstream (1 mi) Temp~~ Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.54			1.54	< 44 mg/L
Transparency (Tube)	cm	21	21		21	none
Turbidity (from chart use in database entry)	NTU/JTU				38	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 10/20/05

Time 4:20

Stream Name and Site ID BEAVER CREEK 14A

Air Temp °C

Water Temp 15 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				103	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10.5			10.5	
Avg DO (original) − DO after 5 days BOD 5-day (difference)	mg/L	−	−	−	−	none
E. Coli	colonies/ 100 mL	25			25	< 235 colonies/ 100 mL
pH	units	8.36			8.36	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp Temperature Change	°C	−	−	−	−	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	2.64			2.64	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.1			0.1	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 10/20/05	Chemical Monitoring Work Sheet	Air Temp °C
Time 4:00 PM	Stream Name JASPER LAKE OUTFALL and Site ID #15	Water Temp 17 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [x] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				72	Avg > 5 mg/L
	mg/L	7.0	7.0		7.0	> 4 mg/L > 7 mg/L for trout
Avg DO (original) – ~~DO after 5 days~~ BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	75			75	< 235 colonies/ 100 mL
pH	units	8.11			8.11	Avg 6-9
Temp at Your Site – ~~Upstream (1 mi) Temp~~ Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	17	18		17.5	none
Turbidity (from chart use in database entry)	NTU/JTU				45	
Orthophosphate	mg/L	0.6			0.6	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 10/21/05	Air Temp °C
Time 12:00	Water Temp °C

Chemical Monitoring Work Sheet

Stream Name and Site ID: BLANK DEIONIZED WATER

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				NA	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	NA			NA	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	NA			NA	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	NA			NA	none
Turbidity (from chart use in database entry)	NTU/JTU				NA	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date	10/21/05
Time	9:00 AM
Stream Name and Site ID	CALUMET RUN #16
Air Temp	°C
Water Temp	14 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				28	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	3.0			3.0	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	750*			750*	< 235 colonies/ 100 mL
pH	units	6.90			6.90	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.6			0.6	< 44 mg/L
Transparency (Tube)	cm	11	11		11	none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L	0.4			0.4	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other __________						
Other __________						

* QUESTIONABLE RESULT. COLORATION OF BACTERIA NOT DISTINCTLY CLEAR.

Chemical Monitoring Work Sheet

Date 10/25/05

Time 11:00 Am

Stream Name and Site ID CALUMET RUN 16

Air Temp °C

Water Temp °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation					Avg > 5 mg/L
	mg/L					> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	400	300		350	< 235 colonies/ 100 mL
pH	units					Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L					< 44 mg/L
Transparency (Tube)	cm					none
Turbidity (from chart use in database entry)	NTU/JTU					
Orthophosphate	mg/L					none
Ammonia Nitrogen	mg/L					.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______________						
Other ______________						

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 5 / 9 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # __________

Stream/River Name Patoka River (Please do not abbreviate.) Site ID #1 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	11	mg/L					
Dissolved Oxygen	110	% saturation	95	X	.18	=	17.1
***E.* coli**	0	colonies/100mL	98	X	.17	=	16.7
pH	7.77	units	86	X	.12	=	10.3
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		60.0

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 90.9

Excellent

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 5 / 9 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name Cane Creek Site ID #2
(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	10.5	mg/L					
Dissolved Oxygen	102	% saturation	98.5	X	.18	=	17.7
E. coli	67	colonies/100mL	50	X	.17	=	8.5
pH	7.5	units	93	X	.12	=	11.2
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		53.3

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 80.8

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 5 / 9 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________ Volunteer ID ________

Organization Name ________

Watershed Name ________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Dillon Creek (Please do not abbreviate.) Site ID #3 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	11.0	mg/L					
	105	% saturation	98	X	.18	=	17.6
E. coli	33	colonies/100mL	62	X	.17	=	10.5
pH	7.77	units	86	X	.12	=	10.3
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	68	X	.09	=	6.1
TOTALS					.66		54.3

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 82.3

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 5 / 9 / 06
MM DD YY

Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________ Volunteer ID ________

Organization Name ________

Watershed Name ________ Watershed # ________

Stream/River Name Davis Creek Site ID #4
(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	11.0	mg/L					
Dissolved Oxygen	107	% saturation	96.5	X	.18	=	17.4
***E.* coli**	0	colonies/100mL	98	X	.17	=	16.7
pH	7.74	units	93	X	.12	=	11.2
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0.22	mg/L	87.5	X	.10	=	8.8
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		60.2

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 91.2

Excellent

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 1 / 06 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________
End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ________________   Volunteer ID ________

Organization Name ________________

Watershed Name ________________   Watershed # ________

Stream/River Name Pinnick Creek (Please do not abbreviate.)   Site ID #5 (Above ID numbers are required.)

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs.: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	13.0	mg/L					
Dissolved Oxygen	≥ 140	% saturation	50	X	.18	=	9.0
E. coli	200	colonies/100mL	37	X	.17	=	6.3
pH	8.64	units	63	X	.12	=	7.6
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	2.64	mg/L	88	X	.10	=	8.8
Turbidity	15	NTU's	68	X	.09	=	6.1
				TOTALS	.66		37.8

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 57.3

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 5 / 9 / 06
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ________
Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Sugar Creek (Please do not abbreviate.) Site ID #6 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	17.0	mg/L					
Dissolved Oxygen	≥140	% saturation	50	X	.18	=	9.0
E. coli	100	colonies/100mL	45	X	.17	=	7.7
pH	9.87	units	25	X	.12	=	3.0
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.14	mg/L	93	X	.10	=	9.3
Turbidity	16	NTU's	67	X	.09	=	6.0
			TOTALS		.66		35.0

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 53.0

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 5 / 9 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # ________

Stream/River Name Patoka River (Please do not abbreviate.) Site ID #7 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test	Test Results	Q-Value		Weighting Factor		Calculation
Dissolved Oxygen	11.0 mg/L; 110 % saturation	95	X	.18	=	17.1
E. coli	33 colonies/100mL	52	X	.17	=	8.8
pH	7.87 units	84	X	.12	=	10.1
B.O.D. 5	mg/L		X	.12	=	
H_2O Temp Change	change in°C		X	.11	=	
Total Phosphate	mg/L		X	.11	=	
Nitrate (NO_3)	0.1 mg/L	98	X	.10	=	9.8
Turbidity	15 NTU's	68	X	.09	=	6.1
		TOTALS		.66		51.9

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 78.6

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 1 / 06
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ____________
Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________

Watershed Name ______________________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name Polson Creek (Please do not abbreviate.) Site ID #8 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	10	mg/L					
Dissolved Oxygen	115	% saturation	92.5	X	.18	=	16.7
E. coli	225	colonies/100mL	36	X	.17	=	6.1
pH	7.5	units	93	X	.12	=	11.2
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0.93	mg/L	94	X	.10	=	9.4
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		49.5

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 75.0

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 5 / 9 / 06 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________

End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ____________________   Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________   Watershed # ________

Stream/River Name Leistner Creek (Please do not abbreviate.)   Site ID #9 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	12	mg/L					
Dissolved Oxygen	122	% saturation	89	X	.18	=	16.0
***E.* coli**	133	colonies/100mL	42.5	X	.17	=	7.2
pH	7.86	units	84	X	.12	=	10.1
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	3.52	mg/L	78	X	.10	=	7.8
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		47.2

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 71.5

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 5 / 9 / 06
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ________
Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name UnNamed Tributary to Patoka River Site ID #10
(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs.: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	11	mg/L					
Dissolved Oxygen	120	% saturation	90	X	.18	=	16.2
E. coli	300	colonies/100mL	34	X	.17	=	5.8
pH	8.18	units	77	X	.12	=	9.2
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	4.4	mg/L	68	X	.10	=	6.8
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		44.1

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 66.8

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 1 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # ________

Stream/River Name Teder Creek (Please do not abbreviate.) Site ID #11 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	10	mg/L					
Dissolved Oxygen	116	% saturation	92	X	.18	=	16.6
E. coli	150	colonies/100mL	41	X	.17	=	7.0
pH	7.57	units	92	X	.12	=	11.0
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.14	mg/L	93	X	.10	=	9.3
Turbidity	15	NTU's	68	X	.09	=	6.1

TOTALS .66 50.0

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 75.8

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 1 / 06
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ____________
Students ____________

Certified Monitors' Names ____________________ Volunteer ID ____________

Organization Name ____________________

Watershed Name ____________________ Watershed # ________

Stream/River Name Beaver Creek
(Please do not abbreviate.)

Site ID #12
(Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	7	mg/L					
Dissolved Oxygen	87	% saturation	94	X	.18	=	16.9
E. coli	25	colonies/100mL	51	X	.17	=	8.7
pH	9.6	units	30	X	.12	=	3.6
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0	mg/L	98	X	.10	=	9.8
Turbidity	15	NTU's	68	X	.09	=	6.1

TOTALS .66 45.1

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 68.3

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 1 / 06
MM DD YY

Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________ Volunteer ID ________

Organization Name ________

Watershed Name ________ Watershed # ________

Stream/River Name Patoka River - Seitz Bridge Site ID #13
(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	6	mg/L					
Dissolved Oxygen	66	% saturation	68.6	X	.18	=	12.4
E. coli	200	colonies/100mL	37	X	.17	=	6.3
pH	7.26	units	92	X	.12	=	11.0
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.1	mg/L	93	X	.10	=	9.3
Turbidity	20	NTU's	62	X	.09	=	5.6
			TOTALS		.66		44.6

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 67.6

Medium

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 1 / 06
MM DD YY

Begin Time ____:____ (am/pm) # Adults ____________

End Time ____:____ (am/pm) # Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________

Watershed Name ______________________ Watershed # _ _ _ _ _ _ _ _ _ _ _

Stream/River Name Patoka River (Please do not abbreviate.) Site ID #14 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	6.5	mg/L					
Dissolved Oxygen	73	% saturation	80.3	X	.18	=	14.5
E. coli	75	colonies/100mL	49	X	.17	=	8.3
pH	7.3	units	92	X	.12	=	11.0
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.8	mg/L	91	X	.10	=	9.1
Turbidity	19	NTU's	64	X	.09	=	5.8
			TOTALS		.66		48.7

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 73.8

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 1 / 06
MM DD YY

Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________ Volunteer ID ________

Organization Name ____________

Watershed Name ____________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name Beaver Creek (Please do not abbreviate.) Site ID #14A (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

	Test Results	*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	7 mg/L 83 % saturation	90.4	X	.18	=	16.3
E. coli	125 colonies/100mL	42	X	.17	=	7.1
pH	7.34 units	92	X	.12	=	11.0
B.O.D. 5	mg/L		X	.12	=	
H_2O Temp Change	change in°C		X	.11	=	
Total Phosphate	mg/L		X	.11	=	
Nitrate (NO_3)	1.1 mg/L	93	X	.10	=	9.3
Turbidity	17 NTU's	66	X	.09	=	5.9
		TOTALS		.66		49.6

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 75.2

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 1 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # ________

Stream/River Name Jasper Lake - Outfall (Please do not abbreviate.) Site ID #15 (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	3	mg/L					
Dissolved Oxygen	37	% saturation	27	X	.18	=	4.9
E. coli	0	colonies/100mL	98	X	.17	=	16.7
pH	7.54	units	93	X	.12	=	11.2
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.6	mg/L	91	X	.10	=	9.1
Turbidity	15	NTU's	68	X	.09	=	6.1
				TOTALS	.66		48.0

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 72.7

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 6 / 1 / 06
MM DD YY

Begin Time ____:____ (am/pm) # Adults ____________

End Time ____:____ (am/pm) # Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________

Watershed Name ______________________ Watershed # __________

Stream/River Name Calumet Run Site ID #16

(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	4	mg/L					
Dissolved Oxygen	46	% saturation	37.8	X	.18	=	6.8
E. coli	225	colonies/100mL	36	X	.17	=	6.1
pH	7.12	units	91	X	.12	=	10.9
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	0.9	mg/L	94	X	.10	=	9.4
Turbidity	19	NTU's	64	X	.09	=	5.8
			TOTALS		.66		39.0

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 59.1

Medium

Date 5-9-06	# Chemical Monitoring Work Sheet	Air Temp °C
Time 9:30 AM	Stream Name and Site ID PATOKA RIVER #1	Water Temp 16 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	110			110	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	11			11	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	7.77			7.77	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.04			0.04	none
Ammonia Nitrogen	mg/L	0.05			0.05	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 5/19/06

Time 10:30AM

Chemical Monitoring Work Sheet

Stream Name and Site ID: CANE CREEK #2

Air Temp °C

Water Temp 14.5 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				102	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10	11		10.5	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	67			67	< 235 colonies/ 100 mL
pH	units	7.50			7.50	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	> 60			> 60	none
Turbidity (from chart use in database entry)	NTU/JTU				< 15	
Orthophosphate	mg/L	0.24			0.24	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW		4.31 CFS			4.31 CFS	
Other ______						

Chemical Monitoring Work Sheet

Date	5-9-06
Time	10:50 AM
Stream Name and Site ID	DILLON CREEK #3
Air Temp °C	
Water Temp °C	13.5

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				105	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	11	11		11	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	33			33	< 235 colonies/ 100 mL
pH	units	7.77			7.77	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW	2.86 CFS				2.86 CFS	
Other ______						

Chemical Monitoring Work Sheet

Date 5-9-06

Time 11:20

Stream Name and Site ID DAVIS CREEK #4

Air Temp °C

Water Temp 14.5 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				107	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	11			11.0	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	7.74			7.74	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.22			0.22	< 44 mg/L
Transparency (Tube)	cm	>60			>60.	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.2			0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW	5.66 CFS				5.66 CFS	
Other ______						

Chemical Monitoring Work Sheet

Date 6-1-06	Stream Name PINNICK CREEK and Site ID #5	Air Temp °C	
Time 9:15AM		Water Temp 21.5 °C	

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				140+	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	13	13		13	
Avg DO (original) − DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	200			200	< 235 colonies/ 100 mL
pH	units	8.64				Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	2.64			2.64	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW		2.14 CFS			2.14 CFS	
Other ______						

Chemical Monitoring Work Sheet

Date	5-9-06
Time	11:50
Stream Name and Site ID	SUGAR CREEK #6
Air Temp	°C
Water Temp	21.5 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				140+	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	17			17	
Avg DO (original) — **~~DO after 5 days~~** **BOD 5-day (difference)**	mg/L	—	—	—	—	none
***E.* Coli**	colonies/ 100 mL	100	100		100	< 235 colonies/ 100 mL
pH	units	9.87			9.87	Avg 6-9
Temp at Your Site — **~~Upstream (1 mi) Temp~~** **Temperature Change**	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.14			1.14	< 44 mg/L
Transparency (Tube)	cm	56			56	none
Turbidity (from chart use in database entry)	NTU/JTU				16	
Orthophosphate	mg/L	0.3			0.3	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW	0.89 CFS				0.89 CFS	
Other ______						

Chemical Monitoring Work Sheet

Date	5-9-06
Time	12:30
Stream Name and Site ID	PATOKA RIVER #7
Air Temp	°C
Water Temp	16 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				110	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	11			11	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	33			33	< 235 colonies/ 100 mL
pH	units	7.87			7.87	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0	0.198		0.1	< 44 mg/L
Transparency (Tube)	cm	>60			>60.	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.2	0.2		0.2	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date	6-1-06
Time	9:55 AM
Stream Name and Site ID	POLSON CREEK #8
Air Temp	°C
Water Temp	22.5 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				115	Avg > 5 mg/L
	mg/L	10			10	> 4 mg/L > 7 mg/L for trout
Avg DO (original) — ~~DO after 5 days~~ BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	225			225	< 235 colonies/ 100 mL
pH	units	7.50			7.50	Avg 6-9
Temp at Your Site — ~~Upstream (1 mi) Temp~~ Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.93			0.93	< 44 mg/L
Transparency (Tube)	cm	>60			>60.	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.6			0.6	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW		4.19 CFS			4.19 CFS	
Other ______						

Chemical Monitoring Work Sheet

Date	5-9-06
Time	2:00 PM
Stream Name and Site ID	LEISTNER CREEK #9
Air Temp	°C
Water Temp	16.5 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				122	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	12			12	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	133			133	< 235 colonies/ 100 mL
pH	units	7.86			7.86	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	3.52			3.52	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW	0.728 CFS				0.728 CFS	
Other ______						

Chemical Monitoring Work Sheet

Date 5/9/06	Air Temp °C
Time 1:15 PM	Water Temp 20 °C

Stream Name UNNAMED TRIBUTARY TO PATOKA RIVER
and Site ID #10

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				120	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	11			11	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	300			300	< 235 colonies/ 100 mL
pH	units	8.18			8.18	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	4.4			4.4	< 44 mg/L
Transparency (Tube)	cm	>60			>60.	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.5			0.5	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW		0.36 CFS			0.36 CFS	
Other						

Chemical Monitoring Work Sheet

Date 6/1/06

Time 10:15 AM

Stream Name and Site ID TEDER CREEK #11

Air Temp °C

Water Temp 23 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				116	Avg > 5 mg/L > 4 mg/L
	mg/L	10	10		10	> 7 mg/L for trout
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	150			150	< 235 colonies/ 100 mL
pH	units	7.57			7.57	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.14			1.14	< 44 mg/L
Transparency (Tube)	cm	>60			>60.	none
Turbidity (from chart use in database entry)	NTU/JTU				< 15	
Orthophosphate	mg/L	0.6			0.6	none
Ammonia Nitrogen	mg/L	0.1			0.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW	0.66 CFS				0.66 CFS	
Other						

Date 6-1-06	Chemical Monitoring Work Sheet	Air Temp °C
Time 10:40AM	Stream Name and Site ID BEAVER CREEK #12	Water Temp 27 °C

Current Weather: ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				87	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	7	7		7	
Avg DO (original) — ~~DO after 5 days~~ BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	25			25	< 235 colonies/ 100 mL
pH	units	9.70	9.54		9.6	Avg 6-9
Temp at Your Site — ~~Upstream (1 mi) Temp~~ Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	760			>60.	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW		7.64 CFS			7.64 CFS	
Other ______						

Chemical Monitoring Work Sheet

Date 6-1-06

Time 1:00 PM

Stream Name and Site ID PATOKA RIVER, SEITZ BRIDGE #13

Air Temp °C

Water Temp 21 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				66	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	6	6		6	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	200			200	< 235 colonies/ 100 mL
pH	units	7.26			7.26	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.1			1.1	< 44 mg/L
Transparency (Tube)	cm	30	30		30	none
Turbidity (from chart use in database entry)	NTU/JTU				20	
Orthophosphate	mg/L	0.4			0.4	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ____________						
Other ____________						

Date 6-1-06	Air Temp °C
Time 12:20PM	Water Temp 22 °C
Stream Name PATOKA RIVER and Site ID #14	

Chemical Monitoring Work Sheet

Current Weather: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				73	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	6.5	6.5		6.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	75			75	< 235 colonies/ 100 mL
pH	units	7.30			7.30	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.8			1.8	< 44 mg/L
Transparency (Tube)	cm	34	34		34	none
Turbidity (from chart use in database entry)	NTU/JTU				19	
Orthophosphate	mg/L	0.4			0.4	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 6-1-06	Stream Name and Site ID BEAVER CREEK #14A	Air Temp	°C
Time 12:50		Water Temp 25	°C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				83	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	7	7		7	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	125			125	< 235 colonies/ 100 mL
pH	units	7.34			7.34	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					<.04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	1.1			1.1	< 44 mg/L
Transparency (Tube)	cm	45	45		45	none
Turbidity (from chart use in database entry)	NTU/JTU				17	
Orthophosphate	mg/L	0.6			0.6	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 6-1-06	Air Temp °C
Time 11:10AM	Water Temp 25 °C

Chemical Monitoring Work Sheet

Stream Name and Site ID: JASPER LAKE OUTFALL #15

Current Weather: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				37	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	3	3		3	
Avg DO (original) — ~~DO after 5 days~~ BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	7.54			7.54	Avg 6-9
Temp at Your Site — ~~Upstream (1 mi) Temp~~ Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.6			1.6	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0.1			0.1	none
Ammonia Nitrogen	mg/L	0.1			0.1	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW		0.28 CFS			0.28 CFS	
Other ______						

Chemical Monitoring Work Sheet

Date 6/1/06

Time 1:30 PM

Stream Name and Site ID: CALUMET RUN #16

Air Temp °C

Water Temp 23 °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				46	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	4	4		4	
Avg DO (original) − DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	225			225	< 235 colonies/ 100 mL
pH	units	7.12			7.12	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.70	1.14		0.9	< 44 mg/L
Transparency (Tube)	cm	37	38		37.5	none
Turbidity (from chart use in database entry)	NTU/JTU				19	
Orthophosphate	mg/L	1.0	1.5	1.5	1.33	none
Ammonia Nitrogen	mg/L	0.5	0.4		0.45	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other FLOW		7.23 CFS			7.23 CFS	
Other ______						

Date 5-9-06	# Chemical Monitoring Work Sheet	Air Temp °C
Time 4 PM	Stream Name and Site ID BLANK DE-IONIZED WATER	Water Temp NA °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation				NA	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	NA				
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	NA			NA	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ________						
Other ________						

Chemical Monitoring Work Sheet

Date 6-1-06

Time 3:30 PM

Stream Name and Site ID BLANK DE-IONIZED WATER

Air Temp °C

Water Temp °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☑ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation					Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	NA				
Avg DO (original) − DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	NA			NA	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU				<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 9 / 06
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ____________
Students ____________

Certified Monitors' Names ____________ Volunteer ID ____________

Organization Name ____________

Watershed Name ____________ Watershed # ____________

Stream/River Name Patoka River Site ID 1
(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test	Test Results	Q-Value		Weighting Factor		Calculation
Dissolved Oxygen	10.5 mg/L; 98 % saturation	98.4	X	.18	=	17.71
E. coli	0 colonies/100mL	98	X	.17	=	16.7
pH	7.23 units	92	X	.12	=	11.04
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	____ mg/L		X	.11	=	
Nitrate (NO_3)	0 mg/L	98	X	.10	=	9.8
Turbidity	15 NTU's	68	X	.09	=	6.1
		TOTALS		.66		61.35

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 93

Excellent

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 9 / 06
MM DD YY

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ____________
Students ____________

Certified Monitors' Names ____________ Volunteer ID ____________

Organization Name ____________

Watershed Name ____________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Cane Creek (Please do not abbreviate.)
Site ID 2 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	10.5 mg/L 95 % saturation		97.5	X	.18	=	17.55
E. coli	40	colonies/100mL	56	X	.17	=	9.52
pH	7.24	units	92	X	.12	=	11.04
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.44	mg/L	96	X	.10	=	9.6
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		53.81

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 81.53

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 9 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________________ Volunteer ID ________

Organization Name ________________________

Watershed Name ________________________ Watershed # ________

Stream/River Name Dillon Creek (Please do not abbreviate.) Site ID 3 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	10.5	mg/L					
Dissolved Oxygen	94	% saturation	97	X	.18	=	17.46
E. coli	200	colonies/100mL	37	X	.17	=	6.3
pH	7.43	units	93	X	.12	=	11.16
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.62	mg/L	95.5	X	.10	=	9.55
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		50.57

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 76.62

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11/9/06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ____________

End Time ____:____ (am/pm) # Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________________________

Watershed Name ______________________ Watershed # _ _ _ _ _ _ _ _ _ _

Stream/River Name Davis Creek Site ID 4

(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	10.5	mg/L					
Dissolved Oxygen	97	% saturation	98	X	.18	=	17.64
E. coli	80	colonies/100mL	48	X	.17	=	8.16
pH	7.50	units	93	X	.12	=	11.2
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.23	mg/L	93	X	.10	=	9.3
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		52.4

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 79.39

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 9 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # __ __ __ __ __ __ __

Stream/River Name Sugar Creek (Please do not abbreviate.) Site ID 6 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results		*Q-Value*		*Weighting Factor*		*Calculation*
	10.5 mg/L					
Dissolved Oxygen	103 % saturation	98.5	X	.18	=	17.73
E. coli	120 colonies/100mL	43.4	X	.17	=	7.38
pH	7.18 units	92	X	.12	=	11.04
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	____ mg/L		X	.11	=	
Nitrate (NO_3)	3.96 mg/L	70	X	.10	=	7.00
Turbidity	15 NTU's	68	X	.09	=	6.1
		TOTALS		.66		49.25

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 74.62

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 9 / 06 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________

End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ________________   Volunteer ID ________

Organization Name ________________

Watershed Name ________________   Watershed # ________

Stream/River Name Patoka River (Please do not abbreviate.)   Site ID 7 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results		*Q-Value*		*Weighting Factor*		*Calculation*
	9.5 mg/L					
Dissolved Oxygen	88 % saturation	94	X	.18	=	16.92
E. coli	60 colonies/100mL	51	X	.17	=	8.67
pH	7.56 units	92	X	.12	=	11.04
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	____ mg/L		X	.11	=	
Nitrate (NO_3)	0 mg/L	98	X	.10	=	9.8
Turbidity	15 NTU's	68	X	.09	=	6.1
		TOTALS		.66		52.53

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 79.59

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 9 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # __ __ __ __ __ __ __ __ __ __

Stream/River Name Unnamed Tributary to Patoka River Site ID 10

(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test	*Test Results*	*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	10.5 mg/L; 105 % saturation	98	X	.18	=	17.64
E. coli	160 colonies/100mL	40	X	.17	=	6.8
pH	7.48 units	93	X	.12	=	11.16
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	____ mg/L		X	.11	=	
Nitrate (NO_3)	4.4 mg/L	68	X	.10	=	6.8
Turbidity	15 NTU's	68	X	.09	=	6.1
TOTALS				.66		48.5

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 73.48

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11/9/06 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________

End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ________________   Volunteer ID ________

Organization Name ________________

Watershed Name ________________   Watershed # __________

Stream/River Name Leistner Creek   Site ID 9

(Please do not abbreviate.)   (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	10.5	mg/L					
Dissolved Oxygen	101	% saturation	99.2	X	.18	=	17.86
E. coli	80	colonies/100mL	48	X	.17	=	8.16
pH	7.38	units	93	X	.12	=	11.16
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	7.04	mg/L	59	X	.10	=	5.9
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		49.18

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 74.52

Good.

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 9 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________
End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ____________________ Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________ Watershed # ________

Stream/River Name Pinnick Creek (Please do not abbreviate.) Site ID 5 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test	*Test Results*	*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	10.5 mg/L; 103 % saturation	98.5	X	.18	=	17.73
E. coli	100 colonies/100mL	45	X	.17	=	7.7
pH	7.69 units	90	X	.12	=	10.8
B.O.D. 5	mg/L		X	.12	=	
H_2O Temp Change	change in°C		X	.11	=	
Total Phosphate	mg/L		X	.11	=	
Nitrate (NO_3)	2.64 mg/L	87	X	.10	=	8.7
Turbidity	15 NTU's	68	X	.09	=	6.1
		TOTALS		.66		51.03

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 77.32

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 9 / 06 (MM DD YY)

Begin Time ____:____ (am/pm)
End Time ____:____ (am/pm)

Adults ________
Students ________

Certified Monitors' Names ________________
Volunteer ID ________

Organization Name ________________

Watershed Name ________________
Watershed # _ _ _ _ _ _ _ _

Stream/River Name Polson Creek (Please do not abbreviate.)
Site ID 8 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☐ Clear/Sunny ☑ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results		*Q-Value*		*Weighting Factor*		*Calculation*
	10.0 mg/L					
Dissolved Oxygen	99 % saturation	98.7	X	.18	=	17.77
E. coli	20 colonies/100mL	63	X	.17	=	10.71
pH	7.37 units	93	X	.12	=	11.16
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	____ mg/L		X	.11	=	
Nitrate (NO_3)	3.52 mg/L	77.5	X	.10	=	7.75
Turbidity	15 NTU's	68	X	.09	=	6.1
		TOTALS		.66		53.49

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 81.05

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 10 / 06 (MM DD YY)　Begin Time ____:____ (am/pm)　# Adults ________

End Time ____:____ (am/pm)　# Students ________

Certified Monitors' Names ______________________ Volunteer ID ________

Organization Name ______________________

Watershed Name ______________________ Watershed # ________

Stream/River Name Calumet Run (Please do not abbreviate.)　Site ID 16 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results		*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	5.75 mg/L 53 % saturation	45.1	X	.18	=	8.12
E. coli	100 colonies/100mL	45	X	.17	=	7.7
pH	7.0 units	90	X	.12	=	10.8
B.O.D. 5	mg/L		X	.12	=	
H_2O Temp Change	change in°C		X	.11	=	
Total Phosphate	mg/L		X	.11	=	
Nitrate (NO_3)	.97 mg/L	94	X	.10	=	9.4
Turbidity	18 NTU's	64	X	.09	=	5.76
			TOTALS	.66		41.78

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 63.30

Bad

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11/10/06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ____________

End Time ____:____ (am/pm) # Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________

Watershed Name ______________________ Watershed # ____________

Stream/River Name Patoka River Site ID 14

(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	8.5	mg/L					
Dissolved Oxygen	79	% saturation	86.9	X	.18	=	15.64
E. coli	140	colonies/100mL	42	X	.17	=	7.14
pH	7.28	units	92	X	.12	=	11.04
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	2.2	mg/L	89	X	.10	=	8.9
Turbidity	18	NTU's	64	X	.09	=	5.76
			TOTALS		.66		48.48

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 73.45

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 10 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________________ Volunteer ID ________

Organization Name ________________________

Watershed Name ________________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Beaver Creek (Please do not abbreviate.) Site ID 14A (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	10.0	mg/L					
Dissolved Oxygen	92	% saturation	96	X	.18	=	17.28
***E.* coli**	60	colonies/100mL	51	X	.17	=	8.67
pH	7.25	units	92	X	.12	=	11.04
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	3.1	mg/L	83.5	X	.10	=	8.35
Turbidity	15	NTU's	68	X	.09	=	6.1

TOTALS .66 51.44

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 77.94

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11/10/06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ____________

End Time ____:____ (am/pm) # Students ____________

Certified Monitors' Names ______________________ Volunteer ID ____________

Organization Name ______________________________________

Watershed Name ______________________ Watershed # _ _ _ _ _ _ _ _

Stream/River Name Patoka River-Seitz Bridge Site ID 13
(Please do not abbreviate.) (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results		*Q-Value*		*Weighting Factor*		*Calculation*
Dissolved Oxygen	9.5 mg/L 88 % saturation	94	X	.18	=	16.92
E. coli	40 colonies/100mL	56	X	.17	=	9.52
pH	7.46 units	93	X	.12	=	11.16
B.O.D. 5	____ mg/L		X	.12	=	
H_2O Temp Change	____ change in°C		X	.11	=	
Total Phosphate	7.46 mg/L		X	.11	=	
Nitrate (NO_3)	1.1 mg/L	94	X	.10	=	9.4
Turbidity	17 NTU's	66	X	.09	=	5.94
		TOTALS		.66		52.94

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 80.21

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 10 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # __ __ __ __ __ __ __ __

Stream/River Name Teder Creek (Please do not abbreviate.) Site ID 11 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			Q-Value		Weighting Factor		Calculation
	9.5	mg/L					
Dissolved Oxygen	102	% saturation	98.6	X	.18	=	17.75
E. coli	60	colonies/100mL	51	X	.17	=	8.67
pH	7.53	units	93	X	.12	=	11.16
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	13.2	mg/L	46	X	.10	=	4.6
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		48.28

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING 73.15

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11/10/06 (MM DD YY)   Begin Time ____:____ (am/pm)   # Adults ________
End Time ____:____ (am/pm)   # Students ________

Certified Monitors' Names ____________________   Volunteer ID ________

Organization Name ____________________

Watershed Name ____________________   Watershed # __________

Stream/River Name Beaver Creek   Site ID 12

(Please do not abbreviate.)   (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Water Quality Index (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	9.5	mg/L					
Dissolved Oxygen	90	% saturation	95	X	.18	=	17.1
E. coli	40	colonies/100mL	56	X	.17	=	9.52
pH	7.76	units	88	X	.12	=	10.56
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	.53	mg/L	96	X	.10	=	9.6
Turbidity	15	NTU's	68	X	.09	=	6.1
			TOTALS		.66		52.88

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 80.12

Good

ADVANCED CHEMICAL MONITORING DATA SHEET

Date 11 / 10 / 06 (MM DD YY) Begin Time ____:____ (am/pm) # Adults ________

End Time ____:____ (am/pm) # Students ________

Certified Monitors' Names ________________ Volunteer ID ________

Organization Name ________________

Watershed Name ________________ Watershed # ________

Stream/River Name Jasper Lake Outfall (Please do not abbreviate.) Site ID 15 (Above ID numbers are required.)

Current Weather ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in Past 48 hrs. ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

WATER QUALITY INDEX (WQI)

You may perform as many of the following tests as you wish; however, at least 6 must be completed to obtain a Total Water Quality Index value. Divide the total of the *Calculation* column by the total of the *Weighting Factor* column to obtain the Water Quality Index rating.

Test Results			*Q-Value*		*Weighting Factor*		*Calculation*
	10.5	mg/L					
Dissolved Oxygen	99	% saturation	98.7	X	.18	=	17.77
***E.* coli**	20	colonies/100mL	63	X	.17	=	10.71
pH	7.80	units	87	X	.12	=	10.44
B.O.D. 5		mg/L		X	.12	=	
H_2O Temp Change		change in°C		X	.11	=	
Total Phosphate		mg/L		X	.11	=	
Nitrate (NO_3)	1.98	mg/L	90	X	.10	=	9.0
Turbidity	18	NTU's	64	X	.09	=	5.76
			TOTALS		.66		53.68

Excellent	90 - 100%	Bad	25 - 49%
Good	70 - 89%	Very Bad	0 - 24%
Medium	50 - 69%		

WATER QUALITY INDEX RATING: 81.33

Good

Date 11-9-06	# Chemical Monitoring Work Sheet	Air Temp °C
Time 8:45AM	Stream Name and Site ID #1 PATOKA RIVER	Water Temp 12.5 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [x] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2 (YSI)	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	98%	98.3%		98%	Avg > 5 mg/L; > 4 mg/L; > 7 mg/L for trout
	mg/L	10.5	10.47		10.5	
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	0			0	< 235 colonies/ 100 mL
pH	units	7.23	7.75		7.23	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F; < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0	0.31		0.31 *	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	2.4		<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY		0.164			0.164	
Other ______						

* YSI DATA

Chemical Monitoring Work Sheet

Date 11-9-06

Time 9:40AM

Stream Name and Site ID 2 Cane Creek

Air Temp °C

Water Temp 10.88 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [x] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2 YSI	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	95%	98%		95%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10.5	10.62		10.5	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	40			40	< 235 colonies/ 100 mL
pH	units	7.24	7.47		7.24	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	0.44	0.82		* 0.82	< 44 mg/L
Transparency (Tube)	cm	> 60			> 60	none
Turbidity (from chart use in database entry)	NTU/JTU	< 15	10.0		< 15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY			0.209		0.209	
Other ________						

* YSI DATA

Date	11-9-06
Time	10:15 AM

Chemical Monitoring Work Sheet

Stream Name and Site ID	3 Dillon Creek
Air Temp	°C
Water Temp	10.73 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [x] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3 YSI	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	94%	97.4		94 %	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10.5	10.8		10.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	200			200	< 235 colonies/ 100 mL
pH	units	7.43	7.47		7.43	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0.62	0.92		0.92 *	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	3.4		<15	
Orthophosphate	mg/L	0.3			0.3	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY		0.202			0.202	
Other						

* YSI DATA

Chemical Monitoring Work Sheet

Date 11-9-06

Time 10:50 AM

Stream Name and Site ID 4 Davis Creek

Air Temp °C

Water Temp 12.07 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [x] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

YSI

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	97%	100		97%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10.5	10.76		10.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	80			80	< 235 colonies/ 100 mL
pH	units	7.50	7.50		7.50	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	1.23	1.17		1.17* ~~1.23~~	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	1.6		<15	
Orthophosphate	mg/L	.02			0.02	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY			0.180		0.180	
Other ______						

* YSI DATA

Chemical Monitoring Work Sheet

Date 11-9-06

Time 11:25

Stream Name and Site ID 6 Sugar Creek

Air Temp °C

Water Temp 14.8 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [x] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2 (YSI)	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	103%	100.4		103%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10.5 / 10.5	10.16		10.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	120			120	< 235 colonies/ 100 mL
pH	units	7.18	7.12		7.18	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (In Lake Michigan)
Nitrate (NO_3) ✱	mg/L	3.96	3.6		3.6 * ~~3.96~~	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	0.8		<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other Conductivity			0.194		0.194	
Other						

* YSI DATA

✱ TURKEY BARNS BEING CLEANED OUT

Chemical Monitoring Work Sheet

Date 11-9-06

Time 12:20 PM

Stream Name and Site ID 7 PATOKA RIVER

Air Temp °C

Water Temp 12.09 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [x] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2 (YSi)	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	88%	88%		88%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	9.5	9.6		9.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	60			60	< 235 colonies/ 100 mL
pH	units	7.56	7.53		7.56	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0	1.33		1.33 * ~~0~~	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	8.5		<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY			0.180		0.180	
Other ______						

* YSi DATA

Chemical Monitoring Work Sheet

Date 11-9-06

Time 12:55 pm

Stream Name and Site ID 10 Unnamed Tributary

Air Temp °C

Water Temp 15.75 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [x] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

YSI

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	105%	96%		105%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10.5	9.5		10.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	160			160	< 235 colonies/ 100 mL
pH	units	7.48	7.24		7.48	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	>4.4	9.3		* 9.3	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	4.6		<15	
Orthophosphate	mg/L	0.5			0.5	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY			0.253		0.253	
Other						

* YSI DATA

Date 11-9-06	Chemical Monitoring Work Sheet	Air Temp °C
Time 1:30 PM	Stream Name and Site ID 9 Leistner Creek	Water Temp 14 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [x] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2 (YSI)	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	101	103.0		101	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10.5	10.3		10.5	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	80			80	< 235 colonies/ 100 mL
pH	units	7.38	7.23		7.38	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	7.04	5.0		5.0 *	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	3.0		<15	
Orthophosphate	mg/L	0.5			0.5	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other Conductivity			0.238		0.238	
Other ______						

* YSI DATA

Chemical Monitoring Work Sheet

Date 11-9-06

Time 2:10PM

Stream Name and Site ID 5 Pinnick Creek

Air Temp °C

Water Temp 14.85 °C

Current Weather: [✓] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [✓] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	103	103		103	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10.5	10.43		10.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	100			100	< 235 colonies/ 100 mL
pH	units	7.69	7.62		7.69	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	2.64	3.48		* 3.48	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	1.4		<15	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY			0.211		0.211	
Other						

* YSI DATA

Chemical Monitoring Work Sheet

Date	11-9-06
Time	2:45
Stream Name and Site ID	8 Polson Creek
Air Temp	°C
Water Temp	14.14 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [ ] Clear/Sunny [x] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2 (YSI)	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	99%	100.1		99%	Avg > 5 mg/L
	mg/L	10.0	10.3		10.0	> 4 mg/L; > 7 mg/L for trout
Avg DO (original) − DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/100 mL	20			20	< 235 colonies/100 mL
pH	units	7.37	7.35		7.37	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp = Temperature Change	°C					< 5° F; < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	3.52	5.25		5.25*	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	2.9		<15	
Orthophosphate	mg/L	0.5			0.5	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY			0.233		0.233	
Other ______						

* YSI DATA

Date 11-9-06	Chemical Monitoring Work Sheet	Air Temp °C
Time 6PM	Stream Name and Site ID 8 DUPLICATE IN LAB	Water Temp NA °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation					Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	NA			NA	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	NA			NA	< 235 colonies/ 100 mL
pH	units	7.29			7.29	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	3.96			3.96	< 44 mg/L
Transparency (Tube)	cm	NA			NA	none
Turbidity (from chart use in database entry)	NTU/JTU	NA			NA	
Orthophosphate	mg/L	0.4			0.4	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Date 11-9-06	# Chemical Monitoring Work Sheet	Air Temp °C
Time 5:30 PM	Stream Name and Site ID BLANK	Water Temp °C

Current Weather: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☐ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation					Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	NA			NA	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	NA			NA	< 235 colonies/ 100 mL
pH	units	NA			NA	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	0			0	< 44 mg/L
Transparency (Tube)	cm	NA			NA.	none
Turbidity (from chart use in database entry)	NTU/JTU	NA			NA	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other ______						
Other ______						

Chemical Monitoring Work Sheet

Date 11-10-06

Time 8:45 AM

Stream Name and Site ID 16 Calumet Run

Air Temp °C

Water Temp 12.67 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3 (YSI)	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	53%		53.6	53%	Avg > 5 mg/L
	mg/L	5.5	6.0	5.75	5.75	> 4 mg/L > 7 mg/L for trout
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	100			100	< 235 colonies/ 100 mL
pH	units	7.0		7.06	7.0	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	0.97		3.4	3.4 *	< 44 mg/L
Transparency (Tube)	cm	42			42	none
Turbidity (from chart use in database entry)	NTU/JTU	18		8.3	18	
Orthophosphate	mg/L	0.8			0.8	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY				0.260	0.260	
Other						

* YSI DATA

Date 11-10-06	Chemical Monitoring Work Sheet	Air Temp °C
Time 9:25	Stream Name and Site ID 14 Patoka River	Water Temp 12.46 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3 (YSI)	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	79%		83.2	79%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	8.5	8.5	8.86	8.5	
Avg DO (original) – DO after 5 days BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	140			140	< 235 colonies/ 100 mL
pH	units	7.28		7.32	7.28	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					<.04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	2.2		2.96	2.96*	< 44 mg/L
Transparency (Tube)	cm	42			42	none
Turbidity (from chart use in database entry)	NTU/JTU	18		14.8	18	
Orthophosphate	mg/L	0.30			0.30	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other Conductivity				0.196	0.196	
Other ______						

 www.HoosierRiverwatch.com

* YSI DATA

Chemical Monitoring Work Sheet

Date 11-10-06

Time 9:45 AM

Stream Name and Site ID 14A Beaver Creek

Air Temp °C

Water Temp 12.48 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3 (YSI)	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	92%		92.3	92%	Avg > 5 mg/L
	mg/L	10		9.84	10.0	> 4 mg/L; > 7 mg/L for trout
Avg DO (original) – DO after 5 days = BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	60			60	< 235 colonies/ 100 mL
pH	units	7.25		7.16	7.25	Avg 6-9
Temp at Your Site – Upstream (1 mi) Temp = Temperature Change	°C					< 5° F; < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	3.1		4.1	4.1 *	< 44 mg/L
Transparency (Tube)	cm	>60				none
Turbidity (from chart use in database entry)	NTU/JTU	<15		10.0	<15	
Orthophosphate	mg/L	0.5				none
Ammonia Nitrogen	mg/L	0				.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY				0.166	0.166	
Other ______						

* YSI DATA

Date 11-10-06	Chemical Monitoring Work Sheet	Air Temp °C
Time 10:20 AM	Stream Name and Site ID 13 Patoka River-Seitz Bridge	Water Temp 12.55 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2 YSI	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	88%	88.6		88%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	9.5	9.44		9.5	
Avg DO (original) − DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	40			40	< 235 colonies/ 100 mL
pH	units	7.46	7.45		7.46	Avg 6-9
Temp at Your Site − Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					<.04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	1.1	2.3		2.3 *	< 44 mg/L
Transparency (Tube)	cm	52			52	none
Turbidity (from chart use in database entry)	NTU/JTU	17	12.7		17	
Orthophosphate	mg/L	0			0	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY			0.193		0.193	
Other ______						

* YSI DATA

Date 11-10-06	Chemical Monitoring Work Sheet	Air Temp °C
Time 10:15 AM	Stream Name and Site ID 11 Teder Creek	Water Temp 13 °C

Current Weather: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

Weather in past 48 hrs: [x] Clear/Sunny [ ] Overcast [ ] Showers [ ] Rain (Steady) [ ] Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	102	100.4		102%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	9.5	10.48		9.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L					none
E. Coli	colonies/ 100 mL	60			60	< 235 colonies/ 100 mL
pH	units	7.53	7.54		7.53	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C					< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (in Lake Michigan)
Nitrate (NO_3)	mg/L	13.2	7.4		7.4 *	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15	1.6		<15	
Orthophosphate	mg/L	0.6			0.6	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY			0.254		0.254	
Other						

* YSI DATA

Chemical Monitoring Work Sheet

Date 11-10-06	Air Temp °C
Time 12:15 PM	Water Temp 13.29 °C
Stream Name and Site ID 12 Beaver Creek	

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2	Sample 3 (YSI)	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	98%		97.4	90%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	9.5	9.5	10.2	9.5	
Avg DO (original) — DO after 5 days BOD 5-day (difference)	mg/L	—	—	—	—	none
E. Coli	colonies/ 100 mL	40			40	< 235 colonies/ 100 mL
pH	units	7.76			7.76	Avg 6-9
Temp at Your Site — Upstream (1 mi) Temp Temperature Change	°C	—	—	—	—	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					<.04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	0.53		2.23	2.23	< 44 mg/L
Transparency (Tube)	cm	>60			>60	none
Turbidity (from chart use in database entry)	NTU/JTU	<15		4.4	<15	
Orthophosphate	mg/L	0.5			0.5	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other Conductivity				0.138	0.138	
Other						

* YSI DATA

Date 11-10-06	Chemical Monitoring Work Sheet	Air Temp °C
Time 12:50 PM	Stream Name and Site ID 15 Jasper Lake Outfall	Water Temp 13.11 °C

Current Weather: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

Weather in past 48 hrs: ☑ Clear/Sunny ☐ Overcast ☐ Showers ☐ Rain (Steady) ☐ Storm (Heavy)

	Units	Sample 1	Sample 2 (YSI)	Sample 3	Average	State Standard
Dissolved Oxygen (DO)	% Saturation	99%	100.4		99%	Avg > 5 mg/L > 4 mg/L > 7 mg/L for trout
	mg/L	10.5	10.57		10.5	
Avg DO (original) – ~~DO after 5 days~~ BOD 5-day (difference)	mg/L	–	–	–	–	none
E. Coli	colonies/ 100 mL	20			20	< 235 colonies/ 100 mL
pH	units	7.80	7.90		7.80	Avg 6-9
Temp at Your Site – ~~Upstream (1 mi) Temp~~ Temperature Change	°C	–	–	–	–	< 5° F < 2° F in a trout stream
Total Phosphate	mg/L					< .04 mg/L (In Lake Michigan)
Nitrate (NO_3)	mg/L	1.98	3.25		3.25 *	< 44 mg/L
Transparency (Tube)	cm	48			48	none
Turbidity (from chart use in database entry)	NTU/JTU		3.9		18	
Orthophosphate	mg/L	0.5			0.5	none
Ammonia Nitrogen	mg/L	0			0	.076 mg/L (at pH 7, 20°C)
Total Solids	mg/L					
Other CONDUCTIVITY			0.191		0.191	
Other ______						

* YSI DATA

PATOKA RIVER PROJECT

Date 5/9/2008 Time 10:05am

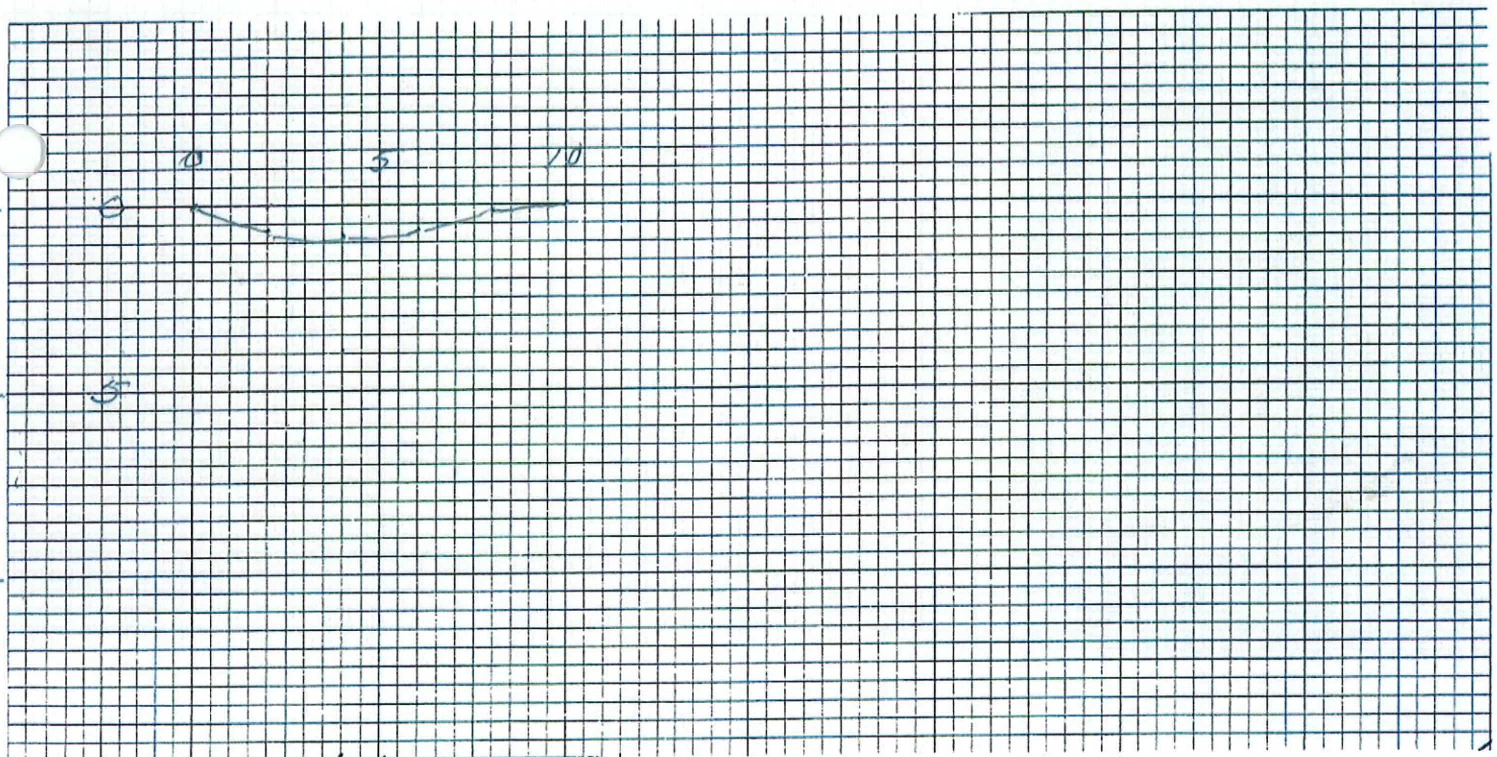
Stream Name Cane Creek

Site ID 2

Velocity/Average 0.69 ft/s

CFS 4.31

Channel Cross-section:



2/.65

4/.8

[illegible]/.6

8/.025

10/

.52

Q = AV

~~3.5[illegible]~~

6.24 x .69 = 4.306

PATOKA RIVER PROJECT

Date 5/9/[illegible] Time 10:46am

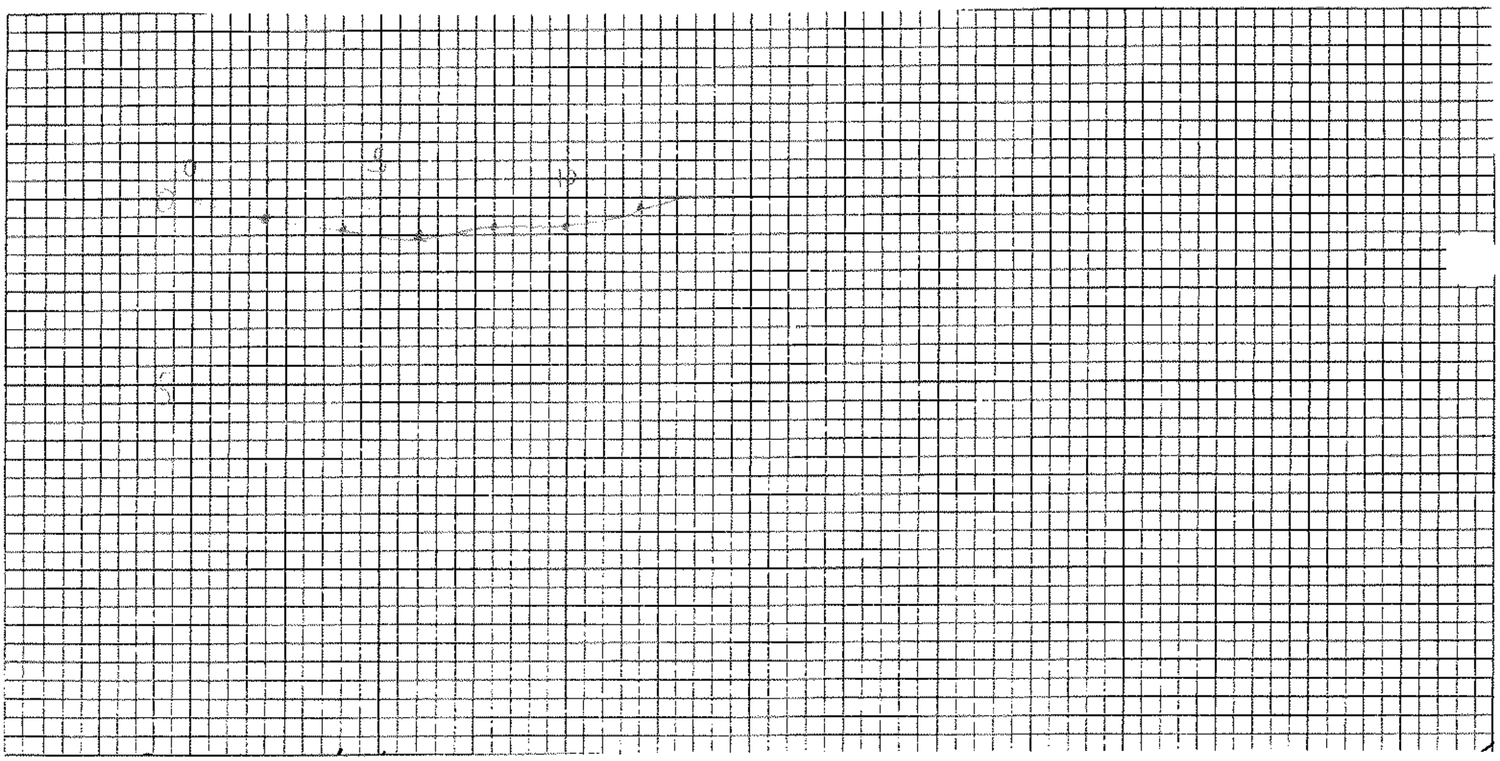
Stream Name Dillon

Site ID 3

Velocity/Average 0.33 ft/s

CFS 2.86

Channel Cross-section:



2/0.5

4/0.6

6/ 1.0

8/ 0.[illegible]

10/ 0.7

12/ 0.[illegible]

13

0.667

8.671 x .33 = 2.86

PATOKA RIVER PROJECT

Date 5/9/2006 Time 11:15 am

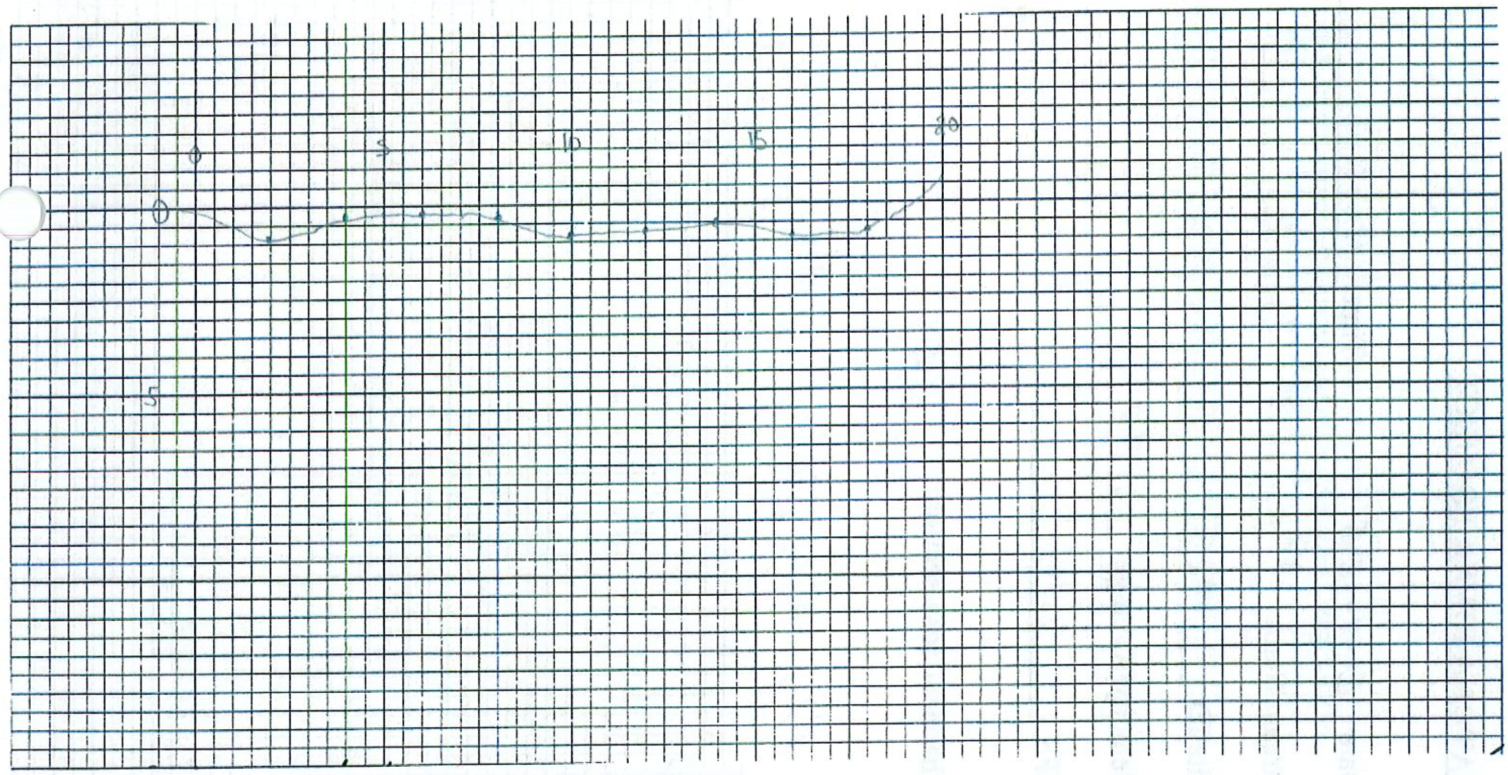
Stream Name Davis Creek

Site ID 4

Velocity/Average 0.47 ft/s

CFS 5.66 ft^3/s

Channel Cross-section:



2/0.8	12/0.7	20
4/0.3	14/0.5	0.6022
6/0.3	16/0.8	
8/0.48	18/0.74	
10/0.8		

PATOKA RIVER PROJECT

Date 6-1-06 Time 9:20

Stream Name Piersick Creek

Site ID #5

Velocity/Average 0.32

CFS 2.14

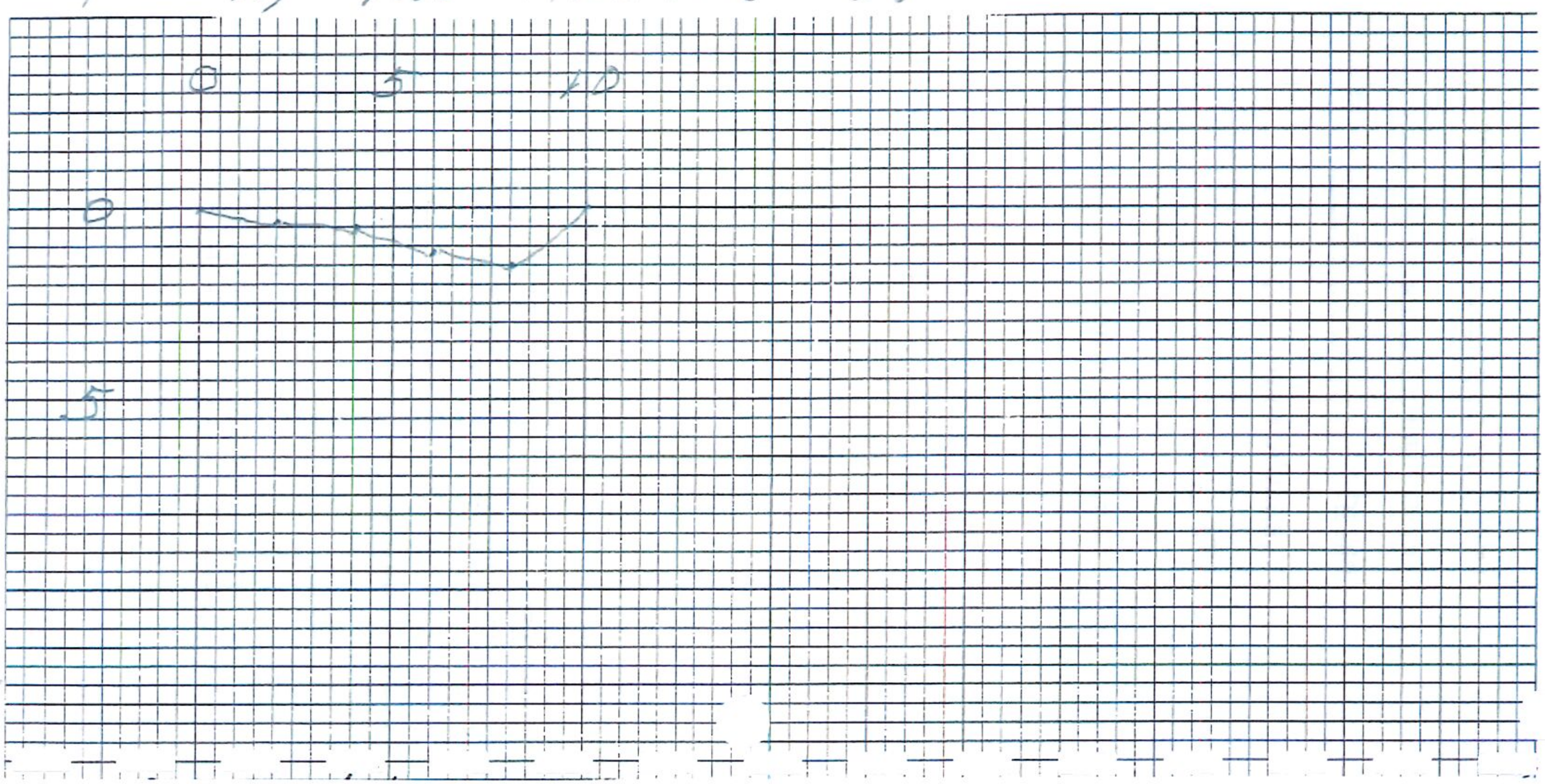
Gravel/Rock

Channel Cross-section: Q=AV

A = 6.68

0/0 2'/.3 4'/.52 6'/1.02 8'/1.5 10'/0

.668



PATOKA RIVER PROJECT

Date 5/9/2006 Time 11:46am

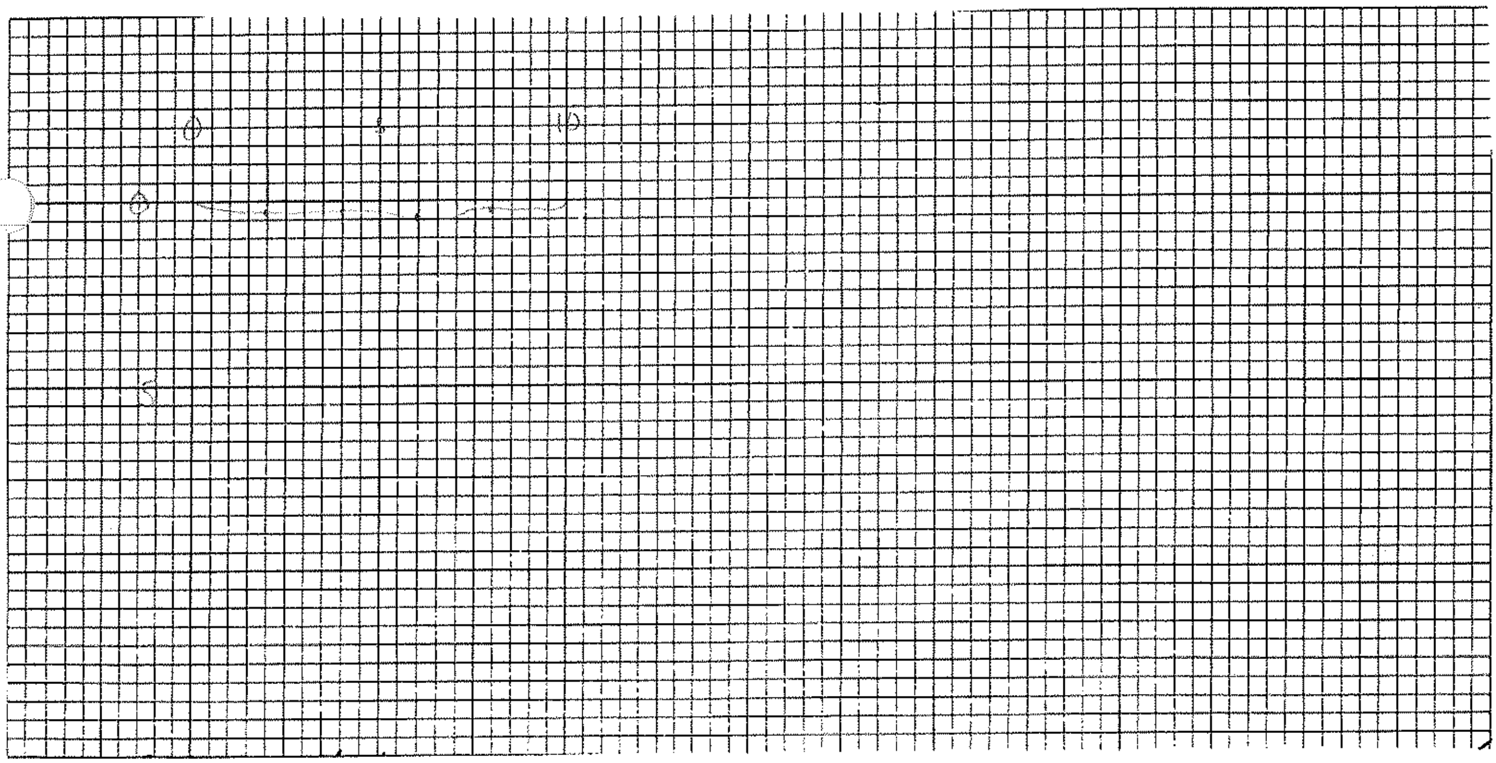
Stream Name Sugar Creek

Site ID 6

Velocity/Average 0.33 ft/s

CFS 0.89

Channel Cross-section:



2/.2 10

4/.2 .27

6/.24

[illegible]/.2

PATOKA RIVER PROJECT

Date 6-1-06 Time 9:55

Stream Name Folsom

Site ID #8

Velocity/Average 0.47

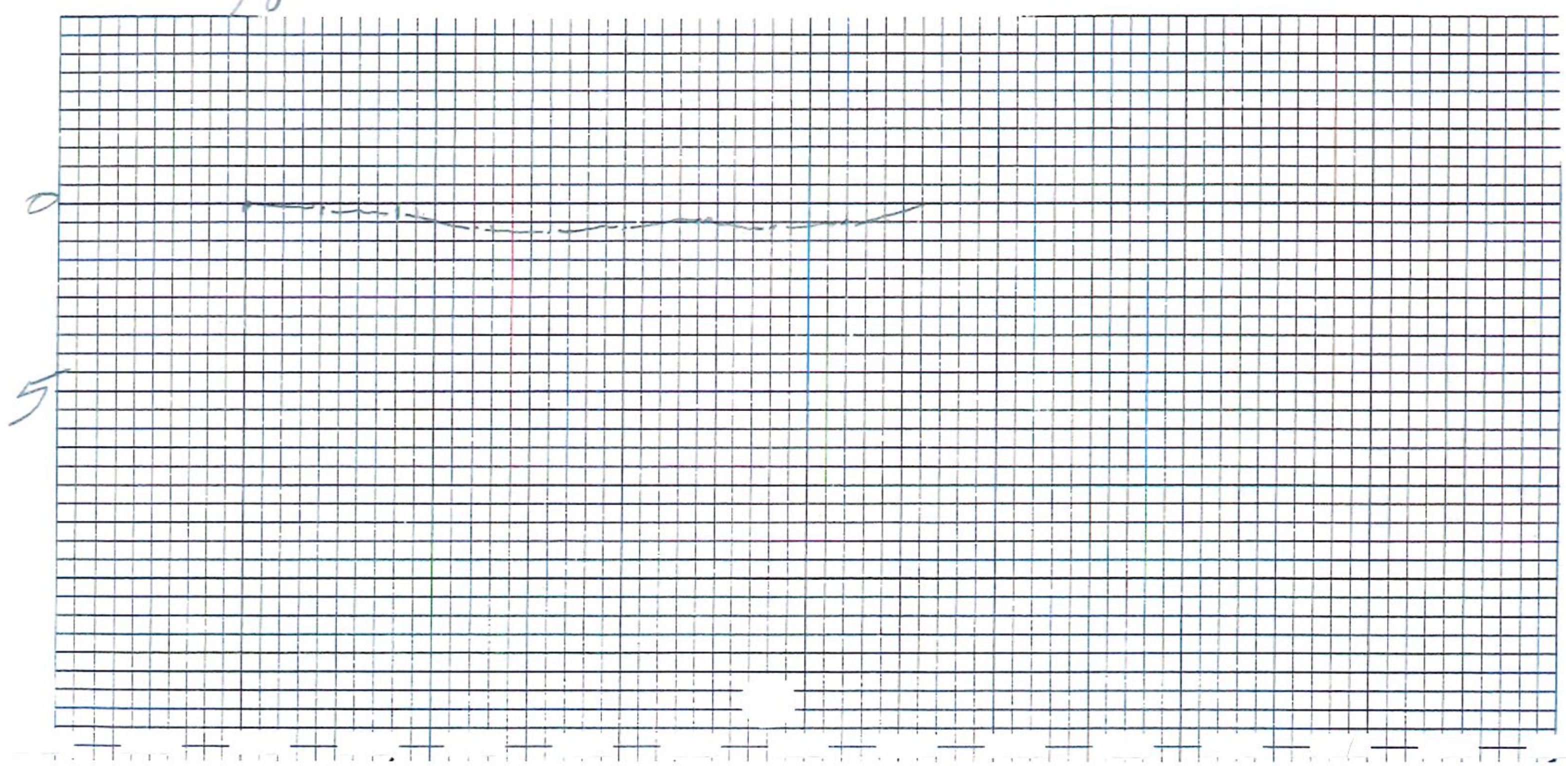
CFS 4.19

Gravel / silt

Channel Cross-section:

.5 x 18 = 8.92

0/0 2/.3 4/.36 6/.6 8/.8 10/.76 12/.5 14/.64 16/.5 18/0



PATOKA RIVER PROJECT

Date 5/9/06 Time 1:50

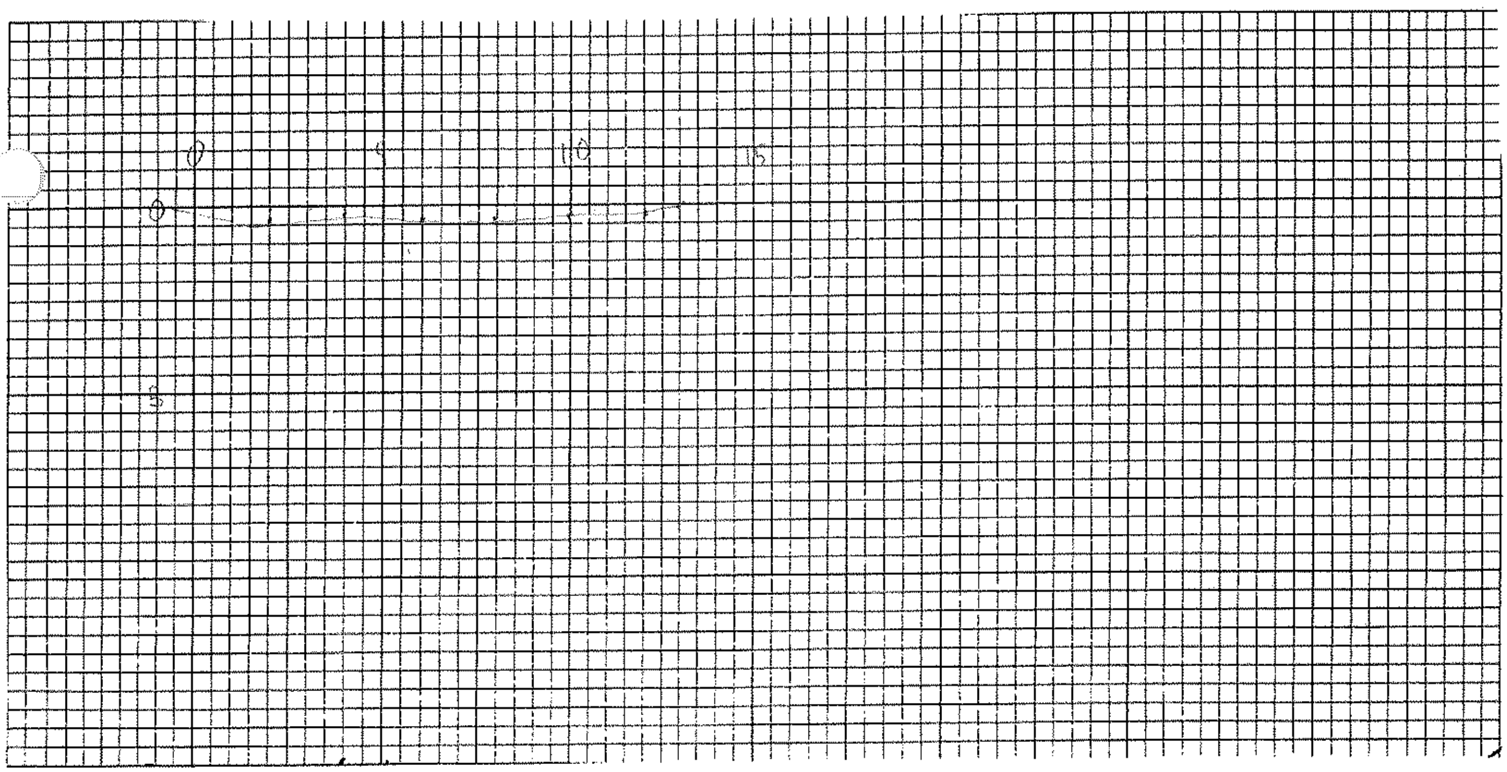
Stream Name Leistner

Site ID 9

Velocity/Average 0.20

CFS 0.728

Channel Cross-section:



2'/.38 8'/.30 13

4'/.15 10'/.30 0.28

'/.30 12'/.25

PATOKA RIVER PROJECT

Date 5/9/06 Time 1:04

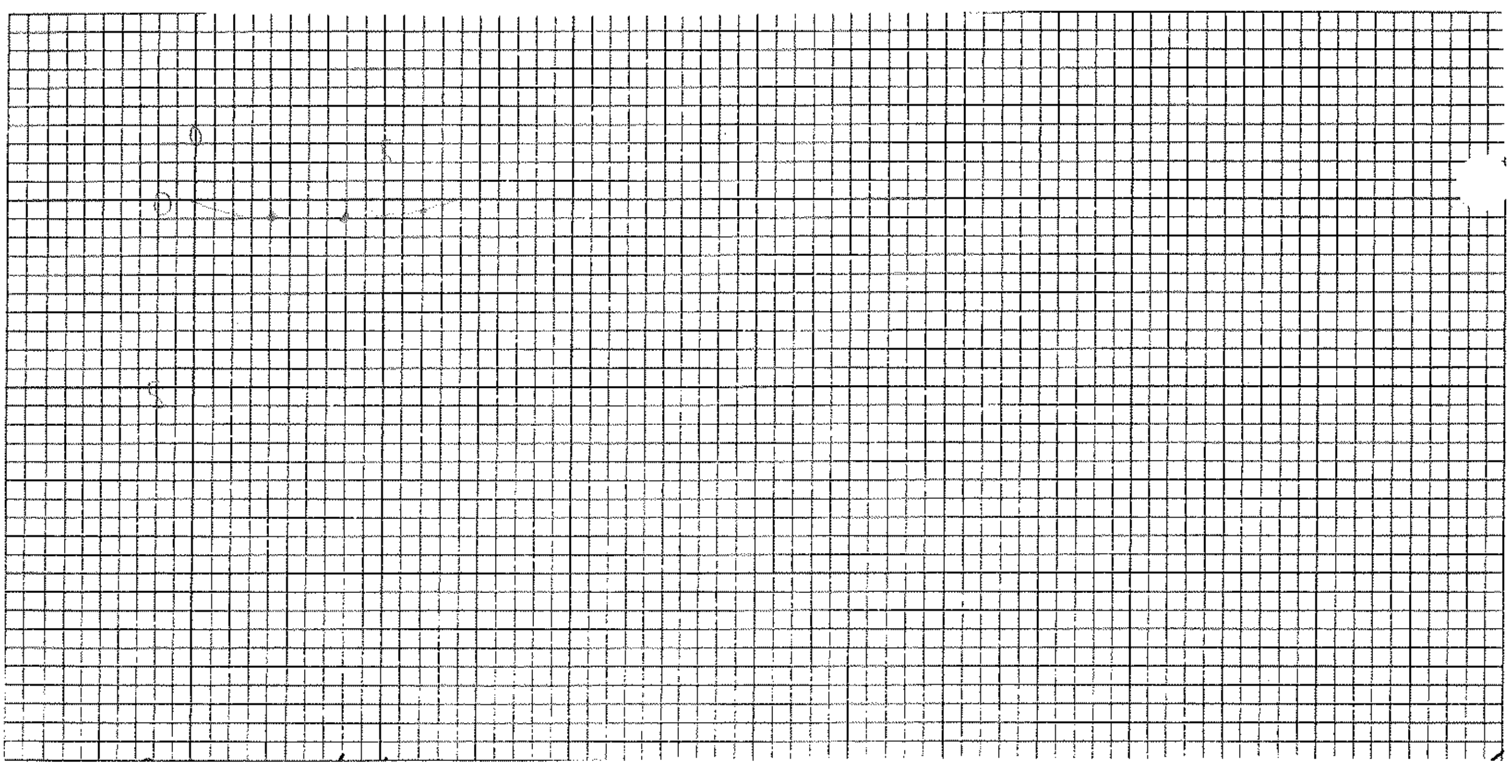
Stream Name Wolf Creek

Site ID 10

Velocity/Average 0.14

CFS 0.36

Channel Cross-section:



2/.4 2

4/.4 0.3

6/.3

PATOKA RIVER PROJECT

Date 6-1-06 Time 10:25

Stream Name Teder

Site ID #11

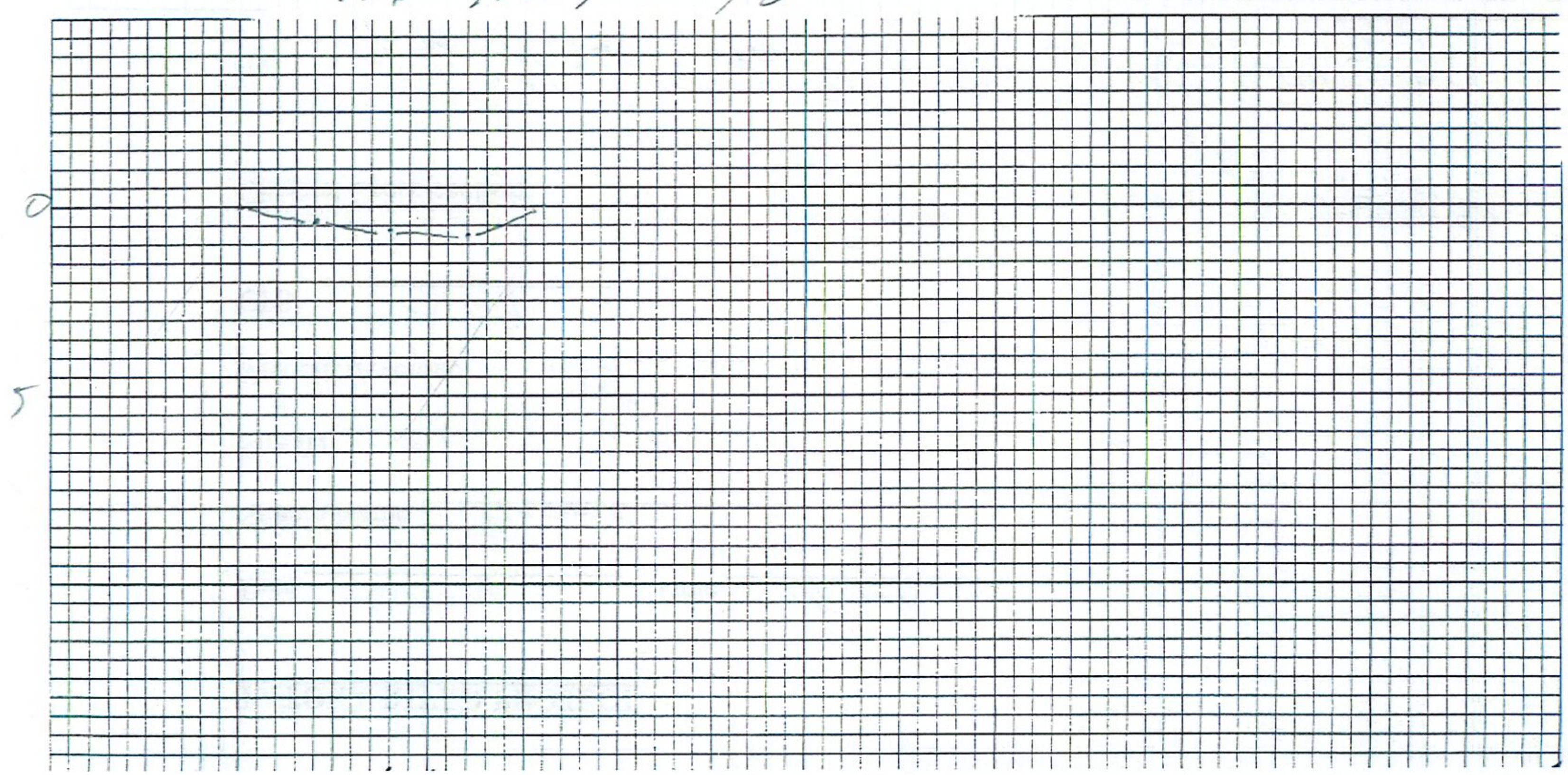
Velocity/Average .19

CFS 0.66

Gravel/Rock

Channel Cross-section:

0/0 2/.4 4/.6 6/.74 8/0 .435 x 8 = 3.48



PATOKA RIVER PROJECT

Date 6-1-06 Time 10:50

Stream Name Beaver

Site ID #12

Velocity/Average .35

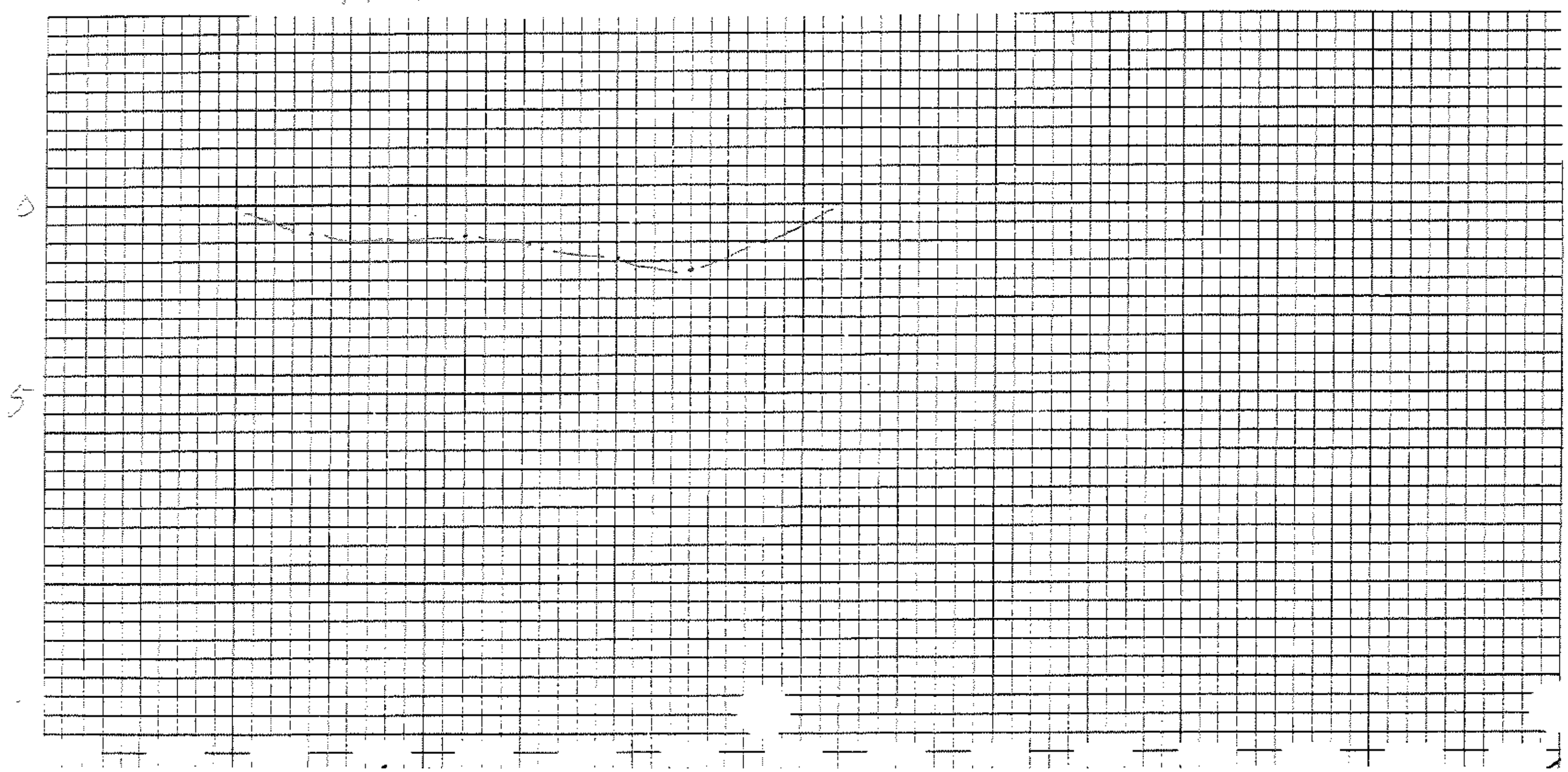
CFS 7.69

Channel Cross-section:

Jam 9/5i.t

1.37 x 16 = 21.96

0/0 2/.74 4/.96 6/.76 8/1.16 10/1.44 12/1.72 14/1.0 16/0



PATOKA RIVER PROJECT

Date 6-1-06 Time 11:15

Stream Name Jasper

Site ID #15

Velocity/Average 0.05

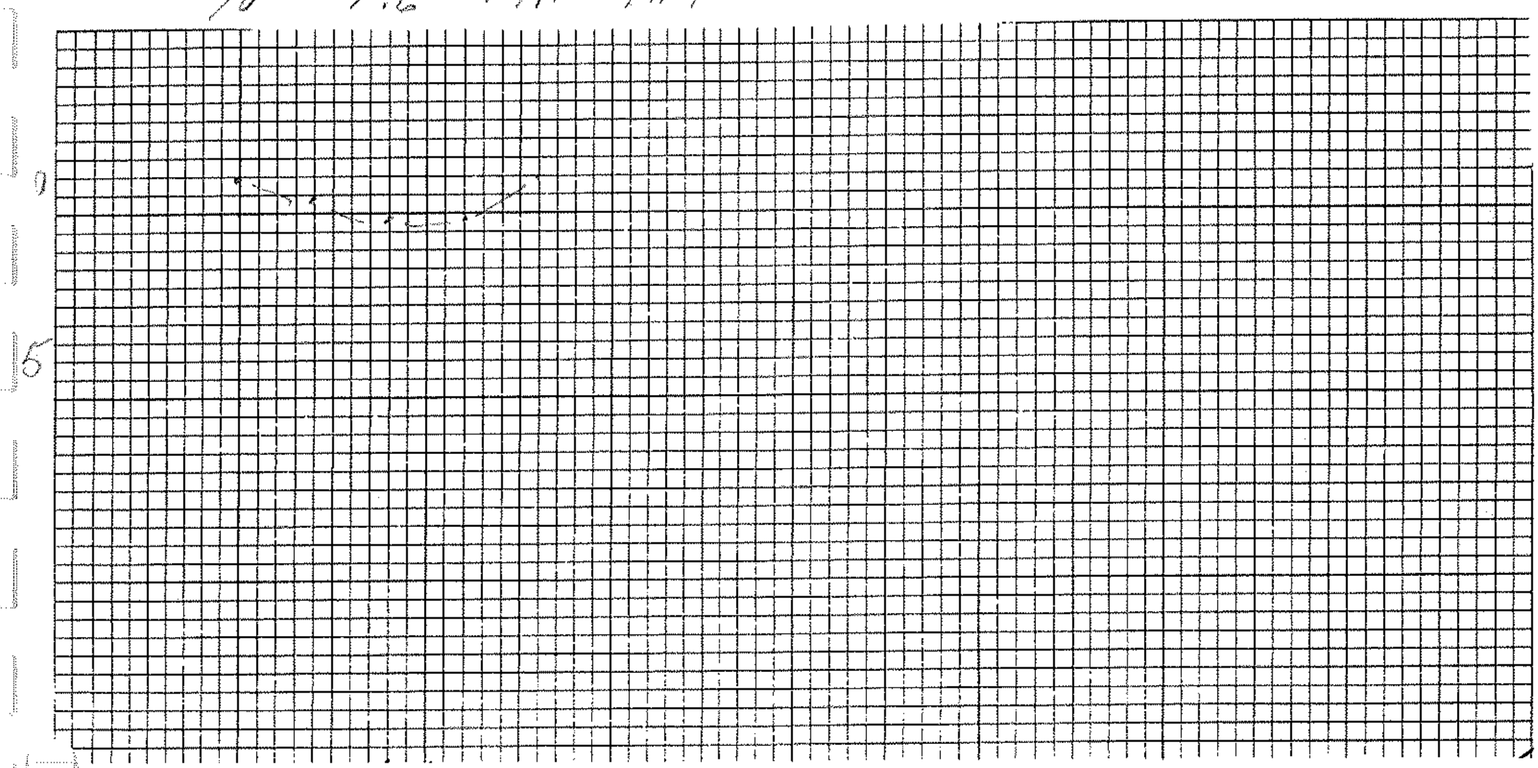
CFS 0.28

sand/silt

Channel Cross-section:

.71 x 8 = 5.68

0/0 8/.6 4/1.1 6/1.14 8/0



PATOKA RIVER PROJECT

Date 6-1-06 Time 1:30

Stream Name Calumet

Site ID #16

Velocity/Average .52

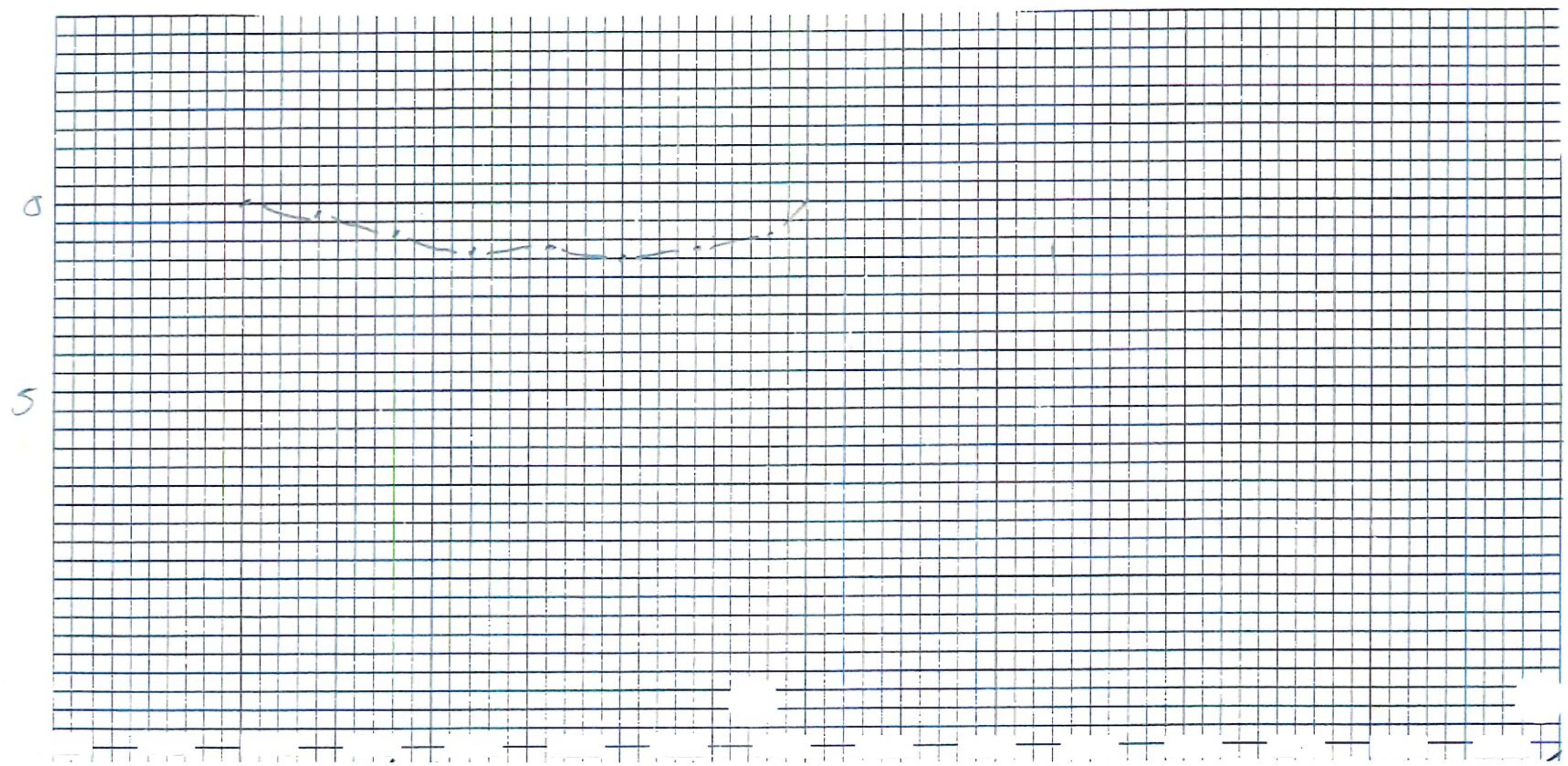
CFS 7.23

Silt

Channel Cross-section:

0.9275 × 15 = 13.91

0/0 2/.3 4/.9 6/1.32 8/1.2 10/1.5 12/1.3 14/0.9 15/0



Appendix C
Quality Assurance Project Plan

QUALITY ASSURANCE PLAN

FOR

PATOKA RIVER WATERSHED
DUBOIS CO., INDIANA
ARN A305-4-129

Prepared by

Four Rivers RC&D Area, Inc.
and the
Dubois Co. Soil & Water Conservation District
for

Indiana Department of Environmental Management
Office of Water Management
Watershed Management Section

February 17, 2005

Approved by:

Dubois Co. SWCD:	______________________ Jack Welp, Chair, SWCD	______________________ Date
Project Mgr	______________________ Judy Gray, Pres. Four Rivers RC&D, Inc.	______________________ Date
WMS QA Officer	______________________ Betty Ratcliff	______________________ Date
WMS Sec. Chief	______________________ Linda Schmidt	______________________ Date
Planning Branch Chief	______________________ Martha Clark Mettler	______________________ Date

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A Location Maps:
1. Location of project area in state of Indiana
2. Sample site locations within project area

B Hoosier Riverwatch Volunteer Stream Monitoring Training Manual instructions (Hach Surface Waters Kit) including chemical monitoring worksheet for recording data

Introduction

The Dubois Co. Soil & Water Conservation District, in cooperation with Four Rivers Resource Conservation & Development Area, Inc., has received a Section 319 grant from the Indiana Department of Environmental Management to assist with the development of a watershed mgt. plan for Patoka River. The grant will be used in partnership with other assistance afforded by the Soil & Water Conservation District, IDNR- Division of Soil Conservation; USDA Natural Resources Conservation Service; concerned citizens; and local representatives of government and business. The SWCD meets regularly to plan activities for improving the overall health of the watershed, and quality of life for the people who live and work there.

Section I: Project Description

Historic Background

The watershed area covered by this QAPP drains approximately 80,000 acres of Dubois County, IN. This portion of hydrologic unit code 05120209 lies between Patoka Lake Reservoir and the city of Jasper, and is the 11 digit HUC 05120209020. The 2004 303(d) list shows Patoka Basin sub-watersheds as impaired for e-coli. The significance of this watershed lies in the fact that Jasper withdraws and treats drinking water from the Patoka River just upstream of the city. At least 37 animal feeding operations exist in this watershed. The grant associated with this QAPP was written out of concern for the drinking water resource and overall watershed health.

Project Objectives

The main objective of the grant project is to gather and research data on the watershed and to construct a Watershed Management Plan to prioritize future land treatment projects in the area.

Project Site

See Appendix A: Map 1 and Map 2.

Sampling Points

See Map 2 for sampling locations. Description of sampling points:

1. 05120209020010- Patoka R.-Lost Ridge; S. Cuzco Rd. first sampling point downstream of Patoka Lake Reservoir
2. 05120209020020- Dillon Cr.-Cane Cr; E. Cuzco Rd. southernmost tributary originating in Orange Co.
3. 05120209020020- Dillon Cr.-Cane Cr; Cuzco-Norton Rd. northern tributary originating in Orange Co.
4. 05120209020030- Davis Cr; W. Cuzco Rd. X SR 56
5. 05120209020050- Poison Cr.- Bauer Cr; Dubois-Patoka Lake Rd., eastern tributaries
6. 05120209020030- Davis Cr; SR 56, northern tributary
7. 05120209020040- Patoka R.- Dubois; Dubois Rd.
8. 05120209020050- Poison Cr.- Bauer Cr; N. Celestine Rd. western tributaries
9. 05120209020040- Patoka R.-Dubois; SR 545, tributary north of town of Dubois
10. 05120209020040- Patoka R.-Dubois; SR 56, western tributary
11. 05120209020070- Beaver Cr.; Jasper-Dubois Rd. east tributary
12. 05120209020070- Beaver Cr.; Jasper-Dubois Rd. outfall from lake
13. 05120209020060- Patoka R.- Lond Ditch; CR 175 E, downstream of NPDES
14. 05120209020060- Patoka R.- Lond Ditch; CR 300 N, main channel
15. 05120209020080- Calumet Run; Jasper-Dubois Rd. south tributary

16.05120209020080- Calumet Run; Jasper-Kellerville Rd., last tributary before water plant intake.

Sample sites will be further described by latitude/longitude obtained from GPS or Internet website, i.e. www.topozone.com

Sampling Design

Sampling will be accomplished spring and fall of 2005 at each site (see Map 2). Water temperature, dissolved oxygen, dissolved oxygen saturation, *E.coli*, pH, orthophosphate, nitrate, ammonia nitrogen and turbidity readings will be measured at each site - reflecting both high and low flow conditions. . Data will be reduced and entered in a database system for ease of analysis. All sites are located near bridges or roads, affording access to the monitoring points.

Project Schedule

April 1, 2005- 1st round of monitoring commences; samples collected from 16 sites within the watershed and analyzed for dissolved oxygen, DO saturation, e. coli, pH, orthophosphate, nitrate, ammonia nitrogen and turbidity.

May 1 thru June 30, 2005- data reduced and entered into database; water quality reports generated and distributed to interested parties; Data report submitted to IDEM; internal audit by SWCD personnel.

September 1, 2005- 2nd round of sampling commences; samples collected from 16 sites within the watershed and analyzed for dissolved oxygen, DO saturation, e. coli, pH, orthophosphate, nitrate, ammonia nitrogen and turbidity.

October 1 thru November 30, 2005- data reduced and entered into database; water quality reports generated and distributed to interested parties; final Data report submitted to IDEM; internal audit by SWCD personnel.

Section II: PROJECT ORGANIZATION & RESPONSIBILTY

The QA Manager for IDEM's Watershed Management Section is responsible for reviewing and approving the Quality Assurance Project Plan (QAPP) and reviewing QA reports for this project.

The IDEM QA Manager is: Betty Ratcliff
100 N Senate Ave.
PO Box 6015
Indianapolis, IN 46206-6015
317/234-1424
bratclif@dem.state.in.us

The IDEM project manager is responsible for monitoring the project's progress and processing invoices and match forms.

The IDEM Project Manager is: Pamela Brown
100 N Senate Ave.
PO Box 6015
Indianapolis, IN 46206-6015
317/232-6566
lbieberi@dem.state.in.us

Four Rivers Resource Conservation & Development Area Inc. is the contractor responsible for financial and administrative oversight of this project. The RC&D is a 501(c) 3 organization managed by a board of officers. The RC&D Coordinator is responsible for the day-to-day operation of the group.

The president of Four Rivers RC&D is:
Responsible for overall leadership of RC&D
Judy Gray
112 S. Lakeview Dr.
Petersburg, IN 47567
812/354-6120
rivers4@sigecom.net

The coordinator of Four Rivers RC&D is:
Dave Elgin
112 S. Lakeview Dr.
Petersburg, IN 47567
812/354-6120
rivers4@sigecom.net

Sampling will be accomplished by Practical Resource Management:
Joe Craig
2156 East State Rd 356
Petersburg, IN 47567
812-354-3880

Section III: DATA QUALITY AND OBJECTIVES

The following table illustrates the precision, accuracy, and measurement range for dissolved oxygen, DO saturation, *E.coli*, pH, temperature, orthophosphate, nitrate, ammonia nitrogen and turbidity.

Data Quality Objectives for Water Chemistry Measurements

Parameter Measurement	Field Method	Field Precision	Field Accuracy*	Range
Dissolved oxygen, high range	Hach model OX-2P	+/- 20%	+/- 1 mg/L	0 to 17 mg/L
Dissolved oxygen, low range	Hach model OX-2P	+/- 20%	+/- 0.02 mg/L	0.2 to 0.4 mg/L
E.coli	Coliscan easygel	+/- 20%	+/- 100 colonies	0 to TNTC* cfu too numerous to count
PH	Hach EN50081	+/- 20%	+/- 0.2 pH units	0 to 14 pH
Temperature	Hach model 26763,armored	+/- 20%	+/- 0.5 degrees C	-5 to + 45 degrees Celcius
Orthophosphate	Hach model PO-24	+/- 20% " "	+/- 10% " "	0 to 1 mg/L 0 to 5 mg/L 0 to 50 mg/L
Nitrate***	Hach model NI-11	+/- 20% " "	+/- 10% " "	0 to 1 mg/L 0 to 10 mg/L 0 to 50 mg/L
Ammonia Nitrogen	Hach model NI-SA	+/- 20%	+/- 10%	0 to 3.0 mg/L
Turbidity	Turbidity tube	+/- 20%	+/- 10 NTU	0 to 100 NTU

****range used varies according to presence of nitrate in sample*

Precision: Field replications will be collected. Relative Percent Difference (RPD) is the method used for chemical measurements.

$$RPD = \frac{(C - C')}{(C + C')/2} \times 100\%$$

Accuracy: The values in the water chemistry table above represent the best accuracy possible with the methods used. Accuracy in the field will be done by measured blanks. Strict adherence to these methods will ensure the best possible accuracy in field measurements. See table on page 9.

Completeness: A minimum of 80% completeness will be necessary to meet the goals of the project.

$$\% \text{ completeness} = \frac{\text{(number of valid measurements obtained)}}{\text{(Number of measurements expected)}} \times 100$$

Representativeness: Sites selected are representative of some of the major land uses and conditions in the watershed, which has a diverse topology due to human disturbance.

Comparability: Where possible, comparison with other studies conducted by the City of Jasper Water Department and the town of Dubois Wastewater Management Plant.

Section IV: SAMPLING PROCEDURES

Water chemistry sampling will consist of dissolved oxygen, DO saturation, *E.coli*, pH, water temperature, orthophosphate, nitrate, ammonia nitrogen and turbidity. Sampling will be accomplished with a Hach Surface Waters test kit, model 27120-00, which meets the Data Quality Objectives for the listed parameters (Table in Section III). The instructions contain a list of reagents, parameters and procedures (Appendix B). The manufacture directions were revised by Hoosier Riverwatch to clarify procedures. Samples will be taken from near midstream; and when possible, samples will be collected at the same time of day during each of the sampling events. Actual water withdrawal from the stream will be accomplished by using a sampling tube.

Sample analysis may be completed on-site, or, samples may be collected in appropriate glass containers for later analysis. Other than dissolved oxygen, DO saturation, temperature, pH and turbidity, which must be done on-site, samples will be placed on ice and analyzed within 24 hours. Samples for E.coli will be collected in the designated containers, transported to the office and incubated, then analyzed.

Section V: CUSTODY PROCEDURES

If analysis is done on-site, then the data will be entered on a field data sheet (Appendix C). If analysis is to be done at the office, samples will be collected in appropriate containers, labeled with site ID, date and time of collection, iced, (except where noted above), and transported. Max Holding Time, Samples should be analyzed within 6 h after sampling and within 2 h from receipt of sample in lab for compliance or 24 h for routine monitoring(Standard Methods, 20th ed Section 9060B): however, a 6 h holding time for all samples is highly recommended (Myers and Sylvester, 1997). Analyses will be completed within 24 hours of collection, if it goes over 24 hours the results should probably be rejected. All results will be entered on field data sheets, which will be maintained at the Four Rivers RC&D office.

Section VI: CALIBRATION PROCEDURES & FREQUENCY

The only equipment requiring calibration is the pH meter. The pH meter will be calibrated using a pH standard of 7.0 before each site is tested. (See Appendix B)

Section VII: ANALYTICAL PROCEDURES

Water chemistry parameters will be analyzed with a Hach Surface Waters Kit for dissolved oxygen, DO saturation, pH, temperature, orthophosphate, nitrate and ammonia nitrogen. *E.coli* bacteria will be analyzed using Coliscan Easygel. The samples will be incubated at 35 degrees C. Turbidity will be measured using a viewing tube marked in centimeter units. Analytical methods specific to each of the chemical tests can be found in Appendix B.

Section VIII: QUALITY CONTROL PROCEDURES

Strict adherence to procedures is paramount.

QC checks for water chemistry	**Frequency**
field replicates	One for every 20 samples
equipment calibration	before sampling each site
lab duplicates	No
reference standards	Yes, pH 7 before sampling each site
control samples	One for every 20 samples
spiked samples	n/a
method blanks	One for every 20 samples
Calibration curves	n/a
spiked duplicates	n/a

Section IX: DATA REDUCTION, VALIDATION & REPORTING

Data validation

The sample technician will review the data for accuracy in mathematics and recording and validate it. Sample results outside of the typical ranges expected for each chemical test (see Appendix B) will be considered outliers, and repeat samples analyzed. If the results of the repeat sample are also out of range, and no extenuating circumstances exist, the results will be considered valid.

Data reduction

Parameter	***unit of field measurement***	***equation used***
dissolved oxygen	drops of reagent	1 drop = 1 mg/L
% d.o. saturation	---------------	read from table
PH	PH units	read directly from meter
Temperature	degrees C	Read directly
Ecoli	colony forming unit (cfu) per 100 mL	100/mL sample x cfu
Phosphate	mg/L	Depends on range
Nitrate	mg/L	Depends on range
Ammonia nitrogen	mg/L	Read directly
Turbidity	Cm	ntu read from table

Data reporting

The data collected under this QAPP will be reported periodically to the SWCD supervisors and staff. Other Farm Service Center staff, including IDNR and USDA-NRCS employees will also have access to the data as needed.

Section X: PERFORMANCE & SYSTEM AUDITS

Oversight of QAPP compliance will be the responsibility of the Dubois Co. SWCD. Judi Brown, a certified Hoosier Riverwatch Volunteer Trainer, will conduct an internal systems audit every six months during the project (see Sec. I, project schedule) Judi will be ensuring that the quality control procedures are being followed. IDEM reserves the right to conduct external audits.

Section XI: PREVENTIVE MAINTENANCE

The sample technician will ensure that all equipment is properly cleaned, stocked with supplies, and maintained. See Appendix B for a list of required materials.

Sample containers, and all glassware will be thoroughly cleaned and stored in accordance with the manufacturer's instructions. See "How to Clean and Care for Equipment" in Appendix B. Cleaning and handling procedures for glassware used in the orthophosphate test will be followed. (see Appendix B) Other glassware not covered under these procedures will be rinsed regularly with isopropyl alcohol and rinsed with distilled water. Out-of-date reagents will be discarded properly. Extra batteries will be kept on-hand for the pH meter.

Section XII: DATA QUALITY ASSESSMENT

Precision

Assessment of Chemical Data

Precision will be calculated using the RPD formula as found in Section III. Precision will be determined every 6 months. If the tests have been repeated with consistent results, the data are accepted. One replicate sample is collected for every 20 samples.

Accuracy/Bias

Assessment of Chemical Data

If the QA checks in Section VIII have been followed, inaccuracy and bias are assumed to be minimal. Using the guidelines in Section III, and Section IX, repeat tests will be done if the results are not within the normal range. However, wide variations may be possible in a watershed of this magnitude If results is between 3 and 5 times the blank contamination the result is (J) estimated. If results is less than 3 times the blank result is (R) rejected. If result is greater than 5 times blank contamination it is not flagged. All data sheets will be reviewed for outliers that have somehow been included among the valid data, and if found, they will be discarded as invalid.

Completeness

As discussed in Section III, the goal is 80% completeness. In this case, the data will be accepted without qualification.

Section XIII: CORRECTIVE ACTION

Adhering to the QA procedures outlined in Sections III and VIII will eliminate systemic and precision problems. However, if a pH reading appears to be out of the normal range for a particular site, the meter will be re-calibrated, and/or the batteries replaced, and the test repeated. For all other tests, if a particular result appears out of range, the sample will be checked for contamination, irregularities, out-of-date reagents, etc. Once this is done, a repeat sample will be analyzed. If the anomaly persists, the results will be accepted.

Section XIV: QUALITY ASSURANCE REPORTS TO MANAGEMENT

All results will be recorded on a computer system, and summarized on a quarterly basis. Quality Assurance progress will be reported to IDEM in each quarterly report. Data and quality assurance will be submitted in a final report to IDEM in hard copy and electronic form.

Section XV: REFERENCES CITED

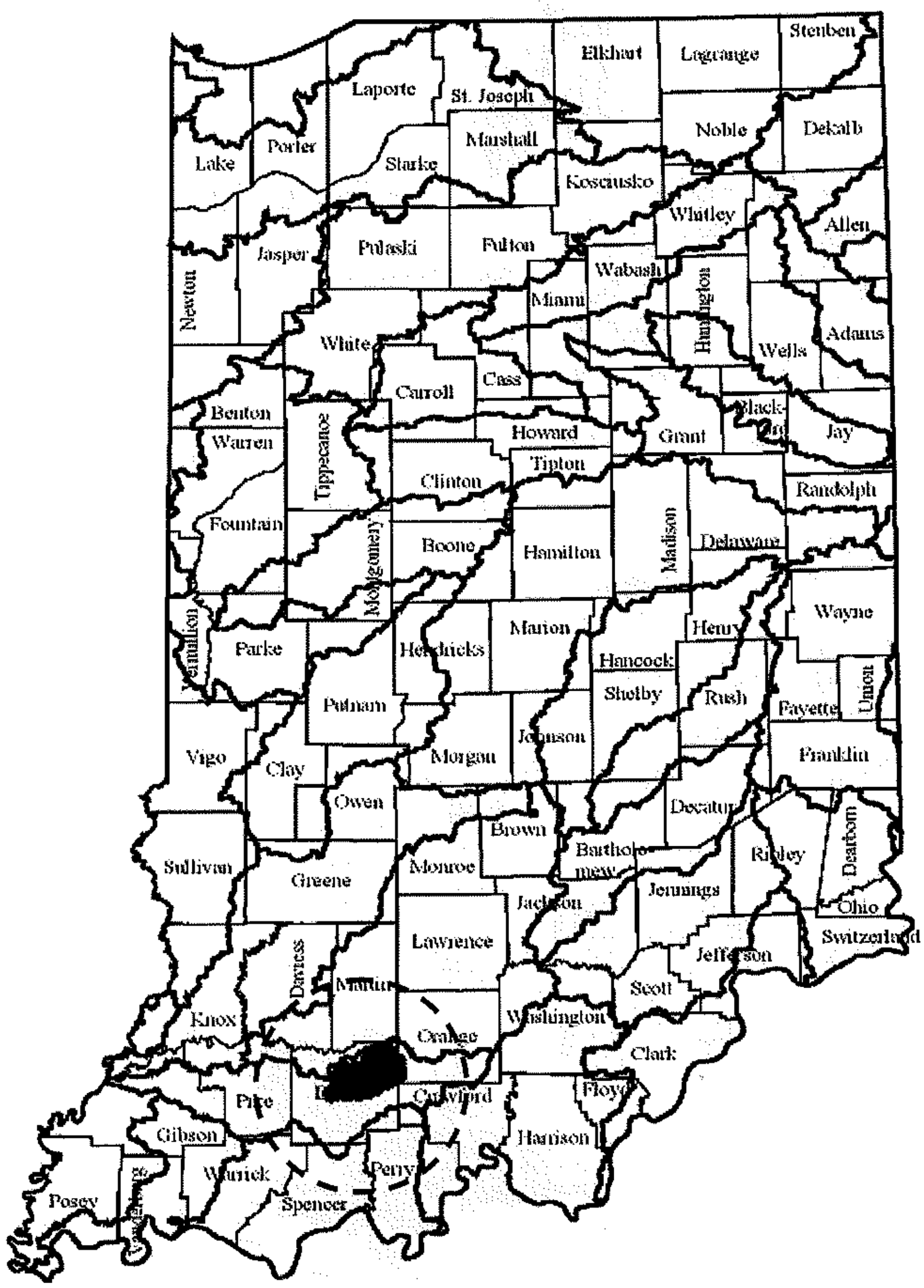
Hartman, Lyn and Mandy Burk. *Volunteer Stream Monitoring Training Manual.* 2nd edition, November 2000 Indiana Dept. of Natural Resources-Division of Soil Conservation and Purdue University Dept. of Agronomy.

Appendices

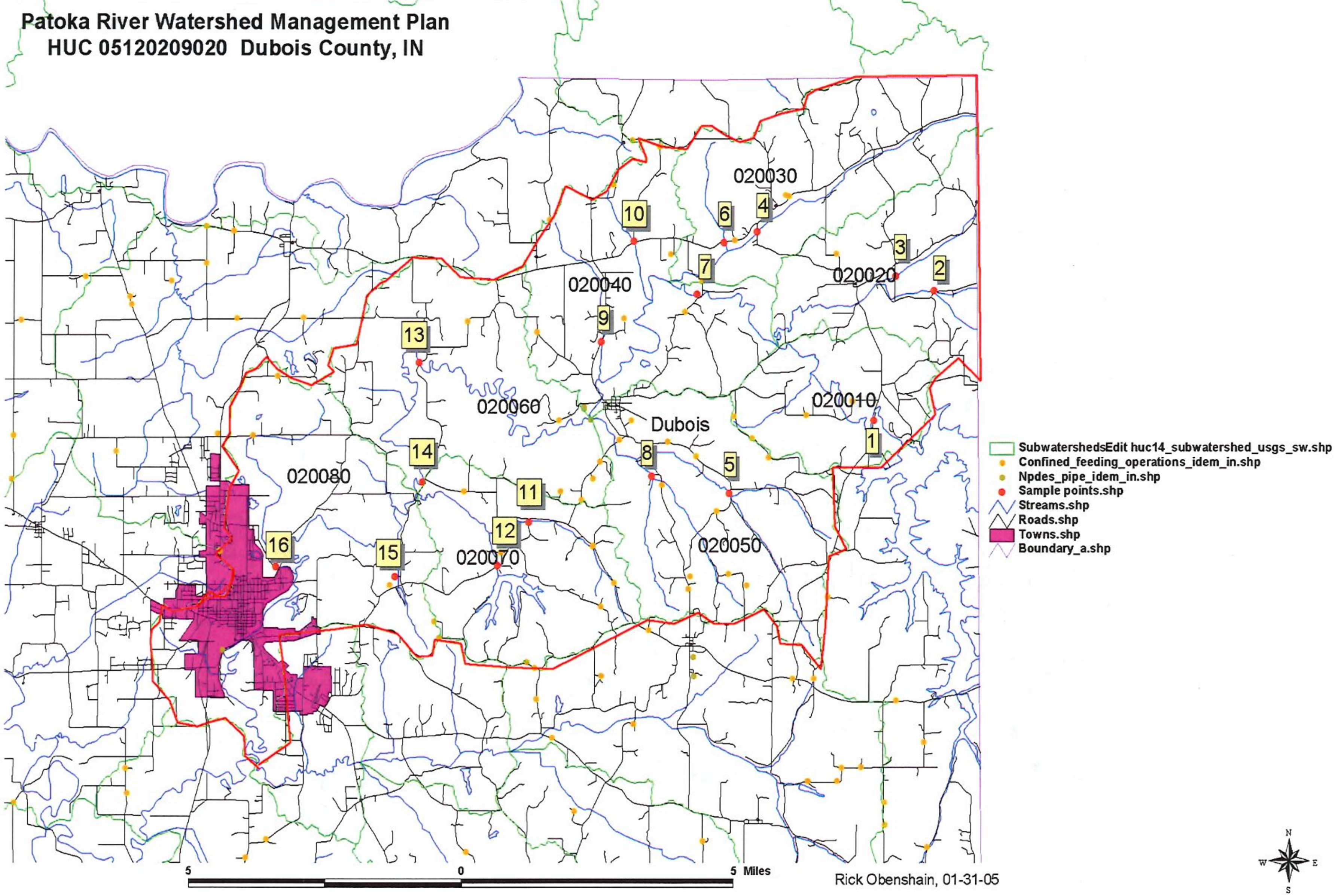
A	Location Maps

B	Hoosier Riverwatch Volunteer Stream Monitoring Training Manual Instructions, including data sheets: advanced chemical

Appendix A, Map 1: location of project area within state of Indiana



Appendix A, Map 2: Sample Site Locations Within Project Area



Appendix D
Endangered & Threatened Species

Endangered Species

Several threatened and endangered species have been identified in the county and may exist in the watershed. Many species are aquatic or depend on the waterways of the watershed for habitat or food. The species, their state designation, preferred habitat, and any known threats specific to the watershed are listed below.

Crustacean

Indiana Crayfish	State Rare

Habitat: The optimum habitat for Indiana Crayfish is medium-sized streams containing riffles and rock pools. The maximum depth is reported as 50 cm and slow-medium flow is preferred. Good habitat streams generally have a minimum forested riparian width of a few meters.

Threats: Coal Mining, Stream channelization and clearing, and otherwise poor water quality threaten the Indiana Crayfish.

Mussels

Habitat: Mussels, in general, require medium to larger rivers with gravel bottoms and a medium to low gradient. The larvae are parasitic on fish and some host specificity exists.

Threats: Sedimentation of gravel beds, low dissolved oxygen, diseases, and no host for larvae.

The following species are known to exist in Dubois County:

Eastern Panshell Pearlymussel	State Endangered
Longsolid	State Endangered
Pyramid Pigtoe	State Endangered
Ohio Pigtoe	State Species of Special Concern
Kidneyshell	State Species of Special Concern

Insects

Cocoa Clubtail	State Endangered

Habitats: Medium-sized rivers with alternating sand and gravel substrate.

Threats: Low dissolved oxygen, sedimentation in substrates and waterways used for egg-laying and larval development.

Fish

Spotted Darter	State Species of Special Concern

Habitat: This species requires large unpolluted streams, spending most of its time in deep riffles, or pools just downstream, where a gravel-rubble bottom predominates, and bottom current velocity is low.

Threats: Channel alteration, sedimentation, reduction in insect populations (95% of its food)

Tippecanoe Darter
Habitat: This little darter prefers riffle areas four to 20 inches deep, in clean rivers and large creeks with a bottom of pea-sized, clean gravel and a high bottom current velocity.

Snakes & Reptiles

Western Cottonmouth State Endangered
Habitat: Swampy flatwood swamps and floodplains. Only reported population in Indiana found at Buffalo Flats

Threats: Habitat alteration, wetland draining

Copperbelly Water Snake State Endangered
Habitat: Shrub swamps, emergent wetlands, and floodplain forests. Also, open waters with shallow edge. Utilizes upland forests during sensitive periods (shedding, birthing)

Threats: draining of wetlands and habitat alterations. Copperbellies often rely on high water table floodplain areas during winter hibernation to reduce the chances of freezing. Fish feed on tadpoles and thus can reduce food supply if introduced to copperbelly habitats.

Plants

Bog Bluegrass State Endangered
Habitat: Bog Bluegrass is found in wet meadows, wet woods, swamps, bogs, and alongside streams. It is often found in association with moss tussocks and alder species. It prefers partially-shaded areas and is absent from completely shaded areas.

Threats: Drainage of wetlands, grazing, and overgrowth through natural succession.

Howe Sedge State Endangered
Habitat: Exists in a variety of open, moist situations in acidic substrates; sphagnum bogs, shrub borders, clearings in wet woods, thickets. Howe Sedge requires partial shade.

Threats: Drainage of wetlands, grazing, and overgrowth through natural succession.

Featherfoil State Threatened
Habitat: Exists in frequently flooded swamps and floodplains. Uproots at some point in life cycle and becomes free floating.

Threats: Wetland draining