

Information Gathering about Nonpoint Sources, Problem Areas and Probable Causes

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U.S. EPA's Definition of Nonpoint Sources (NPS) of Pollution

Diffuse pollution sources

- No single point of origin
- No specific outlet to a receiving stream





Definition of NPS Pollution by IDEM*

Pollution of ground and surface water results from the variety of ways that humans use the land. Unlike pollution from factories and sewage treatment plants (point sources), NPS comes from many diffuse widespread sources. Soil particles, fertilizers, animal manure, pesticides, oil, road salt, fecal material from failing septic systems, pet waste and debris from paved areas are transported over the landscape by storm runoff, snow melt and wind. These pollutants damage aquatic habitat, harm aquatic life, and reduce the capacity of water resources to be used for drinking water and recreation.

*Indiana Department of Environmental Management



Two Categories of Nonpoint Source Pollution

1. Polluted run off from the landscape
2. Physical alterations to the water body





U.S. EPA's Definition of Impaired Stream

An impaired stream is a stream which does not satisfy water quality standards that support its designated use.

U.S. EPA's Definition of Designated Use

A designated use is a water use in state water quality standards that must be achieved and maintained, as required under the Clean Water Act.



Nonpoint Source Impairments in Dearborn County Streams

Water Quality Standard	Designated Use
Bacteria (E. coli)	Recreation
Dissolved Oxygen	Aquatic Life
Biotic Community	Aquatic Life

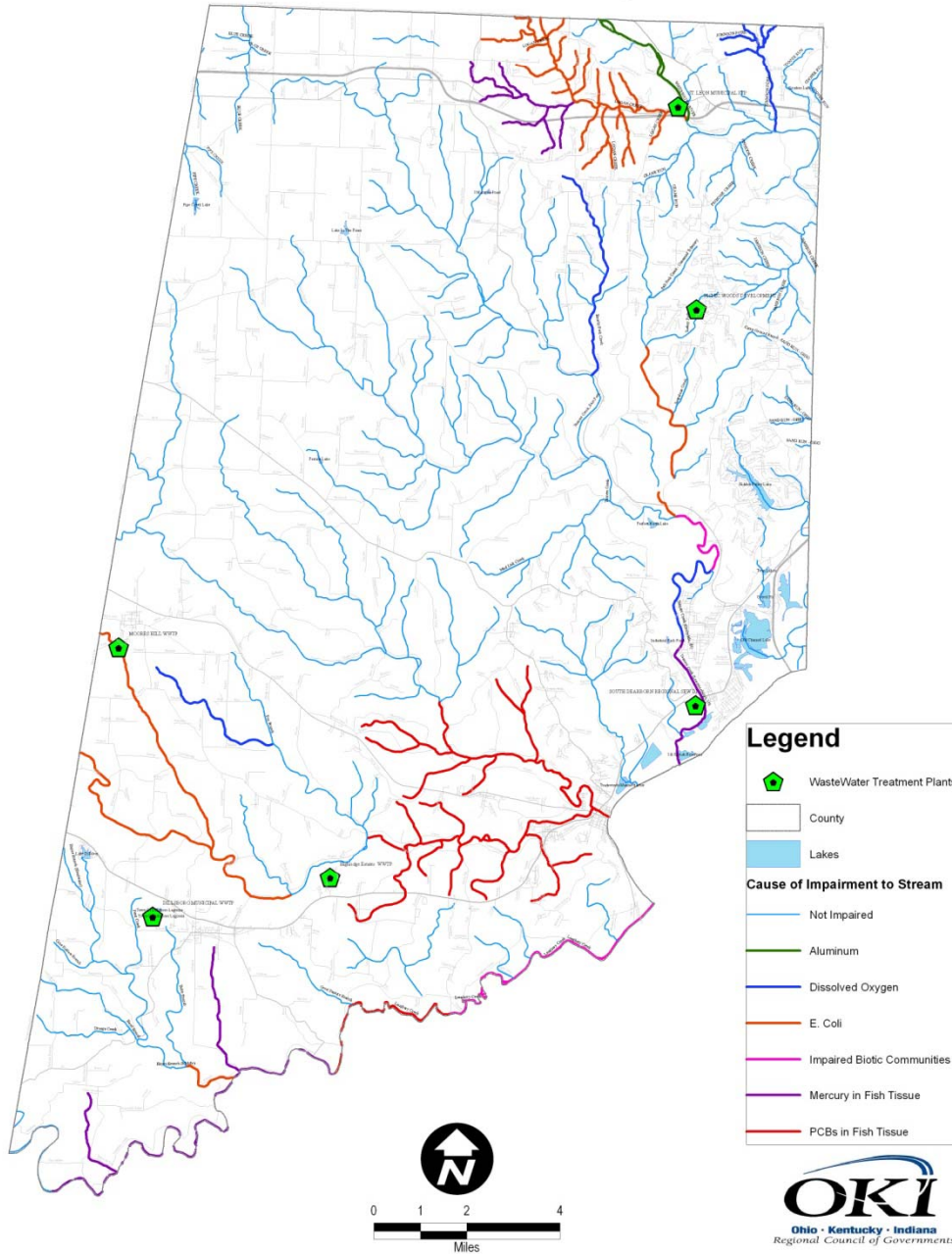


Other Impairments in Dearborn County Streams

Water Quality Standard	Designated Use
PCBs* in Fish Tissue	Fish Consumption
Mercury in Fish Tissue	Fish Consumption

* PCBs is the acronym for polychlorinated biphenyls

Impaired Waters: Dearborn County



Nonpoint Source Impairments:

- low dissolved oxygen
- excessive bacteria (*E. coli*)
- impaired biotic communities

Other Impairments:

- mercury in fish tissue
- PCBs in fish tissue



Impaired Waters: Dearborn County

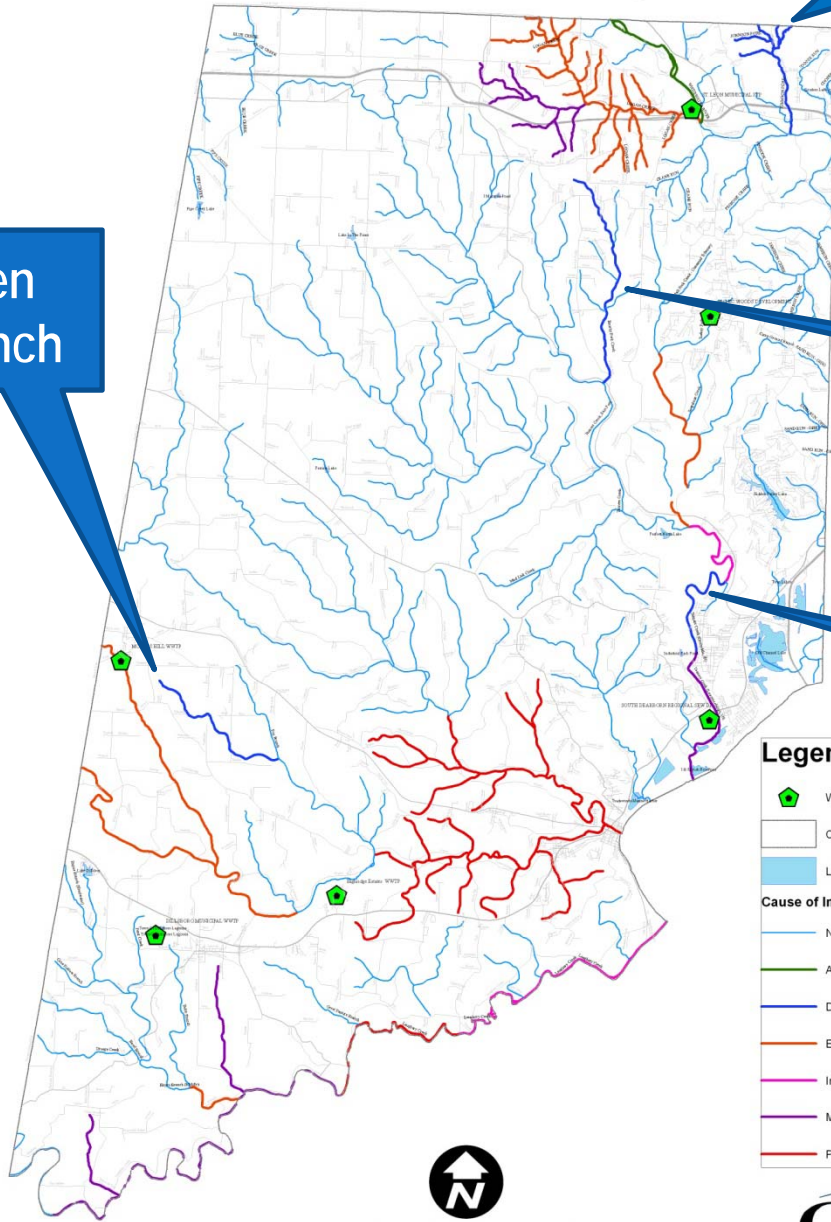
Johnson Fork

Streams impaired by
low dissolved oxygen

Allen
Branch

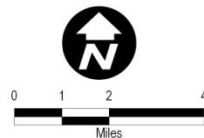
Brushy Fork Creek

Tanners Creek



Legend

- Wastewater Treatment Plants
- County
- Lakes
- Cause of Impairment to Stream**
- Not Impaired
- Aluminum
- Dissolved Oxygen
- E. Coli
- Impaired Biotic Communities
- Mercury in Fish Tissue
- PCBs in Fish Tissue



Logan Creek

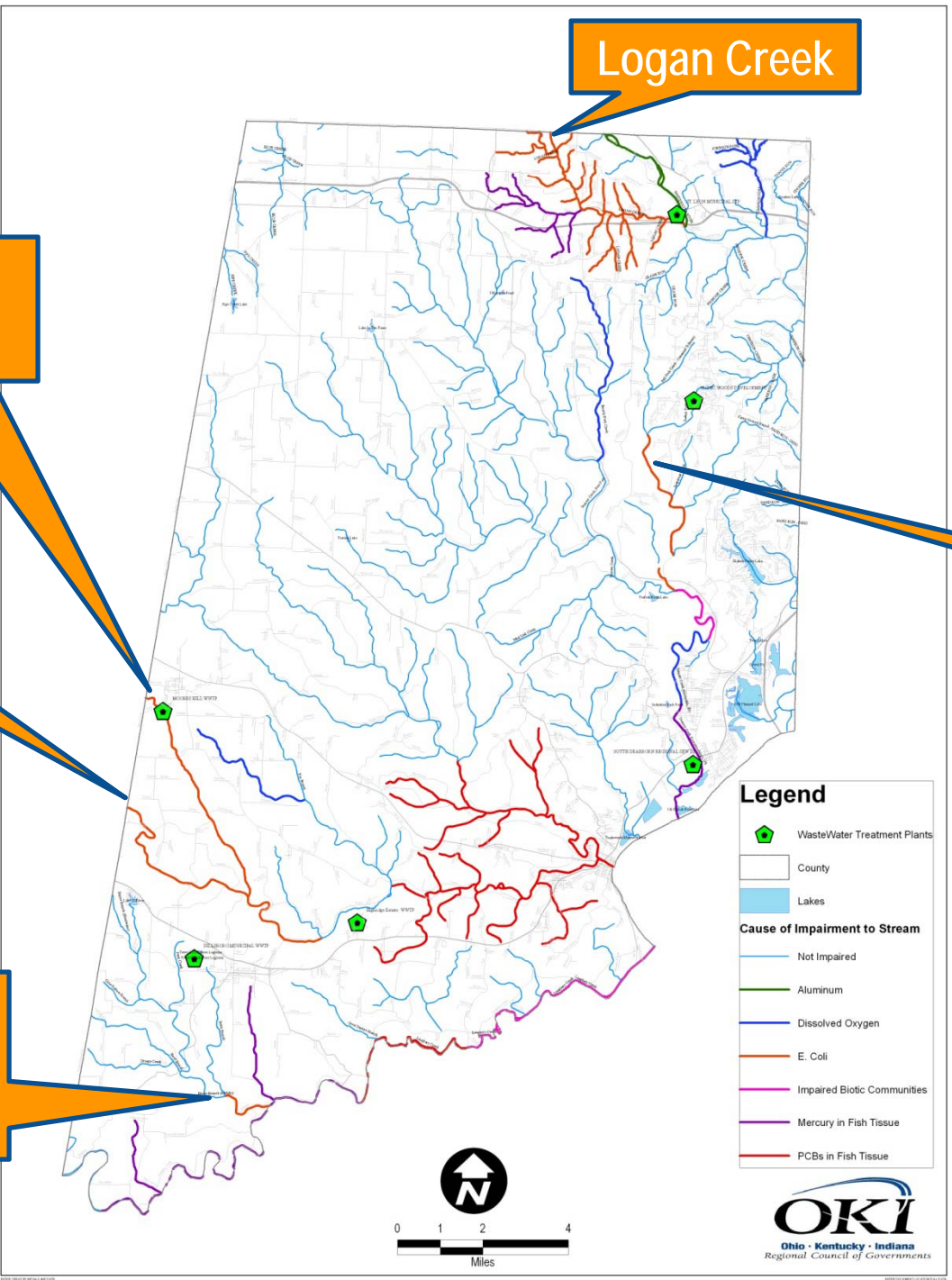
Whitaker Creek

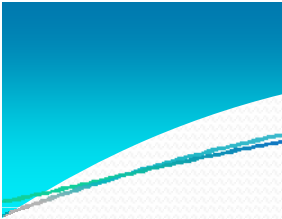
South Hogan Creek

Hayes Branch

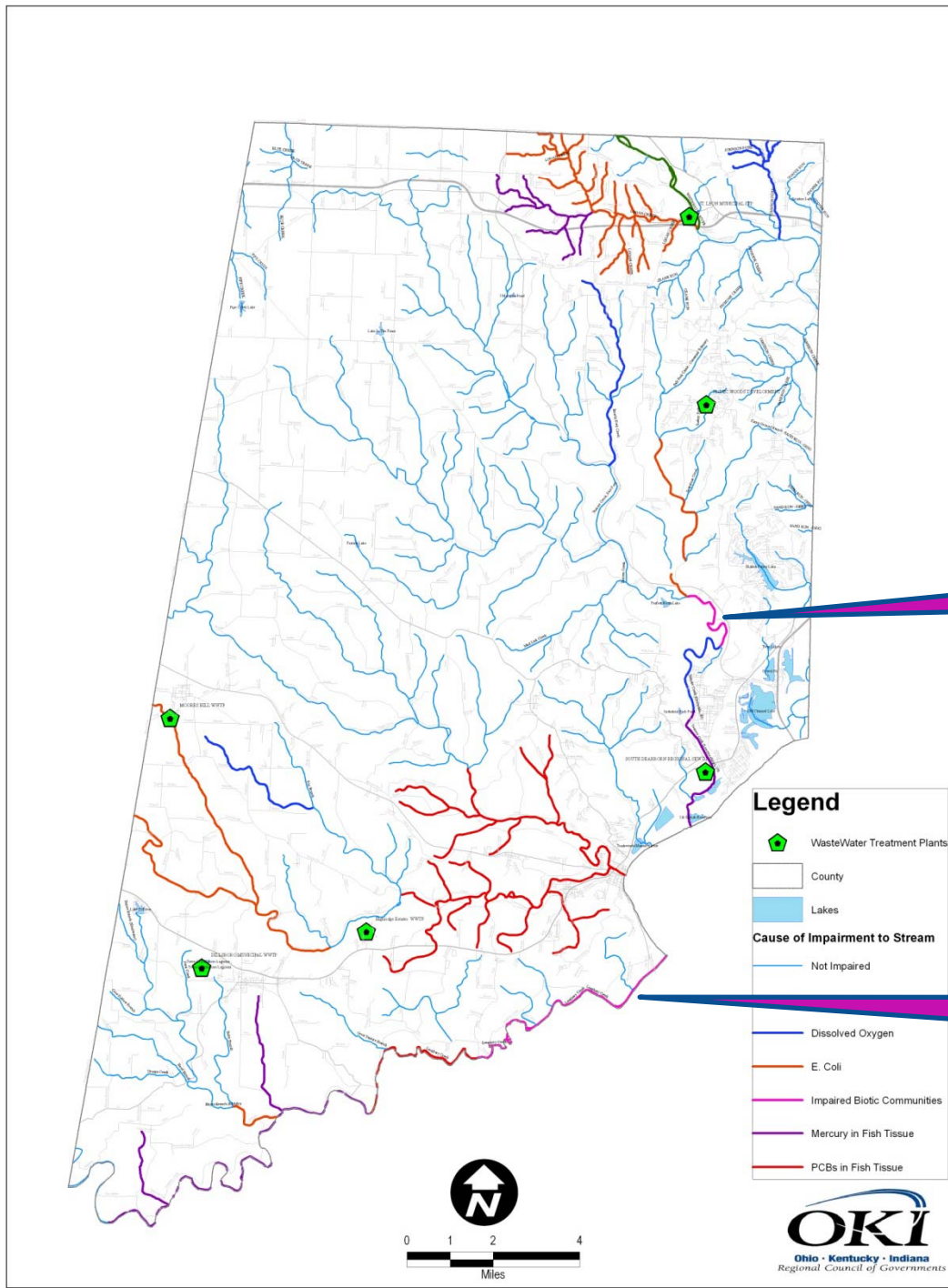
Streams impaired by excessive bacteria (E. coli)

Salt Fork






Streams with impaired biotic communities



Tanners Creek

Laughery Creek





OKI consulted with these knowledgeable, local people:

Rita Cutter, Dearborn County Soil & Water Conservation Dist.


Doug Daggy, Natural Resources Conservation Service

Duane Drockelman, South Laughery Creek Watershed Project

John Grace, Dearborn County Health Department

Jennifer Hughes, Dearborn County Soil & Water Conservation Dist.

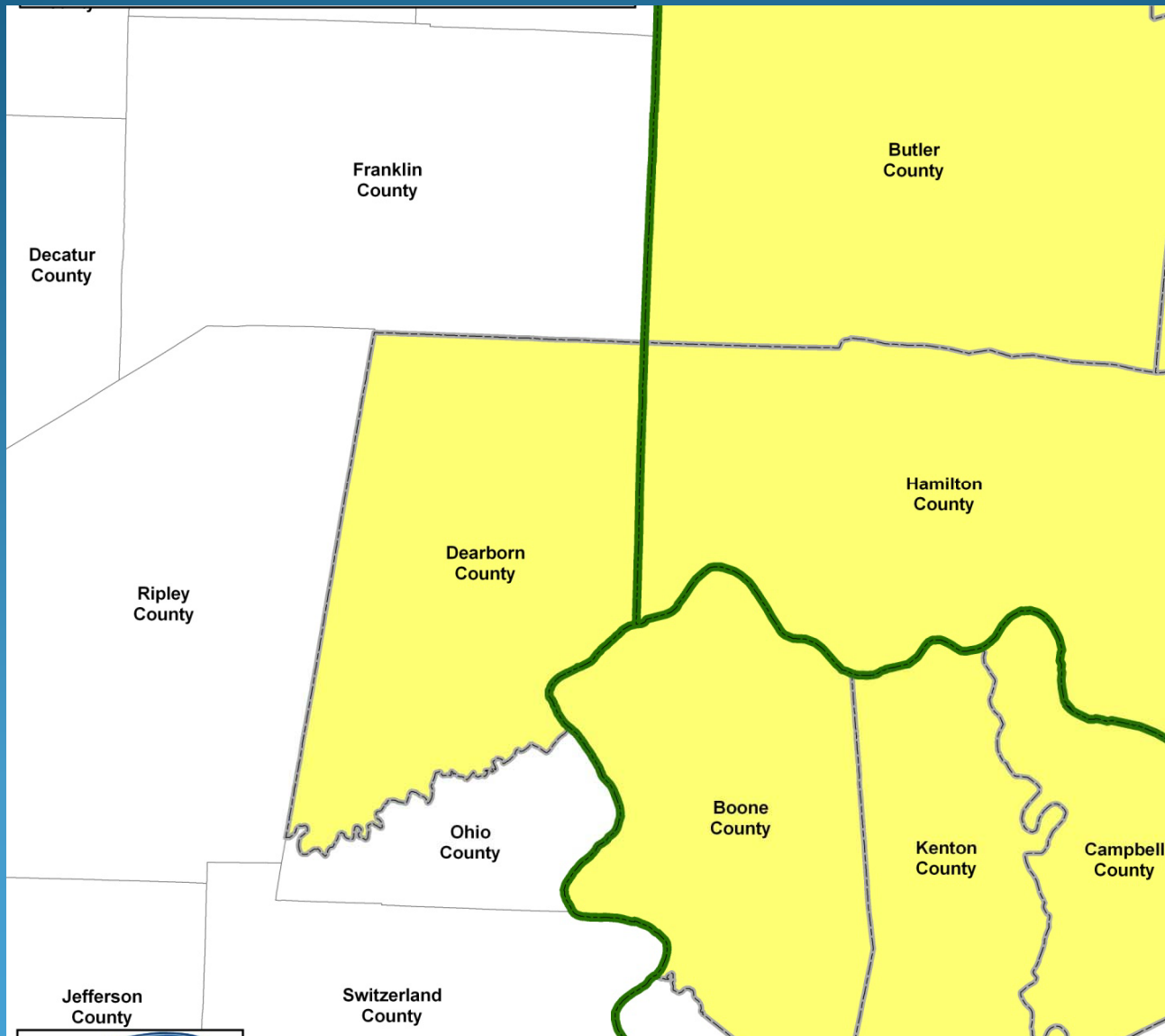
Heather Wirth, Dearborn County Soil & Water Conservation Dist.



Key questions posed by the knowledgeable, local people:

- Age of the data for declaring the impairment
- Location of the stream sampling stations
- Season when samples were collected
- Influence of land uses or stream discharges that occur outside of Dearborn County

Dearborn County's neighbors: several are part of the NPS picture



Allen Branch – low dissolved oxygen

Watershed: Allen Branch-South Hogan Creek

Township: Sparta Township

Land uses: agriculture, low-density residential

Major road: Chesterville Road

Allen Branch – low dissolved oxygen

Suspected reasons: septic tanks, livestock, fertilized cropland, point source pollution

Management partners: Health Dept., SWCD, NRCS, Extension Service, Hogan Creek Watershed Steering Committee

BMPs: filter strips, grassed waterways, no-till, nutrient mgt., repair or replace septic tanks, livestock exclusion (e.g., fencing), pasture mgt., extend sewer lines

SWCD = Soil & Water Conservation District; NRCS = Natural Resources Conservation Service;
BMPs = best management practices; mgt. = management

Johnson Fork – low dissolved oxygen

Watershed: Johnson Fork-Whitewater River

Township: Harrison Township

Land uses: agriculture, moderate-density residential, industrial, golf course

Major roads: I-74, U.S. 52, Johnson Fork Road

Johnson Fork – low dissolved oxygen

Suspected reasons: livestock (cattle and horses), severe flooding, broken or leaking farm tiles, fertilized cropland in Franklin County, golf course

Management partners: Health Dept., SWCD, NRCS, Extension Service, Franklin County

BMPs: filter strips, grassed waterways, no-till, nutrient mgt., repair or replace septic tanks, livestock exclusion, pasture mgt., sewer lines, woodland mgt., repair farm tiles

Brushy Fork Creek – low dissolved oxygen

Watershed: East Fork-Tanners Creek

Townships: Logan Township, Miller Township

Land uses: agriculture, low-density residential, golf course

Major roads: North Dearborn Road

Brushy Fork Creek – low dissolved oxygen

Suspected reasons: low flow, livestock, golf course converted to subdivision, septic tanks, fertilized cropland

Management partners: Health Dept., SWCD, NRCS, Extension Service, Tanners Creek Watershed Steering Committee

BMPs: filter strips, repair or replace septic tanks, livestock exclusion, pasture mgt., sewer lines

Tanners Creek – low dissolved oxygen

Watershed: Salt Fork-Tanners Creek

Township: Lawrenceburg Township

City: Greendale

Land uses: agriculture, high-density residential

Major roads: Greendale streets (Forest, Carol, Ritzman)

Tanners Creek – low dissolved oxygen

Suspected reasons: septic tanks that were hooked to a sewer line in 2008, plant nursery, fertilized lawns, railroad drainage, industrial discharges, sewage lagoons that are no longer operational, natural pooling of Ohio River water

Management partners: Health Dept., SWCD (for stormwater mgt.), City of Greendale, Tanners Creek Watershed Steering Committee

BMPs: manage industrial discharges, extend sewer lines, filter strips

Logan Creek – excessive bacteria (E. coli)

Watershed: Johnson Fork-Whitewater River

Townships: Kelso Township, Logan Township

Town: St. Leon

Land uses: agriculture, low-density residential, commercial

Major roads: I-74, Indiana 46

Logan Creek – excessive bacteria (E. coli)

Suspected reasons: septic tanks, livestock

Management partners: Health Dept., SWCD, NRCS, St. Leon, North Dearborn Water Corp.

BMPs: repair or replace septic tanks, septic tank inspections, enforce sewer connections, extend sewer lines

Salt Fork – excessive bacteria (E. coli)

Watershed: Salt Fork-Tanners Creek

Townships: Miller Township

Land uses: agriculture, (low-density residential)

Major roads: Salt Fork Road

Salt Fork – excessive bacteria (E. coli)

Suspected reasons: septic tanks, discharges

Management partners: Health Department, Logan-Miller-Harrison Utilities, North Dearborn Water Corp., Tri Township Water Corp., SWCD (for stormwater management)

BMPs: repair or replace septic tanks, septic tank inspections, enforce sewer connections, extend sewer lines, involve water companies, manage stormwater

Whitaker Creek – excessive bacteria (E. coli)

Watershed: Little Hogan Creek-North Hogan Creek

Townships: Sparta Township

Town: Moores Hill

Land uses: agriculture, (low-density residential)

Major roads: Voltz Rd., Brown Rd., CSX Railroad

Whitaker Creek – excessive bacteria (E. coli)

Suspected reasons: septic tanks, livestock, natural low-flow in stream, point source pollution

Management partners: Health Department, SWCD, NRCS, Extension Service, Moores Hill, Milan, Hoosier Hills Regional Water District, Hogan Creek Watershed Steering Committee

BMPs: repair or replace septic tanks, septic tank inspections, extend sewer lines, livestock exclusion, pasture mgt.

South Hogan Creek – excessive bacteria (E. coli)

Watershed: Little Hogan Creek-North Hogan Creek

Townships: Sparta Township, Clay Township

Town: Dillsboro

Land uses: agriculture, (low-density residential)

Major roads: West Line Road, Beatty Road

South Hogan Creek – excessive bacteria (E. coli)

Suspected reasons: septic tanks, livestock, natural low-flow in stream, point source pollution

Management partners: Health Department, SWCD, NRCS, Extension Service, Milan, Hoosier Hills Regional Water District, Hogan Creek Watershed Steering Committee

BMPs: repair or replace septic tanks, septic tank inspections, extend sewer lines, livestock exclusion, pasture mgt.

Hayes Branch – excessive bacteria (E. coli)

Watershed: Hayes Branch

Townships: Clay Twp., Caesar Creek Twp.

Land uses: agriculture, (low-density residential)

Major roads: Indiana 62, Prosperity Ridge Road

Hayes Branch – excessive bacteria (E. coli)

Suspected reasons: livestock (including goats), natural effect of a slower flow with sedimentation, cumulative effect of several branches, upstream septic tanks

Management partners: SWCD, NRCS, Extension Service, South Laughery Creek Steering Committee

BMPs: livestock exclusion, pasture management, septic tank inspections, septic tank repair or replacement

Tanners Creek – impaired biotic communities

Watershed: Salt Fork-Tanners Creek

Townships: Miller Township

City: Greendale

Land uses: agriculture, medium-density residential, high-density residential

Major roads: Indiana 1, Pribble Road

Tanners Creek – impaired biotic communities

Suspected reasons: streambank erosion and resulting sedimentation, highway construction, flooding and resulting sediment transport

Management partners: SWCD, NRCS, Extension Service, Tanners Creek Steering Committee, Perfect North Slopes, Dearborn County Regional Sewer District, Army Corps of Engineers, IDNR's Division of Water, IDEM

BMPs: streambank stabilization, no-wake zones, riparian buffers with trees

Laughery Creek – impaired biotic communities

Watershed: LaugheryCreek

Townships: Washington Township, Center Township

Land uses: agriculture, industrial, cemetery,
medium-density residential, low-density residential

Major roads: Laughery Creek Road

Laughery Creek – impaired biotic communities

Suspected reasons: failing septic tanks and direct discharges from summer homes and camps, steep stream banks leave less room for habitat, streambank erosion, erosion from boat wakes, point source pollution

Management partners: South Laughery Watershed Steering Committee, SWCD, NRCS, Extension Service, Army Corps of Engineers, IDNR's Division of Water, IDEM

BMPs: streambank stabilization, riparian buffers with trees, filter strips, floodplain easements, create or restore wetlands, no-wake zone

Common Causes for NPS Problems

- Low Dissolved Oxygen
 - Channelization
 - Elevated water temperatures
- Excessive Bacteria (*E. coli*)
 - Human and animal waste
 - Conditions that breed microbes
- Impaired Biotic Communities
 - Other impairments
 - Poor aquatic habitat



Dearborn County's NPS Issues:

- septic tank discharges
- sedimentation & siltation
- nutrient run off
- floatables and other trash
- unrestricted cattle access

Dearborn County Soil & Water Conservation District listed the issues.



Home Sewage Problem Clusters

