

## *Little Calumet River Watershed Management Plan*



*The Little Calumet River Watershed (Group) exists to effectively and aggressively reduce pollutant loads in the subwatersheds of the Little Calumet River through coordinated planning, public education, and structural BMP implementation.*

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## Glossary of Terms

**303(d) List** - A list identifying water bodies that are impaired by one or more water quality elements there by limiting the performance of designated beneficial uses.

**Aquifer** - Any geologic formation containing water, especially one that supplies water for wells, springs, etc.

**Best Management Practice (BMP)** - Practices implemented to control or reduce non-point source pollution.

**Canopy Cover** - The overhanging vegetation over a given area.

**Channelization** - Straightening of a stream; often the result of human activity.

**Clean Water Act** - The primary federal law in the United States governing water pollution. Commonly abbreviated as the CWA, the act established the symbolic goals of eliminating releases to water of high amounts of toxic substances and ensuring that surface waters would meet standards necessary for human sports and recreation.

**Coliform** - Intestinal waterborne bacteria that indicate fecal contamination. Exposure may lead to human health risks.

**Combined sewer Overflow (CSO)** - Outlets that dump excess water from the sewers into streams and rivers, keeping the sewers from backing up into homes, business and streets when it rains.

**Conservation Design** - A development approach that seeks to protect natural resources from development impacts by taking existing landscape, drainage, and natural features into consideration.

**Continental Divide** - The name given to the North American portion of the mountainous ridge which separates the watersheds that drain into the Pacific Ocean from rivers which drain into the Atlantic Ocean and the Arctic Ocean.

**Designated Uses** - State-established uses that waters should support (e.g. fishing, swimming, aquatic life).

**Detention Pond** - A basin designed to slow the rate of stormwater run-off by temporary storing the run-off and releasing it at a specific rate.

**Dissolved Oxygen (DO)** - Oxygen dissolved in water that is available for aquatic organisms.

**Downstream** - In the direction of a stream's current.

**Dredge** - To clean, deepen, or widen a water body using a scoop, usually done to remove sediment from a streambed.

**Easement** - A right, such as a right of way, afforded an entity to make limited use of another's real property.

**Ecoregion** - A geographic area characterized by climate, soils, geology, and vegetation.

**Ecosystem** - A community of living organisms and their interrelated physical and chemical environment.

**Erosion** - The removal of soil particles by the action of water, wind, ice, or other agent.

**Escherichia Coli (*E. coli*)** - A type of coliform bacteria found in the intestines of warm-blooded organisms, including humans.

**Exotic Species** - An introduced species not native or endemic to the area in question.

**Gradient** - Measure of a degree of incline; the steepness of a slope.

**Groundwater** - Water that flows or seeps downward and saturates soil or rock.

**Headwater** - The origins of a stream.

**Heavy Metals** - The group of elements between copper and bismuth on the periodic table of the elements having specific gravities greater than 4.0. The most common ones in municipal permits are cadmium, chromium, copper, nickel, lead, mercury, and zinc.

**Hydrologic Unit Code (HUC)** - Unique numerical code created by the U.S. Geological Survey to indicate the size and location of a watershed within the United States. Based on four separate divisions ranging in size from regions, sub-regions, accounting units, and cataloging units.

**Impervious Surface** - Any material covering the ground that does not allow water to pass through or infiltrate (e.g. roads, driveways, roofs).

**Infiltration** - Downward movement of water through the uppermost layer of soil.

**Low Impact Development (LID)** - A development approach that utilizes a variety of natural or built features to promote sound management of stormwater.

**Macroinvertebrates** - Animals lacking a backbone that are large enough to see without a microscope.

**Maximum Contaminant Level (MCL)** - The highest level of a contaminant that is allowed in drinking water.

**Moraine** - Any glacially formed accumulation of unconsolidated debris which can occur in currently glaciated and formerly glaciated regions.

**National Pollutant Discharge Elimination System (NPDES)** - National program in which pollutant discharges such as factories and treatment plants are given permits with set limits of discharge allowable.

**Non-point Source Pollution (NPS)** - Pollution generated from large areas with no identifiable source (e.g., stormwater run-off from streets, development, commercial and residential areas).

**Permeable** - Capable of conveying water (e.g., soil, porous materials).

**Point Source Pollution** - Pollution originating from a “point,” such as a pipe, vent, or culvert.

**Pollutant** - As defined by the Clean Water Act (Section 502(6)): “dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.”

**Polychlorinated Biphenyls (PCB's)** - Any of a family of individual compounds produced by chlorination of biphenyl, noted primarily as an environmental pollutant that accumulates in animal tissue with resultant pathogenic and teratogenic effects.

**Pool** - An area of relatively deep, slow moving water in a stream.

**Retention Pond** - A basin designed to retain stormwater run-off so that a permanent pool is established.

**Riffle** - An area of shallow, swift moving water in a stream.

**Riparian Zone** - An area, adjacent to a water body, which is often vegetated and constitutes a buffer zone between the nearby land and water.

**Run-off** - Water from precipitation, snowmelt, or irrigation that flows over the ground to a water body. Run-off can pick up pollutants from the air or land and carry them into streams, lakes, and rivers.

**Sediment** - Soil, sand, and minerals washed from the land into a water body.

**Sedimentation** - The process by which soil particles (sediment) enter, accumulate, and settle to the bottom of a water body.

**Septic System** - A small scale sewage treatment system common in areas with no connection to main sewerage pipes.

**Soil Association** - A landscape that has a distinctive pattern of soils in defined proportions. Typically named for the major soils.

**Steering Committee** - Group of individuals responsible for the development of the procedures and policies to improve the overall water quality of the Little Calumet River and its tributaries.

**Storm Drain** - Constructed opening in a road system through which runoff from the road surface flows on its way to a water body.

**Stormwater** - The surface water runoff resulting from precipitation falling within a watershed.

**Substrate** - The material that makes up the bottom layer of a stream.

**Topographic Map** - Map that marks variations in elevation across a landscape.

**Topography** - The study of Earth's surface features, concerned with local detail in general, including not only relief but also vegetative and human-made features

**Total Maximum Daily Load (TMDL)** - Calculation of the maximum amount of a pollutant that a water body can receive before becoming unsafe and a plan to lower pollution to that identified safe level.

**Tributary** - A stream that contributes its water to another stream or water body.

**Turbidity** - Presence of sediment or other particles in water, making it unclear, murky, or opaque.

**Upstream** - Against the current.

**Valparaiso Moraine** – A terminal moraine around the Lake Michigan basin. It consists of glacial till and sand creating a series of hills and ridges that formed during the Crown Point Phase of the Wisconsin Glaciation.

**Water Quality** - The condition of water with regard to the presence or absence of pollution.

**Water Quality Standard** - Recommended or enforceable maximum containment levels of chemicals or materials in water.

**Watershed** - The area of land that water flows over or under on its way to a common point.

**Wetlands** - Lands where water saturation is the dominant factor in determining the nature of soil development and the types of plant and animal communities.

**Zoning** - To designate, by ordinance, areas of land reserved and regulated for specific uses, such as residential, industrial, or open space.

## Acronyms

ACOE	Army Corps of Engineers
BMP	Best Management Practice
BOD	Biological (or Biochemical) Oxygen Demand
CWA	Clean Water Act
CWP	Center for Watershed Protection
EPA	Environmental Protection Agency
FCA	Fish Consumption Advisory
GAP	Gap Analysis Program
GIS	Geographic Information System
GPS	Global Positioning System
GSWMD	Gary Storm Water Management District
HUC	Hydrologic Unit Code
INDOT	Indiana Department of Transportation
IAC	Indiana Administrative Code
IDEM	Indiana Department of Environmental Management
IDNR	Indianan Department of Natural Resources
ISDA	Indiana State Department of Agriculture
ISS	Individual Septic System
LARE	Lake and River Enhancement
MRCC	Midwestern Regional Climate Center
NIRPC	Northwestern Indian Regional Planning Commission
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	Non-point Source
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OSDS	On-site Sewage Disposal Systems
PCB	Polychlorinated Biphenyls
SSC	Suspended Sediment Concentration
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFW	United States Fish and Wildlife
USGS	United States Geological Survey
WWTP	Wastewater Treatment Plant
<i>E.coli</i>	Escherichia coli
NH <sub>3</sub>	Ammonia
NO <sub>3</sub>	Nitrate
TP	Total Phosphorus
Ortho-P	Ortho Phosphorus, TSS: Total Suspended Solids
TP	Total Phosphorus
TSS	Total Suspended Solids
TKN	Total Kjeldahl Nitrogen

## **Executive Summary**

The Little Calumet River Watershed covered by this plan includes three 14 Digit HUC watersheds. Specific waterways included in these areas are the east reach of the western branch of the Little Calumet River, the Willow Creek watershed, and a portion of the Deep River watershed. This study was funded by a Section 319 Grant through the Indiana Department of Environmental Management (IDEM) with matching funds provided by the local sponsor, the Gary Storm Water Management District (GSWMD).

The watersheds covered by this plan are located in Northwest Indiana and are highly urbanized though some agriculture does still occur. A flood control project by the Army Corp of Engineers (ACOE) is currently underway on this portion of the Little Calumet River.

The Little Calumet River Watershed Management Plan has been developed over the course of 15 months by the Steering Committee and its consultants. Nine steering committee meetings have been held with two of them advertised to the public for public input. The overall process closely followed the Indiana Watershed Planning Guide.

All of the communities within the watersheds were invited to participate prior to the beginning of the project. Once the project began they were again encouraged to attend the steering committee meetings.

The Steering Committee developed the Mission Statement for this watershed management plan and began identifying issues and concerns within the watersheds. A public meeting was conducted at Indiana University Northwest to give the public an opportunity to add to that list of identified issues and concerns.

Information was compiled from a wide variety of sources including but not limited to previous studies in this area, on going projects including the Army Corp of Engineers Flood Control and Recreation Project, the approved Total Maximum Daily Load (TMDL) for the Little Calumet River, municipal Geographic Information Systems (GIS) and sewer atlases, a limited sampling program, a stream reach survey, and numerous publicly available databases with information such as topography, land usage, aerial photographs, etc.

The Steering Committee then compiled a series of problem statement from the list of issues and concerns from each source. These problem statements were then used to set goals for this plan to improve upon those issues. The goals identified as part of this plan include:

Goal 1: Reduce *E. coli* levels in the Little Calumet River by reducing loads to the River to meet beneficial uses.

Goal 2: Reduce sediment loads by source reduction strategies and, in priority subwatersheds, through the use of Best Management Practices (BMPs).

Goal 3: Reduce nutrient loads by source reduction strategies and, in priority subwatersheds, through the use of Best Management Practices (BMPs).

Goal 4: Restore, improve, and/or protect floodplains, wetlands, natural areas, and riparian corridors.

Goal 5: Improve public awareness/knowledge of pollutant loads, sources, and solutions, especially with regard to *E. coli*, and the impacts and risks associated with them.

Goal 6: Create an active watershed alliance or conservancy district that facilitates and implements information sharing including ordinances, projects/experiences, and educational materials in a central location.

Goal 7: Increase river corridor connectivity, river navigability, and public access sites and make the public aware of them.

Specific milestones toward each goal have been set with an indicator designated to measure progress toward completion of each goal. Critical areas have been identified within the watershed where efforts will be focused to have the greatest impact on water quality.

Findings from this watershed planning process include:

1. The flow control structure being built as part of the Little Calumet River Flood Control and Recreation Project will divert high flows that currently flow west toward Illinois from Hart Ditch east into this watershed. When this occurs, higher flows with larger pollutant loads will flow through the watersheds covered by this plan.
2. Base flow levels of *E. coli* bacteria were not as high as they could have been and appear to be manageable. Application of the plan will bring the River into compliance with water quality standards for *E. coli* during base flows. High flows will continue to be a problem until combined sewer overflows are eliminated and flows from Hart Ditch are not elevating bacteria counts within this watershed.
3. Other pollutants in the watersheds including Total Suspended Solids (TSS), nitrogen, and phosphorus are at levels that can adversely impact biological communities.
4. An active watershed alliance or conservancy district is needed to bridge existing political boundaries.
5. Public access to and information about the River will need to be improved as the River is cleaned up and the public wants to utilize it.
6. Natural areas along the river and its tributaries were plentiful, especially along Deep River.