

Watershed Assessment and Planning Branch Monitoring Activities 2024

Probabilistic Monitoring	2024	Parameters
Watershed	Upper Wabash River Basin	CHEMISTRY: <i>E. coli</i> , Aluminum, Antimony, Arsenic, Calcium, Cadmium, Chromium, Copper, Lead, Magnesium, Nickel, Selenium, Silver, Zinc, Alkalinity, Total Solids, Dissolved Solids, Total Suspended Solids, Sulfate, Chloride, Hardness, TKN, Ammonia- Nitrogen, Nitrate/Nitrite, Total Phosphorous, TOC, Dissolved Organic Carbon, Cyanide-Total, Cyanide-Weak Acid Dissociable, Chemical Oxygen Demand, FIELD: Dissolved Oxygen, D.O. Saturation, pH, Specific Conductance, Temperature, Turbidity, BIOLOGICAL: Fish, Macroinvertebrates, Diatoms, and Habitat
Hydrologic Unit Code(s)	Upper Wabash (05120101); Salamonie (05120102); Mississinewa (05120103); Eel (WR) (05120104); Middle Wabash-Deer (05120105); Tippecanoe (05120106); Wildcat (05120107);	
Laboratory Analytical Costs/Funding Source (106)	Pace Analytical \$87,640 IDEM Mobile <i>E. coli</i> Lab \$1,235 IDEM Fish and Macroinvertebrate Lab for Specimen Identification Diatom Verification \$8,750 Macroinvertebrate Verification \$920 Fish Verification \$0	
Reference Site Monitoring	2024	Parameters
Hydrologic Unit Code(s)	Whitewater (05080003) Driftwood (05120204) Muscatatuck (05120207) Silver-Little Kentucky (05140101) Middle Ohio-Laughery (05090203)	CHEMISTRY: Aluminum, Antimony, Arsenic, Calcium, Cadmium, Chromium, Copper, Lead, Magnesium, Nickel, Selenium, Silver, Zinc, Alkalinity, Total Solids, Dissolved Solids, Total Suspended Solids, Sulfate, Chloride, Hardness, TKN, Ammonia- Nitrogen, Nitrate/Nitrite, Total Phosphorous, TOC, Dissolved Organic Carbon, Chemical Oxygen Demand, FIELD: Dissolved Oxygen, D.O. Saturation, pH, Specific Conductance, Temperature, Turbidity, BIOLOGICAL: Fish, Macroinvertebrates, Diatoms, Habitat
Laboratory Analytical Costs/Funding Source (106)	Pace Analytical \$48,699 IDEM Fish, Macroinvertebrate and Algal Lab for Specimen Identification Diatom Verification \$4,900 Macroinvertebrate Verification \$690 Fish Verification \$0	

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Fixed Station Monitoring	Parameters	
<p>165 sites throughout all 9 watersheds: Divided into 16 routes sampled monthly</p> <p>Laboratory Analytical Costs/Funding Source:</p> <p>Indiana Department of Health (IDOH)/106</p>	<p>CHEMISTRY (dissolved vs. total metals at 12 selected sites geographically representative, Dissolved Organic Carbon): Alkalinity, Hardness, Calcium, Magnesium, Ammonia-N, Nitrate+Nitrite-N, Nitrogen-TKN, Phosphorous-Total, Phosphorus-Dissolved Reactive (select sites), COD, TOC, BOD, Solids-Total, Solids-Suspended, Solids-Dissolved, Fluoride, Chloride, Sulfate, Cyanide-Total, Cyanide-Free, Cyanide-Amenable, Arsenic (µg/l), Cadmium (µg/l), Chromium-Total (µg/l), Copper(µg/l), Iron (µg/l), Lead (µg/l), Manganese (µg/l), Nickel (µg/l), Potassium (µg/l), Sodium (µg/l), Zinc (µg/l), <i>E. coli</i>, FIELD: Turbidity, DO, pH, Temperature, Specific Conductance ORGANICS/PESTICIDES (select sites, drinking water intakes): Hexachlorocyclopentadiene, Desethylatrazine, Desisopropylatrazine, Hexachlorobenzene, Simazine, Atrazine, Cloazone, Pentachlorophenol, Lindane, Terbufos, Acetochlor, Alachlor, Heptachlor, Metolachlor, Chlorpyrifos, Cyanazine, Penimethalin, Heptachlor Epoxide, Ocychlorane, Gamm-Chlordane, Alpha-Chlordane, Trans-Nonachlor, endrin, Cis-Nonachlor, P,P'-DDT, Bis(2-Ethylhexyl)adipate, Methoxychlor, Bis(-Ethylhexyl)phthalate, Benzoapyrene, Trifluralin, Aldrin, Dieldrin, Propachlor</p> <p>There are two additional sites being sampled in 2024 (P-14 and P-35) and two sites along the WFWR (WR-210 and WR-192) that have added dissolved metals to the parameter suite. In addition, IDEM will coordinate with DNR on Lake Michigan to sample 3 additional sites in the lake.</p> <p>Pesticides discontinued on June 10 due to lab running out of supplies and resumed on July 1.</p>	
Watershed Characterization Study	2023-2024	Parameters
Watershed	Indian Creek-White River	<p>CHEMISTRY monthly, Alkalinity (as CaCO₃), Solids, Total Residue (TS), Solids, Nonfilterable Residue (TSS) Solids, Filterable Residue (TDS), Sulfate (Dissolved), Chloride, Hardness (as CaCO₃), Nitrogen, as Ammonia, Nitrogen, Kjeldahl (TKN), Nitrogen, Nitrate-nitrite, Phosphorous, Total Organic Carbon (TOC), Chemical Oxygen Demand, Calcium, Magnesium</p> <p>FIELD: pH, DO, D.O saturation, Temperature, Turbidity, and Specific Conductance.</p> <p><i>E. coli</i> Geometric Mean (5X sampling) complete, in addition to monthly samples during the recreational season.</p> <p>BIOLOGICAL: Fish, Macroinvertebrates, Habitat</p>
Hydrologic Unit Code(s)	0512020208	
<p>Laboratory Analytical Costs/Funding Source (106)</p>	<p>IDEM Mobile <i>E. coli</i> Lab, IDEM Fish and Macroinvertebrate Lab for Specimen Identification \$46,000 Pace Analytical-Indy \$1,400 <i>E. coli</i> Macroinvertebrate Verification \$460 Fish Verification \$0</p>	

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<u>Fish Tissue Monitoring</u>	2024	Parameters
Watershed(s)	Lower Wabash River Basin, Upper Illinois River Basin, Lake Michigan	Percent Moisture, Percent Lipid, PCBs, Organochlorine-Pesticides, Cadmium, Selenium, Lead, Total Mercury, Methylmercury, Polychlorinated Biphenyl, and Per- and Polyfluoroalkyl substances Special Study along East Branch Little Calumet River near Cleveland Cliffs at the request of NPDES. We will be looking at dioxins in the fish.
Hydrologic Unit Code(s)	05120108, 05120109, 05120110, 05120111, 05120113, 07120001, 07120002, 07120003; Indiana waters of Lake Michigan; IN DNR District Biologists for samples from lakes of interest.	
Laboratory Analytical Costs/Funding Source (106)	Pace/Lab Account \$167,000 available	
<u>Performance Measure Monitoring</u>	2024	Parameters
Hydrologic Unit Code(s)	Muddy Fork (051202060302), Turkey Run-East Fork Tanners Creek (050902030301), Indian Kentuck (051401010205), Bone Creek-Flat Creek (051202090502), Mill Creek-Patoka River (051202090603), Sugar Creek-Patoka River (051202090604), Springle Creek-South Fork Blue River (051401040601), Dutch Creek-South Fork Blue River (051401040604)	FIELD: pH, DO, D.O. saturation, temperature, turbidity, and specific conductance. BIOLOGICAL: Fish, Macroinvertebrates, Habitat
Laboratory Analytical Costs/Funding Source (106)	IDEM Fish and Macroinvertebrate Lab for Specimen Identification Macroinvertebrate Verification \$230	

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<u>Toxic Algae Monitoring</u>	2024	Parameters
<p>Designated swimming beaches in lakes at state owned parks or managed recreation areas.</p>	<p><u>North Route</u> Chain O’Lakes SP – Sand Lake Beach Ferdinand State Forest - Ferdinand Lake Beach Lincoln SP – Lake Lincoln Beach Mississinewa Lake - Miami SRA Beach Ouabache SP – Kunkel Lake Beach Patoka Lake – Newton Stewart SRA Beach Pokagon SP –Main Beach Pokagon SP – Potawatomi Inn Beach Potato Creek SP – Worster Lake Beach Salamonie Lake - Lost Bridge West SRA Beach Summit Lake SP – Summit Lake Beach <u>South Route</u> Brookville Lake - Mounds SRA Beach Brookville Lake - Quakertown SRA Beach Cagles Mill Lake - Lieber SRA Beach Cecil M. Harden Lake - Raccoon Lake SRA Beach Deam Lake SRA – Deam Lake Beach Hardy Lake - Hardy Lake SRA Beach Monroe Lake - Fairfax SRA Beach Monroe Lake – Paynetown SRA Beach Starve Hollow SRA – Starve Hollow Lake Beach Whitewater Memorial SP – Whitewater Lake Beach Ft. Harrison Dog Park Lake</p>	<p>Cyanobacterial Identification and Cell Enumeration, Microcystin, Cylindrospermopsin, Anatoxin a, and Saxotoxin toxin analysis</p>
<p>Laboratory Analytical Costs/Funding Source (106)</p>	<p>Pace/IDEM Algal Lab/Lab Account ELISA test kits \$30,878 Pace Analytical-Indy \$19,156</p>	

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<u>Special Project</u>	2023-2024	Parameters
Watershed(s)	Blue River and Indian Creek	<p>CHEMISTRY monthly, Alkalinity (as CaCO₃), Solids, Total Residue (TS), Solids, Nonfilterable Residue (TSS) Solids, Filterable Residue (TDS), Sulfate (Dissolved), Chloride, Hardness (as CaCO₃), Nitrogen, as Ammonia, Nitrogen, Kjeldahl (TKN), Nitrogen, Nitrate-nitrite, Phosphorous, Total Organic Carbon (TOC), Chemical Oxygen Demand, Calcium, Magnesium</p> <p>FIELD: pH, DO, D.O saturation, Temperature, Turbidity, and Specific Conductance.</p> <p>BIOLOGICAL: Macroinvertebrates, Habitat</p> <p>PESTICIDES: Sampled by IDEM and analyzed by the Indiana State Department of Health</p>
Hydrologic Unit Code(s)	Mill Creek-Blue River (0514010407), Whiskey Run-Blue River (0514010408), Blue River (0514010409), South Fork- Blue River (0514010406), Upper Indian Creek (0514010403), Middle Indian Creek (0514010404), and Lower Indian Creek (0514010405)	
Laboratory Analytical Costs/Funding Source (106)	IDEM Fish Lab for Specimen Identification \$58,240 Pace Analytical-Indy Rhithron Associates, Inc. Macroinvertebrate Identification \$8,700 Fish Verification \$0	
Stream Regional Monitoring Network	2024	Parameters
Laboratory Analytical Costs/Funding Source (106): IDOH: water chemistry IDEM Fish and Macroinvertebrate Lab for Specimen Identification	<p>USGS stream gages sampled monthly by IDEM Fixed Station Program:</p> <ol style="list-style-type: none"> 1. Vernon Fk. Muscatatuck River @ CR 60 S (WEM070-0001,VF-38) 2. Blue River @ US 150 (OBS140-0004, BLW-57) 3. Tippecanoe River @ SR 18 (WTI150-0011, TR-9) 	<p>CHEMISTRY: Alkalinity, Hardness, Ammonia-N, Nitrate+Nitrite-N, Nitrogen-TKN, Phosphorous-Total, COD, TOC, Solids-Total, Solids-Suspended, Solids-Dissolved, Chloride, Sulfate, Arsenic (µg/l), Cadmium (µg/l), Chromium-Total (µg/l), Copper(µg/l), Iron (µg/l), Lead (µg/l), Nickel (µg/l), Zinc (µg/l), FIELD: Turbidity, Dissolved Oxygen, D.O. Saturation, pH, Specific Conductance, Water temperature (°C)</p> <p>WEATHER STATION: Air temperature (°C), Precipitation</p> <p>BIOLOGICAL: Macroinvertebrates, Fish, and Habitat Time series photos with Reconyx field cameras</p>

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Lake Monitoring	2024	Parameters
<p>Lakes also sampled by the Indiana Clean Lakes Program (Indiana University Limnology Lab)</p> <p>Laboratory Analytical Costs/Funding Source (106):</p> <p>IDEM Fish and Macroinvertebrate Lab for Specimen Identification</p>	<ul style="list-style-type: none"> • Patoka Reservoir; Dubois Co. • Dale Reservoir; Spencer Co. • Cedar Lake; Lake Co. • Lake George (Hobart); Lake Co. • Lower Fish Lake; LaPorte Co. • Rockville Lake; Parke Co. • Daredevil Pit in Chinook Public Fishing Area; Clay Co. • Robinson Lake; Whitley Co. • Celina Lake; Perry Co. • Loon Lake; Stueben Co. • Buffalo Trace; Harrison Co. • Delaney Creek Park Lake; Washington Co. • Pretty Lake; LaGrange Co. • Big Long Lake; LaGrange Co. 	<p>BIOLOGICAL: Fish, Macroinvertebrates, Macrophytes, and Habitat</p>
AutoSampler	2024	Parameters
<p>Fixed station on St. Marys River at Pleasant Mills</p>	<p>IDOH \$0</p> <p>\$32,640 Pace Analytical-Indy (106)</p>	<p>CHEMICAL: DRP Samples will be collected weekly from April – October to IDOH. AutoSampler will collect daily composite samples from April-October to Pace-Indy.</p>