

REMEDIAL ACTION PLAN STAGE II
INTERNATIONAL JOINT COMMISSION
SUBMITTAL DOCUMENT

December 1997

CURRENT ACTIVITIES ADVANCING THE RESTORATION OF BENEFICIAL USES

RAP II ACTIONS TO ATTAIN GOALS		BENEFICIAL USES THAT ARE IMPAIRED IN THE GRAND CALUMET AREA of CONCERN														KEY IMPLEMENTATION ELEMENTS				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	OWNER or PRINCIPLE DRIVER (Person or Organization)	PLANS IN PLACE (Yes, No or TBD)	INDICATORS ESTABLISHED (Yes, No or TBD)	START DATE (Date or TBD)	END DATE (Date or TBD)
<div style="border: 1px solid black; border-radius: 15px; padding: 5px; display: inline-block;"> REVISED 11/5/97 </div> <p>ACTIVITIES CURRENTLY IN PROGRESS *</p>		Restrictions on Fish & Wildlife Consumption	Tainting of Fish & Wildlife Flavor	Degraded Fish & Wildlife Populations	Fish Tumors or Other Deformities	Bird or Animal Deformities or Reproductive Problems	Degradation of Benthos	Restrictions on Dredging Activities	Eutrophication or Undesirable Algae	Restrictions on Drinking Water Consumption or Taste & Odor Problems	Beach Closings	Degradation of Aesthetics	Added Costs to Agriculture or Industry	Degradation of Phytoplankton & Zooplankton Populations	Loss of Fish & Wildlife Habitat					
A	Voluntary Action Initiated Through the RAP																			
1.	The Cooperative Partnership Effort	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Steering Committee	Yes	TBD	1996	TBD
2.	Sediment Cleanup Restoration Alternatives Project (SCRAP)		○	○	○	○	○	○	○	○	○	○	○	○	○	IDEM	Yes	TBD	1996	TBD
3.	The Native Revegetation of Steel Slag Project	□	□	●	□	□	□	□	□	□	●	□	□	●	Inland & Hammond San. Dist.	Yes	TBD	1996	TBD	
4.	The RAP GIS System	●	●	●	●	●	●	●	●	●	●	●	●	●	IDEM	Yes	TBD	1995	TBD	
B	Additional Voluntary Actions Supporting RAP Goals																			
1.	Corridor Planning	□	□	○	□	○	○	○	○	○	○	○	○	○	○	Grand Cal Task Force	Yes	TBD	1997	TBD
2.	Public Outreach and Education	●	●	●	●	●	●	●	●	●	●	●	●	●	All reps	Some	TBD	TBD	TBD	
3.	Citizen Advisory Groups	○	○	○	○	○	○	○	○	○	○	○	○	○	CAC's	Yes	TBD	TBD	TBD	
4.	The Southern Lake Michigan Conservation Initiative	□	□	●	□	○	□	□	□	□	●	□	□	●	The Nature conservancy	Yes	TBD	In Progress	TBD	
5.	The Ivanhoe Nature Preserve Restoration	□	□	●	□	○	□	□	□	□	●	□	□	●	The Nature conservancy	Yes	TBD	In Progress	TBD	
6.	The Clarke & Pine Nature Preserve, Eastern Addition Restoration	□	□	●	□	○	□	□	□	□	●	□	□	●	IDEM / IDNR / USFWS	Yes	TBD	In Progress	TBD	
7.	The Lost Marsh Restoration	□	□	●	□	○	□	□	○	□	○	□	□	●	AMOCO	Yes	TBD	In Progress	TBD	
8.	Interagency Technical Task Force on E. coli	□	□	□	□	□	□	□	○	●	●	□	□	□	IDEM / IDNR	Yes	TBD	1997	TBD	

EXAMPLE

● = Directly Related; ○ = Supportive; □ = Not Related
 (Definitions at end of Matrix)

* Activities listed as presented in Chapter 5

CURRENT ACTIVITIES ADVANCING THE RESTORATION OF BENEFICIAL USES (CONT'D)

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B	Additional Voluntary Actions Supporting RAP Goals (Cont'd)																			
9.	Indianapolis Boulevard Sewer Project															INDOT / AMOCO / IDEM	Yes	TBD	Began in ____?	Finished already '93?
10.	Amoco Bank Cleaning and Stabilization Project															Amoco	Yes	TBD	TBD	TBD
11.	Coordinated Resource Management Process															IDEM	Yes	TBD	TBD	TBD
12.	Great Lakes Watershed Initiative															IDEM	TBD	TBD	1994	TBD
13.	Sediment Transport Model															Army Corps of Engineers		TBD	TBD	TBD
14.	Dredged Sediments Disposal															IDEM / USEPA	Yes	TBD	1997	TBD
15.	Memorandum of Cooperation (MOC)															Five Companies	Yes	TBD	1994	TBD
16.	Lake Michigan Air directors Consortium															LADCO	Yes	TBD	1990	1991
17.	Ridesharing															Air Pollution Boards	Yes	TBD	1993	TBD
18.	Clean Cities Program															USDOE	Yes	TBD	TBD	TBD
19.	Ozone Action Days															Three States	Yes	TBD	1995	TBD
20.	Ozone Transport Assessment Group (OTAG)															OTC	Yes	TBD	1995	TBD
21.	Atmospheric Deposition															USGS	Yes	TBD	1992	1998

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	1.	Natural Resource Damage Assessment																IDEM / IDNR / USFWS / NOAA / NPS	Yes	TBD	1996	TBD
	2.	Soil and Water Conservation District (SWCD) Programs																Local	Yes	TBD	TBD	TBD
	2a.	The south bank of the Grand Calumet River in Gary, Ambridge/Mann area																Lake Co SWCD	Yes	TBD	TBD	TBD
	2b.	Roxanna Marsh in East Chicago																Lake Co SWCD	Yes	TBD	TBD	TBD
	2c.	The east shore of Wolf Lake in Hammond																Lake Co SWCD	Yes	TBD	In Progress	TBD
	3.	Costal Coordination Project																IDNR	Yes	TBD	In Progress	TBD
	4.	Watershed Management Program																IDEM	Yes	TBD	1996	TBD
	5.	Water Quality Certification																ACoE / USEPA / IDEM	Yes	TBD	TBD	TBD
	6.	Storm Water Control Program, Including Best Management Practices																IDEM	Yes	TBD	TBD	TBD
	7.	Control of Urban Runoff																IDEM	Yes	TBD	TBD	TBD
	8.	U.S. Army Corps of Engineers' Indiana Harbor and Canal Dredging Project																ACoE	Yes	TBD	1972	TBD
	9.	Ralston Street Lagoon																GSD	Yes	TBD	TBD	TBD
10.	Elimination of the Use of Slag as Fill Material																IDNR	Yes	TBD	TBD	TBD	
11.	U.S. EPA Advanced Identification of Sites (AIDS) Program																USEPA	Yes		1985	TBD	
12.	Hazardous Waste - Facilities regulated under the Resource Conservation and Recovery Act																IDEM	Yes	TBD	1990	TBD	

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	C Federal, State and Local Regulatory Actions that Support RAP Goals (Cont'd)																			
	13. Solid Waste (Illegal Dumps)										○					IDEM / Legal	Yes	Yes	In Existence	TBD
	14. State Clean Up															IDEM	Yes	Yes	In Existence	TBD
	15. Superfund															USEPA	Yes	Yes	In Existence	
	16. Waste Minimization															USEPA / IDEM	Yes	Yes	1984	TBD
	17. Transportation Programs															IDEM	Yes	TBD	In Existence	TBD
	18. Air Toxics Program															IDEM	Yes	TBD	1997	2001
	19. Mercury															IDEM	Yes	TBD	1997	TBD
	20. Dioxin															USEPA	Yes	TBD	TBD	1999
	21. Accidental Releases															IDEM / USEPA	Yes	TBD	1997	TBD
	22. Particulate Matter (PM10)															IDEM	Yes	TBD	TBD	TBD
	23. Ozone															USEPA	Yes	Yes	1997	2007
	24. Reformulated Gasoline															Local	Yes	In Existence	1995	TBD

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C	Federal, State and Local Regulatory Actions that Support RAP Goals (Cont'd)																			
	25. <i>The Environmental Performance Partnership Agreement</i>															IDEM / USEPA	Yes	2 Yr. EnPPA	To be Negotiated	To be Negotiated
	25a. Prevention / Reduction of Pollutants Entering the System															IDEM / USEPA	Yes	2 Yr. EnPPA	To be Negotiated	To be Negotiated
	25b. Achievement of Air Quality Standards															IDEM / USEPA	Yes	2 Yr. EnPPA	To be Negotiated	To be Negotiated
	25c. Meet Surface Water Quality Standards															IDEM / USEPA	Yes	2 Yr. EnPPA	To be Negotiated	To be Negotiated
	25d. Prevention of Sediment Accumulation															IDEM / USEPA	Yes	2 Yr. EnPPA	To be Negotiated	To be Negotiated
	25e. Municipal solid waste disposal will be reduced by 50 percent before January 1, 2001. Non-Municipal solid waste disposal will be reduced.															IDEM / USEPA	Yes	2 Yr. EnPPA	To be Negotiated	To be Negotiated
	25f. Solid waste disposal will be safely managed.															IDEM / USEPA	Yes	2 Yr. EnPPA	To be Negotiated	To be Negotiated
	25g. Protect Ground Water															IDEM / USEPA	Yes	2 Yr. EnPPA	To be Negotiated	To be Negotiated
	25g. Prevent and Clean Up Contaminated Sites															IDEM / USEPA	Yes	2 Yr. EnPPA	To be Negotiated	To be Negotiated
	25i. Increase Protection and Restoration of Critical Habitat by 100 percent by the Year 2007.															IDEM / IDNR / USFWS				

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D	Administrative Orders, Agreed Orders and Consent Decrees that Support RAP Goals																			
1.	H & H Autofluf Containment Removal Project															USEPA	Yes	No	TBD	TBD
2.	Amoco Pipeline Company															IDEM / AMOCO	Yes	TBD	TBD	TBD
3.	U.S. Steel (water decree)															USEPA	No	No	TBD	TBD
4.	U.S. Steel (sediment)															USEPA / USS	No	No	TBD	TBD
5.	Inland Steel Sediment Characterization Study in the IHSC															USEPA / INLAND	Yes	No	TBD	TBD
6.	Removal Action by LTV Steel															USEPA / LTV	Yes	No	Completed	19977
7.	Gary Sanitary District (GSD)															USEPA / IDEM / GSD	No	No	TBD	TBD
8.	Amoco Soil characterization Work Plan and Ground Water Evaluation															IDEM / AMOCO	Yes	No	1995	TBD
9.	Amoco Agreed Order															IDEM / AMOCO	Yes	No	In Existence	TBD
10.	Gary Lagoons Removal Site; 5622 and 5624-34 Industrial Highway															USEPA	Yes	No	1996	TBD
11.	United States Steel Corporation (U.S. Steel)															IDEM / USS	Yes	TBD	In Existence	TBD

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Additional Actions Necessary to Delist Impaired Beneficial Uses																				
A	Protection of critical habitats															CARE Habitat Sub-Comm.	No	TBD	TBD	TBD
B	Riparian Restoration															Several	Some	TBD	1996	TBD
C	Wetland Protection / Restoration															IDEM	Yes	TBD	TBD	TBD
D	Instream Habitat Restoration															Several	Some	TBD	1996	TBD
E	Invasive Plant Control															Several	Some	TBD	TBD	TBD
F	Underground Storage Tanks															IDEM				

CURRENT SYMBOL DEFINITION:

- = If the activity, action, process or tool is carried through, it will substantively advance the restoration of beneficial uses.
- = This activity, action, process or tool supports the restoration of beneficial uses.
- = No apparent *direct effect* on the restoration of beneficial uses.

* Activities listed as presented in Chapter 5

PREFACE

This document is the Stage II Remedial Action Plan submittal to the International Joint Commission for the Calumet area of Northwest Indiana. The plan identifies the challenges and supplies the tools and blueprints necessary for the people, the industries, and governments in this area to renew and rebuild the outstanding resources of the Grand Calumet region.

Northwest Indiana contributes significantly to the industrial and economic strength of this country. Nearly 40 percent of the nation's steel is produced in Northwest Indiana. Hundreds of millions of barrels of petroleum are refined here each year. The Indiana Harbor Ship Canal is the second most heavily used shipping port on Lake Michigan. These facts may be apparent to anyone who drives through Northwest Indiana.

Less obvious, however, is the remnant dune and swale topography. It gives rise to habitat that supports Karner Blue butterflies and dozens of other endangered and threatened species of insects, plants, and animals.

Those of us, who work, live, and raise our families in Northwest Indiana have learned to treasure these economic and ecological resources. We are committed to the revitalization of the Grand Calumet community and environment. Northwest Indiana is blessed with outstanding human resources. This Stage II Remedial Action Plan represents years of work by a wide variety of people. Steel executives, teachers, municipal representatives, nationally renowned local environmentalists, petroleum industry environmental managers, biologists, geologists, toxicologists, social scientists, bureaucrats, homemakers and local citizens all contributed their knowledge, their time and their passion.

Much of the real work of the Remedial Action Plan remains to be accomplished. Just as the crafting of the Stage II document was a multi-stakeholder process, commitment to implementation of the Remedial Action Plan must include many stakeholders. The Remedial Action Plan is deficient in the sense that it does not contain an assessment of each impaired use and the mechanism for its restoration. The Citizens Advisory for the Remediation of the Environment (CARE) Committee has developed a foundation for this process in the attached matrix. The matrix describes actions that are directly related, possibly related or not related to restoration of impaired uses. The matrix is a tool that will assist in determining restoration and will evolve over time.

The CARE Committee and IDEM have initiated the compilation of a draft matrix of actions underway and beneficial use impairments as a starting point for a more in depth analysis. The list of matrix activities is located in the table of contents for Chapter Five. The matrix describes actions that are directly related, supportive or not related to the restoration of impaired uses. The CARE Committee has currently defined "directly related" as follows: If the activity, action, process or tool is carried through, it will substantively advance the restoration of

beneficial uses. The CARE Committee has currently defined "supportive" as follows: This activity, action, process or tool supports the restoration of beneficial uses. It should be noted that cause-and-effect between activities and impaired beneficial uses has not been demonstrated or discussed in the context of these definitions and should not be inferred.

The Stage II document provides a framework for addressing the 14 beneficial use impairments in an ecosystem context and presents the current environmental conditions in the Area of Concern. The document identifies the physical, biological and chemical stresses to the ecosystem (key ecological processes) and links these stresses to the fourteen beneficial use impairments. While the Stage II document provides a draft matrix of actions underway and beneficial use impairments, an analysis of the matrix has yet to be completed. Further, prioritization of the beneficial use impairments and actions underway is critical in the next stage and will be submitted to the International Joint Commission as an addendum to the Stage II document in the fall of 1998.

In order to initiate an assessment of the matrix, IDEM and the CARE Committee will consider a number of issues surrounding the matrix. The matrix identifies many (60-plus) activities occurring in the Area of Concern that are expected to lead to restoration of beneficial uses that are currently impaired. IDEM and the CARE Committee will finalize the matrix in the coming year by using a systematic ecosystem approach.

Some of the activities are driven by regulation, such as the Air Toxics Program. Other activities are voluntary efforts, taken in cooperation with IDEM, such as the Amoco Agreed Order. All of these activities, and more, promise to improve the overall environmental quality of Northwest Indiana and the Area of Concern.

The Grand Calumet River and Indiana Harbor Ship Canal await restoration. To accomplish this task we will need the energy, strength and resources of the diverse communities and interests in the Area of Concern and beyond. The members of the CARE Committee look forward to working with you to implement this Remedial Action Plan.

EXECUTIVE SUMMARY

In 1978 the Great Lakes Water Quality Agreement (Agreement) was established between the United States and Canada. The Agreement addresses forty-three Areas of Concern recognized in the Great Lakes Basin. These Areas of Concern were identified by having one or more specific impairment to the fourteen beneficial uses of the Great Lakes ecosystem. This led to the initiation of the Remedial Action Plan, the blueprint for restoring the beneficial uses.

All fourteen beneficial uses are impaired in the Grand Calumet River and Indiana Harbor Ship Canal. As part of the Remedial Action Plan process, former Indiana Department of Environmental Management (IDEM) Commissioner, Kathy Prosser, appointed a group of individuals to oversee the development of a Remedial Action Plan. This group is composed of representatives of industry, local government, citizen groups, and education to assist in the development and coordination of the Remedial Action Plan, and is known as the CARE Committee.

The International Joint Commission requires Remedial Action Plans to be submitted in three separate stages. Stage I, released in 1992, defined the environmental problems and identified the beneficial uses that are impaired. Stage II includes remedial and regulatory measures to restore the Area of Concern. The Stage II addendum will establish priorities and time frames for implementation. Stage III will include a monitoring strategy and will identify the degree of restoration of the beneficial uses. A biennial status report will be published by IDEM and the CARE Committee. The goals incorporated in this Stage II document deal specifically with restoring the fourteen beneficial uses by taking an ecosystem approach in designing remedial measures.

Chapter One provides an explanation of the goals of this document and public's role in developing these goals. The International Joint Commission requires each Stage II Remedial Action Plan to name specific Remedial Action Plan goals and quantifiable objectives, and their relationship to use impairments. The achievement of the Remedial Action Plan goals, includes participation by environmental groups, the public, state and federal agencies, local government, business and industry.

Chapter Two supplements the Stage I document by detailing the ecological process; habitat found in the area; and state of the water, ground water, sediment, soil and air. This chapter addresses the International Joint Commission's reservations by outlining an ecosystem approach to restoration in approving the Stage I document for this Area of Concern. The ecological resources of the area include eighteen natural community types, more than seven hundred species of plants, and more than two hundred species of birds. Seven of the community types, eighty-five of the plant species, and eighteen of the nesting bird species are globally or state significant. Important natural processes that contributed to the development of the region's diversity have been altered by human development. Ecological succession and hydrologic

interconnections have been disrupted by stressors such as habitat fragmentation, fire suppression, hydrologic modification, exotic species, shoreline alteration and environmental contamination. As a result of these stressors, the critical habitat areas remain in varying states of degradation, from minimally disturbed to severely degraded. Some of these critical habitat areas include the Miller Woods and Dunes area, the Clarke and Pine East preserve, the DuPont Dune and Swale area, the Gary Airport Sedge Meadow area, and Roxanna Marsh.

Environmental conditions in the Area of Concern exist in a wide range of extremes. There are multiple heavily contaminated National Priorities List sites side by side with natural areas of significant biological diversity. The area contains ecological resources of global significance that are immediately threatened by adjacent contaminated sites. Water in the Grand Calumet River, Indiana Harbor Ship Canal and nearshore Lake Michigan fails to meet its designated standards. Contaminated sediments, contaminated groundwater, and air deposition contribute to this problem. Diverse terrestrial and wetland communities contrast with degraded aquatic communities. Fish that are able to survive in the system are so heavily contaminated that they are unfit for human consumption.

Chapter Three identifies several stressors on the environment. These stressors are contamination, fragmentation and loss of physical habitat, altered hydrology, shoreline alterations, exotic species introduction, and fire suppression. The significant amount of stress in the Area of Concern has caused much of the degradation of the ecosystem, resulting in the loss of habitat, increased sedimentation, and lack of or excessive nutrient loadings. The stress can occur from either biological, physical, or chemical factors. The six leading contributors to the high level of stress are almost all derived from human activity.

Chapter Four focuses on the evolution of the Remedial Action Plan; its origination and its current activities. Public participation is a major component of the Remedial Action Plan process. Citizens, environmental groups and government agencies concerned about the impact of the polluted Grand Calumet River sought ways to bring attention to the problems of the Grand Calumet River. This concern led to the formation of the Grand Calumet Task Force. It was through the creation of the Task Force that a Remedial Action Plan for the site designated by the International Joint Commission as an Area of Concern was formed. Historically, little attention was paid to conservation in land use planning in the Area of Concern. However, recently combined efforts between the public, state and local agencies has led to the purchase and dedication of land as nature preserves. IDEM and other regulatory agencies constantly continue to encourage the public to identify potential problems and to call these problems to the attention of local, state or federal officials.

Chapter Five broadens the description of activities in the Area of Concern and includes actions in progress to remediate and restore the environment. The chapter ends with a section on identified additional actions necessary to delist the impaired beneficial uses in the Area of Concern. There are several ongoing activities; some are voluntary, others are driven by statutes and rules. Improvements in water quality, air quality, and reductions in non point source

pollution have all occurred. Some natural areas have been restored, others are now protected. Chapter Five provides a detailed discussion of the points incorporated in the matrix located at the beginning of this document.

Chapter Six identifies data gaps. Studies to quantify and address data gaps are listed. Those listed may be completed within a five-year time frame. Complete ecosystem recovery will take a long time and the need for further action may be determined as studies progress and actions are undertaken.

Chapter Seven reveals an outline of the surveillance and monitoring program and the environmental indicators that will be used to measure the state of the environment through the Remedial Action Plan. IDEM staff are currently developing surveillance and monitoring strategies for each of the fourteen impaired beneficial uses. The Environmental Performance Partnership Agreement (EnPPA) between the U.S. EPA and IDEM will aid in the restoration of these impaired beneficial uses by the creation of environmental indicators. Some of these indicators will be the building blocks for which surveillance and monitoring strategies are established and revised. Each strategy may address just one or many impaired beneficial uses that can lead to the delisting of each beneficial use.

Chapter Eight ends the document with a discussion of the strategy to coordinate the information received regarding the status of the environment and distribute it to all interested parties. As prescribed by the Remedial Action Plan Coordinating Committee, the responsibility of the Multi-Media Data Coordination team (MMDC) is to provide coherence and consistency in the data for Stage II draft documents. The MMDC team's primary tool for achieving this and showing the status of the impaired uses is to implement a geographic information system (GIS) for Northwest Indiana region, including the Area of Concern. The Remedial Action Plan GIS serves as an ongoing Stage I database and defines the baseline conditions to gauge progress in restoring beneficial uses. It represents a key effort of the Remedial Action Plan Coordinating Committee to incorporate an ecosystem approach into the Remedial Action Plan by encouraging each Technical Remedial Action Plan Team to use disparate databases in the preparation of its selected actions. The public may access this database to review the status of the beneficial uses in the ecosystem.

The Remedial Action Plan process not only challenges the limits of environmental technology, it challenges the endurance of those involved in remediating and restoring this ecosystem. Restoration of the Area of Concern will take decades. This document provides an ecosystem framework for long-term restoration. The document does not by itself guarantee the full restoration of this ecosystem.

IDEM recognizes that the active participation and commitment of other agencies, community groups, environmental organizations and industry are critical to attaining the goals of the Remedial Action Plan. Environmental management is among the highest corporate priorities and is a critical factor in maintaining responsible and constructive corporate development.

IDEM and other government agencies will provide legal and technical leadership to environmental organizations, community groups, and business and industry in a concerted effort to restore ecosystem function within the Area of Concern.

ACKNOWLEDGMENTS

The preparation of Stage II has been a cooperative effort of many individuals. Both Governor Frank O'Bannon, through Commissioner John Hamilton and former Governor Evan Bayh, through former IDEM Commissioners, Michael O'Connor and Kathy Prosser have provided the financial support and institutional leadership to develop this publication. Many individuals from IDEM and other agencies of the State of Indiana deserve recognition for their participation in the deliberations of the Technical Remedial Action Plan Teams and for providing overall guidance through the Remedial Action Plan Coordinating Committee. The names of those who participated in these groups are listed in the Appendices.

The financial and technical support provided by the federal government, primarily U.S. EPA, was critical to the completion of the Stage II document. Valdas Adamkus, former Regional Administrator of EPA Region V, and Christopher Grundler, former Director of the Great Lakes National Program Office, have provided invaluable technical resources and support. The many U.S. EPA individuals and individuals from other federal agencies who participated in the Technical Remedial Action Plan Team deliberations are listed in the Appendices.

The CARE Committee has shown great determination in seeing the Stage II document completed. The CARE members' voluntary contributions of time and expertise in representing industry, environmental organizations, education, municipalities, and citizens in the Area of Concern were crucial to the development of the Stage II document. Several CARE members also served as Remedial Action Plan Champions to lead review and implementation of the Stage II document. The Remedial Action Plan Champions are listed in the Appendices with the Agency Contacts for each group of selected action of the Stage II document.

The individuals who participated in the Subgroup deliberations are listed in the appendices. Many other Remedial Action Plan participants contributed to the development of the Stage II document. Their help is appreciated and will be instrumental in implementing the Stage II document. The organizations these individuals represent are listed in the appendices. We apologize to anyone inadvertently omitted.

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LIST OF ACRONYMS

- AIDS:** Advanced Identification of Sites
- AIRs:** Aerometric Information Retrieval System
- ARCS:** Assessment and Remediation of Contaminated Sediments
- BIF:** Boiler /Industrial Furnace
- BMPs:** Best Management Practices
- °C:** Degrees Celsius
- CAA:** Clean Air Act
- CAAA:** Clean Air Act Amendments
- CAAP:** Clean Air Act Program
- CAC:** Citizen's Advisory Committee
- CARE:** Citizens' Advisory for the Remediation of the Environment
- CBOD₅:** Carbonaceous Biochemical Oxygen Demand
- CDF:** Confined Disposal Facility
- CEMS:** Continuous Emission Monitoring
- CERCLA:** Comprehensive Environmental Response, Compensation and Liability Act
- CFR:** Code of Federal Regulations
- cfs:** Cubic feet per second
- CO:** Carbon Monoxide
- CRM:** Coordinated Resource Management
- CSO:** Combined Sewer Overflow

CSOP: Combined Sewer Operational Plan

CTAP: Compliance and Technical Assistance Program

CWA : Clean Water Act

CY: Cubic yards

DEIS: Draft Environmental Impact Statement

DELT: Deformities, Eroded Fins, Lesions, and Tumors

DO: Dissolved Oxygen

DOE: Department of Energy

ECI: Energy Cooperative, Inc.

ECO: Employee Commute Options

EIS: Environmental Impact Statement

EnPPA: Environmental Performance Partnership Agreement

EPCRA: Emergency Planning and Community Right to Know

FBI: Family Biotic Index

FESOP: Federally Enforceable State Operating Permits

FFY: Federal Fiscal Year

FPH: Free Phase Hydrocarbons

GIS: Geographic Information System

GLAT: Great Lakes Action Team

GLI: Great Lakes Initiative

GLWQA: Great Lakes Water Quality Agreement

GLWQG: Great Lakes Water Quality Guidance

GRASS: Geographic Resources Analysis Support System

GSD: Gary Sanitary District

HAP: Hazardous Air Pollutants

HLP: Hammond Lead Products

HON: Hazardous Organic NESHAP

HPV: Health Protection Value

HSD: Hammond Sanitary District

IAC: Indiana Administrative Code

IACT: Indiana Association of Cities and Towns

IBI: Index of Biotic Integrity

IC: Indiana Code

IDEM: Indiana Department of Environmental Management

IDNL: Indiana Dunes National Lakeshore

IDNR: Indiana Department of Natural Resources

IHSC: Indiana Harbor Ship Canal

IITRI: Indiana /Illinois Toxic Release Inventory

ISTEA: Intermodal Surface Transportation Enforcement Act

ITM: Inland Testing Manual

LADCO: Lake Michigan Air Directors Consortium

LaMP: Lakewide Management Plan

LARE: IDNR Lake and River Enhancement Program

LMF: Lake Michigan Federation

LQERs: Lesser-Quantity Emission Rates

LQG: Large Quantity Generators

LTCP: Long Term Control Plan

LUST: Leaking Underground Storage Tanks

MACT: Maximum Achievable Control Technology

mgd: Million gallons per day

MIS: Management Information Services (IDEM)

MMDC: Multi-media Data Coordination

MOC: Memorandum of Cooperation

NAAQS: National Ambient Air Quality Standards

NESHAP: National Emission Standards for Hazardous Air Pollutants

NIPSCO: Northern Indiana Public Service Company

NIRPC: Northwestern Indiana Regional Planning Commission

NO₂: Nitrogen dioxide

NO_x: Nitrogen oxides

NPDES: National Pollutant Discharge Elimination System

NPL: National Priorities List

NPS: Nonpoint Source

NRCS: Indiana Department of Natural Resources, Division of Soil Conservation

NSPS: New Source Performance Standards

NWIAP: Northwest Indiana Action Plan

O₃: Ozone

OAM: Office of Air Management

OER: Office of Environmental Response

OPA: Oil Pollution Act

OPPTA: Office of Pollution Prevention and Technical Assistance

ORSANCO: Ohio River Valley Water Sanitation Commission

OSHWM: Office of Solid and Hazardous Waste Management

OTAG: Ozone Transport Assessment Group

OWM: Office of Water Management

PAHs: Polycyclic Aromatic Hydrocarbons

PAMS: Photochemical Assessment Monitoring Site

PCB: Polychlorinated Biphenyls

PM₁₀: Particulate Matter

POTW: Publicly Owned Treatment Works

ppb: Parts per billion

ppm: Parts per million

PSDDF: Primary Consolidation, Secondary Compression and Desiccation of Dredged Fill

RAPCC: Remedial Action Plan Coordinating Committee

RAPIDS: Regional Air Pollutant Inventory Development System

RCRA: Resource Conservation and Recovery Act

RDV: Reference Dose Value

SCRAP: Sediment Cleanup Restoration Alternatives Project

SIC: Standard Industrial Classification

SIP: State Implementation Plan

SO₂: Sulfur Dioxide

SRCER: Stream Reach Characterization and Evaluation Protocol Report

SRF: State Revolving Loan Fund

SWCD: Soil and Water Conservation District

TMDL: Total Maximum Daily Load

TNC: The Nature Conservancy

TRI: Toxic Release Inventory

TRPH: Total Recoverable Petroleum Hydrocarbons

TSCA: Toxic Substances Control Act

TSD: Treatment, storage, and disposal facilities

TSP: Total Suspended Particulate

TSS: Total Suspended Solids

U.S. ACE: United States Army Corps of Engineers

USC: United States Code

U.S. DOE: United States Department of Energy

U.S. FWS: United States Fish and Wildlife Service

U.S. EPA: United States Environmental Protection Agency

USGS: United States Geological Survey

U.S. Steel: United States Steel Corporation

VOC: Volatile Organic Compound

VOCAMP: Visible Oil Corrective Action Monitoring Program

WQBELs: Water Quality Based Effluent Limitations

WQC: Water Quality Criteria

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IMPAIRED USE EVALUATION	LISTING GUIDELINE	DELISTING GUIDELINE	RATIONALE	EXISTING CONDITIONS	SOURCE OR CAUSE OF THE PROBLEM
<p>i. RESTRICTIONS ON FISH AND WILDLIFE CONSUMPTION</p>	<p>When contaminant levels in fish or wildlife populations exceed current standards, objectives or guidelines, or public health advisories are in effect for human consumption of fish or wildlife. Contaminant levels in fish and wildlife have been mitigated.</p>	<p>When contaminant levels in fish and wildlife populations do not exceed current standards, objectives or guide, and no public health advisories are in effect for human consumption of fish or wildlife. Contaminant levels in fish and wildlife must be due to contaminant input from the watershed.</p>	<p>Accounts for jurisdictional and federal standards; emphasizes local watershed sources.</p>	<p>Extremely pollution tolerant forms of fish such as carp, and invertebrates such as Oligochaetes, are dominant. There is a lack of a stable fish community in the Grand Calumet River and Indiana Harbor Ship Canal. Existing information is not comprehensive and is too sparse to accurately and fully describe conditions.</p> <p>Indiana currently has fish consumption advisories for mercury in certain sizes of Carp, Longnose Sucker, and White Sucker; and for PCBs in certain sizes of Black Crappie, Brook Trout, Brown Trout, Carp, Catfish, Chinook Salmon, Coho Salmon, Lake Trout, Largemouth Bass, Longnose Sucker, Northern Pike, Pink Salmon, Rainbow Trout, Walleye, Whitefish, and White Sucker. (See 1997 Indiana Fish Consumption Advisory for more details).</p>	<ul style="list-style-type: none"> -Contaminated sediments - industrial and municipal effluents -Combined sewer overflows -Urban surface runoff -Spills -Groundwater contamination -Atmospheric deposition of mercury

IMPAIRED USE EVALUATION	LISTING GUIDELINE	DELISTING GUIDELINE	RATIONALE	EXISTING CONDITIONS	SOURCE OR CAUSE OF THE PROBLEM
ii. TAINTING OF FISH AND WILDLIFE FLAVOR	When ambient water quality standards, objectives, or guidelines, for the anthropogenic substance(s) known to cause tainting, are being exceeded or survey results have identified tainting of fish or wildlife flavor.	When survey results confirm no tainting of fish or wildlife flavor.	Sensitive to ambient water quality standards for tainting substances: emphasizes survey results	There is currently a consumption advisory on various types and sizes of fish in the Grand Calumet River and the Indiana Ship Canal, making this data difficult to obtain.	-Contaminated sediments
iii. DEGRADED FISH AND WILDLIFE POPULATIONS	When fish and wildlife management programs have identified degraded fish or wildlife populations due to a cause within the watershed. In addition, this use will be considered impaired when relevant, field-validated, fish or wildlife bioassays with appropriate quality assurance/quality controls confirm significant toxicity from water column or sediment contaminants.	When environmental conditions support healthy, self-sustaining communities of desired fish and wildlife at predetermined levels of abundance that would be expected from the amount and quality of suitable physical, chemical and biological habitat present. An effort must be made to ensure that fish and wildlife objectives for Areas of Concern are consistent with Great Lakes ecosystem objectives and Great Lakes Fishery Commission fish community goals. Further, in the absence of community structure data, this use will be considered restored when fish and wildlife bioassays confirm no significant toxicity from water column or sediment contaminants.	Emphasizes fish and wildlife management program goals; consistent with Agreement and Great Lakes Fishery Commission goals; accounts for toxicity bioassays.	Extremely pollution tolerant forms of fish, such as carp, and invertebrates such as Oligochaetes, are dominant. There is a lack of a stable fish community in the river and harbor. Existing information is not comprehensive and is too sparse to accurately and fully describe conditions.	<ul style="list-style-type: none"> -Introduction of exotic species. -Contaminated sediments -Industrial and municipal effluents -Combined sewer overflows -Urban surface runoff -Inputs from industries and municipalities -Spills -Groundwater contamination -Degradation/removal of physical spawning and nursery habitat from aquatic system and destruction of physical habitat in terrestrial system -Over fishing -Loss of genetic diversity in native populations -Atmospheric deposition of mercury

IMPAIRED USE EVALUATION	LISTING GUIDELINE	DELISTING GUIDELINE	RATIONALE	EXISTING CONDITIONS	SOURCE OR CAUSE OF THE PROBLEM
iv. FISH TUMORS OR OTHER DEFORMITIES	When the incidence rates of fish tumors or other deformities exceed rates at unimpacted control sites or when survey data confirm the presence of neoplastic or preneoplastic liver tumors in bullheads or suckers.	When the incidence rates of fish tumors or other deformities do not exceed rates at unimpacted control sites and when survey data confirm the absence of neoplastic or preneoplastic liver tumors in bullheads or suckers.	Consistent with expert opinion on tumors; acknowledges background incidence rates.	DELT Anomalies are documented to occur at 3.5% in the Grand Calumet River and up to 12.5% in the Indiana Harbor Ship Canal. Reference conditions would be 0.1% for Lake Michigan Tributaries. See <u>Central Cornbelt Region</u> , "Development of Index of Biotic Integrity, Expectations for the Ecoregions of Indiana, EPA document number 905/9-91/025	<ul style="list-style-type: none"> -Contaminated sediments -Bacterial, fungal, viral, and parasitic infections, neoplastic diseases, and chemicals -Chemical pollutants, overcrowding, improper diet, excessive siltation, and other perturbations -Dischargers of industrial and municipal wastewater -CSO and urban runoff <p>For more detailed information see Remedial Action Plan Support Document, "Pre-remedial Biological and Water Quality Assessment of the East Branch of the Grand Calumet River," U.S. FWS, 6/94</p>
v. BIRD OR ANIMAL DEFORMITIES OR REPRODUCTIVE PROBLEMS	When wildlife survey data confirm the presence of deformities (e.g. cross-bill syndrome) or other reproductive problems (e.g. egg-shell thinning) in sentinel wildlife species.	When the incidence rates of deformities (e.g. cross-bill syndrome) or reproductive problems (e.g. egg-shell thinning) in sentinel wildlife species do not exceed background levels in inland control populations.	Emphasizes confirmation through survey data; makes necessary control comparisons.	U.S. Fish & Wildlife Service has confirmed limited bird/animal deformities in the Grand Calumet River system and Lake George. Reproductive impairments have been documented in several bird species in or feeding in the Area of Concern.	<ul style="list-style-type: none"> -Toxics -Contaminated fish tissue -Degraded water quality -Contaminated sediments -Combined sewer overflows -Urban runoff -Contaminated groundwater -Air toxics -Inputs from industries and municipalities

IMPAIRED USE EVALUATION	LISTING GUIDELINE	DELISTING GUIDELINE	RATIONALE	EXISTING CONDITIONS	SOURCE OR CAUSE OF THE PROBLEM
vi. DEGRADATION OF BENTHOS	When the benthic macroinvertebrate community structure significantly diverges from unimpacted control sites of comparable physical and chemical characteristics. In addition, this use will be considered impaired when toxicity (as defined by relevant, field-validated, bioassays with appropriate quality assurance/quality controls) of sediment-associated contaminants at a site is significantly higher than controls.	When the benthic macroinvertebrate community structure does not significantly diverge from unimpacted control sites of comparable physical and chemical characteristics. Further, in the absence of community structure data, this use will be considered restored when toxicity of sediment-associated contaminants is not significantly higher than controls.	Accounts for community structure and composition; recognizes sediment toxicity; uses appropriate control sites.	Only pollution tolerant species (communities) exist in benthos. No information available for benthos in fluvial-lacustrine zone.	<ul style="list-style-type: none"> -Contaminated sediments -Industrial and municipal effluents -Combined sewer overflows -Urban runoff -Inappropriate nearshore dredging and deposition -Non-conventional inputs to POTWs -Offshore dumping -Spills and chemical treatment of water column -Groundwater contamination -Siltation of aquatic habitats -Loss of Riparian habitat -Loss of aquatic habitat from debris and litter
vii. RESTRICTIONS ON DREDGING ACTIVITIES	When contaminants in sediments exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities.	When contaminants in sediments do not exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities.	Accounts for jurisdictional and federal standards; emphasizes dredging and disposal activities.	The bottom sediments in the Indiana Harbor Ship Canal are contaminated and unsuitable for open water disposal in Lake Michigan. Neither are they suitable for unconfined disposal or for beneficial use.	<ul style="list-style-type: none"> -Contaminated sediments -Industrial and municipal effluents -Combined sewer overflows -Urban runoff Currently no feasible or cost effective facility exists to dispose of the contaminated sediments.
viii. EUTROPHICATION OR UNDESIRABLE ALGAE	When there are persistent water quality problems (e.g. dissolved oxygen depletion of bottom waters, nuisance algal blooms or accumulation, decreased water clarity, etc.) attributed to cultural eutrophication.	When there are no persistent water quality problems (e.g. dissolved oxygen depletion of bottom waters, nuisance algal blooms or accumulation, decreased water clarity, etc.) attributed to cultural eutrophication.	Consistent with Annex 3 of the Agreement; accounts for persistence of problems.	No data available.	<ul style="list-style-type: none"> -Contaminated sediments -Introduction of exotic species -Nutrient loadings

IMPAIRED USE EVALUATION	LISTING GUIDELINE	DELISTING GUIDELINE	RATIONALE	EXISTING CONDITIONS	SOURCE OR CAUSE OF THE PROBLEM
ix. RESTRICTIONS ON DRINKING WATER CONSUMPTION OR TASTE AND ODOR PROBLEMS	When drinking water supplies are impacted to the extent that: 1) densities of disease-causing organisms or concentrations of hazardous or toxic chemicals or radioactive substances exceed human health standards, objectives or guidelines; 2) taste and odor problems are present; or 3) treatment needed to make raw water suitable for drinking is beyond the standard treatment used in comparable portions of the Great Lakes which are not degraded (i.e. settling, coagulation, disinfection).	For treated drinking water supplies: 1) when densities of disease-causing organisms or concentrations of hazardous or toxic chemicals or radioactive substances do not exceed human health objectives, standards or guidelines; 2) when taste and odor problems are absent; and 3) when treatment needed to make raw water suitable for drinking does not exceed the standard treatment used in comparable portions of the Great Lakes which are not degraded (i.e. settling, coagulation, disinfection).	Consistency with the Agreement; accounts for jurisdictional standards; practical; sensitive to increased cost as a measure of impairment.	Currently, there are no drinking water restrictions in either Lake or Porter County.	-Unknown

IMPAIRED USE EVALUATION	LISTING GUIDELINE	DELISTING GUIDELINE	RATIONALE	EXISTING CONDITIONS	SOURCE OR CAUSE OF THE PROBLEM
x. BEACH CLOSINGS	When waters, which are commonly used for total-body contact or partial-body contact recreation, exceed standards, objectives, or guidelines for such use.	When waters, which are commonly used for total-body contact or partial-body contact recreation, do not exceed standards, objectives, or guidelines for such use.	Accounts for use of waters; sensitive to jurisdictional standards; addresses water contact recreation; consistent with the agreement.	Indiana criteria for swimmable waters for <i>E. coli</i> counts is 235 colonies per 100 ml of water for a single sample and a monthly average geometric mean of 126 colonies per 100 ml of water. While in 1995 the National Park Service at Indiana Dunes National Lakeshore documented 45 exceedences of State criteria for <i>E. coli</i> , there were very few beach closings.	<ul style="list-style-type: none"> -Contaminated sediments -Treatment facilities -Underground injection wells -Industrial waste -Combined sewer overflows -Septic systems improperly maintained -Loss or degradation of wetlands -Urban runoff -Agricultural runoff -Land application -Wildlife -Commercial and recreational operation of vessels -Operations of marinas and ports -Human recreational activities -Domestic animals on beaches -Natural phenomena

IMPAIRED USE EVALUATION	LISTING GUIDELINE	DELISTING GUIDELINE	RATIONALE	EXISTING CONDITIONS	SOURCE OR CAUSE OF THE PROBLEM
xi. DEGRADATION OF AESTHETICS	When any substance in water produces a persistent objectionable deposit, unnatural color or turbidity, or unnatural odor (e.g. oil slick, surface scum).	When the waters are devoid of any substance which produces a persistent objectionable deposit, unnatural color or turbidity, or unnatural odor (e.g. oil slick, surface scum).	Emphasizes aesthetics in water; accounts for persistence.	<p>Debris litters the Banks of the Grand Calumet River and the Canal. The banks of the harbor appear to be saturated with petroleum. The river and the harbor often have oily sheen. The Lake Michigan waters often appear murky at the mouth of the Indiana Harbor Ship Canal.</p> <p>Copious amounts of debris found in some benthic areas of aquatic system.</p> <p>Riparian emergent vegetation covered with oil along most of east branch and canal.</p> <p>Strong sewage and petroleum odors.</p>	<ul style="list-style-type: none"> -Contaminated sediments -Combined sewer overflows -Groundwater contamination -Spills -Public littering, especially from recreational activities -Commercial dumping -Poor management for land and water litter control -Natural turbulence (storms)
xii. ADDED COSTS TO AGRICULTURE OR INDUSTRY	When there are additional costs required to treat the water prior to use for agricultural purposes (i.e. including, but not limited to, livestock watering, irrigation and crop-spraying) or industrial purposes (i.e. intended for commercial or industrial applications and noncontact food processing).	When there are no additional costs required to treat the water prior to use for agricultural purposes (i.e. including, but not limited to, livestock watering, irrigation and crop-spraying) and industrial purposes (i.e. intended for commercial or industrial applications and noncontact food processing).	Sensitive to increased cost and a measure of impairment.	<p>Various docks are restricted, causing double handling of bulk commodities.</p> <p>Ships must enter the Harbor at less than optimum vessel drafts.</p>	<ul style="list-style-type: none"> -Contaminated sediments -Inadequate channel depth (no dredging for 20 years)

IMPAIRED USE EVALUATION	LISTING GUIDELINE	DELISTING GUIDELINE	RATIONALE	EXISTING CONDITIONS	SOURCE OR CAUSE OF THE PROBLEM
<p>xiii. DEGRADATION OF PHYTOPLANKTON AND ZOOPLANKTON POPULATIONS</p>	<p>When phytoplankton or zooplankton community structure significantly diverges from unimpacted control sites of comparable physical and chemical characteristics. In addition, this use will be considered impaired when relevant, field-validated, phytoplankton or zooplankton bioassays (e.g. Ceriodaphnia; algal fractionation bioassays) with appropriate quality assurance/quality controls confirm toxicity in ambient waters.</p>	<p>When phytoplankton and zooplankton community structure does not significantly diverge from unimpacted control sites of comparable physical and chemical characteristics. Further, in the absence of community structure data, this use will be considered restored when phytoplankton and zooplankton bioassays confirm no significant toxicity in ambient waters.</p>	<p>Accounts for community structure and composition; recognizes water column toxicity; uses appropriate control sites.</p>	<p>IDEM has never conducted zooplankton work. The most recent phytoplankton work was performed four years ago, but the results were inconclusive and the study was discontinued.</p>	<ul style="list-style-type: none"> -Introduction of exotic species -Contaminated sediments

IMPAIRED USE EVALUATION	LISTING GUIDELINE	DELISTING GUIDELINE	RATIONALE	EXISTING CONDITIONS	SOURCE OR CAUSE OF THE PROBLEM
xiv. LOSS OF FISH AND WILDLIFE HABITAT	When fish and wildlife management goals have not been met as a result of loss of fish and wildlife habitat due to a perturbation in the physical, chemical, or biological integrity of the Boundary Waters, including wetlands.	When the amount and quality of physical, chemical, and biological habitat required to meet fish and wildlife management goals have been achieved and protected.	Emphasizes fish and wildlife management program goals; emphasizes water component of Boundary Waters.	-Poor habitat quality because of physical and chemical reasons. -Limited habitat	<ul style="list-style-type: none"> -Industrialization -Draining and filling of wetlands -Degraded water quality -Contaminated sediments -Destruction of terrestrial natural areas and wetlands -Destruction of macrophyte communities in Nearshore (Coastal Shore) communities -Loss of aquatic habitat from debris and litter -Loss of riparian zone vegetation -Siltation of aquatic habitats -Disconnection of coastal lagoons from Lake Michigan -Thermal increases of the river system from non-contact cooling water -Large scale disturbance due to inappropriate river and nearshore dredging, deposition and construction