

**The Great Lakes: An Analysis of Federal Specific,  
Federal General and State Programs**

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# Executive Summary

## **Purpose:**

The federal government has been a major advocate in the restoration of the Great Lakes. By administering programs at the federal level, efforts to research, provide technical assistance and monitor the condition of the Great Lakes have significantly impacted restoration efforts. Although collaboration efforts have been made, the sheer number and proliferation of programs benefiting the Great Lakes both specifically and generally brings about questions of effectiveness and efficiency. Often times the federal government is charged with administering a multitude of programs that are duplicative and overlapping, and the Great Lakes federal programs are a prime example. Several of these programs serve the same basic functions, objectives, missions and services, reducing the efficiency and effectiveness of individual programs. Because of this, programs associated with the Great Lakes were analyzed and researched in attempts to find areas needing attention and places for consolidation, integration, better coordination and elimination.

## **Background:**

The Great Lakes Regional Collaboration (GLRC) strategy report provides analysis on the challenges facing the Great Lakes and offers suggestions in terms of strategy by highlighting six major categorical problems threatening restoration and sustainability in the Great Lakes today. The priority areas illustrated in the report include: Aquatic Invasive Species, Habitat/Species, Coastal Health, AOC/Sediments, Non-point Source Pollution and Toxic Pollutants. The need for a collaborative strategy came about as a result of an Executive Order made by President George W. Bush on May 18, 2004. President Bush signed an Executive Order that recognized the Great Lakes as a precious resource and mandated the creation of an Interagency Task Force to improve federal coordination for Great Lakes' restoration efforts.

## **Program Analysis:**

Having consolidation as our basic analytical framework and the GLRC strategy report as a primary guide, program analysis was conducted for three separate groups of programs: Federal Specific, Federal General and State. These programs distinctions are found in an April 2003 GAO report titled, *An Overall Strategy and Indicators for Measuring Progress Are Needed to Better Achieve Restoration Goals*. Each group of programs will be explained in turn.

## **Federal Specific Programs:**

Federal specific programs are those that have been created explicitly for the Great Lakes. The GLRC strategy report's priority areas, which will be referred to as categories, were used as a guide for analysis. Based on the six categories, program analysis has been conducted for 33 federal Great Lakes specific programs. Each program was grouped into a category based on the function of the program. The categorizations help identify how each program is contributing to the Great Lakes. Knowing the problem areas of the Great Lakes and what programs exist to support them, this analysis will foster a better understanding of ways to improve collaboration. Recommendations will be made that intend to be used as benchmarks by showing where the

Great Lakes collaboration effort currently is and where it needs to go. Specific recommendations pertaining to duplication, gaps and consolidation of programs will also be pointed out.

**Federal General Programs:**

Federal general programs are those that involve the localized application of national environmental initiatives and do not specifically focus on the Great Lakes. For example, the Endangered Species Program, administered by the U.S. Fish and Wildlife Service, aids in the conservation of the nation’s natural resources, not just the natural resources of the Great Lakes. Program analysis was conducted for 116 federal general Great Lakes programs. In addition to the Collaboration’s six categories, new categories were developed and federal general programs were categorized accordingly.

**State Programs:**

The eight Great Lakes states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin were researched for potential programs benefiting the Great Lakes. State programs are those that have been created either primarily for the Great Lakes, or the Great Lakes is a beneficiary. The Great Lakes Protection Fund is a fund that incorporates seven of the eight Great Lakes states and is designed to support the creative work of collaboration, multi-disciplinary project teams that test new ideas, take risks and share what they have learned. The information presented is used to illustrate the need for enhanced communication and collaboration at all levels of government.

**Recommendations:**

Considering the 149 federal and 11 state programs addressing Great Lakes restoration efforts and recognizing that each program is administered by a different federal agency, our overall recommendation is to consolidate programs. Program consolidation promises increased efficiency and effectiveness in program operations by lowering costs, increasing program impact, creating an organizational system that is transparent and stable and increasing innovation due to collaboration. Overall, consolidation was done for 28 out of the 33 federal specific Great Lakes programs by organizing them into 6 categories, which is approximately 85%. In addition, consolidate was done for 103 out of the 116 Federal General Great Lakes programs by organizing them into 13 categories, which is approximately 90%. Consolidation was not recommended for state programs; rather, observations have been pointed out in regards to individual state involvement and contributions both programmatic and financial.

## **Introduction**

The Great Lakes are considered a unique and valuable resource that provides 11,000 miles of shoreline to eight states and Canada, while supplying fresh drinking water and recreation for more than 35 million Americans. As a historical, cultural, and economic resource, the Great Lakes face many challenges. From the introduction of invasive species to coastal health, these stressors have compromised the environmental health of the Great Lakes. As a result, it has become a high priority at every level of government to restore and protect this precious resource.

The federal government has been a major advocate in the restoration of the Great Lakes. By administering programs at the federal level, efforts to research, provide technical assistance and monitor the condition of the Great Lakes have significantly impacted restoration efforts. Although collaboration efforts have been made, the sheer number and proliferation of programs benefiting the Great Lakes both directly and indirectly brings about questions of effectiveness and efficiency. Often times the federal government is charged with administering a multitude of programs that are duplicative and overlapping, and the Great Lakes federal programs are a prime example. Several of these programs serve the same basic functions, objectives, missions and services, reducing the efficiency and effectiveness of individual programs. Because of this, programs associated with the Great Lakes were analyzed and researched in attempts to find areas needing attention and places for consolidation, integration, better coordination and elimination.

## Program Consolidation

Program consolidation offers an alternative that promises increased efficiency in operations. A 1995 General Accountability Office (GAO) report titled, *Program Consolidation: Budgetary Implications and Other Issues*, emphasizes the need for program consolidation in the federal government. Although its main focus is on education program consolidations, it touches upon the general benefits of consolidating in many other program areas, and the Great Lakes is definitely in need of program consolidation.

The GAO report maintains that “program consolidations can lead to increased efficiency and improvements in performance that significantly benefit taxpayers, administrators, service providers and beneficiaries alike” (2). The report highlights three major benefits.

- 1) Lower Costs: Program consolidations offer opportunities to reduce federal spending in terms of administrative costs, program costs, or both.
- 2) Improve Service: Program consolidations can improve administration and service delivery by bringing together similar programs and eliminating ambiguity, duplication, and overlap in program functions. It allows for better coordination, which leads to higher efficiency and effectiveness.
- 3) Allows for Measurement: Program consolidation can also create opportunities to reassess federal programs or activities and eliminate programs that are duplicative, outdated or in which costs for benefits received either do not or no longer justify federal spending.

To apply the same consideration given by the GAO, we believe that consolidation will do the following for federal Great Lakes specific programs:

- Lower costs so programs are able to operate and spend necessary amounts to improve restoration efforts.
- Increase program impact and efficiency due to collaboration and pooling of resources.
- Create an organizational system that is transparent and stable.
- Increase innovation due to collaboration.
- Allow for more measurable results because the focus will be precise and narrow.

Having consolidation as our basic analytical framework, we have conducted program analysis for a total of 149 federal programs, 33 of which are specific to the Great Lakes and 116 in which are generally associated to the Great Lakes. In addition, we examined eight Great Lakes state programs and state involvement in the Great Lakes Protection Fund. This paper will include three major sections describing the federal specific, federal general and state programs, followed by a recommendation section. The distinctions and breakdowns of programs falling under each of these areas were maintained in a maintained in an April 2003 GAO report titled, *An Overall Strategy and Indicators for Measuring Progress Are Needed to Better Achieve Restoration Goals*.

# **Federal Great Lakes Specific Programs**

## **Great Lakes Regional Collaboration Strategy:**

The Great Lakes Regional Collaboration Strategy (GLRC) is a cooperative effort that focuses on the design and implementation strategy for restoration, protection and sustainability of the Great Lakes. The need for a collaborative strategy came about as a result of an Executive Order made by President George W. Bush on May 18, 2004. President Bush signed an Executive Order that recognized the Great Lakes as a precious resource and mandated the creation of an Interagency Task Force to improve federal coordination for Great Lakes' restoration efforts. After much discussion, the GLRC, which included the Interagency Task Force, Council of Great Lakes Governors, Great Lakes Cities Initiative, Native American Tribes and the Great Lakes Congressional Task Force, convened in Chicago on December 3, 2004 to establish a consensus on the strategy to move forward with collaboration. A year later on December 12, 2005, the GLRC released a report titled *Great Lakes Regional Collaboration Strategy: to restore and protect the Great Lakes*.

The GLRC strategy report provides analysis of the challenges facing the Great Lakes and offers suggestions in terms of strategy by highlighting six major categorical problems threatening restoration and sustainability in the Great Lakes today. The categorical problems illustrated in the report include: Aquatic Invasive Species, Habitat/Species, Coastal Health, AOC/Sediments, Non-point Source Pollution and Toxic Pollutants.

## **Program Analysis Methodology:**

Based on the categorical distinctions described above, analysis has been conducted for 33 federal Great Lakes specific programs. Using the six major categories obtained in the GLRC strategy report, each program was grouped into a category based on the function of the program. The categorizations help identify how each program is contributing to the Great Lakes. As a result, knowing the categorical areas and what programs exist to support them, this analysis will foster a better understanding of ways to improve consolidation. These recommendations intend to be used as benchmarks by showing where the Great Lakes collaboration effort currently is and where it needs to go, according to the GLRC strategy. Specific recommendations pertaining to duplication, gaps and consolidation of programs are also pointed out. The analysis in the following paragraphs will provide: explanations for each category/function, short and long term program goals outlined by the GLRC strategy report, the names of the federal Great Lakes specific programs that fit under each category and the features of the programs under each functional category.

## **GLRC Strategy Categories:**

### **Non-point Source Pollution**

Non-point source pollution refers to diffused sources of pollution that contribute to the impairment of Great Lakes waters. Non-point source pollution is contrasted with point source

pollution because non-point is a pollutant whose source is broader and more difficult to control and prevent from entering waters in the future. Non-point source pollution is not from industrial or sewage plants, it comes from many diffused sources. It can be caused by rainfall or snow melt moving over and through the ground. Pollutants can be natural or human made, including fertilizers, herbicides, oil grease, construction sites, salt from irrigation, bacteria and nutrients from livestock or pet wastes. Non-point source pollution programs are important because the pollution can seriously alter the biological components and processes of Great Lakes waters.

***GLRC Goals for Non-point Source Pollution:***

- Protect and restore wetlands in rural and urban areas to improve the overall health of the ecosystem and waters within it.
- Reduce hundreds of thousands tons of sediment, pounds of phosphorous loading and pounds of nitrogen loading in to the Great Lakes.
- Reduce livestock agriculture’s contribution to non-point source pollution by 40-70 percent.

***Programs categorized in Non-point Source Pollution:***

- Great Lakes Basin Program for Soil Erosion

It is rather concerning that there is only one program under this category because the GLRC strategy report maintained that more money has been given to non-point source pollution, as opposed to point source because it is much more cost effective to reduce. “Work on point source approaches a point of diminishing returns; funding to increase point source control beyond 90 percent or 95 percent is less effective than providing the same amount of funding to address non-point sources” (41). The report also indicated that many governmental agencies, non-governmental agencies, universities and colleges are hard at work to find the solutions to reducing non-point source pollution.

Since there is only one program falling under this category, a question of how and to what extent non-point source pollution is being addressed presents itself. By examining the three major category goals, it can be argued that non-point source pollution is being “taken care of” in a larger context. For example, the last goal of reducing livestock agriculture’s contribution to non-point source pollution may be covered by one or more of the 13 programs in the Great Lakes federal general programs that deal with agriculture and provide producers and farmers incentives for the implementation of best practice strategies. Although the programs at the federal general level implement programs for all bodies of water nationwide, the amount of effort and resources provided to the Great Lakes is not known. The same scenario applies to the other two goals of reducing loaded sediments and restoring wetlands. There are programs at the federal general level that address these issues, but again, it is difficult to determine how much of their effort or resources are going toward the Great Lakes.

**Aquatic Invasive Species (AIS)**

Invasive specie is defined as not native and causes or is likely to cause economic or environmental harm to human health. Invasive species enter from outside an ecosystem and are seen as a threat to the environment. The most common place in which aquatic invasive species

enter into an ecosystem is through ship ballasts, which is the water that is released from a ship once it reaches its destination. Over 3,000 marine species travel around the world in ships' ballast water on a daily basis. Other ways AIS have entered is through aquaculture, canals, waterways and recreational activities.

AIS degrade habitat, kill native and naturalized species and short-circuit food webs needed to maintain and rehabilitate biological resources. Examples of AIS include sea lamprey and zebra mussel. The rate that species like these are introduced in the Great Lakes is not slowing down. Some experts even argue that the severity of AIS is even more problematic than chemical pollution to the Great Lakes. Projected economic loss for AIS alone was estimated at \$5 billion per year according to 2005 figures.

***GLRC Goals for Aquatic Invasive Species:***

- Prevent all new introductions of AIS into the Great Lakes.
- Stop the spread of AIS within the basin, extirpate harmful AIS, or if impossible, then control the levels that ensure sustainable ecosystems and the social, economic and cultural uses they support.

***Programs categorized in Aquatic Invasive Species:***

- New York Canal System Aquatic Nuisance Species Program
- Lower Great Lakes Ruffe Surveillance Program

***Program Features of Aquatic Invasive Species:***

The New York Canal System Aquatic Nuisance Species Program addresses AIS issues within the Canal system in New York. The Lower Great Lakes Ruffe Surveillance Program detects, monitors and manages the strategy involved in preventing the introduction of Ruffe populations in the Great Lakes.

## **Coastal Health**

Coastal health recognizes that if coastal waters are not kept clean, human health is at risk. Because of human usage and close proximity to coastal waters, special attention must be given to the external, ingestion and inhalation of these waters. The Great Lakes provide drinking water, fish for consumption and recreation for millions of Americans. To minimize health risks, coastal waters should be drinkable, swimmable and the fish should be consumable at all times.

Programs in this area are extremely vital, yet disturbing trends lay at the forefront of coastal health issues. For example, according to the GLRC strategy report, “the estimated volume of combined sewer overflow (CSO) discharges in the U.S. is 850 billion gallons per year, with most of these CSO’s located in the Great Lakes and Northeast regions” (29). Coastal health issues such as this have had a large impact on humans. In fact, in 2001-2002, 23 states reported 65 waterborne disease outbreaks affecting 2,536 individuals (61 hospitalized, eight died). Five of these outbreaks were caused by coastal waters in the Great Lakes, and the prevalence of coastal health threats is not slowing down. “The Natural Resource Defense Council’s (NRDC) annual survey of water quality monitoring and public notification at U.S. beaches finds that there were 51 percent more beach closings and advisories in 2003 than in 2002” (*GLRC Strategy*, 29).

***GLRC Goals for Coastal Health:***

- Eliminate the disposal of untreated or inadequately treated human and industrial waste dumped into the Great Lakes.
- Identify indirect pollution sources affecting coastal health and enforce regulations to prevent pollution from entering the Great Lakes. Advocacy should be conducted to enhance efforts in areas concerning research, public education, and remediation.
- Improve drinking water infrastructure to protect water quality and maintain healthy and safe drinking water.

***Programs categorized in Coastal Health:***

- Great Lakes Human Health Effects Research Program

***Program Features of Coastal Health:***

This program is under Health and Human Services and focuses on research to determine the link between fish consumption and short and long term health effects. Its focus on human health though consumption is why we have categorized it as such. In addition to its research efforts, this particular program seeks to increase public awareness by coordinating its efforts with state and local health departments, including the Food and Drug Administration (FDA) and Center for Disease Control (CDC).

***Habitat/Species***

Aquatic ecosystems in the Great Lakes have been vastly altered and affected due to human settlement and activities, resulting in the loss or degradation of many habitats and threatening the species they support. “Invasive species, non-point source runoff and aquatic food web disruption are some of the key threats to the health and sustainability of Great Lakes habitats and species support” (GLRC Strategy, 23). Many habitat types have been sacrificed because of habitat degradation. The Great Lakes has lost more than half of the region’s original wetlands and sixty percent of forest lands. Savannahs and prairies in the Great Lakes region are also very scarce, which has contributed to the extinction of various animal and plant species.

Human health and biodiversity of Great Lakes’ wildlife are of concern as they are dependent on the overall health of the ecosystem, which contributes to clean air, filtered water and stabilized soil. In addition, Great Lakes’ resources have substantial economic value. It is estimated that activities such as boating, fishing, hunting and wildlife watching generates over 50 billion dollars of economic activity annually and creates hundreds of thousands of jobs.

***GLRC Goals for Habitat/Species:***

Habitat/Species restoration efforts have been prioritized by the following 1) Fish and Wildlife Populations in the Open and Nearshore Waters, 2) Wetlands, 3) Riverine Habitats and 4) Coastal Shore and Upland Habitats.

Overarching, long term goals that that apply to all habitat types include:

- Continued progress on recovering state and federally listed species and communities as well as taking proactive steps to prevent future listings.

- Create a process to prioritize conservation actions. Actions should consider the full range of habitat and species biodiversity and be scientifically justified with measurable outcomes.

***Programs categorized in Habitat/Species:***

- 1836 Fisheries Treaty Implementation
- Evaluation Restoration Great Lakes Estuaries Tributaries
- Great Lakes Fishery Ecosystem Restoration
- Lake Ontario St. Lawrence River American Restoration
- National Fish Hatchery System Great Lakes Operation
- Blue Pike Activities Great Lakes
- Great Lakes Coastal Program
- Great Lakes Sturgeon Rehabilitation Program
- Ecosystem Management Lower Great Lakes
- Great Lakes Fish Wildlife Restoration Act
- Lake Ontario Atlantic Salmon Reintroduction
- Lower Great Lakes Trout Surveillance Program

***Program Features of Habitat/Species:***

Some of these programs focus on habitat restoration in general and some focus on a particular species. The programs range in their purpose from technical support, to financial support, to actually developing and implementing proposals for protecting habitat and species. All programs in this category are very specific in the sense that they devote their efforts to habitat and wildlife preservation.

**Areas of Concern (AOC)/Sediments**

The Great Lakes states and provinces have designated 43 “Areas of Concern” (AOC). These AOCs were identified based on 14 types of impairment relating to human use. Factors such as the ability to eat fish, drink and swim in the water, loss of diversity in the aquatic life and the destruction of wildlife habitats are all things that were evaluated in determining the priority areas. However, the most common factors in AOCs are contaminated sediments from sewer overflows, non-point source runoff, hazardous waste and oil spills, resulting in the loss of habitats. The problem with AOCs and cleaning up these areas with contaminated sediments, according to the GLRC Strategy, has much to do with ineffective program administration, technical disposal issues and the lack of formally de-listing these areas as “Areas of Concern”.

Remedial Action Plans (RAPs) play a very large role in the programs addressing AOCs and sediment removal. RAPs are administered and supported by a few different programs, which will be discussed below. Essentially, RAP programs identify the problems within the AOC and design steps to solve those problems. In doing so, they determine the responsible parties involved in the cleanup and set a time table for action. Each AOC has a different RAP depending on its circumstances.

***GLRC Goals for Areas of Concern/Sediments:***

- Increase available funding to a sufficient level to be able to reach the goal of cleaning up all contaminated sediment sites in the AOCs by 2020.
- Develop program efficiencies so that there is more collaboration and coordination between existing programs and authorities.
- Focus on de-listing all AOCs by the year 2020.

***Programs categorized in Areas of Concern/Sediments:***

- Coastal Environmental Management
- Remedial Action Plans Sediment Remediation Support
- Great Lakes Remedial Action Plans Sediment Remediation
- Episodic Events Great Lakes Experiments
- Great Lakes Tributary Models
- Niagara River New York State Areas of Concern

***Program Features of Areas of Concern/Sediments:***

Some of the programs categorized under this area deal with specific AOCs. For example, the Niagara River and New York State AOC deals with remediation efforts toward a specific AOC. This program focuses its efforts on a single geographical area. Other programs focus on contaminated sediments in multiple AOCs; one example is the Great Lakes Remedial Action Plans and Sediment Remediation. Last, there are two programs that have been categorized under this area that focus solely on sediments and their movement, but not a particular AOC. All programs generally involved sediments, which is why they have been categorized as such.

## **Toxic Pollutant Strategy**

The Toxic Pollutant Strategy identifies persistent toxic substances (PTS) as its main nemesis. PTSs can be very harmful to wildlife and human health, and can be very damaging to the overall health of the ecosystem. These pollutants can be released from contaminated sediments, industrial processes, non-point sources and loadings from atmospheric deposition, which is pollutants from air to water through rain, snow, falling particles and contaminated groundwater.

***GLRC Goals for Toxic Pollutant Strategy:***

- Eliminate discharge of all PTSs into the Great Lakes.
- Significantly reduce exposure to PTSs.
- Reduce environmental levels of toxic chemicals so that restrictions on consumption of the Great Lakes fish can be lifted.
- Protect wildlife populations and habitats from PTSs.
- Identify and fill the gaps in the scientific understanding of PTSs in order to be able to better manage the issue.

***Programs categorized in Toxic Pollutant Strategy:***

- Funding Guidance Competitive Grants
- Integrated Atmospheric Deposition
- Great Lakes Air Deposition Grant Program
- Niagara River Toxins Management Plan

- Great Lakes Bi-national Toxics Strategy
- RCRA Subtitle C State Programs Support Great Lakes Initiative

***Program Features for Toxic Pollutant Strategy:***

All of these programs are led by the EPA, unlike other categories that crossed agency lines. The call for consolidation is the strongest in this case because of that factor. The programs that fit under this category focus on priority toxics and hazardous waste transmitted biologically and through the air, land and water.

**Broad Federal Great Lakes Specific Programs**

Finally, there are five programs in the federal specific area that are very broad in their scope and do not fall under one specific category. These programs individually touch upon all of the six categories presented by the Collaboration. Although we will not elaborate on these programs, it must be noted that they deal with issues in AIS, Coastal Health and Non-point Source Pollution, which are the three categories that were lacking programs at the federal specific level. An example of a program categorized as “very broad”, is the Great Lakes Environmental Research Laboratory, a research and management program that deals with issues relating to AIS, coastal health and habitats. Another example in this broad category is the Monitoring Program, which explores issues in aquatic life, water and sediments. Both of these programs could potentially contribute a lot in the areas of AIS, Coastal Health and Non-point Source Pollution, however, it is hard to determine and is worth noting the discrepancy in the number of programs under those three categories.

## **Federal General Great Lakes Programs**

For this part of the report additional categories had to be created to group the federal general Great Lakes programs. The categories that arose from our research include the following: Agriculture, Air, Floods, Forestry, Land Surface Data and Research, Natural Resource Conservation, Pollution–Toxic and Hazardous, Very Broad Federal General Programs, Water Quality and Wetlands. The categories listed in this section are in addition to the six major categories illustrated in the Great Lakes Regional Collaboration Strategy report, and again each program was grouped into a category based on its function.

### **Program Analysis Methodology:**

Based on the categorical distinctions described above, program analysis was conducted for 116 federal general Great Lakes programs. The categorizations identify how each area is contributing to the Great Lakes. As a result, knowing the categorical areas and what programs exist to support them, our analysis will foster a better understanding of how to improve consolidation. The analysis in the following paragraphs will provide: a description of each category, the names of the federal non- specific programs that fit under each category and their connection to the Great Lakes.

### **Federal General Categories:**

#### **Agriculture**

This category is comprised of 13 programs that range in scope from offering funding for agricultural research and education activities, to promoting agricultural production while ensuring environmental quality and compliance.

The relationship to the Great Lakes is evident as non-point source pollution is a large problem in the area. Programs in this category indirectly help in reducing the pollution levels as many non-point sources can seriously alter the biological components and processes of the Great Lakes waters.

#### ***Programs categorized in Agriculture:***

- Agricultural Research Service Research Units
- Emergency Conservation Program
- Environmental Quality Incentives Program
- Farmland Protection Program
- Food Quality Protection Act/Strategic Agricultural Initiative
- Hatch Act Research Program
- Integrated Activities Program
- National Cooperative Soil Survey
- National Research Initiative Program
- Small Business Innovation Research Program
- Soil and Water Conservation/Conservation Technical Assistance

- Special Research Grants Program
- Wildland Fire Management

## **Air**

The programs within this category deal with various issues affecting the air and climate. The Air Program seeks to protect and enhance the quality of the nation's air resources by initiating and accelerating a national research and development program to achieve the prevention and control of air pollution.

The Atmospheric Ecosystem Interactions at Multiple Scales program understands that one of the most important factors impacting terrestrial, riparian, and aquatic ecosystems is the atmospheric environment. The programs under the Air category help to improve the Great Lakes ecosystem as there are many different factors that can affect its health, such as the quality of the air and extreme weather conditions.

### ***Programs categorized in Air:***

- Air Program
- Atmospheric Ecosystem Interactions at Multiple Scales

## **Aquatic Invasive Species**

The programs in this category perform ecological surveys to determine the rate of invasive species in highly susceptible waters, prevent and control infestations in the coastal and inland waters of the United States by the zebra mussel and other non-indigenous aquatic nuisance species.

Its activities include research, prevention of species introductions, control of introduced species, and mitigation of impacts to native fish and wildlife resources.

### ***Programs categorized in Aquatic Invasive Species:***

- Aquatic Nuisance Species Regional Coordination and Technical Assistance
- Aquatic Nuisance Species Surveillance and Control
- National Invasive Species Act/Ballast Water Program

## **Coastal Health**

The programs in this category provide scientific information to help understand changes on coastal lands, prevent or control shore erosion in order to reduce damage to upland developments caused by wind- and tidal-generated waves and currents. There are several programs that provide financial assistance at the local level for the rise of community organizations concerned with environmental/public health issues, the goal is to engage states in protecting, preserving, and restoring their coastal areas.

Its activities include: capturing geographic information of coastal areas through the technical method of remote sensing, gather information, photos, and data on these areas so there is better information for effective coastal management.

***Programs categorized in Coastal Health:***

- Children's Health Program
- Coastal and Marine Geology
- Coastal Mapping/Mapping and Charting Program
- Coastal Remote Sensing, Coastal Change and Analysis Program
- Coastal Zone Management Program
- Drinking Water State Revolving Fund
- Environmental Justice Small Grants
- Landscape Characterization and Restoration Program
- Shore Protection
- State and Tribal Environmental Justice Program

## **Floods**

The programs within this category deal with flood planning, construction, and flood hazard evaluations. For example, the Cleaning and Snagging program plans, designs and constructs projects for emergency removal of debris that threatens to aggravate damage caused by flooding. The functions of the programs contribute greatly to the Great Lakes as flooding and shoreline erosion are important topics that affect the area. According to information issued by the Wisconsin Department of Natural Resources, erosion caused by a catastrophic, natural or human disturbance causes the ecosystem equilibrium to be upset, causing accelerated erosion affecting plants and animals that live along the shoreline.

Flood planning and construction are also important when natural disturbances, such as large trees that are uprooted by a windstorm or a flood resulting from a torrential rainstorm, can have a direct negative impact on the health of the ecosystem.

***Programs categorized in Floods:***

- Cleaning and Snagging
- Emergency Stream Bank and Shoreline Protection
- Flood Plain Management Services
- Small Flood Control Projects

## **Forestry**

The programs within this category help manage forests to enhance and maintain productivity, health, biodiversity, soil and water resources. One program in particular is beneficial to the Great Lakes through its management of forest and related watershed lands to improve conditions of water flow and to protect resources against floods and erosion. A watershed can be defined as an interconnected area of land draining from surrounding ridge tops to a common point such as a lake or stream confluence with a neighboring watershed. The quality of water in each stream and

river depends in large part on the land uses in the watershed. Land used for residential, agricultural or commercial areas can either hurt or support water quality.

***Programs categorized in Floods:***

- Cooperative Forestry
- Forest Health Management
- McIntire-Stennis Cooperative Forestry Research Program

## **Habitat/Species**

The programs in this category deal with two issues, the first one is to make better use of biological data and research for the purposes of making better land, species, and habitat management decisions. The second issue addressed is improving water quality but mostly for the purposes of sustaining and promoting aquatic habitat. The programs understand the risk that endangered species face of depleting healthy ecosystems and good habitats and seek to conserve areas that are a threat to endangered species. Another program regulates the barriers that prevent fish migrations from getting to important habitats and seeks to restore the natural flow of migration.

A program that directly impacts the Great Lakes area is the Fish and Wildlife Management Assistance - Great Lakes Operation, which functions like a general practitioner in the medical field. Its biologists monitor the health of fish and wildlife resources, diagnose ailments, prescribe remedies, refer specific problems to specialists, and coordinate diverse efforts to restore and maintain health. The program helps avoid listing actions under the Endangered Species Act.

***Programs categorized in Habitat/Species:***

- Aquatic Ecosystem Restoration
- Biological Information Management Delivery
- Biological Research and Monitoring
- Endangered Species Program
- Fish and Wildlife Management Assistance - Great Lakes Operation
- La Crosse Fish Health Center
- National Fish Passage Program
- New York Aquatic Resource Management
- Partners for Fish and Wildlife (Private Lands Program)
- Wildlife, Fish, and Rare Plants Resources Management
- Wildlife Habitat Incentive Program

## **Land Surface Data and Research**

The programs within this category gather data for mapping, navigation, property delineation, infrastructure development, natural resource evaluation, land surface and the impact of natural disasters, agriculture production and climate changes. This data serves to plan for providing safe, efficient and environmentally-sound national and international economic decisions.

The programs help to understand the repercussions of the land surface changes taking place, which impact people, the economy and environment. A good example of a program that impacts the Great Lakes area is the Earth Surface Dynamics Program - Central Great Lakes Geologic Mapping Coalition, the State Geological Surveys of Illinois, Indiana, Michigan, and Ohio joined with the U.S. Geological Survey to form the Central Great Lakes Geologic Mapping Coalition. These four States have a similar geologic heritage and need to address common societal issues about land and water resources, the environment and geologic hazards. The research and work will provide customers with additional information on utilizing water and mineral resources, protecting the environment and reducing costs of geologic hazards.

***Programs categorized in Land Surface Data and Research:***

- Cooperative Topographic Mapping (CTM) Program
- Earth Surface Dynamics Program - Central Great Lakes Geologic Mapping Coalition
- Geodesy Program
- Geographic Analysis and Monitoring Program
- Land Remote Sensing Program
- Mineral Resources Program
- National Cooperative Geologic Mapping Program

## **Natural Resource Conservation**

The main goal of the programs in this category is to develop comprehensive plans to preserve national ecological resources. The programs call for conservation of water and related land, natural resources, national forest and grassland ecosystems to improve the general level of economic activity, and to enhance the environment and standard of living.

For example, water projects are aimed at the improvement of surface and groundwater quality and quantity. Projects include watershed management, construction or rehabilitation of irrigation, flood control, water drainage systems, construction or rehabilitation of aquaculture, wastewater treatment and purification operations. Another program seeks to protect millions of acres of American topsoil from erosion by reducing water runoff and sedimentation which protects groundwater and helps improve the condition of lakes, rivers, ponds and streams.

***Programs categorized in Natural Resource Conservation:***

- Conservation Reserve Program
- Environmental Monitoring and Assessment Program
- New York Natural Resource Management Program
- Planning Assistance to States
- Plant Materials for Conservation/Plant Materials
- Recreation, Heritage, and Wilderness Management
- Resource Conservation and Development
- River Basin Studies, Watershed Surveys and Planning, Watershed Protection and Flood Prevention
- Tribal Partnership Program
- Watershed, Lake, Riparian and Stream Analysis, and Restoration

## **Pollution - Toxic and Hazardous**

There are 22 programs in this category, but there may be a need to further categorize the programs into two subcategories. One subcategory is the fifteen programs that specifically deal with monitoring the hazardous waste process to ensure that hazardous waste is managed safely from the moment it is generated, through transportation, treatment, storage and finally disposal. The other subcategory is the seven programs that collect data, conduct studies and perform analysis needed to determine whether coastal resources and navigable waters have sustained injury from releases of oil or hazardous materials. These programs focus on how to restore injured resources and coastal habitats, and to ascertain the damages that must be recovered to accomplish restoration.

All of the programs in this category directly impact the Great Lakes region because the improper management of hazardous waste poses a serious threat to human health and the environment. Such waste contamination can severely pollute ground water, streams, rivers, lakes, coastal waters and other surface waters, killing aquatic life, destroying wildlife and stripping areas of vegetation. Additionally, reckless waste disposal has been linked to respiratory illnesses and skin diseases.

### ***Programs categorized in Pollution – Toxic and Hazardous:***

Specifically deal with monitoring the hazardous waste disposal process:

- Environmental Justice Through Pollution Prevention Grants
- Non-Point Source Program
- Office of Response and Restoration - Damage Assessment Center
- Office of Response and Restoration - Hazardous Materials
- Pollution Prevention Demonstration Grants
- RCRA Subtitle C Corrective Action Program
- RCRA Subtitle C Enforcement and Compliance Program
- RCRA Subtitle C Hazardous Waste Management Program Support
- RCRA Subtitle C Permitting
- RCRA Subtitle D Tribal Solid Waste Assistance Grants
- RCRA Subtitle I Underground Storage Tanks and Leaking Underground Storage Tanks - monitoring
- Resource Conservation and Recovery Act Brownfields
- Superfund
- Tribal Solid Waste Assistance Grants
- Waste Pesticide Collection Program (Agricultural Clean Sweep or Waste Pesticide Disposal)

Perform analysis to determine whether coastal/natural resources and navigable waters have sustained injury:

- National Pollution Discharge Elimination System
- Natural Resource Damage Assessment Program
- Office of Response and Restoration - Coastal Protection and Restoration Division

- Oil Spill Removal Organization Program
- Pollution Prevention for States Grant Programs
- Soil, Water, and Air Management
- USGS Toxic Substances Hydrology Program

## **Sediments**

Contaminated sediments are an extensive problem throughout the Great Lakes basin. Although significant progress over the past 20 years has substantially reduced the discharge of toxic and persistent chemicals to the Great Lakes, persistent high concentrations of contaminants in the bottom sediments of rivers and harbors have raised considerable concern about potential risks to aquatic organisms, wildlife and humans.

There are four programs within this category. Each program has a very different function, but still all pertain to sediments. For example, the Beneficial Use of Dredged Material program is purely administrative and issues permits for the disposal for the beneficial use of dredged material. On the other hand, the National Status and Trends Mussel Watch is a program that researches sediment contaminant trends over 280 coastal sites to determine the types of contaminants and where and when they are occurring.

### ***Programs Categorized in Sediments:***

- Beneficial Use of Dredged Material
- Confined Disposal Facilities
- Environmental Dredging
- National Status and Trends Mussel Watch

## **Water Supply**

The programs in this category deal with the protection of water resources by collecting, storing, analyzing, establishing standards and regulations to protect bodies of water and disseminating water-use information to assess the status and trends of national water quality and to understand the factors that affect it. The programs specifically focus on ensuring that clean and safe drinking water is provided to the public by protecting surface and underground sources of drinking water.

### ***Programs categorized in Water Supply:***

- Clean Water Act - Water Quality Monitoring and Section 106 Grants
- Clean Water State Revolving Fund
- National Water Use Information Program
- National Water Quality Assessment Program
- Public Water Supply Program
- Total Maximum Daily Load Program
- Underground Injection Control
- USGS Ground-Water Resources Program
- Water Quality Management Planning
- Water Quality Standards Program

- Water Resource Research Act Programs

## **Wetlands**

Great Lakes coastal wetlands occur along the Great Lakes shoreline proper and in portions of tributary rivers and streams that are directly affected by Great Lakes water regimes. These wetlands form a transition between the Great Lakes and adjacent terrestrial uplands, and are influenced by both.

The Great Lakes Basin is fortunate to contain a diversity of wetland types ranging from broad expanses of coastal marsh to small isolated bogs. Although each wetland is unique, they share three interrelated characteristics: 1) the presence of water at or near the land surface for a long enough portion of the year to influence the type of vegetation that can grow there; 2) the presence of plants adapted to living in soils saturated with water (hydrophytic - or water-loving - vegetation) and 3) the presence of distinctive soil types which develop under saturated conditions (hydric soils).

Historically, wetlands were seen as areas that were better drained or filled. Due to the loss of wetlands over the years, it is now understood that wetlands are ecologically important and complex systems. Wetlands are extremely vital to the Great Lakes because they provide fish and wildlife habitat, protect water quality, contribute to water supply, protect shorelines and control erosion, protect against floods, contribute to food and fiber production and educate.

There are two programs within this category, both with varying functions relating to wetlands. The Wetlands Reserve Program provides technical and financial assistance to landowners to preserve and restore wetlands, and the Wetlands program regulates the discharge dredged material in U.S. waters, especially in the wetlands where these materials can cause disturbances to the aquatic ecosystem. Both of these programs are seeking out the same goal, thus leading to the benefits of consolidating them.

### ***Programs Categorized in Wetlands:***

- Wetlands Reserve Program
- Wetlands

## **Very Broad Programs**

Many of the Federal General Great Lakes programs were too broad to fit into one category. These eleven programs are responsible for multiple aspects that benefit the Great Lakes and are unable to be broken apart into specific categories. Due to the broadness of these programs, it does not make sense to categorize them.

### ***Programs Categorized in Very Broad Programs:***

- Regional Geographic Initiative Environmental Priorities Program
- Aquatic Stressors Research Program
- Global Climate Change Research Program

- Indian Environmental General Assistance Program
- Cooperative Research Units Program
- Cooperative Water Program
- Environmental Improvements
- National Estuarine Research Reserve System
- National Sea Grant College Program
- National Weather Service
- Small Navigation Projects

### **No Longer Active Programs**

Since this program is no longer active, there is no need to categorize it.

#### ***Programs Categorized in No Longer Active Programs:***

- RCRA Subtitle D Solid Waste Management Assistance Program/Jobs Through Recycling Initiative

## State Programs

This portion of the report is more informational because there is no way to consolidate state programs across state lines. The information presented is also used to illustrate the need for enhanced communication and collaboration at all levels of government. To begin, the Great Lakes Protection Fund is explained in detail, followed by each state that has their own program pertaining to the Great Lakes. Despite the inability to consolidate these programs, analysis and recommendations are still specified.

### **The Great Lakes Protection Fund**

The Great Lakes Protection Fund (Fund) is a private, nonprofit corporation formed in 1989 by the Governors of the Great Lakes States. The Fund was developed after two decades of cooperation in order to address some of the ecological problems plaguing the lakes.

The Fund is the first private, permanent endowment created to benefit a specific ecosystem. It is designed to support the creative work of collaboration, multi-disciplinary project teams that test new ideas, take risks and share what they have learned. The Fund's Board of Directors favors project teams that produce tangible results, apply innovative strategies and create new linkages between environmental and economic health.

Seven Great Lakes states provided one-time contributions to create the Fund's permanent endowment. The states of Illinois, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin have contributed in total \$81 million to the Fund's permanent endowment. This endowment is invested to produce income. Two-thirds of the Fund's net income is dedicated to regional projects that produce tangible improvements to the health of the Great Lakes ecosystem. The remaining third is distributed annually to the member states in proportion to their original contribution, so that the member states can support their Great Lakes priorities.

See Appendix 11 for the one-time state contribution to the Great Lakes Protection Fund.

#### ***Project Activity for the Great Lakes Protection Fund:***

Through June 2006, the Fund has supported 208 projects that identify, demonstrate and promote regional action to restore the health of the Great Lakes ecosystem. These projects represent an investment of \$48,454,213 and have involved people in over 800 different institutions.

The Fund projects are collaborative and are run by multi-institution teams that usually takes place throughout the basin. No one jurisdiction is the "home" for the Fund projects because the projects focus on action. This helps to best use resources where needed as keep the process as unbiased as possible.

Projects supported by the Fund have led the world in protecting and restoring the health of water resources. The Fund financed the world's first installation of filters to keep invasive species out of ships' ballast water. The project team was able to determine that filters can remove more than 90% of invaders. This project created a new regional industry to build and sell ballast treatment technologies and launched a global effort to control invasive species and put the Great Lakes

States at the center of providing solutions. Other project teams have created sets of practical, cost-effective guidelines for removing failing dams on Great Lakes tributaries and elsewhere.

In the future years, the Fund hopes to launch new efforts to stop the introduction of exotic species, create new methods to finance activities to restore the health of the Great Lakes and inform choices made outside of the watershed that impact its health. It is important to note that the Fund does not pay for tasks that are the responsibility of government entities that government regulates.

***Analysis and Recommendations for the Great Lakes Protection Fund:***

The Great Lakes Protection Fund has a good handle on what needs to be done in order to preserve the Great Lakes. The Fund has managed to garner large contributions from nearly all of the Great Lakes states and has a good system to identify projects that would be important ecologically to the Great Lakes.

One important thing to note is that the Fund does not support basic research, convening, general environmental education, operating support or public works projects. The Fund supports action, or projects that are doing something on the ground to produce specific environmental results. The most successful requests come from project teams that bring together researchers and practitioners possessing a complementary range of expertise. Projects must also include the customers of the work, who are most likely to take the results and make a difference for the Great Lakes.

Although the Great Lakes Protection Fund has well defined guidelines of what kinds of projects they want and accept, there is still room for recommendations. It is important for the Fund to look at what areas are possibly being missed by other Great Lakes' projects. There are some areas which are extremely important to the survival of the Great Lakes that Federal programs have not covered. These areas are Aquatic Invasive Species, Non-point Source and Coastal Health. A program previously described focused on invasive species and lead to the discovery that filters can remove more than 90% of invaders. This is an important finding for the Great Lakes and continuing with similar programs is extremely necessary. Another recommendation would be for the Fund to communicate with the state of Indiana in order to receive funding from them as well. They are currently the only Great Lakes state that has not contributed to the Fund, but they are definitely benefiting from projects the Fund is supporting. Though Indiana's Great Lakes shoreline is quite small, a contribution could be made based on their proportion of shoreline.

## **Michigan**

The state of Michigan has three programs associated with the Great Lakes: Fisheries Research in Great Lakes and Inland Waters, Clean Michigan Initiative and Part 201 Programs.

The Fisheries Research in Great Lakes and Inland Waters program funds research projects on fisheries populations, habitats, and anglers. The Fisheries Division of MDEQ began funding this research in the 1930s, and overtime it has grown in scope, with Great Lakes fisheries research stations opening in the early 1970s.

The Clean Michigan Initiative (CMI) is a \$675 million bond approved by Michigan voters on November 3, 1998 to improve and protect Michigan's water resources. The major programs are administered by the Departments of Environmental Quality (DEQ), Natural Resources (DNR), and Community Health (MDCH).

- Clean Water Fund - The purpose of the Clean Water Fund is to implement the DEQ's surface water quality monitoring plan and to implement water pollution controls.
- Non-point Source Program - Michigan's Non-point Source (NPS) Program assists local units of government, non-profit entities and numerous other state, federal and local partners to reduce non-point source pollution statewide. The basis for the program is watershed management; most of the projects that are funded develop watershed management plans or to implement non-point source activities in these plans.
- Pollution Prevention (P2) in Michigan - The Department of Environmental Quality provides assistance to businesses, institutions and the public to improve the environment and save money by adopting the three "R's" reduce, reuse and recycle. Known also as pollution prevention, this is a non-regulatory assistance program that provides information, technical assistance and financial incentives to reduce pollution.
- Lead – No information.
- Contaminated Sediments – No information.  
Waterfronts - The program is administered by the Environmental Science and Services Division. The objective of this program is to reclaim and revitalize waterfront property throughout the state to maximize its economic and public value, and provide waterfront access to the general public. Eligible activities include: environmental response activities, demolition of buildings and facilities, property acquisition and infrastructure and public facility improvements.
- Local Parks - The program provided \$50 million in grants to local units of government for the development and renovation of public recreation facilities and \$50 million for extensive state park renovations.
- Brownfields – No information.

The Part 201 Programs of the Natural Resources and Environmental Protection Act (1994 PA 451, as amended) regulates most sites of environmental contamination in Michigan. Part 201 authorizes the DEQ to set cleanup standards by considering how the contaminated land will be used in the future. Michigan's cleanup standards are risk-based and reflect the potential for human health risk from exposure to potentially harmful substances at contamination sites.

## **Ohio**

The state of Ohio has three programs associated with the Great Lakes and administered by the Ohio Department of Natural Resources: Great Lakes Charter Programs, Shore Structure Permit Program and Submerged Lands Leasing.

The Great Lakes Charter Programs is a suite of programs that was created in response to the charter agreement signed by the Great Lakes governors. The purpose of this 1985 initiated program is to administer the Lake Erie-Ohio River Basin diversion and consumptive use permit

programs called for under the charter. The program includes a water resource inventory and the Lake Erie Basin plans. Program funds support restoration, planning and protection activities.

The Shore Structure Permit Program started in 1955 when the State of Ohio began requiring permits for the construction of shore erosion, wave and flood control structures as an early effort to protect and manage Ohio's Lake Erie shore. A Shore Structure Permit must be obtained prior to the construction of an erosion, wave or flood control structure along the Ohio shore of Lake Erie. Shore structures commonly include nourished beaches, seawalls, stone revetments, bulkheads, breakwaters, groins, docks, piers and jetties. The permits are issued by the Division of Water.

The Submerged Lands Leasing program is the mechanism by which Ohio authorizes use of the Lake Erie Public Trust. A Submerged Lands Lease is a contract between a shoreline property owner and the State of Ohio. The lease grants a private or public entity the special use of a portion of Public Trust (i.e. Lake Erie submerged land) in exchange for a rental fee. The lease states the legal responsibilities of the lessor (the State of Ohio) and the lessee (the applicant). It defines the leased land's boundary, the authorized use(s), sets the rental rate and the term of occupancy. The Public Trust, which includes Lake Erie's water, the land beneath the water and the resources living in the water, is held in trust by the State of Ohio for the benefit of its citizens. The State, acting as a trustee for all Ohioans, allows public land and natural resources to be used for recreation, public infrastructure, private enterprise and in the case of Lake Erie, protection of shoreline property from flooding and erosion.

## **Pennsylvania**

The state of Pennsylvania has one program that is associated with the Great Lakes and administered by the Pennsylvania Department of Environmental Protection; Pennsylvania's Office of the Great Lakes.

Pennsylvania's Office of the Great Lakes is a program that began in 1995 and was created as the focal point for research, restoration, cleanup and pollution prevention activities affecting the Great Lakes.

## **Wisconsin**

The state of Wisconsin has two programs associated with the Great Lakes and administered by the Wisconsin Department of Natural Resources (DNR): Great Lakes Harbors and Bays Restoration Funding and Great Lakes Salmon and Trout Stamp Program.

The Great Lakes Harbors and Bays Restoration Funding program was initiated in 1990. The program allows DNR to conduct activities to cleanup or restore environmental areas that are adjacent to, or a tributary of Lake Michigan or Lake Superior, if the activities are included in remedial action plans approved by the department.

The Great Lakes Salmon and Trout Stamp Program was created in 1982 to provide funding for projects pertaining to Great Lakes fish stocking programs. The stocking program activities include evaluation, research, or species propagation.

## Recommendations

This section gathers the recommendations for all three groups of programs: federal specific, federal general and state.

### **Federal Great Lakes Specific Programs:**

The six priority categories deemed by the GLRC strategy report had very large discrepancies in the number of programs that functionally fall under them. For example, there was a lack of programs addressing the issues of Non-point Source Pollution, Coastal Health and Aquatic Invasive Species. Each of these categorical areas had two or fewer programs out of the 33 federal specific programs, versus the other categories of AOC/Sediments, Habitats/Species and Toxic Pollutant Strategy, which each had a minimum of six programs. This discrepancy is problematic because of the emphasis the Collaboration has made in regards to addressing these priority areas and the effect on Great Lakes restoration, should these issues not be resolved.

In the following paragraphs we will break our recommendations for the federal specific programs into two parts. The first part will indicate our recommendations for categories that are lacking programs and the second section will include recommendations for categories that have a multitude of programs.

#### **Section I: Categories Lacking Programs**

The six priority categories deemed by the GLRC strategy report had very large discrepancies in the number of programs that functionally fall under them. For example, there was a lack of programs addressing the issues of Non-point Source Pollution, Coastal Health and Aquatic Invasive Species. Each of these categorical areas had two or fewer programs out of the 33 federal specific programs, versus the other categories of AOC/Sediments, Habitats/Species and Toxic Pollutant Strategy, which each had a minimum of six programs contributing to its cause. This discrepancy is problematic because of the emphasis the Collaboration has made in regards to addressing these priority areas and the effect on Great Lakes restoration, should these issues not be resolved.

In the following paragraphs we will break our recommendations for the federal specific programs into two parts. The first part will indicate our recommendations for categories that are lacking programs and the second section will include recommendations for categories that have a multitude of programs.

#### ***Non-point Source Pollution (1 program)***

- Determine how the Great Lakes directly benefits from Non-point Source Pollution programs at the federal general and state level, including specific program activities and resources going toward the Great Lakes. Consider the creation of a subset of programs in Non-point Source Pollution at the federal general and state level that will solely focus its efforts on the Great Lakes.

#### ***Aquatic Invasive Species (AIS) (2 programs)***

- Determine how the Great Lakes directly benefits from AIS programs at the federal general and state level, including specific program activities and resources going toward the Great Lakes. Consider the creation of a subset of programs in AIS at the federal general and state level that will solely focus its efforts on the Great Lakes.

***Coastal Health (1 program)***

- Determine how the Great Lakes directly benefits from Coastal Health programs at the federal general and state level, including specific program activities and resources going toward the Great Lakes. Consider the creation of a subset of programs in Coastal Health at the federal general and state level that will solely focus its efforts on the Great Lakes.

**Section II: Categories Containing a Multitude of Programs**

The recommendations in this section are for the other three priority categories maintained in the GLRC strategy report and they include Habitat/Species, AOC/Sediments and Toxic Pollutant Strategy. Because there were many federal specific programs falling under each of these categories, and there is much overlap and duplication in terms of program function, our sole recommendation is to consolidate. By consolidating, the goals outlined in the GLRC strategy report to restore and protect the Great Lakes can be met by lowering costs, making programs more efficient, improving program service, increasing effectiveness and allowing for measurement of programs.

***Habitat/Species (12 programs)***

By consolidating all 12 programs, essentially, one program will contribute to habitat and species in the following ways:

- Provide technical expertise, funding and research to manage restoration for fisheries and other habitats.
- Recover the endangered species list through cooperation with biologists and states to practice good resource and habitat management.
- Manage restoration efforts for specific species, including the Trout, Lake Erie Blue Pike, and Lake Sturgeon fish.
- Restoration and protection of wetlands.
- Provide ecological monitoring and the development and implementation of restoration proposals.

***Areas of Concern (AOC)/Sediments (6 programs)***

Eighty-three percent, or five out of six programs, address contaminated sediments in particular AOCs. If consolidated, essentially one program would contribute to sediments and AOCs in the following ways:

- De-listing AOCs.
- Research and demonstration in technologies to remove contaminated sediments.
- Development of RAPs.
- Funding RAPs and AOC cleanup, prevention and restoration projects.

The other program remaining in this category, Episodic Events Great Lakes Experiments, is a research project for broader sediment studies such as sediment movement and soil erosion. It is recommended that this program also be consolidated despite its primary goal is not with AOCs.

Consolidation will enhance collaboration efforts between AOCs and other areas of the Great Lakes that need sediment support.

### ***Toxic Pollutant Strategy (6 programs)***

By consolidating, essentially one program will be able to contribute to Toxic Pollutant Strategy by doing the following:

- Targeting the 18 Persistent Toxic Chemicals (PTC) and priority toxics.
- Ensuring remedial action for toxic pollutant sites.
- Research and management support for airborne toxics and waste management for municipal governments.
- Funding of toxic pollutant projects through competitive grants.

Overall, consolidation was done for 28 out of the 33 federal specific Great Lakes programs by organizing them into 6 categories, which is approximately 85%.

See Appendixes 1 and 2 for a before and after organizational chart.

### **Federal General Great Lakes Programs:**

This section presents recommendations for the federal general Great Lakes programs. Unfortunately, for all of the federal general programs, determining the exact amount of aid geared toward the Great Lakes opposed to the rest of the nation is difficult because that information was not found. It is extremely difficult to establish the level of supplementary support the Great Lakes requires from the federal general programs since it is not known the portion of support the area currently receives from the federal general programs. Therefore, it is most important to find a connection to the Great Lakes for Aquatic Invasive Species, Coastal Health and Non-point Source Pollution because these three categories do not have many federal specific programs under them. This matters because according to the GLRC, programs in this area are vital to sustainability in the Great Lakes. In the Great Lakes federal specific categories, Aquatic Invasive Species has 2 programs, Coastal Health has 1 program, and Non-point Source Pollution has 1 programs. It needs to be determined how the Great Lakes directly benefit from programs at the federal general level. It is recommended:

- Determine the amount of programmatic resources, and the extent to which programs at the federal general level are contributing to the following categories: Aquatic Invasive Species, Coastal Health and Non-point Source Pollution. These three categories have very few programs under them in the Great Lakes federal specific programs and under the federal general programs there are 3 programs under Aquatic Invasive Species and ten under Coastal Health.
- That a more thorough analysis be performed to indicate with certainty whether the programs that we reviewed actually are successful in meeting the needs of the Great Lakes.

And for categories that have a multitude of programs under its functional area (Agriculture, Air, Aquatic Invasive Species, Coastal Health, Floods, Forestry, Habitat-Species, Land Surface Data and Research, Natural Resource Conservation, Pollution-Toxic and Hazardous, Sediments, Water-quality, supply, Wetlands), it is have recommended:

- Consolidate.

Overall, consolidation was done for 103 out of the 116 Federal General Great Lakes programs by organizing them into 13 categories, which is approximately 90%. Very broad programs and No longer active programs were not included in the consolidation.

See Appendixes 3-9 for an after consolidation organizational chart.

### **State Programs:**

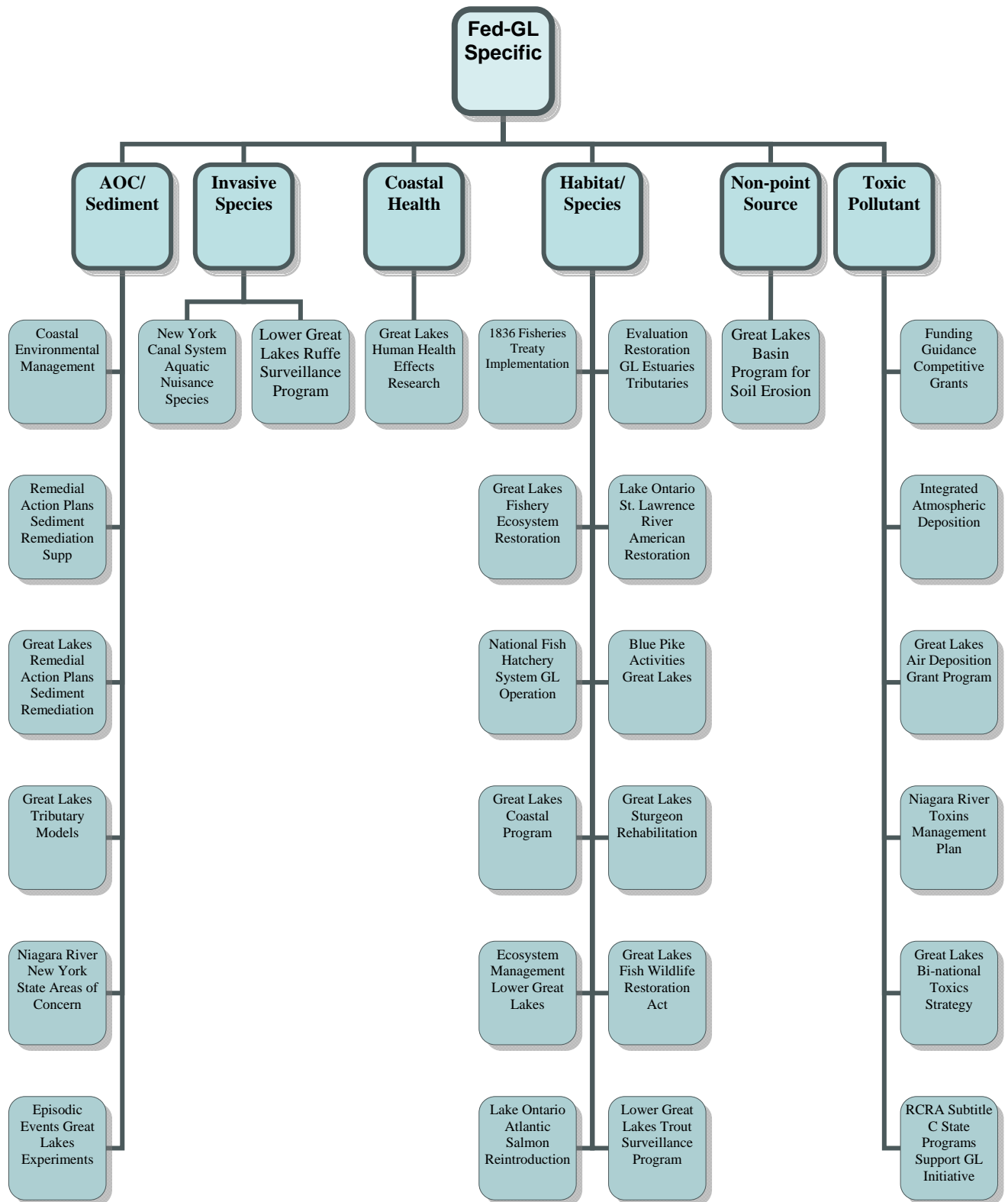
The state programs have very little information available about each and are similar to the federal general programs in that there is no way to determine the amount of aid the Great Lakes is receiving from them. With little access to information about the programs, there is no way to verify the effectiveness, as well as the functions that may be overlapping and duplicating federal programs. Therefore, for the Great Lakes Protection Fund and the individual state programs, it is recommended:

- The Great Lakes Protection Fund examines the areas that are being overlooked by the federal programs because these areas are extremely important to the survival of the Great Lakes. A focus should be on creating programs dealing with Non-point Source Pollution and Coastal Health.
- Encourage Indiana to join the Great Lakes Protection Fund.
- Encourage states to create and improve access to information about state projects and programs so that they may be better researched and analyzed.

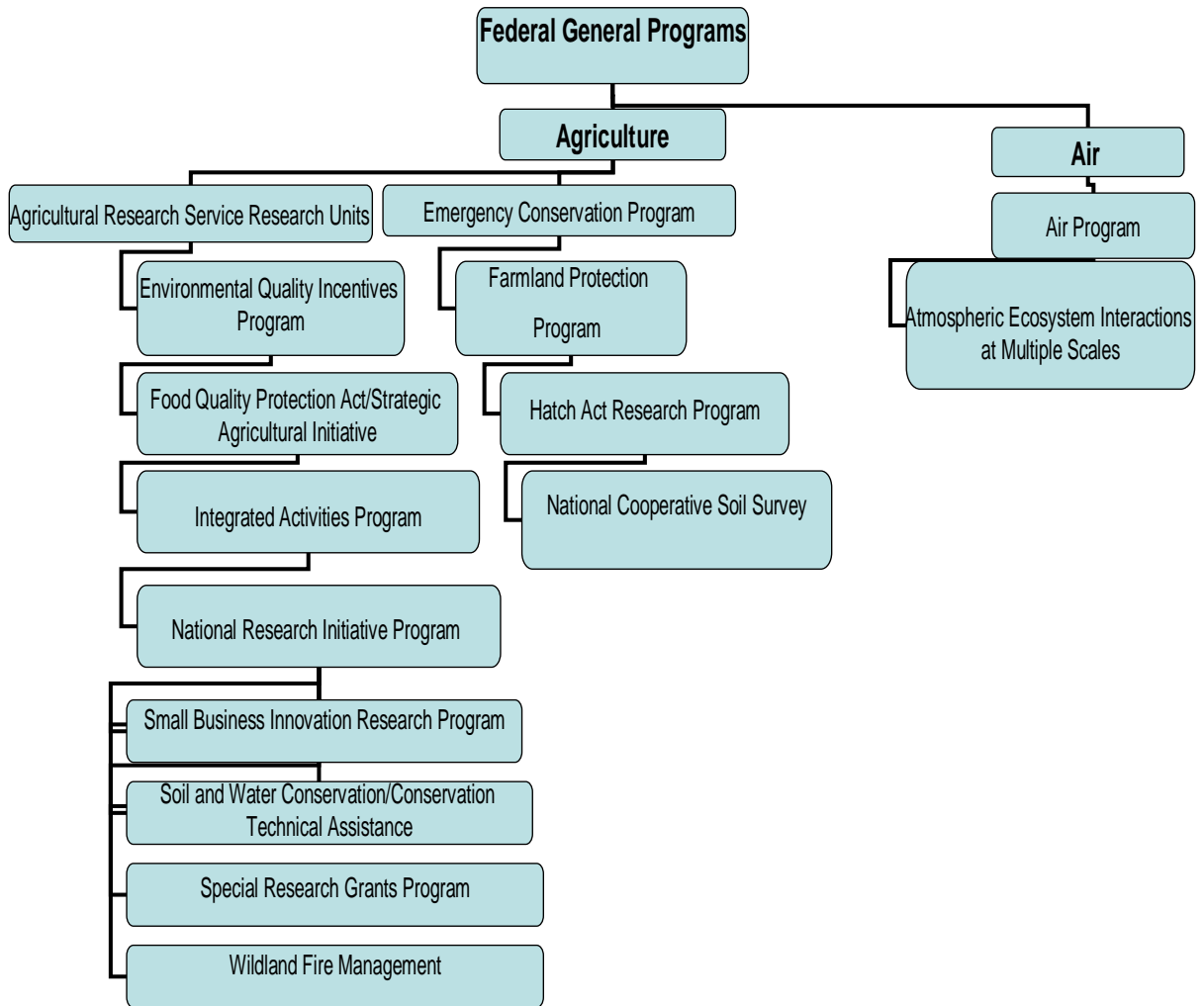
**Appendix 1: Great Lakes Federal Specific Programs – Before Consolidation Chart**



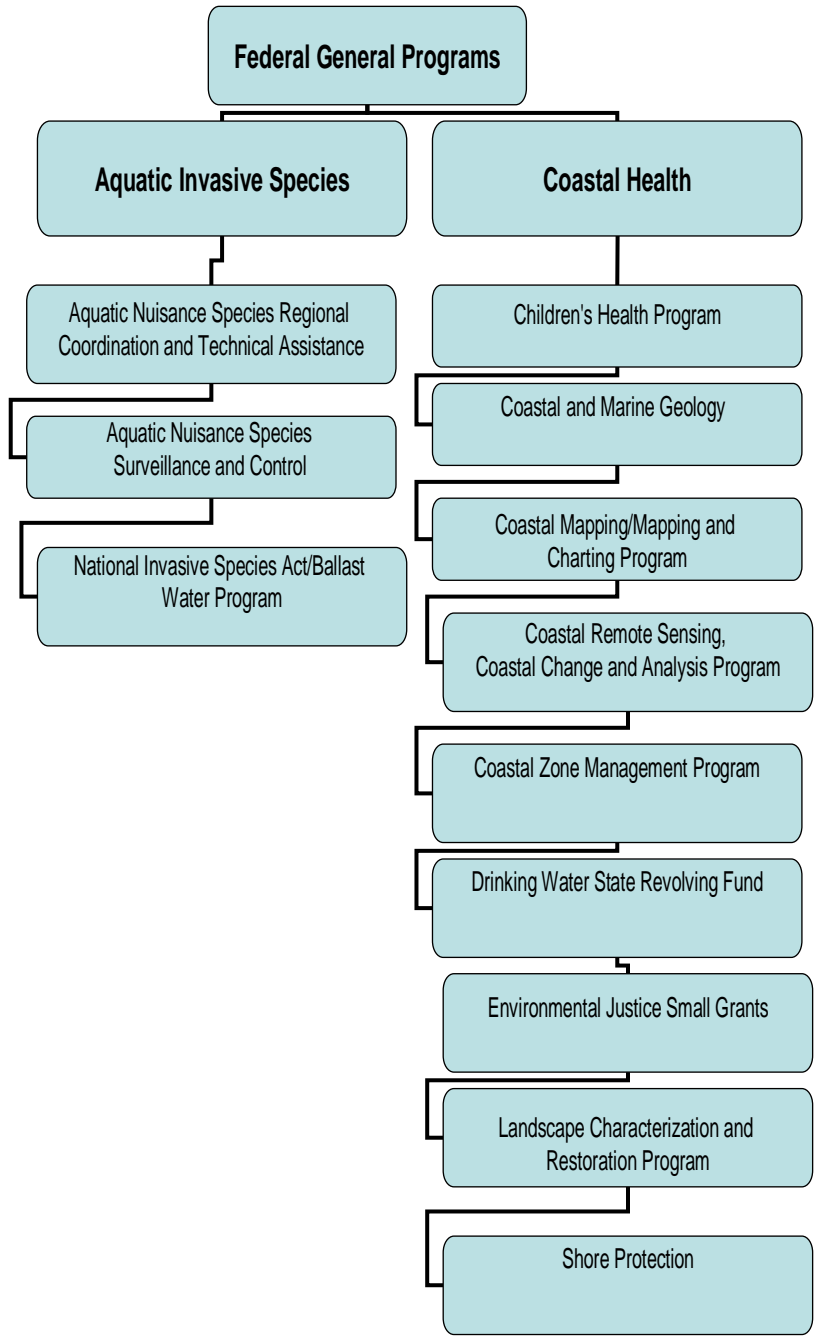
**Appendix 2: Great Lakes Federal Specific Programs – After Consolidation Chart**



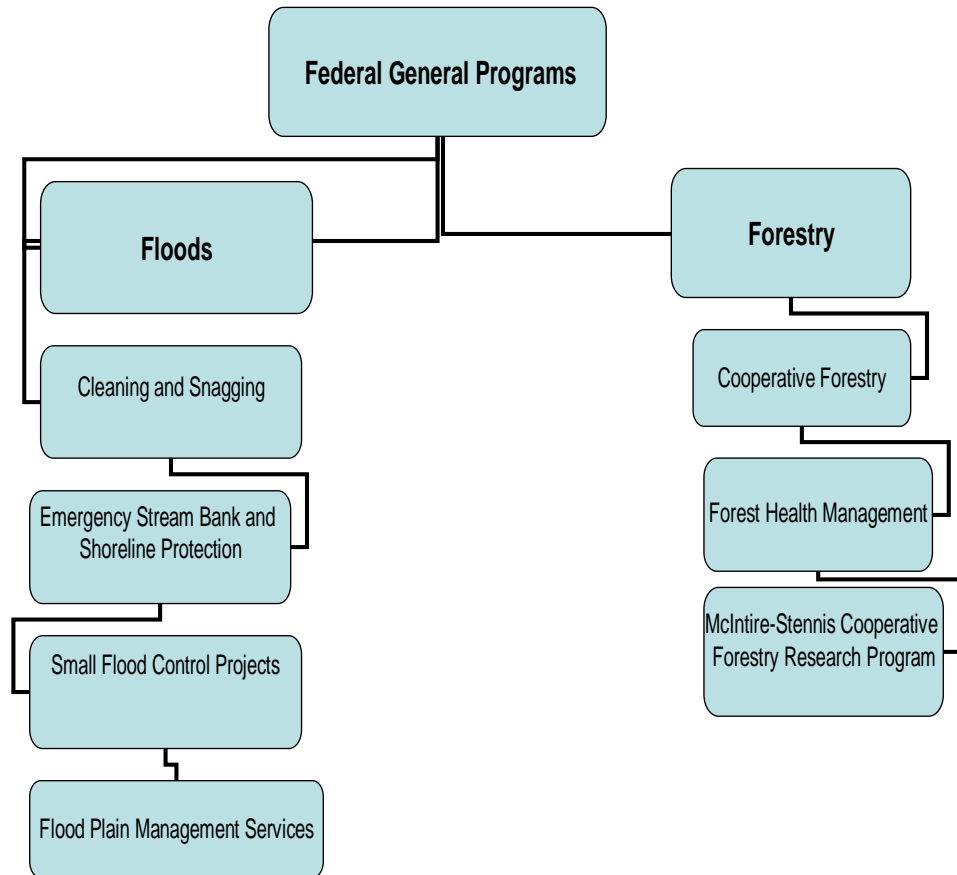
**Appendix 3: Great Lakes Federal General Programs After consolidation - Agriculture & Air programs**



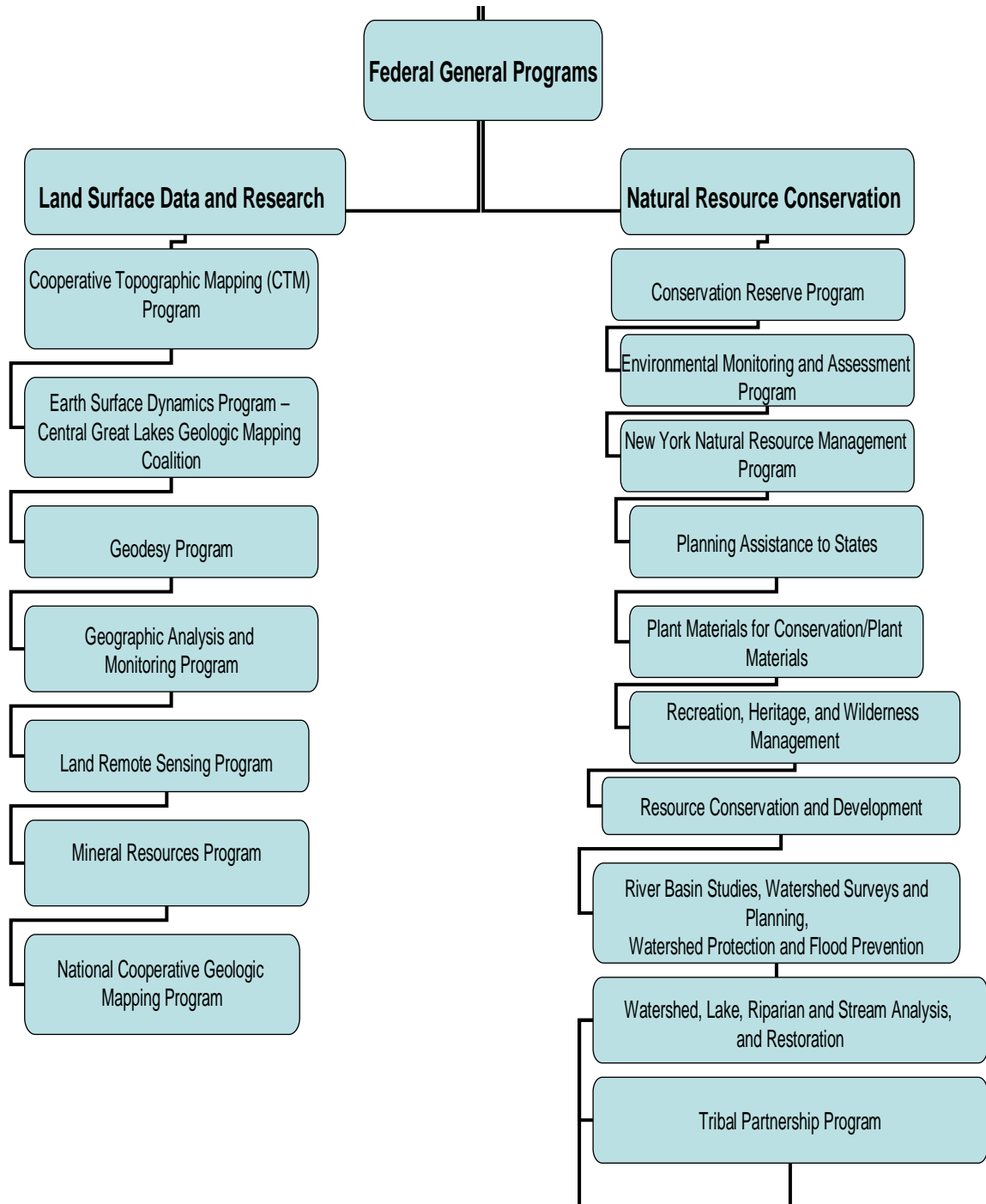
**Appendix 4:** Great Lakes Federal General Programs After consolidation – Aquatic Invasive Species & Coastal Health



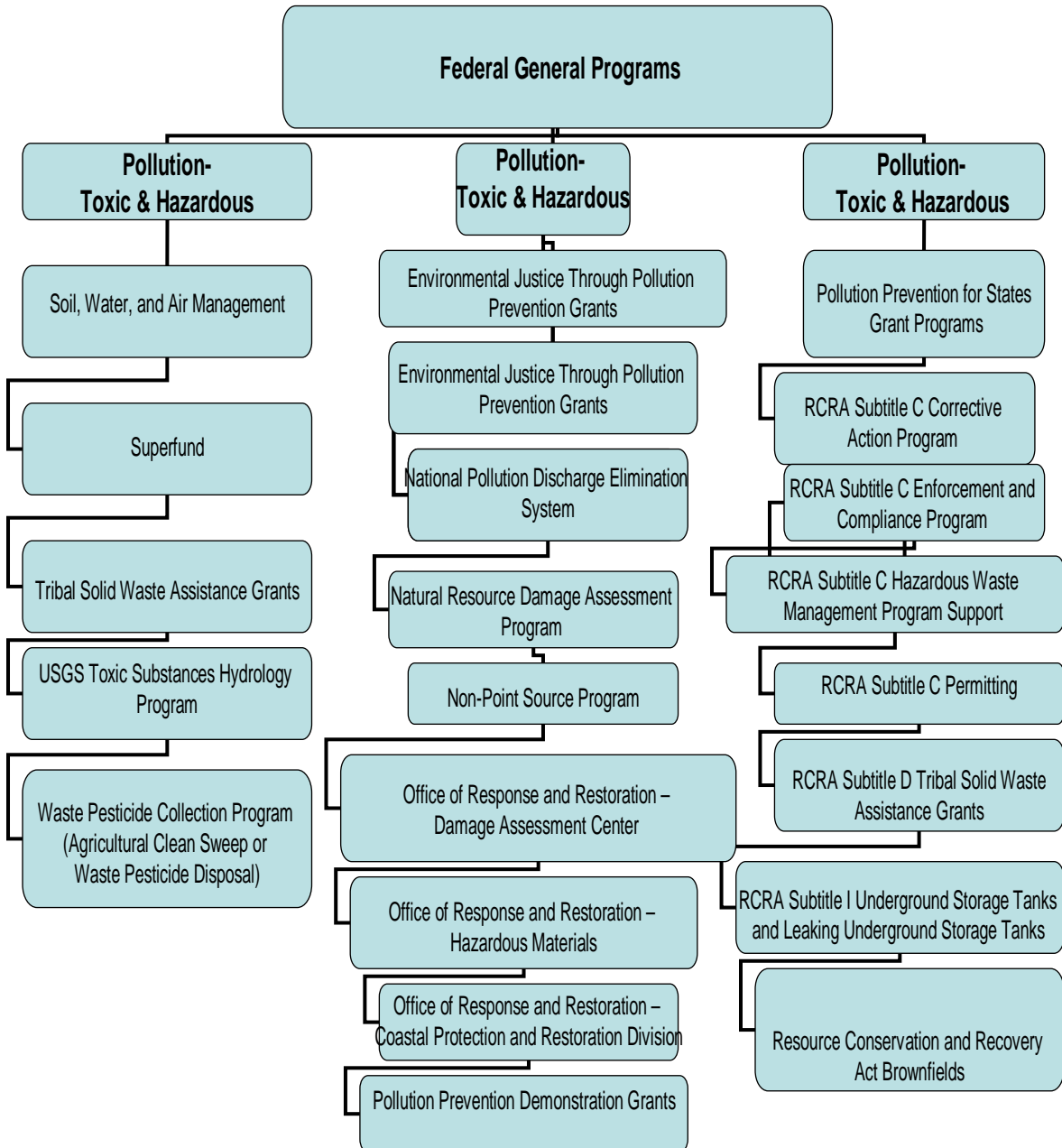
**Appendix 5: Great Lakes Federal General Programs After consolidation – Floods & Forestry**



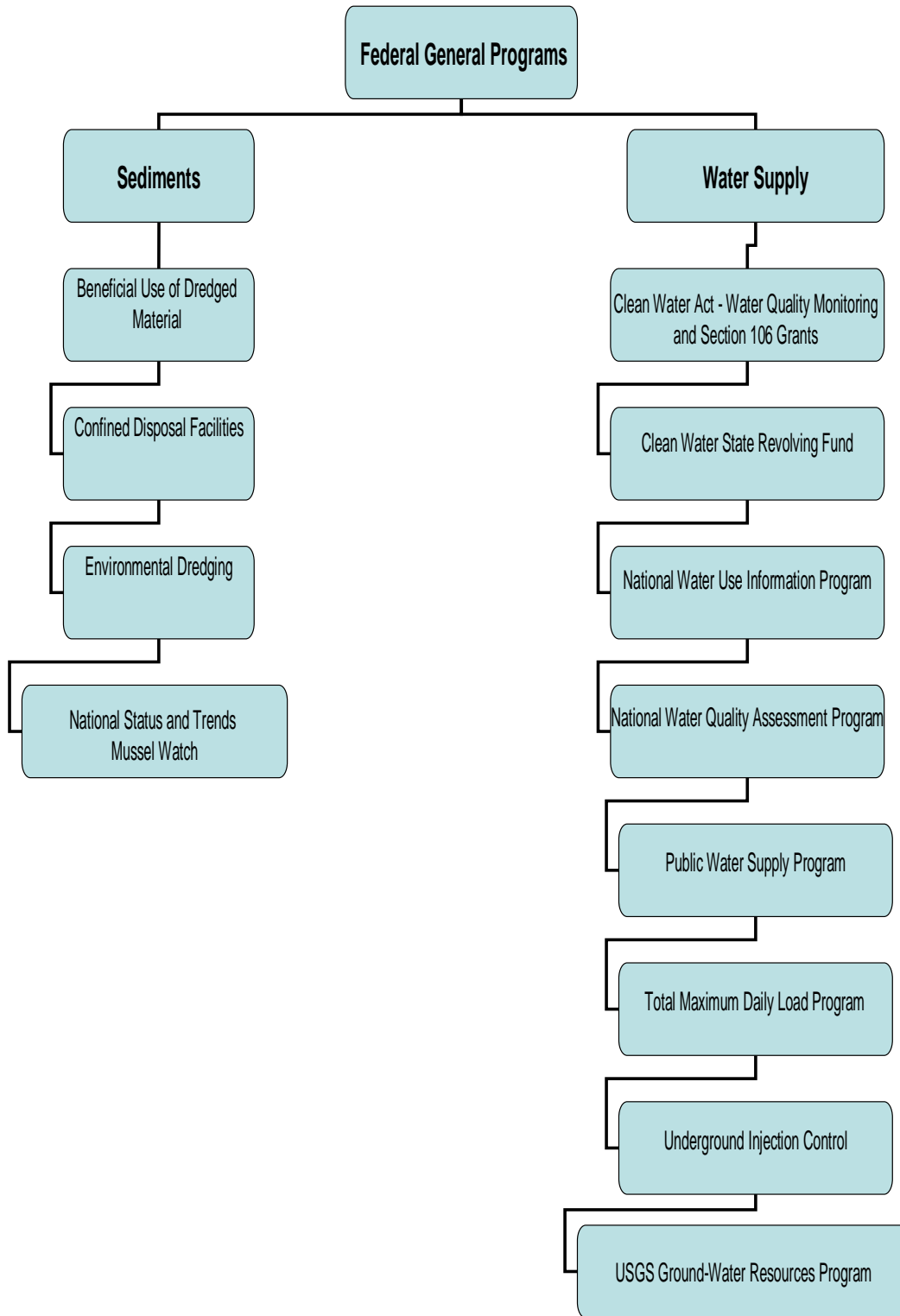
**Appendix 6: Great Lakes Federal General Programs After consolidation – Land Surface Data and Research and Natural Resource Conservation**



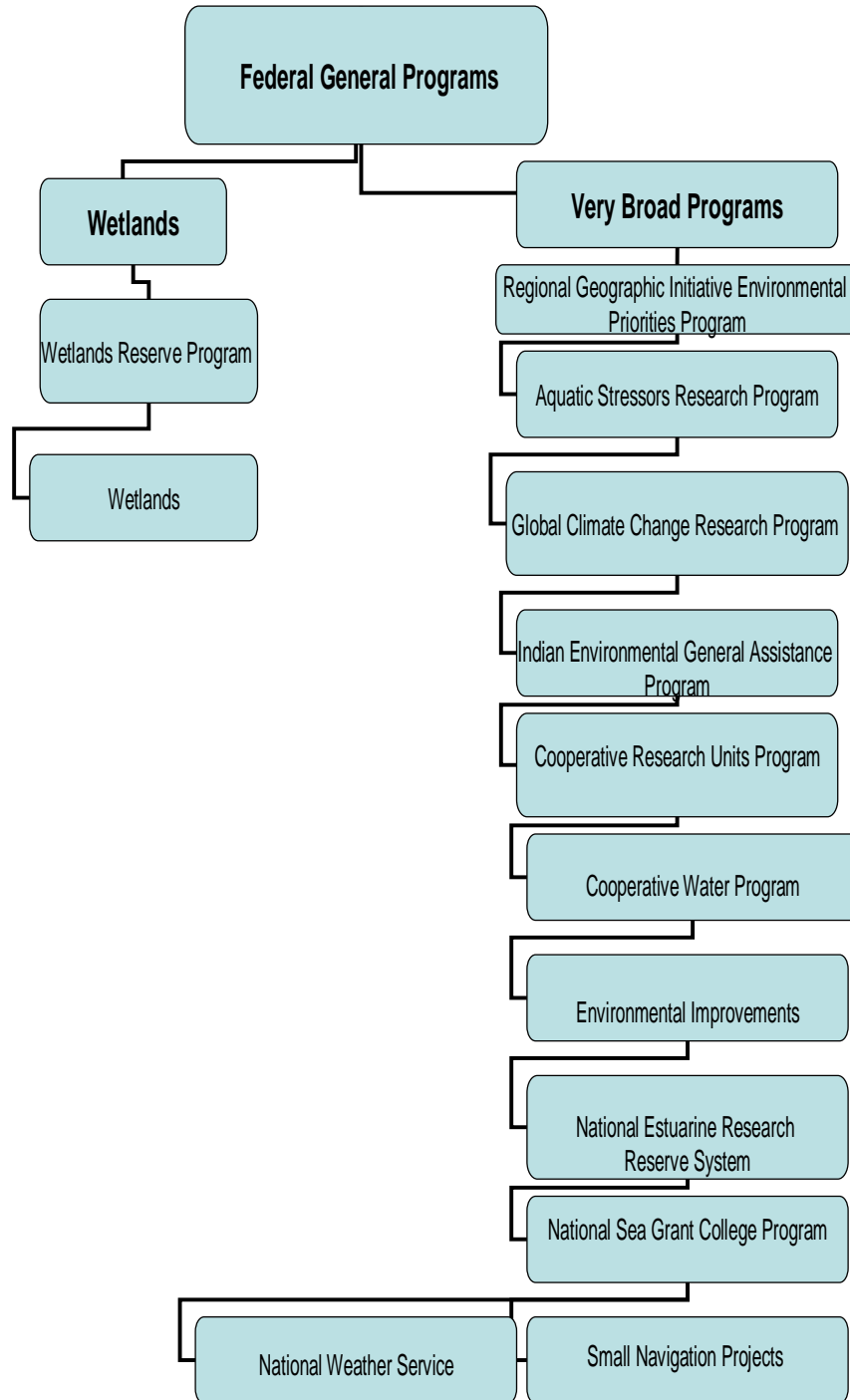
**Appendix 7: Great Lakes Federal General Programs After consolidation – Pollution Toxic & Hazardous**



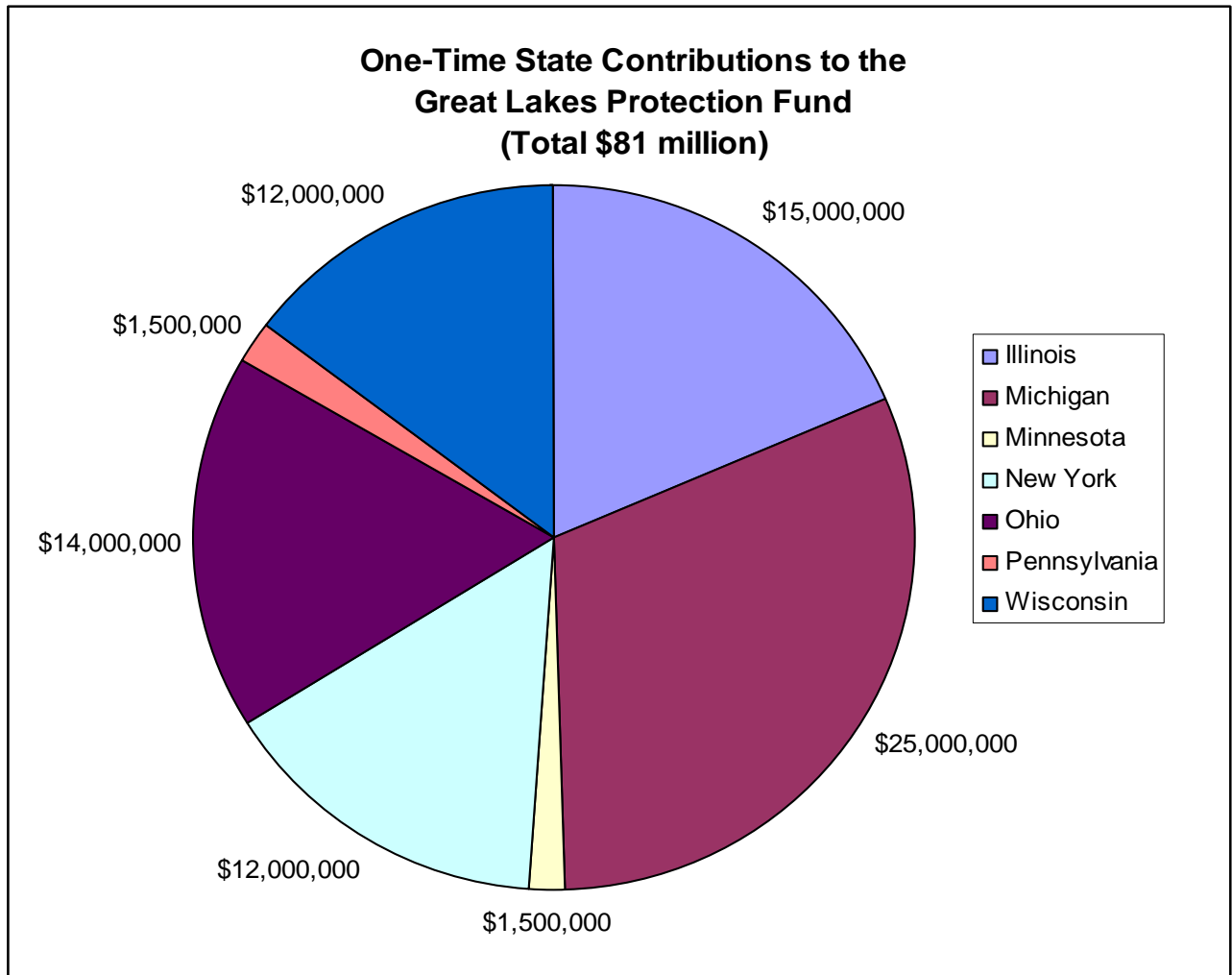
**Appendix 8: Great Lakes Federal General Programs After consolidation – Sediments & Water Supply**



**Appendix 9:** Great Lakes Federal General Programs After consolidation – Wetlands & Very Broad Programs



**Appendix 10: One-Time State Contributions to the Great Lakes Protection Fund**



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