

**The River Raisin  
Remedial Action Plan  
Update**

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# 2002 River Raisin RAP Update

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## Executive Summary

The primary goal of the River Raisin Remedial Action Plan is to restore and maintain the integrity of the River Raisin. Once the Raisin is no longer considered an Area of Concern, long term monitoring and pollution prevention mechanisms must be in place to address both point and non-point sources of contamination. The steps identified in the Raisin RAP must be designed to improve the water quality of the Raisin to provide a safe environment for the diverse biological communities that call our river home. Reduction of persistent toxic substances and soil erosion must be considered top priority in our watershed.

Extensive sedimentation sampling and analysis by Harding ESE has determined that PCB contamination is still a concern in the Area of Concern. The Harding Report has provided a number of alternatives ranging from doing nothing to full dredging and proper disposal of contaminated sediment from the areas identified.

The River Raisin Public Advisory Council's (PAC) goal is to have the River Raisin delisted as an Area of Concern by 2005. The PAC would consider the River Raisin delisted when the contaminated sediment areas are remediated to the best extent that is practical. 27  
3.

The River Raisin PAC is now partnered with the River Raisin Watershed Council and is a stand-alone subcommittee. The Watershed Council is the lead organization in any coordinated effort along the River Raisin. The Watershed Council has been more active in 2002 than any time in the last few years. The function of both the Watershed Council and the River Raisin PAC remains as support organizations with primary focus on educating the public regarding the pressing environmental issues facing the entire watershed and the AOC. Funding and guidance must come from government agencies.

## Introduction

### Area of Concern Description

The River Raisin, located in the extreme southeastern portion of Michigan's lower peninsula, flows in a generally southeast direction and discharges into the western basin of Lake Erie at Monroe Harbor. The River Raisin basin includes portions of five Michigan counties (Hillsdale, Jackson, Lenawee, Monroe and Washtenaw counties) and a small portion of northern Ohio.

The River Raisin Area of Concern (AOC) is located in the southeastern portion of Michigan's lower peninsula in Monroe County. The AOC has been defined as the lower (2.6 miles) portion of the River Raisin, downstream from the low head dam (Dam #6) at Winchester Bridge in the City of Monroe, extending one-half mile out into Lake Erie following the Federal Navigation Channel and along the nearshore zone of Lake Erie, both north and south, for one mile.

### Purpose of River Raisin RAP Update document

In 1987 the original River Raisin Remedial Action Plan was published with recommendations to address nine of the fourteen Great Lakes Water Quality Agreement designated Beneficial Use Impairments (BUI's). The 2002 River Raisin RAP Update is an attempt to review what has been accomplished since 1987 and make recommendations for the future.

This first part of this update report will briefly describe the BUI's, their current condition, and progress being made in restoring those beneficial uses that are impaired. The later part of the update report will describe the goals for River Raisin water quality improvement and the tasks needed to accomplish those goals. It will also suggest important environmental factors that should be evaluated and managed, as well as pollution prevention mechanisms that must be in place.

## **Beneficial Use Impairments**

The Remedial Action Plan (RAP) process identified nine of the Great Lakes Water Quality Agreement 14 beneficial uses as being impaired (Table 1). The River Raisin Public Advisory Council recognizes that industrial encroachment around the Area of Concern has contributed to wetland loss, therefore causing a Loss of Flora.


The River Raisin beneficial use impairments (BUIs) as of 2002 include:

- ❖ 1. Restrictions on Fish & Wildlife Consumption
- ❖ 3. Degradation of Fish and Wildlife Populations
- ❖ 5. Bird or Animal Deformities or Reproductive Problems
- ❖ 6. Degradation of Benthos
- ❖ 7. Restrictions on Dredging Activities
- ❖ 8. Eutrophication or Undesirable Algae
- ❖ 10. Beach Closings or Restrictions on Body Contact
- ❖ 11. Degradation of Aesthetics
- ❖ 14. Loss of Fish or Wildlife Habitat
- ❖ 15. Loss of Flora

These impairments have been primarily caused by historical discharges of oils and grease, heavy metals, and polychlorinated biphenyls (PCBs) to the river from industrial facilities and municipal waste disposal sites in the area.

The following is a brief description of each impaired BUI, its current condition, and progress in restoration.

**Table 1: River Raisin Beneficial Use Impairments**

Potential Impairment of Beneficial Use		Status		Comments	Public Advisory Council Goals
		AOC	Watershed		
1	Restrictions on fish and wildlife consumption	Impaired (fish)	Impaired (fish)	There are no restrictions on consumption of wildlife in Michigan. Fish -several listings in the current MDPH Fish Advisory. The general advisory for inland lakes and reservoirs due to mercury also applies.	Eliminate restrictions on fish consumption. <i>sources with AOC &amp; Watershed that contribute to FCA</i>
2	Tainting of fish and wildlife flavor	Not impaired	Not impaired	There are no reports of fish or wildlife tainting.	Not applicable to River Raisin.
3	Degradation of fish and wildlife populations	Impaired (fish)	Impaired (fish)	Fish populations are impacted by lack of cover, sedimentation, and blocked migration routes.	Improve and enhance the quality and quantity of fish in the Area of Concern.
4	Fish tumors or deformities	Not impaired	Not impaired	There have been no reports of tumors or deformities in the River Raisin.	Not applicable to River Raisin.
5	Bird or animal deformities or reproductive problems	Impaired	Not impaired	Deformities have been found in both Eagles and Cormorants in the AOC.	Reduce bird deformities due to causes within the Area of Concern.
6	Degradation of benthos	Impaired	Impaired	Impaired due to both high sedimentation rates and (in the AOC) contaminants.	Improve and enhance the quality and quantity of benthic populations in the Area of Concern.
7	Restrictions on dredging	Impaired	Not impaired	There are restrictions on dredging in the AOC due to the presence of PCB's, heavy metals, and volatile solids in the sediments.	Eliminate unusual restrictions on dredge spoil disposal due to contamination. <i>- open use of CDF to non-navigational AOC spoils</i>
8	Eutrophication or undesirable algae	Impaired	Impaired	Particularly evident in some of the lakes and impoundments.	Reduce nutrients from point and nonpoint sources to levels recommended by the International Joint Commission.
9	Restrictions on drinking water or taste and odor problems	Not impaired	Unknown		Not applicable to River Raisin.
10	Beach closings	Impaired	Unknown	Sterling State Park Beach closures due to bacterial contamination. Not caused by AOC. 	Eliminate beach closings at Sterling State Park resulting from flows from the River Raisin.
11	Degradation of aesthetics	Impaired	Impaired	Due to CSO's, and high turbidity.	Control CSO's and reduce turbidity by implementing Best Management Practices throughout the watershed.
12	Added costs to agriculture or industry	Not impaired	Not impaired		Not applicable to River Raisin.
13	Degradation of plankton communities	Unknown	Unknown	No studies conducted.	Not applicable to River Raisin.
14	Loss of fish and wildlife habitat	Impaired	Impaired	Loss of wetlands continues to be of concern. Not caused by AOC.	Maintain or increase the quantity and quality of wetlands in the watershed. <i>level!</i>
15	Loss of flora	Impaired	Impaired	Loss of the formerly vast beds of the American Lotus is of concern. Not caused by AOC.	Maintain or increase the lotus beds in the lower river marshes, protect "special" plants in the upper watershed.

## 1. Restrictions on Fish & Wildlife Consumption

The primary impaired use in the AOC is fish consumption, due to high levels of PCBs found in fish samples. The watershed is generally dominated by non-game species. The lower portion of the river sees low fishing pressure, while the upper reaches have more pressure on game fish species. According to the Dodge Report, fish are abundant in the River Raisin. The fish from the AOC and the public fishing site are contaminated and have advisories issued by the Michigan sport fishing Advisory.

A 28-day caged catfish study was conducted below the turning basin in 1988 primarily to determine if bioaccumulation of PCBs would occur in the fish. The study showed PCB concentrations of 4 parts per million (ppm) in the fish after 28 days. This level was much higher than PCB levels in fish from similar studies performed on the Kalamazoo, Saginaw and Huron rivers.

In September and October of 1991, the second of two 28-day caged fish studies was conducted in the River Raisin. At the end of the study, PCB concentrations in the fish were about 1 ppm. The lower uptake concentration seen during the 1991 study cannot be explained since no remedial actions to reduce PCB concentrations in the river had taken place prior to this study. However, although the 1991 PCB uptake concentration was lower than that of the 1988 study, the accumulation of 1 ppm PCBs by the caged fish in such a short time is still very significant.

The PCB levels in the caged fish studies, when comparing 1988 data with 1998, show an 87% decrease. The levels of PCB in fish tissue, while lower, still exceeded the trigger levels for fish consumption. The Detroit Edison corporate levy/Plum Creek area Michigan Department of Community Health caged fish studies have indicated high concentrations of PCBs in fish tissues.

In the fall of 1999 Detroit Edison partnered with Monroe High School to collect fish from Plum Creek to test for PCB and heavy metal contamination. The fish included in the contaminant analysis were carp, channel catfish, white bass and black buffalo. Total PCB concentrations exceeded the women and children trigger levels in all 35 samples and the general population trigger levels in at least one sample of each species (Day, 2000). None of the other contaminant concentrations exceeded the Department of Community Health's (DCH) trigger levels. This data was included in the 2000 fish Contaminant Monitoring Program Annual Report. The Plum Creek area is also listed in the DCH fishing guide.

Currently, there is an advisory banning consumption of carp and channel catfish from the River Raisin (below the Monroe Dam).

There are consumption advisories on black buffalo, freshwater drum (for women and children), small mouth bass, and white bass (all below the Monroe Dam).

Additionally, there are consumption restrictions on northern pike, carp, and redhorse sucker (for women and children) in the South Branch of the River Raisin.



### **3. Degradation of Fish & Wildlife Populations:**

The chronic toxic effect of contaminated sediments has led to depressed survival of benthic species, which depresses the prey species available for sportfish. Chronic toxicity reduces the reproduction and growth of benthic organisms. Dams on the river have restricted fish population movement. Sediment in transport from within the watershed is high, due to the clay and associated colloidal materials, which dominate area soils. Fish populations are also impacted by lack of cover.

European settlers caused dramatic changes to the River Raisin and its watershed that resulted in significant changes to fish communities. These changes are due to the effects of dam construction, intense agriculture, urban land use, municipal and industrial discharges, water withdrawal, drainage, and lake-level control structures on the river.

Land use is the primary factor causing a decline of fishery resources in stream ecosystems. Agriculture is the overwhelmingly dominant land use in the River Raisin basin. Roughly 94% of the total landmass of the river basin is devoted to agricultural use. The percent of land use for agriculture increases as the river continues downstream.

Nonpoint source pollution caused by intensive agricultural land use is the most serious water quality problem in the River Raisin watershed and creates the most limiting factor on fish and aquatic invertebrate populations. Tillage of soils increases erosion and sediment loading in tributary streams. Many fish and macroinvertebrate species are intolerant of high sediment loads.

Stream channelization creates shallow, uniform channels with much less diversity of depth, velocity, and bottom substrates. Less diverse channels support less diverse biota as critical habitats for reproduction and survival of aquatic species. The overhead canopy is often destroyed or greatly reduced during the channelization process. This leads to increased summer water temperatures that can eliminate certain fisheries management options.

### **5. Bird and Animal Deformities or Reproductive Problems**

The Ford marsh is home to a number of bald eagles. The U.S. Fish & Wildlife Service has reported deformities at that location. Most recently crossed beaks on chicks were observed in 1997 - one had to be destroyed. It is unknown whether deformities are caused by residual DDT or PCB's from the AOC.

## 6. Degradation of Benthos

Aquatic invertebrate communities provide an important food source for fish and other animals including birds, mammals, reptiles, and amphibians. Aquatic invertebrates, particularly insects and mussels, also serve as indicator species, and presence or absence of certain aquatic insects reveals much about habitat and water quality in a specific portion of a stream.

Aquatic and benthic organisms have been adversely affected by toxic discharges into the river and sedimentation.

In August and July of 1993 a biological survey of the River Raisin was conducted. The slightly to moderately impaired ratings of invertebrate communities throughout the watershed related to the lack of intolerant species and reduced abundance of stoneflies, mayflies, and caddisflies. Nonpoint source agricultural runoff remains a major factor degrading aquatic habitat particularly in the mainstem below Tecumseh.

Since mussels, unlike fish, have very limited mobility, their distributions are excellent indicators of localized habitat conditions. In 1976-1978, mussel collections were made at 20 stations in the River Raisin watershed. Many stations, particularly in the headwaters, still contained healthy, diverse mussel populations. However, mussel faunas in the lower river stations had been greatly reduced. Although the lower River Raisin below Dundee once held 20 species of mussels, this study found only 4 living species. The original mussel fauna was destroyed by pollution.

The Michigan Natural Features Inventory lists five mussel species in the River Raisin corridor as endangered. These include the northern riffleshell, purple lilliput, rayed villosa, round hickorynut, and salamander mussel. In addition, the wavyrayed lampmussel is threatened and the purple wartyback is of special concern.

In 1994 over 92.5 acres of filter strips were installed as farmers worked to reduce runoff from fields to tributaries of the River Raisin. These "green buffers" filter out up to 50% of sediment. Filter strips were utilized for four years prior to this, and have been very successful.

## **7. Restrictions on Dredging Activities**

Restrictions on dredging are attributable to elevated concentrations of PCBs in dredge spoils from the navigational channel. Yearly maintenance of the lower river channel dredging goes to Sterling State Park Confined Disposal Facility.

### **PCB Hot Spot Identification and Remediation Efforts**

In 1981, samples collected for the United States Army Corp of Engineers revealed elevated levels of PCB's in sediments located from the Monroe Waste Water Treatment Plant (up-stream) to Lake Erie. The highest concentrations were found in the turning basin and immediately downstream of the turning basin. In 1983 and 1984, it was noted that PCB concentrations in sediment increased from the turning basin to the Detroit Edison Power Plant water intake ( Harding, 2002).

During the collection of samples, in 1991, for their River Raisin project, Michigan State University (MSU) staff discovered unexpectedly high levels of PCBs (40,000 ppm) in sediments located near the outlet of a former Ford Motor Company wastewater discharge pipe. This pipe was located on the north side of the River Raisin just downstream from the turning basin. In an effort to further delineate the source and extent of contamination associated with the PCB hot spot and locate other possible PCB sources in the area, U.S. Environmental Protection Agency (U.S. EPA) staff (at the request of the MDNR) conducted additional sediment sampling in the AOC in September of 1992. Through the use of EPA's research vessel, the "Mudpuppy", a number of sediment core profile and grab samples were taken at, above, and below the PCB hot spot area. U.S. EPA staff also collected samples for PCB analysis on Ford's property. This included sampling within the former wastewater discharge pipe mentioned above.

Although other potential sources of PCBs were noted, U.S. EPA's sampling confirmed MSU's earlier sampling, which showed that the highest levels of PCBs in the lower River Raisin are located in the vicinity of Ford's former wastewater discharge pipe. Additionally, analysis of the sample collected from within the former wastewater discharge pipe showed PCBs to be present at levels as high as 9,000 ppm. In view of this new information, at U.S. EPA's request, Ford staff developed investigation and cleanup plans to address the PCB contamination in the sewer system and in the river near the former wastewater discharge pipe. The investigation/delineation of the PCB hot spot (determined to be roughly 600 feet long and 200 feet wide) was completed during the summer of 1993. The sewer system investigation was completed in 1994.

On September 26, 1997, Ford Motor Company completed an environmental dredging project in the River Raisin. The project utilized a double silt containment curtain to hold contaminated sediments during the removal project to prevent their spreading downstream. Ford removed approximately 30,000 cubic yards of PCB-contaminated sediment from a "hot spot" in the River Raisin where PCB concentrations were as high as 40,000 parts per million. River sediment was dredged down to the native clay to ensure that the contamination was fully removed.

The contaminated sediment was then transported to an on-site stabilization facility and mixed with approximately 14 percent Portland cement. After quality assurance checks were conducted the material was transported by truck and disposed of in an approved, on-site landfill. The landfill was

designed utilizing a double-walled containment system and was capped. Leachate from the landfill will be collected and transported off site for treatment.

The EPA initiated sediment sampling for PCB concentrations in 1995, 1997 and 1998. In May and June 1997 sampling was initiated by the Michigan Department of Environmental Quality (MDEQ) to further define the extent of PCB contamination found at certain locations by the EPA during the 1995 sampling. Sediment sampling performed in September 1998 was also initiated by the MDEQ in an effort to further define the extent of PCB contamination noted during the 1997 survey. Also to determine the success of the PCB hotspot cleanup by Ford, and to determine if PCB contamination was present in the Detroit Edison discharge canal and further upstream in Plum Creek. Sampling for additional chemicals of concern was also conducted in 1995, 1997, and 1998 (Jones, 1999).

### **Harding ESE Report**

Harding ESE Inc. published in April 2002 a plan, which includes identifying gaps in existing data and developing alternatives for remediation of sediments in the River Raisin AOC. Harding ESE identified a number of technologies that could be used to remediate the contaminated sediment. The No Action remediation was considered as a baseline for the remedial alternatives. Alternatives were then developed by combining technologies. Alternatives were separated into three categories: no action, in situ, and ex situ.

**No action:** under this alternative, no action would be taken to address the contaminated sediment and the risks to aquatic life.

**In Situ:** in situ alternatives consist of those actions that involve the remediation of contaminated sediment in place. There are four general types: natural attenuation, biological, chemical, and stabilization.

**Ex Situ:** ex situ remediation alternatives consist of the removal of contaminated sediment from the bottom of the waterway before treatment and/or disposal alternatives are applied. Removal of sediment is achieved by mechanically penetrating, grabbing, raking, cutting, or hydraulically scouring the bottom of the waterway

The estimated volume of sediment currently in-place to be remediated is 451,667 cubic yards based on the MDEQ cleanup goal of 330 ppb. The recommended remedial action is sediment dredging and off-site sediment disposal.

## 8. Eutrophication or Undesirable Algae

Eutrophication is the physical, chemical, and biological changes that take place after a lake, estuary, or slow-moving stream receives inputs of plant nutrients – mostly nitrates and phosphates – from natural erosion and runoff from surrounding land basin. Cultural eutrophication leads to increased water turbidity, excessive growth of algae and weeds, decline in water quality, and loss of fish and wildlife due to activities such as agriculture, urbanization, and discharges from industrial plants and sewage treatment plants (Miller, 2000).

In the summer months River Raisin's flow is dramatically slowed. This low flow causes nutrients from upstream to accumulate in the lower Raisin. Water quality during this time of year is degraded: it assumes a sludge-like character, oxygen levels are depressed, and large amounts of undesirable algae grow.

Data collected between 1976 and February 1977 showed that turbidity and total phosphorus was consistently high. During wet weather events total phosphorus concentrations consistently exceeded 1.0 mg/l and sedimentation rates increased. The source of high phosphorus and sediment loadings appeared to be related to runoff from agricultural, municipal or industrial discharges.

In the River Raisin watershed, agricultural runoff is the major source of nonpoint source pollution. Increased erosion often accompanying agricultural land use not only depletes soil resources, but also degrades water quality through increased turbidity and sedimentation. As fertilizer use has increased, transport of nutrients from soils to surface waters has increased accelerating eutrophication of surface waters. Increasing use of agricultural pesticides and herbicides has introduced additional toxic substances into surface waters.

## 10. Beach Closings or Restrictions on Body Contact

Although beach closings are not a problem in the AOC due to a lack of beaches, restrictions on body contact in the river are an ongoing problem. In 2000, severe spring storms caused major problems at upstream wastewater facilities. High levels of E-coli contamination were detected from river samples. Sanitary Sewer Overflows (SSOs) and Combined Sewer Overflows (CSOs) were the reported source. The PAC is working with the local health departments (Monroe and Lenawee County Health Depts.) and watershed groups to identify sources of bacterial contamination.

### Sewage Discharge Summary

The CSO/SSO discharges to the River Raisin Watershed are located in Table 1.1, which summarizes the data for sewage discharges to the watershed during the period June 1995-February 2001. Combined Sewer Overflows (CSO's) consist of partially treated sewage. CSO's usually occur during rain events when retention basins exceed their maximum volumetric holding. The excess overflow is primarily run off due to impervious surfaces. Sanitary Sewer Overflows (SSO's) are untreated sewage overflows that occur most frequently during storm events. This is due to infiltration

of sanitary sewers by storm water. These discharges are illegal. Until 2000, only discharges of CSO's were required to be reported to the state.

A total of over 14.99 million gallons of reported CSO's were discharged into the River Raisin watershed. In addition, reported SSO data was collected from wastewater treatment plants, equaling a total of 27.6 million gallons. **This estimation is low for both CSO's and SSO's due to insufficient data records.** (Requested data was not supplied from several of WWTP.) The MDEQ website should be referred to for specific occurrences of CSO's and SSO's.

#### **11. Degradation of Aesthetics**

The lower 1/4 mile of River Raisin was once a great inland swamp filled with waterfowl - a real sportsman's paradise. Now it is an industrial waterfront with eroded aesthetics. There are still some wetland areas on the Ford marsh, which will soon be accessible by new walking paths.

In May 2001, it was announced that a \$12 million rehabilitation project would commence at Sterling State Park. This will make miles of wetland walking paths open to the public in an area that has been closed to the public since the early 1900's.

#### **14. Loss of Fish and Wildlife Habitat**

Loss of fish and wildlife habitat, specifically wetlands, can be attributed to the contamination of river water and sediments with PCBs and heavy metals.

The destruction of wetlands eliminates spawning, nursery, and feeding habitats for many fish species and other animals. Wetlands also serve important functions in providing high water quality. These wetland functions include acting as a sediment and nutrient filter during and after precipitation events and stabilizing stream flow and promoting ground water recharge by acting as storage reservoirs during high flow periods.

#### **15. Loss of Flora**

A plant of concern in the River Raisin and western Lake Erie Basin is the American Water Lotus, which is designated as endangered in Southeastern Michigan. This is the northernmost part of this plants range. There has been a decrease in the lotus beds in the lower river marshes. American Lotus beds fluctuate from year to year with fluctuating water levels of Lake Erie. They are important habitat for fish and invertebrates.

## **Clear statement of water quality improvement or protection goals of the River Raisin RAP Update**

### **PAC Primary Goal**

The primary goal of the River Raisin Remedial Action Plan is to restore and maintain the integrity of the River Raisin. Once the Raisin is no longer considered an Area of Concern, long term monitoring and pollution prevention mechanisms must be in place to address both point and non-point sources of contamination. The steps identified in the Raisin RAP must be designed to improve the water quality of the Raisin to provide a safe environment for the diverse biological communities that call our river home. Reduction of persistent toxic substances and soil erosion must be considered top priority in our watershed.

### **General Goals**

- 1) The implementation of the RAP is designed to restore the impaired beneficial uses in the River Raisin Area of Concern (AOC). The River Raisin Public Advisory Council developed the impaired beneficial uses and related goals. In addition, water quality must be restored and maintained to meet Michigan Water Quality Standards and designated uses.
- 2) In the long term, it is the goal of the RAP to realistically eliminate the input of persistent toxic substances and to considerably reduce soil erosion throughout our watershed. As steps toward these goals the RAP endorses the principals of pollution prevention, use of soil erosion control technologies, and environmentally sound land use planning.
- 3) Remedial Actions must include removal of the remaining contaminated sediments in the Area of Concern, development of new initiatives and stronger enforcement of existing legislation as needed to address point and non-point sources that impact our watershed and the Area of Concern.
- 4) The final goal of the Raisin Remedial Action Plan is an effective education program that will inform the public of the pressing environmental issues facing our community.

## **The tasks that need to be completed to prevent or control the critical sources of pollution or address causes of impairment.**

### **1. Best management practices - physical improvement**

- A. Contaminated Sediments must be removed (dredged) from the Area of Concern. After the dredging operation has occurred, monitoring must continue to insure that persistent toxic material is not continuing to be introduced from up river sources. If toxins are found, the sources must be identified and eliminated.
- B. Soil erosion in the River Raisin basin is estimated to be as high as five tons per acre, per year. The Soil Conservation Services estimates that cropland is eroding faster than the land can tolerate and still remain productive. The input of sediments are degrading the aquatic habitat in the entire river basin and filling in the federal navigation channel in the Area of Concern. Millions of dollars are being spent annually for dredging projects of this channel. The River Raisin PAC will partner with the Watershed Council and the Soil Conservation District to implement Best Management Practices.
- C. The RAP PAC endorses programs that utilize soil erosion control technologies to reduce the unacceptable amount of soil that is washed away each day in our river basin. Physical improvements including shootrock structures, filter strips, bank stabilization projects, soil stabilization and control of run-off from construction sites, must be utilized throughout the basin. Further, effective land use planning, storm water control, flood plains management plans and effective soil erosion and sedimentation control ordinances must be adopted and effectively enforced to improve our water quality. (See table at end of report for MDEQ grant funding since 1990)
- D. Adjacent to the River Raisin are the old retention lagoons (see AOC map at beginning of report) that were once part of Consolidated Paper Company. The lagoons are a current known source of PCB contamination to the river. The lagoons must be remediated and it is our recommendation to deed these lagoons to the City of Monroe for wet weather retention.

### **2. Land Use Management Tools**

- A. Update Local Master/Land Use Plan: Local communities should review their Master/Land Use Plans periodically (every 5 to 10 years) in order to address urban sprawl through the costly extension of public utilities (sewer and water). Plans should relate to anticipated/projected population growth and housing needs, as well as environmental areas, commercial, and industrial needs. Special attention should be given to the Natural Features, CZM programs.
- B. Update Local Zoning Regulations: Local communities should regularly review and update, as necessary, their zoning ordinance to address issues that would specifically relate to the degradation of the environment. This is most important in the Site Plan Review, Schedule of Regulations and Supplemental and/or General Provision sections of the ordinance. Mandatory Environmental Impact Statements (EIS) and/or Environmental Impact Assessment (EIA)



should be required for developments needing special approval, over 20 acres in size and with on-site utilities, developments in flood plains, or of a commercial/industrial nature.

- C. **Address Water Quality Management Issues in our Watersheds:** This is most apparent for illicit discharges and on-site septic and/or small wastewater treatment systems; these package treatment plants have tendencies to fail (Phase II Clean Water Act). The state may require local government to assume responsibility for these systems. Other areas of concern relate to stormwater management, erosion control, agricultural runoff and flood plain management.
- D. **To Preserve and Enhance our Dwindling Agricultural Lands:** Local communities and/or organization should encourage the development of programs and regulations that would maintain a viable agricultural industry. This could be accomplished through items A and B above, the Purchase or Transfer of Development Rights (PDR/TDR) programs, Act 116 Farmland/Open Space Preservation, and a reassessment of the State's Land Division Act and local assessment policies.
- E. **Review and Update Flood Plain Regulations:** Local communities with Federal Emergency Management Agency (FEMA) Flood Insurance Studies and in the regular flood insurance program are mandated to adopt Local Flood Plain Regulations. These regulations address what types (s) of development is or is not allowed in a flood plain, and if allowed, the elevation that buildings must be built too - usually the minimum elevation for the first habitable floor.
- F. **Combined Sewer Overflows and Sanitary Sewer Overflows** must be addressed in our watershed. The State of Michigan has made a judgment regarding Adrian and Blissfield, requiring them to implement changes at their wastewater facilities by 2004 and 2008. This is a point source for bacteria to the river.
- G. **Natural Features Inventory:** an identification and cataloging of natural features within the entire River Raisin Watershed must be conducted and entered into the Natural Features Inventory. This inventory should then be consulted when making planning decisions within the watershed

Grant

**River Raisin MDEQ Funded  
Projects**

Tracking Code	Project Name	Organization	County Code	Status	Grant Type	Funding Source	Grant Amount
1990-0020	L. Erie Phos. Reduction	USDA SCS	58, 82, 81	CL	WIP	319	\$111,000
1991-0006	R. Raisin	Lenawee Conserv. Dist.	46	CL	WIP	319AOC	\$200,000
1993-0007	R. Raisin	Lenawee Conserv. Dist.	46	CL	WIP	319	\$100,000
1995-0019	South Branch R. Raisin	Lenawee Conserv. Dist.	46	CL	WIP	319	\$98,635
1996-0019	South Branch R. Raisin	Lenawee Conserv. Dist.	46	CL	WIP	319	\$200,000
1998-0025	R. Raisin CREP Impl.	Lenawee Conserv. Dist.	46	CL	WIP	319	\$50,000
1999-0074	R. Raisin	Lenawee Conserv. Dist.	46, 81, 58	OP	WIP	CWAP	\$500,000
2000-0111	R. Raisin Volunteer Clean-Up	R. Raisin Watershed Council	46, 58, 81	CL	VSC		
2001-0037	Pollard Drain	Lenawee Co. Drain Comm.	46	OP	RAL	CMICWF	\$210,806

**Notes**

Total \$1,470,441

Status:

CL = closed

OP = open

Grant Type:

WIP = implementation

VSC = volunteer stream clean-up

RAL = RAPs and LaMPS

Funding Source:

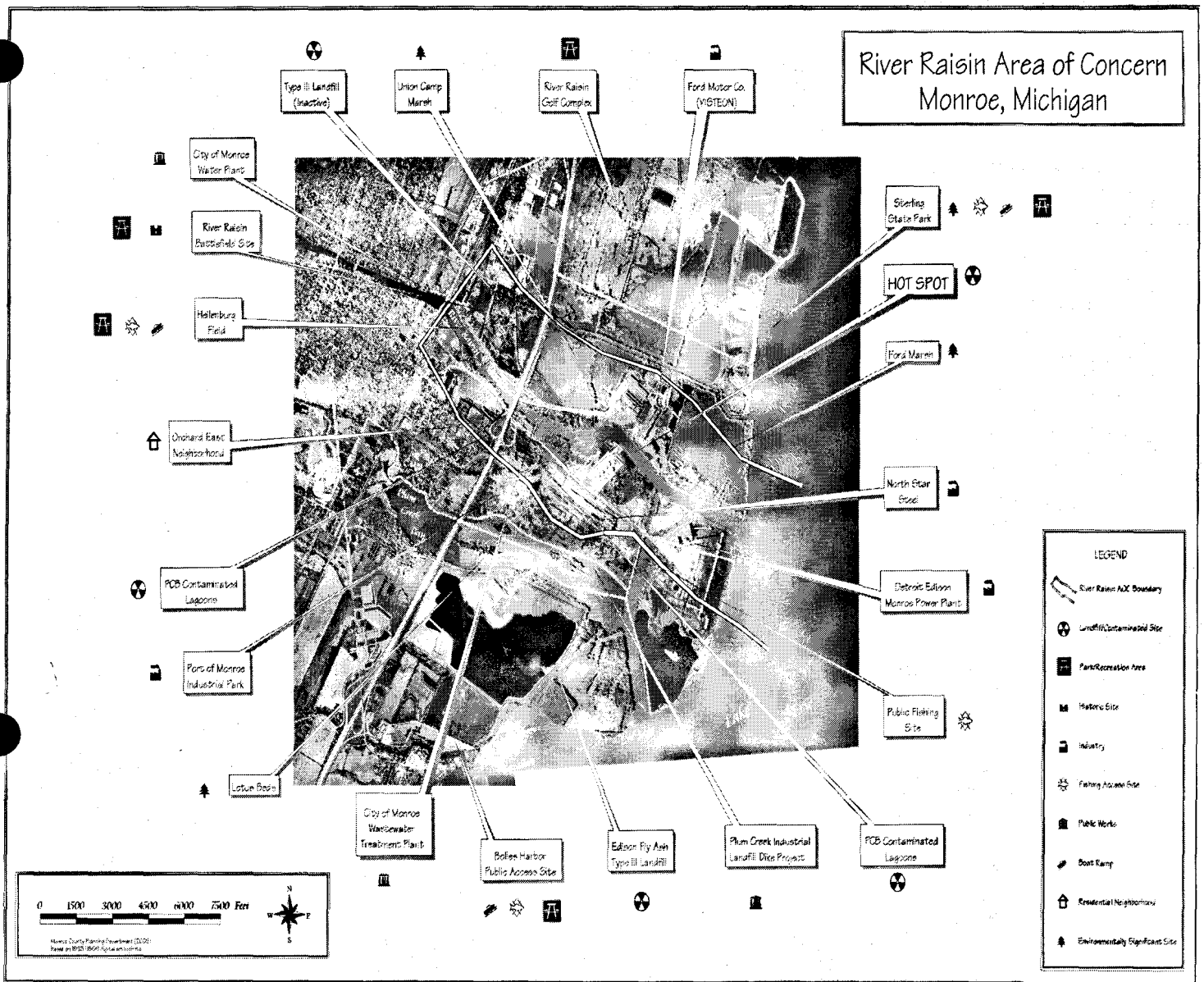
319 = 319

319AOC = 319 Area of Concern

CWAP = Clean Water Action

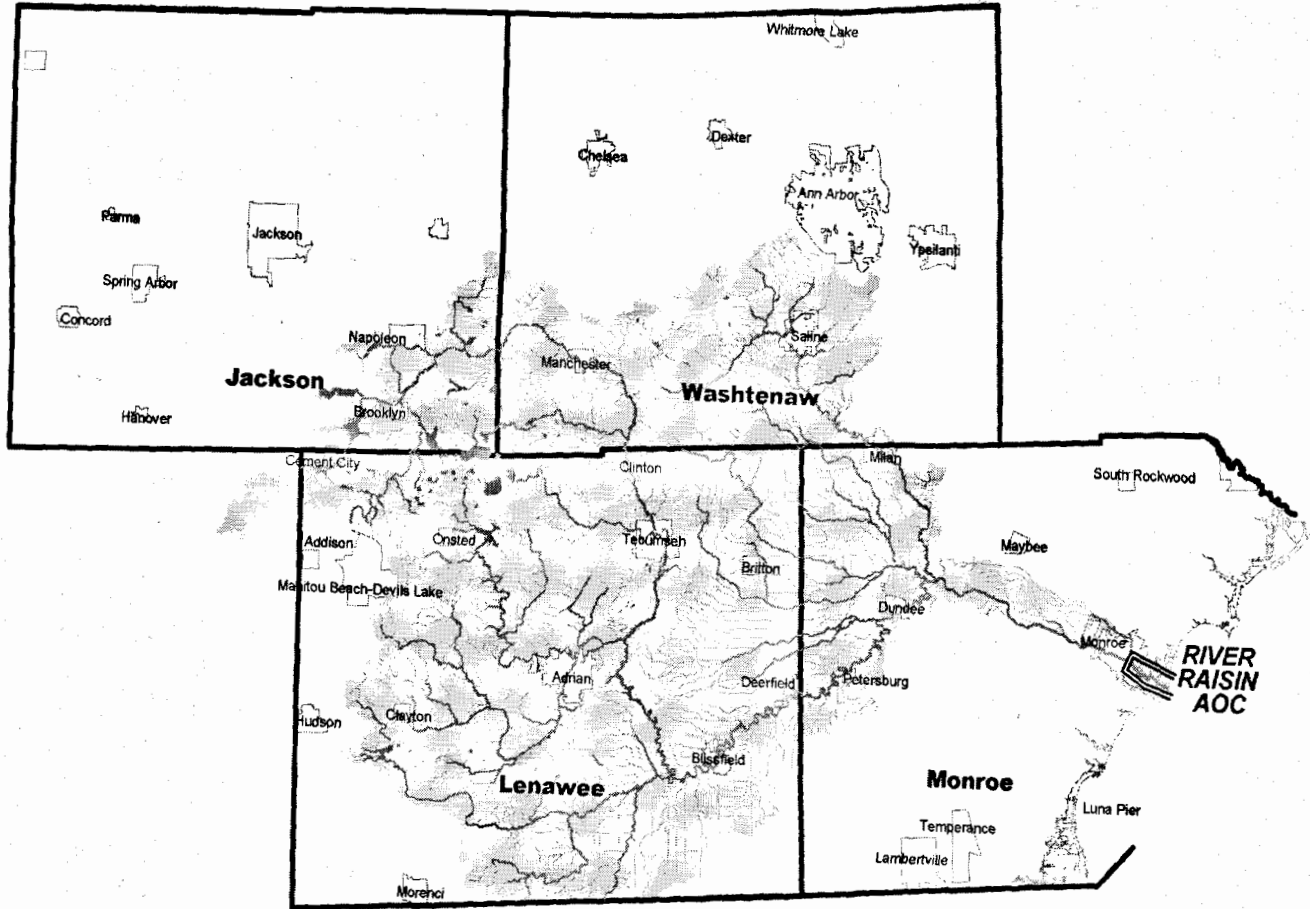
Program

CMICWF = Clean Michigan Initiative Clean Water Fund



**Map of River Raisin Area of Concern**

# Map of the River Raisin Watershed



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