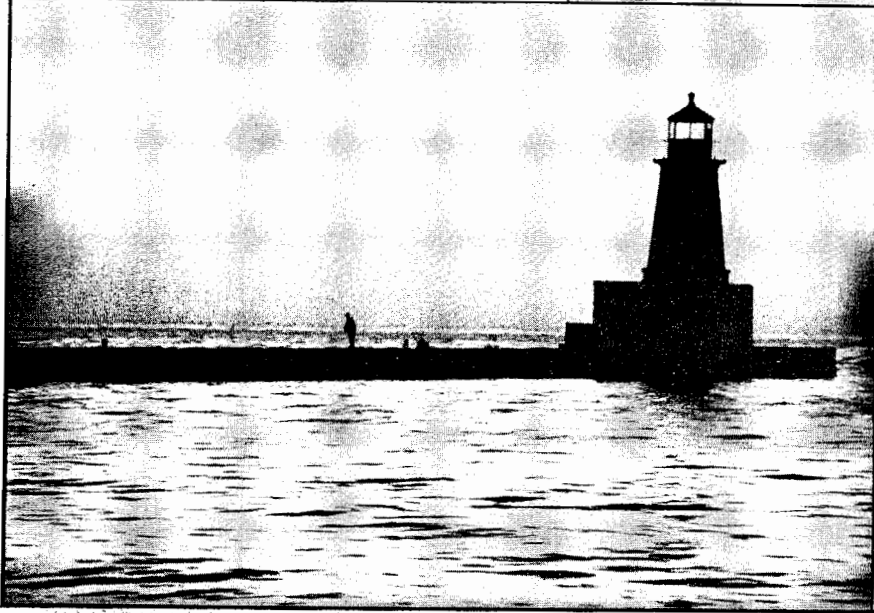
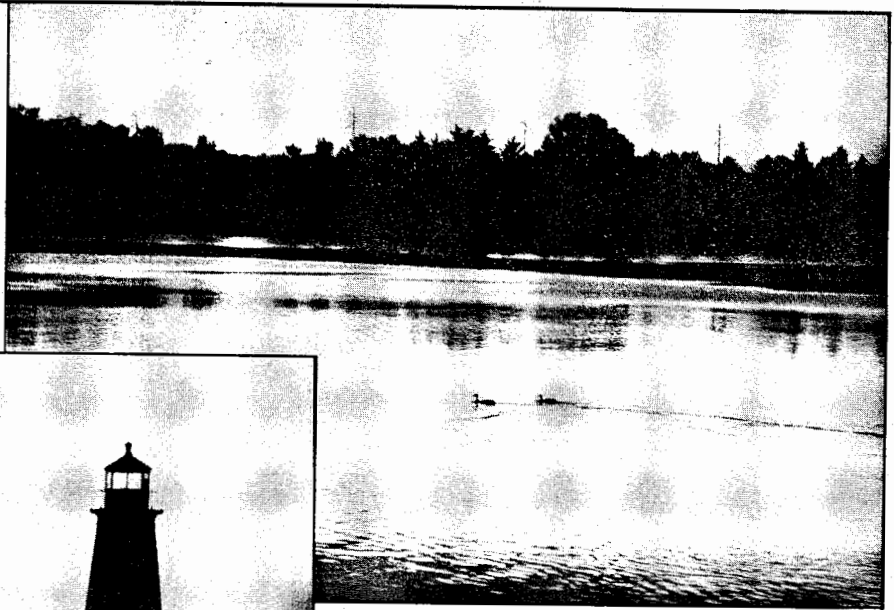
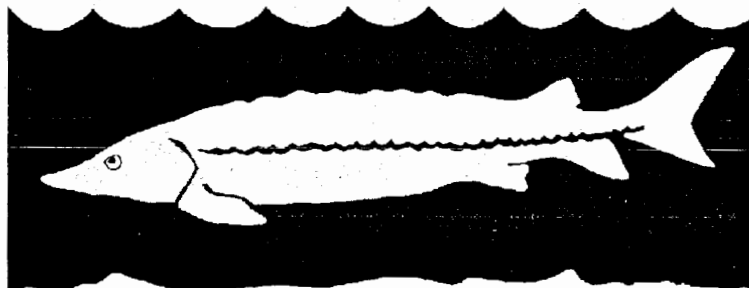


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RAP PROGRESS REPORT



**LOWER MENOMINEE RIVER
REMEDIAL ACTION PLAN**



The lower Menominee River has been designated as one of 43 *areas of concern* (AOCs) on the Great

Lakes due to persistent water quality problems. The process of developing and implementing a Remedial Action Plan (RAP) to address these environmental problems began in 1988. Since the beginning of the RAP process a significant amount of progress has been made toward restoring and protecting the water quality and the ecosystem of the lower Menominee River.

What is a RAP?

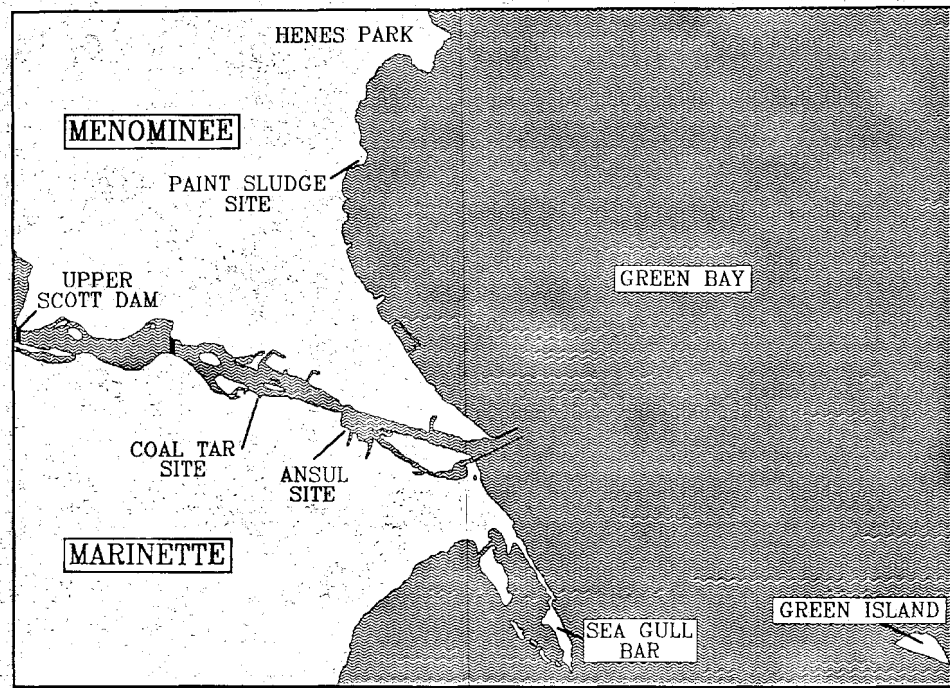
Remedial Action Plans (RAPs) are part of a large-scale, long-term effort to restore and protect water quality in the Great Lakes. RAP development and implementation occurs through a series of stages. The first stage includes research, data collection and problem identification. A list of *impaired beneficial uses* (specific environmental problems associated with the use of water resources) is developed for each area of concern. The second stage includes recommendations to address pollution problems and restore impaired uses. Identification of alternative actions, responsible parties or agencies, and establishing estimated costs and timetables also occurs during this stage. Public information/education, pollution prevention programs and long-range monitoring plans are also developed. A third and final stage involves *delisting* the area of concern after all impaired uses have been restored.

Area of Concern

The Lower Menominee River Area of Concern (AOC) includes the lower three miles of the Menominee River, from the upper Scott Paper Company dam (Park Mill) to the mouth. It also includes the adjacent Green Bay shoreline from Seagull Bar to Henes Park, and extends into Green Bay to include Green Island. The cities of Marinette, WI and Menominee, MI are within the boundaries of the AOC.

Pollution Problems Identified

The major problems in the lower Menominee River are associated with contaminated sediments, in-place toxic pollutants found on the river bottom. These pollutants include elevated levels of arsenic, lead, oil and grease, polycyclic aromatic hydrocarbons (PAHs), cyanide and mercury. Three main contaminated sediment sites have been identified - the Turning Basin (arsenic), Boom Landing (coal tar) and the north shore of Green Bay (paint sludge).



Lower Menominee River RAP Area of Concern



Other sources of pollution or problems in the area of concern include: contaminants from industrial sites along the river and bay, municipal wastewater treatment plants, storm water runoff and former landfills. Some sources of pollution lie outside of the area of concern, such as air pollution and the lake-wide migration of contaminated fish.

RAP Development

Development of the Lower Menominee River RAP is the joint responsibility of the Wisconsin and Michigan Departments of Natural Resources. The RAP process began in 1988 with public meetings, the development of the scope of study, and the formation of the Citizen's Advisory Committee and the Technical Advisory Committee. Membership on these advisory committees includes local citizens, government officials, business and industry representatives, environmental and sports organizations, scientists and agency staff. The local advisory committees are active participants in the development and implementation of the RAP.

The first stage of the Lower Menominee River RAP was completed in 1991. The United States Environmental Protection Agency and the International Joint Commission approved the Stage I Report and complimented the RAP team for their start-to-finish inclusion of local stakeholders in the development of the plan.

The second stage of the RAP process has already begun. Many recommended remedial actions are in various stages of planning, implementation or completion. A written report covering these recommendations is currently being produced.

Impaired Uses

☛ **Fish consumption advisories** - The human consumption of some types and sizes of fish caught in

the area of concern is not advised due to elevated levels of polychlorinated biphenyls (PCBs) and/or mercury found in the fish tissues. These contaminants are believed to originate from outside the area of concern, PCBs from the Fox River and mercury from atmospheric deposition.

☛ **Dredging restrictions** - The turning basin portion of the river has not been dredged since 1965, primarily due to sediments contaminated with arsenic. This contamination is the major reason the lower Menominee River was selected as a RAP site.

☛ **Degraded benthos (bottom dwelling organisms)** - A significant reduction in the number and diversity of benthic species located in the turning basin and the Sixth and Eighth Street slips can be attributed to contaminated sediments located in these areas.

☛ **Loss of fish and wildlife habitat** - Wetlands that once outlined the lower Menominee River provided habitat for a variety of fish and wildlife species. Most of these wetlands have been lost due to filling.

☛ **Degraded fish populations** - The Menominee River has a diverse fishery, but the present fish populations represent only a fraction of the historical levels. Negative impacts on the natural reproduction of fish in the Menominee River may be associated with the presence of contaminated sediments and the loss of wetlands.

☛ **Total and partial body contact restrictions** - Body contact (swimming) warnings have been established for some sections of the lower Menominee River due to high bacterial counts. High bacterial counts are usually associated with the presents of raw sewage. Heavy rains can force municipal wastewater treatment plants to release untreated sewage via combined sewer overflows and wastewater bypassing. ★



Working Together to Restore an Area of Concern - 1993 Progress

Paint Sludge Site

The upland, beach and off-shore areas of Green Bay near the Lloyd/Flanders furniture company in Menominee, MI are contaminated with an estimated 1,000 cubic yards of paint sludge. The contamination occurred prior to 1982 when the furniture company was operated by a previous owner. Lead-based paint residues, cans and barrels were disposed of along the shoreline behind the factory. Paint sludge deposits averaging three feet thick have been observed in a one-half acre area just off shore from the factory. Ice and wave action have broken some of the sludge into small nodules and dispersed them over a one-half mile section of shoreline extending to the north.

In September of 1992 the Michigan DNR filed an Act 307 unilateral administrative order against Flanders Industries Inc., current owners of the Lloyd/Flanders furniture Company. The administrative order required Flanders to complete an investigation of the site, submit plans for remediation and clean up the environmentally contaminated area.

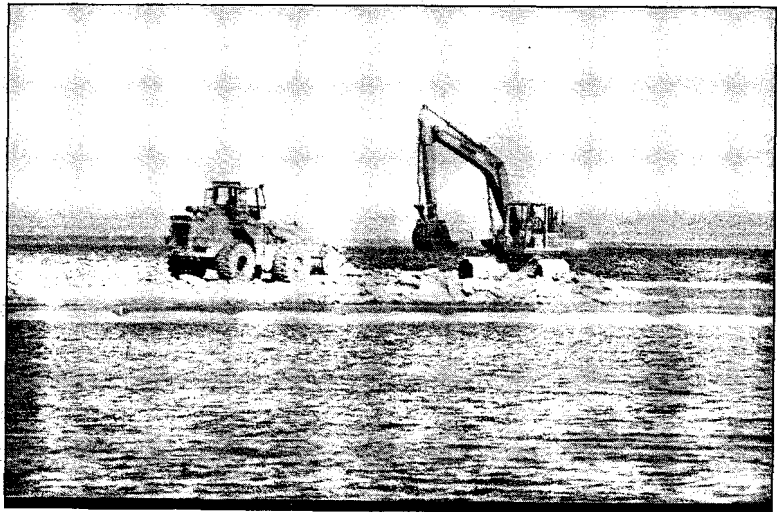
In February 1993 the Michigan DNR approved a workplan for the building of a containment dike around the off-shore paint sludge. The workplan represents the first phase of a three part plan to contain and remove the largest deposit of paint sludge.

Construction of a 900 foot rip-rap dike around the off-shore paint sludge began in July of 1993. The 20 foot wide dike was constructed from 15,000 cubic yards of

quarried rock. A series of membrane liners were incorporated into the dike in an effort to hydraulically seal the area from the surrounding waters of Green Bay. Construction of the dike was completed in September. "The completion of the dike is a major step in controlling the migration of the paint wastes," said Steve Harrington, Michigan DNR. "With the dike in place, the bulk waste deposits will be confined and sheltered from further erosional forces."

Phase II of the cleanup project will involve dewatering the interior of the dike and the removal of the paint wastes. The paint sludge will be shipped to an out of state treatment facility where they will be stabilized prior to final disposal. Phase II of the cleanup is scheduled for completion during the summer of 1994.

The third phase of the cleanup includes the removal of the dike and a complete restoration of the site to pre-contamination conditions.



Containment of the bulk paint wastes located in Green Bay is the first step in remediating the Paint Sludge Site.



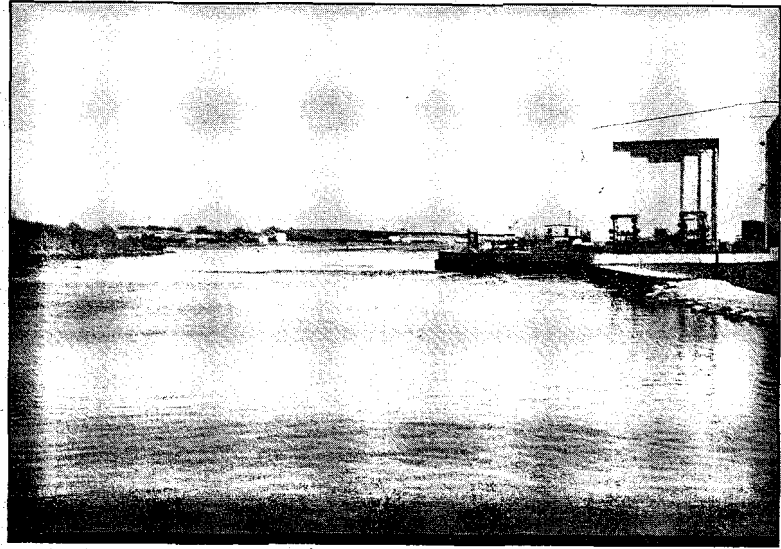
Coal Tar Site

The City of Marinette discovered soils contaminated with coal tar residues during an upgrade and expansion of its municipal wastewater treatment plant in 1989. Soils contaminated with coal tar were excavated and disposed of in a Michigan landfill. The City believes that only a relatively minor amount of contamination remains on-site.

The wastewater treatment plant is located near Boom Landing and lies on a portion of the site of a former coal gasification plant. This coal gasification plant is believed to be the source of the contamination. Documentation of the coal tar pollution in the Menominee River was recorded at this location as early as 1960 by the State of Wisconsin Committee on Water Pollution.

The Wisconsin DNR collected sediment samples from the Menominee River near the wastewater treatment plant in 1991. Chemical analyses of the samples detected polycyclic aromatic hydrocarbon compound (PAH) concentrations reaching 3,638 parts per million. A sediment bioassay (toxicity test) resulted in 100% mortality of the test organisms. PAHs are commonly associated with coal tar wastes.

In April 1992, the Wisconsin DNR identified Wisconsin Public Service Corporation (WPS) as a potentially responsible party for the contamination and indicated that the site investigation and cleanup would be the company's responsibility. WPS has indicated that the company will take responsibility for any contamination which was caused by the operation of its former plant. A Phase I work plan for further site investigation was approved by the Wisconsin DNR in 1993. The Phase I work plan is designed to identify areas of contamination on land. Presently, the Wisconsin DNR is working with WPS to address



Coal tar contaminated soils and river sediments have been found near the Marinette Wastewater Treatment Facility and Boom Landing.

all contamination, including those found in the river sediments.

Valuable Fish and Wildlife Habitat Preserved

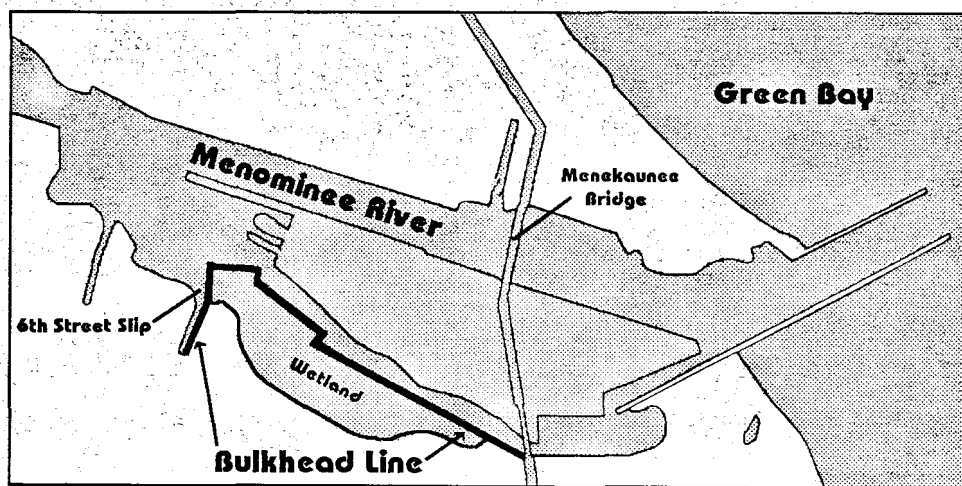
Vast areas of wetlands once outlined the lower Menominee River, providing habitat for large populations and varieties of fish and wildlife species. Most of these wetlands were filled and lost during the historical logging era of the late 1800s, and the more recent urban spread of the cities of Marinette and Menominee. Of the six impaired uses identified in the Lower Menominee River Area of Concern, two are associated with the loss of wetlands - the loss of fish and wildlife habitat and degraded fish populations. These impaired uses and the net loss of wetlands in the area of concern resulted in a RAP recommendation to protect and preserve any and all remaining wetlands.

In the early 1960s, the City of Marinette laid out plans to create an industrial site along the banks of the lower Menominee River. The plans included the designation and construction of a bulkhead (a man-made structure such as a dock or



breakwater to replace the natural shoreline) along a section of the river's south channel. The adjacent wetland was to be drained and filled to create building sites. This wetland represents the only remaining wetland connected to the Menominee River within the area of concern. Although the development plans never came to fruition, the bulkhead line designation had never been legally rescinded. The Lower Menominee River RAP identified the existence of this bulkhead line designation as a threat to the protection and preservation of this valuable wetland.

In 1989 the Citizen's Advisory Committee for the Lower Menominee River RAP drafted a recommendation to remove the bulkhead line designation along the south channel. This recommendation was included in the Stage I Report. Efforts to preserve the wetland along the south channel were renewed in late 1992 when the Citizen's Committee, local RAP personnel and the Wisconsin DNR began working directly with the City of Marinette to remove the bulkhead line designation. These actions commenced on April 7, 1993 when the Marinette City Council voted unanimously to remove the bulkhead line designation, thus protecting the associated wetland from future development.



The removal of a 30-year old bulkhead line designation will help to protect a valuable wetland for fish and wildlife habitat.

Municipal Sewage Treatment Problems Addressed

The Lower Menominee River RAP has listed total and partial body contact restrictions as an impaired use. These restrictions are primarily due to combined sewer overflows and wastewater bypassing from municipal wastewater treatment facilities. Wastewater bypassing represents a serious threat to the water quality of the Menominee River.

The cities of Marinette, WI and Menominee, MI have municipal wastewater treatment facilities that discharge into the lower Menominee River. Both facilities have had a history of wastewater bypassing during large rain storms and rapid snow melt. Under these situations wastewater flowing into the treatment facilities from a combination of sanitary and storm sewer systems exceeds the plant's maximum handling capacity. To prevent flooding of the treatment facility, untreated sewage is released directly into the river, completely bypassing the treatment facility.

Marinette successfully eliminated combined sewer overflows in 1991 by upgrading its treatment plant and separating the sanitary and storm sewer systems. The Marinette wastewater treatment plant

has not experienced any wastewater bypassing since these improvements were installed.

The City of Menominee is under a U. S. Environmental Protection Agency mandate to correct their wastewater treatment problems and eliminate wastewater bypassing. The city is currently implementing a multi-phase plan to separate its





Separation of storm and sanitary sewer systems will help eliminate future discharges of raw sewage into the Menominee River.

sewer systems to prevent future combined sewer overflows.

Phase I of the plan was completed during the summer of 1992 when a major section of the sewer system servicing Thirtieth Avenue was separated and improved. Phase II of the plan involves sewer system improvements which will eliminate the use of combined sewer overflow pipe number two. This discharge pipe is the largest wastewater bypassing outfall into the Menominee River.

During 1993 the City of Menominee installed almost 13 miles of new sewer pipe to separate the storm and sanitary sewer systems above outfall number two. The new system will eliminate almost all combined sewer overflows from the outfall. Completion of this phase of the plan is a giant stride towards the elimination of the body contact restrictions identified in the RAP.

Waterfront Walkway Developed

In April of 1992 the City of Marinette agreed to purchase a strip of riverfront property near the mouth of the Menominee River. This purchase was completed in late 1992, giving the city ownership of all waterfront property from the Sixth Street boat launch to Red Arrow Park. This land acquisition completed the first step in a cooperative effort between the city and the Wisconsin DNR to install a recreational walkway along the waterfront.

During 1993, the city applied for and received a \$30,000 grant from the Wisconsin DNR to help fund a portion of the walkway project. An additional \$26,000 Coastal Management grant was also awarded to the city shortly thereafter. The two grants allowed the city to proceed with development of the scenic walkway during the fall of 1993.



Development of the Menekaunee Walkway has opened previously unused areas of the waterfront for easy and enjoyable public access.



The 3,200 foot walkway begins near the Menekaunee Bridge, follows the edge of the Menominee River to its mouth, turns southward along the beachfront of Green Bay and ends at Red Arrow Park. The walkway is handicap accessible, includes benches for resting, ramps to access the beach and a waterfront observation deck. Waterfront access is greatly enhanced by the walkway, as well as providing the community with an environmentally friendly recreation facility for public enjoyment. Although the project was not completed until late fall, it has already become a popular walking area.

Public Information/Education

Community involvement is considered to be a vital part of the successful development and implementation of a Remedial Action Plan. The Citizen's Advisory Committee, the DNRs and a local RAP Implementation Specialist have pursued community participation, information and education projects when ever possible.

During the spring of 1993 a table-top display board was purchased and developed. The board was laid out with information and photographs about RAPs, the Lower Menominee River and Green Bay, and the progress that is being made to improve the local water quality. The display board is combined with a variety of informational brochures to create an attractive and informative exhibit about the Lower Menominee River RAP. The display has received extensive use, including RAP presentations, meetings, community festivals, county fairs and conferences.

The best utilization of the RAP display occurred during the 1993 Menominee Waterfront Festival. The display was staffed by Steve Zander, RAP Implementation Specialist, and volunteers from the Citizen's Advisory Committee. Participation in the four-day festival resulted in the distribution of hundreds of pieces of information and numerous

discussions between RAP personnel and area residents about the local environment.

Water quality, pollution prevention and RAP information is also being brought to the community through speaking engagements and slide presentations by the RAP Implementation Specialist. A growing number of local groups and organizations have utilized Zander as a guest speaker. Interested groups can make arrangements for a RAP presentation by calling (715) 732-7780.

A priority target of these presentations has been students in the local school system. RAP presentations were made to groups of elementary, high school and college students during 1993. According to Zander, "These kids have a tremendous interest in the environment. Educating them on the mistakes we made in the past is the most effective way to prevent the need for any future Remedial Action Plans."



A group of fifth-graders tour the Marinette Wastewater Treatment Plant as a part of the RAP public information and education effort.



Household Pollution Prevention

Clean water is vitally important to all of us. We depend on our water resources for food, drinking water, industrial productivity, recreation, wildlife habitat and much more. Water resources that are polluted threaten our health, environment and livelihood. Most of the pollution control efforts in the past few decades have been focused on industrial regulation. These efforts have resulted in improved overall water quality, but significant problems still exist.

Many people unknowingly introduce hazardous, often toxic chemicals into area lakes and rivers through their sinks, drains, toilets and bathtubs.

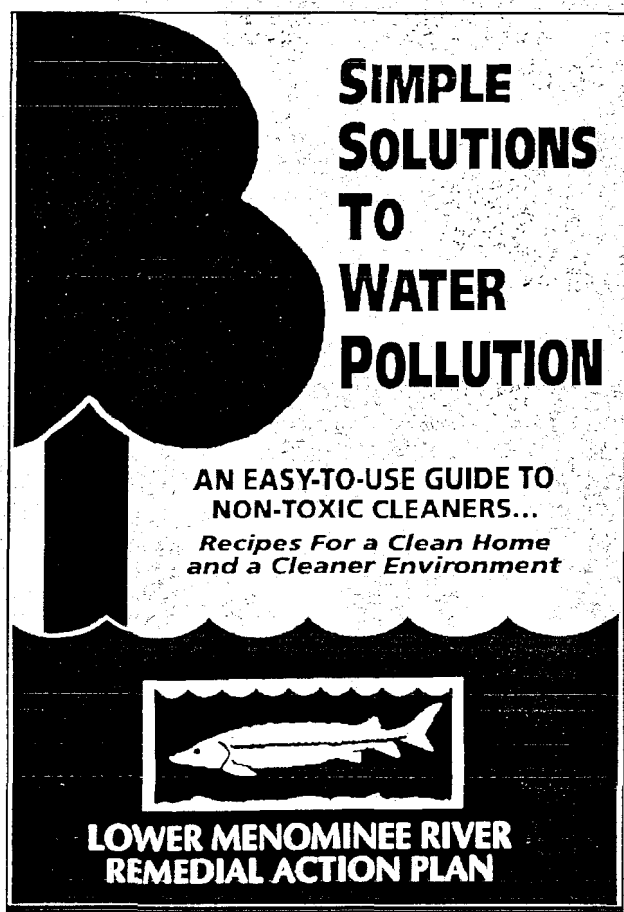
Few people realize that many household products contain these dangerous chemicals. Fewer yet understand that conventional wastewater treatment systems do not adequately remove many toxic substances, but allow them to pass through to our water resources.

In an effort to reduce household water pollution, the Citizen's Advisory Committee for the Lower Menominee River RAP produced an easy to use guide that contains recipes for alternative, non-toxic household products. The guide also includes lawn and garden care tips that reduce the need for chemical pesticides and fertilizers. Over 10,000 of the booklets, **SIMPLE SOLUTIONS TO WATER POLLUTION**, were distributed as inserts in the September 30, 1993 editions of the Marinette Eagle-Star and the Menominee Herald-Leader.

The booklet asks you to become a part of the *solution to pollution* by making your home a *pollution-free zone*. The RAP Citizen's Advisory Committee is hopeful that area residents will take an active roll in pollution prevention by utilizing the tips included in this booklet to create a clean home and a cleaner environment. Some easy steps that can be taken to help reduce the amount of hazardous chemicals entering our waters include:

- **Make a switch to alternative non-toxic cleaners.** Use the recipes in the booklet to create environmentally safe cleaners from products such as vinegar, baking soda, lemon juice and salt.
- **Use lawn and garden practices that eliminate the need for pesticides and fertilizers.**
- **If no alternatives exist, be responsible.** Do not dispose of toxic products in the sink, sewer, trash or on the ground.

Special thanks are due to the Marinette and Menominee Chambers of Commerce, the Lake Michigan Federation and the RAP Implementation Specialist for assisting the RAP Citizen's Advisory



Copies of the guide can be obtained at the Marinette and Menominee Chambers of Commerce or the Marinette County Land & Water Conservation Department.



Committee with the project. Funding for printing and distribution was provided by Ansul, Menominee Paper, Scott Paper, Waupaca Foundry and Wisconsin Public Service.

River/Bay Cleanup Day

Roughly 100 area residents contributed a part of their weekend to help cleanup the Marinette and Menominee waterfront during the fourth annual River/Bay Cleanup Day. Volunteers braved 30 degree temperatures while combing about eight miles of shoreline in search of unsightly trash. The volunteers, ranging in age from preschoolers to senior citizens, collected more than 15 cubic yards of trash from the shores of the Menominee River and Green Bay. Participants were treated to a lunch of pizza and soda at the conclusion of the cleanup.

The October 9 Cleanup Day was sponsored by the Lower Menominee River RAP Citizen's Advisory Committee (CAC). Cleanup activities were coordinated by Nancy Douglas, CAC chairperson and Steve Zander, RAP Implementation Specialist. Members of the Citizen's Advisory Committee volunteered their time to serve as crew leaders for each cleanup site. The cleanup is scheduled in the fall to minimize the negative impacts inflicted on waterfront habitat.

The River/Bay CleanUp Day provides an excellent opportunity for area residents to take an active role in protecting our water resources and to learn more about the Remedial Action Plan. "It is particularly pleasing to see a large number of children participating in the cleanup," said Zander. "These kids are learning about pollution first-hand, and developing a consciousness that will last throughout their lifetime." The cleanup appears to have also created a new community awareness for



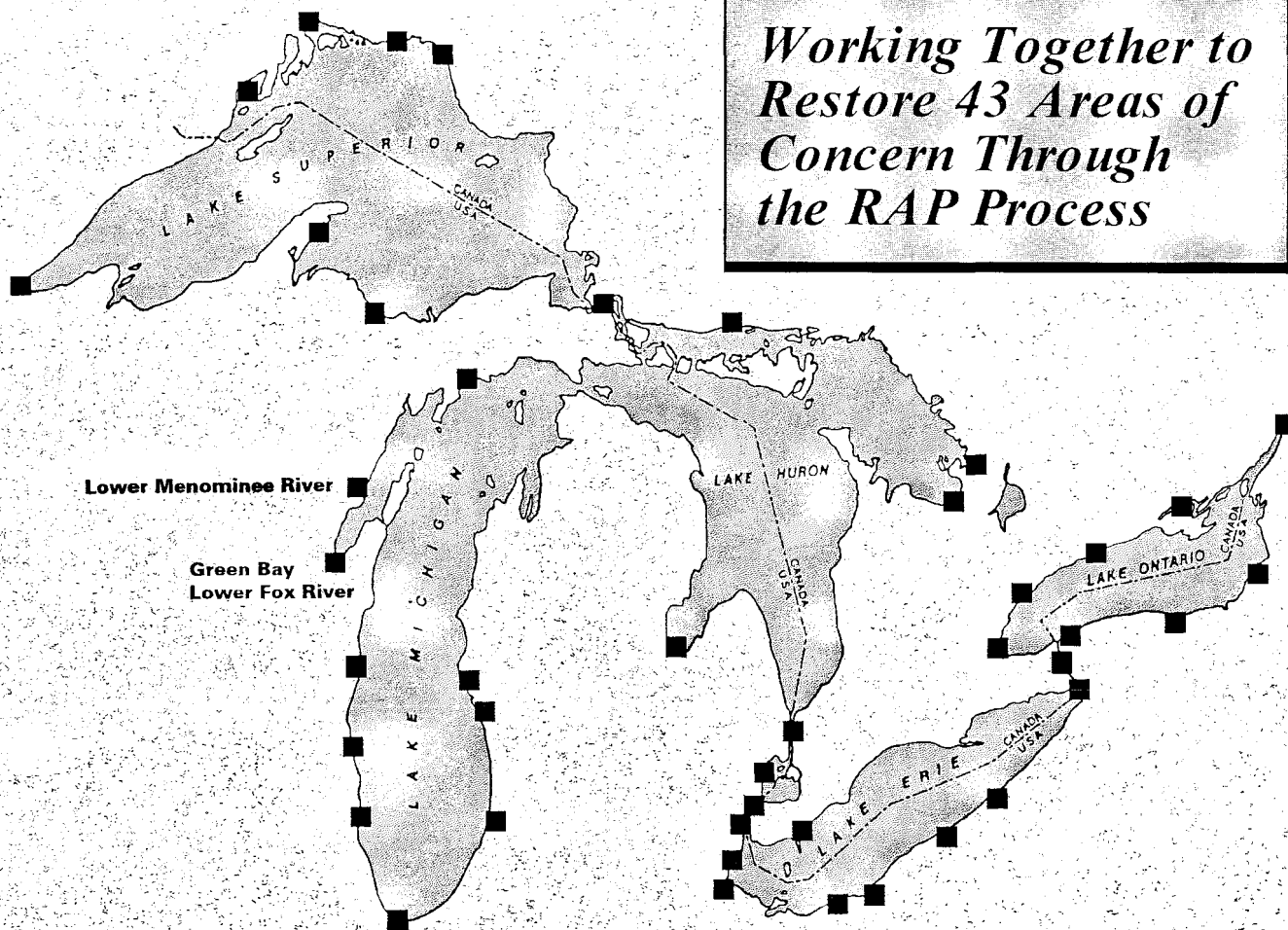
An area resident removes litter from the shoreline during the River/Bay Cleanup Day. More than 100 people assisted with the community effort.

pollution prevention. Several waterfront areas that were previously targeted as cleanup sites are now being maintained and kept clean by individual landowners.

The River/Bay Cleanup Day is made possible by the generous donations of cleanup supplies, disposal services and refreshments by area businesses and organizations. Special thanks go to Kmart, M & M Manufacturers Association, Menominee Paper Co., United Waste Systems Inc., Marinette and Menominee Chambers of Commerce, Marinette County Land & Water Conservation Department, Chappee Rapids Audubon Society and the M & M Yacht Club for their contributions.



*Working Together to
Restore 43 Areas of
Concern Through
the RAP Process*



Public participation is considered a vital part of the development and implementation of Remedial Action Plans. For more information on the Lower Menominee River Remedial Action Plan please contact:

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This report was prepared by Steven D. Zander, RAP Implementation Specialist, through the Marinette County Land & Water Conservation Department. Funding was provided by the Wisconsin Department of Natural Resources.

