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Annis Water Resources Institute

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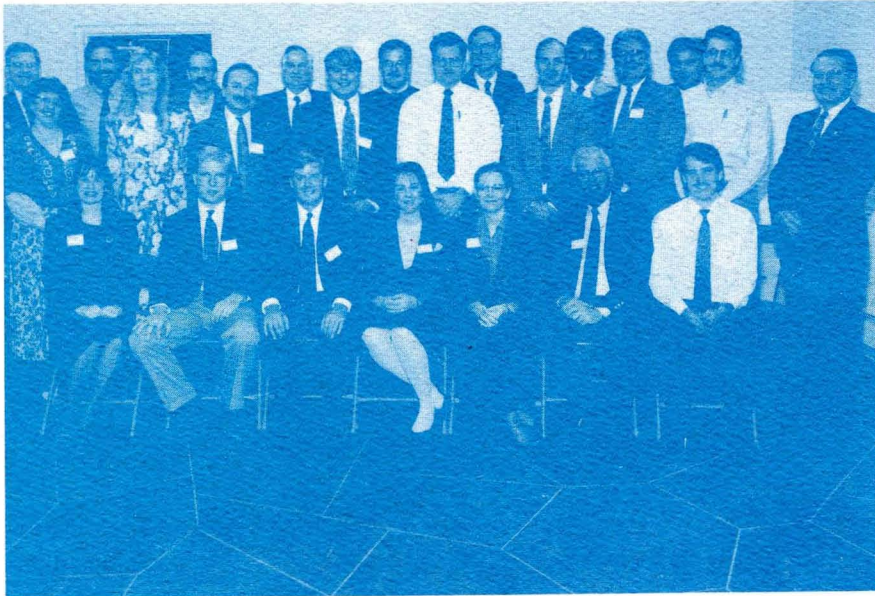
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Eagle Ottawa Leather Company Executive Vice President, Robert White (far right) and Environmental Manager, Buz Haltenhoff (second from left, last row) hosted the inaugural meeting of the Muskegon-Ottawa Pollution Prevention Alliance (MOPP). See story on page 8.

Nonpoint Source Pollution

According to the Michigan Department of Natural Resources, over ninety percent of the watersheds in Michigan are impacted by either urban or rural nonpoint source pollution.

What is nonpoint source pollution and where does it come from? Nonpoint source pollution is the contamination of surface water and groundwater from diffuse, intermittent sources and usually occurs as a result of precipitation. The pollution originates from improper agricultural practices, construction activities, urban stormwater runoff,

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WRI Receives Funding For Air Project

The Michigan Department of Natural Resources (MDNR) has selected the GVSU Water Resources Institute as the recipient of \$200,000 to create two publications on state and federal air pollution control requirements.

The funds will pay for the writing and publication of a technical document and a condensed booklet demonstrating how companies may apply for DNR-issued air-use permits which enable companies to operate equipment that may discharge pollutants.

Janet Vail, WRI research associate, will manage the production of the documents and will supervise the production of subsequent updates, which will be issued for one year following the date of publication.

According to Vail, "At present, Michigan industries do not have a comprehensive guide to help them apply for air-use permits."

"Creating this document is not only in keeping with the Institute's role as an environmental resource for business and industry, but it is also an opportunity for us to meet a very important need," she added.

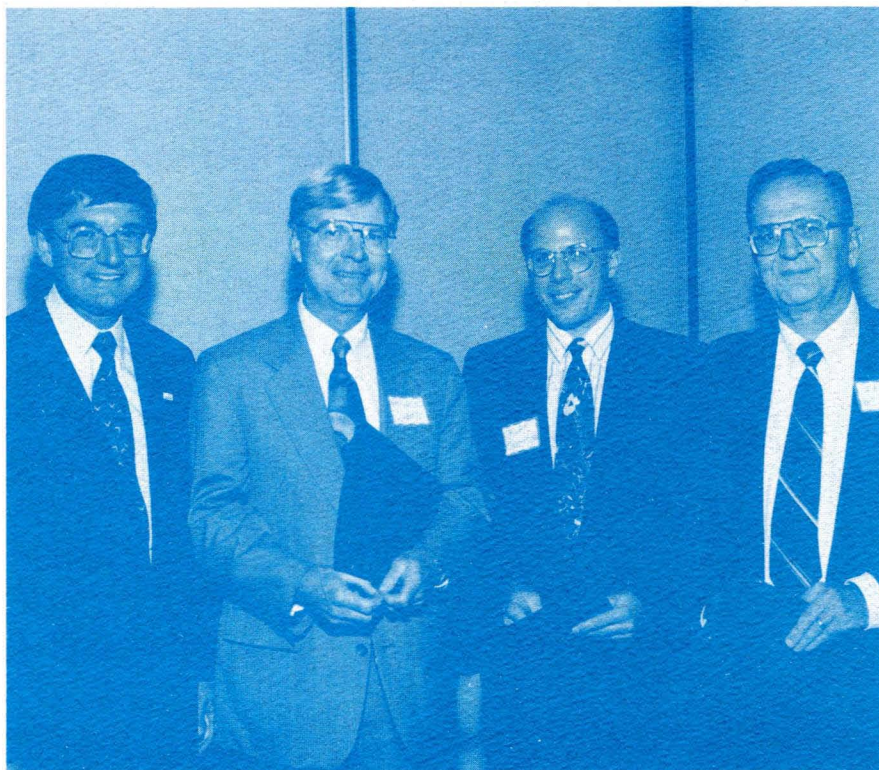
The air-use permit guidance manual will include detailed information on general and specific air use permit procedures and a glossary of air pollution terms. A condensed version of this technical document will be prepared for those who are interested in the air permit application process but are not familiar with the relevant technology.

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Publications Available from WRI

- *Grand River Watershed Reference Collection Listing*
WRI Publication #CR-93-1
- *A Preliminary Survey of Herbicide Contamination of West Michigan Waters*
WRI Publication #TM-92-3
- *The Contamination of Water Resources in West Michigan with Nitrate and Herbicide*
WRI Publication #MR-90-3
- *The Use of Pattern Recognition to Study Groundwater Chemistry*
WRI Publication #TM-90-6
- *Groundwater Quality in Ottawa County, Michigan*
WRI Publication #CR-89-1

For more information call the WRI office at (616) 895-3749.



At a September 9 Awards Ceremony, Roland Harmes, MDNR Director, presented Ron Ward, WRI Director, Kurt Thompson, WRI Research Assistant, and Fred Davis, WRI Research Associate, (left to right) with the Partners in Responsible Conservation Award. Also receiving an award but not pictured was John Koches, WRI Research Associate.

Air Project

(Continued from page 1)

The concept and funding for the publications came from Lacks Industries, a Grand Rapids-based automotive parts supplier. The funds are part of the company's settlement, reached last April, with the Michigan Attorney General's Office and the MDNR for alleged air pollution problems. Since that time, Lacks has implemented air pollution control measures.

Lacks' technical director Gary Walker said, "Lacks is pleased that the Michigan Department of Natural Resources has selected a West Michigan research organization to develop the guidance document on the complex air-use permit application process."

"We are pleased that the Water Resources Institute has been chosen to produce these informative guides, which will assist industries in applying for air-use permits," said Ron Ward, WRI Director.

A steering committee comprised of several industry and government officials has been assembled to help develop and review the documents. Committee members include Dennis Armbruster, Michigan Department of Natural Resources; C. Heidi Grether, Michigan Manufacturers Association; Deborah Hennessey, Department of Commerce; Joseph Trombka, Dow Chemical; Gary Walker, Lacks Enterprises, Inc.; and Ron Ward and Janet Vail, Water Resources Institute.

Draft copies of portions of the manual will be out in May with the finished document scheduled for release in September 1994.

"Although a technical document such as this may seem only of immediate benefit to industry, it will actually benefit our environment and all Michigan residents in the long-run," concluded Ward.



Rod Denning, WRI Research Assistant, takes water samples from Bear Creek in Kent County.

Institute Receives EPA Grant

The U.S. Environmental Protection Agency (EPA) Office of Wetlands, Oceans and Watersheds (OWOW) has awarded a \$25,000 grant to the Water Resources Institute.

The annual renewable grant will fund the first year of a stream restoration project on Bear Creek in Cannon Township, Kent County.

According to Ronald Ward, WRI Director, the overall objective of the project is to explore the relationship between ecological restoration and water quality. In addition, the Bear Creek project will demonstrate how improved water quality resulting from restoration may create educational and recreational opportunities.

Ramon David, WRI research assistant and laboratory manager, and Mark Luttenon, WRI research associate and professor of biology, will head the Bear Creek restoration effort. David notes that the specific goals of the project include restoring the physical condition of the creek by stabilizing eroding stream banks and removing sediment from the creek. The project will also affect chemical changes in the water and improvements in habitat, which are intended to help restore the trout population.

The project also includes re-establishing wetland areas adjacent to the stream, and in nearby areas, to create wildlife habitat.

David and Luttenon have met with Cannon Township officials and residents to discuss the project and gain local support. "The citizens of Cannon Township have been very receptive to the restoration project. I am looking forward to working closely with them throughout the duration of the project," said David.

Luttenon has recruited several GVSU students to assist with winter and spring stream sampling and assessment activities. "The students are great. They not only are helping us out but are also gaining valuable research experience," said Luttenon.

The Bear Creek restoration project is part of the Institute's Grand River Watershed Program (GRWP) which began in 1990. Principal funding for GRWP is provided by The Grand Rapids Foundation.

If you would like more information on the Bear Creek restoration project, please contact Ramon David or Mark Luttenon at the Water Resources Institute (616) 895-3749.

Mopping Up the Shoreline

Last June, the Water Resources Institute hosted a luncheon for Muskegon and Ottawa County businesses to explore the potential for a regional group to help companies with environmental matters such as recycling and waste minimization. Twenty-three individuals attended that luncheon and concluded that such a regional assistance group had merit. A number of attendees and others volunteered to serve as a planning group to move the project forward. That planning group met during the summer and proposed the formation of the Muskegon-Ottawa Pollution Prevention Alliance.

The Muskegon-Ottawa Pollution Prevention Alliance (MOPP) is a coalition of representatives from business, industry, government and education whose mission is to foster a healthy economic environment through promotion of business practices that minimize pollution and waste. Membership in MOPP is open to all businesses and industries in Muskegon and Ottawa Counties.

The first MOPP event was a tour and roundtable discussion at Eagle Ottawa Leather Company in Grand Haven on November 3, 1992. Buz Haltenhoff planned the special tour of Eagle Ottawa Leather and participants viewed the new wastewater treatment plant site as well as the factory. Eagle Ottawa Leather Company is one of the world's largest leather tanneries and the leader in production of automotive and furniture upholstery leathers.

A long-standing company objective of Eagle Ottawa Leather is to reduce the environmental impact of its operations. The company is a leader in developing new technology and processes which will continually reduce manufacturing

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Nonpoint Source Pollution

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faulty septic systems, golf courses, and many other land uses.

Recognizing the need to assess the extent of nonpoint source pollution in the Grand River watershed, WRI researchers have undertaken projects to assess both urban and rural nonpoint source pollution as part of the Grand River Watershed Program.

Most recently, Edward Baum, WRI research associate and GVSU chemistry professor, completed two studies of agricultural nonpoint source pollution in West Michigan. In the first study, Baum examined the presence of herbicides in well and surface water in Kent and Ottawa Counties from September 1990 through September 1991. The second study included an examination of herbicides in well and surface water in Kent and Ottawa Counties as well as at twelve sampling sites along the Grand River from May through September '92.

For each study, private wells and surface water sampling sites were monitored for triazine herbicides during periods of significant rainfall when pollutant runoff was expected. (Several triazines are used in agricultural practices in the area including atrazine and simazine.)

Results from the first study indicate the presence of triazine herbicides in both well water and surface streams in Kent and Ottawa Counties. Triazine levels were detected between 0.05 and 2 parts per billion (ppb -- a ppb is one microgram of contaminant per kilogram of water). The observed triazine levels, however, were below the U.S. Environmental Protection Agency's (EPA) proposed Lifetime Health Advisory levels of 3 parts per billion for atrazine and 35 ppb for simazine.

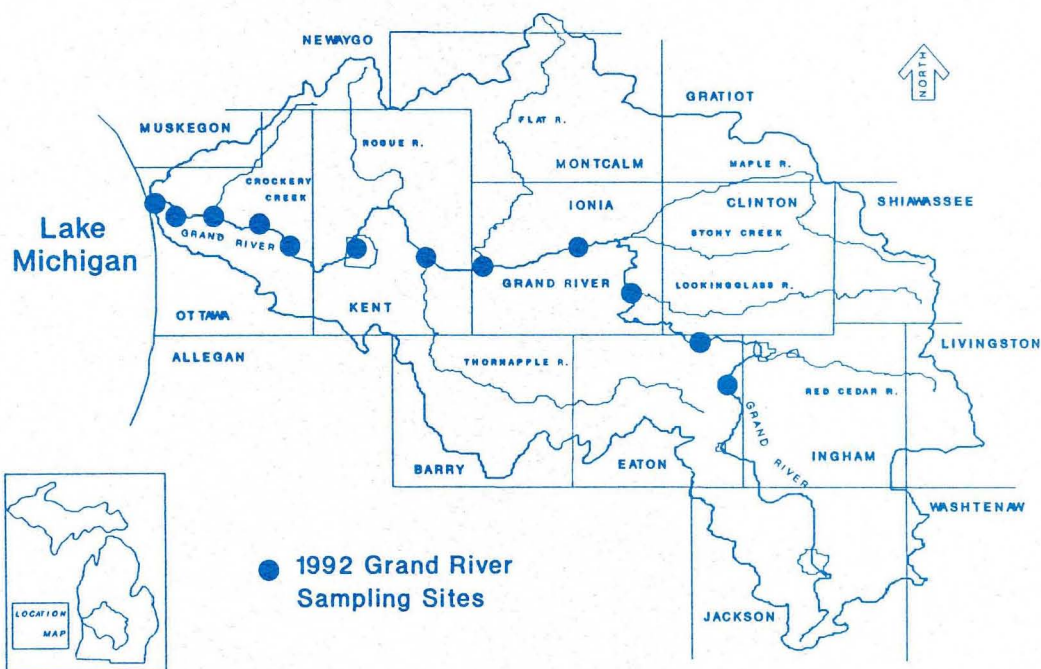
As part of the second study, Baum sampled twelve sites along the Grand River in addition to well and surface water sampling in Kent

and Ottawa Counties. Triazine levels in well and surface water samples were similar to those found in the first study.

Triazine levels in the Grand River were between 0.16 and 4.50 ppb with an average of about 1 ppb. The EPA's proposed Lifetime Health Advisory level for atrazine was exceeded on one occasion. The higher levels of 2 to 4.50 ppb were found between Lansing and Portland, Michigan. It is unknown at this time whether the presence of triazine herbicides at levels detected in this study are adversely impacting the aquatic ecosystem of either the Grand River or Lake Michigan.

For a copy of Baum's first study, "A Preliminary Survey of Herbicide Contamination of West Michigan Waters" (WRI publication # TM-92-3), please call the WRI office at (616) 895-3749. Baum's second study will be available this spring.

GRAND RIVER WATERSHED



Analytical Capabilities Expanded with Grant from The Kresge Foundation

A new world of research has opened up at the Water Resources Institute with the addition of several pieces of state-of-the-art scientific equipment, including:

- a gas chromatograph mass spectrometer (GC-MS)
- atomic absorption spectrometer (AA)
- inductively coupled plasma instrument (ICP).

Purchase of the new equipment was made possible with a \$500,000 grant from The Kresge Foundation and a matching \$500,000 from GVSU donors. Additionally, GVSU had to raise \$2 million in new endowment funds for maintenance and enhancement of the equipment to secure the Kresge grant. The University met the challenge and raised the amount with the assistance of over 1,200 donors. "The Kresge Foundation challenge grant was just that--a challenge. And our generous contributors rose to meet that challenge because they believe in the growth and potential of Grand



Ra David, WRI Research Assistant, and GVSU student Molly Helbing analyze Grand River samples on the atomic absorption spectrometer.

Valley's science program," said Richard M. DeVos, chairman of the Water Resources Institute Council.

The grant was awarded through the Kresge Science Initiative, a program created by The Kresge Foundation in response to growing national concern over the status of science education and research at U.S. universities.

The new equipment has been put to immediate use by faculty and staff at WRI. Samples collected in the Grand River watershed during the 1992 field season are currently being analyzed. "The scientific research opportunities made possible with the purchase of the new equipment are nearly endless," said Ramon David, WRI laboratory manager.

The AA is used to analyze heavy metals in water, sediments, and fish and plant tissue. The ICP is used to conduct broad, rapid assessments of the presence of inorganic constituents, such as arsenic and lead, in water and soil. The GC-MS is used to determine the level of organic contaminants (pesticides, herbicides, PCBs and DDT) in the air, water, and plant and fish tissue.

If you would like more information about the WRI analytical laboratory, please contact Ramon David at the WRI office (616) 895-3749.



Ra David and Jim Zylstra, WRI Research Assistants, examine organic contaminants in groundwater samples using the gas chromatograph.

D.J. ANGUS Wraps up 7th Season

The 1992 season for the Water Resources Institute's Aquatic Sciences Education Outreach Program aboard GVSU's research vessel D.J. ANGUS has concluded.

The number of persons carried for 1992 totaled 3,926. The total number of persons carried since the program's inception in 1986 is 19,482. The participants, most of which are K-12 school groups, represent over 25 counties throughout Michigan and Northern Indiana.

The primary function of the Aquatic Sciences Education Outreach Program is to provide information and educate the public about water pollution, wetlands, dune ecology, and water quality research. This is accomplished through demonstration cruises aboard the D.J. ANGUS in which participants are given the opportunity to examine aquatic plant and animal life and measure environmental parameters such as dissolved oxygen, water temperature, pH, and turbidity.

Cruises in 1992 started in late April with a trip to Ludington, MI and ended in October in Hammond, IN. While in Hammond, the D.J. ANGUS participated in a Midwest

conference of 175 science teachers by providing demonstration cruises.

WRI recently surveyed D.J. ANGUS users and found that of the 43 responses, 81% of the participants were K-12 teachers and 65% were repeat participants aboard the D.J. ANGUS. Survey respondents were very pleased with their experience aboard the D.J. ANGUS, and with service provided by the ship's crew, assistance they had received in scheduling, and the quality of instruction provided by GVSU-WRI.

D.J. ANGUS crew members for 1992 included Captains Richard Behm and Leonard Lamb and crew member Joe Rohloff. Marilyn Park, GVSU assistant professor of biology, served as the on-board science instructor and Molly Helbing and Dennis Festerling served as student lab assistants.

Scheduling for the 1993 Aquatic Sciences Education Outreach Program aboard the D.J. ANGUS has already begun. If you would like to reserve a trip for your group, contact Tonya Crossen at the WRI office (616) 895-3090.

Mopping Up the Shoreline

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emissions into the water and air. Perhaps the greatest achievement of Eagle Ottawa has been in the area of reduction of volatile organic compounds (VOCs) and other toxic air emissions. In 1985, Eagle Ottawa President Anders Segerdahl made a commitment to dramatically reduce air emissions at the Grand Haven facility. To accomplish the reduction, a team from Eagle Ottawa and chemical suppliers worked for three years to develop water-based systems, and the original organic solvent-based leather finishing system was eliminated by the summer of 1991. As a result, Eagle Ottawa reduced its toxic air emissions by about three million pounds to 10 percent of the 1988 levels.

Eagle Ottawa is participating in the U.S. Environmental Protection Agency's 33/50 Program and is currently implementing a formal "Environmental Action Plan". The Plan contains a formal waste reduction statement and lays the foundation for the entire environmental program. Eagle Ottawa Leather recently received the Michigan Chamber of Commerce Environmental Quality Award for its pollution prevention efforts and the company continues to find ways to reduce, reuse, and recycle in the true spirit of pollution prevention.

The next MOPP event will be a presentation and roundtable at Herman Miller in Zeeland on February 10, 1993. Jim Gillespie, MOPP co-chairperson, will be presenting Herman Miller's award winning recycling and pollution prevention efforts. The event will be from 8:00 to 11:00 am with an optional tour of the energy center at 11:00. For registration information, call GVSU-WRI at 895-3749 (FAX 895-3864).



GVSU Pollution Prevention Teleconference Gives Tips on Reducing Solvents

Area businesses and industries are invited to attend a teleconference on water-based alternatives to solvent cleaning at the L.V. Eberhard Center in Grand Rapids on February 11, 1993. This half-day conference is from 1:30 to 5:00 pm and will feature case studies from TRW Ross Gear, Eaton Corporation, Crown Equipment Corporation, and Lincoln Brass Works. Additionally, Ron Blouw, a GVSU-WRI Industrial Advisory Board member, will present information about AC Rochester's solvent reduction efforts. The conference is a production of the Cleveland Advanced Manufacturing Program and is co-sponsored by the Waste Reduction and Management Program at the Water Resources Institute and the Michigan Office of Waste Reduction Services.

The teleconference will allow participants to "walk through the shop" to see how companies are using water-based cleaning systems to produce high quality products that are as clean or cleaner than those produced with solvents. Attendees will receive a packet of pollution prevention information.

If your company uses solvents to clean parts, this teleconference could help you determine ways to avoid the new regulatory requirements on CFCs, HCFCs, and TCA by eliminating use of these chemicals. Call or FAX Janet Vail at WRI (616/895-3048, FAX: 616/895-3864) for more details and a brochure.

Waste Exchange Expo

GVSU-WRI, the Muskegon-Ottawa Pollution Prevention Alliance (MOPP), the Business Industry Team for the Environment (BITE) and others will co-sponsor the West Michigan Waste Exchange Expo. The Expo will be held at the Holiday Inn Crowne Plaza in Grand Rapids on April 21, 1993. This yearly event is highlighted by workshops, displays, and a waste exchange table where companies can bring samples of their non-hazardous waste that other companies might be able to use. Donna Engstrom of the Kent County Department of Public Works is coordinating this event along with a committee from industry, business, county and city government, and GVSU-WRI. For more information on the Expo, call Janet Vail at 895-3048.

Grand River Watershed Program 1993 Pollution Prevention Awards

As part of its Grand River Watershed Program*, the Water Resources Institute will recognize youth in counties in the Grand River watershed who are doing something about reducing or eliminating waste.



- Youth along with their teachers, leaders, or parents are invited to submit descriptions and photos of projects they have done or are doing to produce less waste.
- Projects can be focused on school, home or the community. They may be individual students or groups but must be initiated and carried out by students with limited adult help.
- Categories for the contest are elementary, middle, and high school with one winner per age group.
- Awards will be presented at Grand Valley State University's Allendale campus on April 22, 1993.
- The deadline for entries is March 15, 1993. For entry forms and further information, contact Janet Vail at the Water Resources Institute, 616-895-3048.

* Principal funding provided by The Grand Rapids Foundation.