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Annis Water Resources Institute

GVSU WATER RESOURCES INSTITUTE

WATER RESOURCES

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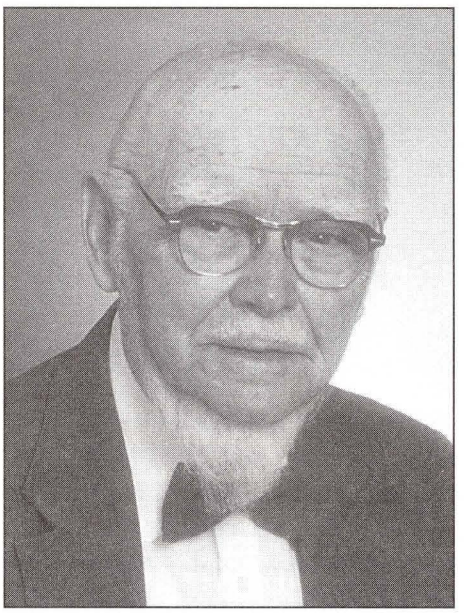


Water Resources Institute Named For Long-time Supporter Robert B. Annis

Grand Valley State University announced recently that it has named the Water Resources Institute after long-time supporter Robert B. Annis, an Indianapolis industrialist and instrument maker.

"Mr. Annis has been an exceptional ally of the sciences at Grand Valley State University through three decades," said President Arend D. Lubbers. "Through his lifelong application of science to industry, he has set an example of achievement that inspires our youth to seek careers in the sciences."

For more than 30 years, Annis has provided financial support to WRI's Water Resources Outreach Education Program for first the *Angus* and then its successor, the *D.J. Angus*. Both research vessels were named in honor of his mentor and lifetime director of Scientech, Donald J. Angus. The program offers students and teachers at both the K-12 and college levels access to research cruises on Lake Michigan.

Ron Ward, director of the Water Resources Institute, said naming the Institute for benefactor Robert B. Annis makes sense. "Bob Annis has been tireless in his efforts to improve science education, and he has been generous to the Water Resources Institute in providing guidance, encouragement and financial support," he said.

The new name — the Robert B. Annis Water Resources Institute — became official at the October 27 meeting of the Scientech Club, an Indianapolis organization founded in 1918 with the goal of promoting scientific study and research.

Water Resources Institute Receives New Endowment

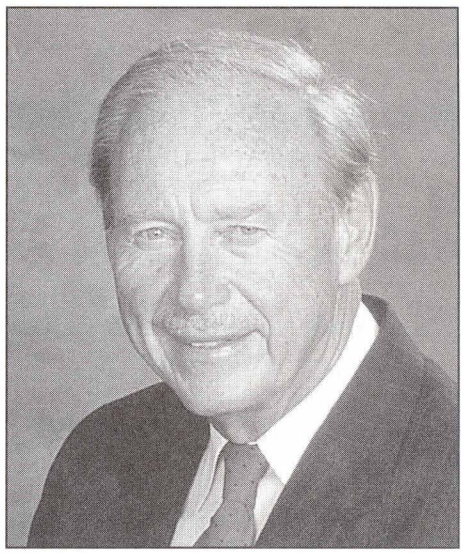
The Water Resources Institute has received a new endowment as the result of the generosity of Herbert L. VanderMey. The sale of Grand River frontage property donated by Mr. VanderMey produced funds in excess of $100,000 to create the VanderMey Endowment.

"The VanderMey Endowment will be dedicated to education and action that will improve the water resources of our region and guarantee the value of those resources for future generations," said Ron Ward, director of the Water Resources Institute.

VanderMey was president of Michigan Wheel, the Grand Rapids based marine propeller manufacturer, from 1970-86. He served until recently on the Butterworth Hospital Board, serving as Chairman of the board in 1987. He also served on the Health Corp. Board from 1987-96. Although now retired, he serves on the Butterworth Insurance Exchange Board. He is a past president of the Grand Rapids Foundation Board and was instrumental in developing the $1 million Grand Rapids Foundation grant that initiated WRI's comprehensive Grand River watershed program in 1990. That gift was a springboard for greater development of WRI and its service to the west Michigan community.

"The environment is of essential importance to our community, in fact, the state and the nation," VanderMey said of his decision to make the donation to WRI. "It's important to use good judgment when it comes to the environment, and I like the things that the Water Resources Institute has been doing."

"The earnings of the VanderMey Endowment will enable us to develop new initiatives to protect our environment and the quality of life in our region," said GVSU President Arend D. Lubbers. "Our community will no doubt derive continuing benefits as a result of Mr. VanderMey's generous support."

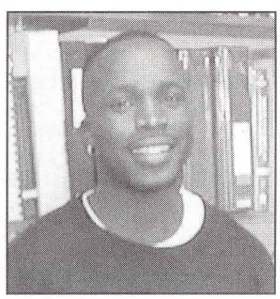


Gift from Herbert VanderMey will support WRI education and action.

Intern Gains Valuable Experience

Kaine Onwuzulike, the Summer 1997 D.J. Angus-Scientech Intern, has been busy the past 4 months. In his capacity as a student worker in the R.B. Annis Analytical Laboratory, he has been involved in projects such as the Meadows Golf Club monitoring program, the Pigeon River Watershed project, the American Farm Bureau Foundation Grant, and general contract analytical work. His primary duties included the analysis of water samples by ion chromatography for nutrients, indicator parameters, and organic acids.

Through this experience he has developed a strong background in the application of ion chromatography to environmental samples and the ability to operate sophisticated instruments with limited supervision.

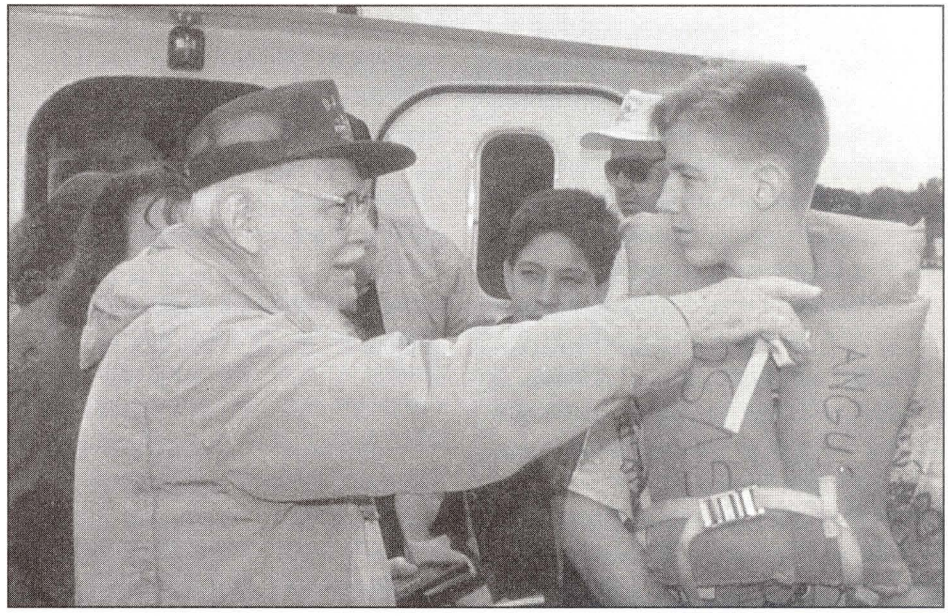


The D.J. Angus-Scientech Educational Foundation sponsors two interns per year at the Water Resources Institute. The internship is open to all students in math or science. Criteria for selection includes past academic performance with an emphasis on improvement and a one page essay stating the students' view of the American way of life.

Recognition For Support Of Science Education

On June 13, Mr. Robert B. Annis led a group of 18 Indianapolis Regional Science Fair awardees and D.J. Angus-Scientech Educational Foundation sponsors to Grand Valley State University (GVSU) for a weekend of science activities. This marked the 30th consecutive year in which Mr. Annis has led similar groups of youth to GVSU for demonstrations at the Water Resources Institute and trips aboard the research and education vessel *D. J. Angus.* During that period Mr. Annis was also instrumental in the founding and development of the Angus-Scientech Educational Foundation which sponsors the annual visits.

Mr. Annis was presented with a GVSU AWARD OF MERIT in recognition of his long-term involvement with youth and science education. A GVSU CERTIFICATE OF RECOGNITION was presented to the Foundation for its promotion and support of science education and its sponsorship of interns in the Water Resources Institute.



Science Fair Award winners receive instruction from Mr. Robert Annis while experiencing a cruise on the D.J. ANGUS.

Water Resources Institute Begins Pollution Prevention Study

The Grand Valley State University Water Resources Institute was recently awarded a grant from the Office of Great Lakes, Michigan Great Lakes Protection Fund for a year-long project entitled, "Organizational Factors Associated with Successful Pollution Prevention Programs." The project involves a state-wide survey, interviews, and publication of a guidance document. The Retired Engineers Technical Assistance Foundation (RETAF) will be conducting the interviews with Michigan manufacturing companies.

The project will address the question of why some facilities experience success with Pollution Prevention (P2), while others still struggle with environmental compliance. It will explore the hypothesis that P2 programs initially begin with a "P2 champion," but long-term viability of a program is dependent upon institutionalization of the program. Factors such as overall corporate culture, use of P2 tools (Life Cycle Analysis, Total Cost Accounting), organizational structure, and executive support will be evaluated.

Although small companies may lack the resources to introduce sophisticated new environmental management systems, they may have inherent organizational advantages that eliminate the need for such systems. If decision makers in small companies can be convinced of the merit of pollution prevention in relation to decreased compliance burdens, the organizational structure of a small operation may allow them to act quickly to implement changes as long as cost is not a barrier.

For details on the project, contact project manager Janet Vail at (616) 895-3048 [vailj@gvsu.edu] or Keith Fry, Executive Director of the Retired Engineers Technical Assistance Foundation, at (616) 897-9192.

Teacher Workshops Provide "Hands-on" Science Education

WRI has been awarded a grant from the Michigan Department of Education for a new initiative, **Building a Learning Community through Aquatic Education**. The funding is from the Dwight D. Eisenhower Higher Education Professional Development Grant Program. Janet Vail, WRI Research Associate, is Program Manager. This year-long project will develop and implement a series of focused teacher workshops and will also strengthen the GVSU teacher training program by enhancing skills needed for "hands-on" science education.

Using the GVSU research and education vessels experience and stream/lake monitoring as a crucible for creative partnerships, this project will pull together inservice and prospective teachers, students, scientific researchers, communities, and technology specialists to create a community of learners. Project participants will work at developing skills in using the Internet and E-mail, manipulating software programs (word processing, spreadsheet, and database), and helping to maintain an aquatic home page for their school. The project will link rural and urban communities through the common experience aboard a Great Lakes research vessel and/or monitoring water bodies in their own watersheds.

Through a series of workshops, networking activities, field trips, and resource support, pre-service, inservice teachers, and others will:

- learn how to facilitate project based science using the common theme of water
- become proficient in the use instrumentation for the analysis of water quality through hands-on experience
- manage and analyze real data from lakes and streams through computer-based spreadsheets, databases, and word processing
- tap into aquatic education resources via the Internet as well as through personal contacts with researchers and the community
- explore, adapt, and implement new and exemplary water-related curricular materials that will help meet state science standards
- facilitate student projects based on an aquatic theme during the school year
- develop partnerships with business, academia, community groups, and government agencies for support of "real world" water-related projects

At the conclusion of the workshop series, each teacher and prospective teacher will be able to understand basic aquatic education principles as they relate to science concepts, how to measure water quality parameters, and how to access and work with water quality information. Participants will have a clear action plan for using project based science in their classroom. These teachers will be catalysts for this approach in their schools and districts.

Besides enhancing project based science skills, the cruises and water monitoring provide significant opportunities to weave in mathematics, computer technology, geography, history, economic, and social science experiences with science.

For more details on the project, please contact Janet Vail at (616) 895-3048 [vailj@gvsu.edu].

Chemistry Paper Published

Dr. Min Qi, assistant professor of chemistry and research associate in the Water Resources Institute, along with GVSU chemistry graduate Michael Anderson, have a paper titled "Separation of 2,3,3',4',6-Pentachlorobiphenyl (IUPAC 110) From 3,3',4,4'-Tetrachlorobiphenyl (IUPAC 77) Using High -Performance Liquid Chromatography" published in the journal of Environmental Toxicology and Chemistry vol. 16, No 7 1997. The research was conducted in Water Resources Institute analytical laboratory and was supported by WRI and the Research and Development Center of Grand Valley State University.

W.G. JACKSON Heads North

Petoskey-Harbor Springs Area Community Foundation Funds Student Cruises

In 1997, the Petoskey-Harbor Springs Area Community Foundation (PHF) again provided funding for the Grand Valley State University Water Resources Institute (GVSU-WRI) to bring hands-on science education to the region. In 1996, area teachers attended PHF funded workshops by GVSU-WRI on aquatic education topics. This year, the teachers were able to apply their knowledge as they accompanied their students on scientific cruises aboard the *W.G. Jackson*.

The *Jackson* was berthed at the Petoskey Marina from May 27 to May 30, 1997. During this visit, there were 12 two-hour cruises for 4th grade through high school students, dockside tours for third grades, a public open house, and a teacher workshop. Students from the Petoskey Area Public School District and the Littlefield Public School District experienced hands-on science via the cruises. Schools represented were Central Elementary, Lincoln Elementary, Ottawa Elementary, Sheridan Elementary, Petoskey High School, Petoskey Middle School, and Mike Harn's environmental science class from the Littlefield School District. Karen Morison, curriculum coordinator for the Public Schools of Petoskey was instrumental in setting up the schedule.

GVSU-WRI science instructors Chuck Vanderlaan, Gus Unseld, and Dave Strand provided a comprehensive experience in the study of chemical, physical, and biological parameters of the Little Traverse Bay. Teachers had prepared their students for the trip by consulting workshop materials from 1996 and using the new teacher's guide to the vessel. Over 80 adults and children from Petoskey, Boyne City, Walloon Lake, Charlevoix, Bay View, Harbor Springs, and Mackinaw Island attended the open house on the *W.G. Jackson* on May 28. There were also numerous people who visited the vessel at other times while she was in port. The attendees were given tours of the vessel by the science instructors. Maureen Nicholson, executive director of the Petoskey-Harbor Springs Area Community Foundation, was available to answer questions about the Foundation. Also, the Tip of the Mitt Watershed Council had a display on the vessel.

It is clear that the *W.G. Jackson* made a positive impact on the community. She was visible from the highway and drew attention from many people who were curious about what was happening. The trip made the front page of the local newspaper. The enthusiasm of the teachers and their students for the trips was evident. It is anticipated that the *Jackson* will make a return trip to the area in June 1998.

Farmland Preservation On The Map

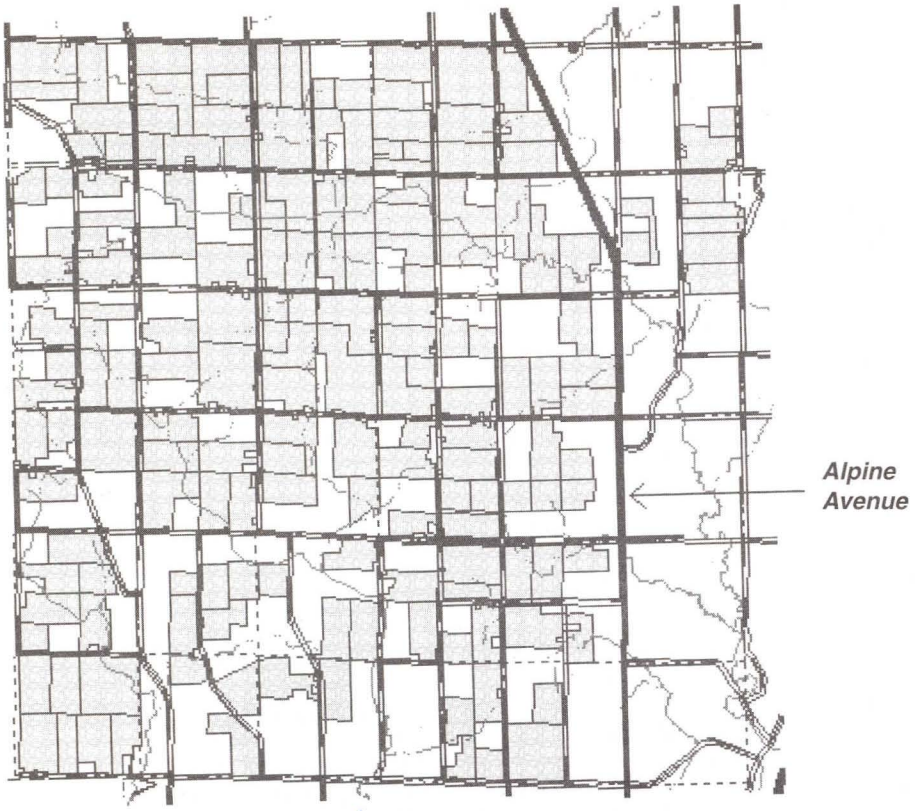
The Water Resources Institute has just completed the first year of its three year project to facilitate Farmland Preservation in northern Kent County. This project was made possible by a grant from the Frey Foundation and centers on the interest of twelve Kent County townships organized as the North Kent Townships Association.

The Institute began this effort through the enhancement and further development of computer based Decision Support Systems (DSS). A regional DSS has been created and includes information about prime farmland soils, zoning, land use, and other geographic information needed to evaluate prime, unique and valuable farmland. For Alpine Township, a large fruit producer, the DSS was modified further to include a Land Evaluation and Site Assessment (LESA) procedure designed to evaluate farmland parcels. The LESA procedure results in a hierarchical map that ranks agricultural parcels in the Township.

The LESA procedure assesses the quality of a farmland parcel based first on soil characteristics. The system then attempts to measure the impact of neighboring land uses with particular attention given to encroaching residential development. Regional characteristics that could directly affect agricultural productivity or practices such as local zoning regulations and location of sewer, water, and other municipal services are also examined. Finally, areas having public and historical value, such as scenic vistas and centennial farms, are also taken into consideration.

As the Farmland Preservation Project moves into it's second year, the LESA system will be modified and applied to Courtland Township, an area known for its dry bean and corn production.

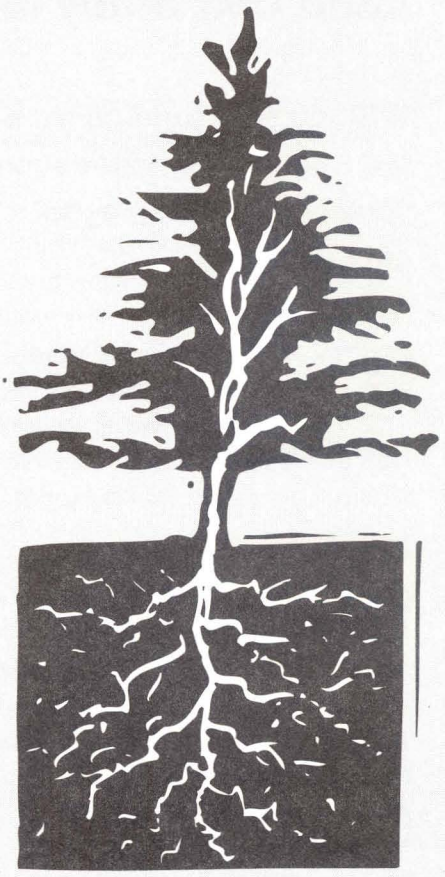
The North Kent Townships Association (NKTA), a partner with the



Agricultural parcels in Alpine Township evaluated using the Water Resources Institute's LESA system.

Institute in the project, has recognized the need to identify/map local resources at the township level. Among these resources are farmland and open space. A map atlas will be developed for each of the townships currently active in the Association. The first atlas has already be delivered to Sparta Township which is located, like Alpine, in the fruit ridge that runs between Kent and Ottawa Counties. The atlas contains much of the same information previously mentioned including the location of municipal sewer and water, the extent of local groundwater aquifers, presettlement vegetation, as well as existing road networks, and surface water hydrology.

For more information about the Farmland Preservation Project, contact Christy Klinge at (616) 895-2527 [klingec@gvsu.edu] or Rod Denning at (616) 895-3793 [denningr@gvsu.edu].



The state is like a tree.
The roots are agriculture,
the trunk is the population,
the branches are industry,
the leaves are commerce
and the arts;
it is from the roots that
the tree draws
the nourishing sap...and it
is to the roots
that a remedy must be
applied
if the tree is not to perish.

—Victor, Marquis de Mirabeau
Early Eighteenth Century

Land Use Study Implemented In Muskegon County

WRI receives funding from the Community Foundation *for* Muskegon County for land use study.

The Water Resources Institute (WRI) has begun a land use study for Muskegon County with a $4,000 grant from the Community Foundation for Muskegon County.

In this first phase, WRI is using existing land use information to create basic yet much needed information products including 1978 and 1991/92 land use maps and land use change analysis maps. These map products point out areas in the Muskegon County landscape that have changed during this 14 year study period. When completed, this analysis will be given to the Muskegon County Land Use Planning Initiative Task Force.

Phase II involves further analysis by updating the database to 1996/7 land use and cover. This will be done using aerial photographs of Muskegon County to identify the areas of change and update the data base accordingly.

Phase III uses the updated land use information to create a Population Allocation Model for Muskegon. This third and final stage will result in a Summary Report for the county.

Throughout the process, WRI will be working closely with the Muskegon County Land Use Planning Initiative Task Force to develop an effective public information and education program as part of each phase. Similar projects have been completed for both Kent County and Ottawa County.

From left to right: Jennifer Rumohr, student assistant, and Amy Zuidema, Research Assistant, compare Muskegon land use maps for 1978 and 1991/92.

The Community Foundation for Muskegon County was created in 1961 to improve the quality of life for Muskegon County residents. A publicly-supported community endowment, the Foundation receives and manages contributions from thousands of community citizens and organizations who are committed to the future of Muskegon County. Supporting community projects in the areas of youth issues, the Foundation reflects the collective vision of Muskegon County residents and provides a cost effective vehicle for contributing to the community through gifts of any size and of many types.

COMMUNITY FOUNDATION *for* MUSKEGON COUNTY

"Growing Communities" Conference Deemed A Success!

The 4th *Annual Growing Communities Conference Quality Through Design* was well received and considered by those in attendance to be a major success.

The conference took place on June 12 at the Rockford Fine Arts Auditorium with over 300 people in attendance. Participants included leaders and local experts interested in land use, transportation, housing, the environment, and economic development.

Presenters included Mr. Peter Calthorpe, Mr. Randall Arendt, Dr. Anthony Downs, and a panel from our local Benchmarks Committee.

Mr. Calthorpe from Calthorpe and Associates of San Francisco, California, is world renowned for his work redefining the models of urban and suburban growth. He has also written the popular *Sustainable Communities* and the *Next American Metropolis: Ecology, Community, and the American Dream.*

Mr. Arendt of the Natural Lands Trust in Media, Pennsylvania is a prominent land use planner, author, lecturer, and advocate for conservation planning. He has written many books including *Rural By Design: Maintaining Small Town Character.*

Dr. Downs, an economist and Senior Fellow at the Brookings Institution in Washington D.C., has authored or co-authored over 15 books in his career most recently *Stuck In Traffic* and *New Visions for Metropolitan America.* Dr. Downs is a frequent speaker on real estate economics, housing, and urban policies.

The conference was made possible by the Grand Valley Metropolitan Council Blueprint Committee and Water Resources Institute.

"The western Michigan area is experiencing tremendous growth. Progress and growth is good, but urban sprawl is not. We need to learn how to manage the growth while keeping the core communities vibrant and healthy. The 'Growing Communities' conference created an awareness and an understanding of the problems which stem from unmanaged growth. It's a great opportunity to bring people together to discuss solutions and options."

Honorable Jim Buck
Mayor of Grandville

"Without a complex knowledge of one's place, and without the faithfulness to one's place on which such knowledge depends, it is inevitable that the place will be used carelessly, and eventually destroyed."

Wendell Berry
A Continuous Harmony
(1972)

Muddy Waters...Clear Choices

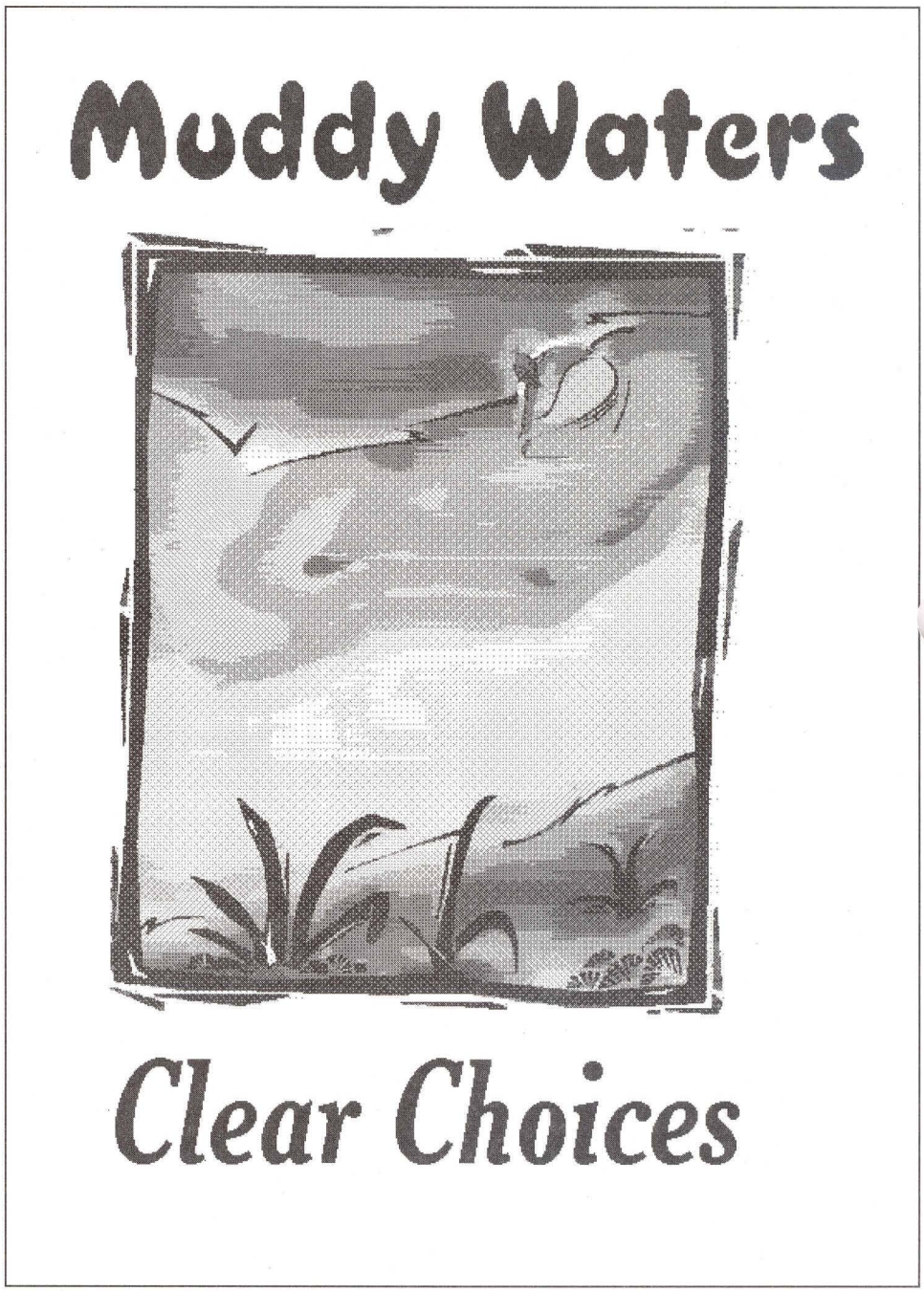
New video mini-documentary looks at Non Point Source Pollution in west Michigan.

The Water Resources Institute has joined WGVU-TV and WGVK-TV to produce *Muddy Waters...Clear Choices*, a 30 minute video focused on Non Point Source (NPS) Pollution and its impact on local water quality. This mini-documentary uses case studies in west Michigan to describe our NPS problem and offers a series of structural and managerial options for improving and protecting water quality.

The video was developed as an educational tool for both the York Creek and Bear Creek Watershed Projects. Many of the examples cited come from WRI's experience in the implementation of watershed management strategies created for these hydrologic systems. The Watershed Projects are managed by the Institute in partnership with Alpine and Cannon Townships, and the Michigan Department of Environmental Quality. The production was paid for through a grant from the US Environmental Protection Agency as part of Section 319 of the Clean Water Act.

The *Muddy Waters...Clear Choices* was aired on PBS Channels 35/52 in late September. Copies of the video will be available for sale to the general public beginning in October 1997.

For more information about the video and related educational tools contact Barbara Scott at (616) 895-3789 [scottb@gvsu.edu].



From the use of recycled Christmas trees to the latest in computer based geographic information systems,* Muddy Waters *offers viewers some* Clear Choices *in managing our communities with stewardship of our natural resources in mind.

WRI Shares Spotlight With Groundwater Partners

The Water Resources Institute (WRI) was joined by representatives from Michigan State University, Western Michigan University, and the Grand Valley Metro Council in a panel discussion regarding groundwater resources and the impact of urban growth. The panel was hosted by local personality Ken Kolby and was broadcast by PBS stations WGVU Channel 35 and WGVK Channel 52 on June 25, 1997.

The panelists offered a response and local perspective to a 30-minute documentary titled *Insatiable Thirst: Groundwater and the Crisis of Development.* The video production was developed by David Hammond, Managing Editor, Great Lakes Radio Consortium, University of Michigan, and was funded by a grant from the W.K. Kellogg Foundation.

The June 25th broadcast comes at the end of the Foundation's very successful and much appreciated Groundwater Education in Michigan (GEM) Program. The video production and panel discussion offered an opportunity to summarize for the general public local accomplishments in protecting this unseen resource.

More importantly, the presentation gave each of the partners a chance to describe the tools, techniques, and other problem solving capabilities resulting from the GEM Program. After all, it is the joint ability to assist area decision makers and local units of government which will remain as GEM's legacy.

Ten Steps To Protect Your Drinking Water

1. **Know your drinking water.**
2. **Test your well.**
3. **Plug abandoned wells.**
4. **Maintain your septic system.**
5. **Yank that tank.**
6. **Practice healthy farming and gardening.**
7. **Reduce, reuse and recycle.**
8. **Buy recycled products.**
9. **Don't dump toxins.**
10. **Become a green consumer.**

Septic Systems Tested In Bear Creek

During March and April 1997, Rockford's Gifted and Talented class from Valley View Elementary School assisted Water Resources Institute (WRI) staff in a septic system dye testing survey. The objective of the survey was to determine if septic systems along Bear Creek in Cannon Township contribute bacterial contamination to the creek and its tributaries.

The dye test survey was based on surveys conducted by Oakland and Macomb Counties in Michigan. In the Bear Creek survey, 21 private septic systems were tested. A positive result indicated that the septic system had leaked effluent and dye into the creek.

One third of the systems tested showed positive results. Most of the systems that showed positive results fit one or more of the following categories:

- system was within 50 feet of the creek
- system was installed on or near a steep slope
- system was 25 or more years old

In conducting the survey, the students, their parents, the septic system owners, and project staff learned more about a septic system's ability to treat wastes, especially in close proximity to surface water. Results from the survey indicate that septic system leakage is one source of bacterial contamination to Bear Creek. These results can be useful in guiding public policy decisions to control such pollution.

For more information about the project, contact Barbara Scott at (616) 895-3789 [scottb@gvsu.edu].