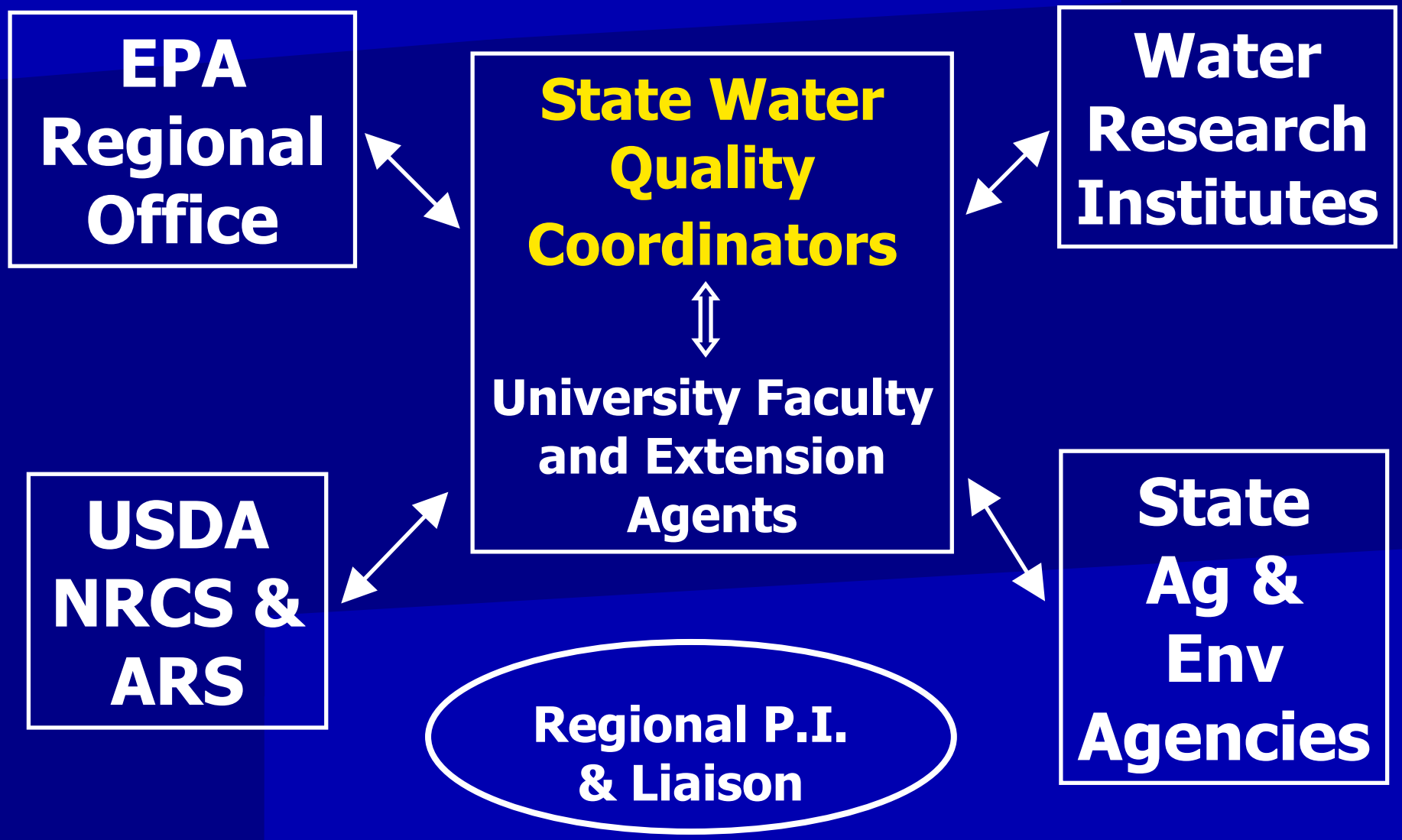
The National Integrated Water Program

A regionally-based, national network delivered at the local level

NIWP structured to create a functioning Network!



Regional Coordination

10 Regions consistent with the EPA regional structure.

Conference Coordinators

Integrated Projects

Integrated Research, Education & Extension Projects

A Framework for Trading Phosphorus Credits in the Lake Allatoona Watershed

This project assessed the sources of the current phosphorus load to a large, impaired reservoir in North Georgia and assessed how suitable a program to trade phosphorus credits might be.

Situation:

Lake Allatoona is a large reservoir located about 50 km northeast of metropolitan Atlanta. Recent monitoring has shown excessive concentrations of chlorophyll-a and a lake-wide total maximum daily load (TMDL) for P is scheduled to be developed by 2008. A program for trading phosphorus credits within the watershed might be a cost-effective way to achieve reductions in P loading to Lake Allatoona.

Actions:

We determined the sources of the current P load to Lake Allatoona and assessed how suitable a program to trade P credits might be for the watershed using two approaches. First, 12 small watersheds drained by first order streams were monitored for two years using automated stream samplers to determine the annual P load lost from poultry/cattle operations (9 watersheds) and forest land use (3 watersheds). Second, computer models of the six major tributaries to Lake Allatoona were developed using the Soil and Water Assessment Tool (SWAT) model (see watershed map). Preliminary model results have been presented to a stakeholder group and further modifications are being made to the model based on their comments. A survey of poultry/cattle operation landowners is being conducted to determine current practices including the use of BMPs.

Impacts - Outcomes:

Our preliminary model results indicate that point sources declined between the period 1992-1996 and 2001-2004, primarily due to new limits on P for poultry processing plants. The largest non-point source of P was poultry/cattle operations in both periods. This was due primarily to a build up in the level of soil test P in fields where poultry manure had been applied for a number of years. Urban landuse increased significantly as a non-point source of P between the two periods and forest land use declined. The 12 small watershed experiments have shown that P losses from poultry/cattle operations are higher than those from forested watersheds, but there is a very wide range in the losses from poultry/cattle operations due to soil test P levels and implementation of BMPs. A trading program between point sources and non-point sources is a viable option in this watershed because both types of sources contribute a significant portion of the current load to the lake. Since there is a wide range of P losses from farms, in part due to BMPs, a trading program could reduce farm losses.

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Integrated Research, Education & Extension Projects

Sources and Abatement of Fecal Bacteria in a High Priority TMDL Watershed in NE Kansas

Implementation of improved management practices on two mid-sized cattle operations has led to measurable reductions in peak bacterial loading, which could lead to delisting the watershed's bacteria TMDL.

Demo-Site 1: Cattle moved, grass buffer added

Demo-Site 3: Feed/water moved away from stream

Situation:

Fecal bacteria contamination of U.S. surface waters threatens human health and safety. In Kansas, the Upper Wakarusa watershed has a bacteria impairment (TMDL) and is ranked among the top priority watersheds in the state for restoration.

Demo-Site 2: Stream sampler

Actions:

1. Implement BMPs. Project funds used to help three producers install targeted practices.

2. Monitor stream water quality. Data collected at key locations for three years.

3. Track bacteria sources. Livestock, human, and wildlife sources tracked for each event. Contributions vary by event.

4. Model bacteria fate and transport. SWAT 2005 tests have been promising. Results emerging that detailed source descriptions are critical.

5. Evaluate BMPs. Lab, field, and farm studies have clarified bacteria pollution from winter bale-feeder sites.

6. Educate farmers. Extension programs and one-on-one education enhanced with project funds. Project Tours are planned on demonstration sites.

7. Update KSU courses and educational materials.

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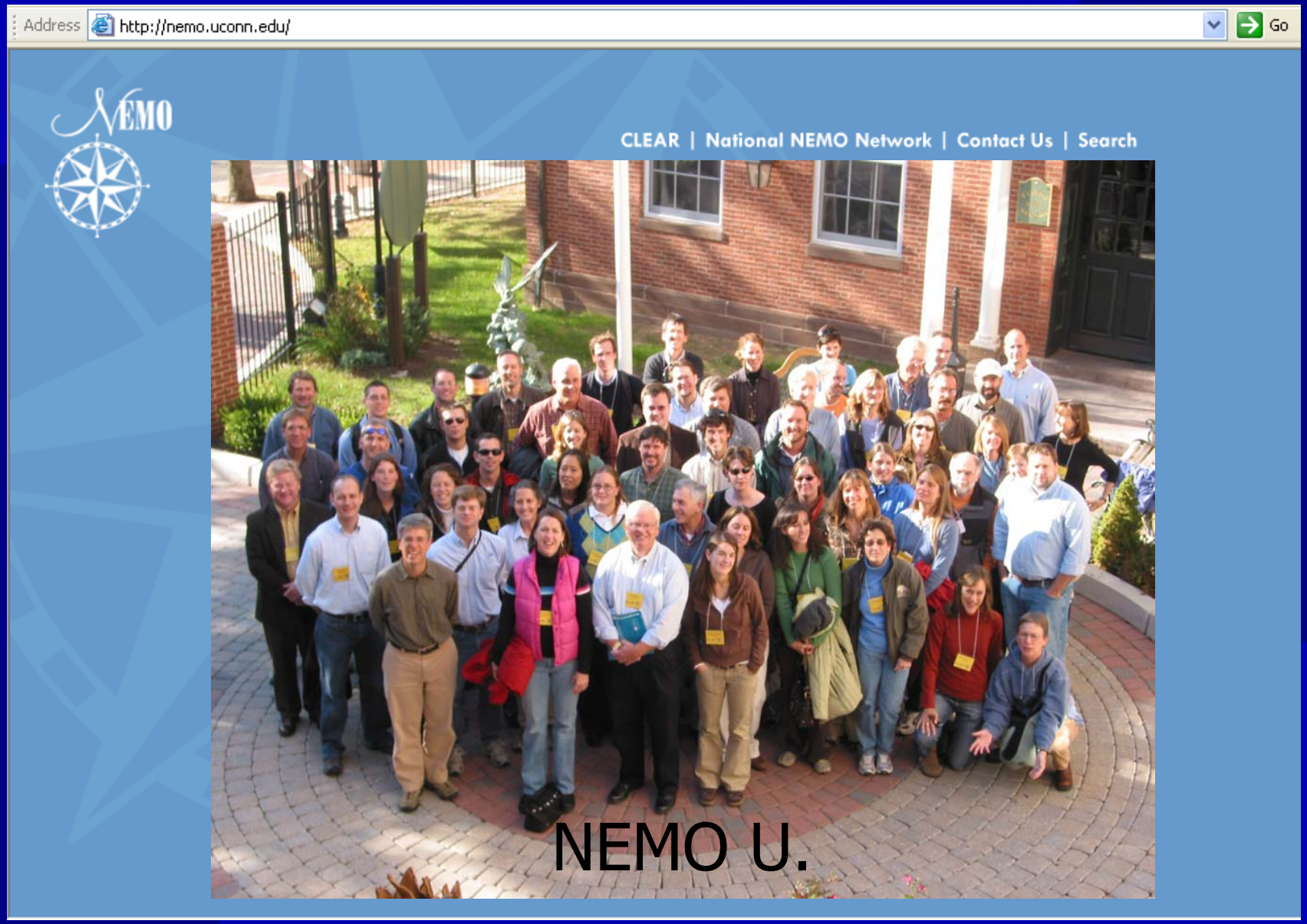
Impact - Outcomes:

Kansas State University investigators, working in the Upper Wakarusa watershed, have detected that implementation of improved management practices on two mid-sized cattle operations appeared to have significantly reduced the peak bacterial loading compared to 2004. Fecal bacterial levels were very low during baseflow conditions during all seasons and at all locations across the watershed. Elevated levels of bacteria were observed in major runoff events in late spring and early summer 2005. Through research, the picture emerging is that the Upper Wakarusa River is impacted mostly by agricultural waste and to some degree by wildlife. The long-term goal of the project is to expand implementation of improved management practices through extension education and partnerships and ultimately have the watershed considered for TMDL delisting in the near future.

National Facilitation Projects



Extension Education Projects

Extension Education Projects

Training Environmental Stewards from Mountains to Ocean: A Water Quality Training Curriculum

Situation:

Water quality and quantity education is often targeted at activities associated with a specific land-use. However, water resource management should occur at the watershed level. King County, Washington, with its rapidly expanding urban base, is a model for the difficulties faced in managing water resources in a rapidly urbanizing area, which includes several land-use activities: forestry in the mountainous headwaters, agriculture and rural lifestyles in the lowland floodplains, and urban homeowners. Individuals need to understand how their individual action is important; this requires that they and those educating them understand the interrelatedness of all land-use activities.

Action:

Researched, wrote, piloted, produced, and distributed a core water quality and quantity volunteer training curriculum for use in all volunteer training programs including Extension Watershed Stewards, Extension Livestock Advisors, Master Gardeners, and Extension Forest Advisors.

Showcased effort by the agricultural industry to protect water quality to the general public through an annual event: Harvest Celebration Farm Tour.

Provided livestock owners, small acreage landowners, and family foresters with the latest tools and techniques to best manage their property at Small Farm Expo, a one-day annual event.

Impacts - Outcomes:

Volunteer training curriculum modules were successfully integrated into existing Master Gardener and Extension WatershedStewardship training programs in King County.

Curriculum was distributed to all seven Washington counties with Beachwatchers Programs, and to colleagues from 14 states who attended a nationwide conference for Extension professionals.

Curriculum website (listed below) received nearly 300 visitors and close to 400 curriculum module downloads in the six-month period since the website was posted.

Over 20,000 visitors from urban and suburban areas toured farms as part of the Harvest Celebration Farm Tour between 2002 and 2005. They learned about local agriculture and food systems, and the many ways family farms are protecting water quality. Nearly 60% of surveyed participants in 2005 said that they would share their Harvest Celebration experience with others, a strong indication that the event is making a lasting impression.

Over 4000 visitors attended the Small Farm Expo between 2003 and 2006. In 2006, visitors took advantage of 15 educational talks, 16 demonstrations, 36 animal displays, and more than 55 vendor booths. Of the attendees that filled out our 2006 survey, more than 98% said they would definitely come back to the event next year. 77% said that this event provided them with information they could not easily have gotten elsewhere and 92% said that they would put what they learned to use within the next year.

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On the web at: http://www.king.wsu.edu/enviro/curriculum.htm

Extension Education Projects

A Volunteer Network to Educate Pennsylvania Well Owners

Master Well Owner Volunteers promote improved private well construction and maintenance, leading to safer private water supplies and reduced potential for ground water contamination

Situation: Over three million rural residents of Pennsylvania rely on a private water supply. Surveys have shown that over 50% of these wells, springs and cisterns fail safe drinking water standards. The cause of these problems can often be traced to inadequate construction, poor management or nearby land uses. A network of educated volunteers increases awareness and promotes better construction, location and maintenance of private water supplies.

Actions:

- Eleven Saturday workshops have been offered to volunteers with training on all aspects of proper construction and management of private water supplies.
- 287 Master Well Owner Network (MWON) Volunteers from 60 counties in Pennsylvania have been trained.
- *"Very well presented, informative, and interesting."* (comment from a volunteer at the 2006 Washington, PA training workshop)
- In 2006, volunteers spent nearly 1,000 hours assisting homeowners with questions about private water system management.

Project Partners

- CSREES Mid Atlantic Regional Water Program
- Pennsylvania Ground Water Association
- Pennsylvania Department of Environmental Protection
- U.S. Environmental Protection Agency Region III
- Pennsylvania Rural Water Association

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Outcomes:

- Since 2004, MWON volunteers have personally educated over 12,000 homeowners with private water supplies in Pennsylvania.
- Another 62,000 homeowners were educated through TV reports, newspaper articles or local newsletters.
- Follow-up surveys with homeowners who interacted with a MWON volunteer showed that 97% found the interaction beneficial, 92% learned at least one new idea to protect their water supply, and 82% had taken action to improve their water supply.

- Many volunteers are currently participating in a research project designed to update information on the occurrence of private well contamination in wells across the state.
- Since the original CSREES 406 grant, the MWON program has received nearly $300,000 in additional grants from federal, state and private project partners to maintain and expand the MWON program.
- Properly constructed wells reduce potential for ground water contamination.

CEAP, NRI, AES and Multi-State Projects

NRI Research Highlights

National Research Initiative Competitive Grants Program

2006 No. 10

Phosphorus (P) Feeding Programs For Dairy Cows: Impacts On Manure Composition, P Runoff, and Farm Sustainability

Andrew Sharpley*, Zhiguo Wu, Al Rotz, Peter Kleinman, and Ann Wolf, USDA-ARS, Pasture Systems & Watershed Management Research Unit University Park, PA, and Department of Dairy and Animal Science, Pennsylvania State University

Research-derived technology reduced the impact of land-applied dairy manure on soil and water resources. In addition, the Phosphorus Indices (P Index) adopted results from this study are producing the first significant reduction in non-point phosphorus inputs and degradation of surface water quality.

Network of Website Coordinators

www.usawaterquality.org

Regional Liaison Team

Water Program Activities at 1890 Institutions

Water Quality

Conference

July 2004, Atlanta, Georgia

Tribal Colleges – 1994 Institutions

Bear
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