



U.S. ENVIRONMENTAL PROTECTION AGENCY WATER QUALITY COOPERATIVE AGREEMENT GRANTS



Accomplishment Report

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Introduction

The Environmental Protection Agency's (EPA) Water Quality Cooperative Agreement Grants were created to promote investigation, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. [Comment: too wordy/long] The selected projects had to attain tangible results.

This report highlights exceptional Water Quality Cooperative Agreement Grants from Headquarters and the ten regions. Grant Project Officers from Headquarters and each of the ten regions were asked to submit reports from grant projects that they found to be particularly noteworthy. Five grants, chosen by headquarters, were included in this report along with one or two grants from each of the regions.

The grants mentioned in this report are focused on improving the nation's wastewater and drinking water systems and water quality of the nation's rivers and streams. Grant projects also sought to improve water quality conditions and wastewater infrastructure at the state and local level.



Water Quality Cooperative Agreement Grants

Program Highlights

Priority projects included but were not limited to watershed approaches for solutions to wet weather activities (i.e. combined sewer overflow, sanitary sewer overflow, stormwater discharge, and animal feeding operations), pretreatment and biosolids (sludge) program activities, decentralized systems, and alternative ways to enhance or measure the effectiveness of point source programs. In addition, selected project exemplified transferability, protection of water quality, and environmental benefits for the areas. Grant projects presented in this report were conducted from 2000 to 2006.

Background

Under the authority of Section 104(b)(3) of the Clean Water Act, the United States Environmental Protection Agency may provide grants to state water pollution control agencies, interstate agencies, municipalities, tribes, colleges and universities, and nonprofit organizations to promote the prevention, reduction and elimination of pollution.

History

In 1992, Congress appropriated \$16 million in grant funds to support implementation of the NPDES program. The funds were to be directed towards unique pilot or special studies and/or demonstrations that would advance EPA's knowledge and ability to deal with point source water pollution problems. The projects were to be of a relatively short timeframe (one to two years) and provide tangible results. Funds were to be used for support of ongoing state programs.

Following implementation of the grant program, the Clean Water Action Plan (CWAP), released in February 1998, presented a broad vision of watershed protection, and included a new, cooperative approach to restoring and protecting water quality, referred to as the Water Quality Cooperative Agreement (WQCA).

The CWAP requested state, federal, tribal, and local governments to work with stakeholders and interested citizens to 1) identify watersheds with the most critical water quality problems, and 2) work together to focus on resources and implement effective strategies to solve these problems. Priority consideration was to be given to implementing the CWAP and projects covering watershed, and activities addressing stormwater, combined sewer overflows, mining, on-site systems, and animal feeding operations.

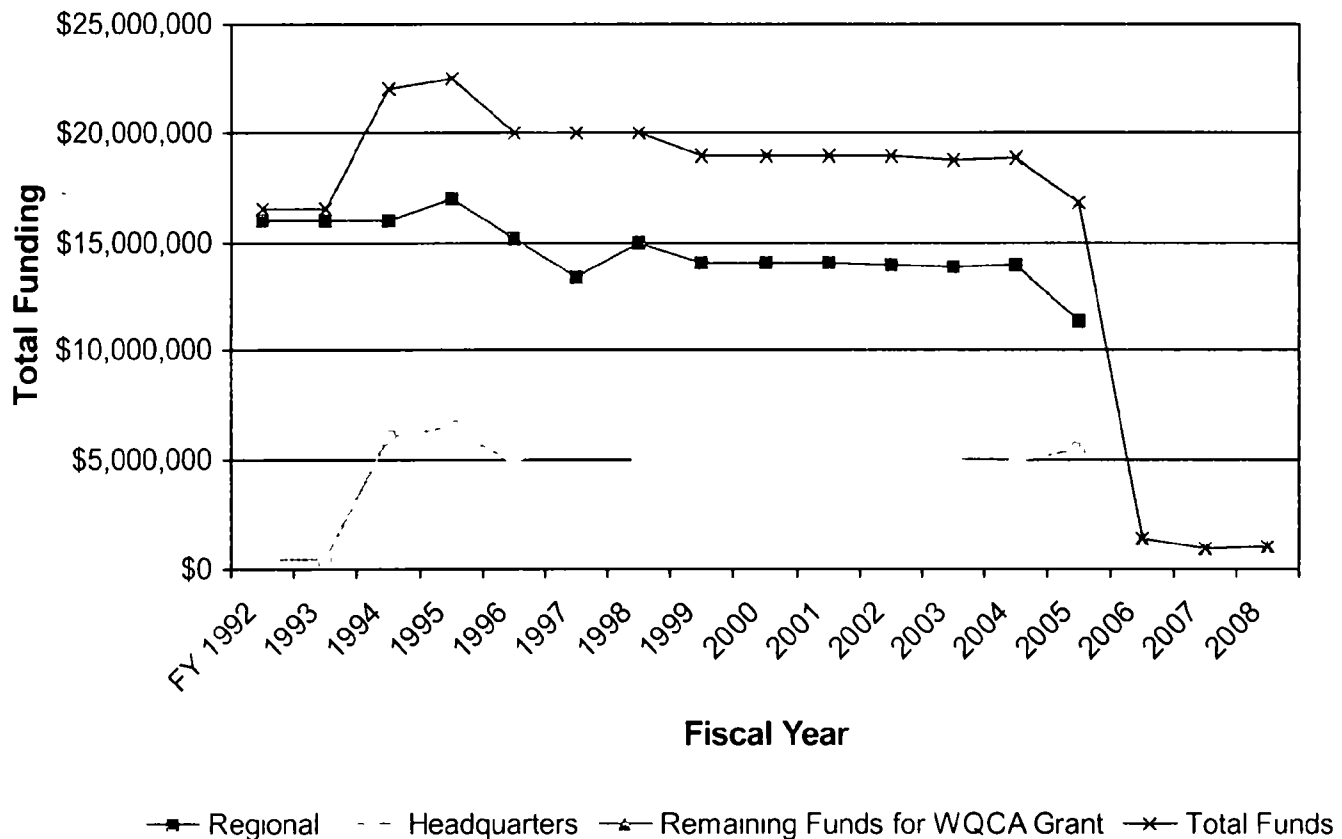
Funds were to be used to focus on innovation demonstration and special projects that related to unified watershed assessment and watershed restoration. Projects or activities could have fallen under various funding categories in Section 104 (b)(3) of the Clean Water Act including

- Institutional Coordination,
- NPDES Permits,
- Environmental Management Systems (EMS),
- Monitoring Assessment,
- Program Measures and Environmental Indicators, and
- Public Participation and Outreach

Funding

Initial funding for the Water Quality Cooperative Agreement Grants was appropriated by Congress in FY 1992. Congress provided \$16 million in grant funds to support and implementation of the program. Project funding typically ranged from \$10,000 to \$300,000 per fiscal year. The average grant awarded by Headquarters was \$100,000 per fiscal year, and the average Regional award was \$120,000 per fiscal year. Unfortunately, Congress ceased appropriating funds for the WQCA grants in 2006. However, of the \$271,337,961 appropriated since the FY 2006, approximately \$1,032,325 still remains to fund new projects. Most of the remaining funds were made available when unused funds were deobligated from previous projects upon completion.

Historical CWA Section 104(3)(b) Funding



Office of Wastewater Municipal Support Division

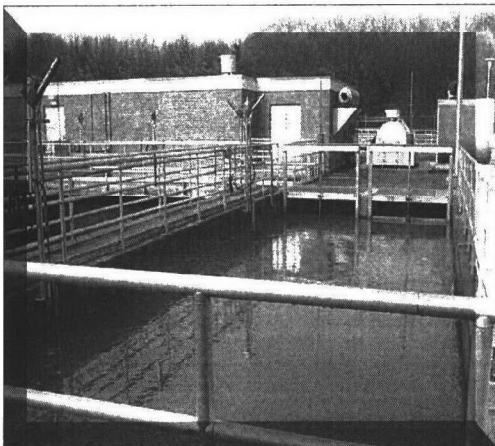
TEAMS Asset Management Tool

Introduction

The Maryland Center for Environmental Training (MCET) provides site-specific environmental, health and safety training and services for municipalities, private businesses and industry, and state and federal agencies. Programs focus on delivering quality education and assistance to professionals in drinking water and wastewater operations, areas in health and safety for employers and employees, technical outreach for industry, and compliance assistance services.

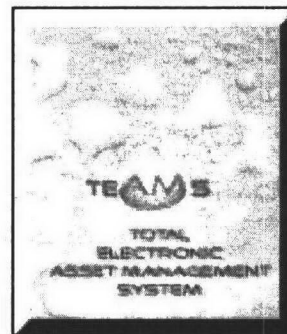
Project Description

During this four year project, MCET developed training materials on Asset Management for small centralized wastewater utilities in Delaware and Maryland. The training materials included a train-the-trainer toolkit on Asset Management and an open source software program called Total Electronic Asset Management System (TEAMS). The Asset Management train-the-trainer course and TEAMS software program covered a wide range of subjects which included: establishing management teams, developing objectives, conducting asset inventory and condition assessments, developing maintenance and rehabilitation programs, capital improvement planning, and conducting program administration. Asset Management Systems provided these small wastewater utility managers with cost effective methods to improve their operational, financial, and administrative functions.



Results

The TEAMS software package has been well received by local communities and demonstrated at various technical conferences. The software package was revealed at the Water Environment Federation's Annual Technical and Exhibition and Conference (WEFTEC) in 2006 and over 200 copies were distributed. Initial TEAMS promotion has been so successful that other organizations are interested in implementing the software. For instance, the Rural Community Assistance Partnership (RCAP) is interested in including TEAMS in their small community curriculum.



Lessons Learned

This project exemplifies the way institutions can work with local communities to improve their wastewater systems. Although this project was geared toward small communities with a capacity of less than 5 million gallons per day, it can also be applied to larger communities as well. In addition, curriculum for the Asset Management Courses continues to be amended to assist trainers and wastewater managers in the technical and financial aspects of their operations. Further negotiations are also being conducted with municipal officials around the country to hold additional conferences and pilot studies of the Asset Management Program and TEAMS software.

Grantee: College of Southern Maryland Center for Environmental Training

Project Number: CP-83052801

Award Year: 2002

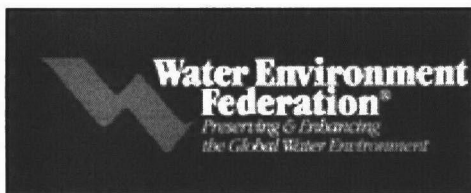
Award Amount: \$450,000

Office of Wastewater Municipal Support Division

Water Sector Collaboration on Effective Utility Management

Introduction

The Water Environment Federation (WEF) was established in 1928 as a not-for-profit technical and educational organization. It now boasts 32,000 members and 80 Member Associations which represent 50,000 water quality professionals around the world. The WEF and its members work to achieve the organization's mission of preserving and enhancing the global water environment.



Project Description

In 2006, EPA partnered with six associations representing water and wastewater utilities to form the Effective Utility Management Steering Committee. The Committee identified common challenges and barriers facing utilities and made numerous recommendations for water and wastewater utilities to improve utility management. As a result of the recommendations, the Committee drafted a series of reports entitled, *Attributes of Effectively Managed Utilities*, *Keys to Management Success*, and *Sample Performance Measures*. These recommendations set the groundwork for the development of a common management framework designed to ensure that utility operations and infrastructure are sustainable.

Results

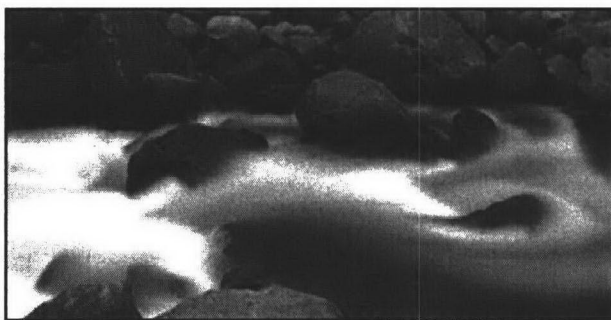
Following the creation of the common management framework, the six national associations signed a Statement for Support signaling their intentions to work both individually and cooperatively to promote and encourage the adoption of the Committee's

recommendations. The EPA and the associations are also working to implement the following reports which provide the tools necessary for utilities to have a more successful and effective management of their operations:

- A Final Agreement on Effective Utility Management
- A Final Report from the Effective Utility Management Steering Committee
- A Fact Sheet describing the initiative
- A list of implementation Actions EPA and the Associations plan to undertake

Lessons Learned

This project and EPA's work with the association partners, demonstrates the need and value of collaboration between EPA and industry to ensure sustainable utility operations and infrastructure. The final products that were funded through this grant reflect the consensus of leading utilities, EPA, and six national associations that represent water and wastewater utilities throughout the country. The cooperative and collaborative efforts truly embodied the vision and goals of the project. It is unlikely that such a consensus would have been possible without such teamwork.



Grantee: Water Environment Federation (WEF)

Project Number: CP83295001-0

Award Year: 2006

Award Amount: \$126,000

Office of Wastewater Municipal Support Division

Documenting and Improving Energy Use in Water Quality Systems

Introduction

The University of Florida's Training Research, and Education for Environmental Organizations (TREEO) Center is dedicated to helping protect the environment for future generations by incorporating sustainable practices into all aspects of their operations. The Center has provided Excellence in Environmental Training to hundreds of students in the past three decades.



Project Description

This project was designed to establish a national advisory workgroup for the identification and categorization of new energy efficiency strategies and technologies for water and wastewater facilities. It developed a new manual on energy efficiency for water and wastewater plants, and accompanying training tools and aids. The Center presented its peer-reviewed manuals at a pilot tested train-the-trainer session in Manchester, New Hampshire for wastewater operators. The presentation, entitled "Documenting and Improving Energy Use in Water Quality Systems," was designed to assist trainers on energy efficiency for water and wastewater treatment plants.

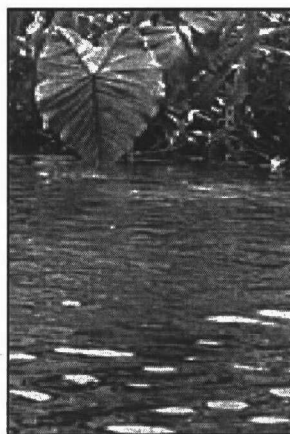


Results

As a result of the project, a new energy efficiency training manual for water and wastewater facilities was developed along with an instructor manual and participant workbook. Curriculum for trainers of wastewater operators was broadened to include water treatment, stormwater management, and reclaimed water. The success of the pilot training session prompted additional training sessions to be held across the country. Presentations were given at four Clean Water Act 104(g) training centers and manuals were distributed to all CWA104(g) Operator Training Centers.

Lessons Learned

Following the initial pilot training sessions, numerous other training sessions were held in Florida and at conferences throughout the country. States had the option to utilize the TREEO center's manual and trainer toolkit or develop their own. Continued efficiency improvements on water and wastewater facilities will diminish their carbon footprint and environmental impact.



Grantee: University of Florida Center for Training, Research, and Education for Environmental Organizations— TREEO

Project Number: CP-830676-01-0

Award Year: 2002

Award Amount: \$63,7444

Office of Wastewater Municipal Support Division

Protocols for Assessing Condition and Performance of Water and Wastewater Assets

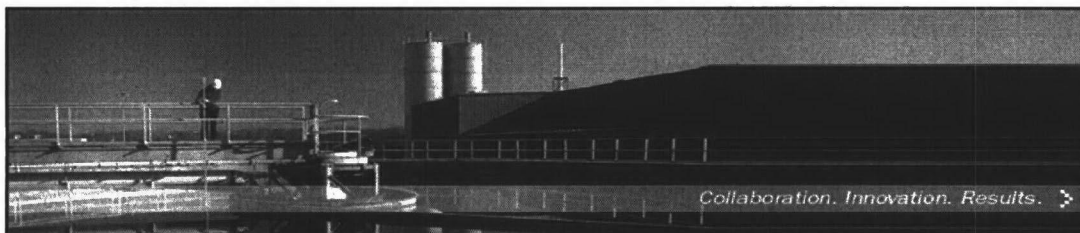
Introduction

The Water Environment Research Foundation is a nonprofit organization that helps utilities and corporations preserve water and protect human health by enhancing water resource management through science and technology research. The Foundation's research has answered the needs of utilities, municipalities, environmental engineering and consulting firms, government agencies, equipment manufacturers, and industrial organizations. Its research is focused on conveyance systems, infrastructure management, wastewater treatment and reuse, solids treatment, residuals, watershed man-

also evaluated based on their economic and financial impact. The research provided reviews of 83 individual condition assessment tools and techniques as well as a discussion of applications, practical considerations, and advantages and limitations of the various asset types.

Results

A prototype expert system was developed based on research and case studies from various utilities. The system was designed to facilitate the selection of condition assessment tools using software systems which provide a framework for updating, maintaining, and distributing refinements of asset types and updating and refining tools for reviews in the future. Recommendation criteria for selecting conditions and performance assessment tools and techniques were also developed from the re-



agement, and water quality. The investigators come from a wide range of backgrounds including municipal agencies, academia, government agencies, and industrial consulting firms. The diversity of expertise promotes creative and innovative solutions to water management.

Project Description

This project was designed to identify and document distribution assets and the broad range of available condition assessment tools and techniques for water and wastewater collection. Distribution assets and assessment tools include sewer mains, installation valves, pumping facilities, access pits, and stacks used in the delivery to wastewater treatment sites. Research and case studies from around the world were compiled to serve as a road map for implementing assessment tools and distribution assets into their systems. A wide variety of asset types were studied based on their technical feasibility, technical suitability, and utility technical capacity. For utility consideration, asset types were

search. A guide for utilities to integrate condition and assessment programs into their overall management framework was also developed.

Lessons Learned

Further innovations of tools used for water and wastewater facilities are needed to make to improve the efficiency of utilities around the world. The results from this research will ensure that wastewater and water utilities have the resources available to improve their infrastructure and invest in asset tools that will continue to enhance the function of their operations.

Grantee: The Water Environment Research Foundation

Project Number: CP-83112101-0

Award Year: 2003

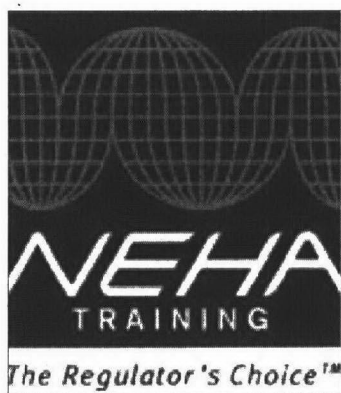
Award Amount: \$210,563

Office of Wastewater Municipal Support Division

Credential Development for On-site Wastewater System Installers

Introduction

The National Environmental Health Association (NEHA), established in 1937, is a professional society for environmental health practitioners. The organization developed credentials for health professionals and includes seven national credential programs. The association holds a number of technical workshops each year. Its mission is "to advance the environmental health and protection professional for the purpose of providing a healthful environment for all." NEHA is focused on developing quality educational programs.



Project Description

The project improved water quality by ensuring that the On-Site Wastewater System (OSWS) installers have adequate knowledge of environmental health.



The NEHA developed credentials for OSWS installers and created a national level certification program. An examination for OSWS will be developed to determine if installers possess the required level of knowledge and skills. Once installers are certified, NEHA will maintain a database of installer credentials, educational records, and recertification records. The OSWS credential is designed to sub-

stantially improve professional standards within the on-site wastewater industry. It, along with the associated training program will encourage the adoption of the USEPA Voluntary Management Guidelines for OSWS.

Results

NEHA's unveiled a credential examination at their June 2006 conference. It was an important step toward raising the competency level and professionalism of the on-site industry. Thus far, six examinations have been conducted at various locations, and NEHA has certified 76 installers for on-site wastewater. Nine states have shown an interest in the installer credential program, and NEHA has been working with them for adoption of this certification program.

Lessons Learned

The development of the certification program for on-site wastewater system installers was the first certification program established by the EPA that was directly geared toward on-site wastewater system installers. Throughout the certification process, stakeholder groups and subject matter experts worked together to develop the program. The successful process through which the credential program was developed could serve as a template for future credential programs that the EPA and other agencies are seeking to pursue. However, only with adequate marketing of the certification for on-site wastewater system installers will the program continue to succeed.

National Environmental Health Association

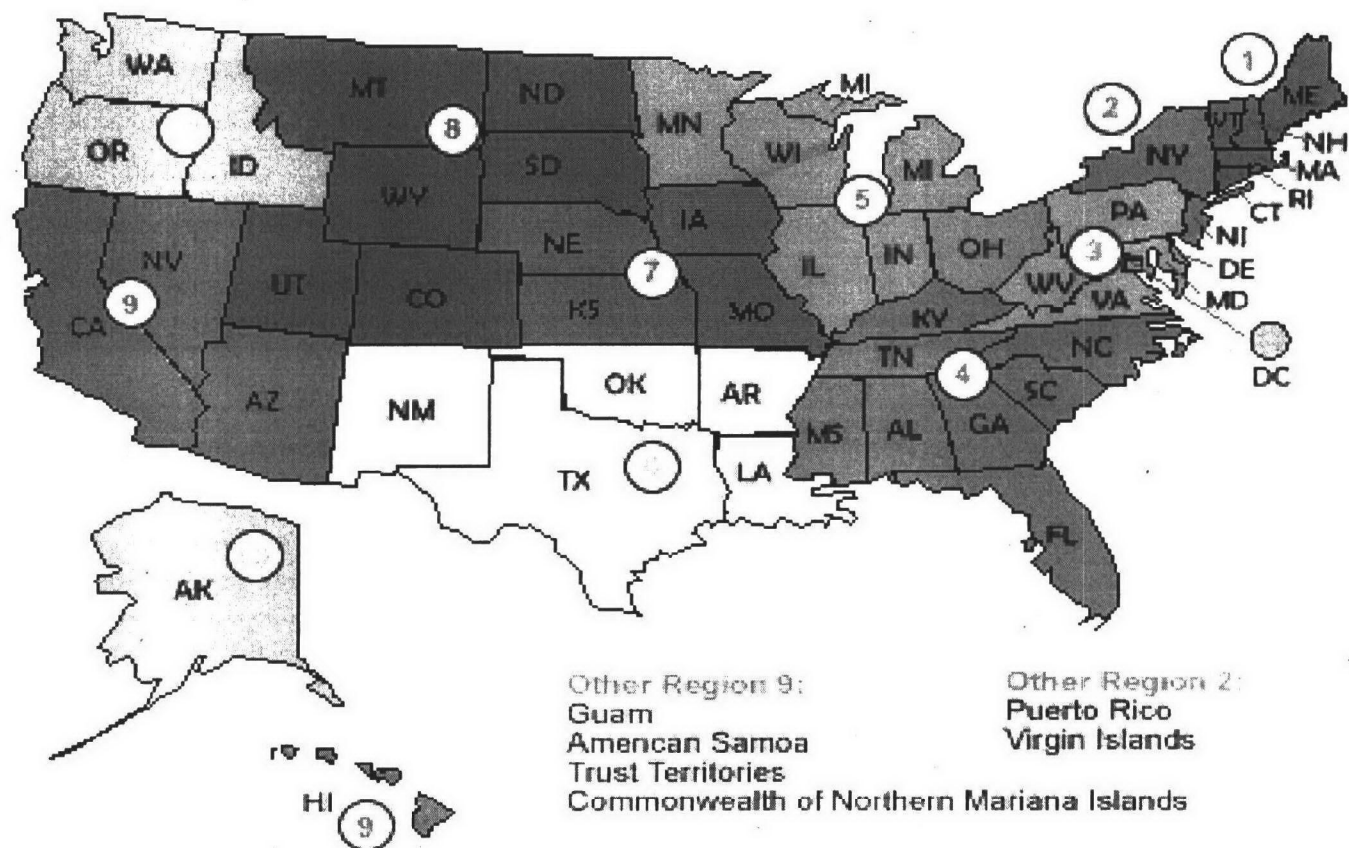
Grantee: National Environmental Health Association (NEHA)

Project Number: CP-83153101

Award Year: 2004

Award Amount: \$267,000

U.S. Environmental Protection Agency Regional Offices

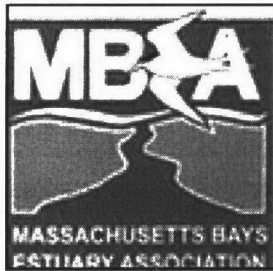


Region 1

Think Blue Massachusetts Bay Stormwater Education Campaign

Introduction

The Massachusetts Bays Estuary Association (MBEA) was established in 2004 to educate the public and raise awareness about threats to Massachusetts' bays. The association's advocacy programs support recognition and admiration for Massachusetts' natural resources.



Project Description

This project originated through a partnership between MBEA and the Massachusetts' Bays Program which is aimed towards educating the public on polluted stormwater. The campaign called "Think Again. Think Blue," was adopted from a San Diego stormwater campaign called "Think Blue." The MBEA campaign used the media and the print market to alert the public of the significant problem of polluted stormwater. The goal of the program was to improve coastal water quality by reducing or eliminating polluted stormwater runoff. To achieve this goal, the campaign urges citizens to push for stormwater management in their communities.

Results

As a result of the "Think Again. Think Blue" campaign, new partnerships have been forged between MBEA and MBP and tools for interested parties were developed and a website was created to assist in furthering the organizations goals. MBEA and MBP have coordinated efforts with cities, municipalities, the Pioneer Valley Planning Commission, and other non-profit groups. For instance, a partnership with the City of Cambridge led to the incorporation of the "Think Blue" campaign into

local events. The campaign's partnership with the Pioneer Valley Planning Commission enabled the Connecticut River Cleanup Committee to develop its own "Think Blue" campaign. This partnership commission also gave the MBEA an opportunity to further clarify its mission through radio broadcasts. The organization publishes an e-newsletter entitled "Stormy Report" and members attend science and environmental events to educate the public on polluted stormwater. The organization developed a website www.thinkagainthinkblue.org that has links for its e-newsletter, products, and upcoming events. In addition, a toolbox was developed for municipalities, community groups, and non-profits to implement the campaign in their area.

Lessons Learned

The development of this campaign exemplifies the way a grassroots campaign can be easily translates in different areas of the country. Communicating the goals and objectives of the "Think Blue" campaign will improve coastal waters by decreasing the amount of polluted water flowing into the nation's bays. Efforts made by this and future "Think Blue" campaigns will enable individuals to impact their communities by encouraging utilities to manage stormwater.



Grantee: Massachusetts Bays Estuary Association

Project Number: CP-97143501-0

Award Year: 2005

Award Amount: \$44,000

Region 2

The New Jersey Animal Feeding Operation Outreach and Non-point Source Pollution Check-up Program

Introduction

The New Jersey Farm Bureau (NJFB) represents agricultural producers and enterprises at federal, state, local and international levels. The Bureau influences regulations and laws and builds relationships with the public. In addition, the New Jersey Farm Bureau seeks out initiatives, activities, and ventures to boost the profitability of agricultural producers and enterprises across New Jersey. Representatives from every part of the state serve to manage the organization.

Project Description

The New Jersey Farm Bureau educated livestock producers, members of 48 livestock commodity groups, 4-H animal club leaders, and other organizations about AFO and CAFO regulations. Letters were sent to these agricultural groups to inform them of non-point source regulations, the AFO process in New Jersey, and contact information for assistance. In addition, the Bureau visited livestock organizations and offered them free confidential consultations for their farm using "On Farm Strategies to Protect Water Quality" for non-point source management. In total, 25 consults were performed to specifically address non-point source pollution and how to apply best management practices (BMPs).



Bureau attend their meetings to inform their members of AFO and CAFO regulations and non-point source pollution management. The NJPHA has educated its membership about AFO and CAFO regulations, and the horse community at large.

Members of the organizations found the information presented by the New Jersey Farm Bureau very helpful. The Bureau stressed the importance of taking a proactive stance towards protecting New Jersey's water quality and informed the members that anyone could be regulated if found polluting in state waterways. Also, members of the farming community who were in attendance, have requested confidential farm consultations in order to implement non-point source management techniques on their farms.

The Bureau also held a seminar for horse owners. The seminar provided valuable information to horse owners about programs offered by state and federal agencies concerning non-point source management. The Bureau also provided insight on effective ways to manage manure and discussed methods for identifying pollution control measures on farms.

Lessons Learned

Through education and outreach to livestock organizations in New Jersey, non-point source pollution of state waterways can be reduced. When these organizations have adequate knowledge of resources and service agencies available to assist them in complying with the AFO and CAFO regulations, they will be more willing to implement non-point source management techniques.

Results

Since the grant was awarded, the Bureau has visited three agricultural organizations including the Equine Advisory Board, which represents 52 organization, the New Jersey Beef Industry Council, and the Salem County 4-H Hoofbeats. In addition, the New Jersey Horse and Carriage Society (NJHCS), the Salem County 4-H Leaders Association, and the New Jersey Professional Horsemen's Association (NJPHA) have all requested that the

Grantee: New Jersey Bureau Research Foundation
Award Year: 2003
Award Amount: \$52,500

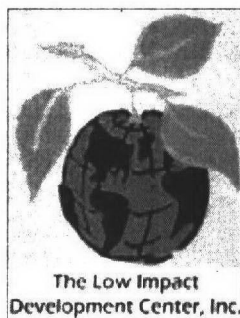
Region 3

Demonstrating and Transferring a "Green Highways" Watershed Approach to Innovative Stormwater Management in the Mid-Atlantic

Introduction

The Global Environmental Technology Foundations(GETF) is a non-profit organization aimed at shaping a better environment through sustainable development. GETF has worked successfully with federal and state agencies, foundations, companies, non-profit organizations, and multilateral development agencies. Their work has focuses on such areas as technology innovation, energy and climate, environmental security, environmental finance, information sharing, partnership development, water and sanitation, and international development.

The Low Impact Development (LID) Center is a non-profit organization that was established in order to provide information to individuals and organizations dedicated to protecting water resources. The Center is aimed towards the advancement of Low Impact Development technology, which is a new comprehensive land planning and engineering approach focused on maintaining the natural hydrologic regime of urban watersheds. LID educates individuals and organization on site design techniques that replicate pre-existing hydrologic conditions in order to restore watersheds in urban and developed areas.



Project Description

The two organizations worked with various stakeholders to develop "Green Highways," which is a new watershed approach for transportation projects that achieves "beyond compliance and better

than before" environmental results. The "Green Highways" approach to highway design incorporates Best Management Practices (BMPs) that address watershed issues, conservation, and ecosystem management. It also promotes recycling and the reuse of materials. The GETF and LID both provided educational outreach and technical assistance to the communities wishing to utilize the "Green Highways" approach.

Results

The GETF and LID developed a green infrastructure based on BMPs that was easily understood and implemented by highway planners, elected officials, engineers, local governments, and stakeholders to solve priority water quality watershed problems. Highways are normally based on predictable design patterns that do not fit into a new watershed management approach. The GETF and LID Center established baseline protocols and metrics for watershed-based innovative stormwater management. Through the use of GIS and BMPs, the GETF and LID Center were able to examine the watershed and identify mitigation opportunities. In addition, a prototype Environmental Management System (EMS) was developed with indicators for the proposed "Green Highway" project. Included in the project was an interactive website designed to facilitate communication and outreach to stakeholders and the community on a wide range of topics concerning cost-effective stormwater management.

Lessons Learned

In response to the project and interactive website, hundreds of stakeholder groups have been interested in implementing a more innovative highway design that incorporates watershed restoration. This project exemplifies the benefits of cooperation between communities and non-profits and the use of technology in improving watershed health.

Grantee: Global Environment & Technology Foundation & Low Impact Development Center

Project Number: CP-973363-01 (GETF) and CP-973375-01 (LID)

Award Year: 2006

Award Amount: \$365,000

Region 4

Get the Dirt Out

Introduction

The Upper Chattahoochee Riverkeeper is a non-profit organization whose mission is to advocate and secure protection of the Chattahoochee River. The organization protects the river's tributaries and watershed to restore and preserve ecological health for the local communities, fish, and wildlife that depend on the river system. Established in 1994, the organization has over 4,600 members dedicated solely to protecting and restoring the Chattahoochee River Basin which serves as the drinking water source for over 3.5 million people in Georgia.

thirds of those sites had major problems. The local governments were made aware of the severity of the problem and became more responsive to citizen complaints.



Project Description

The purpose of this project was to educate the local communities surrounding the Upper Chattahoochee on Georgia's construction industry requirements. The organization dispensed a variety of educational training materials to Riverkeeper members, local watershed organizations, the general public, and developers. The materials were designed to inform the public on stream water quality problems caused by sediment-laden runoff from construction sites. Educational materials elaborated on Best Management Practices (BMPs) and what constitutes a good or bad BMP for Georgia's construction permitting process. Riverkeeper personnel were also trained on how to assess the effectiveness of BMPs for construction sites located along the Upper Chattahoochee watershed.

Lessons Learned

The state general construction permits are written to protect state waters from construction site generated sediment. State and local governments are responsible for preventing sediment from entering local water bodies from construction activities. However, many state and local governments are seriously underfunded even though permit fees are collected at both levels. Other state organizations in North Carolina and Alabama have adopted the "Get the Dirt Out" program for their watersheds to assist local governments in preventing runoff from construction sites.

Results

In 30 workshops held throughout the state, the Riverkeeper provided information to more than 500 citizens, developers, and local government officials about the purpose and requirements of Georgia's construction general permits. The project website (www.getthedirtout.org) includes several printable documents including a training manual and workbook, a BMP field guide, and a two-page *Stormwater Permitting Guide to Land Disturbance Activities for Developers and Local Governments*. Over 100 construction sites were assessed for proper implementation of construction BMPs and about two-

Grantee Upper Chattahoochee Riverkeeper

Project Number CP-96417805

Award Year 2005

Award Amount \$93,900

Region 5

Michigan Department of Environmental Quality

Introduction

The Michigan Department of Environmental Quality (MDEQ) was established in 1995 as a sister agency to Michigan's Department of Natural Resources (DNR). The MDEQ regulates land, air, water, and solid waste within the State of Michigan.

Project Description

This project focused on TMDLs, stormwater education and outreach, a Sanitary Sewer Overflow (SSO) Control Program, and regulation of publicly-owned treatment works (POTWs). TMDLs were determined for creeks, rivers, and extension drains including Ball Creek, Plaster Creek, Sawyer Creek, McKinzie Creek, Little Black Creek, Black Creek, Ecorse River, Clam River, and the Eau Clair Extension Drain. Stormwater education and outreach across Michigan were orchestrated through a grant given to the Center for Environmental Studies (CES). Through cooperation between the Center, MDEQ, and an advisory committee, a stormwater campaign was developed for statewide utilization. In addition, the SSO Control Program was developed in 2000 to identify and correct conditions resulting in SSO municipal sewer systems. Following the development of the program, Section 3112a of Part 31 of the Water Resource Protection of the Natural Resources and Environmental Protection Act (NREPA) was amended, mandating that all discharges of "untreated or partially treated sewage" into Michigan waters be reported to the MDEQ and local health authorities. Additionally, a survey of all POTWs was conducted to obtain information on the character of industrial wastewater.

Results

Following the TMDL assessments for creeks and rivers in Michigan, two creeks were removed from the 303(d) list of impaired water bodies. For the stormwater education and outreach program, a campaign building toolkit was created containing graphics adaptable for local use, new articles ready to publish, display concepts and ideas, brochure examples, media advertisements, and various other marketing tools. A pilot workshop was utilized to test the toolkit components, and due to its success, it has been used in multiple workshops for community training.

After the development of the SSO Control Program and amended legislation, 200 municipalities in 65 of Michigan's 84 counties were identified as having multiple SSO events. In response to the frequency of SSO occurrences, the Chief of the Water Division for MDEQ created a full-time position responsible for coordinating SSO initiatives within the Water Division. To facilitate reporting of new SSO events, as required by Section 3112a of the NREPA, a standardized reporting form was developed and a website was created for posting reported information <http://www.deq.state.mi.us/swq/csoindex.html>. A statewide workshop was also held to educate municipalities, consultants, regulators, and other interested parties on the SSO Control Program. In 2001, an enforcement-based action plan for the SSO Strategy Implementation was finalized. The plan prioritized actions which were required to bring communities in need of formal SSO programs into four groups based on their system size and SSO discharge frequency. The MDEQ recently began developing a statewide corrective program and schedule to be incorporated into an enforceable document such as NPDES permits or orders.

Following the survey of POTWs that collect industrial wastewater, information provided by certain treatment plants was insufficient to determine a required action. In those cases, site visits and telephone follow-ups were conducted by the MDEQ. As the result of these efforts, the MDEQ identified three groundwater POTWs which receive industrial wastewater and are subject to categorical pretreatment standards. The identified facilities are required to develop an Industrial Pretreatment Program for their NPDES permit.

Lessons Learned

State environmental departments nationwide can develop similar improvement programs to control SSO and regulate industrial wastewater. Components of the stormwater education toolkit can also be used by communities across the country.

Grantee Michigan Department of Environmental Quality

Project Number CP-97546502-0

Award Year 2003

Award Amount \$499,164

Region 6

Development of Sediment/ Siltation Use Support Proto- cols for Oklahoma Streams

Introduction

The Oklahoma Office of the Secretary of the Environment is a state organization created "to protect and enhance Oklahoma's environment and natural resources through preservation, conservation, restoration, education, and enforcement in order to maintain and improve environmental quality," in the state.



Project Description

This project established nutrient criteria for Oklahoma's water supply reservoirs through the development of the Beneficial Use Support Assessment Protocols (USAP) for sedimentation and siltation threats or stream impairments. The USAP has served as a template for all Oklahoma environmental agencies to follow when assessing a water body.

Results

This project has led to incremental improvements in Oklahoma's ability to characterize water quality impairment within the regulatory framework of the Clean Water Act.

Grantee: Oklahoma Office of the Secretary

Project Number: X-98687801-0

Award Year: 2001

Award Amount: \$54,199

Nutrient Criteria Development for Oklahoma in Support of TMDL Development and 303 (d) Listing

Project Description

This project established nutrient criteria for Oklahoma reservoirs identified in the Oklahoma Water Quality Standards as Sensitive Public Water Supplies. Nutrient criteria were identified through regional research, in which field sampling and data collection were conducted.

Results

Through regional research, quantifiable biological and water quality measures were developed. Consequently, reservoirs were characterized and attainable goals were set for each water body.

Grantee: Oklahoma Office of the Secretary of the Environment

Project Number: CP-97611301-0

Award Year: 2002

Award Amount: \$76,000

Lessons Learned

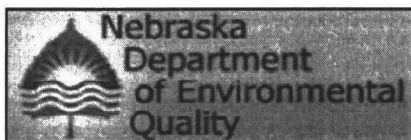
The completion of these projects led to revisions in water quality standard and assessment methods as well as the addition of many waterbodies on the state's 303(d) lists of impaired waters. Application of these methods across all states could give a more accurate perspective on waterbodies throughout the country.

Region 7

Microbial Source Tracking

Introduction

The Nebraska Department of Environmental Quality was established as a result of the Nebraska Environmental Protection Act of 1971. The department's goal is to protect Nebraska's air, land, and water resources.



Project Description

The project determined whether human, livestock, or other animal wastes were sources of fecal bacteria in the Plum Creek watershed. To determine which sources were affecting Plum Creek, the Microbial Source Tracking (MST) tools were evaluated that included, *E. coli*, coliphage, and bacterioids 16s rDNA host-associated maker.

Results

Results of the study found that both the *E. coli* and bacterioidales MST tools showed evidence of fecal contamination in the watershed. *E. coli* presence supported that cattle and wildlife were sources of *E. coli* to both the sediment and water. Presence of bacterioidales supported that cattle and horses in the water as well as human contributed to fecal material in the sediment. The study was also published in the Journal of Environmental Quality.



Lessons Learned

This technique could be applied in other watersheds to identify best management practices for reducing fecal bacteria from livestock, animal wastes, and humans.

Grantee: Nebraska Department of Environmental Quality

Project Number: CP-98740101-1

Award Year: 2004

Award Amount: \$112,375

Jack's Fork Watershed Sinkhole Project

Introduction

The Top of the Ozarks Resource Conservation and Development, Inc. was established by Congress in 1965. The organization includes the R & CD Council comprised of representatives from nine counties in South Central Missouri. The mission of the organization and council is to assist local communities in managing natural resources by developing the maximum potential use of all resources.

Project Description

The Ozarks is a karst environment with numerous sinkholes that are connected to streams and rivers throughout the area. The sinkhole formations facilitate the transport of pollutants. This project gathered information on three hundred sinkholes. Each sinkhole was measured, evaluated for environmental concerns, mapped, and formatted for GIS.

Results

A report was created identifying the location and condition of 300 sinkholes were located in the area through interactive GIS maps. The report and interactive GIS maps are available on the website <http://www.i-maps.com/jakcsfork/>. The project results also indicated where the flow surfaced and groundwater flow for five sinkholes.

Lessons Learned

This project could be replicated in many other karst environments and provide a good visual and educational tool to educate both local citizens and natural resource agencies on the prevalence and importance of sinkholes in preserving water quality.

Grantee: Top of the Ozarks Resource Conservation & Development, Inc.

Project Number: CP-98751301-2

Award Year: 2004

Award Amount: \$72,221

Region 8

Mobility, Extractability, and Fate of Metals in Long-Term Biosolids Field Experiments

Introduction

Colorado State's Department of Soil and Crop Sciences emphasizes the production and management of food, feed and fiber crops to meet human needs and protect the environment. The Department's research scientists and extension specialists are engaged in soil and crop research covering a wide range of basic and applied problems.

Project Description

This project was designed to promote understanding soil mobility, extractability, and fate from two long-term biosolids through the analysis of soil samplings. Specifically, the project examined the long-term environmental effects of a single or multiple application on rangeland or agricultural soil, and the short-term effects of repeat application on rangeland soil. The project tested for the presence of a wide variety of elements in biosolids and soils including common compounds of nitrogen, phosphorus, arsenic, nickel, lead, and zinc.

Results

Through the soil analysis, it was found that metals while land-applied biosolids did cause persistent changes in soil chemical properties. A majority of metals were found at the surface, some were observed below the surface. Both lead and magnesium oxide were found in biosolids samples.

Grantee Colorado State University, Department of Soil and Crop Sciences

Award Year 2003

Award Amount \$85,624

Plants and Soil Response to Biosolids Application Following Forest Fire

Project Description

This project was designed to determine the effects of wildfires on indigenous forest soil microorganisms, their recovery rates in response to wildfires, and the impact of traditional remediation strategies on soil microbial communities. The recovery of fungal biomass and microbial community structure in soils was monitored over time in order to assess the potential of traditional remediation practices aimed towards accelerating the recovery of microorganisms. Soils were collected and analyzed to monitor the recovery of microbial communities over time.

Results

The project revealed that soil moisture content was an important factor in influencing community structure. In comparing burned soil community structure with that of unburned soil and hydromulch treated soil it was determined that by treating burned soil with hydromulch, the negative effect of fire on microorganisms may aid in their recovery, as well as improve soil fertility, soil moisture retention, and prevent soil erosion.

Lessons Learned

This project exemplifies universities' ongoing research into environmental science. Knowledge gained from these grants is being used to educate future scientists in the field of soil and crop sciences. Universities across the country should be recognized for their efforts in the field of environmental science.

Grantee Colorado State University, Department of Soil and Crop Sciences

Award Year 2001

Award Amount \$89,386

Region 10

Oregon Total Maximum Daily Load (TMDL) Development

Introduction

The Oregon Department of Environmental Quality was established in 1969 as an independent state agency designed to protect and enhance Oregon's water and air quality

Project Description

The project was designed to support completing high priority TMDLs for the region by gaining an understanding of thermal pollution and enhancing existing temperature and modeling capabilities. The Oregon Department of Environmental Quality (DEQ) collected thermal infrared stream temperature data through Flight-based, Forward-looking Infrared Radiometry (FLIR) for 400 stream miles in the Umpqua River basin. To further support TMDL development, the Oregon Department of Environmental Quality improved an existing temperature model and designed a user interface and manual for it.

Results

By utilizing FLIR, the Oregon DEQ could collect comprehensive and accurate temperature data for TMDL development. Improvement in the function of the model made it more efficient, user-friendly. Improvement in the function of the model allowed it to become more efficient, user-friendly, and applicable to TMDLs. The Oregon DEQ has made the model available to stakeholders and provided training and assistance to users, thereby fostering collaboration and contributing to a successful, cooperative TMDL process.

Lessons Learned

The employment of new techniques aimed towards improving existing water quality models will contribute to the better management of water resources and understanding of environmental factors affecting state waters.

Grantee Oregon Department of Environmental Quality

Grant Number CP-97015701

Award Year 2004

Award Amount \$468,000

Baseline Water Quality Monitoring for Eyak Lake Orca Inlet

Introduction

The Native Village of Eyak is a tribal community in Alaska with 500 members that rely on subsistence farming and commercial harvests of seafood locally.

Project Description

The project studied effects of harbor activities and wastewater discharges on Orca Inlet and Eyak Lake in Alaska. A baseline assessment of water quality in the area was conducted to determine the presence of pollutants and their sources. The Village also conducted homeowner interviews to help determine potential pollution sources. The project field work and interviews were conducted entirely by tribal members.

Results

The Native Village of Eyak was able to obtain valuable information related to water quality, pollutants of concern, and shoreline surveys for the Inlet and Lake. Information gained from the study was used to develop a surface water clean-up plan. In response to the study, the Village was also able to plant razor clams in Orca Inlet. This project included extensive outreach to the tribal leadership and community using the study results to encourage others to reduce or eliminate discharge of pollutants into these waters.

Lessons Learned

This project exemplifies the way program managers at the EPA can work with tribal communities to gain valuable insight into their local environments. Based on the success of this project, EPA should continue to work with tribes and extend their support to tribal communities that wish to improve their environment.

Grantee Native Village of Eyak

Grant Number CP-97087601

Award Year 2006

Award Amount \$158,500

Water Quality Cooperative Agreement Grants

Clean Water Act Section 104(b)(3)

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