

# 2002 Annual Report: Texas Nonpoint Source Pollution Management Program

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A Joint Report of the  
Texas State Soil and Water Conservation Board  
and the  
Texas Commission on Environmental Quality

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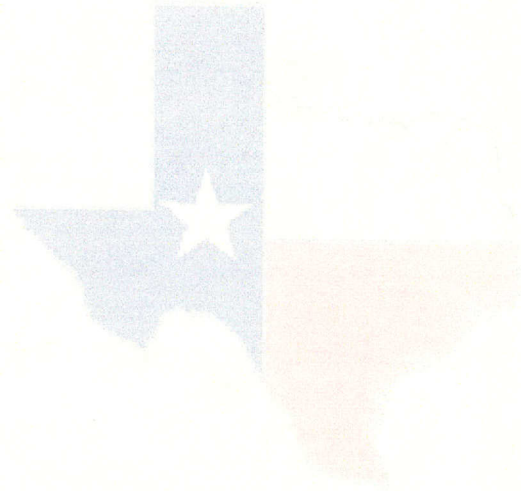
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**Texas Nonpoint Source Pollution  
Management Program**



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Texas State Soil and Water Conservation Board  
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Texas Commission on Environmental Quality

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**Denotes programs administered by the TSSWCB or TCEQ.**



# Letter from the Directors

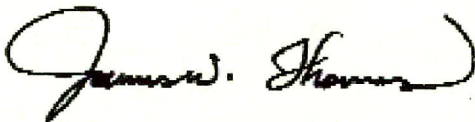
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The direction of the Clean Water Act has undergone a significant change of course over the past ten years, and the “watershed approach” has been determined to be the best method of handling pollution of our Nation’s waters. Where we once looked almost exclusively at point source causes of water pollution, the focus has now shifted heavily toward nonpoint sources.

States are facing a considerable challenge with this recent change since nonpoint source issues require a more holistic approach than point source issues. The abatement of nonpoint source (NPS) pollution is an effort that requires the combined activities of many organizations at both a state and local level. In turn, success is contingent upon multi-agency/multi-jurisdictional approaches; in any case, partnership and stakeholder involvement is crucial. Fortunately, Texas has many programs to address nonpoint source pollution abatement, and many state agencies are involved in this endeavor.

Leadership for the abatement of nonpoint source pollution within the state of Texas is divided between two agencies. The Texas State Soil and Water Conservation Board is responsible for addressing agricultural and silvicultural NPS pollution. The Texas Commission on Environmental Quality is responsible for managing urban and other NPS pollution. In addition, other state agencies have programs and responsibilities which play an integral part in managing nonpoint sources of pollution. Some aspects of the state’s program, such as water quality monitoring, may be contracted to research institutions, private consulting firms, or state or local government agencies.

The following report reflects current projects and the progress of programs in our State for Fiscal Year 2002. The report highlights programs which reduce and/or prevent NPS pollution and thus restore water quality so we may ensure the quality of our water resources for future generations of Texans.



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James D. Thomas  
Director, Technical Analysis Division  
Texas Commission on Environmental Quality



Bobbie H. Stephens  
Director of Administration  
Texas State Soil and Water Conservation Board

## What is Nonpoint Source Pollution?

NPS pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. Nonpoint source pollution occurs when sediment, nutrients, organic and toxic substances originating from land use activities are carried to lakes and streams by surface runoff. As the runoff moves, it picks up and carries away natural and human-made pollutants, depositing them into lakes, rivers, wetlands, coastal waters, and even underground sources of drinking water.

Pollution may alter the chemical, physical, biological and/or radiological integrity of water. Impairment occurs when the rate at which pollutant materials entering water bodies or ground water exceeds the water's natural capacity to assimilate them.

## Texas Nonpoint Source Pollution Program

Because of the great spatial distribution and diversity of the Texas landscape, the voluntary preventative effort of citizens, businesses, service organizations and other groups is an essential part of the campaign to address NPS pollution in Texas.

NPS management requires the combined activities of many organizations at both a state and local level. Fortunately, Texas has several programs to address NPS pollution. Many state agencies are involved in this endeavor.

The mission of the state's NPS program, as indicated in the 1999 Texas Nonpoint Source Pollution Assessment Report and Management Program (TCEQ, SFR-068/99), is to protect the quality of water resources in Texas from adverse effects of NPS pollution. This protection is provided through cooperative implementation of a diverse range of strategies emphasizing pollution prevention, a watershed approach, and community involvement.

The state's current management program was approved by the EPA on February 25, 2000. The Clean Water Act Section 319(b) requires the state management program to include, among other things, a schedule containing annual milestones for utilization of the program implementation methods and implementation of best management practices identified in the management program. Chapter eight of the current management program lists the state's milestones through 2001. The Annual Report provides the opportunity for the State to report on the status of accomplishing these milestones. Even though the milestones have expired, it is assumed that many of the milestones in the management program will be renewed. Therefore, throughout this report the status of a few of the state's milestones are highlighted. Efforts are currently underway to update the Texas Nonpoint Source Management Program.



## Key Terms

**Best Management Practices (BMPs)** – practices or combinations of practices that are the most effective practical means of preventing or reducing the amount of pollution generated by nonpoint sources.

**Stakeholder** – any person or organization involved in or affected by watershed management activities, including the general public, environmental organizations, and the regulated community.

**Total Maximum Daily Load (TMDL)** – a technical analysis that: (1) determines the maximum amount of a pollutant that a water body can receive and still both attain and maintain its water quality standards; and (2) allocates this allowable amount (load) to point and nonpoint sources in the watershed.

**TMDL Implementation Plan** – a detailed description and schedule of the regulatory and voluntary management measures necessary to achieve the pollutant reductions identified in the TMDL. The implementation plan is prepared by taking into account naturally occurring levels of the pollutants, the nature of existing permitted and non-permitted human sources, the content and expiration dates of existing permits in the watershed, the potential for future growth, and any other known significant factors.

**Watershed** – a geographic area in which water, sediments, and dissolved materials drain into a common outlet. This outlet could be a stream, lake, playa, estuary, aquifer, or ocean. Watersheds are also commonly called basins or drainage areas.

**Watershed Action Plan** – the combination of a TMDL and its implementation plan. The watershed action plan provides local, tribal, regional, state, and federal organizations with a comprehensive strategy for restoring and maintaining water quality in an impaired water body.

**Water Quality Management Plan (WQMP)** – a site-specific plan which includes appropriate practices, management measures, and technologies to address water quality considerations for a farm, ranch, or forestry operation. These WQMPs are then certified by the TSSWCB.

## NPS Grant Program

Section 319 of the Clean Water Act (CWA) provides for a national NPS water pollution prevention and control program. Through the grant program established under Section 319(h), the Environmental Protection Agency (EPA) provides funding to Texas to achieve the statutory goals of the Act.

The Section 319(h) grant funds are appropriated annually by Congress to the EPA. The EPA then awards the grant to the states. In Texas, the grant is equally divided between the Texas State Soil and Water Conservation Board (TSSWCB) and the Texas Commission on Environmental Quality (TCEQ). These agencies are responsible for maintaining and implementing a statewide NPS Assessment Report and Management Program to satisfy the federal requirements contained in Section 319.

Section 303(d) of the CWA requires states to develop a list of water bodies that do not meet, or are not expected to meet, state water quality standards. Those waters identified on the 303(d) list with impairment due wholly or in part to NPS pollution comprise the state's list of NPS-impacted waters, which is required under Section 319(a).

The TSSWCB and the TCEQ target a majority of NPS grant funds toward implementation and education projects within the watersheds of NPS-impaired waterbodies on the state's most current 303(d) list. However, 319(h) dollars are also used to assess water bodies, address threatened waters, and work in waters to prevent pollution. Additionally, grant funds are used to develop total maximum daily loads (TMDLs) and to implement management practices that support attainment of the restoration goals established in TMDLs.

## Watershed Management Approach

Texas has adopted a watershed approach to consider all potential sources of pollution and effectively allocate resources to develop the means necessary to protect and restore water quality. The

watershed approach is the mechanism through which the State works with local stakeholders, who have an interest in water quality, to provide the context within which the State carries out its nonpoint source management responsibilities.



## Stakeholder Participation

The TCEQ and the TSSWCB NPS Programs have established a statewide stakeholder workgroup comprised of members of the existing Clean Rivers Program (CRP) Stakeholder Workgroup and numerous representatives from other organizations directly affected by and interested in the State's NPS Program. Members represent approximately 150 state, regional, and local government agencies, along with citizen, environmental, and industry groups. The two agencies meet with stakeholders to present information on statewide NPS goals, showcase 319 projects, and discuss new opportunities for coordination and project collaboration. The workgroup meets annually to review progress, provide feedback on adequacy of accomplishment, identify stakeholder priorities, and suggest options for the future direction of the programs.

**MILESTONES**  
This milestone was met by conducting public presentations throughout Texas to promote participation in the development of watershed action plans and the implementation of nonpoint source management strategies and controls.

On May 14, 2002, more than 100 participants attended the FY 02 Stakeholders Workgroup meeting in Austin. This session focused on the connection between the Clean Rivers and the NPS Programs and how they can be effectively coordinated to identify nonpoint source problems and implement strategies to correct those problems. Presentations included a discussion on the goals and objectives of the NPS Pollution Assessment and Management Program, and an overview of the 319(h) grant program. A subcommittee was formed to assist the TCEQ and TSSWCB in updating the State's present management program during the upcoming fiscal year.

## Water Quality Coordination Team

The Water Quality Coordination Team (WQCT), established by TCEQ, is a group of representatives from each of TCEQ's water quality programs. This group meets biweekly to coordinate and communicate a multitude of water quality issues and activities, including assessment, standards, TMDLs, permitting, watershed initiatives, and grant priorities. The WQCT evaluates and recommends State water quality priorities for the TCEQ and discusses options for how those priorities might be addressed. The WQCT evaluates grant proposals based on policy priorities and provides funding recommendations to TCEQ management.



The combined efforts of all the partners are necessary for effective management of NPS pollution. While the heart of Texas' assessment work is coordinated water quality monitoring, the assessment section highlights strategies to address specific NPS problems.

## Coordinated Water Quality Monitoring

The TCEQ Surface Water Quality Monitoring (SWQM) Team is tasked through the Clean Water Act to ensure surface water quality monitoring efforts are coordinated to reduce duplication, align monitoring sites with priorities, and make efficient use of limited resources. This duty is accomplished annually by conducting a Monitoring Coordination Meeting for each river basin in Texas. The CRP Planning Agencies prepare materials, invite monitoring entities from throughout the basin, host the meetings, and prepare the final approved monitoring schedule outlining each entity's monitoring commitments. Typical attendees include river authorities, water districts, state agencies, TCEQ's Region Office personnel, USGS, municipalities, industry, and other



local monitoring partners that agree to meet the quality assurance requirements of the TCEQ. These meetings allow for direct integration of local, regional, and state water quality monitoring priorities and allocation of resources to address these priorities.

The water quality data collected by the participating entities is used to develop CWA§305(b) Texas Water Quality Inventory and the 303(d) List of Impaired Waters. The Inventory and List identify those water bodies not meeting the Texas Water Quality Standards and screening levels and also indicate whether nonpoint source pollution is a contributing factor as required by CWA§319(a). Those water bodies indicating nonpoint source pollution as a reason for not meeting standards and screening levels are then prioritized for 319(h) grants.

### MILESTONES

This team was able to demonstrate its milestones by collection of water quality data by contracted planning agencies and local governments.

## Total Maximum Daily Load Program

Texas' most comprehensive effort to restore water quality in impaired surface waters is called the TMDL Program. A TMDL is a technical analysis which determines the maximum amount of a specific pollutant a body of water can receive and still meet its water quality standards. After a TMDL is completed, an implementation plan is developed describing the regulatory and voluntary activities necessary to achieve the pollutant reductions identified in the TMDL. The best strategies for each individual watershed are developed in cooperation with regional and local stakeholders.



When the TMDL program was implemented in 1997, the TSSWCB and TCEQ focused on water quality problems that were better understood and originated from known sources. Many of those TMDLs were completed in a relatively short amount of time with minimal cost.

Now the State is focusing on more complicated issues, like impairments from toxic substances, metals, organics, bacteria, and salts, and the link between dissolved oxygen concentrations and healthy aquatic communities. For example, dioxin and mercury impairments both have complex interactions with the environment and can be traced to diverse, widespread sources. These projects require more time and funding. The results, however, will be an improved understanding of the origin of these problems and how scientifically sound solutions can protect human health.



### ***Bacteria Contamination: A Widespread Problem***

More than thirty percent of the water quality problems identified in 1998 were for contact recreation and oyster harvesting in waters with high bacteria counts. The presence of high levels of bacteria indicate a possible health risk due to elevated densities of pathogens—bacteria, viruses, and protozoans that can cause disease.

Like most states, Texas does not directly monitor pathogens because of the difficulty and expense of measuring them. Instead, it tests for the presence of organisms that indicate the likely presence of pathogens, such as *E. coli* in fresh water and *Enterococci* in tidal and marine waters.

When routine monitoring identifies elevated bacteria levels, the next step is to determine the source of contamination. Finding the origin of this kind of contamination can be difficult, considering all the possible sources. That is where bacterial source tracking comes into play. Bacterial source tracking techniques are based on the premise that different warm-blooded animals harbor different types of microbial organisms. By determining what these differences are, at the molecular and physical level, the host animal (e.g., human, livestock, or wildlife) may be identified.

Many new and improved tracking techniques have emerged in the past decade. Some use genetic testing, while others involve biochemical testing on the samples and observation of any physical changes to the organisms. The TCEQ relies on these techniques to learn more about these contaminants and their origins and, ultimately, to control man-made sources of contamination.

### ***Improving Water Quality in the Bosque River***

In 2001, the TSSWCB and TCEQ developed a TMDL for phosphorus for two segments in the Bosque River basin. This basin has an extraordinary concentration of dairy operations. In August 2002, the TCEQ published an implementation plan for these segments for public comment. The primary proposals are: (1) placing permit limits on phosphorus application rates in waste application fields; (2) revising feed management for dairy cows to reduce the phosphorus content of dairy waste; (3) removing about half of the dairy-generated manure from the watershed for use or disposal outside the

#### **MILESTONES**

Milestones were met in the North Bosque River by the development of a watershed action plan designed to further reduce loadings and satisfy the TMDL requirements of section 303(d) of the Clean Water Act.



watershed (See article: *North Bosque/Leon Rivers Composted Dairy Manure Project*); and, (4) placing effluent limits on phosphorus for municipal waste water treatments plants along the Bosque River. Participation by dairies in some elements of the implementation plan will be voluntary and some control measures will be included in their registrations and permits.

After the public commented on the implementation plan, TCEQ Commissioners approved it on December 13, 2002. This plan will be implemented by both the TCEQ and the TSSWCB. The TMDL and implementation plan are intended to provide local, regional, and state organizations a comprehensive strategy for restoring and maintaining water quality in the Bosque River. The success of these measures will be based on water quality results. The watershed will continue to be monitored extensively.

### ***E.V. Spence Reservoir TMDL***

Levels of sulfate and total dissolved solids (salinity) affecting the E.V. Spence Reservoir and its use for drinking water were identified on the 1998 303(d) List. Two TMDLs were approved and adopted by the TCEQ in 2000, EPA approval is pending. The *Implementation Plan for Sulfate and Total Dissolved Solids TMDLs in the E. V. Spence Reservoir* was approved by the TCEQ on August 10, 2001. The TCEQ and the Railroad Commission of Texas have leveraged 319 grant funds with an existing state funded program to plug oil and gas wells in this watershed. (See article: *Railroad Commission of Texas-Saltwater Discharge Minimization Projects*)

**MILESTONES**  
The E.V. Spence TMDL met its milestone by developing a watershed action plan to improve water quality in the E.V. Spence Reservoir which satisfied the TMDL requirements of section 303(d) of the Clean Water Act.

### ***Salado Creek TMDL***

Low levels of dissolved oxygen in Salado Creek, which may harm fish and other aquatic life, were identified on the 1998 303(d) List. In response to these conditions, a TMDL project was initiated to determine the measures necessary to restore water quality in Salado Creek. The TMDL determined that there was additional capacity in Salado Creek to assimilate oxygen-demanding materials. Existing loadings of oxygen-demanding materials do not exceed the assimilative capacity of the creek, and do not cause a violation of state water quality standards, therefore, a TMDL implementation plan is not necessary. Actions are being undertaken at the local level to preserve and enhance water quality. Measures include the introduction of re-use water to supplement the base flow in the stream, the rehabilitation of the sewage collection system in the watershed, establishing additional park areas along the creek, public education, and continued water quality monitoring.

**MILESTONES**  
The Salado Creek TMDL met its milestone by improving its water quality with the development of a watershed action plan designed to satisfy the TMDL requirements of section 303(d) of the Clean Water Act.

### ***Atrazine***

Atrazine is a commonly used broadleaf herbicide applied to corn and sorghum. It effectively reduces crop losses due to weed interference by disrupting the weed's photosynthesis process. When the food process stops, the weeds eventually starve to death. However, too much atrazine runoff in a body of water can be harmful to plants, animals, and possibly humans.

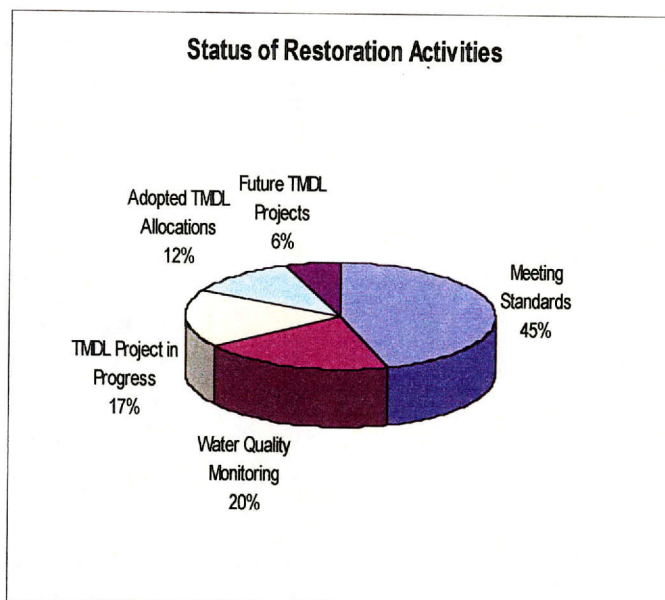


Nine water bodies were listed for atrazine in the 1998 State of Texas 303(d) List (Aquilla Lake, Bardwell Reservoir, Joe Pool Lake, Marlin City Lake System, Lake Waxahachie, Big Creek Lake, Lake Tawakoni, Lake Lavon, and Richland-Chambers Reservoir). Two more were listed for atrazine in the 2000 State of Texas 303(d) List (Navarro Mills Lake and Little River). Listings were based on atrazine concentrations in finished drinking water samples. In Aquilla Lake, the 3 ug/L atrazine maximum contaminant level (MCL) for finished drinking water was violated by exceeding the running annual average based on quarterly monitoring. As a result, Aquilla Lake was listed as impaired on the 1998 State of Texas 303(d) List, and a TMDL was approved by the EPA in December 2002. The other lakes were listed as threatened, that is, there was no violation of the MCL but the strong potential for a violation exists. Of these lakes, the Marlin City Lake System is being addressed by building on the Source Water Assessment and Protection Project.

Sampling on seven of the water bodies listed as threatened for atrazine on the 1998 State of Texas 303(d) List began in April of 2000. Sampling on the two water bodies listed as threatened for atrazine on the 2000 State of Texas 303(d) List began in October of 2001. Samples are still being collected.

### ***The Status of Restoration Activities***

The most recent EPA-approved list of impaired waters in 1998 cited 259 water quality impairments in 147 of Texas' water bodies. Work is already underway to address 94 percent of these impairments. Forty-five percent of the impaired bodies listed in 1998 are now meeting water quality standards; in some cases, this is because additional monitoring did not verify the listed impairment, but showed the standard was supported. TMDL allocations have been adopted for 12 percent, and TMDL projects are in progress to address 17 percent. Water quality monitoring is being conducted for another 20 percent to determine if a TMDL is needed. About 6 percent of impairments will be addressed in upcoming TMDL projects.



### **On-site Sewage Facility Program**

Texas has approximately 1.5 million households relying upon on-site sewage facilities (OSSFs) for wastewater disposal. The numbers are increasing at a high rate each year. Failing OSSFs have been identified as a potential threat to public health and the environment; however, until now, there has been no data to indicate the magnitude of failing OSSFs in Texas.

In 2000, the Texas On-Site Wastewater Treatment Research Council funded the "Study to Determine the Magnitude of, and Reasons for, Chronically Malfunctioning On-Site Sewage Facility Systems in Texas." The study was completed in September 2001 and was based on a survey of the individuals regulating the OSSF Program at the local level. The study examined the issues and trends important for



each of five geographic regions of Texas. This investigation estimates approximately twelve percent of the OSSFs in Texas are considered malfunctioning and may be contributing to nonpoint source contamination. This number is higher in the eastern part of the state where a project to replace failing systems is currently underway. This project is described in the *2001 Annual Report: Texas Nonpoint Source Pollution Management Program (Reducing NPS Impacts from Septic Systems)*.

The reasons given for failures include improper soil evaluations resulting in the wrong system being installed, older systems reaching the end of the system's life, OSSFs improperly installed prior to development of regulations, lack of maintenance, and the homeowners not being informed about their systems.

The entities delegated to regulate the program at the local level have the authority to enforce the rules and require correction of failing systems. However, correction requires a financial investment from the homeowners who often lack the necessary funds. Therefore, enforcement of regulations is often limited, the systems continue to fail, and contamination persists.

## **Brazos River Authority - Lake Granbury Monitoring Study**

Construction of Lake Granbury was completed by the Brazos River Authority (BRA) in 1969. The population living on or near the lake has grown approximately 16 percent each year since its completion. Approximately 300,000 tourists visit the area annually. Growth and tourism have brought prosperity to the area along with a major water quality concern. The large number of septic systems around the lake may be impacting water quality. The Hood County Health District is the designated representative over septic systems in the county and possesses enforcement authority on behalf of TCEQ.

BRA has identified several areas where additional monitoring is needed to quantify the impact of septic systems. Most of the inhabited areas around the lake exist on man-made coves. The coves are shallow, dead-end bodies of water with little mixing or interaction with the main body of the reservoir. Monitoring of Lake Granbury has been inadequate to assess impacts from septic systems concentrated around the coves.

The Lake Granbury *E. coli* Monitoring Study, which began in May 2002, will collect the data necessary to assess impacts on the coves by septic systems. This study is being conducted by the Brazos River Authority and is partially funded by the TCEQ's Clean Rivers Program. The study is scheduled to be completed by August 2003. Sampling will be conducted at strategic locations on Lake Granbury. The locations were selected based on the findings of the 1995 study, which identified areas of potential poor water quality and/or a public health concern. Forty-five locations in thirteen subdivisions using septic systems as their primary means for waste disposal were selected for monthly monitoring. Additionally, five sites in two subdivisions disposing of wastes via the City of Granbury's sewage treatment system were selected for comparison purposes.

Water quality monitoring includes collection of physical and chemical data along with field bacteria samples and nutrient samples. Laboratory analyses include

### **MILESTONES**

The BRA helped the CRP meet its milestones by coordinated targeted assessments by contracted planning agencies and local governments to fill identified data gaps.



nitrite+nitrate nitrogen, orthophosphate phosphorus, and *E. coli*. Data will be compared against the TCEQ water quality standards and screening levels.

Information generated during this study will be distributed to the TCEQ, Hood County, the City of Granbury and other agencies within the county. Preliminary investigations indicate some coves may be negatively impacted by septic systems.

## **The City of Denton's Watershed Protection Program**

The City of Denton is located in north central Texas within the Lewisville Lake watershed, which drains a major portion of the Elm Fork of the Trinity River. Public safety concerns, a desire to protect environmental resources, and storm water regulatory requirements of the National Pollutant Discharge Elimination System motivated the city to develop a watershed protection program in 2001. This program is part of a five-year plan to reduce overall pollutant loadings in the three sub-watersheds of the Elm Fork Watershed within the City of Denton. The City has adopted a watershed-based framework for water resource protection and management. This approach made the most sense because it is based on the geographical characteristics of the ecosystem's hydrology.

The City has also implemented structural, non-structural and educational BMPs at their own expense. Structural BMPs have been designed and installed in the Elm Fork Watershed to address nonpoint source pollution problems. The City recently adopted development codes (non-structural BMPs) with criteria that specify an area draining less than or equal to one square mile must have a 50 foot riparian buffer on either side of the site's stream, swale, or other drainage conveyance. This criteria, along with existing monitoring data, will be used to develop data on urban riparian buffer zones. One of the most effective BMPs to address water quality issues is education. Urban NPS problems can be prevented or minimized by empowering citizens with the knowledge necessary to make informed decisions about how their actions affect water quality.

The City of Denton has designed and implemented a water quality monitoring program to document the effects of the City's BMPs. Monitoring data currently collected by the city can be used to determine the effectiveness of these and future BMPs as they are implemented. Information on water quality within the watersheds is compiled and displayed in an easily understood geographical format and made available to the public via the internet. Realtime water quality data from the area is available at: <http://www.ecoplex.unt.edu>. More information can be found at the City's Web site: <http://www.cityofdenton.com/pages/utlswaterwatershed.cfm>.



## **Implementing Programs to Prevent and Reduce Pollution**

The success of reducing NPS pollution depends upon state and local officials, planners, developers and citizens. Technical assistance and outreach is an integral component of implementation efforts. Much of the implementation takes place at the watershed level; however, local and state wide implementation are also supported by statewide programs.

While TSSWCB and TCEQ share the leadership role in the Texas NPS program, other agencies are also active in NPS pollution management. The Texas Water Development Board administers the State Revolving Fund to provide loans to political subdivisions for NPS pollution and storm water control projects. Technical assistance and BMP information is provided to landowners and agricultural producers through various state agencies including the Texas Department of Agriculture, Texas Cooperative Extension, and the Texas Agricultural Experiment Station, through a variety of outreach programs and projects demonstrating proper soil, land, and waste management practices.

Numerous regional governments and private organizations facilitate pollution prevention at the local level. River authorities, counties, municipalities, councils of government and citizen groups implement programs to promote a hands-on public participation and awareness campaign of NPS pollution and prevention. Examples of these activities include household hazardous waste collection days, storm drain stenciling, trash clean up events and volunteer monitoring. In addition, several municipalities have enacted local ordinances to control storm water runoff, prohibit illicit storm drain connections, and limit development in environmentally sensitive watersheds. During 2002, Texas stakeholders pursued implementation strategies as diverse as the sources of NPS pollution. Featured here are some of the best of those efforts.

## ***Regulatory***

### **Lower Colorado River Authority NPS Management Programs**

In 1986, the Lower Colorado River Authority (LCRA) actively participated with the TCEQ predecessor agency, the Texas Water Commission (TWC), to enact a ban on pollutant discharges into the Highland Lakes of Central Texas. With point sources addressed, and with a development boom occurring around the Highland Lakes, the LCRA shifted its focus to nonpoint source pollution, especially pollution generated by construction activity. To achieve this, the LCRA enacted two ordinances which are among the first water quality protection ordinances in the State implemented by a river authority. Both ordinances target three pollutants for removal: total suspended solids; total phosphorus; and, oil and grease.

In February 1990, the Lake Travis NPS Ordinance was implemented for the Lake Travis watershed in Travis County. This ordinance requires a varying percentage (70% to 90%) of



pollutants generated from the site be removed based on the development's proximity to Lake Travis and the slope of the land.

Subsequently, in March 1992, the LCRA implemented a new ordinance which covers all of Llano County and the portion of Burnet County in the Colorado River watershed. This ordinance is slightly different than the Lake Travis Ordinance. The Upper Highland Lakes Ordinance requires an even 70 percent removal of the three targeted pollutants from a developed site.



LCRA staff developed a technical manual to assist developers in meeting the standards of the ordinances. The TCEQ and the EPA both recommend LCRA's manual to communities, developers, and public officials as a helpful tool that incorporates current technical information. LCRA allows developers to choose which types of BMPs will be used to meet the standards of the ordinance from a BMP menu. The manual is in its third edition, reflecting changing technology and recent data.

To date, LCRA has permitted more than 24,000 acres of land regulated by the two ordinances. Most permitted tracts are subdivisions using low impact development techniques such as sheet flow from streets, grass lined water ways, filter strips, conservation easements, and low development density. Commercial properties typically include BMPs such as sedimentation/ filtration ponds, wet ponds, and extended detention facilities. LCRA monitored a commercial site in Marble Falls that utilized extended detention in combination with a wet pond, and found more than 90% removal of total suspended sediment.

LCRA encourages the use of disconnected storm water drainage systems, filter strips, grass swales, and other natural techniques which take advantage of vegetation, to achieve pollutant reduction goals and reduce storm water runoff volume and rate. Use of passive systems to manage storm water results in a reduction in cost to the developer, minimizes long-term maintenance costs and health and safety issues, and improves site appearance.

## **Supplemental Environmental Projects**

When a company faces a TCEQ enforcement action, it may negotiate an agreement to contribute to a Supplemental Environmental Project (SEP) in return for an offset of the administrative penalty imposed in the enforcement action. SEPs are defined as projects which prevent pollution, reduce the amount of pollution reaching the environment, enhance the quality of the environment, or contribute to public awareness of environmental matters. Many of these projects in 2002 were NPS projects. Examples include repair or replacement of failing OSSFs, plugging abandoned wells, collection of household hazardous waste, cleanup of illegal dump sites, local fire department hazardous spill response capabilities, and stabilization of stream banks and shorelines.

In 2002, several companies chose to offset half their administrative penalties by contributing to a Household Hazardous Waste (HHW) project being implemented by the City of Houston. The City of



Houston coordinates and manages an HHW Collection Facility which is open to the public two days per week. This facility accepts hazardous waste common to households including, but not limited to paint, paint thinners, pesticides, oil and gas, corrosive cleaners, and fertilizers. The City of Houston uses SEP monies solely for the direct costs of collection, recycling, and disposal of HHW.



A central Texas firing range was cited by TCEQ for allowing discharges of shotgun pellets from their firing range to accumulate in a nearby creek. The company offset half its administrative penalty by contributing funding to plug an abandoned water well in Kendall County as its SEP contribution. Abandoned wells are a direct channel for contaminants to reach ground water and pose a safety threat to humans and wildlife. This SEP provides a discernible environmental benefit by reducing the threat of contamination of state ground water supplies.

### **Beneficial Sludge/Biosolids Use Program**

Under this program, sludge and biosolids are applied to agricultural lands to enrich the soil instead of being land filled as waste. An operator must apply to the TCEQ for a permit to construct and operate such sites.

TCEQ surface water quality monitoring has identified problems with multiple water bodies in north central and southeast Texas which appear to be associated with runoff from sludge-use facilities. In order to address these concerns, the TCEQ conducts site inspections to assess sludge-use sites in selected basins in the target areas. Initial assessments identify specific water bodies that require further attention and initiate activities necessary for the reduction of pathogens, organics, and metals contained in contaminated storm water from mismanaged sites.

**MILESTONES**  
This program met its milestones by providing technical assistance to achieve compliance with permit limits.

The Texas Legislature passed a law in 2001 requiring all beneficial land use sites applying Class B wastewater treatment plant sewage sludge to obtain a new TCEQ individual permit before September 1, 2003, in order to continue operations. The legislation requires the applicant to provide information on the hydrologic characteristics within one-quarter mile of the site. This information will address soil permeability, recharge features, shallow groundwater, and runoff to surface water. Solutions for these types of problems include not applying sludge to a restricted area, or developing a management plan which recognizes and addresses site limitations.

### **Revisions of TCEQ Manure Management Rules**

Passage of House Bill 2912 during the 78th Session of the Texas Legislature required changes in TCEQ rules (Title 30, Texas Administrative Code, Rule 321.48) governing management of manure from any new or expanded dairy herds in particular areas of the state. This new requirement applies to "major sole-source impairment zones," such as the North Bosque River watershed, which provide the primary flow to a drinking water reservoir of a large municipality and which have an identified impairment related to pathogens and phosphorus which has been addressed in a TMDL. All the manure from such additional animals in confinement must now be managed using one or more of the following methods: beneficial use or disposal as industrial waste outside the watershed; delivery to an



approved compost facility; applied to land owned or controlled by the dairy under specific requirements such as an approved Nutrient Utilization Plan; or, other beneficial use approved by the Executive Director of TCEQ.

## *Non Regulatory*

### **Texas Department Of Transportation - Litter Prevention Programs**



Photo courtesy of TxDOT

The Texas Department of Transportation implements storm water management measures during the construction and maintenance of State roadways to minimize NPS pollution. Their litter prevention programs also address nonpoint sources of pollution. Discarded trash, such as cigarette butts, polystyrene, plastics, paper wrappers, bottles and cans, is generally most visible since much of it floats and is identifiable. Wind and rain can carry litter and debris to streams, rivers, and lakes. Toxic chemicals from plastic containers, decomposing rubbish, and non-biodegradable waste can threaten water quality and harm aquatic life. Much of this trash accumulates along Texas roadways. The Texas Department of Transportation (TxDOT) maintains more acres of right-of-way than any other state department of transportation in the United States. After years of collecting an increasing amount of trash from the state highways, the agency realized a public service campaign was needed to educate Texans about litter prevention. Two of the main components in the campaign include the Adopt-a-Highway (AAH) program and the Don't Mess with Texas (DMWT) program.

TxDOT estimates the AAH program saves Texas around \$3 million annually. This program concept has been adopted by 47 other states and several foreign countries. The popularity of the AAH program foreshadowed the success to come with the media-based litter prevention campaign, DMWT.

In 1986, TxDOT secured a local, award winning, advertising agency to develop a litter prevention campaign to encourage motorists to stop littering. Better known as "Don't Mess with Texas", this program was the first of its kind in the world. Over the years, the DMWT campaign has grown to reach a variety of audiences. In 1998, the DMWT Partners program was established to allow entities to donate in-kind goods and services to the campaign. Today more than 100 Partners have joined the program to show their support of the DMWT program. Every April, TxDOT coordinates the one-day DMWT Trash-Off. On April 2002, an estimated 60,000 volunteers hauled nearly one million pounds of litter from Texas highways and cities. Roadside litter in Texas has decreased by 52 percent since 1995.

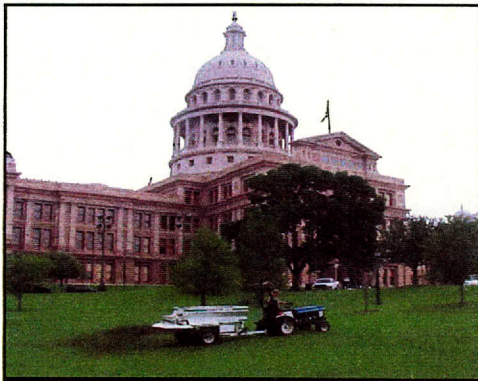
The program periodically reinvents itself to target the proper audience. In 1998, research showed Texas' most active litterers are youths between the ages of 16-24. With this marked change in the target audience, a new logo was created to update the image of the campaign and a series of new public service announcements was launched which included a focus on reducing fast food trash. A Spanish language media campaign was also launched. For more information, visit the Web site at: [www.dontmesswithtexas.org](http://www.dontmesswithtexas.org).





## North Bosque and Leon Rivers Composted Dairy Manure Project

In a move to address water quality in the North Bosque River, the Texas Legislature placed more stringent requirements on new or expanding dairy operations in the Bosque and Leon River watersheds. Studies by several agencies have identified phosphorus (a nutrient), contributed by dairy farms and municipal sewage plants, as a major cause of degraded water quality. A primary proposal of a TMDL implementation plan to address the problem, is to remove about half of the dairy generated manure from the watershed.



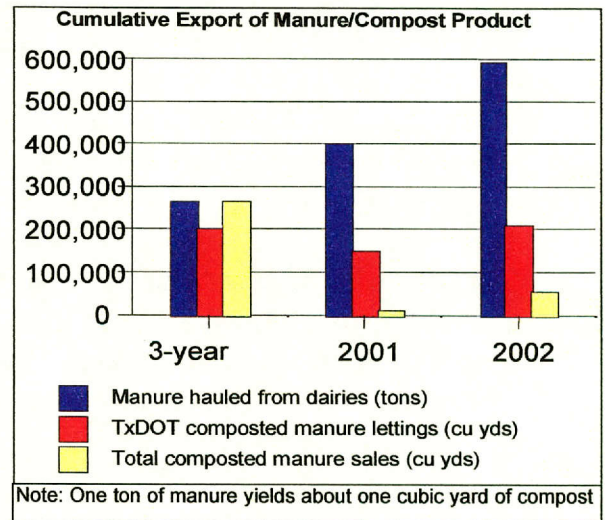
The Texas State Preservation Board used 223 cubic yards of composted manure to top-dress the lawn of the Texas State Capitol on May 2, 2002.

The TCEQ and TSSWCB have been working with local dairy farmers and composters to convert manure into compost for public and commercial purposes. Initiated jointly by TCEQ and TSSWCB in September 2000, this innovative project has made significant progress toward tackling the elevated phosphorus levels in the North Bosque and the Leon River. The export and composting of phosphorus-rich dairy manure from these watersheds, providing value-added product for uses such as erosion control, continues to grow.

This market-driven export has been accomplished by a home-grown manure composting industry of seven approved facilities within these watersheds. This project helped establish these facilities through intensive technical, transportation, and marketing assistance.

As the chart demonstrates, the project in its first year exceeded its goal to remove 263,400 tons of manure from dairies in these watersheds. By the end of 2002, it had exceeded twice the goal amount. In 2002 TxDOT, the primary compost user under this project, also exceeded its project goal of making purchase commitments (“lettings”) for 200,000 cubic yards of composted manure from this program.

Most of the dairy manure collected through this program continues to be composted. A large percentage of the composted manure remains in storage. TxDOT’s projects often do not need the compost for a year or more after a letting is issued.



### MILESTONE 1

TCEQ provided 21 workshops, 19 compost-use demonstrations, a statewide news release, web announcement, and several other presentations in 2002 to promote beneficial compost uses.

However, compost sales under the program are now increasing as more and more TxDOT compost orders come due. As a result of the positive experience TxDOT has had with compost under this project, its compost use has greatly expanded statewide even where the \$5 per cubic yard purchase incentive is not available.



Also in 2002, Texas Cooperative Extension (TCE) became a partner with the project to build governmental compost markets beyond TxDOT. TCE provides demonstration, education, and promotion of cost-effective composted manure uses through its research and extension network.

**MILESTONE 2**  
This project helped reduce agricultural and other loadings in the North Bosque River which will help bring the river into compliance with the State of Texas water quality standards.



## **TSSWCB Water Quality Management Program**

What began as Senate Bill 503 of the 73rd Legislature in 1993 has matured in nine years into the Water Quality Management Program. The program addresses abatement of agricultural and silvicultural NPS pollution by administering a Water Quality Management Plan and Cost-Share Program through local Soil and Water Conservation Districts (SWCDs). Five Regional Offices in diverse areas of the state, which assist districts, facilitate the total program. Also included is a water quality complaint handling process that enables producers to voluntarily comply with water quality laws. Since 1994, over 6,100 Water Quality Management Plans spanning the entire spectrum of agricultural and silvicultural activities have been certified by the TSSWCB. These plans cover nearly 2.5 million acres of Texas' farm, ranch and forestry land. The enthusiasm of agricultural producers provides a constant backlog of plans to be developed to address water quality at a local level.



## **Abatement of Nonpoint Source Pollution from Poultry Operations**

The passage of Senate Bill 1339 during the 77th Session of the Texas Legislature R.S. required all poultry facilities in Texas to develop and maintain Water Quality Management Plans (WQMPs) certified by the TSSWCB. The new law provides a staggered-schedule of deadlines by which each producer, depending on their initial date of operation, must submit a WQMP to their SWCD and the TSSWCB for certification.

**MILESTONE 1**  
The program met one milestone by developing a comprehensive training manual for dairy, feedlots, poultry, and swine facilities.

The TSSWCB currently has certified approximately 6,100 total WQMPs, including more than 800 poultry WQMPs. The passage of S.B. 1339 is expected to push that figure to approximately 1,500 poultry WQMPs by the end of 2008.

The TSSWCB may refer any producers not complying with the law or their respective WQMP to the TCEQ for enforcement action. However, this act also offers a level of protection for poultry producers despite the added requirements. Enforcement action cannot be brought against the facility as long as the poultry facility is operating in accordance with the WQMP.

**MILESTONE 2**  
This program met a second milestone by conducting annual continuing education training courses for dairy, feedlots, poultry, and swine facilities.

The TSSWCB continues to manage seven projects in East Texas designed to provide funding for technical assistance and direct cost-sharing of WQMP implementation. Funding is provided for projects by Section 319(h) of the Clean Water Act. These projects are located in the nine counties exhibiting the highest concentrations of poultry operations that coincide with the numerous impaired waterbodies in East Texas. As of September 30, 2002, approximately 250 poultry WQMPs have been certified as a result of these projects.





## Atrazine

Currently in Texas there are seven lakes listed on the State of Texas 303(d) list for high concentrations of the herbicide atrazine in drinking water. These lakes are listed as threatened because the average of quarterly samples taken exceeded half of the maximum contaminate level (MCL). The MCL for atrazine is 3 ppb (parts per billion).

The TSSWCB works cooperatively with the Soil and Water Conservation Districts, Natural Resource Conservation Service (NRCS), Texas Cooperative Extension (TCE), Texas Department of Agriculture (TDA), and Texas Agricultural Experiment Station (TAES) to provide water quality education, BMP demonstration, and technical/financial assistance to corn and sorghum producers.

The TSSWCB, in cooperation with fifteen local Soil and Water Conservation Districts (SWCDs), is implementing several atrazine remediation projects. These projects provide corn and sorghum producers educational opportunities and technical/financial assistance aiding in the implementation of Best Management Practices (BMPs) as related to the abatement of atrazine runoff. BMPs may include, but are not limited to, buffer strips, terraces, grassed waterways, and integrated pest management.

To date, the cooperating SWCDs have compiled a list of 365 requests for WQMP assistance; of those, 203 WQMPs are developed and certified by the TSSWCB. All projects represent a combined total of \$2,860,000 in cost share availability.

### MILESTONES

The Atrazine Action Plan met its milestones by identifying key watersheds supplying water to the various distribution systems. They also developed committees for each waterbody to involve local stakeholders in the Atrazine Action Plan. The Plan identified large acreage producers and met with the growers to discuss the atrazine issue, BMPs that may fit their operation, alternative chemicals, and document the decisions in the conservation plan. The Plan also funded BMP installation as needed through programs such as EQIP, Buffer Initiative, Senate Bill 503, and others.

## Natural Resource Conservation Service

Administered by the NRCS, the Environmental Quality Incentives Program (EQIP) provides technical, educational, and financial assistance to agricultural producers to address resource concerns. The TSSWCB and Texas' Soil and Water Conservation Districts (SWCDs) actively promote landowner participation in EQIP.

In 2002, thirteen special emphasis areas were addressed where water quality was identified as the primary resource concern. Representative of these emphasis areas are 349 EQIP plans and contracts totaling 110,612 acres. Each conservation plan is developed according to the current NRCS Field Office Technical Guide (FOTG). The Environmental Quality Incentives Program offers producers 1 to 10 year contracts providing incentive payments and cost share to implement conservation practices called for in each plan. Some conservation practices common to the program are grassed waterways, filter strips, manure management facilities, and integrated pest management. Producers in total may receive \$6.9 million in cost share and incentive payments to implement conservation measures included in their plans.



## Texas Parks and Wildlife Department

The Texas Parks and Wildlife Department (TPWD) oversees several programs with elements addressing NPS pollution. These programs promote native landscapes and thus reduce the potential for pollution from erosion, fertilizers, herbicides, pesticides, and other landscape maintenance activities.

The Texas Wildscapes Program bestows its certification upon areas where individuals and corporate citizens have restored wildlife habitat lost to urban expansion. Last year, TPWD completed an agreement with the National Wildlife Federation to develop a joint certification program that promotes greater use of native plants and requires other environmentally sound practices. The joint effort, called the Best of Texas Backyard Habitats, was introduced at Expo 2002. Last year, more than 150 properties were certified, bringing the total to 1,755 locations representing more than 12,000 acres of land.

Through the Private Lands Enhancement Program, field biologists work with individual landowners to develop land and wildlife management plans using environmentally and economically sound land use practices. Implementation of the plan is completely voluntary. During 2002, plans were developed for almost a million additional acres. Texas now has 15.5 million acres being managed under active, written wildlife management plans.

The Landowner Incentive Program provides incentive payments and cost-share funds to private landowners to manage their lands in ways that support wildlife habitat. Priority is given to projects that manage, conserve, and restore rare habitats and endangered and threatened species. Funds are awarded on a competitive basis as challenge grants, in which landowners share 20 percent or more of the cost of implementing habitat management practices. The TPWD has awarded over \$1,750,000 in cost-share funds to date.

The TPWD is involved in wetland conservation throughout Texas using a variety of resources. Partnering with organizations such as the NRCS, U.S. Fish and Wildlife Service, and Ducks Unlimited, the TPWD delivers technical and financial assistance to landowners throughout the state. Biologists work directly with private landowners for improving wildlife habitat on their property through wetland conservation practices. These private land programs share the costs of the project with the landowner.



## Railroad Commission of Texas - Saltwater Discharge Minimization Projects

Since Fiscal Year 2000, the Railroad Commission (RRC) of Texas has been working with the TCEQ to utilize 319(h) grant funding to reduce chloride and total dissolved solids (TDS) levels in the Upper Colorado River, the Red River, and the Canadian River drainage basins. Elevated levels of these pollutants have been attributed to several factors including past oilfield practices, naturally occurring conditions, and other man-made sources such as farming and manufacturing. The primary objective is to eliminate potential sources of salinity through the plugging of abandoned, unplugged, or improperly plugged wells, and the possible remediation of surface seeps.

The first of these projects was designed in conjunction with assessment activities linked to the E. V. Spence TMDL. This project encompassed seven counties in the Upper Colorado River Basin. Approximately \$2.6 million in 319(h) funds were committed to plug 171 abandoned wells and investigate numerous seeps in the basin. To date, 197 wells have been plugged and assessments have



been completed on eight saltwater seeps. Sampling results indicated chloride contamination in groundwater dropped significantly. For example, a supplemental investigation of the O’Ryan Seep indicated that chloride levels in one monitor well dropped from 17,500 mg/l in February 2001 to 3,300 mg/l in June 2002. Benzene and toluene levels also dropped from 3.040 mg/l and 1.160 mg/l to 0.0006 mg/l and less than 0.0005 mg/l respectively during the same time period. These results indicate the plugging of a well eliminated a major source of the impacted groundwater up gradient of the northern expression of the seep. When monitoring results were not as positive or decisive as these, the RRC reassessed results and recommended a second mobilization to the site in question.

**MILESTONES**  
The RRC of Texas met its milestones by regulating threats to water quality from oil and gas industry activities.

The second well plugging project was initiated in Fiscal Year 2002, involving the Red River and Canadian River basins. The RRC committed to plugging 55 wells by August 2003, but due to lower than anticipated plugging costs, have plugged 87 wells as of the end of Fiscal Year 2002, including 84 wells in the Red River basin and 3 wells in the Canadian River basin. Additional wells have been identified for plugging; however, 2 could not be plugged due to a rise and shift in the course of the Red River. Plugging bids were obtained on these wells but were extremely expensive and thus, cost prohibitive. It is more costly to conduct plugging operations on wells located in the riverbed, and therefore, it is more prudent to postpone plugging operations until the river recedes.

Both projects have been completed well ahead of schedule and original goals have been surpassed. Currently, the RRC is compiling final reports and data analysis results on both projects. As part of outreach objectives, further details have been posted on the RRC web site:

<http://www.rrc.state.tx.us/divisions/og/fops/river/river.htm>



## San Antonio Water System - Abandoned Water Well Abatement Project



The Edwards Aquifer is the first aquifer in the nation to be given the sole source designation under the Safe Drinking Water Act. The San Antonio Water System has taken a leading role in the region in devoting its resources to understanding and protecting this water resource as well as other water-bearing aquifers in the region.

Abandoned water wells have proven to be major contributors to groundwater contamination. Around the wellhead, or the area draining to a wellhead, uncapped or uncased wells provide a direct conduit to groundwater from activities at the surface. These wells can also pose a contamination hazard to nearby surface water.

Under this project, SAWS is concentrating its efforts on identifying abandoned water wells that are contributing to groundwater and surface water degradation. To increase its knowledge of the Edwards Aquifer, SAWS is collecting information on the condition of well casings, the lithology of well



bores, and various water quality parameters. These characteristics are being assessed through geophysical log surveys and the collection of water samples on selected wells throughout the metropolitan area. SAWS is using this information to develop an aquifer database which will be beneficial to other agencies and the public.

Many abandoned wells are not closed due to the well owner's lack of funds. Complying with the well plugging provisions required by State law and City ordinance represents a significant financial burden to these landowners. SAWS staff have been working with the San Antonio Department of Community Initiatives to verify the eligibility of low-income homeowners who qualify to have their wells plugged under the 319(h) grant program. During FY 2002, SAWS conducted 283 abandoned well investigations and plugged nine water wells for indigent landowners. In addition, the U.S. Air Force plugged 66 abandoned wells in the vicinity of one of their military bases in San Antonio. These wells were identified by field investigations conducted under this project.



## Upper Colorado River Authority - Stormwater Control Program

The Upper Colorado River Authority (UCRA) has been actively addressing NPS water quality issues within the North Concho River basin since 1994. During that year, the Authority began work with a Citizen's Advisory Group and the City of San Angelo to adopt a NPS master plan to address urban runoff impacting the North Concho River. The plan identified and prioritized a list of storm water control structures to be constructed within seven urban tributaries of the North Concho River. Four structural BMPs have already been implemented under leadership of the UCRA with financial assistance from the CWA 319(h) grant program.

An additional phase of this project was completed in FY 2002. The newest BMP structure is located along Bryant Boulevard near U.S. highway 67. This location was identified as the highest priority subwatershed in the Master Plan and the largest contributor of biochemical oxygen demand (BOD), total suspended solids (TSS) and nutrients entering the downtown Concho River area. A new detention structure (dry pond) was designed and built to impound and filter storm water from the surrounding 570 acre watershed. At the end of FY 2002, water quality monitoring efforts were underway to measure the reduction in pollutant loadings as a result of implementing the control structure.

Complementing the implementation of structural BMPs, public education has been an important and successful component of UCRA's overall NPS Program. UCRA staff made presentations to student and citizen groups and conducted teacher workshops to discuss nonpoint source pollution and its prevention. In Spring 2002, the UCRA co-hosted a West Texas Regional NPS conference. The assembly was well attended by area stakeholders involved or interested in NPS planning. Tours of previous and current BMP sites were organized for public officials and media representatives. Local newspaper and television stations highlighted the NPS program in several news reports.

A special project involving middle school students was sponsored by the UCRA to focus attention on NPS problems within the city. Support of this project resulted in the group's top ten placement in a National Science Foundation/Bayer Foundation final competition held at Epcot Center in Florida.





## Texas Coastal NPS Pollution Control Program

As a requirement for federal approval of its coastal management program, Texas was directed to develop and implement a program to address coastal NPS pollution, to identify sources of coastal NPS pollution and develop recommendations for preventing pollution.

In September 2001, the National Oceanic and Atmospheric Administration (NOAA) and EPA published their intent to approve the Texas Coastal NPS Program with certain conditions. The NOAA identified six areas that Texas must strengthen or correct prior to receiving full approval of the Coastal NPS Program. These areas are: new development and site development; watershed protection and existing development; construction site chemical control; new and operating onsite disposal systems; roads, highways, and bridges; and hydromodification. NOAA is requiring that these issues be addressed within two years of the issuance of the Final Findings.

The Texas General Land Office (GLO) established a work group to develop the program. The NPS Work Group is comprised of staff from GLO, TSSWCB, TCEQ, RRC of Texas, TxDOT, TPWD, and a public member from the Council. The NPS Work Group has worked to address comments on the Coastal NPS Program submitted by NOAA and EPA. They have reviewed and recommended to the Coastal Coordination Council proposed NPS pollution control projects.

In fiscal year 2002, the Council funded eight projects that address NPS pollution in the coastal zone:

*1. Rangeland Rainfall and Runoff Study – Phase III*

During the final phase of the project, the SWCD will continue to monitor rainfall runoff at the three study sites on the refuge.

*2. Lake Whitney/McCampbell Slough*

This project will construct watershed Best Management Practices Lake Whitney/McCampbell Slough watershed.

*3. Clean Texas Marina Program – Phase II*

Phase II will involve hiring a graduate student to set up and run the implementation phase from Texas A&M Environmental Assistance Division on the marina inspection phase of the program.

*4. No La Riegues Public Service Campaign*

This project will coordinate public service announcements (PSA's) campaign pieces aimed at increasing personal awareness of individual responsibility for runoff pollution and wasted water. The PSA's will be sponsored by Texas Cooperative Extension in coordination with the Houston Galveston Area Council.

*5. Water Quality Management Plans (4 projects)*

The Coastal Coordination Council provided the Willacy Soil and Water Conservation, San Patricio District, Copano Bay District, and Nueces District with Coastal NPS Program funding to develop and implement water quality management plans.



## Bays and Estuaries Program-Nonpoint Source Pollution Projects

Texas boasts two of the twenty-eight National Estuary Programs in the United States: Galveston Bay Estuary Program (GBEP) and the Coastal Bend Bays and Estuaries Program (CBBEP). Both programs work with stakeholders representing state and federal agencies, local governments, business and industry, academia, environmental organizations, commercial and recreational users, and the general public to develop and implement comprehensive conservation and management plans to protect and restore these bays and estuaries. Due to the urbanization of these areas, the potential impact of NPS pollution to the bay systems is immense.



Water and sediments in bay tributaries and near-shore areas have been degraded by contaminated runoff from nonpoint sources. Effects are seen in low dissolved oxygen in urban bayous from nutrients and other oxygen-demanding compounds, toxic contamination of water and sediment by metals and trace organic compounds, and complete closure of about one-half of Galveston Bay to shellfish harvesting due to elevated fecal coliform contamination.

During 2002, the estuary programs have focused efforts on developing projects to address storm water runoff pollution. Specifically, GBEP sponsored the development of the Phase II Model Storm Water Management Program (SWMP). This template document is organized to aid local entities in the development and implementation of their own SWMPs as required by the Phase II permit regulations. It also provides guidance for the completion of general permit notification of intent forms and tracking progress for annual reports. The target audience includes cities, towns, counties, districts, associations, or other public bodies owning and/or operating municipal separate storm sewer systems (MS4s).

GBEP and CBBEP rallied the stakeholders to coordinate outreach efforts for the storm water requirements. The Phase II Storm Water Circuit Rider Program managed by Texas Cooperative Extension provided information and technical assistance to affected entities about developing and implementing SWMPs, developing of related ordinances or other regulatory mechanisms, and determining the appropriate funding options for Phase II storm water activities. GBEP partnered with the Houston-Galveston Area Council to host workshops to provide the latest information on the approaching Phase II general permit and recommendations with respect to preparations for the SWMP requirements. All CBBEP local governments received at least one briefing on the new Phase II rules and potentially regulated communities have received “one-on-one” visits.

In addition to the new storm water regulation outreach, GBEP and CBBEP support ongoing efforts to address NPS pollution. The two Texas estuary programs collaborate to gather information, develop outreach materials, and share web site resources. They assist coastal governments and businesses with development of NPS prevention programs, sponsor projects to address failing septic systems, and illicit connections to storm sewer systems. GBEP and CBBEP promote urban storm water treatment wetlands, conservation landscaping techniques, and use of storm drain stencils to increase public

### MILESTONE

The CBBEP met its milestones by completing the Coastal Bend Bays Plan. The GBEP met its milestones by providing a number of technical assistance activities including workshops, onsite conferences, technical assistance workgroup meetings, training sessions, and guidance documents.



awareness and public participation in protecting storm water quality. Additionally, teacher training workshops, student field trips, and public outreach and awareness events are conducted through these programs.

## ***Education***

### **Keep It Clean Communications Campaign Project**

The CBBEP partnered with the city of Corpus Christi to develop and implement a community education initiative utilizing public service announcements to protect and improve Texas' environment through promotion of positive behaviors and reduction of storm water pollution.

The objectives of this project were to educate citizens about the drainage system, increase public awareness about pollutants and their impact on the bay, increase individual and business responsibility to prevent pollution, promote anti-littering, and encourage positive practices in disposing of household hazardous wastes and coordinate storm water drainage communications with other environmental initiatives.

Three public service announcements (PSAs) were produced in English and Spanish to address pollutants and the *trash trail* to the bay. The PSAs aired on the ABC, NBC, CBS, FOX, and the Univision (Spanish) television affiliates over a six-month period with comprehensive coverage. The PSAs also aired during the city council meetings.

### **Phase II Storm Water Permits Education Outreach**

A Municipal Separate Storm Sewer System (MS4) is a conveyance or system of conveyances for storm water runoff. An MS4 is not always just a system of underground pipes, it can include roads with drainage systems, gutters, and ditches.

On September 14, 1998, the EPA authorized Texas to develop and implement the Texas Pollutant Discharge Elimination System (TPDES) program, including the TPDES Municipal Separate Storm Sewer System (MS4) Phase I Storm Water permits. The Phase I storm water program covers medium (pop. 100k–249,999k) and large (pop. of >250k) MS4s. The Storm Water Phase II Final Rule applies to regulated small MS4s. A Phase II regulated small MS4 is any small MS4 located in an urbanized area or small MS4s located outside of an urbanized area that is designated as a regulated small MS4 by the TCEQ. The TCEQ must designate small MS4s and issue storm water discharge permits for these facilities no later than December 9, 2002.

In an effort to assist the TCEQ with the implementation of the Phase II Stormwater Permitting Program, seven Councils of Governments (COGs) conducted an outreach campaign to provide information about the regulations to their member cities and counties. These planning areas, as designated by the Governor under the authority of Section 208 of the Clean Water Act, receive funding to perform water quality management planning activities under the authority of the Clean Water Act Section 604(b). This work was funded by a CWA 604(b)(3) grant. The seven COGs conducted workshops and provided mail-outs regarding permitting regulations and information to prepare



organizations for Phase II regulatory implementation. Representatives from TCEQ's regional offices, as well as from the Storm Water General Permits and Small Business and Local Government Assistance teams, were on hand to answer questions regarding Phase II implementation. The North Central Texas Council of Governments produced a videotape with local funding entitled, *Storm Water Management in North Central Texas*. The video provides useful information for municipalities and counties in the North Central Texas planning area, as well as other planning areas in Texas.

Workshop attendees were also surveyed for feedback regarding Phase II implementation. Many of those surveyed responded with concerns which included a lack of funding for implementation and a lack of understanding of their role in the implementation process. Respondents from the Houston-Galveston area described a particular interest in sharing certain aspects of Phase II implementation. Their concerns included sampling, inspection, public education, program evaluation, and a citizen's hotline for illegal dumping. However, most surveyed expressed an interest in receiving pertinent information as soon as it becomes available.

The seven designated planning areas are the Ark-Tex Council of Governments, which includes the Texarkana area; the Central Texas Council of Governments, which includes the Temple-Belton area; the Coastal Bend Council of Governments, which includes the Corpus Christi area; the Houston-Galveston Area Council, the Lower Rio Grande Valley Development Council; which includes the McAllen area; the North Central Texas Council of Governments, which includes the Dallas-Fort Worth area; and the South East Texas Regional Planning Commission, which includes the Beaumont area.



## Texas Watch

The Texas Watch (TW) program implements public outreach strategies to enhance the TCEQ's NPS pollution prevention programs. TW is supported through a cooperative partnership between the TCEQ, Southwest Texas State University and the EPA. Program goals include educating a broad spectrum of citizens about local water quality issues, and encouraging communication and a sense of community among environmental educators and water resource managers. Strategies for meeting these goals include volunteer monitoring, watershed education, and community action projects. In carrying out these activities, Texas Watch influences individuals to adopt activities and behaviors that help improve water quality and prevent NPS pollution.

**MILESTONE**  
Texas Watch accomplished its milestones by educating more than 5,000 citizens about management of NPS pollution through educational workshops, newsletters, and their Web site.

Texas Watch develops and supports partner networks to train volunteers statewide. Partners include industries, municipalities, river authorities, regional councils, school districts, and non-governmental organizations. They sponsor groups, supply monitoring equipment, host meetings, and donate staff time and technical expertise. This unique collaboration educates stakeholders, promotes citizen involvement in addressing water quality issues, produces sound, useable water quality data, provides an outlet for citizens to voice their water quality concerns, and integrates citizen concern with the TCEQ's efforts to prevent NPS pollution. During 2002, Texas Watch and its partners trained more than 300 new volunteers, who in turn, contributed to the more than 2,000 collection events and 5,000 volunteer-hours spent monitoring the state's waters. Regional meetings were held in San Angelo, Arlington, and Lampasas, along with numerous Watershed Education Workshops and other presentations focusing on NPS issues. These meetings examined how local land use and individual behavior can impact both



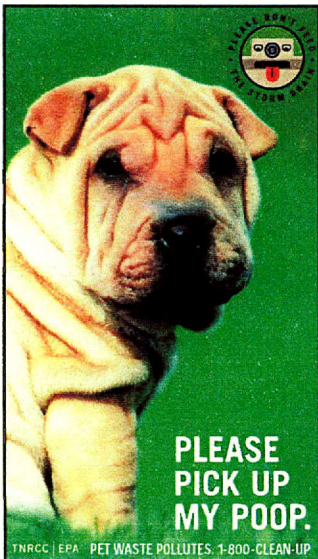
water quality and aquatic life. In April 2002, Texas Watch also coordinated its third annual statewide Earth Day sampling event. Several hundred volunteers and professional monitors participated. For more information visit the Web site at: [www.texaswatch.geo.swt.edu](http://www.texaswatch.geo.swt.edu).

## TCEQ Small Business and Environmental Assistance-NPS Consumer Education Campaign

The objective of the NPS Consumer Education Campaign is to increase the awareness of the nonpoint source pollution problem in Texas waterways throughout the state. Other goals are to increase the awareness of the TMDL process, the relation of NPS to the TMDL program, and stimulate actions that can be undertaken by all Texas citizens to reduce NPS Pollution.

The public education campaign has targeted 30 urban areas on the State of Texas 1998 Clean Water Act Section 303(d) List and Schedule for Development of TMDLs. The consumer program has targeted six media markets with TMDL events, partnerships, and special activities. These include Austin, Dallas/Ft. Worth, San Antonio, Houston, Corpus Christi, and the Rio Grande Valley. The campaign has been working with city and county governments, councils of government, TCEQ regional offices, schools, Keep Texas Beautiful affiliates, and river authorities.

NPS campaign issues include pet waste, yard care, household hazardous waste, and motor oil. Campaign materials include a video news release produced in English and Spanish, which was sent to 300 TV stations. TV and radio Public Service Announcements were also produced bilingually and sent statewide.



Other materials include NPS and pet waste posters, pet waste magnets, bilingual NPS book markers and door hangers, a Clean Water for Texas Brochure, NPS fact sheets, NPS “Don’t Feed The Storm Drain” buttons, pet waste billboards, and yard care billboards.

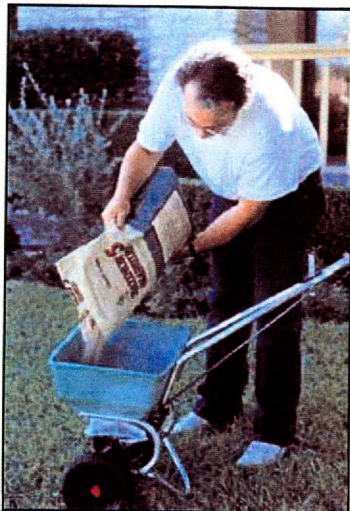
The pet waste issue was promoted in Austin, Houston and San Antonio. Press conferences and media tours attracted several TV and radio stations which covered the events. TCEQ worked with city parks departments to place “mutt-mitt” dispensers (which hold disposable pet waste pick-up mitts) in various city parks and trails. Signs were installed which read, **“Thousands of Pounds of Dog Poop Wash Into Your Water Supply Every Year. Gulp.”** Sponsors were listed at the bottom of the poster. Bill boards which read, **“Please Pick Up My Poop... Pet Waste Pollutes Drinking Water Sources”** featuring a Sharpei puppy, were also displayed in these areas.

The yard care, motor oil, and household hazardous waste issues were addressed in Corpus Christi, Dallas/Ft. Worth, and the Rio Grande Valley. TCEQ SBEA worked with cities, counties, local governments, river authorities, and schools to promote the campaign in these areas. TV and radio stations produced several live and taped interviews and used TCEQ video and graphics. Billboards stated, **“Put Your Lawn On A Diet...Too Much Fertilizer Pollutes Drinking Water Sources.”** For more information, visit the Web site at <http://www.tnrcc.state.tx.us/exec/sbea/nps/nps.html>.



## Grow Green Program

As Austin faces increased urbanization, the City's Watershed Protection and Development Review Department and the TCE launched a new program, Grow Green. This program will provide citizens and participating gardening retailers, information about environmentally responsible alternatives for



their landscaping needs. The City of Austin funded and designed the majority of the public outreach materials, while TCE provided much of the technical expertise and content of those materials. TCE also provided noted experts in their fields to provide high quality training to local sales staff. Grow Green is totally dependent on its retail partners to communicate its message to the community.

Since elevated levels of nitrate, contributed by rainfall runoff is a major pollution threat to Austin waterways, Grow Green stresses careful problem identification and physical, biological, or least toxic options for controlling pests and diseases, and fertilizing lawns. As a city with limited polluting industry, many of the local educational efforts are focused on nonpoint source pollution created by homeowners.

Because homeowners often ask sales personnel at their local gardening retailer for advice on how to solve their landscaping problems, Grow Green partners with these merchants. This project provides extensive training to these sales staff to better prepare them to recommend plants which require the least chemical maintenance and to recommend least toxic pest control solutions when required. Free Grow Green informational materials are prominently displayed and distributed at the point of purchase for landscaping chemicals at nurseries and home improvement centers. Twenty-one fact sheets were developed, covering general gardening principles, pruning, specific plant diseases, problematic area pests, and beneficial insects, ranking chemical products based on EPA toxicity levels from their product labels. Grow Green also produced a Native and Adapted Plant Guide containing descriptions and photos of 200 plants.

Three extensive two-day training sessions addressing entomology, diseases, turf management, safety, water quality issues, and two advanced workshops covering disease, pest, and turf issues were conducted. Two videos are in production to make training more accessible to new sales staff, and to address the high turnover rates of nursery personnel. Fax alerts are sent to program participants to inform them of pest outbreaks and emerging issues to ensure their staff can assist customers.

Nearly all of the potential retailers in Austin participate in the program and more than 200,000 fact sheets have been distributed. The Grow Green web site, [www.growgreen.org](http://www.growgreen.org), had more than 71,000 visitors this past year.

## Texas Riparian Invasive Plant and Water Task Force

Invasive species have adversely impacted the water quality in Texas. Salt cedar, hydrilla, water hyacinth, giant reed, giant salvinia, and Eurasian milfoil can impact water quality by contributing to increased sedimentation, salinity, dissolved particulates, and depletion of oxygen in the water column.



General water chemistry could be fundamentally affected, modifying the habitat for native aquatic species, as well as decreasing water quantity.

The Texas Riparian Invasive Plant and Water Task Force (TRIPWTF) was formed in 2002 as a means to curb the negative aspects of noxious species in riparian systems. TRIPWTF is currently chaired by the Texas Department of Agriculture. The goal of the task force is to identify and coordinate efforts by state and federal agencies, and other partners involved in ongoing water quality and quantity projects as well as invasive species control activities.

## **Surface Water Management Plan for the Prevention of Pesticide Contamination**

The Pesticide Subcommittee of the Texas Watershed Protection Committee (TWPC) recognized a need for a statewide cooperative approach to address potential and actual surface water contamination by pesticides. The subcommittee directed the formulation of a task force chaired by the TDA to draft the Texas Surface Water Management Plan for the Prevention of Pesticide Contamination (SWaMP).

The primary goal of SWaMP is to protect and maintain existing surface water quality and to allow normal use of pesticides without impairing water quality or posing a public health hazard. The plan in its current draft form encompasses the strategies and responsibilities of each state agency and other entities in the protection and conservation of surface water resources, and the regulation of pesticides in the state.

The Texas State Management Plan for the Prevention of Pesticide Contamination of Ground Water (commonly referred to as PMP or Pesticide Management Plan) will be the basic underlying framework for managing pesticide use in the state and will serve as a basis and guidance for the development of the watershed-specific SWaMPs. In addition to the basic program components SWaMP shares with the generic PMP for groundwater, the watershed-specific SWaMPs will contain any specific, concerted actions necessary to prevent the local pesticide contamination.



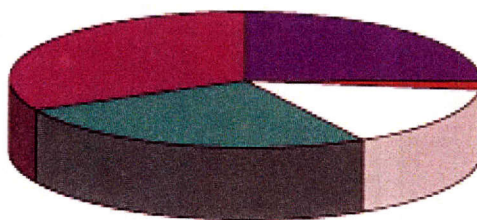
This document, therefore, would be similar to the Ground Water PMP for the State and would guide the development and implementation of watershed-specific SWaMPs as recommended to protect the selected water bodies through the source water protection programs. The PMP will be included in the update to the State of Texas NPS Pollution Assessment Report and Management Program.



# Financial Information

## TSSWCB Financial Information

The TSSWCB's NPS program is supported by Clean Water Act §319(h) federal funds.



- Other
- Silviculture
- Poultry
- Atrazine Runoff Abatement
- Dairy

**Other (Implementation, Assessment, etc.):** \$4,922,351 (25%)

**Silviculture:** \$431,394 (2%)

**Poultry:** \$2,955,722 (15%)

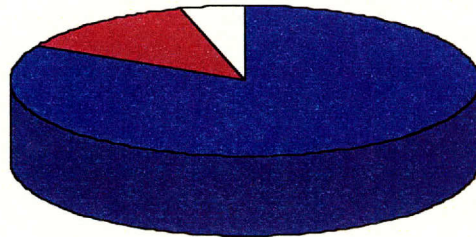
**Atrazine Runoff Abatement:** \$5,110,075 (26%)

**Dairy:** \$6,540,395 (32%)



### TCEQ Financial Information

The TCEQ NPS program was supported with Clean Water Act, section 319(h) federal funds from the FY 02 Partnership Performance Grant (PPG), and three multi-year categorical grants. All programmatic and financial requirements of TCEQ's FY 96 grant were completed by August 31, 2002.



- Urban Implementation
- Urban Assessment
- Agricultural Assessment

**Urban Implementation:** \$14,754,554 (83%)  
**Urban Assessment:** \$2,253,888 (13%)  
**Agricultural Assessment:** \$805,000 (4%)



## Other State Agencies:

### **General Land Office–Coastal NPS Program**

<http://www.glo.state.tx.us/coastal.html>

### **Railroad Commission–Upper Colorado Salt Minimization Project**

<http://www.rrc.state.tx.us/divisions/og/fops/river/river.htm>

### **Texas Department of Transportation–Compost Project**

<http://www.dot.state.tx.us/insdtdot/orgchart/des/landscape/compost/topsoil.htm>

### **Don't Mess with Texas**

<http://www.dontmesswithtexas.org>

### **Texas Forest Service**

<http://txforestsERVICE.tamu.edu/>

### **Texas Parks & Wildlife (TPWD)**

<http://www.tpwd.state.tx.us/>

Conservation Programs: <http://www.tpwd.state.tx.us/consERVE/>

## BMP Resources:

### **Street Edge Alternatives Project**

<http://www.ci.seattle.wa.us/util/SEAstREETS/default.htm>

### **Low Impact Development Center**

<http://www.lowIMPACTdevelopment.org>

### **Texas Nonpoint Source Book**

<http://www.txNPSbook.org>

### **Water Quality and BMPs for Loggers**

<http://www.usabmp.net/launch.html>

### **National Storm Water Best Management Practices Database**

<http://www.bmpdatabase.org>

## Educational Resources:

### **Building Environmental Education Solutions, Inc.**

<http://www.beesinc.org/>



**Bullfrog Films**

<http://www.bullfrogfilms.com/>

**Cyberways Waterways**

<http://www.cyberwaysandwaterways.com/en/CW3Home/>

**Texas Watch**

<http://www.texaswatch.geo.swt.edu/>

**Wet in the City**

<http://www.wetcity.org>

**Conservation Organizations:**

**Ducks Unlimited–Wetlands Conservation**

<http://www.ducks.org/>

**Izaak Walton League of America / Save Our Streams Program**

<http://www.iwla.org/sos/>

**National Wildlife Federation–Gulf States Region**

<http://www.nwf.org/gulfstates/>

**Sierra Club–Texas**

<http://texas.sierraclub.org/>

**The Trust for Public Lands–Texas**

<http://www.tpl.org/>

**Estuary and Marina Programs:**

**Clean Texas Marinas Program**

<http://www.cleanmarinas.org>

**Coastal Bend Bays and Estuaries Program**

<http://www.cbbep.org/>

**Galveston Bay Estuary Program**

<http://gbep.tamug.tamu.edu/>

**Partnership for Environmental Safety and Outreach**

<http://www.tamucc.edu/~outreach/peso>

**Clean Rivers Program Partner Agencies:**

**Angelina & Neches River Authority**

<http://www.anra.org>



**Brazos River Authority**

<http://www.brazos.org/index.htm>

**Canadian River Municipal Water Authority**

<http://www.crmwa.com>

**Colorado River Municipal Water District**

<http://www.crmwd.org>

**Guadalupe–Blanco River Authority**

<http://www.gbra.org>

**Houston–Galveston Area Council**

<http://www.hgac.cog.tx.us/intro/introwater.html>

**International Boundary and Water Commission**

<http://www.ibwc.state.gov/CRP/Welcome.htm>

**Northeast Texas Municipal Water District (Cypress Creek)**

<http://www.netmwd.com/index.html>

**Red River Authority**

<http://www.rra.dst.tx.us>

**Lower Colorado River Authority (LCRA)**

<http://www.lcra.org>

**Lower Neches Valley Authority (LNVA)**

<http://www.lnva.dst.tx.us/>

**Sabine River Authority**

<http://www.sra.dst.tx.us>

**San Antonio River Authority**

<http://www.saratx.org>

**Sulphur River Basin Authority**

<http://www.sulphurr.org/>

**Trinity River Authority**

<http://www.trinityra.org/>

**Upper Colorado River Authority (UCRA)**

<http://www.ucratx.org/index.html>



## **Councils of Governments and Regional Agencies:**

### **North Central Texas Council of Governments (NCTCOG) Nonpoint Source**

<http://www.dfwinfo.com/index.asp>

### **Stormwater Management**

[www.dfwstormwater.com/index.html](http://www.dfwstormwater.com/index.html)

### **Lower Rio Grande Valley Development Council**

<http://www.lrgvdc.org/>

### **Texas Association of Regional Councils**

<http://www.txregionalcouncil.org/>

## **Cities:**

### **City of Austin–Watershed Protection**

<http://www.ci.austin.tx.us/watershed/>

### **Fort Worth–Environmental Management Department**

<http://www.fortworthgov.org/dem/>

### **San Antonio Water System, Watershed Protection**

[http://www.saws.org/our\\_water/Source\\_Water\\_Watershed\\_Protection/](http://www.saws.org/our_water/Source_Water_Watershed_Protection/)

SAWS Well Project:

[www.saws.org/our\\_water/Source\\_Water\\_Watershed\\_Protection/GroundwaterProtection/319grant/](http://www.saws.org/our_water/Source_Water_Watershed_Protection/GroundwaterProtection/319grant/)

## **Universities and Research Organizations:**

### **Center for Research in Water Resources**

<http://www.crrw.utexas.edu>

### **Texas Agricultural Extension Service Resource Center**

<http://texaserc.tamu.edu/catalog/>

### **Texas Institute for Applied Environmental Research (TIAER)**

<http://tiaer.tarleton.edu>

### **Texas Water Resource Institute**

<http://twri.tamu.edu/>

## **Federal Agencies:**

### **Environmental Protection Agency–Wetlands, Oceans, and Watersheds**

<http://www.epa.gov/OWOW/>



**Funding Opportunities Polluted Runoff (Nonpoint Source Pollution)**

<http://www.epa.gov/owow/nps/funding.html>

**Best Nonpoint Source Documents:**

<http://www.epa.gov/owow/nps/bestnpsdocs.html#nps>

**USDA - Natural Resource Conservation Service (NRCS)**

<http://www.nrcs.usda.gov/>

**United States Army Corps of Engineers**

<http://www.usace.army.mil/index.html>

**United States Fish and Wildlife Service**

<http://www.fws.gov/>

**United States Geological Survey (USGS) in Texas**

<http://tx.usgs.gov/>





