

CHAPTER TWO

Agency Activities

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The Texas Commission on Environmental Quality has a range of responsibilities as broad as the state itself, all keyed to various aspects of environmental protection.

This role of environmental oversight is conducted in the agency's Austin headquarters and in its 16 regional offices. Staff duties cover a wide spectrum, from investigating an odor nuisance complaint in a small Panhandle town to conducting fence-line air quality monitoring at a large petrochemical plant on the Gulf Coast. A typical workday will find employees leading field investigations, evaluating permit applications, organizing and hosting environmental seminars, and evaluating a Superfund site.

This chapter examines some of the major programs under way at the TCEQ to address the agency's goals of protecting public health and the state's natural resources.

Enforcement

Environmental Compliance

The TCEQ enforcement process begins when a violation is discovered during an investigation at the regulated entity's location, through a review of records at agency offices, or as a result of a complaint from the public that is subsequently verified as a violation. Enforcement actions may also be triggered after submission of citizen-collected evidence.

In a typical year, the agency will conduct almost 100,000 investigations statewide to assess compliance with environmental laws.

When environmental laws are violated, the agency has the authority in administrative cases to levy penalties up to the

statutory maximum per day, per violation. The statutory maxima range as high as \$25,000. Civil judicial cases carry penalties up to \$25,000 per day, per violation, in some programs.

In fiscal 2011, the TCEQ issued 1,628 administrative orders, which required payments of \$12.5 million in penalties and about \$5 million for Supplemental Environmental Projects, or SEPs. The average number of days from initiation of an enforcement action to completion (with an effective order) was 241 days.

In fiscal 2012, the TCEQ issued 1,826 administrative orders, which required payments of \$11.4 million in penalties and \$2.5 million for SEPs. The average number of days from initiation of an enforcement action to completion (with an effective order) was 245 days.

The TCEQ can also refer cases to the state Attorney General. In fiscal 2011, the AG's office obtained 29 judicial orders in cases referred by the TCEQ or in which the TCEQ was a party. These orders resulted in more than \$4.3 million in civil penalties and another \$115,000 for SEPs.

In fiscal 2012, the AG's office obtained 48 judicial orders, which resulted in \$57.4 million in civil penalties and \$121,500 for SEPs.

Other enforcement statistics can be found in the agency's annual enforcement report at www.tceq.texas.gov/goto/enforcement.

Also, orders that have been approved by the commission and have become effective are posted on the agency's website, as are pending orders not yet presented to the commission.

Supplemental Environmental Projects

When the TCEQ finds a violation of environmental laws, the agency and the regulated entity often enter into an administrative order, which regularly includes the assessment of a monetary penalty. The penalties collected do not stay at the agency, but instead go to general revenue.

One option under state law, however, gives regulated entities a chance to direct some of the penalty dollars to local improvement projects. By agreeing that penalty amounts can be used for a Supplemental Environmental Project, the violator can do something beneficial for the community in which the environmental offense occurred. Such a project must reduce or prevent pollution, enhance the environment, or raise public awareness of environmental concerns.

The agency has a list of preapproved SEPs, which consists of projects that have already received general approval from the commission. The list includes nonprofits and governmental agencies that sponsor activities such as cleaning up illegal dump sites, providing first-time adequate water or sewer service for low-income families, retrofitting

TCEQ Enforcement Orders

Fiscal Year	Number of Orders	Penalties Paid	Orders with SEPs	SEP Funds
2011	1,628	\$12.5 million	222	\$5.0 million
2012	1,826	\$11.4 million	146	\$2.5 million

or replacing school buses with cleaner emission technologies, removing hazards from bays and beaches, and improving nesting conditions for colonial water birds.

A regulated entity that meets program requirements may propose its own custom SEP if the proposed project is environmentally beneficial and the party performing the SEP was not already obligated or planning to perform the SEP activity before the violation occurred. Additionally, the activity covered by a SEP must be one that is above and beyond what is already required by state and federal environmental laws.

As of Sept. 1, 2011, the Texas Water Code gives the TCEQ the discretion to allow local governments cited in enforcement actions to use SEP money to achieve compliance with environmental laws or to remediate the harm caused by the violations in the case. This compliance SEP may be offered to governmental authorities such as school districts, counties, municipalities, junior-college districts, river authorities, or water districts.

Other than compliance SEPs, a SEP cannot be used to remediate a violation or any environmental harm caused by a violation, or to correct any illegal activity that led to an enforcement action.

Compliance History

Since 2002, the agency has rated the compliance history of every owner or operator of a facility that is regulated under certain state environmental laws.

An evaluation standard has been used to assign a rating to about 300,000 entities regulated by the TCEQ that are subject to the compliance-history rules. The ratings take into consideration prior enforcement orders, court judgments, consent decrees, criminal convictions, and notices of violation, as well as investigation reports, notices, and disclosures submitted in accordance with the Texas Environmental, Health, and Safety Audit Privilege Act. Agency-approved environmental management systems and participation in agency-approved voluntary pollution-reduction programs are also taken into account.

An entity's classification comes into play when the TCEQ considers matters regarding

not only enforcement but also permit actions, the use of unannounced investigations, and participation in innovative programs.

Each September, regulated entities are classified or reclassified. (The ratings database can be found at www11.tceq.texas.gov/oce/ch/.)

Ratings below 0.10 receive a classification of "high," which means that those entities have an "above-satisfactory compliance record" with environmental regulations. Ratings from 0.10 to 55.00 merit "satisfactory" for having "generally complied." Ratings greater than 55.00 result in an "unsatisfactory" classification because these entities "performed below minimal acceptable performance standards."

An entity with no compliance information for the last five years will not receive a classification and is therefore "unclassified."

In 2011, House Bill 2694 called for changes to the compliance history rule. The commission responded in 2012 by adopting revisions to 30 Texas Administrative Code Chapter 60 (Compliance History). This allows the TCEQ to use new standards, instead of the existing uniform standard, for evaluating and using compliance history. In addition, the adopted rule modified the components and formula of compliance history to provide a more accurate measure of regulated entities' performance and to make compliance history a more effective regulatory tool. These

changes will be reflected in compliance history information for fiscal 2013.

Critical Infrastructure

In November 2011, the TCEQ created the Critical Infrastructure Division within the Office of Compliance and Enforcement (OCE). This new division combines elements from the OCE that are critical to the agency's responsibilities under the Texas Homeland Security Strategic Plan. The division seeks to ensure compliance with environmental regulations and, during disaster conditions, to support regulated critical infrastructures that are essential to the state and its residents. This includes not only responding to but also recovering from disasters.

The Critical Infrastructure Division programs are Dam Safety and Emergency Management Support, as well as Homeland Security, which includes compliance investigations involving radioactive materials and the federally funded BioWatch. The latter is a federally funded initiative aimed at early detection of bioterrorism agents.

Dam Safety

The Dam Safety Program monitors and regulates both private and public dams in Texas. The program periodically inspects dams that pose a high or significant hazard and issues recommendations and reports to the dam

Compliance History Designations, September 2012

Classifications are updated each September to reflect the previous five years.

Classifications	Number of Entities Subject to Compliance Rules	Percent
High	37,405	12.48%
Satisfactory	9,619	3.21%
Unsatisfactory	1,643	.55%
Unclassified	251,111	83.76%
Total	299,778	100%

owners to help them maintain safe facilities. The program ensures that these facilities are constructed, maintained, repaired, and removed safely. High- or significant-hazard dams are those at which loss of life could occur if the dam should fail.

In 2012, Texas had 7,126 state-regulated dams, with 1,046 high-hazard dams and 725 significant-hazard dams. The remaining dams were classified as low hazard.

As of August 2012, 96.2 percent of all high- and significant-hazard dams had been inspected during the past five years. Securing access to the few remaining dams became an issue that the program continues to address. About half of the dams inspected are in either “fair” or “poor” condition. The majority of owners have begun making repairs, as funds are available.

In addition to inspections, the program conducts workshops—primarily for dam owners and engineers—on emergency action plans and dam maintenance. Emergency management personnel also attend. In fiscal 2011, four workshops were conducted; in fiscal 2012, three were conducted.

Emergency Management

In a state as large and geographically and economically diverse as Texas, natural disasters or emergencies caused by human activities occur almost daily. Disasters may have a widespread impact, or significant emergencies may occur at the same time in different areas.

In an emergency or disaster, the TCEQ is the lead state agency for hazardous materials and oil-spill response. As such, it supports several other state emergency-management functions.

The TCEQ’s responsibilities in a disaster align with the agency’s mission—to protect human health and the environment. Those responsibilities also apply to the critical infrastructure facilities regulated by the agency, such as public water systems, wastewater-treatment plants, dams, and chemical and refining facilities.

The TCEQ regional offices form the basis of the agency’s support for local jurisdictions addressing emergency and disaster situations. For that reason, the Emergency

Management Support Team was created to implement a strategy of building greater disaster-response capabilities in each TCEQ region.

The Emergency Management Support Team is charged with maintaining preparedness, assisting with the development of the Disaster Response Strike Team in each region by providing enhanced disaster preparedness training to staff, and maintaining sufficient trained personnel so that response staff can rotate during long-term emergency events.

In addition, the Emergency Management Support Team maintains enhanced disaster-response equipment that can be deployed to any of the regions. This enables responders to conduct environmental monitoring, communicate with other responding jurisdictions or disciplines, and restore continuity of operations at any regional office affected by a disaster.

Accredited Laboratories

The TCEQ only accepts regulatory data from laboratories accredited according to standards set by the National Environmental Laboratory Accreditation Program (NELAP) or from laboratories that are exempt from accreditation, such as a facility’s in-house laboratory.

All labs accredited by the TCEQ are held to the same quality-control and quality-assurance standards. The analytical data produced by these laboratories is used in TCEQ decisions relating to permits, authorizations, compliance actions, enforcement actions, and corrective actions, as well as in characterizations and assessments of environmental processes or conditions.

TCEQ laboratory accreditations are recognized by other states using NELAP standards and by some states that do not operate accreditation programs of their own.

In fiscal 2012, the number of laboratories accredited by the TCEQ was 281.

Houston Laboratory

The TCEQ Houston Laboratory is accredited through the National Environmental Laboratory Accreditation Program (NELAP),

and serves the agency’s 16 regional field offices. The laboratory performs routine analyses that support the environmental monitoring programs of the TCEQ, river authorities, and other environmental partners.

The Houston Laboratory supports monitoring operations for the TCEQ’s air, water, and waste programs through laboratory analysis of surface water, wastewater, sediments, and sludge samples, airborne particulate matter, and a variety of environmental contaminants. The Houston Laboratory also analyzes samples collected as part of investigations conducted by the agency’s Office of Compliance and Enforcement. The laboratory develops analytical procedures and performance measures for accuracy and precision, and maintains a highly qualified staff of analytical chemists and biologists.

The laboratory generates scientifically valid and legally defensible test results under its NELAP-accredited quality system. Analytical data are traceable to national standards, such as the National Institute of Standards and Technology and the American Type Culture Collection, and are produced using EPA-approved methods.

With the rapid transmission of electronic data, the TCEQ can upload results directly to program databases.

Edwards Aquifer Protection Program

As a karst aquifer, the Edwards Aquifer is one of the most permeable and productive groundwater systems in the United States. The regulated portion of the aquifer crosses eight counties in south central Texas, serving as the primary source of drinking water for more than 1.7 million people. This replenishable system also supplies water for farming and ranching, manufacturing, generation of electric power using steam, mining, and recreation.

The aquifer’s pure spring water also supports a unique ecosystem of aquatic life, including a number of threatened and endangered species.

Because of the unusual nature of the aquifer’s geology and biology—and its role as a primary water source—the TCEQ

requires an Edwards Aquifer pollution abatement plan for any regulated activity proposed within the recharge, contributing, or transition zones. Regulated activities include construction, clearing, excavation, or anything that alters the surface or possibly contaminates the aquifer and its surface streams. Best management practices must be used during and after construction to treat stormwater in the regulated areas.

Each fiscal year, the TCEQ receives about 550 plans to be reviewed by the Austin and San Antonio regional offices. In addition to reviewing plans for development within the regulated areas, personnel conduct compliance investigations to ensure that best management practices are appropriately used and maintained. In addition, personnel conduct site assessments to ensure that aquifer-recharge features are adequately identified for protection prior to the start of construction.

Air Quality

Changes to Criteria-Pollutant Standards

The federal Clean Air Act requires the EPA to review the standard for each criteria pollutant every five years to ensure that it provides the required level of health and environmental protection. Federal clean-air standards cover six air pollutants: ozone, particulate matter, carbon monoxide, lead, nitrogen dioxide, and sulfur dioxide. Over the years, attaining the ozone standard has been the biggest air quality challenge in Texas.

Ground-level ozone, a component of smog, is not emitted directly into the air but forms through a reaction of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. The major sources of NO_x and VOCs are industrial facilities, electric utilities, car and truck exhaust, and chemical solvents.

Types of Sources

Emissions that affect air quality can be characterized by their sources.

Point sources: industrial facilities such as refineries and cement kilns

Area sources: dry cleaners, gasoline stations, and residential heating

On-road mobile sources: cars and trucks

Nonroad mobile sources: construction equipment and engines such as locomotives

2008 Ozone Standard

In January 2010, the EPA published a proposed reconsideration of the 2008 eight-hour ozone standard of 0.075 parts per million (ppm). In September 2011, at President Obama's request, the EPA withdrew the proposed reconsidered ozone standard.

Soon after, the EPA announced it would proceed with initial area designations under the 2008 eight-hour ozone standard, starting with the recommendations states had made in 2009 and updating them with more current, certified air quality data (2008 through 2010).

Based on the latest available certified monitoring data, Governor Rick Perry

revised the March 2009 Texas designation recommendation for the 2008 eight-hour ozone standard. The revised recommendation indicated that the nine-county Dallas-Fort Worth (DFW) area—Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant counties—and the eight-county Houston-Galveston-Brazoria (HGB) area—Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties—should be designated nonattainment.

In late 2011, the EPA indicated it intended to modify the state's recommendations to include Wise County in the DFW nonattainment area and Matagorda and Hood counties in the HGB nonattainment area.

At the behest of the TCEQ, the governor in February 2012 asked the EPA to reverse its plan to expand the DFW and HGB ozone nonattainment areas, pursuant to EPA's 2008 eight-hour ozone standard, because of insufficient scientific justification for the action. Texas' position was supported by the TCEQ's comprehensive technical analysis.

In May 2012, the EPA published final designations and classifications for the 2008 eight-hour ozone standard. It also published a final rule for the 2008 eight-hour ozone standard that included classification thresholds, establishing December 31 of each relevant calendar year as the attainment date for each classification.

Ozone Compliance Status

Area	Attainment Status			
	1997 Eight-Hour Ozone	Attainment Deadline	2008 Eight-Hour Ozone	Attainment Deadline
Houston-Galveston-Brazoria (HGB)	Severe	6/15/2019	Marginal	12/31/2015
Dallas-Fort Worth (DFW)	Serious	6/15/2013	Moderate	12/31/2018
Beaumont-Port Arthur, El Paso, Austin, Corpus Christi, Victoria, San Antonio, East Texas, Waco	Attainment	n/a	Attainment	n/a

Note: The HGB area includes the counties of Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller. The DFW area includes the counties of Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant; also Wise for the 2008 eight-hour ozone standard.

The EPA also revoked the 1997 eight-hour ozone standard for purposes of transportation conformity.

The DFW area was designated nonattainment with a “moderate” classification and the HGB area was designated nonattainment with a “marginal” classification. Matagorda and Hood counties were designated attainment/unclassifiable. Wise County was designated nonattainment with a “moderate” classification and became part of the DFW nonattainment area. The effective date was July 20, 2012.

Identifying control measures that are reasonable—as well as technologically and economically feasible—has presented a challenge for the TCEQ, considering the magnitude of emission reductions already achieved under the 1990 one-hour ozone standard.

Two of the main control strategies implemented in the HGB area for the one-hour ozone standard were as follows:

- An annual cap-and-trade program to reduce emissions of nitrogen dioxides (NO_x) by an average of 80 percent from utility, industrial, commercial, and institutional combustion sources.
- An annual cap-and-trade program to reduce emissions of highly reactive volatile organic compounds (VOCs) from process vents, flares, and cooling-tower heat exchange systems.

Meeting the eight-hour ozone standard in the HGB area has also been complicated by unique meteorological conditions along the Gulf Coast and the complex chemistry of ozone formation.

In June 2012, the EPA published its final rule to determine that the HGB area did not attain the one-hour ozone standard by the attainment date of Nov. 15, 2007. Although the EPA had revoked the one-hour standard in 2005, states must continue to meet the one-hour ozone anti-backsliding requirements when triggered by a finding of failure to attain by the applicable attainment date. The requirements are contingency measures and the Clean Air Act’s major stationary source fee programs.

14 Reductions from contingency measures have already been achieved in the HGB

area, so a final determination of failure to attain does not trigger additional emission reductions. However, a final determination of failure to attain by the area’s one-hour attainment date does trigger the one-hour anti-backsliding obligation to implement the penalty fee program under the Clean Air Act, unless that obligation is terminated.

2010 Sulfur Dioxide Standard

In 2010, the EPA published a final rule strengthening the primary sulfur dioxide (SO₂) standard. The rule sets a new one-hour standard of 75 parts per billion (ppb), determined by a three-year average of the 99th percentile of the annual distribution of daily maximum one-hour average concentrations. The rule revokes the previous annual SO₂ standard of 0.03 parts per million and the 24-hour standard of 0.14 ppm. The rule, which took effect in August 2010, was challenged in federal court by Texas and other states. That challenge was dismissed by the D.C. Circuit Court of Appeals in July 2012. Texas and the other parties to the lawsuit chose not to appeal the decision.

In 2011, Texas recommended the following designations: nonattainment for Jefferson County; attainment for Dallas, Ellis, El Paso, Galveston, Gregg, Harris, Kaufman, McLennan, and Nueces counties; and unclassifiable for all remaining counties. Texas revised its recommendation for Jefferson County to attainment in April 2012. The EPA’s initial designations were delayed beyond the June 2012 anticipated release. All Texas counties with regulatory monitors have 2011 design values indicating compliance with the 2010 SO₂ one-hour standard.

The EPA’s initial implementation guidance required maintenance plans and modeled demonstration of attainment for unclassifiable areas. In April 2012, the EPA put those requirements on hold. Roundtable meetings were held with stakeholders at EPA headquarters to determine how best to implement and assess compliance with the standard. By February 2014, states must submit State Implementation Plans (SIPs) to demonstrate attainment of the standard by August 2017 in nonattainment areas. By June 2013, states must submit infrastructure and transport SIPs.

The EPA was moving forward with designations focused on areas with sufficient air quality monitoring data. No attainment designations are anticipated, while areas in which monitored data indicate violation of the standard will be designated nonattainment. All other areas are expected to be designated unclassifiable.

As part of the final rulemaking for the 2010 standard, new SO₂ monitors are required in Amarillo, Austin–Round Rock, Beaumont–Port Arthur, Dallas–Fort Worth–Arlington, Houston–Sugar Land–Baytown, Longview, and San Antonio. The monitors must be operational by Jan. 1, 2013.

2010 Nitrogen Dioxide Standard

In February 2010, the EPA published the final rule to strengthen the primary standard for nitrogen dioxide (NO₂). The rule establishes a new one-hour NO₂ standard at 100 parts per billion. The new standard focuses on short-term exposures to NO₂, which are generally greater on and near major roads. No area in Texas has monitored above the 100 ppb standard.

The EPA retained the current annual average NO₂ standard of 53 ppb, but changed the monitoring network requirements to capture both peak NO₂ concentrations that occur near roadways and community-wide NO₂ concentrations.

In February 2012, the EPA published in the *Federal Register* the initial designations identifying all counties and parishes in the United States as unclassifiable/attainment. Two near-road NO₂ monitors in DFW and HGB must begin operating no later than Jan. 1, 2013, while two near-road NO₂ monitors in San Antonio and Austin–Round Rock must begin operating no later than Jan. 1, 2014.

Once the expanded network of NO₂ monitors is fully deployed and three years of air quality data have been collected—in 2016 or 2017—the EPA intends to redesignate areas based on data from the new monitoring network. The 2010 NO₂ attainment date is January 2021 or 2022, about five years after the date of the nonattainment designations.

2008 Lead Standard

In 2008, the EPA revised the primary standard for lead from 1.5 to 0.15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), measured in total suspended particulate matter. In 2010, the EPA published a final rule designating a portion of Collin County—surrounding the Exide Technologies facility for recycling lead-acid batteries in Frisco—as nonattainment for the 2008 lead standard. The effective date of the designation was Dec. 31, 2010. The EPA's designation was identical to the revised recommendation the governor had submitted.

In 2011, the commission approved proposal of the Collin County attainment demonstration SIP revision for the 2008 lead standard. The SIP revision demonstrates attainment using an air-dispersion modeling analysis that includes existing control strategies, as well as the control strategies described in an agreed order with Exide. The agreed order was being processed concurrently with the SIP revision. A public hearing on this proposal was held in Frisco in July 2011.

In June 2012, the City of Frisco and Exide approved an agreement that would result in the closure of Exide's plant. Under the terms of the agreement, about 180 acres of undeveloped land surrounding the plant will be sold to the Frisco Community Development Corporation and the Frisco Economic Development Commission Corporation. As stipulated by the agreement, Exide will retain ownership of the federal and state permitted plant site, and it will cease business operations no later than Jan. 6, 2014. Also the Exide permits will be voided by Dec. 31, 2015.

The commission approved the Collin County attainment-demonstration SIP revision and agreed order in August 2012. The attainment date is Dec. 31, 2015.

Particulate-Matter Standards

The standard for particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($\text{PM}_{2.5}$) was proposed in June 2012. The EPA's proposal would reduce the annual primary $\text{PM}_{2.5}$

standard to a range of 12 to 13 $\mu\text{g}/\text{m}^3$. The EPA has been taking comments on alternative levels down to 11 $\mu\text{g}/\text{m}^3$. The EPA has proposed to retain the current 24-hour primary $\text{PM}_{2.5}$ standard of 35 $\mu\text{g}/\text{m}^3$ and the current coarse-particulate (PM_{10}) standard. Based on 2009–2011 air quality monitoring data, Harris County could be in nonattainment for primary $\text{PM}_{2.5}$ if the design value is set at 11 or 12 $\mu\text{g}/\text{m}^3$.

The EPA has proposed adding a separate 24-hour secondary standard for fine particles to protect visibility in urban areas. The proposal is for two levels: 28 and 30 deciviews. The EPA has also been taking comment on alternative levels down to 25 deciviews. Based on current air quality monitoring data, all of Texas would meet the secondary $\text{PM}_{2.5}$ standard.

The El Paso area is classified as moderate nonattainment for the PM_{10} standard. In January 2012, the commission adopted a SIP revision to incorporate a revised memorandum of agreement between the TCEQ and the City of El Paso to reflect a concurrent rulemaking to amend the PM control measures.

Evaluating Health Effects

The TCEQ relies on health- and welfare-protective values developed by its toxicologists to ensure that airborne concentrations of pollutants stay below levels of concern.

In 2006, the TCEQ finalized state-of-the-science guidelines for developing safe levels of chemicals in air, and in 2011 began the process of updating the guidelines to incorporate the latest scientific advancements. The updated guidelines have been subject to two rounds of public comment and an external scientific peer review by experts in assessing human-health risk. The document should be final in fiscal 2013.

The draft development support documents outlining the scientific procedures used to develop effects screening levels (ESLs) and air monitoring comparison values for individual chemicals are subject to a 90-day public comment period before they become final. In addition, the development support documents for some individual chemicals have undergone a technical review or

independent external peer review by subject experts. Updated toxicity assessments were derived for 21 chemicals using this process in fiscal 2011, and proposed development support documents for three chemicals were opened for public comment in fiscal 2012.

The toxicity assessments conducted by the agency have received widespread attention. In 2009, the Ontario Ministry of the Environment deemed the TCEQ toxicity assessment for 1,3-butadiene as the most defensible assessment of health risk over the assessments made by the EPA and other states. In 2010, Texas became the only state to have its toxicity factors posted to the International Toxicity Assessments for Risk Assessment database.

The EPA has recommended review of Texas' guideline levels to other states, and Texas has received compliments from the Agency for Toxic Substances and Disease Registry. Other countries now use Texas' values, including Australia, Israel, Taiwan, China, Austria, Belgium, Mexico, and the Netherlands.

Air Pollutant Watch List

Air toxics are pollutants known or suspected to cause cancer or other serious health effects. The TCEQ routinely reviews and conducts health-effects evaluations of ambient air monitoring data from across the state by comparing air-toxic concentrations to their respective air monitoring comparison values (AMCVs) or state standards. The TCEQ evaluates areas for inclusion on the air pollutant watch list (APWL) where monitored concentrations of air toxics are persistently measured above AMCVs or state standards.

The purpose of the APWL is to reduce air-toxic concentrations below levels of concern by focusing TCEQ resources and heightening awareness for interested parties in areas of concern.

The TCEQ also uses the APWL to identify companies with the potential of contributing to elevated ambient air-toxic concentrations and to then develop strategic actions to reduce emissions. An area's inclusion on the APWL results in more stringent permitting, prioritized investigative efforts, and in some cases increased monitoring.

Ten areas of the state are on the APWL (see <www.tceq.texas.gov/toxicology/AirPollutantMain/APWL.html>). In fiscal 2011 and 2012, the TCEQ conducted boundary reevaluations, which resulted in the redefinition of two APWL areas and the removal of one. Monitoring data indicated significant improvement in several other APWL areas, including Galena Park, Texas City, and Port Arthur. The TCEQ has evaluated these areas to determine whether the improvements in air quality are expected to be maintained. In the last two years, no new areas were added to the APWL.

Residential Exposure Studies

The TCEQ's Toxicology Division has been involved in numerous studies investigating human exposure to airborne toxic chemicals and the potential of these exposures to cause adverse health effects. These studies lead to a greater understanding of air pollution and more knowledgeable decision making at the TCEQ. They are also a valuable way to address community concerns, since many of the study requests come from individuals.

Two significant scientific research projects sponsored by the TCEQ were completed in fiscal 2011 and 2012:

- The Frisco Blood Lead Testing study was a collaborative sampling event in which the Texas Department of State Health Services collected blood samples to determine lead concentrations in Frisco-area residents. This occurred after the EPA lowered the standard for lead, which resulted in a portion of Frisco being identified as a nonattainment zone. The study found that all adult and child blood lead levels were below levels of concern and consistent with those of national and state data.
- The Hillcrest Community Environmental Investigation was a collaborative investigation, with citizen input, to address local concerns in the Corpus Christi community about potential sources of VOCs within the community and other environmental impacts. The investigation found that all measured levels of VOCs, polycyclic aro-

matic hydrocarbons and total petroleum hydrocarbons in soil and groundwater were below a level of health concern.

Oil and Gas: Barnett Shale and Eagle Ford Shale

As mentioned in Chapter 1, the TCEQ has conducted numerous air-monitoring projects in the Barnett Shale area, which encompasses 24 counties in the Dallas-Fort Worth area. From August 2009 to May 2012, the TCEQ surveyed 2,247 sites using the GasFind infrared (IR) camera; at 2,203 of these sites, employees also used a hand-held volatile-compound sampler.

Based on these instrument observations, 1,175 canister samples were collected. The agency's Toxicology Division provided health effects evaluations for all of the canister samples and posted the information on the TCEQ's Barnett Shale Web page (see <www.tceq.texas.gov/goto/barnettshale>). The site also features an interactive map to show the location and results of sampling conducted in the Barnett Shale area.

The TCEQ continues to conduct research projects aimed at improving oil and gas emissions inventory estimates and emissions factors, including a special emissions inventory in the Barnett Shale area. A summary of the Barnett Shale emissions inventory data, along with the other research to improve oil and gas emissions inventory estimates and emissions factors, is available at the TCEQ's Point Source Emissions Inventory Web page (see www.tceq.texas.gov/airquality/point-source-ei/psei.html). The TCEQ uses this data to update the periodic emissions inventory submitted to the EPA.

In late 2009, the TCEQ implemented a procedure to respond to all complaints received concerning oil and gas facilities in the Barnett Shale area. Average response time to Barnett Shale complaints has been less than five hours from the time the complaint is received until arrival of investigators on-site. From early 2009 to mid-2012, more than 1,175 complaints had been investigated.

New drilling activity is expected to continue, based on recent rig counts. However, drilling activity has slowed considerably in the "dry gas" areas of the Barnett Shale since October 2008.

The TCEQ will continue to analyze how the oil and gas sector affects overall air quality in the state, specifically the Dallas-Fort Worth area. Because of continued lower pricing for natural gas, drilling in the Barnett Shale has been shifting to the more oil-rich area of that shale or moving out of the area. Relocation areas are the oil-rich area of the Eagle Ford Shale play in South Texas and various Permian Basin shale zones in West Texas.

Based on lessons learned from the TCEQ's work in the Barnett Shale area, a number of activities have been conducted or will take place in other areas of the state. This includes meeting with county judges, conducting workshops for local government agencies and industry, making presentations, conducting flyovers using the infrared camera, performing reconnaissance investigations, and developing guidance documents (see <www.TexasOilandGasHelp.org>) for oil and gas compliance issues.

The TCEQ belongs to the Railroad Commission of Texas' Eagle Ford Task Force and is a member of the Energy Sector Impacts Task Force led by the Texas Department of Transportation.

The TCEQ is in the early development stages of determining what additional air monitoring might be needed in the Eagle Ford Shale area. The goal would be to gather baseline data on VOCs and NO_x so the agency can evaluate, anticipate, and address the impact of oil and gas drilling and production activities on air quality throughout the Eagle Ford Shale play.

In addition, the data would be used to evaluate the potential transport of ozone precursors into the San Antonio area.

CAMR, CAIR, and CSAPR

In 2005, the EPA issued new rules to significantly reduce emissions for new and existing electricity-generating units.

The Clean Air Mercury Rule (CAMR) was designed to permanently cap—for the first time—mercury emissions from new and existing coal-fired power plants. This rule promised to make the United States the first country to regulate mercury emissions from electricity-generating utilities. In 2006, the

TCEQ approved rulemaking to implement the CAMR trading program for mercury.

The Clean Air Interstate Rule (CAIR) was intended to help nonattainment areas for ozone and fine particulate matter (PM_{2.5}) control NO_x and SO₂ emissions from new and existing electricity-generating utilities. In 2006, the TCEQ approved rulemaking to implement the CAIR trading program for NO_x and SO₂ and incorporated the provisions of Texas House Bill 2481, passed in 2005, and Texas Senate Bill 1672, passed in 2007.

In 2008, the D.C. Circuit Court of Appeals vacated CAMR. In a decision later that year, the court vacated CAIR and remanded it back to the EPA until the EPA could replace it with another rule that addressed the flaws the court identified in CAIR. The commission adopted the CAIR SIP and rule revisions in 2010. Texas electric generating units were only included in CAIR for the PM_{2.5} requirements, not for both ozone and PM_{2.5}, as was the case in more than 20 other states in the eastern half of the United States.

In 2011, the EPA finalized a rule, called the Cross-State Air Pollution Rule (CSAPR), requiring 28 eastern states to reduce emissions from electric generating units that contribute to ozone and PM_{2.5} pollution in other states. The rule is intended to help eastern states meet federal air quality obligations regarding interstate transport of air pollution for the 1997 ozone and PM_{2.5} and 2006 PM_{2.5} standards. The rule requires reductions in ozone season NO_x emissions for states under the ozone requirements, and reductions in annual SO₂ and NO_x for states under the PM_{2.5} requirements. The proposed rule had included Texas only under the ozone requirements, but the final rule required Texas to be included in both the ozone and PM_{2.5} programs.

To ensure emissions reductions, the EPA is implementing federal implementation plans (FIPs) for each of the states covered by the rule, beginning with the 2012 control periods. States may choose to develop SIP revisions to replace the FIP, beginning with the 2013 control period. The rule fully replaces CAIR.

In September 2011, the Texas Attorney General filed with the EPA a petition for

reconsideration and a stay of CSAPR, as it applies to Texas. The AG's Office also filed with the D.C. circuit court a petition for review and a motion for partial stay of the final rule.

On Dec. 30, 2011, the circuit court granted the state's request for a stay, which halted implementation of CSAPR, pending a full review of Texas' petition. The court heard oral arguments in April 2012. CAIR remains in place.

In June 2012, the EPA published the final rule to implement revisions. The EPA has stated that it is prudent to proceed with these amendments so the rules will be in place in case the CSAPR stay is lifted. However, given the stay, these amendments did not impose any requirements on regulated electric generating units or states.

In August 2012, CSAPR was vacated in a 2-1 decision from the D.C. Circuit Court of Appeals. The court ordered CSAPR vacated and the EPA to continue to administer CAIR while it works on a replacement transport rule. The court reiterated its language from the CAIR decision that the court did not intend an indefinite continuation of CAIR, and an expectation that the EPA would act expeditiously.

Fuel Requirements

In another strategy to lower levels of NO_x and VOC emissions from mobile sources, either the TCEQ or the EPA has requirements in place to use various fuel mixtures in different parts of the state, as follows:

- Reformulated gasoline is required year round in the eight-county Houston-Galveston-Brazoria area and the four-county Dallas-Fort Worth area (Collin, Dallas, Denton, and Tarrant counties).
- Low Reid vapor pressure gasoline is required between May and October in 95 counties in East and Central Texas, the Beaumont-Port Arthur area, and El Paso County.
- Oxygenated gasoline with a minimum oxygen content of 2.7 percent by weight is required from October through March in El Paso County (to lower carbon monoxide).

- Texas low-emission diesel fuel is required year-round in 110 counties in East and Central Texas.

Major Incentive Programs

The TCEQ has three important programs aimed at reducing emissions: the Texas Emissions Reduction Plan, Drive a Clean Machine, and the Texas Clean School Bus Program.

Texas Emissions Reduction Plan

The Texas Emissions Reduction Plan (TERP) provides financial incentives to owners and operators of heavy-duty vehicles and equipment for projects that will lower NO_x emissions. Because NO_x is a leading contributor to the formation of ground-level ozone, lowering these emissions is key to achieving compliance with the Clean Air Act.

In providing grants for voluntary upgrades, the program has focused largely on the ozone nonattainment areas of Dallas-Fort Worth and Houston-Galveston-Brazoria. Funding has also been awarded to projects in the Tyler-Longview-Marshall, San Antonio, Beaumont-Port Arthur, Austin, Corpus Christi, El Paso, and Victoria areas.

From 2002 through August 2012, the program awarded more than \$858 million for the upgrade or replacement of 14,685 heavy-duty vehicles, locomotives, marine vessels, and pieces of equipment. Over the life of these projects, 164,965 tons of NO_x are projected to be reduced, which equals to 62.4 tons per day in 2013.

Two programs were established under the TERP program in 2009.

- The **Texas Clean Fleet Program** provides funding for replacement of diesel vehicles with alternative-fuel or hybrid vehicles. Eight projects were awarded grants in 2011 for a total of \$29.4 million. The 2012 grant round closed in August. These projects included a range of alternative-fuel vehicles, including propane school buses, natural gas refuse vehicles, hybrid delivery vehicles and refuse vehicles, and electric vehicles.
- The **New Technology Implementation Grant Program** funds incremental

costs of reducing emissions from facilities and other stationary sources in Texas. Two grants were awarded in 2011 for a total of almost \$6.2 million. These projects involve systems to capture and store energy from wind-powered generation sources.

In 2011, the Legislature established additional programs to support alternative fuel vehicles in Texas.

- The **Clean Transportation Triangle Program** provides grants to support the development of a network of natural gas vehicle-fueling stations along the interstate highways connecting the Houston, Dallas, Fort Worth, and San Antonio areas. The program is allocated up to \$2.3 million per fiscal year. Plans called for the first grants to be awarded in the fall of 2012, with an additional grant application period anticipated for December 2012.
- The **Alternative Fueling Facilities Program** provides grants for the construction, reconstruction, or acquisition of facilities to store, compress, or dispense alternative fuels in areas of Texas designated as nonattainment. This program is allocated \$1.1 million per fiscal year. Plans called for the first grants to be awarded in early fiscal 2013.
- The **Texas Natural Gas Vehicle Grants Program** provides grants for the replacement or repower of heavy-duty or medium-duty diesel- or gasoline-powered vehicles with natural gas-powered vehicles and engines. Eligible vehicles must be operated in the counties intersected by the interstate highways designated under the Clean Transportation Triangle program and in counties designated as nonattainment. This program is allocated at least \$9.1 million per fiscal year. The first application period opened in July 2012 and will extend until May 2013 or until all funds are awarded, whichever occurs earlier. These grants are awarded on a first-come-first-served basis.

TERP grants and activities during the last two years are detailed in a separate report, *Texas Emissions Reduction Plan (TERP)*

(SFR-079/12). (The report is available at <www.tceq.texas.gov/publications>.)

Drive a Clean Machine

The Drive a Clean Machine program (see <www.driveacleanmachine.org>) was established in 2007 as part of the Low Income Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP) to remove older, polluting cars and trucks and replace them with newer, cleaner-running vehicles.

Backed by a \$45 million annual appropriation from fiscal 2008 through 2011 and \$5.6 million in fiscal 2012, the Drive a Clean Machine program is available in the areas of Houston-Galveston-Brazoria (Brazoria, Fort Bend, Galveston, Harris, and Montgomery counties), Dallas-Fort Worth (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant counties), and Austin-Round Rock (Travis and Williamson counties). These counties conduct annual inspections of vehicle emissions.

From the program's debut in December 2007 through May 2012, about \$161 million was provided to qualifying vehicle owners in the Houston-Galveston-Brazoria, Dallas-Fort Worth, and Austin-Round Rock areas. This funding helped retire or replace a total of 49,729 vehicles and repair an additional 24,213 vehicles.

Texas Clean School Bus Program

The Texas Clean School Bus Program provides grants for technologies that reduce diesel-exhaust emissions inside the cabin of a school bus. In addition to grant funding, the program offers educational materials to school districts on other ways to reduce emissions, such as idling reduction. By the end of August 2012, the Texas Clean School Bus Program had reimbursed approximately \$18.9 million in grants to 181 public school districts or charter schools to retrofit 6,692 school buses in Texas.

Environmental Research and Development

The TCEQ supports cutting-edge scientific research into the causes of air pollution in Texas.

The agency sponsored the Texas Air Quality Study (TexAQ5) field campaign in 2000, and the TexAQ5 II from 2005 to 2006.

More recently, the TCEQ and the Air Quality Research Program supported a range of projects. Among the air quality topics studied by TCEQ-sponsored researchers in fiscal 2011 and 2012 are the following:

- estimates of industrial emissions (especially flares) and emissions from oil and gas production;
- analyses of the transport of pollutants from city to city within the state and from out of state into Texas;
- detailed analyses of ozone production chemistry to develop more accurate simulations of the chemical processes that create and destroy ozone in Houston and Dallas; and
- advanced meteorological simulations for high pollution episodes in Houston, Dallas, and eastern Texas.

The most important studies are summarized as follows:

- **The destruction and removal efficiency of industrial flares.**

Flares burn waste gases from industrial processes. Standard operating practices are assumed to destroy at least 98 percent of the gases, but recent measurement studies using state-of-the-science technology by the TCEQ indicated that the waste gases may not always be burned with the assumed efficiency. Based on these preliminary investigations, the TCEQ, the University of Texas at Austin, and John Zink (a flare manufacturer) developed a project to test flares under different conditions to quantify the true emissions of vent gases from high-volume flares being operated at low volume (i.e., as process flares instead of emergency flares). One of the key factors found to affect flare destruction efficiency is the amount of steam assist or air assist supplied to the flare during combustion. Steam or air assist is used to reduce smoke from the flame and to mix the gases thoroughly with air. The TCEQ's Comprehensive Flare Study found that it was easy to over-assist the flare, which

could dramatically reduce its destruction efficiency and thus dramatically increase the emission of gases that were supposed to be destroyed. UT conducted computer simulations of ozone episodes to test the effects of lowered destruction efficiency and found that the increased emissions could increase ozone formation within flare plumes. Therefore, this study identified one of the major underreported sources of highly reactive VOC emissions in the Houston area. Fourteen papers, based on the research during the TCEQ Comprehensive Flare Study, have been published in *Industrial and Engineering Chemistry Research*.

- **Direct measurements of emission fluxes.** In 2009, the TCEQ sponsored researchers from the University of California–Los Angeles and other universities to conduct a field study in the Houston area to examine industrial emission sources with advanced remote sensing devices, including devices that could directly quantify the emissions of organic compounds. Analysis of these measurements in 2011 to 2012 found that formaldehyde, an important ozone precursor, can be emitted directly from the tip of the flame atop an industrial flare and from the unit that refreshes the catalyst used in fluidized catalytic cracking processes. These observations also determined that the destruction and removal efficiency and combustion efficiency of vent gases from the flares ranged from 70–99 percent. Since the assumed efficiencies are 98–99 percent, the emissions of vent gases are presumably greatly underestimated. These observations are corroborated by other on-site measurements, and by the results from the TCEQ Comprehensive Flare Study. Short-term SO₂ flux measurements were found to agree with the reported emissions inventories, but short-term flux measurements of highly reactive VOCs were found to exceed the emissions inventory rates by up to two orders of magnitude.
- **Sources of formaldehyde.** The TCEQ funded scientists at the National Oceanic and Atmospheric Administration to investigate the relative importance of primary versus secondary sources of

formaldehyde. Primary formaldehyde is directly emitted, whereas secondary formaldehyde is created from chemical reactions of highly reactive VOCs in the ambient air. The investigation was based on measurements collected during five field studies in 2000, 2006, and 2009. Secondary formation of formaldehyde was the dominant source. Small amounts of ambient formaldehyde were contributed by primary emissions from industrial facilities, secondary production from vehicle emissions, and primary emissions from vehicles. The primary emissions from both industry and vehicles are well-quantified by current emission inventories.

- **DFW field study.** The TCEQ and the Air Quality Research Program funded a field study in the Dallas–Fort Worth area in 2011. One of the purposes was to characterize emissions from the Barnett Shale oil and gas production region. The emission flux measurements performed during the study found that the largest sources of hydrocarbons at oil and gas locations near Fort Worth were gas-treatment facilities, combined with large compressor stations. Emissions were an order of magnitude lower from smaller compressor stations and well pads; however, flashing emissions on one occasion from a condensate tank were estimated at 140 kg/h methane and 10 kg/h ethane (and other species), suggesting further study for this potentially important intermittent source.

The latest findings should help in solving some of the persistent air quality issues faced by the Houston area. However, challenges remain for Dallas–Fort Worth and the southeastern portions of the state, as the revised air quality standards proposed by the EPA will be challenging to meet.

Water Quality

Developing Surface Water Quality Standards

Texas Surface Water Quality Standards

Under the federal Clean Water Act, every three years the TCEQ is required to review

and, if appropriate, revise the Texas Surface Water Quality Standards. These standards are the basis for establishing discharge limits in wastewater permits, setting instream water quality goals for Total Maximum Daily Loads and providing criteria to assess instream attainment of water quality.

Water quality standards are set for major streams and rivers, reservoirs, and estuaries based on their specific uses: aquatic life, recreation, drinking water, fish consumption, and general. The standards establish water quality criteria, such as temperature, pH, dissolved oxygen, salts, bacterial indicators for recreational suitability, and a number of toxic substances.

The commission adopted revised water quality standards and standards implementation procedures in fiscal 2010. Major revisions included:

- Expanded categories for recreational uses and criteria, as well as more specific protocols to assign recreational uses.
- Revisions to toxicity criteria to incorporate new data on toxicity effects and revisions to the basic requirements for toxicity effluent testing to address revised TCEQ and EPA procedures.
- Addition of new numerical nutrient criteria to protect numerous reservoirs from the excessive growth of aquatic vegetation related to nutrients.
- Numerous revisions and additions to the uses and criteria of individual water bodies to incorporate new data and the results of recent use-attainability analyses.

Revised standards must be approved by the EPA before being applied to Clean Water Act–related activities. The EPA acted on about half of the 2010 revisions in June 2011. Although portions of the 2010 standards had yet to finish federal review, the TCEQ proceeded with its triennial review of the Texas Surface Water Quality Standards.

Use-Attainability Analyses

The Surface Water Quality Standards Program also coordinates and conducts use-attainability analyses (UAAs) to develop site-specific uses for aquatic life and

recreation. A UAA is a scientific assessment of the physical, chemical, biological, or recreational characteristics of a water body. This assessment is often used to reevaluate designated or presumed uses when the existing standards might be inappropriate for water bodies that are listed as impaired or are potentially affected by permitted actions.

As a result of aquatic life UAAs, site-specific aquatic life uses or dissolved oxygen criteria were adopted in the 2010 water quality standards revision for more than 50 individual water bodies.

In 2009, the TCEQ developed recreational UAA procedures to evaluate and more accurately assign levels of protection for water recreation activities such as swimming and fishing. Since then, the TCEQ has initiated more than 100 recreational UAAs to evaluate recreational uses of water bodies that have not attained their existing criteria.

Using results from recreation UAAs, the TCEQ adopted site-specific contact recreation criteria for three individual water bodies in the 2010 Texas Surface Water Quality Standards revision. Additional site-specific contact-recreation criteria will be included in future revisions to the Texas Surface Water Quality Standards.

Clean Rivers Program

The Texas Clean Rivers Program is a unique state-fee-funded water quality monitoring, assessment, and public outreach program. Fifteen regional water agencies (primarily river authorities) perform monitoring, assessment, and outreach. The program affords the opportunity to approach water quality issues within a watershed or river basin at the local and regional level through coordinated efforts among diverse organizations.

Accomplishments include doubling the water quality data available for TCEQ decision making and increasing public awareness of water quality issues at the local level.

Water Quality Monitoring

Surface water quality is monitored across the state in relation to human-health concerns, ecological conditions, and design-

nated uses. The resulting data forms a basis for policies that promote the protection and restoration of surface water in Texas.

Coordinated Routine Monitoring

Each spring, TCEQ staff meet with various water quality organizations to coordinate their monitoring efforts for the upcoming fiscal year. The TCEQ prepares the guidance and reference materials, and the Texas Clean Rivers Program partners assist with the local meetings. The available information is used by participants to select stations and parameters that will enhance the overall water quality monitoring coverage, eliminate duplication of effort, and address basin priorities.

The coordinated monitoring network, which is made up of about 1,800 active stations, is one of the most extensive in the country. Coordinating the monitoring among the various participants ensures that available resources are used as efficiently as possible.

Continuous Water Quality Monitoring

The TCEQ has developed—and continues to refine—a network of continuous water quality monitoring sites on priority water bodies. The agency maintains 65 to 70 sites in its Continuous Water Quality Monitoring Network (CWQMN). At these sites, instruments measure basic water quality conditions every 15 minutes.

CWQMN monitoring data may be used by the TCEQ or other organizations to make water-resource management decisions, target field investigations, evaluate the effectiveness of water quality management programs such as TMDL implementation plans and watershed-protection plans, characterize existing conditions, and evaluate spatial and temporal trends. The data is posted at <www.texaswaterdata.org>.

The monitoring network is used daily to guide decisions on how to better protect certain segments of rivers or lakes, as seen by the following:

- **Pecos River.** From 2006 to 2012, the TCEQ developed a network of

nine CWQM sites from New Mexico to the Amistad Reservoir. The primary purpose of these sites is to monitor levels of dissolved salts and obtain information on the effectiveness of the Pecos River Watershed Protection Plan, which was implemented to protect the water supply in the Amistad Reservoir. The Pecos River CWQM sites are operated and maintained by the U.S. Geological Survey through cooperative agreements with the TCEQ and the Texas State Soil and Water Conservation Board. Other uses of this data includes development of water quality models.

- **Lower Rio Grande.** Seven Lower Rio Grande CWQMN stations provide near real-time data to support Rio Grande watermaster decisions. This occurs by monitoring water quality impacts from agricultural return flows from multiple sources in Texas and Mexico. These sites help the watermaster anticipate and lessen these water quality impacts.

Assessing Surface Water Data

Every even-numbered year, the TCEQ assesses water quality to determine which water bodies meet the surface water quality standards for their designated uses, such as contact recreation, support of aquatic life, or drinking water supply. Data associated with 200 different water quality parameters are reviewed to conduct the assessment. These parameters include physical and chemical constituents, as well as biological communities.

The assessment is published on the TCEQ website (see <www.tceq.texas.gov/waterquality/monitoring/index.html>) and submitted as a draft to the EPA as the *Texas Integrated Report for Clean Water Act Sections 305(b) and 303(d)*.

The report evaluates conditions during the assessment period and identifies the status of the state's surface waters in relation to the Texas Surface Water Quality Standards. Waters that do not regularly attain one or more of the standards may require action by the TCEQ and are placed on the 303(d) List of Impaired Water Bodies for Texas (part of the Integrated Report). The EPA must approve

this list before implementation by the TCEQ's water quality management programs.

Because of its large number of river miles, Texas can assess only a portion of its surface water bodies. The most important river segments and those considered at highest risk for pollution are assessed regularly. For the 2010 Integrated Report, water quality data was evaluated from 4,320 sites on 1,214 water bodies. The draft 2012 Integrated Report is expected to be submitted to the EPA in late 2012.

Restoring Water Quality

Watershed Action Planning

Water quality planning programs in Texas have responded to the challenges of maintaining and improving water quality by developing new approaches to addressing water quality issues in the state. Watershed action planning is a process for coordinating, documenting, and tracking the actions necessary to protect and improve the quality of the state's streams, lakes, and estuaries. The major objectives are:

- To fully engage stakeholders in determining the most appropriate action to protect or restore water quality.
- To improve access to state agencies' management decisions in water quality and increase the transparency of that decision making.
- To improve the accountability of state agencies assigned with protecting and improving water quality.

Leading the watershed action planning process are the TCEQ, the Texas State Soil and Water Conservation Board, and the Texas Clean Rivers Program partners. Key to the success of this process is involving all stakeholders, especially at the watershed level.

Total Maximum Daily Load

The Total Maximum Daily Load (TMDL) Program is one of the agency's primary means of improving the quality of impaired surface waters. This program works closely with the agency's Wastewater Permitting

and Nonpoint Source programs, as well as other governmental agencies and regional stakeholders, during the development of TMDLs and related implementation plans.

A TMDL is like a budget for pollution—it estimates the amount of a pollutant that a water body can assimilate daily and meet water quality standards. The budget, or load, is divided among categories of sources of pollution in the watershed. A TMDL sets the target for reaching attainment. Fully restoring water quality is a long-term commitment of the stakeholders in the watershed. For many impaired water bodies, an implementation plan to reduce pollutant loads is developed by the stakeholders in the affected watershed.

Since 1998, the TCEQ has been developing TMDLs to improve the quality of impaired water bodies on the federal 303(d) List, which identifies surface waters that do not meet one or more quality standards. In all, the agency has adopted 206 TMDLs for 134 water bodies in the state.

As of August 2012, the TMDL Program had restored water quality to attain standards for 28 impairments to surface waters. Overall, the program restored fishing uses, conditions for aquatic life, and proper salinity to 353 stream miles; made water suitable as a source of drinking water for 19,310

reservoir acres; and restored conditions for aquatic life in 12 square miles of estuary.

From August 2010 to August 2012, the commission adopted eight TMDL reports (56 impairments) for the following projects in which bacteria had impaired contact-recreation use: Brays Bayou and tributaries, Carters Creek and Burton Creek and tributaries, Cottonwood Branch and Grapevine Creek and tributaries, and Dickinson Bayou and tributaries. Also, 10 water bodies in the eastern Houston area, Halls Bayou and tributaries, nine water bodies upstream of Lake Houston, Sims Bayou and tributaries, and the Upper Trinity River.

Bacteria TMDLs

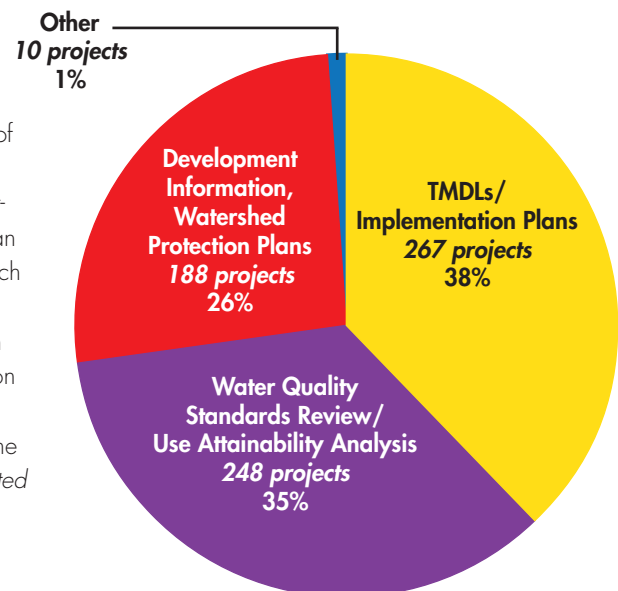
Bacteria from human and animal wastes can indicate the presence of disease-causing microorganisms that pose a threat to public health. People who swim or wade in waterways with high concentrations of bacteria have an increased risk of contracting gastrointestinal illnesses. High bacteria concentrations can also affect the safety of oyster harvesting and consumption.

Of the 621 impairments listed for surface water segments in Texas, about half are for bacterial impairments to recreational water uses.

Management Strategies for Restoring Water Quality

There are a variety of ways the TCEQ can address water impairments. Selection of an appropriate approach is coordinated with stakeholders through the Watershed Action Planning process. Numbers are from the 2010 Texas Integrated Report.

Total projects: 713



In the last two years, 41 TMDLs for bacteria were completed, and 51 were under way or planned for fiscal 2013. A workable strategy has been developed for bacteria TMDLs that is simple and relies on the consensus of the stakeholders in the affected watersheds.

Other actions are also being taken to address bacteria impairments, such as recreational use-attainability analyses that ensure that the appropriate contact-recreation use is in place, as well as watershed-protection plans developed by stakeholders and primarily directed at nonpoint sources.

Implementation Plans

Implementation plans are developed by the stakeholders in watersheds affected by a TMDL. They describe the activities that stakeholders will conduct in the watershed to decrease pollutant loads. The plans also map out the schedule, the responsible party, needed technical and financial assistance, estimated load reductions, and milestones to measure progress. For simple pollutants that are distributed throughout the watershed, such as bacterial and dissolved oxygen, the TMDL and implementation plans are developed together. This efficiency shortens the length of time needed to complete the process.

Each plan contains a commitment by the stakeholders to meet annually and review progress. They can revise or renew the plan to continue the water quality improvement with the goal of meeting the water quality standards. Engaging stakeholders in the development of an implementation plan allows them to develop a strategy that can be accomplished with available resources.

The best example of engaging stakeholders is the Bacteria Implementation Group in the Houston area. The group consists of 31 members and alternates representing government, private industry, agricultural interests, conservation organizations, watershed groups, and the public. Stakeholders convened in 2009 to develop a single implementation plan for 72 bacterial impairments in the Houston area. The watersheds in the plan make up 2,200 square miles, including all or part of 10

counties and more than 55 municipalities. Public comments on the draft implementation plan were accepted from June 13 to July 30, 2012. The stakeholder group is expected to remain active throughout implementation of the plan.

Nonpoint Source Program

The Nonpoint Source (NPS) Program administers the provisions of Section 319 of the federal Clean Water Act to control urban and non-agricultural NPS pollution. Section 319 authorizes grant funding for states to develop projects and implement NPS management strategies.

The TCEQ, with the Texas State Soil and Water Conservation Board, manages the NPS grants to implement the goals identified in the Texas NPS Management Program. The management program must be approved by the TCEQ, the governor, and the EPA. The governor submitted an updated NPS Management Program to the EPA in June 2012, and approval was granted in August. The NPS Program annual report tracks the progress in meeting the long- and short-term goals of the management program.

The NPS Program annually applies for funding from the EPA. The award is split between the TCEQ to address urban NPS pollution and the Texas State Soil and Water Conservation Board to address agricultural and silvicultural NPS pollution. The TCEQ receives \$2 million to \$3 million annually. Sixty percent of overall project costs are federally reimbursable; the remainder must be matched by the grantee. In fiscal 2012, \$2.5 million was matched with \$1.6 million, for a total of \$4.1 million.

The TCEQ solicits applications to develop projects that contribute to the NPS Program management plan. Typically, 20 to 25 applications are received, reviewed, and ranked each year. Because the number of projects funded depends on the amount of each contract, the number fluctuates. Ten projects were selected in fiscal 2011; nine in fiscal 2012. Half of the federal funds awarded must be used for the development and implementation of watershed-protection plans and TMDL implementation plans.

The NPS Program also administers the provisions of Section 604(b) of the federal Clean Water Act. These funds are derived from State Revolving Fund appropriations under Title VI of the act. Using a legislatively mandated formula, money is passed through to councils of governments for planning purposes. In fiscal 2012, the program applied for about \$680,000 in funding from the EPA.

Bay and Estuary Programs

The estuary programs are non-regulatory, community-based programs focused on conserving the sustainable use of bays and estuaries in the Houston-Galveston and Coastal Bend Bays regions through implementation of locally developed comprehensive conservation management plans. Plans for Galveston Bay and the Coastal Bend bays were established in the 1990s by a broad-based group of stakeholders and bay user groups. These plans strive to balance the economic and human needs of the regions.

The plans are implemented by two different organizations: the Galveston Bay Estuary Program (GBEP), which is a program of the TCEQ, and the Coastal Bend Bays and Estuaries Program (CBBEP), which is managed by a nonprofit authority established for that purpose. The TCEQ partially funds the CBBEP.

Additional coastal activities at the TCEQ include:

- Participating in the Gulf of Mexico Alliance, a partnership composed of Alabama, Florida, Louisiana, Mississippi, and Texas. The TCEQ contributes staff time to implement the Governors' Action Plan, focusing on several water quality concerns (pathogens, nutrients, and mercury, and improved comparability of data collection among the states), as well as education and outreach.
- Participating on the Coastal Coordination Advisory Committee and implementing the state's Coastal Management Program, both of which are led by the General Land Office.
- Directing, along with the General Land Office and the Railroad Commission of

Texas, the allocation of funds from the Coastal Impact Assistance Program.

- Working with the General Land Office to gain full approval of the Coastal Non-point Source Program, which is required under the Coastal Zone Act Reauthorization Amendments.

Galveston Bay Estuary Program

The GBEP provides ecosystem-based management that strives to balance economic and human needs with available natural resources in Galveston Bay and its watershed. Toward this goal, the program fosters cross-jurisdictional coordination among federal, state, and local agencies and groups, and cultivates diverse, public-private partnerships to implement projects and build public stewardship.

GBEP priorities include:

- wetlands conservation
- oyster-reef restoration
- water conservation
- stormwater quality improvement
- public outreach and education

During fiscal 2011 and 2012, GBEP protected and restored 1,600 acres of coastal wetlands and other important habitats; worked to control the spread of invasive species in Galveston and Brazoria counties; assisted local governments in managing stormwater through water quality improvement projects; helped interested landowners maintain working farms while preserving long-term wildlife values on their property; and partnered with industry and local governments to initiate a regional education campaign.

Through collaborative partnerships established by the program, \$7 in private, local, and federal contributions was leveraged for every \$1 the program dedicated to these projects.

Coastal Bend Bays and Estuaries Program

During fiscal 2011 and 2012, the CBBEP implemented 60 projects, including habitat

restoration and protection in areas totaling 1,369 acres. Based in the Corpus Christi area, the CBBEP is a voluntary partnership working with industry, environmental groups, bay users, local governments, and resource managers to improve the health of the bay system. In addition to receiving program funds from local governments, private industry, the TCEQ, and the EPA, the CBBEP seeks funding from private grants and other governmental agencies. In the last two years, the CBBEP secured more than \$7.7 million in additional funds to leverage TCEQ funding.

CBBEP priority issues focus on human uses, freshwater inflows, maritime commerce, habitat loss, water and sediment quality, and education and outreach. The CBBEP has become more active in water and sediment quality issues. The goal is to address 303(d) List segments so they meet state water quality standards.

Other areas of focus:

- Restoration of a 180-acre emergent marsh complex in Nueces Bay to restore fish and wildlife habitat.
- Environmental education of more than 7,000 students and teachers a year at the CBBEP Nueces Delta Preserve, which provides experiential activities.
- Colonial-waterbird rookery island enhancement for which CBBEP biologists implement predator control, habitat management, and other actions to help stem the declining populations of nesting coastal birds.
- The San Antonio Bay Partnership in which CBBEP assists local stakeholders to better characterize the San Antonio Bay system and develop plans to protect and restore wetlands and wildlife habitats.

Drinking-Water Standards

For more than a decade, the EPA has been instituting major changes that require public water systems to remove disease-causing microorganisms from surface waters, reduce arsenic and radionuclides from groundwater aquifers, and enact stricter controls regarding the chemical by-products created when chlorine is used to disinfect water. These

new standards have been integrated into TCEQ rules.

Of the 7,023 public water systems in Texas, about 4,700 are community water systems, mostly operated by cities. These systems serve about 96 percent of Texans. The rest are non-community water systems—such as those at schools, churches, factories, businesses, and state parks.

The TCEQ provides online data tools so the public can find information on the quality of locally produced drinking water. The Texas Drinking Water Watch (see <[dwww.tceq.texas.gov/DWWW/](http://www.tceq.texas.gov/DWWW/)>) provides analysis results from the compliance sampling of public water systems. In addition, the Source Water Assessment Viewer (see <www.tceq.texas.gov/gis/swaview/>) shows the location of the sources of drinking water. The viewer also allows the public to see any potential sources of contamination, such as an underground storage tank.

All public water systems are required to monitor the levels of contaminants present in treated water and to verify that each contaminant does not exceed its maximum contaminant level (MCL), action level (AL), or maximum residual disinfection level (MRDL). The MCL, AL, or MRDL is the highest level at which a contaminant is considered acceptable in drinking water for the protection of public health.

In all, the EPA has set standards for 102 contaminants in the major categories of microorganisms, disinfection by-products, disinfectants, organic and inorganic chemicals, and radionuclides. The most significant microorganism is coliform bacteria, particularly fecal coliform. The most common chemicals of concern in Texas are disinfection by-products, arsenic, fluoride, and nitrate.

More than 41,000 water samples are analyzed each year just for chemical compliance. Most of the chemical samples are collected by contractors, and then submitted to a certified laboratory. The analytical results are sent to the TCEQ and the public water systems.

Each year, the TCEQ holds a free symposium on public drinking water, which draws about 700 participants. The agency also provides technical assistance to public

water systems to ensure that consumer confidence reports are developed correctly.

Any public system that fails to have its water tested or reports test results incorrectly faces a monitoring or reporting violation. When a public water system has significant or repeated violations of state regulations, the case is referred to the TCEQ's enforcement program.

In May 2011, the TCEQ adopted EPA's new approach for "enforcement targeting" under the federal Safe Drinking Water Act. The approach is designed to identify public water systems with violations that rise to the level of significant non-compliance by focusing on systems with health-based violations and those with a history of violations across multiple rules.

The TCEQ also enacted an enforcement response policy. This new system-based approach uses an enforcement targeting tool that prioritizes public water systems by assigning each violation a "weight," or number of points, based on the assigned threat to public health. Points for each violation at a public water system are totaled to produce a score. For example, a violation stemming from an acute MCL carries more weight than a monitoring and reporting violation. This way, the TCEQ can target resources to address water systems having the highest priority problems.

Utility Services

Public water systems are required to submit engineering plans and specifications for new water systems or for improvements to existing systems. The plans must be reviewed by the TCEQ before construction can begin. In fiscal 2011, the TCEQ completed compliance reviews of 1,735 engineering plans for public water systems. In fiscal 2012, the agency performed 1,734 such reviews.

Investor-owned utilities and water supply corporations are required to obtain certificates of convenience and necessity (CCNs) before providing service. A CCN is a TCEQ authorization that allows a retail public utility to furnish retail water or sewer utility service to a specified geographic area. Investor-owned utilities must also

have an approved tariff that includes a rate schedule, service rules, an extension policy, and a drought contingency plan.

The TCEQ has original jurisdiction over the rates and services of investor-owned utilities, and has appellate jurisdiction over the rates of water-supply corporations, water districts, and out-of-city customers of municipally owned retail public utilities.

In fiscal 2011, the agency completed 137 CCN-related application reviews and 138 rate-related application reviews. In fiscal 2012, it completed 192 CCN-related application reviews and 160 rate-related application reviews.

The agency strives to ensure that all water and sewer utility systems have the capability to operate successfully. The TCEQ contracts with the Texas Rural Water Association to assist utilities by providing financial, managerial, and technical expertise. About 570 assignments for assistance to utilities were made through this contract in fiscal 2011, as were 549 in fiscal 2012.

In addition to contractor assistance, the TCEQ certifies utilities as regional providers. With this certification, utilities are eligible for tax-exempt status for utility-system construction and improvements. More than 350 utilities have been certified as regional providers.

The TCEQ also has jurisdiction over the creation of, and bond reviews for, water districts such as municipal utility districts, water control and improvement districts, and freshwater supply districts.

The agency reviews the creation of applications for general-law water districts and bond applications for water districts to fund water, sewer, and drainage projects. In fiscal 2011, the agency reviewed 226 major and 306 minor water-district applications. In fiscal 2012, it reviewed 200 major and 270 minor water district applications.

Stormwater

The Texas Pollutant Discharge Elimination System (TPDES) was created in 1998 when the EPA transferred authority of the National Pollutant Discharge Elimination System for water quality permits in the state to Texas. This included stormwater permits.

As the permitting authority, the TCEQ has renewed the federal permits as they expired and developed new stormwater permits to conform to updated federal and state requirements. A permittee can obtain authorization for stormwater discharges through an individual or general permit.

The TCEQ receives thousands of applications a year for coverage under TPDES stormwater general permits. To handle the growing workload, the agency has incrementally introduced online applications for some of these permitting and reporting functions. The agency has also outsourced the management of incoming paper notices of intent (NOIs), notices of termination (NOTs), and no-exposure certifications (NECs).

Permits are issued under the categories of industrial, construction, and municipal.

Industry

The multi-sector general permit regulates stormwater discharges from industrial facilities. The permit groups similar industrial activities into sectors, with requirements specific to each of 29 sectors.

Facilities must develop and implement a stormwater pollution prevention plan, conduct regular monitoring, and use best management practices to reduce the discharge of pollutants in stormwater. The permit also contains limitations for certain discharges—specific pollutants and concentrations that cannot be exceeded. The TCEQ receives about 150 NOIs, NECs, and NOTs a month for industrial facilities. This general permit was renewed and amended in August 2011.

Construction

The construction general permit was developed for stormwater runoff associated with construction activities, which includes clearing, grading, or excavating land at building projects such as homes, schools, roads, and businesses. The size of a construction project determines the level of regulation. Construction disturbing five or more acres is labeled a "large" activity, while construction disturbing one to five acres is termed "small."

Smaller projects are also regulated if they are a part of a larger common plan of

Stormwater Permits

	No. Affected (Issued)		Applications Received (mo. ave.)		Applications Received (total)	
	FY 2011	FY 2012	FY 2011	FY 2012	FY 2011	FY 2012
Industrial (facilities)	2,180	9,800	189	817	2,272	9,802
Construction (large sites)	5,407	5,858	460	504	5,515	6,042
MS4s (public entities)	22	9	2	1	21	3

development or sale more than one acre in size. Construction operators at large sites are required to apply for coverage under the general permit by filing an NOI. Operators at small sites must meet permit requirements, but are not required to submit an NOI. The TCEQ receives about 400 NOIs and 300 NOTs a month for large construction activities. This general permit was reissued in February 2008; it will expire in 2013.

Municipal

The TCEQ also regulates discharges from municipal separate storm-sewer systems, or MS4s. This category applies to a citywide system of ditches, curbs, gutters, and storm sewers that collect runoff. It also includes other publicly owned systems, such as controls for drainage from state roadways.

The TCEQ is responsible for renewing previously issued individual federal permits for discharges from medium and large MS4s. These systems are operated by cities and other public authorities, such as the Texas Department of Transportation, in areas in which the 1990 census showed a count of 100,000 people or more. Thirty-three municipalities and other public authorities fall into this category. The TCEQ has issued 26 individual MS4 permits to medium and large MS4s. Some of these entities are permitted together under one permit.

In 2007, the TCEQ issued a general permit regulating small MS4s (populations under 100,000 in 1990) in urbanized areas. This permit requires a regulated MS4 operator to develop and implement a stormwater-management program that includes minimum plan requirements for public education and participation, as well as minimum control measures for illicit-discharge detection and elimination, control of construction stormwater runoff, post-construction stormwater management, and pollution prevention

and good housekeeping. About 500 small cities, districts, and other public authorities have submitted NOIs for authorization or waivers under this general permit. The permit was in the process of being renewed in 2012.

Water Availability

Drought

Texas has experienced some serious dry spells in recent years, but the drought of 2011 turned out to be a record breaker. By October, all 254 counties in Texas were experiencing some stage of drought—most in the “exceptional” category.

As the state agency charged with managing surface water rights in Texas, the TCEQ carries out this responsibility primarily through issuing and enforcing water-right permits. Among permitted water-right holders, the permit holders that got their authorization first (senior water rights) are entitled to receive their water before water-right holders that got their authorization later (junior water rights). Any water-right holders not getting their entitled water can call on the TCEQ to enforce the priority doctrine—a priority call.

As drought persisted in 2011, the TCEQ received 15 priority calls on surface water from municipal, industrial, irrigation, and domestic and livestock users in the Brazos, Guadalupe, Colorado, Sabine, and Neches river basins. These priority calls resulted in the suspension or curtailment of more than 1,200 water-right permits, and the TCEQ stopped issuing temporary water-right permits. When drought conditions began to abate, priority calls were rescinded and suspensions lifted, allowing junior water-right holders the opportunity to use and store water.

During the drought, TCEQ field personnel enforced curtailments through ground-

level and aerial investigations. They also conducted streamflow monitoring to aid agency decisions regarding curtailments and management of priority calls.

The TCEQ initiated proactive steps as concerns intensified over extreme drought conditions. Information about drought conditions and permit suspensions was communicated to state leadership, legislative officials, county judges, county extension agents, holders of water-right permits, and the media.

This response was coordinated through the TCEQ Drought Team, a multidisciplinary agency group that began meeting in February 2010. The team issued updates on the status of drought conditions and agency response activities. Attending team meetings were agency partners, such as the Texas Department of Emergency Management and the Texas Water Development Board.

The TCEQ conducted a number of outreach and assistance activities—specifically targeting public water systems—in an effort to prevent systems from running out of water. The agency contacted all public water suppliers to urge implementation of drought contingency plans. TCEQ staff offered assistance to any public water systems experiencing critical conditions.

The agency intensively monitored a targeted list of public water systems that had a limited or an unknown supply of water remaining. The TCEQ offered those systems financial, managerial, and technical assistance, such as identifying alternative water sources, coordinating emergency drinking-water planning, and finding possible funding for alternative sources of water.

Because of the exceptional and prolonged nature of the drought, the TCEQ was also called on to assist power plants in managing lake levels and temperatures and to work with the U.S. Army Corps of Engineers to coordinate releases from Lake Whitney.

Drought Hits Home

When Texas experienced a record drought in 2011, 742 public water systems reported to the TCEQ that they implemented mandatory water restrictions. Weather conditions improved in 2012 and only 171 water systems reported implementing mandatory water restrictions, as of Aug. 20, 2012.

Water Rights

Water flowing in Texas creeks, rivers, lakes, and bays is state water. The right to use it may be acquired through appropriation via the permitting processes established in state law.

Each permit application is reviewed by the TCEQ for administrative and technical requirements to evaluate the proposed project's likely impact on matters such as other water rights, fish and wildlife habitat, conservation, water availability, and public welfare.

In fiscal 2011 and 2012, the agency processed a total of 792 water-rights actions, including new permits and amendments, water supply contracts, and ownership transfers.

As more surface water rights are issued, available water supplies diminish. For this reason, some cities are turning to indirect reuse of water as a source of supply. With indirect reuse, a city takes effluent that has been discharged into a stream, re-diverts the wastewater, and reuses it for irrigation or some other purpose. This type of project requires a bed-and-banks permit. Of these permits, a total of two were issued in fiscal 2011 and 2012.

Environmental Flows

In 2007, the Legislature passed HB 3 and SB 3 relating to the development, management, and preservation of water resources, including the protection of instream flows and freshwater inflows. This legislation changed the process by which the state would decide the flow that needed to be preserved in the watercourse for the environment, considering both environmental and other public interests. The TCEQ is required to adopt rules for environmental flow standards for Texas' rivers and bays.

Schedule for Adoption of Environmental Flow Standards

TCEQ Rule Adoption	River and Bay Systems
April 2011	Sabine and Neches rivers and Sabine Lake Bay; Trinity and San Jacinto rivers; Galveston Bay
August 2012	Guadalupe, San Antonio, Mission, and Aransas rivers; Mission, Copano, Aransas, and San Antonio bays; Colorado and Lavaca rivers; Matagorda and Lavaca bays
August 2013	Nueces River and Corpus Christi and Baffin bays; Brazos River and its associated bay and estuary system
December 2013	Rio Grande, Rio Grande estuary, and Lower Laguna Madre

Once environmental flow standards are adopted for a river basin, the TCEQ's goal is to protect the standards, along with the interests of senior water-right holders, in the agency's water-rights permitting process for new appropriations and amendments that increase the amount of water to be taken, stored, or diverted.

Texas Instream Flow Program

Established in 2001, the Texas Instream Flow Program is a cooperative effort by the TCEQ, the Texas Water Development Board, and the Texas Parks and Wildlife Department to perform scientific studies to determine flow conditions necessary for supporting a sound ecological environment in river basins. Texas Instream Flow Program studies are ongoing in the San Antonio, Brazos, Trinity, and Guadalupe River Basins, and scheduled to be completed by the end of 2016.

Groundwater Management

The TCEQ is responsible for delineating and designating priority groundwater management areas (PGMAs) (see <www.tceq.texas.gov/assets/public/permitting/watersupply/groundwater/maps/pgma_areas.pdf>) and creating groundwater conservation districts (GCDs) (see <www.tceq.texas.gov/assets/public/permitting/watersupply/groundwater/maps/gcds_in_pgmas.pdf>) in response to landowner petitions or through the PGMA creation process.

In 2011, the Legislature made changes to the PGMA program, including the

requirement that new studies will be undertaken over the next several years to determine whether any areas of the state without GCDs have—or will have—critical groundwater problems in the next 50-year planning cycle.

The TCEQ adopted new rules to implement the 2011 statutory changes, added one PGMA to an existing GCD, and began tracking and pursuing GCD creation in the other PGMAs.

Also, the TCEQ and the Texas Water Development Board (TWDB) will submit a report to the Legislature in 2013 on the following topics: the creation of new GCDs, the status and result of actions in the PGMAs, GCD management planning, and agency-required interactions.

Groundwater conservation districts are the state's preferred method of groundwater management. Each district is governed by a locally selected board of directors. Under the Texas Water Code, GCDs are authorized and required to permit water wells, develop a management plan, and adopt rules to implement the management plan.

By quantifying and evaluating the groundwater resource on an ongoing basis, GCDs help groundwater users understand the aquifer located in their area, the combined demands on the aquifer, and the need for conservation of the aquifer. A GCD uses aquifer data and public input to develop a plan to manage and conserve groundwater resources. A locally developed management plan outlines goals to conserve and protect the groundwater resources within the aquifers. A GCD implements rules and programs to achieve the plan's goals

through monitoring, registration and permitting, and educational outreach.

A GCD management plan and the “desired future conditions” for a groundwater management area (GMA) must be readopted and approved at least once every five years. The state’s GCDs have completed the first round of GMA planning to adopt desired future conditions for their groundwater resources. The TWDB has provided the estimates of “modeled available groundwater” to the GCDs for their next management plans and to the regional water planning groups for their 2016 plans.

In 2011, the Legislature continued the current law for the first round of GMA planning, but made significant changes to the GMA process for the next cycle of joint planning. The changes apply to GCD responsibilities, petitions for inquiry to the TCEQ, and appeals of desired future conditions to the TWDB.

The TCEQ actively monitors and ensures GCD compliance to meet management-plan adoption and readoption requirements. The agency also takes action when the State Auditor’s Office determines that a GCD is not operational in achieving the objectives of its management plan, and responds to petitions for inquiry of a GCD. TCEQ rules governing these responsibilities were updated in fiscal 2012 to implement the statutory changes.

Evaluations of River Basins without a Watermaster

Under Sections 11.326(g) and (h) of the Texas Water Code, the TCEQ is required every five years to evaluate river basins that do not have a watermaster program to determine whether a watermaster should be appointed. Staff is directed to report its findings and make recommendations to the commission.

In September 2011, the TCEQ developed a schedule for conducting these evaluations, as well as criteria for developing recommendations. Several basins are to be evaluated each calendar year and findings presented to the commission. The first year of evaluation was 2012, which included the Brazos and Colorado river basins, along with the Brazos-Colorado

and Colorado-Lavaca coastal basins. For information about watermaster evaluations, see Appendix D.

Texas Interstate River Compacts

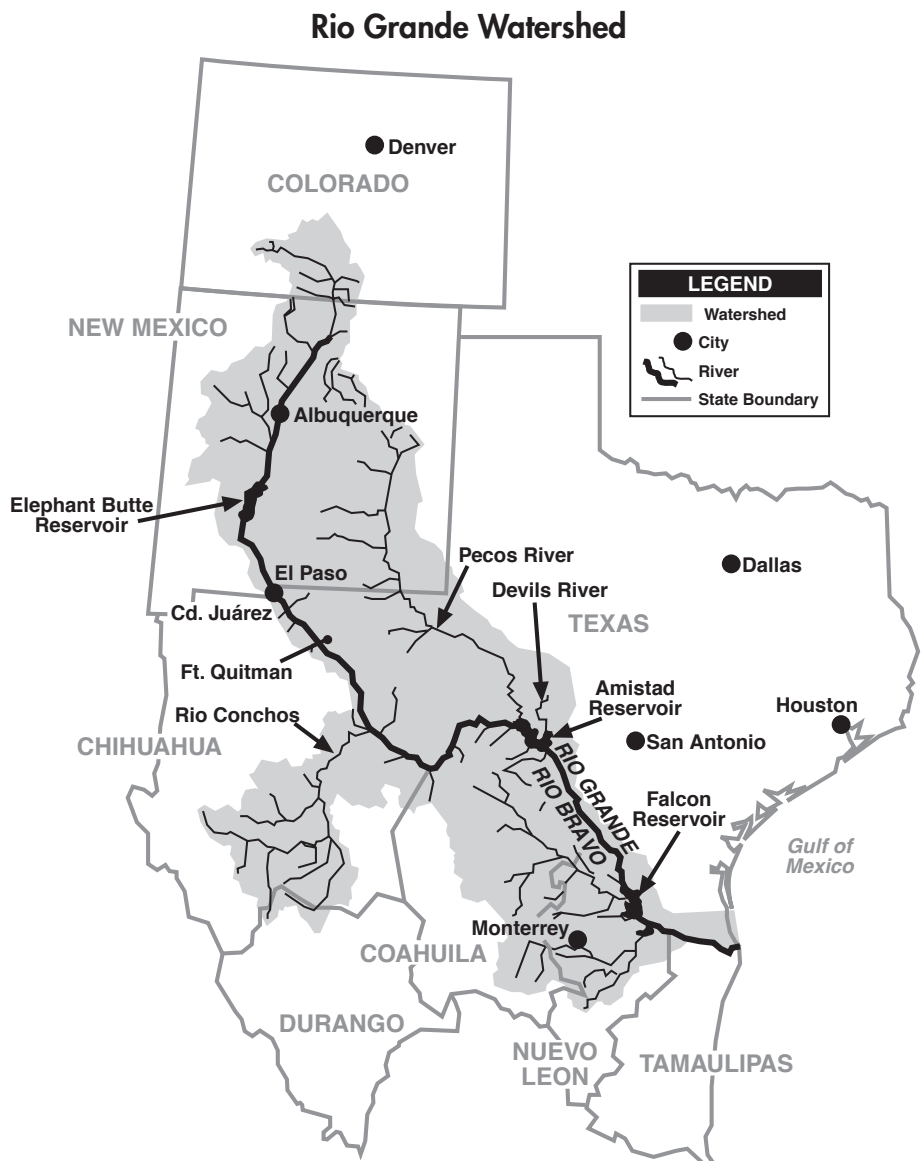
Texas is a party to five interstate river compacts. These compacts apportion the waters of the Canadian, Pecos, Red, Rio Grande, and Sabine rivers between the appropriate states. Interstate compacts form a legal foundation for the equitable division of the water of an interstate stream with the intent of settling each state’s claim to the water.

Rio Grande Compact

The Rio Grande Compact, ratified in 1939, divided the waters of the Rio Grande

among the signatory states of Colorado, New Mexico, and Texas from its source in Colorado to Fort Quitman, Texas. The compact did not contain specific language regarding the apportionment of water in and below Elephant Butte Reservoir. However, the compact was drafted and signed against the backdrop of the 1915 Rio Grande Project and a 1938 U.S. Bureau of Reclamation contract that referred to a division of 57 percent to New Mexico and 43 percent to Texas.

The Rio Grande Project (Project) serves the Las Cruces and El Paso areas and includes Elephant Butte Reservoir, along with canals and diversion works in New Mexico and Texas. Historically, Project water has been allocated by the 57/43 division, based on the relative



amounts of Project acreage originally identified in each state. Two districts receive Project water: Elephant Butte Irrigation District in New Mexico and El Paso County Water Improvement District No. 1 in Texas. The latter provides the City of El Paso about half of its water.

In 2008, after 20 years of negotiations, the two districts and the Bureau of Reclamation completed an operating agreement for the Rio Grande Project. The agreement acknowledged the 57/43 division of water and established a means of accounting for the allocation. The agreement also settled major issues regarding the impact of large amounts of groundwater development and pumping in New Mexico that affected water deliveries to Texas.

More recently, significant compliance issues have arisen regarding New Mexico's water use associated with the Rio Grande Compact. In August 2011, New Mexico took action in federal district court to invalidate the 2008 operating agreement. In response to the lawsuit and in coordination with the Legislative Budget Board and the Attorney General's Office, the TCEQ hired outside counsel with specialized experience in interstate water litigation to ensure protection of Texas' share of water.

International Treaties

Two international treaties have an impact on water supplies available to Texas. The 1906 convention between the United States and Mexico apportions the waters of the Rio Grande basin above Fort Quitman, Texas, while the 1944 treaty between the United States and Mexico apportions the waters of the Rio Grande basin below Fort Quitman.

An issue remains regarding the accounting of waters in the Rio Grande at Fort Quitman. While the 1906 convention clearly granted 100 percent of all waters below El Paso to Fort Quitman to the United States, the International Boundary and Water Commission has allocated the waters equally between the two countries.

Waste Management

Disposal of Low-Level Radioactive Waste

28 In 2009, the TCEQ issued a license to Waste Control Specialists LLC (WCS) authorizing

the operation of a facility for disposal of low-level radioactive waste (LLRW) in Andrews County in West Texas.

The low-level radioactive waste generated in the Texas LLRW Disposal Compact, comprising the states of Texas and Vermont, will be disposed of in the compact's waste-disposal facility, as will accepted non-compact wastes. A separate, adjacent facility, which was authorized by the same license, will accept low-level radioactive waste and mixed waste (waste that contains both a hazardous and a radioactive constituent) from federal facilities. This facility will be owned by the Department of Energy (DOE), should a contract between WCS and DOE be approved.

In January 2011, the TCEQ authorized WCS to begin construction of the LLRW disposal facility. In April 2012, the TCEQ issued a letter authorizing WCS to accept waste in the compact's waste-disposal facility. The first shipment of low-level radioactive waste was received and disposed of by WCS that same month. With this facility now accepting waste, the TCEQ's resident inspectors inspect every shipment and approve waste before Texas takes title.

Construction of the initial phase of the federal disposal facility was nearing completion and, if approved, will be available for operations once WCS and DOE successfully negotiate and approve a contract.

The wastes disposed of in the compact facility will generally include paper, plastic, glass, resins, metals, radiography tools, equipment, and other materials that have been contaminated by or contain radionuclides that meet the classification of low-level radioactive waste under state and federal regulations. These wastes are commonly generated by nuclear power plants, diagnostic and therapeutic nuclear medical facilities, industry, universities, and state governments.

Waste sent to the adjacent federal facility could include contaminated soil and debris from federal facilities. Neither disposal facility is authorized to accept high-level radioactive wastes, such as spent nuclear fuel rods or weapons-grade plutonium.

By law, the TCEQ is responsible for setting rates for the disposal of low-level radioactive waste at the compact facility. In June

2010, WCS submitted a waste disposal rate application to the TCEQ for review. In August 2011, the TCEQ recommended an interim disposal rate that is "reasonable and necessary" to protect Texas and Vermont businesses and services.

In January 2012, the TCEQ filed the notice of the LLRW rate application and the preliminary rate decision, which created the opportunity for a contested-case hearing. LLRW Compact Generators requested a contested-case hearing, and in May the TCEQ executive director referred the request to the State Office of Administrative Hearings.

Upon completion of this process, the recommended rates will be referred to the commission for consideration of adoption through expedited rulemaking.

Radioactive By-product Material Disposal

The Waste Control Specialists disposal site for by-product material, which was licensed in May 2008, has been open for by-product disposal operations since October 2009. By-product material that can be disposed of by WCS is defined as tailings or wastes produced by or resulting from the extraction or concentration of uranium or thorium from ore.

Since October 2009, WCS has disposed of one by-product waste stream containing 3,776 canisters of waste generated by the U.S. Department of Energy's Fernald facility in Ohio.

Underground Injection Control of Radioactive Waste

The TCEQ regulates disposal of by-product wastewater material generated at *in situ* uranium mining and processing sites. This occurs through permitting and enforcement of Class I injection wells under the agency's federally authorized Underground Injection Control (UIC) Program.

Each uranium mining site has one or more permitted Class I UIC wells for disposal of excess water produced from *in situ* mining and uranium recovery, as well as groundwater produced in restoration of mined aquifers.

Texas has nine mining projects with on-site permitted Class I UIC wells. All are located in South Texas.

Superfund Program

Superfund is the federal program that enables state and federal environmental agencies to address properties contaminated by hazardous substances. The EPA has the legal authority and resources to clean up sites where contamination poses the greatest threat to human health and the environment.

Texas either takes the lead or supports the EPA in the cleanup of Texas sites that are on the National Priorities List (NPL), which is EPA's ranking of national priorities among known releases or threatened releases of hazardous substances, pollutants, or contaminants.

In addition, Texas has a state Superfund program to deal with sites that are ineligible for the federal program. This program is the state's safety net for dealing with contaminated sites. The TCEQ uses state funds for cleanup operations at sites on the Texas Superfund Registry if no responsible parties can, or will, perform the cleanup. The TCEQ also takes legal steps to recover the cleanup expenses.

After a site is proposed for the state Superfund program, either the responsible party or the TCEQ proceeds with a remedial investigation, during which the agency determines the extent and nature of the contamination. A feasibility study follows to identify possible cleanup remedies. A local public meeting is held to explain the proposed remedy and to accept public comments. The TCEQ then selects an appropriate remedial action.

Projects entering the Superfund program are prioritized by risk. Locating the responsible parties and resolving legal matters, such as access to the site, consumes time and resources. It can take several years for sites to be fully investigated and cleaned up, though the TCEQ will expedite its response when necessary.

In fiscal 2011, Texas had a total of 111 sites in the state and federal Superfund programs, including an additional site proposed for the NPL in Midland County. Remedial

actions were completed at two NPL sites and two Texas Superfund Registry sites.

In fiscal 2012, two additional sites were proposed for the NPL in Parker and Harris counties, for a total of 113 sites. Remedial actions at two federal NPL sites were completed.

Petroleum Storage Tanks

The contamination of groundwater and soil due to leaking petroleum storage tanks (PSTs) has been a statewide environmental problem. The TCEQ oversees PST cleanups. Since the program began in 1987, the agency has received reports of 26,431 leaking PST sites—primarily at gasoline stations.

By the end of fiscal 2012, cleanup had been completed at 24,716 sites, and corrective action was under way at 1,715 sites.

Of the total reported PST releases, about one-half have affected groundwater.

Leaking PSTs are often discovered when a tank owner or operator upgrades or removes tanks, when an adjacent property owner is affected, or when the tank leak-detection system signals a problem. Some leaks are detected during construction or utility maintenance. Most tank system leaks are due to corrosion, incorrect installation, or damage during construction or repairs.

To avoid releases, tank owners and operators are required to properly operate and monitor their storage-tank systems, install leak-detection equipment and corrosion protection, and take measures to prevent spills and overfills.

Tank owners and operators are required to clean up releases from leaking PSTs, beginning with a site assessment that may include drilling monitoring wells and taking soil and groundwater samples. The TCEQ oversees the remediation.

The PST Remediation Fund has paid for most PST cleanups, with total expenditures topping \$1 billion. Revenue comes from a fee on the delivery of petroleum products removed from bulk storage facilities. In 2011, H.B. 2694 continued the petroleum-product-delivery fee; however, the TCEQ was required to set the amount of the fee by rule sufficient only to cover the agency's costs for administering the program. As a result, the

fee was reduced by about 27 percent.

Under state law, cleanups of leaking tanks that were discovered and reported after Dec. 23, 1998, are paid by the owners' environmental liability insurance or other financial assurance mechanisms, or from their own funds.

The PST reimbursement program, which funded cleanups at sites meeting specific eligibility criteria, ended Sept. 1, 2012, per H.B. 2694. The PST regulatory and State Lead programs remain active.

Before the expiration deadline, several milestones had to be met for a responsible party to remain eligible for reimbursement. The TCEQ required implementation of a corrective-action plan or groundwater monitoring to demonstrate progress toward cleanup goals. Eligible parties not completing all corrective actions by the deadline could apply to have their sites placed in the PST State Lead Program by July 1, 2011.

The PST State Lead Program continues to clean up sites at which the responsible party is unknown, unwilling, or financially unable to do the work—and in situations in which an eligible site was transferred to State Lead by the July 2011 deadline. State and federal funds pay for the corrective actions. Except for the eligible sites placed in the program by the deadline, the state allows cost recovery from the current owner or any previous responsible owner.

Voluntary Cleanups

The Texas Voluntary Cleanup Program (VCP) provides incentives for pollution cleanup by releasing future property owners from liability once a previously contaminated property meets the appropriate cleanup levels.

Since 1995, the program has provided regulatory oversight and guidance for 2,344 applicants and has issued 1,774 certificates of completion for residential, commercial, and industrial properties.

In the last two years, the program received 179 applications and issued 163 certificates. Recipients of the certificates report that the release of liability helps with property sales, including land transactions that would not have otherwise occurred due to concerns about environmental liability.

As a result, many underutilized or unused properties may be restored to economically beneficial or community use.

Recent sites successfully addressed under the Texas VCP range from green-space projects, such as an urban park in Dallas, to commercial developments, such as a retail development in Harlingen.

The key benefit is the liability release afforded to future property owners once the certificate is issued. The certificate insulates future owners from potential changes in environmental conditions, such as the discovery of previously unknown contamination or even future changes in cleanup levels. Most importantly, the certificate provides finality concerning environmental issues.

The VCP is funded by an initial \$1,000 application fee paid by each applicant. Costs beyond the initial fee are invoiced to the applicant on a monthly basis by the TCEQ.

Under the Innocent Owner/Operator Program, the TCEQ also implements the law providing liability protection to property owners whose land has been affected by contamination that migrated onto their property from an off-site source. In the last two years, the TCEQ issued about 55 certificates.

Dry Cleaners

Since 2003, the TCEQ has been responsible for collecting fees for a remediation fund designed to help pay for the cleanup of contaminated dry-cleaner sites. The fees come from the annual registration of dry-cleaning facilities and drop stations, property owners, previous property owners, and solvent fees from solvent distributors.

The Legislature in 2007 established registration requirements for property owners and preceding property owners who wish to claim benefits from the remediation fund, and authorized a lien against property owners and preceding property owners who fail to pay registration fees due during corrective action. In addition, the use of perchloroethylene was prohibited at sites where the agency has completed corrective action.

In fiscal 2012, the TCEQ identified potentially unregistered dry-cleaner locations and initiated contact through letters and

site visits aimed at improving compliance. These efforts resulted in an increase of 435 registrations and a \$716,715 increase in fees invoiced from fiscal 2011. Fiscal 2012 saw a total of 3,238 registrations and more than \$3.6 million in invoiced fees.

Municipal Solid-Waste Management

With growing demands on the state's waste-disposal facilities, the TCEQ evaluates the statewide outlook for landfill capacity and strives to reduce the overall amount of waste generated.

In fiscal 2011 (the most recent data available), the total disposal in the state's 193 active municipal solid-waste landfills was about 28.8 million tons, representing a reduction of 10.7 percent from fiscal 2009. Per capita, the rate of landfill disposal was about 6.2 pounds per day in fiscal 2011.

By the end of fiscal 2011, overall municipal solid-waste capacity stood at about 1.8 billion tons, representing almost 64 years of disposal capacity. That was a net increase of about 263 million tons, or roughly 285 million cubic yards, compared with fiscal 2009 capacity. More populous areas have seen a trend toward regional landfills serving larger areas, while less populous areas in West

Texas continue to be served by small (less than 40 tons per day) arid exempt landfills, which are operated by municipalities.

To assist regional and local solid-waste planning initiatives, such as addressing adequate landfill capacity, the TCEQ provides solid waste planning grants to each of the 24 regional councils of governments (COGs). The planning initiatives are based on goals specified in each COG's regional solid-waste management plan.

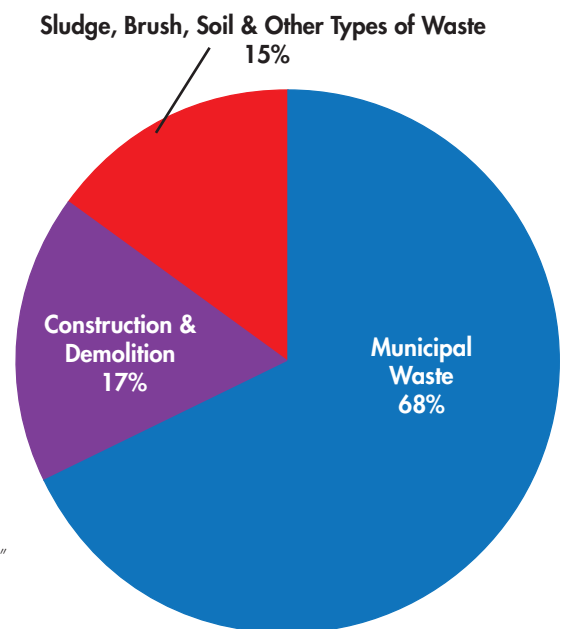
For the grant period of 2010 to 2011, the COGs received about \$21.9 million, including \$8.1 million for regional solid waste planning activities and \$13.8 million for 452 local and regional solid-waste projects. These projects included collection stations in underserved areas, reduce-reuse-or-recycle and organic waste management projects, education, and outreach. The Legislature in 2011 halved the 2012–2013 biennial funding to \$10.9 million, resulting in fewer local and regional projects being funded.

Regional solid waste grants and activities of the last two years are detailed in a separate report, *Regional Councils of Governments and the Municipal Solid Waste Grant Program, FY 2010–2011: Report to the Texas Legislature*, published in cooperation with the TCEQ by the 24 COGs and the Texas Association of Regional Councils.

Texas had 193 active municipal solid waste landfills in fiscal 2011. Municipal waste disposal reached about 28.8 million tons.

NOTE: The categories of "residential" and "commercial" listed in the 2009–2010 TCEQ Biennial Report have been merged into the category of "municipal."

Municipal Waste Disposal



Environmental Assistance

Voluntary Programs

The TCEQ uses technical assistance, education, and pollution prevention programs to encourage environmental improvements. The Small Business and Environmental Assistance Division has steered many of these programs to better focus on agency priorities and to align more closely with agency regulatory systems.

In fiscal 2011 and 2012, the agency provided direct compliance assistance to about 11,100 small businesses and local governments; of those, 758 received one-on-one assistance at their business or facility site.

Also, almost 400 small businesses and local governments took advantage of the Compliance Commitment Program. This program allows participants to undergo a site visit, during which a consultant contracted by the TCEQ uses a checklist to identify environmental compliance problems. After the visit, the businesses and facilities receive recommended actions they can take to resolve those problems. They must correct deficiencies within six months to be eligible for a compliance-commitment certificate.

Forty-four percent of Compliance Commitment Program participants achieved full environmental compliance with the applicable industry checklist. Upon successful completion of the program, businesses receive a certificate and an exemption of up to two years from routine investigations by the agency and partners, such as the EPA and local environmental-enforcement authorities.

Moreover, the program allows small businesses and local governments to achieve compliance voluntarily, confidentially, and without fear of enforcement. Site visits do not lead to an investigation or citation, unless there is an imminent threat to human health or the environment. Many times, participants find they save money by improving the efficiency of their processes and reducing paperwork.

In fiscal 2012, the agency conducted eight drought emergency-planning workshops across the state for local government officials, board members, and water-system operators. These workshops, which reached more than 500 attendees, offered information and tools to prevent or mitigate water outages.

For larger organizations, the TCEQ offered technical advice on innovative approaches for improving environmental performance through pollution prevention planning.

These efforts resulted in reductions of hazardous waste by more than 516,000 tons and toxic chemicals by about 52,700 tons during fiscal years 2011-2012.

Renewing Old and Surplus Materials

Texas established the Resource Exchange Network for Eliminating Waste (RENEW) in 1988 to promote the reuse or recycling of industrial waste.

The materials-exchange network has assisted in the trading of millions of pounds of materials, including plastic, wood, and laboratory chemicals. These exchanges divert materials from landfills and help participants reduce waste-disposal costs and receive money for their surplus materials.

RENEW is a free, easy-to-use service. Listings are grouped under "Materials Available" for anyone offering raw materials to other facilities, and "Materials Wanted" for anyone looking to find raw materials.

Through the website <www.renewtx.org>, these entities list and promote information on materials-exchange opportunities at a national and regional level.

During the last two years, an additional 292 users signed up to use RENEW, and 366 new listings were posted.