CHAPTER 2

Agency Activities

Texas border with Mexico along the Rio Grande

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 for some 2,900 employees 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 conducting field investigations, evaluating permit applications, holding a pollution prevention seminar, 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 human health and the state's natural resources.

Enforcement

Environmental Compliance

The TCEQ enforcement process begins when a violation is discovered during an inspection 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, more than 100,000 investigations will be conducted 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 maximums range from $500 to $10,000. Civil judicial cases carry penalties of up to $25,000 per day, per violation, in some programs.

In fiscal 2009, the TCEQ issued 1,756 administrative orders, which required payments of $14.5 million in penalties and nearly $6.4 million for Supplemental Environmental Projects, or SEPs (see next subsection).

In fiscal 2010, the TCEQ issued 1,640 administrative orders, which required payments of $11.3 million in penalties and $3.5 million for SEPs.

The TCEQ can also refer cases to the state Attorney General. In fiscal 2009, 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 $11 million in civil penalties and another $1.1 million for SEPs.

In fiscal 2010, the AG's office obtained 27 judicial orders, which resulted in $2.1 million in civil penalties and $1.3 million directed to SEPs.

Other enforcement statistics can be found in the agency's annual enforcement report, which is posted at <www.tceq.state.tx.us/goto/enforcement>.

In response to stakeholder input, the TCEQ has made concerted efforts to continue to expedite the processing of enforcement cases. Over the last two years, there has been a significant reduction in the number of cases considered backlogged. By the end of August 2010, only 61 cases were backlogged. Since the last biennium, there has been an 84 percent reduction in the number of cases backlogged.

Backlogged cases refer to administrative orders with pending initial settlement offers and where 180 days have passed since the most recent screening, or with proposed settlement offers, but have not been approved, and where 550 days have passed since the most recent screening.

While staff worked to reduce the backlog and process new cases, the average number of days from initiation of an enforcement action to completion (with an effective order) was 210 days.

TCEQ Enforcement Orders

Fiscal Year	Number of Orders	Penalties Paid	Orders with SEPs	SEP Funds
2009	1,756	$14.5 million	282	$6.3 million
2010	1,640	$11.3 million	219	$3.6 million

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

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 in the agency, but instead go to general revenue.

An option under state law, however, gives violators a chance to direct some of the penalty dollars to local improvement projects. By negotiating an agreement to perform or support a Supplemental Environmental Project (SEP)—in return for an offset of the administrative penalty—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.

In fiscal 2009, 282 enforcement cases concluded with violators directing a portion of their penalties—totaling more than $6.3 million—to local projects designed to improve air quality, water quality, or waste management. In fiscal 2010, there were 219 SEPs, for a total of almost $3.6 million.

In both years, the number of participants was the highest since the SEP program began in 1991.

To increase participation, the agency has compiled a list of pre-approved SEPs, which consists of projects that have already received general approval from the Commission. The list includes nonprofits that sponsor activities such as cleaning up illegal dumpsites, providing first-time adequate water or sewer service for low-income families, retrofitting or replacing school buses with cleaner emission technologies, removing hazards from bays and beaches, and improving nesting conditions for colonial water birds. Many municipalities and governmental

organizations are also listed with such projects as maintaining air quality networks and insulating homes for low-income households.

Regulated entities may draw up their own SEPs as long as the project is environmentally beneficial and the result of a settlement (not an activity already scheduled before the violation occurred). The SEP should go beyond what is already required by state and federal environmental laws, and it cannot be used to remediate the violation or any environmental harm caused by the violation, or to correct any illegal activity that led to the 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.

A uniform evaluation standard has been used to assign a rating to the 400,000 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 are also taken into account.

An entity's classification comes into play when the agency considers matters regarding not only enforcement but also permit actions, the use of unannounced inspections, and participation in innovative programs.

Each September, regulated entities are classified or reclassified. (The ratings database can be found at <www11.tceq.state.tx.us/oce/ch>.) Ratings below 0.10 receive a classification of "high," which means that those entities have an "above-average compliance record" with environmental regulations. Ratings from 0.10 to 45.00 merit "average," for having "generally complied." And ratings of 45.01 or more result in a "poor" classification, because these entities "performed below average."

An "average by default" classification means there was no compliance information on that entity for the last five years.

Compliance History Designations

September 2010

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

Entity Classification	Number	Percent
High	14,902	8.35%
Average by default	144,012	80.67%
Average	17,982	10.07%
Poor	1,621	.91%
TOTAL	178,517	100.00%

Dam Safety

New dam safety rules went into effect on Jan. 1, 2009. The new rules changed the definition of a dam, resulting in the reduction of the number of dams under the jurisdiction of the TCEQ Dam Safety Program. At the end of fiscal 2009, the number of state-regulated dams was 7,144; of those, 1,730 were classified as high- or significant-hazard. At the end of fiscal 2010, the number of state-regulated dams was 7,298; of those, 1,742 were classified as high- or significant-hazard.

While dam owners are ultimately responsible for the safety of the structures, the TCEQ's Dam Safety Program has oversight of the construction, maintenance, and repair of dams.

In a May 2008 audit report, the State Auditor's Office concluded that the TCEQ was not fulfilling its statutory mandate in dam safety—that it was failing to perform timely inspections of all high- and significant-hazard dams, or to ensure that the deficiencies identified in inspection reports were corrected. The report contained a number of recommendations to upgrade the program. The TCEQ Dam Safety Program has either corrected or is addressing the deficiencies.

Since the end of August 2008, the agency has added 21 new inspectors, for a total of 29 staff. Twelve of these were the result of funding approved by the Legislature. An additional 12 staff positions will be added in fiscal 2011.

The staff performs safety inspections of existing dams, reviews plans for dam construction and major rehabilitation work, makes periodic inspections of construction work, performs hydrologic and hydraulic studies, and approves emergency action plans (EAPs). In fiscal 2009, the program issued inspection reports on 526 dams; in fiscal 2010, it issued another 628 reports.

Over the last two years, staff have also been involved in a number of educational workshops around the state. This included 10 TCEQ dam owners workshops, attended by 668 dam owners, operators, and engineers; six rules workshops, attended by 433 dam owners and engineers; and five workshops sponsored by local soil and water conservation districts in North Texas, attended by 181 dam owners, property owners, representatives of oil and gas companies, and members of the public. In addition, the TCEQ's Dam Safety Program has published five guidelines for dam owners and engineers.

The new dam safety rules also require dam owners to have operation and maintenance plans and EAPs. Since January 2009, owners have submitted for review EAPs on 428 dams. The rule changes also allow the agency to increase its oversight of high- and significant-hazard dams.

Accredited Laboratories

Since July 2008, the TCEQ has only accepted regulatory data from labs accredited according to standards set by the National Environmental Laboratory Accreditation Program (NELAP) or from labs that are exempt from accreditation, such as in-house labs. Laboratories were allowed a three-year phase-in, ending in mid-2008, to become accredited.

Leading up to the July 2008 deadline, the TCEQ conducted an outreach and educational program, which included workshops that drew more than 400 attendees. Program staff has continued the outreach and educational program through the TCEQ's annual Environmental Trade Fair and presentations at conferences. In 2010, the TCEQ also co-hosted a workshop with the NELAC Institute, the EPA, and the Water Environment Association of Texas.

All labs accredited by the TCEQ are now held to the same quality control and quality assurance standards. The analytical data produced by these facilities 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.

At the end of August 2010, the number of labs accredited by the TCEQ was 281, including the TCEQ's own air and water lab.

Houston Laboratory

The TCEQ Houston Laboratory, which is accredited through the National Environmental Laboratory Accreditation Conference (NELAC), serves the agency's 16 regional field offices and the EPA's Region 6. Staff perform routine analyses that support the TCEQ and other environmental partners such as the Lower Neches Valley Authority.

The TCEQ's environmental programs—including air quality, water quality, and surface water quality monitoring—are supported through the analysis of air (for lead), water, wastewater, soil sediments, and sludge samples. The lab also conducts analysis of samples for environmental investigations conducted by the TCEQ's Office of Compliance and Enforcement. The lab develops analytical procedures and performance measures for accuracy, precision, and timeliness, and maintains a robust system with a highly qualified staff of analytical chemists and biologists. In fiscal 2010, a microbiologist was hired to ensure the lab's ability to address analysis of microbiological samples and maintain its NELAC accreditation.

Standard wet chemistry analyses are conducted for parameters such as pH, oil and grease, phenols, solids, bacteria *(E. coli)*, ammonia, cyanide, alkalinity, nitrate and nitrite, total phosphorous, total Kjeldahl nitrogen, chlorophyll a, chemical oxygen demand, total organic carbon, ortho phosphate, sulfides, and anions. Metals analyses are also conducted, including hexavalent chromium (in air and water), mercury (in water and solids), and selenium (in water and solids). The lab also assembles clean sampling kits for the collection of surface water quality monitoring samples.

Complaints Received

The TCEQ receives hundreds of environmental complaints each year, mainly through its 16 regional offices. Staff investigates each complaint and makes a report available to the complainant and the public.

The agency is required by statute to prepare an annual compilation that includes analyses of complaints by environmental media (air, water, and waste), priority classification, region, Commission response, enforcement

action, and trends. The analysis also assesses the impact of changes in complaint-handling policies and procedures approved by the Commission.

An analysis of the complaints received in the last two years can be found in Appendix A.

Asarco Smelter Site, El Paso

In 2005, Asarco and related entities filed for Chapter 11 bankruptcy protection in federal court in Corpus Christi. The TCEQ filed claims in the bankruptcy case pertaining to Asarco's environmental liabilities in Texas. One of the largest of these claims concerned Asarco's smelter property in El Paso.

Asarco is a mining, smelting, and refining company based in Tucson. Operations at its El Paso property began in 1887 in the form of a lead smelter and continued in various capacities for over a century, including the most recent operations as a copper smelter.

In February 2009, the state air permit for the copper smelter was voided by the TCEQ at Asarco's request. At that point, it became clear within the bankruptcy case that the site would no longer have active smelter operations.

A month later, the TCEQ, the EPA, and Asarco entered into a consent decree and settlement agreement in which Asarco's El Paso property, with about 458 acres, would be placed in an environmental custodial trust and Asarco would pay $52 million into the trust to address contamination at the property. The bankruptcy court approved the consent decree and settlement in June 2009. However, due to competition among various entities for control of Asarco through the bankruptcy process, the court did not confirm a plan of reorganization until November 2009.

The bankruptcy court confirmed the plan put forth by Americas Mining Corporation (controlled by Grupo México), which is the parent corporation of the debtor, Asarco. The confirmed plan implemented the consent decree and settlement agreement concerning the El Paso property. Thus, in December 2009, an environmental custodial trust was created and funded with $52 million from the Asarco bankruptcy.

The trustee of the environmental custodial trust, Project Navigator (represented by Roberto Puga) was moving forward in August 2010 to address the remaining contamination at the property. The primary contaminants of concern at the site are arsenic, lead, and cadmium. Remediation will address the contaminants in both soil and groundwater.

The TCEQ continues to have a regulatory oversight role in the remediation of the property and is in frequent communication with the trustee concerning technical, legal, and financial issues.

Air Quality

Recent 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 the standard provides the required level of health and environmental protection. Federal clean-air standards cover six air pollutants: ozone, particulate matter, carbon monoxide, lead, nitrogen oxides, and sulfur dioxide.

Over the years, attaining the ozone standard has been the biggest air quality challenge in Texas. Some of the state's largest metropolitan areas are designated as nonattainment, and stricter revisions have been proposed.

2010 Ozone Standard

In August 2010, the EPA announced that it would delay finalization of a new primary and secondary ozone standard. The EPA was expected to set the new primary standard within the range of 0.060 to 0.070 parts per million (ppm), in the fall of 2010. The secondary standard—a cumulative, seasonal standard—was expected to be set within a range of 7 to 15 ppm-hours, and was to be finalized shortly after the primary standard. The revised primary and secondary standards are the result of the reconsideration of the ozone standard of 0.075 ppm, finalized by the EPA in March 2008 but not yet implemented. The 1997 8-hour ozone standard of 0.08 ppm remains in effect.

Preliminary data indicates a number of areas may monitor nonattainment of a reduced standard. Due dates for state recommendations regarding the

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, gasoline vapors, 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: industrial fuel use, surface coating, and painting

On-road mobile sources: cars and trucks

Nonroad mobile sources: construction equipment and engines such as locomotives

attainment status of areas for the 2010 primary standard will be identified when the standard is finalized, but will be no sooner than 120 days following promulgation of the new standard. The EPA's schedule for final designations was unknown at the end of fiscal 2010.

The EPA's options for the secondary standard's designation process require recommendations for the secondary standard on the same schedule as for the primary standard (or may require them due by August 2011).

Revisions to the State Implementation Plan (SIP) for areas designated as nonattainment are due to the EPA in December 2013. These recommendations will be based on monitoring data over a three-year period. The EPA's default approach has been to include the entire metropolitan statistical area.

In June and July of 2010, the TCEQ held public meetings across the state on the proposed lowered standard and asked for community comments. As the TCEQ develops proposals to deal with ozone issues, the revisions will be submitted to the EPA in the form of the SIP, which is a blueprint for dealing with air quality issues at the local level.

2010 Sulfur Dioxide Standard

In June 2010, the EPA published a final rule strengthening the primary sulfur dioxide (SO_2) standard. The rule sets a new 1-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 1-hour average concentrations. The rule revokes the previous annual SO_2 standard of 0.03 ppm and the 24-hour standard of 0.14 ppm. The new standard aims to better protect communities near coal-fired power plants, industrial boilers, petroleum refineries, metal processing plants, and diesel exhaust emissions. The rule became effective in August 2010.

No part of Texas is designated nonattainment for the previous SO_2 standards. However, air quality monitoring in Jefferson County indicates a design value of 80 ppb for 2007 through 2009.

Initial designations for the new standard will rely on refined dispersion modeling results, combined with 2008-through-2010 monitoring data. Areas with a violation indicated by monitor or model will be designated nonattainment. Areas with both monitored data and modeling results showing no

2010 Primary Ozone Design Values by Combined Metropolitan Statistical Area

Combined Metropolitan Statistical Area	Design Value, as of Sept. 14, 2010 (parts per billion)
Dallas—Fort Worth	86
Houston-Galveston-Brazoria	82
Austin—Round Rock	74
San Antonio	74
Beaumont—Port Arthur	73
Northeast Texas	72
El Paso	71
Corpus Christi	71
Waco	70
Victoria	66
Big Bend (Brewster County)	64
Lower Rio Grande Valley	63

Note: Design value describes the air quality status of a given geographic area relative to the federal clean-air standard. It is calculated from observed pollutant concentrations and is used as an indicator for the pollution level—in this case, for ozone.

violations will be designated attainment. All other areas will be designated unclassifiable. Final EPA designations are expected by June 2012.

States with areas designated nonattainment in 2012 have until February 2014 to submit SIP revisions that outline plans to attain the standard by August 2017. States must submit infrastructure SIP revisions by June 2013 for unclassified and attainment areas. An infrastructure SIP demonstrates how the state will provide for the implementation, maintenance, and enforcement of a new or revised standard.

As part of the final rulemaking for the 2010 SO_2 standard, new SO_2 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 strengthened the primary nitrogen dioxide (NO_2) standard by establishing a new 1-hour NO_2 standard of 100 ppb. State designation recommendations are due to the EPA in January 2011. The new standard focuses on short-term exposures to NO_2, which are generally greater near major roads. No area in Texas has monitored above the 100 ppb standard. The EPA retained the annual average NO_2 standard of 53 ppb, but changed the monitoring network requirements to capture both peak NO_2 concentrations occurring near roadways and community-wide NO_2 concentrations. An estimated 126 new NO_2 monitoring sites will be placed near major roads in 102 urban areas nationwide. Approximately eight new monitoring sites are expected in Texas.

In January 2012, the EPA will designate most of the United States as unclassifiable because monitors near roads will not yet be in place. All new NO_2 monitors must begin operating no later than Jan. 1, 2013. The EPA intends to redesignate areas based on new monitoring data by 2016 or 2017, once the expanded network of NO_2 monitors is fully deployed and three years of air quality data have been collected. The attainment date for the 2010 NO_2 standard is early 2021 or 2022, or about five years after the date of nonattainment designations.

2008 Lead Standard

In 2008, the EPA revised the primary lead standard from 1.5 to 0.15 micrograms per cubic meter (µg/m3), measured in total suspended particulate matter. On June 14, 2010, the EPA proposed a nonattainment area of about 2.5 square miles surrounding the Exide Technologies battery recycling facility in Frisco (Collin County). The EPA's proposal would designate the rest of Texas as attainment/unclassifiable. Final designations will be effective in January 2011 for areas with sufficient monitoring data and in January 2012 for areas with source-oriented monitors installed in 2010. Attainment demonstration SIP revisions will be due to the EPA in June 2012 for areas designated nonattainment as of January 2011, and in June 2013 for areas designated nonattainment as of January 2012.

Compliance Status by Area

Houston-Galveston-Brazoria

Based on a 2009 modeling emissions inventory, mobile sources (on-road and nonroad) make up 55 percent of the nitrogen oxide (NO_x) emissions for the eight-county nonattainment area in and around Houston. Point and area sources contribute the remaining

City of Houston

45 percent, based on a 2009 modeling emissions inventory. While the state has jurisdiction over point and area source emissions, it must rely on the federal government to reduce emissions from mobile sources.

This urban area is classified as severe nonattainment for the 1997 ozone standard, with an attainment date that is "as expeditious as practicable" but no later than June 15, 2019.

On March 10, 2010, the TCEQ adopted two revisions to the Texas SIP for the Houston-Galveston-Brazoria (HGB) ozone nonattainment area. The HGB attainment demonstration SIP revision demonstrates attainment of the 1997 8-hour ozone standard by the June 15, 2019, deadline. The three principal components of this SIP are (1) a photochemical modeling demonstration, (2) control strategy development, and (3) the stakeholder process.

Identifying control measures that are reasonable as well as technologically and economically feasible presents a challenge for the TCEQ, considering the magnitude of emission reductions already achieved under the 1990 1-hour ozone standard. Two of the main control strategies implemented in the area for the 1-hour ozone standard were an annual cap-and-trade program to reduce NO_x emissions by an average of 80 percent from utility, industrial, commercial, and institutional combustion sources; and an annual cap-and-trade program to reduce emissions of highly reactive volatile organic compounds from process vents, flares, and cooling-tower heat exchange systems. Meeting the ozone standard in the Houston area is also complicated by unique meteorological conditions along the Gulf Coast and the complex chemistry of ozone formation.

In response to public comments, the TCEQ will perform a 1997 8-hour ozone standard mid-course review and submit this review to the EPA with the 2010 ozone standard SIP revision, due in December 2013.

The HGB reasonable further progress SIP revision demonstrates an 18 percent emissions reduction between 2002 and 2008, and an average of 3 percent per year emissions reduction between 2008 and 2011, 2011 and 2014, and 2017 and 2018.

On July 1, 2010, the TCEQ's executive director approved a concept memo to begin working on an HGB reasonably available control technology (RACT) update SIP revision. The purpose of this revision is to provide the EPA a RACT analysis update to include control techniques guidelines (CTG) not yet addressed in the March 2010 HGB attainment demonstration SIP revision for the 1997 8-hour ozone standard and to incorporate any CTG-related rulemaking considered for the HGB area. This SIP revision is tentatively scheduled for proposal in May 2011, with adoption in November 2011.

Dallas–Fort Worth

Based on a 2009 modeling emissions inventory, in the nine-county nonattainment area of Dallas–Fort Worth, about 74 percent of NO_x emissions are emitted from on-road and nonroad mobile sources that remain under federal jurisdiction. However, the state has initiated substantial NO_x reductions through regulation of point- and area-source emissions, which make up the remaining 26 percent of NO_x emission sources.

In the last two years, two additional revisions have been made to the initial 1997 8-hour ozone attainment demonstration SIP revision, which was approved by the EPA in January 2009. On March 10, 2010, the Commission adopted a revision that updated the area's volatile organic compounds RACT, adopted new VOC regulations, and modified the contingency plan. On Aug. 25, 2010, the TCEQ adopted a revision to the DFW attainment demonstration to convert an environmental speed-limit control measure into a transportation control measure, allowing the North Central Texas Council of Governments to substitute the environmental speed-limit control measure with other transportation control measures, as long as all substitutes achieve the same reductions.

The DFW area is classified as moderate nonattainment for the 1997 ozone standard; however, the area did not attain the ozone standard by the June 15, 2010, deadline. As a result, the EPA is required to reclassify the area from moderate to serious with a new attainment deadline of June 15, 2013. Additionally, failure to attain the standard by the deadline requires implementation of an attainment demonstration's contingency measures. In May 2010, the TCEQ implemented contingency measures in the area.

In 2011, the Commission will consider for adoption a new attainment demonstration SIP and reasonable further progress SIP for the 1997 8-hour ozone standard. This attainment demonstration SIP revision will use photochemical modeling to demonstrate that

the area will attain the 1997 8-hour ozone standard by June 15, 2013. The attainment demonstration will also show that the state has adopted all reasonably available control measures, required the implementation of all RACT, adopted any other controls needed to attain the standard, and adopted measures needed to provide an additional 3 percent reduction in emissions as a contingency measure if the area fails to attain the standard by the new deadline.

In addition, the state will demonstrate the area's compliance with all of the serious classification requirements, including an enhanced monitoring network, additional NO_x and/or VOC emission reductions averaging 3 percent per year through 2012, an enhanced inspection and maintenance program, a clean-fuel fleet program, and transportation control measures. In June 2010, the TCEQ held a stakeholder meeting in Arlington to receive ideas from the public on control strategies for the new attainment demonstration.

Lead Maintenance Plan for the 1978 Lead Standard. After designating a portion of Collin County as a lead nonattainment area in 1991, the EPA approved the TCEQ's Collin County lead attainment SIP in 1994. The EPA then redesignated the Collin County nonattainment area to attainment and approved a 10-year maintenance plan, effective Dec. 13, 1999. Even though a new 0.15 µg/m3 lead standard was implemented on Jan. 12, 2009, the previous 1.5 µg/m3 standard remains in effect for Collin County until approximately January 2012. In August 2009, the Commission adopted a SIP revision for the second maintenance plan for the 1978 lead standard, along with an agreed order with Exide Technologies in Frisco to make the second maintenance plan's contingency measures legally enforceable.

Beaumont–Port Arthur

The four-county BPA area is classified as moderate nonattainment for the 1997 8-hour ozone standard. In December 2008, the TCEQ submitted to the EPA a request, along with a maintenance plan, to redesignate the BPA area to attainment of the 1997 8-hour ozone standard.

In May 2010, the EPA proposed approval of the 2008 redesignation request and maintenance plan SIP revision, including a determination that the BPA area has attained the 1997 8-hour ozone standard and has met all applicable 1997 8-hour ozone requirements and 1-hour anti-backsliding requirements for the purposes of redesignation. The EPA also proposed that the BPA area is meeting the 1-hour ozone standard.

El Paso

After implementing air quality programs for 15 years, El Paso achieved major reductions in previously high levels of ozone, carbon monoxide (CO), and coarse particulate matter (PM_{10}). The El Paso area is in attainment of the 1997 8-hour ozone standard, and the EPA in 2009 approved the El Paso ozone maintenance SIP revision.

In 2008, the area was redesignated attainment for the CO standard. In 2009, the EPA changed El Paso's status for the PM_{10} (particulate matter equal to or less than 10 micrograms) to meeting the standard. The TCEQ has been researching elements of a maintenance plan and a redesignation request for that standard.

Austin

The Austin area is in attainment of the 1997 8-hour ozone standard. The Austin–Round Rock 8-Hour Ozone Flex Program Memorandum of Agreement was approved by the Commission in 2008 and by the EPA later the same year.

Corpus Christi

The Corpus Christi area is in attainment of the 1997 8-hour ozone standard. The Corpus Christi 8-Hour Ozone Flex Program Memorandum of Agreement was approved by the Commission in 2007 and by the EPA later the same year.

Victoria

The Victoria area is in attainment of the 1997 8-hour ozone standard. On July 28, 2010, the Commission adopted the Victoria County contingency plan SIP revision. This revision contains an amended contingency measures section to complete the 2007 Victoria maintenance plan SIP revision, as required by the EPA. The amended section provides a list of rules that the TCEQ may adopt and implement upon violation of the 1997 8-hour ozone standard.

Additional Areas

The areas of Big Bend (Brewster County), Northeast Texas, San Antonio, and Waco are all in attainment of the 1997 8-hour ozone standard, but no applicable SIP or 8-hour ozone flex plans are in place.

Evaluating Health Effects

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

Before 2006, the same values were used for both air permitting and air monitoring, even though use of the same value did not account for the significant differences between the two programs, nor the differences in the types of health effect evaluations.

In 2006, new guidelines finalized the development of these values and defined a scientific process for deriving separate values for these two different uses. For values used in evaluating air permits for a single permittee, the health value derived to protect against non-cancer health effects is reduced by 70 percent to account for cumulative exposure. This additional reduction is not necessary for air monitoring data because air monitoring data represent emissions from multiple sources. However, because the new values were unfamiliar terms, the values derived for evaluating air monitoring data were often overlooked or misquoted.

In 2010, the TCEQ changed the terminology for evaluating data collected from ambient air monitors. A new term—air monitoring comparison values (AMCV)—refers to all the health- and welfare-based values used to evaluate air monitoring data, and Effects Screening Level (ESL) now refers only to the values used to review air permitting data.

The 2006 guidelines were subject to two rounds of public comment and an external scientific peer review by world-renowned experts in human health risk assessment. The draft development support documents outlining the scientific procedures used to develop ESLs and AMCVs for individual chemicals are subject to a 90-day public comment period before the documents 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 15 chemicals using this process in fiscal 2009 and fiscal 2010, and proposed development support documents for four chemicals were opened for public comment in fiscal 2010.

The toxicity assessments conducted by the agency have received widespread attention. In 2009, the Ontario Ministry of 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 on 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

The TCEQ routinely reviews and conducts health effects evaluations of ambient air monitoring data from across

the state by comparing the data to its air monitoring comparison values (AMCVs). When appropriate, agency toxicologists will recommend that a pollutant and the area of potential sources of the pollutant be added to the Air Pollutant Watch List. This occurs in the areas where long-term monitored concentrations of pollutants have been measured above the long-term AMCV, or where frequent monitored exceedances of the short-term AMCV occur.

In June 2009, this recommendation process was amended to include advanced notification of legislators whose districts lie in the proposed area. After a 30-day public comment period, the agency reevaluates all comments received and any additional monitoring information. Following a final notification to legislators, the pollutant and area will be placed on the Watch List.

An area's inclusion on the Watch List results in more stringent permitting of local industry, prioritized investigative efforts, increased efforts to work with industry to address air quality concerns through pollution control technology, and in some cases increased monitoring and notification.

Through increased awareness, air quality has significantly improved in six Watch List areas; in fact, nine pollutants were removed from the Watch List in the last two fiscal years. By the end of fiscal 2010, the Watch List included 16 pollutants and 11 areas of potential sources.

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 by the TCEQ. They are also a valuable way to address community concerns, since many of the study requests come from individuals. Three significant scientific research projects sponsored by the TCEQ were completed in fiscal 2010:

- An **ambient air study** addressed citizen concerns about possible exposure to VOCs and metals from cement kiln operations in Midlothian. The study found that, although the ambient air monitors could detect trace levels of pollutants likely from kiln operations, the concentrations of metals (particularly the carcinogen hexavalent chromium) were well below a level of health concern. The carcinogen hexavalent chromium represented a small percentage of the total chromium measured.
- The **Houston Exposure to Air Toxics Study** compared ambient air concentrations of target air toxics at outdoor stationary monitors to indoor air concentrations, concentrations outside residents' homes, and personal monitors worn by residents. The study found that personal exposure concentrations of target air toxics were higher than residential indoor and outdoor concentrations, meaning that participants' daily activities (commuting, using household cleaning and office supplies, etc.) contributed more to their personal air toxics exposure than did outdoor air.
- The **Houston Air Toxics Biomarkers of Exposure Study** examined the utility of biomarker concentrations as an indication of ambient exposure to compounds of concern. The study compared concentrations of target air toxics from ambient air monitoring data and biomarkers in biological samples (i.e., blood and urine) for residents living near large point sources of the pollutants to concentrations for residents living away from point sources. The study found that concentrations in blood and urine were similar for the two areas, suggesting that the exposure to air pollutants is likely from other sources—such as automobile traffic, airports, railroad engines, construction, or household and lifestyle activities.

Barnett Shale

As oil and gas production has rapidly expanded in the Barnett Shale area, some residents have expressed concern about the potential health effects of air emissions.

In response to these concerns, the TCEQ has made a substantial commitment of resources to air quality in the area, including increasing the number of air inspectors, shortening complaint investigation times, proposing revised authorizations for production equipment, performing focused enforcement and investigations in the area, installing stationary air monitoring equipment, and performing air quality tests.

In an effort to give residents information about local air quality, the TCEQ developed a website that contains air monitoring data from the

Barnett Shale region. The online Barnett Shale viewer—an interactive map that gives the public the ability to see the results of the hundreds of air samples taken—is available 24 hours a day and is updated with the most recent monitoring results and toxicological analysis as the agency collects air samples in the region. Visit <www/tceq.state.tx.us/goto/barnettshale>.

Under the authority of Title 30, Texas Administrative Code Subsection 101.10(b)(3), the TCEQ conducted a special emissions inventory to obtain information on and assess the 2009 annual emissions from oil and gas production leases in the Barnett Shale area formation, along with information from the midstream pipeline companies operating in the area.

In 2010, the TCEQ installed two state-of-the-art 24-hour fixed air monitors, in DISH and in the Eagle Mountain Lake area. Three more monitors will be installed in fiscal 2011—one in Flower Mound, one in Decatur, and another at a location yet to be determined in southeast Tarrant County. In September 2010, legislators directed the TCEQ to locate eight additional monitors in the Barnett Shale area.

The two fixed air monitors, as well as two monitors in Fort Worth and Dallas that have been operating for more than seven years, continue to show very low levels of benzene and other air toxics. The measurements from these monitors are posted within a few hours of analysis on the TCEQ website.

CAMR, CAIR, and Transport

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 SO_2 emissions from new and existing electricity-generating utilities. In 2006, the TCEQ approved rulemaking to implement the CAIR trading program for NO_x and SO_2 and incorporated the provisions of Texas House Bill 2481, passed in 2005, and Texas Senate Bill 1672, passed in 2007.

Both EPA programs were overturned in 2008. A federal appellate court vacated CAMR and, in a later decision, remanded CAIR.

On July 6, 2010, the EPA proposed a rule to replace CAIR. The Clean Air Transport Rule would require 31 states and the District of Columbia to reduce power plant emissions contributing to ozone and $PM_{2.5}$ in other states. The proposal aims to help eastern states meet federal Clean Air Act obligations regarding the interstate transport of air pollution for the 1997 ozone and $PM_{2.5}$ standards. The proposal would require reductions in NO_x emissions crossing state lines for some areas, and reductions in annual SO_2 and NO_x in some areas. To ensure emission reductions, the EPA is proposing federal implementation plans for each of the states covered by the rule, although states may develop SIP revisions to replace the federal plan. The rule is expected to be finalized in 2011.

The EPA also intends to propose an additional rule in 2011 to address transport requirements for the 1997 ozone standard and perhaps transport requirements for the 2010 ozone standard.

Fuel Requirements

In another strategy to lower levels of NO_x and VOCs 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:

Houston traffic

- Reformulated gasoline year-round in the eight-county Houston-Galveston-Brazoria area and the four-county Dallas–Fort Worth area (a federal requirement).
- Low Reid vapor pressure gasoline from May 1 to October 1 in 95 counties in East and Central Texas.
- Low Reid vapor pressure gasoline from May 1 to September 15 in the three-county Beaumont–Port Arthur area (a federal requirement).
- Low Reid vapor pressure gasoline from May 1 to September 16 in El Paso County.
- Oxygenated gasoline from October 1 to March 31 in El Paso County (to lower carbon monoxide).
- Low-emission diesel fuel year-round in 110 counties in East and Central Texas, including Houston-Galveston, Dallas–Fort Worth, and Beaumont–Port Arthur.

The Texas Low Emission Diesel (TxLED) rule applies to diesel-fuel producers, importers, common carriers, distributors, transporters, bulk-terminal operators, and retailers. The goal is to lower the emissions of NO_x and other pollutants from diesel-powered motor vehicles and nonroad equipment in the eastern portion of the state.

Diesel fuel produced for delivery and ultimate sale—for both highway and non-highway use—in the affected counties must contain less than 10 percent by volume of aromatic hydrocarbons and have a cetane number of 48 or greater. Compliance alternatives are allowed, such as TCEQ-approved alternative diesel-fuel formulations, California Air Resource Board–certified alternative diesel-fuel formulations, and TCEQ-approved alternative emission reduction plans. Compliance for producers and importers was required on Oct. 31, 2005; for bulk plant distribution facilities, Dec. 15, 2005; for retail fuel dispensing outlets, wholesale bulk purchasers, and consumer facilities, Jan. 31, 2006.

In addition, the TxLED rule applies to marine distillate fuels used in the Houston-Galveston-Brazoria ozone nonattainment area. Compliance for producers and importers of marine distillate fuels was required on Oct. 1, 2007; for bulk plant distribution facilities, Nov. 15, 2007; and for retail fuel dispensing outlets, wholesale bulk purchasers, and consumer facilities, Jan. 1, 2008.

As of August 2010, 115 producers and importers had registered to supply TxLED to 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.

The Texas Emissions Reduction Plan

Established by the Texas Legislature in 2001, 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 federal Clean Air Act.

Providing grants for voluntary upgrades, the program has been focused largely in 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.

The success of the program in Texas has encouraged other states, as well as the federal government, to implement voluntary incentive programs targeted at mobile sources, modeling their programs after the TERP.

Since the program's debut in 2002, through August 2010, the program had awarded $786 million for the upgrade or replacement of over 12,672 heavy-duty vehicles, locomotives, marine vessels, and pieces of equipment. Over the life of these projects, 158,072 tons of NO_x will be reduced, which equals to 67.5 tons per day in 2011.

Additional programs were established under the TERP program by the Texas Legislature in 2009. The TCEQ expected to have grants awarded under each of these programs by early fiscal 2011.

- The **Texas Clean Fleet Program** was established to provide funding under the TERP for replacement of diesel vehicles with alternative-fuel or hybrid vehicles.
- The **New Technology Research and Development (NTRD) Program** was again placed under direct administration of the TCEQ. The NTRD Program provides grants to encourage research, development, and commercialization of technologies that reduce pollution from mobile sources.

- The **New Technology Implementation Grant (NTIG) Program** was established to offset the incremental costs of reducing emissions of pollutants from facilities and other stationary sources in Texas.

TERP grants and activities during the last two years are detailed in a separate report, *Texas Emissions Reduction Plan (TERP) Biennial Report to the Texas Legislature* (RG-388).

Drive a Clean Machine

The Drive a Clean Machine program was created in 2007 as part of the Low Income Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP) to remove older, polluting vehicles from Texas roads and replace them with newer, cleaner-running vehicles. Backed by a $45 million annual appropriation, the Drive a Clean Machine program is available in the areas of Houston-Galveston-Brazoria, Dallas–Fort Worth, and Austin–Round Rock, all of which conduct annual inspections of vehicle emissions.

Driving a new car, or a qualifying used car, is much better for air quality than driving a vehicle that is 10 years old or older. Today's low-emission vehicles can be up to eight times cleaner than those produced a decade ago.

To retire a car or truck under this program, the vehicle must have failed an emissions inspection or be at least 10 years old, be registered in a participating county for the 12 months preceding the application, and have passed the Texas Department of Public Safety's "safety" or "safety and emissions" inspection within 15 months of the date of the application. In addition, the vehicle owner's income may not exceed 300 percent of the federal poverty guidelines. In 2009 and 2010, a family of four could qualify with a maximum net income of $66,150 per year.

Vouchers for up to $3,500 for replacement vehicles are provided to eligible applicants and may be used at participating dealers to purchase eligible replacement vehicles. Replacement vehicles must meet federal Tier 2 Bin 5 clean-emissions standards, have a gross vehicle weight rating of less than 10,000 pounds, and have a total purchase cost of no more than $25,000.

The Drive a Clean Machine program also offers assistance of up to $600 for emissions-related repairs for vehicles that fail an emissions inspection.

From the program's debut in December 2007 through May 2010, approximately $115 million was provided to qualifying vehicle owners in the Houston-Galveston-Brazoria, Dallas–Fort Worth, and Austin–Round Rock areas. This funding helped to retire or replace a total of 36,102 vehicles and to repair an additional 13,385 vehicles.

More information can be found at <www.driveacleanmachine.org>.

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. As of August 2010, the Texas Clean School Bus Program had reimbursed approximately $13.4 million in grants to 128 public school districts or charter schools to retrofit 5,000 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 (TexAQS) field campaign in 2000, and the TexAQS II from 2005 to 2006.

More recently, the TCEQ and the Texas Environmental Research Consortium supported a smaller field study known as the Study of Houston Atmospheric Radical Precursors (SHARP). The TCEQ has also directly funded a host of other air quality research projects.

Among the air quality topics studied by TCEQ-sponsored researchers during the 2009 and 2010 fiscal years are the following:

- Meteorological analyses of Houston during high- and low-ozone days to understand how weather differs on these two kinds of days and how weather affects ozone concentrations.
- 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.
- Detailed modeling of local-scale meteorological processes, including the land-sea-bay breeze that frequently occurs in southeastern Texas during the summer.
- Sensitivity of modeled ozone to changes in emissions and chemical reaction rates to prioritize the state's efforts to improve the accuracy of ozone episode simulations.
- Estimates of industrial emissions (especially flares), shipping emissions, oil and gas production, and biogenic emissions based upon ambient measurements of pollutants in the air, and studies of emission factors and activity data.

The most important findings from these studies are summarized as follows:

- VOC emissions from flares at petrochemical facilities in the Houston area appear to be particularly large, especially for emergency flares that are used routinely as relatively low-flow process flares. Emissions from these flares can be 10 times greater than what has been reported in the emissions inventory. Flares can emit highly reactive alkenes and aldehydes; these classes of compounds are particularly conducive to ozone formation. Modeling studies show that these emissions can substantially increase ozone concentrations miles downwind of the emissions point. Results from the Houston field studies, and from additional flare studies funded by the TCEQ, can correct the emissions inventories and thus fully account for their impact upon local ozone formation.
- Chemical models of ozone simulate ozone formation imperfectly; insights from the Houston field studies should help scientists improve these simulations.
- Levels of regional background ozone—ozone that enters a city from outside and has not been affected by the city of interest—can have a substantial effect on the daily maximum ozone concentrations observed in both the Houston-Galveston-Brazoria and Dallas–Fort Worth nonattainment areas. High background ozone was known to be an issue in Dallas–Fort Worth, but its strong effect upon peak ozone in Houston was somewhat unexpected. In some cases, elevated regional background ozone originates outside of Texas, but sometimes ozone can be transported from one major Texas city to another. Studies supported by the TCEQ have shown that a portion of the ozone observed in the state can be attributed to out-of-state emissions.
- Both local-scale and regional-scale weather patterns play important roles in causing ozone-conducive conditions. The land-sea breeze flow pattern in southeastern Texas and post-frontal stagnation contribute to high ozone in eastern Texas. An improved understanding of these meteorological processes will help the TCEQ simulate ozone episodes more accurately, and can help in predicting when they will occur.
- As a result of the field studies and other studies funded directly and indirectly by the TCEQ, a total of 67 air quality research papers have been published in the peer-reviewed scientific literature since the beginning of fiscal 2009. Texas-specific research has led to exceptional progress in reducing ozone levels in Houston, where the 8-hour ozone design value fell from 118 parts per billion in 1999 to 84 ppb in 2009.

Although solid progress has been made, the new air quality standards proposed by the EPA will be challenging to meet. Research conducted in fiscal years 2009 and 2010 will help the TCEQ build on that progress.

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 provide the basis for establishing discharge limits in wastewater permits, setting instream water quality goals for Total Maximum Daily Loads (TMDLs), and providing criteria to assess instream attainment of water quality.

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

Revised water quality standards and standards implementation procedures were adopted during fiscal 2010 and forwarded to the EPA for review and approval. Major revisions include:

- Expanded categories for recreational uses and criteria, as well as more specific protocols to assign recreational uses.
- Retained the criterion of 126 *E. coli* per 100 milliliters in order to protect swimming and other aquatic recreation in freshwater streams, rivers, and reservoirs.
- Revisions to toxic 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 (UAAs).

Use-Attainability Analyses (UAAs)

The Water Quality Standards Program also coordinates and conducts use-attainability analyses to develop site-specific uses for aquatic life and recreation. A UAA is a scientific assessment of the physical, chemical, and biological characteristics of a water body. This assessment is often used to re-evaluate designated or presumed uses when the existing standards might be inappropriate for water bodies that are listed as impaired or that are potentially affected by permitted actions. As a result of these UAAs, site-specific aquatic life uses or dissolved oxygen criteria were adopted in the current water quality standards revision for over 50 individual water bodies.

In 2009, the TCEQ developed new recreational UAA procedures to evaluate and more accurately assign different levels of water recreation activities, such as swimming and fishing. Over the past two years, more than 100 UAAs have been initiated to evaluate recreational uses of water bodies that have not been attaining their existing criteria for indicator bacteria.

The 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 activities. The program provides 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 available water quality data for TCEQ water quality decision-making and increasing public awareness of water quality issues at the local level.

Water Quality Monitoring

Water quality is monitored across the state in relation to human health

concerns, ecological conditions, and designated uses. The resulting data provide a basis for policies that promote the protection, restoration, and wise use of surface water in Texas.

Coordinated Routine Monitoring

Each spring, the TCEQ meets 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 facilitate the local meetings. Information is used by the participants to select stations and parameters that will enhance 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 partners ensures that available resources are used as efficiently as possible and therefore maximizes available monitoring dollars.

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, evaluate spatial and temporal trends, and confirm water quality standards compliance. The data are transmitted to TCEQ computers and are 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:

- **Brazos River Basin.** The TCEQ has seven continuous water quality monitors in the six-county area comprising much of the North Bosque-Leon watersheds, northwest of Waco. The monitors are part of the agency's Environmental Monitoring and Response System (EMRS). Several of the EMRS sites focus on potential pollution sources from small geographic areas. The streambeds in these areas are normally dry and run only after significant rainstorms. By monitoring concentrations from areas above a monitor of just 1,000 to 1,500 acres—which have a limited number of potential sources for contamination—the agency can better monitor the runoff and target potential field investigations. Other EMRS sites evaluate larger watersheds that also provide alerts of elevated contaminants; however, targeting investigations may take additional effort (See "North Bosque Cleanup," page 38.)
- **Lower Rio Grande.** During the 2009 and 2010 fiscal years, the TCEQ began expanding the existing CWQMN in the Lower Rio Grande Valley from two to eight stations. Three stations were deployed in fiscal 2009. Two additional stations

Rio Grande

were deployed in June 2010 when Hurricane Alex and subsequent flooding damaged or destroyed all existing CWQMN stations in the Lower Rio Grande Valley. The TCEQ plans to have all CWQMN stations in the Lower Rio Grande Valley operational by January 2011. These stations provide near real-time data to support Rio Grande watermaster decisions 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.

Under an international treaty, both Texas and Mexico get annual allotments of water from the Rio Grande. Water taken by Mexico below the Falcon Dam eventually drains back to the Rio Grande upstream from the Anzalduas Dam, near Mission. The TCEQ continuously monitors the quality of reservoir water upstream of the dam near the El Morillo drain, where water draining off Mexican agricultural fields returns to the Rio Grande. These agricultural return flows sometimes have high concentrations of total dissolved solids (salts). When TCEQ monitors detect high saline levels, the agency requests that the International Boundary Water Commission (IBWC) release more water from the Falcon Reservoir to freshen the water in the Anzalduas Reservoir. If the IBWC confirms that Mexico failed to properly operate the drain to divert the salty return flows, the water released by the IBWC comes out of Mexico's allotment.

Assessing Surface Water Data

Every two years, in even-numbered years, 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. The assessment is published on the TCEQ website and submitted to the EPA as the *Texas Integrated Report for Clean Water Act Sections 305(b) and 303(d)*. The *Integrated 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. The federal 303(d) List of Impaired Water Bodies identifies waters that do not regularly attain one or more of the standards and may require action by the agency to address the impairment. Data associated with 214 different water quality parameters are reviewed to conduct the assessment. These parameters include physical and chemical constituents, as well as biological communities.

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 draft *2010 Integrated Report*, water quality data were evaluated from 4,320 sites on 1,214 water bodies.

Restoring Water Quality

Watershed Action Planning

Water quality planning programs in Texas are responding 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 an approach that emphasizes the role of partners and stakeholders, relies on sound technical information, and uses multiple tools to address varied circumstances. The goal is to implement an effective water quality planning strategy that optimizes the use of resources, has the involvement and support of stakeholders, and is accountable to Texans.

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

A TMDL is like a budget for pollution—it estimates the amount of a pollutant that a water body can assimilate daily and still remain clean enough to meet water quality standards. The budget, or load, is divided among the sources of pollution in the watershed. Then an implementation plan to reduce pollutant loads is developed.

A TMDL sets the target for reaching attainment. Fully restoring water quality is a long-term project that can take several years.

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

has adopted 151 TMDLs for 91 water bodies in the state.

As of August 2010, 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 estuary square miles.

From August 2008 to August 2010, the Commission adopted four TMDL reports (51 impairments) for the following projects: bacteria impairing the contact-recreation use in Buffalo and Whiteoak bayous and tributaries, Clear Creek and tributaries, and Greens Bayou and tributaries; and dissolved oxygen impairing the aquatic-life use in upper Oyster Creek.

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 risk contracting gastrointestinal illnesses. High bacteria concentrations can also affect the safety of oyster harvesting and consumption.

Of the 585 impairments listed for surface water segments in Texas, about half are for bacteria impairments to recreational water uses. About 52 percent of these recreational impairments have either TMDLs or use-attainability analyses under way, scheduled, or approved.

Much of the focus the last two years has been on addressing the bacterial impairments in the Houston metropolitan area. By August 2010, the TCEQ adopted 35 TMDLs and proposed an additional 26 in this area, representing about 21 percent of the contact-recreation impairments.

For another 31 percent of bacteria impairments, the TMDL Program is developing TMDLs or the Water Quality Standards Program is coordinating the collection of additional data (recreational use-attainability analyses) to determine whether a revision to the standards is needed in lieu of a TMDL. The Texas State Soil and Water Conservation Board (TSSWCB) has responsibility for addressing water bodies affected by agriculture and silviculture.

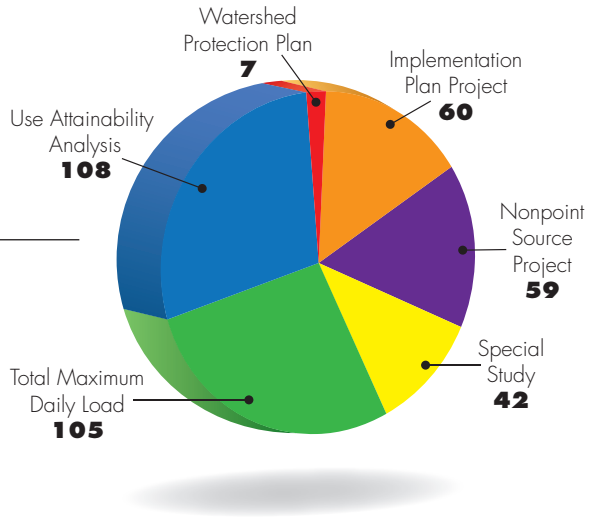
The TCEQ's TMDL Program is coordinating with the TSSWCB to develop TMDLs or watershed protection plans for bacteria impairments in areas where the primary sources are believed to be from agriculture or silviculture. The TCEQ proposed revisions of the water quality standards to the EPA in summer 2010. Some of the revisions are designed to evaluate and more accurately assign appropriate recreational uses of the state's water bodies. If the recreational standard for a segment is changed due to these revisions, this could affect the scheduling of some bacteria TMDLs and the placement of segments on the 303(d) List.

Mercury Impairments

The draft 303(d) List for 2010 identifies 75 assessment units in 24 water bodies that are impaired due to mercury in fish tissue. Reducing the mercury concentrations in fish tissue is not readily accomplished through a standard TMDL process. Much of the mercury is airborne and can originate outside the state. Also, the physical and chemical processes that affect bioaccumulation of mercury in fish are not fully understood.

At the direction of the Commission, staff formed the Advisory Group on Mercury-Impaired Waters in 2008 to study how to best approach the state's mercury impairments. The advisory group's recommendations were

Addressing Water Impairments: Projects for Bacteria



There are a variety of ways the TCEQ can address water impairments. This particular example is for projects addressing bacteria impairments. Numbers are from the 2008 Integrated Report (303(d) List), which is updated every two years.

presented to the Commission in August 2009. The information gathered and discussed by the group, as well as input received from group members, indicate that additional coordination and cooperation are needed to determine the most effective way to reduce mercury impairments in Texas. Information from outside of Texas indicates that most states are waiting before they pursue either a TMDL or an alternate strategy such as a comprehensive mercury reduction program.

The TCEQ will continue to participate in national air and water programs and initiatives related to mercury, and will urge the EPA to initiate international discussions on mercury-control options. The TCEQ will also continue to participate in the Gulf of Mexico Alliance and work with other Gulf states to address mercury impairments in Gulf Coast marine waters. In conjunction with recent revisions to the Texas Surface Water Quality Standards, the TCEQ adopted a mercury criterion of 0.7 parts per million (ppm) in fish.

Bay and Estuary Programs

Plans for comprehensive conservation management of Galveston Bay and the Coastal Bend bays were established in the 1990s and included a broad-based group of stakeholders and bay user groups. These 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 entity established for that purpose. The TCEQ partially funds the CBBEP.

The 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. The GBEP holds a "State of the Bay" symposium every two to three years, and is active in public outreach, giving presentations to civic groups, nonprofits, schools, and governmental organizations.

GBEP priorities include conserving wetlands and other valuable coastal habitats, addressing nonpoint sources of pollution, managing invasive species, and protecting public health by monitoring the safety of bay seafood.

Leveraging more than $14 million in private, local, and federal partner contributions, the GBEP completed 29 projects in the last two years. Habitat conservation projects protected and restored 3,100 acres of wetlands and other important coastal habitats, and controlled the Brazilian pepper tree and other invasive species on Galveston Island. The program also coordinated the development and implementation of stakeholder-based watershed protection plans to help address impaired and threatened water bodies, and provided financial and technical assistance to local groups for community-based marsh restoration, debris cleanups, and outreach and education.

Photo courtesy TPWD

In 2009, as part of a collaborative team of public and private partner organizations, the GBEP received the Coastal America Partnership Award—the only environmental award of its kind given by the president of the United States—for its efforts to protect the most important colonial water bird rookery on the upper Texas coast: North Deer Island. The GBEP initiated the nine-year project to stabilize the erosion that was destroying the island's shoreline, endangering the habitat of many bird species, and threatening to diminish Galveston Bay's commercial and recreational fishing industries, worth $3 billion a year. The project also won the prestigious EPA Gulf of Mexico Program Gulf Guardian Partnership Award.

The Coastal Bend Bays and Estuaries Program

During the 2009 and 2010 fiscal years, the CBBEP implemented 53 projects, including habitat restoration and protection in areas totaling 4,119 acres. Based in the Corpus Christi area, the CBBEP is a voluntary partnership effort 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 $3 million in additional funds to leverage TCEQ funding.

CBBEP priority issues—focusing on human uses, freshwater inflows, maritime commerce, habitat loss, water and sediment quality, and public education and outreach—are identified in the Coastal Bend Bays Plan. The CBBEP has recently become more active in water and sediment quality issues throughout the program areas. It is a goal of the CBBEP to address 303(d) List segments and bring them into compliance with state water quality standards.

Other areas of focus:

- **The need to maximize the ecological benefits of the limited amounts of freshwater reaching the estuary.** Efforts are under way to provide for the direct input of freshwater into the most important areas within the Nueces River delta. This area is critically important for the successful production of shrimp and fish. In addition, the CBBEP hopes to restore the function and productivity of thousands of acres of brackish marsh habitat.
- **Impaired water bodies and TMDLs in the Oso Creek and Oso Bay watershed.** An investigation of bacteria sources in the upper Oso Creek watershed is ongoing. A project to improve on-site sewage facilities in the Tierra Grande colonia has been completed. Twenty-one new or non-functioning facilities were installed or replaced, respectively, and 10 systems were repaired.
- **Hypoxia.** A study of hypoxia, the oxygen depletion known to occur each summer in the southeast corner of Corpus Christi Bay, was performed to gain more information and to begin exploring the potential role of nutrients. It appears that salty water driven by prevailing winds into Corpus Christi Bay from the Laguna Madre and Oso Bay is the main cause of stratification, and that dissolved oxygen is quickly depleted from the bottom layer of water, leading to the hypoxia.

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 manages the NPS categorical 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 NPS 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 TSSWCB, to address agriculture and silviculture NPS pollution. About $4.5 million is awarded to the TCEQ each year from the federal government. The 319 grant provides federal funds for 60 percent and requires a 40 percent non-federal match. In fiscal 2009, $4 million was matched with $2.7 million, for a total of $6.7 million.

The TCEQ solicits applications to develop projects that contribute to the NPS Program's management plan. Usually 20 to 25 applications are received annually. Then the projects are reviewed and ranked. Because the number of projects funded depends on the amount of each contract, the number fluctuates from year to year. In fiscal 2009, 12 projects were selected, and seven projects were selected in fiscal 2010. There are limitations, however, on the types of projects funded. Half of the money awarded from the federal government must be used to fund 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 the councils of governments for planning purposes. In fiscal 2010, the program applied for approximately $300,000 in funding from the EPA.

North Bosque Cleanup

The TCEQ is meeting most of its goals in the North Bosque River watershed as various cleanup strategies continue to be implemented.

High levels of nutrients have contributed to an overabundance of algae and other aquatic plants. Excessive growth of algae can lead to taste and

odor problems in drinking water and to low dissolved oxygen, which can kill fish. The primary targeted pollutant has been phosphorus, a nutrient found in animal waste and in discharges from wastewater treatment plants.

The North Bosque River empties into Lake Waco, which is the main source of drinking water for about 200,000 people in and around Waco. The upper half of the watershed is a hub of commercial dairy operations, with an estimated 55,000 dairy cows.

- In 2001, the TCEQ developed a TMDL project for each segment of the North Bosque River to ultimately lower phosphorus levels. An implementation plan, containing both regulatory and voluntary measures, led to the following course of action: Stephenville and Clifton upgraded their wastewater treatment plants, reducing the concentration of phosphorus in wastewater effluent that empties into the river.
- A compost program met its goal of removing at least half the solid cattle manure from dairy CAFOs (concentrated animal feeding operations, with 200 or more head of cattle). Incentives were offered for companies to turn cow manure into compost, which was then sold to landscapers. About 650,000 tons of dairy manure were collected from the North Bosque watershed from 2002 to 2006, when the incentives expired. Of that amount, 329,000 tons were exported in the form of compost, representing the removal of 740 tons of phosphorus. Composting facilities are still operating and removing manure from the watershed.
- The TCEQ's Environmental Monitoring Response System (EMRS), which performs continuous water quality monitoring, operates at seven locations in the watershed. The EMRS alerts regional staff when phosphorus concentrations rise to a designated level, requiring immediate investigation. The EMRS also targets "microwatersheds" so that investigators have smaller areas to check when alerts are issued. (See "Continuous Water Quality Monitoring," page 34.)
- The TCEQ boosted enforcement efforts to ensure compliance. The agency's Stephenville office conducts annual inspections of each CAFO and is available seven days a week to respond to pollution complaints.
- The TCEQ developed rules requiring individual permits for CAFOs in the watershed. These require comprehensive nutrient management plans, which range from feed management to land application of animal waste and include enhanced inspection, testing, and recordkeeping. Dairy CAFOs must have larger retention-control structures to capture rainfall from their production areas. The CAFOs also must satisfy certain education requirements to ensure that operators and staffers are trained in dairy waste management.

Meanwhile, the agency and its partners monitor water quality every two weeks to obtain information before and after pollution-reduction measures are put in place. Also, the TCEQ hired researchers to refine the TMDL models used to simulate conditions in the river. Results from the refined model are considered to be virtually the same as the initial model. TCEQ staff interprets the re-analysis to indicate that no "mid-course correction" is needed, so current implementation efforts should continue as originally planned.

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 about 1.7 million people. This replenishable structure also supplies water for farming and ranching, manufacturing, steam electric power generation, 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 a water 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 storm water in the regulated areas.

Each fiscal year, the TCEQ receives about 550 plans to be reviewed by staff located in the Austin and San Antonio regional offices. In 2006, the agency

goal for staff technical review of each aquifer protection plan was reduced from 90 to 60 days. Staff continue to meet this goal by requiring all plans to be administratively complete before staff begin reviewing the technical requirements. In addition to reviewing plans for development within the regulated areas, TCEQ staff conduct compliance investigations to ensure that best management practices are appropriately utilized and maintained. Additionally, staff conduct site assessments to ensure that aquifer recharge features are adequately identified for protection prior to the commencement of construction activities.

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 rules by the TCEQ and passed on to public water systems.

Of the 6,900 public water systems in Texas, about 4,700 are community water systems, mostly operated by cities. The remainder are non-community water systems—such as those at schools, churches, factories, businesses, rest stops, and state parks.

The number of public water systems meeting the state's drinking water standards totals 6,573. These systems serve about 96 percent of Texans.

All public water systems are required to monitor the levels of contaminants present in the 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) established by the EPA. Based on the EPA's risk assessments, 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 microorganism that is of most importance is coliform bacteria, particularly fecal coliform. For Texas, the most common chemicals of concern are disinfection by-products, arsenic, fluoride, and nitrate.

The TCEQ continues to implement the requirements of the federal Long Term 2 Enhanced Surface Water Treatment Rule, which addresses Cryptosporidium removal and inactivation in surface water, and the Groundwater Rule, which addresses viruses in groundwater.

Additionally, the TCEQ is in the process of completing the initial evaluations of chemical levels in the distribution systems of all community and non-transient community water systems, which is required by the federal Stage 2 Disinfectants and Disinfection By-products Rule. Disinfection by-products are potentially carcinogenic chemicals that are formed when a disinfectant such as chlorine reacts with naturally occurring organic carbon. About 125 systems in Texas are out of compliance with the Stage 1 Disinfectants and Disinfection By-products Rule, and the TCEQ estimates that perhaps twice this number will have difficulty complying with the Stage 2 rule.

Federal rules also apply to arsenic, an element that dissolves from rocks into water supplies. Citing studies that link long-term arsenic exposure to cancer, the EPA established a standard of 10 parts per billion, which replaced the old standard of 50 ppb. About 115 water systems in Texas continue to have difficulty complying with the arsenic standard, which took effect in 2006.

The EPA has also established new rules that revise some of the

requirements for lead and copper in drinking water. The new federal rule is intended to address the issue of lead and copper, which can leach into drinking water from pipes or solder under corrosive conditions, and for which the EPA has identified potential adverse impacts to human health. Federal rules for lead and copper have been in place since 1991. The new revisions to the federal Lead and Copper Rule add changes related to monitoring locations and frequency, compliance calculations, consumer notification and public education, and pipe materials and corrosion-control strategies.

Implementing new regulations has been difficult and often costly, especially for smaller systems. The TCEQ has been proactive by alerting water systems to the new rules and their impact on water systems. The agency also manages an expense-reimbursement grant that reimburses costs for operator licenses and training at systems serving fewer than 3,300 people.

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

The agency also hires university students to help with customer service and data review.

For educational purposes, the TCEQ holds a free annual symposium on public drinking water. The Austin conference draws about 700 attendees.

If a public system's drinking water has levels of contaminants that exceed the regulatory MCLs or treatment technique requirements, the system must notify its customers. Community public water systems are required to provide consumers with an annual report on the quality of their drinking water. These Consumer Confidence Reports (CCRs) offer basic information, such as the type and source of water used by the local system, and an update of the system's compliance status with drinking water regulations. The EPA has determined that failure to deliver any CCR is a significant instance of noncompliance, subject to fines and penalties.

If a public system fails to have its water tested or fails to report test results correctly to the TCEQ, this constitutes 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.

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 2009, the agency performed compliance reviews of 1,606 engineering plans for public water systems. In fiscal 2010, the TCEQ completed 1,705 such compliance reviews.

Investor-owned utilities (IOUs) and water supply corporations (WSCs) are also 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. IOUs 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 IOUs, and has appellate jurisdiction over the rates of WSCs, water districts, and out-of-city customers of municipally owned retail public utilities.

In fiscal 2009, the TCEQ completed 287 CCN-related application reviews and 125 rate-related application reviews. In fiscal 2010, the agency completed 230 CCN-related application reviews and 129 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 (TRWA) to assist utilities by providing them with financial, managerial, and technical expertise. Approximately 400 assignments for assistance to utilities were made through this contract in fiscal 2009, as were over 600 in fiscal 2010. The TCEQ also contracts with the Bureau of Economic Geology at the University of Texas to provide a higher level of assistance to certain water systems experiencing compliance problems.

To further maximize resources, the agency encourages water and sewer systems to consolidate regionally. The consolidation of two or more systems can lead to better utility service and lower rates. Toward this end, the TCEQ and the TRWA conducted about 23 regional consolidation assessments in fiscal 2009 and 17 in fiscal 2010.

In addition to contractor assistance, the TCEQ also certifies utilities as

regional providers. With this certification, utilities are eligible for tax-exempt status for utility-system construction and improvements. There have been 357 utilities 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 2009, the TCEQ reviewed about 205 major and 390 minor water district applications. In fiscal 2010, the agency reviewed approximately 225 major and 368 minor water district applications.

Storm Water Program

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 storm water permits.

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

The TCEQ receives thousands of applications a year for coverage under TPDES storm water general permits. With the growing workload, the agency has applied ePermitting (see "Access to TCEQ Information Expands," in Chapter 1) to some of these permitting and reporting functions, and has 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, developed in 2001, regulates storm water 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 storm water pollution prevention plan, conduct regular monitoring, and use best management practices to reduce the discharge of pollutants in storm water. The permit also contains limitations for certain discharges—specific pollutants and concentrations that cannot be exceeded. The TCEQ receives about 140 NOIs and NOTs a month for industrial facilities. This general permit was renewed and amended in August 2006 and is in the process of being renewed and amended again. The revised permit will be issued in August 2011.

Construction

The construction general permit was developed in 2003 for storm water 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 development or sale that is 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 450 NOIs and 350 NOTs a month for large construction activities. This general permit was re-issued in February 2008 and will expire in 2013. When the permit is renewed in 2013, it will incorporate the new effluent guidelines for construction activities, including a requirement to comply with turbidity effluent limits for sites that are over 10 acres in size.

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 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 entities, such as the Texas Department of Transportation, in areas in which the 1990 census recorded 100,000 people or more. Thirty-three municipalities and other public

Storm Water Permits

Activity	Number Affected		Applications Received (monthly average)	
	FY 2009	FY 2010	FY 2009	FY 2010
Industrial (facilities)	11,847	12,732	123	121
Construction (large sites)	11,453	13,402	443	419
MS4s (public entities)	403*	462*	1**	3**

* MS4s under general permit.
**Most MS4 applications are processed during the issuance (FY 2007) or renewal (FY 2012) of the general permit. The numbers presented in this table are reflective of interim years, and do not reflect the workload associated with this program.

entities 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 August 2007, the TCEQ issued a general permit regulating small MS4s (populations of less than 100,000 in 1990) in urbanized areas. This permit requires a regulated MS4 operator to develop and implement a storm water management program that includes minimum plan requirements for public education and public participation, as well as minimum control measures for illicit discharge detection and elimination, construction storm water runoff control, post-construction storm water management, and pollution prevention and good housekeeping. There are 462 small cities, districts, and other public entities that have submitted NOIs for authorization or waivers under this general permit.

Water Availability

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 years 2009 and 2010, the agency processed 1,353 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. Because of this, 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.

In a related matter, the TCEQ has participated for several years in instream flow studies in select river basins. The data is used to improve the scientific basis for special conditions placed in water right permits to maintain instream uses and habitats. The current focus is on the new, stakeholder-driven process to establish instream flow and freshwater inflow standards for each basin.

Groundwater Management

Almost 60 percent of the water used in Texas comes from groundwater. The state's preferred method of managing this resource is through groundwater conservation districts (GCDs).

GCDs are authorized to adopt rules and permit water wells as part of their overall charge to manage and protect the groundwater in their jurisdiction by providing for conservation, recharge, and waste prevention. Most GCDs are created by special acts of the Legislature, but two other avenues exist: landowners may petition the TCEQ to create a GCD, or may petition an existing GCD to add property.

In fiscal years 2009 and 2010, Texas gained five GCDs—encompassing all or part of 14 counties. This raised the statewide total to 98 GCDs, covering all or part of 174 counties. Legislation passed in 2009 created two additional GCDs, subject to voter confirmation. Creation of one of those single-county GCDs was defeated by the voters in May 2010; the other was not presented to the voters during fiscal 2009 or 2010.

GCDs are created within priority groundwater management areas (PGMAs). The TCEQ orders a PGMA designation when an area is experiencing critical groundwater problems or is expected to do so within 25 years. These problems include shortages of surface water or groundwater, land subsidence resulting from groundwater

withdrawal, or contamination of groundwater supplies.

Once an area is designated a PGMA, landowners have two years to get a GCD created. Otherwise, the TCEQ is required to create a GCD or to recommend that the area be added to an existing district.

In October 2008, the TCEQ designated the Central Texas Trinity Aquifer PGMA for the counties of Bosque, Coryell, Hill, McLennan, and Somervell, and recommended that a regional GCD be created for the five-county area. Since then, all of the counties have created new GCDs or joined an existing one. Of note in this PGMA is that a special legislative act requires the Southern Trinity GCD in McLennan County to expand by one county before Sept. 1, 2011, or be dissolved by the TCEQ on that date.

In February 2009, the TCEQ designated the North-Central Texas Trinity and Woodbine Aquifers PGMA to include Collin, Cooke, Dallas, Denton, Ellis, Fannin, Grayson, Hood, Johnson, Montague, Parker, Tarrant, and Wise counties, and recommended an eight-county GCD for the counties without one. Dallas is the only county in the PGMA that has not established or joined a GCD; and a special legislative act that was passed in 2009 prohibits TCEQ action to establish a GCD in the PGMA prior to Sept. 1, 2011.

The TCEQ has also initiated GCD creation within the PGMAs that were designated in 1990 under different statutory processes. In February 2010, the TCEQ issued an order recommending that all of the Dallam County PGMA be added to the North Plains GCD. An election to determine this addition is scheduled for November 2010. The TCEQ executive director recommended in June 2010 that the agency create a new GCD for the Comal, Hays, and Travis county portions of the Hill Country PGMA. This administrative procedure—as well as the agency-initiated GCD creation process for Swisher County and parts of Briscoe, Midland, and Upton counties—are ongoing.

The TCEQ is responsible for enforcing adoption of a GCD management plan, as well as the approval and implementation of Groundwater Management Area (GMA) joint planning goals. The agency is actively monitoring and ensuring GCD compliance to meet management plan adoption and re-adoption requirements. The TCEQ dissolved one GCD in 2009 for violating these provisions.

In 2009, the Legislature directed the TCEQ to conduct a study of the characteristics and impacts on groundwater planning in the Carrizo-Wilcox Aquifer. Subsequent discussions with Senate members clarified that this study should be completed and available for use by the upcoming Legislature in 2011. In fiscal 2010, the TCEQ entered into a research contract with the University of Texas Bureau of Economic Geology to identify and involve Carrizo-Wilcox Aquifer groundwater managers, planners, and users; to collect and review a wide variety of groundwater management and planning data and information; and to develop datasets and conduct a series of analyses regarding current activities related to groundwater management and protection. The contract requires a final draft to be ready for the Legislature by Feb. 1, 2011, and a final report by June 30, 2011.

The Carrizo-Wilcox Aquifer study involved significant stakeholder input in fiscal 2010. During fiscal 2011, the study will seek to identify and understand the following: the quality and quantity of scientific information that has been used by groundwater conservation districts managing the aquifer, the compatibility of different management approaches in place for the aquifer, and stakeholders' leading groundwater management and protection issues and concerns.

Waste Management

Low-Level Radioactive Waste Disposal

The TCEQ has issued a license to Waste Control Specialists LLC (WCS) of Dallas, authorizing the operation of a low-level radioactive waste (LLRW) disposal facility in Andrews County. Prior to issuing the license, the TCEQ set in motion a series of application reviews and analyses to determine whether the planned facility meets the complex and stringent environmental, safety, and public health standards established by law and agency rules. Following completion of the technical review and a condemnation proceeding on remaining mineral interests, TCEQ Radioactive Material License R04100 was issued to WCS on Sept. 10, 2009. The license complies with all of the pertinent laws and agency rules, and requires the LLRW disposal facility to operate in a manner that is safe to the public, facility workers, and the environment.

The license authorizes the disposal of both compact and federal LLRW. LLRW generated in the Texas

LLRW Compact, which is composed of the states of Texas and Vermont, will be disposed in the compact waste disposal facility. A separate, adjacent facility will accept LLRW and mixed waste (waste that contains both a hazardous and a radioactive constituent) from federal facilities.

The types of wastes that will be disposed in the Texas "compact" facility generally include discarded paper, plastic, glass, and metals that have been contaminated by or contain radionuclides that meet the classification of LLRW 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 engaged in nuclear weapons research and production, as well as more concentrated forms of mixed radioactive and hazardous wastes. 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 charged with the responsibility of setting rates for the disposal of LLRW at the "compact" facility. WCS submitted a waste disposal rate application to the TCEQ for review. After processing the WCS application, the TCEQ will recommend a rate that is "reasonable and necessary" to protect Texas and Vermont compact states' businesses and services. LLRW compact generators will be able to contest this rate at the State Office of Administrative Hearings (SOAH). Upon completion of this process, the recommended rates will be adopted by TCEQ rule.

In accordance with the license, the agency was reviewing final construction documents at the end of fiscal 2010. WCS may not commence construction until written approval of the construction documents is provided by the TCEQ.

Radioactive By-product Material Disposal

On May 29, 2008, the TCEQ issued a license to WCS for a by-product material disposal facility, also in Andrews County. By-product material that is authorized for disposal is defined as tailings or wastes produced by or resulting from the extraction or concentration of uranium or thorium from ore. Since that time, the licensee has constructed two cells of the disposal facility. WCS began construction of the by-product material disposal facility in the fall of 2008 and completed it in October 2009. Disposal of 3,776 waste canisters from the Fernald site—a closed U.S. Department of Energy uranium-processing facility in Ohio—began immediately and was completed before the end of 2009.

In accordance with a provision of its radioactive material license, WCS is currently limited to the disposal of only Fernald by-product material, and continues work to comply with license conditions that will help ensure the ongoing safe operation of the site. Principal among the license conditions is the requirement to monitor groundwater in the near-surface formation that could possibly impact waste in the facility or the performance of the engineered cap system after closure. The TCEQ is committed to monitoring WCS's sampling results and facility operations to help ensure worker safety, public health and safety, and protection of the environment.

Underground Injection Control of Radioactive Waste

At *in situ* uranium mining sites in South Texas, the TCEQ regulates disposal of by-product wastewater material generated on-site through the permitting of and enforcement activities on 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 by-product wastewater material that is generated on-site—consisting principally of excess water produced from the *in situ* mining and uranium recovery process, and groundwater produced in restoration activities of the mined aquifer to water quality consistent with pre-mining conditions. The subject mining projects with on-site permitted Class I UIC wells include Mesteña Uranium's Alta Mesa site; South Texas Mining Venture's La Palangana and Hobson sites; and Uranium Resources' Kingsville Dome, Rosita, and Vasquez sites.

Superfund Program

Superfund is the name given to the federal program that enables state and federal environmental agencies to take care of properties contaminated by hazardous substances. Under the program, the EPA has the legal power 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 sites in the state that are on the National Priorities List (NPL), which is the EPA's ranking of the most serious Superfund sites.

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 state Superfund registry if no responsible parties can or will perform the cleanup. The TCEQ also takes legal steps to recover the money spent.

After a site is proposed for the state Superfund program, the responsible party or the TCEQ proceeds with a remedial investigation, during which the agency collects information to determine the extent and nature of the contamination. A feasibility study follows to identify possible cleanup remedies. A public meeting is held locally to explain the proposed remedy and to take comments. After reviewing the public comments, the TCEQ selects a remedial action.

Projects entering the Superfund program are prioritized by risk, with the most hazardous placed at the top of the list. 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 2009, Texas had a total of 108 sites in the state and federal Superfund programs, including additional sites proposed for the state Superfund registry in Brazoria County.

In fiscal 2010, three additional sites were proposed for the state and federal Superfund registries in Ector, Howard, and Kaufman counties. At the same time, one site in Brazoria County was deleted from the state registry, leaving a total of 110 sites. Cleanup at two federal NPL sites and at three state registry sites was completed in 2010.

Petroleum Storage Tanks

The contamination of groundwater and soil due to leaking petroleum storage tanks (PSTs) is an environmental problem known statewide. The TCEQ oversees PST cleanups and reimburses eligible parties that have met all statutory deadlines for reimbursement.

Since the program began in 1987, the TCEQ has received reports of more than 25,912 leaking PST sites—primarily at gasoline stations. Of these, cleanup had been completed at 23,031 sites by the end of fiscal 2009, and corrective action was under way at another 2,612 sites. By the end of fiscal 2010, cleanup had been completed at 23,637 sites and corrective action was under way at 2,275 sites.

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

Often, leaking PSTs are 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. Sometimes leaks are detected during construction or utility maintenance. Most tank systems that begin leaking do so because they have corroded, were installed incorrectly, or were damaged during construction or repairs. Contamination can also result from repeated spills when vehicles are overfilled with fuel.

Tank owners and operators are required to clean up releases from

leaking PSTs, beginning with a site assessment, which may include drilling monitoring wells and taking soil and groundwater samples. The TCEQ oversees the remediation until cleanup is completed.

The PST Remediation Fund has paid for the vast majority of PST cleanups, with expenditures topping $1 billion. Revenue comes from a fee on the delivery of petroleum products removed from bulk storage facilities.

Under state law, leaking tanks discovered and reported after Dec. 23, 1998, are not covered under the remediation fund. These subsequent cleanups are paid for by the owners' environmental liability insurance or other financial assurance mechanisms, or from their own funds.

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 spill and overfill prevention measures. This applies to active and inactive PSTs.

The PST State Lead Program continues to clean up sites at which the responsible party is unknown, or is unwilling or financially unable to do the work. State and federal funds pay for the corrective actions. State statutes allow cost recovery from the current owner or any previous responsible owner.

The reimbursement program, which was extended in 2007, will not be available after Sept. 1, 2011.

Leading up to that sunset deadline, several milestones must be met for a responsible party to remain eligible. The agency requires implementation of a corrective action plan or groundwater monitoring to demonstrate progress toward site closure. Eligible parties not completing all corrective actions by the deadline can apply to have their sites placed in the State Lead Program.

After the reimbursement program expires, the PST regulatory and State Lead programs will continue.

Voluntary Cleanups

The Texas Voluntary Cleanup Program (VCP) provides incentives for pollution cleanup by releasing future property owners from liability once a piece of property is satisfactorily cleaned of contamination.

Since 1995, the program has provided regulatory oversight and guidance for more than 2,220 applicants and has issued more than 1,600 certificates of

TCEQ's Voluntary Cleanup Program provides revitalization incentives to participants for investigation, cleanup, and redevelopment of properties such as Austin's Midtown Commons at Crestview Station.

completion for residential, commercial, and industrial properties.

In the last two years, the program received 127 applications and issued 213 certificates. Recipients of the certificates report that it helps with property sales, including land transactions that would not have otherwise occurred for fear of environmental liability.

Sites addressed under the Texas VCP range from the small, such as corner dry cleaners, to the large, such as the mixed-use development at the former Mueller Airport in Austin and the redevelopment of a former Montgomery Ward complex in Fort Worth.

The key 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 relating to environmental issues. If new contamination related to previous site activities were to be discovered, the former property owners would be sought to perform any required cleanup.

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.

The TCEQ also implements the law providing liability protection to property owners whose land has been affected by contamination that migrated to their property from off-site.

The Innocent Owner/Operator Program relieves the eligible owner or operator from performing soil and groundwater investigation or cleanup on their property. The "innocent owner certificate" is generally sought by landowners seeking to sell property.

The demonstration of innocence requires evidence of contamination on the property, verification that the contamination resulted from an off-site source, and confirmation that the applicant has not contributed to the contamination. Since 1997, the TCEQ has processed more than 600 of these applications and issued more than 400 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 facilities and drop stations, as well as from the sale of perchloroethylene and other dry cleaning solvents.

By the end of fiscal 2010, the agency had registered 1,455 dry cleaning facilities and 1,399 drop stations. In addition, there were 192 registered property owners and 26 distributors of dry cleaning solvents. Since 2004, approximately $44 million was collected for the remediation fund.

The agency has received 211 applications for ranking. Of these, 181 were ranked and prioritized for corrective action. The ranking system determines scores for facilities based on factors that could affect human health or the environment.

Legislation 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 is prohibited at sites where the agency has completed corrective action.

Municipal Solid Waste Management

Texas has growing demands on its waste disposal facilities. That is why it is important to evaluate the statewide outlook for landfill capacity in the coming decades. The TCEQ's responsibility also involves working to reduce the overall amount of waste generated.

In fiscal 2009 (the most recent year with available data), Texans disposed of 31.3 million tons of municipal solid waste, a decrease of about 5.5 percent from the previous year. The per capita landfill disposal rate was about 6.9 pounds per day.

In fiscal 2009, Texas had 243 municipal solid waste landfills, including 207 that were open or newly permitted. Of that group, 190 were actively accepting waste. The smaller landfills—typically the arid exempt landfills—constituted about one-third of the landfills.

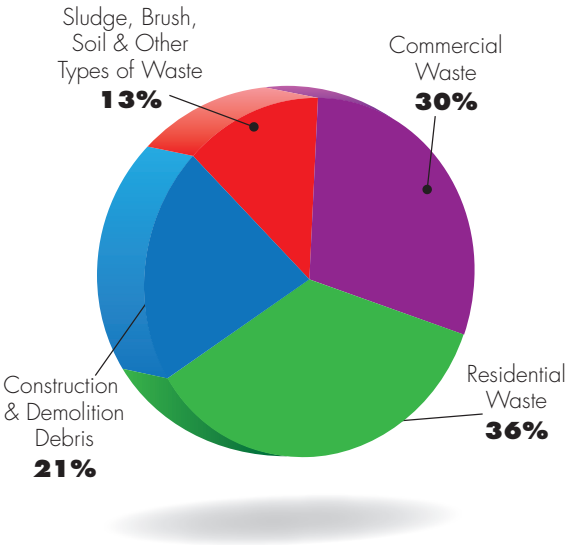
By the end of fiscal 2009, municipal solid waste capacity in the state stood overall at about 1.6 billion tons, representing nearly 50 years of disposal capacity. The resulting net increase from the statewide 2007 capacity was about 153.6 million tons (roughly 174.3 million cubic yards). More populous areas have been seeing a trend toward regional landfills serving larger areas. Less populous areas in West Texas continue to be served by small (less than 40 tons per day) arid exempt landfills that are operated by municipalities.

In an effort to facilitate regional and local solid waste planning initiatives, such as addressing adequate landfill capacity, the TCEQ provides pass-through grants to each regional council of governments (COG). The planning initiatives are based on goals specified in each COG's regional solid waste management plans, which are reviewed and approved by the TCEQ. Funding for the pass-through grants are provided through the municipal solid waste disposal fees paid to the state.

For the grant period of 2008 to 2009, grants totaling about $14.7 million funded 466 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 programs on responsible solid waste management, and programs to enforce laws against illegal dumping. Project priority is established using the regional plans, and each funded project must meet the goals and objectives identified in the COG's regional solid waste management plans.

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 2008–2009: Report to the Texas Legislature*, published in cooperation with the TCEQ by the 24 COGs and the Texas Association of Regional Councils.

Municipal Waste Disposal



In 2009, Texas had 190 landfills actively accepting waste, collecting a total of 31.3 tons for the year.

Environmental Assistance

Voluntary Programs

The TCEQ uses technical assistance, education, and pollution prevention programs to encourage actions that result in environmental improvements. In recent years, the Small Business and Environmental Assistance Division has taken many of these programs in a new direction to better focus on agency priorities and to be more closely aligned with agency regulatory systems.

TCEQ staff concentrated on offering site assistance visits, which help companies identify ways to reduce environmental risks and save money. In fiscal years 2009 and 2010, the agency provided direct compliance assistance to more than 12,000 small businesses and local governments; of those, over 900 received one-on-one assistance at their business or facility sites. Also, more than 450 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 any environmental compliance problems. After the visit, the businesses and facilities receive a report detailing recommended actions they can take to resolve those problems. They must correct any deficiencies within six months to become eligible for a compliance commitment certificate.

More than a quarter of Compliance Commitment Program participants achieved full environmental compliance, according to the agency's checklists. Upon successful completion of the program, these businesses receive

their certificate and a one-year exemption from routine investigations by the agency and local partners, such as the EPA and local environmental enforcement entities. Moreover, the program allows small businesses and local governments to achieve compliance voluntarily, confidentially, and without fear of enforcement. Site visits will not lead to an inspection or citation, unless there is an imminent threat to human health and the environment. Many times, participants find they can save money by improving the efficiency of their processes and reducing the time spent on paperwork.

In particular, the TCEQ directed compliance assistance to owners and operators of underground storage tanks. This followed the enactment of state and federal legislation on Jan. 1, 2009, and the many questions that arose over new rules for underground storage tanks. In fiscal 2010, the TCEQ hosted 13 workshops, which drew 955 participants, to help owners and operators of petroleum storage tanks understand compliance with the new rules. As a result of these workshops, in response to requests for confidential assessments of environmental compliance, staff conducted 76 site visits. Additionally, the TCEQ distributed more than 1,200 copies of a new compliance tool, *The PST Super Guide: A Comprehensive Guide to Compliance in Texas,* to workshop attendees, underground storage tank contractors, and agency staff. With the federal Energy Policy Act of 2005 requiring increased investigations of facilities, the TCEQ plans to continue offering the petroleum storage tank workshops throughout fiscal 2011 and to distribute the *Super Guide* at 12 locations across Texas.

Since September 2008, the agency has also conducted six workshops on the additional opportunities available to reduce emissions from upstream oil and gas operations. These workshops, which reached more than 1,300 attendees, offered strategies on how to improve efficiency, lower VOC emissions, and prevent pollution.

For larger entities, the TCEQ offered technical advice on innovative approaches for improving environmental performance, primarily through pollution-prevention planning, site assistance visits, and Clean Texas activities.

These efforts produced a number of achievements the last two years. Among them:

- Pollution-prevention planning helped reduce hazardous waste by almost 1.2 million tons and toxic chemicals by about 66,000 tons.
- A total of 95 site assistance visits were conducted. Participating sites reported a combined savings of more than $31.2 million and an overall reduction of more than 32,000 tons in wastes or emissions.
- Environmental management systems have been implemented by 19 Clean Texas members. As a result of environmental improvements, Clean Texas members reported eliminating a total of 91,633 tons of emissions and waste, and saving more than $10.9 million.

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.

In 2007, the EPA funded the expansion of RENEW as a resource for its Region 6, which includes Texas, Arkansas, Louisiana, Oklahoma, and New Mexico. Introducing the TCEQ's RENEW Web tool to Texas' neighbors broadened the reach of the waste exchange network. The expansion gives industries, businesses, and governmental entities throughout EPA Region 6 a central site for selling surplus materials, by-products, and wastes to users who will reclaim or reuse them.

Hosted by the Southwest Network for Zero Waste (a collaborative project of the EPA, the University of Texas at Arlington, and regional environmental agencies), 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 <www.renewtx.org>, these entities list and promote information on materials-exchange opportunities at a national and regional level. The website also allows users to report on successful exchanges as a result of the program.

Over the life of RENEW, an estimated 514,000 tons of material has been exchanged, representing a total savings of more than $27 million in disposal costs. In just the last two years,

RENEW Transactions

Fiscal Year	Number of Exchanges	Materials Exchanged	Savings in Disposal Costs	Earnings from Sales
2009	12	11,600 tons	$2.2 million	$1.4 million
2010	20	11,858 tons	$4.6 million	$5.7 million
TOTAL	**32**	**23,458 tons**	**$6.8 million**	**$7.1 million**

a total of 23,458 tons of material was exchanged through RENEW.

Here are some recent RENEW exchanges:

- A coating manufacturer transferred more than 2,000 pounds of water-borne and solvent-based mill-end primer to be used as primer for metal. The manufacturer saved $24,888 in disposal costs and earned revenues of $9,200 by selling the material rather than disposing of it.
- A paint and varnish manufacturing plant transferred 3,080 pounds of off-spec shopcoat primer to another company that planned to use the paint. The plant earned $6,930 in revenues and avoided $2,000 in disposal costs.
- An inorganic chemical manufacturer sold 2.3 million pounds of sulfuric acid. If this material had been disposed of, it would have required treatment to neutralize the acid. Instead, the acid was sold to a company that reused it in ferrous-sulfate production. This resulted in a disposal-cost savings of $1,500 and earned revenues of $12,000 for the sale of the material.

Lake Amistad, photo courtesy TxDOT

Palo Duro Canyon, photo courtesy TxDOT

Cypress trees at Caddo Lake, photo courtesy TxDOT