

CHAPTER

Agency Activities

The following summarizes the agency's fiscal 2017 and 2018 activities regarding compliance, supplemental environmental projects, compliance history, critical infrastructure, dam safety, emergency management, laboratory accreditation, and the Edwards Aquifer Program.

Enforcement

Environmental Compliance

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

In a typical year, the agency will conduct about 105,000 routine investigations and investigate about 4,400 complaints 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—as high as \$25,000 for some programs—per day, per violation. In some programs, civil judicial cases carry penalties of up to \$25,000 per day, per violation.

In fiscal 2017, the TCEQ issued 1,496 administrative orders, which required payments of almost \$11 million in penalties and nearly \$5 million for SEPs (see “Supplemental Environmental Projects,” below). The average number of days from initiation of an enforcement action to completion (order approved by the commission) was 276 days.

In fiscal 2018, the TCEQ issued 1,370 administrative orders, which required payments of over \$13 million in penalties and almost \$4 million for SEPs. The average number of days from initiation of an enforcement action to completion was 363 days.

The TCEQ can also refer cases to the state attorney general. In fiscal 2017, the AG's office obtained 46 judicial orders in cases referred by the TCEQ or in which

the TCEQ was a party. These orders resulted in more than \$16.1 million in civil penalties. In fiscal 2018, the AG's office obtained 34 judicial orders, which resulted in approximately \$3.8 million in civil penalties.

Additional enforcement statistics can be found in the agency's annual enforcement report, available online at <www.tceq.texas.gov/goto/aer>.

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

Supplemental Environmental Projects

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

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

The agency has a list of *preapproved SEPs*, which have already received general approval from the commission. The projects—which are sponsored by both nonprofit organizations and governmental agencies—represent a wide array of activities, such as cleaning up illegal dump sites, 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.

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

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

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

Table 1. TCEQ Enforcement Orders

Fiscal Year	Number of Orders	Assessed Penalties	Orders with SEPs	SEP Funds
2017	1,496	\$18.9 million	166	\$4.9 million
2018	1,370	\$13.3 million	169	\$3.9 million

Compliance History

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

An evaluation standard has been used to assign a rating to approximately 394,000 entities regulated by the TCEQ that are subject to the compliance history rules. The ratings take into consideration prior enforcement orders, court judgments, consent decrees, criminal convictions,

and notices of violation, as well as investigation reports, notices, and disclosures submitted in accordance with the Texas Environmental, Health, and Safety Audit Privilege Act. Agency-approved environmental management systems and participation in agency-approved voluntary pollution-reduction programs are also taken into account.

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

Each September, regulated entities are classified or reclassified to reflect the previous five years. Ratings below 0.10 receive a classification of "high," which means those entities have an above-satisfactory compliance record with environmental regulations. Ratings from 0.10 to 55.00 merit "satisfactory," for having generally complied. Ratings greater than 55.00 result in an "unsatisfactory" classification, because these entities performed below minimal acceptable performance standards.

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

Critical Infrastructure

In 2011, the TCEQ created the Critical Infrastructure Division within the Office of Compliance and Enforcement. This division combines elements from the OCE that are critical to the agency's responsibilities under the Texas Homeland Security Strategic Plan. The division seeks to ensure that regulated critical infrastructures, essential to the state and its residents, maintain compliance with environmental regulations; and to support these critical infrastructures during disasters. This latter duty includes not only responding to disasters but also aiding in recovery from them.

The division's programs are Homeland Security, Dam Safety, and Emergency Management Support.

Table 2. Compliance-History Designations

Classifications	September 2017		September 2018	
	Number of Entities Subject to Compliance-History Rules	Percent	Number of Entities Subject to Compliance-History Rules	Percent
High	36,097	9.75	36,540	9.26
Satisfactory	9,871	2.67	8,867	2.25
Unsatisfactory	904	0.24	932	0.24
Unclassified	323,360	87.34	348,334	88.25
Total	370,232	100	394,673	100

Dam Safety

The Dam Safety Program monitors and regulates private and public dams in Texas. The program periodically inspects dams that pose a high or significant hazard and issues recommendations and reports to the dam owners to help them maintain safe facilities. The program ensures that these facilities are constructed, maintained, repaired, or removed safely.

High- or significant-hazard dams are those at which loss of life could occur if the dam should fail.

On Sept. 1, 2013, a new state law exempted a large number of dams from Dam Safety Program regulation. Exempt dams must meet all of the following criteria:

- Be privately owned.
- Be classified either “low hazard” or “significant hazard.”
- Have a maximum capacity of less than 500 acre-feet.
- Be within a county with a population of less than 350,000.
- Be outside city limits.

As a result, the law exempts 3,239 dams.

In 2018, Texas had 4,007 state-regulated dams; of those, 1,379 were high-hazard dams and 354 were significant-hazard dams. The remaining dams were classified as low hazard.

As of August 2018, 85 percent of all high- and significant-hazard dams had been inspected during the past five years. About 777 of the inspected dams are in either “fair” or “poor” condition. Most of the owners have begun making repairs, as funds are available.

In addition to inspections, the Dam Safety Program conducts workshops—primarily for dam owners and engineers—on emergency action plans and dam maintenance. Emergency management personnel also attend. Three workshops were conducted in fiscal 2018.

Homeland Security

The Homeland Security Section coordinates communications during disaster response with federal, state, and local partners; conducts threat assessments regarding the state’s critical infrastructure; participates in the state’s counterterrorism task forces; and, coordinates the BioWatch program in Texas. The latter is a federally funded initiative aimed at early detection of bioterrorism agents.

Texas Compact Waste Facility

The Homeland Security Section is also responsible for compliance at the disposal site for low-level radioactive waste in Andrews County. The disposal site, the Texas Compact Waste Facility, is operated by Waste Control Specialists, Inc. (radioactive-material license R04100). The waste facility was authorized to accept waste in April 2012.

The Homeland Security Section maintains two full-time resident inspectors at the low-level radioactive waste site to accept, survey, and approve the disposal of each shipment. Each disposal is documented in an investigation report. The following shipments of low-level radioactive waste were inspected and successfully disposed of in the Texas Compact Waste Facility:

- fiscal 2017: 118 shipments
- fiscal 2018: 125 shipments

Tier II Chemical Reporting Program

Since Sept. 1, 2015, the Homeland Security Section also oversees the Tier II Chemical Reporting Program.

House Bill 942, 84th Legislature, which was signed into law by Gov. Abbott on June 16, 2015, transferred the Tier II Chemical Reporting Program from the Texas Department of State Health Services (DSHS) to the TCEQ. The transfer from the DSHS included 11 full-time-equivalent positions, equipment, and resources. Additionally, a new position was created to develop and administer a Tier II Grant Program.

The Texas Tier II Chemical Reporting Program is the state repository for annual hazardous-chemical inventories, called Texas Tier II Reports, which are required under the Emergency Planning and Community Right-to-Know Act.

Texas Tier II Reports contain detailed information on chemicals that meet or exceed specified reporting thresholds at any time during a calendar year. The Tier II reporting system identifies facilities and owner-operators, and collects detailed data on hazardous chemicals stored at reporting facilities within the state. There are over 77,000 facilities in the data system. A total of 74,588 Tier II reports were received for the reporting period of Jan. 1–March 1, 2018.

Emergency Management Support

The TCEQ’s 16 regional offices form the basis of the agency’s support for local jurisdictions addressing emergency and disaster situations. For that reason, during a

disaster, Disaster-Response Strike Teams (DRSTs), organized in each regional office, serve as the TCEQ's initial and primary responding entities within their respective regions. Team members come from various disciplines and have been trained in the National Incident Management System, Incident Command System, and TCEQ disaster-response protocols.

The agency's Emergency Management Support Team (EMST), based in Austin, was created to build greater disaster-response capabilities within each TCEQ region and to support the regions when necessary. The EMST joins the regional DRST during disaster responses.

The EMST is also responsible for maintaining preparedness, assisting with the development of the DRSTs in each region by providing enhanced disaster-preparedness training, and maintaining sufficient trained personnel so that response staff can rotate during long-term emergency events.

Accredited Laboratories

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

The analytical data produced by these laboratories are 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.

All laboratories accredited by the TCEQ are held to the same quality-control and quality-assurance standards. TCEQ laboratory accreditations are recognized by other states using NELAP standards and by some states that do not operate accreditation programs of their own.

In August 2018, there were 259 laboratories accredited by the TCEQ.

Sugar Land Laboratory

The TCEQ Sugar Land Laboratory, which is accredited by NELAP, serves the agency's 16 regional field offices. The laboratory supports monitoring operations for the TCEQ's air, water, and waste programs, as well as river authorities and other environmental partners, by analyzing surface water, wastewater, sediments, sludge samples, and airborne particulate matter for a variety of environmental contaminants. The laboratory also analyzes samples collected as part of investigations conducted by the agency's Office of Compliance and Enforcement.

The laboratory develops analytical procedures and performance measures for accuracy and precision, and maintains a highly qualified team of analytical chemists, laboratory technicians, and technical support personnel.

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

With the near-instant transmission of electronic data, the TCEQ can now upload results directly to program databases.

Edwards Aquifer Protection Program

As a karst aquifer, the Edwards Aquifer is one of the most permeable and productive groundwater systems in the United States. The regulated portion of the aquifer crosses eight counties in south-central Texas, serving as the primary source of drinking water for more than 2 million people in the San Antonio area. This replenishable system also supplies water for farming and ranching, manufacturing, mining, recreation, and the generation of electric power using steam.

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

Because of the unusual nature of the aquifer's geology and biology—and its role as a primary water source—the TCEQ requires an Edwards Aquifer protection 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. In regulated areas, best management practices for treating stormwater are mandatory during and after construction.

Each year, the TCEQ receives hundreds of plans to be reviewed by the Austin and San Antonio regional offices. Since 2012, due to increased development, the agency has experienced a dramatic increase in the number of plans submitted for review in both regions. The TCEQ reviewed 798 plans in fiscal 2017 and 890 plans in fiscal 2018.

In addition to reviewing plans for development within the regulated areas, agency personnel conduct compliance investigations to ensure that best management practices are appropriately used and maintained. The staff also performs site assessments before the start of regulated activities to ensure that aquifer-recharge features are adequately identified for protection.

Air Quality

Changes to Standards for Criteria Pollutants

The federal Clean Air Act requires the EPA to review the standard for each criteria pollutant every five years to ensure that it achieves the required level of health and environmental protection. Federal clean-air standards, or the National Ambient Air Quality Standards (NAAQS), cover six air pollutants: ozone, particulate matter, carbon monoxide, lead, nitrogen dioxide, and sulfur dioxide. Attaining the ozone standards continue to be the biggest air quality challenge in Texas.

As the TCEQ develops plans—region by region—to address air quality issues, it revises the State Implementation Plan (SIP) and submits these revisions to the EPA.

Ozone Compliance Status

2008 Ozone Standard

On May 21, 2012, the EPA published final designations for the 2008 eight-hour ozone standard of 0.075 ppm. The Dallas–Fort Worth (DFW) area was designated “nonattainment,” with a “moderate” classification, and the Houston–Galveston–Brazoria (HGB) area was designated “nonattainment,” with a “marginal” classification. The attainment demonstration and reasonable further progress SIP revisions for the DFW 2008 eight-hour ozone nonattainment area were adopted in June 2015. An additional attainment demonstration to address a revised 2017 attainment year was adopted in July 2016.

The EPA approved the DFW reasonable further progress SIP revision in December 2016 and proposed approval of the attainment demonstration in May 2018. The DFW area was required to attain the 2008 eight-hour ozone standard by July 20, 2018, and the HGB area was required to do so by July 20, 2015. Both areas did not attain by the applicable dates. The EPA reclassified the HGB area to moderate nonattainment effective Dec. 14, 2016. The new attainment deadline was July 20, 2018, with a 2017 attainment year, which is the year that the area was required to measure attainment of the applicable standard. The

attainment demonstration and reasonable further progress SIP revisions for the HGB 2008 eight-hour ozone moderate nonattainment area were adopted in December 2016. The EPA proposed approval of the HGB reasonable further progress SIP revision in April 2018 and of the attainment demonstration in May 2018.

Because both areas did not attain by the end of 2017, the EPA is expected to reclassify both the DFW and HGB 2008 ozone nonattainment areas to serious. The reclassifications are expected to be completed in early 2019. It is anticipated that the submission deadline for required serious area attainment demonstration and reasonable further progress SIP revisions will be approximately one year after the EPA’s final reclassification.

2015 Ozone Standard

In October 2015, the EPA finalized the 2015 eight-hour ozone standard of 0.070 parts per million. The EPA was expected to make final designations by Oct. 1, 2017, using design values from 2014 through 2016. On Nov. 16, 2017, the EPA designated a majority of Texas as attainment/unclassifiable for the 2015 eight-hour ozone NAAQS. The designations for four areas—DFW, HGB, El Paso, and San Antonio—remained pending.

On June 4, 2018, the EPA published final designations for the remaining areas, except for the eight counties that

Table 3. Ozone-Compliance Status for the 2015 Eight-Hour Standard

Area of Texas	2015 Eight-Hour Ozone	Attainment Deadline
Houston–Galveston–Brazoria (six-county area)	Marginal Nonattainment	Aug. 3, 2021
Dallas–Fort Worth (nine-county area)	Marginal Nonattainment	Aug. 3, 2021
San Antonio (Bexar County)	Marginal Nonattainment	Sept. 24, 2021
All Other Texas Counties	Attainment	not applicable

Note: The HGB 2015 ozone nonattainment area comprises the counties of Brazoria, Chambers, Fort Bend, Galveston, Harris, and Montgomery. The DFW 2015 ozone nonattainment area comprises the counties of Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise.

compose the San Antonio area. Consistent with state designation recommendations, the EPA finalized nonattainment designations for a nine-county DFW marginal nonattainment area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise counties) and a six-county HGB marginal nonattainment area (Brazoria, Chambers, Fort Bend, Galveston, Harris, and Montgomery counties). The EPA designated all the remaining counties, except those

T ypes of Sources

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

Point sources: examples include industrial facilities such as refineries and cement plants

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

On-road mobile sources: cars and trucks

Non-road mobile sources: examples include construction equipment, locomotives, and marine vessels

in the San Antonio area, as attainment/unclassifiable. The designations are effective Aug. 3, 2018.

On July 17, 2018, the EPA designated Bexar County as nonattainment, and the seven other San Antonio area counties—Atascosa, Bandera, Comal, Guadalupe, Kendall, Medina, and Wilson—as attainment/unclassifiable.

The attainment deadline for the DFW and HGB marginal nonattainment areas is Aug. 3, 2021, with a 2020 attainment year. The attainment deadline for the Bexar County marginal nonattainment area is Sept. 24, 2021, with a 2020 attainment year. An emissions inventory SIP revision will be due to the EPA two years following the effective date of nonattainment designations.

Redesignation for Revoked Ozone Standards

On Feb. 16, 2018, the U.S. Court of Appeals for the D.C. Circuit issued an opinion in the case *South Coast Air Quality Management District v. EPA*, 882 F.3d 1138 (D.C. Cir. 2018). The case was a challenge to the EPA's final 2008 eight-hour ozone standard SIP requirements rule, which revoked the 1997 eight-hour ozone NAAQS as part of the implementation of the stricter 2008 eight-hour ozone NAAQS.

The court's decision vacated parts of the EPA's final 2008 eight-hour ozone standard SIP requirements rule, including the redesignation substitute, the removal of anti-backsliding requirements for areas designated nonattainment under the 1997 eight-hour ozone NAAQS, the waiving of requirements for transportation conformity for maintenance areas under the 1997 eight-hour ozone NAAQS, and the elimination of the requirement to submit a second 10-year maintenance plan. On April 23, 2018, the EPA filed a request for rehearing on the case, and is awaiting a decision by the court.

To date, the EPA has provided limited guidance to states regarding the effects of the ruling on transporta-

tion conformity for the 1997 and 2008 eight-hour ozone NAAQS, but no guidance regarding SIP planning obligations arising from the court's initial ruling.

This ruling results in uncertainty for applicants seeking air quality permits and for transportation projects for which conformity analyses may be needed, in areas that were designated nonattainment under the revoked one-hour ozone NAAQS of 0.12 parts per million (ppm) or 124 parts per billion (ppb) and the revoked 1997 eight-hour ozone NAAQS of 0.08 ppm or 84 ppb. Major source thresholds, significance levels, and emission offset requirements for air quality permitting are determined by the designation and classification level that applies in a nonattainment area. Some areas in Texas were classified at more stringent classification levels under the revoked one-hour and 1997 ozone NAAQS than currently applicable for the 2008 ozone NAAQS.

If an area does not have a valid motor vehicle emission budget (MVEB) or cannot demonstrate conformity to an existing MVEB, any transportation project using federal dollars cannot proceed without a demonstration that the emissions are no greater than if the project were not completed. Four areas of Texas are potentially affected by the ruling. To address the potential impacts of the court's ruling, the TCEQ has initiated planning for expedited submittal to the EPA of formal redesignation requests and maintenance plans for each area.

Houston-Galveston-Brazoria

The HGB area (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties) is classified as a severe nonattainment area for both the one-hour and 1997 eight-hour ozone NAAQS. Because the area has monitored design values meeting both ozone NAAQS, the TCEQ submitted, and the EPA approved, redesignation substitutes for the HGB area for both NAAQS.

Dallas–Fort Worth

The DFW one-hour ozone area (Collin, Dallas, Denton, and Tarrant counties) is classified as serious nonattainment. The DFW 1997 eight-hour ozone area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant counties) is classified as serious nonattainment. Because the area has monitored design values meeting both NAAQS, the TCEQ submitted, and the EPA approved, redesignation substitutes for the DFW area for both NAAQS.

Beaumont-Port Arthur

The BPA area (Hardin, Jefferson, and Orange counties) is classified as serious nonattainment for the one-hour ozone NAAQS. The area was redesignated by the EPA to attainment for the 1997 eight-hour ozone standard in 2010 after approval of the TCEQ's formal redesignation request and maintenance plan for the area. The BPA area is affected by the ruling in two ways. First, the vacatur of waiver of transportation conformity for redesignated areas may reinstate those requirements for the area, requiring compliance with MVEBs that may be difficult for the area to meet. Second, the ruling would reinstate the requirement for a second 10-year maintenance plan for the BPA area under the 1997 eight-hour ozone NAAQS.

El Paso

The El Paso area (El Paso County) is classified as serious nonattainment for the one-hour ozone NAAQS. Though the area was never formally redesignated, the EPA lifted anti-backsliding requirements for the area that would normally only be lifted after formal redesignation. The court's vacatur of removal of anti-backsliding requirements for areas designated nonattainment under the 1997 NAAQS may also apply to areas that were designated nonattainment under the one-hour ozone NAAQS.

2010 Sulfur Dioxide Standard

The EPA revised the sulfur dioxide (SO₂) NAAQS in June 2010, adding a one-hour primary standard of 75 parts per billion. In July 2013, the EPA designated 29 areas in 16 states, which did not include Texas, in nonattainment of the 2010 standard. On March 3, 2015, a U.S. district court order set deadlines for the EPA to complete designations for the SO₂ NAAQS. It required that the EPA designate by July 2, 2016, any areas monitoring violations or with the largest SO₂ sources fitting specific criteria for SO₂ emissions.

The EPA identified 12 sources in Texas meeting these criteria for Round 2 designations. The EPA designated Atascosa (San Miguel), Fort Bend (WA Parish), Goliad (Coleto Creek), Lamb (Tolk), Limestone (Limestone Station), McLennan (Sandy Creek), and Robertson (Twin Oaks) counties as unclassifiable/attainment and designated Potter County (Harrington) as unclassifiable, effective Sept. 12, 2016. Designations for the remaining four EPA-identified Texas power plants—Big Brown, Martin Lake, Monticello, and Sandow—were delayed and the EPA published a supplement to the Round 2 SO₂ designations on Dec. 13, 2016. Effective Jan. 12, 2017, portions of Freestone and Anderson counties (Big Brown), portions of Rusk and Panola counties (Martin Lake), and a portion of Titus County (Monticello) were designated nonattainment. Milam County was designated unclassifiable.

Sources with more than 2,000 tons per year of SO₂ emissions not designated in 2016 would be designated based on modeling data by December 2017 in Round 3 or monitoring data by December 2020 in Round 4. In accordance with the August 2015 Data Requirements Rule, Texas identified 24 sources with 2014 SO₂ emissions of 2,000 tons per year or more, which included the 12 sources identified in Round 2. The TCEQ evaluated the Oklaunion facility in Wilbarger County through modeling submitted to the EPA, for designation in Round 3. The EPA completed Round 3 designations for the 2010 SO₂ NAAQS, effective April 9, 2018, designating Wilbarger County as unclassifiable/attainment along with unclassifiable/attainment designations for 237 other Texas counties or portions of counties. The areas designated unclassifiable/attainment in Anderson, Panola, Rusk, and Freestone counties are the parts of those counties not previously designated nonattainment in Round 2. All remaining areas not designated in rounds 2 or 3 are to be designated in Round 4 by Dec. 31, 2020, including the following areas of Texas, currently being monitored: Jefferson, Hutchinson, Navarro, Bexar, Howard, Harrison, and Titus (remaining partial area) counties.

In October 2017, Luminant (Vistra Energy) filed notices with the Electric Reliability Council of Texas (ERCOT) stating its plans to retire the Monticello, Sandow, and Big Brown power generation plants. Late in 2017, Vistra received determinations from ERCOT that these retirements would not affect system reliability. The TCEQ voided permits for these three plants on March 30, 2018. Big Brown and Monticello were the primary SO₂ emissions sources of the areas designated nonattainment in Anderson, Freestone, and Titus counties. The Martin Lake plant, in the nonattainment area in Rusk and Panola counties, continues to operate.

Evaluating Health Effects

TCEQ toxicologists meet their goals of identifying chemical hazards, evaluating potential exposures, assessing human health risks, and communicating risk to the general public and stakeholders in a variety of ways. Perhaps most notably, the TCEQ relies on health- and welfare-protective values developed by its toxicologists to ensure that both permitted and monitored airborne concentrations of pollutants stay below levels of concern. Final values for 316 pollutants have been derived so far. Texas has received compliments about these values from numerous federal agencies and academic institutions, and many other states and countries use the TCEQ's toxicity values.

TCEQ toxicologists use the health- and welfare-protective values it derives for air monitoring—called air monitoring comparison values (AMCVs)—to evaluate the public-health risk of millions of measurements of air pollutant concentrations collected from the ambient air monitoring network throughout the year.

When necessary, the TCEQ also conducts health-effects research on particular chemicals with limited or conflicting information. In fiscal 2016 and 2017, specific work evaluating arsenic and ozone was completed. This work can inform the review and assessment of human-health risk of air, water, or soil samples collected during investigations and remediation, as well as aid in communicating health risk to the public.

Finally, toxicologists communicate risk and toxicology with state and federal legislators and their committees, the EPA, other government agencies, the press, and judges during legal proceedings. This often includes input on EPA rulemaking, including the NAAQS, through written comments, meetings, and scientific publications.

Air Pollutant Watch List

TCEQ toxicologists oversee the Air Pollutant Watch List activities that result when ambient pollutant concentrations exceed these protective levels. The TCEQ routinely reviews and conducts health-effects evaluations of ambient air monitoring data from across the state by comparing air toxic concentrations to their respective AMCVs or state standards. The TCEQ evaluates areas for inclusion on the Air Pollutant Watch List where monitored concentrations of air toxics are persistently measured above AMCVs or state standards.

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

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

Four areas of the state are currently on the watch list, which is available at <www.tceq.texas.gov/toxicology/apwl>. The TCEQ continues to evaluate the current APWL areas to determine whether improvements in air quality have occurred. For example, the TCEQ conducted two mobile monitoring trips this biennium around existing APWL areas that lack stationary air monitors. The TCEQ has also identified areas in other parts of the state with monitoring data close or slightly above AMCVs, and worked proactively with nearby companies to reduce air toxic concentrations, obviating the need for listing these areas on the APWL.

Oil and Gas: Boom of Shale Plays

The early activities associated with the Barnett Shale formation in the Dallas-Fort Worth area presented an unusual challenge for the TCEQ, considering that this was the first time that a significant number of natural gas production and storage facilities were built and operated in Texas within heavily populated areas. In response, the TCEQ initiated improved collection of emissions data from oil and gas production areas.

The TCEQ conducts in-depth measurements at all shale formations to evaluate the potential effects. The TCEQ continues to conduct surveys and investigations at oil and gas sites using optical gas imaging camera (OGIC) technology and other monitoring instruments.

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shale play is a defined geographic area containing an organic-rich, fine-grained sedimentary rock with specific characteristics. The shale forms from the compaction of silt and clay-size mineral particles commonly called "mud."

The monitoring, on-site investigations, and enforcement activities in the shale areas also complement increased air-permitting activities. The additional field activities include additional stationary monitors, increased collections of ambient air canister samples, flyovers using OGIC imaging, targeted mobile monitoring, and investigations (routine and complaint-driven).

One vital aspect in responding to shale-play activities is the need for abundant and timely communications with all interested parties. The TCEQ has relied on community open houses, meetings with the public, county judges and other elected officials, workshops for local governments and industry, town-hall meetings, legislative briefings, and guidance documents. For example, the agency recently issued a new publication, *Flaring at Oil and Natural Gas Production Sites* (TCEQ GI-457). This brochure is designed to provide a helpful starting point for discussions with citizens; TCEQ staff can then provide more details as needed with each person. The agency also maintains a multimedia website, <www.TexasOilandGasHelp.org>, with links to rules, monitoring data, environmental complaint procedures, regulatory guidance, and frequently asked questions.

The TCEQ continues to evaluate its statewide network for air quality monitoring and will expand those operations when needed. Fifteen automatic-gas-chromatograph monitors operate in the Barnett Shale area, along with numerous other instruments that monitor for criteria pollutants. In addition, 16 VOC canister samplers (taking samples every sixth day) are located throughout TCEQ Region 3 (Abilene) and Region 4 (Dallas–Fort Worth).

In South Texas, the agency has established a precursor ozone monitoring station in Floresville (Wilson County), north of the Eagle Ford Shale; the station began operating on July 18, 2013. Another monitoring station has been established in Karnes City, which is in Karnes County; this station was activated on Dec. 17, 2014. Karnes County continues to lead the Eagle Ford Shale play in production and drilling activities. The data from these new monitoring stations is used to help determine whether the shale oil and gas play is contributing to ozone formation in the San Antonio area. It should be noted that existing statewide monitors located within oil and gas plays show no indications that these emissions are of sufficient concentration or duration to be harmful to residents.

Regional Haze

Guadalupe Mountains and Big Bend national parks are Class I areas of Texas identified by the federal government for visibility protection, along with 154 other national parks

and wilderness areas throughout the country. Regional Haze is a long-term air quality program requiring states to establish goals and strategies to reduce visibility-decreasing pollutants in the Class I areas and meet a “natural conditions” visibility goal by 2064. In Texas, the pollutants influencing visibility are primarily NO_x , SO_2 , and PM. Regional Haze program requirements include an updated plan (Texas Regional Haze SIP revision) that is due to the EPA every 10 years and a progress report that is due to the EPA every five years, to demonstrate progress toward natural conditions.

The Texas Regional Haze SIP revision was submitted to the EPA on March 19, 2009. The plan projected that Texas Class I areas will not meet the 2064 “natural conditions” goal, due to emissions from the Ohio River Valley and international sources. On Jan. 5, 2016, the EPA finalized a partial disapproval of the 2009 SIP revision and proposed a federal implementation plan (FIP) effective Feb. 4, 2016. In July 2016, Texas and other petitioners, contending that the EPA acted outside its statutory authority, sought a stay pending review of the FIP; the U.S. Court of Appeals for the Fifth Circuit ruled in favor of Texas and the other petitioners and stayed the FIP. The FIP would have required emissions control upgrades or emissions limits at eight coal-fired power plants in Texas. The EPA also approved the Texas Best Available Retrofit Technology (BART) rule for non-electric utility generating units, but due to continuing issues with the Cross-State Air Pollution Rule, the EPA could not act on BART requirements for electric utility generating units (EGUs).

On Oct. 17, 2017, the EPA adopted a FIP to address BART for EGUs in Texas, which included an alternative trading program for SO_2 . The EPA will administer the trading program, which included only specific EGUs in Texas and no out-of-state trading. For NO_x , Texas remains in CSAPR. For PM, the EPA determined no further action was required. On March 20, 2018, the U.S. Court of Appeals for the D.C. Circuit issued a ruling upholding “CSAPR-better-than-BART” for regional haze.

Texas’ first five-year progress report on regional haze was submitted to the EPA in March 2014. It contained:

- A summary of emissions reductions achieved from the plan.
- An assessment of visibility conditions and changes for each Class I area in Texas that Texas may have an impact on.
- An analysis of emissions reductions by pollutant.
- A review of Texas’ visibility-monitoring strategy and any necessary modifications.

On Jan. 10, 2017, the EPA published the final Regional Haze Rule Amendments to update aspects of the reasonably available visibility impairment (RAVI) and regional haze programs, including:

- Strengthening the federal land manager consultation requirements.
- Extending the RAVI requirements so that all states must address situations where a single source or small number of sources is affecting visibility at a Class I area.
- Extending the SIP submittal deadline for the second planning period from July 31, 2018, to July 31, 2021, to allow states to consider planning for other federal programs like the Mercury and Air Toxics Standards, the 2010 one-hour SO₂ NAAQS, and the 2012 annual PM_{2.5} NAAQS.
- Adjusting the interim progress report submission deadline so that second progress reports would be due by Jan. 31, 2025.
- Removing the requirement for progress reports to be SIP revisions.

In January 2018, the EPA announced it would revisit the 2017 amendment to the Regional Haze Rule, though no formal action has been taken regarding the rule.

Major Incentive Programs

The TCEQ implements several incentive programs aimed at reducing emissions, including the Texas Emissions Reduction Plan, the Texas Clean School Bus Program, and Drive a Clean Machine.

Texas Emissions Reduction Plan

The Texas Emission Reduction Plan (TERP) program gives financial incentives to owners and operators of heavy-duty vehicles and equipment for projects that will lower nitrogen oxides (NO_x) emissions. Because NO_x are a leading contributor to the formation of ground-level ozone, reducing these emissions is key to achieving compliance with the federal ozone standard. Incentive programs under TERP also support the increased use of alternative fuels for transportation in Texas, including fueling infrastructure.

- The **Diesel Emissions Reduction Incentive (DERI) Program** has been the core incentive program since the TERP was established in 2001. DERI incentives have focused largely on the ozone nonattainment areas of Dallas–Fort Worth and Houston–Galveston–Bra-

zoria. Funding has also been awarded to projects in the Tyler–Longview–Marshall, San Antonio, Beaumont–Port Arthur, Austin, Corpus Christi, El Paso, and Victoria areas. From 2001 through August 2017, the DERI program awarded more than \$1 billion for the upgrade or replacement of 19,001 heavy-duty vehicles, locomotives, marine vessels, and pieces of equipment. Over the life of these projects, 179,427 tons of NO_x are projected to be reduced, which in 2018 equated to approximately 30 tons per day. The Emissions Reduction Incentive Grants Program, a program of the DERI, will be accepting applications through Aug. 15, 2018.

- The **Texas Clean Fleet Program** funds replacement of diesel vehicles with alternative-fuel or hybrid vehicles. From 2009 through August 2017, 28 grants funded 644 replacement vehicles for a total of \$58.2 million. These projects included a range of alternative-fuel vehicles, including propane school buses, natural gas garbage trucks, hybrid delivery vehicles and garbage trucks, and electric vehicles. These projects are projected to reduce NO_x by 660 tons over the life of the projects. The next Texas Clean Fleet Program grant round is expected to open in August 2018.
- The **Clean Transportation Triangle Program (CTTP)** and the **Alternative Fueling Facilities Program (AFFP)** were combined under the AFFP by the Legislature in fiscal 2017 to provide grants to ensure that alternative-fuel vehicles have access to fuel and to build the foundation for a self-sustaining market for alternative fuels in Texas. The programs previously aimed at fueling stations along the interstate highways connecting the Houston, Dallas, Fort Worth, and San Antonio areas, the counties within the triangle formed by those interstate highways, as well as other areas also eligible under the DERI program. The eligible areas were expanded to become the Clean Transportation Zone (CTZ) in 2017, with the addition of the interstate highways and counties between the Laredo and Corpus Christi areas. From 2012 through August 2018, the CTTP and AFFP programs have funded 172 grants for a total of more than \$34.5 million. Grants include the new construction or expansion of 69 natural gas fueling stations, 12 biodiesel fueling stations, 6 propane stations, and 85 electric charging stations. All grant funds have been awarded for the fiscal biennium of 2017–2018.

- The **Texas Natural Gas Vehicle Grants Program** provides grants for the replacement or repower of heavy- or medium-duty diesel- or gasoline-powered vehicles with natural gas- or liquid petroleum gas-powered vehicles and engines. Eligible vehicles must be operated within the CTZ counties. From 2009 through August 2017, the program funded 105 grants to replace 923 vehicles for a total of \$41.9 million. These projects are projected to reduce more than 1,493 tons of NO_x over the life of the projects. The program will be accepting applications through May 2019 or until all available funds have been awarded.
- The primary objective of the **New Technology Implementation Grant Program** is to offset the incremental cost of the implementation of existing technologies that reduce the emission of pollutants from facilities and other stationary sources that may also include energy-storage projects in Texas. From 2010 through August 2018, the program funded eight grants for a total of \$10.6 million. The next New Technology Implementation Grant Program grant round is expected to open in September 2018.
- The **Drayage Truck Incentive Program** was established by the legislature in 2013 to fund the replacement of drayage trucks operating at seaports and railyards in Texas nonattainment areas with newer, less-polluting drayage trucks. In 2017, the legislature renamed the name the program the **Seaport and Rail Yard Areas Emissions Reduction (SPRY) Program**, and expanded the statutory criteria to include the replacement of cargo-handling equipment as well as drayage trucks. Through August 2018, the program funded 17 grants for the replacement of 77 trucks and pieces of cargo-handling equipment, for a total of \$6.2 million. It is estimated that these projects will reduce more than 357 tons of NO_x in eligible Texas seaports and railyards over the life of the projects. The next SPRY Program grant round is expected to open in September 2018.
- The **Light-Duty Motor Vehicle Purchase or Lease Incentive Program (LDPLIP)** was established by the legislature in 2013 to provide up to \$2,500 for the purchase of a light-duty vehicle operating on natural gas, liquefied petroleum gas (lpg), or plug-in electric drive. Through its expiration, in August 2015, the program provided incentives for the purchase of 1,897 electric plug-in vehicles and 196 vehicles operating on compressed natural gas or pro-

pane, for a total \$7.8 million. In 2017, the legislature reinstated the LDPLIP to provide rebates of up to \$5,000 for the purchase or lease of natural gas or lpg-powered light-duty vehicles, and up to \$2,500 for light-duty vehicles powered by electric drives. The program is currently open and accepting applications through May 2019, or until all available funds have been awarded.

- The **Governmental Alternative Fuel Fleet Program (GAFFP)** was established by the legislature in 2017 to help state agencies, political subdivisions, and transit or school transportation providers fund the replacement or upgrade of their vehicle fleets to alternative fuels, including natural gas, propane, hydrogen fuel cells, and electric. The legislature required the TCEQ to consider the feasibility and benefits of implementing the GAFFP and, if feasible, allowed the commission to adopt rules governing the program and the eligibility of entities to receive grants. However, funding for this program was not included in the Appropriations Act. Therefore, implementation is not currently feasible.

TERP grants and activities are further detailed in a separate report, *TERP Biennial Report to the Texas Legislature* (TCEQ publication SFR-079/18).

Texas Clean School Bus Program

The Texas Clean School Bus Program (TCSBP) provided grants for technologies that reduce diesel-exhaust emissions inside the cabin of a school bus, as well as educational materials to school districts on other ways to reduce emissions, such as idling reduction. From 2008 to August 2017, the TCSBP used state and federal funds to reimburse approximately \$29.8 million to retrofit 7,560 school buses in Texas. In 2017, the legislature expanded the criteria for the TCSBP to also include grants for the replacement of older school buses with newer models. From September 2017 through August 2018, the TCSBP awarded approximately \$2.9 million to replace 61 school buses across the state. An additional \$3.1 million is expected to be awarded beginning September 2018 for the replacement of 66 school buses.

Texas Volkswagen Environmental Mitigation Program

In December 2017, Gov. Greg Abbott selected the TCEQ as the lead agency responsible for the administration of

funds received from the Volkswagen State Environmental Mitigation Trust. A minimum of \$209 million dollars will be made available for projects that mitigate the additional nitrogen oxides emissions resulting from specific vehicles using defeat devices to pass emissions tests. The TCEQ is currently developing a Beneficiary Mitigation Plan for Texas, as required by the trust, that will summarize how the funds allocated to Texas will be used. In general, funds provided under the trust must be awarded through grants to governmental and non-governmental entities in accordance with the priorities established in the Mitigation Plan.

Drive a Clean Machine

The Drive a Clean Machine program (see <www.driveacleanmachine.org>) was established in 2007 as part of the Low Income Vehicle Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP) to repair or remove older, higher-emitting vehicles. The Drive a Clean Machine (DACM) program is available to qualifying vehicle owners in 16 participating counties in the areas of HGB, DFV, and Austin–Round Rock. The counties in these areas conduct annual inspections of vehicle emissions. From the program’s debut in December 2007 through May 2018, qualifying vehicle owners have received more than \$218 million. This funding helped replace 64,509 vehicles and repair 45,153.

Following the governor’s veto of the appropriations funding for the LIRAP and the Local Initiative Projects program for fiscal biennium 2018–19, all 16 participating counties opted out and collection of the LIRAP fee has been terminated. Funding carried over from fiscal biennium 2016–17 appropriations may continue to be used for the DACM program until Aug. 31, 2019.

Local Initiative Projects

The Local Initiative Projects (LIP) program was established in 2007 to provide funding to counties participating in the LIRAP for implementation of air quality improvement strategies through local projects and initiatives. Projects are funded both by the TCEQ from LIRAP appropriations and through a dollar-for-dollar match by the local government, although the TCEQ may reduce the match for counties implementing programs to detect vehicle-emissions fraud (currently set at 25¢/dollar). From the LIP program’s debut in December 2007, more than \$31 million has been appropriated to fund eligible projects in the participating counties. Recently funded projects include vehicle-emissions enforcement task forces; traffic-signal synchronization; and bus transit services.

Although all 16 counties participating in the LIRAP have opted out, LIP funding carried over from fiscal biennium 2016–17 appropriations may continue to be used by these counties for the LIP program until Aug. 31, 2019.

Environmental Research and Development

The TCEQ supports cutting-edge scientific research to expand knowledge about air quality in Texas. The agency’s Air Quality Research Program (AQRP) continues to be engaged in a range of projects that build on scientific research on air quality from the previous biennium.

The AQRP and the TCEQ sponsored a field campaign during May 2017 to study ozone in the San Antonio area. Detailed atmospheric chemistry and meteorology measurements were made at six sites in the area. Ongoing analysis of these data will allow the TCEQ to better understand ozone in San Antonio.

Other important air quality research carried out through the AQRP has included the following:

- Projects that examine the role of wildfires and agricultural burning upon air quality in Texas, including fires outside of Texas and the United States.
- A study of the activity data used to estimate NO_x emissions from cars and trucks in Texas, and how locally derived data can contribute to these estimates.
- Improvements in the tools used to estimate biogenic volatile organic compound emissions in Texas.

In addition to research carried out through the AQRP, the TCEQ used grants and contracts to support ongoing air quality research. These are some of the many notable projects:

- A review-and-synthesis study examining atmospheric impacts of oil and gas development on ozone and particulate matter pollution in Texas.
- Analyses of biomass burning impacts on Texas air quality using two different modeling methods, with an emphasis on identifying exceptional events that may affect air quality.
- Updating emissions inventories for emissions from flash tanks, asphalt paving; ocean-going tanker-vessel lightering (i.e., transferring liquids from one tanker to another); aircraft; railyard activity; and industrial, commercial, or institutional fuel use.
- Improving the boundary conditions used in ozone modeling in Texas by updating the model chemistry.

- Measurements of biogenic VOC emissions and improvements of the tools used to estimate those emissions both inside Texas and throughout the ozone-modeling domain.

The latest findings from these research projects help the state understand and appropriately address some of the challenging air quality issues faced by Texans because of changes to various standards for ambient air quality and other federal actions. These challenges are increasing, and addressing them will require continued emphasis on scientific understanding. This knowledge helps ensure that Texas adopts attainment strategies that are achievable, sound, and based on the most current science.

Water Quality

Developing Surface Water Quality Standards

Texas Surface Water Quality Standards

Under the federal Clean Water Act, every three years the TCEQ is required to review and, if appropriate, revise the Texas Surface Water Quality Standards. These standards are the basis for establishing discharge limits in wastewater permits, setting instream water quality goals for total maximum daily loads, and establishing criteria to assess instream attainment of water quality.

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

The commission revised its water quality standards in 2018. Major revisions included:

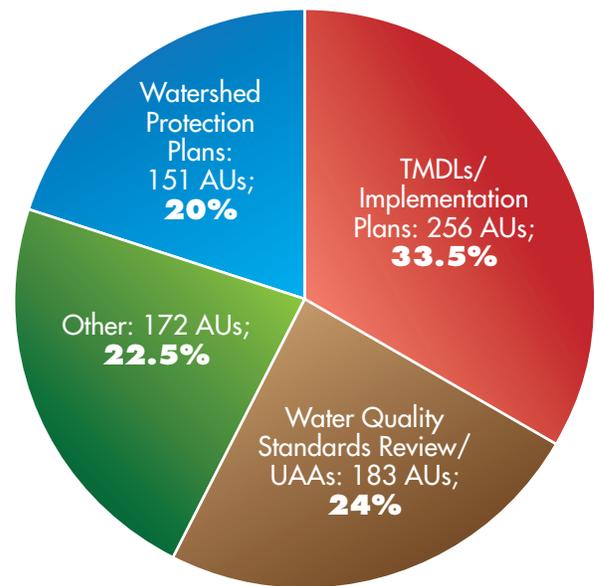
- A new single sample criterion for coastal recreation waters as mandated by the BEACH Act.
- Revisions to toxicity criteria to incorporate new data on toxicity effects and local water quality characteristics that affect toxicity.
- Numerous revisions and additions to the uses and criteria of individual water bodies to incorporate new data and the results of recent use-attainability analyses.

The revised standards must be approved by the EPA before being applied to activities related to the Clean

Water Act. Although federal review of portions of the 2010 and the 2014 standards has yet to be completed, the TCEQ proceeded with its 2017 triennial standards review. The commission approved the 2018 Texas Surface Water Quality Standards in February 2018. It was sent to the EPA and is awaiting approval.

Figure 1. Management Strategies for Restoring Water Quality

An assessment unit (AU) is the smallest geographic area used when evaluating surface water quality.



Total AUs with an assigned restoration strategy: 762

The TCEQ can address water impairments in a variety of ways. Selection of an appropriate restoration strategy is coordinated with stakeholders through the Watershed Action Planning (WAP) process.

Source: WAP database and the 2014 Texas Integrated Report

Use-Attainability Analyses

The Surface Water Quality Standards Program also coordinates and conducts use-attainability analyses to develop site-specific uses for aquatic life and recreation. The UAA assessment is often used to re-evaluate designated or presumed uses when the existing standards may need to be revised for a water body. As a result of aquatic life UAAs, site-specific aquatic-life uses and dissolved-oxygen criteria were adopted in the 2018 revision of the standards for individual water bodies.

A *use-attainability analysis is a scientific assessment of the physical, chemical, biological, or recreational characteristics of a water body.*

In 2009, the TCEQ developed recreational UAA procedures to evaluate and more accurately assign levels of protection for water recreational activities such as swimming and fishing. Since then, the agency has initiated more than 120 UAAs to evaluate recreational uses of water bodies that have not attained their existing criteria. Using results from recreational UAAs, the TCEQ is proposing site-specific contact-recreation criteria for numerous individual water bodies in the 2018 Texas Surface Water Quality Standards revision.

Clean Rivers Program

The Clean Rivers Program administers and implements a statewide framework set out in Texas Water Code, Section 26.0135. This state program works with 15 regional partners (river authorities and others) to collect water quality samples, derive quality-assured data, evaluate water

quality issues, and provide a public forum for prioritizing water quality issues in each Texas river basin. This program provides 60–70 percent of the data available in the state’s surface water quality database used for water-resource decisions, including revising water quality criteria, identifying the status of water quality, and supporting the development of projects to improve water quality.

Water Quality Monitoring

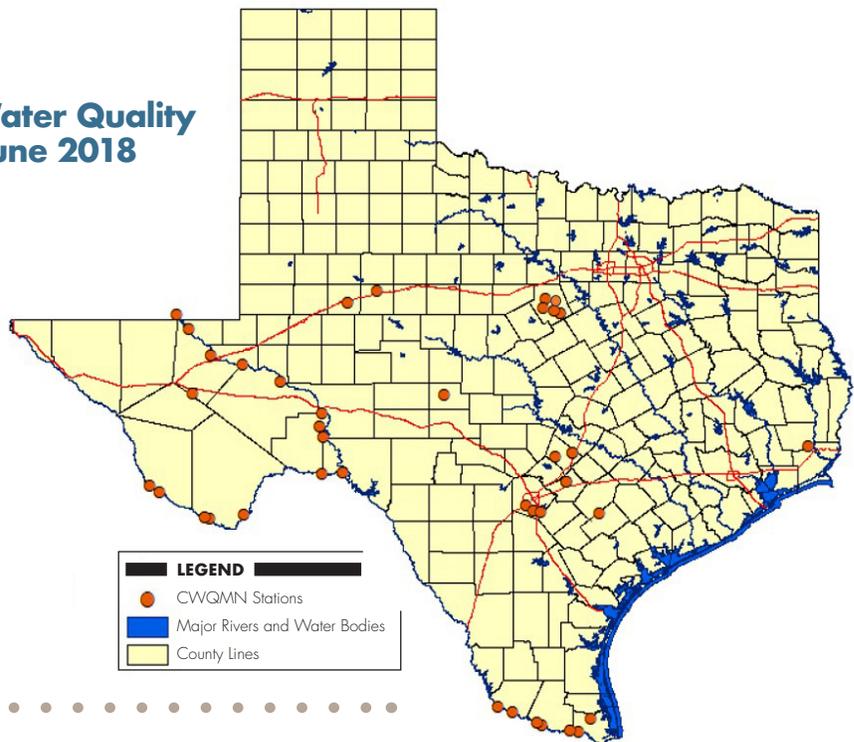
Surface water quality is monitored across the state in relation to human-health concerns, ecological conditions, and designated uses. The resulting data form a basis for policies that promote the protection and restoration of surface water in Texas. Special projects contribute water quality monitoring data and information on the condition of biological communities. This provides a basis for developing and refining criteria and metrics used to assess the condition of aquatic resources.

Coordinated Routine Monitoring

Each spring, TCEQ staff meets with various water quality organizations to coordinate monitoring efforts for the upcoming fiscal year. The TCEQ prepares the guidance and reference materials, and the Texas Clean Rivers Program partners coordinate the local meetings. The available information is used by participants to select stations

Figure 2. TCEQ Continuous Water Quality Monitoring Stations – June 2018

In June 2018, the TCEQ had 41 active stations around the state as part of the Continuous Water Quality Monitoring Network. Instruments at these sites measure basic water quality conditions every 15 minutes. The data is used to make decisions about managing water resources and water quality. The number and locations of sites may vary from year to year.



and parameters that will enhance the overall coverage of water quality monitoring, eliminate duplication of effort, and address basin priorities.

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

Continuous Water Quality Monitoring

The TCEQ has developed—and continues to refine—a network of continuous water quality monitoring sites on priority water bodies. The agency maintains 40 to 50 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 decisions about water-resource management, as well as to target field investigations, evaluate the effectiveness of water quality management programs such as TMDL implementation plans and watershed-protection plans, characterize existing conditions, and evaluate spatial and temporal trends. The data are posted at <www.texaswaterdata.org>.

The CWQMN is used to guide decisions on how to better protect certain segments of rivers or lakes. For example, the TCEQ developed a network of 15 CWQMN sites on the Rio Grande and the Pecos River, primarily to monitor levels of dissolved salts to protect the water supply in Amistad Reservoir. The Pecos River CWQMN stations also supply information on the effectiveness of the Pecos River Watershed Protection Plan. These stations are operated and maintained by the U.S. Geological Survey through cooperative agreements with the TCEQ and the Texas State Soil and Water Conservation Board. Another use of such data is development of water quality models.

Assessing Surface Water Data

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

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

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. Waters that do not regularly attain one or more of the standards may require action by the TCEQ and are placed on the 303(d) List of Impaired Water Bodies for Texas (part of the report). The EPA must approve this list before its implementation by the TCEQ's water quality management programs.

Because of its large number of river miles, Texas can monitor only a portion of its surface water bodies. The major river segments and those considered at highest risk for pollution are monitored and assessed regularly. The 2014 *Integrated Report* was approved by the EPA in November 2015. In developing the report, water quality data was evaluated from 5,086 sites on 1,409 water bodies. The draft 2016 *Integrated Report* is currently in the TCEQ approval process and the draft 2018 *Integrated Report* is under development.

Restoring Water Quality

Watershed Action Planning

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

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

Leading the WAP process are the TCEQ, the Texas State Soil and Water Conservation Board, and the Texas Clean Rivers Program. Involving stakeholders, especially at the watershed level, is key to the success of the WAP process.

Total Maximum Daily Load Program

The Total Maximum Daily Load (TMDL) Program is one of the agency's mechanisms for improving the quality of impaired surface waters. A TMDL is the total amount (or load) of a single pollutant that a receiving water body can assimilate within a 24-hour period and still maintain water quality standards. A rigorous scientific process is used to arrive at practicable targets for the pollutant reductions in TMDLs.

This program works with the agency's water quality programs, other governmental agencies, and watershed stakeholders during the development of TMDLs and related implementation plans.

Bacteria TMDLs

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

Of the 589 impairments listed in the 2014 *Integrated Report* for surface water segments in Texas, about half are for bacterial impairments to recreational water uses.

The TMDL Program has developed an effective strategy for developing TMDLs that protects recreational safety. The strategy relies on the engagement and consensus of the communities in the affected watersheds. Other actions are also taken to address bacteria impairments, such as recreational use–attainability analyses that ensure that the appropriate contact-recreation use is in place, as well as watershed-protection plans developed by stakeholders and primarily directed at nonpoint sources.

Implementation Plans

While a TMDL analysis is being completed, stakeholders are engaged in the development of an Implementation Plan (I-Plan), which identifies the steps necessary to improve water quality. These I-Plans outline three to five years of activities, indicating who will carry them out, when they will be done, and how improvement will be gauged. The time frames for completing I-Plans are affected by stakeholder resources and when stakeholders reach consensus. Each plan contains a commitment by the stakeholders to meet periodically to review progress. The plan is revised to maintain sustainability and to adjust to changing conditions.

Programmatic and Environmental Success

Since 1998, the TCEQ has been developing TMDLs to improve the quality of impaired water bodies on the federal 303(d) List, which identifies surface waters that do not meet one or more quality standards. In all, the agency has adopted 279 TMDLs for 196 water bodies in the state.

Based on a comparison of the 2012 and the 2014 *Integrated Reports*, water quality standards were attained for five impaired assessment units addressed by the TMDL Program.

From September 2014 to June 2018, the commission adopted TMDLs to address instances where bacteria had impaired the contact-recreation use. TMDLs were adopted for 10 surface water body segments consisting of 310 assessment units. A TMDL is developed for each assessment unit: Jarbo Bayou (one), Tres Palacios Creek (one), Upstream of Mountain Creek Lake (four), Town and Quinlan creeks (two), and Aransas River and Poesta Creek (two). During that time, the commission also approved one I-Plan, for Tres Palacios Creek. The commission approved Jarbo Bayou, Town and Quinlan creeks, Aransas River and Poesta Creek, and Upstream of Mountain Creek Lake to join existing I-Plans.

The Greater Trinity River Bacteria TMDL I-Plan is an example of successful community engagement to address bacteria impairments. Development of the I-Plan occurred through a stakeholder-driven process that included active public participation. Stakeholders engaged in the process represented a broad spectrum of authorities and interests including government, agriculture, business, conservation groups, and the public. The I-Plan identifies nine strategies for activities that address four TMDL projects.

Nonpoint Source Program

The Nonpoint Source (NPS) Program administers the provisions of Section 319 of the federal Clean Water Act. Section 319 authorizes grant funding for states to develop projects and implement NPS management strategies to maintain and improve water quality conditions.

The TCEQ, in coordination with the Texas State Soil and Water Conservation Board (TSSWCB), manages NPS grants to implement the long and short-term goals identified in the Texas NPS Management Program. The NPS Program annual report documents progress in meeting these goals.

The NPS grant from the EPA is split between the TCEQ (to address urban and non-agricultural NPS pollution) and the TSSWCB (to address agricultural and silvicultural NPS pollution). The TCEQ receives \$3 to \$4 million annually.

About 60 percent of overall project costs are federally reimbursable; the remaining 40 percent comes from state or local matching. In fiscal 2018, \$3.8 million was matched with \$2.5 million, for a total of \$6.3 million.

The TCEQ solicits applications to develop projects that contribute to the NPS Program management plan. Typically, 10 to 20 applications are received, reviewed, and ranked each year. Because the number of projects funded depends on the amount of each contract, the number fluctuates. Fourteen projects were selected in fiscal 2017, and 16 in fiscal 2018. Half of the federal funds awarded must be used to implement watershed-based plans, comprising activities that include public outreach and education, low-impact development, the construction and implementation of best management practices, and the inspection and replacement of on-site septic systems.

The NPS Program also administers provisions of Section 604(b) of the federal Clean Water Act. These funds are derived from State Revolving Fund appropriations under Title VI of the act. Using a legislatively mandated formula, money is passed through to councils of governments for water quality planning. The program received \$617,000 in funding from the EPA in fiscal 2017 and \$612,000 in fiscal 2018.

Bay and Estuary Programs

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

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

Additional coastal activities at the TCEQ include:

- Participating in the Gulf of Mexico Alliance, a partnership linking Alabama, Florida, Louisiana, Mississippi, and Texas. The TCEQ contributes staff time to implement the Governors' Action Plan, focusing on water resources and improved comparability of data collection among the states.

- Serving on the Coastal Coordination Advisory Committee and participating in the implementation of the state's Coastal Management Program to improve the management of coastal natural resource areas and to ensure long-term ecological and economic productivity of the coast.
- Directing, along with the General Land Office and the Railroad Commission of Texas, the allocation of funds from the Coastal Impact Assistance Program.
- Working with the General Land Office to gain full approval of the Coastal Nonpoint Source Program, which is required under the Coastal Zone Act Reauthorization Amendments.

Galveston Bay Estuary Program

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

GBEP priorities include:

- coastal habitat conservation
- public awareness and stewardship
- water conservation
- stormwater quality improvement
- monitoring and research

During fiscal 2017 and 2018, the GBEP worked to preserve wetlands and important coastal habitats that will protect the long-term health and productivity of Galveston Bay. To inform resource managers, the program conducted ecosystem-based monitoring and research, and worked with partners to fill data gaps. The GBEP collaborated with local stakeholders to create watershed-protection plans and to implement water quality projects. Its staff began updating the Galveston Bay Plan through a collaborative stakeholder process, and also continued to develop the Back the Bay campaign, which strives to increase public awareness and stakeholder involvement, and reinforce the priorities of the Galveston Bay Plan.

In fiscal 2017 and 2018, about 2,586 acres of coastal wetlands and other important habitats were protected, restored, and enhanced. Since 2000, the GBEP and its partners have protected, restored, and enhanced a total of 29,713 acres of important coastal habitats.

Through collaborative partnerships established by the program, approximately \$5.84 in private, local, and federal contributions was leveraged for every \$1 the state dedicated to the program.

Coastal Bend Bays and Estuaries Program

During fiscal 2017 and 2018, the CBBEP implemented 59 projects, including habitat restoration and protection in areas totaling 2,913 acres. Based in the Corpus Christi area, the CBBEP is a voluntary partnership that works 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 \$2,833,504 in additional funds to leverage TCEQ funding.

CBBEP priority issues focus on human uses of natural resources, freshwater inflows, maritime commerce, habitat loss, water and sediment quality, and education and outreach. The CBBEP has also become active in water and sediment quality issues. The CBBEP's goal is to address 303(d)-listed segments so that they meet state water quality standards.

Other areas of focus:

- Conserving and protecting wetlands and wildlife habitat through partnerships with private landowners.
- Restoring the Nueces River Delta for the benefit of fisheries, wildlife habitat, and freshwater conservation.
- Environmental education and awareness for more than 8,000 students and teachers annually at the CBBEP Nueces Delta Preserve by delivering educational experiences and learning through discovery, as well as scientific activities.
- Enhancement of colonial-waterbird rookery islands by implementing predator control, habitat management, and other actions to help stem the drop in populations of nesting coastal birds in the Coastal Bend and the Lower Laguna Madre.
- Supporting the efforts of the San Antonio Bay Partnership to better characterize the San Antonio Bay system and to develop and implement management plans that protect and restore wetlands and wildlife habitats.

Drinking Water

Of the approximately 7,000 public water systems (PWSs) in Texas, about 4,650 are community systems, mostly operated by cities. These systems serve about 97 percent of Texans. The rest are non-community systems—such as those at schools, churches, factories, businesses, and state parks.

The TCEQ makes data tools available online so the public can find information on the quality of locally produced drinking water. The Texas Drinking Water Watch at <www.tceq.texas.gov/goto/dww> provides analytical results from the compliance sampling of PWSs. In addition, the Source Water Assessment Viewer at <www.tceq.texas.gov/gis/swaview> shows the location of the sources of drinking water. The viewer also allows the public to see any potential sources of contamination, such as an underground storage tank.

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

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

More than 56,000 water samples are analyzed each year just for chemical compliance. Most of the chemical samples are collected by contractors and then submitted to an accredited laboratory. The analytical results are sent to the TCEQ and the PWSs.

Each year, the TCEQ holds a free symposium on public drinking water, which typically draws about 800 participants. The agency also provides technical assistance to PWS to ensure that consumer confidence reports are developed correctly.

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

Table 4. Violations of Drinking-Water Regulations

	Fiscal 2017	Fiscal 2018
Enforcement Orders	324	360
Assessed Penalties	\$328,533	\$398,343
Offsets by SEPs	\$12,472	\$23,836

Note: The numbers of public-water-supply orders reflect enforcement actions from all sources in the agency.

The EPA developed the Enforcement Response Policy and the Enforcement Targeting Tool for enforcement targeting under the Safe Drinking Water Act. The TCEQ uses this tool to identify PWSs with the most serious health-based or repeated violations and those that show a history of violations of multiple rules. This strategy brings the systems with the most significant violations to the top of the list for enforcement action, with the goal of returning those systems to compliance as quickly as possible.

More than 98 percent of the state’s population is served by a PWS producing water that meets or exceeds the National Primary Drinking Water Standards.

Review of Engineering Plans and Specifications

PWSs 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 2017, the TCEQ completed compliance review of 2,305 engineering plans for PWSs; in fiscal 2018, 2,396.

The agency strives to ensure that all water and sewer systems have the capability to operate successfully. The TCEQ contracts with the Texas Rural Water Association to assist utilities with financial, managerial, and technical expertise. About 1,099 assignments were made through this contract in fiscal 2017, and 1,307 assignments in fiscal 2018.

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 2017, the agency reviewed 576 water-district applications; in fiscal 2018, 514.

Wastewater Permitting

The Texas Pollutant Discharge Elimination System was created in 1998, when the EPA transferred the authority of the National Pollutant Discharge Elimination System for water quality permits in the state to Texas. The TPDES program issues municipal, industrial, and stormwater permits.

Industrial and Municipal Individual Permits

Industrial wastewater permits are issued for the discharge of wastewater generated from industrial activities. In fiscal 2017, the TCEQ issued 139 industrial wastewater permits; in fiscal 2018, 138. Municipal wastewater permits are issued for the discharge of wastewater generated from municipal and domestic activities. In fiscal 2017, the TCEQ issued 654 municipal wastewater permits; in fiscal 2018, 635.

Stormwater Permits

Authorization for stormwater discharges are primarily obtained through one of three types of general permits: industrial, construction, and municipal. The TCEQ receives thousands of applications a year for coverage. To handle the growing workload, the agency has introduced online applications for some of these permitting and reporting functions.

Industry

The multi-sector general permit regulates stormwater discharges from industrial facilities. Facilities authorized under this general permit must develop and implement a stormwater pollution prevention plan, conduct regular monitoring, and use best management practices to reduce the discharge of pollutants in stormwater. The TCEQ receives about 167 notices of intent, 75 no-exposure certifications, and 17 notices of termination a month for industrial facilities.

Construction

The construction general permit regulates stormwater runoff associated with construction activities, which include clearing, grading, or excavating land at building projects. Construction disturbing five or more acres is labeled a “large” activity, while construction disturbing one acre or more but less than five acres is termed “small.” The TCEQ currently receives about 643 notices of intent and 386 notices of termination a month for large construction activities.

Municipal

The TCEQ also regulates discharges from municipal separate storm-sewer systems (MS4s). This category applies to a municipality’s system of ditches, curbs, gutters, and storm sewers that collect runoff, including controls for drainage from state roadways. The TCEQ has issued 23 individual MS4 permits and 583 MS4s are authorized under a general permit. MS4s must develop and implement a stormwater management plan.

Table 5. Stormwater General Permits

	Applications Affected (issued)		Applications Received (monthly average)		Applications Received (total)	
	Fiscal 2017	Fiscal 2018	Fiscal 2017	Fiscal 2018	Fiscal 2017	Fiscal 2018
Industrial (facilities) ^a	8,581	2,675	186	126	9,678	1,514
Construction (large sites)	7,801	16,471	684	1,334	8,211	16,019
MS4s (public entities)	13	12	1	1	11	7

^a. Includes No-Exposure Certifications.

Water Availability

Managing Surface Water Rights

The TCEQ is charged with managing state surface water in Texas. One way the agency implements its authority is through permitting of surface water rights. The use of water for domestic or livestock purposes is considered a superior water right that does not require a permit. The TCEQ is responsible for protecting senior and superior water rights, as well as for ensuring that water right holders divert state water only in accordance with their permits.

Texas water law specifies that in times of shortage, permitted water rights will be administered based on the priority date of each water right, also known as the prior appropriation doctrine; that is, the earliest in time is senior. Additionally, exempt domestic and livestock uses are superior to permitted rights. Among permitted water right holders, the permit holders that received their authorization first (senior water rights) are entitled to take their water before water right holders that received their authorization on a later date (junior water rights). Senior or superior water right holders not able to take their authorized water can call on the TCEQ to enforce the priority doctrine (a priority call).

Under the *TCEQ v. Texas Farm Bureau* decision, the TCEQ will not be able to exempt any junior water rights based on public health, safety, or welfare concerns, including junior water rights used for municipal purposes or power generation, if suspension is necessary to satisfy a priority call by a senior or superior water right.

Managing Water Availability During Drought

Widespread drought conditions developed and persisted across Texas from 2009 through 2015. The drought of 2011 broke records, with 97 percent of the state in ex-

treme or exceptional drought. By mid-2016, less than 2 percent of the state experienced abnormally dry conditions; however, in mid-2018, severe or worse drought conditions had returned to around 20 percent of Texas.

The TCEQ is engaged to respond to extreme drought. The agency’s focus on drought response and its activities include monitoring conditions across

the state, expedited processing of drought-related water rights applications, priority call response, and participating in multi-disciplinary task force meetings. The TCEQ also communicates information about drought to state leaders, legislative officials, county judges, county extension agents, holders of water right permits, and the media.

In June, July, and August 2018, drought-alert letters were mailed to public water suppliers, water rights holders, county judges, and county extension agents in drought-affected areas to provide notification that dry conditions may persist in the coming months for some parts of Texas and that if a priority call is made, the TCEQ may have to suspend water rights in some areas of the state.

Drinking Water Systems

The Public Drinking Water Program is responsible for ensuring that the citizens of Texas receive a safe and adequate supply of drinking water. The TCEQ carries out this responsibility by implementing the Safe Drinking Water Act. All PWSs are required to register with the TCEQ, provide documentation to show that they meet state and federal requirements, and evaluate the quality of the drinking water.

Drought Response and Assistance for Public Water Systems

Drought-response activities are coordinated through the TCEQ’s Drought Team, a multidisciplinary agency group that began meeting in 2010. The team issues updates on the status of drought conditions and agency responses. Agencies invited to team meetings are partners such as the Texas Department of Emergency Management, Texas Department of Agriculture, and Texas Water Development Board.

In addition, the multi-disciplinary Emergency Drinking Water Task Force was formed by the Texas Division of

Emergency Management and facilitated by the TCEQ to respond to drought emergencies at PWSs. Once the TCEQ was notified or became aware that a water system was within 180 days of running out of water, the task force informed the appropriate local and state officials, as well as the local TDEM district coordinator, who in turn notified the county emergency management coordinator, mayor, county judge, and appropriate state legislators. The Task Force met weekly at the height of the drought, and now—in 2018—meets monthly, to discuss the systems being tracked and opportunities for outreach and assistance.

The agency continues to monitor a targeted list of PWSs that have a limited or unknown supply of water remaining. Employees offer those systems financial, managerial, and technical assistance, such as identifying alternative water sources, coordinating emergency drinking-water planning, and finding possible funding for alternative sources of water. The TCEQ also engages in outreach and assistance—specifically targeting PWSs—to help prevent PWSs from running out of water. The agency contacts PWSs to urge implementation of drought contingency plans. TCEQ staff offer assistance to any PWS continuing to experience critical conditions.

From 2012 to the present, the TCEQ has provided technical assistance to more than 427 public water systems by expediting approximately 625 requests for reviews of plans and specifications for drilling additional wells, moving surface water intakes to deeper waters, and finding interconnections with adjacent water systems, without compromising drinking-water quality and the capacity of other systems.

In fiscal 2018, a total of 688 PWSs implemented mandatory water restrictions, while another 398 relied on voluntary measures to cut back on water use. For the complete list, see <www.tceq.texas.gov/goto/pws-restrictions>.

Exploring New Supplies through Alternative Treatment

With Texas' population expected to reach almost 46 million by the year 2060, and given the lasting effects of the drought, Texans have had to plan far in advance to sustain their water needs. Because of these challenges, PWSs have begun to use less-conventional sources of water and the TCEQ began reviewing several innovative water-supply projects. The TCEQ has engineers and scientists with the expertise to guide PWSs through selecting innovative treatment technologies and receiving approval

for those technologies while ensuring that the treated water is safe for human consumption.

One alternative involves not only reclaiming effluent from municipal wastewater treatment plants for non-potable uses such as irrigation and industry, but also adding additional treatment to remove chemical and microbiological contaminants to prepare the effluent for direct potable reuse.

Another alternative for some communities is to treat saline or brackish groundwater. For this reason, the agency streamlined construction approval for PWSs asking to conduct brackish-water desalination. To further assist communities with decreased water supplies, the TCEQ offers other streamlined approval processes such as concurrent reviews of designs and models.

Marine desalination has been gaining attention as some communities seek to treat saline water to make it potable. In response, the 84th Texas Legislature passed House Bills 2031 and 4097 in 2015 to expedite permitting related to desalination of both marine seawater from the Gulf of Mexico and seawater from a bay or arm of the gulf. In 2016, the agency initiated a rulemaking to expedite permitting and related processes for such diversion of seawater and the discharge of both treated seawater and waste resulting from desalination, and to address industrial seawater desalination.

Water Rights Permitting

Water flowing in Texas creeks, rivers, lakes, and bays is state water. The right to use state water may be acquired through appropriation via permitting as established in state law. An authorization (permit or certificate of adjudication) is required to divert, use, or store state water or to use the bed and banks of a watercourse to convey water. However, there are several specific uses of state water that are exempt from the requirement to obtain a water right permit, such as domestic and livestock (D&L) purposes. For any new appropriation of state surface water, the Texas Water Code requires the TCEQ to determine whether water is available in the source of supply. Once obtained, a surface water authorization is perpetual, with exception to some temporary and term authorizations.

The TCEQ reviews permit applications for new appropriations of state water for administrative and technical requirements related to conservation, water availability, and the environment. In addition to new appropriation requests, the agency also reviews amendment applications and other applications including bed-and-bank authorizations, reuse, and temporary water rights. In fiscal 2017

and 2018, the agency processed 1,630 water rights actions, including new permits, amendments, water-supply contracts, and transfers of ownership.

Major changes to state water policy (for example, developing environmental flow standards), drought, complex applications, and other projects can shift TCEQ water rights permitting staff from permitting activities. Beginning in 2007, several of these factors affected water rights processing. In September 2007, there were 127 pending water right applications. That number climbed to 355 in early 2016 and has since been reduced to 177 as of September 2018. Figure 3 shows the number of water right permit applications pending with the TCEQ from September 2007 to September 2018. This graph shows how changes to state water policy, drought, complex permits, and other projects affect water rights permitting during this timeframe.

Figure 3. Pending Water Rights Applications, September 2007 – September 2018



During the last biennium, the TCEQ conducted a critical review of water rights permitting and change-of-ownership processes that resulted in changes. These changes included allocating additional personnel to the program, strongly encouraging pre-application meetings to assist applicants in developing more complete applications, limiting time extensions granted to applicants to respond to requests for information, and implementing return policies when an applicant is unresponsive. Internal application-tracking tools have also been implemented to streamline processes. This critical review is an iterative process with improvements continuing. In addition, the TCEQ has engaged in outreach efforts to help water right holders remain in compliance with statutory requirements for reporting water use. Whenever possible, the TCEQ has reached out to water rights stakeholders and has increased its presence and availability at water conferences and other events.

Fast Track Permitting

Not all water right applications require the same level of technical review. Reuse applications, applications that seek a new appropriation of water, and applications to move a diversion point (outside the Rio Grande) require a more intensive technical review.

In July 2016, the Water Rights Permitting program began a “Fast Track” pilot program for those “Other” applications. A separate, more streamlined process and dedicated staff allow Fast Track applications to be processed more quickly. Since the pilot program began, 219 Fast Track applications have been processed. Of those received after the program began, the average processing time is 213 days. The TCEQ continues to evaluate the Fast Track program to see which applications fit well in the program.

Changes of Ownership and Water Use Reports

The TCEQ processes ownership changes in support of water rights permitting statewide. Current ownership information ensures that proper notice information is received by water rights permit holders. Additionally, current owner information is critical to ensure that information is conveyed to the appropriate permit holder to achieve the desired effect of actions taken to meet a priority call during drought.

The TCEQ also requires the completion of Water Use Reports to support modeling efforts and enforcement of water rights. Water Use Reports are sent to water rights permit holders outside of Watermaster areas on Jan. 1 of each year and are due back to TCEQ on March 1. The return rate for these reports is between 75 and 85 percent of the reports mailed out, but this actually represents approximately 95 percent of the permitted water in the state.

Water Conservation and Drought Contingency Plans

The TCEQ is currently working to improve instructional material available on its website in preparation for the upcoming five-year review and May 1, 2019, submittal of water conservation and drought contingency plans. The TCEQ is engaged in outreach efforts to notify entities that are required to develop, implement, and submit Water Conservation Plans, Drought Contingency Plans, and Water Conservation Implementation Reports to the TCEQ every five years of the upcoming deadline.

Changes in Water Rights

In 2017, the 85th Texas Legislature passed four bills relating to surface water rights that required changes to the

TCEQ's rules. House Bill (HB) 1648 amended requirements relating to certain retail public utilities and their designation of a water conservation coordinator. HB 3735 amended TCEQ surface water application map requirements and codified the commission's practice regarding consideration of the public welfare in water rights applications. Senate Bill (SB) 864 amended the notice requirements relating to alternate sources of water used in surface water rights applications. Finally, SB 1430 and HB 3735 required the TCEQ to create an expedited amendment process to change the diversion point for existing non-saline surface water rights when the applicant begins using desalinated seawater. The TCEQ implemented the requirements of these bills in a single rulemaking adopted in July 2018.

In 2018, the TCEQ revised water rights application forms and instructional material available on its website to assist applicants in developing more complete applications. The new application forms are resulting in applications that are more complete; thereby helping to reduce processing timeframes. The TCEQ continues to search for more improvements that will expedite permitting without neglecting any statutory responsibilities. Overall, these actions have resulted in increased production in water rights permitting and the total number of pending water right applications continues to decline.

Environmental Flows

In 2007, the Legislature passed two landmark measures relating to the development, management, and preservation of water resources, including the protection of instream flows and freshwater inflows. The measures changed how the state determines the flow that needs to be preserved in the watercourse for the environment, requiring the consideration of both environmental and other public interests.

The TCEQ adopted rules for environmental flow standards for Texas' rivers and bays. The third rulemaking for the environmental flow standards was completed in February 2014. The TCEQ's ongoing goal is to protect the flow standards—along with the interests of senior water-rights holders—in the agency's water rights permitting process for new appropriations and amendments that increase the amount of water to be taken, stored, or diverted.

The Texas Instream Flow Program (TIFP) was established in 2001 before environmental flow standards were required, developed, and adopted into the water rights permitting process. The TIFP has been a collaboration between the TCEQ, the Texas Water Development Board, and the Texas Parks and Wildlife Department to collect

and evaluate instream flow data and to conduct studies to determine instream flow conditions necessary to support a sound ecological environment in specific watersheds. These responsibilities have been replaced by the dynamic 2007 environmental flows process.

Final recommendations of instream flow studies of the lower San Antonio and middle and lower Brazos river basins were completed in fiscal 2018. Instream flow studies are concluding in the middle Trinity and lower Guadalupe river basins. Completion of the middle Trinity and lower Guadalupe studies will conclude the work of the TIFP.

Evaluations of River Basins without a Watermaster

Under the Texas Water Code, the TCEQ is required every five years to evaluate river basins that do not have a watermaster program to determine whether a watermaster should be appointed. Agency personnel are directed to report their findings and make recommendations to the commission.

In 2011, the TCEQ developed a schedule for conducting these evaluations, as well as criteria for developing recommendations. The TCEQ has completed one five-year cycle of evaluations. The agency is currently in the second five-year cycle. In 2017, the TCEQ evaluated the Colorado and Upper Brazos river basins along with the San Jacinto–Brazos, Brazos Colorado, and Colorado Lavaca coastal basins. In 2018, the TCEQ evaluated the Trinity and San Jacinto river basins, along with the Trinity San Jacinto and Neches Trinity coastal basins.

The commission did not create a watermaster program on its own motion at the conclusion of any evaluation year. In the first five-year cycle, the TCEQ expended approximately \$570,000 total in staff time, travel costs, and other administrative costs to conduct evaluations. In the first year of the second five-year cycle, the agency expended approximately \$170,000.

For more information, see Appendix D, "Evaluation of Water Basins in Texas without a Watermaster."

Texas Interstate River Compacts

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

Rio Grande Compact

The Rio Grande Compact, ratified in 1939, divided the waters of the Rio Grande among the signatory states of Colorado, New Mexico, and Texas from its source in Colorado to Fort Quitman, Texas. The compact did not contain specific wording regarding the apportionment of water in and below Elephant Butte Reservoir. However, the compact was drafted and signed against the backdrop of the 1915 Rio Grande Project and a 1938 U.S. Bureau of Reclamation contract that referred to a division of 57 percent to New Mexico and 43 percent to Texas. The compact contains references and terms to ensure sufficient water to the Rio Grande Project.

Figure 4. Rio Grande Watershed



The project serves the Las Cruces and El Paso areas and includes Elephant Butte Reservoir, along with canals and diversion works in New Mexico and Texas. The project water was to be allocated according to the 57:43 percent division, based on the relative amounts of project acreage originally identified in each state. Two districts receive project water: Elephant Butte Irrigation District (EBID), in New Mexico, and El Paso County Water Improvement District No. 1 (EP # 1), in Texas. The latter supplies the city of El Paso with about half of its water.

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

But significant compliance issues continue regarding New Mexico's water use associated with the Rio Grande Compact. In 2011, New Mexico took action in federal district court to invalidate the 2008 operating agreement. In response to the lawsuit and in coordination with the Legislative Budget Board and the Attorney General's Office, the Rio Grande Compact Commission of Texas hired outside counsel and technical experts with specialized experience in interstate water litigation to protect Texas' share of water.

In January 2013, Texas filed litigation with the U.S. Supreme Court. A year later, the Supreme Court granted Texas' motion and accepted the case. Subsequently, the United States filed a motion to intervene as a plaintiff on Texas' side, which was granted.

As Texas develops information to support its position, evidence grows that New Mexico's actions have significantly affected, and will continue to affect, water deliveries to Texas. On Nov. 3, 2014, the Supreme Court appointed a special master in this case with authority to fix the time and conditions for the filings of additional pleadings, to direct subsequent proceedings, to summon witnesses, to issue subpoenas, and to take such evidence as may be introduced. The special master was also directed to submit reports to the Supreme Court as he may deem appropriate.

A "special master" is appointed by the Supreme Court to carry out actions on its behalf such as the taking of evidence and making rulings. The Supreme Court can then assess the special master's ruling much as a normal appeals court would, rather than conduct the trial itself. This is necessary as trials in the United States almost always involve live testimony and it would be too unwieldy for nine justices to rule on evidentiary objections in real time.

Motions to Intervene filed by EP# 1 and EBID were referred to the special master. Following a hearing on the motions conducted August 19–20, 2016, the special master filed his First Interim Report with the Supreme Court on Feb. 13, 2017. He recommended denying the motions to intervene filed by EP# 1 and EBID as well as New Mexico's motion to dismiss. The First Interim Report was also very favorable to Texas' position.

The Supreme Court ruled on Oct. 10, 2017: the motion of New Mexico to dismiss Texas's complaint was denied; the motions of EBID and EP#1 to intervene were denied; the motions of New Mexico State University and New Mexico Pecan Growers for leave to file briefs as *amicus curiae* were granted. The exception of the United States and the first exception of Colorado to the First Interim Report of the Special Master were heard during oral arguments by the Supreme Court on Jan. 8, 2018. On March 5, 2018, the Supreme Court ruled that the United States may pursue the compact claims it has pleaded in the litigation and all other exceptions were denied.

A new special master was appointed by the Supreme Court on April 2, 2018. New Mexico filed a response to Texas' complaint on May 22, 2018, denying the allegations and filed counterclaims against Texas and the United States. Responses to New Mexico were submitted on July 20, 2018. It is anticipated that discovery will commence Sept. 1, 2018, with a trial expected in the spring of 2020.

International Treaties

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

Mexico continues to under-deliver water to the United States under the 1944 Treaty. Mexico does not treat the United States as a water user and only relies on significant rainfalls to make deliveries of water. This stands in contrast to the manner in which the United States treats Mexico with regard to the Colorado River. In fact, the United States has always supplied Mexico its annual allocation from the Colorado River. The Colorado River and the Rio Grande are both covered by the same 1944 water treaty. Efforts continue through the Texas congressional delegation to address this problem.

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

Groundwater

The TCEQ is responsible for delineating and designating priority groundwater management areas (PGMAs) and creating groundwater conservation districts in response to landowner petitions or through the PGMA process.

In 2019, the TCEQ and the Texas Water Development Board will submit a joint legislative report that details activities in fiscal biennium 2017–18 relating to PGMAs and the creation and operation of groundwater conservation districts.

Groundwater conservation districts (GCDs), each governed by a locally selected board of directors, are the state's preferred method of groundwater management. Under the Texas Water Code, GCDs are authorized and required to issue permits for water wells, develop a management plan, and adopt rules to implement the plan. The plan and the "desired future conditions" for a groundwater management area must be readopted and approved at least once every five years. The TCEQ actively monitors and ensures GCD compliance to meet requirements for adoption and re-adoption of management plans.

The TCEQ also has responsibility for supporting the activities of the interagency Texas Groundwater Protection Committee (TGPC). Texas Water Code, Sections 26.401–26.408, enacted by the 71st Texas Legislature (1989), established non-degradation of the state's groundwater resources as the goal for all state programs. The same legislation created the TGPC to bridge gaps between existing state groundwater programs and to optimize groundwater quality protection by improving coordination among agencies involved in groundwater activities.

Three of the TGPC's principal mandated activities are:

- Developing and updating a comprehensive groundwater protection strategy for the state.
- Publishing an annual report on groundwater monitoring activities and cases of documented groundwater contamination associated with activities regulated by state agencies.
- Preparing and publishing a biennial report to the legislature describing these activities, identifying gaps in programs, and recommending actions to address those gaps.

Waste Management

Disposal of Low-Level Radioactive Waste

In 2009, the TCEQ issued a license to Waste Control Specialists LLC (WCS) authorizing the operation of a facility for disposal of low-level radioactive waste (LLRW) in Andrews County, Texas.

The Texas Low-Level Radioactive Waste Compact is made up of the states of Texas and Vermont. LLRW

generated in the Texas Compact may be disposed of in the Compact Waste Facility (CWF). The CWF can also accept non-compact wastes provided that the importation is approved by the Texas Low-Level Radioactive Waste Disposal Compact Commission. A separate, adjacent facility, the Federal Waste Facility (FWF), authorized by the same license as the CWF, may accept LLRW and mixed waste (waste that contains both a hazardous and a radioactive constituent) from federal facilities. Upon eventual closure of the FWF, the facility will be owned by the U.S. Department of Energy (DOE).

After the TCEQ authorized commencement of operations at the CWF portion of the site, the facility received its first waste shipment in April 2012. The TCEQ then authorized operations to begin at the FWF portion of the site, and the facility received its first waste shipment in June 2013. Since operations began at both sites, more than 400,000 cubic feet of waste have been safely disposed of, and over \$47 million in disposal and processing fees have been collected as revenue for the state through the third quarter of fiscal 2018.

LLRW is produced predominantly by nuclear utilities, academic and medical research institutions, hospitals, industry, and the military. It typically consists of radioactively contaminated trash, such as:

- paper
- rags
- plastic
- glassware
- syringes
- protective clothing (gloves, coveralls)
- cardboard
- packaging material
- organic material
- used, sealed radioactive sources

Nuclear power plants contribute the largest portion of LLRW in the form of spent ion-exchange resins and filters, contaminated tools and clothing, and irradiated metals and other hardware. LLRW does not include high-level waste and spent nuclear fuel.

By law, the TCEQ is responsible for setting rates for the disposal of LLRW at the compact facility. In November 2013, the TCEQ adopted a final disposal rate by rule and published the notice in the *Texas Register*. The disposal rate has been reviewed annually and revised as necessary, or at the request of the compact facility operator and the compact generators.

Disposal of Radioactive By-Product Material

Licensed in 2008, the WCS site has been open for by-product disposal since 2009. By-product material that can be disposed of by the WCS facility is defined as tailings or wastes produced by, or resulting from, the extraction or concentration of uranium or thorium from ore.

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

Underground Injection Control Program

Underground Injection Control (UIC) is a federally authorized program that was established under the authority of the federal Safe Drinking Water Act to protect underground sources of drinking water from degradation caused by unsafe injection of fluids underground. The state of Texas gained primacy for the UIC program in 1982 and jurisdiction is shared between the TCEQ and the Railroad Commission of Texas (RRC). There are six classes of injection wells. The TCEQ's jurisdiction covers Classes I, III, IV, and V injection wells.

- Class I wells are used for deep injection of hazardous and non-hazardous wastes.
- Class II wells are used to extract minerals other than oil and gas, and are regulated by the TCEQ or the RRC, depending on the type of well.
- Class IV wells are only authorized by the TCEQ or the EPA in special circumstances regarding environmental cleanup operations.
- Class V wells are used for many different activities and are regulated by either the TCEQ or the RRC, depending on the type of well.

Uranium Production

Uranium is produced in Texas through *in situ* leaching. Uranium is leached directly out of a uranium-bearing formation underground and pumped in solution to the surface for processing. The conventional method used in the past for uranium production created impoundments for disposal of by-product waste. These impoundment sites have all been capped, are no longer accepting waste, and will be transferred to the DOE upon license termination.

Currently, Texas has five uranium mining licenses comprising eight sites and two licensed uranium-processing facilities.

Superfund Program

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

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

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

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

In fiscal 2017, Texas had 111 active sites in the state and federal Superfund programs. One new site in Winkler County was proposed and listed on the National Priorities List (NPL) during the fiscal year. Remedial actions were completed at three state Superfund sites, in Brazoria, Grayson, and Mitchell counties.

In fiscal 2018, one new site in Bexar County and one new site in Dallas County were listed on the NPL, for a total of 113 active sites. Additionally, one new site in Dallas County was proposed for listing on the NPL. Remedial actions were completed at one Texas Superfund Registry site located in Mitchell County and at one NPL site located in Galveston County.

Petroleum Storage Tanks

The TCEQ oversees the cleanup of contamination of groundwater and soil due to leaking petroleum-storage tanks. Since the program began in 1987, the agency has received reports of 28,043 leaking PST sites—primarily at gasoline stations.

By the end of fiscal 2018, cleanup had been completed at 26,753 sites, and corrective action was under way at 1,290 sites.

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

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

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

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

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

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

Voluntary Cleanups

The Texas Voluntary Cleanup Program gives incentives for pollution cleanup by releasing future property owners from liability once a previously contaminated property is cleaned up to the appropriate risk-based standard.

Since 1995, the program has provided regulatory oversight and guidance for 2,869 applicants and has issued 2,330 certificates of completion.

In the last two years, the program received 110 applications and issued 198 certificates. Recipients of the certificates report that the associated release of liability helps with property sales, including transactions that would not have otherwise occurred due to real or perceived environmental impacts. As a result, many underused or unused properties may be restored to economically beneficial use.

The key benefit of the VCP 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.

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

Under the Innocent Owner/Operator Program, the TCEQ also implements the law providing liability protection to property owners whose land has been affected by contamination that migrated onto their property from an off-site source. In the last two years, the TCEQ issued 91 certificates.

Dry Cleaners

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

In 2007, the Legislature established registration requirements for current and prior property owners who wish to claim benefits from the remediation fund, and authorized a lien against current and prior property owners who fail to pay registration fees due during corrective action.

In addition, the use of perchloroethylene was prohibited at sites where the agency has completed corrective action.

In fiscal 2017, there were 2,982 dry-cleaner registrations and more than \$3.3 million in invoiced fees; in fiscal 2018, there were a total of 2,726 registrations and approximately \$3.2 million in invoiced fees.

Managing Industrial and Hazardous Waste

The Resource Conservation Recovery Act (RCRA) establishes a system for controlling hazardous waste from the time it is generated until its ultimate disposal. The EPA has delegated the primary responsibility of implementing the RCRA in Texas to the TCEQ.

The TCEQ reviews and approves plans, evaluates complex analytical data, and writes new and modified Industrial and Hazardous Waste (I&HW) permits. Texas has 181 permitted industrial and hazardous waste treatment, storage, and disposal facilities.

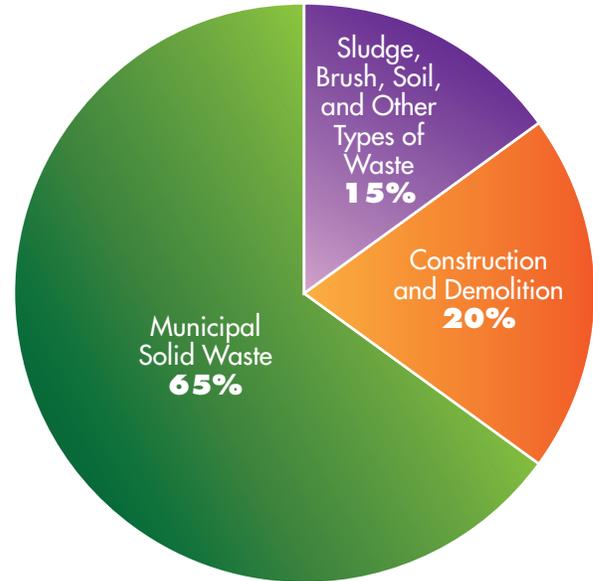
During fiscal 2017 and 2018, the TCEQ issued 26 I&HW permit renewals, performed approximately 1,121 industrial waste-stream audits, and oversaw remediation of a total of 336 sites.

Managing Municipal Solid Waste

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

Figure 5. Municipal Solid Waste

Texas had 196 active municipal solid waste landfills in fiscal 2017. Municipal solid waste disposal reached about 35.3 million tons.



In fiscal 2017 (the most recent data available), there were 196 active municipal solid-waste landfills in the state. Over 35.5 million tons of waste were disposed of, an increase of 5.5 percent from fiscal 2015. In fiscal 2017, the average per capita disposal rate was 6.8 pounds per person per day.

At the end of fiscal 2017, overall municipal solid-waste capacity was over 1.9 billion tons, representing an average of 55 years of remaining disposal capacity. The net capacity increased approximately 61 million tons, or roughly 44 million cubic yards, compared with the capacity in fiscal 2015. Throughout the state, the existing trend is for regional landfills to serve the state's more-populous areas, while less-populous areas in West Texas are served by small, arid-exempt landfills that accept less than 40 tons per day.

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

For the 2016–17 grant period, the COGs received about \$10.9 million. Pass-through projects included recycling activities, cleanups of illegal dump sites (including

illegal tire sites), household hazardous waste collection events, and education and outreach projects.

The *Solid Waste Grants Program Funding Report, FY2016–2017*, includes data collected by the TCEQ from the 24 COGs, and details the regional solid-waste grant activities for that two-year period. The report will be available on the TCEQ's website in January 2019.

Environmental Assistance

Voluntary Programs

The TCEQ uses technical assistance, education, and pollution prevention programs to encourage environmental improvements. The Environmental Assistance Division (EAD) steers many of these programs in a direction that focuses on agency priorities and aligns with agency regulatory systems.

In fiscal 2017 and 2018, the division responded to 16,857 requests for assistance from small businesses and local governments. Of those, 597 received one-on-one assistance at their business site or facility.

For fiscal 2017, the EAD's Site Visit program continued to focus resources on the requirements of the federal Energy Policy Act. Under that act, all registered petroleum storage tanks must undergo an investigation at least once every three years. Through the Site Visit Program, PST facilities have an opportunity to receive an Energy Policy Act site visit. If they achieve full compliance with the Energy Policy Act's checklist, they receive credit for their three-year investigation. Site visits do not lead to an investigation or citation, unless there is an imminent threat to human health or the environment.

In fiscal 2017, 162 site visits occurred, resulting in 114 Energy Act compliant facilities. Those facilities that were not compliant received recommendations for resolving non-compliance issues so that they can prepare for a future investigation under the Energy Policy Act.

At the end of fiscal 2017, after Hurricane Harvey made landfall on the Texas Coast, the Site Visit Program once again was repurposed for fiscal 2018 to provide damage-assessment site visits to PST facilities in the areas most affected by Harvey. At the beginning of fiscal 2018, the Site Visit Program completed 589 damage-assessment site visits at facilities located in the Houston, Beaumont, and Corpus Christi regions. Additionally, the EAD sent letters to the 8,053 PST facilities in the affected counties requesting that they submit an online survey reporting damage sustained from Harvey. A total of 1,106 PST facilities submitted online damage-assessment surveys. Combined, 136 facilities sustained PST system damage from Hurricane Harvey, primarily wind and water damage to canopies and fuel dispensers.

In March of 2017, the TCEQ adopted rules to be consistent with the federal Revised Total Coliform Rule (RTCR) and to maintain primacy over the Public Drinking Water System Supervision Program in Texas. Outreach was conducted by the EAD in conjunction with the Water Supply Division. In fiscal 2017, workshops were held in San Angelo, Laredo, Corpus Christi, Wichita Falls and Amarillo. In total, the workshops had 213 attendees, of which 154 were licensed operators, representing 118 unique PWSs. In fiscal 2018, workshops were completed in Beaumont, Tyler (2), Ft. Worth (2), Frisco, Houston, Rosenberg, Dallas, and Corpus Christi. In total, the workshops had 391 attendees, of which 370 were licensed operators, representing 261 unique PWSs.

The TCEQ also offers educational opportunities and technical assistance through coordinated workshops, seminars, and education events, including the annual Environmental Trade Fair and Conference held in downtown Austin. During the last two years, the agency sponsored 14 seminars to provide technical information to almost 13,300 attendees.

For larger organizations such as refineries, universities, and municipal utility districts, the TCEQ offered technical advice on innovative approaches for improving environmental performance through pollution prevention planning.

All together, these efforts resulted in reductions of hazardous waste by more than 2.5 million tons and toxic chemicals by about 698,365 tons during fiscal biennium 2017–18.

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. Additionally, exchanges help protect the environment by conserving natural resources and reducing waste.

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

Through the RENEW website, <www.renewtx.org>, these participants can list and promote information on opportunities for exchanging at national and regional levels.

In fiscal 2017 and 2018, 178 users signed up to use RENEW, and 221 new listings were posted.