CHAPTER ONE

Agency Highlights

As the state's leading environmental agency, the Texas Commission on Environmental Quality is engaged with every region of the state, from the heartland to the most remote areas. Agency employees in the Austin headquarters and 16 field offices are immersed every day in a wide spectrum of issues related to air and water quality, water supply, and waste management.

The agency is also active in promoting pollution prevention and educating Texans about protecting the environment.

The fiscal years of 2013 and 2014 found the TCEQ dealing with familiar but important issues, such as the ongoing drought, but also with new challenges, such as rapidly escalating oil and gas production in South Texas. In addition, the agency experienced internal changes with some personnel shifts at top levels.

All of these activities occurred against a backdrop of the state's fast-growing population and booming economy, which add complexity to environmental protection. The TCEQ responded with initiatives adapted to the changing times and challenges, and a continued dedication to protecting public health and the state's natural resources.

Leadership Changes

Chairman Carlos Rubinstein was named chairman of the Texas Water Development Board by Gov. Rick Perry. After his departure in the fall of 2013, the TCEQ saw a reshuffle of some top positions.

In January 2014, the governor chose Zak Covar to fill the remainder of Rubinstein's term, which expires in September 2015, thereby becoming one of three full-time commissioners.

Covar, who joined the agency in 2009, had most recently been the TCEQ's executive director, which put him in charge of the agency's day-to-day operations and policy implementation. As executive director starting in May 2012, Covar revamped the agency's Take Care of Texas program and put more emphasis on educational outreach.

In previous state service, Covar had been the environmental and natural resources policy adviser to the governor, chief committee clerk for the Texas House Environmental Regulation Committee, and chief of staff to State Rep. Dennis Bonnen.

On the commissioners' dais, Covar joined Chairman Bryan W. Shaw, Ph.D., P.E., for whom Covar was executive assistant when he first joined the agency, and Toby Baker. Shaw was appointed commissioner in November 2007, coming from Texas A&M University, where he taught courses on air-pollution engineering. Baker was appointed commissioner in April 2012 for a term to expire in 2017. He came from the Governor's Office, where he was a policy and budget adviser on energy, natural resources, and agriculture. He was also the governor's liaison with several state agencies.

With an empty seat at the agency helm, the commissioners named Richard A. Hyde, P.E., as the new executive director. Hyde had served as deputy executive director since 2012. He has been with the agency since 1992, having worked in managerial positions in the Office of Compliance and Enforcement, the Office of Permitting and Registration, and the Air Permits Division.

The position of deputy executive director was filled by Stephanie Bergeron Perdue.

Challenges in the Eagle Ford Shale

In recent years, Texas has been a leader in jobs and economic growth, thanks in large part to the boom in oil and gas exploration and production. The expansion of this sector was stimulated mainly by hydraulic fracturing (fracking) and improved techniques for horizontal drilling. Much of this activity has been concentrated in the Eagle Ford Shale, an area that encompasses 24 counties and extends from the Mexican border between Laredo and Eagle Pass through counties east of Temple and Waco.

In Texas, the shale boom began in 2008 with the Barnett Shale formation, in North Texas, followed by the Eagle Ford Shale, in South Texas. This energy bonanza

has created more than 100,000 jobs and added billions to the economy. At the same time, questions arose about the consequences on the environment.

The TCEQ plays an important role in oil and gas fields by regulating emissions and ensuring air quality. This role has required the agency to be fully engaged in monitoring, investigations, and enforcement activities at Eagle Ford Shale. The methodology was an outgrowth of the experience first gained in the Barnett Shale.

Since 2008, the TCEQ has heavily monitored the oil and gas activities in the Barnett Shale, which covers more than 5,000 square miles in and around the Dallas–Fort Worth area. Initial environmental concerns were raised about operations in the Barnett Shale, but those later subsided as a network of 24-hour, near real-time automated gas chromatograph monitors came online and posted results on the TCEQ website. Monitoring millions of measurements each year, the TCEQ has found no cause for alarm.

Similarly, monitoring data at Eagle Ford has provided further evidence that overall shale-play activity does not significantly affect air quality or pose a threat to human health. This conclusion was based on several million air-monitoring data points for volatile organic compounds and other air pollutants that the TCEQ collected.

While improperly operated facilities can result in temporary, local, unauthorized emissions, there are no indications that these emissions are of sufficient concentration or duration to harm residents of Barnett or Eagle Ford shales.

In the Eagle Ford Shale, the TCEQ has two fixed VOC monitors, in Floresville and Laredo, neither of which has detected levels of concern for VOCs. (Update: The TCEQ plans to install a third monitor in Karnes County in fiscal 2015.) Additional fixed-site monitors measuring other air pollutants such as ozone, nitrogen oxides, and particulate matter are located in Laredo (Webb County), Eagle Pass (Maverick County), Cuero (DeWitt County), Victoria (Victoria County), and Fayetteville (Fayette County). Concentrations of these pollutants have remained below the national ambient air quality standards set by the Environmental Protection Agency (EPA). Also, the TCEQ has contracted with the University of Texas to conduct mobile monitoring upwind and downwind of the Eagle Ford Shale.

Aerial Surveys

Using infrared imaging cameras mounted on aircraft, the TCEQ has conducted two extensive aerial surveys of the Eagle Ford Shale to spot VOC emissions. In mid-2013, the flyovers collected 286 aerial video images. More than 10,000 individual tanks were surveyed; of those, about 5 percent were found to have some degree of emissions, either authorized or unauthorized. Follow-up investigations were conducted at facilities with observed emissions to determine compliance with authorizations and regulations.

Ground-Based Reconnaissance

Since 2011, staff has also conducted regular ground-based investigations throughout the Eagle Ford Shale, often using handheld infrared imaging cameras. These proactive measures identify problems and are used to follow up on complaint investigations.

From September 2012 to August 2014, the TCEQ conducted more than 1,000 investigations (including complaint, routine compliance, and reconnaissance investigations) related to oil and gas activities at the Eagle Ford Shale. As drilling activities increased, so did the issuance of formal notices of violation, which reached 174 in the same period. In addition, the agency issued 27 administrative orders. These orders assessed about $349,000 in administrative penalties and required corrective actions related to the Eagle Ford Shale oil and gas activities.

Complaint Response

From September 2012 to August 2014, the TCEQ conducted 152 investigations in response to 198 complaints received about various issues associated with oil and gas drilling in the Eagle Ford Shale. Of those, 96 were for odor or air issues. The remaining complaints were related to spills, dust (traffic or construction concerns), waste or water quality issues. About 17 percent of the complaints received by the TCEQ, including some of those related to odor and air issues, were referred to other, more appropriate state agencies or to local governmental entities that have jurisdiction over aspects of oil and gas activities.

Other Concerns

The rapid acceleration of oil and gas activities in the Eagle Ford Shale has also generated concerns regarding traffic, road maintenance, housing for workers, water usage, and drilling waste. All of these issues are being addressed at various levels by industry and local, state, and federal governments.

Meanwhile, the TCEQ is working diligently to make sure that air emissions are monitored and controlled. Teaming up with the Railroad Commission and other state

agencies, the TCEQ has devoted significant resources to make sure its responsibilities are met.

Focus on Air Emissions

Texas is known for pushing the envelope when it comes to using technology to protect the environment.

Since the TCEQ acquired its first GasFind infrared (IR) camera in 2005 to track down and monitor air emissions, these cameras have become an indispensable part of the agency's technological toolbox. Twelve of these cameras are now deployed.

The IR cameras are in demand because they make fieldwork much more efficient. That is because the high-tech cameras "see" infrared light that is invisible to the naked eye. A special filter allows the camera to visualize the absence of infrared energy at the wavelengths absorbed by hydrocarbon vapors. This spectrum includes VOCs, with which the TCEQ is largely concerned. The camera shows these emissions as a light or dark plume, depending on temperature settings.

During compliance investigations, the cameras can show whether flare pilot lights are lit, valves and flanges are leaking VOCs, or emission sources have gone undetected.

TCEQ regional offices use the cameras for many purposes. In Beaumont, for example, residents were complaining about odors in one area, but the source could not be located. With the IR camera, staff discovered a facility where the storage tanks had bad seals, and VOCs were being vented into the atmosphere. The facility repaired the tanks.

The IR cameras are often used in complaints and investigations of oil and gas facilities. With the cameras, staff can tell from a distance whether equipment is operating as expected. The cameras have also been mounted on helicopters for airborne surveys over large areas.

In the highly industrialized Houston region, investigators use the cameras almost every day, performing field reconnaissance and on-site investigations. From outside a fence line, camera operators scan the facilities for unreported or underreported VOC emissions. Facility operators are generally open to looking at what the cameras have found and acting on that information. Discovering a flare that is not combusting to maximum efficiency will prompt the facility operator to fine-tune the flare to obtain the highest combustion rate, which results in the lowest level of emissions.

Many refineries and other large plants in Texas have purchased IR cameras and use them to reduce emissions.

Drought Fosters New Approaches

Since 2009, drought has persisted throughout much of Texas. Even when periodic rains arrive, residents in each region are aware how quickly conditions can turn critical again.

Drought results from lower-than-normal rainfall and higher-than-normal temperatures. Texans have seen firsthand how this combination of factors can punish landscapes and crops, and bring public water systems to the brink of crisis.

Some municipalities have seen long-term planning pay off, as they employed innovative ways to extend water supplies. In other areas, water shortfalls have been so rapid and severe that those systems have had to call for outside help to avoid critical water shortages.

In all cases, the TCEQ, other state agencies, and state officials are prepared to help public water systems meet the primary needs of their customers for safe drinking water and sanitation.

Rio Grande Valley

Parts of South Texas have suffered from prolonged and extreme drought conditions, resulting in lower flows in certain segments of the Rio Grande. Irrigation districts in the Rio Grande Valley, in conjunction with the TCEQ's Rio Grande watermaster, manage a series of canals that deliver water to their customers, including municipalities and agricultural interests.

While these municipalities have adequate supplies to meet basic needs, more water is required to push these supplies down the canals for delivery. The lack of rain, along with inadequate releases from Mexico, has raised concerns about municipal deliveries.

In 2013, the TCEQ began hosting meetings to address these problems. Staff joined the EPA, the North American Development Bank, and the Texas Department of Emergency Management to confer with district and municipal operators, as well as local officials. The resulting forum saw a broad-range discussion on the ways irrigation districts can work together to implement a regional approach for avoiding shortages.

As for Mexico, that country's failure to consistently deliver water in accordance with the 1944 Water Treaty has had a significant impact on South Texas water users. See Chapter Three, "Rio Grande Compact Commission."

Big Spring Facility

Water has always been a precious commodity in West Texas. When its reservoirs were reduced to mud patches in 2011, the Colorado River Municipal Water District (CRMWD) was already planning to increase supplies by drilling more groundwater wells, installing a pipeline, and constructing a new facility to enhance raw-water supplies in Big Spring.

The new raw-water production facility now captures treated municipal effluent from the City of Big Spring and conducts additional advanced treatment before blending it with raw surface water in the delivery system. It is then treated by conventional surface-water treatment plants. In 2013, the TCEQ approved the facility to add treated water to a raw-water pipeline that carries the blended water to five downstream conventional surface-water treatment plants. As treated water from the facility began to be added to the raw-water pipeline, according to the CRMWD, the initial output was an estimated 2 million gallons per day.

Because the blended water from the CRMWD Raw Water Production Facility is treated downstream at conventional surface-water treatment plants, the facility's treatment goals are to produce water with a quality equivalent to—or better than—the raw surface water with which it is blended.

Other water providers around the state have also explored the potential for similar direct-potable reuse projects.

Conservation and Teamwork

With drought a near-constant companion, Texans have found that they need to think differently about water. Many communities have implemented water restrictions according to their drought contingency plans and urged customers to make wiser water-use choices. Individuals have taken actions to conserve water in homes and gardens. Businesses realize the need to plan for more efficient water use by reducing demand and recycling water, where possible.

The TCEQ encourages water conservation at all levels and delivers technical assistance to systems where water supplies may be depleted. It also relies on agency partners to help public water systems meet the needs for clean, safe, and reliable drinking water and sanitation. Other agencies, such as the Texas Department of Agriculture and the Texas Water Development Board, have made grants or low-interest loans available to communities needing to fund projects such as drilling new wells, moving intakes, or connecting with other suppliers.

This coordinated effort makes better use of taxpayer dollars by reducing duplication, and opens doors for further collaboration in data sharing and collection.

While no one can predict with certainty what the weather will do, this state's fast-growing population makes water planning essential. The TCEQ has built relationships to find solutions in the years ahead, whatever the forecast.

"Take Care of Texas" Hits the Airwaves

The TCEQ's Take Care of Texas program encourages Texans to adopt wise environmental practices to help keep the air and water clean, conserve water and energy,

Take Care of Texas™
It's the only one we've got.
TakeCareOfTexas.org

reduce waste, and save money. In 2013, the TCEQ expanded the program by adding a new team member. The agency tapped country recording artist Kevin Fowler to produce public-service announcements promoting the Take Care of Texas program and urging all Texans to conserve water and keep the air clean.

The first campaign included the Texas Parks and Wildlife Department (TPWD), which contributed the video production and filmed the television PSA at Guadalupe River State Park. The TV and subsequent radio PSAs featured an original jingle written and performed by Fowler, who donated his songwriting and performing talents.

The announcements, sponsored by both the TCEQ and the TPWD, urged everyone to get outdoors and enjoy Texas' clean air, rivers, lakes, and bays and to visit state parks. The PSAs also encouraged everyone to visit <TakeCareOfTexas.org> and pledge to conserve water and energy. Those who pledge receive a *Texas State Park Guide* and a Take Care of Texas bumper sticker.

From June 3 to Aug. 23, 2013, the radio and TV spots aired 17,302 times for a value of $580,809, of which the TCEQ paid only $105,010. TV and radio stations across the state donated the remaining $475,799 of airtime to support the conservation cause.

In a second campaign in 2014, the TCEQ and Kevin Fowler produced a radio PSA using the same jingle and altering the message slightly to encourage Texans to do their part to keep the air clean. The PSA played on country-music stations from May 5 to July 20, with a total of 5,889 spots valued at a total of $170,927. Of that, the TCEQ paid $94,663; radio stations across the state donated the remaining $76,264 of airtime.

In addition to the PSAs, the TCEQ produced "making of" videos about shooting the TV PSA and recording the second radio PSA. Links to both videos, as well as the PSAs, can be found on <TakeCareOfTexas.org> and the TCEQ's YouTube page.

From June 2013 to May 2014, the Take Care of Texas website received almost 21,000 visits, resulting in 3,060 pledges from participants who want to do their part for a cleaner Texas. Much of this website traffic was credited to the PSA campaigns.

Staying Connected

The TCEQ maintains an ongoing effort to improve its online presence and to prove that the Web is an effective way to educate the public while advancing government transparency. With a website that encompasses about 12,650 Web pages and 79,500 documents, the agency strives on a continuous basis to increase functionality and to smooth navigation.

In 2013, the TCEQ unveiled an updated Web design that supports online viewing on desktop, tablet, or mobile devices.

Easier Access

The TCEQ continues to develop new online applications and Web pages for the regulated community and the general public. Any Web user can now apply for permits and registrations, renew licenses, submit regulatory reports, file documents, submit comments, and pay fees, penalties, and other assessments through the TCEQ's e-Services at <www.tceq.texas.gov/e-services>.

All told, 23 online processes are currently available to the public and anyone doing business with the TCEQ. Being able to accept information electronically has provided multiple benefits to both the customers and the TCEQ, such as reduced paperwork and overall improved efficiencies and accuracy of the information processed. Quality-assurance data checks are performed prior to customer submissions.

While the TCEQ's main duties are regulatory, providing information and education resources to the general public is also a major responsibility. To bolster transparency, the agency has enabled Web users to review air and water quality data, enforcement reports, and the status of permits and registrations. Users may also submit and review environmental complaints online. To view environmental data, including air and water quality, enforcement reports, and permit status, see <www.tceq.texas.gov/agency/data>.

Though text messaging, the agency has further expanded its online resources by offering automatic alerts to anyone wanting immediate updates from many TCEQ programs. At no charge, subscribers receive notifications

TCEQ Web Presence: Snapshots from FY 2014

Total website visits: 2.2 million

The 8 countries generating the most visits (in order): USA, India, Canada, Philippines, United Kingdom, Mexico, Malaysia, Australia

The 8 cities generating the most visits (in order): Austin, Houston, San Antonio, Dallas, Fort Worth, Waco, College Station, Plano

The 7 Web pages receiving the most visits (in order): home page, licensing, jobs, water quality, business permitting requirements, forms search, air quality

Reach: Every country had at least one visitor to the TCEQ website, with the exception of Greenland and the Central African Republic

Languages: Of all visitors, 3,000 had their browser's primary language set to Spanish, 3,000 to Chinese, 1,200 to French, 900 to Japanese, and 650 to Korean.

Search ranking: The TCEQ site ranked 20,049 out of more than 30 million website domains worldwide.

Sources: Google Analytics and SiteInSEO.com

by e-mail or text messaging for more than 160 topics. To sign up for e-mail or text alerts, go to <www.tceq.texas.gov/goto/news-email>.

Social Media

The TCEQ has joined an increasing number of state agencies that have expanded their online presence by using YouTube and other social-media sites, including Twitter and Facebook.

In 2013, the agency used these resources to promote its revamped Take Care of Texas program. After the rollout of public-service announcements and a catchy new jingle, the program saw an upsurge in participation. More than 1 million TCOT publications and materials were mailed to individuals wanting to do their part to conserve water and energy.

Through the YouTube channel TCEQNews, viewers can see informational videos on a wide range of subjects, including the tools used to monitor air quality, how to build a rain barrel, and the inspiring winners of the Texas Environmental Excellence Awards.

TCEQNews is also the name of the agency's official Twitter account, through which followers can learn about the latest news releases and follow posts from agency officials.

Using social media has allowed the agency to reach more people, including those who might not have been familiar with the scope of the agency and its responsibilities.

The Important Role of Toxicology

Many chemicals exist in the environment, both man-made and naturally occurring. Chemical risk assessments evaluate the impact those chemicals could have on human health, focusing especially on the type and severity of health problems a chemical might cause.

The TCEQ relies on its Toxicology Division to help make scientifically sound decisions when developing environmental regulations and policy. On any given day, the agency's 16 toxicologists might assess whether the chemical emissions proposed in an air permit would be safe; evaluate whether the chemicals detected in the ambient air of a certain location might cause adverse health effects or a nuisance; determine whether the chemical contamination of a given industrial or residential site could cause adverse health effects; or help the agency's Remediation Division decide whether a site needs to be cleaned up, based on risk to human health.

Determining how any chemical reacts in a human body is a complex, case-by-case enterprise. What could potentially harm a child may or may not affect a 300-pound man. There is variation in how any human being will absorb, metabolize, or excrete a harmful compound. Further, factors such as genetic makeup, lifestyle, and even the location of an individual's residence play a part in how any chemical travels through a human body.

In the last 20 years, techniques for evaluating the harmful effects of chemicals have become more advanced, particularly when it comes to the effects on human cells. The field of toxicology has come to understand more about the human body and how it responds to chemical exposures. The Toxicology Division has been reviewing the way risk assessments are conducted to better incorporate this new knowledge and to make risk assessments more realistic and predictive.

As Texas gains more people and businesses, toxicologists have begun to focus on how both can interact—without detriment to human health. In the case of expanded natural-gas drilling, the TCEQ took the lead by conducting air quality studies in Houston, Midlothian, Dallas–Fort Worth, Corpus Christi, and the Barnett and Eagle Ford shale areas. In spite of the increased well activity, studies have shown only slight increases in levels of air pollution and no indication of adverse health effects.

For its toxicology work, the agency has received national and international recognition. TCEQ studies on the risk to human health posed by nickel, 1,3-butadiene, arsenic, and chromium have been published in the journal *Regulatory Toxicology and Pharmacology*. In 2014, the TCEQ hosted the annual Alliance for Risk Assessment seminar, which drew toxicologists from the United States and Canada. This marked the third time the agency has hosted the workshops since 2010.

The TCEQ has also taken the lead in formulating scientifically sound, state-of-the-art guidelines for developing toxicity factors. Staff has worked to identify risk with methods that are predictive and useful. In this way, the agency plays a critical role in the changes being effected within the risk-assessment community. Doing risk assessment accurately is imperative in helping to decide where to place limited resources. For example, water quality and quantity are much more of a risk for Texas than air quality.

Annual Trade Fair Remains an Attraction

For the 22nd consecutive year, the TCEQ's Trade Fair and Conference drew participants from around the state to attend classroom sessions and view exhibits on topics

related to air, water, and waste management. Attendance in May 2014 topped 4,000 and included CEOs, environmental compliance officers, and engineers, as well as representatives from cities and counties.

The Trade Fair is the state's premier environmental educational forum. The three-day event offers not only educational opportunities but also a chance to view the latest technology, get answers to regulatory questions, and network with colleagues in various environmental fields. The 2014 conference, held at the Austin Convention Center, featured more than 100 classroom sessions and a large hall packed with 365 exhibits offered by contractors, equipment vendors, engineering firms, laboratories, and suppliers.

More than one-fifth of attendees were engineers. They and other professionals were able to earn continuing-education credits to help fulfill their license requirements. Two of the presentations, for example, featured ethics training for engineers and geoscientists. TCEQ staff and other professionals led the classroom sessions. Many attendees said they appreciated that the conference is Texas-specific, targeting environmental issues that are both timely and close to home.

At a mid-day luncheon, attendees heard TCEQ commissioners discuss priority issues, such as demands related to the expanding oil and gas industry. An evening banquet featured an address by Gov. Perry and the presentation of the Texas Environmental Excellence Awards.