Draft Texas Nonpoint Source Management Program, 2027

Texas Commission on Environmental Quality

Texas State Soil & Water Conservation Board

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Learn more about the Nonpoint Source Program on the Texas Commission on Environmental Quality website, at
www.tceq.texas.gov/waterquality/nonpoint-source/

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Abbreviations

303(d) Vision	A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d)
AFO	Animal Feeding Operation
ARS	USDA Agricultural Research Service
BEACH Act	Beaches Environmental Assessment and Coastal Health Act of 2000
BMP	Best Management Practice
CAFO	Concentrated Animal Feeding Operation
CBBEP	Coastal Bend Bays and Estuaries Program
CCMP	Comprehensive Conservation and Management Plan
CFR	Code of Federal Regulations
CMP	Coastal Management Program
COG	Council of Governments
CRP	Clean Rivers Program
CWA	Clean Water Act
CWSRF	Clean Water State Revolving Fund
CZARA	Coastal Zone Act Reauthorization Amendments
CZMA	Coastal Zone Management Act
DFund	Texas Water Development Fund
DSHS	Texas Department of State Health Services
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
GCD	Groundwater Conservation District
GBEP	Galveston Bay Estuary Program
GLO	Texas General Land Office
GRTS	Grants Reporting and Tracking System
IBWC	International Boundary Water Commission, United States Section
I-Plan	Implementation Plan
Joint Report	*Joint Groundwater Monitoring and Contamination Report*
LID	Low Impact Development
Management Program	Texas Nonpoint Source Management Program
mg/L	Milligrams per Liter
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

MS4	Municipal Separate Storm Sewer System
NADB	North American Development Bank
NGO	Nongovernmental Organization
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OSSF	On-Site Sewage Facility
OSPRA	Oil Spill Prevention and Response Act of 1991
PFC	Permeable Friction Course
PPG	Performance Partnership Grant
QAPP	Quality Assurance Project Plan
RRC	Railroad Commission of Texas
RUAA	Recreational Use-Attainability Analysis
SPCS	Structural Pest Control Service
SWAP	Source Water Assessment and Protection
SWCD	Soil and Water Conservation District
SWQM	Surface Water Quality Monitoring
SWQMIS	Surface Water Quality Monitoring Information System
TAC	Texas Administrative Code
TAGD	Texas Alliance of Groundwater Districts
TCEQ	Texas Commission on Environmental Quality
TCRMP	Texas Coastal Resiliency Master Plan
TDA	Texas Department of Agriculture
TDLR	Texas Department of Licensing and Regulation
TDS	Total Dissolved Solids
TEKS	Texas Essential Knowledge and Skills
TGPC	Texas Groundwater Protection Committee
TIAER	Texas Institute for Applied Environmental Research
Texas Integrated Report	*Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d)*
TISCC	Texas Invasive Species Coordinating Committee
TLAP	Texas Land Application Permit
TMDL	Total Maximum Daily Load
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TSSWCB	Texas State Soil and Water Conservation Board

TSWQS	Texas Surface Water Quality Standards
TWC	Texas Water Code
TWDB	Texas Water Development Board
TWRI	Texas Water Resources Institute
TWS	Texas Watershed Stewards
TxDOT	Texas Department of Transportation
UAA	Use-Attainability Analysis
U.S.	United States
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WPP	Watershed Protection Plan
WQMP	Water Quality Management Plan

Chapter 1. Introduction

Section 319 of the Clean Water Act (CWA) established a national program to address nonpoint sources of pollution. The Texas Commission on Environmental Quality (TCEQ) and Texas State Soil and Water Conservation Board (TSSWCB) jointly administer the nonpoint source program in Texas. The *Texas Nonpoint Source Management Program* (Management Program) is required under CWA Section 319(b) and outlines the state's comprehensive strategy to protect and restore water quality impacted by nonpoint sources of pollution. This document describes the specific programs and processes the state uses to address nonpoint source pollution, provides for the coordination of activities, establishment of statewide goals, prioritization of assessment and implementation activities, and reporting of program activities. States with federally approved management programs are eligible to receive CWA Section 319(h) funds to implement their program. A state must review and revise its management program at least every five years to receive CWA Section 319(h) funds. The CWA Section 319(h) grant program is a significant source of funding for implementing nonpoint source management programs.

Nonpoint Source Pollution

Every river, stream, lake, reservoir, and estuary is part of a watershed. Each watershed encompasses many land uses and supports a variety of economic activities. Water quality within a watershed is largely linked to the actions of the people who live, work, and play within its boundaries. Water quality problems can be a result of either point or nonpoint source pollution.

Point source pollution comes from single, identifiable sources, such as the discharges from municipal or industrial wastewater treatment systems and concentrated animal feeding operations (CAFOs). Point sources are regulated under the CWA and Texas law and are subject to permit requirements that focus on water quality protection. These permits specify effluent limits, monitoring requirements, and enforcement mechanisms.

Nonpoint source pollution comes from rainfall runoff, snowmelt, atmospheric deposition, and other means that carry pollutants to rivers, lakes, coastal waters, and groundwater. Due to the diffuse nature of nonpoint source pollution, it can be difficult to characterize with the same level of specificity and accuracy as point source pollution.

The focus of the Texas Management Program includes **common nonpoint source pollutants** such as:

Fertilizers, herbicides, and insecticides from residential areas and agricultural lands.

Oil, grease, chlorides, and total dissolved solids (TDS) from spills, roads, urban areas, and energy production.

Sediment from crop and forest lands, and eroding stream banks.

Bacteria and nutrients from livestock, pets, wildlife, and malfunctioning on-site sewage facilities (OSSFs).

Evaluation of Nonpoint Source Pollution: Surface Waters

Nonpoint source pollution enters surface waters in a diffuse manner and at intermittent intervals during periods of rainfall runoff. The amount, timing, and duration of these events are determined by meteorological conditions. Due to their widespread and variable nature, precise sources of nonpoint source pollution can be difficult to trace. However, contaminated runoff can result in degradation of water quality and nonsupport of designated water uses.

According to national data compiled by the United States (U.S.) Environmental Protection Agency (EPA), nonpoint source pollution contributes to approximately 85% of the nation's water quality impairments to rivers and streams and 80% of the water quality impairments to reservoirs. In Texas, nonpoint source pollution is known or suspected to be responsible for 81% of water quality impairments[1].

Evaluation of Nonpoint Source Pollution: Groundwater

Nonpoint source contamination is present in many Texas aquifers. While a variety of pollutants of concern are found in groundwater, the most widespread contaminant is nitrate. Sources of nitrate may include failing OSSFs (septic systems), infiltration of stormwater runoff, over-application of fertilizer on urban and agricultural land, or naturally occurring nitrate derived from the aquifer matrix.

TCEQ developed a Groundwater Assessment for the 2024 *Texas Integrated Report of Surface Water Quality for the CWA Sections 305(b) and 303(d)* (Texas Integrated Report), using groundwater quality data from the Texas Water

[1] Texas Integrated Report of Surface Water Quality for the CWA Sections 305(b) and 303(d), TCEQ, 2024.

Development Board's (TWDB) groundwater database from fiscal years 2014 through 2023. The assessment demonstrated that ambient groundwater quality in Texas is generally good but varies somewhat among the state's aquifers. In a small percentage of wells, the ambient concentration for some constituents was above the primary maximum contaminant level for drinking water, including arsenic, fluoride, nitrate, and selenium. In addition, several constituents that are found naturally occurring in groundwater are present at a level above the secondary standard for drinking water, including chloride, fluoride, iron, manganese, sulfate, and TDS.

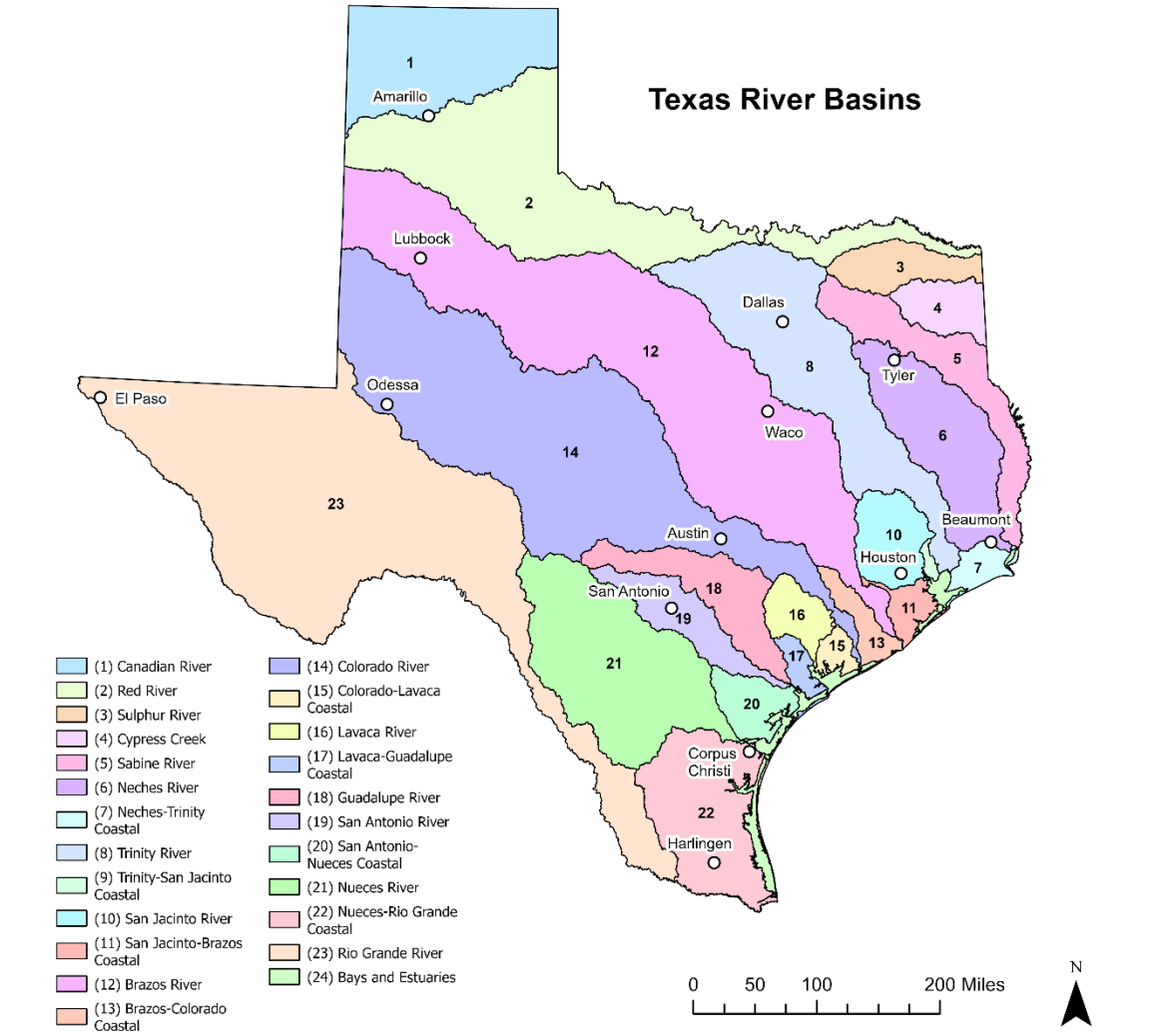
From fiscal years 2014 through 2023, TWDB and its cooperators sampled 2,099 wells across the state for nitrate, with 431 wells presenting nitrate concentrations that exceeded the maximum contaminant level for drinking water. An additional 922 wells showed the presence of nitrate but did not exceed the maximum contaminant level.

Nonpoint Source Water Quality Challenges

Monitoring

The size and number of water bodies in Texas, as well as the intermittent nature of nonpoint source pollution, present a challenge to addressing water quality. Texas is separated into 24 river and coastal basins (Figure 1.1). For the 2024 Texas Integrated Report, TCEQ assessed:

- 1,394 stream and river segments with a total combined length of 27,124 miles with:
  - 21,689 miles perennial (80%);
  - 4,412 miles intermittent or intermittent with pools (16%); and
  - 1,023 miles tidal (4%).
- 448 inland reservoirs and lakes that cover approximately 1,507,030 acres; and
- 89 bays, estuaries, and oceans that cover approximately 3,803 square miles.



This map was generated by the Water Quality Planning Division of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact the Water Quality Planning Division at 512-239-6682. Map created August 8, 2025.

Figure 1.1 Texas River Basins

Coordinating Efforts

The success of reducing nonpoint source pollution depends upon a coordinated effort of state and local officials, planners, developers, and residents. Technical assistance and outreach to local and regional governments is an integral component of nonpoint source implementation efforts. Land use management decisions are best made locally where buy-in by the affected parties is crucial to sustainability and success. Government planners and zoning authorities around Texas are integrating water conservation, nonpoint source pollution abatement, flood mitigation, and water quality improvement strategies into urban planning.

Population Increases and Urban Development

TWDB estimates the population in Texas will more than double between the years 2020 and 2070 to over 51 million people. This population increase will

cause urban growth, resulting in increases in impervious surfaces from buildings, roadways, and parking lots. Without proper controls in place, these changes can result in higher runoff volumes, increased pollutant loadings, a greater potential for downstream flooding, the erosion of stream channels, reduced base flows, and reduced groundwater infiltration. Urban development also results in modifications to natural drainage systems. This urban growth pushes the urban-rural fringe further away from urban cores, resulting in the loss of wetlands, riparian areas, and stream buffers, thereby reducing the environment's natural ability to absorb storm flows and filter contaminants before they reach nearby water bodies.

Rural Wastewater

In many developing areas, OSSFs may be the most cost-effective option for managing domestic wastewater. These systems are primarily used in rural and suburban areas not connected to a city sewer system. Proper operation and maintenance of OSSFs is essential to avoid nonpoint source pollution to surface and groundwater.

Agricultural Activities

Possible nonpoint source pollutants associated with agricultural and silvicultural (forestry-related) activities include sediment, nutrients, pesticides, organic matter, and bacteria. Sediment resulting from erosion fills up reservoirs, streams, and estuaries. Sediment can also carry bacteria, fertilizers, pesticides, and excess nutrients into surface waters, and these pollutants can seep into groundwater. Nutrients, pesticides, and other pollutants can come from a variety of sources, including over-fertilized fields, rainfall runoff from improperly managed animal operations and waste applications, and inaccurate pesticide sprayer settings.

Water Availability

Texas has approximately 191,000 miles of streams and 188 major water supply reservoirs. While there is a relative abundance of water available in Texas, it is not uniformly distributed throughout the state. Precipitation varies from less than 10 inches per year in the western part of the state to more than 55 inches per year in the east. During periods of drought and flooding, surface water and groundwater quality can be negatively impacted. Drought degrades surface water quality by reducing water volume, which concentrates pollutants, increases water temperatures, and promotes stagnation. Stagnant conditions can cause higher salinity and increased sediment concentration which reduces water availability for ecosystems and agriculture.

Conversely, the effects of flooding can also impact water quality. Rainfall can carry pollutants such as bacteria, nutrients, oil and grease, and other contaminants from the landscape into receiving waters as runoff. Flood waters

also pose various health risks including infectious diseases, physical injuries, and illnesses from exposure to chemical hazards.

Measuring Nonpoint Source Pollution

Measuring nonpoint source pollution is difficult and involves monitoring water quality and connecting it to land uses and pollution loads. Monitoring is crucial to developing effective management strategies and understanding their effectiveness. Other challenges to nonpoint source pollution management in Texas are limited public awareness of the issues, the size and complexity of the problem, institutional barriers to directing resources to a nonregulatory problem, the voluntary implementation needed, and the availability or lack of awareness of funding sources other than CWA Section 319(h) grants to address the problems.

Watershed Action Planning in Texas

Watershed action planning is the coordination among the state's water quality planning programs and stakeholders to identify appropriate restoration strategies for impaired water bodies. The result of this process is a list of all water quality impairments in the state that identifies what will be done to address the impairment or issue. Protection plans for unimpaired water bodies can also be developed by stakeholders. These waterbodies are labelled as Special Interest in Appendix A. This process emphasizes the role of partner agencies and stakeholders, relies on sound technical information, and makes available multiple options to provide the flexibility needed to address varied watershed conditions and circumstances.

The objective of comprehensive planning is to identify, assign, document, and track water quality management strategies to protect and restore water quality in an efficient, effective, and appropriate manner (Figure 1.2). Updates to strategies are made following EPA's approval of a new Texas Integrated Report. This is accomplished by gathering watershed-specific information, integrating this information into state water quality planning programs, and communicating the resulting strategies with the appropriate federal, state, regional, and local stakeholders.

Figure 1.2 Watershed Planning Process

Addressing Nonpoint Source Pollution

It is critical to engage local stakeholders in the assessment and evaluation of a watershed's water quality impairments and concerns, as well as in the development and implementation of management strategies. Watershed-based plans, such as watershed protection plans (WPPs) or total maximum daily loads (TMDLs), specify quantifiable targets for water quality improvement and outline actions necessary to attain and maintain applicable water quality standards and goals. TCEQ and TSSWCB are active in supporting each phase of the planning process from initial identification of impaired and threatened waters to implementation and oversight of solutions.

The Components of the Texas Nonpoint Source Management Program

As prescribed by EPA's *Nonpoint Source Program and Grants Guidelines for States and Territories* (May 2024)[2], the Management Program incorporates EPA's seven components of an effective program, which allows for maximum flexibility in managing nonpoint source pollution. These components are listed below, with a summary of how the state has addressed them in this Management Program. Many specific examples of the state's application of these

[2] www.epa.gov/system/files/documents/2024-06/2024_section_319_guidelines_final_1.pdf

seven components may be found in the descriptions of various programs and management strategies.

Component 1
Identify water restoration and protection goals and the program strategies (regulatory, nonregulatory, financial and technical assistance, as needed) to achieve and maintain water quality standards. It includes relevant, current, and trackable annual milestones that best support program implementation.

The state has established long- and short-term goals and objectives for guiding and tracking the progress of nonpoint source management in Texas. The section "Goals for Nonpoint Source Management" in Chapter 2 details these goals and objectives and the milestones by which progress towards meeting them will be measured. Success in achieving the goals and objectives in Texas is reported annually in the *Nonpoint Source Pollution Management in Texas Annual Report*[3]. Many individual programs from various agencies identified in this document have also established specific long- and short-term goals that are compatible with these overall Management Program goals.

Component 2
Identify the primary categories and subcategories of nonpoint source pollution and a process for prioritizing impaired and unimpaired waters and identify how national and state priorities may align.

As described in Chapter 3, TCEQ and TSSWCB use a strategic planning process to identify and prioritize the most significant nonpoint source surface water quality problems. As described in Chapter 2, TCEQ and TSSWCB give the highest consideration to projects which address the most significant threats to water quality and have the best potential to prevent or reduce nonpoint source pollution and improve water quality.

Many TCEQ and TSSWCB programs are nonregulatory, so stakeholders voluntarily incorporate pollution prevention activities. TCEQ, TSSWCB, and other state programs that carry out nonpoint source management activities are described in Chapter 5.

Component 3
Identify management measures that will be undertaken to reduce pollutant loading resulting from each category, subcategory, or particular nonpoint source identified in component 2 above. The measures should also consider the impact of the best management practices on groundwater quality.

TCEQ routinely monitors and assesses water quality in Texas. Federal, state, regional, and local agencies and partners collect water quality data which are

[3] www.tceq.texas.gov/waterquality/nonpoint-source/mgmt-plan/annual-reports.html

assessed and compiled into the Texas Integrated Report by TCEQ. The strategic planning process describes the approach by which the state will prioritize and address water quality problems. CWA Section 303(d)-listed surface water bodies are further categorized to prioritize water quality assessments or implementing protection and restoration activities. This prioritization is described in the strategic planning process. The management strategies detailed through the strategic planning process lay out the procedures that TCEQ and TSSWCB will use to address impaired or threatened surface water bodies.

The state assesses groundwater by compiling the groundwater portion of the Texas Integrated Report specific to aquifers. The *Texas Groundwater Protection Strategy*[4] serves as the statewide plan outlining responsibilities and goals for agencies and organizations with groundwater protection interests.

As described in Chapter 3, the state applies the Watershed Approach to managing nonpoint source pollution. Efforts to restore and protect water quality from nonpoint source pollution are achieved through the development and implementation of watershed-based plans, such as WPPs and TMDLs.

The state's water quality assessment and planning programs are described in more detail in Chapters 3, 4, and 5.

Management measures in TMDL implementation plans (I-Plans) or WPPs identify best management practices (BMPs) to improve water quality. The successful implementation of TMDL I-Plans and WPPs is largely dependent on the early and sustained participation and involvement of stakeholders in the watershed. Early and sustained stakeholder participation and buy-in also provides the best possible setting to help ensure implementation of management strategies. This Management Program describes established regulatory, nonregulatory, financial, and technical assistance programs used by the state and regional agencies to implement statewide and local programs.

The state's implementation programs are described in more detail in Chapters 3, 4, and 5.

Component 4
Use both watershed projects and well-integrated regional or statewide programs to restore and protect waters and achieve water quality benefits.

Activities in Texas that address nonpoint source pollution involve both statewide strategies and local initiatives. For example, one of Texas' primary statewide efforts is public outreach and education. TCEQ has numerous programs throughout the agency that play significant roles in statewide public education. TSSWCB educates agricultural stakeholders throughout the state on how their activities may contribute to nonpoint source pollution, the measures

[4] https://www.tceq.texas.gov/groundwater/groundwater-planning-assessment/prot_prog.html

they can take to minimize their impacts, and financial incentives that are available to help them implement these measures. In addition to statewide public outreach and education efforts, activities can also be directed to watersheds where they can be most effective through local entities such as the Clean Rivers Program (CRP), local Soil and Water Conservation Districts (SWCDs), Texas A&M AgriLife Extension Service, and groundwater conservation districts (GCDs). Other state, regional, and local efforts to address nonpoint source pollution are described in detail throughout this document.

Texas' balanced approach of implementing both statewide and local watershed programs is described in more detail in Chapter 4.

Component 5
Identify and enhance the state's collaboration with appropriate federal, state, interstate, Tribal, and regional agencies as well as local entities (including conservation districts, private sector groups, utilities, and citizens groups) that will be utilized to implement the state program. Furthermore, the state supports capacity-building in disadvantaged, underserved, or overburdened communities.

Surface water and aquifers are not limited by political boundaries and, as a result, environmental solutions often cross federal, state, and local levels of responsibility. With the extent and variety of water quality issues across Texas, the need for cooperation at all levels is essential.

As described in Chapter 4, the state coordinates, develops, and implements the Management Program by using the existing infrastructure of the CRP, SWCDs, Texas Groundwater Protection Committee (TGPC), Coastal Coordination Advisory Committee, universities, and other organizations, creating an enhanced network that performs in conjunction with state, regional, and local entities. The strategic planning process described in Chapter 3 also provides a forum for engaging stakeholders in determining strategies that protect and restore water quality. Through this infrastructure, the state establishes working partnerships for obtaining consensus and input on nonpoint source issues to:

- identify priority watersheds impacted by nonpoint source pollution;
- formulate the steps necessary to address water quality problems within those watersheds; and
- secure and target resources to develop and implement strategies that restore water quality.

A description of various agencies and programs that are used to address nonpoint source pollution in Texas are presented in Chapter 5.

Component 6
Show how the state manages and implements the nonpoint source program efficiently and effectively, including necessary financial management.

The state takes its fiduciary responsibilities managing public funds very seriously. TCEQ and TSSWCB have established thorough operating procedures and tracking systems to ensure the effective use of CWA Section 319(h) grant funds for addressing identified water quality problems. Both agencies conduct a meeting at the beginning of all projects, with all collaborating entities and internal agency programs, to discuss expectations and review what will be required throughout the course of the project. The respective agency staff maintain close contact with collaborating entities and provide oversight throughout the course of each project. Agency staff also stay in continuous contact with the EPA project officers regarding the status of the program.

Component 7
Evaluate the state's nonpoint source management program using environmental and functional measures of success and revise the plan at least every five years.

TCEQ and TSSWCB are committed to comprehensively reviewing and updating the Management Program at least every five years, reviewing priority waters at least biennially, and engaging with other state and local entities through the strategic planning process. This 2027 update to the Management Program was made available for stakeholder review and formal public comment.

This 2027 update to the Management Program provides an opportunity to recognize and document recent improvements in the state's efforts to improve water quality.

- The strategic planning process continues to provide an important role in deciding how to address water quality issues in the state and allows planning activities to be coordinated among various water quality professionals.
- Texas has seen rapid growth in the development and implementation of WPPs for protection and restoration across the state.
- Coordination between TSSWCB and TCEQ's Nonpoint Source and TMDL programs in the state has been enhanced with the implementation of the 303(d) Vision, as discussed in Chapter 4.
- There has been increased coordination and project planning between state programs and partners, including the state's estuary programs.
- Close coordination between TCEQ, Texas General Land Office (GLO), EPA, and the National Oceanic and Atmospheric Administration (NOAA) resulted in full approval of the *Texas Coastal Nonpoint Source Pollution Control Program* in May 2022.
- Communication of program activities with the public has been enhanced through the development of the Nonpoint Source Project Viewer. The viewer shows the location of WPPs, water quality restoration success stories, photos of implemented management practices, and water bodies

that are impaired. Please visit the TCEQ Nonpoint Source Program webpage[5] to access the Nonpoint Source Project Viewer.

The state will rely on existing forums provided by the strategic planning process, Management Program updates, the Nonpoint Source Pollution Management in Texas Annual Reports[6], CWA Sections 319(h), 320, 106, and 604(b) annual grant cycles, and partner activities such as the CRP, SWCDs, and TGPC to continue the evaluation of the Management Program. Annual milestones in the Management Program are listed in Appendix C, Table C.1. These describe outcomes and key actions expected each year.

[5] www.tceq.texas.gov/waterquality/nonpoint-source
[6] www.tceq.texas.gov/waterquality/nonpoint-source/mgmt-plan/annual-reports.html

Chapter 2. Texas Nonpoint Source Management Program Overview

Nonpoint sources of pollution are largely unregulated, and most of the activities designed to reduce their impact on water quality fall on the states' Nonpoint Source Management Programs administered under CWA Section 319. Texas addresses the requirements of CWA Section 319 to manage nonpoint source pollution in surface water and groundwater, through the Management Program (Table 2.1). The Texas Management Program is a collaborative effort between TSSWCB and TCEQ. CWA Section 319 consists of three broad components as defined by CWA Sections 319(a), 319(b), and 319(h).

Table 2.1 CWA Section 319 Nonpoint Source Program Requirements

Assessment Report CWA Section 319(a)	Management Program CWA Section 319(b)	Grant Program CWA Section 319(h)
Identifies water bodies impacted by nonpoint sources that do not meet water quality standards[1]	Identifies BMPs and measures to reduce pollutant loadings from nonpoint sources	Outlines application requirements, eligibility, and priorities
Identifies categories of nonpoint sources which add significant pollution to impacted water bodies[1]	Identifies programs[3] to achieve implementation of BMPs	Identifies how grant funds will be allocated
Describes the process for identifying BMPs and measures to control nonpoint sources[2]	Includes a schedule with milestones for utilization of the program[3], implementation methods, and implementation of BMPs	Identifies priorities for grant funds
Identifies and describes state and local programs for controlling pollution added from nonpoint sources[2]	Identifies sources of federal and other assistance and funding and coordination with other state and federal agencies	States the requirement for annual reporting to EPA regarding progress towards milestones, reductions in loadings, and improvements in water quality

[1] Texas Integrated Report
[2] Texas Nonpoint Source Management Program
[3] Programs may include nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfers, and demonstration projects.

Texas CWA Section 319(a) Assessment Report

The Texas Nonpoint Source Assessment Report is provided within the Texas Integrated Report. TCEQ produces the Texas Integrated Report every two years in accordance with the requirements of the CWA. The Texas Integrated Report identifies water bodies where observed water quality conditions do not support their designated uses or standards. A section of this report determines if

nonpoint source pollution potentially contributes to the water body's impairment. Having an approved Section 319(a) nonpoint source assessment report is a prerequisite for receiving CWA Section 319(h) grant funding for implementing NPS management programs.

Texas CWA Section 319(b) Management Program

Each state must have an approved management program to receive CWA Section 319(h) funds. The Texas Nonpoint Source Management Program is the state's official plan for addressing nonpoint source pollution. The program publication is updated at least every five years. The last revision was approved by EPA in 2022. TCEQ and TSSWCB jointly update and administer the Management Program.

TCEQ is charged with managing the quality of the state's water resources. Accordingly, TCEQ has general jurisdiction and primary responsibility over the state's water quality program, including water quality planning, issuance of permits for point source discharges, abatement of nonpoint source pollution from sources other than agriculture and silviculture, and enforcement of water quality rules, standards, orders, and permits.

TSSWCB is the lead state agency responsible for planning, implementing, and managing programs and practices for preventing and abating agricultural and silvicultural nonpoint source water pollution (Texas Agriculture Code Section 201.026).

TCEQ and TSSWCB have a Memorandum of Understanding (MOU), which sets forth the coordination of jurisdictional authority, program responsibility, and procedural mechanisms for point and nonpoint source pollution control programs [31 Texas Administrative Code (TAC) Section 523.5(b)]. Additionally, TCEQ and TSSWCB have a Memorandum of Agreement (MOA), which sets forth the coordination of program responsibilities relating to the development and implementation of TMDLs, TMDL I-Plans, and WPPs by the two agencies.

The Management Program uses water quality management programs and regulatory, voluntary, financial, and technical assistance approaches to achieve a balanced program. Nonpoint source pollution is managed through assessment, planning, implementation, and education. The state has established long- and short-term goals and objectives for guiding and tracking the progress of nonpoint source management in Texas. Success in achieving the goals and objectives is reported annually in the *Nonpoint Source Pollution Management in Texas Annual Repor*t, which is submitted to EPA in accordance with the CWA.

In accordance with CWA Sections 205(j), 208, and 303 and 40 Code of Federal Regulations (CFR) Section 130.2(k), the *Texas Water Quality Management Plan* (WQMP) is required to address matters related to designated management agencies, effluent limitations for wastewater facilities, TMDLs, nonpoint source

management, dredge and fill programs, and groundwater programs. The WQMP is used to direct planning for implementation measures that control and/or prevent water quality problems. This Management Program is a required element of the state's WQMP.

Implementation of the Management Program involves partnerships among many organizations. With the extent and variety of nonpoint source issues across Texas, cooperation across political boundaries is essential. Many local, regional, state, and federal agencies play an integral part in managing nonpoint source pollution, especially at the watershed level. They provide information about local concerns and infrastructure and build support for the kind of pollution controls that are necessary to prevent and reduce nonpoint source pollution. By establishing coordinated frameworks to share information and resources, the state can more effectively focus its water quality protection efforts.

Texas CWA Section 319(h) Grant Program

Congress enacted CWA Section 319(h) in 1987, establishing a national program to control nonpoint source water pollution. Based on Congressional appropriations, EPA allocates CWA Section 319(h) funds by formula to the states annually for the implementation of Nonpoint Source Management Programs. The CWA Section 319(h) funding in Texas is divided equally between TCEQ and TSSWCB. Each agency independently administers its portion of the grant and annually solicits project applications from eligible entities across the state (Figure 2.1). Each agency identifies priority areas, activities and ranking criteria for each funding cycle based on this Management Program, the most recent Texas Integrated Report, the strategic planning process, and applicable federal guidelines.

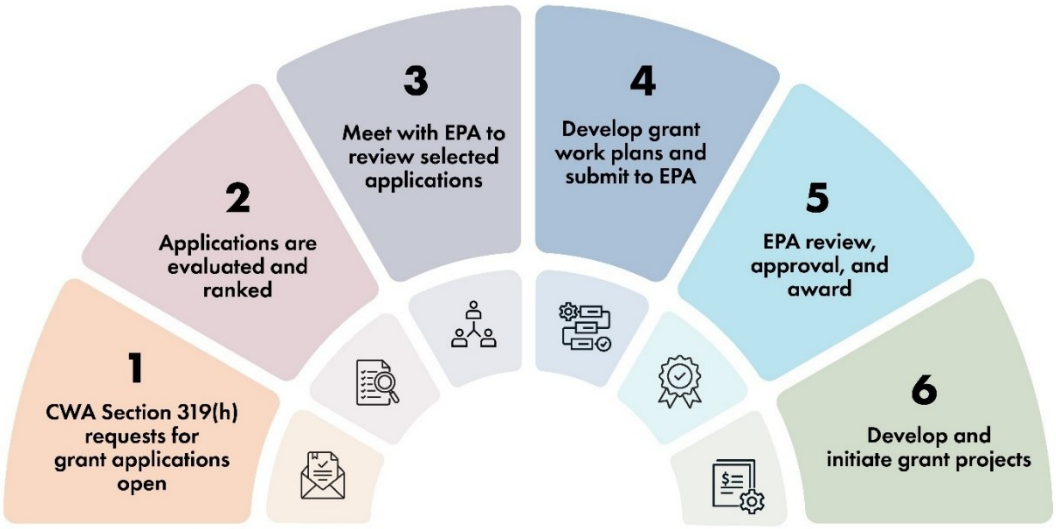


Figure 2.1 Texas Nonpoint Source Grant Development Process

State Priorities for CWA Section 319(h) Funding

Texas establishes priorities for its CWA Section 319(h) grant program, with highest priority given to funding projects which address water bodies not meeting water quality standards due to nonpoint source pollution. TCEQ and TSSWCB use the Texas Integrated Report and the Nonpoint Source Priority Waters Report to prioritize waters for CWA Section 319(h) grant funding. This helps to ensure fiscal responsibility by providing focus for the use of limited financial resources.

Generally, priorities for CWA Section 319(h) funding are:

- develop and fund the implementation of WPPs or other watershed-based plans for water bodies identified as impaired by nonpoint source pollution in the Texas Integrated Report;
- continue to conduct activities to prevent the degradation of water quality, including, but not limited to, the development and implementation of watershed-based plans to protect water quality which includes unimpaired waters of local interest;
- facilitate the implementation of activities to restore and protect groundwater quality; and
- implement the *Texas Coastal Nonpoint Source Pollution Control Program*.

Specific priorities and applicable criteria for CWA Section 319(h) funding are included in TCEQ's Request for Grant Applications and TSSWCB's Request for Proposals which are released annually to solicit applications for projects. Factors such as compatibility with Management Program priorities, the potential for project success, applicant qualifications/past performance, and pollutant load reductions are important considerations.

Resource Leveraging

The majority of Texas' annual CWA Section 319(h) grant allocation is passed through to political subdivisions and nongovernmental organizations (NGOs) by TCEQ and TSSWCB through the execution of interagency or inter-local contracts. CWA Section 319(h) contractors are considered sub-recipients and, as such, are subject to all applicable federal regulations and statutes.

For the Management Program to be effective on both a statewide and watershed level, TCEQ and TSSWCB must work closely with other state, regional, and local organizations to implement management measures and optimize the use of all available resources. The extent of monetary resources needed to effectively address nonpoint source pollution and restore beneficial uses is greater than the amount of funding available from the CWA Section 319(h) grant program alone. Consequently, the Management Program encourages the use of leveraged resources when feasible. For example, the state has worked closely with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service

(NRCS) to leverage federal Farm Bill monies [i.e., the Environmental Quality Incentives Program (EQIP)] with CWA Section 319(h) grants to abate agricultural nonpoint source pollution and address water quality impairments on the CWA Section 303(d) List. Also, TCEQ and TSSWCB have worked with the state's estuary programs and GLO to leverage CWA Section 320 funding, Coastal Impact Assistance Program funding, and Coastal Management Program (CMP) Section 309 funding for projects that both reduce nonpoint source pollutant loadings to impaired water bodies and meet respective estuary program Comprehensive Conservation and Management Plan priorities and the requirements of the *Texas Coastal Nonpoint Source Pollution Control Program.*

Federal Match Requirement

The CWA Section 319(h) grant program requires federal funds to be matched with 40% nonfederal funds. "Match" refers to funds or services used to conduct a project that are not sustained by federal funds. Any project match must: (1) relate directly to the project for which the match is being applied; (2) be reasonably valued; (3) be supported by sufficient documentation; and (4) occur during the project period.

The match does not have to originate with the grant recipient but can come from eligible individuals, outside organizations, other local governments, or state agencies if the source of the matching funds is nonfederal and is not being used to match another federal grant program. Eligibility requirements under CWA Section 319(h) apply equally to federal and matching funds.

Consistency With Other Federal Assistance Programs

CWA Section 319(b)(2)(F) requires states to identify federal financial assistance applications and develop projects which the state will review for consistency with their Management Program. Appropriate programs and projects from the list of federal assistance programs available through the System for Award Management website[7] will be reviewed by the state for consistency with the Management Program. The National Environmental Policy Act does not apply to Section 319 funds.

TCEQ and TSSWCB will review CWA section 319(h) draft work plan and budgets, coordinate with other programs as appropriate (e.g., CWA Section 604(b) Clean Water State Revolving Fund and Water Quality Management Program, USDA, NRCS, Coastal Zone Management Program, TMDL), and resolve any technical, administrative, or eligibility issues. TCEQ is responsible for a consistency review of urban, nonagricultural, and non-silvicultural programs, and TSSWCB is responsible for the consistency review of agricultural and silvicultural programs. Building connections to and identifying additional funding sources to accomplish state nonpoint source management goals is an important part of successful implementation. A wide array of CWA and non-CWA programs align

[7] sam.gov/

with and are available to support the states' efforts in leveraging funds for more effective implementation of nonpoint source management plans and projects.

Texas Coastal Nonpoint Source Pollution Control Program

Section 6217 of the federal Coastal Zone Act Reauthorization Amendments (CZARA) of the Coastal Zone Management Act (CZMA) requires each state with a CMP to develop a federally approved program to enhance coastal nonpoint source pollution management. The Texas CMP was approved on January 10, 1997, and was created to improve the management of the state's coastal resources to ensure the long-term ecological and economic productivity of land within the Coastal Zone Boundary (Figure 2.2). Members of the Coastal Coordination Advisory Committee advise GLO, which administers the CMP.

At the federal level, NOAA and EPA jointly administer CZARA Section 6217. In Texas, GLO is the lead agency responsible for the administration and management of the CMP. TCEQ, TSSWCB, Railroad Commission of Texas (RRC), Texas Parks and Wildlife Department (TPWD), Texas Department of Transportation (TxDOT), and GLO are all responsible for the implementation of the *Texas Coastal Nonpoint Source Pollution Control Program*[8], which is incorporated by reference as part of this *Texas Nonpoint Source Management Program.*

[8] tsswcb.texas.gov/programs/texas-nonpoint-source-management-program/coastal-nonpoint-source-pollution-control-program

EPA's *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*[9] (January 1993) calls for Coastal Nonpoint Source Pollution Control Programs to address five major categories of nonpoint source pollution that impair or threaten coastal waters nationally: (1) agricultural runoff; (2) urban runoff (including developing and developed areas); (3) silvicultural runoff; (4) marinas and recreational boating; and (5) hydromodification (channelization and channel modification, dams, and streambank and shoreline erosion).

The *Texas Coastal Nonpoint Source Pollution Control Program* discusses the coastal nonpoint source management area, provides an overview of implementation and coordination, and presents specific nonpoint source categories, management measures, state rules, and programs which address pollution sources and provides information on technical assistance, public participation, and program monitoring and evaluation. Additional implementation measures include a technical manual, *Guidance for Sustainable Stormwater Drainage on the Texas Coast*[10], conducting outreach, maintaining an inventory of OSSFs, assessing the coastal management strategy, and continued planning.

The state has identified and contacted officials and inventoried existing programs in the coastal zone responsible for managing urban development, OSSFs, and roadways. The state continues to provide educational, technical, and financial assistance to support the implementation of the management measures, including workshops, constructing green infrastructure, and training. Green infrastructure is an approach to water management that uses vegetation, soils, and other nature-based practices to restore elements of the natural water cycle. Types of practices include rain gardens, rainwater harvesting, permeable pavements, planter boxes, bioswales, and others. In 2022, EPA and NOAA approved the *Texas Coastal Nonpoint Source Pollution Control Program*. Program implementation efforts are now within the Clean Coast Texas initiative of GLO.

[9] www.epa.gov/nps/guidance-specifying-management-measures-sources-nonpoint-pollution-coastal-waters
[10] www.glo.texas.gov/coastal/clean-coast-texas/clean-coast-texas-resources/technical-resources

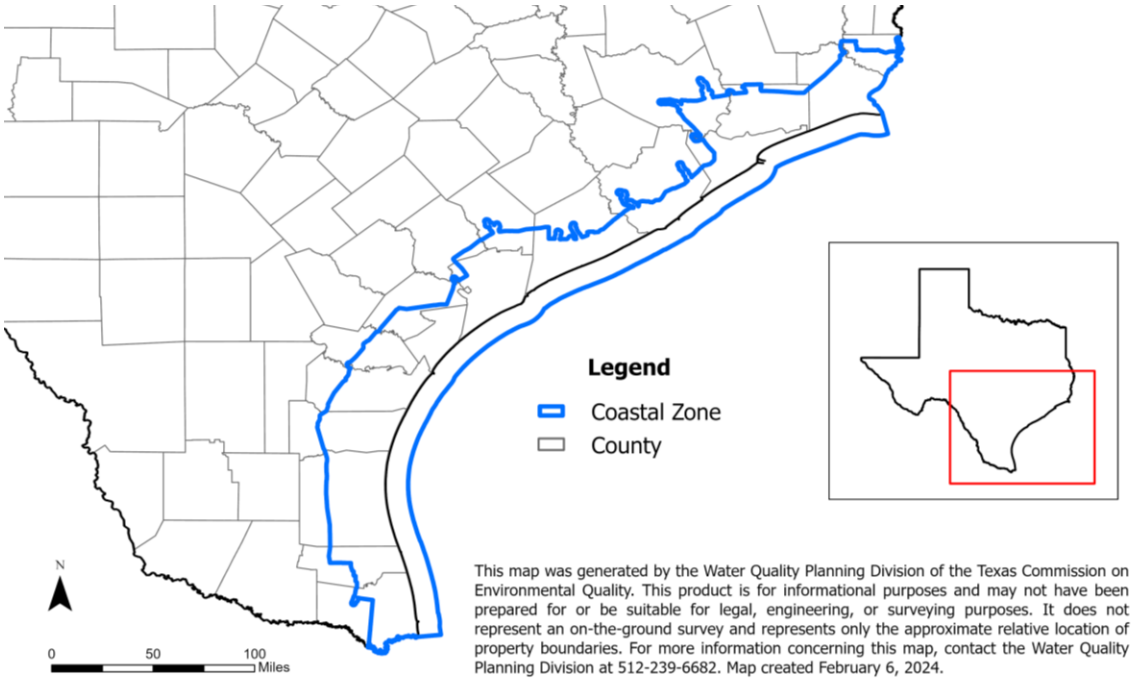


Figure 2.2 Coastal Zone Boundary

Texas Groundwater Protection Strategy

The TGPC was created by the 71st Texas Legislature in 1989 to bridge gaps between existing state groundwater programs and to optimize water quality protection by improving coordination among agencies involved in groundwater activities. The Texas Legislature also required TGPC to develop a comprehensive groundwater protection strategy with guidelines for preventing groundwater contamination, conserving groundwater, and coordinating the groundwater protection activities of all the entities represented on TGPC [Texas Water Code (TWC) Section 26.405(2)]. The most recent edition of the *Texas Groundwater Protection Strategy* is TCEQ publication AS-188, published in 2018.

Preserving and conserving groundwater in the state begins with the existing regulatory and nonregulatory groundwater protection, remediation, and conservation programs. The current status of groundwater protection and monitoring activities conducted or required by each TGPC member is described in TGPC's annual *Joint Groundwater Monitoring and Contamination Report*[11] (TCEQ publication SFR-56, "Joint Report").

Further, the *Texas Groundwater Protection Strategy* summarizes the dynamic and interactive processes by which recommendations are made, and information is exchanged between the TGPC and the public to further protect groundwater resources. The comprehensive strategy for protecting groundwater

[11] www.tceq.texas.gov/groundwater/groundwater-planning-assessment/sfr-056-joint-groundwater-monitoring-contamination-report

in Texas includes the internal programs for each TGPC member as well as the procedures and the internal processes of the committee. The internal programs of several TGPC members address nonpoint source pollution, and the *Texas Groundwater Protection Strategy* is incorporated by reference as part of this Management Program.

The Role of Stakeholders

Stakeholder participation is an essential part of programs designed to address water quality issues and has become integrated into many state and local government programs. This section provides information to help identify stakeholders and explains the importance of involving them early and sustaining their efforts through the process.

Who is a Stakeholder?

Stakeholders are entities or individuals who have an interest in a specific water body, water quality issue, or may be affected by a related decision. Stakeholders:

- live in the watershed or use the water resource;
- are affected by water quality problems;
- impact water quality;
- have statutory or regulatory responsibilities closely linked to water quality;
- may be required to undertake water quality control measures;
- can help develop or implement actions to remedy water quality problems;
- are affected by project outcomes or decisions;
- have a financial interest in how the resource is managed; or
- have an interest in the decision-making process.

Simply knowing their common characteristics does not always help to identify specific stakeholders. For example, stakeholders might include water skiers at an area lake, workers at a port in the lower reaches of a watershed, or the millions of people who eat locally sourced fish and seafood every day. Landowners often have multiple interests in water quality issues because the water body may be on or near their property. Stakeholders can include, but are not limited, to the following:

- municipal and industrial entities
    - wastewater and stormwater dischargers
- the public
    - individuals
    - civic and other groups representing environmental, consumer, recreational, and community interests
    - schools and universities
    - private landowners
- agriculture, silviculture, and aquaculture managers

    - corporate and individual farmers, ranchers, and producers
    - commercial harvesters of fish and shellfish
    - agricultural groups and organizations
    - wildlife management associations
- business
    - commercial and industrial firms
    - utilities
    - business groups
    - trade associations
- government
    - people who represent residents or are legally responsible for public resources, including federal, state, and local levels

Partnerships for Conducting Work

The state uses the infrastructure of the CRP, SWCDs, river authorities, TGPC, Coastal Coordination Advisory Committee, universities, and other mechanisms to coordinate, develop, and implement the Management Program. These entities are each charged with certain water quality stewardship responsibilities and bring a variety of experience related to research, assessment, laboratory analysis, and implementation and education activities. In addition, these entities conduct meetings and coordinate activities with a variety of local, regional, and state stakeholders to pursue effective solutions to reduce or prevent nonpoint source pollution.

Goals for Nonpoint Source Management

TCEQ and TSSWCB have established long- and short-term goals and objectives for guiding and tracking the progress of nonpoint source management in Texas. The goals describe high-level guiding principles for all activities under the Management Program. The objectives specify the key methods that will be used to accomplish the goals. Success in achieving the goals and objectives will be tracked by a comprehensive suite of program performance measures, incorporated into the program to enhance accountability (Appendix C). Progress in meeting program performance measures is reported annually in the *Nonpoint Source Pollution Management in Texas Annual Report*, which is submitted to EPA in accordance with CWA Section 319(h)(11).

The long-term goal discussed below will remain if nonpoint source water pollution is a problem. Short-term goals will be reported annually.

The programs discussed throughout this document implement the Management Program and achieve its goals and objectives. To facilitate coordination among essential programs, the goals are over-arching for all nonpoint source programs implemented by federal, state, regional, and local governmental entities, NGOs, and residents in Texas.

Long-Term Goal

Protect and restore water quality affected by nonpoint source pollution through assessment, implementation, and education.

Objectives

1. Focus nonpoint source abatement efforts, implementation strategies, and available resources in watersheds and aquifers identified as impacted by nonpoint source pollution.

2. Support the implementation of state, regional, and local programs to prevent nonpoint source pollution through assessment, implementation, and education.

3. Support the implementation of state, regional, and local programs to reduce nonpoint source pollution, such as the implementation of strategies defined in TMDL I-Plans, WPPs, and other water quality planning efforts in the state.

4. Support the implementation of state, regional, and local programs to reduce nonpoint source pollution to groundwater through the *Texas Groundwater Protection Strategy*, based on the potential for degradation with respect to use.

5. Support the implementation of state, regional, and local programs to reduce nonpoint source pollution in the coastal management zone through the *Texas Coastal Nonpoint Source Pollution Control Program.*

6. Develop partnerships, relationships, memoranda of agreement, and other instruments to facilitate collective, cooperative approaches to manage nonpoint source pollution.

7. Increase overall public awareness of nonpoint source issues and prevention activities.

8. Enhance public participation and outreach by providing forums for residents and industry to contribute their ideas and concerns about the water quality management process.

Short-Term Goals

Goal One – Data Collection and Assessment

Coordinate with appropriate federal, state, regional, and local entities, and stakeholder groups to target water quality assessment activities in high priority, nonpoint source-impacted watersheds, vulnerable and impacted aquifers, or areas where additional information is needed.

Objectives

Evaluate the condition of the state's waters on a biennial basis, and prepare a report containing this evaluation, as required by CWA Section 305(b), to determine: a) which waters are not meeting water quality standards due, at least

in part, to nonpoint source pollution, and b) the potential cause of the impairment or degradation.

A. Identify surface water bodies and aquifers from the Texas Integrated Report and *Joint Groundwater Monitoring and Contamination Report* that need additional information to characterize nonattainment of designated uses and water quality standards.

B. Ensure that monitoring procedures meet quality assurance requirements and comply with EPA-approved TCEQ or TSSWCB Quality Management Plans.

C. Conduct special studies to determine sources of nonpoint source pollution and gain information to target water quality planning and BMP implementation.

D. Develop TMDLs, TMDL I-Plans, and WPPs to restore and maintain water quality in water bodies impacted by nonpoint source pollution.

E. Conduct monitoring to determine the effectiveness of TMDL I-Plan and WPP implementation.

Goal Two – Implementation

Implement TMDL I-Plans, WPPs, and other state, regional, and local plans/programs to reduce nonpoint source pollution by targeting implementation activities to areas identified as impacted or threatened by nonpoint source pollution.

Objectives

Prevent and reduce nonpoint source pollutant loadings in surface water bodies, groundwater aquifers, wetlands, and coastal areas through the execution of TMDL I-Plans, WPPs, the *Texas Groundwater Protection Strategy,* the *Texas Coastal Nonpoint Source Pollution Control Program,* and other state, regional, and local plans.

A. Work with regional and local entities to determine priority areas and develop and implement strategies to address nonpoint source pollution in those areas; includes unimpaired waters of special interest.

B. Implement BMPs to address nonpoint source constituents of concern in water bodies identified as impacted by nonpoint source pollution.

C. Implement BMPs to address nonpoint source constituents of concern in aquifers identified as impacted by or vulnerable to nonpoint source pollution.

D. Implement TMDL I-Plans, WPPs, and other state, regional, and local plans developed to restore and maintain water quality in water bodies identified as impacted by nonpoint source pollution.

Goal Three – Education

Conduct education and technology transfer activities to increase awareness of nonpoint source pollution and activities which contribute to the degradation of water bodies, including aquifers, by nonpoint source pollution.

Objectives

Through pollution prevention activities and education, reduce the amount of nonpoint source pollutant loading entering the water bodies of Texas.

A. Enhance existing outreach programs at the state, regional, and local levels to maximize the effectiveness of nonpoint source education.

B. Administer programs to educate residents about water quality and their potential role in causing and preventing nonpoint source pollution.

C. Expedite the development of technology transfer activities to increase BMP implementation.

D. Conduct outreach through the CRP, SWCDs, and other partners to enable stakeholders to participate in decision-making and provide a more complete understanding of water quality issues and how they relate to each resident.

E. Implement outreach and education activities identified in the *Texas Groundwater Protection Strategy* to prevent nonpoint source impacts to groundwater.

F. Implement outreach and education activities identified in the *Texas Coastal Nonpoint Source Pollution Control Program* to prevent and abate nonpoint source pollution impacts to coastal resources.

G. Implement public outreach and education activities to maintain and restore water quality in water bodies impacted by nonpoint source pollution.

Milestones

This Management Program identifies milestones at three levels to help track and report success in achieving the goals and objectives described above. These three planning levels include the statewide program level, priority watersheds level, and project level.

- At the statewide program level, milestones have been developed for program administration, the strategic planning process, the *Texas Coastal Nonpoint Source Pollution Control Program,* and statewide education programs. This is consistent with the use of federal Program Funds.
- At the priority watersheds level, program initiatives may include stakeholder participation, monitoring, modeling, and the development and implementation of TMDLs and WPPs. This is consistent with the use of federal Program Funds

- At the project level, a schedule and deliverables are specified for individual project tasks in each approved scope-of-work. Project initiatives must include reducing or preventing nonpoint source pollution. This is consistent with the use of federal Project Funds.

The state also reports information to EPA on nonpoint source-related Performance Measures referenced in the *EPA National Water Quality Program Guidance.*

Statewide Program Level Milestones

CWA Section 319(b)(2)(C) requires state management programs to include a schedule of annual milestones for the implementation of programs and practices to control nonpoint source pollution. EPA's CWA Section 319 guidelines require that EPA annually issue a written determination that the state has made satisfactory progress during the previous fiscal year in implementing the Management Program. EPA requires schedules and milestones for the determination of satisfactory progress and continued funding of the program; however, other documents and factors are also used to assist with the determination. In addition to the state's Management Program and Annual Report, described in Chapter 1, EPA may consider other factors such as overall financial and grant progress, national program measures, and mid-year and end-of-year reports. EPA may also conduct interim meetings to discuss program issues across water programs, including CWA Section 319, in its determination of satisfactory progress of the Management Program.

Milestones have been defined for the Management Program that represent progress in implementing the nonpoint source program in Texas (Appendix C, Table C.1). The milestones document program events, accomplishments, and project deliverables. An annual schedule of milestones provides a quantitative means to track progress in the program over time and to communicate progress to stakeholders and EPA.

The Nonpoint Source Program will report on the progress in meeting milestones annually in the ***Nonpoint Source Pollution Management in Texas Annual Report***.

EPA recognizes that achievement of goals and milestones is subject to potential changes in national funding levels, environmental and weather-related factors, the national economy, and other variables beyond the control of the state. EPA and the state also recognize that changes to the goals and milestones can be influenced by revisions to national EPA guidance. Subsequently, the state may choose to reevaluate and update applicable goals and milestones to adjust for such changing factors. This adaptive management approach enables the state to make appropriate modifications to the Management Program to continue to attain satisfactory progress.

Nonpoint Source Program Administration – Milestones associated with the administration of the Management Program include the Grant Reporting and Tracking System (GRTS), the preparation of the *Nonpoint Source Pollution Management in Texas Annual Report* and semiannual reports, filing financial reports required by federal grants, conducting an end-of-year meeting with EPA, and filing annual grant applications. These milestones are specified in individual grant conditions from EPA to TCEQ and TSSWCB and are reported according to appropriate grant procedures.

Strategic Planning Process – Milestones associated with the planning process include interagency planning meetings to identify strategies, and updates to the Nonpoint Source Priority Waters Report (Chapter 3). In general, this process is ongoing, with updates to the strategic planning database occurring every two years following EPA's approval of a new Texas Integrated Report.

Coastal Nonpoint Source Pollution Control Program – Milestones for coastal nonpoint source pollution control via inspection of septic systems is reported in the *Nonpoint Source Pollution Management in Texas Annual Report.* Other milestones related to the coastal nonpoint source program are reported separately by the GLO.

Education Program – Milestones for the statewide educational program relate to the number of nonpoint source educational programs in the state. Activities are scheduled for these programs in consultation with collaborating entities.

Watershed Level Milestones

Watershed programs are ongoing projects funded with CWA Section 319(h) grants. These projects have activities scheduled in accordance with approved grant work plans. Specific program commitments are specified in these work plans and are reported according to appropriate grant procedures. Milestones for watershed programs are specified in grant work plans for the major project activities, which are further described below.

Stakeholder Participation – Initiate or develop a local watershed steering committee and work groups to encourage the participation of affected stakeholders in the decision-making process.

Characterization and Water Quality Monitoring – Characterize the watershed by reviewing existing water quality data and conducting an inventory of point- and nonpoint sources, land use data, and all known stressors influencing water quality. Complete water quality monitoring. Analyze data, assess loadings, and determine the origin and distribution of pollutants.

Modeling – Apply models to determine numerical load allocations. Recommend control strategies for implementation.

Plan Development – Develop a detailed action plan (TMDL and TMDL I-Plan, and/or WPP) which establishes overall goals and objectives, load allocations, needed load reductions a timetable for implementation, and a list of expected results.

Implementation – Implement voluntary and regulatory actions described in TMDL and TMDL I-Plan, and/or WPP and use adaptive management to adjust implementation based on effectiveness monitoring or stakeholder feedback.

Project Level Milestones

Projects funded with 319(h) grants have activities scheduled in accordance with EPA-approved grant work plans. Specific project deliverables and a schedule are specified in these work plans and are reported according to appropriate grant procedures.

Chapter 3. Strategic Water Quality Planning

Texas has an abundance of natural resources, a large and growing population, and a robust economy. Water quality planning programs in Texas recognize the need for keeping the state's water resources safe for drinking, swimming, fishing, aquatic life, and other beneficial uses. It is a complex effort that requires collaboration among numerous parties. The large geographic expanse of the state, increasing demands on the state's water resources, changing federal policies, new technical problems, and the high expectations of Texans require that state water quality planning programs evolve to meet new challenges.

Water quality planning programs in Texas respond to these challenges by developing new approaches to addressing water quality issues. Strategic planning is a process that emphasizes the role of partners and stakeholders, relies on sound technical information, and makes available multiple options to provide the flexibility needed to address varied conditions and circumstances.

The Watershed Approach

The Watershed Approach provides the organizational framework for conducting scientific, engineering, and other technical work in the Management Program. TCEQ uses a flexible framework for managing water quality and includes stakeholder involvement and management actions supported by sound science and appropriate technology. The approach also addresses water quality holistically (i.e., a manner that addresses all beneficial uses of the water body, the criteria needed to protect the uses, and the strategies to restore water quality). The Watershed Approach is based on the following principles:

- geographic focus based on hydrology rather than political boundaries;
- water quality objectives based on scientific data;
- coordinated priorities and integrated solutions; and
- various, well-integrated partnerships.

For groundwater quality protection, the geographic focus is on aquifers rather than watersheds. Since aquifer boundaries do not follow watershed boundaries, a watershed may transect portions of several aquifers. Wherever interactions between surface water and groundwater are identified, management activities will support the quality of both resources. This approach is combined with WPPs by integrating groundwater/surface water interactions into watershed characterizations and the selection of management measures. However, the management measures included in a WPP will generally not affect an entire aquifer.

The state manages nonpoint source pollution by channeling its efforts to restore and protect water quality through the development and implementation of WPPs and TMDLs in those watersheds where nonpoint source pollution is contributing to a water quality impairment or concern. Water quality

degradation is a multifaceted problem with environmental, health, and economic consequences. Finding solutions that are not only effective but financially feasible is critical for long-term sustainability.

Figure 3.1 Considerations to Achieve Water Quality Restoration

Watershed Action Strategies

TCEQ's strategic planning process to address water quality is designed to coordinate and track the state's water quality programs' activities. It includes an evaluation of watershed-specific circumstances and a deliberative and collective decision as to how to address water quality concerns. The process emphasizes coordination with partners and stakeholders at both the local and state levels. An output of the planning process is a list of impaired water bodies, each with a recommended strategy to address water quality issues. Special interest waters are also identified during the planning phase, primarily in consultation with TCEQ and TSSWCB. These include unimpaired water bodies that are targeted for water quality protection activities. The goal of the strategic planning process is to identify strategies that restore water quality and are accountable and transparent to the residents of Texas.

Following the release of the Texas Integrated Report, representatives from the state's water quality planning programs make strategy recommendations by considering water quality standards, monitoring data, restoration programs, and other water quality planning programs and how they relate to one another. For example, it is essential to develop meaningful, yet attainable water quality standards. Restoration programs such as TMDLs cannot be successful if the water quality standards are not attainable. Similarly, water quality monitoring

plays a critical role in establishing a link between land use and resulting instream water quality.

Available strategies for addressing surface water quality are shown in Table 3.1. These preliminary recommendations are reviewed and approved by CRP partners and related stakeholders.

The strategic planning process supports the **integration of state water quality planning programs** by providing a framework and mechanism for enhanced coordination to select strategies for addressing.

For those water bodies where a clear strategy is not apparent, a more intensive evaluation of water quality conditions is initiated. In these evaluations, the state's water quality planning programs discuss factors influencing water quality and other issues associated with the water body. These watershed-oriented discussions may include a review of watershed maps, land uses, activities, and known point- and nonpoint sources of pollution. This more intensive evaluation at the local level allows the state's water quality planning programs to determine appropriate strategies for restoration and protection.

Table 3.1 Strategies to Address Water Quality Issues

Strategy	Strategy Description
Monitoring	More data are needed to determine the severity and/or area of the impairment before determining the most appropriate restoration strategy.
Evaluation	A more comprehensive, site-specific analysis than the one conducted for the Texas Integrated Report is required.
Water Quality Standards Review	Evaluate the appropriateness of the designated use or criterion.
TMDL/I-Plan	A TMDL and I-Plan determine the assimilative capacity, allocate loads, and identify the actions necessary to achieve water quality standards.
WPP	A WPP coordinates water quality restoration programs and projects to restore water quality standards.
Other	The impairment cannot be addressed by one of the other identified strategies.

The Nonpoint Source Priority Waters Report

Priority surface waters for the Management Program are identified in the Nonpoint Source Priority Waters Report included as Appendix A. The report identifies waters in the state which have degraded water quality caused by nonpoint source pollution and special interest water bodies identified for protection strategies. The Nonpoint Source Priority Waters Report is critical to the CWA Section 319(h) grant program. It provides CWA Section 319(h) grant applicants the basis to plan, scope, and coordinate the development of projects

that address waters with impairments from nonpoint source pollutants and protect high quality unimpaired waters of local interest.

In short, the strategic planning process and Nonpoint Source Priority Waters Report improve the coordination and resource leveraging necessary to achieve the long- and short-term goals of the Management Program. Updates to the Nonpoint Source Priority Waters Report occur biennially.

Chapter 4. Water Quality Management Cycle

To protect water quality, the state must define and measure it, identify the types and sources of pollution, and implement plans to protect, maintain, and restore it. The State of Texas uses a dynamic, flexible cycle of activities to manage water quality (Figure 4.1). Implementing this cycle of activities involves coordination between many different entities and programs around the state. The steps in the cycle include:

1. **Planning**: setting standards for surface water quality and revising or formulating monitoring plans;
2. **Monitoring**: collecting data to monitor the condition of surface waters and groundwaters
3. **Assessment**: assessing data to determine water quality status and identify impairments and using the strategic planning process to target resources;
4. **Strategy Development**: using various partners and agencies to protect, improve, or restore water quality with pollutant source controls and practices; and
5. **Implementation**: enacting pollution controls for both point and nonpoint sources, conducting outreach and education programs, and evaluating progress. Evaluations may lead back to revising strategies or formulating new ones.

Water Quality Standards

Water quality standards are the foundation for managing surface water quality under the CWA. Water quality standards are a set of regulations and guidelines established by states to protect the quality of water bodies for various uses, such as drinking water, recreation, and aquatic life.

The Texas Surface Water Quality Standards (TSWQS) consist of several parts:

- Beneficial Use – Identifies how people, aquatic fauna, and wildlife will use the water. For example, healthy aquatic life and recreation are beneficial uses.
- Numeric Standards – Quantifiable amount of a specific pollutant allowed in a water body to still be protective of the beneficial uses.
- Narrative Standards – Statements of unacceptable conditions in and on the water body. Narrative standards address basic forms of water pollution, such as floating solids, scums, visible oil film, or nuisance algae blooms.
- Antidegradation Protection – Extra protection for high-quality or unique waters and protection of existing uses from degradation.

Figure 4.1 The Water Quality Management Cycle

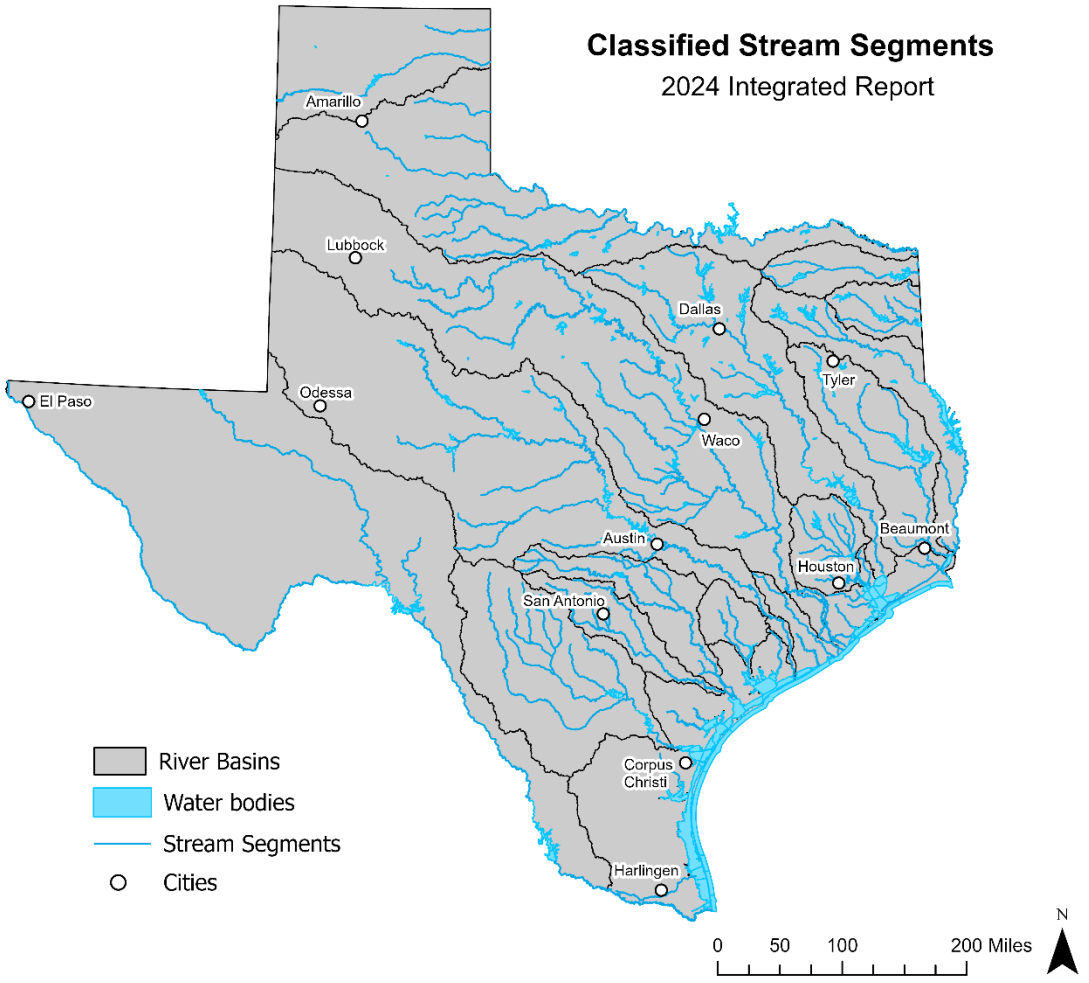
The CWA and associated EPA rules require states to review, and, if appropriate, revise surface water quality standards at least every three years. The rulemaking process to revise the TSWQS requires public participation. State water quality standards must be approved by EPA for them to be used for federal permitting programs and other CWA purposes. The TSWQS are set forth in 30 TAC Chapter 307. They define desired uses for surface waters in the state, and appropriate instream numeric and narrative criteria to protect those uses. Water quality standards define the goals for water quality and provide the basis for permitting, assessment, and restoration targets for managing point and nonpoint source loadings in Texas surface waters. The TSWQS recognize the regional and geologic diversity of the state. The standards also define an antidegradation policy that protects existing uses and the state's highest quality waters.

TCEQ is the lead agency in the state responsible for establishing and revising standards to protect surface water quality in accordance with CWA Section 303(c). TWC Section 26.023 provides that TCEQ has the sole and exclusive authority to make rules setting water quality standards for all waters in the state. The TWC stipulates that the state may amend the standards from time to

time. The TCEQ Water Quality Standards Group is responsible for establishing and revising standards to protect surface water quality.

Classified Waters

Classified waters are designated in Appendix A of the TSWQS (Figure 4.2). Classified segments have designated uses (such as recreation, aquatic life, and water supply) and numeric criteria associated with those uses (such as dissolved solids, dissolved oxygen, pH, bacteria, and temperature). The designated uses and associated criteria for classified segments are also listed in Appendix A of the TSWQS. The segment descriptions that define the geographic extent of the classified segments are listed in Appendix C of the TSWQS.



This map was generated by the Water Quality Planning Division of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact the Water Quality Planning Division at 512-239-6682. Map created August 13, 2025.

Figure 4.2 Classified Stream Segments

The major surface waters of Texas have been divided into classified water segments. Most of the larger perennial (always flowing) rivers in the state, major reservoirs, and estuaries with large areas, are classified. A single river may

consist of several classified segments. The term segment refers to a defined, basic unit for assigning site-specific standards that has relatively homogenous biological, chemical, hydrological, and physical characteristics. Segments will also normally exhibit common reactions to external stresses, such as discharges or pollutants. The establishment of segments facilitates planning activities, issuance of permits, and allocation of grant funds necessary to implement various sections of the CWA.

Unclassified Waters

Unclassified waters are those smaller water bodies that are not designated as segments in Appendix A of the TSWQS. Certain unclassified water bodies are listed in Appendix D of the TSWQS. These are water bodies where sufficient information has been gathered to assign an aquatic life use and associated dissolved oxygen criterion. Unclassified water bodies not included in Appendix D of the TSWQS are typically assigned presumed uses, such as a presumed high aquatic life use.

Water Quality Standards Review

The CWA provides a process for evaluating the water quality standards for a particular water body if there is reason to believe that one or more of the uses and/or criteria may be inappropriate because of local conditions that are not due to human impacts. Waters in this category (5b) are slated for a review of their standards, called a use-attainability analysis (UAA).

Use-Attainability Analyses

It is essential to develop appropriate water quality standards that reflect a water body's ability to attain criteria due to natural water quality conditions. UAAs are one of the tools TCEQ uses to identify and assign appropriate standards. TCEQ has developed procedures for aquatic life UAAs and recreational UAAs (RUAAs).

An aquatic life UAA is conducted to establish or change an assigned aquatic life use or dissolved oxygen criteria by studying the physical, chemical, and biological characteristics of the water body. Aquatic life UAAs are often initiated on individual water bodies (classified or unclassified) when the existing standards appear to be inappropriate for water bodies that are identified on the CWA Section 303(d) List as impaired, or that are potentially affected by permitted wastewater discharges or other permitting actions. These studies often rely on the expertise of local water quality professionals from river authorities, TCEQ regions, and TPWD to collect the information necessary to assign appropriate aquatic life uses and dissolved oxygen criteria.

RUAAs are conducted to collect information that TCEQ needs to assign the most appropriate contact recreation use and indicator bacteria criterion. RUAA information includes the presence or absence of water recreation activities, streamflow type, and stream depth. TCEQ uses this information to verify a presumed use or provide detailed information to establish a site-specific

recreational standard. TCEQ heavily considers input from local stakeholders, including residents who live near or adjacent to the water body. Water quality professionals from river authorities, TCEQ regions, TPWD, and TSSWCB are solicited for feedback prior to the initiation of a study to determine if a RUAA is an appropriate water quality management strategy. Once a RUAA is initiated, local meetings are held in the watershed to notify stakeholders and incorporate their feedback to further develop the study design. TCEQ uses interviews with local residents familiar with the water body to document past and present recreational activities occurring on the water body. Stakeholders also play an important role in providing comments on draft study reports.

An aquatic life or recreational UAA can result in the addition, removal, modification, or retainment of a use. Uses may be modified when it can be demonstrated, through a UAA, that attainment of the current uses and/or criteria is not possible due to local water quality conditions. Conversely, a UAA might demonstrate that the current uses and criteria are appropriate, or even that they should be more stringent. UAAs and use designations become part of the surface water quality standards and are available for public comment after they are proposed by TCEQ. Once formally adopted, they are reviewed by EPA and must be approved prior to use in TCEQ water quality management activities, such as wastewater permitting.

Monitoring

Water quality data are gathered regularly to monitor the condition of the state's surface waters. TCEQ, the regional agencies of CRP, and other organizations, such as state and federal agencies, municipalities, educational institutions, volunteer monitoring groups, and private organizations under contract with the state collect chemical, physical, biological, and hydrological data. Data collectors follow methods and procedures outlined in TCEQ's *Surface Water Quality Monitoring Procedures*[12] to perform sampling activities. Monitoring plans are guided by quality assurance project plans (QAPPs) that ensure data are collected according to generally accepted practices and are of sufficient quality to be used in making defensible scientific assessments and management decisions.

The SWQM Team at TCEQ and staff in TCEQ's 16 regional offices conduct the SWQM Program. SWQM personnel conduct routine monitoring and special studies. This program is also responsible for the maintenance of the statewide Continuous Water Quality Monitoring Network, which is used to report water quality on a near real-time basis at specific locations.

Texas conducts four main types of data collection to monitor the status of water bodies:

- routine monitoring

[12] www.tceq.texas.gov/waterquality/monitoring/swqm_procedures.html

- systematic monitoring
- permit support monitoring
- special-project monitoring

Routine Monitoring

Routine monitoring is designed to assess the status and trends of overall water quality for each river basin. Data are collected on a regular basis using a network of key representative, ambient monitoring sites located on the major water bodies in each basin. Monitoring sites may also be located on smaller water bodies to support the characterization of ecoregions and/or basin-specific conditions.

Systematic Monitoring

Systematic monitoring focuses on evaluating subwatersheds and unclassified water bodies. The purpose of this monitoring is to investigate and detect areas of concern, and isolate issues that require further study. It also includes targeted monitoring to check the status of water bodies (identify improvements or concerns). This monitoring strategy distributes resources throughout the river basin to gather information on water bodies that would not normally be included in the routine monitoring program.

Permit Support Monitoring

Permit support monitoring is used to address specific areas where additional information is needed to support the development of permits that allow wastewater discharges. This may include studies to gather site-specific information used in drafting permits.

Special-Project Monitoring

Special-project monitoring involves data collection to better characterize nonattainment of water quality standards, the loading contributions of pollution in a watershed, and stakeholder concerns. Special projects are developed in consultation with other basin monitoring entities and TCEQ coordinators from the SWQM, Clean Rivers, Water Quality Standards, Nonpoint Source, and TMDL programs.

Coordination

The Texas CRP and the SWQM Program play key roles in TCEQ's yearly integration of the various monitoring needs into a coordinated monitoring schedule for the entire state. The schedule shows all surface water monitoring being conducted by TCEQ or under its contracts or cooperative agreements for each planning year.

Planning and development of the coordinated monitoring schedule takes place from January through May preceding the state fiscal year for which the plan is developed. To support coordinated monitoring, TCEQ has developed guidance for selecting sites and for sampling methods for routine, systematic, and

targeted monitoring. The Lower Colorado River Authority, a CRP Partner Agency, hosts the coordinated monitoring schedule, which can be found on their website[13].

Clean Rivers Program

CRP is a state-sponsored program that relies on a collaborative partnership between regional water agencies in the state and TCEQ to accomplish its essential functions.

To support partnerships and TCEQ's overall water quality management program, CRP's long-term action plan includes six key elements:

- provide quality-assured data to TCEQ for use in water quality decision-making;
- identify and evaluate water quality issues;
- promote cooperative watershed planning;
- inform and engage stakeholders;
- maintain efficient use of public funds; and
- adapt the program to emerging water quality issues.

Coordinated Monitoring Meetings

An essential function of CRP is to facilitate coordination of water quality monitoring in each basin. Each basin has a CRP Partner—usually a river authority—which conducts surface water quality monitoring under a QAPP. Each year, the CRP Partner in each basin hosts at least one Coordinated Monitoring Meeting in which all entities who conduct surface water quality monitoring in that basin convene to discuss the monitoring schedule for the upcoming fiscal year. Each entity that participates in the coordinated monitoring process agrees to follow CRP guidance to ensure that data collected are of known quality. After the Coordinated Monitoring Meeting, each entity updates the coordinated monitoring schedule.

The key goals of the Coordinated Monitoring Meetings in each basin are to:

- ensure that there is adequate spatial and temporal coverage in monitoring surface water in the basin;
- eliminate duplications of effort by making sure entities are not monitoring the same site, at the same time, for the same parameters, which maximizes limited resources;
- set priorities for monitoring; and
- address areas of concern for water quality.

[13] cms.lcra.org/

Steering Committee Meetings

Basin steering committees of CRP provide the primary forum for coordinating stakeholder involvement at the regional level. CRP Basin Steering Committees meet at least once a year in each of Texas' major river basins. The purpose of these meetings is for the CRP Partner Agency to present information on water quality issues in the basin and request input from the local residents and stakeholders for identifying potential sources of pollution and setting local monitoring priorities. In turn, this process informs the monitoring decisions and discussions among the monitoring entities during the Coordinated Monitoring Meetings.

Basin Highlights and Summary Reports

Each regional water quality authority produces a Basin Highlights Report which provides the status of water quality in the region, and monitoring and assessment activities. The report is published every five years. This detailed report provides trend analyses, spatial analyses (correlating environmental factors to water quality), an explanation for why certain water quality problems exist, and recommendations for addressing persistent water quality problems. The CRP partners strive to report water quality data in a user-friendly format to inform the public. TCEQ uses the information contained in these reports in the development of the Texas Integrated Report, and prioritization of management strategies.

United States Geological Survey

The U.S. Geological Survey (USGS) also conducts a large amount of monitoring statewide, and TCEQ uses much of these data. The USGS surface water collection network in Texas monitors streamflow continuously at many permanent sites. Field measurements, routine water chemistry, and metals in water are also collected at many of the fixed sites. Sites are chosen to represent a mix of natural and human factors that influence water quality. USGS then relates chemical variables to hydrologic conditions to interpret water resource conditions and meet water quality management needs. Estimations of point and nonpoint source loadings, stormwater management, and chemical-contaminant controls are some of those needs.

Groundwater Quality

Groundwater is contained in aquifers, which are underground layers of rock that store water and can transmit water through the pore spaces, cracks, or voids in the rock. Texas aquifers are composed of a variety of rock types, such as limestone, dolomite, sandstone, alluvial gravels, and igneous rocks.

TWDB is the state agency responsible for collecting information on and maintaining an inventory of ambient groundwater conditions throughout Texas. TGPC relies on this ambient monitoring data for learning about the state's groundwater quality and developing reports. TWDB monitors the ambient groundwater quality of water wells in a select number of Texas aquifers each

year, resulting in all major and minor aquifers of the state being monitored approximately every four years.

TWDB maintains a groundwater database of ambient groundwater quality data from over 140,000 sites, including water wells and springs. This information is supplemented by data from USGS, the Bureau of Economic Geology at the University of Texas at Austin, and TCEQ. In addition, many GCDs have groundwater monitoring programs, and while these programs primarily monitor the volume of water in an aquifer, they may also collect groundwater quality information. Groundwater quality data maintained by the GCD may be reported to TWDB and added to their ambient groundwater database.

According to the annual Water Use Survey conducted by TWDB, groundwater supplied 54% of the 15.3 million acre-feet of water used in Texas in 2022. An estimated 71% of this groundwater was used to irrigate crops, and an estimated 23% was used for municipal purposes.

Measuring Groundwater Quality

TWDB is authorized by the TWC to conduct studies and map the state's water resources. TWDB has identified the boundaries and various characteristics for the state's major and minor aquifers based on yields and significance of aquifer production. For most aquifers, a TDS concentration of 3,000 milligrams per liter (mg/L) is used to mark the boundary of usable-quality water when mapping aquifers, as this level meets most agricultural and industrial needs. A notable exception is the Edwards Aquifer (Balcones Fault Zone), which has a boundary for mapping purposes of 1,000 mg/L TDS for public water supply use.

TGPC and its member agencies recognize that groundwater classification is an important tool for implementing the state's groundwater protection policy and TGPC developed a Groundwater Classification System (Table 4.1) for use by state agencies. Groundwater classification allows agencies to specify protection or restoration measures according to the quality and use of the groundwater. Four groundwater classes are defined based on quality as determined by TDS content.

Table 4.1 TGPC Groundwater Classification System

Class	Quality (mg/L of TDS)	Examples of Use
Fresh	Zero to 1,000	Drinking and all other uses
Slightly Saline	More than 1,000 to 3,000	Drinking, if freshwater is unavailable; livestock watering; irrigation; industrial; mineral extraction; oil and gas production
Moderately Saline	More than 3,000 to 10,000	Potential/future drinking and limited livestock watering and irrigation. if fresh or slightly saline water is unavailable; industrial, mineral extraction; oil and gas production
Very Saline to Brine	More than 10,000	Mineral extraction; oil and gas production

Other Sources of Data

TWDB's ambient groundwater monitoring data also include other pollutants which may pose a risk to human health, such as nitrates, metals, and radionuclides. Additional water quality data from other state and federal agencies, local governments, and monitoring groups can be assessed if the data meet clearly defined acceptance and timeline criteria established by TCEQ. Most of these data are contributed by GCDs.

Assessment

Texas Integrated Report for CWA Sections 305(b) and 303(d)

TCEQ evaluates the condition of the state's water bodies every two years as required by CWA Section 305(b). The results of this evaluation are contained within the Texas Integrated Report which is prepared by TCEQ's SWQM team and submitted to EPA for approval. The *Guidance for Assessing and Reporting Surface Water Quality in Texas* is based on a set of methods that apply the surface water quality standards to ambient surface water quality monitoring data collected as part of routine monitoring events. These methods are developed by TCEQ with the advice of stakeholders and are made available to partner organizations and stakeholders every two years, prior to the biennial assessment in which they will be used.

The Texas Integrated Report describes the status of all surface water bodies of the state that were evaluated for the defined assessment period. TCEQ uses data collected during a recent seven- to ten-year period in making its assessment. The data are gathered by many different organizations that operate according to approved quality control guidelines and sample collection procedures. The

quality of waters described in the Texas Integrated Report represents a snapshot of conditions during the defined period.

One of five categories is assigned to each parameter and assessment unit, described as an area of water which is hydrologically uniform, to provide more information to the public, EPA, and agency staff about water quality status, management plans, and management activities (Table 4.2). The categories indicate the status of the water body and measures the state will use to address identified water quality problems. Higher category numbers correspond to higher levels of effort required to manage or restore water quality.

Category 5 represents the list of impaired water bodies as required by CWA Section 303(d). Since a water body has multiple uses, it may fall into different categories if impaired for different uses. In that case, the overall category for the water body is the one with the highest category number.

For example, a hypothetical water body does not support the contact recreation use (Subcategory 5c – additional data collection) or the aquatic life use (Subcategory 5b – water quality standards evaluation). It supports the public water supply and general uses (Category 1), and the fish consumption use has not been assessed (Category 3). The designation for the entire water body is Category 5, since that is the highest category associated with any one of its uses.

Table 4.2 Categories of the Texas Integrated Report

Category	Description
Category 1	All designated uses are supported, no use is threatened.
Category 2	Available data and/or information indicate that some, but not all of the designated uses are supported.
Category 3	There is insufficient or unreliable available data and/or information to make a use support determination.
Category 4	Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed.
Subcategory 4a	A state-developed TMDL has been approved by EPA or a TMDL has been established by EPA for any water-pollutant combination.
Subcategory 4b	Other required control measures are expected to result in the attainment of an applicable water quality standard in a reasonable period of time.
Subcategory 4c	The impairment or threat is not caused by a pollutant.
Category 5	Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed.
Subcategory 5a	A TMDL is underway, scheduled, or will be scheduled.
Subcategory 5b	A review of the standards for the water body will be conducted before a management strategy is selected.
Subcategory 5c	Additional data and information will be collected or evaluated before a management strategy is selected.
Subcategory 5n	The water body does not meet applicable chlorophyll a criterion, but additional study is needed before a management strategy is selected
Subcategory 5r	A WPP is under development or accepted by EPA for this parameter.

CWA Section 303(d) List

The CWA Section 303(d) List (Category 5) is an important management tool produced as part of the assessment. It identifies waters which do not meet uses defined in the TSWQS. Before the CWA Section 303(d) List can be implemented, it must be approved by EPA. A map of impaired stream segments based on the 2024 Texas Integrated Report is illustrated in Figure 4.3.

When a water body is identified on the CWA Section 303(d) List, certain new requirements may apply for facilities that discharge wastewater into the listed water body. Importantly, TCEQ may not allow any new or expanded discharges

of a listed pollutant into a Category 5 water body if it will contribute to the impairment. Other possible effects on permits that may result from a restoration plan (e.g., TMDL) for the water body include the following:

- TCEQ-initiated amendments to impose new limits, or newly imposed limits with routine renewals or amendments;
- permitted loadings from existing facilities may be reduced;
- new facilities may be required to meet more stringent effluent;
- stormwater permits may receive new or more stringent limits;
- dischargers may no longer be eligible for general permits; and
- additional monitoring and reporting requirements may be added.

The CWA Section 303(d) List also helps to determine how technical and financial assistance programs are implemented to address nonpoint source pollution. These resources are used to help implement additional nonpoint source management practices, such as:

- management of runoff by such means as detention basins, filter strips, infiltration basins, porous pavement, retention ponds, and swales; and
- management of operations to decrease or eliminate pollutants in runoff, such as spill prevention and control, source controls, and education.

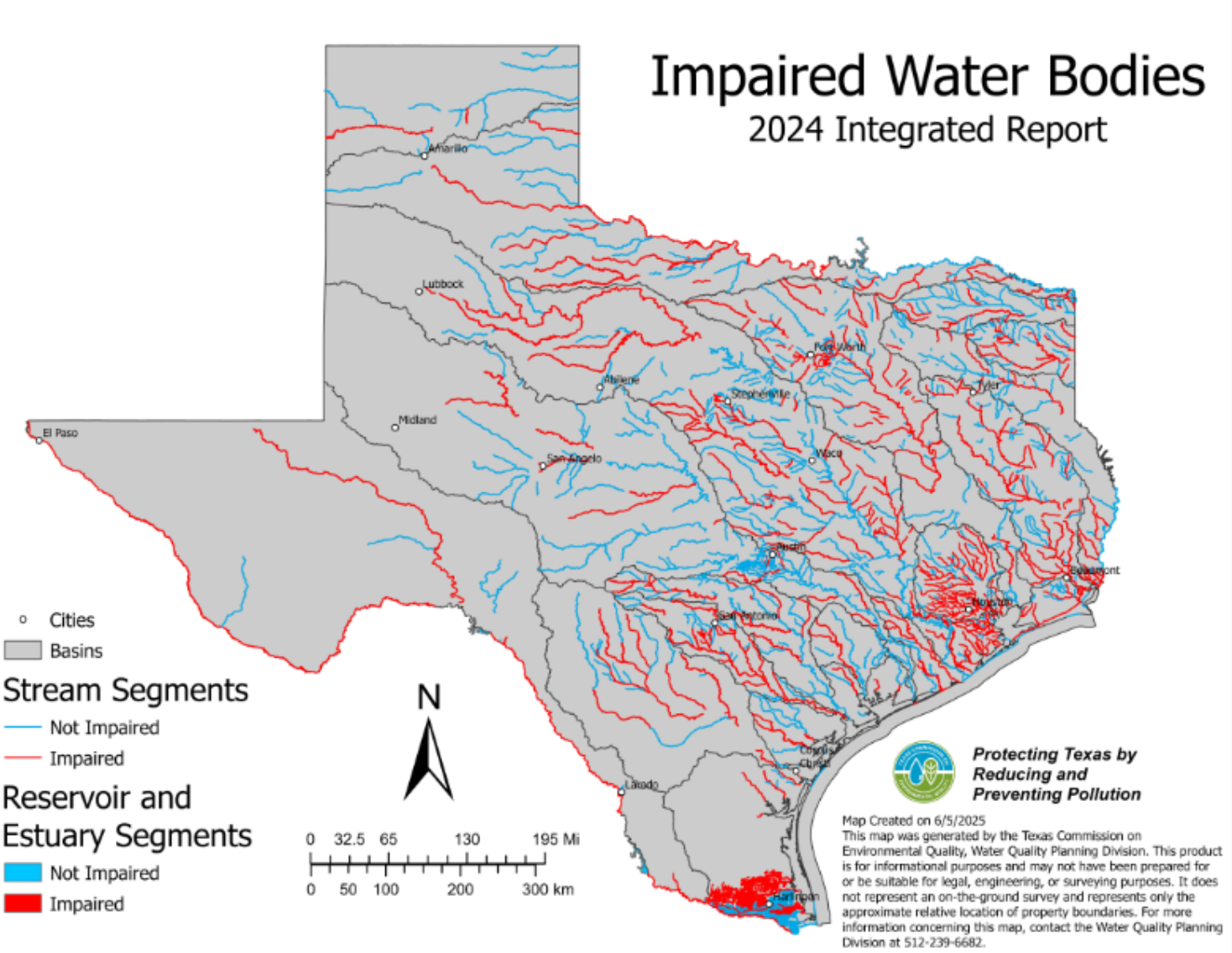


Figure 4.3 Impaired Water Bodies

Groundwater Assessment

The member agencies of TGPC provide data for groundwater quality inventory efforts. In 1996, TGPC began conducting an inventory of groundwater quality of the state's aquifers through a partnership between TCEQ and TWDB, two of its member agencies. This Groundwater Assessment, TCEQ publication number AS-465, is included as a chapter within the Texas Integrated Report.

The Groundwater Assessment compares sampled parameters from TWDB's groundwater database to federal and state drinking water standards. The parameters chosen include those with established drinking water standards and were also present in enough samples to perform an assessment. They include arsenic, barium, cadmium, chromium, copper, iron, manganese, selenium, zinc, sulfate, chloride, nitrate-nitrogen, and TDS. Staff evaluated results for each constituent for the most recent ten-year period to determine how many wells in each sampled aquifer were above an accepted regulatory value, typically the maximum contaminant level for drinking water established by EPA or TCEQ.

Groundwater quality data are supplemented with groundwater contamination case information from the annual Joint Report. The contamination cases in the Joint Report are primarily those where contaminants were discharged to the surface, the shallow subsurface, or to groundwater from activities such as storage, processing, transport, or disposal of products or waste materials. For TCEQ, most groundwater contamination cases within the agency's remediation programs include leaking petroleum storage tanks, industrial and hazardous waste sites, voluntary cleanup sites, dry cleaner sites, and Superfund sites. Other programs that typically report contamination cases include municipal solid waste facilities, wastewater disposal facilities, public water supplies, and other occurrences of contamination that may not be directly linked to a specific source or program. For RRC, groundwater contamination cases may be related to oil and gas well drilling and production activities, spills from oil or gas pipelines, or surface mining operations.

Because there are no water quality standards specific to groundwater assessment, TCEQ uses the state's goal of non-degradation with respect to use as an appropriate standard. For the purposes of the nonpoint source assessment, any measurements of groundwater quality obtained from the aquifers listed in the Texas Integrated Report that exceed the maximum contaminant levels for drinking water are considered impaired with respect to existing or potential use. Constituents of concern that are above the minimum detection level, but below the maximum contaminant level for drinking water, should also be watched. An increase in the number of detections of a parameter could signal a developing concern. Degradation in groundwater, with respect to existing or potential use, could be considered for targeted monitoring and restoration activities.

The vulnerability of major and minor aquifers are reported in the Groundwater Assessment section of the 2024 Integrated Report. Highlights include:

- Major aquifers with “high” vulnerability rankings include the Seymour and the Edwards (Balcones Fault Zone) aquifers.
- For the Edwards (Balcones Fault Zone) Aquifer, the karstic features at the outcrop mean the aquifer is especially vulnerable to contamination, making nonpoint source pollution from runoff in urbanized areas a particular concern (Texas Aquifers Study, TWDB, December 31, 2016).
- Minor aquifers with “high” vulnerability rankings include the Brazos River Alluvium, the Ellenburger-San Saba, and the Marble Falls aquifers.

Nonpoint Source Assessment

The CWA Section 319(a) assessment focuses only on those waters which have been identified as being degraded, at least in part, by nonpoint source pollution. Texas’ CWA Section 319(a) assessment of impaired waters is based on the Texas Integrated Report. To address the most current priorities for Texas and have a Management Program based on the most current information, the latest Texas Integrated Report serves as the state’s CWA Section 319(a) assessment. Nonpoint source-degraded surface waters appearing in the report will be targeted by the state for additional nonpoint source monitoring and restoration activities during the strategic planning phase discussed in Chapter 3.

With regard to CWA Section 319(h) grant funding, priority is given to projects that will develop and implement WPPs in water bodies that fall within subcategories 5b and 5c of the Texas Integrated Report. Funds may also be used for TMDL I-Plan activities and other actions consistent with the goals of the Nonpoint Source Management Program.

Strategy Development

Strategic Planning Process

The strategic planning process, described in Chapter 3, is used to develop strategies to address water quality issues. The strategies identified for addressing surface water quality issues are monitoring, water quality standards review, TMDL development, WPP development, evaluation, and other. More detail is provided in Table 3.1.

A range of circumstances influence the strategy selection. Strategies such as water quality standard reviews and site-specific evaluation studies may result in delisting due to the increased understanding of water quality and conditions in the watershed. WPPs are primarily developed to address problems caused by nonpoint sources. Federal regulations cite TMDLs as the basis for permitting decisions and are more appropriate for problems caused by point sources.

The CWA Section 303(d) Vision

In 2013, EPA published a new vision for implementing the CWA in relation to the CWA Section 303(d) List, titled *A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program* (Vision). Together with states, EPA outlined how implementation of the new vision would be organized and defined. The 2013 Vision ended in fiscal year 2022, and states worked with EPA to develop a new framework for implementing Section 303(d) of the CWA. This new 2022 Vision is an extension of the 2013 Vision with changes to reporting mechanisms, the addition of Focus Areas, and increased planning flexibility for states.

The 2022 Vision establishes water quality planning priorities in Texas for the next ten years, and includes five key goals:

- **Planning and Prioritization** – States, territories, and tribes develop a holistic strategy for implementation of Vision goals, systematically prioritize waters or watersheds for TMDL and other plan development (restoration and/or protection), and report on the progress towards development of plans for priority waters.

- **Restoration** – States, territories, and tribes design TMDLs and other restoration plans to attain and maintain water quality standards, facilitate effective implementation, and drive restoration of impaired waters.

- **Protection** – In addition to recognizing the protection benefits that TMDLs and other restoration plans can provide, states, territories, and tribes may develop protection plans to prevent impairments and improve water quality, as part of a holistic watershed approach.

- **Data and Analysis** – The CWA Section 303(d) program coordinates with other government and nongovernmental stakeholders to facilitate data production and sharing, and effectively analyzes data and information necessary to fulfill its multiple functions.

- **Partnerships** – The CWA Section 303(d) program meaningfully communicates and collaborates with other government programs and nongovernmental stakeholders to restore and protect water quality effectively and sustainably.

To implement the 2022 Vision, Texas developed the *2022-2032 Vision for Texas' 303(d) Program,* a prioritization framework that describes how the state will meet the goals of the 2022 Vision to prioritize and address impairments using the strategic planning process in Chapter 3.

Implementation

The implementation of pollution control measures for point and/or nonpoint sources of pollution may be required to address water quality impairments. These pollution control measures can carry out both regulatory and nonregulatory mechanisms to limit pollution as needed to meet water quality standards. Regulatory mechanisms (such as wastewater and stormwater discharge permits) establish legally enforceable pollution control requirements and consist of permitting, inspection, and compliance programs. Nonregulatory mechanisms are applicable to nonpoint sources of pollution. These measures encourage pollution control practices through educational, technical, and financial assistance provided by local, state, and federal programs. Pollution control measures needed to achieve and maintain water quality standards are identified in plans developed by the TMDL and WPP processes. The development of these measures and some of the programs and strategies involved in their development are further described below.

Statewide Educational Program

The state's overall outreach and education programming is fundamental to the Management Program and the development of TMDLs and WPPs. The following are some examples of education outreach and training that help ensure watershed planning and implementation is a success.

Texas Watershed Planning Short Course

The Texas Watershed Planning Short Course provides training and promotes sustainable proactive approaches to managing water quality. This course provides participants with guidance on stakeholder coordination, education, and outreach; meeting EPA's nine essential elements of a WPP; data collection and analysis; and the tools available for plan development. This information is presented through lectures and case studies. Proper training of watershed coordinators and water professionals is needed to ensure that watershed protection efforts are adequately planned, coordinated, implemented, and sustained. To provide this training, the Texas Watershed Planning Short Course is developed through a coordinated effort led by the Texas Water Resources Institute (TWRI) and funded by EPA through TCEQ and TSSWCB.

TWRI partners with state and federal agencies, other universities, and public and private entities to develop and conduct this short course. The Texas Watershed Planning Short Course has evolved into a fundamental tool used by parties interested in developing a WPP to achieve the goals of an EPA nine element watershed-based plan.

Texas Watershed Steward Program

Texas Watershed Stewards (TWS) is a one-day training program designed to increase resident understanding of watershed processes and foster increased local participation in watershed management and watershed protection

planning activities. This is an important step in improving surface water quality given that public participation in local watershed management efforts is critical in addressing nonpoint source pollution.

The TWS Program offers both in-person workshops and online training courses. A team of environmental professionals delivers in-person workshops using high quality visual aids and hands-on teaching stations. Each workshop consists of a four-hour educational event tailored to the targeted watershed in which it is hosted. Targeted watersheds primarily include those with an existing water quality impairment and undergoing the development or implementation of a WPP, TMDL, TMDL I-Plan, or another watershed-based plan. To increase the reach and accessibility of the TWS curriculum, the program administers three self-paced online courses: two video based courses marketed to adult learners and one interactive course formatted for middle school-aged youth.

Program participants learn about the nature and function of watersheds, potential impairments, and BMPs for watershed stewardship through the five units of the TWS curriculum: a program introduction, an overview of watershed systems, identification of watershed impairments, watershed management and regulation, and community-driven watershed protection strategies.

The TWS program is sponsored by Texas A&M AgriLife Extension Service and TSSWCB and made possible through a CWA Section 319(h) nonpoint source grant from TSSWCB and EPA. Additional information concerning the TWS program, including in-person workshops, online training options, and curriculum materials, is available on the program website[14].

Texas Watershed Coordinator Roundtable

The Texas Watershed Coordinator Roundtable is held twice per year in various areas of the state. The roundtable meetings provide a forum to establish dialogue between watershed coordinators and professionals, facilitate interactive solutions to common watershed issues faced throughout the state, and add to the fundamental knowledge conveyed at the Watershed Planning Short Course. Interested coordinators and professionals may email TWRI at twri@tamu.edu to subscribe to the listserv and learn about the roundtables and training events, and other useful information.

Texas Stream Team

The Texas Stream Team is a statewide program committed to improving water quality through community-generated water quality data, stakeholder engagement, and watershed education. It is a network of trained volunteers and supportive partners working together to gather information about the natural resources of Texas and to ensure the data are available to all Texans.

[14] tws.tamu.edu/

The Texas Stream Team was established in 1990 and is administered through a cooperative partnership between The Meadows Center for Water and the Environment at Texas State University, TCEQ, and EPA. Currently, over 400 Texas Stream Team volunteers collect water quality data on lakes, rivers, streams, wetlands, bays, bayous, and estuaries in Texas.

The Texas Stream Team volunteers sample streams, springs, reservoirs, and tidal areas for bacteria, dissolved oxygen, conductivity, pH, depth, temperature, phosphorus, nitrogen, turbidity, and various field observations, including flow severity. Data are collected using a QAPP and a three-phase certification process. Intended data uses include watershed characterization, pollution identification, understanding background conditions, watershed-based plan development, education, research, local decisions, and other uses deemed appropriate by the end user.

Watershed Summary Reports and a program Datamap forum are available for viewing and downloading at the program website[15]. There are decades of Watershed Summary Reports available for water resource managers, stakeholders, and others to access. The Datamap provides water quality data from the last 35 years from every major river basin in Texas.

The watershed outreach program of the Texas Stream Team focuses on teaching students, community members, and landowners about watershed functions and how nonpoint source pollution impacts water quality. Watershed outreach services are delivered in a myriad of ways, including curriculum distribution, nonpoint source watershed model demonstrations, hands-on student scenario investigations, creek-side lessons, bacteria snapshots, water quality monitoring trainings, and hosting booths at special events. The Texas Stream Team provides outreach to thousands of students, teachers, residents, and landowners each year. By providing customized watershed information and new ways to engage teachers and students, participants learn about local issues, factors influencing water quality, and ways to improve watershed health. Texas Stream Team staff and partners lead educational workshops at universities, community education centers, partner offices, and local creeks and reservoirs.

In addition to statewide programmatic activities, the Texas Stream Team also focuses efforts in targeted watersheds. A suite of watershed services, such as nonpoint source pollution outreach, community science trainings, internships, community clean-up coordination assistance, data summary reports, and collaborative grant writing, are provided to assist in the development and implementation of watershed-based plans.

[15] www.meadowscenter.txst.edu/Leadership/TexasStreamTeam.html

Urban BMP Initiative

The Urban BMP Initiative is an effort by the TCEQ Nonpoint Source Program to provide financial, technical, and educational assistance to municipalities in the state to support the voluntary implementation of urban BMPs, including low impact development (LID) stormwater management practices and nature-based solutions. It is anticipated that this process of documenting the benefits of urban BMPs and communicating these benefits to municipal governments will lead to broader implementation of urban BMPs.

Certain urban stormwater management practices are required under Municipal Separate Storm Sewer System (MS4) permits and are therefore considered to be point source controls. These types of practices are not eligible for financial assistance under CWA Section 319(h) guidelines. However, those practices that are not required by permits may be eligible for assistance under the TCEQ Nonpoint Source Program. More information about the eligibility of TCEQ Nonpoint Source Program projects within MS4 jurisdictions is available on the TCEQ Nonpoint Source Program's website[16]. These determinations are made on a case-by-case basis in consultation with EPA.

New developments in urban BMPs include a rapid expansion in the development and use of LID stormwater management practices and the integration of these practices into an overall green infrastructure strategy in municipal areas. EPA literature cites the benefits of LID practices to include reducing the volume of stormwater runoff, reducing pollutant loadings, preserving areas that provide important water quality benefits, and reducing the costs of urban development. EPA states that LID practices can be used in both new development and redevelopment projects.

The TCEQ Nonpoint Source Program is taking advantage of the interest in and benefits of LID practices to help meet Management Program goals and objectives in specific priority watersheds and in the coastal zone. The TCEQ Nonpoint Source Program is implementing outreach efforts to priority municipalities (including coastal communities) to inform them of the technical and financial assistance resources available from TCEQ to support the implementation of LID management practices. The goal of this initiative is to leverage limited state and federal resources to achieve broader and sustainable environmental benefits by helping communities incorporate LID practices into their local programs. The initiative is based on the EPA publication *Incorporating Low Impact Development into Municipal Stormwater Programs*[17] (EPA 901-F-09-005). This publication identifies several steps municipalities can take to institutionalize the use of LID practices in their community. The TCEQ Nonpoint Source Program seeks to assist municipalities by providing financial assistance, supporting the implementation of demonstration projects,

[16] www.tceq.texas.gov/waterquality/nonpoint-source
[17] www.epa.gov/system/files/documents/2025-11/incorporating-lid-apr-2009.pdf

developing technical guidance, educating developers and designers, and quantifying the costs and benefits of LID practices.

The TCEQ Nonpoint Source Program provides financial assistance through the administration of the CWA Section 319(h) federal grant program and will continue to solicit and provide financial assistance for LID implementation projects in future years depending upon the quality of the projects and the availability of funding. Among other criteria, LID implementation projects will be evaluated based on the degree to which they: (1) reduce pollutant loads contributing to a water quality impairment, and (2) serve to institutionalize LID practices at the state, regional, or community level.

Watershed Protection Plans

WPPs are locally driven mechanisms for voluntarily addressing complex water quality problems that cross multiple jurisdictions. WPPs are developed and implemented at the local level to address water quality issues and attainment of water quality standards. Through the WPP process, TCEQ and TSSWCB encourage stakeholders to holistically address all the sources and causes of nonpoint source pollution and threats to both surface water and groundwater within a watershed.

Developing and implementing WPPs is a priority for CWA Section 319(h) funding. TCEQ and TSSWCB, with funding from the state and EPA, have supported the development and implementation of many WPPs (Figure 4.4). In some cases, third-party WPPs are funded and sponsored by entities and agencies other than TCEQ or TSSWCB.

In Texas, WPP development projects funded by CWA Section 319(h) federal grant funds are required to develop these plans in accordance with EPA's *Nonpoint Source Program and Grants Guidelines for States and Territories*[18] (May 2024). EPA has also published the *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*[19] (March 2008), which provides in-depth guidance and technical tools for use in developing WPPs along with examples to illustrate how to apply these concepts to a specific watershed.

[18] www.epa.gov/nps/cwa-ss319-grant-current-guidance
[19] www.epa.gov/nps/handbook-developing-watershed-plans-restore-and-protect-our-waters

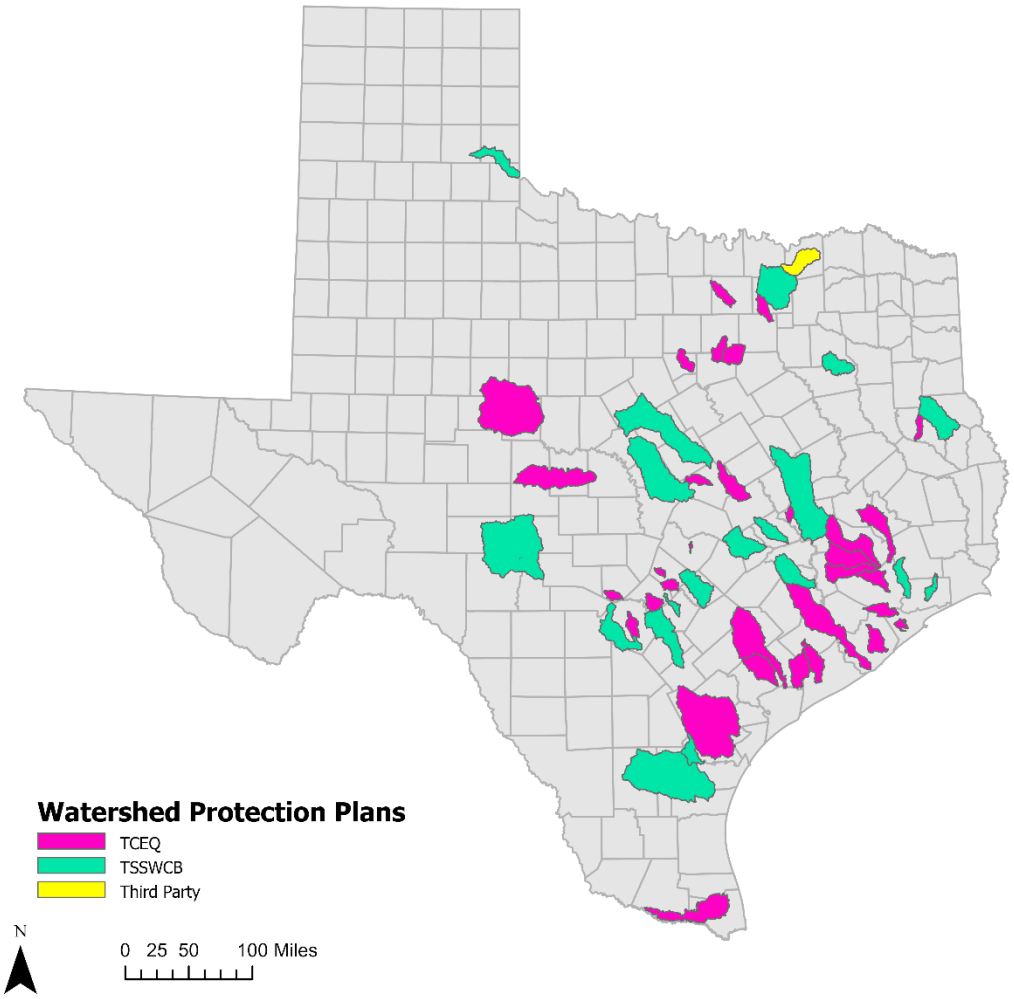


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Figure 4.4 Watersheds With Developing or Implemented WPPs

The state (either TCEQ or TSSWCB) and EPA review WPPs to assess a plan's consistency with the nine essential elements of a WPP and to ensure a plan is eligible for future CWA Section 319(h) implementation funding. The state and EPA use the EPA Region 6 *Review Guide for Watershed-Based Plans*[20] (January 2010) to conduct this consistency review. All WPPs developed with CWA Section 319(h) grant funds will be reviewed by the state who will then seek EPA acceptance of the plan. Entities interested in developing third-party WPPs should consult with both agencies early in the process, especially if they want to apply for CWA Section 319(h) grant funds for future implementation activities. All third-party developed WPPs should be submitted to TCEQ or TSSWCB for a consistency review to ensure that the plan includes the nine essential elements

[20] www.epa.gov/tx/r6-review-guides-watershed-based-plans

of a WPP, which are listed below. The reviewing agency will submit the WPP for EPA review, as appropriate.

Nine-Essential Elements for an EPA Approved WPP

A. An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the estimated load reductions.

B. An estimate of the load reductions expected for the management measures described in the plan.

C. A description of the management measures that will need to be implemented to achieve the load reductions estimated in the plan, and an identification of the critical areas in which those measures will be needed to implement the plan.

D. An estimate of the amounts of technical and financial assistance needed, associated costs, and/or sources and authorities that will be relied upon to implement the plan.

E. An information/education component that will be used to enhance public understanding of the plan and encourage early and continued participation in selecting, designing, and implementing the management measures that will be implemented.

F. A schedule for implementing the management measures identified in the plan.

G. A description of interim, measurable milestones for determining whether management measures or other control actions are being implemented.

H. A set of criteria that can be used to determine whether load reductions are being achieved over time and substantial progress is being made towards attaining water quality goals and, if not, the criteria for determining whether the plan needs to be revised.

I. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established in the plan

The state of Texas believes that in some watersheds, the development and implementation of a WPP may be a more viable approach to restoring water quality than through the establishment of a TMDL. This perspective recognizes that management measures developed and implemented without TMDLs, such as those included in a WPP, may be the most effective method for achieving water quality standards for some water bodies. The significance and complexity of whether a WPP or other approach may be more immediately beneficial or practicable in achieving water quality standards than pursuing the TMDL approach in the near term necessitates close coordination between watershed stakeholders, the state, and EPA.

Another viable approach in Texas is completing TMDLs, TMDL I-Plans, and WPPs concurrently. This results in water bodies being placed in Texas Integrated Report Subcategory 4a and ensures that a plan is developed in accordance with EPA's *Nonpoint Source Program and Grants Guidelines for States and Territories* (May 2024). There is a great deal of overlap between what is required in TMDLs, TMDL I-Plans, and WPPs, and this approach often provides for the leveraging of state and federal resources, the completion of permitting actions for point sources, and the use of CWA Section 319(h) for some implementation activities.

The development of WPPs is supported by CWA Section 319(h) funding to varying extents; however, a WPP that meets EPA's nine essential elements is required to be eligible for CWA Section 319(h) funding to implement the management measures of the WPP. The state has identified five general areas of activity associated with WPPs which are implemented to meet the specific watershed-based goals of the program. These areas of activity are identified and generally described below.

Outreach and Partnership Development

The diffuse nature of nonpoint sources of pollution requires a varied response, including the establishment of a partnership of stakeholders to plan, guide, and implement WPPs that are developed for the unique conditions found within each watershed. Effective partnerships strengthen support for watershed-based environmental protection by increasing the quantity and improving the quality of available information. These partnerships foster local ownership of water quality, helping local stakeholders to gain insight into the nature of water quality problems, which leads to voluntary actions and the reduction of pollution.

Science-based watershed education to help residents identify and take action to address local water quality concerns and impairments is supported by the development and implementation of multiple education and outreach strategies included in the Management Program. Residents learn about the nature and function of watersheds, threats to water quality, and strategies for watershed protection. Active public participation in local watershed management efforts is critical in addressing local water quality problems and concerns. Educational programs are provided to watershed residents, including homeowners, business owners, agricultural producers, decision-makers, community leaders, and other residents.

The Management Program supports the development and implementation of watershed management strategies with federal, state, and local stakeholders. Information derived from the state's water quality inventory identifies priority water quality issues in the state. These issues are discussed and evaluated every two years to identify appropriate watershed management strategies and track their implementation. The outcomes of these discussions and evaluations are

incorporated into the strategic planning process and serve as the basis for planning, budgeting, and implementing program activities.

Watershed Characterization

Watershed characterization provides the foundation for watershed planning and implementation and presents a basic understanding of the impairments, the degree of difference between current and desired water quality, and the likely sources contributing to the impairment. Characterizing the watershed and the water body provides necessary background information to support decisions regarding the approach used in managing water quality within the watershed. The methods for completing a source assessment may vary but typically rely on information from state and national databases, literature reviews, and local knowledge from state, regional, or residents.

Knowledge of the cause-and-effect relationship between pollutant sources and the water body response is necessary to guide the management of nonpoint sources. Several technical and practical factors are considered when selecting the most appropriate analysis of cause-and-effect relationships. This analysis may be performed through complex or simplified approaches using modeling and non-modeling methods.

Bacteria source tracking is a set of methods used to identify the origins of fecal contamination in water. These techniques can distinguish between sources like humans, livestock, pets, and wildlife using microbial fingerprints of DNA. These techniques are employed by the State to help pinpoint pollution sources for better management and public health protection.

Watershed Protection Plan Development

The primary mechanism for addressing nonpoint source pollutant load reductions in Texas is through watershed planning, such as a WPP. A WPP is developed through a series of cooperative, iterative steps to characterize existing conditions, identify and prioritize problems, define management objectives, and develop and implement protection or remediation strategies. Developing effective watershed plans require active participation from stakeholders as well as the analysis and quantification of the specific causes and sources of water quality problems. This, in turn, facilitates the identification of measurable water quality goals and the implementation of specific actions needed to meet those goals.

Preliminary information and estimates may need to be confirmed and/or modified over time, additional monitoring may be gathered during WPP development or along with implementation efforts. A project will often require several years of effective implementation to achieve its goals and mid-course corrections may be needed. The watershed planning process is dynamic and iterative.

Implementation

The Management Program supports implementation of management measures needed to protect and restore water quality conditions. Financial assistance is provided through the CWA Section 319(h) grant program and other funding sources. CWA Section 319(h) grants are made available on an annual basis to projects and programs set forth in the Management Program. Priorities for funding under the CWA Section 319(h) grant program are given to projects which produce measurable reductions in pollutant loadings from nonpoint sources in accordance with goals established in accepted WPPs and projects which leverage other funding sources.

Determining a pollutant load reduction that will allow a water body to meet water quality standards involves estimating load reductions from BMPs and other load reduction strategies that will be implemented. Factors affecting the selection of BMPs and load reduction strategies include the location and relative magnitude of sources, the pollutants of concern, the feasibility of load reduction strategies, ongoing control practices, and stakeholder priorities.

TSSWCB provides financial incentives to agricultural producers through state and other federal financial assistance programs. Technical assistance is provided through TSSWCB to assist agricultural producers in developing plans to limit water quality impacts from farming and ranching operations. Municipal planners in Texas receive technical assistance for urban runoff management measures through a series of technical workshops provided by TCEQ. Educational opportunities for public officials, business owners, and the public are provided through TCEQ.

Tracking, Evaluation, and Reporting

The *Nonpoint Source Pollution Management in Texas Annual Report* provides an annual summary of progress in meeting approved milestones and the short- and long-term goals and objectives identified in the Management Program. The report includes information on program milestones associated with the applicable project or program, the scheduled project completion date, and the percent projects completed. The report also summarizes available information on the nonpoint source load reductions achieved and improvements in water quality because of Management Program implementation. Surrogate measures of environmental progress are used where appropriate.

Post-implementation monitoring is critical to determine the success of watershed implementation efforts and is included in many BMP implementation projects. However, sometimes statistically significant effectiveness monitoring is cost prohibitive in which case, surrogate information from BMP database is used to determine load reductions gained from implementation actions.

Total Maximum Daily Loads

TMDLs address point sources, such as wastewater treatment facility discharges, and nonpoint sources. At the most basic level, a TMDL is the sum of the individual wasteload allocations for point sources, load allocations for nonpoint sources, and an appropriate margin of safety. This equation expresses the total amount (or load) of a single pollutant that a receiving water body can receive within a 24-hour period and maintain water quality standards.

CWA Section 303(d) and its implementing regulations (40 CFR Section 130.7) require states to identify waters that do not or will not meet applicable water quality standards after the application of technology-based or other required controls, and to establish TMDLs for pollutants that are causing nonattainment of water quality standards. For listed waters, states must develop TMDLs allowing for seasonal variations and an appropriate margin of safety (Figure 4.5).

Numerous factors are considered in determining when a TMDL will be developed for an impairment, including whether the impairment affects human health, local and regional support for TMDL development, data availability, the proximity of one impaired segment to others that have similar or related pollutants, the similarity of the strategies and actions needed to address impairments, and the availability of funding and resources.

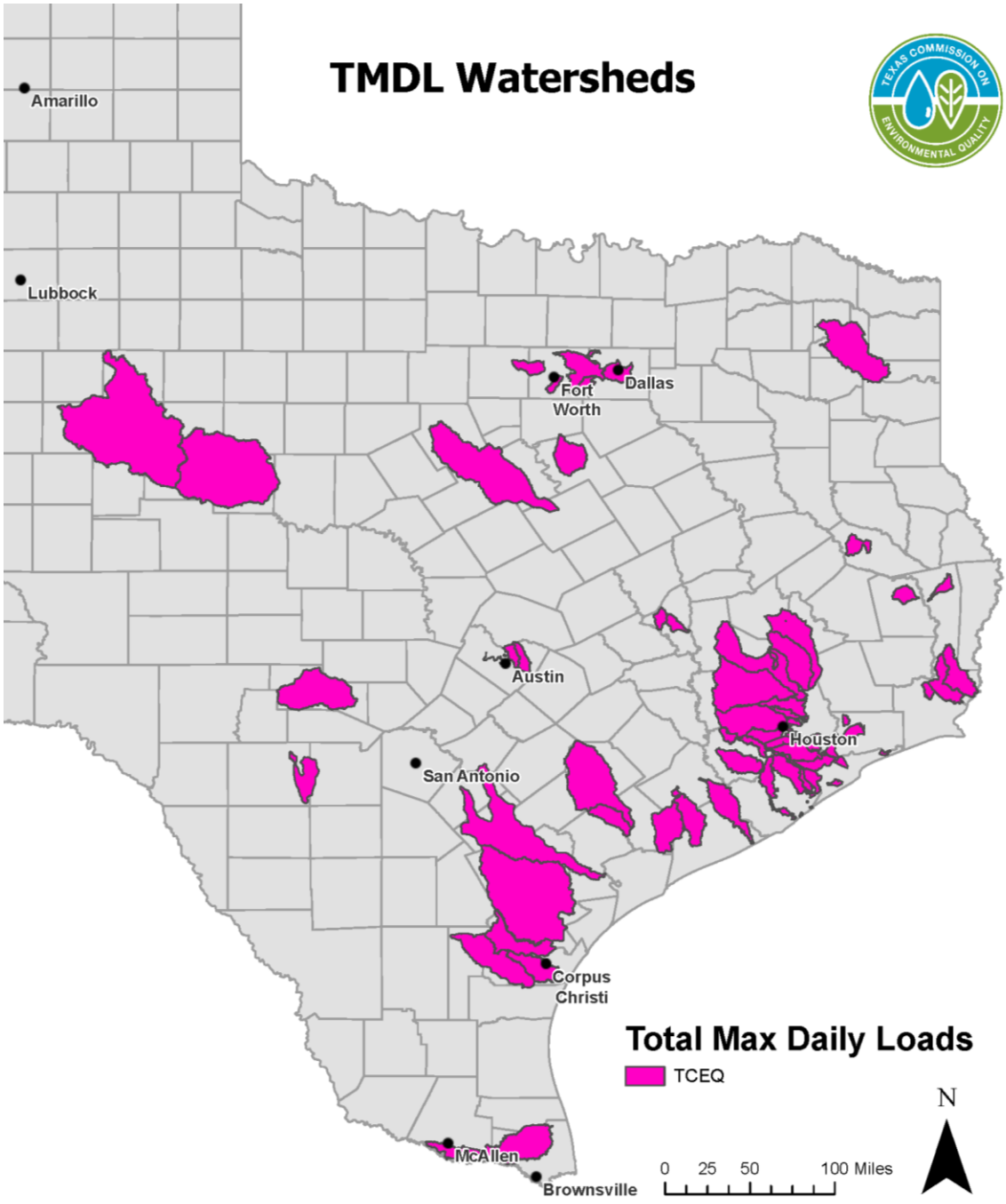

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Figure 4.5 Completed and Developing TMDL Watersheds

Public Participation and Engagement

Public participation is an integral part of the TMDL process, and many opportunities for the public to participate are provided. The public can participate in the TMDL process by attending watershed committee meetings to

provide local input on a TMDL and to develop an I-Plan for the TMDL project. The public are encouraged to work on these committees or attend their meetings.

All TMDL meetings are open to the public, regardless of whether formal committees are established. Notices are provided for meetings in local media outlets, through email, and on TCEQ's website[21]. These meetings provide an opportunity for residents to make comments and get answers to their questions.

Before the state adopts a TMDL, TCEQ publishes the document and has a formal public comment period. In addition, TCEQ conducts a public comment meeting to provide information and receive verbal comments. Responses to all comments are published.

TCEQ's TMDL Program uses four primary avenues for informing the public of its activities:

- the TCEQ Event Calendar on the TCEQ website which includes TMDL stakeholder and public hearing meetings,
- the TMDL Program website[22], which includes pages for current and past projects,
- an email news list, and
- coordination with existing statewide and regional forums.

Statewide, the TMDL Program coordinates with the forums and work groups of the CRP, the Nonpoint Source Program, and statewide watershed planning events such as the Texas Watershed Coordinators Roundtable. Regionally, the program coordinates its projects with the CRP Basin Steering Committees, and SWCDs if agricultural or silvicultural operations may be affected by the TMDL. In addition, the state, or local partners will conduct public meetings within the watershed at key points in project development.

Key Components of a TMDL

The development of TMDLs begins with the review of existing data and/or the collection of additional data related to water quality, point source discharges, precipitation, streamflow, soils, geology, topography, and land use (agriculture, mining, residential, etc.). Next, analytical methods are used to calculate pollutant loads and the response of the receiving water. The appropriate method is selected based on the pollutants of concern, the amount of data available, the type of water body, and watershed conditions. If a computer model is selected, data from the watershed may be used to calibrate the model and verify that the computed values match known conditions. The model can then be used to develop alternate scenarios by first determining the amount of

[21] www.tceq.texas.gov/waterquality/tmdl/tmdlnews.html
[22] www.tceq.texas.gov/waterquality/tmdl

specific pollutants each source contributes, then calculating the amount each pollutant needs to be reduced, and finally specifying how the reduced pollutant load would be allocated among the different sources. In some cases, TMDLs can be based on readily available information and studies using simple analytical efforts. In other cases, more complex, data-intensive computer simulations are required.

Upon completion of the data collection and analyses, a TMDL report is developed, and adopted by the state after a thorough public review and comment period. The state-adopted TMDL is submitted to EPA for review and approval. The TMDL report consists of nine components:

- problem statement,
- endpoint identification,
- source analysis,
- linkage between pollutant sources and water quality in the receiving water,
- margin of safety,
- pollutant load allocation,
- seasonal variation,
- public participation, and
- implementation and reasonable assurances.

TMDL I-Plan

The TMDL I-Plan document provides an overview of the activities that will be used to implement the TMDL and improve water quality. It is used as a basis for the implementation planning process. Management activities may be nonregulatory, regulatory, or incentive based. Nonregulatory nonpoint source management activities are eligible for CWA Section 319(h) funding.

For example, the plan may show that point source dischargers will be required to reduce discharges of the pollutant of concern through enhanced treatment technology, and that such enhancements are reasonable and achievable. If new or amended rules are necessary to implement the TMDL, the plan may cite the laws and regulations that give it the authority to enact such rules. The plan may also identify funding sources available for implementing the TMDL and indicate that the selected implementation activities are eligible for funding under the identified state, federal, or private grants or incentives.

Compliance with load allocations may also be assured by setting numeric targets for pollutant concentrations at individual sampling sites and regularly monitoring conditions at those sites. A commitment to periodic and repeated evaluations of the effectiveness of the chosen implementation methods is another way of providing reasonable assurance. Continuing evaluation allows for the adaptation of implementation activities based on the environmental

progress observed, giving further assurance that compliance with water quality standards is attained.

Monitoring for Results

In addition to WPPs and TMDLs, there are many other programs in place throughout the state that are responsible for conducting implementation activities. Upon implementing a BMP or other implementation activity, it is necessary to determine the effectiveness of the activity. Data collected after implementation must be compared to data collected prior to implementation to determine effectiveness. These data may be historical, like those collected for a special study, or collected as part of the project tasks prior to implementation. In some cases, routine monitoring can be used to evaluate effectiveness. In other cases, it will be necessary to collect data in a specific project area to evaluate the effectiveness of the implementation activities. Certain types of BMPs or implementation activities will not show immediate results; effectiveness and water quality improvements will be determined over time.

Groundwater Strategy

TGPC serves as a primary resource for coordinating groundwater quality protection activities in Texas. The committee strives to improve or identify areas where new or existing programs could be enhanced to provide additional protection for groundwater resources. TGPC actively seeks to improve existing groundwater programs and promotes coordination among agencies and GCDs.

Though TGPC's membership is limited by statute, its primary work is carried out through subcommittees comprised of staff from member agencies, as well as any interested party. The standing subcommittees are the Groundwater Issues Subcommittee and the Public Outreach and Education Subcommittee. Nonpoint source issues are addressed in the Groundwater Issues Subcommittee meetings, which TCEQ and TSSWCB attend.

Groundwater Protection Strategy

Users of privately-owned water wells used for drinking water or other domestic drinking purposes are a major segment of the population likely to be impacted by nonpoint source pollution. For this population, Texas has statewide resources and programs which include testing of domestic well water. Up to 20% of the wells from which TWDB has collected groundwater samples are private domestic wells. TWDB analyzes samples for naturally occurring inorganic constituents, nutrients, trace metals, and radionuclides; however, they typically do not test for organics that might be present due to nonpoint source pollution. In addition, the Texas Well Owner Network is an educational program offered through the Texas A&M AgriLife Extension Service in cooperation with TSSWCB and other partners.

Studies conducted by various agencies have indicated that both man-made and naturally occurring contaminants have been found in some domestic wells at

levels that exceed health-based maximum contaminant levels, based upon a lifetime exposure to the contaminant. These include fecal coliform, nitrate, radionuclides, pesticides and pesticide degradation byproducts, arsenic, and heavy metals.

TGPC is responsible for developing and updating the *Texas Groundwater Protection Strategy,* which includes the TGPC members' internal programs regarding groundwater protection, remediation, and observation. Several aspects of these agency programs address nonpoint source pollution and its impacts on drinking water sources, including private and public water wells.

Joint Groundwater Monitoring and Contamination Report

Each year, TGPC publishes the Joint Report, describing the documented cases of groundwater contamination resulting from activities regulated by Texas. Once groundwater contamination has been confirmed, either the regulated entity or the appropriate agency will address the groundwater contamination case.

Confirmed cases of contamination are generally addressed by following a prescribed sequence of actions until the program or agency providing oversight concludes that no further action is necessary or required. The sequence of actions generally consists of confirming the contamination; investigating the extent, composition, and circumstances of the contamination; developing corrective action measures based on the investigation; implementing those measures; and monitoring actions prior to considering the site closed or complete. While the Joint Report focuses on contamination from point sources, information from the report is used in nonpoint source assessments to ascertain the potential for contaminants from nonpoint sources to impact an aquifer.

Groundwater Constituents of Concern

The Management Program includes multiple methods for identifying and addressing nonpoint source groundwater issues including:

- Texas Integrated Report, Groundwater Assessment;
- aquifer vulnerability ranking (Appendix B, Table B.2);
- TGPC recommendations and reports, including:
    - *Joint Groundwater Monitoring and Contamination Report,*
    - *Texas Groundwater Protection Strategy*
    - *State Management Plan for the Prevention of Pesticide Contamination in Groundwater*
- subcommittee recommendations
- special programs and priorities identified by GCDs.

The list of groundwater constituents of concern presented in Appendix B (Table B.1) is based on the Groundwater Assessment from the 2024 Texas Integrated Report. The list includes constituents for whom groundwater

analyses exceed the maximum contaminant level or the secondary standard for drinking water for one or more wells in an aquifer during the ten-year period from fiscal years 2014 through 2023.

Additionally, Table B.2 of Appendix B includes the vulnerability ranking for major and minor aquifers in Texas, as determined using a methodology that consists of several components. The seven variables from which the name of the DRASTIC model is derived include Depth to water, Recharge, Aquifer media, Soil media, Topography, Impact to the vadose zone, and hydraulic Conductivity. The aquifer vulnerability rating is used to identify aquifers that may be susceptible to impacts from surface activities.

Texas has used the DRASTIC methodology for many years, and DRASTIC values have been incorporated into TCEQ's regulatory programs to establish the relative vulnerability of aquifers to contamination. CWA Section 319(h) grant funds are often targeted to address localized nonpoint source pollution issues and prevention, which could be identified through the TGPC and other stakeholders, in addition to statewide and regional efforts.

Impacts to groundwater from nonpoint source pollution may be greater within aquifer outcrops, where recharge or surface water infiltration to the aquifer occurs. Based on this, programs may focus water quality protection efforts in these outcrop areas. In other cases, nonpoint source pollution may impact groundwater via hydrologic features that involve interactions between groundwater and surface water. Programs may focus on areas with these features if stakeholders have identified significant concerns.

Chapter 5. Agency Program Descriptions Supporting Nonpoint Source Management

The Management Program uses partnerships among many organizations to protect and restore water quality. With the extent and variety of water quality concerns across Texas, cooperation at all levels is essential. Surface water bodies and aquifers are not limited by political boundaries, and, therefore, environmental solutions often cross federal, state, and local levels of responsibility. By establishing a coordinated framework to share information and resources, while minimizing unnecessary duplication, the state can more effectively focus its water quality protection efforts. This chapter provides a description of the agencies and their respective programs that are used to address nonpoint source pollution in Texas.

Interagency Agreements

Maximizing the use of local, state, and federal resources is essential if limited resources are to be effective. Texas has implemented a variety of mechanisms to ensure and improve coordination between federal, state, and local officials for addressing water quality. A list of some of the agreements and strategic partnerships is provided below in Table 5.1.

Table 5.1 Federal, State, and Local Agreements

Cooperative Entities	Type of Agreement	Purpose of Agreement
TCEQ and TSSWCB	MOU	Facilitates cooperation between the two primary Texas nonpoint source control agencies by setting forth jurisdictional authority, program responsibility, and procedural mechanisms for point and nonpoint source pollution programs.
TCEQ and TSSWCB	MOA	Sets forth the cooperating responsibility and authority regarding the development of TMDLs, TMDL I-Plans, and WPPs.
TSSWCB and The Texas A&M University System	MOU	Establishes commitments to work together to accomplish statewide nonpoint source pollution reduction goals with the state's agricultural and silvicultural producers. AgriLife Extension will conduct soil and water conservation and nonpoint source management demonstrations and related educational activities, and cooperate with TSSWCB and SWCDs to identify research needs relative to soil and water conservation and nonpoint source management.
TCEQ and RRC	MOU	Clarifies the division of jurisdiction between TCEQ and RRC regarding waste generated in connection with oil and gas exploration, development, and production activities.

Cooperative Entities	Type of Agreement	Purpose of Agreement
NRCS with local SWCDs	MOA	Sets forth the cooperation for SWCDs to furnish technical assistance to farmers and ranchers in the preparation of soil and water conservation plans.
TCEQ and TWDB	MOA	Sets forth the cooperation, responsibility, and authority regarding the development of TMDLs.
TCEQ and Texas Department of Agriculture (TDA)	MOA	Sets forth the cooperation, responsibility, and authority regarding the development of TMDLs.
TCEQ and Texas Agricultural Experiment Station, Texas Cooperative Extension and Texas A&M Forest Service	MOA	Sets forth the cooperation, responsibility, and authority regarding the development of TMDLs.
TSSWCB and USDA-Forest Service	MOU	Sets forth the responsibilities and activities to be performed by each agency in carrying out the Management Program as related to activities on National Forest System Lands.
TPWD and TxDOT	MOU	Provides a formal mechanism by which the TPWD may review TxDOT transportation projects, including those that have the potential to affect natural resources and promote the mutually beneficial sharing of information which will assist TxDOT in making environmentally sound decisions.
TCEQ and U.S. Coast Guard	MOA	Outlines the responsibilities for the notification of and recovery of abandoned sealed containers on Texas beaches for pollution prevention and response.
GLO and U.S. Coast Guard	MOA	Provides for agreement to cooperate and coordinate efforts in implementing and exercising their respective statutory and regulatory duties related to pollution prevention and response in the navigable waters of the U.S. which are also within or may impact the coastal waters of the state of Texas.

State Agencies

The following sections describe the various state agencies and the programs they administer which contribute to managing nonpoint source pollution in Texas.

Texas State Soil and Water Conservation Board

TSSWCB, established in 1939, works in partnership with the state's 216 local SWCDs to encourage the wise and productive use of the state's natural resources in a manner that promotes a clean, healthy environment and strong economic growth. TSSWCB is the lead agency in Texas responsible for:

- administering Texas' soil and water conservation law;

- delivering coordinated natural resource conservation programs to agricultural producers through local SWCDs;
- administering grant programs to SWCDs to ensure the state's network of 2,000 flood control dams are protecting lives, private property, and public infrastructure from flood damage;
- planning, implementing, and managing programs for preventing and abating agricultural and silvicultural (forestry related) nonpoint source pollution, including assisting the Texas poultry industry with WQMPs;
- working to improve border security along the Rio Grande through control of Carrizo cane; and
- facilitating the Texas Invasive Species Coordinating Committee.

TSSWCB is governed by a seven-member State Board composed of two Governor-appointed members and five members elected from across Texas by the directors of the state's 216 SWCDs. All members of the state board must be landowners actively engaged in farming or ranching. Specific agency programs, functions, and initiatives which are implemented to fulfill statutory responsibilities and that collectively represent the agency's efforts in supporting the goals and objectives of this Management Program are described below.

Water Quality Management Plan Program

With the passage of Senate Bill 503 in 1993, the 73rd Texas Legislature directed TSSWCB to establish a WQMP Program to abate agricultural nonpoint source water pollution. The WQMP Program is administered by TSSWCB through local SWCDs and provides a voluntary, incentive-based, natural resource conservation planning mechanism to agricultural producers and other rural landowners who choose to implement BMPs that prevent and abate nonpoint source pollution. The WQMP Program includes technical assistance to participants for the development of WQMPs, as well as financial incentives to participants to assist with the installation of specific BMPs prescribed in WQMPs. The WQMP Program is the state's primary BMP implementation program for agricultural and silvicultural lands.

Through the WQMP Program, agricultural and silvicultural producers develop and implement site-specific WQMPs in cooperation with local SWCDs. WQMPs include appropriate and essential land treatment practices, production practices, management measures, or technologies applicable to each planned land use (e.g., cropland, rangeland, pastureland). Specific BMPs included in WQMPs are based on the best available management and technology as described in the NRCS Field Office Technical Guide. Local SWCDs provide technical assistance to program participants to develop WQMPs through agreements with NRCS and TSSWCB. After being approved by the local SWCD, the developed WQMP requires TSSWCB certification. Certified WQMPs ensure farming or ranching operations are carried out in a manner consistent with state water quality standards. While participation in the WQMP Program by agricultural producers is generally voluntary, the 77th Texas Legislature, in

2001, amended the TWC to require all persons who own or operate a poultry facility to implement and maintain a WQMP certified by TSSWCB.

The Texas Legislature provides funding (state general revenue) through TSSWCB for the implementation of WQMPs. In accordance with statute, TSSWCB identifies priority areas across the state where water quality is being impacted, or has the potential to be impacted, by agricultural and silvicultural nonpoint source water pollution. TSSWCB then allocates state funding to specific SWCDs in those priority areas to serve as financial incentives for implementing WQMPs. In establishing and periodically changing these priority areas, TSSWCB considers water bodies identified as impaired on the CWA Section 303(d) List, threatened areas in which action is necessary to prevent nonpoint source pollution, and other concerns such as impacts to groundwater. In addition to state funds directed to these priority areas, TSSWCB uses CWA Section 319(h) grant funds to assist landowners and SWCDs in developing and implementing WQMPs in watersheds with TMDLs or WPPs.

TSSWCB Nonpoint Source Grant Program

The Nonpoint Source Grant Program is administered by TSSWCB for the purpose of providing funding as grants to cooperating entities for activities that address the goals and objectives in this Management Program. The Texas Legislature and the U.S. Congress (through EPA) provide funding to TSSWCB to implement the agricultural and silvicultural components of this Management Program through the TSSWCB Nonpoint Source Grant Program.

TSSWCB administers the provisions of CWA Section 319 to manage **silviculture and agricultural** nonpoint source pollution.

Agricultural and silvicultural nonpoint source pollution prevention and abatement activities that can be funded through the Nonpoint Source Grant Program include implementation of WPPs and the nonpoint source portion of TMDL I-Plans, SWQM, demonstration of innovative BMPs, technical assistance and financial incentives for the development and implementation of TSSWCB-certified WQMPs, public outreach and education, development of WPPs, and monitoring activities to determine the effectiveness of specific pollution prevention methods.

Since 1990, Congress has annually appropriated grant funds to states through EPA under CWA Section 319(h) for the implementation of each state's Nonpoint Source Management Program. The CWA Section 319(h) funding allocated to the state of Texas is split evenly between TCEQ and TSSWCB. TSSWCB directs its share of CWA Section 319(h) funds through the agency's Nonpoint Source Grant Program. Additional detail on CWA Section 319(h) funding is provided in Chapter 2.

The 80th Texas Legislature, in 2007, appropriated state general revenue funds to TSSWCB for the purpose of planning, implementing, and managing programs and practices for preventing and abating agricultural and silvicultural nonpoint source water pollution in impaired watersheds; subsequent legislatures have continued this appropriation. These state funds are used for activities consistent with the goals and objectives of this Management Program, including, but not limited to, watershed planning and assessment, BMP implementation, and research on the efficacy of BMPs.

Flood Control Program

Nearly 2,000 floodwater retarding structures, or dams, have been built over the last 60 years within Texas. The primary purpose of the structures is to protect lives and property by reducing the velocity of floodwaters, and thereby releasing flows at a safer rate. These earthen dams on private property were designed and constructed by the NRCS. Local governmental sponsors are responsible for their operation and maintenance. SWCDs are one of the local governmental sponsors of these flood control dams. Other local sponsors include counties, cities, and water control and improvement districts. For these aging dams to continue to serve as critical protection for lives, private property, and the state's infrastructure, the Texas Legislature has appropriated state funds to TSSWCB for grants to SWCDs and other local sponsors for operation and maintenance, structural repair, and rehabilitation.

A secondary benefit of properly maintained and functioning flood control dams is the reduction of nonpoint source pollutants (e.g., sediment) in floodwater downstream, helping to accomplish the state's CWA goals. By trapping sediment and other pollutants, these dams contribute to the protection of water quality in downstream water bodies, such as major water supply reservoirs. Studies have examined the rate at which sediment is trapped by these dams and the various pollutants (e.g., nutrients, heavy metals, pesticides) buried in sediment cores from the impoundments behind them. While TSSWCB flood control grant funds are targeted to dams based on priorities associated with protecting lives and property, this agency program supports the state's water quality goals and contributes to achieving the goals and objectives of this Management Program.

Rio Grande Vegetative Management Program

Large dense stands of non-native carrizo cane (*Arundo donax)* now occupy the banks and floodplains of the Rio Grande, thwarting law enforcement efforts along the international border, impeding and concealing the detection of criminal activity, restricting law enforcement officers' access to riverbanks, and impairing the ecological function and biodiversity of the Rio Grande. These stands of invasive riparian weeds present considerable obstacles for the protection of the international border by law enforcement and agricultural inspectors by both significantly reducing visibility within enforcement areas and by providing favorable habitat for agriculturally damaging cattle ticks. Carrizo cane is a noxious brush species that consumes precious water resources to a

degree that is detrimental to water conservation. As a result of this weed's high evapotranspiration capacity, infestations threaten water supplies for agricultural and municipal drinking water uses in south Texas.

To help meet the Governor's border security priorities, the 84th Texas Legislature, in 2015, directed TSSWCB, through Senate Bill 1734, to develop and implement a program to eradicate carrizo cane and other noxious vegetation along the Rio Grande. The goal of the program is to improve border security and restore function of the Rio Grande through invasive species control.

TSSWCB has developed a program that establishes long-term management of invasive carrizo cane and other noxious vegetation at a landscape level along the entire Rio Grande, an international border with great ecological and cultural significance. Comprehensively addressing the impacts of carrizo cane on border security are paramount to the program, while also accruing benefits to the ecosystem health of the Rio Grande and water user groups in south Texas.

The Rio Grande Vegetation Management Program:

- reduces the canopy, density, and biomass of carrizo cane and other noxious vegetation;
- improves border access for law enforcement officers;
- improves visibility to allow better detection of illegal activities;
- restores ecological function, degraded riparian habitats, and the biodiversity of the Rio Grande; and
- enhances water savings by conserving water lost to evapotranspiration by carrizo cane and other noxious vegetation.

Due to the diversity of biological, legal, and cultural issues associated with the control of carrizo cane along the 1,255-mile Rio Grande international border, TSSWCB's ecosystem-based approach integrates the use of biological, chemical, mechanical, and cultural controls, as appropriate, to manage carrizo cane and other noxious vegetation. Such an approach promotes the reestablishment of beneficial native plants but necessitates a long-term maintenance program to ensure control is successful. Participation in the program is voluntary for landowners.

On The Ground Conservation Program

The On The Ground Conservation Program was created by Senate Bill 1118 during the 87th Texas Legislative Session and was signed into law with an effective date of September 1, 2021. The new law enhances TSSWCB's jurisdiction to include a wide range of natural resource priorities, authorizes the agency to provide voluntary technical and financial assistance toward the implementation of conservation practices to address those priorities, and directs the agency to form partnerships and seek out funding opportunities from other federal, state, or local governmental agencies and private entities.

The primary focus of this new program is implementation, especially in partnership with other efforts that offer educational, research, or other activities. TSSWCB is actively pursuing all potential sources of funding to address its eligible natural resource priorities.

Outreach and Education

TSSWCB implements a robust outreach and education program targeted to the general public, youth, and agricultural producers. TSSWCB prepares and disseminates public information relative to the agency and SWCD functions, programs, events, and accomplishments. TSSWCB staff annually participate in a variety of seminars, conferences, workshops, and agricultural trade shows and provide guidance to SWCDs on their individual education programs. TSSWCB also conducts training for newly elected SWCD directors on SWCD operations and programs to help them better serve landowners and agricultural producers.

TSSWCB collaborates with the Texas Future Farmers of America organization and others to sponsor the Wildlife Alliance for Youth, which provides youth the opportunity to experience soil, water, and related resource conservation management techniques. TSSWCB staff use physical watershed models in classrooms to help students understand how nonpoint source pollution can affect water supplies. TSSWCB carries out an annual Texas Conservation Awards Program in partnership with SWCDs, which includes a soil and water stewardship public speaking contest and a poster and essay contest for students.

TSSWCB regularly disseminates Conservation News, a compilation of readily available current news and information regarding natural resource issues, and agency press releases to an email subscriber list. As required by statute, TSSWCB hosts the Annual Meeting of Texas SWCD Directors, bringing SWCDs from across the state together to discuss common challenges and solutions to natural resource conservation issues. TSSWCB's comprehensive outreach and education program supports the state's water quality goals and contributes to achieving the goals and objectives of this Management Program.

Texas Commission on Environmental Quality

TCEQ strives to protect the state's human and natural resources consistently with sustainable economic development. The agency works to ensure clean and safe water resources for drinking, recreation, and other uses. TCEQ develops water quality standards designed to protect attainable uses and maintain the quality of waters in the state. TCEQ has several programs that address various aspects of nonpoint source pollution management through planning, setting standards, data collection, assessment, prioritization, and implementation.

TCEQ Nonpoint Source Grant Program

TCEQ administers the provisions of CWA Section 319(h) to control **urban and non-agricultural** nonpoint source pollution.

The goal of the TCEQ's Nonpoint Source Program is to protect water bodies from nonpoint source pollution and restore water quality. This goal is achieved through planning, implementation, and educational activities. The Nonpoint Source Program's strategy is to work with stakeholders to develop and implement programs and practices which prevent or reduce nonpoint source pollution. The objectives of the Nonpoint Source Program are to establish public/private partnerships, develop watershed plans, characterize water quality and watershed conditions, and assist others in implementing cost effective management measures to control nonpoint source pollution. Success of the TCEQ Nonpoint Source Program is measured through water quality improvements, nonpoint source pollutant load reductions, and educational programs.

The Nonpoint Source Grant Program is administered by TCEQ to provide funding to cooperating entities for activities that address the goals and objectives in this Management Program. The CWA Section 319(h) funding allocated to the State of Texas is split evenly between TCEQ and TSSWCB; TCEQ administers the provisions of CWA Section 319(h) to control urban and nonagricultural nonpoint source pollution. CWA Section 319(h) authorizes grant funding for states to develop projects and implement nonpoint source management strategies. The CWA Section 319(h) grant provides 60% federal funds and requires a 40% nonfederal match. TCEQ solicits applications through a competitive grant solicitation process. The number of projects funded depends on the amount of funds requested by each proposal and the amount of federal funds available. Of the CWA Section 319(h) funds awarded, 50% must be used to implement WPPs that have been accepted by EPA.

Nonpoint Source Pollution Management Annual Report

States, territories, and tribes that receive grants under CWA Section 319(h) are required to submit annual reports to EPA reporting on their progress in implementing the goals and milestones outlined in their management programs. These annual reports are a key component of demonstrating satisfactory progress and continued effort in managing and reducing nonpoint source pollution. TCEQ and TSSWCB jointly produce The *Nonpoint Source Pollution Management in Texas Annual Report*, which identifies the state's progress in meeting the schedule of milestones contained in this Management Program.

Watershed Protection Plans

The Nonpoint Source Program uses CWA Section 319(h) funds to develop and implement WPPs. WPPs are developed at the local level to address water quality issues. A WPP is a coordinated framework to address water quality protection

and restoration strategies at the watershed level. Rather than focusing on isolated fixes, a watershed approach recognizes the complex interactions between land use, water quality, ecosystems, and human communities within a given watershed.

CWA Section 604(b) Grants

TCEQ's Nonpoint Source Program also administers the provisions of CWA Section 604(b). These funds are derived from state revolving fund appropriations under Title VI of the CWA. EPA is required to set aside a portion of each state's allotment for water quality management planning. Using a legislatively mandated formula, TCEQ passes funds to councils of governments and planning agencies for water quality planning and monitoring, developing strategic plans, and educating the public on water quality issues. Certain councils of governments are actively involved with the planning and implementation of WPPs.

TCEQ Water Quality Standards Group

TCEQ is responsible for establishing and revising standards to protect surface water quality in accordance with CWA Section 303(c). TWC Section 26.023 identifies TCEQ as the sole and exclusive authority to make rules setting water quality standards for all waters in the state.

The TCEQ Water Quality Standards Group is responsible for establishing and revising standards to protect surface water quality. Appropriate uses are established in the TSWQS for surface waters, and the associated numerical and narrative criteria provide a basis for permitting, assessing water quality, and establishing restoration targets for managing point and nonpoint source loadings. The TSWQS are codified in 30 TAC Chapter 307.

TCEQ Surface Water Quality Monitoring Program

TCEQ's SWQM Program is administered by staff in TCEQ's central office and 16 regional offices. The SWQM Program Coordinates the collection of physical, chemical, and biological samples from more than 1,800 surface water sites statewide. The SWQM Program, in coordination with the TCEQ Data Management and Analysis Program, also compile and assess data collected by federal, state, regional, and local agencies to develop the Texas Integrated Report for CWA Sections 305(b) and 303(d).

TCEQ Clean Rivers Program

The Texas CRP, established in 1991, is a state fee-funded, nonregulatory program that was created to provide a framework and forum for managing water quality issues. TCEQ administers the CRP, which is a collaboration of 15 regional water agencies and TCEQ. It is a unique water quality monitoring, assessment, and public outreach program that is funded by state fees assessed on permittees based on the number and size of their wastewater treatment plants and surface water right permittees that reside within each river basin.

The CRP provides the opportunity to approach water quality issues at the local level through coordinated efforts among diverse agencies, various programs, and the public. Most of the fee funds allocated to the program are used to conduct monitoring, quality assurance, and data management functions of the program. This program generates approximately 75% of the data used by TCEQ for water quality decision-making.

TCEQ Data Management and Analysis Program

Water quality assessments, including assessments for nonpoint source pollution, depend on accurate and available water quality data. TCEQ's Data Management and Analysis Team provides assurances of the quality and availability of water quality data in the state. It is responsible for the management of surface water quality data and metadata in cooperation with other TCEQ water programs and the TCEQ Information Resources Division. This responsibility includes documentation and maintenance of records relating to the processes described in the Data Management Reference Guide. Relationships between the Data Management and Analysis Team and other water program areas are documented in project-specific QAPPs. Data not meeting quality requirements set forth in these QAPPs may be stored in the Surface Water Quality Monitoring Information System (SWQMIS) database with appropriate qualifiers.

The SWQMIS database is maintained by TCEQ and serves as a repository for TCEQ surface water quality data. SWQMIS also provides validation and reporting tools, a mapping interface, modules for tracking information about analytical laboratories, and quality assurance documents. SWQMIS contains more than 42 years of physicochemical and biological data from up to 9,900 monitoring stations throughout Texas. These data are collected by TCEQ, contributing river authorities, cities, and other local, state, and federal agencies.

The statewide water quality database has received data since 1967, allowing for the assessment of short- and long-term trends. TCEQ may use these data to characterize existing conditions, evaluate spatial and temporal trends, develop water quality standards, determine water quality standards compliance, identify emerging problems, and evaluate the effectiveness of water quality control programs.

TCEQ Total Maximum Daily Load Program

The TCEQ TMDL Program is responsible for developing TMDLs in accordance with CWA Section 303(d) and its implementing regulations (40 CFR Section 130.7). These regulations require states to identify waters that do not or will not meet applicable water quality standards after the application of technology-based or other required controls, and to establish TMDLs for pollutants that are causing nonattainment of water quality standards. For listed waters, states must develop TMDLs allowing for seasonal variations and an appropriate margin of safety. A TMDL is a quantitative assessment of water quality pollutants and

contributing sources that need to be addressed to restore and protect individual water bodies. The integration of TMDLs and WPPs increases the efficiency of efforts and can accelerate restoring water quality in targeted water bodies.

TCEQ Estuary Programs

The National Estuary Program was established under CWA Section 320 to identify nationally significant estuaries threatened by pollution, development, or overuse; promote comprehensive planning and conservation and management plans; and enhance the coordination of estuarine research. There are two approved estuary programs in Texas. The first was established for the Galveston Bay system, and the second was established for the bays and estuaries along the Coastal Bend of South Texas. The Galveston Bay Estuary Program (GBEP) is a TCEQ program, and the Coastal Bend Bays and Estuaries Program (CBBEP) is a nonprofit organization. Each of these estuary programs developed a Comprehensive Conservation and Management Plan (CCMP) which recommends priority actions and implementation schedules to address impacts observed in the estuary. CCMP development is a consensus-based process involving a partnership across federal, state, and local levels. With the completion of the CCMP, each national estuary program formed a nonprofit, academic, or local government-based nonregulatory management structure to implement its plan.

Galveston Bay Estuary Program

GBEP was established in 1989 as a National Estuary Program charged with preserving Galveston Bay for future generations through implementation of its CCMP, *The Galveston Bay Plan.* The plan guides future decisions and addresses a wide range of environmental protection issues. TCEQ and EPA approved the second edition of *The Galveston Bay Plan* in 2018. Nonpoint source pollution is an identified water quality problem in Galveston Bay. Implementation of *The Galveston Bay Plan, 2nd Edition* includes numerous actions to address this problem and is being updated in 2026 to address gaps and revise plan priorities, as needed.

GBEP and CBBEP are **two of 28 areas in the National Estuary Program** working to improve the health of bay systems.

GBEP works with local partners and numerous state and federal agencies to address nonpoint source pollution. Actions include convening a forum for information sharing among Galveston Bay stakeholders involved in nonpoint source pollution prevention/control activities, funding projects that implement nonpoint source pollution BMPs, providing technical assistance to local governments, and providing education and outreach to the public.

Coastal Bend Bays and Estuaries Program
CBBEP is a local nonprofit organization dedicated to protecting and restoring the bays and estuaries of the Texas Coastal Bend. CBBEP implements the Coastal Bend Bays Plan which addresses a wide array of problems ranging from public health and education, freshwater flow, and loss of natural habitats. Through implementation of the plan, CBBEP has completed the following actions that serve to protect bays and estuaries from nonpoint source pollution:

- created a handbook of urban nonpoint source pollution BMPs for voluntary use by local communities and provided training regarding appropriate BMP use to the community leadership;
- encouraged communities to participate in watershed planning activities;
- provided compliance assistance to small businesses and industries in the region which are subject to the Texas Pollutant Discharge Elimination System (TPDES) Permit Program or have nonpoint source controls needs;
- provided assistance to local governments to implement OSSF programs; and
- provided upgrades and/or replacements of failing OSSFs in targeted watersheds.

TCEQ Wastewater Permitting Program
A fundamental consideration for achieving CWA goals is the ability to control sources of pollutants that may be impairing or threatening the quality of navigable waters. In many jurisdictions, the discharge of pollutants from point sources is a significant factor to address when managing the condition of water bodies. Point source permitting programs are integral to the state's Nonpoint Source Program because in many cases, the goals of the Nonpoint Source Program cannot be fully realized without considering impacts from permitted sources.

The National Pollutant Discharge Elimination System (NPDES) is a federal regulatory program to control discharges of pollutants to surface waters of the U.S. The State of Texas assumed the authority to administer the NPDES Program on September 14, 1998. TCEQ's TPDES Permit Program has federal regulatory authority over discharges of pollutants to Texas surface waters. Through the TPDES Permit Program, Texas prohibits the discharge of pollutants from a point source into a water in the state unless the operation has been granted authorization through a permit by rule or a TPDES individual or general permit that explicitly allows discharges by establishing:

- limits on the type and amount of pollutants that can be discharged into a receiving water,
- monitoring and reporting requirements for discharges, and
- other conditions necessary to carry out the intent of the CWA and applicable state laws.

House Bill 2771 (86th Legislature, 2019) amended TWC, Section 26.131, to transfer to TCEQ the RRC's responsibilities relating to regulation of discharges into surface water in the state of produced water, hydrostatic test water, and gas plant effluent resulting from the exploration, production and development of oil, natural gas, or geothermal resources. TCEQ received EPA's approval to authorize these discharges in January 2021.

A TPDES permit may be written to address discharges either from an individual point source or from a number of similar dischargers.

TPDES Individual Permit
TCEQ may issue an individual permit to a point source that includes site-specific conditions, such as effluent limitations, management practices, and monitoring and reporting requirements.

TPDES General Permit
TCEQ may issue a general permit to authorize the discharge of waste into or adjacent to water in the state by category if TCEQ finds the discharges in the category or the dischargers:

- engage in the same or substantially similar types of operations,
- discharge the same types of waste,
- are subject to the same requirements regarding effluent limitations or operating conditions,
- are subject to the same or similar monitoring requirements, and
- are more appropriately regulated under a general permit than under individual permits.

A facility that does not or cannot meet the requirements of the general permit must obtain authorization under an individual permit.

No-Discharge Permits
Texas Land Application Permits (TLAPs) are no-discharge permits that authorize individual facilities to dispose of wastewater without discharging into water in the state. TLAPs may authorize OSSFs over 5,000 gallons per day or may authorize industrial or domestic wastewater to be evaporated or land applied via a surface or subsurface irrigation system. Discharges to surface waters from these no-discharge systems are prohibited. Land application rates are limited to the agronomic and hydrologic (evapotranspiration rates) needs of the cover crop and the soil infiltration rates. The permittee may be required to monitor soils in the land application areas for nutrients, metals, and salts to determine and monitor the appropriate application rates. The permittee is prohibited from land applying effluent in sensitive areas that may result in the contamination of surface water or groundwater, or additional restrictions are placed in permits to protect these sensitive areas.

Stormwater Management

TCEQ issues TPDES permits to regulate stormwater discharges from industrial facilities, construction activities, and municipal separate storm sewer systems (MS4s). Key aspects include permitting requirements, BMPs, and monitoring and reporting obligations. The 319(h) grant program can fund BMPs that are not being implemented in the stormwater permit and can fund activities that go above and beyond the permit requirements.

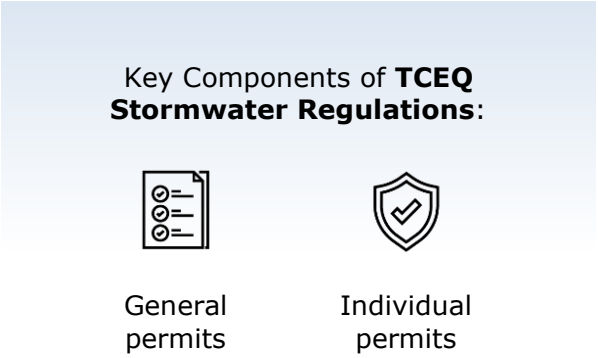
TCEQ Water Quality Assessment Team

The Water Quality Assessment Team performs several functions related to water quality. The primary functions of the team are:

- dissolved oxygen modeling and determining critical low flow conditions and mixing zone sizes for TPDES permits and
- groundwater protection for TLAP facilities through geology and soil reviews.

Technical staff support the development of wastewater discharge permit limits for dissolved oxygen-demanding constituents by ensuring that dissolved oxygen criteria are maintained in the receiving stream. The team also coordinates quarterly updates to the state's WQMP, which contains updates of permitted effluent information for amended and new permits. The state's WQMP provides an avenue for updates of approved TMDLs.

TCEQ Beneficial Use Sludge Permitting Program



TCEQ's Beneficial Use Sludge Permitting Program regulates the land application, processing, or disposal of sewage sludge and other residuals from wastewater treatment facilities. This program aims to ensure these materials are managed safely and beneficially, protecting public health and the environment. Domestic sewage sludge must be properly processed, transported, and used or disposed of in order to prevent adverse environmental and public health impacts. Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Beneficial use is defined as the land application of biosolids, domestic septage or water treatment residuals at or below the agronomic needs for a crop.

Because of the nutrient and soil-conditioning characteristics of most sewage sludge, local governments are encouraged to consider beneficial land application or composting following treatment in accordance with TCEQ established criteria. If domestic sewage sludge meets certain pollutant limits,

pathogen reduction and odor controls, it can be land applied and used as a soil amendment for crop growth. In addition, domestic septage, which is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage, can also be used as a soil amendment. Land application of certain biosolids for a beneficial use must be authorized by TCEQ.

TCEQ CAFO Permitting Program

Both Animal Feeding Operations (AFOs) and CAFOs refer to agricultural facilities that raise animals in confined situations. However, there is a key distinction: CAFOs are essentially large, concentrated AFOs that are subject to stricter regulations due to their potential for water quality impact. AFOs such as feedlots, dairies, and poultry operations, can be a source of pollutant discharges following rainfall events. An AFO is required to apply for a wastewater permit if it confines more than a given number of animals. CAFOs are prohibited from directly discharging into surface water under wastewater permits, except under chronic or catastrophic rainfall events or other catastrophic conditions.

AFOs that are not classified as CAFOs and dry litter poultry facilities are not required to obtain written authorization. These facilities are regulated by rule in 30 TAC 321.47, which describes operational requirements. To meet these requirements, AFOs may choose to obtain a WQMP from TSSWCB. The WQMP must meet the same technical requirements as the TCEQ rule. All dry litter poultry operations must obtain a TSSWCB-certified WQMP. AFOs and CAFOs may receive technical assistance from TSSWCB and the NRCS.

The TCEQ CAFO Permitting Program reviews technical designs of CAFOs for new facilities and facilities being modified or enlarged. The designs are reviewed to ensure that the retention control structures are adequately sized and that sufficient land is available for land application. Waste and wastewater application rates are reviewed to ensure that land application does not exceed agronomic rates. Applications are also reviewed to ensure that BMPs will be implemented to prevent the pollution of waters in the state.

Under 30 TAC 321.46, a Pollution Prevention Plan must be prepared for every permitted CAFO facility in the state. The plan must be prepared in accordance with good engineering practices and include measures necessary to limit the discharge of pollutants to waters in the state. The Pollution Prevention Plan must include:

- practices to ensure compliance with the CAFO rules;
- a site plan indicating all animal confinement areas, waste treatment and retention facilities, and waste and wastewater application areas;
- a nutrient management plan;
- design calculations for retention facilities;

- the identification of potential pollutant sources used, stored, or disposed of at the facility;
- BMPs used to control potential pollutant sources;
- the identification of recharge features with BMPs used to protect them; and
- required monitoring and inspection records, including procedures for monitoring discharges and sampling land application areas.

TCEQ Dairy Outreach Program

Some areas of the state have been identified as having a higher potential for water quality problems from AFOs. The areas involved in TCEQ's Dairy Outreach Program Area include Erath, Bosque, Hamilton, Comanche, Johnson, Hopkins, Wood, and Raines counties. The number of animals requiring written authorization is lower for AFOs located in the Dairy Outreach Program Area. For example, the threshold for dairies is reduced from 700 to 200 head.

Owners and operators of dairy CAFOs located in the Dairy Outreach Program Area must complete an initial eight-hour course of continuing education in animal waste management and a subsequent eight hours every two years. Similarly, owners and operators of a CAFO are required to train all employees responsible for work activities relating to compliance regarding the proper operation and maintenance of the facility. Employees at all levels of responsibility must be informed of the general components and goals of the Pollution Prevention Plan. Training topics include land application of waste, proper operation and maintenance, good housekeeping and material management practices, recordkeeping requirements, and spill response and cleanup.

TCEQ Standards Implementation Team

The Standards Implementation Team is responsible for several functions related to implementation of the TSWQS, 30 TAC Chapter 307, through wastewater permits. Team functions include:

- evaluating TPDES permit applications to determine the statewide and site-specific designated uses and criteria for the protection of human health and aquatic life in the receiving streams;
- evaluating CAFO permit applications to identify waterways down gradient of land application fields and identify any impairments to those waterways;
- conducting receiving water assessments;
- administering the whole effluent toxicity program to ensure the protection of surface water from instream toxicity due to wastewater discharges;
- conducting 401 State Water Quality Certifications of CWA Section 404 Dredge and Fill permits and other federally permitted or licensed projects; and

- performing site reviews and criteria development for the following agency programs: Leaking Petroleum Storage Tanks, Voluntary Cleanup Program, Corrective Action Program, and the Superfund Program.

Groundwater Protection

The Water Quality Assessment Team is responsible for coordinating the Water Quality Division's groundwater protection responsibilities. The Water Quality Assessment Team groundwater staff duties include:

- conducting groundwater impact evaluations of TLAP individual and CAFO general permits to ensure that the permits are protective of groundwater quality and comply with applicable rules;
- providing technical support to the Wastewater Permitting Section for all permit-related activities for soil science, soil chemistry, agronomy, geology, groundwater quality, groundwater recharge potential, vadose zone geology, and groundwater migration;
- reviewing permit-required groundwater and agronomic data to assess effectiveness of site management.
- reviewing nutrient management plans and nutrient use plans required by 30 TAC Chapter 321, Subchapter B and 30 TAC Chapter 312;
- assisting the regulated CAFO community and the Field Operations Division in resolving issues related to misidentified, abandoned, or damaged water wells; and
- reporting groundwater contamination issues to the TGPC via the annual Joint Report and participating as a member of TCEQ's Impact Evaluation Team, which implements the requirements of TWC Section 26.408.

TCEQ Water Supply Program

Public Drinking Water

Many Texans get their drinking water from large-scale municipal water systems that rely on surface water resources, such as rivers, lakes, and reservoirs. Others depend on underground sources, such as wells and aquifers. Contamination can occur in surface water or groundwater supplies from wastewater discharges, urban and agricultural runoff, leaking underground storage tanks, improperly maintained OSSFs, waste sites, abandoned wells, and the deposition of airborne pollutants. The state pays special attention to protecting surface water and groundwater supplies that serve as a source of drinking water. Protecting drinking water at the source makes good public health, economic, and environmental sense. The aquifers, lakes, and rivers that are designated by law for use as sources of drinking water are called source waters. TCEQ protects source waters by assessing their susceptibility to pollution and assisting local communities to develop source water protection programs.

The following is a discussion of the state programs that focus on the protection of drinking water sources.

TCEQ Source Water Assessment and Protection Program

The TCEQ Source Water Assessment and Protection (SWAP) Program was created in 1996 by the Safe Drinking Water Act. The SWAP Program combines source water assessment and source water protection.

Source Water Assessments

A source water assessment determines a public water system's source susceptibility to 227 potential drinking water contaminants. Specific elements scrutinized include location, intrinsic characteristics, contaminant occurrence, point and nonpoint source pollution, and construction. These elements are compared with several hundred thousand database records to produce a technically defensible assessment product. The goal of the assessment component leads to local source water protection. A source water assessment report has been provided to 6,000 public water systems and is intended to lead to the implementation of source water protection projects and BMPs. The source water assessment reports are used by TCEQ's SWAP Program to drive the activities and recommended BMPs aimed at minimizing or eliminating the effects of nonpoint source contaminants.

Under the program, all surface waters and groundwaters that contribute to public drinking water supplies are investigated for potential contamination. A report assessing the vulnerability of each source water is provided to the operators of systems that supply public drinking water. The assessments consider the location of pollutant sources, intrinsic characteristics, contaminant occurrence, well construction, geology, known point sources, and land uses that occur within the capture zone of groundwater wells and within the watersheds of surface water intakes. The assessments provide the scientific basis for the implementation of source water protection projects. The protection and assessment of source waters is required and authorized under the federal Safe Drinking Water Act Section 1453.

Source Water Protection Program

Source Water Protection is a voluntary pollution prevention program implemented at the local level to prevent the contamination of waters that are a source for public drinking water. All public water supply systems are eligible to participate in the program. TCEQ provides technical assistance and guidance to local public water systems that implement recommended BMPs. TCEQ coordinates BMP recommendations or implementation with other agencies and organizations with expertise and/or jurisdiction. These BMPs include signs to increase public awareness, educational programs, site-specific protection plans, and local ordinances. TCEQ recommends that communities participating in the program voluntarily implement BMPs based on the results of potential contaminant source inventories. Most source water protection participants have implemented programs by working cooperatively with community members and through public education programs. Implementation costs are eligible for funding through TWDB's Drinking Water State Revolving Fund Loan Program.

TCEQ Groundwater Program

TCEQ's Groundwater Section coordinates and implements groundwater protection, assessment, and management activities. These activities include administering the interagency TGPC; implementing the *Texas Groundwater Protection Strategy;* preparing the annual Joint Report*;* providing limited oversight of GCDs; implementing the state's Priority Groundwater Management Area Program; processing and reviewing landowner petitions for creation of GCDs; providing reports and legislative support for activities related to groundwater protection and GCDs; and developing and implementing the state's Generic State Pesticide Management Plan and its pesticide-specific management plans.

TCEQ Groundwater Section:

- Administers the state's Priority Groundwater Management Area Program. The program also provides limited oversight of GCDs relating to the adoption and implementation of management plans, reviews stakeholder petitions for inquiry, processes and reviews landowner petitions for GCD creation, and provides reports and legislative support for the TGPC, groundwater management, and GCD activities.
- Maintains an online map-based application that helps assess groundwater conditions. The Groundwater Contamination Viewer, which was developed in 2017, allows users to query and obtain spatial relationship information about groundwater contamination cases from recent Joint Reports.
- Maintains the Water Well Report Viewer, which allows users to geographically locate and view scanned copies of over one million water well reports submitted by drillers from approximately 1960 until 2003. The Groundwater Contamination Viewer and the Water Well Report Viewer can be found on TCEQ's Geographic Web Apps website[23].
- Administers TCEQ's Impact Evaluation Team, which was implemented to address the requirements of TWC Section 26.408. This statute requires the agency to notify owners of private drinking water wells of potential groundwater contamination that may impact their wells. The Impact Evaluation Team meets every two weeks as needed to review cases of potential groundwater contamination documented by various program areas within TCEQ and other state agencies, such as RRC.
- Provides technical support for other TCEQ groundwater-related programs, such as the Edwards Aquifer Protection Program, and provides oversight and technical support when needed for a variety of special initiatives and studies.
- Compiles and maintains the Interagency Pesticide Database, which is part of a TGPC interagency effort to assess groundwater impacts from pesticides. The database contains the results of groundwater monitoring

[23] www.tceq.texas.gov/gis/tceq-geographic-data-viewers

for pesticides collected by state agencies and other entities that sample groundwater. The database enables quick responses to public and agency inquiries, and when applied within Geographic Information System (digital mapping) software, it provides maps that enhance and clarify pesticide monitoring coverage and acts as an annual planning and assessment resource.

Pesticide Management
TCEQ is the state's lead agency for developing pesticide contaminated water regulations. The state legislature and federal government have granted TCEQ:

- responsibility of developing management plans to prevent water pollution by pesticides—TCEQ must solicit advice from the TGPC in developing such plans,
- authority to regulate chemical wastes discharged to waters in the state (including groundwater) from tailwater or runoff from agricultural lands, and
- authority to issue TPDES and Texas Land Application permits.

Since 1989, GPAT has been responsible for groundwater protection activities related to pesticides. This includes conducting the agricultural chemical monitoring programs described in the *Texas State Management Plan for Prevention of Pesticide Contamination of Groundwater*. Monitoring includes ambient screening for atrazine and other constituents depending on location, funding, and specific immediate concerns.

Additional pesticide-related activities include:

- delineating areas vulnerable to pesticide contamination,
- conducting cooperative ambient monitoring of groundwater,
- investigating elevated detections of atrazine and other constituents to determine the source and extent,
- ongoing monitoring of known high occurrences of atrazine or other constituents for long-term trend analysis and determining BMP effectiveness, and
- assessing pesticides of interest or concern in the EPA's online Pesticides of Interest Tracking System.

TCEQ Environmental Assistance Program

Pollution Prevention
The key to controlling nonpoint source pollution is often prevention. Preventing contaminants from reaching water in the first place mitigates environmental risks and eliminates the need for expensive clean-up programs. Community, business, and resident involvement are integral to successful pollution prevention. Educating individuals about simple day-to-day activities and

implementing prevention programs can be accomplished on a larger scale by federal, state, and local government programs. The following sections describe several programs that work with residents, businesses, and industries to encourage voluntary use of pollution prevention activities.

Household Hazardous Waste Program
TCEQ's Household Hazardous Waste Program offers assistance to municipalities and individuals who are interested in the proper collection and disposal of household hazardous waste. Resources include educational and regulatory information; technical assistance in setting up a collection program; contact information for existing programs; and general information on relevant issues.

Small Business and Local Government Assistance
TCEQ offers assistance through its Small Business and Local Government Assistance Program to help small businesses and local governments comply with environmental rules. The program is designed to give confidential technical assistance on air, water, and waste issues without the threat of enforcement.

TCEQ offers several compliance assistance tools, regulatory guidance documents, and easy-to-follow checklists for various industries. Example industries include auto body shops, automotive repair facilities, auto salvage yards, dry cleaners, fleet maintenance facilities, foundries, metal finishers, petroleum storage tank facilities, printers, reinforced plastics facilities, sawmill operations, small airports and tenant operations, surface coaters, and the wood products industry.

TCEQ Take Care of Texas Program
The Take Care of Texas Program is a statewide campaign designed to raise awareness of how each Texan can make our state a better place, which includes improving water quality and preventing nonpoint source pollution. The Take Care of Texas campaign includes the initiatives identified below.

Resources for Students and Teachers
The Take Care of Texas website[24] offers an expanded page with free educational information for students, including activity books and posters. The website also offers teaching resources, which include Texas Essential Knowledge and Skills (TEKS) aligned lesson plans, to help educators promote awareness of environmental sciences.

Ambassador Program
Educators can apply to become part of the Ambassador Program where they help promote the Take Care of Texas Program and its practices through classroom lessons while also contributing to future lesson plans.

[24] takecareoftexas.org/

Proud Partner Program
Businesses, nonprofit organizations, or other governmental organizations can voluntarily participate in the Proud Partner Program. Through different tiers of partnership and engagement their goal is to inspire the next generation to act through waste-reduction and other conservation initiatives.

Scout Program
The Take Care of Texas Scout Program recognizes scouts who are doing their part to conserve water and energy, keep our air and water clean, and reduce waste by rewarding them with a patch or pin.

Publications
TCEQ has many publications available to provide assistance and educational information. The Take Care of Texas Program also offers free materials to help residents and communities learn how all Texans can improve the environment, including publications on how to practice environmentally responsible lawn care to improve water quality and reduce water use.

TCEQ also offers subscribers a free, online newsletter called Take Care of Texas News You Can Use. This monthly newsletter offers current information to educate customers, suppliers, employees, or students about why and how they can improve the environment. More information on the Take Care of Texas campaign can be found on the program's website.

TCEQ On-Site Sewage Facilities Program

Texas Guidelines for Management of On-site Sewage Facilities
In Texas, an OSSF is defined as a wastewater system with a daily flow of less than 5,000 gallons where the wastewater is treated and disposed of on the property where it is generated. In 1989, the 71st Texas Legislature passed legislation to regulate OSSF systems statewide. The law requires the state to establish a minimum construction code for all newly installed OSSFs. The law also encourages the state to delegate its regulatory power to local governments who may adopt more stringent regulations than the state minimum. In Texas approximately 50,000 OSSF permits are issued on average per year. Approximately 98% of the permits issued in the state are issued by local governments.

To properly manage OSSFs to protect public health and the environment, Texas uses the following:

- Permits – To construct or operate a new OSSF, a property owner is required to obtain a permit. The permitting process encompasses site evaluation, approval of planning materials, and final inspection of OSSF construction.
- Statewide Construction Code – The statewide construction code establishes a minimum standard for OSSF construction. The minimum

code protects the public health and environment by matching the size and type of the OSSF to the soil and site characteristics.
- Inspections/Monitoring – All new construction is inspected and approved by a trained inspector. Additionally, the performance of more complex OSSFs is periodically monitored by trained professionals and reported to the regulatory authority.
- Enforcement – TCEQ and local governments primarily pursue enforcement for failing OSSFs through local courts. Revocation and suspension of licenses is performed through TCEQ.
- Training and Licensing of OSSF Professionals

Texas has a formal licensing program for the OSSF professionals identified below.

- Designated Representative – trained to review OSSF permit applications and associated planning materials, inspect OSSF construction, and initiate corrective actions for failing systems;
- Site Evaluator – trained to evaluate soils and site characteristics;
- Installer I – trained to install basic OSSFs;
- Installer II – trained to install complex OSSFs; and
- Maintenance Provider – trained to maintain complex OSSFs.

All training for licensed individuals is conducted by third parties, with TCEQ review and approval of the trainers and course materials.

TCEQ Edwards Aquifer Protection Program

The State of Texas contains only one designated sole-source aquifer, the Edwards Aquifer found in the central and south-central portion of the state. The Edwards Aquifer is a curved band of limestone and associated formations that stretch from Bell County through Williamson, Travis, Hays, Comal, Bexar, Medina, and Uvalde counties, finally terminating in Kinney County. These counties, except Bell, are subject to TCEQ rules promulgated to protect the quality of groundwater within the aquifer.

The rules in 30 TAC Chapter 213 are the basis of the Edwards Aquifer Protection Program, administered by TCEQ's staff in the Austin and San Antonio Regional Offices. The program requires anyone who plans to conduct regulated activity on the recharge, transition, or contributing zone of the Edwards Aquifer to first have an application, including construction plans, approved by TCEQ. After a plan is reviewed and approved by TCEQ, the regional office staff monitor the site for compliance.

The Edwards Aquifer rules are intended to mitigate nonpoint source and point source impacts from regulated development over the recharge zone, transition zone, and contributing zone of the aquifer and, depending on the location and type of development, may require any or all of the following:

- A water pollution abatement plan for any regulated activity proposed on the Edwards Aquifer recharge zone, such as, but not limited to:
    - the construction of buildings, utility stations, roads, highways, and railroads; clearing, excavation, or any other activities that alter or disturb the topographic, geologic, or existing recharge characteristics of a site;
    - any other activities which may pose a potential for contaminating the Edwards Aquifer and hydrologically connected surface streams.
- A contributing zone plan for regulated activities on the contributing zone that disturb five or more acres or regulated activities disturbing less than five acres which are part of a larger common plan of development or sale with the potential to disturb five or more acres.
- A sewage collection system plan for any public or private sewage system for the collection and conveyance of sewage to a treatment and disposal system that is regulated pursuant to TCEQ rules and provisions of TWC Chapter 26.
- An underground storage tank facility plan for the installation or replacement of underground storage tanks or piping on either the recharge or transition zone of the Edwards Aquifer.
- An aboveground storage tank facility plan for the installation of permanent aboveground storage tanks at a facility that will have a total capacity of 500 gallons or more on either the recharge or transition zone of the Edwards Aquifer.

TCEQ Border Affairs Program

Border Programs
Urban populations are growing more rapidly in the border region compared to the rest of the state. On the Mexican side of the border, the population has grown by almost 50% since 2010. The boom in population and industrial growth both create an increased demand for water and strain communities' drinking water, wastewater, and waste management infrastructure.

The border region's economy depends on agriculture, ranching, oil and gas production, trade and commerce, industry, and tourism. Per capita income is lower in the border region than other parts of Texas, and lower income means fewer tax dollars for local governments to meet existing needs, keep up with rapid growth, or plan for the future. One of the greatest threats to water quality is the lack of sufficient drinking water, wastewater, and stormwater infrastructure to keep pace with growth. Poor and inadequate wastewater treatment can elevate bacteria levels and the risk of contracting water-borne diseases.

In addition to the need for adequate infrastructure, water quantity problems also affect water quality in the Rio Grande. As water quantity decreases, salinity

levels can increase and may make the water less suitable for municipal and agricultural use. Leaching, the dissolution of metals, solids and chemicals into drinking water, can also occur when water quality parameters change and impact drinking water distribution lines. Agriculture is particularly important in the Lower Rio Grande Valley of South Texas, where elevated levels of salinity in surface water from the Rio Grande, as well as water supply delivered from binational dams on the Rio Grande, are a daily concern for farmers.

Border growth also impedes communities' ability to manage the disposal of solid and hazardous wastes. Limited disposal options lead to an increase in illegal dumping. Hazardous waste transportation remains a concern in border port-of-entry cities, where chemical spills pose a potential threat to public health and water supplies. Improper disposal of used and scrap tires is a major concern in the region where scrap tires can block storm drains and canals, exacerbating flooding and interrupting water deliveries for irrigation. TCEQ provides several programs to address the unique water quality and quantity needs in the border region.

The TCEQ Border Initiative

TCEQ leads a comprehensive border initiative, integrating all the agency's work in the border region, including those undertaken cooperatively with local, state, and federal partners. The Border Initiative encompasses various water and wastewater programs, including a binational watershed protection pilot program for the Rio Grande (known as Rio Bravo in Mexico) downstream of Falcon Dam. Beginning in 2023, TCEQ worked with U.S. and Mexican stakeholders on the Binational Salinity Study. This study was a binational effort to identify major sources of salinity along the Lower Rio Grande below Falcon International Dam. This study reached its successful conclusion in May 2025, with planning for the next phase of salinity research underway. Regional TCEQ staff based in El Paso, Harlingen, and Laredo respond to complaints and provide confidential assistance to small businesses and local governments on water and waste regulations face to face and through the toll-free hotline at 800-447-2827.

Part of TCEQ's Border Initiative is supporting the Texas Water Infrastructure Coordinating Committee, which is a clearinghouse for information on funding eligibility and technical assistance for water systems facing infrastructure or compliance issues. Since maintaining water quality is a shared responsibility of many agencies and jurisdictions, the Border Initiative helps provide information to customers in the border region about the various resources that are available to bring water systems and utilities into compliance, follow BMPs, and ensure cost-effective operations.

State-to-State Agreements

TCEQ has signed a Memoranda of Cooperation with each of Texas' four neighboring Mexican states—Chihuahua, Coahuila, Nuevo León, and Tamaulipas—to strengthen cross-border coordination. These agreements support communication during emergencies and collaboration on shared environmental challenges, including the impact of nonpoint source pollution on our shared waterways. Under each memorandum or state-to-state agreement, TCEQ has worked with our counterpart agencies to develop strategic environmental plans tailored to regional water priorities.

Border 2025: U.S.–Mexico Environmental Program

Since the signing of the 1983 La Paz Agreement, EPA and Mexico's Secretariat of the Environment and Natural Resources have collaborated through a binational environmental program called Border 2025. A top priority of the program is improving water quality through cross-border coordination and action.

Under Goal 2, Objective 6 of the Border 2025 framework, partners are committed to continuing the work of the Lower Rio Grande Water Quality Initiative, focused on the stretch of river below Falcon International Dam. TCEQ has taken a lead role spearheading a binational initiative to characterize and manage salinity spikes in this reach, alongside Mexican state and federal agencies, EPA, and both sections of the International Boundary and Water Commission (IBWC). The objectives of the initiative are to characterize the state of the river, develop a strategic plan to improve environmental conditions, and implement a monitoring plan to document progress. More information on Border 2025 can be found at EPA's U.S.–Mexico Border 2025 Program website[25].

The North American Development Bank

The North American Development Bank (NADB) was created as part of the U.S.–Mexico–Canada Agreement with the mandate to develop and finance environmental infrastructure along the U.S.-Mexico border to improve the well-being of the population. As of December. 31, 2024, the NADB has certified 323 environmental infrastructure projects with more than $312.6 billion in loans and grants in the border area of Texas, defined as within 100 kilometers of the border, with over $1.12 billion supporting projects in the Rio Grande Valley. Most NADB investments are water and sewer projects. In addition, various completed wastewater projects in Mexico along the Rio Grande are aimed to improve Rio Grande water quality. TCEQ coordinates with the NADB to ensure that funded projects meet state priorities.

Texas Global Fellowship Program in Coahuila

The TCEQ Border Affairs Program collaborates with the University of Texas at Austin in support of their Texas Global Fellowship Program. The initiative

[25] www.epa.gov/usmexicoborder/what-border-2025

supports faculty-driven internships and research opportunities to improve water quality monitoring along the Texas-Coahuila border area.

TCEQ provides guidance and training tools to University of Texas fellows that prepare them to acquire more technical background on water quality monitoring methodologies. Since 2021, TCEQ, University of Texas at Austin, and the Secretariat of Environment in Coahuila have worked on projects including; the design of a water quality monitoring program in Coahuila that will periodically measure water quality parameters with the goal of informing the public of real-time conditions of streams and rivers, development of operational manuals of water quality monitoring equipment for Coahuila partners, and the creation of a robust database to store real-time data of parameters such as turbidity, conductivity, dissolved oxygen, and TDS. Future projects will seek to conduct a data assessment to determine water quality impairments and analyze previous data to identify trends and develop an early warning notification system of current parameters.

TCEQ Clean Water Certification Program

TCEQ implements the requirements of 30 TAC Chapter 321, Subchapter A relating to boat sewage disposal. These rules identify which boats must have marine sanitation devices installed, specification and certification requirements (including fees and renewals) for marine sanitation devices and boat pump-out stations, and disposal methods for the contents of marine sanitation devices and boat pump-out stations. The rules also prohibit the disposal of sewage (treated or untreated) into waterways that are designated as no discharge zones.

TCEQ CWA Section 401 Certification Program

CWA Section 401 ensures that federal discharge permits are consistent with the TSWQS. Under CWA Section 401, states are given the authority to review federally permitted or licensed activities that may result in a discharge of pollutants to waters of the U.S., such as the discharge of dredge or fill material.

Any activity that may result in a discharge to jurisdictional waters of the U.S. is subject to CWA Section 401 certification. The most common type of permit subject to CWA Section 401 certification is the U.S. Army Corps of Engineers' CWA Section 404 permit for discharges into jurisdictional waters of the U.S. Applicants for CWA Section 404 permits are asked to avoid impacts to waters of the U.S. where possible; minimize impacts where avoidance is not possible; and provide compensatory mitigation for unavoidable impacts. Wetland and stream mitigation can take place at mitigation banks through in-lieu fee programs or through permittee-responsible mitigation. State and federal regulations have set a goal of *no net loss* of wetland functions and values.

The federal permitting agency must receive either a state 401 certification, conditional certification, or waiver stating that the discharge will not violate the TSWQS, before a federal permit can be issued. If the state denies certification,

the federal permit is also denied. TCEQ is responsible for certifying federal permits in Texas, except for those related to oil and gas exploration, development, and production, which are certified by the RRC.

The CWA Section 401 certification program also plays a role in protecting coastal resources under the Texas CMP. The CMP is designed to accomplish the goals set by the state legislature for coastal resource protection and to meet specific requirements for an approved plan under the CZMA. Certain activities, such as discharges authorized by CWA Section 404 permits, must be consistent with the state CMP when they occur within the coastal zone boundary and the CMP delegates some coastal consistency reviews to the two CWA Section 401 agencies.

TCEQ Industrial and Hazardous Waste Permits Program

Texas solid waste rules and TCEQ permits for industrial and hazardous waste management units contain provisions to protect groundwater and surface water from the effects of releases. These provisions include requirements for liner systems, leachate collection, and leak detection systems for pond and landfills, secondary containment for storage and processing units, groundwater monitoring sampling and analysis, operational requirements, and other protective measures. In addition, new facilities must meet siting requirements that consider the suitability of local geology and climatological conditions to minimize possible contamination of surface water and groundwater.

TCEQ Municipal Solid Waste Permitting, Planning, and Reporting Program

Municipal solid waste is solid waste resulting from municipal, community, commercial, institutional, and recreational activities, including garbage, rubbish, ashes, street cleanings, dead animals, and abandoned automobiles. TCEQ requires municipal solid waste facilities to obtain permits in Texas. These permits address aspects of the facilities, including:

- location restrictions
- lining requirements
- leachate collection and removal systems
- operating practices
- groundwater monitoring requirements
- closure and post-closure care requirements
- corrective action provisions
- financial assurance

TCEQ is responsible for data assessment and planning for the management of solid wastes in Texas. To support these activities, TCEQ collects and compiles data on the generation and disposal of municipal solid waste in Texas.

Owners and operators of municipal solid waste landfills and other waste management facilities submit an annual report to TCEQ, detailing the amount

and types of solid waste managed and the remaining capacity of each facility. The data are compiled and published in an annual summary report titled *Municipal Solid Waste in Texas: A Year in Review*[26] (TCEQ publication AS-187).

As part of its waste planning efforts, TCEQ administers a Regional Solid Waste Grants Program. The grants program supports regional solid waste management planning by the state's 24 regional Councils of Governments (COGs), as well as a pass-through grant program administered by the COGs to fund regional and local solid waste management projects. The COGs also use these funds to develop an inventory of closed municipal solid waste landfills; conduct regional coordination and planning activities; provide technical assistance and informational programs pertaining to solid waste management; serve as central points of contact for solid waste management outreach, education, and training programs; and maintain a regional solid waste management plan.

Remediation of Contaminated Sites

Environmental contamination can occur in many ways. Some examples include unreported spills of hazardous materials, undetected leaks from pipes or other malfunctioning industrial equipment, improper disposal of byproducts of industrial processes, abandoned municipal solid waste landfills, and abandoned, inactive industrial sites. If not remedied, groundwater and surface water contamination may occur, which can pose environmental and human health problems.

TCEQ Superfund Program

The state Superfund Program remediates abandoned or inactive sites within Texas that pose an unacceptable risk to public health and safety or the environment, but which do not qualify for action under the federal Superfund Program. The state Superfund Program is administered by TCEQ.

TCEQ manages or provides management assistance to EPA with regard to the Superfund remediation process after the site is identified as being eligible for listing on either the state Superfund registry or the federal National Priorities List. TCEQ ensures that all Superfund activities are completed in a timely and efficient manner, and in accordance with all applicable state and federal laws and rules.

TCEQ Brownfields Program

In Texas, many former industrial properties lie dormant or underutilized due to liability associated with real or perceived contamination. These properties are broadly referred to as brownfields. TCEQ, in close partnership with EPA and other federal, state, and local agencies, facilitates cleanup, transferability, and revitalization of brownfields. This is accomplished through the development of regulatory, tax, and technical assistance tools.

[26] www.tceq.texas.gov/permitting/waste_permits/waste_planning/wp_swasteplan.html

TCEQ Voluntary Cleanup Program
The Texas Voluntary Cleanup Program provides administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas. Non-responsible parties, including future lenders and landowners, receive protection from liability from the State of Texas for cleaning up sites under the Voluntary Cleanup Program. This can help eliminate constraints related to environmental conditions or perceptions and allow real estate transactions at those sites to be completed. Also under the program, site cleanups follow a streamlined approach to reduce future human and environmental risks to safe levels. As a result, many unused or under-used properties may be restored and become economically productive and beneficial to the community.

TCEQ Corrective Action Program
The mission of TCEQ's Industrial and Hazardous Waste Corrective Action Program is to oversee the cleanup of sites with soil and groundwater contamination from industrial and municipal hazardous and industrial nonhazardous wastes. The goal of this program is to ensure that the public is not exposed to hazardous levels of chemicals by requiring mitigation and/or the removal of contamination to levels protective of human health and the environment.

TCEQ Leaking Petroleum Storage Tank Program
TCEQ is responsible for administering the Leaking Petroleum Storage Tank Program. The program mission is to oversee the cleanup of releases and spills from regulated storage tanks by recording and evaluating all reported incidents of releases of petroleum and other hazardous substances from underground and aboveground storage tanks. The goal of the program is to ensure that the public is not exposed to hazardous levels of contamination by requiring the remediation of contaminated soil and groundwater to levels protective of human health and the environment.

TCEQ Dry Cleaner Remediation Program
TCEQ established the Dry Cleaner Remediation Program for state-led clean-ups of dry cleaner-related contaminated sites. The program assists with remediation of contamination caused by dry cleaning solvents. The goal of the program is to ensure that the public is not exposed to hazardous levels of chemicals by mitigating and/or remediating contaminated soil and groundwater to levels protective of human health and the environment.

TCEQ Underground Injection Control Program
Chapter 27 of the TWC (the Injection Well Act) defines an "injection well" as "an artificial excavation or opening in the ground made by digging, boring, drilling, jetting, driving, or some other method, and used to inject, transmit, or dispose of industrial and municipal waste or oil and gas waste into a subsurface stratum; or a well used for the injection of any other fluid; but the term does

not include any surface pit, surface excavation, or natural depression used to dispose of industrial and municipal waste or oil and gas waste."

A few examples of injection wells regulated by TCEQ are:

- wells that inject municipal or industrial, nonhazardous or hazardous wastes into a formation that is below the lowermost underground source of drinking water;
- wells that inject fluids to extract uranium or sulfur and to dispose of waste byproducts from the mining operation;
- any well or similar apparatus that releases a waste or any other fluid into or above an underground source of drinking water;
- wells that are used for aquifer storage and recovery;
- wells that are used for aquifer recharge;
- wells that are used as remediation wells and stormwater drainage wells;
- nonhazardous waste disposal wells that inject into or above underground sources of drinking water; and
- wells used for the injection of nonhazardous desalination concentrate or nonhazardous drinking water treatment residuals.

TCEQ Emergency Response Program

TCEQ provides monitoring, oversight, and technical and regulatory help through its emergency-response team. According to the State of Texas Emergency Management Plan[27], Annex Q, TCEQ is the state's primary agency for hazardous materials and oil spill response. TCEQ personnel provide technical and regulatory assistance in the management of wastes and other residual materials that result from spills within the agency's jurisdiction, which also includes management of industrial and municipal solid wastes and hazardous wastes. TCEQ and GLO jointly serve as the state's primary members of the federal Regional Response Team for EPA's Region 6, and TCEQ represents the state in matters related to inland spills or releases of oil and inland or coastal releases of hazardous substances or other pollutants. The agency also responds to pollution events and the needs of local government, the regulated community, and the public associated with natural disasters.

TCEQ Used Oil Recycling Program

Texas law prohibits dumping used oil into storm drains, sewers, waterways, or on land, including for use as a dust suppressant. Instead, TCEQ rules in 30 TAC Chapter 324 and 30 TAC Chapter 328 encourage used oil recycling to make fuel oil, lubricants, re-refined oil, or other petroleum products. Used oil transporters, handlers, and collection centers must register with TCEQ and report the amount of used oil handled on an annual basis. Additionally, Texas has banned the disposal of used oil filters in landfills. Instead, used oil filter generators should drain, shred, crush, or heat the filters to remove the oil. The used oil filters

[27] tdem.texas.gov/preparedness/state-planning

generator should send the removed oil to a recycler. The remaining material must be further recycled. Used oil filter transporters, storage facilities, or processors may not store, process, recycle, or dispose of used oil filters unless the person registers with TCEQ.

TCEQ Illegal Disposal Abatement Program
To successfully address illegal dumping, communities must develop long-term comprehensive solutions. TCEQ has developed a model approach for use in developing solutions for illegal dumping and other municipal solid waste problems. This model approach focuses on developing and maintaining a program that includes the following four components:

- Garbage collection services – Provide residents with convenient and affordable ways to dispose of their garbage, such as resident collection stations for rural communities.
- Public awareness campaigns – Increase public awareness on the health and safety hazards of illegal dumping and available legal options for garbage disposal.
- Cleanup of existing dumps – Clean up illegal dump sites to discourage other dumpers, who are attracted to these existing sites, and to improve the community's awareness of the problem.
- Enforcement – Increase the cost of illegal dumping through increased enforcement and more severe punishments for offenders.

TCEQ Scrap Tire Management Program
Scrap tires must be managed to prevent fires and control disease vectors, such as mosquitoes and rodents. The air pollutants from tire fires can become nonpoint source water pollutants through atmospheric deposition. Prior to TCEQ's Scrap Tire Management Program, large illegal tire dumps often appeared on the beds and banks of streams, damaging riparian habitat. TCEQ regulates the collection, processing, and recycling/disposal of over 50 million tires discarded each year in Texas. Anyone who stores more than 500 scrap tires must register with TCEQ as a scrap tire storage site. Scrap tires must be hauled by a registered transporter to either a permitted landfill or an authorized scrap tire facility. All facilities must keep manifest records showing the final use or disposition of scrap tires.

Resident Complaints
Responding to complaints from the public about alleged environmental, health, or regulatory violations is an important part of TCEQ's regional offices. Complaints received in regional offices are prioritized based on the relative threat that is posed to public health, safety, or the environment in which the most serious complaints are addressed first. An investigation may take the form of an on-site inspection, which may result in sampling.

Complaints are categorized as:

- conditions relating to air quality, such as odor, dust, and smoke,
- conditions that create a potential to pollute the water or land,
- alleged violations of TCEQ permits or rules,
- smoking vehicles,
- spills, and
- other environmental concerns.

When a resident believes someone is causing an environmental problem and possibly violating the law, the resident can either file a complaint with TCEQ or submit information documenting the problem. TCEQ is authorized by statute to initiate an enforcement action based on information provided by a private individual if that information, in TCEQ's judgment, is of sufficient value and credibility to warrant the initiation of an enforcement action (TWC Section 7.0025; 30 TAC Section 70.4).

Supplemental Environmental Projects

TCEQ's Supplemental Environmental Projects Program provides the opportunity for respondents in administrative enforcement cases to include in their settlement an agreement to perform or contribute a supplemental environmental project. This option allows penalty dollars to fund environmental projects instead of being routed more traditionally to the state of Texas' General Revenue Fund. Potential projects include cleanup of illegal dump sites; community household hazardous waste collections; purchase of Water Wise kits for local schools; and conservation efforts to preserve riparian areas and prevent or address the effects of nonpoint source pollution.

TCEQ Occupational Licensing Program

The TCEQ Occupational Licensing Program is committed to safeguarding the environment and public health by responsibly licensing professionals whose occupations may have an environmental impact. The program's responsibilities include issuing and renewing licenses, approving training providers and courses, and exam development. The following is a list of licenses that TCEQ issues:

- Backflow Prevention Assembly Tester;
- Customer Service Inspector;
- Landscape Irrigator, Technician, and Inspector;
- Leaking Petroleum Storage Tank Corrective Action Specialist and Project Manager;
- Municipal Solid Waste Operator;
- OSSF, including septic tanks, Inspector and Installer;
- Underground Storage Tank Contractor and On-Site Supervisor;
- Wastewater Treatment and Collection Operator;
- Wastewater Operation Company;
- Water Treatment and Distribution Operator;

- Water Operations Company; and
- Water Treatment Specialist.

Texas Water Development Board

TWDB is the state's water planning and water project financing agency. It is responsible for collecting and disseminating water-related data, assisting with regional water planning, preparing the State Water Plan and State Flood Plan, and financing water and wastewater projects. Under the Clean Water State Revolving Fund (CWSRF), TWDB provides loans that can be used for the planning, design, and construction of wastewater treatment facilities, wastewater recycling and reuse facilities, collection systems, stormwater pollution controls, nonpoint source pollution controls, and estuary management projects.

TWDB conducts an active groundwater resource assessment program. TWDB personnel have identified boundaries and various characteristics for all of the state's major and minor aquifers, including geologic information, water availability, and recharge. In addition, TWDB has identified the major entities using groundwater within each river basin, the aquifer(s) from which they pump, the quality of water being developed, and the quantity of water needed for a 50-year planning period. To accomplish this, TWDB has been collecting data on the occurrence, availability, quality, and quantity of groundwater present and the current and projected demands on groundwater resources. The statewide groundwater level measurement program, groundwater quality sampling program, springs monitoring program, and groundwater studies are vital to the state's regional water planning efforts.

The Clean Water State Revolving Fund

Another funding tool available in Texas to address nonpoint source pollution is the CWSRF, which is administered by TWDB. The CWSRF is a loan program authorized under the CWA and is funded by an annual grant from EPA. This program provides funding assistance in the form of 20- to 30-year loans at below market interest rates. The money from the loan payments is returned to the CWSRF to supplement the annual EPA grant for new loans. Although most of the loans are made to publicly owned wastewater treatment and collection systems, TWDB can also provide loans for nonpoint source pollution abatement projects. Loans can be made to towns, counties, GCDs, SWCDs, and other political subdivisions, as well as to private and nonprofit organizations (for nonpoint source or estuary projects only). A water quality-based priority system is used to rank potential applicants and fund projects with the greatest environmental benefits. Some of the activities that are eligible for funding include agricultural, rural, and urban runoff control; estuary improvement; nonpoint source education; and wet weather flow control, including stormwater and sewer overflows that are not associated with a TPDES permit.

TWDB has increased its efforts to identify potential applicants for loan projects that address nonpoint source-related water quality problems. Staff from TWDB, TCEQ, and TSSWCB meet as needed to coordinate efforts to identify water bodies which are impacted by nonpoint source pollutants and identify potential applicants for CWSRF assistance. TCEQ and TSSWCB provide input on funding needs from information gathered during the development of the Texas Integrated Report, TMDLs, TMDL I-Plans, and WPPs. The TWDB uses this information during the development of its annual CWSRF Intended Use Plan to focus its efforts on identifying potential applicants for CWSRF funding assistance. More information on the CWSRF can be found on the TWDB website.

The Texas Water Development Fund

The Texas Water Development Fund (DFund) is the original TWDB Financial Assistance Program created by the Texas Legislature in response to the drought of the 1950s. The DFund makes loans available for planning, acquisition, design, and construction of both wastewater and water projects. Eligible sewer projects include sewer treatment plants, collection systems, system acquisitions, nonpoint source pollution abatement, and development of new municipal solid waste disposal facilities. In addition to standard water treatment and supply projects, the DFund can also provide loans for structural and nonstructural flood protection improvements. The DFund provides loans only and is available to state political subdivisions and nonprofit water supply corporations.

The Rural Water Assistance Fund

The Rural Water Assistance Fund is designed to assist small rural utilities in obtaining low-cost financing for water and wastewater projects. The assistance fund offers tax-exempt equivalent interest rates with long-term finance options. Eligible borrowers are defined as rural political subdivisions, which include water supply corporations, serving populations of 10,000 or fewer, and counties in which no urban area has a population exceeding 50,000. Financial assistance is provided for a wide range of both water and wastewater projects, including nonpoint source pollution abatement.

The Agricultural Loan Program

The TWDB provides grants and loans for agricultural water conservation equipment and practices which promote, demonstrate, or evaluate more efficient uses of irrigation in agriculture. Grants are available to political subdivisions and state agencies. Loans are also available to political subdivisions and individuals through political subdivisions or a linked deposit program. The use of more efficient irrigation practices can reduce agricultural nonpoint source loadings in surface water and groundwater.

Flood Infrastructure Fund

The Flood Infrastructure Fund provides grants and loans for flood mitigation, flood control, and drainage projects that may also mitigate nonpoint source pollution. For most projects, eligible applicants are political subdivisions

created under Article III, Section 52 or Article XVI, Section 59 of the Texas Constitution. For large-scale watershed planning studies, eligibility is expanded to also include any other political subdivision of the state, any interstate compact commission to which the state is a party, and any nonprofit water supply corporation created and operating under Chapter 67.

Texas Groundwater Protection Committee

The Texas Legislature created TGPC in 1989 to bridge gaps between existing state groundwater programs and to improve coordination among agencies involved in groundwater activities, with a goal of optimizing the protection of groundwater quality. State law codified in TWC Sections 26.401 through 26.408 establishes the TGPC; outlines its powers, duties, and responsibilities; and establishes the state's policy to protect groundwater as a vital resource.

TGPC includes representatives from ten agencies. The executive director of TCEQ serves as the TGPC's chairperson, and the executive administrator of TWDB serves as its vice chairperson. TCEQ is designated as the lead agency for TGPC and administers its activities. Additional members of the committee are RRC, Texas Department of State Health Services (DSHS), TDA, TSSWCB, Texas Alliance of Groundwater Districts (TAGD), Texas A&M AgriLife Research, Bureau of Economic Geology of the University of Texas at Austin, and Texas Department of Licensing and Regulation (TDLR).

TGPC implements the state's groundwater protection policy [TWC 26.401(c)], which states that the goal of the policy is that the existing quality of groundwater is not degraded, noting that non-degradation does not mean zero discharge of contaminants. This goal is consistent with protecting public health and welfare, propagating and protecting terrestrial and aquatic life, protecting the environment, operating existing industries, and maintaining and enhancing the state's long-term economic health.

Public Outreach and Education Subcommittee

The primary goals of the TGPC Public Outreach and Education Subcommittee are to develop and distribute educational outreach materials for those concerned with groundwater protection and environmental health concerns and to facilitate interagency communication and coordination to provide support for water well owner and user educational outreach projects. Activities include developing educational materials, coordinating outreach programs and special projects with a focus on the nonpoint source-related issues of abandoned well closure, OSSF maintenance, domestic drinking well sampling, and the Texas Well Owner Network, which is a groundwater quality protection program.

Groundwater Issues Subcommittee

The primary goals of the TGPC Groundwater Issues Subcommittee are to facilitate interagency communication for assessment programs addressing groundwater contamination; coordinate and assist member agencies with

monitoring programs for ambient groundwater conditions, pesticides, and emerging contaminants or constituents of concern; and support the intent of the *Texas Groundwater Protection Strategy*. Activities include the review of data and reports to assist in the determination of the effectiveness of existing regulatory programs and to identify potential groundwater contaminants not addressed by existing regulatory programs, and the development of white papers with recommendations or policy options for consideration by TGPC regarding various groundwater-related issues.

Texas Parks and Wildlife Department

TPWD's primary functions are to manage and conserve land and water resources and to provide hunting, fishing, and outdoor recreation opportunities for all Texans. The agency is responsible for protecting the state's fish and wildlife resources.

To this end, TPWD:

- operates and maintains a system of public lands, including state parks, historic sites, fish hatcheries, and wildlife management areas;
- monitors, conserves, protects, and enhances the state's fish and wildlife resources;
- monitors, conserves, and enhances the quality and quantity of rivers, streams, lakes, coastal marshes, bays, beaches, gulf waters, and other aquatic and wildlife habitat;
- provides direct matching grants to local political subdivisions and nonprofit entities for planning, acquiring, or developing local parks and recreational facilities, and for recreation, conservation, and education programs.

Kills and Spills Team

TPWD has assembled a multi-divisional response team, the Kills and Spills Team, comprised of biologists assigned to four regions across Texas. The Kills and Spills Team assumes four key responsibilities:

1. respond to fish and wildlife kills and pollution incidents, including oil and hazardous material spills;
2. minimize environmental degradation resulting from pollution incidents and fish and wildlife kills;
3. obtain compensation, repairs, and restoration for environmental damage; and,
4. act as a technical resource with respect to relationships between water quality, habitat, and living organisms.

Approximately 89% of the incidents the Kills and Spills Team responds to are fish or wildlife kills. Natural causes responsible for fish kills include extreme weather, temperatures, bacteria and disease, and toxic algal blooms. The actions

of humans can result in fish and wildlife kills through the introduction of toxic chemicals, pesticides, fertilizers, and contaminated stormwater runoff. Low dissolved oxygen concentration is another cause of fish kills. Low dissolved oxygen can result from plant respiration depleting oxygen levels during the night. Other causes of low dissolved oxygen include excessive decay during hot, still days, dams, and dead-end canals.

A responsible party may be identified as having caused the incident. The responsible party may be asked to make restitution for the ecological damages. Restitution may consist of a monetary reimbursement for the value of fish or wildlife killed or may be a project that restores value to the ecosystem.

The Texas Farm and Ranch Lands Conservation Program

The Texas Farm and Ranch Lands Conservation Program was created in 2005 by the 79th Texas Legislature and received state funding when it moved to TPWD in 2016. The program provides funds to qualified easement holders, such as government entities and land trusts, to acquire and hold conservation easements on privately owned working lands that have a high conservation value. Working lands include farms and ranches, fiber and timber production, or wildlife management. An emphasis is placed on protecting lands that are at risk of subdivision and fragmentation. Since the program transferred to TPWD, the Texas Farm and Ranch Lands Conservation Council has awarded over $8.4 million to 36 projects, protecting approximately 47,000 acres across the state. The conservation of these properties is directly related to improving water quality by providing permanent protection to springs, creeks, and watersheds. In addition, the properties selected have demonstrated a long-term commitment to using BMPs designed to improve water quality.

The Texas Wildscapes Program

The Texas Wildscapes Program emphasizes providing the basics for good habitat: food, water, and cover. With approximately 95% of the state's land use practices in the hands of private landowners, the importance of education toward a common bond is evident. The Texas Wildscapes Program provides educational materials for the Texas urban residential landowner to promote a better-educated population which is more supportive of wildlife and conservation issues. The program also promotes minimizing the use of pesticides and fertilizers, xeriscaping, mulching, composting, and watering practices to conserve water.

Water Resources Program

TPWD administers a program to restore and maintain freshwater aquatic habitats to support healthy, sustainable ecosystems. Aquatic habitat degradation and loss have profound detrimental effects on ecosystem health and resiliency. Currently 48% of fish and approximately 30% of mussel taxa in Texas are listed as imperiled, and several species have already been lost to

extirpation or extinction. These losses can be mitigated by ensuring natural physical processes and habitat quality are maintained or improved.

TPWD helps to protect these habitats by providing technical support and review of projects associated with water development, water planning, and water quality issues. Partnerships have been developed to conserve aquatic, riparian, and upland habitats essential to environmentally and economically healthy watersheds that benefit the natural resources of the state. This is achieved through:

- promoting awareness and stewardship of fish and freshwater aquatic habitats;
- establishing and nurturing local partnerships to identify conservation priorities and leverage available resources;
- providing technical guidance and planning assistance; and
- organizing community involvement in local fish habitat conservation projects.

Proper watershed management helps to raise public awareness of the value of our state's natural resources and provides quality recreational opportunities to residents of Texas.

Conserving Texas Rivers Initiative

The TPWD Habitat Conservation Branch staff work with TPWD's Wildlife Division staff to engage private landowners and promote the implementation of watershed-based BMPs for the conservation of riparian and aquatic species. Technical guidance is provided to facilitate land stewardship that results in benefits to aquatic species. Additionally, staff work with landowners to develop riparian and upland restoration projects that are ultimately funded by the TPWD Landowner Incentive Program, National Fish and Wildlife Foundation, Southeast Aquatic Resources Partnership, and U.S. Fish and Wildlife Partners. To date, technical guidance has been provided on over 100,000 acres, and active restoration projects have been implemented on over 8,000 acres in the Edwards Plateau.

Coastal Habitat Restoration and Protection

TPWD's Coastal Habitat Restoration and Protection program works to restore and protect habitats along the Texas Coast. These restoration projects reestablish intertidal marsh, high marsh, seagrasses, and sand flats along bay shorelines that have subsided and are suffering from severe erosion. These restored habitats can provide many ecosystem services in addition to enhancing the habitat value. For example, restored marshes buffer shorelines from erosion and remove both sediments flowing into the bays and sediments that have been resuspended by dredging, boating activities, and storms. These wetlands also help remove nutrients from stormwater runoff. Oyster habitat restoration provides both water quality, fisheries habitat, and economic value for harvest.

Protection occurs along with restoration projects and through acquisition. Partnerships with multiple local, state, and federal agencies have been developed to leverage state and local funds to conserve aquatic, riparian, and upland habitats essential to environmentally and economically healthy watersheds that benefit the natural resources of the state.

Texas Department of Agriculture

TDA is the state's lead regulatory agency for agricultural, structural, and vector pesticide regulation. Texas statutes grant TDA the authority to enforce provisions relating to the registration, distribution, and use of all agricultural, structural, and health-related vector pesticides. TDA is responsible for licensing all pesticide applicators and the labeling, storage, sales, usage, and disposal of all pesticides. TDA also cooperates with other Texas agencies that have statutory pesticide responsibilities, such as TCEQ and DSHS. TDA is also responsible for the enforcement of federal pesticide laws under a cooperative agreement with EPA. TDA continues to proactively engage state and federal agencies to review and keep current with issues involving the protection of water quality from pesticides. TDA is also working on risks from other contaminants, as well as state water conservation and planning efforts.

In addressing pesticide contamination, several major principles are considered. Agricultural pesticides are beneficial and important to the production of food and fiber and are of significance to the state economy. However, the use of pesticides should not impair any use of waters of the state or cause a public health hazard. Drinking water supplies, both groundwater and surface water, should especially be protected. Efforts in Texas in addressing these issues include, for groundwater, the adoption of the *Groundwater Pesticide Management Plan* and, for surface water, the incorporation of similar sets of protective management measures by various state agencies.

The Public Drinking Water Section of TCEQ regularly monitors public water supplies. Nonpoint source pollution resulting from pesticides is managed through prevention and response to contamination. Measures used to address risks include requiring intensive monitoring programs, prohibition of use in specified geographic areas or watersheds, education programs to promote and ensure proper pesticide use, and mitigation requirements. The state has developed programs to enforce and ensure compliance with this EPA program at the state level.

Prevention and Mitigation

TDA uses a tiered approach for the prevention of pesticide contamination in coordination with other Texas agencies.

- General Education – Current and updated information is shared statewide to raise and maintain awareness of the potential for pesticide contamination.

- Education Focused on Affected Water Bodies – Educational efforts are expanded in areas where a surface drinking water source has been identified as affected by specific pesticides. This effort will be applied even though monitoring has not shown contamination beyond the maximum contaminant level.
- Application of BMPs in Areas With Pesticide Concerns:
    - Drinking Water Source With Low Pesticide Levels – Voluntary BMPs will be encouraged where monitoring has revealed pesticides are present in a surface drinking water source at concentrations lower than the pesticide maximum contaminant level or health advisory level.
    - Drinking Water Sources With Higher Pesticides Levels – Voluntary education and BMP program will be initiated where monitoring has revealed pesticides are present in a surface drinking water source at levels greater than the maximum contaminant level or health advisory level. If there is no evidence of sufficient improvement, use restrictions will be implemented.
    - Pesticide Use Restrictions – If all previous levels of preventive measures fail, the final recourse is to restrict use of the pesticide in the water body which is contaminated. Such actions will be implemented by the TDA after consultation with the other involved agencies through the Texas Watershed Protection Committee. Users will be notified of the restricted use status of the pesticide in their area.

The response to contamination of surface water by pesticides falls under the jurisdiction of several agencies. Pesticide runoff is typically treated as agricultural nonpoint source pollution; therefore, TSSWCB and TDA play a key role in response. TCEQ provides response assistance when the water body is a drinking water supply. TDA provides expertise on pesticide regulation and education. When pesticide contamination results in a surface water body not meeting TSWQS, the response can be addressed through the TMDL process. When pesticide contamination does not result in a standards violation, response occurs through the actions described above.

Agricultural Pesticide Regulation

TDA cooperates with all agricultural producers and other users of pesticides to make certain that all pesticides are used safely and according to instructions. The Texas Pesticide Control Act requires that pesticides be stored in a manner that will reasonably ensure that human food, domestic and public water, pet foods, drugs, animal feeds, commercial fertilizers, seeds, and clothing will not be contaminated. The law also directs that pesticide containers be disposed of as directed on the label or by any other methods approved by TDA. Any use of pesticides inconsistent with label directions is a violation of the law and may subject the user to penalties under federal and state law.

The Structural Pest Control Service (SPCS), within the Agriculture and Consumer Protection Division of TDA, licenses and regulates pest management professionals, specifically those engaged in the business of structural pest control. The SPCS enhances the educational and professional standards of license holders and ensures the health, safety, and welfare of the public.

Pesticide Disposal Events

Various local and county events take place statewide to help landowners and homeowners dispose of unwanted pesticides properly. Improper storage and disposal can lead to pesticide seepage into ground and surface waters. TDA frequently partners with other agencies to provide free public events to provide agricultural producers with a way to dispose of these products safely and conveniently.

Texas Institute for Applied Environmental Research

The Texas Institute for Applied Environmental Research (TIAER) was created by the 72nd Texas Legislature in 1991 and established at Tarleton State University in Stephenville, Texas in 1992. Under its enabling legislation, TIAER conducts applied research on environmental issues with public policy implications focusing on the interface between government and the private sector. One of TIAER's goals is to establish interdisciplinary programs and partnerships that develop and implement new policies, technologies, and strategies addressing state- and national-level environmental issues.

Because problems associated with nonpoint source pollution are essentially an outgrowth of land-use decisions, TIAER's research dealing with nonpoint source pollution focuses largely on the interactions of streams, lakes, and reservoirs with their terrestrial environments. As most watersheds are combinations of rural and urban land uses, TIAER seeks to involve all affected parties in developing practical and economically feasible solutions in addressing water quality issues, realizing that these outcomes impact the residents' quality of life. TIAER provides technical and outreach services in the assessment and management of nonpoint source pollution throughout Texas.

Texas A&M Forest Service

The Texas A&M Forest Service provides statewide leadership and technical assistance to ensure trees, forests, and related natural resources are sustained for the benefit of all.

Silvicultural Management

Texas has over 60 million acres of forested land, more than any other state in the continental U.S. Most streams that originate or flow through these forest lands are used for water supply, recreation, and other high-quality uses. As a result, forest and woodland management programs have been developed to implement adequate measures to protect water quality. Below are some of the

programs in place to address the potential nonpoint source problems resulting from improperly conducted silvicultural and land management operations.

Forestry and Natural Resource Management Division

The Forestry and Natural Resource Management Division provides professional assistance to family forest owners, including services such as development of forest management plans, assistance in the implementation of reforestation and forest stand improvement practices, native forest restoration, and control of forest insect and disease problems. The division also administers several state and federal cost share programs which promote reforestation, healthy forests, and land stewardship. Emphasis is placed on developing the state's forest resources in an environmentally sound manner to meet present and future needs.

The Forest Stewardship Program

The Forest Stewardship Program, a USDA Forest Service Program, provides technical assistance, through state forestry agency partners, to nonindustrial private forest owners. The program encourages and enables active long-term forest and woodland management. A primary focus of the program is the development of comprehensive, multi-resource management plans that provide landowners with the information they need to manage their forests.

The Water Resources Program

The Water Resources Program works to protect, conserve, and enhance water resources through the sustainable use of trees and forests. This program accomplishes this objective through the development of science-based, nonregulatory BMPs; an aggressive education, technical assistance, and outreach campaign; and a monitoring program designed to measure the implementation and effectiveness of these practices. Additionally, program staff work to advance forest watershed initiatives, source water protection, riparian restoration, green infrastructure, wildfire remediation, and land stewardship.

The Ecosystem Services Program

The Ecosystem Services Program seeks to create a marketable value for the numerous benefits forests provide, generating additional revenue for landowners. Conserving these working forest landscapes can enhance and protect water resources.

The Urban and Community Forestry Program

The Urban and Community Forestry Program works with communities to develop sustainable programs that provide Texans with healthy trees and forests. Trees intercept rainfall, slow and filter runoff, and reduce flooding, making them a critical component in green infrastructure and stormwater management plans.

Texas Forest Information Portal

The Texas Forest Information Portal is a website that provides landowners, managers, government officials, local community groups, and the public state-of-the-art access to information about trees and forest lands across the state. This web portal provides access to custom web mapping applications with capabilities to discover and explore an array of maps depicting forest conditions, query data, and download reports on a variety of forest interests. The *Plan My Land Operation* application enables users to map custom areas, identify sensitive features, and generate BMP recommendations based on the site conditions of the mapped property. The *Texas Forestry BMPs* native smartphone application provides users with in-the-field digital access to the *Texas Forestry Best Management Practices* handbook and critical planning tools, such as soil survey data, a slope calculator, and a culvert sizing tool. More information can be found at the Texas A&M Forest Service's Texas Forest Information Portal website[28].

Texas A&M AgriLife Research

Texas A&M AgriLife Research is the state's lead research agency in agriculture, natural resources, and the life sciences. An agency of The Texas A&M University System, AgriLife Research collaborates with the Texas A&M University College of Agriculture and Life Sciences, the Texas A&M AgriLife Extension Service, and others to help fulfill the Texas A&M University System's land-grant mission of teaching, research, extension, and service. Texas A&M AgriLife Research provides technical services in the assessment and management of nonpoint source pollution in Texas.

Texas A&M AgriLife Extension Service

The Texas A&M AgriLife Extension Service, an agency of The Texas A&M University System, is an outreach and education agency with a statewide network of professional educators, trained volunteers, and county offices. It provides high-quality, relevant education to improve the lives of people, businesses, and communities across Texas.

Lone Star Healthy Streams Program

The Lone Star Healthy Streams program helps to reduce bacterial contamination originating from livestock, wildlife, and feral hogs in Texas' surface waters. Elevated bacteria remain a major cause of surface water quality impairment throughout Texas. The Lone Star Heathy Streams Program's three objectives are to:

- increase public awareness of bacteria issues associated with livestock, wildlife, and feral hogs,
- provide education materials to Texas farmers, ranchers, and landowners about proper grazing, feral hog management, and riparian areas, and

[28] texasforestinfo.tamu.edu/

- encourage implementation of science-based, but voluntary BMPs.

The program conducts local watershed-based and computer-based educational events. As part of this education program, current and novel BMPs are being evaluated to provide important information regarding BMP effectiveness relative to implementation costs and pollutant load reduction. Through enhanced education regarding riparian protection and vegetation management on grazing lands, Lone Star Healthy Streams will protect waterways from sediment, nutrient, and pesticide runoff with the concomitant loss of water and topsoil. Lone Star Healthy Streams is the state's primary coordinated and comprehensive educational program to address nonpoint source pollution and water quality impacts from livestock operations and feral hogs.

The Lone Star Healthy Streams Program is implemented through a partnership between the Texas A&M AgriLife Extension Service and TSSWCB with CWA Section 319(h) grants from EPA.

Texas Well Owner Network

Texas is home to over one million private water wells, supplying water to residents in rural areas and an increasing number of individuals living on small acreages at the expanding rural-urban interface. Unlike public water systems, private well owners bear sole responsibility for monitoring and maintaining the quality of their water supply, placing them at a higher risk of exposure to contaminated water. This makes effective outreach, education, and support for private well owners critical to safeguarding public health and protecting water resources.

The Texas Well Owner Network is a science-based, community-responsive education curriculum focused on educating private well owners about potential pollutant sources and what steps can be taken to protect groundwater quality and aquifer integrity. The Texas Well Owner Network offers training workshops and water well screening events that can stand alone or be delivered in conjunction with other water education programs. Participants will have a better understanding of the relationship between actions on the land and the quality of groundwater available for drinking and irrigation.

The Texas Well Owner Network is implemented through a partnership between the Texas A&M AgriLife Extension, TWRI, and TSSWCB with CWA Section 319(h) grants from EPA.

Texas Water Resources Institute

TWRI, part of Texas A&M AgriLife Research, the Texas A&M AgriLife Extension Service, and the College of Agriculture and Life Sciences at Texas A&M University, provides science-based, community-supported solutions for the state's pressing water quantity and quality challenges through internal expertise and external collaborations. The passage of the federal Water Resources

Research Act in 1964 created one water resource research institute in each state and territory across the U.S. TWRI, being the institute that was created for Texas, now serves as a gateway to a national network of water institutes as well as to interdisciplinary partnerships with Texas A&M University departments, other universities, and various water resources organizations. The following paragraphs summarize TWRI programs related to managing nonpoint source pollution.

Monitoring and Assessing Water Quality

Many of TWRI's projects address agricultural and urban BMPs to reduce or prevent nonpoint source pollution. TWRI assists communities with water quality and quantity monitoring and assessment, bacterial source tracking of pollution sources, and evaluating innovative BMPs. Its water team collects water quality data, conducts watershed surveys to identify pollutant sources, and analyzes and interprets the information to provide sound science and support restoration work. TWRI's demonstration projects evaluate management practice efficiency and provide hands-on teaching to stakeholders.

Watershed Planning and Implementation

Through its watershed planning and implementation projects, TWRI works with stakeholders to identify, develop, and implement effective watershed-based management strategies to address local water quality concerns. These projects use science-based and stakeholder-supported approaches to develop strategies to reduce nonpoint source pollution and improve water quality.

Water Resources Outreach and Training

The TWRI Water Resources Outreach and Training Program serves interested residents, students, and water professionals. Its programs convey BMPs essential to managing and conserving water, riparian and stream restoration, and water well protection and maintenance. The program administers courses that offer intensive hands-on instruction on the latest technologies, computer modeling, and water management strategies to water resource professionals. For the public, it raises awareness about water resources and the importance of practicing good water stewardship through publications, social media channels, and websites.

Texas Department of Licensing and Registration

TDLR is charged with protecting groundwater quality through the licensing of well drillers and assuring well construction standards are enforced. The program has mandatory requirements that all applicants have at least two years of drilling experience before taking the licensing exam. TDLR has the power to suspend or revoke licenses and set administrative penalties for incompetence or violations of Texas Occupations Code Chapters 1901 and 1902 or any related rule.

The Texas Legislature expanded the water well driller functions to include pump installers that repair wells after they have been drilled. Pump installers install and repair well pumps and equipment, locate and survey abandoned wells, and repair existing wells. Regulation of this function provides a mechanism to ensure that surface casing is completed on wells that were drilled before the rules on surface casing existed to prevent the contamination of drinking water sources by improperly sealed wells.

Abandoned water wells exist in every county and impact all the state's aquifers. It is conservatively estimated that 150,000 of the wells drilled since 1965 are abandoned or deteriorated. Abandoned water wells not only serve as conduits or channels for contamination to reach groundwater, but larger diameter wells can also be a hazard to human and animal life. In addition, uncapped, non-cemented, deteriorated, or uncased wells completed in more than one water-bearing zone or aquifer may allow poorer-quality water from one zone to commingle and impact the other(s). Abandoned municipal, industrial, and irrigation wells; abandoned rig-supply, domestic, and livestock wells; and unplugged test-holes also pose threats to groundwater quality.

Numerous state and local programs have identified **abandoned water wells** as having a significant, or potentially significant, **negative impact on groundwater quality** in the state.

State law requires landowners who possess an abandoned or deteriorated well to have the well plugged or capped under TDLR standards. The landowner is liable for any water contamination or injury due to such wells. The Abandoned Well Notification and Referral Program, administered by TDLR, compiles, identifies, and processes abandoned water well notification and enforcement cases in cooperation with local groundwater conservation districts and TCEQ. TDLR can assess administrative and civil penalties against persons who do not comply with the provisions. Some GCDs are implementing well-capping and plugging programs of their own.

Additionally, the Water Well Driller/Pump Installer Program provides advisories to water well drillers for areas with contaminant plumes or undesirable water quality. These advisories help water well drillers avoid impacting usable groundwater by unknowingly drilling through contaminated zones in the areas specified. Drillers are advised to case off and pressure grout those zones to prevent contaminant migration, another form of nonpoint source pollution.

Texas General Land Office

GLO is the state agency responsible for the management of state-owned public lands not specifically purchased by or deeded to other agencies. GLO is a proprietary state agency. GLO is also the state's lead agency for coordinating the CMP designed to help preserve public beach access, protect coastal wetlands

and other coastal natural resources, and respond to beach erosion along the Texas coast. GLO also works to remove derelict vessels and other debris that could contribute to spills.

GLO is responsible for managing over 3,300 miles of bays and estuaries and approximately 367 miles of Texas coastline, which includes the area from mean high tide to 10.3 miles into the Texas Gulf Coast. Through its Coastal Protection Department, GLO seeks to encourage, promote, and engage in sound stewardship practices that preserve and enhance the use and enjoyment of the state's natural resources, while fostering economic growth along the Texas coast.

Coastal Oil Spill Prevention and Response

The Oil Spill Prevention and Response Act of 1991 (OSPRA) designated GLO as the lead state agency for the prevention of and response to oil spills in coastal waters. The program is funded by a fee on crude oil loaded or off-loaded in Texas ports by vessel. Revenue is deposited in the Coastal Protection Fund, a dedicated fund that is capped at $20 million.

Rapid, effective response is a primary objective of the Oil Spill Prevention and Response Division. Five regional offices, located in Port Neches, LaPorte, Port Lavaca, Corpus Christi, and Brownsville, respond to more than 750 spill notifications reported to GLO annually. In addition to their 24/7 rapid response capability, regional staff conduct audits, inspections; patrol harbors by boat and vehicle; maintain response equipment; participate in oil spill response exercises with marine and shore-based industries; and provide public education services about oil spill prevention and response.

OSPRA requires all facilities that handle oil and pose a threat to coastal waters to submit contingency plan information to GLO for review and certification. Approximately 530 facilities currently require OSPRA certification. Spill plans are routinely audited by field personnel and detail spill response strategies, pre-identified sensitive natural resources, trained personnel, and provide inventories of spill response equipment. The law also requires that certain classes of vessels that transit Texas waters to submit contingency plans. The program maintains an accessible database containing over 4,170 company accounts representing more than 28,200 vessels.

Small Oil Spill Prevention Program

Small amounts of petroleum products can affect the vision, sense of smell, growth, and reproductive ability of marine wildlife. The Oil Spill Division's Small Spill Prevention Program works with marinas, recreational fishermen, and other interested parties to educate the public on how to properly dispose of oil and reduce small spills and includes free access to Scupper Plug and Bilge Reclamation initiatives. The Scupper Plug Program prevents accidental spills from entering coastal water by providing partner marinas with sorbent

equipment to block vessel outlets where oil may be released during fueling. The Bilge Water Reclamation Program has bilge water removal units accessible to small recreational and fishing vessel operators for no-cost disposal of oily bilge water.

The Texas Coastal Management Program

The Texas CMP was created to improve the management of the state's coastal resources to ensure the long-term ecological and economic productivity of the coast. It was approved by the NOAA on January 10, 1997. The Texas CMP is a network of representatives from eight state resources agencies and four resident members appointed by the GLO Commissioner. This advisory committee (Coastal Coordination Advisory Committee) works to coordinate state, local, and federal programs for the management of Texas coastal natural resources. The program awards federal funds to state and local entities to implement coastal improvement projects. The GLO administers the Texas CMP.

Texas CMP Enforceable Policies – The CMP's enforceable policies are detailed in 31 TAC Sections 26.15-26.34 (previously 31 TAC Sections 501.15-501.34). The enforceable policies are used by networked agencies to guide government decision making that may affect coastal natural resources. Enforceable policies are central to implementing state and federal consistency and must be addressed when conducting consistency reviews for projects proposed in the coastal zone.

There is one enforceable policy that specifically applies to nonpoint source pollution, detailed in 31 TAC Section 26.22. There may be other applicable enforceable policies depending on the circumstances of the discharge.

State agencies and subdivisions with authority to manage nonpoint source pollution cooperate in the development and implementation of a coordinated program to reduce nonpoint source pollution in order to restore and protect coastal waters. This may include the development of a WQMP certification program which does not cause a violation of state water quality standards established by TCEQ. OSSFs and underground storage tanks must not adversely affect coastal waters.

The Coastal Nonpoint Source Program

Each state with an approved Coastal Management Program is required to develop a federally approvable program to control coastal nonpoint source pollution. The Texas Coastal Nonpoint Source Pollution Control Program was approved by EPA and NOAA on May 22, 2022. The program addresses pollution from various

The Coastal Nonpoint Source Program addresses pollution from various sources such as **agriculture, forestry, urban areas, marinas**, and **hydromodification**.

sources and the management measures needed to control them. The emphasis is on voluntary management practices to reduce pollution. For example, the Clean Coast Texas Collaborative is a program initiative managed by the Harte Research Institute at Texas A&M University-Corpus Christi and funded by GLO. Various state and local partners assist coastal communities in the development and implementation of best practices for stormwater and floodplain planning and management, local policy development and adoption, OSSF maintenance and environmental outreach.

The Texas Beach Watch Program

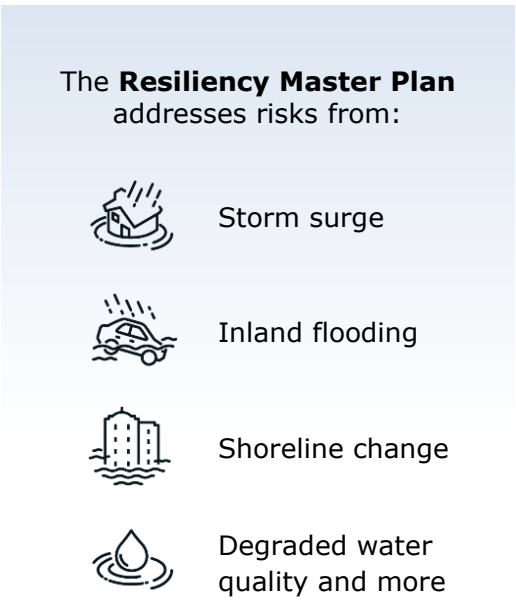
In October 2000, the U.S. Congress passed the Beaches Environmental Assessment and Coastal Health Act (BEACH Act) to protect the public health at our nation's beaches. The BEACH Act requires that states, in cooperation with EPA, develop and implement a program to monitor coastal recreation waters and to notify the public if Beach Action Value standards for pathogens and pathogen indicators are exceeded.

The BEACH Act requires the state to identify all factors used to evaluate and rank beaches; identify coastal recreation waters; identify bathing beaches adjacent to coastal recreational waters; develop a sampling, monitoring, and notification program; develop a method for issuing beach advisories; and develop a method to notify the public. In July 2001, the Governor's office appointed GLO as the lead state agency to implement the BEACH Act based upon the ongoing Beach Watch Program at that time.

The Texas Beach Watch Program provides baseline data on the health of high-use Gulf and bay sites, helping to ensure that patrons have timely access to contact recreation conditions. The Texas Beach Watch Program coordinates with county and city governments, universities, and organizations representing beachgoers. Contractors test specified sites for Enterococci bacteria and issue public advisories if water samples exceed the Beach Action Value criteria recommended by EPA. Additionally, data collected through the Texas Beach Watch Program is used by local government decision-makers, researchers, and TCEQ in developing the Texas Integrated Report.

The Texas Coastal Resiliency Master Plan

The Texas Coastal Resiliency Master Plan (TCRMP) is an ongoing and iterative state-led coastal planning effort coordinated by GLO that provides a vision to boost long-term resiliency of the state's coastal communities, infrastructure, and ecological assets to vulnerabilities and hazards resulting from both natural processes and human activities. The GLO engages in a robust planning process with stakeholders, including a Technical Advisory Committee consisting of coastal experts and local decision-makers. High priority coastal resiliency initiatives and needs are identified and supported by modeling data to anticipate future landscape change along the coast. The TCRMP recommends specific statewide and regional actions while ultimately prioritizing Tier 1 projects for funding and implementation. The TCRMP has been published in 2017, 2019, and 2023 with the next update is scheduled for release in 2028. This planning process will continue in four- to five-year cycles, assessing coastal vulnerabilities and evaluating solutions through close partnerships with local municipalities, ports, nonprofits, universities, and other federal and state agencies.



The Adopt-A-Beach Program

The Texas Adopt-A-Beach Program, sponsored by GLO, is dedicated to preserving and protecting Texas beaches by raising public awareness; educating residents about the source of marine debris; and generating public support for state, national, and international action to clean up coastal waters. Since the first Adopt-A-Beach Cleanup in 1986, more than 593,000 volunteers have removed more than 10,000 tons of trash from Texas beaches. At each cleanup site, volunteers record data about the trash to learn more about the cause of marine debris. These data have been instrumental in the passage of international treaties and laws aimed at reducing the amount of offshore dumping. The program's success is due to the generous efforts of dedicated volunteer county coordinators, coastal community leaders, sponsors, and residents. Strong support from the private sector helps carry the anti-litter message to all Texans across the state.

Railroad Commission of Texas

RRC is the state agency with primary regulatory jurisdiction over the exploration and production activities of the oil and natural gas, geothermal, and brine production industry, pipeline transporters, natural gas utilities, and surface mining operations. The RRC also has jurisdiction under state law over

geologic storage of carbon dioxide. The main functions of RRC are to protect the environment, protect public safety, protect the correlative rights of mineral interest owners, prevent the waste of natural resources, and ensure fair utility rates in those industries over which it has been granted authority.

Texas Natural Resources Code Section 91.113(a) authorizes RRC or its employees or agents to spend oil field cleanup funds to investigate, assess, control, or clean up oil and gas wastes or other substances or materials regulated by RRC that are causing or are likely to cause the pollution of surface or subsurface waters of the state. RRC is responsible for plugging and cleaning up abandoned wells and sites using state managed funds. Funding for RRC's program comes from regulatory fees, permit fees, and bond fees paid by industries regulated by the RRC. Some federal grants also fund this program. Cleanup and prioritization of sites is based on protecting public health, public safety, and the environment. RRC also oversees cleanup by responsible parties of pollution associated with activities under RRC jurisdiction.

Management of Wastes under RRC Jurisdiction

RRC regulates activities and the wastes generated by the exploration, development, or production of oil, gas, geothermal resources, and brine production, including the transportation of crude oil or natural gas by pipeline. These wastes include both hazardous and nonhazardous wastes.

RRC has responsibility for the prevention of pollution that might result from activities under its jurisdiction. RRC uses authorizations by rule and permitting to regulate the storage, transportation, processing, and disposal of wastes to prevent releases to the environment. RRC rules require that waste be processed and disposed of only in an authorized or permitted manner.

RRC establishes well construction and plugging standards. RRC's Groundwater Advisory Unit establishes the location of the base of usable quality groundwater and underground sources of drinking water. Wells must be constructed and plugged in such a manner that the usable quality groundwater is protected from contaminants that may migrate during the life of the well. In addition, RRC authorizations by rule and permits for the storage, management, and disposal of waste under the jurisdiction of the RRC including requirements for pit liners, sampling and monitoring, and runoff control.

In 2021, TCEQ gained the authority from EPA to permit discharges of produced water, hydrostatic test water, and gas plant effluent from oil and gas activities into Texas surface waters. This transfer of permitting authority for these discharges from the RRC to TCEQ was a result of Texas House Bill 2771 (86th Legislature, 2019).

RRC's environmental and safety programs cover the drilling, operation, and plugging of wells; separation and treatment of produced fluids in the field or at

natural gas processing plants; storage of crude oil before it enters the refinery; underground storage of hydrocarbons in salt caverns or natural gas depleted reservoirs; transportation of crude oil or natural gas by pipeline; drilling, operation, and plugging of geothermal and drilling, operation, and plugging of carbon dioxide injection wells; brine wells; and storage, hauling, reclamation, or disposal of wastes generated by these activities.

RRC's environmental and safety regulations for wastes are administered through the agency's Technical Permitting, Site Remediation, and Field Operations programs.

The Technical Permitting Program
The Technical Permitting Program oversees the management and disposal of waste, at and near the surface, and is responsible for regulating the construction, operation, permitting, and closure of injection wells that place fluids underground for storage and disposal. The Technical Permitting Program also coordinates with other state and federal agencies on environmental and safety matters.

The Field Operations Program and the Site Remediation Program
The Field Operations Program coordinates the activities of nine district offices in inspecting oil and gas operations and enforcing the RRC's environmental and safety rules. The Field Operations and Site Remediation programs use the Oil and Gas Regulation and Cleanup Fund to clean up abandoned facilities. This fund is supported by the agency's existing fees. The Site Remediation Program also reviews operator cleanup activities and coordinates RRC's response to large spills and other major events.

The Oil and Gas Well Plugging Program
RRC has long been active in regulating the exploration, development, and production of oil and gas in Texas, which includes protecting the environment and maintaining public safety. RRC began regulating oil and gas exploration and production operations in 1919 and over time has adopted increasingly stringent plugging standards and procedures. Statutes to prevent pollution from unplugged wells have also been modified over the years to increase RRC authority in this area.

RRC has used the Oil and Gas Regulation and Cleanup Fund to plug over 32,000 wells; however, thousands of additional abandoned wells remain. To ensure effective and efficient use of the fund, RRC has implemented a well plugging priority system to plug the wells

RRC has worked with TCEQ to utilize CWA Section 319(h) grant funding to **reduce chloride and TDS pollution** resulting from improperly plugged wells.

that pose the greatest risk to the environment. The fund is supported by existing agency fees and federal grants.

Site Remediation Section

RRC's Site Remediation Section has four programs to clean up oilfield pollution sites which are described below:

- Operator Cleanup Program – provides oversight of complex pollution cleanups performed by the oil and gas industry.
- Voluntary Cleanup Program – provides an incentive for landowners to remediate properties contaminated by oil and gas-related pollution. The program is available to all parties who did not cause or contribute to the contamination.
- State Managed Cleanup Program – uses funds from regulatory fees, permit fees, and bond fees paid by the oil and gas industry to clean up pollution at abandoned oil and gas sites. An abandoned site becomes a candidate for state cleanup when the responsible party fails or refuses to act or is unknown, deceased, or bankrupt.
- Grants Cleanup Programs – includes the Brownfields Response Program, Nonpoint Source Program, and Coastal Impact Assessment Program.

Texas Department of Transportation

TxDOT oversees the construction and maintenance of the state's roadway network, including managing potential pollution from road and highway operations throughout the state. TxDOT maintains compliance with several TPDES regulatory requirements through a variety of stringent work practices, programs, and policies. TxDOT's Stormwater Management Program website provides associated compliance and programmatic information. Some selected programs and practices that contribute to TXDOT's management of nonpoint source pollution are highlighted below.

Litter Pick Up

TxDOT contracts private companies to collect litter along rights of way. This helps prevent floatable debris from clogging storm drains and polluting surface waters. Urban roadway segments are cleaned multiple times per year, and mobile spot-cleaning is conducted as needed. Picnic and safety rest areas are also maintained regularly.

Street Sweeping

Street sweeping is performed by private contractors using primarily vacuum-assisted equipment for maximum particulate removal. Urban roadways are typically swept at least once a month, while elevated sections are treated as needed. Street sweeping is an effective method for reducing stormwater pollution and improving water quality by removing debris and pollutants from urban streets before they can enter storm drains. Pollutants in stormwater runoff have long been recognized as contributors to instream habitat

degradation, nuisance algal growth, low dissolved oxygen, and toxicity in receiving water bodies.

Permeable Friction Course
TxDOT uses permeable friction course (PFC), a porous asphalt layer up to two inches thick, as a BMP to improve water quality. Stormwater drains through the PFC to the underlying surface, then flows to the pavement edge. PFC has been shown to remove up to 90% of total suspended solids on high-speed, curb-less roadways. This pavement is categorized as a BMP because of its capability to remove total suspended solids, a nonpoint source pollutant, from stormwater runoff.

Structural Controls – Construction and Post-construction
TxDOT designs structural stormwater controls in ways to minimize pollutant discharges. Guidance that outlines existing environmental compliance and pollution prevention strategies are found in the *Construction Contract Administration Manual, Maintenance Management Manual, Local Government Projects Policy Manual,* and the *Hydraulic Design Manual.* Relevant design specifications are used to ensure compliance with water quality standards.

Public Education and Participation
TxDOT has a comprehensive program that promotes public participation in stormwater management, which includes training, outreach campaigns, and research initiatives. Programs like “Don’t Mess with Texas” ® and Adopt-a-Highway play a key role in litter prevention. Approximately 47% of all litter along Texas roads comes from motorists. The Adopt-a-Highway Program allows individuals or groups to maintain designated highway sections, with recognition signage provided. This model has been adopted by 47 other states and several countries.

Pesticide, Herbicide, and Fertilizer Application
TxDOT manages the use of pesticides, herbicides, and fertilizers being applied to rights-of-way to minimize potential pollutant runoff. The *Roadside Vegetation Management Manual* outlines best practices for vegetation control. All personnel applying these substances must complete a 12-hour training course and obtain a ground applicator license from TDA. Licensed applicators must also complete an annual eight-hour refresher course.

Texas Department of State Health Services
The Texas DSHS is the lead agency to protect, promote, and improve the health of the people of Texas. DSHS administers several programs that support public health and environmental programs.

The Environmental Surveillance and Toxicology Branch in the Environmental Epidemiology and Disease Registries Section at DSHS uses the principles of epidemiology, toxicology, and surveillance to identify populations at risk, to

develop evidence-based actions, and to protect and promote the health of the people of Texas.

The Seafood and Aquatic Life Operations Branch in the Division of Consumer Protection at DSHS protects consumers of fish and shellfish from disease or other health hazards transmissible by these products produced in or imported into Texas. The Seafood and Aquatic Life Operations Branch also protects recreational fishers from disease or contaminants found in fish and other aquatic species caught in Texas' lakes, rivers, bays, or nearshore state waters. Consumption advisories, possession bans, and shellfish harvesting area restrictions issued by DSHS are evaluated by TCEQ when developing the Texas Integrated Report.

The Meadows Center for Water and the Environment

The Meadows Center for Water and the Environment at Texas State University supports research, education, stewardship, and service programs that ensure sustainable water resources for human needs, ecosystem health, and economic development. The Meadows Center develops and promotes holistic approaches to the management of river systems including the springs, streams, groundwater aquifers, and watersheds that feed them, as well as the lakes, bays, and estuaries into which they flow. This broad approach supports the Management Program goals of data collection and assessment, implementation, and education.

Data Collection and Assessment

The Meadows Center's monitoring programs support watershed research, management, and policy decisions and are conducted in collaboration with institutional partners, water resource professionals, faculty, students, and volunteers. These monitoring programs fill information gaps that have historically impeded critical components of watershed management, such as assessment and modeling. Meadows Center staff also serve as technicians, quality assurance officers, and project managers for CRP water quality monitoring efforts in the Guadalupe River Basin.

The Meadows Center also develops and deploys assessment and prioritization tools, such as decision support systems that incorporate hydrologic and land use models that support management priorities and facilitate stakeholder participation in planning and implementation. These modeling efforts incorporate the effects of land use changes, streamflow, water quality, and nonpoint source pollution, and provide temporal and predictive information on urban growth or historical land use patterns.

Watershed Planning and Implementation

The Meadows Center helps communities develop WPPs and large-scale regional planning frameworks that support sustainable uses of the region's water resources. The intended outcomes of these plans include maintenance of water

quality standards, alignment of water availability with demand, agricultural irrigation efficiency, improved watershed hydrologic function, sustainable growth, and incorporation of natural areas into water quality management strategies. Watershed-based plans are implemented in collaboration with stakeholders as well as directly through the Meadows Center.

Education and Outreach

The Meadows Center engages more than 125,000 people each year in environmental education and outdoor learning activities at Spring Lake in San Marcos, Texas. The Spring Lake site includes a wide variety of educational activities that emphasize the importance of environmental conservation and the impacts of nonpoint source pollution.

Texas Stream Team

The Texas Stream Team coordinates a network of partner organizations and voluntary citizen scientists that monitor water quality statewide. The Texas Stream Team program serves as a valuable resource for educating the public about water quality issues and fostering community participation in monitoring and protecting water quality. Data collected through the volunteer monitoring program can be used at the local level for decision making. The Texas Stream Team is administered through a cooperative partnership between the Meadows Center, TCEQ, and a CWA Section 319(h) grant from EPA. The Texas Stream Team, through its varied outreach activities, encourages individuals to adopt activities and behaviors which contribute to the improvement of water quality and prevention of nonpoint source pollution.

Texas Invasive Species Coordinating Committee

The Texas Invasive Species Coordinating Committee (TISCC) was established by the 81st Texas Legislature in 2009. Statutorily authorized members of TISCC include TDA, TPWD, TSSWCB, the Texas A&M AgriLife Extension Service, the Texas A&M Forest Service, TWDB, and Texas Animal Health Commission. TISCC is administratively attached to TSSWCB, a member of whose staff serves as the committee coordinator.

TISCC serves as a catalyst for cooperation between state agencies and provides a forum for developing effective and timely interagency strategies and policies for invasive species control. TISCC makes recommendations to the leadership of state agencies regarding research, technology transfer, and management actions related to invasive species control.

A myriad of invasive plant and animal species, both aquatic and terrestrial, can affect water quality, water quantity, and aquatic ecosystems. For example:

- Rapidly expanding infestations of giant salvinia can overgrow and replace native aquatic plants, creating dense surface cover and preventing light and oxygen from entering the water. Additionally, decomposing material

from mats of giant salvinia drops to the bottom of lakes and ponds, consuming dissolved oxygen needed by fish and other aquatic life.
- Feral hogs are significant contributors of pollutants to creeks and rivers across the state. Fecal matter deposited directly in streams by feral hogs contributes bacteria and nutrients. In addition, extensive rooting activities of groups of feral hogs can cause extreme erosion and soil loss.
- Riparian areas infested by saltcedar impact salinity levels in water bodies. Saltcedar absorbs large amounts of water and concentrates salt in the soil which can then be transported to surface waters. Saltcedar can also intensify water quality problems due to its ability to reduce groundwater supplies and streamflow through evapotranspiration.

Efforts of TISCC contribute to the implementation of the National Invasive Species Management Plan developed under the auspices of federal Executive Order 13112. Work by TISCC supports the state's water quality goals and contributes to achieving the goals and objectives of this Management Program.

Regional and Local Agencies

The following sections describe various regional and local agencies and the programs they administer which contribute to managing nonpoint source pollution in Texas.

Cities and Counties

Cities in Texas have numerous environmental responsibilities, including water and wastewater services, solid waste management, and stormwater management. Cities have many programs to address stormwater pollution, including educational materials, inspections, and land development guidelines. Counties in Texas have numerous environmental responsibilities, including OSSF management, solid waste management, and stormwater management.

River Authorities

Twenty-four river authorities were created by the Texas Legislature as water conservation and reclamation districts that cover multiple counties. Their primary function is to distribute and conserve the state's surface water. River authorities provide stewardship for the water resources in their basins. They also undertake various water-related projects, such as flood control, wastewater management, and water quality monitoring. Many river authorities are Clean River Partners. Streams, rivers, evaporation, and precipitation interconnect Texas waters, allowing water management in one region to affect water quality and water supply in another. Therefore, the collaboration of river authorities is crucial to the management of water across Texas.

Councils of Governments

COGs are voluntary associations of local governments formed under Texas law. Texas has 24 COGs that represent all 254 counties. These organizations address

the problems and planning needs that cross the boundaries of individual local governments or that require regional attention. Services are provided in cooperation with member governments, the private sector, and state and federal partners. COGs are responsible for regional planning activities that may differ from region to region, but typically include planning for economic growth, water supply and water quality, air quality, transportation, emergency preparedness, and the coordinated delivery of various social services. Many COGs establish and host region-wide geographical information systems as well as databases on regional population, economic, and land-use patterns. Seven COGs are also eligible to receive CWA Section 604(b) funding from TCEQ to implement water quality planning activities.

Soil and Water Conservation Districts

SWCDs are independent political subdivisions of state government, like a county or school district. The first SWCDs in Texas were organized in 1940 in response to the widespread agricultural and ecological devastation of the Dust Bowl of the 1930s. There are currently 216 SWCDs organized across the state. Each SWCD is governed by five directors elected by landowners within the district.

SWCDs provide **technical assistance, education, and resources** to landowners and communities to promote sustainable land and water management practices.

SWCDs serve as the state's primary delivery system through which technical assistance and financial incentives for natural resource conservation programs are provided to agricultural producers and rural landowners. SWCDs combat soil erosion and enhance water quality and quantity by giving farmers and ranchers the opportunity to solve local conservation challenges. SWCDs instill in landowners and residents a stewardship ethic and individual responsibility for soil and water conservation.

Some of TSSWCB's statewide programs, such as the WQMP Program and Flood Control Program, are administratively coordinated through the efforts of local SWCDs. Additionally, SWCDs assist federal agencies in establishing resource conservation priorities for federal Farm Bill and CWA programs based on locally specific knowledge of natural resource concerns. SWCDs work with the USDA NRCS, USDA Farm Service Agency, EPA, Texas A&M AgriLife Extension Service, Texas A&M Forest Service, and others when necessary to assist landowners and agricultural producers in meeting natural resource conservation needs. SWCDs are actively involved in promoting outreach and education programs, such as sponsoring pesticide applicator workshops, agricultural producer field days, land and range judging contests for students, scholarships, and securing funds for the construction of outdoor classrooms.

SWCDs in Texas do not have taxing authority; therefore, various federal and state agencies and other local governmental entities aid SWCDs. As TSSWCB is charged with the responsibility of coordinating the programs and activities of the state's 216 local SWCDs, the assistance programs provided by TSSWCB make up most SWCDs' operating budgets. Additionally, many SWCDs have received CWA Section 319(h) grants from TSSWCB to implement specific objectives in WPPs and TMDLs. The delivery system that SWCDs present for the state is one of the most efficient and effective mechanisms for conducting natural resource conservation programs.

Groundwater Conservation Districts

GCDs are the state's preferred method of groundwater management and may be created under Chapter 36 of the TWC to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater and to control subsidence. Chapter 36 authorizes GCDs to make and enforce rules to carry out those responsibilities.

GCDs are guided by comprehensive management plans that address various management goals aimed at the efficient use, conservation, and protection of groundwater resources. Wastewater reuse, well spacing, brush control, drought contingency with water conservation, and other strategies are featured in the plans. While water quantity is the primary focus of these plans, strategies to protect water quality may also be addressed. GCDs are also encouraged by their enabling legislation to coordinate groundwater quality assessment and protection activities with the appropriate state regulatory agencies.

Texas Alliance of Groundwater Districts

TAGD was formed to support the sound management of groundwater resources, including groundwater conservation and protection activities. Currently, 90 of the 98 GCDs in Texas are members of TAGD. Its voting membership is restricted to GCDs which have the powers and duties to manage groundwater as defined in TWC Chapter 36.

TAGD provides a means of communication and exchange of information between individual GCDs on issues ranging from the day-to-day operation of local groundwater management to statewide groundwater resource policy issues TAGD staff and its members also serve on various local, state, and federal agency committees and subcommittees and maintain contact with members of the private sector and various elected officials.

Federal Agencies

The following sections describe the various federal agencies and the programs they administer which contribute to managing nonpoint source pollution in Texas.

United States Environmental Protection Agency

EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. EPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and monitoring and enforcing compliance. EPA also supports voluntary, locally driven efforts to protect and restore water quality by providing grant funding, technical guidance, and training to state partners under CWA Section 319(h).

Watershed Planning and the CWA Section 319(h) Program

EPA offers numerous free tools and resources that simplify the watershed planning process and provide access to needed resources, including:

- Technical Guidance and Tools – EPA offers free online guidance on national management measures and tools to calculate pollutant load reductions and social indicators. These resources can be found on EPA's Nonpoint Source Pollution website[29].
- *Handbook for Developing Watershed Plans to Restore and Protect Our Waters* – This guidance document discusses the watershed management process and can be found on EPA's Nonpoint Source Pollution website. EPA requires that all watershed-based plans funded with CWA Section 319(h) grants address the nine elements described in this handbook.
- Training – EPA offers free online seminars and courses about watershed protection and planning on their Watershed Academy website[30].

United States Geological Survey

USGS has the principal responsibility within the federal government to provide hydrologic information and achieve the best use and management of the nation's water resources. Through research and the Integrated Water Availability Assessments, Next Generation Water Observing Systems, National Hydrologic Monitoring Networks, and Integrated Water Prediction programs, USGS scientists collect and interpret data about water chemistry, hydrology, land use, stream habitat, and aquatic life. These programs are a primary source for long-term, nationwide, and regional information on the quality of streams, groundwater, and aquatic ecosystems. This information supports national, regional, state, and local decision making and policy formation for water-quality management.

USGS also conducts a large amount of monitoring statewide, and TCEQ uses much of the data. USGS's surface water collection network in Texas is primarily established to monitor continuous streamflow at many permanent sites. Field measurements and samples for routine water chemistry and metals in water are also collected at many of the fixed sites. Sites are chosen to represent a mix of

[29] www.epa.gov/nps/basic-information-about-nonpoint-source-nps-pollution
[30] www.epa.gov/watershedacademy

natural and human factors that influence water quality. USGA relates chemical variables to hydrologic conditions to interpret water-resource conditions and meet water quality management needs such as estimating point and nonpoint source loadings.

National Oceanic and Atmospheric Administration

NOAA is a scientific agency within the U.S. Department of Commerce focused on the conditions of the oceans and the atmosphere. NOAA warns of dangerous weather, charts seas and skies, guides the use and protection of ocean and coastal resources, and conducts research to improve understanding and stewardship of the environment. Among many other responsibilities, NOAA administers the CZMA of 1972, which provides for management of the nation's coastal resources and balances economic development with environmental conservation.

The CZMA created the National Coastal Zone Management Program, a voluntary partnership between NOAA and 34 coastal and Great Lakes states, territories, and commonwealths. The partnership works to preserve, protect, develop, and where possible, restore and enhance the nation's coastal zone resources. NOAA invests millions of dollars, allocated through the CZMA, to implement coastal management programs in the participating states and territories. The Texas Coastal Management Program, approved by NOAA in 1996, is administered by the GLO.

United States Army Corps of Engineers

The U.S. Army Corps of Engineers is a worldwide organization that provides engineering services, environmental restoration, and construction support for a wide variety of civil and military projects. The U.S. Army Corps of Engineers develops projects to reduce flood damage; improves navigation channels and harbors; protects wetlands; and preserves, safeguards, and enhances the environment. The U.S. Army Corps of Engineers plays a significant role in managing erosion and pollution, particularly through its Regional Sediment Management Program.

United States Coast Guard

The U.S. Coast Guard is a military, multi-mission, maritime service, and one of the nation's six Armed Services. Its mission is to ensure our Nation's maritime safety, security, and stewardship. The Coast Guard is the lead Federal agency for preparedness and response to oil discharges and hazardous substance releases in the Coastal Zone.

United States Department of Agriculture

The USDA provides federal leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on public policy, the best available science, and effective management. USDA agencies and programs with a role in nonpoint source pollution management are described below.

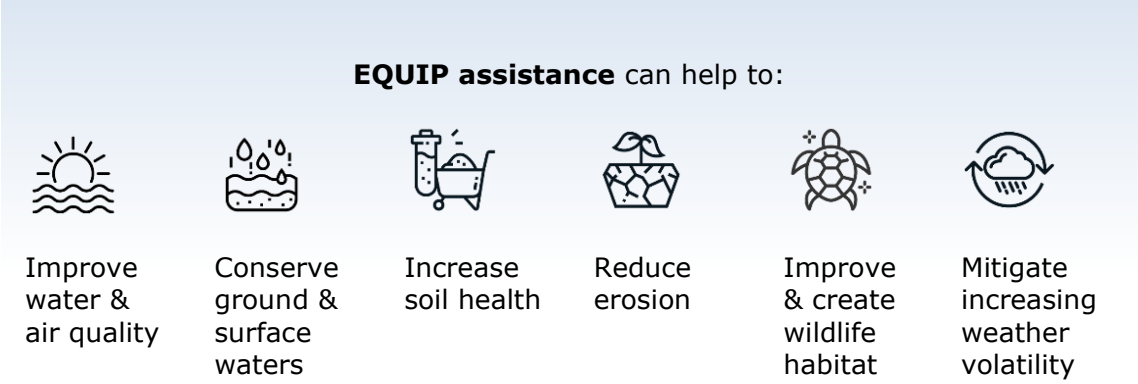
Natural Resources Conservation Service

The NRCS is a federal agency that works in partnership with the farmers, ranchers, and forest stewards of Texas to improve and protect soil, water, and other natural resources. For 90 years, NRCS has helped people make investments in their operations and local communities to keep working lands working, boost rural economies, increase the competitiveness of American agriculture, and improve the quality of our air, water, soil, and habitat.

Through voluntary conservation programs, NRCS helps producers, SWCDs, and other partners protect and conserve natural resources on private lands throughout the U.S. Through one-on-one personalized advice, NRCS works with producers and communities to find the best solutions to meet their unique conservation and business goals. NRCS has a unique partnership with SWCDs. All 217 SWCDs in Texas have working mutual agreements with the USDA to provide grassroots input to USDA through NRCS.

Environmental Quality Incentives Program

EQIP provides financial and technical assistance to agricultural producers and forest landowners to address natural resource concerns and deliver environmental benefits. Through EQIP, NRCS provides agricultural producers with one-on-one help and financial assistance to plan and implement improvements, or what NRCS calls conservation practices. Together, NRCS and producers invest in solutions that conserve natural resources while improving agricultural operations.



EQIP is administered by NRCS, but the priorities for allocation and distribution of financial assistance funds are established with input from a State Technical Committee. The committee is composed of representatives from federal and state resource agencies, organizations that are associated with agriculture, and individual agriculture operators. TCEQ and TSSWCB are represented on this committee. In Texas, financial assistance funds are used to address both the local priority resource concerns identified by local work groups that are chaired by SWCDs, and the statewide resource concerns identified by the committee. The committee and local work groups also make recommendations for

conservation practices eligible for incentive payments. Eligible persons may apply for EQIP assistance by contacting their local NRCS office. Landowners and operators will work with a local conservationist to plan the practice or system of practices to address resource concerns present on their operations. In addition to state and local priority resource concerns, EQIP has several national priorities and landscape initiatives, such as the National Water Quality Initiative, to address high priority natural resource concerns.

The availability of EQIP, active participation in the State Advisory Committee, local work groups, and the recommendations from the committee to the state conservationist have provided opportunities to focus resources on problem areas that were previously difficult or impossible to address. The voluntary nature of the program has enabled the committee and NRCS to establish state-level resource concerns. Through the committee, NRCS has actively pursued information on areas of the state where changes or adjustments in practices by individual landowners would be needed to contribute to the alleviation of identified natural resource concerns.

Watershed Programs
NRCS Watershed Programs provides technical and financial assistance to local government agencies, tribal organizations, and other eligible sponsors to help communities implement conservation practices that address watershed resource concerns. These programs are the Emergency Watershed Protection, the Watershed Protection and Flood Prevention Operations, and the Watershed Rehabilitation Program.

Conservation Technical Assistance Program
The Conservation Technical Assistance Program, administered by NRCS, provides our nation's farmers, ranchers and forestland owners with the knowledge and tools they need to conserve, maintain, and restore the natural resources on their land and improve the health of their operation for the future.

Conservation Reserve Program
The Conservation Reserve Program is a voluntary program administered by the Farm Service Agency under USDA that provides a yearly rental payment to farmers who remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. These practices can reduce nonpoint source pollution from agricultural lands.

Agricultural Research Service
Agricultural Research Service (ARS) is the principal in-house research agency of the USDA. ARS conducts research to develop and transfer solutions to agricultural problems of high national priority. Two of the 22 ARS National Programs, Water Availability and Watershed Management and Sustainable Agricultural Systems, are strongly committed to applied nonpoint source

pollution research as part of their mission to increase understanding and develop solutions to protect the nation's soil and water resources. In Texas, ARS is conducting ongoing research on nonpoint source-related issues, such as land application of municipal and agricultural wastes; improved management of soil, water, nutrients, and chemicals in agricultural production systems; and enhanced simulation tools for water quality, hydrology, and crop growth.

United States Forest Service

The mission of the Forest Service, an agency of the USDA, is to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations. Its main activities include protection and management of natural resources on National Forest System lands; research on all aspects of forestry, rangeland management, and forest resource use; and community assistance and cooperation with state and local governments, forest industries, and private landowners to help protect and manage nonfederal forest and associated watersheds. The Forest Service uses a suite of BMPs to manage activities like road construction, timber harvesting, and site preparation to minimize their impact on water quality.

International Boundary and Water Commission, U.S. Section

The mission of the IBWC is to apply the rights and obligations which the governments of the United States and Mexico assume under the numerous water treaties and related agreements, and to do so in a way that benefits the social and economic welfare of the peoples on the two sides of the boundary and improves relations between the two countries. IBWC may undertake cooperative projects to implement existing treaties and other agreements between the two governments. Projects may originate with the emergence of an environmental problem requiring the agreement and cooperation of the two governments to develop and implement a solution. Because of the international nature of the Rio Grande, the U.S. Section of IBWC implements the CRP in its 1,254-mile international boundary section by collecting routine water quality data in the Rio Grande. IBWC has also collaborated with partners both in the United States and Mexico on projects researching sources of nonpoint sources of pollution in the Rio Grande watershed.

United States Fish and Wildlife Service

The U.S. Fish and Wildlife Service is the lead federal agency within the U.S. Department of the Interior responsible for management of the nation's fish and wildlife. The mission of the agency is to work with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The agency guides conservation and management of the nation's fish and wildlife resources, including a national program to provide the public opportunities to understand, appreciate, and wisely use fish and wildlife resources. The Fish and Wildlife Service works to restore and protect habitats impacted by nonpoint pollution through various

programs and partnerships that focus on reducing pollutants like sediment, nutrients, pesticides, and excess salinity.

Chapter 6. Best Management Practices

A wide variety of BMPs are used to manage nonpoint source pollution in Texas. This section provides an overview of the primary BMPs in use or identified for use. This is not a complete listing of all acceptable BMPs for nonpoint source pollution control programs and projects in Texas. The use and demonstration of innovative practices, whether funded by CWA Section 319(h) or not, are acceptable and valuable, particularly where their effectiveness can be evaluated and monitored.

Definition of Best Management Practices

Nonpoint source BMPs are activities, practices, and procedures undertaken to prevent or reduce water pollution. They are sometimes categorized as preventative measures, which are actions taken or techniques used to eliminate or reduce concentrations of pollutants from runoff. Programs that implement these BMPs are addressed in Chapter 5.

TSSWCB has determined that the implementation of a whole-farm WQMP based on the NRCS Field Office Technical Guide, including all practices required to minimally meet the resource quality criteria for water quality at the resource management system level, represents the best available technology for preventing and abating agricultural and silvicultural nonpoint source pollution in order to comply with the TSWQS [31 TAC Section 523.3(g)(2)]. This means that the specific BMPs included in the NRCS technical guide are incorporated by reference as part of this Management Program.

Since most BMPs address specific management needs and site characteristics, it is helpful to identify and classify BMPs according to where they are most effective. The next section categorizes BMPs according to their use in managing the various parts of the nonpoint source pollution pathway.

Categories of Nonpoint Source Pollution Management

The management of nonpoint source pollution involves a strategic combination of practices designed to prevent and intercept the entry of nonpoint source pollutants into waters along the entire stormwater pathway. Most BMPs address one specific stage of this pathway, although they may be applied in different situations and to different sources. General categories of BMPs utilized to manage NPS pollution in Texas include:

- preventive practices: conceptual management or design practices which eliminate or reduce pollutants at the source;
- cleanup practices: recapturing pollutants that have spilled onto or contaminated a location;
- runoff control practices: reducing the volume and velocity,
- erosion control practices: protecting material at the soil surface from entering stormwater runoff;

- sediment control practices: preventing materials already suspended in water from leaving a site;
- channel protection practices: preventing the erosion of channels, stream banks, and streambeds;
- riparian restoration practices: restoring natural communities that minimize erosion and remove water pollutants;
- stream channel restoration practices: create stable channels that can handle flows without excessive erosion or deposition;
- abatement of contaminated groundwater seepage to reduce the flow into surface waters; and
- public education.

For optimum effectiveness, nonpoint source programs should attempt to coordinate BMPs with other governmental agencies, private sector interests, and stakeholder groups at the state and watershed level. Additional monitoring to characterize nonpoint source pollution in a watershed may be necessary to ensure BMPs are being installed in the most effective locations. Control of these pollutants generally becomes more difficult and expensive the farther they travel down the stormwater pathway.

Preventive BMPs

Preventive BMPs, sometimes called source controls, are management techniques or designs that prevent or reduce the exposure of substances to precipitation, stormwater, or surface waters. All policies and practices that prevent the release of materials to the open air, soil, or water are preventive BMPs. Such practices and safeguards comprise a large part of the rules, guidelines, and permit requirements for facility management and for the storage, transport, processing, and disposal of waste and hazardous materials administered by TCEQ and other regulatory agencies. Typical preventative BMPs include:

- planning, policy, and regulatory activities
- using alternate, less polluting materials
- housekeeping to contain and cover materials and wastes, or keep them indoors
- minimize the extent and duration of land disturbance activities
- well plugging
- groundwater seepage abatement and control
- recycling and composting, including rainwater harvesting
- household hazardous waste and similar collections

Cleanup BMPs

Cleanup BMPs remove or remediate nonpoint source pollutants which have contaminated a specific area. In most cases of significant contamination, the selection and implementation of these BMPs is governed specifically under

agency rules. Other cleanup BMPs, such as the cleanup of litter or illegally disposed materials, are more discretionary. Typical cleanup BMPs include:

- spill response
- contaminated site cleanup
- trash-litter cleanup
- increased-efficiency street sweeping
- plugging oil and gas wells
- source removal

Runoff Control/LID BMPs

Runoff BMPs reduce the volume, velocity, and erosive force of stormwater through the diversion, infiltration, or absorption of stormwater into the surface or through physical impediments which slow the flow of stormwater. Typical runoff control/LID BPMs include:

- level spreaders
- permeable pavement
- bio-retention and bio-swales
- rainwater harvesting
- rainwater detention/irrigation
- vegetated filter strips
- rain gardens
- trash interceptors/separators
- tree boxes
- riparian buffers

Erosion Control BMPs

Erosion control BMPs maintain the integrity of the land surface to prevent material at the surface from entering stormwater or surface water. Typical erosion control BMPs include:

- mulch and vegetative blankets
- vegetation preservation and establishment
- riprap on temporary traffic areas

Sediment Control BMPs

For material that escapes erosion control BMPs and enters stormwater runoff, the next line of defense is sediment control. Sediment control BMPs detain runoff before it leaves a site to filter out and/or precipitate suspended particles, including soluble pollutants which may be attached to solid particles. Typical sediment control BMPs include:

- inlet protection
- extended detention basins
- vegetated filter strips

- sediment trap/stone outlet
- filter berms and silt fences
- sand filter systems
- constructed or restored wetlands

Channel, Stream Bank, and Streambed Protection BMPs

These BMPs protect the integrity of stream beds and stream banks to prevent erosion and loss. Stream banks can be protected or restored either by increasing the resistance of the bank to erosion or by decreasing the energy of the water at the point of contact with the bank, such as deflecting or interrupting flows. Typical channel, stream bank, and streambed protection BMPs include:

- prevention of disturbance by exclusion of livestock, off-road vehicles, etc.
- channel shaping to reduce velocity and erosive force
- gabions or riprap lining of channels
- reinforcing or armoring exposed surfaces
- stream bank vegetation

Habitat Restoration BMPs

These are a special subset of biological erosion control and stream protection BMPs. They establish or protect the natural communities which most effectively protect waterways and riparian areas from erosion. Typical habitat restoration BMPs include:

- reestablish the hydrology of wetlands and riparian areas
- restoration of wetland native plant communities
- riparian buffer connecting streams or channels to floodplain

Appendix A. Nonpoint Source Priority Waters

Required component of NPSMP: State identifies the primary categories and subcategories of NPS pollution and a process for prioritizing impaired and unimpaired waters and identify how national and state priorities may align.

Texas Integrated Report Subcategory and Definitions

5C
Monitoring – More data are needed to confirm the impairment or delineate the area of the impairment in order to select and initiate the most appropriate strategy to achieve attainment of the TSWQS. This strategy is limited to the collection or acquisition of more water quality data through a special study or targeted monitoring.

Evaluation – A more comprehensive, site-specific analysis than the one conducted for the Texas Integrated Report is required.

5B
TSWQS Review – UAA, which is conducted if the designated use or criterion appears to be inappropriate for a water body. A UAA involves the collection of site-specific information that could result in a use change or the development of a site-specific criterion. Establishing or changing a designated use or criterion requires a revision to the TSWQS, adoption by TCEQ, and approval by EPA.

5A
TMDL/I-Plan – A TMDL and I-Plan are planned, scheduled, or under development. A TMDL determines the maximum amount of a pollutant a water body can receive and still achieve its water quality standards and then allocates this amount (load) to point and nonpoint sources in the watershed.

4A
TMDL/I-Plan Completed – A TMDL and I-Plan are being implemented. A TMDL I-Plan is locally developed and describes the regulatory and voluntary activities necessary to achieve the pollutant reductions identified in the TMDL

5R
WPP – A WPP is planned, scheduled, under development, or being implemented. WPPs are a coordinating framework for designing and implementing water quality protection programs and projects. WPPs are locally developed, designed to meet water quality standards, and satisfy EPA guidance and criteria.

Other – The impairment cannot be addressed by one of the other identified strategies; natural attenuation may be involved.

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
0101A_01	Dixon Creek	5C
0102_01	Lake Meredith	5C
0102_01	Lake Meredith	5C
0102_02	Lake Meredith	5C
0102_02	Lake Meredith	5C
0103_01	Canadian River Above Lake Meredith	5C
0103_02	Canadian River Above Lake Meredith	5C
0103_03	Canadian River Above Lake Meredith	5C
0105_01	Rita Blanca Lake	5C
0105_01	Rita Blanca Lake	5C
0201A_01	Mud Creek	5B
0201A_01	Mud Creek	5C
0201D_01	Barkman Creek	5C
0202A_02	Bois d'Arc Creek	5R
0202A_03	Bois d'Arc Creek	5B
0202C_01	Pecan Bayou	5B
0202E_01	Post Oak Creek	5C
0202F_01	Choctaw Creek	5B
0202F_02	Choctaw Creek	5B
0202G_01	Smith Creek	5B
0202H_01	Big Pine creek	5C
0202I_01	Little Pine Creek	5C
0202I_01	Little Pine Creek	5C
0202L_01	Honey Grove Creek	5B
0202N_01	Hicks Creek	5C
0205A_01	Wildhorse Creek	5C
0206B_01	South Groesbeck Creek	5B
0207_04	Lower Prairie Dog Town Fork Red River	5B
0211_02	Little Wichita River	5C
0212A_01	Little Wichita River Above Lake Arrowhead	5C
0214_05	Wichita River Below Diversion Lake Dam	5C
0214A_01	Beaver Creek	5B
0214A_02	Beaver Creek	5B
0214F_01	Unnamed tributary of Buffalo Creek	5B
0219_01	Lake Wichita	5C
0219_01	Lake Wichita	5C
0219_01	Lake Wichita	5C
0221_01	Middle Fork Pease River	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
0221_01	Middle Fork Pease River	5C
0221_01	Middle Fork Pease River	5C
0223_01	Greenbelt Lake	5C
0226_01	South Fork Wichita River	5C
0226_02	South Fork Wichita River	5C
0226_03	South Fork Wichita River	5C
0226_04	South Fork Wichita River	5C
0228_01	Mackenzie Reservoir	5C
0228_01	Mackenzie Reservoir	5C
0229_01	Upper Prairie Dog Town Fork Red River	5C
0229_02	Upper Prairie Dog Town Fork Red River	5C
0299A_01	Sweetwater Creek	5C
0302A_02	Big Creek	5C
0302H_01	Elliott Creek	5C
0303B_01	White Oak Creek	5B
0303B_03	White Oak Creek	5B
0303B_03	White Oak Creek	5C
0303B_04	White Oak Creek	5B
0303P_01	Mustang Creek	5C
0304_01	Days Creek	5C
0304C_01	Wagner Creek	5C
0306_01	Upper South Sulphur River	5C
0307A_01	Middle Sulphur River	5C
0401_02	Caddo Lake	5C
0401_03	Caddo Lake	5C
0401_05	Caddo Lake	5C
0401_07	Caddo Lake	5C
0401A_01	Harrison Bayou	5C
0402_02	Big Cypress Creek Below Lake O' the Pines	5C
0402B_01	Hughes Creek	5C
0403_04	Lake O' the Pines	4A
0404_02	Big Cypress Creek Below Lake Bob Sandlin	5B
0404B_01	Tankersley Creek	5B
0404C_01	Hart Creek	5B
0404E_01	Dry Creek	5C
0404J_01	Prairie Creek	5C
0405_01	Lake Cypress Springs	5C
0405_02	Lake Cypress Springs	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
0405_03	Lake Cypress Springs	5C
0405A_01	Big Cypress Creek	5B
0405A_01	Big Cypress Creek	5C
0406_01	Black Bayou	5C
0406_02	Black Bayou	5C
0406_02	Black Bayou	5C
0407_01	James Bayou	5C
0407_02	James Bayou	5C
0409_01	Little Cypress Bayou (Creek)	5C
0409_02	Little Cypress Bayou (Creek)	5C
0409_02	Little Cypress Bayou (Creek)	5C
0409_04	Little Cypress Bayou (Creek)	5C
0409A_01	Lilly Creek	5B
0409B_01	South Lilly Creek	5B
0410_02	Black Cypress Bayou (Creek)	5C
0410_04	Black Cypress Bayou (Creek)	5C
0410A_01	Black Cypress Creek/Bayou	5C
0501_01	Sabine River Tidal	5C
0501_02	Sabine River Tidal	5C
0501B_01	Little Cypress Bayou	5B
0501B_01	Little Cypress Bayou	5C
0501B_02	Little Cypress Bayou	5B
0501B_02	Little Cypress Bayou	5C
0501B_03	Little Cypress Bayou	5B
0501B_03	Little Cypress Bayou	5C
0502A_01	Nichols Creek	5C
0502A_01	Nichols Creek	5C
0502B_02	Caney Creek	5C
0502E_01	Cypress Creek	5B
0505_04	Sabine River Above Toledo Bend Reservoir	5C
0505B_01	Grace Creek	5B
0505B_02	Grace Creek	5B
0505G_01	Wards Creek	5C
0506A_01	Harris Creek	5C
0507G_01	South Fork of Sabine River	5B
0508_01	Adams Bayou Tidal	4A
0508_01	Adams Bayou Tidal	4A
0508_02	Adams Bayou Tidal	4A

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
0508_02	Adams Bayou Tidal	4A
0508_03	Adams Bayou Tidal	4A
0508_03	Adams Bayou Tidal	4A
0508_04	Adams Bayou Tidal	4A
0508_04	Adams Bayou Tidal	4A
0508A_01	Adams Bayou Above Tidal	4A
0508B_01	Gum Gully	4A
0508B_01	Gum Gully	4A
0508C_01	Hudson Gully	4A
0508C_01	Hudson Gully	4A
0511_01	Cow Bayou Tidal	4A
0511_02	Cow Bayou Tidal	4A
0511_03	Cow Bayou Tidal	4A
0511_03	Cow Bayou Tidal	4A
0511_04	Cow Bayou Tidal	4A
0511_04	Cow Bayou Tidal	4A
0511A_02	Cow Bayou Above Tidal	4A
0511B_01	Coon Bayou	4A
0511B_01	Coon Bayou	4A
0511C_01	Cole Creek	4A
0511E_01	Terry Gully	4A
0512A_01	Running Creek	5B
0512B_01	Elm Creek	5B
0513_01	Big Cow Creek	5C
0514_01	Big Sandy Creek	5C
0601_01	Neches River Tidal	5A
0601_02	Neches River Tidal	5A
0601_03	Neches River Tidal	5A
0601_04	Neches River Tidal	5A
0601A_01	Star Lake Canal	5C
0603A_01	Sandy Creek	5C
0603B_01	Wolf Creek	5C
0604A_02	Cedar Creek	5C
0604A_03	Cedar Creek	5C
0604B_01	Hurricane Creek	5C
0604C_01	Jack Creek	5C
0604D_01	Piney Creek	5B
0604D_02	Piney Creek	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
0604M_03	Biloxi Creek	5C
0604M_03	Biloxi Creek	5C
0605A_01	Kickapoo Creek in Henderson County	5C
0605A_01	Kickapoo Creek in Henderson County	5C
0605A_02	Kickapoo Creek in Henderson County	5C
0606_01	Neches River Above Lake Palestine	5C
0606_02	Neches River Above Lake Palestine	5C
0606_02	Neches River Above Lake Palestine	5B
0606A_01	Prairie Creek	5B
0606A_03	Prairie Creek	5B
0606D_02	Black Fork Creek	5B
0607_01	Pine Island Bayou	5B
0607_02	Pine Island Bayou	5B
0607_03	Pine Island Bayou	5B
0607_04	Pine Island Bayou	5B
0607A_02	Boggy Creek	5B
0607B_01	Little Pine Island Bayou	5B
0607C_01	Willow Creek	5B
0608C_01	Cypress Creek	5B
0608E_01	Mill Creek in Hardin County	5C
0610A_01	Ayish Bayou	5C
0610A_02	Ayish Bayou	5C
0611_01	Angelina River Above Sam Rayburn Reservoir	5C
0611_04	Angelina River Above Sam Rayburn Reservoir	5C
0611A_01	East Fork Angelina River	5C
0611A_02	East Fork Angelina River	5C
0611B_01	La Nana Bayou	5B
0611B_02	La Nana Bayou	5B
0611B_03	La Nana Bayou	5B
0611C_01	Mud Creek	5B
0611D_01	West Mud Creek	5C
0612_01	Attoyac Bayou	5C
0612_02	Attoyac Bayou	5C
0612_03	Attoyac Bayou	5C
0615_01	Angelina River/Sam Rayburn Reservoir	5C
0615A_01	Paper Mill Creek	5B
0701_01	Taylor Bayou/North Fork Taylor Bayou Above Tidal	5B

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
0701_02	Taylor Bayou/North Fork Taylor Bayou Above Tidal	5B
0701D_01	Shallow Prong Lake	5C
0702_01	Intracoastal Waterway Tidal	5C
0702_02	Intracoastal Waterway Tidal	5C
0703_01	Sabine-Neches Canal Tidal	5C
0704_01	Hillebrandt Bayou	5B
0704_02	Hillebrandt Bayou	5A
0801C_01	Cotton Bayou	5C
0801C_01	Cotton Bayou	5C
0803_01	Lake Livingston	5B
0803_02	Lake Livingston	5B
0803_03	Lake Livingston	5B
0803_04	Lake Livingston	5B
0803_05	Lake Livingston	5B
0803_06	Lake Livingston	5B
0803_07	Lake Livingston	5B
0803_08	Lake Livingston	5B
0803_09	Lake Livingston	5B
0803_10	Lake Livingston	5B
0803_11	Lake Livingston	5B
0803_12	Lake Livingston	5B
0804G_01	Catfish Creek	5B
0804G_01	Catfish Creek	5B
0804H_01	Upper Keechi Creek	5B
0804K_01	Lower Keechi Creek	5C
0804L_01	Town Creek	5C
0805_03	Upper Trinity River	4A
0805_04	Upper Trinity River	4A
0806D_01	Marine Creek	5C
0806E_01	Sycamore Creek	4A
0809B_01	Ash Creek	5B
0809C_01	Dosier Creek	5C
0809D_01	Derrett Creek	5C
0810_01	West Fork Trinity River Below Bridgeport Reservoir	5C
0810C_01	Martin Branch	5C
0811B_01	Beans Creek	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
0812_01	West Fork Trinity River Above Bridgeport Reservoir	5C
0812_01	West Fork Trinity River Above Bridgeport Reservoir	5C
0812_02	West Fork Trinity River Above Bridgeport Reservoir	5C
0814_02	Chambers Creek Above Richland-Chambers Reservoir	5C
0815_01	Bardwell Reservoir	5C
0818B_01	Cedar Creek Above Cedar Creek Reservoir	5C
0818C_01	Kings Creek	5C
0819_01	East Fork Trinity River	5C
0819_01	East Fork Trinity River	5C
0820B_01	Rowlett Creek	5C
0821_01-04	Lake Lavon	SI[(1)]
0821C_01	Wilson Creek	5C
0821D_01	East Fork Trinity River Above Lake Lavon	5C
0822A_02	Cottonwood Branch	4A
0822B_01	Grapevine Creek	4A
0823C_01	Clear Creek	5C
0824_03	Elm Fork Trinity River Above Ray Roberts Lake	5C
0827A_01	White Rock Creek Above White Rock Lake	5C
0828_01-08	Lake Arlington	SI
0828A_01	Village Creek	5C
0829_02	Clear Fork Trinity River Below Benbrook Lake	5C
0831_01	Clear Fork Trinity River Below Lake Weatherford	5C
0831_04	Clear Fork Trinity River Below Lake Weatherford	5C
0833_03	Clear Fork Trinity River Above Lake Weatherford	5B
0833_04	Clear Fork Trinity River Above Lake Weatherford	5B
0833A_01	Clear Fork Trinity River Above Strickland Creek.	5C
0836_07	Richland-Chambers Reservoir	5C
0836B_01	Cedar Creek	5B
0837_01	Richland Creek Above Richland-Chambers Reservoir	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
0838_01-03	Joe Pool Lake	SI
0841_01	Lower West Fork Trinity River	4A
0841F_01	Cottonwood Creek	4A
0841G_01	Dalworth Creek	4A
0841I_01	Dry Branch Creek	5C
0841K_01	Fish Creek	4A
0841L_01	Johnson Creek	4A
0841M_01	Kee Branch	4A
0841N_01	Kirby Creek	4A
0841P_01	North Fork Cottonwood Creek	5A
0841Q_01	North Fork Fish Creek	5A
0841U_01	West Irving Creek	4A
0841V_01	Crockett Branch	4A
0901_01	Cedar Bayou Tidal	5C
0901A_01	Cary Bayou	5C
0901A_01	Cary Bayou	5C
0902_01	Cedar Bayou Above Tidal	5C
0902_01	Cedar Bayou Above Tidal	5C
1002_06	Lake Houston	4A
1003_01	East Fork San Jacinto River	4A
1003_02	East Fork San Jacinto River	4A
1003_03	East Fork San Jacinto River	4A
1004_01	West Fork San Jacinto River	4A
1004_02	West Fork San Jacinto River	4A
1004E_02	Stewarts Creek	4A
1004J_01	White Oak Creek	5A
1006_05	Houston Ship Channel Tidal	5C
1006D_01	Halls Bayou	4A
1006D_02	Halls Bayou	4A
1006F_01	Big Gulch Above Tidal	4A
1006H_01	Spring Gully Above Tidal	4A
1006I_01	Unnamed Tributary of Halls Bayou	4A
1006J_01	Unnamed Tributary of Halls Bayou	4A
1007_05	Houston Ship Channel/Buffalo Bayou Tidal	5C
1007A_01	Canal C-147	4A
1007B_01	Brays Bayou Above Tidal	4A
1007B_02	Brays Bayou Above Tidal	4A
1007C_01	Keegans Bayou Above Tidal	4A

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1007D_01	Sims Bayou Above Tidal	4A
1007D_02	Sims Bayou Above Tidal	4A
1007D_03	Sims Bayou Above Tidal	4A
1007E_01	Willow Waterhole Bayou Above Tidal	4A
1007F_01	Berry Bayou Above Tidal	4A
1007G_01	Kuhlman Gully Above Tidal	4A
1007H_01	Pine Gully Above Tidal	4A
1007H_01	Pine Gully Above Tidal	5C
1007I_01	Plum Creek Above Tidal	4A
1007I_01	Plum Creek Above Tidal	5C
1007K_01	Country Club Bayou Above Tidal	4A
1007K_01	Country Club Bayou Above Tidal	5C
1007L_01	Unnamed Tributary of Brays Bayou	4A
1007M_01	Unnamed Tributary of Hunting Bayou	4A
1007N_01	Unnamed Tributary of Sims Bayou	4A
1007O_01	Unnamed Tributary of Buffalo Bayou	4A
1007O_01	Unnamed Tributary of Buffalo Bayou	5C
1007R_01	Hunting Bayou Above Tidal	4A
1007R_01	Hunting Bayou Above Tidal	5C
1007R_02	Hunting Bayou Above Tidal	4A
1007R_03	Hunting Bayou Above Tidal	4A
1007R_04	Hunting Bayou Above Tidal	4A
1007R_04	Hunting Bayou Above Tidal	5C
1007S_01	Poor Farm Ditch	4A
1007T_01	Bintliff Ditch	4A
1007U_01	Mimosa Ditch	4A
1007V_01	Unnamed Tributary of Hunting Bayou	4A
1007W_01	Harris County Flood Control Ditch D 138	5A
1008_02	Spring Creek	4A
1008_03	Spring Creek	4A
1008_04	Spring Creek	4A
1008C_01	Lower Panther Branch	4A
1008C_02	Lower Panther Branch	4A
1008H_01	Willow Creek	4A
1008I_01	Walnut Creek	5A
1008J_01	Brushy Creek	5A
1009_01	Cypress Creek	4A
1009_02	Cypress Creek	4A

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1009_03	Cypress Creek	4A
1009_04	Cypress Creek	4A
1009C_01	Faulkey Gully	4A
1009D_01	Spring Gully	4A
1009E_01	Little Cypress Creek	4A
1010_02	Caney Creek	4A
1010_03	Caney Creek	5A
1010_04	Caney Creek	4A
1010C_01	Spring Branch	5A
1010C_01	Spring Branch	5C
1011_01	Peach Creek	4A
1011_02	Peach Creek	4A
1013_01	Buffalo Bayou Tidal	4A
1013A_01	Little White Oak Bayou	4A
1013A_01	Little White Oak Bayou	5C
1013C_01	Unnamed Non-tidal Tributary of Buffalo Bayou Tidal	4A
1013C_01	Unnamed Non-tidal Tributary of Buffalo Bayou Tidal	5C
1014_01	Buffalo Bayou Above Tidal	4A
1014A_01	Bear Creek	4A
1014B_01	Buffalo Bayou/Barker Reservoir	4A
1014C_01	Horsepen Creek	5A
1014E_01	Langham Creek	4A
1014H_01	South Mayde Creek	4A
1014H_02	South Mayde Creek	4A
1014K_01	Turkey Creek	4A
1014K_02	Turkey Creek	4A
1014L_01	Mason Creek	4A
1014M_01	Newman Branch (Neimans Bayou)	4A
1014M_01	Newman Branch (Neimans Bayou)	5B
1014N_01	Rummel Creek	4A
1014O_01	Spring Branch	4A
1015A_01	Mound Creek	4A
1016_01	Greens Bayou Above Tidal	4A
1016_02	Greens Bayou Above Tidal	4A
1016_03	Greens Bayou Above Tidal	4A
1016A_03	Garners Bayou	4A
1016B_01	Unnamed Tributary of Greens Bayou	4A

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1016C_01	Unnamed Tributary of Greens Bayou	4A
1016D_01	Unnamed Tributary of Greens Bayou	4A
1017_01	Whiteoak Bayou Above Tidal	4A
1017_02	Whiteoak Bayou Above Tidal	4A
1017_03	Whiteoak Bayou Above Tidal	4A
1017_04	Whiteoak Bayou Above Tidal	4A
1017A_01	Brickhouse Gully/Bayou	4A
1017B_02	Cole Creek	4A
1017C_01	Vogel Creek	4A
1017D_01	Unnamed Tributary of White Oak Bayou	4A
1017D_01	Unnamed Tributary of White Oak Bayou	5C
1017E_01	Unnamed Tributary of White Oak Bayou	4A
1017F_01	Rolling Fork Creek	4A
1101_01	Clear Creek Tidal	4A
1101_02	Clear Creek Tidal	4A
1101_03	Clear Creek Tidal	4A
1101A_01	Magnolia Creek	4A
1101B_01	Chigger Creek	4A
1101C_01	Cow Bayou	4A
1101D_01	Robinson Bayou	4A
1101D_02	Robinson Bayou	4A
1101E_01	Unnamed Tributary of Clear Creek Tidal	4A
1101E_01	Unnamed Tributary of Clear Creek Tidal	5C
1102_02	Clear Creek Above Tidal	4A
1102_03	Clear Creek Above Tidal	4A
1102_04	Clear Creek Above Tidal	4A
1102A_01	Cowart Creek	4A
1102A_02	Cowart Creek	4A
1102B_01	Mary’s Creek/North Fork Mary’s Creek	4A
1102D_01	Turkey Creek	4A
1102F_01	Mary’s Creek Bypass	4A
1102G_01	Unnamed Tributary of Mary’s Creek	4A
1103_01	Dickinson Bayou Tidal	4A
1103_01	Dickinson Bayou Tidal	5B
1103_02	Dickinson Bayou Tidal	4A
1103_02	Dickinson Bayou Tidal	5B
1103_03	Dickinson Bayou Tidal	4A
1103_03	Dickinson Bayou Tidal	5B

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1103_04	Dickinson Bayou Tidal	4A
1103_04	Dickinson Bayou Tidal	5B
1103A_01	Bensons Bayou	4A
1103A_01	Bensons Bayou	5B
1103B_01	Bordens Gully	4A
1103B_01	Bordens Gully	5C
1103C_01	Geisler Bayou	4A
1103C_01	Geisler Bayou	5B
1103D_01	Gum Bayou	4A
1103E_01	Cedar Creek	4A
1103F_01	Unnamed Tributary of Dickinson Bayou Tidal	5A
1103F_01	Unnamed Tributary of Dickinson Bayou Tidal	5C
1103G_01	Unnamed Tributary of Gum Bayou	5A
1104_01	Dickinson Bayou Above Tidal	4A
1104_02	Dickinson Bayou Above Tidal	4A
1105_01	Bastrop Bayou Tidal	5C
1105A_03	Flores Bayou	5B
1105B_01	Austin Bayou Tidal	5C
1105C_01	Austin Bayou Above Tidal	5B
1105E_01	Brushy Bayou	5B
1105E_01	Brushy Bayou	5C
1107_01	Chocolate Bayou Tidal	5A
1108_01	Chocolate Bayou Above Tidal	5A
1109_01	Oyster Creek Tidal	5A
1110_01	Oyster Creek Above Tidal	5A
1110_01	Oyster Creek Above Tidal	5C
1110_03	Oyster Creek Above Tidal	5C
1113_02	Armand Bayou Tidal	5B
1113_03	Armand Bayou Tidal	4A
1113_03	Armand Bayou Tidal	5B
1113A_01	Armand Bayou Above Tidal	4A
1113A_01	Armand Bayou Above Tidal	5B
1113B_01	Horsepen Bayou Tidal	4A
1113C_01	Unnamed Tributary to Horsepen Bayou	4A
1113D_01	Willow Springs Bayou	4A
1113E_01	Big Island Slough	4A
1202J_01	Big Creek	5A
1202J_02	Big Creek	5A

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1202K_01	Mill Creek	5C
1204A_01	Camp Creek	5C
1205_01-05	Lake Granbury	SI
1208_02	Brazos River Above Possum Kingdom Lake	5C
1208_04	Brazos River Above Possum Kingdom Lake	5C
1208_05	Brazos River Above Possum Kingdom Lake	5C
1209_05	Navasota River Below Lake Limestone	5A
1209C_01	Carters Creek	4A
1209D_01	Country Club Branch	4A
1209E_01	Wickson Creek	5B
1209H_01	Duck Creek	5B
1209H_02	Duck Creek	5C
1209H_02	Duck Creek	5B
1209I_01	Gibbons Creek	5B
1209I_01	Gibbons Creek	5C
1209I_02	Gibbons Creek	5B
1209J_01	Shepherd Creek	5C
1209K_02	Steele Creek	5B
1209L_01	Burton Creek	4A
1210A_01	Navasota River Above Lake Mexia	5C
1211A_02	Davidson Creek	5C
1211A_02	Davidson Creek	5C
1212A_02	Middle Yegua Creek	5C
1213_04	Little River	5C
1213A_01	Big Elm Creek	5B
1217_01-05	Lampasas River Above Stillhouse Hollow Lake	SI
1217D_01	North Fork Rocky Creek	5C
1218_01	Nolan Creek/South Nolan Creek	5C
1218_02	Nolan Creek/South Nolan Creek	5C
1218C_01	Little Nolan Creek	5B
1218D_01	Long Branch	5C
1221_06	Leon River Below Proctor Lake	5C
1221A_01	Resley Creek	5B
1221A_01	Resley Creek	5B
1221A_02	Resley Creek	5B
1221D_01	Indian Creek	5B
1221D_02	Indian Creek	5B
1221G_01	Coryell Creek	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1222A_01	Duncan Creek	5C
1222B_01	Rush-Copperas Creek	5C
1222C_01	Sabana River	5B
1222E_01	Sweetwater Creek	5C
1223_01	Leon River Below Leon Reservoir	5C
1223_01	Leon River Below Leon Reservoir	5C
1226_02	North Bosque River	4A
1226_03	North Bosque River	4A
1226_04	North Bosque River	4A
1226B_01	Green Creek	5C
1226G_01	Spring Creek	5C
1226K_01	Little Duffau Creek	5C
1227_01	Nolan River	5B
1227_01	Nolan River	5B
1227_02	Nolan River	5C
1227_02	Nolan River	5B
1227_02	Nolan River	5B
1232_04	Clear Fork Brazos River	5C
1232A_01	California Creek	5C
1238_01	Salt Fork Brazos River	5C
1238_02	Salt Fork Brazos River	5C
1238_03	Salt Fork Brazos River	5C
1238_03	Salt Fork Brazos River	5C
1240_01	White River Lake	5B
1240_01	White River Lake	5B
1241_01	Double Mountain Fork Brazos River	5B
1241A_02	North Fork Double Mountain Fork Brazos River	5C
1242B_01	Cottonwood Branch	5C
1242B_02	Cottonwood Branch	5C
1242C_02	Still Creek	5C
1242D_01	Thompsons Creek	5B
1242D_02	Thompsons Creek	5B
1242D_02	Thompsons Creek	5B
1242F_01	Pond Creek	5C
1242I_01	Campbells Creek	5C
1242J_01	Deer Creek	5C
1242K_01	Mud Creek	5B
1242L_01	Pin Oak Creek	5B

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1242M_01	Spring Creek	5B
1242O_01	Walnut Creek	5B
1242P_01	Big Creek	5B
1244_01	Brushy Creek	5C
1244_03	Brushy Creek	5C
1245_01	Upper Oyster Creek	4A
1245_02	Upper Oyster Creek	4A
1245_03	Upper Oyster Creek	4A
1245_03	Upper Oyster Creek	4A
1245C_01	Bullhead Bayou	5C
1245D_01	Unnamed Tributary of Bullhead Bayou	5C
1245F_01	Alcorn Bayou	5B
1245I_01	Steep Bank Creek	5C
1246E_01	Wasp Creek	5B
1247A_01	Willis Creek	5C
1248C_01	Mankins Branch	5C
1255_01	Upper North Bosque River	5C
1255_01	Upper North Bosque River	4A
1255_02	Upper North Bosque River	5C
1255_02	Upper North Bosque River	5C
1255_02	Upper North Bosque River	4A
1255A_01	Goose Branch	5C
1255C_01	Scarborough Creek	5C
1255D_01	South Fork North Bosque River	5C
1255E_01	Unnamed Tributary of Goose Branch	5C
1255G_01	Woodhollow Branch	5C
1259_01	Leon River Above Belton Lake	5C
1259_03	Leon River Above Belton Lake	5C
1301_01	San Bernard River Tidal	5C
1302_01	San Bernard River Above Tidal	5C
1302_02	San Bernard River Above Tidal	5C
1302_03	San Bernard River Above Tidal	5C
1302A_01	Gum Tree Branch	5C
1302B_01	West Bernard Creek	5C
1302B_01	West Bernard Creek	5C
1302B_02	West Bernard Creek	5C
1302D_01	Peach Creek	5B
1302E_01	Mound Creek	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1304_01	Caney Creek Tidal	5A
1304_02	Caney Creek Tidal	5A
1304A_01	Linnville Bayou	5A
1305_03	Caney Creek Above Tidal	5C
1402C_01	Buckners Creek	5C
1402H_01	Skull Creek	5B
1403A_04	Bull Creek	5C
1403J_01	Spicewood Tributary to Shoal Creek	4A
1403K_01	Taylor Slough South	4A
1407A_01	Clear Creek	5C
1407A_01	Clear Creek	5C
1411_01	E. V. Spence Reservoir	5C
1411_01	E. V. Spence Reservoir	4A
1411_01	E. V. Spence Reservoir	4A
1411_02	E. V. Spence Reservoir	5C
1411_02	E. V. Spence Reservoir	4A
1411_02	E. V. Spence Reservoir	4A
1412_02	Colorado River Below Lake J. B. Thomas	5B
1412B_03	Beals Creek	5B
1413_01	Lake J. B. Thomas	5B
1413_01	Lake J. B. Thomas	5B
1415_05-06	Llano River	SI
1416_01	San Saba River	5C
1416A_03	Brady Creek	5C
1421_08	Concho River	5C
1425_01	O. C. Fisher Lake	5C
1425_01	O. C. Fisher Lake	5C
1426_01-04	Colorado River Below E. V. Spence Reservoir	SI
1428B_05	Walnut Creek	4A
1428C_01	Gilleland Creek	4A
1428C_03	Gilleland Creek	4A
1428C_04	Gilleland Creek	4A
1429A_01	Shoal Creek	SI
1429C_01	Waller Creek	5C
1429C_02	Waller Creek	4A
1429C_03	Waller Creek	4A
1433_01	O. H. Ivie Reservoir	5C
1433_02	O. H. Ivie Reservoir	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1433_03	O. H. Ivie Reservoir	5C
1433_04	O. H. Ivie Reservoir	5C
1434G_01	Alum Creek	5C
1501_01	Tres Palacios Creek Tidal	4A
1501_01	Tres Palacios Creek Tidal	5B
1602_02	Lavaca River Above Tidal	5A
1602_03	Lavaca River Above Tidal	5A
1602B_01	Rocky Creek	5A
1602C_01	Lavaca River Above Campbell Branch	5B
1602C_02	Lavaca River Above Campbell Branch	5B
1803A_01	Elm Creek	5B
1803B_01	Sandies Creek	5B
1803B_01	Sandies Creek	5B
1803B_02	Sandies Creek	5B
1803B_02	Sandies Creek	5B
1803C_01	Peach Creek	5B
1803C_01	Peach Creek	5B
1803C_03	Peach Creek	5B
1803C_03	Peach Creek	5B
1804A_01	Geronimo Creek	5C
1806_08	Guadalupe River Above Canyon Lake	5C
1806A_01	Camp Meeting Creek	5A
1806D_01	Quinlan Creek	4A
1806E_01	Town Creek	4A
1810_01	Plum Creek	4B
1810_02	Plum Creek	4B
1810_03	Plum Creek	4B
1811_01	Comal River	5C
1811A_01	Dry Comal Creek	5C
1814_01-04	Upper San Marcos River	SI
1815_01	Cypress Creek	5C
1901_02	Lower San Antonio River	4A
1901_03	Lower San Antonio River	4A
1901_04	Lower San Antonio River	4A
1901A_01	Escondido Creek	5C
1901B_01	Cabeza Creek	5C
1901F_01	Ecleto Creek	5C
1901F_01	Ecleto Creek	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
1902_01	Lower Cibolo Creek	5C
1902_02	Lower Cibolo Creek	5C
1902_03	Lower Cibolo Creek	5C
1902A_01	Martinez Creek	5C
1902C_01	Clifton Branch	5C
1902C_01	Clifton Branch	5B
1903_01	Medina River Below Medina Diversion Lake	5C
1903_02	Medina River Below Medina Diversion Lake	5C
1903_03	Medina River Below Medina Diversion Lake	5C
1905_01	Medina River Above Medina Lake	5C
1908_01	Upper Cibolo Creek	5C
1910_02	Salado Creek	4A
1910_03	Salado Creek	4A
1910_04	Salado Creek	4A
1910_04	Salado Creek	4A
1910A_01	Walzem Creek	4A
1910D_01	Menger Creek	4A
1911_02	Upper San Antonio River	4A
1911_03	Upper San Antonio River	4A
1911_04	Upper San Antonio River	4A
1911_05	Upper San Antonio River	4A
1911_07	Upper San Antonio River	4A
1911_08	Upper San Antonio River	4A
1911_09	Upper San Antonio River	4A
1911B_01	Apache Creek	4A
1911C_01	Alazan Creek	4A
1911C_02	Alazan Creek	4A
1911D_01	San Pedro Creek	4A
1911D_02	San Pedro Creek	4A
1911E_01	Sixmile Creek	4A
1911H_01	Picosa Creek	5C
1911I_01	Martinez Creek	5A
1912_01	Medio Creek	5C
2001_01	Mission River Tidal	4A
2003_01	Aransas River Tidal	4A
2004_02	Aransas River Above Tidal	4A
2004A_01	Aransas Creek	5C
2004B_02	Poesta Creek	4A

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
2102_01	Nueces River Below Lake Corpus Christi	5C
2102_02	Nueces River Below Lake Corpus Christi	5C
2104_01	Nueces River Above Frio River	5C
2105_02	Nueces River Above Holland Dam	5C
2106_01	Nueces/Lower Frio River	5B
2106_02	Nueces/Lower Frio River	5C
2106_02	Nueces/Lower Frio River	5B
2107_01	Atascosa River	5B
2107_02	Atascosa River	5B
2107_02	Atascosa River	5B
2108_01	San Miguel Creek	5B
2109_01	Leona River	5C
2109_02	Leona River	5C
2109_03	Leona River	5C
2109_03	Leona River	5C
2116_01	Choke Canyon Reservoir	5C
2116_02	Choke Canyon Reservoir	5C
2116_03	Choke Canyon Reservoir	5C
2116_04	Choke Canyon Reservoir	5C
2116_05	Choke Canyon Reservoir	5C
2116_06	Choke Canyon Reservoir	5C
2116_07	Choke Canyon Reservoir	5C
2117_01	Frio River Above Choke Canyon Reservoir	5C
2117_01	Frio River Above Choke Canyon Reservoir	5C
2117_02	Frio River Above Choke Canyon Reservoir	5C
2117_02	Frio River Above Choke Canyon Reservoir	5C
2117_03	Frio River Above Choke Canyon Reservoir	5C
2117_04	Frio River Above Choke Canyon Reservoir	5C
2117_05	Frio River Above Choke Canyon Reservoir	5C
2117_06	Frio River Above Choke Canyon Reservoir	5C
2201_01	Arroyo Colorado Tidal	5C
2201_02	Arroyo Colorado Tidal	5C
2201_03	Arroyo Colorado Tidal	5C
2201_04	Arroyo Colorado Tidal	5C
2201_04	Arroyo Colorado Tidal	5C
2201_05	Arroyo Colorado Tidal	5C
2201_05	Arroyo Colorado Tidal	5C
2201B_01	Unnamed Drainage Ditch Tributary (B) in Cameron County Drainage District #3	5B

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
2202_01	Arroyo Colorado Above Tidal	5C
2202_02	Arroyo Colorado Above Tidal	5C
2202_03	Arroyo Colorado Above Tidal	5C
2202_04	Arroyo Colorado Above Tidal	5C
2203_01	Petronila Creek Tidal	5C
2204_01	Petronila Creek Above Tidal	5B
2204_01	Petronila Creek Above Tidal	4A
2204_01	Petronila Creek Above Tidal	4A
2204_01	Petronila Creek Above Tidal	4A
2204_02	Petronila Creek Above Tidal	5B
2204_02	Petronila Creek Above Tidal	4A
2204_02	Petronila Creek Above Tidal	4A
2204_02	Petronila Creek Above Tidal	4A
2302_03	Rio Grande Below Falcon Reservoir	5C
2302A_01	Arroyo Los Olmos	5B
2304_01	Rio Grande Below Amistad Reservoir	5C
2304_02	Rio Grande Below Amistad Reservoir	5C
2304_03	Rio Grande Below Amistad Reservoir	5C
2304_07	Rio Grande Below Amistad Reservoir	5C
2304_09	Rio Grande Below Amistad Reservoir	5C
2306_01	Rio Grande Above Amistad Reservoir	5B
2306_02	Rio Grande Above Amistad Reservoir	5B
2306_03	Rio Grande Above Amistad Reservoir	5B
2306_04	Rio Grande Above Amistad Reservoir	5B
2306_05	Rio Grande Above Amistad Reservoir	5B
2306_06	Rio Grande Above Amistad Reservoir	5B
2306_07	Rio Grande Above Amistad Reservoir	5B
2306_08	Rio Grande Above Amistad Reservoir	5B
2307_01	Rio Grande Below Riverside Diversion Dam	5B
2307_01	Rio Grande Below Riverside Diversion Dam	5B
2307_02	Rio Grande Below Riverside Diversion Dam	5B
2307_02	Rio Grande Below Riverside Diversion Dam	5B
2307_03	Rio Grande Below Riverside Diversion Dam	5C
2307_03	Rio Grande Below Riverside Diversion Dam	5B
2307_03	Rio Grande Below Riverside Diversion Dam	5B
2307_04	Rio Grande Below Riverside Diversion Dam	5C
2307_04	Rio Grande Below Riverside Diversion Dam	5B
2307_04	Rio Grande Below Riverside Diversion Dam	5B

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
2307_05	Rio Grande Below Riverside Diversion Dam	5C
2307_05	Rio Grande Below Riverside Diversion Dam	5B
2307_05	Rio Grande Below Riverside Diversion Dam	5B
2308_01	Rio Grande Below International Dam	5C
2310_01	Lower Pecos River	5C
2310_02	Lower Pecos River	5C
2311_03	Upper Pecos River	5B
2313_01	San Felipe Creek	5C
2314_01	Rio Grande Above International Dam	5C
2411_01	Sabine Pass	5C
2421B_01	Little Cedar Bayou	5C
2421OW_01	Upper Galveston Bay (Oyster Waters)	4A
2422B_01	Double Bayou West Fork	5C
2422B_01	Double Bayou West Fork	5B
2422D_01	Double Bayou East Fork	5C
2422OW_01	Trinity Bay (Oyster Waters)	4A
2423OW_01	East Bay (Oyster Waters)	4A
2424A_02	Highland Bayou	5C
2424A_03	Highland Bayou	5C
2424A_04	Highland Bayou	5C
2424A_04	Highland Bayou	5C
2424A_05	Highland Bayou	5C
2424A_05	Highland Bayou	5B
2424B_01	Lake Madeline	5C
2424C_01	Marchand Bayou	5C
2424C_01	Marchand Bayou	5C
2424G_01	Highland Bayou Diversion Canal	5C
2424OW_02	West Bay (Oyster Waters)	4A
2425B_01	Jarbo Bayou	4A
2431A_01	Moses Bayou	5C
2431C_01	Unnamed Tributary to the Southern Arm of Moses Lake (West)	5C
2432A_01	Mustang Bayou	5A
2432A_02	Mustang Bayou	5A
2432B_01	Willow Bayou	5A
2432C_01	Halls Bayou Tidal	5A
2432D_01	Persimmon Bayou	5C
2432E_01	New Bayou	5C
2432OW_01	Chocolate Bay (Oyster Waters)	4A

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
2433OW_01	Bastrop Bay/Oyster Lake (Oyster Waters)	4A
2433OW_02	Bastrop Bay/Oyster Lake (Oyster Waters)	4A
2434OW_01	Christmas Bay (Oyster Waters)	4A
2435OW_01	Drum Bay (Oyster Waters)	4A
2435OW_02	Drum Bay (Oyster Waters)	4A
2439OW_01	Lower Galveston Bay (Oyster Waters)	4A
2441OW_01	East Matagorda Bay (Oyster Waters)	5A
2452OW_01	Tres Palacios Bay/Turtle Bay (Oyster Waters)	5A
2452TP_01	Tres Palacios Bay (Recreational Beaches)	5A
2453A_01	Garcitas Creek Tidal	5B
2453C_01	Arenosa Creek	5A
2453D_01	Lavaca Bay Ship Channel Area	5C
2453OW_02	Lavaca Bay/Chocolate Bay (Oyster Waters)	5A
2453OW_03	Lavaca Bay/Chocolate Bay (Oyster Waters)	5A
2455OW_01	Keller Bay (Oyster Waters)	5A
2456_02	Carancahua Bay	5A
2456A_01	West Carancahua Creek Tidal	5C
2456OW_02	Carancahua Bay (Oyster Waters)	5A
2462OW_01	San Antonio Bay/Hynes Bay/Guadalupe Bay/Mission Lake (Oyster Waters)	5A
2472OW_01	Copano Bay/Port Bay/Mission Bay (Oyster Waters)	5C
2481CB_03	Corpus Christi Bay (Recreational Beaches)	5A
2481CB_04	Corpus Christi Bay (Recreational Beaches)	5A
2481CB_06	Corpus Christi Bay (Recreational Beaches)	5A
2485_02	Oso Bay	5B
2485_03	Oso Bay	4A
2485A_01	Oso Creek	5A
2485OW_01	Oso Bay (Oyster Waters)	5A
2491_01	Laguna Madre	5B
2491_02	Laguna Madre	5C
2491_02	Laguna Madre	5B
2491B_01	North Floodway	SI
2491C_01-04	Drainage ditches flowing into Lower Laguna Madre	SI
2491OW_02	Laguna Madre (Oyster Waters)	5C
2492A_01	San Fernando Creek	5C
2494_01	Brownsville Ship Channel	SI
2494A_01	Port Isabel Fishing Harbor	5C

Nonpoint Source Priority Waters List		
Segment	**Segment Name**	**Integrated Report Subcategory**
2501_01	Gulf of Mexico	5C
2501_02	Gulf of Mexico	5C

(1) SI – Special Interest – indicates a water body which is not impaired but is targeted for protection activities.

Appendix B. Groundwater Constituents of Concern Report

Table B.1 Groundwater Constituents Present Above Screening Levels in One or More Water Wells. Fiscal Years 2014 through 2023.

Aquifer	Region of Texas	Constituents of Concern with Primary Drinking Water Maximum Contaminant Levels
Blaine	North Central	Nitrate, selenium
Blossom	Northeast	N/A
Bone Spring-Victorio Peak	Far West	Nitrate, selenium
Brazos River Alluvium	Southeast	Nitrate
Capitan Reef Complex	West	Fluoride, nitrate, selenium
Carrizo-Wilcox	South to East	Arsenic, fluoride, nitrate, selenium
Cross Timbers	North Central	Nitrate
Dockum	Panhandle, West - outcrop area only	Fluoride, nitrate
Edwards (Balcones Fault Zone)	Central	Arsenic, cadmium, fluoride, nitrate, selenium
Edwards-Trinity (High Plains)	Southern High Plains	Arsenic, fluoride, nitrate
Edwards-Trinity (Plateau)	Terrell, Reagan, and Crockett counties	Arsenic, fluoride, nitrate, selenium
Ellenburger-San Saba	Central	Nitrate
Gulf Coast	Rio Grande valley	Arsenic, barium, nitrate, selenium
Hickory	Llano Uplift	Nitrate
Hueco-Mesilla Bolsons	Far West	Arsenic, mercury, nitrate
Igneous	Far West	Arsenic, fluoride, nitrate
Lipan	Concho, Runnels, Tom Green, and Coke counties	Nitrate
Marathon	Brewster County	Nitrate

Aquifer	Region of Texas	Constituents of Concern with Primary Drinking Water Maximum Contaminant Levels
Marble Falls	Central (Llano Uplift)	Selenium
Nacatoch	Northeast	--
Ogallala	Southern High Plains, Panhandle	Arsenic, fluoride, nitrate, selenium
Pecos Valley	West	Arsenic, nitrate
Queen City	Coastal Plain	Fluoride, nitrate
Rita Blanca	Far West	Fluoride
Rustler	Culberson and Reeves counties	Nitrate, selenium
Seymour	North Central	Arsenic, fluoride, nitrate, selenium
Sparta	Coastal Plain	--
Trinity	Central North - outcrop area only	Arsenic, fluoride, nitrate
West Texas Bolsons	Far West	Arsenic, nitrate
Woodbine	North Central	Fluoride, nitrate
Yegua-Jackson	Coastal Plain	Fluoride

* Fluoride in this aquifer was not detected above the maximum contaminant level, but was present above the secondary standard.

Table B.2 Aquifer Vulnerability Ranking

Major Aquifers	Average DRASTIC Index	Vulnerability Rank*
Seymour	144	High
Edwards (Balcones Fault Zone – San Antonio)	135	High
Edwards (Balcones Fault Zone – Austin)	126	High
Carrizo-Wilcox	117	Medium
Edwards-Trinity (Plateau)	107	Medium
Ogallala (South)	99	Medium

Gulf Coast	95	Medium
Trinity	95	Medium
Pecos Valley	95	Medium
Ogallala (North)	87	Low
Hueco-Mesilla Bolsons	84	Low
Minor Aquifers	**Average DRASTIC Index**	**Vulnerability Rank***
Brazos River Alluvium	144	High
Ellenburger-San Saba	126	High
Marble Falls	126	High
Hickory	114	Medium
Nacatoch	111	Medium
Blossom	109	Medium
Queen City	108	Medium
Lipan	108	Medium
Rustler	106	Medium
Blaine	102	Medium
Bone Spring-Victorio Peak	100	Medium
Capitan Reef Complex	98	Medium
Sparta	98	Medium
Marathon	96	Medium
West Texas Bolsons	90	Low
Edwards-Trinity (High Plains)	83	Low
Rita Blanca	83	Low
Woodbine	82	Low
Igneous	79	Low
Dockum	78	Low
Yegua-Jackson	Not Available	Not Available
Cross Timbers	Not Available	Not Available

* DRASTIC index developed from Report 89-01, “Groundwater Quality of Texas: An Overview of Natural and Man-Affected Conditions,” Texas Water Commission, March 1989.

Appendix C. Texas Nonpoint Source Program Milestones

Milestones are estimated based upon projected future CWA Section 319(h) grant commitments between EPA, the state, and collaborating entities.

Table C.1 Nonpoint Source Program Milestones Schedule[1]

Goals / Objectives	Milestone	Milestone Description	Milestone Measurement	Year 2027	Year 2028	Year 2029	Year 2030	Year 2031	Year 2032
ST[2]1/A	Nonpoint Source Assessment Report	The state will produce the Texas Integrated Report in accordance with applicable EPA guidance.	Texas Integrated Report	0	1	0	1	0	1
LT[3]/2	Nonpoint Source Management Program Updates	The state will update the Management Program in accordance with applicable EPA guidance.	Management Program updates	1	0	0	0	0	1
LT/2	Nonpoint Source Performance Partnership Grant (PPG) End of Year Reports	The state will produce an End of Year Report for PPG activities completed by TCEQ.	PPG End of Year Reports	1	1	1	1	1	1
LT/7	Nonpoint Source Annual Report	The state will produce the Nonpoint Source Annual Report in accordance with applicable EPA guidance.	Nonpoint Source Annual Report	1	1	1	1	1	1
LT/5	Implementation of Coastal Nonpoint Source Pollution Control Management Measures	Number of OSSFs inspected in the CZ boundary	Nonpoint Source Annual Report and GLO Reporting Mechanisms	TBD	TBD	TBD	TBD	TBD	TBD
LT/2-5	Section 319(h) Grant Program Solicitation	The state will conduct individual TCEQ and TSSWCB solicitations for Section 319(h) grant funding.	Grant Solicitation documentation	2	2	2	2	2	2

Goals / Objectives	Milestone	Milestone Description	Milestone Measurement	Year 2027	Year 2028	Year 2029	Year 2030	Year 2031	Year 2032
LT/2-5	Section 319(h) Grant Program Application	The state will prepare individual TCEQ and TSSWCB grant program applications and submit them to EPA for Section 319(h) grant funding.	Grant Application documentation	2	2	2	2	2	2
LT/2	Section 319(h) Grant Program Reporting	The state will report grant funded activities to GRTS in accordance with EPA guidance.	GRTS updates	4	4	4	4	4	4
ST2/A	Priority Waters Report Updates	The state will update the Priority Waters Report based upon information and recommendations derived through the Watershed Action Planning process as described in the Management Program.	Priority Waters Report Updates	0	1	0	1	0	1
ST3/C,D	Watershed Training	The state will provide training to watershed professionals to ensure quality and consistency in the development and implementation of watershed protection efforts.	Texas Watershed Planning Short Course	1	0	1	0	1	0
ST3/A,B,F,G	Watershed Education	The state will provide watershed education to help residents participate in programs designed to address water quality issues.	Texas Watershed Education Programs (number of programs)	8	8	8	7	7	7
ST3/C,D	Watershed Training	The state will provide a forum to facilitate the transfer of information between watershed professionals in the state.	Texas Watershed Coordinator Roundtable	2	2	2	2	2	2

Goals / Objectives	Milestone	Milestone Description	Milestone Measurement	Year 2027	Year 2028	Year 2029	Year 2030	Year 2031	Year 2032
ST3/B,F,G	Volunteer Monitoring	The state will provide support for local volunteer monitoring groups. These groups provide water quality data to the state water quality planning program and gain insight into resolving water quality issues.	Texas Stream Team Participation (numbers of stations monitored)	250	250	300	300	300	300
ST1/B	Quality Assurance	The state will ensure that monitoring procedures are in compliance with EPA-approved TCEQ and TSSWCB Quality Management Plans.	Annual Quality Management Plan updates	2	2	2	2	2	2
ST1/C	Watershed Characterization	The state will support projects designed to evaluate watershed characteristics and produce information needed for watershed characterization and water quality models.	Watershed characterization projects	3	3	2	2	2	2
ST2/A,C	Watershed Coordination	The state will support watershed coordination projects which facilitate the implementation of WPPs.	Watershed coordination projects	11	12	12	9	10	12
ST1/D	Develop WPPs	The state will support projects which provide for the development of WPPs that satisfy applicable EPA guidance.	WPP development projects	8	5	4	3	3	3
ST2/D	Implement WPPs	The state will support projects which provide for the implementation of management measures specified in WPPs that satisfy applicable EPA guidance.	WPP implementation projects	44	42	42	42	42	42

Goals / Objectives	Milestone	Milestone Description	Milestone Measurement	Year 2027	Year 2028	Year 2029	Year 2030	Year 2031	Year 2032
ST1/D	Develop TMDLs and I-Plans	The state will support projects which provide for the development of TMDLs and I-Plans that satisfy applicable state, federal, and program regulations and guidance.	TMDL and I-Plan development projects	0	0	0	0	0	0
ST2/D	Implement TMDLs and I-Plans	The state will support projects which provide for the implementation of management measures specified in TMDLs and I-Plans that satisfy applicable state, federal, and program regulations and guidance.	TMDL I-Plan implementation projects	8	5	3	3	3	3
ST2/B,C	Load Reductions	The state will support projects which provide for the reduction of loadings of nonpoint source pollutants.	Nonpoint source load reduction projects	26	18	16	16	16	16
ST2/B,C	Load Reductions (Nitrogen)	The state will ensure project reductions are reported in GRTS.	GRTS Report	RQ(4)	RQ	RQ	RQ	RQ	RQ
ST2/B,C	Load Reductions (Phosphorus)	The state will ensure project reductions are reported in GRTS.	GRTS Report	RQ	RQ	RQ	RQ	RQ	RQ
ST2/B,C	Load Reductions (Sediment)	The state will ensure project reductions are reported in GRTS.	GRTS Report	RQ	RQ	RQ	RQ	RQ	RQ
ST2/E	Effectiveness Monitoring	The state will support projects which provide for the collection and analysis of water quality and other watershed information for the purpose of evaluating the effectiveness of BMPs.	Effectiveness monitoring projects	15	12	10	10	10	10

(1) Goals and objectives are described in Chapter 2.
(2) LT – Long-term goal
(3) ST – Short-term goal
(4) RQ – Reportable Quantity – the value will be reported in the Nonpoint Source Annual Report.

Appendix D. Summary of Public Comments and the State's Responses

Public comments were received in response to the published draft of the Management Program.

Table F.1 Responses to Public Comments

Tracking Number	Date Received	Affiliation of Commenter	Summary of Request or Comment	Summary of TCEQ/TSSWCB Action or Explanation