

## **EXECUTIVE SUMMARY**

On March 9, 2000, a 28-inch gasoline pipeline owned and operated by Explorer Pipeline Company ruptured several miles northwest of Greenville, Texas and released an estimated 600,000 gallons of reformulated gasoline into a pasture. The spill drained into a tributary of East Caddo Creek approximately 28 creek miles upstream from Lake Tawakoni, a reservoir owned and operated by the Sabine River Authority of Texas (SRA). The reformulated gasoline contained methyl tertiary-butyl ether (MtBE), which is difficult to remove from natural waters due to its chemical properties. Rainfall the next day flushed a significant amount of the spilled gasoline down the creek into Lake Tawakoni. Figure ES.1 shows the area from the spill site to the reservoir. The locations of raw water intakes, pollution control devices, and SRA's monitoring activities are depicted on the map.

This report is a summary of SRA's involvement in the events surrounding the gasoline spill. The spill was significant for several reasons: the volume was larger than any other onshore gasoline spill in Texas history; the gasoline contained MtBE, a possible carcinogen and persistent contaminant; and Lake Tawakoni, a major drinking water supply reservoir, was directly impacted. From the earliest days of the spill, SRA dedicated all of its available resources to respond to the contamination in the reservoir.

Multiple state and federal regulatory agencies became involved from the outset of the spill. The National Transportation Safety Board (NTSB) was responsible for investigating the cause of the pipeline rupture, and the U.S. Department of Transportation Office of Pipeline Safety (OPS) evaluated Explorer's compliance with federal pipeline transportation regulations and set the conditions for restoration of pipeline service. The Texas Parks and Wildlife Department (TPWD) was involved with the spill event from the earliest stages and was the first to alert SRA about the pipeline rupture. The TPWD continues to evaluate the gasoline release's impact to natural resources. The U.S. Environmental Protection Agency (EPA) and the Texas Natural Resource Conservation Commission (TNRCC) each have had jurisdictional authority over the environmental response. EPA had command over the incident during the period when it was considered

to be an emergency response. Currently, the event is in the remediation stage under the direction of the TNRCC.

Within hours of the pipeline rupture, Explorer began pollution control efforts. Spill control dams, spill booms, and absorbent pads were placed in the creek shortly after the spill to contain and capture free product. Vacuum trucks were used to collect gasoline from the spill site and the creek after the release. Explorer also placed air-stripping systems in several locations along the creek in an attempt to remove contamination from the water. Despite these measures, a significant amount of contamination reached Lake Tawakoni when high creek flows after a large rain event on March 10 washed out the control devices.

Numerous municipal and private water customers on Lake Tawakoni were affected by the spill and subsequent reservoir contamination. The city of Dallas, which has rights to eighty percent of the available water in Lake Tawakoni, did not draw water from its intake from March 10 until August 16 as a result of the spill. The City normally obtains thirty percent of its drinking water supply from the reservoir. The raw water intakes for the cities of West Tawakoni, Greenville, and Commerce, as well as Cash Water Supply Corporation, had detectable levels of MtBE from the gasoline spill at some point during this event. The city of Greenville intake was shut down for maintenance at the time of the spill, but remained shut down for several weeks afterward as a precautionary measure.

Other water suppliers using the reservoir, including the cities of Emory, Point, Wills Point, Terrell, East Tawakoni, and Edgewood, and the water supply corporations Combined Consumers, South Tawakoni, and MacBee, did not have MtBE detected at their intakes, but were still affected by the event. Local residents receiving water from each of these suppliers voiced their concerns about the quality of their drinking water based on information gathered from media reports.

In accordance with its standard practice, SRA maintained an open-door policy with its customers and the local residents to provide as much quality information as possible. SRA established early contact with Explorer Pipeline Company to develop a

working relationship to expedite the remediation of the spill site and the reservoir. Meetings were held each morning and afternoon in the early stages after the spill occurred to coordinate activities between Explorer, the regulatory agencies, SRA, the city of Dallas, and affected water customers.

SRA began monitoring Lake Tawakoni on March 12 after a large rainfall event flushed a significant portion of the spilled gasoline into the reservoir. Initially, MtBE was detected in the reservoir at concentrations as high as 6,000 parts per billion (ppb). Other gasoline components, including benzene, toluene, ethylbenzene, and xylene were detected at levels up to several hundred ppb, but these compounds quickly dissipated from the reservoir. MtBE, which is highly soluble in water and has a negligible rate of natural degradation, had a much longer residence time in the water.

An estimated 11,500 pounds of MtBE reached the reservoir in the first three days after the spill. This contamination appeared to have entered the reservoir from the creek as one “slug”, as opposed to a continuous stream, and migrated east along the south bank of the Caddo Inlet arm of Lake Tawakoni. Contamination near the city of West Tawakoni’s raw water intake, located along this bank, was first detected by SRA the morning of March 15. The intake was shut down that evening based on analytical results provided to the City by SRA for samples collected that afternoon that showed sharply increasing concentrations of MtBE. Treatment devices, including an aerator and a carbon filtration system, were installed by Explorer at the intake and the water treatment plant, respectively, to reduce MtBE levels. From March 16 to March 24, Explorer delivered a total of 1.5 million gallons of potable water by truck to West Tawakoni while the raw water intake was shut down.

MtBE, aided by a strong wind shift, dispersed northward and eastward into the rest of Caddo Inlet over the next several days. MtBE contamination reached the intakes for the cities of Commerce and Greenville and Cash WSC by March 17, although at less than one-tenth the levels encountered at West Tawakoni. Commerce never completely shut its intake down, but restricted its use when MtBE levels increased. Cash WSC continued to draw water throughout the event. Greenville, which has the ability to draw water from its own reservoir in the City for several weeks, delayed reactivation of its

intake in Lake Tawakoni until April 25, when MtBE levels had dissipated throughout the reservoir and had been below detectable limits near the intake for an extended period.

MtBE was first detected south of Two-Mile Bridge toward the main body of the reservoir on March 23 at levels up to 12 ppb. Contamination was most concentrated in the reservoir along the west bank in the main body and was tracked as far south as the city of Dallas intake, although at levels below five ppb. Since April 19, MtBE concentrations have been at or below one ppb throughout the reservoir. No MtBE has been detected in the reservoir since May 30.

A fixed-elevation spillway exists in the reservoir. Water releases downstream into the Sabine River when the reservoir is at or above the spillway elevation and can overtop the spillway. SRA cannot regulate the timing or rate of spillage from the reservoir. The water level in Lake Tawakoni remained below the spillway elevation throughout the period of reservoir contamination because of existing drought conditions in the area and despite several rain events in the weeks after the pipeline rupture. Lake Tawakoni spilled for the first time in nearly a year on June 23 after significant rainfall earlier in the month raised the reservoir's level to capacity. MtBE levels in Lake Tawakoni had been at or below one ppb for more than nine weeks when the reservoir spilled in June.

For environmental protection of the river downstream of the reservoir, SRA typically releases five cubic feet per second (cfs) of water continuously through a discharge pipe in the dam. The five cfs release was discontinued on March 22 to prevent the possibility of transporting MtBE contamination into the Sabine River downstream of Lake Tawakoni.

As MtBE concentrations in the reservoir diminished, SRA investigated other possible sources of MtBE contamination. Boats and personal watercraft have been studied significantly as sources of MtBE in lakes and reservoirs. A study conducted for the TNRCC by the U.S. Geological Survey (USGS) found MtBE in more than 75 percent of the 46 Texas reservoirs sampled. Concentrations of MtBE ranged from 0.2 ppb up to 3.0 ppb. On March 28, April 11, and May 2, SRA collected and analyzed samples for MtBE from Lake Fork, the Sabine River downstream of Lake Tawakoni, and Toledo

Bend Reservoir. During the March 28 sampling event, MtBE was detected in Lake Fork and the Sabine River at approximately one ppb. This information provided SRA with a background MtBE concentration to consider in the event contamination persisted at low ppb levels in Lake Tawakoni. As the plume of contamination from the gasoline spill in the reservoir dispersed and concentrations diminished in mid-April, later sporadic detections of MtBE in Lake Tawakoni appeared to be more attributable to boat traffic than remnants of the spill.

East Caddo Creek and Caddo Inlet near the mouth of the creek continue to be monitored on a regular basis and after each rainfall event in the East Caddo Creek watershed area. Despite several significant rainfalls in the watershed, no subsequent increase in MtBE contamination has been detected by SRA in the reservoir.

Explorer Pipeline is currently remediating the spill site under the direction of the TNRCC. Contaminated soil in the pasture and adjacent wash areas at the spill site is being excavated and thermally treated to remove and destroy any volatile organic compounds, including MtBE. The TNRCC is monitoring Explorer's activities and conducting verification sampling to ensure that adequate remediation is taking place. Cleanup at the spill site is expected to continue for several months. Remediation of the contaminated portions of the creek is pending coordination between Explorer, the TNRCC, and other regulatory agencies including the TPWD. Explorer has monitored creek sediments twice since the release occurred and is in the process of developing an ecological risk assessment for the creek. Information from these data gathering efforts will be used to determine how the creek will be remediated.

Since the spill occurred, SRA has collected more than 1,500 samples throughout the reservoir. Based on the characteristics of the initial contamination, it appears the vast majority of MtBE entered the reservoir in the first few days. Concern that future rainfall would recontaminate the reservoir with MtBE has not been borne out. Except for rainfall on March 10, the day after the release, monitoring of Caddo Inlet and East Caddo Creek after rainfall events has shown no significant increase in MtBE levels in the reservoir. SRA will continue monitoring the creek and the reservoir until remediation of areas contaminated by the pipeline rupture is completed by Explorer.