Wacissa Groundwater Contamination

County Road 259 and State Road 59
Wacissa, Florida
County: Jefferson
District: Northwest
Site Lead: Bureau of Waste Cleanup
Approved for Cleanup: June 8, 1987
Delisted: April 1, 1997
ERIC ID # 3830
HWC # 057

Site Description and History

The Wacissa community is located in a rural area of Jefferson County, at the intersection of County Roads 59 and 259 in Section 36, Township 01S, Range 03E at 30° 21′ 30.6034″ N, 83° 59′ 15.7888″ W. In May 1985, the Florida Department of Environmental Regulation (FDER, now DEP) Northwest District investigated complaints of gasoline contamination in several domestic water wells. Laboratory analyses revealed gasoline constituents benzene and 1, 2-dichloroethane in wells at the Brittle and McLeod residences. The contaminants were found in the Floridan Aquifer, which is the area's sole source of potable water.

Threat

Two drinking water sources were contaminated with petroleum hydrocarbons and other private wells were threatened. Treatment systems were installed at the two sites identified as sources of contamination. The site was referred to the Bureau of Petroleum Storage Systems (BPSS) for continued remediation and delisted from the Hazardous Waste Cleanup list in April 1997.

Response Strategy and Status

In 1985, an FDER Groundwater Operation Response Team (ORT) conducted a detailed site investigation. The results indicated the source of contamination in the wells was Walker's Grocery, a country store with gasoline service. Another location in Wacissa, the Rutherford Store site, was also found to have leaking USTs, although no contamination of potable wells had resulted. Walker's inventory records from 1969 indicate gasoline leakage from two 550 gallon underground storage tanks (USTs) installed by the Sinclair Oil Company, now Atlantic Richfield (ARCO). In 1970, Walker's Grocery installed two new storage tanks and the old tanks were taken out of service. These tanks were excavated and removed in May 1989. In addition to discovering the contamination source, the ORT delineated a contaminant plume horizontally encompassing an 11.4 acre area and vertically extending to depths greater than 100 feet.

The site was referred to the FDER Bureau of Waste Cleanup (BWC) in January 1986. Property access was obtained in April 1986. The potential responsible parties did not undertake a cleanup. The FDER consultant, Ecology & Environment (E&E) conducted a Feasibility Study in 1986, which delineated the extent of the contamination and included potential cleanup strategies. All contaminated residential wells were taken out of service and new wells were installed to supply affected residents with potable water. During the construction of monitoring and recovery wells, the drilling subcontractors experienced several subsurface limestone collapses

(sinkholes). The collapses damaged drilling rigs and equipment, delaying the project for several months while FDER reconsidered drilling methods to avoid further sinkhole formation.

In March 1990, a design for the groundwater recovery and treatment system was completed for FDER. The design consists of 2 treatment systems: the Rutherford system employs a 3 gallon-per-minute (gpm) Granular Actuated Carbon (GAC) unit; the Walker system uses a 150 gpm air stripper followed by a GAC polishing unit. Construction of both systems began in January 1991 and was completed in March 1991. In September 1993, DEP tasked E&E to remove the remaining USTs from the Rutherford site. Four USTs were removed and disposed offsite. The site topography and vegetation were restored to pre-removal conditions.

After two years of operation of the Walker Treatment System, the expected reduction of contamination levels had not been achieved. DEP tasked E&E to collect soil and water samples and analyze operation of the current treatment system. In early January 1994, E&E mobilized to the site to collect soil head space data and groundwater samples, and installed new monitoring wells. Initial data indicated an increase of soil vapors in the area of the Walker Store, and unweathered free product was detected in the open-hole soil borings. This indicated a continual source of contamination at this site.

In July 1994, E&E was tasked by DEP to determine existing system effectiveness and evaluate modifications to enhance cleanup efforts. In September 1994, a tightness test conducted on the two underground storage tanks at the Walker site confirmed that they were not leaking. It was concluded from this test that the continual source at the Walker site must be coming from free product still trapped in the clayey soils.

In November 1994, E&E proposed a pilot study of an air sparging/vapor extraction system at the Walker site. Following ongoing research into potential remediation strategies at the site, the DEP requested a more aggressive approach to cleanup, and recommended that E&E pursue dual-phase vapor extraction technology as a possible remedy to overcome the low permeability problems at the site. In November 1995, E&E subcontracted with WES, Inc., a provider of patented dual-phase technology, to conduct a pilot study at the Walker site. A multi-phase vapor extraction pilot study was conducted in December 1995. Analysis of the test results from the study by the DEP and E&E indicate that the system would not work well at this site, due to the tight, clayey soils.

Following review of site data and systems operation, the DEP tasked E&E to redesign the current groundwater recovery and treatment system at the Walker site. Included in the redesign were options for source removal or control. The DEP received the Remedial Action Plan modifications report from E&E in July 1996. The report included source removal options and a redesign of the treatment system. O&M of the treatment systems continued until June 1997. The site has now been turned over to the BPSS and delisted from the HWC Sites List.