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## **The History and Environmental Impact of Crude Oil Earthen Storage, Southeast Texas**

Earthen tanks or pits were used to store heavy crude oil from 1901 until the mid-1930s in southeast Texas. Most pits ranged in capacity from 25,000 to 350,000 barrels. Oil loss into the ground was from pit seepage and stable emulsion/tank bottom disposal. Trenches were dug around pits to gather seepage oil. In 1904, the Batson, Saratoga, Sour Lake, and Spindletop field areas had about 18.8 million barrels of earthen storage capacity. The discovery of Humble Field in 1905 resulted in Humble becoming the largest earthen storage center with over 6 million barrels of crude in storage by early 1906. Some large earthen field storage clusters became long-term tank farm storage for heavy crude (18 to 24 degrees) from regional fields. Tank farm earthen storage gradually decreased during the 1920s and was abandoned by the mid-1930s. The post-1930s storage history varied from removing wooden roofs only, to burning and burial of tank waste, to various cleanup procedures and pit infilling. The Railroad Commission required extensive study and remediation at several sites in the 1980s-1990s, often initiated due to land development issues. State open-file records of 12 storage sites with 50 pits document how storage loss affected the shallow subsurface. All pits were built in the clay-rich Beaumont Formation. Hydrocarbons had migrated predominantly vertically, sometimes over 10 meters, with minor lateral movement. In some pits, hydrocarbons reached the water table and a free product existed. Cleanup procedures have included landfarming contaminated soils and pumping free product.