unsaturated sediments above the perched aquifer is being conducted to predict the efficiency of soil vapor extraction. Several bioremediation investigations are being conducted, including an evaluation of the effectiveness of selected microorganisms for HE degradation.

Ecological risk assessments are being conducted to determine potential contaminant pathways for biota. Ongoing chromium investigations include determining whether elevated chromium levels could have resulted from chemicals used for conditioning cooling water during the tower's 14-year operational period, determining potential soil and groundwater geochemical reactions through chromium anion exchange and column studies, determining whether ion exchange resins would be an effective treatment technology, and geochemical modeling to predict the fate and transport of chromium species in groundwater, as previously discussed.

Groundwater Uses

The Ogallala aquifer is a primary source of groundwater in the High Plains and is used for irrigation, industrial process water, and the municipal potable water supply at and in the vicinity of Pantex Plant. This aquifer has not been classified by EPA. The City of Amarillo draws its raw water from the Ogallala aquifer and Lake Meredith. During the 1995 water year (from October 1994 through September 1995), approximately 23.6 billion liters (6.2 billion gallons) were pumped from the Carson County wellfield, located just north and northeast of Pantex Plant (Table 4.6.1.2–3). This wellfield consists of 37 wells and 2 standby wells completed in the Ogallala aquifer (Pantex 1996:4.8).

The withdrawal of water from regional pumping in the Ogallala aquifer continues to exceed recharge, causing groundwater levels in the Ogallala aquifer to decline in the Pantex Plant area at a rate of approximately 0.6 to 2 meters (2 to 5 feet) per year (DOE 1995k:4-293). Water levels have declined approximately 30 meters (100 feet) since the Carson County production wells went into use (DOE 1990b:16). From 1980 to 1990, the Carson County Wellfield experienced up to 20 meters (60 feet) of water level decline, which may have contributed to a depression in the groundwater surface northeast of Pantex Plant (TWD 1993:11).

TABLE 4.6.1.2–3.—*1995 Water Withdrawal by Pantex Plant, City of Amarillo, and Irrigation in Carson County*

SOURCE	WITHDRAWAL OR USE Mliters (Mgal)	PERCENT OF TOTAL WITHDRAWAL/USE
Pantex Plant Wells Approximately 25 percent was used by TTU	869 (230)	0.7
City of Amarillo's Carson County Well Fields	23,610 (6,210)	18.8
Carson County Irrigation Use	100,767 (26,622)	80.5
Total Withdrawal	125,264 (33,062)	100

Sources: Pantex 1996c:9,11; PC 1996c