



THE MEMPHIS DEPOT TENNESSEE

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 23

Soil toxins at depot could taint city water

By Tom Charlier
The Commercial Appeal

A diverse brew of industrial solvents and metals has seeped into the water table beneath the old Defense Depot Memphis and eventually could penetrate the city's drinking-water source, a federal report says.

Boring into a shallow aquifer beneath decades-old waste burial pits and spill sites, a government contractor found everything from toxic lead to cancer-causing trichloroethene. Scattered "hot spots" of tainted soil also were found on the 642-acre facility in South Memphis.

The contamination, documented in a report obtained by The Commercial Appeal, has prompted plans for more than \$1 million in additional studies and water-treatment work at the depot. It also is likely to land the facility on the federal government's list of high-priority hazardous waste sites.

Although no immediate risks to the public were shown, the report underscores growing concerns about local groundwater resources. This week, utility of-

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Water

Officials are expected to appropriate nearly \$500,000 to help launch a groundwater research institute at Memphis State University.

In recent years, contaminants have been found in shallow groundwater beneath dozens of sites in Memphis. In two documented instances, chemical pollutants have turned up in public wells drawing water from the Memphis Sand, the deep-lying aquifer that supplies up to 200 million gallons daily to the metropolitan area.

The depot contamination, however, is noteworthy because of its extent and location.

The facility lies within a mile of 13 Memphis Light, Gas & Water Division wells providing water for some 44,300 people and a half-mile from the Kellogg Co. plant, which uses Memphis Sand water to make breakfast cereal. An estimated 154,000 Memphians get their water from wells within four miles of the depot, now known as Defense Distribution Region Central.

The report, based on an 18-month, \$671,000 study by Law Environmental Inc. of Kennesaw, Ga., was part of a Pentagon effort to identify and clean up contamination on more than 700 military bases. The report has not been released publicly, but was obtained through U.S. Environmental Protection Agency files. Its major conclusions:

■ A shallow aquifer lying 80-100 feet below a large waste-disposal area at the depot is laden with an estimated 75 million gallons of contaminated water. Found were more than two dozen chlorinated organic compounds and metals, apparently from old disposal and spill sites.

■ The "plume" of contaminants has spread an unknown distance off the depot in the general direction of LG&W's Allen well field, one of eight major fields serving the utility. The eventual migration of chemicals into the Memphis Sand, which lies about 100 feet below the shallow aquifer and is shielded by a layer of clay, "appears possible."

■ Surface soils in at least a half-dozen areas contain "unacceptably high" levels of human carcinogens — the result of container leaks, spills and routine operations over the years. However, most contaminated areas are covered with asphalt or vegetation or sealed off from depot workers.

■ Contamination of surface water and lake sediments could taint fish in ponds on the depot golf course and in Nonconah Creek, which receives drainage from the base. Little or no fish-

ing is done at either location, however.

The report recommends further studies to determine how far the contamination has migrated off base. Also, officials should conduct more drilling at the depot to determine whether any gaps exist in the clay layer protecting the Memphis Sand, the report says.

LG&W officials said late last week that they had not seen the depot report, but they have been kept posted on some of the contamination findings there.

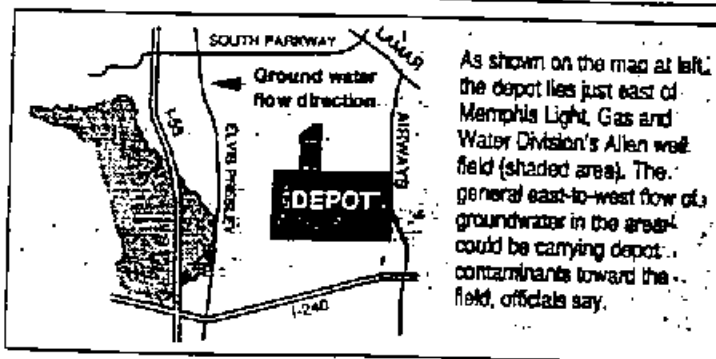
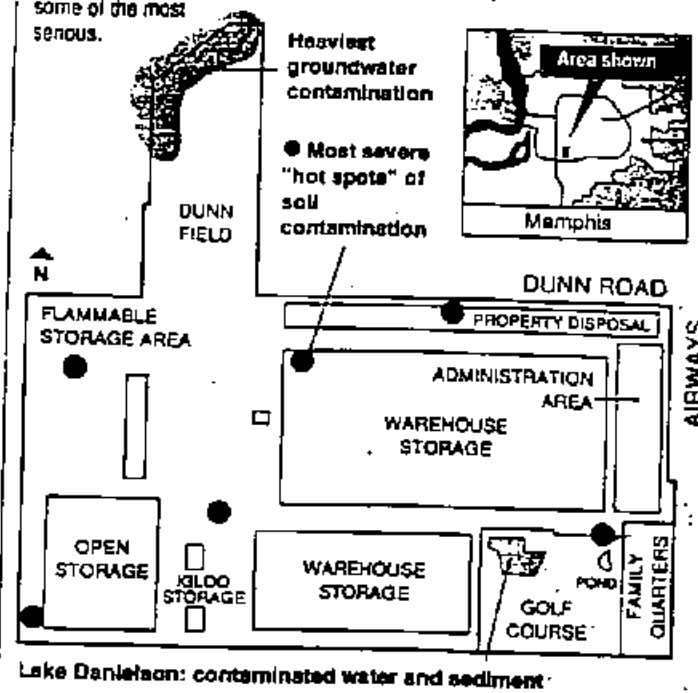
So far, no depot pollutants have turned up in any of the utility's wells, officials said. Even if they do, the chemicals could be removed through treatment, they said.

"I know our whole concern was: Is any of that stuff migrating away from there (the depot)?" said LG&W president Bill Crawford, who also chairs the county's Groundwater Quality Control Board.

Dr. John Smith, a civil engi-

Contamination at Memphis defense depot

A \$671,000 federal study found numerous areas of contamination at the 642-acre Memphis defense depot. Shown on the map below are some of the most serious.



neering professor and groundwater expert at MSU, said the depot contaminants could move toward the LG&W wells in part because of the heavy water-pumping done by the utility. A "cone of depression" has formed in the aquifer, which could suck the chemicals toward the well field, he said.

"That's the way the water is moving — both naturally and due to the cone of depression," Smith said. "The key thing is whether it leaves the shallow aquifer and gets into the deeper one."

The Law Environmental report traces most of the environmental problems at the depot to past disposal practices, isolated spills and accumulated deposits from years of container-cleaning and pesticide applications. The contractor identified 75 waste-disposal sites and other areas of concern on the base.

The depot, which opened 50 years ago, employs 2,200 civilians and serves as a vital link in

the military supply network. Each year, the facility ships out 155,000 tons of generally non-lethal material to bases in five states, the Caribbean and Latin America.

The heaviest contamination is centered in the northwest corner of Dunn Field, a 60-acre extension of the base north of Dunn Road, the report states. It was the scene of widespread waste-disposal activity between 1954 and 1970.

A 1983 Army report said the buried wastes included nearly 3,800 gallons of methyl bromide, a potent insecticide; 1,400 bottles of herbicide; 1,700 bottles of fuming nitric acid, a corrosive chemical used in rocket propellant; six "training sets" containing vials of poisonous mustard gas and lewisite gas; and 32 drums of oil, grease and thinner.

Groundwater samples beneath and adjacent to Dunn Field showed lead in levels up to 20 times the federal drinking-water standard, while trichloroethylene was measured up to 300 times the standard. Other compounds found in high levels include toxic mercury and carbon tetrachloride, a carcinogen.

In addition, the contractor discovered one sample containing acetone, a flammable, toxic solvent, within the Memphis Sand. The concentration of the compound was estimated at 3,500 parts per billion, which the report describes as "fairly high."

However, the acetone finding could reflect errors in the field or laboratory instead of actual contamination, said Scott Bradley, environmental engineer with the Corps of Engineers' Huntsville, Ala., Division, which is overseeing the investigation.

No other samples from the Memphis Sand or shallow aquifer at the depot contained significant levels of acetone, Bradley said.

Based on the report and other data, the EPA last month proposed that the depot be added to the national priority list of hazardous waste sites requiring cleanups.

Sherri Hudgins, the corps' project manager for the depot work, said the EPA designation will help speed up future studies and cleanup activity.

The corps is awaiting EPA approval of plans for \$1.02 million in further work. Monitoring wells will be resampled, and groundwater will be processed through a treatment system to remove contaminants, Hudgins said.

Depot spokesman George Dunn said facility officials have been at the forefront of efforts to investigate environmental problems — even before there was any pressure to do so. "It's something the installation took on on its own," he said.

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