Frontier Fertilizer Superfund Site

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION 9 • 75 HAWTHORNE ST., SAN FRANCISCO, CA • JUNE 2005

Update on Groundwater Extraction, Treatment and Monitoring Activities

This fact sheet provides an update on activities at the Frontier Fertilizer Superfund Site in Davis, California. It concentrates primarily on improvements the United States Environmental Protection Agency (U.S. EPA) has made to the groundwater extraction and treatment system.

Background

Frontier Fertilizer was placed on the Superfund National Priorities List in 1994 due to risks associated with pesticides detected in air, soil and groundwater resulting from past activities at the site. The site is located in a light industrial development at the eastern edge of the City of Davis, California and occupies approximately eight acres. It was first developed in the 1950s as an area where agricultural equipment could be stored. From the early 1970s through the mid 1980s, the site was used to store, mix and distribute pesticides and fertilizers for local agricultural use. In 1987, pesticide processing was discontinued and investigations were undertaken when hazardous conditions were discovered at an unlined disposal basin that resulted in impacts to groundwater.

Contaminated groundwater has migrated north of the Frontier Fertilizer Superfund site and is beneath the Mace Ranch Park Subdivision. Figure 2 shows the approximate boundaries of the target zones, or the boundary of groundwater that the U.S. EPA is currently attempting to capture. Contaminant levels vary significantly between three groundwater zones. Layers of less permeable material, like clays, appear to limit movement between zones, although this varies across the site. The shallow zone, called the S-1, extends to approximately 60 feet below ground surface (bgs). The S-2 zone extends from approximately 60 to 90 feet bgs. The A-1 aquifer extends from approximately 90 to 140 feet bgs. The primary chemicals of concern (COCs) found in groundwater are four pesticides: 1,2-dibromoethane (EDB); 1,2-dichloropropane (DCP); 1,2-dibromo-3-chloropropane (DBCP); 1,2,3-trichloropropane (TCP) and the solvent carbon tetrachloride (CCl_4).

The drinking water supply for the City of Davis comes from a deeper A-2 aquifer that begins at approximately 180 feet bgs. No contaminants above drinking water standards have been detected in the A-2.

Groundwater Extraction and Treatment System Improvements

Since the U.S. EPA installed the groundwater extraction and treatment system in 1995, commonly referred to as a "pump-and-treat" system, it has been operated and maintained with the goal of controlling the migration of contaminated groundwater. The system typically uses 16 groundwater extraction wells to remove contaminated groundwater. Granular activated carbon (GAC) is contained in three above-ground vessels and is used to remove volatile organic compounds (VOCs) from the extracted water. The U.S. EPA samples and discharges the water to the City of Davis sanitary sewer system under a discharge permit.

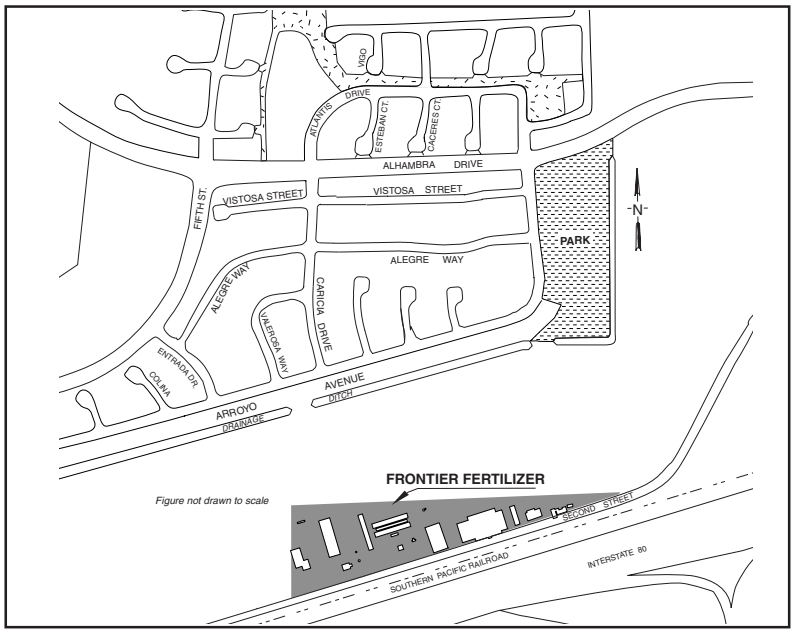

Figure 1: Frontier Fertilizer Superfund Site, Davis, California

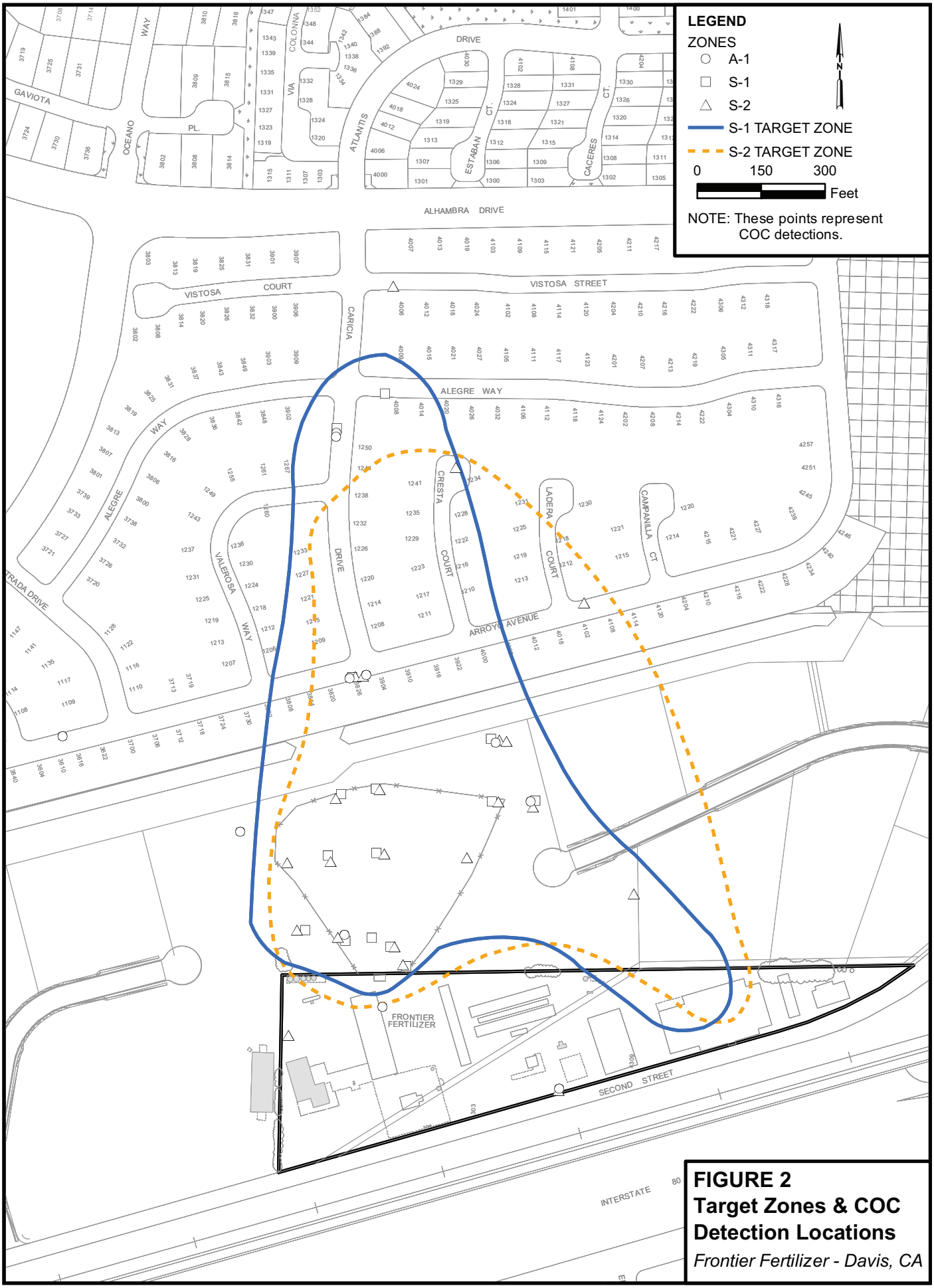

FIGURE 2
Target Zones & COC Detection Locations
Frontier Fertilizer - Davis, CA

Within the last two years, the U.S. EPA implemented system improvements to increase control of contaminated groundwater and allow the system to operate at the maximum available treatment rate (80 gallons per minute). These and other operation and maintenance improvements have also resulted in reduced operation costs.

Improvements made to the system since August 2003 include the following:

1) Installation of five new wells capable of extracting and monitoring contaminated groundwater and four smaller wells, called piezometers, to increase monitoring capacity of the groundwater system.
2) Completion of four extraction wells and connection to the existing extraction system.
3) Replacement of problematic buried power and control conductors with above-ground wiring to minimize operational and maintenance requirements.
4) Replacement of pressurized treatment system discharge plumbing with a gravity flow line to facilitate increased pumping capacity and reduced energy demand.

Groundwater Monitoring System Improvements

To evaluate the extraction system effectiveness and the distribution of groundwater contamination, the U.S. EPA measures groundwater elevations and COC concentrations in wells at and around the site. In order to improve the sample collection process, separate pumps were installed in 73 monitoring wells. Groundwater monitoring and treatment system performance results are documented in quarterly reports available to the public at the Information Repositories listed below.

Laboratory Testing of Soil Treatment Options

The U.S. EPA is currently testing four options for soil treatment in laboratory studies. Contaminated soil and groundwater were mixed in the lab with four different additives to evaluate their effectiveness in treating the pesticides. Laboratory results will be available in June and these results will be used to help select a remedy to clean-up contaminated soil found at the site.

Upcoming Documents

During summer 2005, the U.S. EPA will complete a draft Feasibility Study (FS) that includes a detailed analysis of alternatives for final clean-up of on-site contaminated soils and groundwater. Once the FS is finalized, the U.S. EPA will issue a Proposed Plan that recommends clean-up alternatives and its preferred alternative. As part of a formal 30-day review process of the Proposed Plan, the U.S. EPA will schedule a public meeting to discuss the proposed clean-up alternatives and receive verbal comments. Community members may also provide formal written comments on the Proposed Plan within the 30-day comment period.

Access to Site Information and Repositories

For Web Access to general site information and fact sheets, go to: http://yosemite.epa.gov/r9/sfund/overview.nsf
For detailed information, visit the libraries listed below:

Yolo County Library, Davis Branch
315 E. Fourteenth Street
Davis, CA 95616
(530) 757-5593

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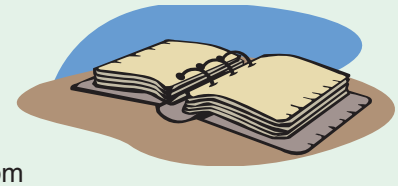

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You can also leave a message on the
Community Involvement Toll-Free number: **(800) 231-3075**

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