FRONTIER FERTILIZER SUPERFUND SITE

United States Environmental Protection Agency • Region 9 • April 2000

Extraction Well to be Installed in Mace Ranch Park

In early June, the U.S. Environmental Protection Agency (EPA) will install one groundwater extraction well in the Mace Ranch Park development as part of its ongoing groundwater investigation. The extraction well will be installed on Fifth Street behind 3813 Alegre Way. Figure 1 illustrates the location where this well will be installed and also shows the locations of EPA's existing groundwater monitoring wells in the subdivison.

Background

This activity is part of ongoing work by the EPA at the Frontier Fertilizer Superfund site, located along Second Street, south of Mace Ranch Park. Soil in the vicinity of the former disposal basin and groundwater under the facility are contaminated as a result of past pesticide storage and distribution activities. Contaminated groundwater has migrated north of the Frontier site, and exists beneath the Mace Ranch Park subdivision. EPA installed an interim groundwater extraction and treatment system in 1995 using emergency response authority. This system will be expanded by the Summer of 2001 so that the entire contaminated groundwater plume is captured and treated.

The principal chemicals in groundwater are three pesticides: ethylene dibromide (EDB), 1,2-dichloropropane (DCP), and 1,2-dibromo-3-chloropropane (DBCP) as well as the solvent carbon tetrachloride. The solvents tetrachlorethene or perchloroethylene (PCE) and trichloroethene (TCE) have also recently been detected in groundwater monitoring wells in the subdivision. PCE and TCE have not been detected in EPA's monitoring wells in the agricultural field south of the subdivision. PCE has occasionally been detected in a few of the monitoring wells on the Frontier Fertilizer site as well as in EPA's two groundwater monitoring wells south of the Frontier property. PCE and TCE are extracted and

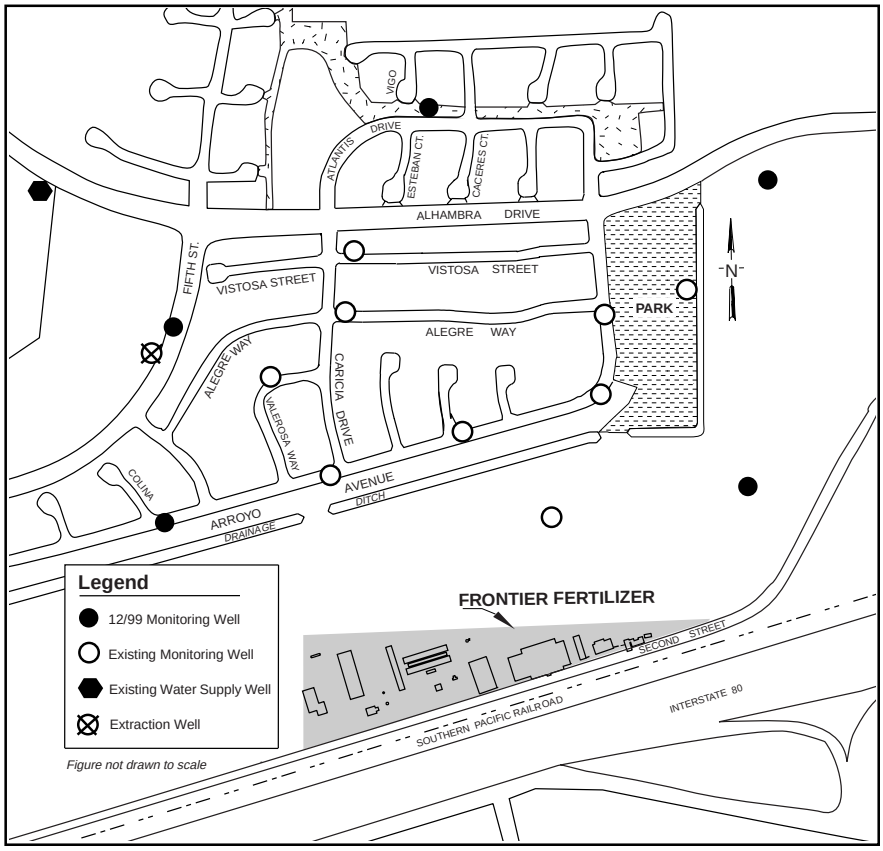

Figure 1: *Locations of Groundwater Monitoring Wells and Extraction Well.*

treated along with the pesticides.

There are four water-bearing zones beneath Frontier Fertilizer and the Mace Ranch Park subdivision. These zones are separated by layers of clay which act as an impediment to groundwater movement between the zones. The shallow zone, called the S-1, extends from approximately 30 to 50 feet below ground surface (bgs). Below the S-1 zone is the S-2 zone. The S-2 zone extends from approximately 60 to 90 feet bgs. The A-1 aquifer extends from approximately 110 to 130 feet bgs. The drinking water supply for the City of Davis comes from the deeper A-2 aquifer which begins at approximately180 feet bgs and is not contaminated.

The S-1, S-2 and A-1 zones are contaminated with chemicals from the Frontier Fertilizer site. Groundwater contamination from the site does not currently affect any of the City of Davis municipal water supply wells. Household water supplied by the City of Davis continues to meet all state and federal safe drinking water standards.

Sampling Results from Groundwater Monitoring Wells Installed in December 1999

In December 1999, EPA installed additional monitoring wells to determine how far contaminated groundwater had migrated. The new wells (see Figure 1) show no contamination from pesticides or carbon tetrachloride. However, TCE was detected in the well on Atlantis and in the well at the eastern end of Alhambra Drive at levels above the safe drinking water standard. No chemicals were detected in any wells when EPA collected samples again in January 2000. EPA collects groundwater samples from all of the monitoring and extraction wells on a quarterly basis and will track the occurrence of TCE.

Expansion of Existing Groundwater Extraction and Treatment System

Now that the extent of contamination has been determined, additional extraction wells will be installed in order to prevent further migration of chemicals. The extraction wells will be connected to the existing groundwater treatment system on the Frontier property. The first step in this process is to install one extraction well and perform tests (called pump tests) to determine how much water can be pumped from that well. This information will help EPA determine how closely extraction wells will need to be spaced and how much water will have to be pumped in order to prevent chemicals from moving past the extraction wells.

The extraction well on Fifth Street will be installed over a four week period, beginning in early June. Once the well is installed, the pump tests will be performed. The pump tests are expected to take four to six weeks. Once the data from the pump tests is evaluated, EPA will begin design of the expanded groundwater extraction and treatment system. EPA anticipates that the design and installation of the remaining extraction wells will be completed in the Summer of 2001. We will hold a public meeting before we begin constructing additional extraction wells in the subdivision.

Extraction well drilling and pump testing will not pose a health risk to residents in the area. EPA will minimize disruptions to residents near the work, but a certain amount of traffic inconveniences and noise are inevitable. The well will be installed in the public right-of way in a landscaped area. The well will be installed below ground and appear similar to a sewer manhole cover or a utility vault at the land surface. It will not interfere with vehicle or foot traffic.

Most of the personnel performing this work will be wearing protective clothing that is required by the Occupational Safety and Health Administration for this type of work. This is a standard precautionary measure for worker safety. In conformance with a City of Davis ordinance, EPA will limit working hours in residential areas to Monday through Friday, 7:00 AM to 6:00 PM.

What Happens When Groundwater Extraction Wells are Drilled?

1. **Drilling the Borehole for the Well.** A drilling rig will drill a 16-inch diameter vertical hole to a pre-determined depth (as much as 140 feet below ground surface).

2. **Construction.** An 8-inch diameter steel pipe is placed in the 16-inch diameter borehole. Sections of the pipe are slotted to allow groundwater to flow into the pipe at locations that correspond to the S-1, S-2 and A-1 water-bearing zones. Sand is placed between the borehole and the slotted sections of the pipe to filter out rocks and clumps of clay that might otherwise flow into the well. A sanitary cement seal is then placed on top of the sand filter to the ground surface.

3. **Development.** Groundwater is pumped through the slotted sections to clean the clay, sand and gravel left in the well after it has been built.

4. **Wellhead Completion.** A locking cap will be placed over the top of the well, which will be below ground surface. A protective vault box, similar to a utility vault, will be constructed around the top of the wellhead.

5. **Sampling.** Groundwater samples will be collected from the well on a quarterly basis.

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You may also provide the above information via email to: herrera.angeles@epamail.epa.gov

If you have **Questions or Concerns** about EPA's cleanup efforts for the Frontier Fertilizer site, please contact:

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