



Frontier Fertilizer Superfund Site



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Cleanup Action Update Bulletin Number 6

Upcoming Work: EPA to Upgrade Groundwater Extraction and Treatment System Fall 2016

In Fall 2016, the U.S. Environmental Protection Agency (EPA) will connect up to seven extraction wells to EPA's 2nd Street groundwater treatment plant via an underground pipe network, including two within the Mace Ranch neighborhood. Adding these wells will improve the capture of groundwater contamination and streamline EPA's ongoing cleanup at the Frontier Fertilizer Superfund Site (Site) in Davis, CA (see Figure 1). The upcoming work and past activities are summarized in this bulletin.

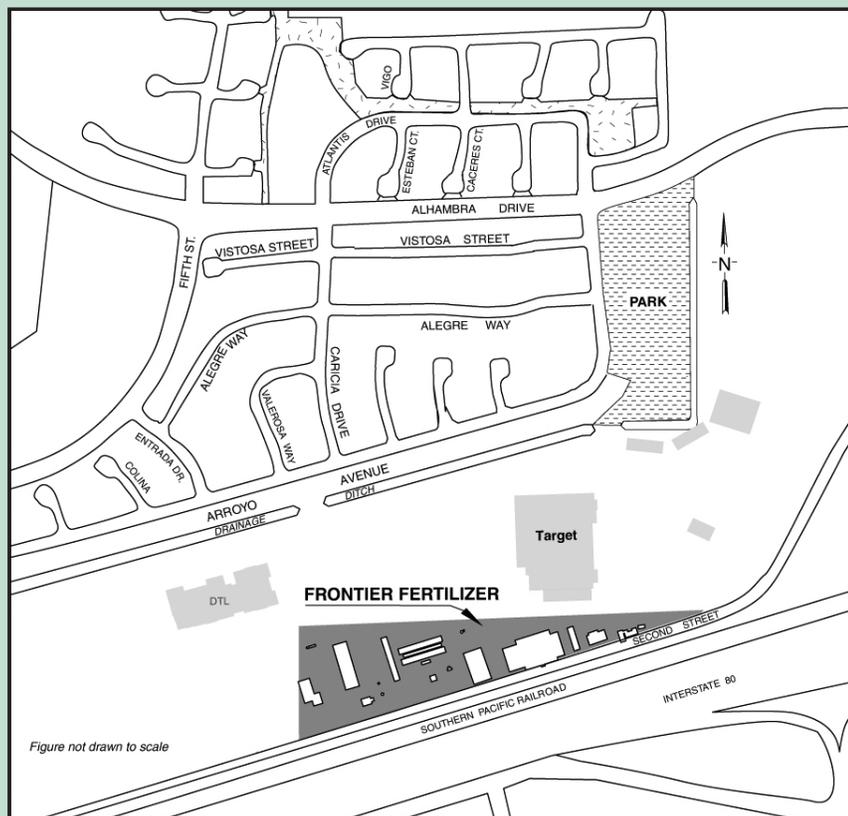


Figure 1: Frontier Fertilizer Superfund Site Location

Site Background

The 2nd Street groundwater extraction and treatment system has operated since 1995. EPA currently pumps and treats groundwater from 16 extraction wells located in the field south of the Mace Ranch neighborhood. After the contaminated groundwater is extracted, it travels through underground pipes and contaminants are removed in large carbon filter vessels located at the 2nd Street plant. The treated water then is piped to the City of Davis Wastewater Treatment Plant and is tested to ensure it meets Federal and state primary drinking water standards. EPA also samples groundwater quarterly and/or biannually from over 120 monitoring wells, including 40 in the Mace Ranch neighborhood, to ensure that the contamination is not migrating and to verify there are no added risks to residents. Groundwater contamination from the Site does not affect any of the City of Davis drinking water wells, which obtain water from between 700-1,500 feet below ground surface (bgs).

Electrical Resistive Heating System (Heating System) Cleaned Up Soil and Groundwater in Source Area

From February 2011 through October 2012, EPA operated a short-term Heating System that destroyed Site contaminants in the source area. The source area is where the past operators of the Site disposed of unused pesticides and fertilizers in an unlined basin on the property. Site contaminants of concern (COCs) include pesticides such as, 1,2-dibromoethane (EDB), 1,2-dibromo-3-chloropropane (DBCP), 1,2-dichloropropane (DCP), 1,2,3-trichloropropane (TCP) and a chlorinated solvent, carbon tetrachloride. The Heating System moved electrical current through 236 subsurface electrodes installed in the ground to destroy contaminants in 52,478 cubic yards of soil and groundwater. Ten months later, after the soil and groundwater cooled, EPA sampled the soil and groundwater. Sample results indicate that contaminants in groundwater and in soil were reduced by 99 percent and 95 percent in the treated area, respectively.

Groundwater Extraction and Treatment System Upgrade

After the Heating System results were analyzed, EPA, State of California representatives and the Frontier Fertilizer Superfund Oversight Group (FFSOG) planned the next phase of cleanup. As a result of the team's discussions, EPA updated the groundwater model with the new information to determine how to optimize the groundwater extraction system. The team identified new extraction well locations that would improve cleanup time of the remaining groundwater contamination. See the "Upcoming Field Activities" section for the extraction well locations.

Summary of Recent Investigations

September 2015 Soil Gas

To verify that low concentrations of COCs in groundwater do not affect residents living in neighborhoods above the affected groundwater, EPA sampled soil gas in September 2015. A soil gas sample measures volatile organic chemicals between the ground surface and the water table, to help determine whether trace amounts of COCs present in groundwater can move up into overlying soils. The two shallow soil gas probes were located near existing monitoring wells on Alegre Way and Caricia Drive. None of the soil gas samples contained COCs above the human health protective screening levels calculated by EPA toxicologists. These results are consistent with the quarterly groundwater quality data that

also do not indicate a human health concern to overlying neighborhoods. The groundwater quality will continue to be monitored biannually from monitoring wells in the neighborhood.

Summary of May-July 2016 Drilling Activities

EPA collected groundwater samples from five deep borings to confirm that no contaminants from the 2nd Street Site had migrated to the deeper aquifer zone, which starts at approximately 180 feet below ground surface (bgs). EPA's current groundwater data shows low concentrations of COCs in an aquifer zone located at 110 feet bgs. Four of the five new deep borings (between 188 to 250 feet bgs) were located in the Mace Ranch neighborhood. Final data is expected by late August and EPA will mail a fact sheet summarizing data when available.

This summer EPA also installed six new extraction wells and three new monitoring wells to help monitor the groundwater contamination. EPA will review and discuss the July sampling data with the State of California and the FFSOG, to determine how many of these extraction wells to connect.

Target Corporation (Target) Agreement Update

TCP and DCP, which also are found at the Frontier Fertilizer Superfund Site, were found in groundwater monitoring wells near the Target store before it was built. With EPA and FFSOG's review, the Target building was constructed with a sub-slab venting system designed to divert vapors around the building. Current vapor sample results indicate that TCP and DCP are detected in the building and under the building slab at trace levels (less than one part per billion). The chemical, carbon tetrachloride, was also detected at concentrations similar to outdoor air upwind of Frontier Fertilizer, so it is not believed to be originating from Frontier's contaminated groundwater. Due to the presence of TCP below the building, Target installed solar powered blowers for the sub-slab system and is conducting sub-floor vapor and in-store sampling to determine if there are risks to workers and/or shoppers from the Frontier Fertilizer Site contaminants. Target's contractors have completed 15 rounds of sampling since July 2011. Sub-floor vapor samples are collected from monitoring ports under the building and five locations are tested within the store. EPA has determined that there is not a risk to workers and/or shoppers due to the detections of TCP and DCP in the sub-slab venting system. Target plans to continue to collect quarterly vapor samples and EPA will review these results and summarize them in future bulletins. Full data reports are available from EPA.

Upcoming Field Activities

EPA plans to connect between five and seven extraction wells in Fall 2016. Two of these extraction wells are located in the Mace Ranch neighborhood: one is on Arroyo Avenue and the other is on Caricia Drive (see Figure 2). EPA's contractor is comparing different methods to connect the extraction wells; once connected, they will increase the amount of contaminated groundwater to be treated, reducing the overall cleanup timeframe. We anticipate that the pipeline installation work will take a total of eight weeks, with up to four weeks in the Mace Ranch neighborhood. EPA will contact individual homeowners to alert them to the work near their home and notify surrounding neighbors.

The piping installation will be noisy at times and vehicle, bicycle, and pedestrian traffic may be rerouted temporarily. Construction in Mace Ranch will be limited to the hours of 8:00 am to 7:00 pm, Monday to Friday, and on-site work will be scheduled in accordance with the City of Davis ordinance. EPA will work with the contractors to minimize the inconvenience to residents. EPA recognizes that this is an interruption to the neighborhood; however, it is temporary and necessary in order to bring the Frontier Fertilizer cleanup to an eventual close.

In October 2016, the State of California, Department of Toxic Substances Control, will take over long-term operation and maintenance of the treatment plant, including sampling of the groundwater monitoring wells. Superfund law requires this transfer of responsibility from EPA to the State for all sites with no responsible party, like Frontier Fertilizer. EPA and the State will work closely together to ensure that this transfer does not disrupt the on-going groundwater cleanup.

Technical Assistance Grant (TAG)

EPA believes it is important for community members to provide input on the cleanup of Superfund sites. One of EPA's tools is to give an eligible group a grant to hire an independent technical advisor to help them interpret and comment on EPA's site decision documents. The Frontier Fertilizer Superfund Oversight Group has been the recipient of the TAG for this Site since 1995. The group and its technical advisor work closely with EPA and State regulators to make sure that community concerns are incorporated into the cleanup decision-making process. The primary point of contact for the TAG is Pamela Nieberg who can be reached at (530) 756-6856. If you would like to receive updates from the TAG recipient, send an email to: pnieberg@dcn.org.

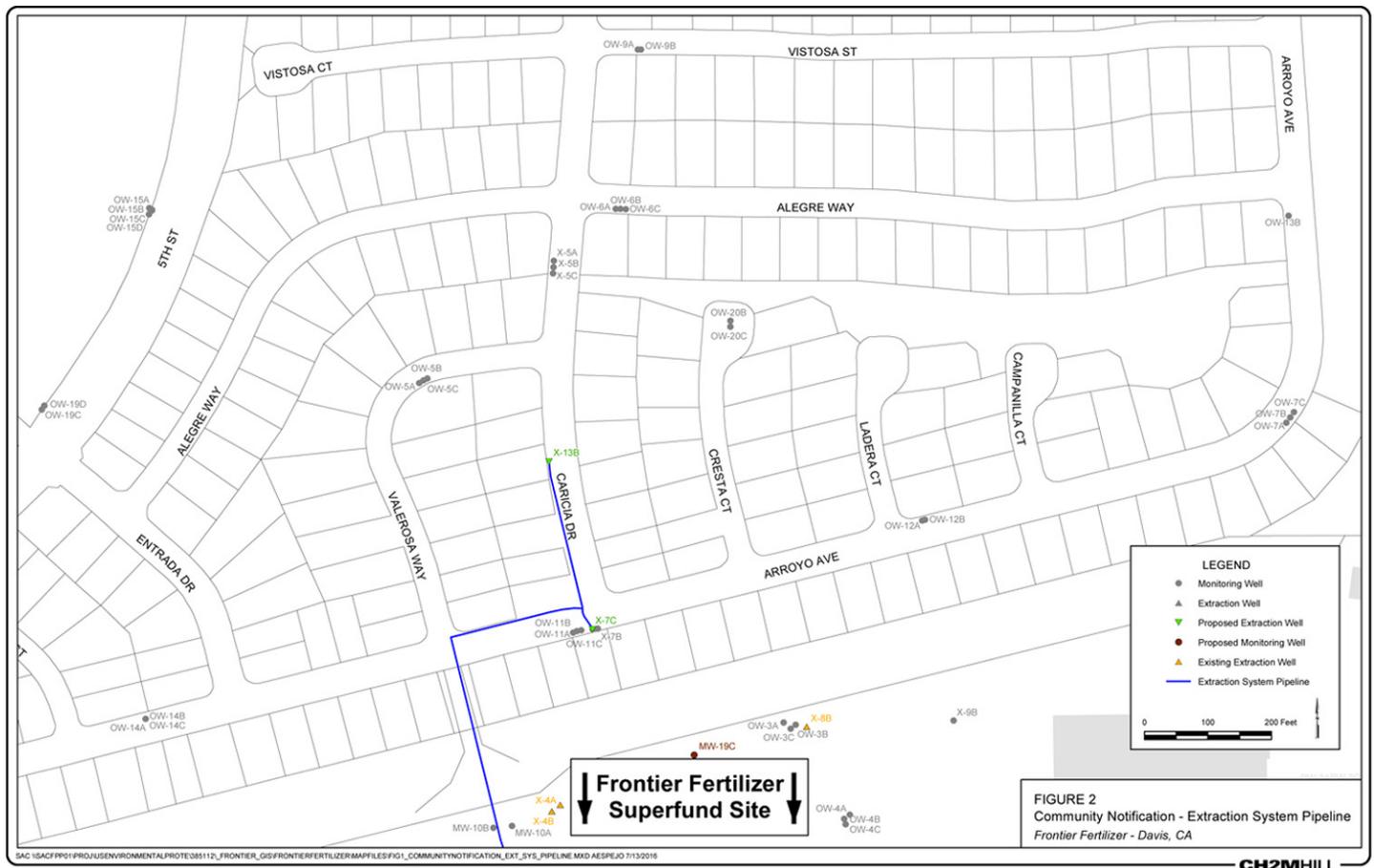


Figure 2: Map showing pipeline extending to Mace Ranch extraction wells



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You can also leave a toll-free message for Jackie Lane or Bonnie Arthur by calling the Community Involvement toll-free number:
(800) 231-3075

Site Information Repositories and On-Line Web Page

The information repositories below house Site documents available for public review. EPA also has a Site Overview web page at <http://www.epa.gov/superfund/frontierfertilizer>

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