



California Regional Water Quality Control Board

Central Valley Region

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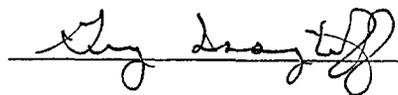
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FROM: Greg Issinghoff, RG No. 5680
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DATE: 7 April 2003

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SUBJECT: SUMMARY REPORT, TIME-CRITICAL REMOVAL ACTION,
ADMINISTRATION AREA PLUME, UST SITE 117, NASA CROWS LANDING
FLIGHT FACILITY, CROWS LANDING, STANISLAUS COUNTY

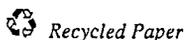
I have reviewed above-referenced report, which was prepared by IT Corporation. A summary of the report is presented below.

BACKGROUND INFORMATION

The former Naval Auxiliary Landing Field (NALF), Crows Landing facility, is located between the towns of Patterson and Crows Landing in western Stanislaus County. NALF Crows Landing was commissioned in 1943 and served as a training field during World War II. The facility was inactive after World War II until the facility was used for fleet carrier landing practice during the Korean War in the early 1950s. The site has been used for a variety of military purposes throughout the 1970s and 1980s. In 1994, the facility was transferred from the Navy to the National Aeronautics and Space Administration (NASA) as part of a Base Realignment and Closure Act conveyance. The site is now known as NASA Crows Landing Flight Facility. In October 1999, NASA received legislative authority to transfer the facility to Stanislaus County, although no transfers have occurred to-date. In January 2001, Stanislaus County released California Environmental Quality Act documentation for public review for the planned reuse of the site for general aviation and agriculture.

UST Site 117 is a former 1,200-gallon gasoline storage tank that was installed in the 1940s or 1950s. UST 117 failed a leak test in 1987 and was removed in 1988. Building 117, which has been identified on the Navy's plant account list as a service station, was constructed in 1944 near the former UST. Building 168, identified as a clubhouse, is currently the nearest structure to the UST 117 location. The clubhouse is reportedly vacant. Investigations have found petroleum hydrocarbons in soil and groundwater beneath Site 117. In May 1997 to March 1998, a long-term vapor extraction treatability study was conducted on vadose zone soil and removed approximately 48,000 pounds of petroleum hydrocarbons.

California Environmental Protection Agency



Data gathered during the summer of 2000 indicated the extent of commingling of three plumes (Installation Restoration Plan (IRP) Site 17, UST Cluster Site 1, and UST Site 117) was greater than previously suspected. As a result, the three plumes are now referred to as one groundwater plume known as the Administration Area Plume under the IRP. A feasibility study is in preparation to evaluate remedial alternatives for the Administration Area Plume.

In August 2001, a Time-Critical Removal Action (TCRA) Memorandum was prepared describing actions to be taken to remove contaminant mass from groundwater at source areas within the Administrative Area Plume. The purpose of the removal action was to minimize potential migration of the plume to adjacent properties. The removal action conducted at Site 117 is summarized below.

REMOVAL ACTION

Four monitoring wells are located at Site 117. They are:

- 117-MW-02(S), screened from 50 to 75 feet below grade
- 117-MW-03(MS), screened from 97 to 107 feet below grade
- 117-MW-10(S), screened from 50 to 75 feet below grade
- 117-MW-10(MS), screened from 115-125 feet below grade

Wells 117-MW-02(S) and 117-MW-03(MS) are both located near the former UST 117 location. Wells 117-MW-10(S) and 117-MW-10(MS) are cluster wells constructed within the same borehole and are approximately 55 feet downgradient of the former UST 117 location.

These four wells were utilized for aquifer testing, which was conducted from 24 July 2001 through 17 September 2001. Pumping rates from each of the wells were found to be considerably less than one gallon per minute (gpm). Well 117-MW-10(MS), the largest water producer of the four wells, produced 0.17 gpm. The average hydraulic conductivity was calculated to be 0.208 feet per day, which corresponds to permeabilities for silt, sandy-silt, and clayey-sand.

Groundwater was sampled before the aquifer testing. Concentrations of various constituents of concern in the four monitoring wells ranged as follows.

- Gasoline: 20J micrograms per liter ($\mu\text{g/L}$) to 210 $\mu\text{g/L}$
- Benzene: 0.2J $\mu\text{g/L}$ to 47.3 $\mu\text{g/L}$
- Chloroform: 1.1 $\mu\text{g/L}$ to 4.1 $\mu\text{g/L}$
- 1,1-DCA: 0.5J $\mu\text{g/L}$
- 1,2-DCA: 0.7 $\mu\text{g/L}$ to 100 $\mu\text{g/L}$
- 1,2-DCP: 0.5 $\mu\text{g/L}$ to 2.1 $\mu\text{g/L}$
- TBA: 76J $\mu\text{g/L}$ to 86 $\mu\text{g/L}$

Following the aquifer testing, the removal action consisted of extracting groundwater from wells 117-MW-02(S) and 117-MW-03(MS). Removal action was conducted from 17 September 2001 through 31 December 2001. Each well was pumped four days per week, 24 hours per day during this time interval. Well 117-MW-02(S) was pumped at a rate of approximately 0.04 gpm and well 117-MW-03(MS) at a rate of 0.12 gpm. Concentrations of constituents of concern were approximately the same in the two

wells at the beginning and end of the extraction activities. Extracted groundwater from both the removal action and aquifer testing was characterized and transported off-site to a treatment and disposal facility.

A total of 11,189 gallons of groundwater was extracted during the aquifer testing and the removal action. The total mass of contaminants removed was calculated to be 0.012 pounds. The total cost of the aquifer testing and removal action is reported to be \$55,000. The report stated that contaminants were removed from the source area, thereby minimizing the potential for contaminants to spread downgradient beyond the facility boundary.

Recommendations as stated in the report are presented below:

1. Data collected during the removal action should be used to refine the hydrogeologic model of the Administrative Area Plume.
2. Data collected during the removal action should be considered during the evaluation of potential remedial alternatives for the Administrative Area Plume.
3. Groundwater extraction should continue from wells 117-MW-02(S) and 117-MW-03(MS) as a transitional action to continue to remove contaminant mass from the shallow and mid-shallow intervals until a final remedy is implemented or it is determined to not be cost effective.
4. Further investigation should be conducted in the mid-shallow interval near the property boundary to verify hydrogeologic conditions and determine the concentrations of contaminants.

DISCUSSION

Over a four-month period, the cumulative amount of groundwater extracted during the removal action was 11,189 gallons at a rate of less than 0.5 gpm and with 0.012 pounds of contaminants removed. Total cost for the removal action was \$55,000. This computes to a cost of \$4.5 million per pound of contaminant removed. Using these figures, it appears that groundwater extraction and treatment is not a cost effective remedial solution for the Administrative Area Plume. Although the Regional Board would not prevent its implementation, continuing groundwater extraction from wells 117-MW-02(S) and 117-MW-03(MS), as indicated in recommendation 3 above, does not appear to be a cost effective remedial solution. Recommendations 1, 2 and 4, above, however, do appear to be appropriate for the site.

Transmittal

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