SOIL VAPOR RECOVERY AND GROUNDWATER REMEDIATION SYSTEMS

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February 26, 1990
File No. 0389058.00

I. PREVIOUS INVESTIGATION

SCS Engineers performed an environmental site assessment on the subject parcel in January 1990. A report describing services rendered, results and recommendations was sent to Mr. Robert P. Gates of Erskine and Tulley on January 30, 1990.

Summary of Results

Contamination of both the vadose zone (the zone of aeration above the water table) and the groundwater is present beneath the subject parcel. All soil samples tested positive for oil and grease. Diesel and minor amounts of PCB's were noted in some soil samples (see attached). Analysis for CAM metals noted metals in many soil samples. Low amounts of volatile or semi-volatile organic substances were noted. Slight or no contamination was noted in all wells excepting: MW-7 which contained some oil and grease contaminants and MW-8 which contained high amounts of methyl isobutyl ketone (MIBK) and total petroleum hydrocarbons (TPH).

II. INTRODUCTION

The former MIBK underground storage tank (UST) area as well as the drum storage in the southwest corner of the subject parcel require groundwater remediation systems. Vadose zone remediation is necessary in the former location of the MIBK USTs. The following section describes the groundwater remediation system.

III. GROUNDWATER REMEDIATION

Monitoring wells 7 and 8 (MW-7, MW-8), illustrated on Sheet 2 of 3 will be converted to groundwater extraction wells, used in conjunction with a submersible pump. The water is delivered via 1.75 inch Schedule 40 PVC pipe to three CARBTROL(R) canisters arranged in series. The efficiency of the system will be monitored by obtaining effluent samples, influent samples and samples between the CARBTROL units. The schematic illustration of the groundwater remediation system is on Sheet Number 3 of the attached systems drawings. Sample points located on the inlet and outlet sides of each CARBTROL(R) unit will be used to obtain samples for laboratory analysis. The laboratory analysis will provide quantitative value for the presence (or non presence) of contaminants before and after each canister. The effluent of the third canister should contain non-detectable levels of contamination. When concentrations in the effluent of canister one exceed acceptable levels, the first canister is removed, number two is moved to the number one position, number three is moved to the number two position, and a new canister is placed in the third position. This process is done repeatedly until the groundwater beneath the subject parcel achieves acceptable levels of contamination.

SCS proposes that the final effluent, containing non detectable levels of contamination will be sewered to the nearest sanitary sewer line. Once the remediation system is

in operation, four to six months will be required to acceptable levels of contamination. This time frame is an estimate and is dependent on the specific site conditions during the remediation process.

The following section describes in detail the vadose zone remediation system for the soil in the vicinity of the former MIBK tanks.

Soil Remediation

Four vapor extraction wells, each consisting of two inch, 0.020 slotted PVC pipe wrapped in fiberglass will be placed in the former MIBK tank pit area. The wells are connected to a manifold, which is connected to a blower. (See Sheet 2 of 3, Engineering Drawings). A flow rate of approximately 100 cubic feet per minute of vapor (CFM), induced by a vacuum at the well head at approximately 5-6 inches of mercury, will be delivered to two carbon canisters mounted in series. Sample ports on the influent and effluent side of each canister will be used to determine the effectiveness of the carbon absorption units. Qualitative indicators located between the two canisters and the canister number two will be installed for a field method of determining the system efficiency. When contaminant levels in the effluent of canister number one are greater than 10 ppm canister number two will be placed in the one position and a new canister will be placed in the number two position. The above method is based on a detection limit of 6 ppm. By design, the vapor

leaving canister one should contain non detectable levels of contamination. The vapor leaving canister two will be vented to the atmosphere through a vertical exhaust vent.

Permitting

Permit applications have been submitted to the Bay Area Air Quality Management District (BAAQMD) and East Bay Municipal Utility District.