STATE OF CALIFORNIA

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
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WELL INVESTIGATION PROGRAM - UTILITY TRAILER MANUFACTURING CO. 17300 E. CHESTNUT ST., CITY OF INDUSTRY (FILE NO. 105.0296)

We have received the following submissions prepared by your consultant, Harding Lawson Associates: Phase II Site Assessment Report dated December 1, 1993, presents the results of supplemental soil-gas sampling, vapor probe purge testing and sampling, soil-matrix sampling, vapor extraction pilot well installation and testing, and biannual groundwater monitoring; and Final Draft Interim Remedial Action Plan (IRAP) dated February 15, 1994, presents the objectives, technical approach, and proposed implementation schedule for the remediation of halogenated volatile organic compound (VOC)-impacted soil at the site.

These submissions are in general compliance with an approved work plan dated January 14, 1993 (modified by addenda dated April 15, July 30 and August 30 1993), and a meeting between the consultant and Board staff on November 15, 1993.

Supplemental Soil-Gas Survey

The soil gas survey presented in the subject assessment report supplements the initial soil gas survey performed in July 1991. Upon review of the report, we have the following comments:

1. The results of the additional 57 shallow (6' bgs) and 19 deep (14' bgs) soil gas samples collected and analyzed during the subject soil gas survey further delineate the extent of VOC impact that was identified during the initial survey. A total of 12 permanent vapor probes installed during a previous phase of assessment were also sampled during this survey. Soil gas samples collected during this survey from the three principal VOC soil gas plumes (N, SE and SW) contained concentrations of 1,1-DCE ranging from 100 to 1,734 µg/l, PCE ranging from 100 to 1,065 µg/l, 1,1,1-TCA ranging from 100 to 708 µg/l and TCE ranging from 30 to 98 µg/l. At many probe locations, the deeper samples contained higher VOC concentrations than the shallow samples.

2. VOC concentrations measured during the subject survey were consistently lower (in some cases more than two orders of magnitude lower) than those obtained from the previous survey. The explanation provided in the report suggested that the elevated concentrations from the previous survey were in part due to desorption of contaminants from the soil due to the larger purged volume and were not representative of soil vapor contamination.

3. Statements in the report implied that the results of the purge volume tests using the permanent vapor wells suggested that larger purged volumes produce higher contaminant concentrations in soil-gas measurements. However, the purge test data supplied in the report do not appear to demonstrate this phenomenon.

4. In spite of the large differences in concentration values, an attempt must be made to combine data from the two soil gas surveys, possibly using a normalization calculation. Data from both soil gas surveys should be used for delineation of the extent of impact and the design of remedial strategies.

5. In addition to the three major contaminated areas (North, Southwest, and Southeast), the soil-gas survey results identify other, less significant, isolated contaminant plumes including the paint booth area (SG-148, SG-107, SG-108, SG-110, B-8), dip tank area (SG-139, SG-140), machine shop area (SG-105, SG-106), SG-26/SG-136 area, and SG-135 area. These satellite areas must be addressed during vadose zone remediation.

6. The following QA/QC deficiencies were noted in the soil gas survey report:

   - The average response factors (RF) were different for the sample analysis tables and daily calibration data, which suggests that the GCs were calibrated during the soil gas survey. The report did not clarify this discrepancy. Only one set of three-point calibration data was provided in the report. All calibration data used in the soil gas survey should be included in the report.

   - The three-point calibration (9/15/94) presented in the report did not satisfy the requirement of %RSDs<20%. Among 38 listed compounds, there were 11 out of range for the right GC column, and 6 out for the left column.

- The samples analyzed on 9/14/93 contained elevated concentrations of 1,1-DCE, 1,1-DCA and 1,1,1-TCA based on RFs which were only one-tenth of the values in the corresponding daily calibration data. The same type of discrepancy occurred with PCE and TCE concentrations that were measured the same day using the left GC, but not for those using the right GC.

- An explanation should have been included in the report for the different RFs that were used to calculate VOC concentrations for samples VP4-9-3V and VP4-16-2V, which were both sampled and analyzed within the same hour.

- The daily calibration for 9/16/93 was incomplete for the right GC. It does not include PCE, TCE, 1,1-DCE and the aromatic compounds.

The above deficiencies compromise the soil gas survey data. Based on the results of future work, additional soil gas samples and analyses may be required to validate the results of the subject survey.

7. Although portions of the SE and SW plumes may extend off site, the closure of the concentration contours in the plumes and elevated concentrations with depth suggest that on-site sources have impacted the soil from ground surface to ground water at approximately 23' bgs.

Soil Matrix Sampling

A total of 90 soil samples from 20 boreholes, most of which were located in the three target areas, were analyzed for VOCs. Most of the borings were drilled from ground surface to the water table, which was encountered at depths ranging from 20' to 30' bgs. The following comments pertain to the results of the soil matrix phase of the subject assessment:

1. The results of the borings and soil sample analyses successfully characterize vadose zone hydrogeologic conditions and evaluate soil phase contamination beneath the subject site. Maximum VOC concentrations in soil samples from the three plume areas ranged from: 180 to 2,000 µg/kg 1,1-DCE; 150 to 350 µg/kg PCE; 38 to 520 µg/kg 1,1,1-TCA; 12 to 61 µg/kg TCE; 8 to 35 µg/kg 1,1-DCA; and 7 to 34 µg/kg methyl chloride.

2. The upper clayey layer, generally extending from ground surface to depths ranging from 10' to 15' bgs, contained the highest levels of VOC contamination based on laboratory analyses and PID measurements during drilling. The lower sandy layer was, in most cases, less heavily impacted.

3. The following required QA/QC information was not included in the soil matrix laboratory report prepared by Jones Environmental, Inc.: calibration data, including the most recent initial calibration range, average RF, %RSD, and daily RF from mid-point calibration and its percent difference from the initial average RF; and daily laboratory quality control check data.

4. The boring logs and chain of custody documents were incomplete regarding some of the drilling and sampling details. The hole diameter, sampling equipment (2" split spoon, etc.), sampling sleeve diameter and sample type (grab or in-situ) were not identified. Specifically, the report did not mention if the Simco drilling rig used to drill B8 and B10 inside the building had small diameter solid core augers or if the samples were collected in 1" stainless steel sleeves instead of the larger diameter brass sleeves used for the other borings. Such a difference in sampling methods may have had a significant affect on the laboratory results and should have been mentioned in the report.

5. Soil matrix data generally confirm the conclusion that on-site VOC sources have impacted the soil from ground surface to the water table in all three plume areas. In many instances, the lithology of the various soil horizons appears to have influenced the degree of VOC impact, with the upper clayey unit being the most heavily impacted.

Soil-Vapor Extraction Well Installation and Pilot Testing

Two vapor extraction wells (VE1 screened in the upper clayey zone and VE2 screened in the lower sandy zone), installed near the center of the northern VOC plume, were used in a SVE pilot study which involved two seven hour tests. The following comments pertain to this phase of the assessment:

1. This pilot study confirms the feasibility of using VES methods to remediate VOC-impacted soil beneath the subject site. The zone of influence (defined as the distance from the extraction well at which a pressure drop of 1" of water can be maintained) was at least 9' for the upper clayey zone and 25' for the lower sandy zone. The highest concentrations of VOCs in the vapor phase recovered during the tests were: 4,200 ppmv PCE; 460 ppmv 1,1-DCE; 220 ppmv TCE; 39 ppmv 1,1-DCA; 190 ppmv 1,1,1-TCA; and 22 ppmv 1,2-DCE. Liquid VOC condensed from the vapor contained 91% PCE.

2. According to the vapor extraction analytical data report (Appendix D), there is a substantial difference in the laboratory analyses results of the original and duplicate samples collected at 1400 hours during the VE1 test: 460 vs. <0.005 ppmv for 1,1-DCE, 190 vs. 0.004 ppmv for 1,1,1-TCA, 220 vs. <0.004 ppmv for TCE, and 4200 vs. <0.003 ppmv for PCE. This discrepancy should have been addressed in the report.

3. Since vapor phase contamination is widespread at the subject site, rather than concentrated in only the three major plumes, it is hoped that a VES system will be installed that is capable of remediating the entire site with a minimum number of extraction wells. In order to evaluate this capability during future tests, measurement of flow rates at greater distances (100' or more) during longer test periods (at least 24 hours) might be more appropriate than measuring pressure drops during short tests.

Groundwater Monitoring

Ground water samples from the five ground water monitoring wells at the site (MW-2 through 6) were analyzed for VOCs during this phase of the assessment. The following comments pertain to this monitoring data:

1. Ground water was measured at depths ranging from approximately 21' to 27' bgs in the five wells. The gradient was calculated to be 0.004 foot per foot in a northwesterly direction. Maximum VOC concentrations in the ground water samples were: 500 µg/l PCE; 67 µg/l TCE; 92 µg/l 1,1-DCE; 29 µg/l 1,1-DCA; and 12 µg/l chloroform.

2. The well purging data in Appendix F indicates that MW-3 was purged dry prior to sampling. This exceptional sampling condition should have been noted in the report and data summary table. VOC analyses for this sample may not be comparable to data obtained from wells that were not purged dry.

3. No record of sample turbidity was noted in the report. Turbidity should be monitored during well purging and noted on ground water sampling logs.

4. Contrary to Board guidelines, data for laboratory quality control check samples was not included in the QA/QC report.

5. Detection limits were higher than required for all constituents in some ground water samples due to dilution for high concentrations for one or two constituents. Separate, additional runs of undiluted samples should be performed to

achieve acceptable detection limits for VOCs that have low concentrations.

6. If the data from MW4 (one of the two upgradient wells) is ignored, a pattern of contamination is apparent in which on-site sources are the probable sources of ground water impact. Considering the complexity of the site and the presence of numerous potential off-site sources upgradient from the site, additional monitoring and possibly more well control may be required to determine the sources of the observed ground water contamination below the subject site.

7. Semiannual groundwater monitoring should be continued. **Three** copies of the monitoring reports are due at this regional Board on **May 6, 1994.**

Interim Remedial Action Plan (IRAP)

The final draft IRAP proposes the installation of soil vapor extraction (SVEs) systems in the three target areas for remediation of the VOC-impacted soil beneath the subject site. VOC contaminated soil gas will be extracted from wells or trenches and alternately treated using portable refrigeration/condensation and GAC techniques. The portable treatment units will be moved from the three target areas to subareas if confirmation soil gas sampling indicates the need for additional remediation. Proposed cleanup levels are based on performance criteria involving asymptotical decreases in contaminants and total mass removal. Board staff have no objections to implementation of the proposed soil remediation with the following exceptions:

1. Numerous impacted areas outside the limits of the three major soil plumes may require separate installations of SVE equipment. Enough multiple-depth vapor probes (or supplemental soil gas surveys) should be installed to monitor the progress and efficiency of remediation in the satellite "hot spot" areas during remediation of the three major soil plumes.

2. The design of the SVE system presented in the proposed IRAP is only conceptual and preliminary. Detailed design information and design rationale of the final system should be submitted to the Board prior to commencement of field work.

3. The remediation goal should include attainment of sufficiently low VOC concentrations in addition to the performance criteria mentioned in the report. Additional cleanup or monitoring measures may be required after remediation using SVE methods if the levels exceed five times the MCLs for the various contaminants.

4. Soil samples and VOC analyses are required for borings and trenches in areas that lack previous soil matrix data.

5. The quarterly progress reports should include a description of anticipated work to be performed during the following quarter. Board staff would like to have some input regarding the placement of multi-depth monitoring probes and confirmation soil gas surveys. In addition to the quarterly progress reports, a final closure report containing a detailed description of remediation activities and confirmation data must be submitted to the Board.

Based on the tentative implementation schedule included in the IRAP, vapor extraction well installation will commence within five weeks, or on May 16, 1994, and system startup will occur in eleven weeks, or on June 27, 1994. Please inform Board staff of any changes in this scheduling. Board staff must be notified at least 72 hours prior to field work at the subject site. Please contact Rueen-Fang Wang at (213) 266-7541 if you have any questions.

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