Harding Lawson Associates

Engineering and Environmental Services

UTM 005002

TRANSMITTAL

To: Mr. Bob Griffis
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From: Kurt Wiebe

Date: July 21, 1994

Subject: Interim Remedial Action Plan

Project Number: 26961 2

Attached is one copy of Harding Lawson Associates' (HLA) *Interim Remedial Action Plan, Soil-Vapor Extraction, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California.* Please call Brad Eismen or me at (714) 556-7992 if you have any questions or comments.

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Interim Remedial Action Plan
Soil-Vapor Extraction
Utility Trailer Manufacturing Company
17300 East Chestnut Street
City of Industry, California

Prepared for

Utility Trailer Manufacturing Company
17295 East Railroad Street
City of Industry, California 91749

HLA Project No. 26961 2

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DISTRIBUTION

1.0 INTRODUCTION

This document presents the interim remedial action plan (IRAP) for soil-vapor extraction (SVE) at Utility Trailer Manufacturing Company (UTM), located at 17300 East Chestnut Street, City of Industry, California. This IRAP has been developed at the request of Messrs. Philip Chandler and Samuel Yu formerly of the Regional Water Quality Control Board - Los Angeles Region (RWQCB), at a meeting attended by representatives of UTM and HLA on November 15, 1993, and as discussed in a meeting with Mr. Eric Nupen and Ms. Rueen-Fang Wang of the RWQCB in a meeting held on June 29, 1994. This IRAP provides the objectives, technical approach, and proposed implementation schedule for the remediation of halogenated volatile organic compound (VOC)-affected soil at the site.

Harding Lawson Associates (HLA) performed in-situ vapor extraction testing in October 1993, as part of a Phase II site assessment required by the RWQCB. This testing yielded favorable results in both zones tested. Test results are detailed in HLA's report entitled *Phase II Site Assessment, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, dated December 1, 1993 (HLA, 1993d). Because the test results were favorable, extended pilot testing of soil-vapor extraction is presented in this IRAP at the RWQCB's request as an interim remedial measure, and to collect additional data regarding the applicability of using this remedial technology for soil cleanup at the site. This approach was approved by RWQCB staff in the June 29, 1994 meeting, and remedial actions will proceed, as required by the RWQCB, in a "self directed" manner, following written approval of this IRAP by RWQCB staff.

This proposed interim remedial action is intended to document the appropriateness and feasibility of SVE technology to achieve the following goals:

- Protect groundwater from potential impacts from the elevated concentrations of the compounds of concern (COCs) reported in the soil matrix.
- Reduce the concentrations of the COCs in the soil vapor and matrix to acceptable operational and/or risk-based levels as discussed in the November 15, 1993, and June 29, 1994, meetings.
- Conduct all field activities in a safe and efficient manner.

This IRAP will be implemented using a phased and modular-design approach. Subareas of the three main areas of the site, which were further delineated as containing elevated concentrations of VOCs in soil matrix and soil-vapor samples collected during Phase II site assessment activities, will be targeted first. The remaining portions of these three areas will be addressed once the effectiveness of this remedial action is demonstrated and is approved by the RWQCB.

2.0 BACKGROUND

2.1 Site Description

The site is located between Railroad and East Chestnut Streets, south of Azusa Avenue, in the City of Industry, California (Plate 1). The site is bounded on the north by Chestnut Street and San Jose Creek and on the west by a field adjacent to Azusa Avenue. Somitex Prints of California (Somitex), the Los Angeles Water Company (LA Water), and Maxim Lighting abut the southern and eastern boundaries of the site. The main manufacturing building, plant operations building, numerous small operational support buildings, and a quality assurance test track are currently located on the site. The property is paved with asphalt and concrete, except for two unpaved areas located on the northern and western portions of the property.

The approximately 27-acre site is situated in the Puente Valley, with the San Jose Hills to the north and the Puente Hills to the south, at an approximate elevation of 380 feet above Mean Sea Level (MSL). The Puente Valley is the southernmost tributary valley of the larger San Gabriel Valley. Site terrain is generally flat, sloping gently to the north toward San Jose Creek. San Jose Creek originates approximately 30 miles upstream of the UTM site, runs past UTM, and then flows into the San Gabriel River at Whittier Narrows, approximately 6 miles downstream of the site.

2.2 Geology

The site lies within the Northeastern structural block of the Peninsular Range physiographic province (Yerkes et al., 1965). The Puente Valley is a structural basin filled with Quaternary alluvial deposits and underlain by Tertiary sedimentary rocks. The Tertiary-age sequence consists of fine- to coarse-grained marine clastic sedimentary rocks and has been divided into three formational units, the Puente, Repetto, and Pico formations (oldest to youngest, respectively). Quaternary sediments consist of unconsolidated to semiconsolidated alluvial and terrace deposits. The surficial alluvium is probably 300 to 400 feet thick beneath the site (Mann, 1986).

Investigations conducted at the site indicate that the site is underlain by alluvial deposits consisting of interbedded clay, silt, sand, and gravel. Sediments from the ground surface to approximately 15 feet below ground surface (bgs) consist of very stiff clay. This upper clay unit tends to be thicker on the southern portion of the site. Below this, to a depth of approximately 20 to 30 feet bgs, is an interval of interbedded silty sand, fine-grained sand, clayey sand, and silt (uppermost sand). Beneath this zone, to a depth of approximately 35 to 45 feet bgs, is an interval of fine- to coarse-grained sand and fine to coarse gravel.

2.3 Hydrogeology

The site is located within the Puente Groundwater Basin, a subbasin of the larger San Gabriel Valley Groundwater Basin. Groundwater flows into the Puente Basin through a gap at the northeastern end of the basin (Department of Water Resources [DWR], 1966). Groundwater flow in the basin is westerly, generally parallel to San Jose Creek, and flows out of the basin at Whittier Narrows. The principal water-bearing formations of the Puente Basin are the upper members of the Pico Formation and the Older and Younger Alluvium. Borings drilled at the site encountered groundwater at a depth of approximately 22 feet bgs. Depth to the base of fresh water is estimated to be approximately 200 feet bgs at the site (DWR, 1966).

2.4 Previous Investigations

A summary of investigations conducted at the site is included in the HLA report entitled, *Site Assessment, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, dated December 23, 1992 (HLA, 1992e; HLA, 1993d). These investigations have identified three general areas at the site that contain elevated concentrations of VOCs in soil-gas and soil-matrix samples. These areas include the area near the northern end of the drainage conduit from Somitex (North Area), an area located at the southern end of the drainage conduit (Southwest Area), and an area near the former hazardous materials storage location at the southeastern portion of the facility (Southeast Area). The predominant VOCs previously reported from soil-gas and soil-matrix samples at the site are 1,1-dichloroethene (1,1-DCE), 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethene (PCE), and trichloroethene (TCE).

The soil-vapor extraction testing conducted in the North area during the Phase II site assessment indicated that SVE is a technically viable approach to remove VOCs from both the upper clay zone and the uppermost sand zone. Propagated vacuums at most upper clay zone piezometers showed a slow rise throughout the test and indicated that a vacuum of 1 inch of water was propagated to a radius of approximately 9 feet from the vapor extraction well in that zone after approximately 7 hours. Propagated vacuums in most uppermost sand zone piezometers appeared to have stabilized by the end of the test and indicated that a vacuum of 1 inch of water was propagated to a radius greater than 25 feet from the vapor extraction well in that zone after approximately 7 hours. Approximately 1 gallon of dense nonaqueous phase liquid (DNAPL) and approximately 5 gallons of water were recovered from the vapor extraction system condenser during each test. Analytical results of the DNAPL indicated a makeup of predominantly PCE with lesser amounts of TCE (approximately 81 percent PCE and 4 percent TCE in the upper clay zone and approximately 91 percent PCE and 2 percent TCE in the uppermost sand zone).

2.5 Lithologic Controls

Based on an aerial photograph review performed as part of a Phase I site assessment (HLA, 1992b), the site area was predominantly used for agricultural cultivation and the raising of livestock through at least 1954. The presence of lithologic features (calcified stringers, root holes, and worm tubes) in the upper clay zone are likely related to these activities. These features will probably influence remediation of this zone because they are likely the reason for the relatively high propagated vacuums and radius of influence measured in the upper clay zone during the vapor extraction test.

Total organic carbon (TOC) analyses performed on selected soil samples during Phase II site assessment activities indicated a TOC range from 1,700 to 14,000 milligrams per kilogram (mg/kg) in the upper clay zone and a range from 93 to 3,500 mg/kg in the uppermost sand zone. These concentrations indicate a relatively high sorptive capacity for the upper clay zone. While the lithologic features described above will tend to allow SVE to remove the majority of the contaminant relatively quickly, the sorptive capacity of the clay would tend to decrease the mobility of any remaining contaminant.

3.0 TECHNICAL APPROACH

3.1 Interim Remedial Action Goals

The general goal of the remediation work presented herein is to remove a maximum amount of VOCs from vadose zone soils in the three target areas as quickly and as cost effectively as is possible.

The primary technical goal is to select the best feasible technology presently available to remove VOCs and use that technology to its practical and economic limit. Based on discussions with RWQCB staff, we propose that remediation of vadose soils using vapor extraction in each subarea be discontinued when the following condition has been met:

- The graphs of extracted VOC concentration versus time for individual wells or trenches become asymptotic, indicating that further vapor extraction will have little additional beneficial effect. Because treatment in each area will be alternated as part of the operation and maintenance plan, we believe the most appropriate measure of the concentration decline curve should be the plot of the restart VOC concentrations versus time. An example concentration decline plot is presented on Plate 2.

One of the following conditions should also be met:

- Analytical results from confirmation samples indicate that a significant and consistent decline in soil VOC concentrations has resulted from the remedial action, or

- It can be demonstrated that remaining VOC concentrations do not pose a risk if left in place.

The remedial action described herein is intended to be implemented in a phased and modular-design approach. The initial phase is intended to quickly remediate the subareas indicating the highest concentrations of reported VOCs. When the remedial goals discussed above have been achieved at any given subarea, the ongoing operational data review and evaluation of confirmation data will determine whether to expand the system or target a new subarea.

3.2 Remedial Alternatives

The principal remediation alternatives that were considered are:

- Excavation of contaminated soils (upper clay zone) to a depth of 15 feet bgs in the three affected areas (North, Southwest, Southeast, as shown on Plates 3, 4, and 5, respectively), with transport offsite for disposal.

- Installation of upper clay zone vapor extraction trenches, installation of uppermost sand zone vapor extraction wells, and installation of vapor extraction piping and collection manifolds in the three affected areas. One of the three treatment technologies described below, or a combination of these technologies, would be used to alternately treat each of the selected subareas, one at a time, thus allowing VOC concentrations to equilibrate between treatment periods. It is anticipated that this approach will help maximize the total mass of VOCs removed per unit time. The three vapor extraction technologies considered are:

  1. Use of a trailer-mounted vapor refrigeration/condensation (R/C) equipment similar to that used during soil-vapor extraction testing conducted as part of the Phase II site assessment (HLA, 1993d). This system produces DNAPL and water condensate that must be recycled or disposed of offsite.

  2. Design skid-mounted SVE equipment incorporating a 5000-lb granular activated carbon (GAC) vessel that is regenerated onsite using existing, subcontracted, truck-mounted equipment. This process uses GAC vessels similar to those conventionally used to adsorb VOCs. Once the GAC reaches its adsorption limit, heated nitrogen and R/C equipment are used to remove the VOCs from the GAC, producing DNAPL and water that must be recycled or disposed of offsite.

  3. Design skid-mounted SVE equipment incorporating two conventional 1,200-lb GAC vessels. Once the GAC in the primary vessel reaches its adsorption limit, it is removed and replaced with fresh GAC. The flow direction through the vessels is then reversed, with the new GAC acting as the secondary, or scrubbing, unit. The expended GAC is transported offsite for regeneration.

3.3 Cost and Technical Comparison of the Alternatives

A planning-level cost estimate (PLCE) has been prepared to identify the main technical components and to compare the relative order-of-magnitude costs of these alternatives. A key assumption is that SVE can adequately remove VOCs from the clayey soils as indicated in the pilot SVE test (HLA, 1993d). The main conclusions that can be drawn from the PLCE are:

- The cost of excavation and offsite disposal or treatment of soil is approximately one order of magnitude higher than the well installation and SVE treatment options.
- The costs of the three SVE treatment options, excluding well installation costs, are within approximately 10 percent of each other for large-scale remediation. For smaller scale remediation, the trailer-mounted vapor R/C approach is most costly; the conventional GAC approach is next in cost, and the onsite GAC regeneration appears to be least costly.
- The trailer-mounted R/C approach rental costs are structured in tiers, with different influent concentrations determining pricing per unit time. This approach is price competitive with GAC alternatives at high and intermediate VOC concentrations, but at lower concentrations (for example at below 100 parts per million by volume) the relatively high energy consumption cost makes the R/C approach less economical. The costs of the two GAC-based alternatives are more directly related to the total mass of VOCs being removed and are more costly at higher influent concentrations. Therefore, a combination of technologies, employed in a modular fashion, appears to be the most cost-effective approach to soil remediation in the affected areas.

3.4 Proposed Combination of Alternatives

In order to best take advantage of the individual cost effectiveness of the different SVE approaches under different extracted vapor concentration conditions, we propose the following combination of technical approaches to SVE remediation:

- Install horizontal vapor collection trenches in the upper clay zone in the north area and three SVE wells in the uppermost sand zone in each area. Well and trench spacing will be determined based on the results of the pilot testing performed during Phase II site assessment activities.
- Install approximately eight temporary soil vapor/vacuum piezometers around the well and trench area in each target subarea. Additional soil vapor/vacuum piezometers will be installed as needed in additional outlying areas.
- Install piping manifolds connecting the SVE wells and/or trenches.
- Operate the trailer-mounted R/C equipment in approximately 4-day periods at each affected area, alternating between the three target areas for several weeks, or until extracted vapor concentrations drop to levels that make one of the GAC-based technologies more economical.
- Design and install an onsite regenerable GAC system or a conventional system that can be used to alternately treat soils in the three affected areas until the remediation goals described above are achieved.

3.5 VES Conceptual Design

A trailer-mounted system will use a positive-displacement vacuum blower to apply a negative pressure (vacuum) to the vapor extraction wells and trenches and draw soil vapor into the wells. The soil vapor will then be passed through a refrigeration/condensation (R/C) unit to remove the VOCs from the vapor stream prior to discharge to the atmosphere. When the concentration of VOCs in the airstream is reduced, GAC vessels will be employed in place of the R/C unit to more cost-effectively remove VOCs from the extracted vapor stream.

The proposed treatment system will be used to alternately treat soils in the three areas to be remediated. The piping and electrical service will be installed in a manner such that soils in the three target areas can be treated in alternation.

The VES, associated pipe manifolding from the wells, and electrical service panels will be contained in a secure fenced area(s). Piping manifold and fence locations will be chosen so as to minimize the impacts of construction on facility operations. Excavated soil may be placed in an aboveground contained treatment area connected to the VES.

The treatment compound(s) will have a 6-foot chain-link fence to secure the equipment. The fence will be constructed with swinging gates to facilitate the servicing of the GAC regeneration modular vapor extraction equipment. Reflective markings will placed at the perimeter of the fencing to increase the visibility of the compound at night and reduce the potential for accidents. The access area of each compound will be designated a no parking zone.

4.0 REMEDIAL ACTION

4.1 Utility Clearance

To help ensure that underground piping, utilities, and obstructions are not encountered during drilling activities, HLA will:

- Based on the proposed vapor extraction well and trenches and temporary probe locations, review available maps and records provided by UTM for known subsurface obstructions;
- Mark locations of wells and/or trenches with representatives of UTM and relocate as necessary;
- Notify Underground Service Alert as required by law;
- Conduct a geophysical clearance survey and compare the results to available maps; and
- Hand auger the first 5 feet at each boring location and excavate by hand the leading edge of trenching.

4.2 Vapor Extraction Well and Trench Installation

Eight 10-inch diameter soil borings will be drilled to a depth of approximately 25 feet bgs in the uppermost sand zone with a truck-mounted hollow-stem auger drilling rig. An HLA geologist will supervise drilling, soil sampling, and well installation. Soil cuttings and samples will be monitored for organic vapors using a photo-ionization detector (PID). The PID will be calibrated daily to a hexane standard. Soil samples will be logged using the Unified Soil Classification System. Soil samples will be collected at 5-foot intervals. Samples may be selected for submittal to Del Mar Analytical, Irvine, California, for analysis of VOCs using EPA Method 8010. If samples are submitted for analysis, they will be selected based on field screening, visual observation, and their location in areas with limited data.

The borings will be converted to 4-inch diameter vapor extraction wells. The wells will be constructed of Schedule 40, flush-threaded, 0.020-inch slot PVC casing from approximately 16 to 25 feet bgs. Blank Schedule 40 PVC casing will be installed above the screened section. No. 3 Monterey sand will be used as a filter pack in the annular space surrounding the casing to approximately 1 foot above the screened section. An approximately 5-foot thick hydrated bentonite seal will be placed above the filter pack. A bentonite-cement grout mixture will be used to seal each boring above the hydrated bentonite. The wellheads will be completed with flush-mount, traffic-rated well boxes following installation of SVE piping. Typical well completion details are presented on Plate 7.

Three vapor extraction trenches will initially be installed in the uppermost clay zone in the North area. The dimensions of each trench will be approximately 8 feet deep by 2 feet wide by 70 feet long. Two-inch-diameter slotted PVC vapor collection pipes will be installed near the bottom of each trench. Pea gravel or similar materials will be used to backfill the trenches to a depth of approximately 2 feet. The top 2 feet will be excavated wider than the trench and backfilled with cement. Plastic sheeting will be placed between the pea gravel and the cement cap.

The trench design will include three separate horizontal cells per trench. The cells will be divided by 8-inch isolation walls. This will allow for treatment of individual horizontal sections of the trench as needed. Plate 8 presents the conceptual trench design.

Soil cuttings and excavation spoils will be covered and treated onsite by vapor extraction. Slotted vapor collection pipes, similar to those used in the trenches, will be placed within the treatment pile. The collector pipes will subsequently be connected to the VES.

4.3 Temporary Soil Vapor/Vacuum Piezometer Installation

Approximately eight temporary soil vapor/vacuum piezometers will be installed at each of the subareas. The piezometers will be installed by pushing a standard 1/2-inch-diameter soil-gas probe to the target depth. A 1/8-inch-diameter polypropylene tube will be installed in the center of the probe. As the steel probe is carefully withdrawn, filter sand will be placed in the probe using a technique similar to that used to build the vapor extraction wells within the hollow stem augers. The filter sand will be placed approximately 6 inches above the bottom of the tube, and the remainder of the tube will be filled with hydrated bentonite. Each tube will be immediately capped following installation. It is anticipated that four piezometers will be installed in the uppermost clay and four piezometers will be installed in the uppermost sand.

4.4 VES Construction and Installation

Construction activities will include trenching and installation of subgrade PVC piping from the wells; assembly of a collection, valving, and sampling manifold; construction of a treatment pile and piping; installation of electrical service (if portable generators are not used); and installation and marking of the fenced compounds. Following the trailer-mounted R/C unit operation, piping to connect the three target areas and the treatment pile may be installed, and GAC-based VES equipment will be installed. RWQCB staff will be provided design plans prior to installation, as-built plans after construction, and timely notification of system startup. Informal reports of field activities, remedial progress, project milestones, and system design changes will be communicated to the RWQCB.

4.5 Permitting

Permitting approvals will be required from various regulatory agencies. The lead agency involved with the remediation will be the RWQCB. The RWQCB will review this IRAP as a workplan for remediation activities onsite, and upon approval, the IRAP will guide future activities. Other agencies from which permits and/or approval will be required include:

- South Coast Air Quality Management District (SCAQMD)
- Local Building and Safety Department
- Local Fire Department

During the initial phase of remediation, the trailer-mounted R/C unit will be used to remediate soils. This unit is permitted by the SCAQMD for use in various locations for up to 90 days. During this 90-day period, HLA can apply for a fixed location permit to operate GAC-based equipment past the 90-day period. The fixed location permit will require approximately 6 weeks for approval and is expected to be obtained prior to the expiration of the various locations permit.

4.6 Implementation

4.6.1 System Startup

Once piping installation has been completed, the trailed-mounted R/C system should require relatively little time to become fully operational. We anticipate that approximately 1 day will be required for startup at each area.

Approximately 1 week will be required for startup at each area for the GAC-based system. During this period, the following work will be performed:

- Troubleshooting of system during startup,
- Modification of equipment and piping,
- Collection of operational baseline data, and
- Development of initial operation parameters and valve/control settings.

The SCAQMD permit for the fixed GAC-based system will likely require 2 weeks of daily monitoring and one-time influent and effluent sampling at startup. HLA will follow the permit requirements for the number and type of air samples analyzed. All samples will be submitted to a State of California-certified laboratory according to chain-of-custody protocol.

During the first 3 weeks of system startup and operation, HLA and/or our subcontractors will monitor the VES daily to ensure that the equipment is operating correctly, to collect operations and concentration information, to compare operating data to the general operational plan, and to adjust and optimize the system as necessary.

4.6.2 Operation and Maintenance

At each subarea, vapors will be withdrawn from the soil for a specified number of days and then will be turned off for a specified number of days (for example, 10 days on, 20 days off) in each of the three target areas to allow soil conditions (especially in the fine-grained soils) to return to equilibrium. We believe that alternating treatment at each of the areas should maximize overall VOC mass removal per unit time. Vapor extraction at the two southern areas will begin after the RWQCB has completed further investigation at the neighboring facility (Somitex), per RWQCB staff request.

Air sampling will be conducted in accordance with SCAQMD permit requirements. On each site visit, the influent and effluent concentrations of the VES will be measured using a PID. Influent vapor samples will also be periodically collected to evaluate the concentrations of VOCs being removed from the soil.

Operational results will be evaluated to fully take advantage of the modular design of the VES. Different combinations of wells and trenches may be used for vapor extraction and passive air inlet to help maximize total VOC mass recovery.

Soil vapor/vacuum piezometers will be sampled prior to initial startup. Sampling and analysis procedures will be conducted in accordance with current RWQCB WIP guidelines. Following startup, the piezometers will be monitored periodically for vacuum response with a manometer and for VOCs with a PID.

4.6.3 Reporting

HLA will compile and evaluate the VES operational data and will issue periodic reports to UTM. The reports will summarize field activities, discuss conditions encountered during remediation, present key operational parameters, and calculate mass removal rates. Copies of these reports may be submitted to the RWQCB, if required.

During VES operations, HLA will assess the monitoring data for progress of remediation. Once the extracted VOC concentrations in the VES influent have declined sufficiently, HLA will collect confirmation samples to assess the type and concentration of VOCs remaining in the soil. Depending on the analytical results obtained, HLA may request RWQCB approval to cease remedial operations, may continue to operate the VES, or may modify the remedial operation. HLA will develop a sampling plan for closure confirmation sampling in cooperation with RWQCB staff.

Per discussions with RWQCB staff, informal reporting via telephone will occur at major project milestones. Data, modeling results, and other pertinent information will be made available upon request by RWQCB staff.

4.7 Interim Remedial Action Schedule

An approximate schedule of activities to be performed is presented on Plate 6.

In summary:

- The design phase is expected to take approximately 5 weeks.
- Permitting, borehole clearance, well and trench installation, and piezometer installation can be conducted concurrently and are expected to take approximately 4 weeks.
- Construction of the VES is expected to take approximately 3 weeks and can immediately follow well and trench installation.
- Startup of the VES in the north area will begin following timely notification of RWQCB staff; operation in the southern areas will begin after completion of the RWQCB's further investigation at the neighboring facility (Somitex).

BIBLIOGRAPHY

Department of Water Resources. 1966. *Planned utilization of groundwater basins, San Gabriel Valley*; Bull. No. 104-2, Appendix A, Geohydrogeology.

Harding Lawson Associates. 1991a. *Quarterly groundwater monitoring; January, February, and March 1991, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, April 9.

--- 1991b. *Quarterly ground-water monitoring, April, May, and June 1991, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, July 8.

--- 1991c. *Soil-gas survey report, 17300 East Chestnut Street, City of Industry, California*, September 5.

--- 1991d. *Quarterly groundwater monitoring, July, August, and September 1991, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, September 27.

--- 1992a. *Quarterly groundwater monitoring, October, November, and December 1991, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, January 9.

--- 1992b. *Phase I Preliminary site assessment, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, June 2.

--- 1992c. *Quarterly groundwater monitoring; April, May, and June 1992; Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, July 14.

--- 1992d. *Quarterly groundwater monitoring; July, August, and September 1992; Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, October 13.

--- 1992e. *Site assessment, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, December 23.

--- 1993a. *Workplan, Phase II site assessment and supplemental soil gas survey, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, January 14.

--- 1993b. *Quarterly groundwater monitoring; October, November, and December 1992 and annual summary, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, January 14.

--- 1993c. *Quarterly groundwater monitoring; January, February, and March 1993, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, April 15.

--- 1993d. *Phase II site assessment, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California*, December 1.

Hydro-Fluent, Inc. 1988. *Discovery well assessment*, December 30.

--- 1989a. *Ground water assessment*, June 9.

--- 1989b. *Bi-monthly ground water monitoring, August - September 1989*, September 28.

--- 1989c. *Bi-monthly ground water monitoring, October - November 1989*, November 29.

--- 1990a. *Bi-monthly ground water monitoring, December 1989 - January 1990*, January 30.

--- 1990b. *Bi-monthly ground water monitoring, February - March 1990*, March 29.

--- 1990c. *Bi-monthly ground water monitoring, April - May 1990*, March 30.

--- 1990d. *Bi-monthly ground water monitoring, June - July 1990*, July 31.

--- 1990e. *Bi-monthly ground water monitoring, August - September 1990, and Annual Summary*, September 26.

Mann, J.F., Jr. 1986. *Water rights adjudication of the Puente Basin*. Geologic Society of America.

Massmann, J.W. 1989. Applying groundwater flow models in vapor extraction system design. *Journal of Environmental Engineering* 115(1):129-149.

Triad Foundation Engineering, Inc. 1987. *Contaminated soils investigation*, 87-467, October 30.

Yerkes, R.F., T.H. McCulloh, J.E. Schoellhamer, and J.G. Vedder, J.G. 1965. *Geology of the Los Angeles Basin, California - An introduction*. U.S. Geological Survey Professional Paper 420-A.

ILLUSTRATIONS

Reference: USGS 7.5-minute quadrangles, Baldwin Park and La Habra, California (photorevised 1981)

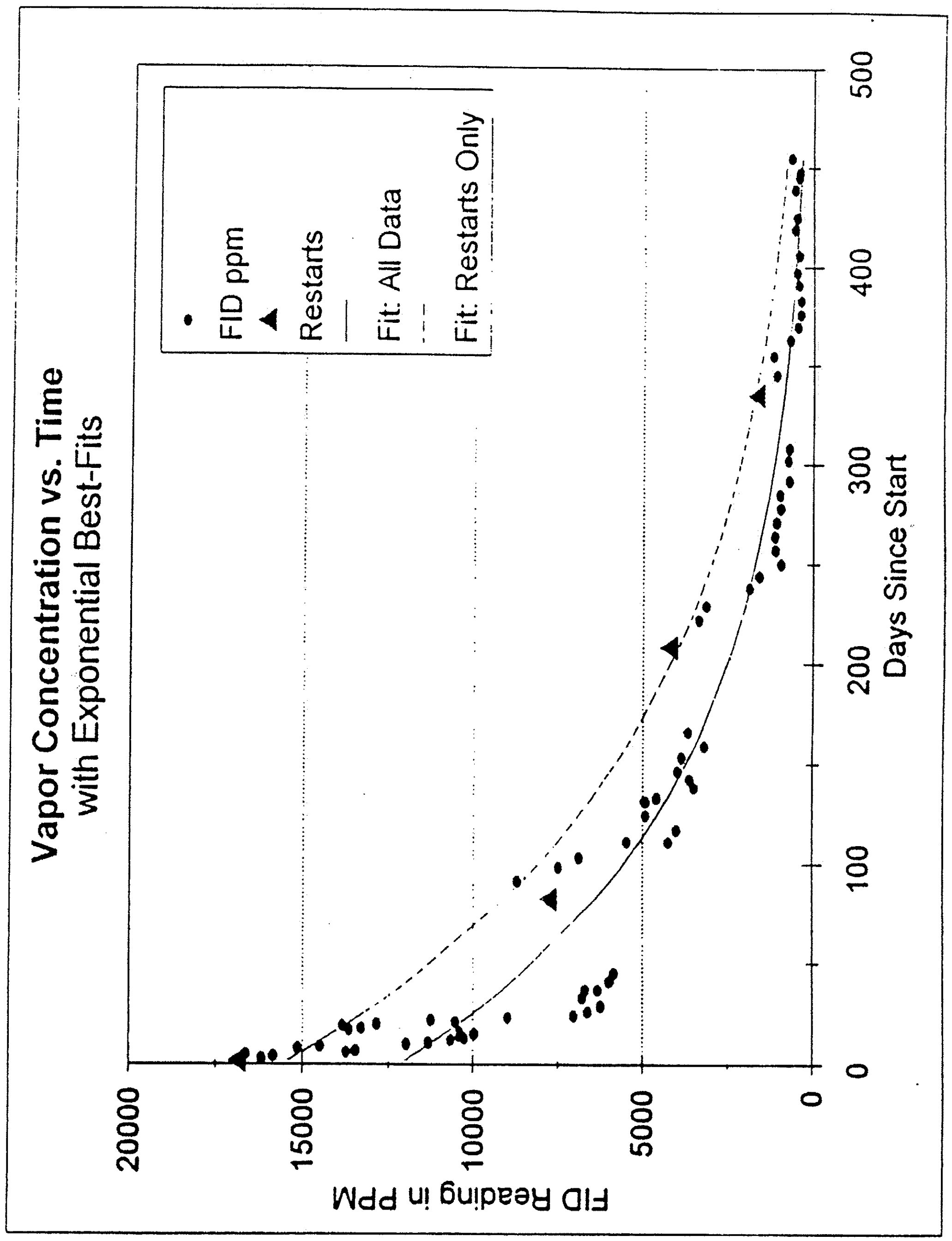
Harding Lawson Associates
Engineering and Environmental Services

VICINITY MAP

Utility Trailer Manufacturing Company
City of Industry, California

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED	DATE
JTL	26961-2	BCDS	11/93		

UTM 005024



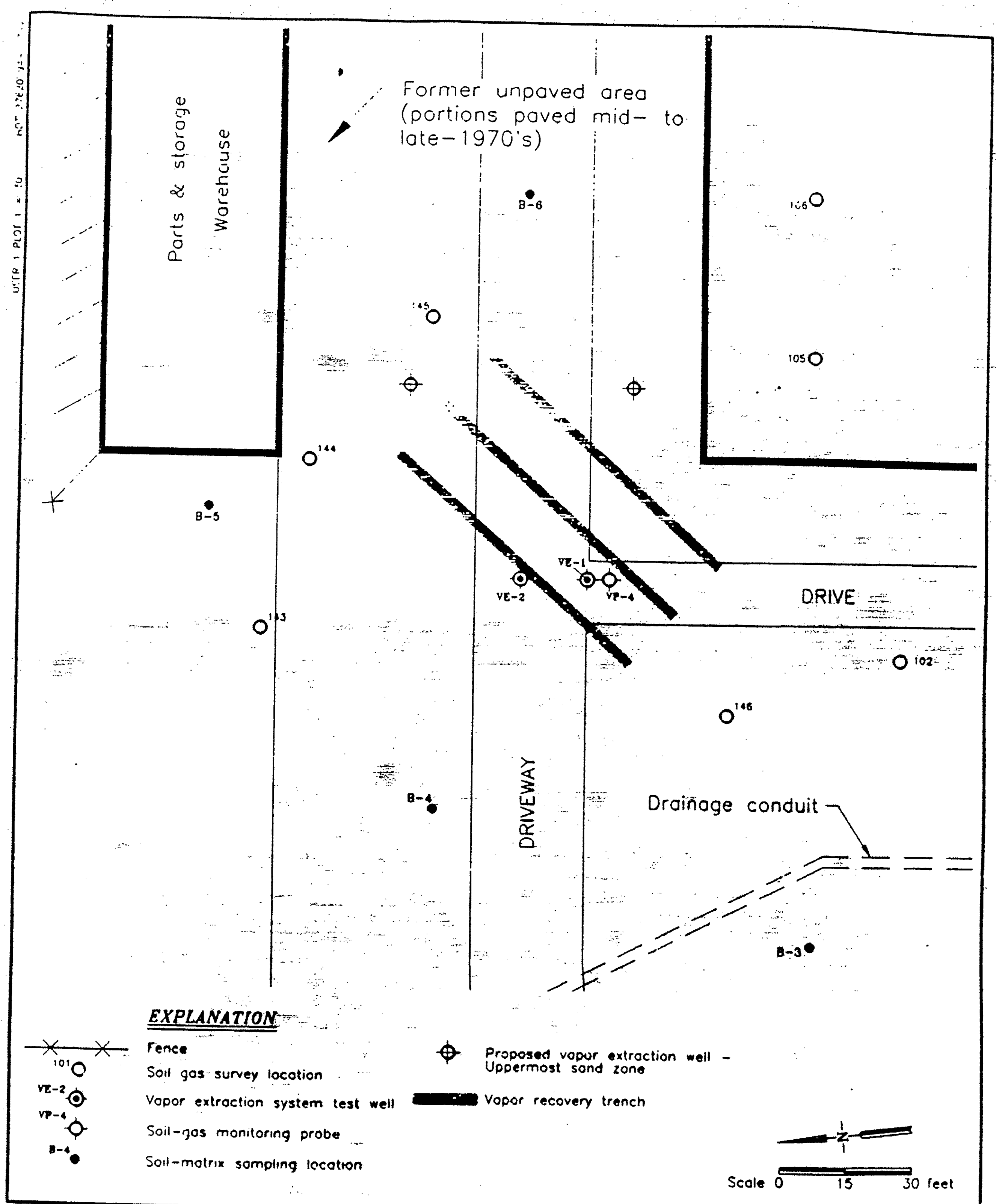
Harding Lawson Associates
Engineers and Geoscientists

TYPICAL CONCENTRATION DECLINE PLOT
SOIL VAPOR EXTRACTION SYSTEM INFLUENT
Utility Trailer Manufacturing Company
City of Industry, California

PLATE **2**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
kdw	26961-2	[initials]	1/94		

UTM 005025



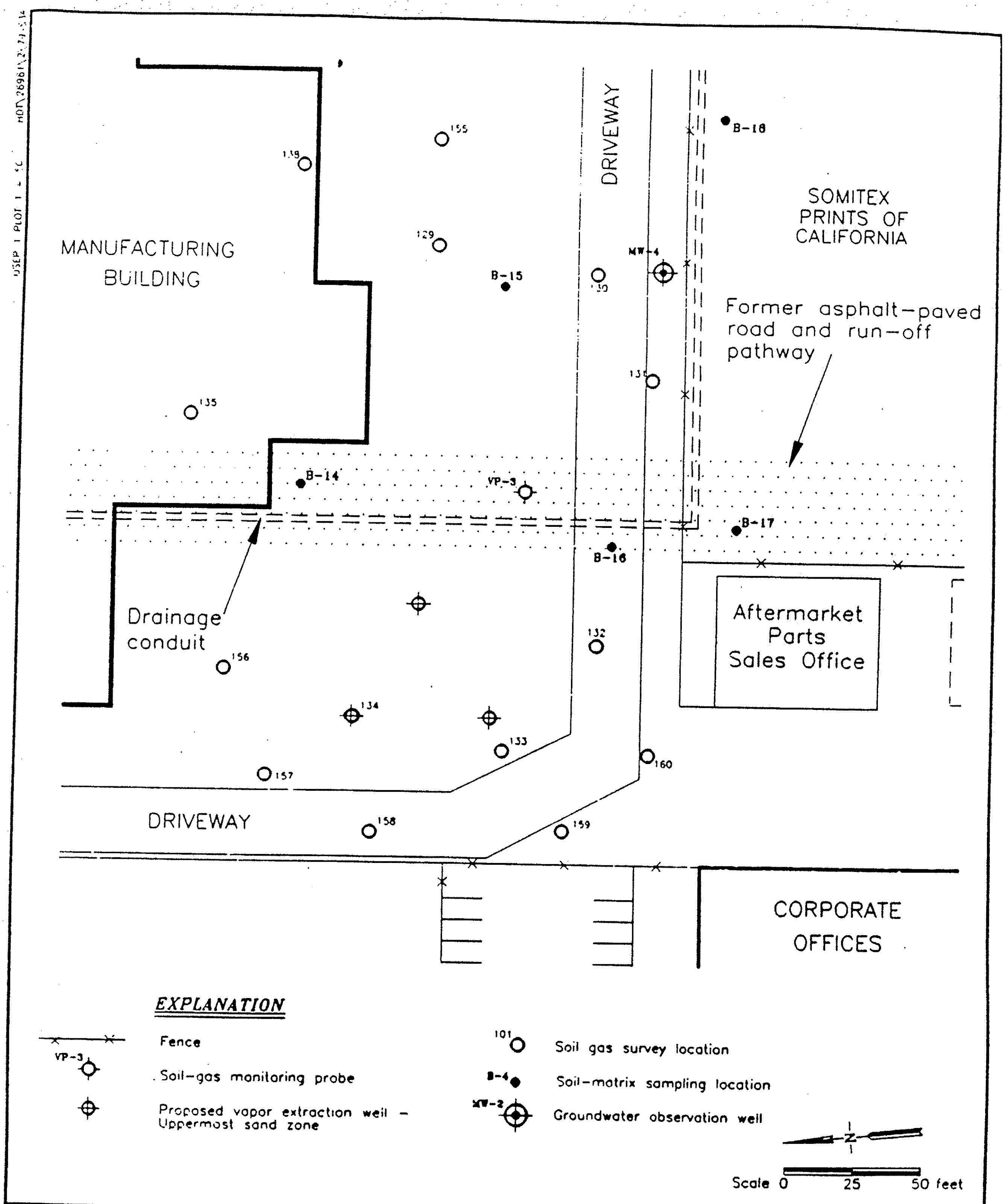
HLA Harding Lawson Associates
Engineering and Environmental Services

PROPOSED VAPOR EXTRACTION WELLS NORTH AREA
Utility Trailer Manufacturing Company
City of Industry, California

PLATE **3**

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED	DATE
JTL	27620-94.1	[signature]	7/94		

UTM 005026



HLA Harding Lawson Associates
Engineering and Environmental Services

PROPOSED VAPOR EXTRACTION WELLS
SOUTHWEST AREA
Utility Trailer Manufacturing Company
City of Industry, California

PLATE **4**

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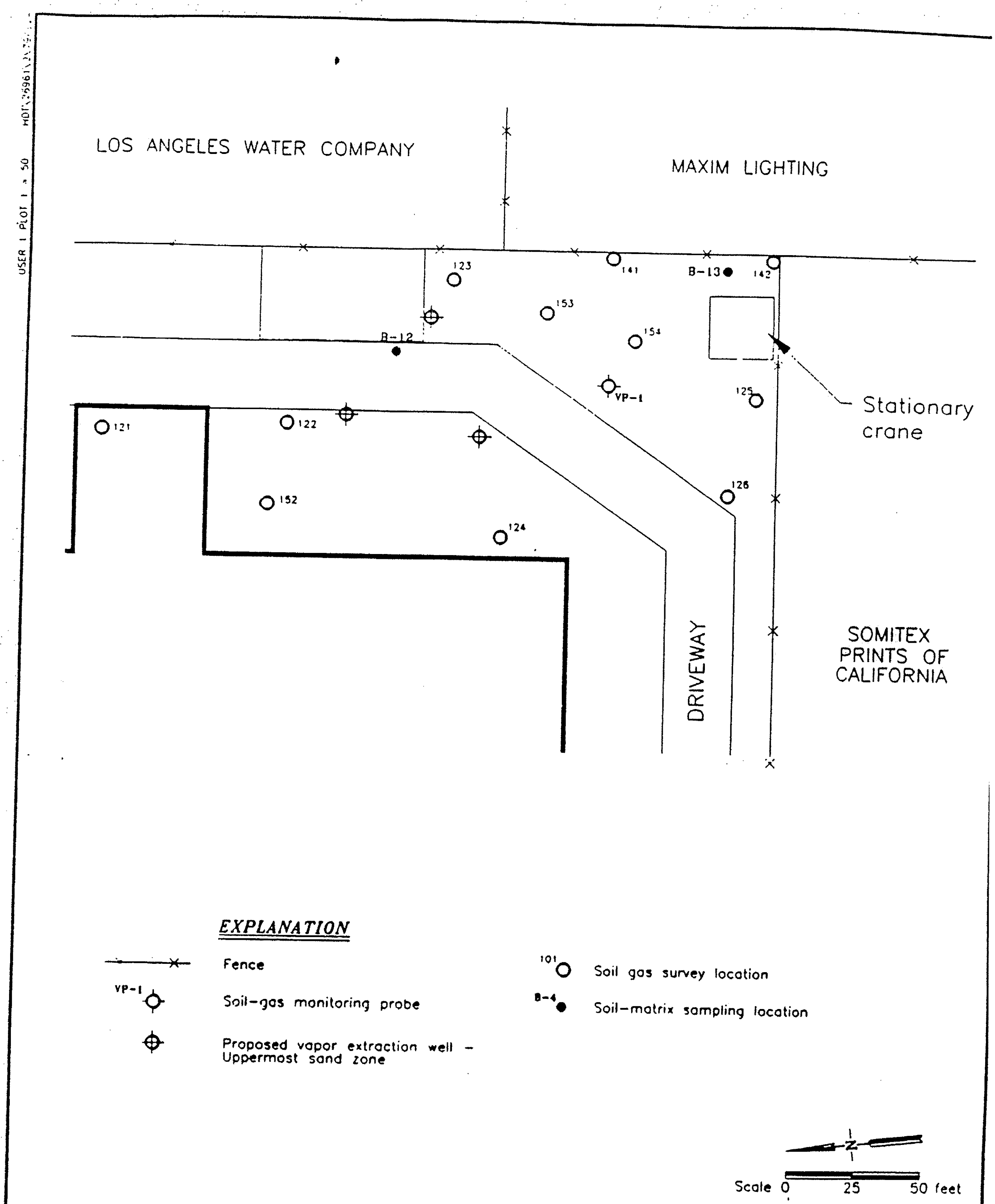

HLA Harding Lawson Associates
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PROPOSED VAPOR EXTRACTION WELLS SOUTHEAST AREA
Utility Trailer Manufacturing Company
City of Industry, California

PLATE **5**

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED	DATE
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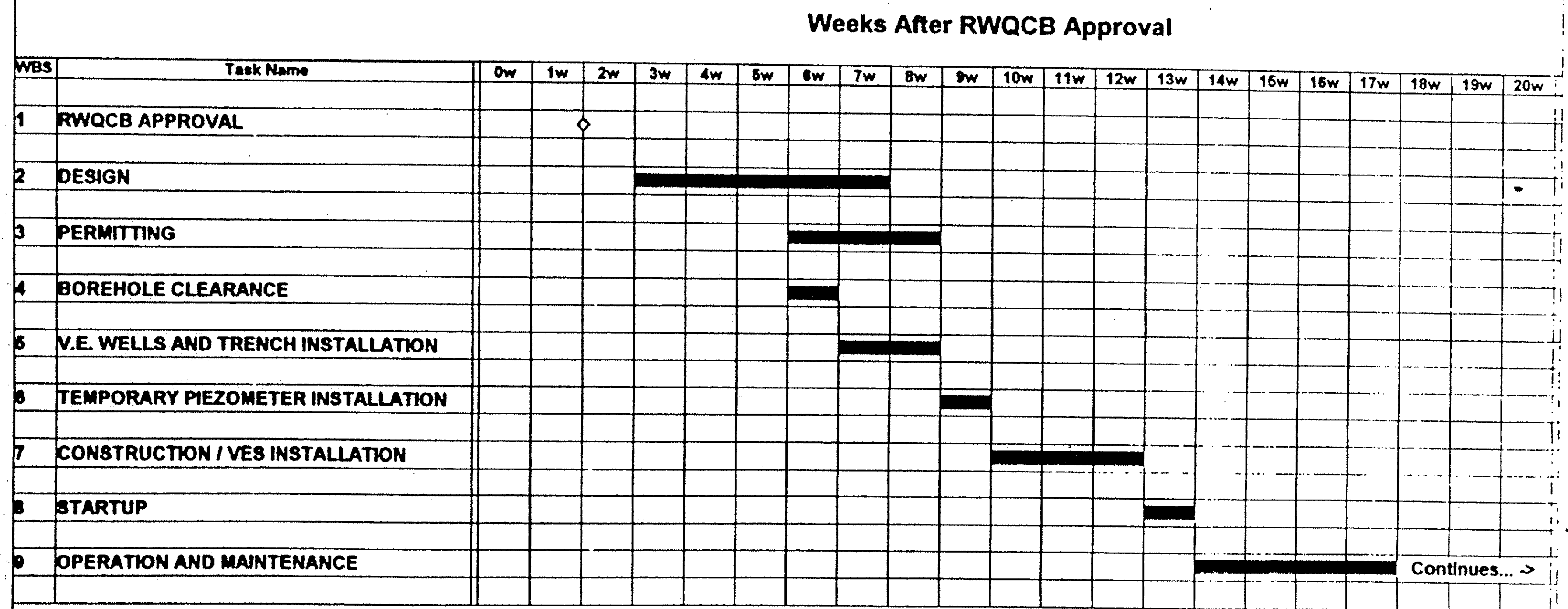
PLATE 6

TENTATIVE IMPLEMENTATION SCHEDULE



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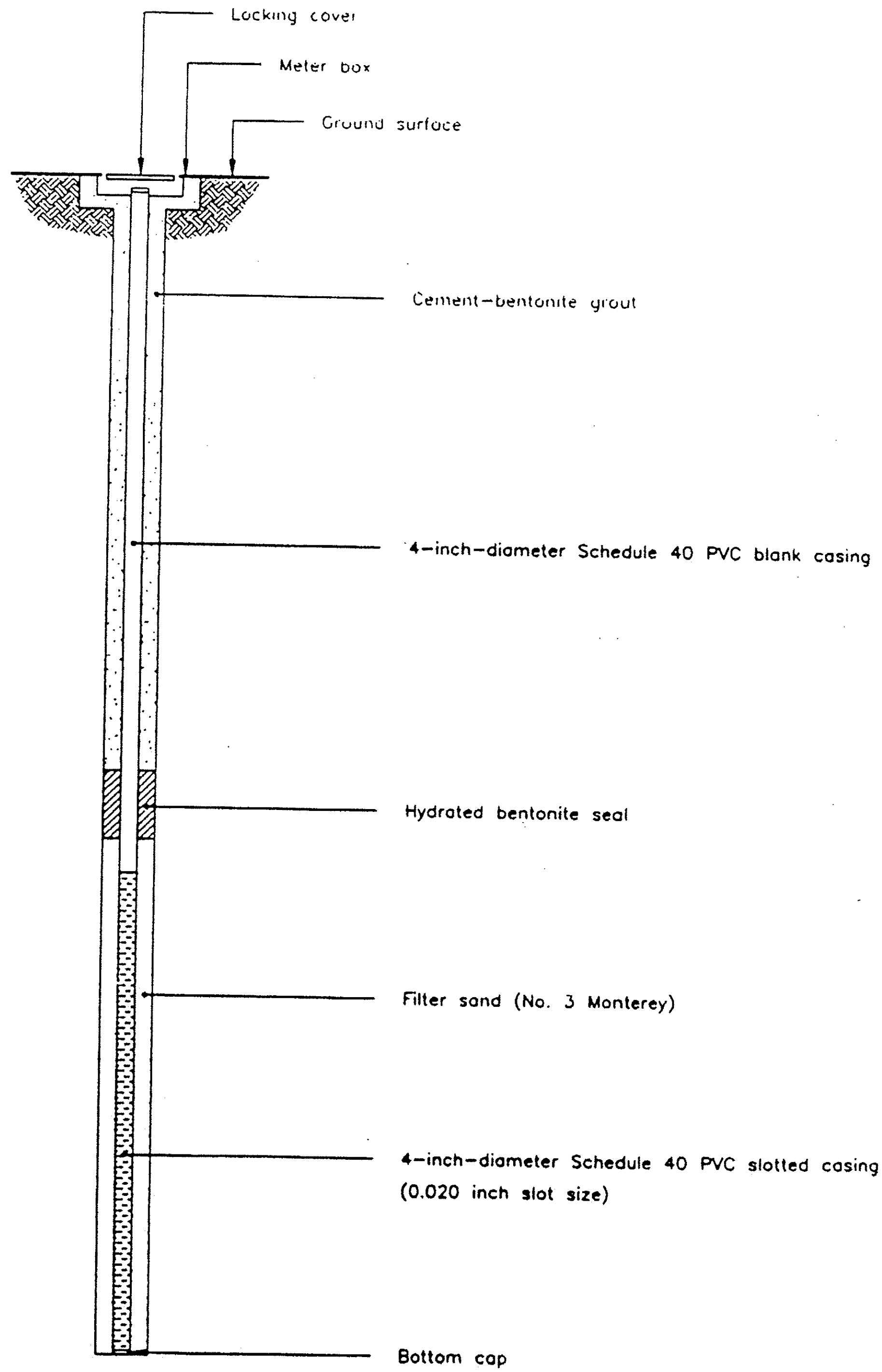
UTM 005



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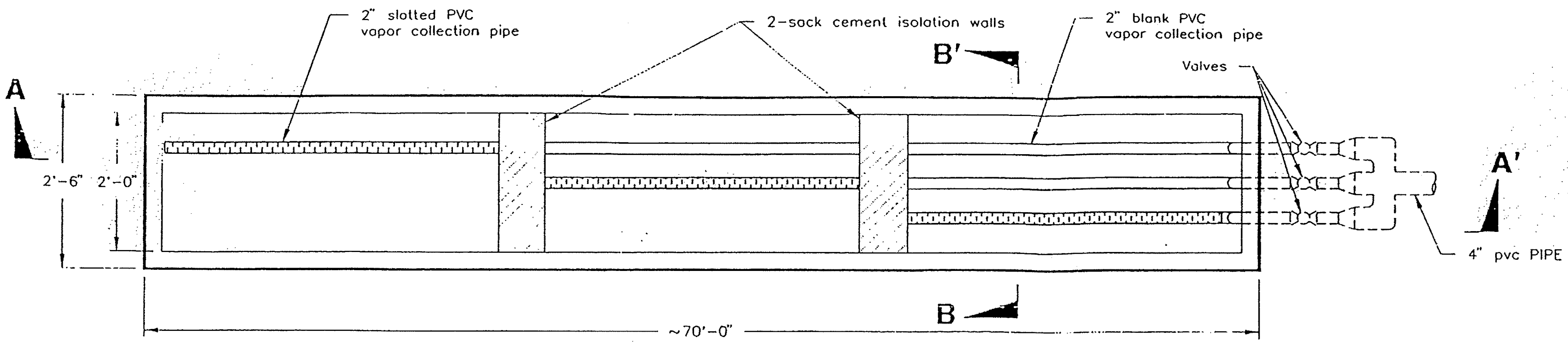
Engineering and Environmental Services

WELL COMPLETION DETAILS
VAPOR EXTRACTION WELL
Utility Trailer Manufacturing Company
City of Industry, California

PLATE 7

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED	DATE
bcde	26961-2	BCD3	7/94		

UTM 005030



PLAN VIEW
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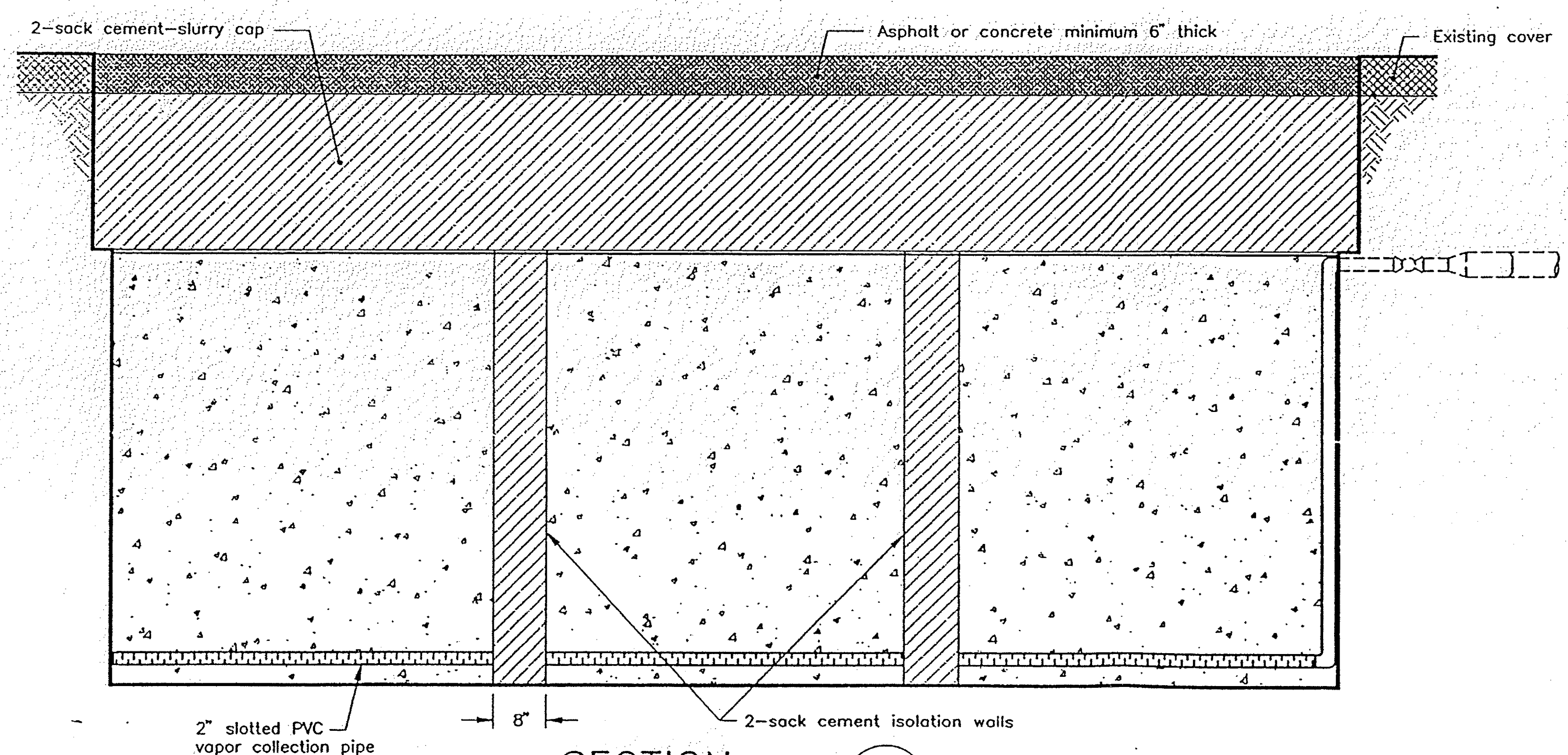

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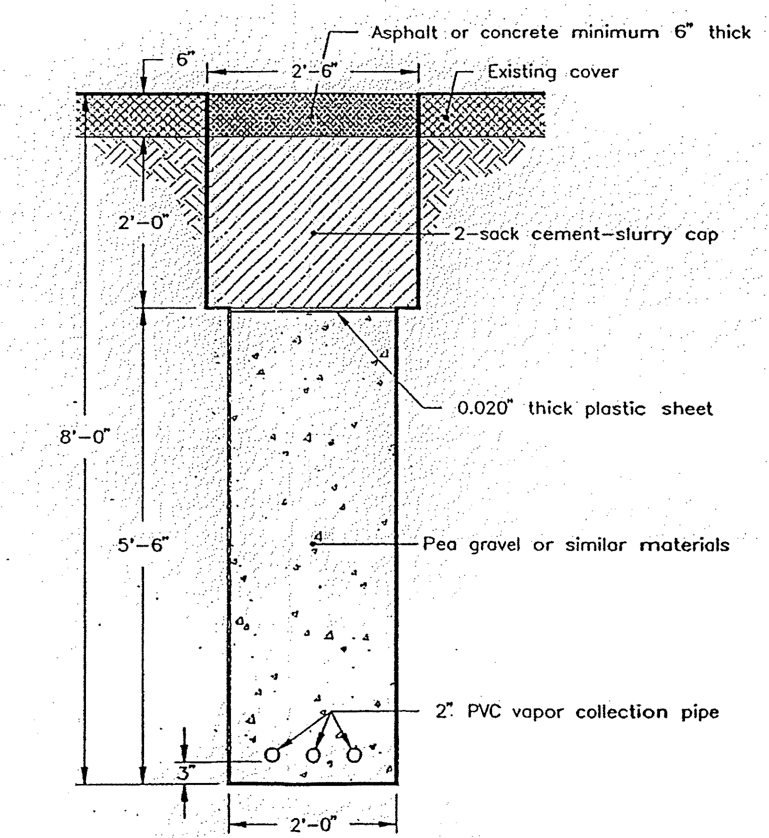

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Engineering and Environmental Services

VAPOR EXTRACTION TRENCH DETAILS
Utility Trailer Manufacturing Company
City of Industry, California

PLATE 8

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED	DATE
JTL	26961-2	[signature]	7/94		

UTM 005031

DISTRIBUTION

Interim Remedial Action Plan
Soil-Vapor Extraction
Utility Trailer Manufacturing Company
17300 East Chestnut Street
City of Industry, California

July 21, 1994

Copies 1-3:	Ms. Rueen-Fang Wang Regional Water Quality Control Board Los Angeles Region 101 Centre Plaza Drive Monterey Park, California 91754
Copy 4:	Mr. Robert Griffis Utility Trailer Manufacturing Company 17295 East Railroad Street City of Industry, California 91749
Copies 5-9:	HLA

Quality Control Reviewer

for: William L. Sedlak
Associate Engineer

KHW/BCDE/TAK/xj/hk/94UTM009.pln

UTM 005032