Harding Lawson Associates

February 5, 1996

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Mr. Walter Salas
California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

IRAP Implementation
North Area Soil-Vapor Extraction System Progress Report
Utility Trailer Manufacturing Company
17300 East Chestnut Street
City of Industry, California

Dear Mr. Salas:

INTRODUCTION

Harding Lawson Associates (HLA), on behalf of Utility Trailer Manufacturing Company (UTM), is submitting this letter report to the Regional Water Quality Control Board - Los Angeles Region (RWQCB) as discussed in HLA's December 8, 1995 letter entitled "IRAP Implementation Meeting Summary" and in a November 21, 1995 meeting among the RWQCB, UTM, and HLA. This letter summarizes soil remediation progress made from April 17 to December 31, 1995 in soil vapor extraction (SVE) operations at the North area of the UTM site (Plate 1). Please refer to HLA's April 28, 1995 letter report entitled "RAP Implementation, Soil-Vapor Extraction System Progress Report" for details of the initial remediation work completed from January 16 to April 7, 1995 using refrigeration/condensation (R/C) equipment in the North area. SVE installation and startup details for the South areas will be presented in a report to be issued in February 1996.

OPERATIONAL GOAL

The goal of the North area SVE operation is to maximize removal of chlorinated volatile organic compounds (CVOCs) from the soil and treatment pile, within the cost and technical limits of the technologies used. The R/C equipment was used in the North area until influent concentrations were reduced to levels that are more economically treated using GAC. GAC-based SVE began on April 17, 1995.

NORTH AREA OPERATIONS

UTM 005695

The operational strategy used to achieve the stated goal has been to extract vapors from the wells and trenches containing the highest sustained photoionization detector (PID) readings while maintaining a steady flow of air through the treatment soil pile. The North area SVE system layout is shown on Plate 2.

Vapors were extracted from different combinations of wells and trenches depending upon CVOC concentrations present, as indicated by a PID calibrated to hexane. During site visits, HLA personnel

recorded PID readings, system and wellhead vacuum measurements, and air flow rates. A summary of North area operations data is presented in Table 1.

Approximately 1150 gallons of water have been condensed out of the vapor stream by the blower unit. This recovered water was stored in 55-gallon drums pending removal for recycling. To date, only one carbon vessel has reached its adsorption capacity (as defined by the South Coast Air Quality Management District [SCAQMD] permit) and had its carbon replaced. The spent carbon was transported offsite for thermal regeneration. As documented in HLA's April 29, 1995 letter report, the amount of recovered liquid-phase CVOC was quantified at approximately 14.7 gallons during the period that the R/C equipment was operating. The CVOC recovery plot for North area R/C operations is presented as Plate 3. Although low extracted CVOC concentrations make precise quantification difficult, it is estimated that an additional 0.65 to 3.2 gallons of CVOCs have been recovered during GAC-based operation. Several methods were used to produce this estimate; a summary of these methods is presented in Appendix B. Total recovered CVOC from the North area probably does not exceed 17 gallons.

To measure the horizontal/radial influence of SVE, vacuum measurements were recorded from vacuum piezometers in the clay and sand zones while each trench segment and well was operated individually. Piezometers screened at a depth less than 12 feet below ground surface (bgs) are considered to be clay piezometers, and those screened at a depth greater than 12 feet bgs are considered to be sand piezometers. The vacuum piezometer measurements are presented in Table 2. Measured vacuums were plotted against distance from the source vacuum on a semi-log scale. An exponential fit of these data was then added to each graph, illustrating the vacuum influence for each trench or well. The vacuum influence graphs are presented as Plates 4 through 10. Representative vacuum influence values were taken from the vacuum influence graphs and were plotted on a North area site plan (Plate 11) to illustrate the horizontal extent of vacuum influence.

By August 1995, no CVOCs were detectable using a PID in the VES inlet stream from the soil treatment pile. Ten soil samples were collected from the pile and submitted to Del Mar Analytical, a state-certified laboratory, for analysis of CVOCs by EPA Method 8010. Tetrachloroethene (PCE) was detected in two of the samples at levels below any potentially applicable regulatory level for soil. HLA, on behalf of UTM, has proposed to reuse the soil as onsite backfill. For details of the stockpile sampling, please refer to HLA's November 2, 1995 letter to Mr. John Lewis of the RWQCB entitled "Soil Stockpile Treatment, Sampling, and Reuse Plan." The treatment pile soil was removed from the treatment compound in late September 1995 to make space available for excavated soil from the SVE installation in the South areas. The soil was placed onto and covered with visqueen plastic in an area near the compound, pending RWQCB approval of the proposed reuse plan. As documented in a January 3, 1996 letter from Mr. Bob Griffis of UTM to Mr. Walter Salas of the RWQCB, Mr. Lewis has granted approval to reuse all the soil except for that which was represented by the two samples that showed detectable PCE. He suggested that UTM isolate this soil and place it back in the soil treatment area for additional vapor extraction. HLA proposed resampling the soil prior to additional

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treatment. A letter report dated January 30, 1996 documents the results of the four additional samples taken, none of which showed detectable CVOCs. Additionally, UTM received a letter dated January 12, 1996 from Mr. Eric Nupen of the RWQCB that grants permission to reuse all the soil without further testing.

Contaminant removal within the technological limits of R/C and GAC-based SVE is substantially complete. PID concentrations have decreased to asymptotic levels. This trend is shown on Plate 12, which is a plot of North area PID data versus time for which a seven-point moving average was used to reduce variance introduced by operational procedures and to present a smooth overall trend. On November 13 and 15, 1995, the five North area soil-gas points were resampled and analyzed by an onsite mobile laboratory. Samples could not be drawn from three of the original soil-gas probes, VP-34, VP-36, and VP-37, because the probes had become plugged. Therefore, it was necessary to install and sample three new probes, VP-34b, VP-36b, and VP-37b at locations immediately adjacent to each original probe location. Soil-gas results from the January and November 1995 events are presented in Table 3, and analytical laboratory reports are presented in Appendix A. Overall, results demonstrate a significant decline in North area soil-gas concentrations. Results from one portion of the North area near soil-gas probe VP-35 still indicated the presence of trace amounts of CVOCs. Since November, vapors have been extracted primarily from trench segment 2C and Well VE-02, which are nearest to VP-35.

FUTURE WORK

The GAC-based SVE system will continue to operate in the North area until the R/C system operating in the South areas becomes economically infeasible. At that time, the GAC-based SVE system will be relocated to the South areas. RWQCB staff will be notified before the GAC system is shut down in the North area.

CONCLUSION

GAC-based SVE is continuing in the North area and on soil stockpiled from construction in the two South areas. Based on results from the operational PID and vacuum monitoring, and the November 1995 soil gas sampling, the North area is substantially remediated. The concentration decline curve became asymptotic after September 1995, and PID readings continue to be low. The November 1995 soil-gas survey showed that most analytes were not detectable at the sampling points.

As discussed in the November 21, 1995 meeting among the RWQCB, UTM, and HLA, system operations data, namely vacuum influence data and decline of inlet concentrations, will be the primary measure of remedial effectiveness. If these operations data demonstrate remedial effectiveness, it is our understanding that the RWQCB will grant North area closure. Most of the criteria for closure established by the RWQCB have already been met, and it is anticipated that North area closure will be requested within a few months.

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HLA and UTM will continue to keep the RWQCB informed of GAC-based system operations and progress by regular telephone updates. If you have any questions or comments, please call Mr. Kurt Wiebe of HLA at (714) 260-1800 or Mr. Robert Griffis of UTM at (818) 854-7324.

Very truly yours,

HARDING LAWSON ASSOCIATES

Kevin J. Trout
Staff Engineer

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Associate Engineer

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Attachments: Table 1 - Summary of North Area GAC-Based Operations Data
Table 2 - Vacuum Piezometer Measurements
Table 3 - Summary of Soil-gas Concentrations

Plate 1 - Site Plan
Plate 2 - North Area Piping Layout with Piezometer Locations
Plate 3 - R/C Operations North Area CVOC Recovery
Plates 4 through 10 - Well and Trench Segment Vacuum Influence Graphs
Plate 11 - North Area Vacuum Influence Plot
Plate 12 - North Area PID Data/7-Point Moving Average

Appendix A - Soil-Gas Survey Analytical Reports
Appendix B - GAC-based CVOC Recovery Calculations

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TABLES

Utility Trailer Manufacturing Company
GAC- SVE Operations Data

Table 1. Summary of North Area GAC-based Operations Data

Recorder Initials	Date	Time	Active Well/Trench	Well/Trench Vacuum ("H2O)	Individual Manifold Vacuum ("H2O)	Vacuum at Blower (Combined) ("H2O)	Individual PID (ppm)	Combined PID (ppm)	Combined Flow (CFM)
DAH	4/14/95	09:00	VE-02	Access Closed	23	—	160	200	97
			TR-4	—	22	—	270	—	—
			Stockpile	—	1.5	—	0	—	—
DAH	4/15/95	10:00	VE-02	Access Closed	24	26	90	190	159
			TR-4	—	23	—	210	—	—
			Stockpile	—	1	—	1	—	—
DAH	4/17/95	08:55	VE-02	Access Closed	23	24	140	170	—
			TR-4	—	22	—	200	—	—
			Stockpile	—	1.5	—	1	—	—
DAH	4/18/95	09:35	VE-02	Access Closed	24	25	150	180	131
			TR-4	—	23	—	195	—	—
			Stockpile	—	1	—	2	—	—
JWH	4/20/95	09:30	VE-02	Access Closed	24	24	—	130	180
			TR-4	—	23.5	—	—	—	—
			Stockpile	—	1	—	—	—	—
DAH	4/21/95	09:20	VE-02	Access Closed	24	25	—	160	152
			TR-4	—	23	—	—	—	—
			Stockpile	—	1	—	—	—	—
DAH	4/24/95	11:15	VE-02	Access Closed	24	25	31	34	131
			TR-4	—	23	—	52	—	—
			Stockpile	—	1	—	2	—	—
KJT	4/26/95	10:38	VE-02	Access Closed	30	32	105	65	131
			VE-03	19	30	—	216	—	—
			VE-04	—	30	—	44	—	—
			Stockpile	—	1.5	—	1	—	—
DAH	4/28/95	11:40	VE-02	Access Closed	30	31	60	35	135
			VE-03	—	30	—	55	—	—
			VE-04	—	29	—	20	—	—
			Stockpile	—	1.5	—	1	—	—
KJT	5/1/95	11:15	VE-02	Access Closed	20	22	—	—	135
			VE-03	2	18	—	—	—	—
			TR-04	—	19	—	—	—	—
			Stockpile	—	1	—	—	—	—
DAH	5/5/95	14:30	TR-3C	—	19.5	21	38	—	131
DAH	5/10/95	11:00	TR-3B	—	21	24	30	18	131
			Stockpile	—	2	—	3	—	—
DAH	5/15/95	11:30	TR-3A	15	17	20	16	28	124
			TR-04	—	7	—	55	—	—
			Stockpile	—	1	—	2	—	—
DAH	5/19/95	11:40	TR-2A	18	18	20	—	—	124
			TR-04	—	2	—	—	—	—
			Stockpile	—	0.5	—	—	—	—
DAH	5/24/95	12:00	TR-2B	21	23	25	52	36	124
			TR-04	—	4.5	—	95	—	—
			Stockpile	—	0.5	—	18	—	—
DAH/KJT	5/30/95	09:00	TR-2C	23	25	27	40	36	131
			TR-04	—	5	—	73	—	—
			Stockpile	—	0.5	—	1	—	—
DAH	6/7/95	14:15	TR-1A	13	15	19	27	54	128
			TR-4	—	5	—	85	—	—
			Stockpile	—	0.5	—	10	—	—
DAH	6/12/95	11:40	TR-1B	18	20	22.5	27	27	131
			TR-4	—	5	—	44	—	—
			Stockpile	—	0.5	—	2	—	—
DAH	6/16/95	13:00	TR-1C	—	23	25	—	—	124
			TR-4	—	5	—	—	—	—
			Stockpile	—	0.5	—	—	—	—
DAH	6/19/95	09:25	TR-1C	29	31	—	—	—	—
			TR-4	—	—	—	—	—	—
			Stockpile	—	—	—	—	—	—
DAH	6/23/95	13:45	TR-3C	—	24	29	8	18	124
			TR-4	—	5	—	60	—	—
			Stockpile	—	0.5	—	5	—	—
DAH	6/28/95	08:10	TR-4	—	32	35	50	45	121
			Stockpile	—	4	—	4	—	—
DAH	7/3/95	10:40	TR-1C	26	28	30	18	55	121
			Stockpile	—	0.5	—	0	—	—
			TR-4	—	4	—	45	—	—
DAH	7/10/95	15:00	TR-2A	14	16	20	10	10	121
			Stockpile	—	1	—	0	—	—

Table 1. Summary of North Area GAC-based Operations Data

Recorder Initials	Date	Time	Active Well/Trench	Well/Trench Vacuum ("H2O)	Individual Manifold Vacuum ("H2O)	Vacuum at Blower (Combined) ("H2O)	Individual PID (ppm)	Combined PID (ppm)	Combined Flow (CFM)
			TR-4	—	4	—	35	—	—
DAH	7/17/95	13:20	VE-03	1	16	18	8	18	124
			Stockpile	—	3	—	0	—	—
			TR-4	—	16	—	30	—	—
DAH	7/24/95	16:25	VE-03	20	24	28	25	20	135
			Stockpile	—	2	—	1	—	—
			TR-4	—	24	—	30	—	—
DAH	7/28/95	13:30	VE-03	—	23	26	13	12	135
			Stockpile	—	2	—	3	—	—
			TR-4	—	22	—	19	—	—
DAH	8/1/95	15:40	VE-03	—	18	21	18	21	135
			VE-02	Access Closed	19	—	20	—	—
			Stockpile	—	1	—	1	—	—
			TR-4	—	17	—	28	—	—
KJT	8/8/95	07:45	TR-1A	—	17.5	18.5	6	6	131
			Stockpile	—	0.2	—	0	—	—
KJT	8/15/95	09:25	TR-1B	20	20.5	22	0	0	138
			Stockpile	—	6	—	0	—	—
KJT	8/21/95	16:30	TR-4	—	12.5	13.5	35	25	124
			TR-2B/TR-2C	12	13	—	17	—	—
KJT	8/25/95	07:45	TR-4	—	18	20	44	49	76
			TR-2B/TR-2C	4	5	—	14	—	—
KJT	8/30/95	13:10	VE-03	26	27	31	20	28	128
			TR-4	—	27	—	28	—	—
			TR-2B/TR-2C	5	5	—	10	—	—
JAZ	9/5/95	11:49	TR-4	—	13	14	20	12	135
			TR-3C	12	13	—	7	—	—
KJT	9/11/95	10:05	TR-4	—	12	14	34	22	135
			TR-3B	11	12	—	8	—	—
KRM	9/15/95	12:35	TR-4	—	5	6	25	10	104
			TR-3A	4.5	5	—	0	—	—
KRM	9/20/95	15:50	TR-4	—	9	10	24	10	145
			TR-2A	—	9	—	2	—	—
JAZ	9/26/95	07:20	TR-4	—	11	14	20	16	131
			TR-2B	11	11.5	—	3	—	—
KJT	10/3/95	08:25	TR-4	—	8	8	10	10	104
			TR-2C	7	8	—	6	—	—
JAZ	10/11/95	09:45	TR-4	—	25	28	35	23	135
			VE-02	Access Closed	26	—	21	—	—
JAZ	10/18/95	15:15	TR-4	—	24.5	30	16	26	131
			VE-02	Access Closed	28	—	8	—	—
KJT	11/8/95	16:00	VE-04	—	24	26	6	21	131
			TR-4	—	22	—	20	—	—
KJT	11/10/95	09:30	TR-4	—	42	—	20	—	135
JWH	12/6/95	13:56	Stockpile	—	14	—	3	—	124
JWH	12/13/95	09:36	Stockpile	—	12	—	11	—	124
KJT	12/22/95	09:40	Stockpile	—	10	—	2	—	117
JWH	12/29/95	09:54	Stockpile	—	10	—	1	—	131
JWH	1/5/96	14:59	Stockpile	—	7.5	—	10	—	124
JWH	1/12/96	10:12	VE-02	Access Closed	15	17	10	26	121
			TR-2C	13	15	—	16	—	—
			Stockpile	—	1	—	6	—	—
JWH	1/18/96	08:16	VE-02	Access Closed	19	20	14	12	117
			TR-2C	17	19	—	24	—	—
			Stockpile	—	1.5	—	3	—	—

Notes:
1) PID data was not collected on all days. PID calibrated to 50 ppm Hexane.
2) From 10/24-11/3 electrical problems prevented system from operating normally, no data was recorded during that period.
3) Equipment shut down from 11/13/95-11/15/95 for soil gas survey, shut down 11/20/95-12/5/95 for electrical modification.
4) Beginning 12/5/95, running on stockpile only, in order not to influence paint booth area vacuum measurements
5) Beginning 1/11/96, resumed system operation on wells and trenches.

UTM 005701

Utility Trailer Manufacturing Company
GAC-VES Operations Data

Table 2. Vacuum Piezometer Measurements ("H2O)

Recorder	Date	Vacuum Source	Trench/Well Vacuum	Piezometer VP-04 (9')	VP-04 (16')	VP-04 (21')	VP-05	VP-06	VP-07	VP-08	VP-09	VP-10	VP-11	VP-12	VP-13	VP-14	VP-15	VP-16
DAH	5/10/95	TR-3B	24	0.60	1.50	1.50	3.50	0.01	0.80	0.96	3.50	3.10	—	2.75	0.78	0.75	0.22	—
DAH	5/15/95	TR-3A	15	—	—	—	3.00	3.25	0.92	1.10	1.70	1.75	1.80	—	0.98	0.90	0.54	—
DAH	5/19/95	TR-2A	18	—	—	—	1.50	0.21	1.20	0.95	0.75	0.78	—	0.70	1.10	0.85	0.39	—
DAH/KJT	5/24/95	TR-2B	21	2.20	2.10	2.00	3.80	1.30	1.00	2.30	1.40	1.50	—	1.20	0.50	0.46	—	—
KJT	5/30/95	TR-2C	23	6.00	4.30	3.40	1.60	—	—	1.20	1.30	1.40	—	1.10	—	—	—	—
DAH	6/7/95	TR-1A	26	0.10	0.70	0.66	0.48	0.08	1.40	0.98	0.35	0.36	—	0.34	0.50	0.48	—	—
DAH	6/12/95	TR-1B	23	0.70	1.50	1.80	0.78	0.45	0.92	2.50	0.54	0.60	—	0.46	0.40	0.40	—	—
DAH	6/19/95	TR-1C	29	1.50	3.60	3.20	1.25	0.26	0.94	2.40	0.86	0.92	—	0.50	0.56	0.50	—	—
DAH	6/23/95	TR-3C	28	1.20	2.00	2.30	4.00	0.18	—	1.25	4.80	3.60	—	3.25	0.66	0.62	—	—
DAH	6/28/95	TR-4	36	0.20	0.66	0.72	0.30	0.28	0.38	0.60	0.22	0.26	—	0.00	0.20	0.20	—	—
DAH	8/1/95	VE-02	28	—	0.72	0.84	—	—	—	—	—	0.52	—	0.86	—	—	—	—
KJT	8/3/95	VE-03	18	—	—	—	—	—	—	—	—	0.05	—	0.03	—	—	—	—
KJT	8/3/95	VE-04	35	—	—	—	—	—	—	—	—	0.14	—	0.13	—	—	—	—
JAZ	8/8/95	VE-03	31	—	0.06	0.07	—	—	—	—	—	0.02	—	0.01	—	—	—	—

Recorder	Date	Vacuum Source	Trench/Well Vacuum	Piezometer VP-17	VP-18	VP-19	VP-20	VP-21	VP-22	VP-23	VP-24	VP-25	VP-29	VP-30	VP-31	VP-32	VE-03	VE-04
DAH	5/10/95	TR-3B	24	0.65	—	—	—	—	—	0.24	—	—	—	—	0.38	0.72	—	—
DAH	5/15/95	TR-3A	15	—	—	—	—	—	—	—	—	—	—	—	0.68	0.85	—	—
DAH	5/19/95	TR-2A	18	0.21	—	—	—	—	—	—	—	—	—	—	0.48	0.60	—	—
DAH/KJT	5/24/95	TR-2B	21	0.36	0.80	—	—	1.60	1.20	1.00	1.30	—	—	—	0.10	0.62	—	—
KJT	5/30/95	TR-2C	23	0.50	0.76	—	—	0.84	0.94	1.50	—	0.14	—	—	—	—	—	—
DAH	6/7/95	TR-1A	26	0.30	0.40	0.42	—	—	—	—	—	—	0.40	0.36	0.76	0.68	—	—
DAH	6/12/95	TR-1B	23	0.72	1.00	0.64	—	0.86	0.92	0.16	0.01	—	0.77	0.66	0.52	0.74	—	—
DAH	6/19/95	TR-1C	29	2.10	2.00	1.18	—	2.60	2.20	0.64	0.46	0.44	1.30	1.35	0.60	0.86	—	—
DAH	6/23/95	TR-3C	28	0.16	0.40	0.00	0.00	0.42	0.08	0.42	0.11	0.05	0.36	0.32	0.40	0.68	—	—
DAH	6/28/95	TR-4	36	3.50	5.00	4.00	0.20	1.95	2.00	0.08	0.20	0.24	5.40	4.50	0.42	0.98	—	—
DAH	8/1/95	VE-02	28	0.14	0.20	0.00	0.00	—	0.14	—	—	—	—	0.11	—	0.48	—	—
KJT	8/3/95	VE-03	18	0.11	0.43	—	0.12	—	0.27	—	—	—	—	0.29	—	0.05	—	0.07
KJT	8/3/95	VE-04	35	0.41	0.44	—	0.00	—	0.12	—	—	—	—	0.70	—	2.10	0.05	—
JAZ	8/8/95	VE-03	31	0.11	0.56	—	0.00	—	0.31	—	—	—	—	0.35	—	0.09	—	0.11

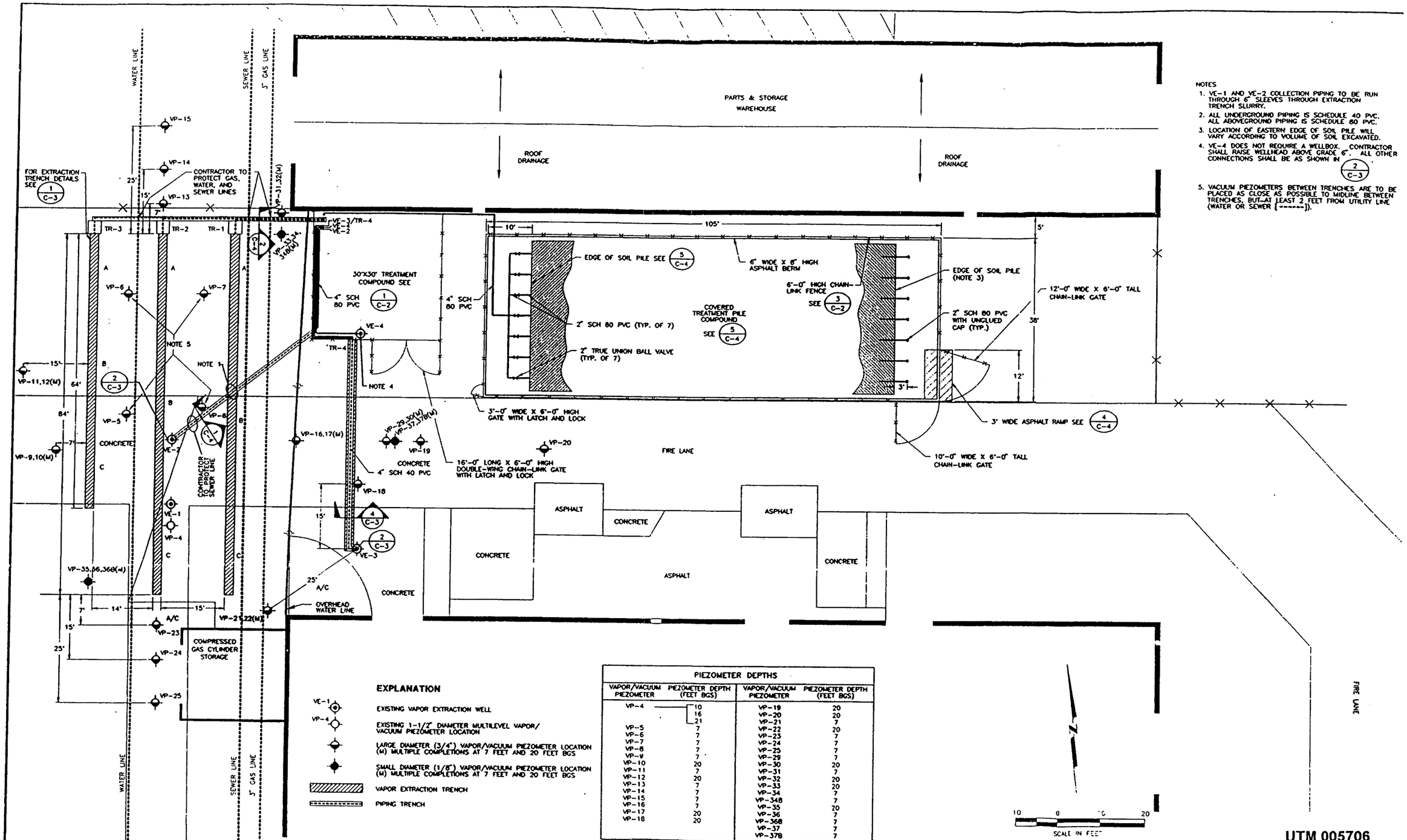
Utility Trailer Manufacturing Company
North Area Operations

Table 3. Summary of Soil Gas Concentrations

	VP-33 1/13/95	VP-33 11/13/95	VP-34 1/13/95	VP-34b 11/13/95	VP-35 1/13/95	VP-35 11/13/95	VP-36 1/13/95	VP-36b 11/13/95	VP-37 1/13/95	VP-37b 11/13/95
1,1 Dichloroethane (ug/L)	5.8	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)
1,1 Dichloroethene (ug/L)	57	2.8	(1.0)	(1.0)	5.4	8.9	(1.0)	(1.0)	(1.0)	(1.0)
Tetrachloroethene (ug/L)	323	(1.0)	(1.0)	(1.0)	17.2	42.6	1.9	(1.0)	(1.0)	3.2
Trichloroethene (ug/L)	20.6	(1.0)	(1.0)	(1.0)	2.2	8.7	(1.0)	(1.0)	(1.0)	(1.0)
1,1,1 Trichloroethane (ug/L)	9.7	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)

( ) - Indicates compound not detected above enclosed detecion limit
ug/l - micrograms per liter

PLATES



NOTES

1. VE-1 AND VE-2 COLLECTION PIPING TO BE RUN THROUGH 6" SLEEVES THROUGH EXTRACTION TRENCH SLURRY.
2. ALL UNDERGROUND PIPING IS SCHEDULE 40 PVC. ALL ABOVEGROUND PIPING IS SCHEDULE 80 PVC.
3. LOCATION OF EASTERN EDGE OF SOIL PILE WILL VARY ACCORDING TO VOLUME OF SOIL EXCAVATED.
4. VE-4 DOES NOT REQUIRE A WELLBOX. CONTRACTOR SHALL RAISE WELLHEAD ABOVE GRADE 6". ALL OTHER CONNECTIONS SHALL BE AS SHOWN IN 2/C-3.
5. VACUUM PIEZOMETERS BETWEEN TRENCHES ARE TO BE PLACED AS CLOSE AS POSSIBLE TO MIDLINE BETWEEN TRENCHES, BUT AT LEAST 2 FEET FROM UTILITY LINE (WATER OR SEWER [------]).

EXPLANATION

- VE-1 — EXISTING VAPOR EXTRACTION WELL
- VP-4 — EXISTING 1-1/2" DIAMETER MULTILEVEL VAPOR/VACUUM PIEZOMETER LOCATION
- LARGE DIAMETER (3/4") VAPOR/VACUUM PIEZOMETER LOCATION (M) MULTIPLE COMPLETIONS AT 7 FEET AND 20 FEET BGS
- SMALL DIAMETER (1/8") VAPOR/VACUUM PIEZOMETER LOCATION (M) MULTIPLE COMPLETIONS AT 7 FEET AND 20 FEET BGS
- VAPOR EXTRACTION TRENCH
- PIPING TRENCH

PIEZOMETER DEPTHS

VAPOR/VACUUM PIEZOMETER	PIEZOMETER DEPTH (FEET BGS)	VAPOR/VACUUM PIEZOMETER	PIEZOMETER DEPTH (FEET BGS)
VP-4	10	VP-19	20
	16	VP-20	20
	21	VP-21	7
VP-5	7	VP-22	20
VP-6	7	VP-23	7
VP-7	7	VP-24	7
VP-8	7	VP-25	7
VP-9	7	VP-29	7
VP-10	20	VP-30	20
VP-11	7	VP-31	7
VP-12	20	VP-32	20
VP-13	7	VP-33	20
VP-14	7	VP-34	7
VP-15	7	VP-348	7
VP-16	7	VP-35	20
VP-17	20	VP-36	7
VP-18	20	VP-368	7
		VP-37	7
		VP-378	7

UTM 005706

NO.	DATE	REVISIONS	BY	CHK
2	1/25/95	AS-BUILT		
1	11/8/94	ADD VAPOR PIEZOMETERS		
0	11/1/94	ISSUE FOR BID		

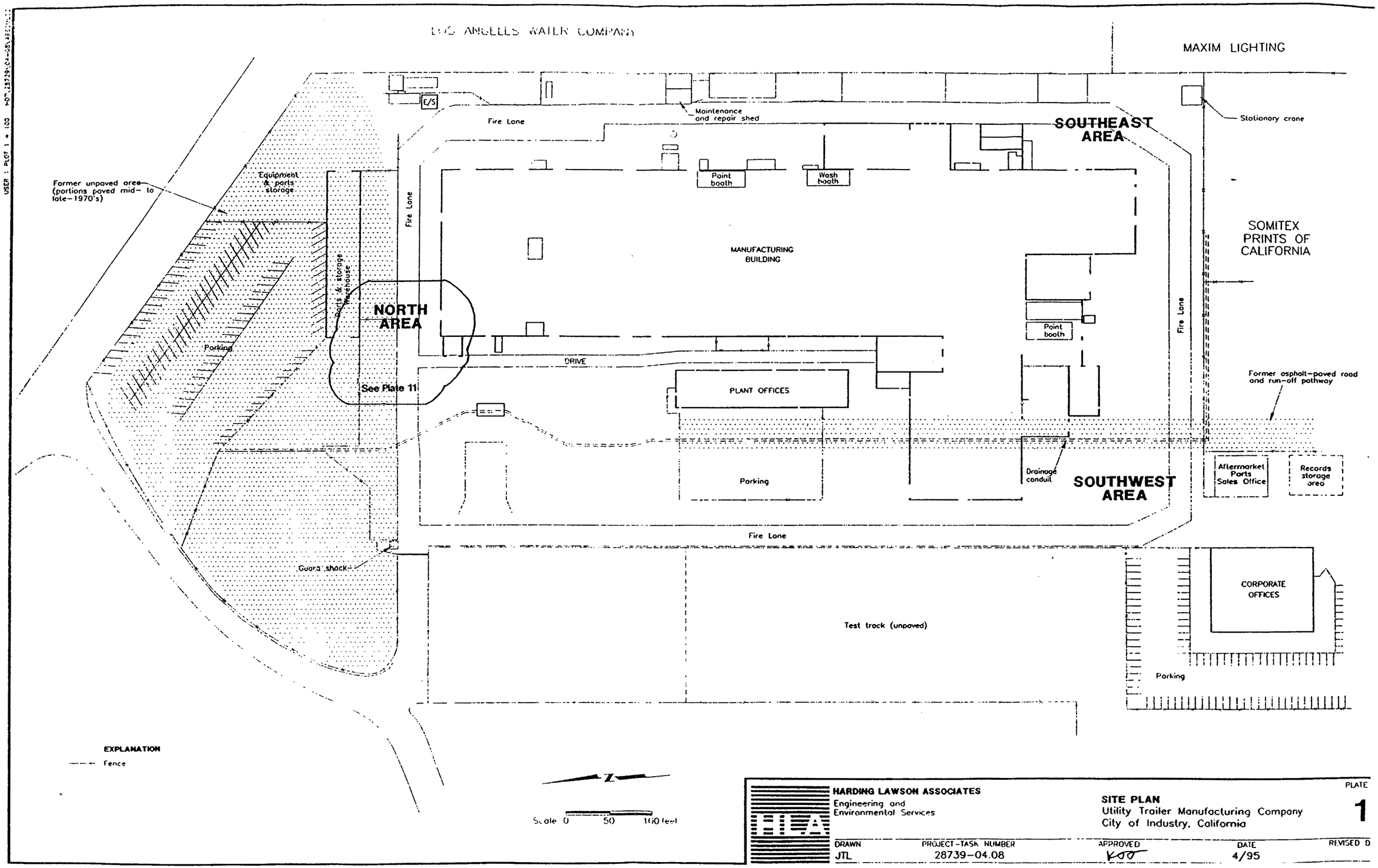
DRAWN: JTL
ENGINEER: WES
CHECKED:
DATE:
PROJECT NO: 28739-06.01
SCALE: 1" = 10'
APPROVED: K.A.
DATE:

Harding Lawson Associates
Engineering and Environmental Services
3 HUTTON CENTRE DRIVE, SUITE 300
SANTA ANA, CALIFORNIA 92707
(714) 556-7992

Utility Trailer Manufacturing Company
City of Industry, California

NORTH AREA PIPING LAYOUT WITH PIEZOMETER LOCATIONS

PLATE: 2
SHEET: OF
REVISION NUMBER: 2
DATE: 1/95



HARDING LAWSON ASSOCIATES
Engineering and Environmental Services

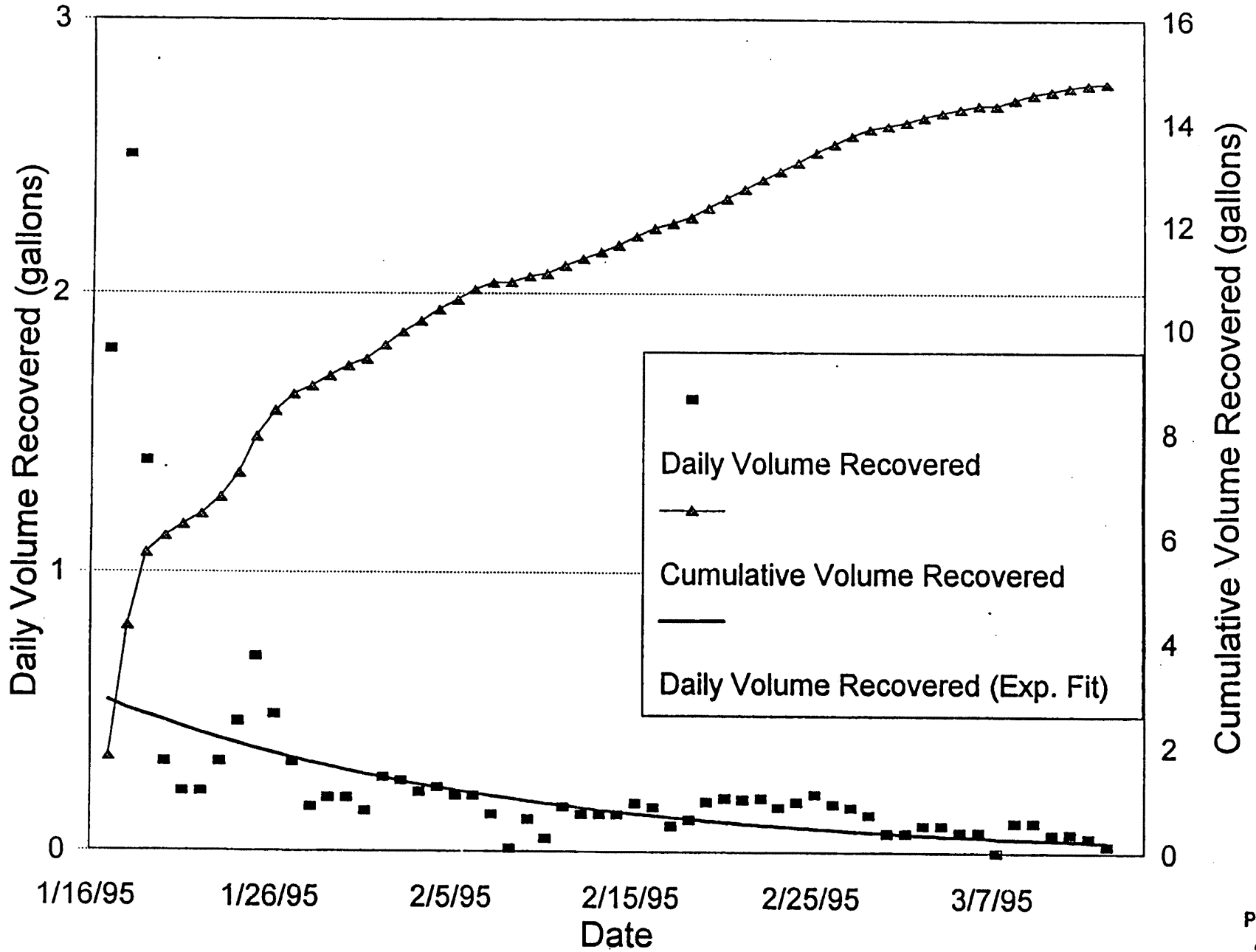
SITE PLAN
Utility Trailer Manufacturing Company
City of Industry, California

PLATE 1

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED D
JTL	28739-04.08	KOO	4/95	

UTM 005705

R/C Ops. North Area CVOC Recovery



UTM 005707

Plate 3

TRANSMITTAL

To:	Mr. Robert Griffis Utility Trailer Manufacturing Company 17295 East Railroad Street, P.O. Box 1299 City of Industry, California 91749
From:	Kevin Trout
Date:	February 6, 1996
Subject:	North Area Soil-Vapor Extraction System Progress Report
Project Number:	28739 06.01

FEB 1996

ACTION

Enclosed is your copy of Harding Lawson Associates' report entitled *IRAP Implementation, North Area Soil-Vapor Extraction System Progress Report*, Utility Trailer Manufacturing Company, 17300 East Chestnut Street, City of Industry, California.

If you have any questions, please give us a call.

THANKS -

KEVIN

Harding Lawson Associates
Engineering and Environmental Services
3 Hutton Centre Drive, Suite 300
Santa Ana, CA 92707 – (714) 556-7992

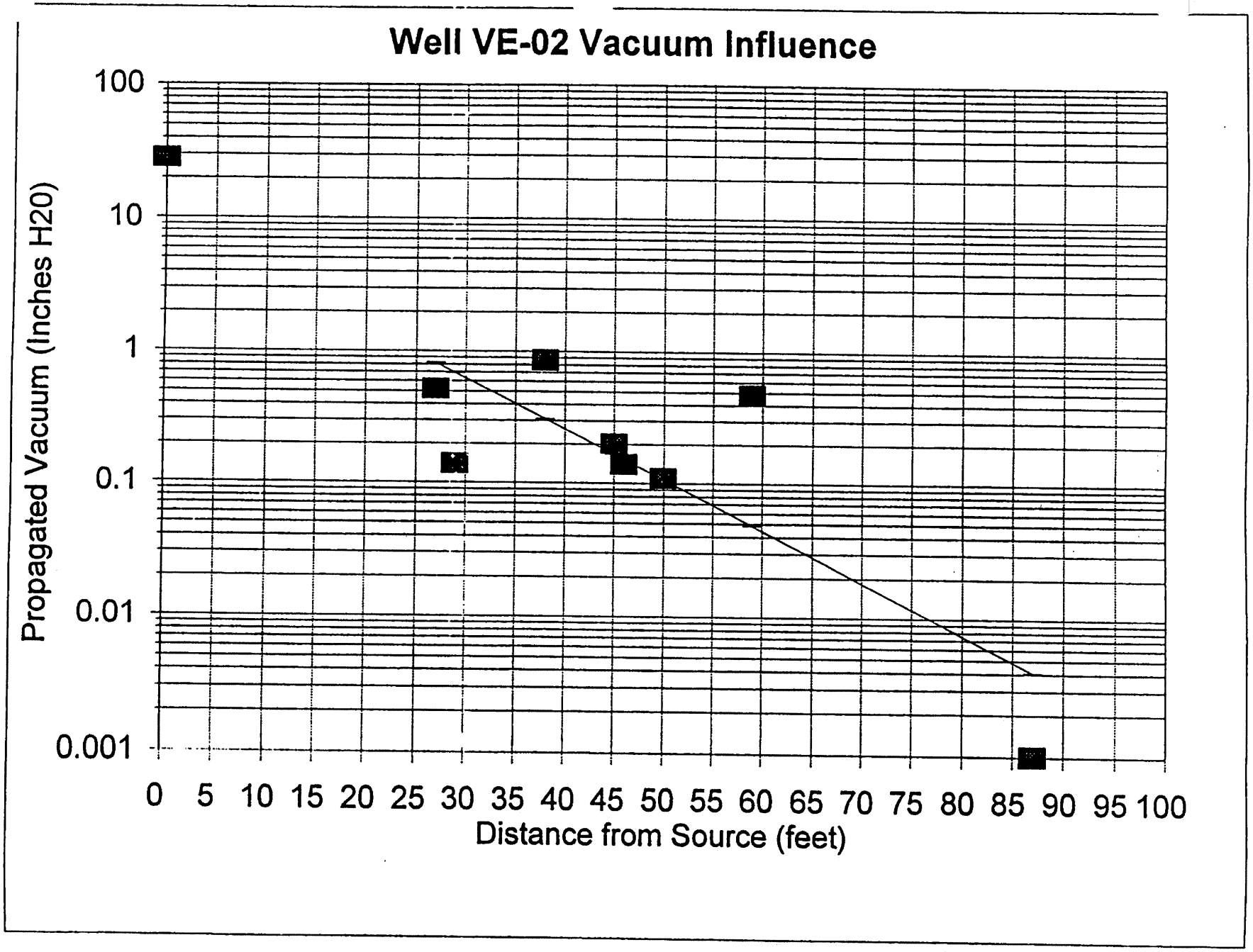


Plate
4

UTM 005709

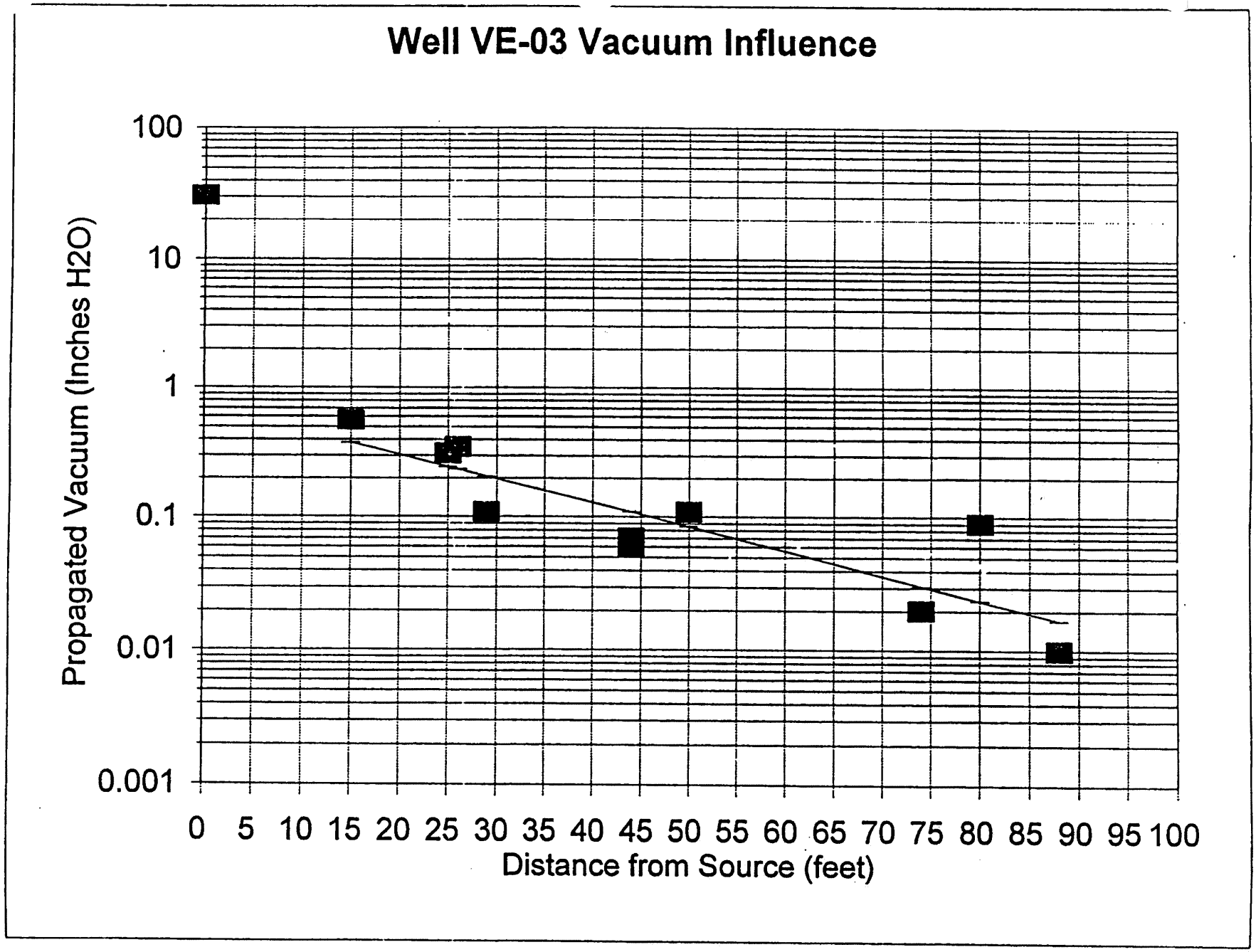


Plate
5

UTM 005710

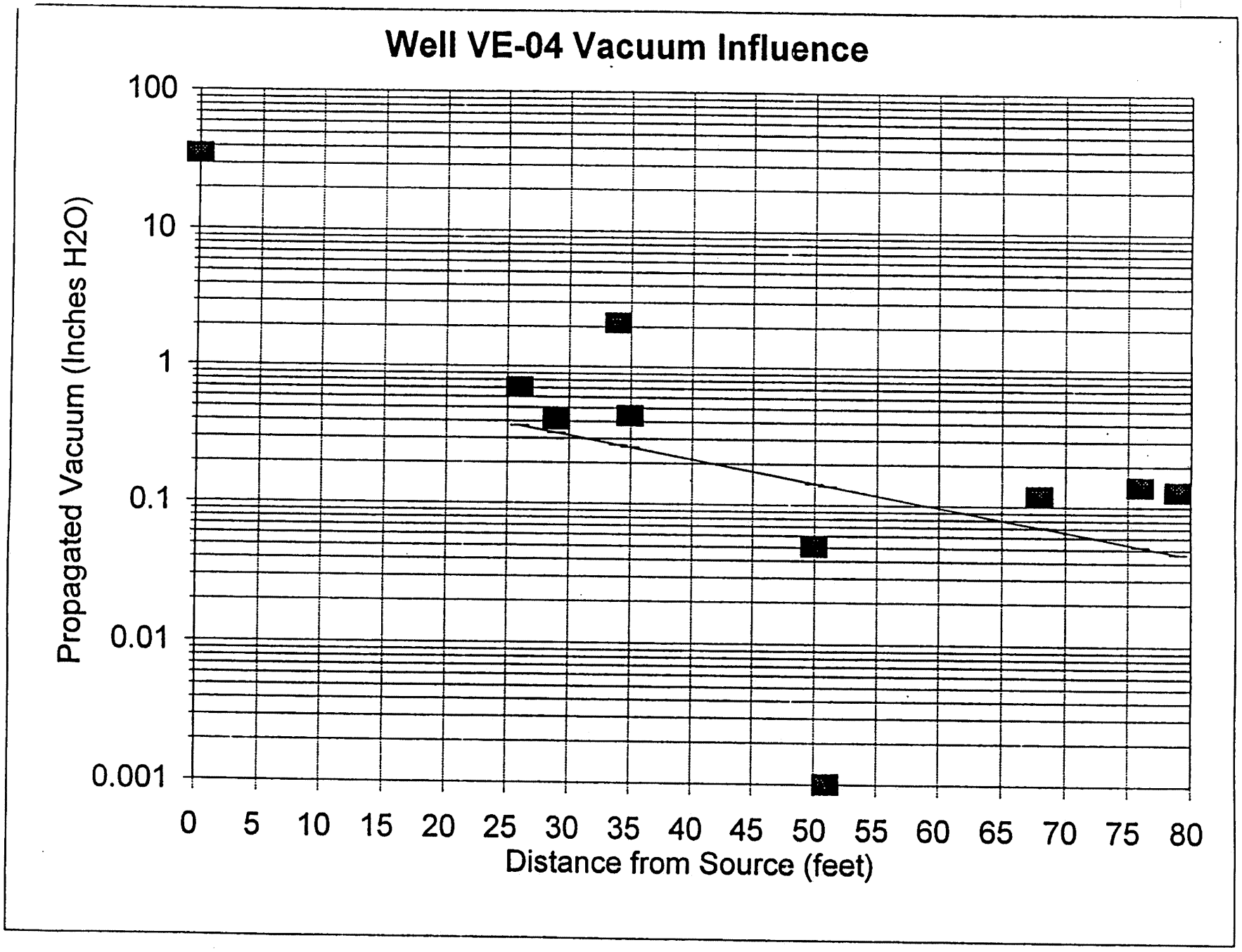
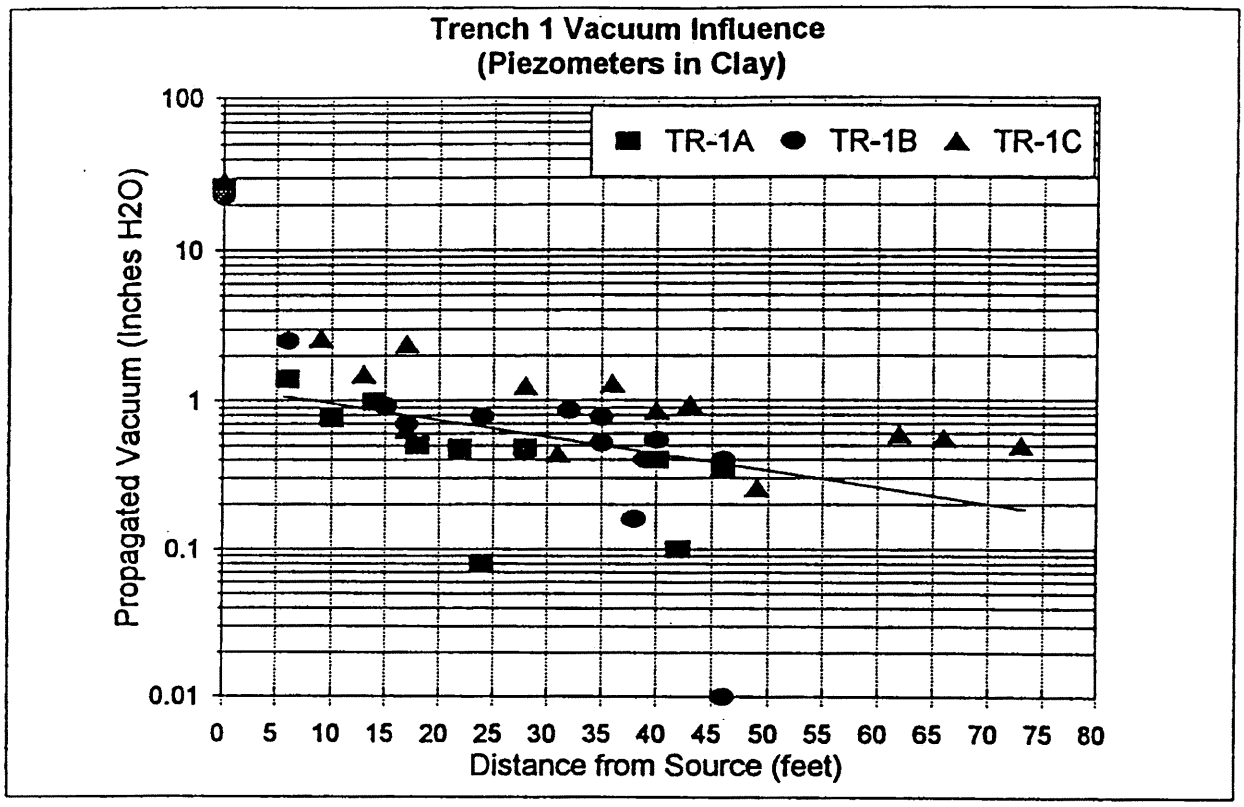


Plate
6

UTM 005711



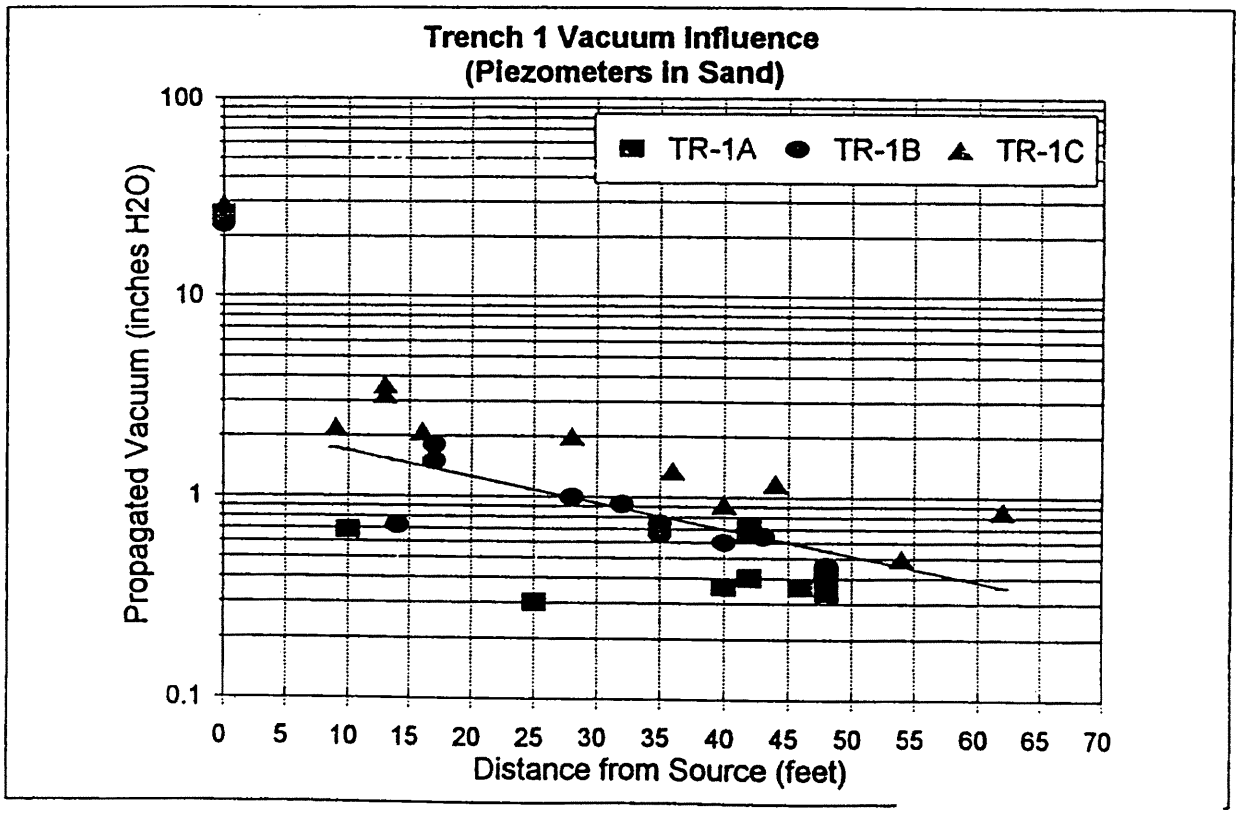
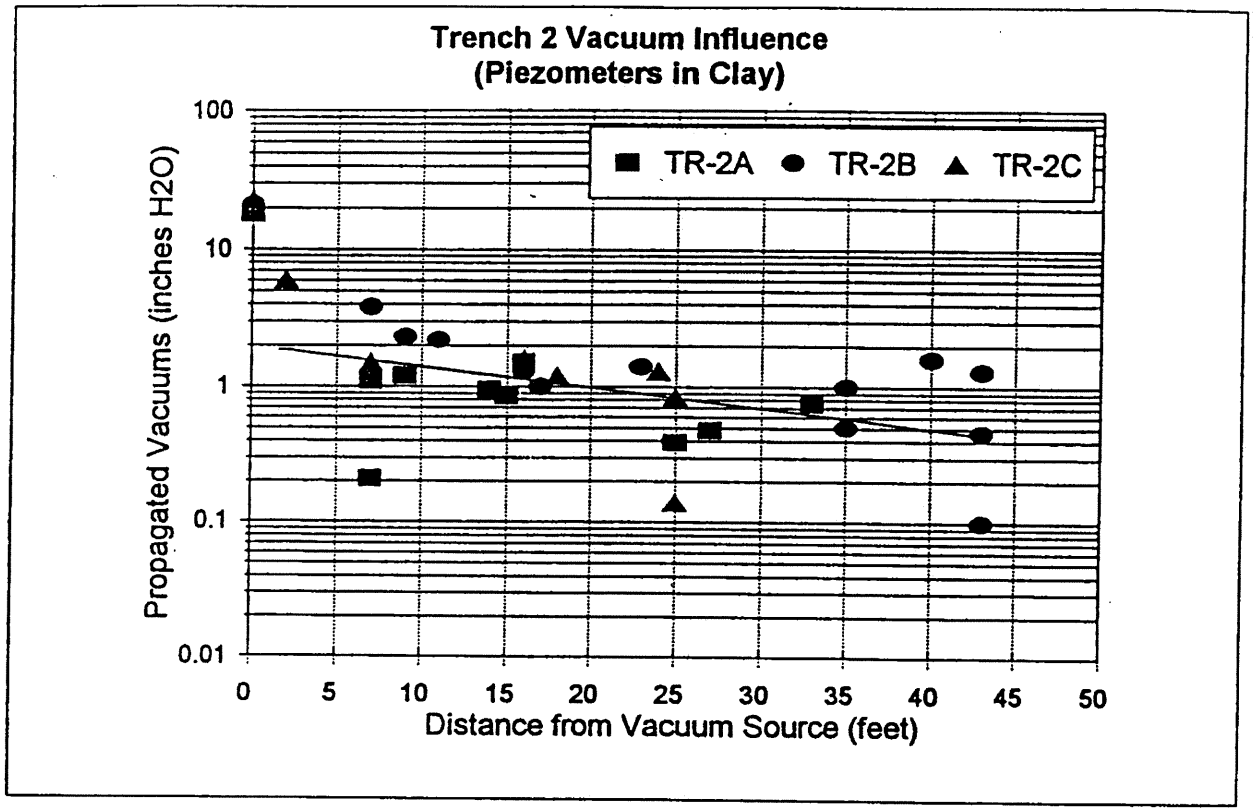


Plate
7

UTM 005712



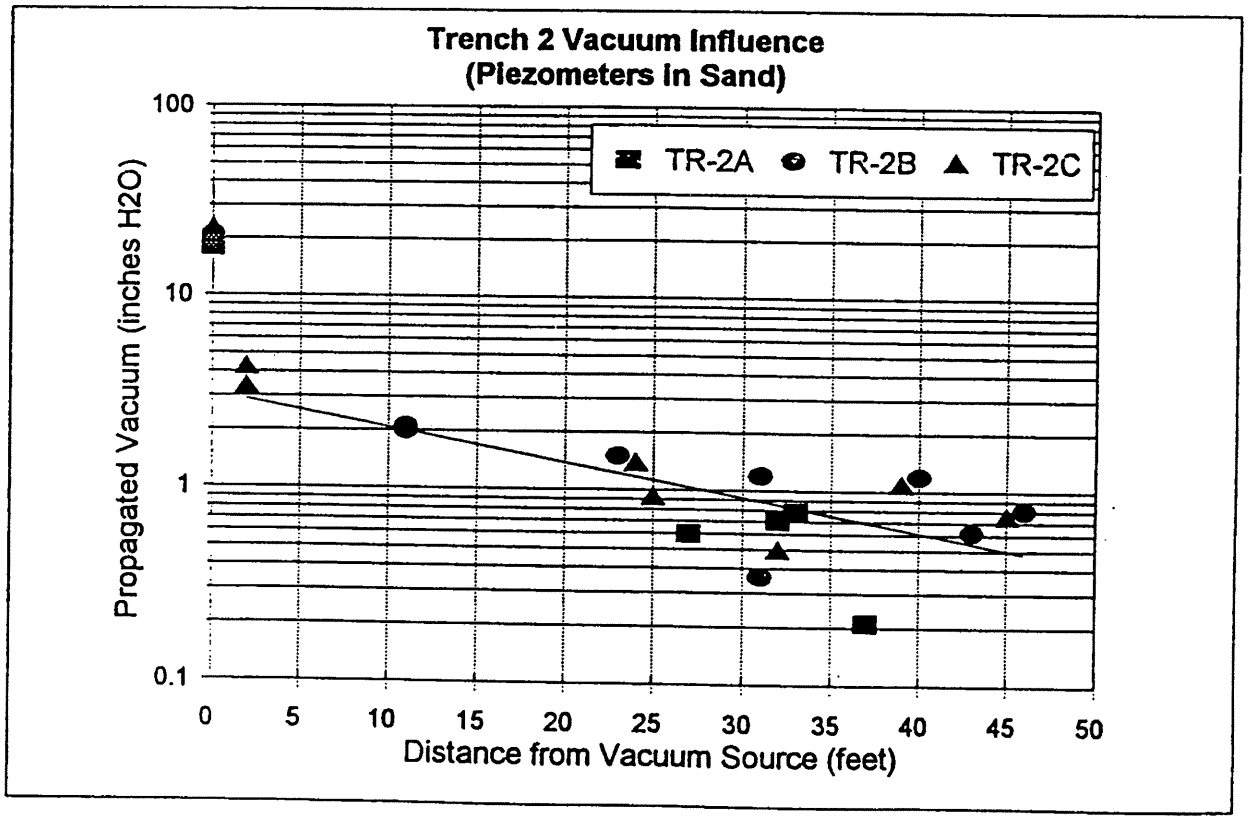
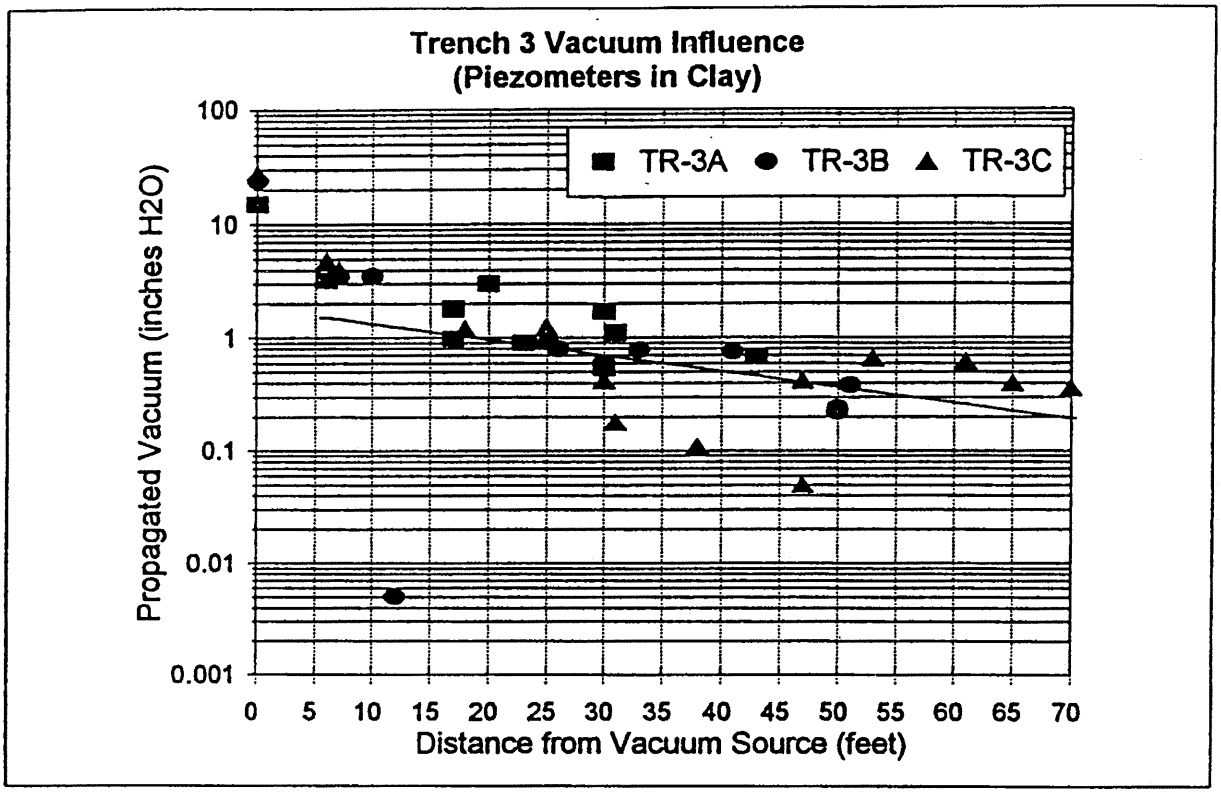


Plate
8

UTM 005713



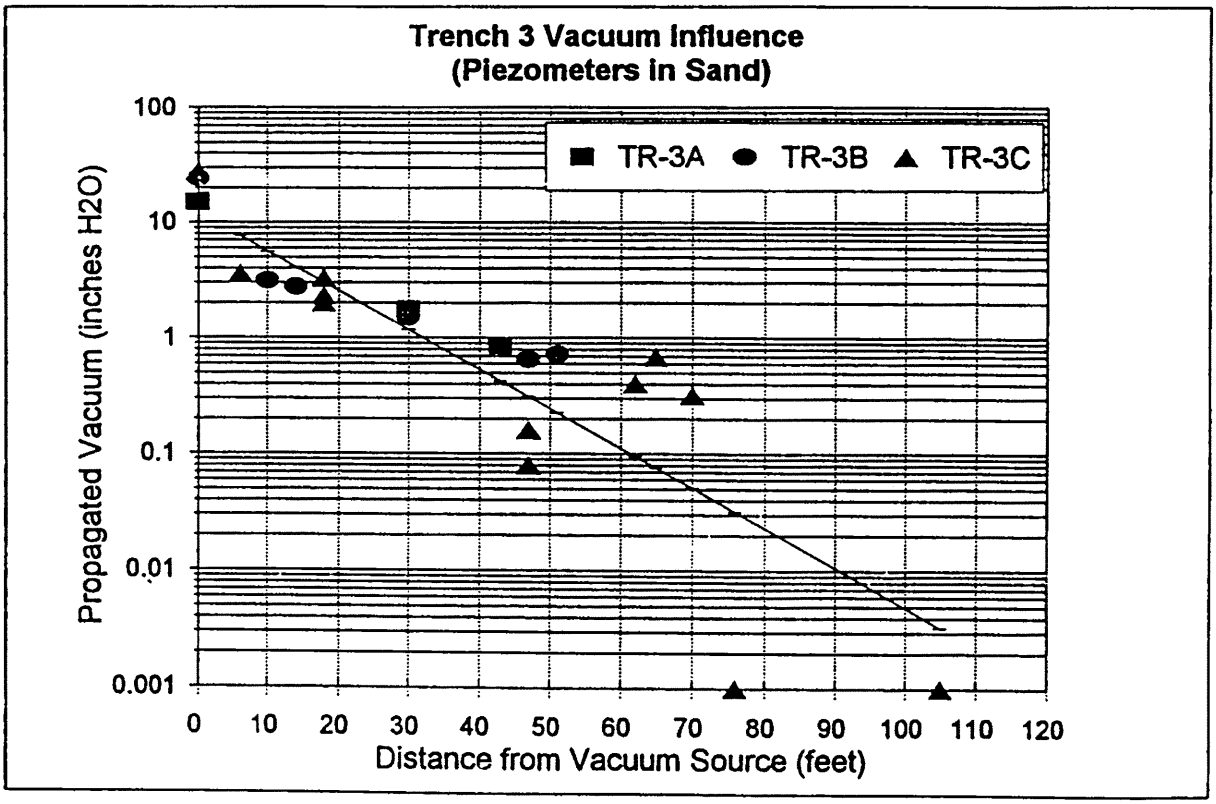
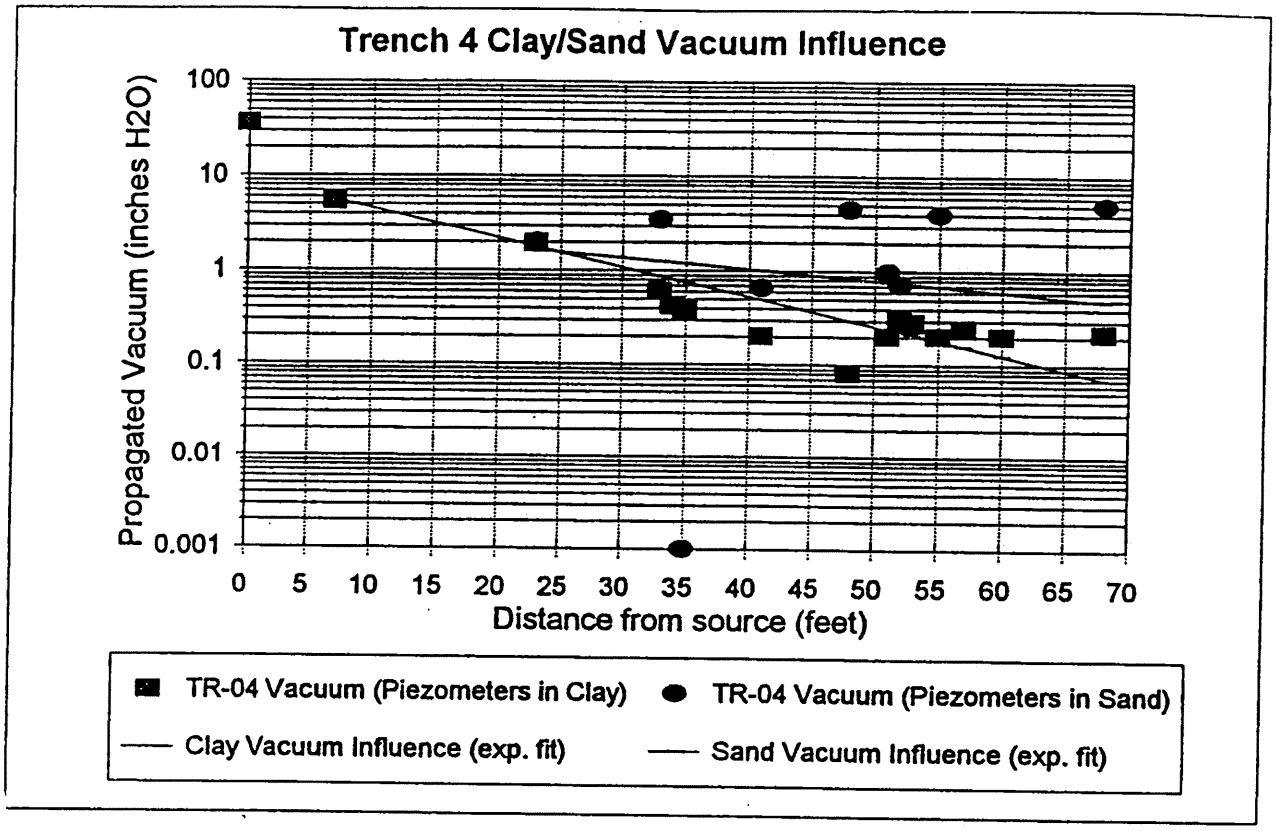


Plate
9

UTM 005714


Trench 4 Clay/Sand Vacuum Influence
Propagated Vacuum (inches H2O)
100
10
1
0.1
0.01
0.001
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
Distance from source (feet)
TR-04 Vacuum (Piezometers in Clay)
TR-04 Vacuum (Piezometers in Sand)
Clay Vacuum Influence (exp. fit)
Sand Vacuum Influence (exp. fit)

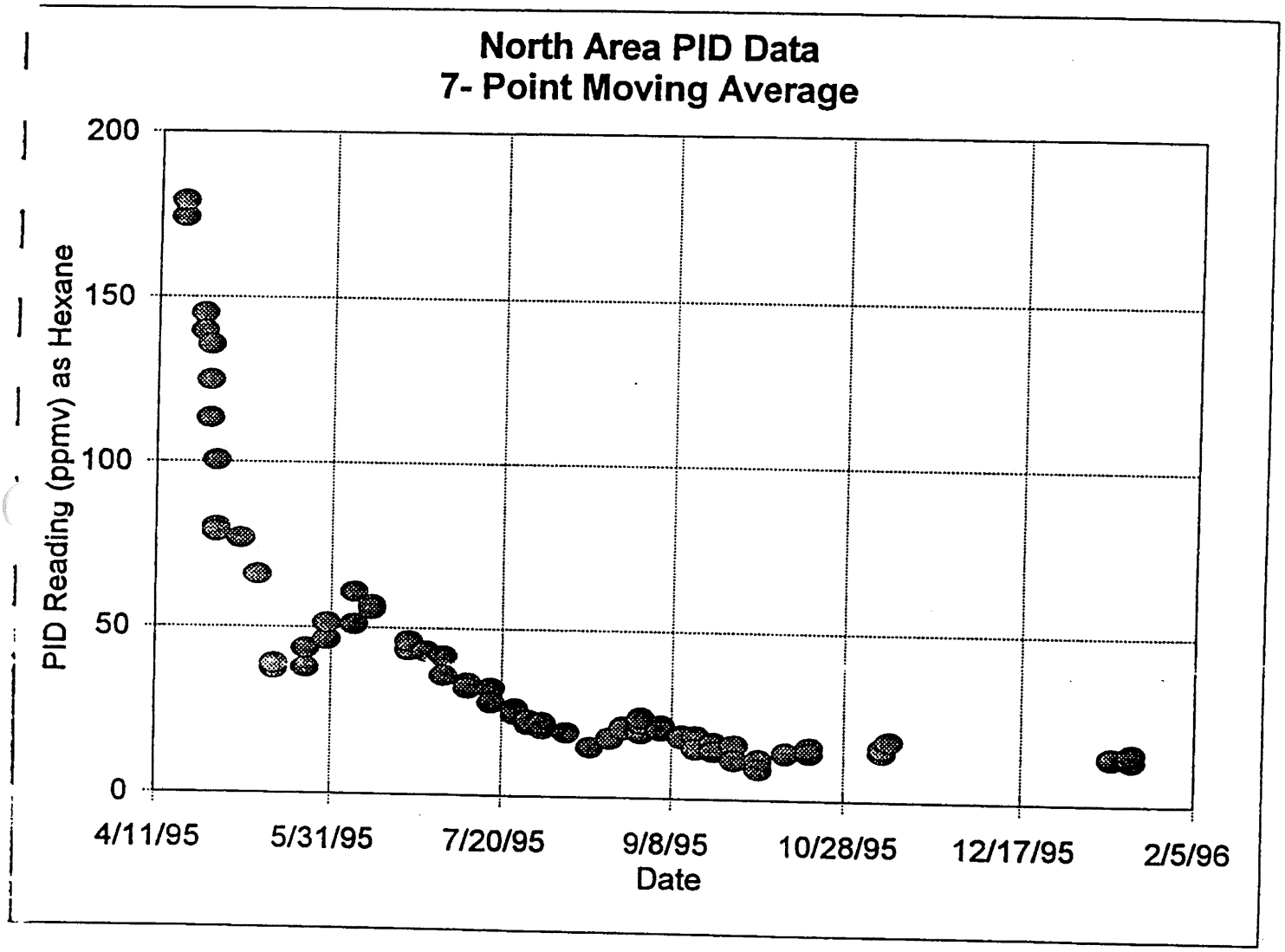


Plate
12

UTM 005717

APPENDIX A

APPENDIX A

SOIL-GAS SURVEY ANALYTICAL REPORTS

teg

HARDING LAWSON ASSOCIATES PROJECT
UTILITY TRAILER
17300 E. CHESTNUT
INDUSTRY, CA

TEG Project #951113T3
GC SHIMADZU 14A LEFT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) SOIL VAPOR ANALYSES
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VP-33-20	VP-35-20
DATE	11/13/95	11/13/95	11/13/95
ANALYSIS TIME	9:58	10:18	10:51
SAMPLING DEPTH (feet)	--	20	20
VOLUME WITHDRAWN (cc)	60	190	190
VOLUME INJECTED	1	1	1
DILUTION FACTOR	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd
CHLOROFORM	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	6.9
CIS-1,2-DICHLORO ETHENE	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd
TETRACHLORO ETHENE	nd	2.8	43
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd
TRICHLORO ETHENE	nd	nd	6.7
BENZENE	nd	nd	nd
ETHYLBENZENE	nd	nd	nd
TOLUENE	nd	nd	nd
m&p-XYLENES	nd	nd	nd
o-XYLENE	nd	nd	nd

ND INDICATES NOT DETECTED AT DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND
* REPORTED VALUE FROM 10 TIMES DILUTION

ANALYSES PERFORMED ON-SITE IN TEG'S CA DOHS CERTIFIED MOBILE LABORATORY (CERT #1317)
ANALYSES PERFORMED BY: PATRICK LAO
DATA REVIEWED BY: DR. BLAYNE HARTMAN

Blayne Hartman
1-16-96

teg

HARDING LAWSON ASSOCIATES PROJECT
UTILITY TRAILER
17300 E. CHESTNUT
INDUSTRY, CA

TEG Project #951113T3
GC SHIMADZU 14A LEFT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) SOIL VAPOR ANALYSES
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	VP-37B-7	VP-36B-7	VP-34B-7
DATE	11/15/95	11/15/95	11/15/95	11/15/95
ANALYSIS TIME	8:54	12:49	13:13	13:40
SAMPLING DEPTH (feet)	–	7	7	7
VOLUME WITHDRAWN (cc)	60	70	70	70
VOLUME INJECTED	1	1	1	1
DILUTION FACTOR	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	3.2	1.0	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd

ND INDICATES NOT DETECTED AT DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND
** INDICATES THAT THE ANALYTE WAS QUANTIFIED FROM THE FID

ANALYSES PERFORMED ON-SITE IN TEG'S CA DOHS CERTIFIED MOBILE LABORATORY (CERT #1317)
ANALYSES PERFORMED BY: PATRICK LAO
DATA REVIEWED BY: DR. BLAYNE HARTMAN

Blayne Hartman
1-16-96

HARDING LAWSON ASSOCIATES PROJECT
UTILITY TRAILER
17300 E. CHESTNUT
INDUSTRY, CA

TEG Project #951113T3
GC SHIMADZU 14A LEFT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) SOIL VAPOR ANALYSES
AREA COUNTS

	BLANK	BLANK	VP-33-20	VP-33-20	VP-35-20	VP-35-20
DATE	11/13/95	11/13/95	11/13/95	11/13/95	11/13/95	11/13/95
ANALYSIS TIME	9:58	9:58	10:18	10:18	10:51	10:51
SAMPLING DEPTH (feet)	–	–	20	20	20	20
VOLUME WITHDRAWN (cc)	60	60	190	190	190	190
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	3.4	62.8
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	11.6	35.3	11.7	540.4
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	7.8	130.0
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd

ND INDICATES NOT DETECTED AT DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND
* REPORTED VALUE FROM 10 TIMES DILUTION

ANALYSES PERFORMED ON-SITE IN TEG'S CA DOHS CERTIFIED MOBILE LABORATORY (CERT #1317)
ANALYSES PERFORMED BY: PATRICK LAO
DATA REVIEWED BY: DR. BLAYNE HARTMAN

teg

HARDING LAWSON ASSOCIATES PROJECT
UTILITY TRAILER
17300 E. CHESTNUT
INDUSTRY, CA

TEG Project #951113T3
GC SHIMADZU 14A LEFT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) SOIL VAPOR ANALYSES
AREA COUNTS

	BLANK	BLANK	VP-37B-7	VP-37B-7	VP-36B-7	VP-36B-7	VP-34B-7	VP-34B-7
DATE	11/15/95	11/15/95	11/15/95	11/15/95	11/15/95	11/15/95	11/15/95	11/15/95
ANALYSIS TIME	8:54	8:54	12:49	12:49	13:13	13:13	13:40	13:40
SAMPLING DEPTH (feet)	--	--	7	7	7	7	7	7
VOLUME WITHDRAWN (cc)	60	60	70	70	70	70	70	70
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	11.6	40.2	11.6	8.1	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd	nd	nd

ND INDICATES NOT DETECTED AT DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND
** INDICATES THAT THE ANALYTE WAS QUANTIFIED FROM THE FID

ANALYSES PERFORMED ON-SITE IN TEG'S CA DOHS CERTIFIED MOBILE LABORATORY (CERT #1317)
ANALYSES PERFORMED BY: PATRICK LAO
DATA REVIEWED BY: DR. BLAYNE HARTMAN

teg

QA/QC REPORT - CALIBRATION DATA

TEG Project #951113T3

DATE: 11/13/95
SUPPLY SOURCE: ACCUSTANDARD 075-114
INSTRUMENT: T3 GC SHIMADZU 14A LEFT

					OPENING STANDARD			CLOSING STANDARD		
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	RF	%DIFF	AREA	RF	%DIFF
CARBON TETRACHLORIDE	HALL	117.9	20	7.3	2,202	110.1	6.7%	2,407	120.4	2.0%
CHLOROFORM	HALL	103.4	20	6.7	2,251	112.6	8.9%	2,298	114.9	11.1%
1,1-DICHLORO ETHANE	HALL	93.7	20	5.3	2,069	103.5	10.4%	1,749	87.5	6.6%
1,2-DICHLORO ETHANE	HALL	127.3	20	7.7	2,382	119.1	6.5%	2,203	110.2	13.5%
1,1-DICHLORO ETHENE	PID	7.0	20	3.7	153	7.7	8.8%	124	6.2	11.8%
CIS-1,2-DICHLORO ETHENE	PID	13.2	20	6.1	255	12.8	3.7%	256	12.8	3.3%
TRANS-1,2-DICHLORO ETHENE	PID	16.5	20	4.7	293	14.7	11.2%	290	14.5	12.1%
DICHLOROMETHANE	HALL	72.2	20	4.4	1,414	70.7	2.1%	1,356	67.8	6.1%
TETRACHLORO ETHENE	PID	12.7	20	12.9	229	11.5	9.8%	231	11.6	9.0%
1,1,1,2-TETRACHLORO ETHANE	HALL	136.0	20	15.4	3,071	153.6	12.9%	3,101	155.1	14.0%
1,1,2,2-TETRACHLORO ETHANE	HALL	105.6	20	18.9	2,071	103.6	1.9%	2,229	111.5	5.6%
1,1,1-TRICHLORO ETHANE	HALL	98.1	20	7.0	1,859	93.0	5.2%	2,020	101.0	3.0%
1,1,2-TRICHLORO ETHANE	HALL	76.8	20	12.6	1,696	84.8	10.4%	1,724	86.2	12.2%
TRICHLORO ETHENE	PID	15.0	20	8.8	278	13.9	7.0%	279	14.0	6.7%
BENZENE	PID	26.1	20	7.6	468	23.4	10.4%	487	24.4	6.8%
CHLOROBENZENE	PID	38.1	20	15.1	768	38.4	0.9%	727	36.4	4.5%
ETHYLBENZENE	PID	27.5	20	15.4	548	27.4	0.4%	530	26.5	3.7%
TOLUENE	PID	28.6	20	11.6	537	26.9	6.1%	549	27.5	4.0%
m&p-XYLENES	PID	33.6	40	15.8	1,284	32.1	4.4%	1,247	31.2	7.1%
o-XYLENE	PID	30.9	20	16.8	599	30.0	3.0%	582	29.1	5.8%

MASS UNITS ARE ng UNLESS OTHERWISE STATED
ANALYSES PERFORMED ON-SITE IN TEG'S CA DOHS CERTIFIED MOBILE LABORATORY (CERT #1317)
ANALYSES PERFORMED BY: PATRICK LAO
DATA REVIEWED BY: DR. BLAYNE HARTMAN

Blayne Hartman
1-16-96

teg

QA/QC REPORT - CALIBRATION DATA

TEG Project #951113T3

DATE: 11/14/95
SUPPLY SOURCE: ACCUSTD 075-114
INSTRUMENT: T3 GC-LEFT

					OPENING STANDARD			CLOSING STANDARD		
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	RF	%DIFF	AREA	RF	%DIFF
CARBON TETRACHLORIDE	HALL	117.9	20	7.3	2,630	131.5	11.5%	2,494	124.7	5.7%
CHLOROFORM	HALL	103.4	20	6.7	2,162	108.1	4.6%	2,097	104.9	1.4%
1,1-DICHLORO ETHANE	HALL	93.7	20	5.3	1,832	91.6	2.2%	1,884	94.2	0.6%
1,2-DICHLORO ETHANE	HALL	127.3	20	7.7	2,653	132.7	4.2%	2,195	109.8	13.8%
1,1-DICHLORO ETHENE	PID	7.0	20	3.7	127	6.4	9.7%	129	6.5	8.3%
CIS-1,2-DICHLORO ETHENE	PID	13.2	20	6.1	227	11.4	14.2%	276	13.8	4.3%
TRANS-1,2-DICHLORO ETHENE	PID	16.5	20	4.7	370	18.5	12.1%	378	18.9	14.5%
DICHLOROMETHANE	HALL	72.2	20	4.4	1,501	75.1	3.9%	1,704	85.2	18.0%
TETRACHLORO ETHENE	PID	12.7	20	12.9	288	14.4	13.5%	271	13.6	6.8%
1,1,1,2-TETRACHLORO ETHANE	HALL	136.0	20	15.4	2,396	119.8	11.9%	2,765	138.3	1.7%
1,1,2,2-TETRACHLORO ETHANE	HALL	105.6	20	18.9	2,186	109.3	3.6%	2,385	119.3	13.0%
1,1,1-TRICHLORO ETHANE	HALL	98.1	20	7.0	2,185	109.3	11.4%	2,100	105.0	7.0%
1,1,2-TRICHLORO ETHANE	HALL	76.8	20	12.6	1,445	72.3	6.0%	1,779	89.0	15.8%
TRICHLORO ETHENE	PID	15.0	20	8.8	267	13.4	10.7%	267	13.4	10.7%
BENZENE	PID	26.1	20	7.6	541	27.1	3.6%	561	28.1	7.4%
CHLOROBENZENE	PID	38.1	20	15.1	733	36.7	3.7%	713	35.7	6.3%
ETHYLBENZENE	PID	27.5	20	15.4	626	31.3	13.7%	635	31.8	15.4%
TOLUENE	PID	28.6	20	11.6	626	31.3	9.5%	572	28.6	0.1%
m&p-XYLENES	PID	33.6	40	15.8	1,417	35.4	5.5%	1,455	36.4	8.4%
o-XYLENE	PID	30.9	20	16.8	654	32.7	5.9%	658	32.9	6.5%

MASS UNITS ARE ng UNLESS OTHERWISE STATED
ANALYSES PERFORMED ON-SITE IN TEG'S CA DOHS CERTIFIED MOBILE LABORATORY (CERT #1317)
ANALYSES PERFORMED BY: PATRICK LAO
DATA REVIEWED BY: DR. BLAYNE HARTMAN

Blayne Hartman
1-16-96

teg

QA/QC REPORT - CALIBRATION DATA

TEG Project #951113T3
DATE: 11/15/95
SUPPLY SOURCE: ACCUSTANDARD 075-114
INSTRUMENT: T3 GC-LEFT

					OPENING STANDARD			CLOSING STANDARD		
COMPOUND	DETECTOR	AVE RF	MASS	RT	AREA	RF	%DIFF	AREA	RF	%DIFF
CARBON TETRACHLORIDE	HALL	117.9	20	7.3	2,202	110.1	6.7%	2,309	115.5	2.1%
CHLOROFORM	HALL	103.4	20	6.7	2,251	112.6	8.9%	2,279	114.0	10.2%
1,1-DICHLORO ETHANE	HALL	93.7	20	5.3	2,069	103.5	10.4%	1,667	83.4	11.0%
1,2-DICHLORO ETHANE	HALL	127.3	20	7.7	2,382	119.1	6.5%	2,325	116.3	8.7%
1,1-DICHLORO ETHENE	PID	7.0	20	3.7	153	7.7	8.8%	152	7.6	8.1%
CIS-1,2-DICHLORO ETHENE	PID	13.2	20	6.1	255	12.8	3.7%	261	13.1	1.4%
TRANS-1,2-DICHLORO ETHENE	PID	16.5	20	4.7	293	14.7	11.2%	305	15.3	7.6%
DICHLOROMETHANE	HALL	72.2	20	4.4	1,414	70.7	2.1%	1,292	64.6	10.5%
TETRACHLORO ETHENE	PID	12.7	20	12.9	229	11.5	9.8%	228	11.4	10.2%
1,1,1,2-TETRACHLORO ETHANE	HALL	136.0	20	15.4	3,071	153.6	12.9%	2,793	139.7	2.7%
1,1,2,2-TETRACHLORO ETHANE	HALL	105.6	20	18.9	2,071	103.6	1.9%	2,313	115.7	9.6%
1,1,1-TRICHLORO ETHANE	HALL	98.1	20	7.0	1,859	93.0	5.2%	2,066	103.3	5.3%
1,1,2-TRICHLORO ETHANE	HALL	76.8	20	12.6	1,696	84.8	10.4%	1,712	85.6	11.4%
TRICHLORO ETHENE	PID	15.0	20	8.8	278	13.9	7.0%	309	15.5	3.3%
BENZENE	PID	26.1	20	7.6	468	23.4	10.4%	446	22.3	14.6%
CHLOROBENZENE	PID	38.1	20	15.1	768	38.4	0.9%	799	40.0	5.0%
ETHYLBENZENE	PID	27.5	20	15.4	548	27.4	0.4%	561	28.1	1.9%
TOLUENE	PID	28.6	20	11.6	537	26.9	6.1%	527	26.4	7.8%
m&p-XYLENES	PID	33.6	40	15.8	1,284	32.1	4.4%	1,321	33.0	1.6%
o-XYLENE	PID	30.9	20	16.8	599	30.0	3.0%	630	31.5	2.0%

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ANALYSES PERFORMED BY: PATRICK LAO
DATA REVIEWED BY: DR. BLAYNE HARTMAN

Blayne Hartman
1-16-96

teg

INITIAL CALIBRATION (3-POINT)

SUPPLY SOURCE: ACCUSTANDARD 075-114

LAB: TIOGA 3
INSTRUMENT: GC SHIMADZU 14A LEFT

COMPOUND	DETECTOR	CAL DATE	LOW STANDARD				MID STANDARD				HIGH STANDARD				SUMMARY			
			RT	MASS	AREA	RF	RT	MASS	AREA	RF	RT	MASS	AREA	RF	AVE RT	AVE RF	SD	%RSD
CARBON TETRACHLORIDE	HALL	11/7/95	6.5	10	1,203	120.3	6.5	20	2,272	113.6	6.5	40	4,798	119.9	6.5	117.9	3.8	3.2%
CHLOROFORM	HALL	11/7/95	5.9	10	969	96.9	5.9	20	2,111	105.6	5.9	40	4,307	107.7	5.9	103.4	5.7	5.5%
1,1-DICHLORO ETHANE	HALL	11/7/95	4.7	10	965	96.5	4.7	20	1,830	91.5	4.7	40	3,721	93.0	4.7	93.7	2.6	2.7%
1,2-DICHLORO ETHANE	HALL	11/7/95	6.6	10	1,385	138.5	6.6	20	2,498	124.9	6.6	40	4,743	118.6	6.6	127.3	10.2	8.0%
1,1-DICHLORO ETHENE	PID	11/7/95	3.2	10	69	6.9	3.2	20	127	6.4	3.2	40	314	7.9	3.2	7.0	0.8	10.8%
CIS-1,2-DICHLORO ETHENE	PID	11/7/95	5.4	10	129	12.9	5.4	20	261	13.1	5.4	40	550	13.8	5.4	13.2	0.5	3.4%
TRANS-1,2-DICHLORO ETHENE	PID	11/7/95	4.1	10	157	15.7	4.1	20	301	15.1	4.1	40	750	18.8	4.1	16.5	2.0	12.0%
DICHLOROMETHANE	HALL	11/7/95	3.8	10	686	68.6	3.8	20	1,333	66.7	3.8	40	3,254	81.4	3.8	72.2	8.0	11.1%
TETRACHLORO ETHENE	PID	11/7/95	11.7	10	130	13.0	11.7	20	244	12.2	11.7	40	515	12.9	11.7	12.7	0.4	3.4%
1,1,1,2-TETRACHLORO ETHANE	HALL	11/7/95	14.2	10	1,377	137.7	14.2	20	2,825	141.3	14.2	40	5,159	129.0	14.2	136.0	6.3	4.6%
1,1,2,2-TETRACHLORO ETHANE	HALL	11/7/95	17.6	10	979	97.9	17.6	20	2,149	107.5	17.6	40	4,452	111.3	17.6	105.6	6.9	6.5%
1,1,1-TRICHLORO ETHANE	HALL	11/7/95	6.2	10	948	94.8	6.2	20	1,949	97.5	6.2	40	4,082	102.1	6.2	98.1	3.7	3.7%
1,1,2-TRICHLORO ETHANE	HALL	11/7/95	11.5	10	678	67.8	11.5	20	1,636	81.8	11.5	40	3,236	80.9	11.5	76.8	7.8	10.2%
TRICHLORO ETHENE	PID	11/7/95	7.9	10	148	14.8	7.9	20	291	14.6	7.9	40	620	15.5	7.9	15.0	0.5	3.3%
BENZENE	PID	11/7/95	6.7	10	253	25.3	6.7	20	506	25.3	6.7	40	1,110	27.8	6.7	26.1	1.4	5.4%
CHLOROBENZENE	PID	11/7/95	13.9	10	412	41.2	13.9	20	756	37.8	13.9	40	1,407	35.2	13.9	38.1	3.0	7.9%
ETHYLBENZENE	PID	11/7/95	14.2	10	272	27.2	14.2	20	555	27.8	14.2	40	1,104	27.6	14.2	27.5	0.3	1.0%
TOLUENE	PID	11/7/95	10.5	10	289	28.9	10.5	20	556	27.8	10.5	40	1,162	29.1	10.5	28.6	0.7	2.4%
m&p-XYLENES	PID	11/7/95	14.5	20	653	32.7	14.5	40	1,318	33.0	14.5	80	2,807	35.1	14.5	33.6	1.3	4.0%
o-XYLENE	PID	11/7/95	15.6	10	309	30.9	15.6	20	612	30.6	15.6	40	1,246	31.2	15.6	30.9	0.3	0.9%

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ANALYSES PERFORMED BY: PATRICK LAO
DATA REVIEWED BY: DR. BLAYNE HARTMAN

teg

INITIAL LCS STANDARD REPORT (CALIBRATION VERIFICATION)

SUPPLY SOURCE: ACCUSTANDARD 075-114
INSTRUMENT: GC SHIMADZU 14A LEFT

COMPOUND	DETECTOR	CAL DATE	AVE RF	MASS	RT	AREA	RF	%DIFF
CARBON TETRACHLORIDE	HALL	11/7/95	117.9	20	6.5	2,483	124.2	5.3%
CHLOROFORM	HALL	11/7/95	103.4	20	5.9	2,257	112.9	9.2%
1,1-DICHLORO ETHANE	HALL	11/7/95	93.7	20	4.7	1,931	96.6	3.1%
1,2-DICHLORO ETHANE	HALL	11/7/95	127.3	20	6.8	2,722	136.1	6.9%
1,1-DICHLORO ETHENE	PID	11/7/95	7.0	20	3.2	127	6.4	9.7%
CIS-1,2-DICHLORO ETHENE	PID	11/7/95	13.2	20	5.4	263	13.2	0.6%
TRANS-1,2-DICHLORO ETHENE	PID	11/7/95	16.5	20	4.1	302	15.1	8.5%
DICHLOROMETHANE	HALL	11/7/95	72.2	20	3.8	1,473	73.7	2.0%
TETRACHLORO ETHENE	PID	11/7/95	12.7	20	11.7	245	12.3	3.5%
1,1,1,2-TETRACHLORO ETHANE	HALL	11/7/95	136.0	20	14.2	2,767	138.4	1.7%
1,1,2,2-TETRACHLORO ETHANE	HALL	11/7/95	105.6	20	17.6	2,255	112.8	6.8%
1,1,1-TRICHLORO ETHANE	HALL	11/7/95	98.1	20	6.2	2,061	103.1	5.0%
1,1,2-TRICHLORO ETHANE	HALL	11/7/95	76.8	20	11.5	1,663	83.2	8.2%
TRICHLORO ETHENE	PID	11/7/95	15.0	20	7.9	293	14.7	2.0%
BENZENE	PID	11/7/95	26.1	20	6.7	509	25.5	2.6%
CHLOROBENZENE	PID	11/7/95	38.1	20	13.9	761	38.1	0.0%
ETHYLBENZENE	PID	11/7/95	27.5	20	14.2	560	28.0	1.8%
TOLUENE	PID	11/7/95	28.6	20	10.5	548	27.4	4.1%
m&p-XYLENES	PID	11/7/95	33.6	40	14.5	1,314	32.9	2.1%
o-XYLENE	PID	11/7/95	30.9	20	15.6	612	30.6	0.9%

MASS UNITS ARE ng UNLESS OTHERWISE NOTED
ANALYSES PERFORMED IN TEG'S CA DOHS CERTIFIED MOBILE LABORATORY (CERT #1317)
ANALYSES PERFORMED BY: PATRICK LAO
DATA REVIEWED BY: DR. BLAYNE HARTMAN

APPENDIX B

APPENDIX B

GAC-BASED CVOC RECOVERY CALCULATIONS

CVOC Recovery Estimate Using Curve Regression Analysis

Date	Daily CVOC Removal (gal.)	Daily Cumulative CVOC Removal (gal.)	Regression Estimate of Daily Removal (gal.)	
3/5/95	0.0740	14.3000	0.0764	
3/6/95	0.0740	14.3740	0.0735	
3/7/95	0.0000	14.3740	0.0707	
3/8/95	0.1057	14.4797	0.0681	
3/9/95	0.1057	14.5853	0.0655	start reg
3/10/95	0.0634	14.6487	0.0631	
3/11/95	0.0687	14.7174	0.0607	
3/12/95	0.0528	14.7703	0.0584	
3/13/95	0.0264	14.7967	0.0562	
3/14/95		0.0538	0.0538	
3/15/95		0.1053	0.0515	
3/16/95		0.1545	0.0492	
3/17/95		0.2013	0.0468	
3/18/95		0.2458	0.0445	
3/19/95		0.2880	0.0422	
3/20/95		0.3279	0.0399	
3/21/95		0.3654	0.0375	
3/22/95		0.4007	0.0352	
3/23/95		0.4335	0.0329	
/24/95		0.4641	0.0306	
3/25/95		0.4924	0.0282	
3/26/95		0.5183	0.0259	
3/27/95		0.5419	0.0236	
3/28/95		0.5632	0.0213	
3/29/95		0.5821	0.0190	
3/30/95		0.5988	0.0166	
3/31/95		0.6131	0.0143	
4/1/95		0.6251	0.0120	
4/2/95		0.6347	0.0097	
4/3/95		0.6420	0.0073	
4/4/95		0.6471	0.0050	
4/5/95		0.6497	0.0027	
4/6/95		**0.6501**	0.0004	
4/7/95			-0.0020	
4/8/95				
4/9/95				
4/10/95				
4/11/95				
4/12/95				

Regression Output:

Constant	80.86046
Std Err of Y Est	0.00010
R Squared	0.99949
No. of Observations	5
Degrees of Freedom	3
X Coefficient(s)	-0.00232
Std Err of Coef.	0.00003

Modelled as linear regression in form of y=mx+b

Total CVOC recovery = .6501 gal

UTM 005731

Plate 3 displays the cumulative and daily CVOC recovery volumes observed during R/C operations. The area under the daily recovery decline curve represents the total volume of CVOC recovered by the R/C equipment, which is equal to 14.7 gallons. If it is assumed that recovery continues to decline linearly, it is possible to project the total volume of CVOCs that are still available for recovery by GAC after 3/13/95, when R/C operations ceased. It is assumed that the recovery decline can be modelled by the equation of a line, y=mx+b. Using this equation and the x coefficient and constant from the regression data above, daily recovery rates can be calculated and plotted until recovery reaches zero. At this point, the area under the curve represents the amount of CVOC available for recovery; which is equal to a total cumulative recovery of .6501 gallons.

Harding Lawson Associates
Engineering
and
Enviromental Services

SHEET 1 OF 1
JOB NO. 28739 06.01
DATE 1/23/96
COMPUTED BY KOT
CHECKED BY

PROJECT UTM
SUBJECT GAC LOADING

CVOC RECOVERY ESTIMATE USING OPERATIONAL DATA

- ASSUME RECOVERED CVOC IS ALL PCE

→ FROM OPERATIONAL DATA;

- AVERAGE FLOW RATE - 125 CFM
- DAYS OF OPERATION - 62
- AVERAGE PID READING (AS HEXANE) TO START = 215 ppm
- AVERAGE PID READING (AS HEXANE) TO FINISH = 27 ppm

THE PID CONVERSION FROM HEXANE TO PCE IS -

$$\text{ppm (AS PCE)} = \text{ppm (AS HEXANE)} \times \left(\frac{1.6}{8.6}\right)$$

WHERE 1.6 IS THE PID RESPONSE FACTOR FOR HEXANE
8.6 IS THE PID RESPONSE FACTOR FOR PCE

BY THIS CONVERSION,

215 ppm (AS HEX) = 40 ppm (AS PCE) AND TO CONVERT TO MG/L →

$$40\,\text{ppm} \times \frac{166}{24.05} = 276\ \text{mg/L (PCE)}$$

USING PLATE 12, THE AVERAGE CONCENTRATION FOR THE CURVE IS APPROXIMATELY 20% OF THE INITIAL VALUE.

THEREFORE $276\ \text{mg/L} \times .2 = 55\ \text{mg/L (PCE)}$

TO CONVERT TO TOTAL GALLONS OF PCE

$$(55\ \text{mg/L})(62\ \text{DAYS})(125\ \text{CF/MIN})(1440\ \text{MIN/DAY})(28.3\ \text{L/CF})$$
$$(.001\ \text{mg/µg})(.001\ \text{g/mg})(.001\ \text{kg/g})(2.205\ \text{lb/kg})\left(.0825\ \frac{\text{GAL}}{\text{lb}}\right)$$

= 3.16 GALLONS

UTM 005732

THIS ESTIMATE IS FOR THE VOLUME OF CVOCS RECOVERED UP UNTIL THE CHANGEOUT OF THE FIRST CARBON VESSEL. SINCE THEN, WE HAVE NOT ESTIMATED CVOC RECOVERY FOR THE SECOND VESSEL BECAUSE CONCENTRATIONS ARE TOO LOW TO QUANTIFY.

CVOC RECOVERY ESTIMATE USING TCLP RESULTS

- FIRST, WHAT PERCENTAGE OF TOTAL MASS IN TCLP RESULT IS REPRESENTED BY PCE?

PCE: 0.13 (166) = 21.58

TCE: 0.03 (131) = 3.93

DCE: 0.03 (97) = 2.91

28.42

21.58/28.42 = .76

SO TO SIMPLIFY, CALL AS PCE, THEN DIVIDE BY .76 AT END.

- ASSUME TCLP METHOD REMOVES 1/10 OF CVOC'S FROM GAL
- GAL IS "DILUTED" 20x DURING ACID EXTRACTION PROCESS

TCLP RESULT — RECOVERY ASSUMPTION — ACID DILUTION — TOTAL MASS GAL

$(0.13\ mg/L)(10)(20\ \frac{L\ ACID}{kg\ GAL})(454\ kg\ GAL)(.001\ g/mg)(.001\ kg/g)$

$(2.205\ lb/kg)(.082\ \frac{GAL\ PCE}{LB}) = .00213\ GAL$

$.00213 / .76 = .00281$ GAL CVOC'S

THE RESULTING VOLUME OF CVOC'S IS FAR BELOW WHAT WE EXPECT, THEREFORE WE HAVE NOT INCLUDED THIS RESULT IN OUR ESTIMATION OF RECOVERED CVOC.

1/22/92

UTM 005733

Wheelabrator Clean Air Systems Inc.

2130 Leo Avenue
Los Angeles, CA 90040
Tel 213-722-7500
Fax. 213-722-8207

ANALYTICAL REPORT

Customer:	Utility Trailer	Lab I.D. #:	5557
Project:		Date Reported:	07/17/95
Address :	City of Industry California	Date Sampled:	07/03/95
		Date Received:	07/05/95
Attention:	c/o Mr. Mark Bailey	Date Analyzed:	07/14/95
Sample Matrix:	Granular Activated Carbon	Date Extracted:	07/07/95

TCLP VOLATILES BY EPA 601/602
PURGEABLE ORGANICS

compound	cas #	concentration (mg/L)	limit of detection (mg/L)	TCLP limits (mg/L)
Vinyl Chloride	75-01-4	<0.03	0.03	0.2
1,1-Dichloroethene	75-35-4	0.03	0.01	0.7
Chloroform	67-66-3	<0.01	0.01	6.0
1,2-Dichloroethane	107-06-2	<0.01	0.01	0.5
2-Butanone	78-93-3	<0.50	0.50	200
Carbon Tetrachloride	56-23-5	<0.01	0.01	0.5
Trichloroethene	79-01-6	0.03	0.01	0.5
Benzene	71-43-2	<0.01	0.01	0.5
Tetrachloroethene	127-18-4	0.13	0.01	0.7
Chlorobenzene	108-90-7	<0.01	0.01	100

The volatile organic analyses was extracted using a Zero Headspace Toxicity Characteristic Leaching Procedure (TCLP). The leachate was prepared according to the procedure as listed in the 49CFR March 29 and June 29 1990 Federal Registers.

A sample is considered to have failed the volatile TCLP test and is considered a hazardous waste if any of the volatile compounds exceed the maxima limits as listed in the last column. These limits have been taken from the March 29, Federal Register , pp 11845-6.

Respectfully submitted,

Dr. James R. Graham, Ph.D
Technical Director

UTM 005734

his report is submitted in confidence to the above named client. Authorization for publication of this report, conclusions, r extracts from or regarding it is restricted without written approval of Westates Carbon, Inc. as a mutual protection to our clients, the public and ourselves.