MACTEC

April 26, 2005

PN 3618058008

Mr. Wes LaParl
Technical BRAC Environmental Coordinator
Stratford Army Engine Plant
550 Main Street
Stratford, CT 06615

SUBJECT: Supplemental RI Soil Vapor Monitoring Data
March 2005 Monitoring Round
Stratford Army Engine Plant
Stratford, Connecticut

Dear Mr. LaParl:

The purpose of this technical memorandum is to summarize results of the March 2005 Soil Vapor Monitoring Round conducted at the Stratford Army Engine Plant (SAEP) by MACTEC Engineering and Consulting, Inc. (MACTEC E&C) from March 15 through 17, 2005.

INSTALLATION OF ADDITIONAL PERMANENT SOIL VAPOR MONITORING POINTS

During the period of March 15 through March 17, 2005, a total of seven permanent soil vapor probes were installed beneath the floors of buildings B-6 and B-16 to augment the existing soil vapor monitoring network. Figure 1 presents the locations of the soil vapor probes installed in March 2005.

At the building B-6 new monitoring point locations, a diamond concrete coring drill was used to core through the concrete floor slabs. The core size allowed for the penetration of the secondary slab beneath the existing floor to accommodate the installation of soil vapor probes, and for the placement of protective casings and cement to hold them in place. At the building B-16 new monitoring point locations, a hammer drill and carbide tipped bit were advanced through the concrete floor slab. The drill bit size allowed for the installation of soil vapor robes, protective casings, and cement to hold them in place.

Using direct-push techniques (Geoprobe™), soil vapor probes were installed using a 1.25-inch rod, such that the bottoms of the probes were 28-to-66-inches beneath the surface of the floor or pavement. Probe depth was dependant upon subsurface soil locations and conditions at each location. Soil vapor monitoring probes consist of 0.5-inch diameter, woven stainless steel screen approximately 21 inches in length. The lower ends of the probes were screwed into an expendable point and the upper end was fitted with a barbed fitting for connection of 0.25-inch OD/0.17-inch ID low-density polyethylene tubing (LDPE) that can be extended above the floor surface for sampling. The annular space around, and generally the first few inches above, each sampling probe was filled with 60- to 100-mesh glass beads to create a permeable layer. The annulus above the glass beads for each probe was then filled with a sand and granular bentonite mixture to seal the annulus. Expanding and anchoring cement was placed above the sand and granular bentonite seal and allowed to set for at least 24 hours. Based on the positive performance of the expanding and anchoring cement, placed above the sand and granular bentonite seal and integrity seal testing

performed during March 2004, integrity seal testing was not performed during the March 2005 soil vapor probe installation.

Each vapor monitoring point in building B-6 was finished with a flush-mount protective casing installed level with the surface of the surrounding floor and securely cemented in place. Each probe in building B-16 was finished with a PVC stick-up and securely cemented in place. Soil vapor probe installation diagrams are provided as Attachment 1.

SAMPLE COLLECTION AND ANALYSIS

Soil vapor samples were collected from 43 locations at SAEP from March 16 through March 17, 2005. The locations of soil vapor monitoring points from which samples were collected are indicated on Figure 2.

At each vapor monitoring location, the flush mount protective casing was opened, and the LDPE tubing connected to the screen point was connected to a quick release, barbed fitting. Using a new section of LDPE tubing, a one-liter Tedlar® bag, labeled with the sample location was connected to the sampling tee located inside an SKC Vac-U-Chamber™. The sample valve on the Tedlar® bag was opened one full rotation counter-clockwise. The quick release fitting was introduced into the purge port of the Vac-U-Chamber™ and the cover closed. A Gillian™ brand or similar personal monitoring pump was connected to the exhaust port in the Vac-U-Chamber™. The personal monitoring pump was calibrated prior to draw 0.5 liters per minute (L/min.) of air. The pump was turned on and allowed to run for four minutes, effectively purging two liters of soil vapor from the sampling location. After four minutes, the quick release connection was transferred to the sample inlet port in the Vac-U-Chamber™ and the Tedlar® bag was observed through the viewing port until it was filled. Upon completion of filling, the pump was turned off. The release valve in the Vac-U-Chamber™ was opened to allow the chamber to equilibrate. The Vac-U-Chamber™ was opened and the Tedlar® bag sampling valve was closed. The Tedlar® bag was then removed and labeled with the date and time of sample collection and the initials of the sampling personnel. Sampling information and observations were recorded in the field log book and on the chain-of-custody.

Since the holding time for chlorinated VOCs in a Tedlar® bag is only 3 days (see Table 6-1 of the QAPP), soil vapor samples were shipped to the analytical laboratory via overnight delivery on the day they were sampled. Samples were kept out of direct light to minimize the potential for loss, reaction, or degradation of VOCs.

A trip blank (TBK031605) was submitted with the Tedlar® bags. The trip blank was prepared by collecting an aliquot of outdoor ambient air from an upwind location. The trip blank collection process was performed using the Vac-U-Chamber™.

A duplicate sample was collected at a rate of 1 per 20 samples (see section 3.1.2.3 of the SAP). The duplicate was collected immediately after sampling the initial sample for that location. The collection process was the same as the initial soil vapor sample collection process.

Soil vapor samples were submitted to Air Toxics Ltd. in Folsom, California for analysis of vinyl chloride, 1,1-dichloroethene (1,1-DCE), 1,1,1-trichloroethane (1,1,1-TCA), trichlorothene (TCE), tetrachloroethene (PCE), cis-1,2-dichloroethene (cis-1,2-DCE), and trans-1,2-dichloroethene

(trans-1,2-DCE) by modified USEPA method TO-15 (direct-inject) using gas chromatography/mass spectrometry. A syringe was used to remove an aliquot from the Tedlar® bag and was introduced into the injection port of the GC/MS via direct injection with the sample containing syringe. Data was received by MACTEC E&C on April 1, 2005, and has undergone data validation procedures, as presented in Attachment 2.

ANALYTICAL RESULTS

On March 20, 2003, the Connecticut Department of Environmental Protection (CTDEP) issued a memorandum indicating proposed changes in the Industrial/Commercial Soil Vapor Volatilization Criteria (I/C SV VC). The following Table presents the 1995 I/C SV VC and the proposed 2003 I/C SV VC.

Chemical of Concern	1995 I/C SV VC (ppmv)	Proposed 2003 I/C SV VC (ppmv)
1,1,1-TCA	4520	130
1,1-DCE	1	7
PCE	27	1
TCE	16	0 26
cis-1,2-DCE	NA	35
trans-1,2-DCE	NA	70
vinyl chloride	1	1

Notes NA – None available

Concentrations of chlorinated volatile organic compounds detected in this round of soil vapor monitoring have been compared to the proposed 2003 I/C SV VC. Analytical results indicate concentrations of TCE exceed I/C SV VC at eight, and PCE exceed I/C SV VC at three, of the 43 monitoring locations (see Table 1). The following table summarizes the locations and concentrations of samples collected which had analyte concentrations exceeding the proposed 2003 I/C SV VC:

Location ID	Sample Location	TCE Conc. (ppmv)	PCE Conc. (ppmv)	Factor of Conc. Exceeding IATC (TCE/PCE)
SVM-04-29	Building B-3	NE	1.4	NE/1 4
SVM-04-34	Building B-3	0 54	1.6	2 1/1 6
SVM-04-36	Building B-3	0 47	1.3	1 8/1 3
SVM-04-38	Building B-3	2 9	NE	11 2/NE
SVM-04-39	Building B-3	0 42	NE	1 6/NE
SVM-04-40	Building B-3	0 67	NE	2 6/NE
SVM-04-48	Building B-3A	5 1	NE	19 6/NE
SVM-04-49	Building B-3A	0 94	NE	3 6/NE
SVM-04-74	Building B-16	0 55	NE	2 1/NE

Notes NE – No Exceedance

A comparison of the March 2005 soil vapor monitoring data to other monitoring rounds will be conducted following the third round of 2005 monitoring.

If you have any questions or issues concerning this memorandum, please contact me at (207) 775-5401.

Sincerely,

MACTEC Engineering and Consulting, Inc.

D. Roderick Pendleton

Rod Pendleton, P.G.
Project Manager/Principal Scientist

Enclosures

cc: File PN 3618058008/4.1-Reports

FIGURES

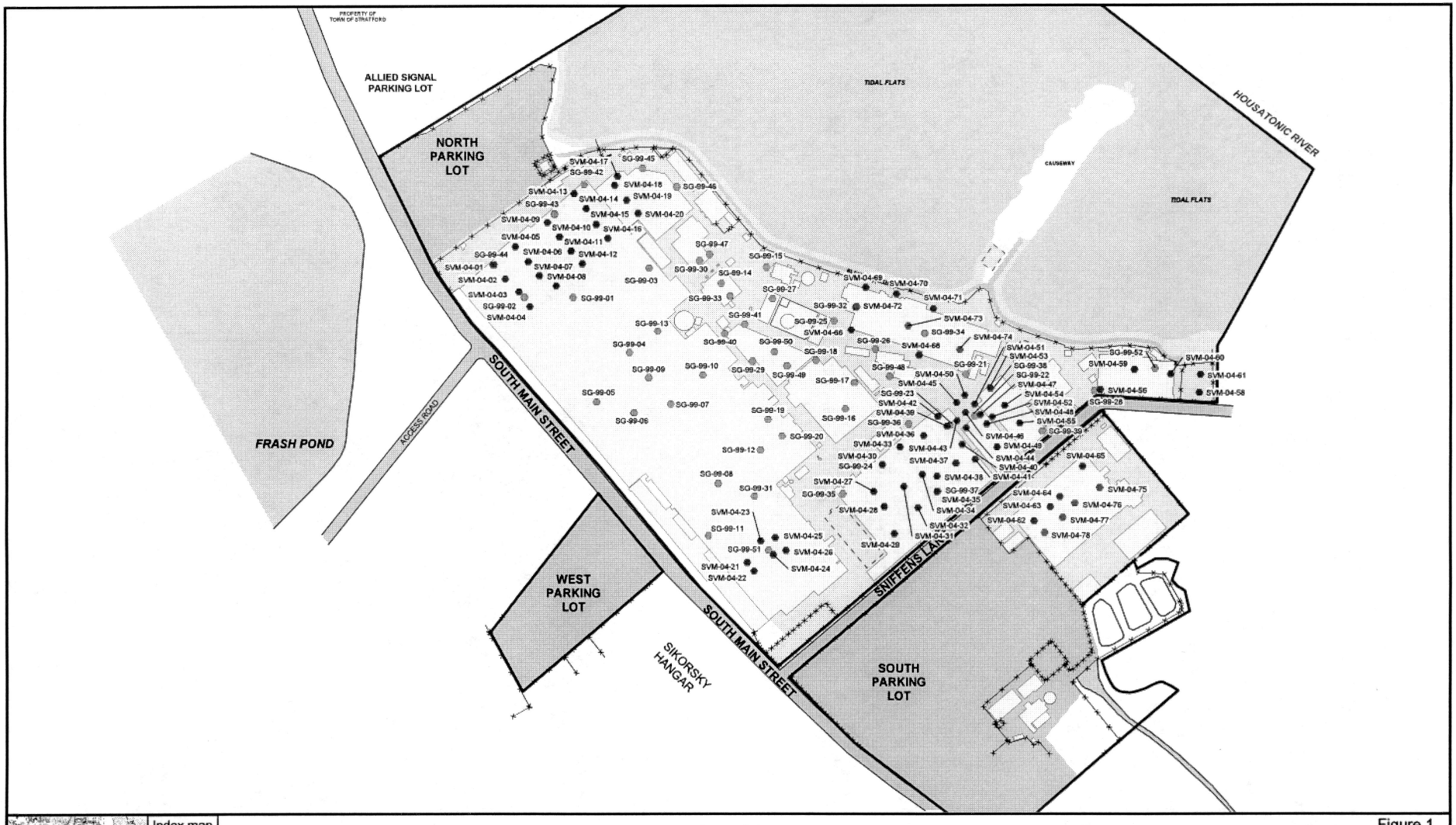

Figure 1
Soil Vapor Monitoring Locations

Stratford Army Engine Plant
Stratford, Connecticut
MACTEC Engineering and Consulting, Inc.

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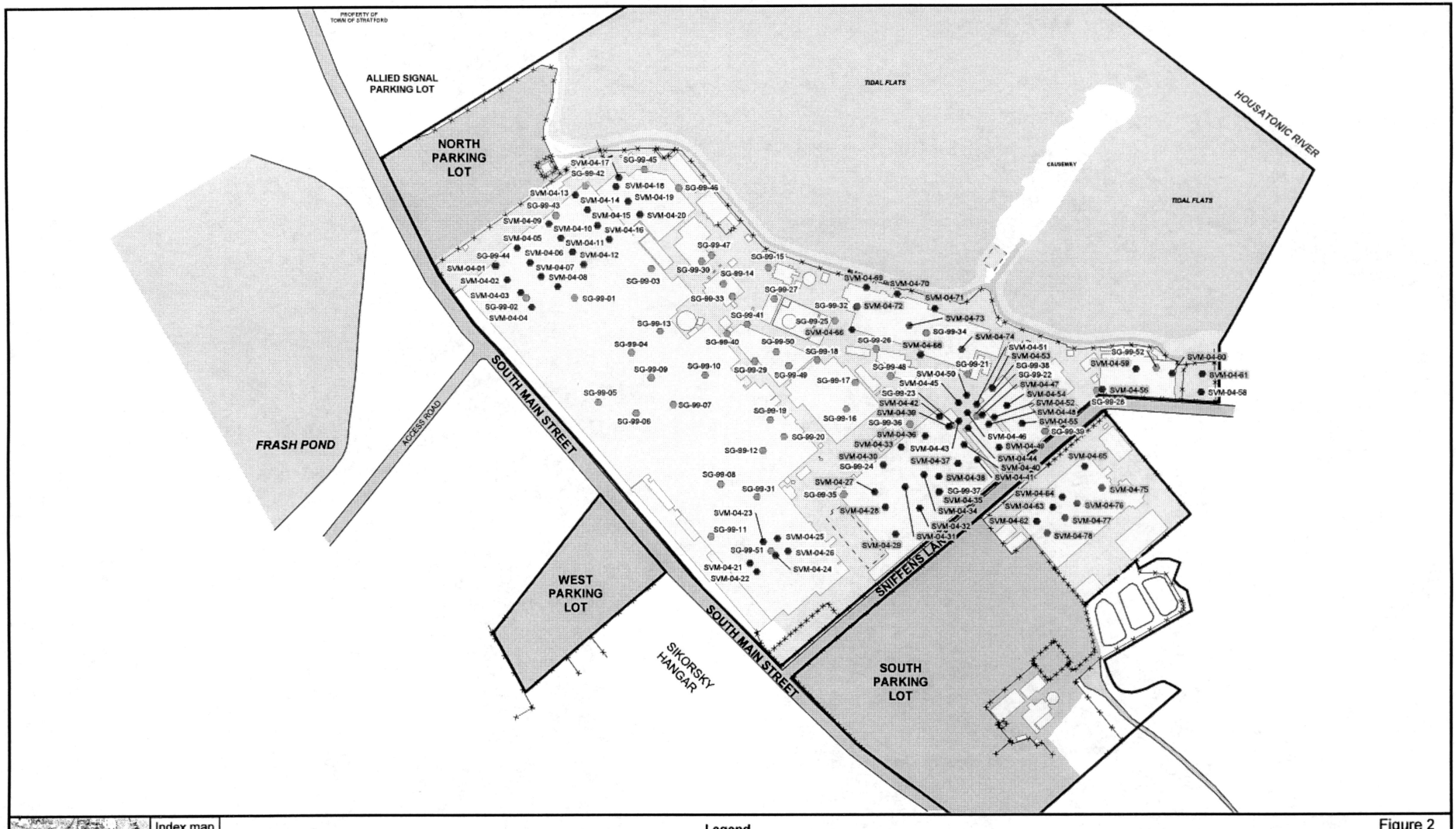

Index map

N

0 150 300 Feet

Prepared by BRP | Checked by WDC

Legend

- 1999 Soil Vapor Sampling Locations
- Soil Vapor Monitoring Points Installed March 2004
- Soil Vapor Monitoring Points Installed March 2005

SVM-04-54 Highlight Denotes Sampled March 2005

Figure 2
Soil Vapor Monitoring Locations
Sampled March 2005

Stratford Army Engine Plant
Stratford, Connecticut
MACTEC Engineering and Consulting, Inc.

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TABLES

TABLE 1
MARCH 2005 SOIL VAPOR MONITORING DATA

STRATFORD ARMY ENGINE PLANT
Stratford, Connecticut

LOC_ID	LAB SAMPLE ID	SAMPLE DATE	PARAMETER	RESULT	FINAL QUALIFIER	UNITS	CTDEP I/C SV VC*
SVM-04-27	0503312A-10A	3/16/2005	1,1,1-Trichloroethane	0.038		PPMV	130
SVM-04-27	0503312A-10A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-27	0503312A-10A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-27	0503312A-10A	3/16/2005	Tetrachloroethene	0.22		PPMV	1
SVM-04-27	0503312A-10A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-27	0503312A-10A	3/16/2005	Trichloroethene	0.12		PPMV	0.26
SVM-04-27	0503312A-10A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-28	0503312A-11A	3/16/2005	1,1,1-Trichloroethane	0.012		PPMV	130
SVM-04-28	0503312A-11A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-28	0503312A-11A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-28	0503312A-11A	3/16/2005	Tetrachloroethene	0.075		PPMV	1
SVM-04-28	0503312A-11A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-28	0503312A-11A	3/16/2005	Trichloroethene	0.03		PPMV	0.26
SVM-04-28	0503312A-11A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-29	0503312A-17A	3/16/2005	1,1,1-Trichloroethane	0.022		PPMV	130
SVM-04-29	0503312A-17A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-29	0503312A-17A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-29	0503312A-17A	3/16/2005	Tetrachloroethene	1.4		PPMV	1
SVM-04-29	0503312A-17A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-29	0503312A-17A	3/16/2005	Trichloroethene	0.2		PPMV	0.26
SVM-04-29	0503312A-17A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-30	0503312A-09A	3/16/2005	1,1,1-Trichloroethane	0.0098		PPMV	130
SVM-04-30	0503312A-09A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-30	0503312A-09A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-30	0503312A-09A	3/16/2005	Tetrachloroethene	0.1		PPMV	1
SVM-04-30	0503312A-09A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-30	0503312A-09A	3/16/2005	Trichloroethene	0.1		PPMV	0.26
SVM-04-30	0503312A-09A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-31	0503312A-12A	3/16/2005	1,1,1-Trichloroethane	0.0098		PPMV	130
SVM-04-31	0503312A-12A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-31	0503312A-12A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-31	0503312A-12A	3/16/2005	Tetrachloroethene	0.29		PPMV	1
SVM-04-31	0503312A-12A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-31	0503312A-12A	3/16/2005	Trichloroethene	0.16		PPMV	0.26
SVM-04-31	0503312A-12A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-32	0503312B-36A	3/16/2005	1,1,1-Trichloroethane	0.014		PPMV	130
SVM-04-32	0503312B-36A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-32	0503312B-36A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-32	0503312B-36A	3/16/2005	Tetrachloroethene	0.25		PPMV	1
SVM-04-32	0503312B-36A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-32	0503312B-36A	3/16/2005	Trichloroethene	0.23		PPMV	0.26
SVM-04-32	0503312B-36A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-33	0503312A-08A	3/16/2005	1,1,1-Trichloroethane	0.031		PPMV	130
SVM-04-33	0503312A-08A	3/16/2005	1,1-Dichloroethene	0.0055		PPMV	7
SVM-04-33	0503312A-08A	3/16/2005	Cis-1,2-Dichloroethene	0.009		PPMV	35
SVM-04-33	0503312A-08A	3/16/2005	Tetrachloroethene	0.31		PPMV	1
SVM-04-33	0503312A-08A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-33	0503312A-08A	3/16/2005	Trichloroethene	0.14		PPMV	0.26

TABLE 1
MARCH 2005 SOIL VAPOR MONITORING DATA

STRATFORD ARMY ENGINE PLANT
Stratford, Connecticut

LOC_ID	LAB SAMPLE ID	SAMPLE DATE	PARAMETER	RESULT	FINAL QUALIFIER	UNITS	CTDEP I/C SV VC*
SVM-04-33	0503312A-08A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-34	0503312A-13A	3/16/2005	1,1,1-Trichloroethane	0.2		PPMV	130
SVM-04-34	0503312A-13A	3/16/2005	1,1-Dichloroethene	0.028		PPMV	7
SVM-04-34	0503312A-13A	3/16/2005	Cis-1,2-Dichloroethene	0.01		PPMV	35
SVM-04-34	0503312A-13A	3/16/2005	Tetrachloroethene	1.6		PPMV	1
SVM-04-34	0503312A-13A	3/16/2005	trans-1,2-Dichloroethene	0.008		PPMV	70
SVM-04-34	0503312A-13A	3/16/2005	Trichloroethene	0.54		PPMV	0.26
SVM-04-34	0503312A-13A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-35	0503312B-35A	3/16/2005	1,1,1-Trichloroethane	0.005	U	PPMV	130
SVM-04-35	0503312B-35A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-35	0503312B-35A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-35	0503312B-35A	3/16/2005	Tetrachloroethene	0.02		PPMV	1
SVM-04-35	0503312B-35A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-35	0503312B-35A	3/16/2005	Trichloroethene	0.042		PPMV	0.26
SVM-04-35	0503312B-35A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-36	0503312A-07A	3/16/2005	1,1,1-Trichloroethane	0.033		PPMV	130
SVM-04-36	0503312A-07A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-36	0503312A-07A	3/16/2005	Cis-1,2-Dichloroethene	0.21		PPMV	35
SVM-04-36	0503312A-07A	3/16/2005	Tetrachloroethene	1.3		PPMV	1
SVM-04-36	0503312A-07A	3/16/2005	trans-1,2-Dichloroethene	0.0081		PPMV	70
SVM-04-36	0503312A-07A	3/16/2005	Trichloroethene	0.47		PPMV	0.26
SVM-04-36	0503312A-07A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-37	0503312A-14A	3/16/2005	1,1,1-Trichloroethane	0.034		PPMV	130
SVM-04-37	0503312A-14A	3/16/2005	1,1-Dichloroethene	0.0056		PPMV	7
SVM-04-37	0503312A-14A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-37	0503312A-14A	3/16/2005	Tetrachloroethene	0.51		PPMV	1
SVM-04-37	0503312A-14A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-37	0503312A-14A	3/16/2005	Trichloroethene	0.12		PPMV	0.26
SVM-04-37	0503312A-14A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-38	0503312B-34A	3/16/2005	1,1,1-Trichloroethane	0.04		PPMV	130
SVM-04-38	0503312B-34A	3/16/2005	1,1-Dichloroethene	0.0076		PPMV	7
SVM-04-38	0503312B-34A	3/16/2005	Cis-1,2-Dichloroethene	0.029		PPMV	35
SVM-04-38	0503312B-34A	3/16/2005	Tetrachloroethene	0.46		PPMV	1
SVM-04-38	0503312B-34A	3/16/2005	trans-1,2-Dichloroethene	0.018		PPMV	70
SVM-04-38	0503312B-34A	3/16/2005	Trichloroethene	2.9		PPMV	0.26
SVM-04-38	0503312B-34A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-39	0503312A-16A	3/16/2005	1,1,1-Trichloroethane	0.0068		PPMV	130
SVM-04-39	0503312A-16A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-39	0503312A-16A	3/16/2005	Cis-1,2-Dichloroethene	0.068		PPMV	35
SVM-04-39	0503312A-16A	3/16/2005	Tetrachloroethene	0.64		PPMV	1
SVM-04-39	0503312A-16A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-39	0503312A-16A	3/16/2005	Trichloroethene	0.42		PPMV	0.26
SVM-04-39	0503312A-16A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-40	0503312A-15A	3/16/2005	1,1,1-Trichloroethane	0.0094		PPMV	130
SVM-04-40	0503312A-15A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-40	0503312A-15A	3/16/2005	Cis-1,2-Dichloroethene	0.027		PPMV	35
SVM-04-40	0503312A-15A	3/16/2005	Tetrachloroethene	0.5		PPMV	1
SVM-04-40	0503312A-15A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70

TABLE 1
MARCH 2005 SOIL VAPOR MONITORING DATA

STRATFORD ARMY ENGINE PLANT
Stratford, Connecticut

LOC_ID	LAB SAMPLE ID	SAMPLE DATE	PARAMETER	RESULT	FINAL QUALIFIER	UNITS	CTDEP I/C SV VC*
SVM-04-40	0503312A-15A	3/16/2005	Trichloroethene	0.67		PPMV	0.26
SVM-04-40	0503312A-15A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-41	0503312B-33A	3/16/2005	1,1,1-Trichloroethane	0.0062		PPMV	130
SVM-04-41	0503312B-33A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-41	0503312B-33A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-41	0503312B-33A	3/16/2005	Tetrachloroethene	0.14		PPMV	1
SVM-04-41	0503312B-33A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-41	0503312B-33A	3/16/2005	Trichloroethene	0.2		PPMV	0.26
SVM-04-41	0503312B-33A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-42	0503312A-06A	3/16/2005	1,1,1-Trichloroethane	0.005	U	PPMV	130
SVM-04-42	0503312A-06A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-42	0503312A-06A	3/16/2005	Cis-1,2-Dichloroethene	0.021		PPMV	35
SVM-04-42	0503312A-06A	3/16/2005	Tetrachloroethene	0.22		PPMV	1
SVM-04-42	0503312A-06A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-42	0503312A-06A	3/16/2005	Trichloroethene	0.26		PPMV	0.26
SVM-04-42	0503312A-06A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-44	0503312B-29A	3/16/2005	1,1,1-Trichloroethane	0.005	U	PPMV	130
SVM-04-44	0503312B-29A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-44	0503312B-29A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-44	0503312B-29A	3/16/2005	Tetrachloroethene	0.0061		PPMV	1
SVM-04-44	0503312B-29A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-44	0503312B-29A	3/16/2005	Trichloroethene	0.0064		PPMV	0.26
SVM-04-44	0503312B-29A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-47	0503312B-30A	3/16/2005	1,1,1-Trichloroethane	1.1		PPMV	130
SVM-04-47	0503312B-30A	3/16/2005	1,1-Dichloroethene	0.14		PPMV	7
SVM-04-47	0503312B-30A	3/16/2005	Cis-1,2-Dichloroethene	0.011		PPMV	35
SVM-04-47	0503312B-30A	3/16/2005	Tetrachloroethene	0.47		PPMV	1
SVM-04-47	0503312B-30A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-47	0503312B-30A	3/16/2005	Trichloroethene	0.23		PPMV	0.26
SVM-04-47	0503312B-30A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-48	0503312B-31A	3/16/2005	1,1,1-Trichloroethane	0.69		PPMV	130
SVM-04-48	0503312B-31A	3/16/2005	1,1-Dichloroethene	0.075		PPMV	7
SVM-04-48	0503312B-31A	3/16/2005	Cis-1,2-Dichloroethene	0.006	U	PPMV	35
SVM-04-48	0503312B-31A	3/16/2005	Tetrachloroethene	1		PPMV	1
SVM-04-48	0503312B-31A	3/16/2005	trans-1,2-Dichloroethene	0.006	U	PPMV	70
SVM-04-48	0503312B-31A	3/16/2005	Trichloroethene	5.1		PPMV	0.26
SVM-04-48	0503312B-31A	3/16/2005	Vinyl chloride	0.006	U	PPMV	1
SVM-04-49	0503312B-32A	3/16/2005	1,1,1-Trichloroethane	0.027		PPMV	130
SVM-04-49	0503312B-32A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-49	0503312B-32A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-49	0503312B-32A	3/16/2005	Tetrachloroethene	0.088		PPMV	1
SVM-04-49	0503312B-32A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-49	0503312B-32A	3/16/2005	Trichloroethene	0.94		PPMV	0.26
SVM-04-49	0503312B-32A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-52	0503312B-37A	3/16/2005	1,1,1-Trichloroethane	0.005	U	PPMV	130
SVM-04-52	0503312B-37A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-52	0503312B-37A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-52	0503312B-37A	3/16/2005	Tetrachloroethene	0.005	U	PPMV	1

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SVM-04-52	0503312B-37A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-52	0503312B-37A	3/16/2005	Trichloroethene	0.005	U	PPMV	0.26
SVM-04-52	0503312B-37A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-53	0503312B-27A	3/16/2005	1,1,1-Trichloroethane	0.005	U	PPMV	130
SVM-04-53	0503312B-27A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-53	0503312B-27A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-53	0503312B-27A	3/16/2005	Tetrachloroethene	0.048		PPMV	1
SVM-04-53	0503312B-27A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-53	0503312B-27A	3/16/2005	Trichloroethene	0.005	U	PPMV	0.26
SVM-04-53	0503312B-27A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-54	0503312B-28A	3/16/2005	1,1,1-Trichloroethane	0.028		PPMV	130
SVM-04-54	0503312B-28A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-54	0503312B-28A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-54	0503312B-28A	3/16/2005	Tetrachloroethene	0.072		PPMV	1
SVM-04-54	0503312B-28A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-54	0503312B-28A	3/16/2005	Trichloroethene	0.11		PPMV	0.26
SVM-04-54	0503312B-28A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-55	0503312B-26A	3/16/2005	1,1,1-Trichloroethane	0.016		PPMV	130
SVM-04-55	0503312B-26A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-55	0503312B-26A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-55	0503312B-26A	3/16/2005	Tetrachloroethene	0.034		PPMV	1
SVM-04-55	0503312B-26A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-55	0503312B-26A	3/16/2005	Trichloroethene	0.012		PPMV	0.26
SVM-04-55	0503312B-26A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-56	0503312B-25A	3/16/2005	1,1,1-Trichloroethane	0.024		PPMV	130
SVM-04-56	0503312B-25A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-56	0503312B-25A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-56	0503312B-25A	3/16/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-56	0503312B-25A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-56	0503312B-25A	3/16/2005	Trichloroethene	0.005	U	PPMV	0.26
SVM-04-56	0503312B-25A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-59	0503312B-24A	3/16/2005	1,1,1-Trichloroethane	1.1		PPMV	130
SVM-04-59	0503312B-24A	3/16/2005	1,1-Dichloroethene	0.13		PPMV	7
SVM-04-59	0503312B-24A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-59	0503312B-24A	3/16/2005	Tetrachloroethene	0.01		PPMV	1
SVM-04-59	0503312B-24A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-59	0503312B-24A	3/16/2005	Trichloroethene	0.0085		PPMV	0.26
SVM-04-59	0503312B-24A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-60	0503312B-23A	3/16/2005	1,1,1-Trichloroethane	0.01		PPMV	130
SVM-04-60	0503312B-23A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-60	0503312B-23A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-60	0503312B-23A	3/16/2005	Tetrachloroethene	0.0062		PPMV	1
SVM-04-60	0503312B-23A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-60	0503312B-23A	3/16/2005	Trichloroethene	0.005	U	PPMV	0.26
SVM-04-60	0503312B-23A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-61	0503312A-04A	3/16/2005	1,1,1-Trichloroethane	0.005	U	PPMV	130
SVM-04-61	0503312A-04A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-61	0503312A-04A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35

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SVM-04-61	0503312A-04A	3/16/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-61	0503312A-04A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-61	0503312A-04A	3/16/2005	Trichloroethene	0.043		PPMV	0.26
SVM-04-61	0503312A-04A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-62	0503350-05A	3/17/2005	1,1,1-Trichloroethane	0.005	U	PPMV	130
SVM-04-62	0503350-05A	3/17/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-62	0503350-05A	3/17/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-62	0503350-05A	3/17/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-62	0503350-05A	3/17/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-62	0503350-05A	3/17/2005	Trichloroethene	0.005	U	PPMV	0.26
SVM-04-62	0503350-05A	3/17/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-63	0503350-06A	3/17/2005	1,1,1-Trichloroethane	0.36		PPMV	130
SVM-04-63	0503350-06A	3/17/2005	1,1-Dichloroethene	0.024		PPMV	7
SVM-04-63	0503350-06A	3/17/2005	Cis-1,2-Dichloroethene	0.018		PPMV	35
SVM-04-63	0503350-06A	3/17/2005	Tetrachloroethene	0.035		PPMV	1
SVM-04-63	0503350-06A	3/17/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-63	0503350-06A	3/17/2005	Trichloroethene	0.15		PPMV	0.26
SVM-04-63	0503350-06A	3/17/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-64	0503350-08A	3/17/2005	1,1,1-Trichloroethane	0.016		PPMV	130
SVM-04-64	0503350-08A	3/17/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-64	0503350-08A	3/17/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-64	0503350-08A	3/17/2005	Tetrachloroethene	0.0053	J	PPMV	1
SVM-04-64	0503350-08A	3/17/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-64	0503350-08A	3/17/2005	Trichloroethene	0.011		PPMV	0.26
SVM-04-64	0503350-08A	3/17/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-65	0503350-07A	3/17/2005	1,1,1-Trichloroethane	0.023		PPMV	130
SVM-04-65	0503350-07A	3/17/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-65	0503350-07A	3/17/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-65	0503350-07A	3/17/2005	Tetrachloroethene	0.0066		PPMV	1
SVM-04-65	0503350-07A	3/17/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-65	0503350-07A	3/17/2005	Trichloroethene	0.022		PPMV	0.26
SVM-04-65	0503350-07A	3/17/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-66	0503312B-19A	3/16/2005	1,1,1-Trichloroethane	0.071		PPMV	130
SVM-04-66	0503312B-19A	3/16/2005	1,1-Dichloroethene	0.0098		PPMV	7
SVM-04-66	0503312B-19A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-66	0503312B-19A	3/16/2005	Tetrachloroethene	0.059		PPMV	1
SVM-04-66	0503312B-19A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-66	0503312B-19A	3/16/2005	Trichloroethene	0.049		PPMV	0.26
SVM-04-66	0503312B-19A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-68	0503312B-20A	3/16/2005	1,1,1-Trichloroethane	0.005	U	PPMV	130
SVM-04-68	0503312B-20A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-68	0503312B-20A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-68	0503312B-20A	3/16/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-68	0503312B-20A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-68	0503312B-20A	3/16/2005	Trichloroethene	0.012		PPMV	0.26
SVM-04-68	0503312B-20A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-69	0503312A-03A	3/16/2005	1,1,1-Trichloroethane	0.02		PPMV	130
SVM-04-69	0503312A-03A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7

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SVM-04-69	0503312A-03A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-69	0503312A-03A	3/16/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-69	0503312A-03A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-69	0503312A-03A	3/16/2005	Trichloroethene	0.032		PPMV	0.26
SVM-04-69	0503312A-03A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-70	0503312B-21A	3/16/2005	1,1,1-Trichloroethane	0.79		PPMV	130
SVM-04-70	0503312B-21A	3/16/2005	1,1-Dichloroethene	0.094		PPMV	7
SVM-04-70	0503312B-21A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-70	0503312B-21A	3/16/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-70	0503312B-21A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-70	0503312B-21A	3/16/2005	Trichloroethene	0.011		PPMV	0.26
SVM-04-70	0503312B-21A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-71	0503312B-22A	3/16/2005	1,1,1-Trichloroethane	0.27		PPMV	130
SVM-04-71	0503312B-22A	3/16/2005	1,1-Dichloroethene	0.033		PPMV	7
SVM-04-71	0503312B-22A	3/16/2005	Cis-1,2-Dichloroethene	0.038		PPMV	35
SVM-04-71	0503312B-22A	3/16/2005	Tetrachloroethene	0.13		PPMV	1
SVM-04-71	0503312B-22A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-71	0503312B-22A	3/16/2005	Trichloroethene	0.028		PPMV	0.26
SVM-04-71	0503312B-22A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-72	0503312A-02A	3/16/2005	1,1,1-Trichloroethane	0.012		PPMV	130
SVM-04-72	0503312A-02A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-72	0503312A-02A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-72	0503312A-02A	3/16/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-72	0503312A-02A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-72	0503312A-02A	3/16/2005	Trichloroethene	0.068		PPMV	0.26
SVM-04-72	0503312A-02A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-73	0503312A-01A	3/16/2005	1,1,1-Trichloroethane	0.013		PPMV	130
SVM-04-73	0503312A-01A	3/16/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-73	0503312A-01A	3/16/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-73	0503312A-01A	3/16/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-73	0503312A-01A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-73	0503312A-01A	3/16/2005	Trichloroethene	0.085		PPMV	0.26
SVM-04-73	0503312A-01A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-74	0503312A-05A	3/16/2005	1,1,1-Trichloroethane	0.044		PPMV	130
SVM-04-74	0503312A-05A	3/16/2005	1,1-Dichloroethene	0.009		PPMV	7
SVM-04-74	0503312A-05A	3/16/2005	Cis-1,2-Dichloroethene	0.029		PPMV	35
SVM-04-74	0503312A-05A	3/16/2005	Tetrachloroethene	0.009		PPMV	1
SVM-04-74	0503312A-05A	3/16/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-74	0503312A-05A	3/16/2005	Trichloroethene	0.55		PPMV	0.26
SVM-04-74	0503312A-05A	3/16/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-75	0503350-04A	3/17/2005	1,1,1-Trichloroethane	0.018		PPMV	130
SVM-04-75	0503350-04A	3/17/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-75	0503350-04A	3/17/2005	Cis-1,2-Dichloroethene	0.41		PPMV	35
SVM-04-75	0503350-04A	3/17/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-75	0503350-04A	3/17/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-75	0503350-04A	3/17/2005	Trichloroethene	0.046		PPMV	0.26
SVM-04-75	0503350-04A	3/17/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-76	0503350-03A	3/17/2005	1,1,1-Trichloroethane	0.24		PPMV	130

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SVM-04-76	0503350-03A	3/17/2005	1,1-Dichloroethene	0.046		PPMV	7
SVM-04-76	0503350-03A	3/17/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-76	0503350-03A	3/17/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-76	0503350-03A	3/17/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-76	0503350-03A	3/17/2005	Trichloroethene	0.036		PPMV	0.26
SVM-04-76	0503350-03A	3/17/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-77	0503350-02A	3/17/2005	1,1,1-Trichloroethane	0.24		PPMV	130
SVM-04-77	0503350-02A	3/17/2005	1,1-Dichloroethene	0.085		PPMV	7
SVM-04-77	0503350-02A	3/17/2005	Cis-1,2-Dichloroethene	0.041		PPMV	35
SVM-04-77	0503350-02A	3/17/2005	Tetrachloroethene	0.033		PPMV	1
SVM-04-77	0503350-02A	3/17/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-77	0503350-02A	3/17/2005	Trichloroethene	0.037		PPMV	0.26
SVM-04-77	0503350-02A	3/17/2005	Vinyl chloride	0.005	U	PPMV	1
SVM-04-78	0503350-01A	3/17/2005	1,1,1-Trichloroethane	0.0067		PPMV	130
SVM-04-78	0503350-01A	3/17/2005	1,1-Dichloroethene	0.005	U	PPMV	7
SVM-04-78	0503350-01A	3/17/2005	Cis-1,2-Dichloroethene	0.005	U	PPMV	35
SVM-04-78	0503350-01A	3/17/2005	Tetrachloroethene	0.005	U	PPMV	1
SVM-04-78	0503350-01A	3/17/2005	trans-1,2-Dichloroethene	0.005	U	PPMV	70
SVM-04-78	0503350-01A	3/17/2005	Trichloroethene	0.0069		PPMV	0.26
SVM-04-78	0503350-01A	3/17/2005	Vinyl chloride	0.005	U	PPMV	1

Notes: Shading indicates analyte concentration exceeds CTDEP I/C SV VC

* Proposed March 2003 CTDEP Industrial/Commercial Soil Vapor Volatilization Criteria

PPMV - parts per million by volume

ATTACHMENT 1

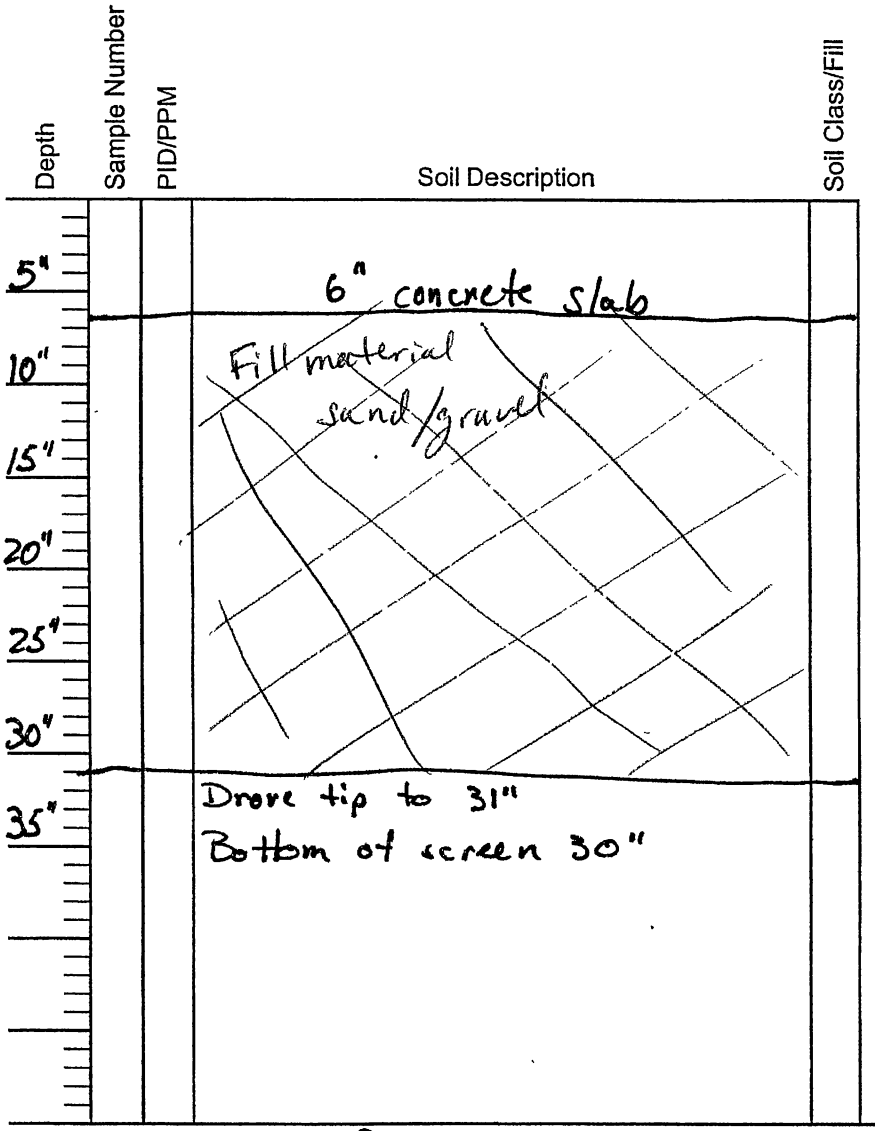
SOIL VAPOR PROBE INSTALLATION DIAGRAMS

Soil Vapor Boring Log and Monitoring Point Construction Diagram

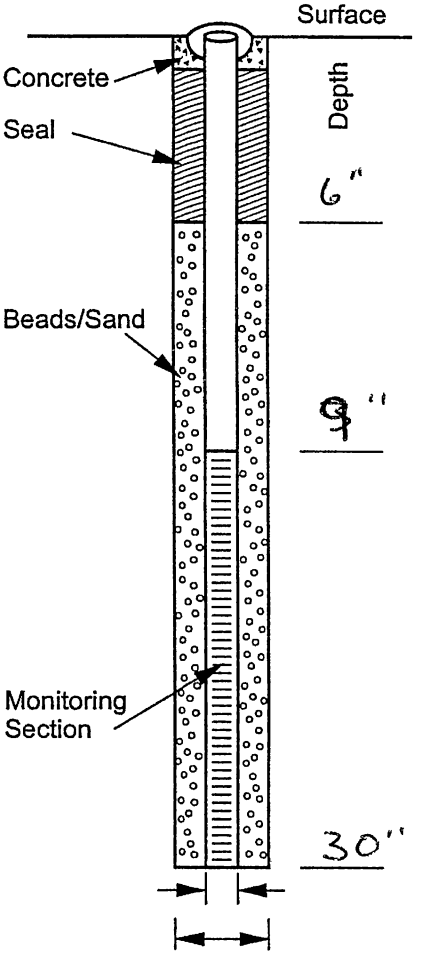
Stratford Army Engine Plant

Project No. ~~3618038008~~ 3/11/05
36180580008.04.04.4

Exploration ID: SVM-04-72
Date Started: 3/14/05
Date Completed: 3/14/05
Logged By: WDCalvin



Vapor Monitoring Point Construction Details



Comments/Observations: Rebar observed at 4" bgs and 6" bgs. ~~n~~ ½" rebar. Installed 1½ PUC as protective riser. Sweet solvent odor initial 1" ~~concrete~~ concrete. Building 16.

Notes:

1. Scales of soil descriptions and monitoring details are not necessarily the same.
2. Soil class is noted only if soils are undisturbed native soils.
3. Was surface seal integrity test performed? ☐ Yes ☑ No _____ Date - Results

MACTEC

W2004013a.cdr

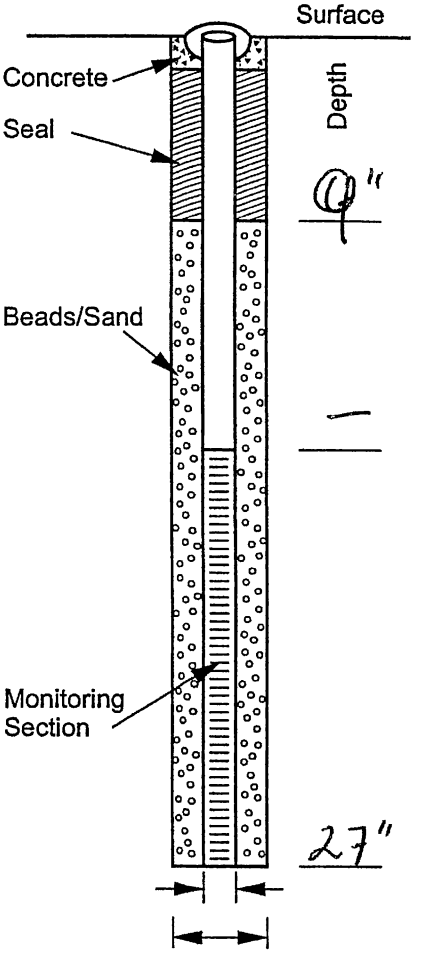
Soil Vapor Boring Log and Monitoring Point Construction Diagram
~~Stratford Army Engine Plant~~

Project No. ~~36180580008~~ 3/11/05
36180580008.04.04.4

Exploration ID: SVM-04-73
Date Started: 3/14/05
Date Completed: 3/14/05
Logged By: W. Patterson

Depth	Sample Number	PID/PPM	Soil Description	Soil Class/Fill
5			Concrete slab	
10			Fill material - sand/gravel	
15				
20				
25				
30			Bottom of point 28" bgs.	
35			Bottom of screen 27" bgs.	

Vapor Monitoring Point Construction Details



Comments/Observations: Building 16

Sweet, solvent odor initial 1" concrete

Notes:

1. Scales of soil descriptions and monitoring details are not necessarily the same.
2. Soil class is noted only if soils are undisturbed native soils.
3. Was surface seal integrity test performed? ☐ Yes ☑ No _____ Date - Results

W2004013a.cdr

MACTEC

Soil Vapor Boring Log and Monitoring Point Construction Diagram

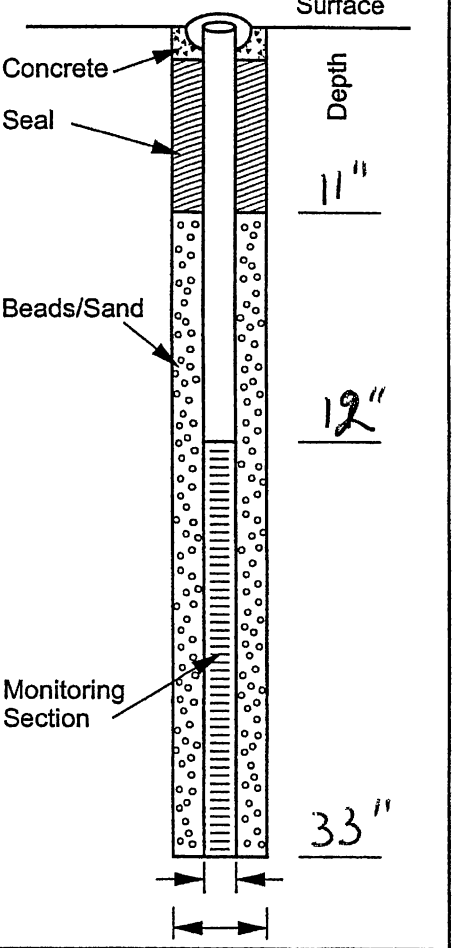
~~Stratford Army Engine Plant~~

Project No. ~~3618038008~~ (WO) 3/11/05
3618058008.04.04.4

Exploration ID: SVM-04-74
Date Started: 3/14/05
Date Completed: 3/14/05
Logged By:

Depth	Sample Number	PID/PPM	Soil Description	Soil Class/Fill
5			Concrete slab	
10				
15			Fill material: sand/gravel.	
20				
25				
30				
35			Bottom of point 34" bgs. Bottom of screen 33" bgs.	
40				
45				
50				

Vapor Monitoring Point Construction Details



Comments/Observations: Building 16

Sweet, solvent odor initial 1" concrete.

Notes:

1. Scales of soil descriptions and monitoring details are not necessarily the same.
2. Soil class is noted only if soils are undisturbed native soils.
3. Was surface seal integrity test performed? ☐ Yes ☑ No _____ Date - Results

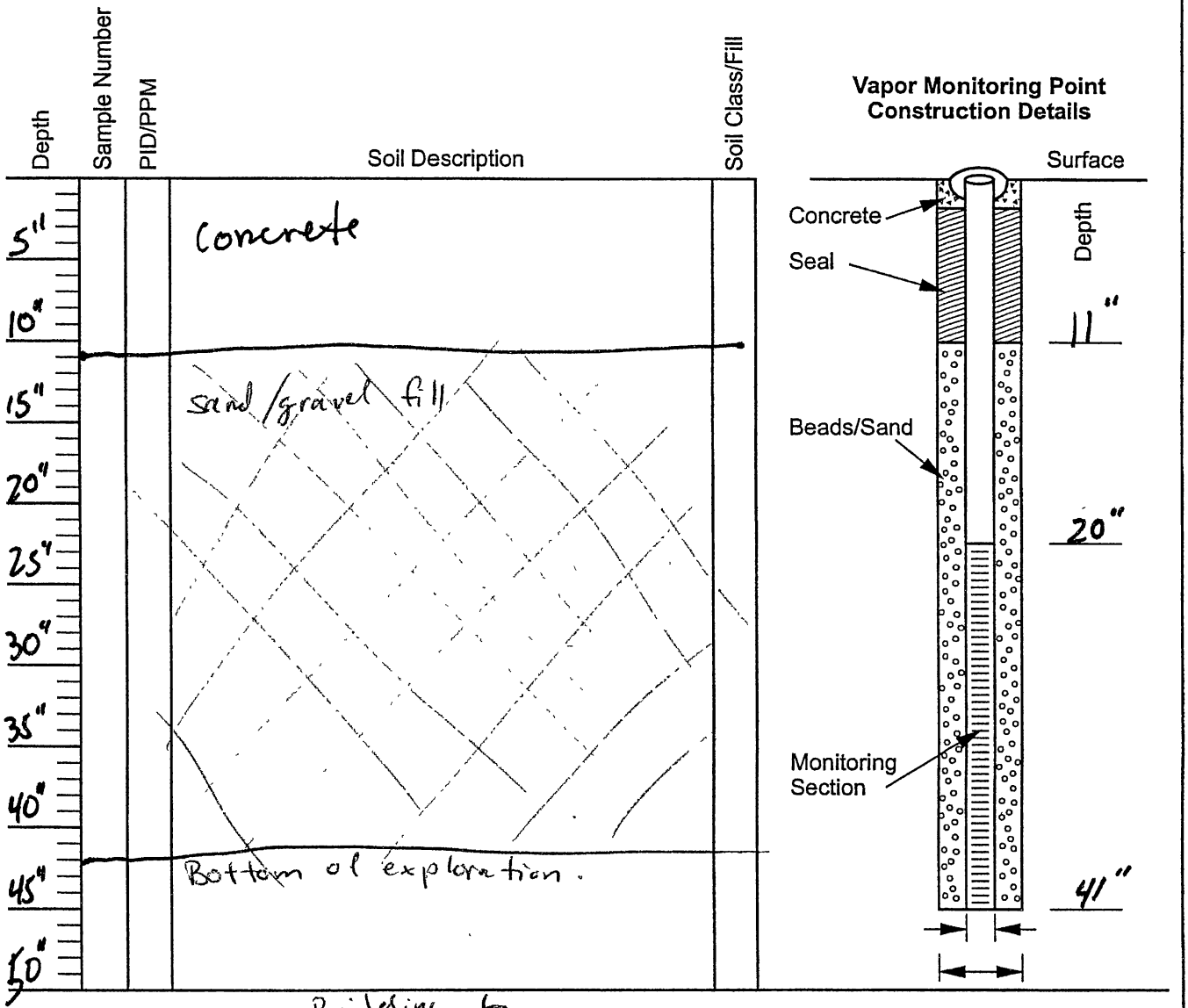
W2004013a.cdr

MACTEC

Soil Vapor Boring Log and Monitoring Point Construction Diagram
~~Stratford Army Engine Plant~~

Project No. ~~3618038008~~ @ 3/11/05
3618058008.04.04.4

Exploration ID: SVM-04-75
Date Started: 3/15/05
Date Completed: 3/15/05
Logged By: MSD Calantoni



Comments/Observations: Building 6.
Screen point at 42" bgs.
Bottom of screen at 41" bgs.

Notes:

1. Scales of soil descriptions and monitoring details are not necessarily the same.
2. Soil class is noted only if soils are undisturbed native soils.
3. Was surface seal integrity test performed? ☐ Yes ☑ No _____ Date - Results

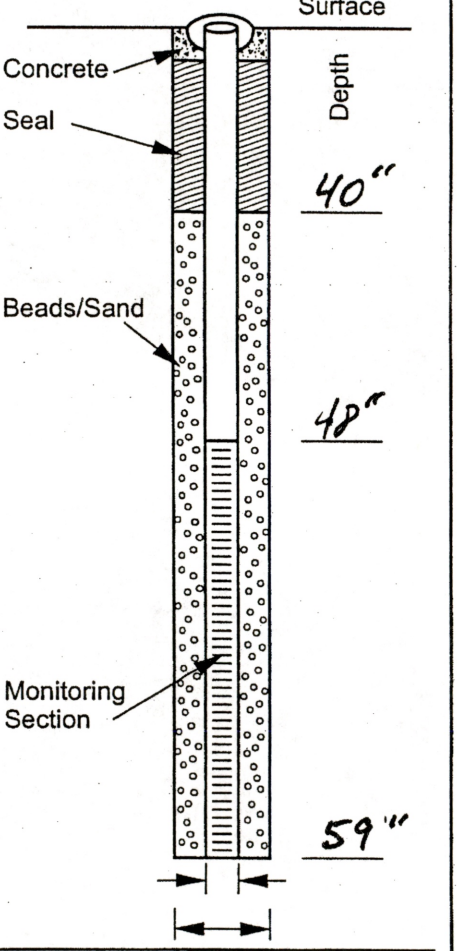
Soil Vapor Boring Log and Monitoring Point Construction Diagram
Stratford Army Engine Plant

Project No. ~~3618038008~~ (W) 3/11/05
3618058008.04.04.4

Exploration ID: SVM-04-76
Date Started: 3/15/05
Date Completed: 3/15/05
Logged By:

Depth	Sample Number	PID/PPM	Soil Description	Soil Class/Fill
5"			Concrete ~~slab~~ slab (C)	
10"				
15"			VOID SPACE	
20"				
25"			Fill material sand/gravel	
30"				
35"			Concrete slab	
40"				
45"			Fill material sand/gravel	
50"				

Vapor Monitoring Point Construction Details



SVM-04-7C

Comments/Observations: Building 6
1/2" rebar observed in top slab.
1/4" mesh observed in original slab.

secondary roll up
MAIN roll up

Notes: Screen point 60" bgs. Bottom of screen 59" bgs

1. Scales of soil descriptions and monitoring details are not necessarily the same.
2. Soil class is noted only if soils are undisturbed native soils.
3. Was surface seal integrity test performed? ☐ Yes ☑ No _____ Date - Results

MACTEC

W2004013a.cdr

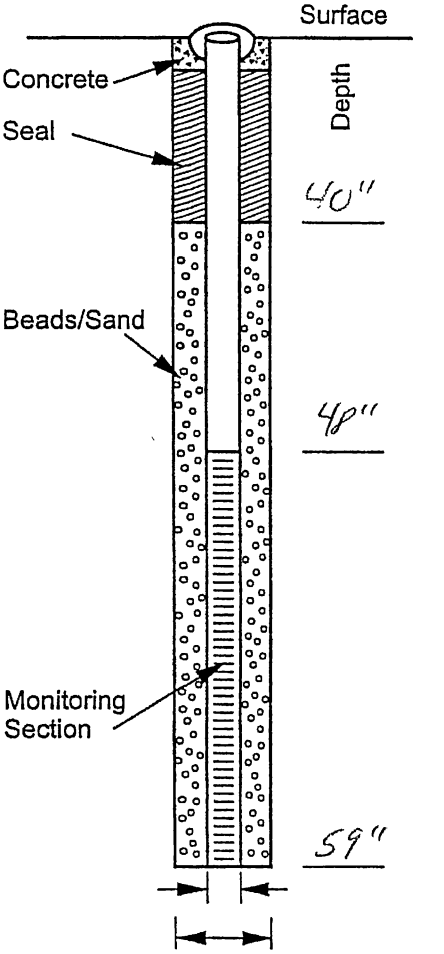
Soil Vapor Boring Log and Monitoring Point Construction Diagram
Stratford Army Engine Plant

Project No. ~~3618038008~~ (W) 3/16/05
36180 58008.04.04.4

Exploration ID: SVM-04-76
Date Started: 3/15/05
Date Completed: 3/15/05
Logged By: [signature]

Depth	Sample Number	PID/PPM	Soil Description	Soil Class/Fill
55"			Fill material: sand/gravel.	
60"				
65"			Bottom of exploration.	
70"				
75"				
80"				
85"				
90"				
95"				
100"				

Vapor Monitoring Point Construction Details



Comments/Observations: Building 6.

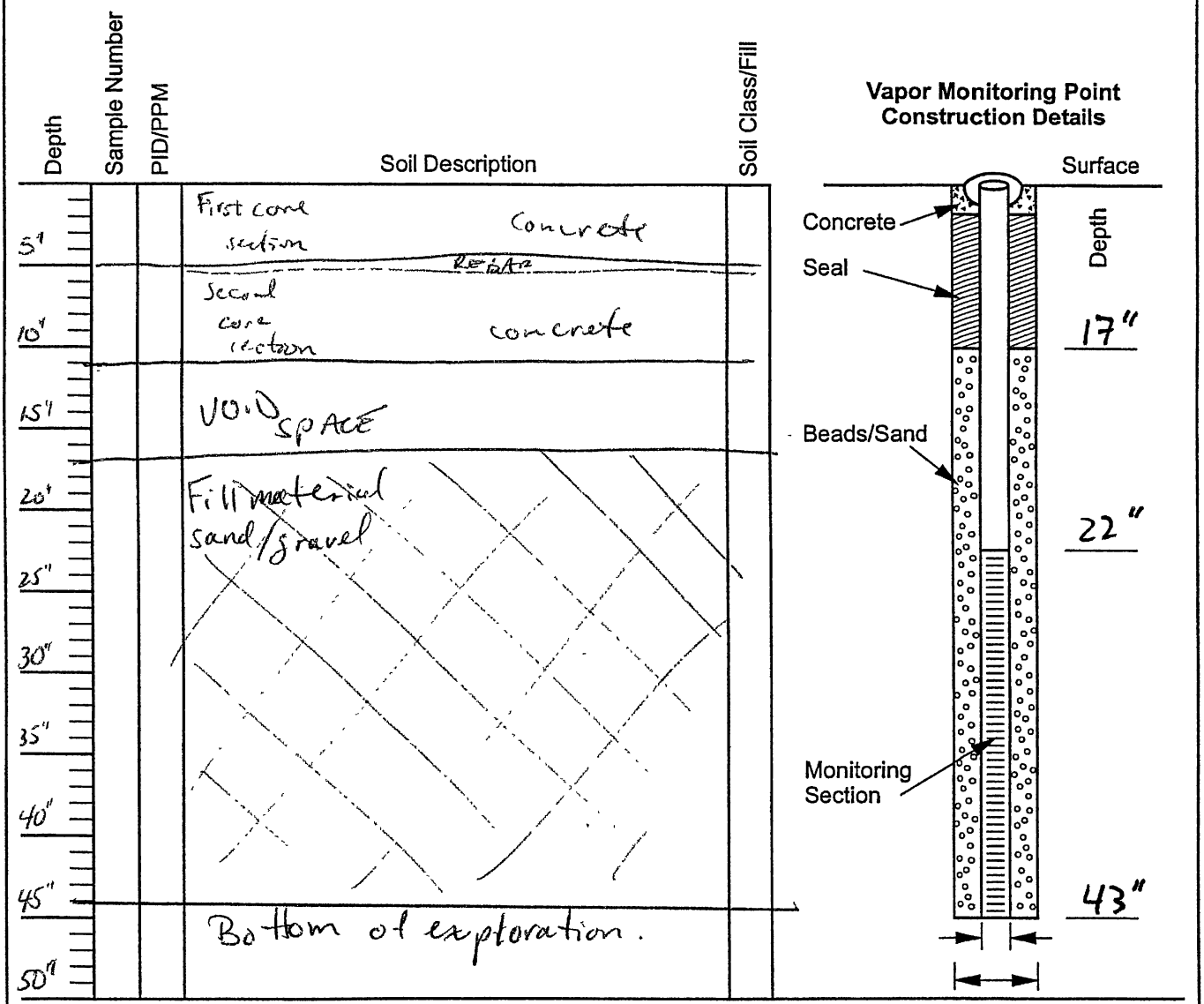
Notes:

1. Scales of soil descriptions and monitoring details are not necessarily the same.
2. Soil class is noted only if soils are undisturbed native soils.
3. Was surface seal integrity test performed? ☐ Yes ☑ No Date - Results

Soil Vapor Boring Log and Monitoring Point Construction Diagram
~~Stratford Army Engine Plant~~

Project No. ~~3618038008~~ 3/11/05
3618058008.04.04.4

Exploration ID: SVM-04-77
Date Started: 3/15/05
Date Completed: 3/15/05
Logged By: WDC



Comments/Observations: Building 6
Bottom of point 47" bgs.
Bottom of screen 43" bgs.

Notes:

1. Scales of soil descriptions and monitoring details are not necessarily the same.
2. Soil class is noted only if soils are undisturbed native soils.
3. Was surface seal integrity test performed? ☐ Yes ☑ No _____ Date - Results

MACTEC

W2004013a.cdr

Soil Vapor Boring Log and Monitoring Point Construction Diagram
Stratford Army Engine Plant

Exploration ID: SVM-04-78

Date Started: 3/15/05

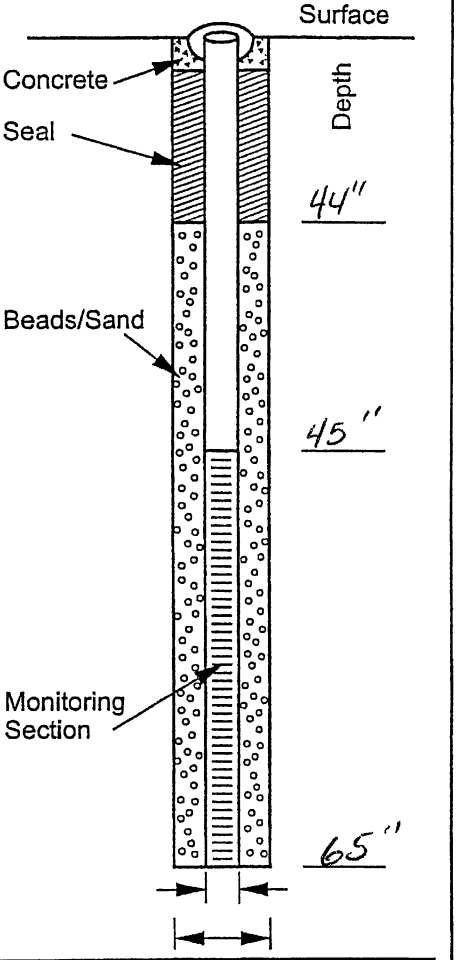
Date Completed: 3/15/05

Logged By: [illegible]

Project No. ~~3618038008~~ 3/11/05
3618058008.04.04.4

Depth	Sample Number	PID/PPM	Soil Description	Soil Class/Fill
5"			steel U-rail runs through	
10"			concrete slab	
15"			rebar	
20"				
25"				
30"			Concrete	
35"			rebar	
40"			rebar	
45"			Fill material sand/gravel	
50"				

Vapor Monitoring Point Construction Details



Comments/Observations: Building 6. Top 12" of concrete appears to be filled pit.

1 of 2

Notes:

1. Scales of soil descriptions and monitoring details are not necessarily the same.
2. Soil class is noted only if soils are undisturbed native soils.
3. Was surface seal integrity test performed? ☐ Yes ☑ No _____ Date - Results

MACTEC

W2004013a.cdr

Soil Vapor Boring Log and Monitoring Point Construction Diagram
Stratford Army Engine Plant

Exploration ID: SVM-04-78

Date Started: 3/15/05

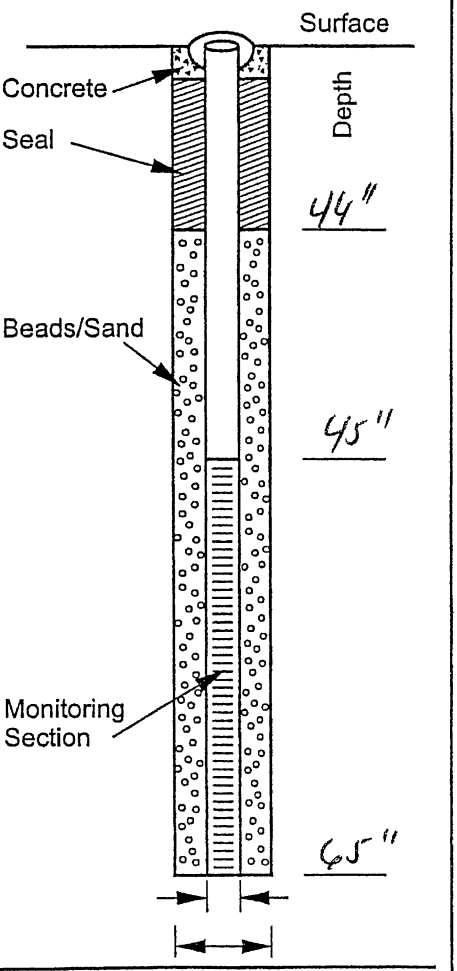
Date Completed: 3/15/05

Logged By: [illegible]

Project No. ~~3618038008~~ 3/11/05
3618058008.04.04.4

Depth	Sample Number	PID/PPM	Soil Description	Soil Class/Fill
55"			Fill material sand/gravel	
60"				
65"			Bottom of exploration	
70"				
75"				
80"				
85"				
90"				
95"				
100"				

Vapor Monitoring Point Construction Details



Comments/Observations: Building 6.
Bottom of point 66" bgs. Water observed below this.
Bottom of screen 65" bgs

2 of 2.

Notes:

1. Scales of soil descriptions and monitoring details are not necessarily the same.
2. Soil class is noted only if soils are undisturbed native soils.
3. Was surface seal integrity test performed? ☐ Yes ☑ No _____ Date - Results

MACTEC

W2004013a.cdr

ATTACHMENT 2

CHAIN OF CUSTODY RECORDS

@ AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Contact Person [illegible]
Company [illegible] Email
Address [illegible] City [illegible] State ME Zip [illegible]
Phone [illegible] Fax
Collected by: (Signature)

Project Info:
PO #
Project # [illegible]
Project Name SAEP Visit

Turn Around Time:
☑ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Date	Time	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
	SVM 04-73	3/16/05	10:03	(10-15 Day Turnaround Laboratory)				
	SVM-04-72	3/16/05	10:31					
	SVM-04-69	3/16/05	11:06					
	SVM 04-01	3/16/05	11:35					
	SVM-04-[illegible]	3/16/05	12:15					
	SVM-04-[illegible]	3/16/05	12:47					
	SVM-04-30	3/16/05	13:54					
	SVM-04-33	3/16/05	[illegible]					
	SVM 04-[illegible]	3/16/05	[illegible]					
	SVM 04-27	3/16/05	13:22					

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	Notes: Target Analytes
[illegible] 3/16/05 13:21		TCE PCE 1,1-DCE cis-1,2-DCE Vinyl Chloride
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	trans-1,2-DCE
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact? Yes No None	Work Order #

Form 1293 rev 10

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

CHAIN-OF-CUSTODY RECORD

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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Contact Person _____

Company _____ Email _____

Address _____ City _____ State _____ Zip _____

Phone _____ Fax _____

Collected by: (Signature) _____

Project Info:

P.O # _____

Project # _____

Project Name _____

Turn Around Time:

☐ Normal

☐ Rush

_____ specify

Lab Use Only

Pressurized by: _____

Date: _____

Pressurization Gas:

N_2 He

Lab I.D.	Field Sample I.D. (Location)	Date	Time	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
	SVM-04 - 28							
	SVM-04 - 31							
	SVM-04 - 34							
	SVM-04 - 37							
	SVM-04 - 40							
	SVM-04 - 43							
	SVM-04 - 46							
	SVM-04 - 49							
	SVM-04 - 52							
	SVM-04 - 55							

Relinquished by. (signature)	Date/Time	Received by: (signature)	Date/Time	Notes:
Relinquished by. (signature)	Date/Time	Received by: (signature)	Date/Time	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time	

Lab Use Only

Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact? Yes No None	Work Order #

Form 1293 rev 10

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CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Contact Person _____

Company _____ Email _____

Address _____ City _____ State _____ Zip _____

Phone _____ Fax _____

Collected by: (Signature) _____

Project Info:

P.O. # _____

Project # _____

Project Name _____

Turn Around Time:

☑ Normal

☐ Rush

_____ specify

Lab Use Only

Pressurized by: _____

Date: _____

Pressurization Gas:

N_2 He

Lab I.D.	Field Sample I.D. (Location)	Date	Time	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)

Relinquished by (signature) Date/Time	Received by. (signature) Date/Time	**Notes:**
Relinquished by: (signature) Date/Time	Received by. (signature) Date/Time	
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	

Lab Use Only

Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact? Yes No None	Work Order #

Form 1293 rev 10

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CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

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180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Contact Person Rod Swilley

Company MACTEC E+C Email

Address 511 Coolidge City Portland State OR Zip 97232

Phone 503 828 3600 Fax

Collected by: (Signature)

Project Info:

P.O #

Project # 3612C-5300-RA-01.4

Project Name SAED Vapor

Turn Around Time:

☑ Normal

☐ Rush

specify

Lab Use Only

Pressurized by:

Date:

Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Date	Time	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
	SVM-04-44	5/10/05	1220	TO-15 Dist Full Client List (VOC)				
	SVM-04-43							
	SVM-04-42							
	SVM-04-41							
	SVM-04-40							
	SVM-04-39		1421					
	SVM-04-38							
	SVM-04-37							
	SVM-04-52							
	~~SVM-04-TRIP Blank~~							

Relinquished by: (signature)	Date/Time	Received by (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by. (signature)	Date/Time
Relinquished by. (signature)	Date/Time	Received by: (signature)	Date/Time

Notes: Target Analytes

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact? Yes No None	Work Order #

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CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Contact Person: Rod Pendleton
Company: MACTEC [illegible] Email:
Address: [illegible] City: [illegible] State: [illegible] Zip: [illegible]
Phone: [illegible] Fax: [illegible]
Collected by: (Signature)

Project Info:
P.O. #
Project #: 3613058008.04.04
Project Name: SAEP Vapor

Turn Around Time: ☑ Normal ☐ Rush ______ specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Date	Time	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
	SVM-04-[illegible]	[illegible]	7:58	TO-15 (Short Target Chlorinated VOCs)	[illegible]	[illegible]		
	SVM-04-[illegible]	[illegible]	[illegible]	↓	↓	↓		
	SVM-04-[illegible]	[illegible]	[illegible]	↓	↓	↓		
	SVM-04-[illegible]	[illegible]	[illegible]	↓	↓	↓		
	SVM-04-[illegible]	[illegible]	[illegible]	↓	↓	↓		
	SVM-04-[illegible]	[illegible]	[illegible]	↓	↓	↓		
	SVM-04-[illegible]	[illegible]	[illegible]	↓	↓	↓		
	SVM-04-[illegible]	[illegible]	[illegible]	↓	↓	↓		
	SVM-04-[illegible]	[illegible]	[illegible]	↓	↓	↓		
	~~SVM-04~~							

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	Notes:
[illegible]		Target Analytes:
		1,1,1-TCA; 1,1-DCA; cis-1,2-DCE; Trans-1,2-DCE; PCE; TCE; Vinyl Chloride

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
					Yes No None	

ATTACHMENT 3

DATA VALIDATION REPORT

Supplemental RI Soil Vapor Monitoring
Data Validation Report
Soil Vapor Monitoring Conducted March 16-17, 2005
Stratford Army Engine Plant

I. INTRODUCTION

A Tier II and ten percent Tier III data validation in accordance with USEPA Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses (USEPA, 1996) was performed on the analytical data for air samples collected by MACTEC Engineering and Consulting (formerly Harding ESE) at the Stratford Army Engine Plant (SAEP) Site. Samples for Soil Vapor Monitoring were collected on March16th and March 17th, 2005. All samples were analyzed by Air Toxics Ltd., located in Folsom, CA. Air Toxics performed VOC air analysis on one-liter Tedlar Bags via EPA method modified TO-15 using GC/MS in the SIM acquisition mode.

Field Sample ID	Lab Sample ID	Sample Date	QC Type
SVM-04-73	0503312A-01A	3/16/05	
SVM-04-72	0503312A-02A	3/16/05	
SVM-04-69	0503312A-03A	3/16/05	
SVM-04-61	0503312A-04A	3/16/05	
SVM-04-74	0503312A-05A	3/16/05	
SVM-04-42	0503312A-06A	3/16/05	
SVM-04-36	0503312A-07A	3/16/05	
SVM-04-33	0503312A-08A	3/16/05	
SVM-04-30	0503312A-09A	3/16/05	
SVM-04-27	0503312A-10A	3/16/05	
SVM-04-28	0503312A-11A	3/16/05	
SVM-04-31	0503312A-12A	3/16/05	
SVM-04-34	0503312A-13A	3/16/05	
SVM-04-37	0503312A-15A	3/16/05	
SVM-04-40	0503312A-16A	3/16/05	
SVM-04-39	0503312A-17A	3/16/05	
SVM-04-33 Dup	0503312A-18A	3/16/05	Field Duplicate
SVM-04-66	0503312B-19A	3/16/05	
SVM-04-68	0503312B-20A	3/16/05	
SVM-04-70	0503312B-21A	3/16/05	
SVM-04-71	0503312B-22A	3/16/05	
SVM-04-60	0503312B-23A	3/16/05	
SVM-04-59	0503312B-24A	3/16/05	
SVM-04-56	0503312B-25A	3/16/05	
SVM-04-55	0503312B-26A	3/16/05	
SVM-04-53	0503312B-27A	3/16/05	
SVM-04-54	0503312B-28A	3/16/05	
SVM-04-44	0503312B-29A	3/16/05	
SVM-04-47	0503312B-30A	3/16/05	

Field Sample ID	Lab Sample ID	Sample Date	QC Type
SVM-04-48	0503312B-31A	3/16/05	
SVM-04-49	0503312B-32A	3/16/05	
SVM-04-41	0503312B-33A	3/16/05	
SVM-04-38	0503312B-34A	3/16/05	
SVM-04-35	0503312B-35A	3/16/05	
SVM-04-32	0503312B-36A	3/16/05	
SVM-04-52	0503312B-37A	3/16/05	
TBK031605	0503312B-38A	3/16/05	Trip Blank
SVM-04-78	0503350-01A	3/17/05	
SVM-04-77	0503350-02A	3/17/05	
SVM-04-76	0503350-03A	3/17/05	
SVM-04-75	0503350-04A	3/17/05	
SVM-04-62	0503350-05A	3/17/05	
SVM-04-63	0503350-06A	3/17/05	
SVM-04-65	0503350-07A	3/17/05	
SVM-04-64	0503350-08A	3/17/05	
SVM-04-64 DUP	0503350-09A	3/17/05	Field Duplicate

The samples were analyzed for the following seven volatile organic compounds:

- vinyl chloride
- 1,1-dichloroethene (1,1-DCE)
- 1,1,1-trichloroethane (1,1,1-TCA)
- trichloroethene (TCE)
- tetrachloroethene (PCE)
- cis-1,2-dichloroethene (cis-1,2-DCE)
- trans-1,2-dichloroethene (trans-1,2-DCE)

The following information was reviewed:

* Sample Collection Documentation and Data Completeness
* EDD verification vs. Summary Forms
* Preservation and Holding times
* GC/MS Performance Check (tuning)
* Initial Calibration
* Continuing Calibration
* QC Blanks
* Internal Standard Response
* Surrogate Recovery
* Spike Accuracy and Precision
* Field Duplicates
Laboratory Duplicates

* - All criteria were met for this parameter.

II. VALIDATION RESULTS AND ACTIONS

Holding Times

All samples were analyzed within the holding times (3 days from collection).

Instrument Tunes

The GC/MS instrument tunes were completed using the tuning compound bromofluorobenzene (BFB). All tunes met USEPA Region I validation criteria.

Initial Calibration

For the initial calibration curves applying to all volatile organics samples target analytes, the average Relative Response Factors (RRFs) for all target compounds were greater than the USEPA Region I minimum criterion of 0.05, indicating good response on the instrument was obtained for all compounds. The percent Relative Standard Deviations (%RSDs) of the RRFs over the five point calibration were less than the Region I goals of 30 percent for all initial calibrations.

Continuing Calibration

For the continuing calibration standards applying to all volatile organics samples target analytes, the RRFs for all seven target compounds were greater than the Region I minimum criterion of 0.05, indicating good response on the instrument was obtained for all compounds. The percent Differences (%Ds) between the RRFs and the initial calibration average RRFs were less than 25 percent for all continuing calibrations.

Method Blanks

For each analytical batch, a method blank was analyzed prior to sample analysis. All target analytes were non-detect.

Internal Standard Response

All internal standard areas and retention times were within USEPA Region I control limits as specified in the CLP Statement of Work (OLM03.1) and were within the laboratory's control limits.

Surrogate Recoveries

Surrogate recoveries were within the 70-130 percent control limits specified by the laboratory indicating good accuracy was observed for each sample.

Spike Recoveries

Laboratory control samples (LCS) had recoveries between 94 and 118 percent indicating good accuracy.

Duplicates

Field duplicates were collected and analyzed for sample locations SVM-04-33 and SVM-04-64. Laboratory duplicates were analyzed for samples SVM-04-34, SVM-04-36, SVM-04-47, SVM-04-49 and SVM-04-64DUP. Results of the field duplicate and laboratory duplicate analyzed are summarized in Table 1. A goal for relative percent difference (RPD) of 50 percent or less was used when evaluating the duplicate data.

Table 1

Sample ID	Analyte	Original Result (ppb/v)	Qual	Duplicate Result (ppb/v)	Qual	RPD (%)
SVM-04-33	1,1,1-Trichloroethene	0.031		0 032		**3**
SVM-04-33	Trichloroethene	0 14		0.14		**0**
SVM-04-33	Tetrachloroethene	0 31		0.35		**12**
SVM-04-33	1,1-Dichloroethene	0 0055		0.0052		**6**
SVM-04-33	cis-1,2-Dichloroethene	0.0090		0.0095		**5**
SVM-04-64	1,1,1-Trichloroethene	0.016		0.016		**0**
SVM-04-64	Trichloroethene	0.011		0.011		**0**
SVM-04-64	Tetrachloroethene	0.0053		0.0058		**9**
SVM-04-34	1,1,1-Trichloroethene	0.2		0 2		**0**
SVM-04-34	Trichloroethene	0.54		0.53		**2**
SVM-04-34	Tetrachloroethene	1.6		1.6		**0**
SVM-04-34	1,1-Dichloroethene	0 028		0.031		**10**
SVM-04-34	trans-1,2-Dichloroethene	0.008		0.0075		**6**
SVM-04-34	cis-1,2-Dichloroethene	0.01		0.01		**0**
SVM-04-36	1,1,1-Trichloroethene	0.033		0.032		**3**
SVM-04-36	Trichloroethene	0.47		0.46		**2**
SVM-04-36	Tetrachloroethene	1.3		1.3		**0**
SVM-04-36	trans-1,2-Dichloroethene	0.0081		0.0078		**4**
SVM-04-36	cis-1,2-Dichloroethene	0.21		0.21		**0**
SVM-04-47	1,1,1-Trichloroethene	1.1		1.1		**0**
SVM-04-47	Trichloroethene	0.23		0 22		**4**
SVM-04-47	Tetrachloroethene	0.47		0.46		**2**
SVM-04-47	1,1-Dichloroethene	0.14		0.13		**7**
SVM-04-47	cis-1,2-Dichloroethene	0 011		0.01		**10**
SVM-04-49	1,1,1-Trichloroethene	0.027		0.029		**7**
SVM-04-49	Trichloroethene	0.94		0.92		**2**
SVM-04-49	Tetrachloroethene	0.088		0.09		**2**
SVM-04-64 DUP	1,1,1-Trichloroethene	0.015		0.016		**7**
SVM-04-64 DUP	Trichloroethene	0.01		0.01		**8**
SVM-04-64 DUP	Tetrachloroethene	0 005	U	0.0058		**200**

The RPD for tetrachloroethene (200) in the laboratory duplicate analysis of sample SVM-04-64DUP exceeds the QC control limit of 50. Results for tetrachloroethene in samples SVM-04-64 and SVM-04-64DUP were qualified estimated (J).

References:

U.S Environmental Protection Agency (USEPA), 1996. "Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses;" QA Unit - Office of Environmental Measurement and Evaluation; USEPA Region I, New England; July 1996, Revised December 1996.

Data Validator: Wolfgang D. Calicchio

Signature: _____ Date: 18 April 2005