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THE MEMPHIS DEPOT TENNESSEE

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 954



Memorandum

To: Brian Renaghan, CIV AFCEE/EXA
Mike Dobbs, DES-DDC-EE

From: Tom Holmes
Steven Herrera, P.E.

Date: 30 September 2008

Re: **Fluvial Soil Vapor Extraction (SVE) – Operations Summary #7**
Dunn Field Source Areas Remedial Action
Defense Depot Memphis, Tennessee
FA8903-04-D-8722, TO 0031

This memorandum summarizes operations of the Fluvial SVE system from 2 May 2008 through 1 August 2008 (reporting period) and includes operational data and field and laboratory sampling results.

The Fluvial SVE system consists of two 13.1 hp regenerative blowers connected to seven SVE wells. The SVE wells have screen lengths of 25 to 35 feet with the screened interval ranging from 29 to 73 feet below ground surface. Condensate from the SVE wells is removed via a 140-gallon air/water separator and stored in a 535-gallon tank for analysis prior to discharge to the sewer system. If necessary to control VOC emissions, the extracted air flows through two 2,000-pound granular activated carbon (GAC) vessels prior to discharge. No emission controls are currently being used and extracted vapor is being emitted directly to atmosphere. There are 20 vapor monitoring points (VMPs) located 15 to 80 feet from the SVE wells. Fluvial SVE operations began on 25 July 2007. The Fluvial SVE system lay-out is shown on Figure 1.

FLUVIAL SVE OPERATIONS SUMMARY

System uptime was over 98% for the reporting period with both blowers in operation for 100% of the time. System shutdowns were made to collect photoionization detector (PID) measurements and laboratory samples at VMPs and to perform general system maintenance. Quarterly laboratory samples were collected from VMPs and SVE wells on 16 July 2008 and from system influent on 17 July 2008. The GAC treatment system remains offline due to low volatile organic compound (VOC) concentrations which are below Memphis Shelby County Health Department (MSCHD) permit limits.

System flow rates and vacuum measurements are shown on Table 1. Flow rates at individual wells are measured by a vane-type meters at the piping manifold. System flow rates are measured by a mass-flow meter. The system is currently operated with all SVE wells in the 100% open position. Individual well flow rates vary from 20 to 190 actual cubic feet per minute (acfm) with both blowers operating and are similar to previous readings. The lower flow rates

and higher vacuums at SVE-A and SVE-G are attributed to these wells being screened in tighter formations than other SVE wells. Combined flow from all SVE wells is approximately 740 standard cubic feet per minute (scfm) at 5.2 inches of mercury (in. Hg.) with both blowers operating.

Vacuum measurements collected at vapor monitoring points (VMPs) during the reporting period are shown on Table 2. Measurements continue to indicate vacuum influence at distances greater than 80 feet from all SVE wells.

PID FIELD MEASUREMENTS

VOC concentrations are estimated through field measurements at individual SVE wells, system influent, and VMPs with a MiniRae 2000 (10.6 eV lamp) PID. PID measurements are made by drawing vapor into a tedlar bag using a sampling pump.

PID measurements from SVE wells and system influent are shown on Table 3. System influent PID measurements ranged from 2.9 to 23.8 parts per million (ppm) during the reporting period. Increases in PID measurements at several SVE wells (SVE-B, -C, -D, and -G) and the system effluent since early June 2008 are attributed to thermal SVE operations; soil heating for the thermal SVE began on 27 May. PID readings showed little variation at SVE-A, -E, and -F since the onset of thermal SVE operations. The trend in PID measurements at SVE wells is shown on Figure 2.

Quarterly PID measurements at VMPs were collected on 16 July 2008. The SVE system is shutdown for two to four hours prior to the measurements. The VMPs are purged using the sampling pump until three consecutive PID readings are within 10%. The final PID measurements at each VMP are shown on Table 4. Increases in PID measurements (greater than 100%) were seen at several shallow VMPs (VMP-2B, -3B, -5B, -6B, -7B, and -8B). The trend in PID measurements at -A VMPs is shown on Figure 3 and -B VMPs on Figure 4.

LABORATORY ANALYSES

Annual VMP Samples

Laboratory samples were collected from all VMPs on 16 July 2008. Samples were collected in SUMMA canisters immediately following purging and PID measurements. Analytical results from the Baseline samples (collected on 25 July 2007 prior to system startup) and the Year 1 samples (collected on 16 July) are shown on Table 5. The table presents the analytical results for all constituents detected above the reporting limit in one or more samples. Large increases in CVOC concentrations were reported in VMP-2B, -3B, -5B, and -6B. CVOC concentrations in other VMPs have decreased over 90% from Baseline samples.

Quarterly SVE Samples

Laboratory samples were collected from all SVE wells on 16 July and from the system influent on 17 July 2008 (3Q08 event). Samples were collected directly into SUMMA canisters. Analytical results are shown on Table 6 for the influent system sample and on Table 7 for SVE well samples. Historical sample results for primary CVOC constituents at all SVE wells and system influent are on Table 8.

Total CVOCs in the 3Q08 treatment system influent (11,557 parts per billion by volume [ppbv]) continue to slowly decrease. The primary CVOCs detected in the influent sample are similar to

previous samples: trichloroethene (TCE) at 59%; 1,1,2,2-tetrachloroethane (TeCA) at 23%; cis-1,2-dichloroethene (cDCE) at 12%, and chloroform at 4%. System influent concentrations trends are plotted on Figure 5.

3Q08 CVOC concentrations increased significantly at SVE-C, SVE-D, and SVE-G. A significant decline was seen at SVE-A where total CVOC concentrations decreased to 24.1 parts per million by volume (ppbv) from 5,095 ppbv in 2Q08. CVOC concentrations at SVE-B and -E, continue to be fairly steady since 4Q07 (Table 8) and are below 40 ppbv (3Q08). Total VOC concentrations also continue to remain below 40 ppbv at SVE-F after peaking at 981 ppbv in 1Q08. The primary CVOC in each SVE well was TCE in SVE-A, -B, -D, -E and -F; TeCA in SVE-C; and chloroform at SVE-G. The trend in total VOC concentrations at SVE wells and influent is shown on Figure 6.

FLUVIAL SVE MASS ESTIMATES

VOC concentrations in the influent sample (based on TCE, the primary constituent), system operating hours and flow rates were used to calculate the VOC mass removed from the fluvial soils. VOC concentrations used for mass calculations are shown on Table 9. Mass emission calculations are shown on Table 10.

Influent emission rates are estimated at 0.17 pounds per hour (lb/hr). The MSCHD Operations Permit 01030-01PC for the Fluvial SVE system has a maximum VOC emission limit of 5.71 lb/hr. The Fluvial SVE system removed approximately 471 pounds of VOCs between the 2Q08 and 3Q08 sample events and 2,788 pounds of VOCs since system startup (Table 10).

CONCLUSIONS AND RECOMMENDATIONS

The fluvial SVE system continues to remove VOC mass from the fluvial subsurface. System uptime during the reporting period was above 98%. Approximately 2,788 pounds of VOCs have been removed from the subsurface since startup. The GAC filters remain offline with discharge directly to atmosphere based on continued emission rates well below permit limits.

3Q08 samples collected from SVE wells, system influent, and VMPs show that thermal SVE operations in the overlying loess formation are contributing to increases in CVOC concentrations at several wells and VMPs. At VMPs, the increases were limited to shallower (-B) VMPs while concentrations generally decreased in deeper (-A) VMPs. Increasing soil temperature from the thermal SVE operations are apparently mobilizing CVOCs from the loess into the upper fluvial formation. Increased CVOC concentrations were also evident in SVE-C, -D, and -G.

System influent total CVOC concentrations were at 11,557 ppbv and continue to show an asymptotic decreasing trend. TCE continues to be the primary CVOC detected in the system influent (comprising 59% of the total concentration).

Based on the quarterly sample results and field measurements, VOC mass remains in the Fluvial subsurface and continued SVE operations are warranted at all SVE wells. Weekly PID readings from the system influent and SVE wells will be used to monitor system emissions and the impact from the thermal SVE system. PID readings will be collected from VMPs on a quarterly basis. Laboratory samples will be collected from SVE wells and system influent in October 2008 (4Q08 event).

TABLES

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TABLE 1
SYSTEM FLOW RATE AND VACUUM READINGS
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Date/Time of Recording	Number of Blowers in Operation	SVE-A		SVE-B		SVE-C		SVE-D		SVE-E		SVE-F		SVE-G		System	
		Flow rate (scfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (scfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (scfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (scfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (scfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (scfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (scfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (scfm)	Vacuum (in. Hg.) ⁽²⁾
7/25/2007 16:00	2	80	5.0	150	3.0	180	2.5	145	3.0	145	3.0	145	3.0	50	5.0	785	4.86
7/27/2007 07:45	2	80	5.0	140	3.0	145	2.0	150	3.5	145	3.6	140	3.0	40	5.0	748	4.87
7/28/2007 11:30	2	80	5.5	140	3.0	145	2.0	150	3.5	160	4.0	140	3.0	30	5.0	741	5.03
7/29/2007 07:40	2	80	6.0	145	3.5	145	2.0	150	3.5	160	4.0	140	3.0	30	5.0	740	4.88
7/30/2007 12:42	2	80	6.4	145	3.5	148	2.1	150	3.5	150	3.8	140	3.0	40	5.0	738	4.93
7/31/2007 10:59	2	80	6.0	145	3.5	145	2.3	145	3.5	150	3.9	145	3.0	40	5.0	740	4.87
8/1/2007 13:48	2	80	6.0	145	3.5	145	2.3	145	3.5	150	3.9	145	3.0	40	5.0	740	4.87
8/3/2007 12:00		Readings not recorded. ⁽³⁾															
8/15/2007 13:00	1	20	3.0	100	2.0	115	<1 ⁽⁴⁾	110	2.0	110	<1 ⁽⁴⁾	110	<1 ⁽⁴⁾	20	2.0	602	2.36
8/16/2007 12:30	1	40	3.0	100	2.0	100	<1 ⁽⁴⁾	100	2.0	100	2.0	100	2.0	<20	1.5	597	2.74
8/17/2007 12:00	1	20	3.0	100	2.0	100	<1 ⁽⁴⁾	100	2.0	100	1.5	100	1.5	<20	2.5	608	2.77
8/20/2007 07:34	1	20	3.2	100	2.0	100	<1 ⁽⁴⁾	100	2.0	100	2.0	100	2.0	<20	3.0	608	2.87
8/21/2007 07:30	1	40	3.5	90	2.0	100	<1 ⁽⁴⁾	100	2.0	90	<1 ⁽⁴⁾	90	<1 ⁽⁴⁾	<20	3.0	593	3.13
8/22/2007 07:45	1	50	4.0	100	2.0	100	<1 ⁽⁴⁾	100	2.0	100	<1 ⁽⁴⁾	100	<1 ⁽⁴⁾	20	3.5	571	3.51
8/23/2007 08:30	1	50	4.0	90	2.0	90	<1 ⁽⁴⁾	90	2.0	90	<1 ⁽⁴⁾	90	<1 ⁽⁴⁾	20	3.5	560	3.48
8/27/2007 08:58	1	50	4.0	95	2.0	90	1.0	85	2.0	80	2.0	80	1.0	20	3.5	563	3.59
8/28/2007 09:00	1	30	4.0	90	2.0	90	1.0	85	1.5	95	2.0	90	1.0	20	3.5	550	3.55
8/29/2007 06:55	1	40	4.0	95	1.0	90	<1 ⁽⁴⁾	90	2.0	85	2.0	90	1.0	20	3.5	582	3.80
8/31/2007 08:00	2	50	4.5	130	3.5	170	3.0	145	3.5	130	3.5	130	3.5	20	4.0	870	3.93
9/4/2007 08:30	2	50	4.5	130	3.0	170	3.0	150	3.0	150	3.5	140	3.0	20	4.0	870	3.99
9/5/2007 09:20	2	50	5.0	150	4.0	190	3.0	170	4.0	150	4.0	160	3.5	50	4.5	802	4.64
9/7/2007 13:55	2	50	5.0	150	3.0	170	3.5	170	4.0	150	4.0	160	3.5	50	4.5	800	4.82
9/14/2007 08:10	2	60	5.0	145	4.0	190	3.0	160	4.0	160	3.5	150	3.5	30	4.5	810	4.69
9/17/2007 07:59	2	60	5.0	145	4.0	190	3.0	160	4.0	170	3.0	150	3.5	20	4.5	800	4.71
9/19/2007 14:02	1	20	3.0	110	2.5	150	2.0	20	0.0	120	2.0	110	2.5	<20	3.0	578	2.74
9/21/2007 12:32	2	50	5.0	140	3.8	190	3.0	160	3.9	165	3.2	150	3.6	20	4.5	800	4.49
9/28/2007 08:20	2	50	5.0	145	3.8	200	3.2	160	4.0	170	3.3	150	3.6	20	4.4	806	4.75
10/5/2007 08:45	2	50	5.0	140	3.7	195	3.0	160	4.0	170	3.3	150	3.6	20	4.5	798	4.63
10/11/2007 11:55	2	50	5.0	150	4.0	195	3.5	160	4.0	185	3.5	155	4.0	<20	5.0	831	4.95
10/18/2007 07:50	2	50	5.0	150	4.0	200	3.5	160	4.0	180	3.5	150	4.0	<20	5.0	796	4.82
10/25/2007 12:05	2	80	5.0	150	4.0	200	3.5	170	4.0	180	3.0	160	4.0	20	5.0	805	5.02
11/1/2007 15:20	1	20	2.5	100	2.0	150	1.5	100	2.5	120	2.0	110	2.0	<20	2.0	615	2.38
11/8/2007 12:10	1	30	2.0	110	1.5	150	1.0	100	0.5	110	1.5	110	1.0	<20	1.5	605	2.48
11/15/2007 07:40	1	50	3.0	120	2.5	140	2.5	110	2.5	120	3.0	100	2.5	<20	3.0	600	2.80
11/21/2007 08:40	2	50	5.0	160	5.0	180	4.0	170	3.5	180	4.5	160	4.0	20	5.5	788	5.21
11/29/2007 09:00 ⁽⁵⁾	2	70	84	160	72	190	4.0	170	62	180	64	150	70	50	86	803	5.39
12/5/2007 07:40	2	70	90	160	80	180	4.0	170	64	180	66	160	70	20	88	794	5.42
12/21/2007 07:50	2	60	88	170	76	180	62	160	64	170	65	150	70	20	88	775	5.36
12/28/2007 14:00	2	60	88	170	78	190	62	160	66	180	66	150	70	30	88	783	5.50
1/4/2008 09:00	2	60	90	180	78	190	62	180	66	180	68	160	70	30	90	799	5.53
1/11/2008 07:00	2	60	88	170	76	180	62	160	64	170	65	150	70	20	88	794	5.37
1/17/2008 09:00	2	70	90	170	78	190	62	170	65	180	66	150	72	20	92	779	5.53
1/24/2008 07:30	2	70	92	180	80	190	64	170	68	190	68	150	74	40	94	800	5.52
2/1/2008 08:45	2	100	95	180	82	190	75	170	70	180	64	160	77	70	91	771	5.50
2/8/2008 08:00	2	80	91	180	78	190	64	170	66	180	66	160	72	70	92	783	5.48
2/15/2008 09:00	1	70	64	130	50	150	50	130	52	130	52	110	58	20	84	542	3.70
2/22/2008 07:15	1	50	66	140	50	150	46	130	52	130	61	110	58	50	84	554	3.48
2/28/2008 08:15	2	70	82	170	80	190	64	160	68	180	66	150	74	40	92	793	5.45

TABLE 1
SYSTEM FLOW RATE AND VACUUM READINGS
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Date/Time of Recording	Number of Blowers in Operation	SVE-A		SVE-B		SVE-C		SVE-D		SVE-E		SVE-F		SVE-G		System	
		Flow rate (acfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (acfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (acfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (acfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (acfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (acfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (acfm)	Vacuum (in. Hg.) ⁽²⁾	Flow rate (acfm)	Vacuum (in. Hg.) ⁽²⁾
3/6/2008 07:15	2	80	90	180	79	190	84	180	66	180	66	180	74	50	92	773	5.49
3/14/2008 08:00	2	80	98	190	82	200	68	185	70	0 ⁽¹⁾	0 ⁽¹⁾	180	76	50	98	700	5.96
3/20/08 18:15 ⁽¹⁾	2	120	98	0	0	200	70	190	72	0	0	0	0	50	100	700	6.14
3/27/2008 7:15 ⁽¹⁾	2	110	98	0	0	200	96	180	66	0	0	0	0	50	100	730	5.98
4/3/2008 7:00 ⁽¹⁾	2	90	100	0	0	200	70	190	70	0	0	0	0	30	100	700	6.09
4/10/2008 15:00 ⁽¹⁾	2	80	94	0	0	180	65	175	66	0	0	0	0	50	96	844	6.37
4/17/2008 18:15	2	80	82	150	84	190	58	170	56	190	56	170	80	40	82	821	4.94
4/18/2008 07:15	2	80	88	200	68	190	52	160	52	190	52	160	86	20	80	784	5.16
4/24/2008 11:30	2	70	86	185	67	180	62	160	64	180	62	170	84	20	89	800	5.08
5/2/2008 07:45	2	80	88	185	68	180	62	170	62	175	62	160	84	50	88	780	5.01
5/8/2008 07:45	2	80	84	180	66	180	62	180	62	170	61	160	84	20	88	775	5.00
5/15/2008 12:30	2	70	82	190	68	180	62	170	62	170	62	170	84	50	88	775	5.00
5/22/2008 08:45	2	100	82	180	88	180	82	170	82	180	82	170	84	70	88	778	5.03
5/30/2008 08:45	2	70	82	170	86	N/R ⁽¹⁾	82	165	62	175	60	160	85	20	87	765	4.92
6/5/2008 07:30	2	70	86	190	68	180	62	140	62	170	62	180	86	30	86	755	4.95
6/13/2008 08:26	2	70	85	180	66	200	64	150	64	180	64	150	88	40	88	745	5.01
6/19/2008 08:33	2	80	88	180	70	190	58	150	64	170	84	150	70	20	90	761	5.22
6/26/2008 08:08	2	90	88	180	70	200	80	160	64	180	66	160	72	40	90	744	5.20
7/3/2008 07:30	2	70	90	180	72	190	62	150	66	170	66	160	72	20	92	740	5.28
7/11/2008 07:20	2	80	90	180	74	200	80	150	66	180	66	160	74	50	92	724	5.32
7/16/2008 07:05	2	80	92	180	74	200	62	150	74	180	68	150	76	20	94	731	5.38
7/18/2008 08:10	2	90	92	190	74	200	62	160	66	180	68	140	76	20	92	734	5.30
7/24/2008 13:52	2	80	92	180	76	190	62	150	66	170	66	140	76	20	94	719	5.27
8/1/2008 12:16	2	80	92	180	76	140	60	150	68	170	68	150	76	20	94	705	5.30

(1) - Vacuum measured at blower manifold.

(2) - For all wells, except SVE-C, units are in in. H₂O from 11/29/08 to present. For SVE-C, units are in in. H₂O from 12/21/08 to present.

(3) - To minimize system operation time, the SVE system was online for laboratory sampling only from 11:00 AM to 12:00 PM.

(4) - Readings below 1 in. Hg. are too low to be registered on vacuum gauges which have a span of 0 - 30 in. Hg.

(5) - Vacuum gauges with a smaller span installed on all wells but SVE-C (shipped inoperable) on 28 November 2007. New gauge are in units of inches of water (in. H₂O) and have spans of 0 to -100 in. H₂O (0 to 7.353 in. Hg.). Replacement gauge for SVE-C installed on 21 December 2007.

(6) - SVE-E damaged during other onsite remedial action activities and was offline during 3/14/08 inspection. No reading collected.

(7) - Rebound Event #1 occurred from 3/20/08 to 04/17/08. SVE-B, SVE-E, and SVE-F were offline during this period.

(8) - Gauge could not be read due to debris/gtime in site glass.

SVE-D valve left in closed position following system tests on 8/19/07.

acfm: actual cubic feet per minute

N/R: not recorded

scfm: standard cubic feet per minute

in. Hg. = inches of mercury

in. H₂O = inches of water

0.07353 x in. H₂O = in. Hg.

TABLE 2
SYSTEM VACUUM READINGS AT VMPs
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

VMP ID ⁽²⁾	Closest SVE Well	Distance from Closest SVE Well (ft)	Vacuum Reading Recorded (in. H ₂ O) ⁽¹⁾																	
			8/20/07	8/20/07	8/31/07	9/7/07	9/14/07	9/17/07	11/29/07	12/6/07	1/11/08	1/24/08	2/22/08	3/6/08	3/22/08	4/01/08 ⁽³⁾	4/17/08 ⁽³⁾	5/13/08	6/26/08	7/18/08
VMP-1A	SVE-A	15.06	-5	-6	-8	-7	-8	-7	-8	-11.0	-11.0	-11.8	-6.0	-11.4	-13.4	-9.2	-6.8	-11.4	-12.2	-12.0
VMP-1B	SVE-A	21.04	-5	-8	-8	-7	-7	-7	-8	-11.0	-11.2	-11.8	-6.0	-11.8	-13.6	-8.8	-6.9	-11.8	-12.2	-12.2
VMP-2A	SVE-B	30.88	-6	-8	-8	-7	-8	-7	-10.0	-11.4	-11.5	-12.0	-7.0	-12.0	-14.2	-7.6	-5.2	-11.8	-13.0	-13.0
VMP-2B	SVE-B	37.47	0 ⁽⁴⁾	0 ⁽⁴⁾	-2	-5	-3	-2	-7.8	-11.4	-12.4	-12.2	-7.0	-12.2	-15.0	-7.8	<-15.0 ⁽⁶⁾	-13.6	-13.4	-13.2
VMP-3A	SVE-C	30.68	-4	-4	-6	-5.75	-6	-5	-8.0	-10.0	-10.4	-10.8	-6.8	-10.8	-12.8	-10.0	-8.2	-10.0	-10.2	-10.4
VMP-3B	SVE-C	28.52	-4	-5	-7	-7	-7	-6	-10.8	-12.0	-12.3	-12.8	-8.0	-12.8	-14.6	-12.0	-9.6	-11.2	-11.2	-11.8
VMP-4A	SVE-C	59.98	0 ⁽⁴⁾	0 ⁽⁴⁾	0 ⁽⁴⁾	1 ⁽⁴⁾	-5	-5	-8.2	-9.0	-9.8	-10.0	-6.4	-10.0	-12.0	-8.0	-7.4	-8.8	-9.0	-9.2
VMP-4B	SVE-C	59.53	-4	-4	-6	-5	-6	-5	-7.8	-9.0	-9.4	-9.8	-6.0	-9.8	-11.8	-9.8	-7.2	-8.4	-8.8	-9.0
VMP-5A	SVE-D	30.98	-5	-5	-7	-7	-8	-7	-11.2	-12.4	-12.8	-13.2	-8.8	-13.0	-14.8	-9.8	-7.9	-11.4	-11.8	-12.0
VMP-5B	SVE-D	31.05	-5	-5	-7	-8	-8	-8	-11.4	-12.6	-13.0	-13.3	-8.8	-13.0	-14.8	-9.4	-7.8	-11.6	-11.8	-12.2
VMP-6A ⁽⁶⁾	SVE-E	45.01	-5	-5	-8	-7	-8	-8	-11.6	-13.0	-13.2	-11.0	-9.0	-13.2	-16.0	-8.8	-7.2	-12.0	-12.2	-12.7
VMP-6B ⁽⁶⁾	SVE-E	45.04	-5	-6	-8	-7	-8	-8	-11.5	-12.8	-13.0	-14.6	-9.0	-13.2	-15.0	-8.7	-7.2	-12.0	-12.0	-12.6
VMP-7A	SVE-F	15.30	0 ⁽⁴⁾	0 ⁽⁴⁾	0 ⁽⁴⁾	-1 ⁽⁴⁾	-10	-8	-13.6	-15.0	-14.4	<-15.0 ⁽⁶⁾	-8.4	-14.8	-17.2	-5.6	-4.2	-14.0	-9.6	-13.4
VMP-7B	SVE-F	15.23	-9	-8	-10	-10	-10	-10	-14.2	<-15.0 ⁽⁶⁾	<-15.0 ⁽⁶⁾	<-15.0 ⁽⁶⁾	-8.6	-15.0	-17.6	-5.8	-4.2	-14.4	-8.4	-13.6
VMP-8A	SVE-F	80.41	-5	-5	-6	0 ⁽⁴⁾	-6	-6	-9.6	-11.2	-10.8	-11.4	-6.0	-11.2	-14.2	-5.6	-4.2	-9.8	-13.4	-10.0
VMP-8B	SVE-F	80.17	-4	-2	-4	-4.5	-4	-2	-3.0	-9.0	-9.2	-10.2	-5.0	-9.4	-12.4	-5.4	-4.0	-8.8	-13.6	-8.8
VMP-9A	SVE-G	45.18	-4	-3	-4	-4	-4	-4	-6.2	-7.6	-6.7	-7.3	-2.8	-7.2	-10.2	-5.6	-4.0	-8.0	-8.4	-7.2
VMP-9B	SVE-G	45.18	-4	-3	-4	-4	-4	-4	-6.2	-7.6	-6.8	-7.2	-3.4	-7.0	-10.2	-5.4	-4.4	-8.2	-7.0	-7.6
VMP-10A	SVE-G	80.08	-3	-3	-4	N/R	-4	-4	-8.0	-7.2	-6.3	-7.0	-2.6	-7.0	-10.2	-5.4	-4.2	-8.0	-8.2	-7.0
VMP-10B	SVE-G	80.50	-3	-2	-4	N/R	-4	-4	-5.6	-7.0	-6.2	-7.0	-2.4	-7.0	-10.2	-5.4	-4.2	-8.0	-8.4	-7.0
Number of Blowers Online			1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2

N/R = not recorded

(1) = 0.07353 x in. H₂O = in. Hg.

(2) = All VMP wells contain 5-foot screen lengths. VMP "A" wells (e.g., VMP-1A) were constructed with a screen located near the bottom of the screen of the associated SVE well.

VMP "B" wells (e.g., VMP-1B) were constructed with a screen located near the top of the screen of the associated SVE well.

(3) = Rebound Event #1 occurred from 3/20/08 to 04/17/08. SVE-B, SVE-E, and SVE-F were offline during this period.

(4) = Vacuum readings exceeded gauge span of -15 in. Hg. Debris was removed and tube length shortened by 6 inches on 9/14/07.

(5) = Vacuum reading exceeded gauge span of -15 in. Hg.

(6) = VMP-6A and VMP-6B are located equidistant from SVE-D and SVE-E.

Note: Vacuum gauges with a smaller span used on readings after 11/29/07.

in. Hg. = inches of mercury

in. H₂O = inches of water

Shaded Cells indicate SVE well offline.

TABLE 3
PID MEASUREMENTS AT SVE WELLS
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Date	Sample Location									
	SVE-A	SVE-B	SVE-C	SVE-D	SVE-E	SVE-F	SVE-G	SVE-INF	SVE-MID	SVE-EFF
	PID Measurement (ppm) ⁽¹⁾									
7/26/2007	3863	>10000 ⁽²⁾	>10000 ⁽²⁾	2188	>10000 ⁽²⁾	2196	>10000 ⁽²⁾	>10000 ⁽²⁾	510	5.7
7/27/2007	105	1230	927	1861	1193	11.4	108	1091	3.6	0
7/28/2007	59.1	575	417	835	741	38.1	262	538	598	0.2
7/29/2007	53	432	445	667	550	31.1	205	486	554	0.1
7/30/2007	27.3	229	290	399	356	27.6	168	279	570	2.7
7/31/2007	22.7	186	246	338	285	24.6	131	242	528	72.4
8/1/2007	19.1	157	224	288	256	24.4	127	187	560	299
8/15/2007	7.5	153	210	271	234	22.6	131	152	18.1	9.4
8/16/2007	10.3	74.8	164	231	134	19.7	108	116	0	0
8/17/2007	10.2	94.4	140	208	118	16.9	92.4	120	4.7	2.1
8/20/2007	7.4	58.8	111	128	96.0	12.9	67.6	89.5	34.7	0.7
8/21/2007	8.5	38.5	73.8	95	112	12.7	65.1	68.0	37.9	0.6
8/22/2007	7.8	51.2	94.3	105	114	13.5	65.0	78.0	42.6	0.4
8/23/2007	5.6	37.0	84.0	86.8	99.1	12.9	63.8	74.3	74.1	0.1
8/27/2007	4.5	26.2	60.2	92.5	55.9	8.5	33.4	61.1	46.1	1.4
8/28/2007	4.4	28.3	59.8	87.4	61.3	7.4	27.5	59.1	56.1	0.6
8/29/2007	3.9	26.4	57.9	42.3	38.2	6.9	26.1	53.7	53.8	1.4
8/31/2007	5.0	29.7	55.5	67.0	43.3	0.6	32.0	60.9	62.9	11.1
9/4/2007	4.1	28.1	27.9	68.0	18.9	5.8	24.9	44.8	45.2	19.3
9/5/2007	3.8	24.7	50.3	67.7	38.8	7.9	27.6	39.9	46.6	15.1
9/7/2007	2.4	9.6	16.4	29.1	16.3	3.8	12.7	34.5	45.9	15.3
9/14/2007	3.0	16.6	23.1	44.5	25.6	6.1	18.7	24.4	31.3	16.3
9/19/2007	2.4	20.4	27.1	8.2	28.8	2.9	14.5	21.3	30.7	27.4
9/28/2007	2.3	19.0	13.1	35.1	18.6	3.5	16.4	12.1	23.3	32.2
10/5/2007	2.2	21.2	30.9	32.4	17.0	3.7	13.8	20.8	27.5	29.5
10/11/2007	2.7	23.0	9.9	18.7	13.2	0.5	12.8	22.6	N/C ⁽³⁾	N/C ⁽³⁾
10/18/2007	1.3	14.0	20.3	14.8	10.3	1.8	3.5	14.3	N/C	N/C
10/25/2007	1.7	15.2	21.2	19.1	10.7	1.5	12.4	17.4	N/C	N/C
11/1/2007	2.0	14.5	24.0	21.2	1.7	4.2	15.6	17.4	N/C	N/C
11/9/2007	1.2	21.9	22.3	21.3	8.2	1.5	10.7	16	N/C	N/C
11/15/2007	1.8	23.8	21.5	21.1	12.7	1.7	10.0	9.3	N/C	N/C
11/21/2007	2.6	27.6	23.4	22	9.6	2.7	10.2	17.9	N/C	N/C
11/29/2007	2.2	31.1	34.1	18.7	10.9	1.7	16.2	25.7	N/C	N/C
12/6/2007	1.7	24.9	18.5	8.4	6.1	3.5	6.8	20.2	N/C	N/C
12/21/2007	5.4	46.1	31.4	14.5	6.4	0.7	12.3	28.1	N/C	N/C
12/28/2007	1.2	65.9	33.8	9.8	4.3	1.1	15.4	23.4	N/C	N/C
1/4/2008	0.9	41.6	19.1	1.5	3.2	0.3	20	22.5	N/C	N/C
1/11/2008	1.2	61.0	37.5	24.4	5.3	2.3	9.8	20	N/C	N/C
1/17/2008	7.6	27.6	3.7	6.7	1.9	8.0	7.5	18.8	N/C	N/C
1/24/2008	1.8	67.8	10.9	2.2	2.8	0.4	7.6	26.1	N/C	N/C
2/1/2008	0.8	48.9	13.3	4.6	2.1	1.0	8.1	20.9	N/C	N/C
2/8/2008	0.8	31.8	18.4	5.8	1.7	2.4	17.5	6.6	N/C	N/C
2/15/2008	0.9	17.7	5.3	3.9	1.4	0.6	12.4	15.5	N/C	N/C
2/22/2008	0.7	48.6	8.3	4.8	2.3	1.0	13.0	15.8	N/C	N/C
2/29/2008	27.3	39.2	21.5	14.4	5.6	3.1	5.4	17.9	N/C	N/C
3/6/2008	0.3	28.5	13.8	4.2	7.3	0.3	13.2	12.1	N/C	N/C
3/14/2008	13.8	37.3	22.4	16.8	N/C ⁽⁴⁾	17.1	17.5	25.8	N/C	N/C
3/20/2008 ⁽⁵⁾	0.7	N/C	26.1	0.7	N/C	N/C	0.4	10.4	N/C	N/C
3/27/2008 ⁽⁵⁾	0.0	N/C	21.6	4.0	N/C	N/C	0.0	6.2	N/C	N/C
4/3/2008 ⁽⁵⁾	9.3	N/C	15.4	5.2	N/C	N/C	8.1	10.6	N/C	N/C
4/10/2008 ⁽⁵⁾	3.1	N/C	5.7	0.9	N/C	N/C	8.2	6.2	N/C	N/C
4/18/2008	5.1	103	12.7	4.0	0.4	0.5	5.2	34.5	N/C	N/C
4/24/2008	0.4	31.7	7.2	4.8	2.5	0.6	8.7	13.5	N/C	N/C
5/2/2008	0.3	22.0	18.6	2.7	1.6	0.3	8.9	10.3	N/C	N/C
5/8/2008	0.7	27.2	9.5	3.8	1.6	0.6	11.1	9.8	N/C	N/C
5/13/2008	0.6	24.4	14	3.8	7.3	0.6	20.3	16.4	N/C	N/C
5/15/2008	0.5	17.8	5.1	2.4	1.9	0.7	5.4	8.6	N/C	N/C

TABLE 3
PID MEASUREMENTS AT SVE WELLS
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Date	Sample Location									
	SVE-A	SVE-B	SVE-C	SVE-D	SVE-E	SVE-F	SVE-G	SVE-INF	SVE-MID	SVE-EFF
	PID Measurement (ppm) ⁽¹⁾									
5/22/2008	0.4	7.7	7.3	3.9	1.6	0.5	7.3	8.1	N/C	N/C
5/30/2008	0.3	7.0	7.1	1.5	1.1	0.3	1.2	3.7	N/C	N/C
6/5/2008	1.4	4.7	3.8	2.6	1.4	1.3	1.7	2.9	N/C	N/C
6/13/2008	0.6	5.6	5.6	6.5	2.3	0.7	1.3	3.6	N/C	N/C
6/19/2008	0.5	6.9	0.4	11	0.9	0.4	1.2	5.6	N/C	N/C
6/26/2008 ⁽⁶⁾	0.0	0.0	0.0	14.1	1.8	0.6	0.9	4.2	N/C	N/C
6/30/2008	0.6	9.2	14.4	22.8	5.4	0.9	1.9	11.4	N/C	N/C
7/3/2008	0.3	8.7	10.7	6.8	1.1	0.3	1.0	10.0	N/C	N/C
7/11/2008	0.3	13.9	16.5	39.9	0.9	0.7	1.8	13.7	N/C	N/C
7/16/2008	0.4	22.7	15.6	54.5	0.9	1.6	2.6	17.6	N/C	N/C
7/18/2008	0.8	25.9	22.3	76.8	2.1	2.9	4.9	23.8	N/C	N/C
7/24/2008	1.5	29.1	15.8	70.3	5.0	1.8	7.5	22.8	N/C	N/C
8/1/2008	0.6	40.4	10.0	48.4	2.5	1.4	8.8	21.8	N/C	N/C

(1) = Photo Ionization Detector (PID) manufactured by RAE System (Model: MiniRAE 2000) with a 10.6 eV lamp.

(2) = Influent stream exceeded maximum range of PID meter (10,000 ppm).

(3) = PID reading not collected as treatment system was taken offline following 5 October 2007 readings.

(4) = SVE-E damaged during other onsite remedial action activities and was offline during 3/14/08 inspection. No reading collected.

(5) = Rebound Event #1 occurred from 3/20/08 to 04/17/08. SVE-B, SVE-E, and SVE-F were offline during this period.

(6) = PID readings believed to be in error due to malfunctioning PID. Readings recollected on 6/30/08.

ppm: parts per million

PID: photoionization detector

TABLE 4
PID MEASUREMENTS AT VMPs
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

VMP ID ⁽²⁾	Closest SVE Well	Distance from Closest SVE Well (ft)	PID ⁽¹⁾ Measurement (ppm)										
			8/20/2007 ⁽³⁾	11/29/2007 ⁽⁴⁾	12/6/2007 ⁽⁴⁾	01/11/08 ⁽⁴⁾	01/24/08 ⁽⁴⁾	02/22/08 ⁽⁴⁾	03/20/08 ⁽⁴⁾⁽⁵⁾	04/03/08 ⁽⁴⁾	04/10/08 ⁽⁴⁾	04/17/08 ⁽⁴⁾	07/16/08 ⁽⁴⁾
VMP-1A	SVE-A	15.06	4,783	0.1	1.7	0.0	0.0	0.0	0.0	N/C	N/C	1.3	1.3
VMP-1B	SVE-A	21.04	3,194	4.3	0.3	0.9	1.3	0.2	0.0	N/C	N/C	16.0	2.0
VMP-2A	SVE-B	30.68	1,076	1.2	0.8	0.2	0.6	0.0	0.0	0.0	0.5	0.5	0.6
VMP-2B	SVE-B	37.47	>10,000 ⁽⁶⁾	34.5	22.7	316	143	0.0	42.2	217	135	316	713
VMP-3A	SVE-C	30.68	103	1.2	1.8	0.5	0.7	0.4	0.0	N/C	N/C	0.8	1.8
VMP-3B	SVE-C	25.52	4,509	847	619	398	645	50.0	1.47	N/C	N/C	43.4	>10,000 ⁽⁶⁾
VMP-4A	SVE-C	59.89	98.2	1.7	1.4	0.2	0.6	0.7	0.0	N/C	N/C	1.4	2.3
VMP-4B	SVE-C	59.53	386	69.6	62.2	23.1	23.2	37.7	0.0	N/C	N/C	9.9	6.0
VMP-5A	SVE-D	30.99	1,484	4.4	3.5	1.7	2	2.63	0.5	N/C	N/C	9.9	5.0
VMP-5B	SVE-D	31.05	82.3	94.1	79.2	54.2	56.3	28.9	12.6	N/C	N/C	7.0	606
VMP-6A	SVE-E	45.01	999	15.4	11.5	4.17	3.8	7.4	0.0	0.0	0.0	0.2	2.3
VMP-6B	SVE-E	45.04	3,320	482	459	666	470	1,277	406	302	85.5	112	2,890
VMP-7A	SVE-F	15.30	14.6	2.2	1.8	0.1	0.2	1.7	0.0	0.0	0.3	3.6	3.7
VMP-7B	SVE-F	15.23	11.7	3.9	3.1	3.0	2.1	3.9	1.1	0.0	0.0	3.9	55.8
VMP-8A	SVE-F	80.41	450	0.3	0.4	0.0	0.2	1.6	0.0	0.0	0.0	0.7	4.6
VMP-8B	SVE-F	80.17	80.6	28.8	33.3	7.2	5.0	5.1	0.5	19.7	1.2	4.4	16.8
VMP-9A	SVE-G	45.19	2.3	1.2	1.2	1.3	0.7	1.9	0.0	N/C	N/C	2.7	4.1
VMP-9B	SVE-G	45.18	84.3	119	126	54.3	49.4	51.3	11.3	N/C	N/C	23.1	2.6
VMP-10A	SVE-G	60.08	2.1	0.4	0.3	0.1	0.1	0.7	0.0	N/C	N/C	0.7	3.2
VMP-10B	SVE-G	60.50	27.2	2.8	3.8	11.1	16.8	27.4	3.73	N/C	N/C	2.2	2.3

(1) Photo Ionization Detector (PID) manufactured by RAE Systems (Model: MiniRAE 2000) with a 10.6 eV lamp.

(2) All VMP wells contain 5-foot screen lengths. VMP "A" wells (e.g., VMP-1A) were constructed with a screen located near the bottom of the screen of the associated SVE well. VMP "B" wells (e.g., VMP-1B) were constructed with a screen located near the top of the screen of the associated SVE well.

(3) Measurements collected prior to system startup.

(4) Measurements collected while system offline. System offline for two hours prior to collection of PID readings.

(5) Measurements collected prior to shut down of SVE wells as part of rebound study.

(6) Influent stream exceeded maximum range of PID meter (10,000 ppm).

N/C - Rebound Event #1 occurred from 3/20/08 to 04/17/08. PID readings only collected on VMPs associated with those offline wells. No PID readings collected from VMP-1A/B, VMP-3A/B, VMP-4A/B, VMP-5A/B, VMP-9A/B, and VMP-10A/B.

ppm: parts per million

TABLE 5
ANALYTICAL RESULTS SUMMARY - VMPs
FLUVAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Location	VMP-01A	VMP-01B	VMP-01B	VMP-02A	VMP-02A	VMP-02B	VMP-02B	VMP-03A	VMP-03A
Date	7/16/2008	7/16/2008	7/16/2008	7/16/2008	7/16/2008	7/16/2008	7/16/2008	7/16/2008	7/16/2008
Event	SVE BASE 1	SVE BASE 1	SVE BASE 1	SVE BASE 1	SVE BASE 1	SVE BASE 1	SVE BASE 1	SVE BASE 1	SVE BASE 1
Units	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)
Analyte									
1,1,1-Trichloroethane	<410	<2	<2	<110	18	<1200	<5300	<580	<7.3
1,1,2,2-Tetrachloroethane	<410	<2	6.9	54F	<7.8	<1200	1900F	<580	16
1,1,2-Trichloro-1,2,2-trifluoroethane	<410	1F	<390	<110	1100	<1200	<5300	<580	<7.3
1,1,2-Trichloroethane	<410	<2	<390	<110	<7.8	<1200	1600F	<580	<7.3
1,1-Dichloroethane**	<410	<2	<390	<110	7.1F	<1200	<5300	<580	<7.3
1,1-Dichloroethane	240F	1.8F	1.1F	43F	98	1800	18000	<580	<7.3
1,2,4-Trimethylbenzene**	170F	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
1,2-Dichloro-1,1,2,2-tetrafluoroethane**	<410	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
1,2-Dichloroethane	<410	<2	0.77F	<110	<7.8	<1200	<5300	<580	<7.3
1,2-Dichloropropane**	<410	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
1,4-Dichlorobenzene**	<410	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
Benzene	<410	<2	3.2	<110	<7.8	<1200	4400F	<580	<7.3
Carbon tetrachloride	450	<2	220F	<110	<7.8	<1200	<5300	<580	1.6F
Chloroethane**	<410	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
Chloroform	1100	16	180F	<110	<7.8	830F	1500F	220F	6.6F
Chloromethane**	<1000	<5	<880	<280	<20	<3000	<13000	480F	<18
cis-1,2-Dichloroethane	21000	1.2F	7000	4800	33	240000	910000	25000	98
Dichlorodifluoromethane	<410	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
Ethylbenzene	<410	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
Methylene chloride	190F B	2F B	190F B	59F B	8.1F B	580F B	3600F B	340F B	8.2F B
m-Xylene & p-Xylene**	<410	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
o-Xylene**	<410	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
Styrene**	<410	<2	<390	<110	<7.8	<1200	<5300	<580	<7.3
Tetrachloroethane	880	3	880	48F	1.7F	1800	2000F	780	9.1
Toluene	<410	<2	<390	88F	<7.8	<1200	<5300	<580	<7.3
Trichloroethane	87000	4.3	40000	13000	40	480000 B	330000	81000	1200
Trichlorofluoromethane	<410	0.27F	<390	<110	20	<1200	<5300	<580	<7.3
Vinyl chloride	<410	<2	<390	98F	9.8	4800	400000	<580	3.1F
Total VOCs*	90410	22.3	47550	17800	1312.6	707900	1658000	105760	1320.1

Notes:

Bold: Detected above RL

B: Method Blank Contamination

F: Estimate - result > MDL and < RL

D: Result obtained from analysis of dilution

<: Result is less than laboratory detection limit.

* Sum of detected analytes above reporting limit.

** Not detected above RL

ppb v/v: parts per billion volume per volume

TABLE 5
ANALYTICAL RESULTS SUMMARY - VMPs
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Location	VMP-03B	VMP-03B	VMP-04A	VMP-04A	VMP-04B	VMP-04B	VMP-05A	VMP-05A	VMP-05B	VMP-05B
Date	7/24/2007	7/16/2008	7/24/2007	7/16/2008	7/24/2007	7/16/2008	7/24/2007	7/16/2008	7/24/2007	7/16/2008
Event	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE 3Q08
Units	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)
Analyte										
1,1,1-Trichloroethane	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
1,1,2,2-Tetrachloroethane	<11000	<3400	190F	7.8	<1200	<12	110000	97	<420	970F
1,1,2-Trichloro-1,2,2-trifluoroethane	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
1,1,2-Trichloroethane	<11000	<3400	<400	<2	<1200	4.2F	<8200	<2	<420	<2200
1,1-Dichloroethane**	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
1,1-Dichloroethane	<11000	3000F	<400	<2	<1200	7.3F	<8200	<2	<420	<2200
1,2,4-Trimethylbenzene**	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
1,2-Dichloro-1,1,2,2-tetrafluoroethane**	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
1,2-Dichloroethane	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
1,2-Dichloropropane**	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
1,4-Dichlorobenzene**	<11000	1100F	<400	<2	<1200	21	<8200	0.88F	<420	2000F
Benzene	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
Carbon tetrachloride	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
Chloroethane**	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
Chloroform	3300F	7000	230F	88	850F	38	<8200	0.85F	<420	670F
Chloromethane**	<28000	<8400	<1000	<5	<3100	<29	<16000	<5	<1100	<5500
cis-1,2-Dichloroethane	670000	1600000	23000	140	100000	2000	40000	5.4	1000	11000
Dichlorodifluoromethane	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
Ethylbenzene	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
Methylene chloride	4200F B	2500F B	190F B	2.5F B	470F B	12F B	2000F B	2.7F B	160F B	1900F B
m-Xylene & p-Xylene**	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
o-Xylene**	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
Styrene**	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
Tetrachloroethane	27000	50000	750	2.6	3000	81	39000	1.8F	1300	16000
Toluene	<11000	<3400	<400	<2	<1200	13	<8200	1.1F	<420	3900
Trichloroethane	2700000	5800000	84000	86	330000	710	26000000 D	200	96000	840000
Trichlorofluoromethane	<11000	<3400	<400	0.27F	<1200	<12	<8200	0.36F	<420	<2200
Vinyl chloride	<11000	<3400	<400	<2	<1200	<12	<8200	<2	<420	<2200
Total VOCs*	3297000	7457000	87750	283.4	433000	2863	2689000	302.4	66300	570900

Notes:

Bold: Detected above RL

B: Method Blank Contamination

F: Estimate -result >MDL and <RL

D: Result obtained from analysis of dilution

<: Result is less than laboratory detection limit.

* Sum of detected analytes above reporting limit.

** Not detection above RL

ppb v/v: parts per billion volume per volume

TABLE 5
ANALYTICAL RESULTS SUMMARY - VMPs
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Location	VMP-06A	VMP-06A	VMP-06B	VMP-06B	VMP-06B	VMP-07A	VMP-07B	VMP-07B	VMP-08A	VMP-08A
Date	7/24/2007	7/17/2008	7/24/2007	7/24/2007	7/17/2008	7/17/2008	7/24/2007	7/17/2008	7/25/2007	7/17/2008
Event	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE BASE 1	SVE 3Q08	SVE 3Q08	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE 3Q08
Units	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)
Analyte										
1,1,1-Trichloroethane	<3000	<4.4	<3000	<3000	<2300	<2	<31	<9.7	<31	<2
1,1,2,2-Tetrachloroethane	4000	680	310000	4800000	78	9.5	14F	32	67	3.2
1,1,2-Trichloro-1,2,2-trifluoroethane	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
1,1,2-Trichloroethane	<3000	2.6F	<3000	4000	49	0.82F	14F	8.5F	21F	<2
1,1-Dichloroethane**	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
1,1-Dichloroethane	<3000	<4.4	<3000	<2300	<40	<2	14F	7.3F	<31	1.8F
1,2,4-Trimethylbenzene**	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
1,2-Dichloro-1,1,2,2-tetrafluoroethane**	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
1,2-Dichloroethane	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
1,4-Dichlorobenzene**	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
Benzene	<3000	<4.4	<3000	<2300	15F	1.8F	18F	20	15F	<2
Carbon tetrachloride	<3000	<4.4	<3000	<2300	410	1.5F	<31	410	<31	1.8F
Chloroethane**	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
Chloroform	<3000	1.8F	<3000	<2300	290	38	410	380	160	0.94F
Chloromethane**	<7500	<11	<7400	<5700	<100	<5	<78	<24	<77	<5
cis-1,2-Dichloroethane	11000	14	16000	23000	6900	18	4700	770	910	1.8F
Dichlorodifluoromethane	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	1.8F
Ethylbenzene	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
Methylene chloride	980F B	2.3F B	1100F B	1400F B	29F B	1.4F B	18F B	7.8F B	26F B	1.8F B
m-Xylene & p-Xylene**	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
o-Xylene**	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
Styrene**	<3000	<4.4	<3000	<2300	<40	<2	<31	<9.7	<31	<2
Tetrachloroethane	12000	0.98F	21000	31000	37F	0.6F	82	56	32	3.3
Toluene	<3000	<4.4	<3000	<2300	16F	<2	<31	3F	<31	<2
Trichloroethane	880000	540	1300000B D	3500000	6300B	18	6300B	1900	4800B	5.2
Trichlorofluoromethane	<3000	<4.4	<3000	<2300	<40	0.25F	<31	<9.7	5.6F B	0.51F
Vinyl chloride	<3000	<4.4	<3000	<2300	100	<2	64	23	38	<2
Total VOCs*	907000	1234	1647000	8358000	13127	81.5	11556	3561	5995	11.7

Notes:

Bold: Detected above RL
B: Method Blank Contamination
F: Estimate -result >MDL and <RL
D: Result obtained from analysis of dilution
<: Result is less than laboratory detection limit.
* Sum of detected analytes above reporting limit.
** Not detected above RL
ppb v/v: parts per billion volume per volume

TABLE 5
ANALYTICAL RESULTS SUMMARY - VMPs
FLUVAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Location	VMP-08B	VMP-08B	VMP-08A	VMP-08A	VMP-08B	VMP-08B	VMP-08B	VMP-10A	VMP-10A	VMP-10B	VMP-10B
Date	7/23/2007	7/17/2008	7/23/2007	7/17/2008	7/23/2007	7/17/2008	7/23/2007	7/17/2008	7/23/2007	7/17/2008	7/17/2008
Event	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE 3Q08	SVE BASE 1	SVE 3Q08	SVE 3Q08
Units	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)
Analyte											
1,1,1-Trichloroethane	<320	<50	<2.9	1.4F	<1200	0.88F	<7.2	<2	<220	<63	<63
1,1,2,2-Tetrachloroethane	3000	2100	<2.9	5.9F	950F	8.4	4.9F	0.92F	83F	8400	8400
1,1,2-Trichloro-1,2,2-trifluoroethane	<320	<50	<2.9	<7.9	<1200	<3.6	<7.2	1.4F	<220	<63	<63
1,1,2-Trichloroethane	400	160	<2.9	<7.9	<1200	<3.6	<7.2	<2	<220	700	700
1,1-Dichloroethane**	<320	18F	<2.9	<7.9	<1200	<3.6	<7.2	<2	<220	<63	<63
1,1-Dichloroethane	<320	22F	1.9F	98	<1200	60	<7.2	2.9	<220	<63	<63
1,2,4-Trimethylbenzene**	<320	<50	<2.9	<7.9	<1200	<3.6	<7.2	<2	<220	<63	<63
1,2-Dichloro-1,1,2,2-tetrafluoroethane**	<320	<50	<2.9	<7.9	<1200	<3.6	<7.2	<2	<220	<63	<63
1,2-Dichloroethane	240F	<50	<2.9	<7.9	<1200	<3.6	28	<2	<220	<63	<63
1,2-Dichloropropane**	<320	<50	<2.9	<7.9	<1200	<3.6	<7.2	<2	<220	<63	<63
1,4-Dichlorobenzene**	<320	<50	<2.9	<7.9	<1200	<3.6	<7.2	<2	<220	<63	<63
Benzene	<320	17F	<2.9	2.6F	<1200	110	<7.2	<2	<220	<63	<63
Carbon tetrachloride	930	24F	360	780	60000	460	430	67	16000	16F	16F
Chloroethane**	<320	<50	<2.9	<7.9	<1200	<3.6	<7.2	<2	<220	<63	<63
Chloroform	1400	360	2700D	1100	190000	480	920	5.9	56000	260	260
Chloromethane**	<800	<120	<7.1	<20	<2800	<9.1	<18	<5	<550	<180	<180
cis-1,2-Dichloroethane	7400	2600	46	26	2800	9.3	10F	<3	420	<94	<94
Dichlorodifluoromethane	<320	<50	<2.9	48	<1200	37	<7.2	<2	<220	<63	<63
Ethylbenzene	<320	<50	<2.9	<7.9	<1200	20	<7.2	<2	<220	<63	<63
Methylene chloride	240F B	22F B	1.4F B	4F B	2100F B	3.5F B	3.7F B	1.6F B	210F B	67F B	67F B
m-Xylene & p-Xylene**	<320	<50	<2.9	<7.9	<1200	3.4F	<7.2	<2	<220	<63	<63
o-Xylene**	<320	<50	<2.9	<7.9	<1200	1.7F	<7.2	<2	<220	<63	<63
Styrene**	<320	<50	<2.9	<7.9	<1200	<3.6	<7.2	<2	<220	<63	<63
Tetrachloroethane	810	180	4.7	190	16000	110	63	4.7	3000	23F	23F
Toluene	<320	<50	<2.9	<7.9	<1200	28	<7.2	<2	<220	<63	<63
Trichloroethane	40000	11000	680B	2400	97000B	1000	710	2.7	27000B	530	530
Trichlorofluoromethane	<320	<50	<2.9	3.2F	<1200	2.3F	<7.2	0.33F	<220	<63	<63
Vinyl chloride	330	92	1.1F	<7.9	<1200	<3.6	<7.2	<2	<220	<63	<63
Total VOCs*	54270	16572	3700.7	4610	365600	2310.7	2131	83.2	101420	6890	6890

Notes:

Bold: Detected above RL

B: Method Blank Contamination

F: Estimate -result >MDL and <RL

D: Result obtained from analysis of dilution

<: Result is less than laboratory detection limit.

* Sum of detected analytes above reporting limit.

** Not detected above RL

ppb v/v: parts per billion volume per volume

TABLE 6
 ANALYTICAL RESULTS SUMMARY - SYSTEM INFLUENT (3Q08 EVENT)
 FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
 DUNN FIELD SOURCE AREAS REMEDIAL ACTION
 Defense Depot Memphis, Tennessee

Location	INF-3Q08
SampleID	FSVE-INF-3Q08
Date	7/17/2008
Event	3Q08
Analyte	ppb(v/v)
1,1,1-Trichloroethane	11F
1,1,2,2-Tetrachloroethane	2700
1,1,2-Trichloro-1,2,2-trifluoroethane	24F
1,1,2-Trichloroethane	25F
1,1-Dichloroethene	58F
1,2-Dichloroethane	<62
1,2-Dichloropropane	<62
Benzene	28F
Carbon tetrachloride	15F
Chloroform	420
cis-1,2-Dichloroethene	1400
Dichlorodifluoromethane	<62
Methylene chloride	77F B
Tetrachloroethene	140
Toluene	<62
Trichloroethene	6800
Trichlorofluoromethane	<62
Vinyl chloride	97
Total VOCs*	11557

Notes:

Bold: Detected above RL

B: Method Blank Contamination

F: Estimate -result >MDL and <RL

<: Result is less than laboratory detection limit.

***** Sum of detected analytes above reporting limit.

Units: ppb v/v: parts per billion volume per volume

TABLE 7
ANALYTICAL RESULTS SUMMARY - SVE WELLS (3Q08 EVENT)
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Location	SVE-A	SVE-B	SVE-C	SVE-D	SVE-D DUP	SVE-E	SVE-F	SVE-G
Date	8/14/2008 ⁽¹⁾	7/16/2008	7/16/2008	7/16/2008	7/16/2008	7/16/2008	7/16/2008	7/16/2008
Event	3Q08	3Q08	3Q08	3Q08	3Q08	3Q08	3Q08	3Q08
Units	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)	ppb(v/v)
Analyte								
1,1,2,2-Tetrachloroethane	4.4	9.8	20000	14000	11000	7.2	9.4	420
1,1,2-Trichloroethane	<2	<2	210	<240	<180	<2	<2	8.9
1,1-Dichloroethane	<2	<2	<58	<240	<180	0.42F	0.37F	6.4
1,2-Dichloroethane	<2	<2	37F	<240	<180	<2	<2	3.7F
1,2-Dichloropropane	<2	<2	<58	<240	<180	<2	<2	4.6F
Benzene	<2	0.57F	<58	<240	<180	<2	0.67F	4.1F
Carbon tetrachloride	<2	<2	<58	<240	<180	<2	<2	72
Chloroform	6.7	1.9F	160	<240	<180	1.6F	1.6F	2000
cis-1,2-Dichloroethene	1.2F	6	4000	880	580	6.2	5.7	47
Dichlorodifluoromethane	<2	<2	<58	<240	<180	<2	<2	2.8F
Methylene chloride	3.2F B	1.5F B	31F B	210F B	730B	1.4F B	1.9F B	31B
Tetrachloroethene	1.9F	0.55F	59	670	600	0.49F	0.46F	27
Toluene	0.99F	0.85F	<58	<240	51F	0.66F	0.86F	<5.1
Trichloroethene	13	24	13000	28000	25000	24	24	600
Trichlorofluoromethane	0.49F	<2	<58	<240	61F	<2	0.28F	<5.1
Vinyl chloride	<2	<2	<58	<240	<180	<2	<2	3.8F
Total VOCs*	24.1	39.8	37429	43550	37910	36.4	38.1	3212.3

Notes:

Bold: Detected above RL

B: Method Blank Contamination

F: Estimate -result >MDL and <RL

<: Result is less than laboratory detection limit.

* Sum of detected analytes above reporting limit.

Units: ppb v/v; parts per billion volume per volume

(1): Samples collected at SVE-A on 07/16/08 contained excess water were unable to be analyzed by the laboratory. SVE-A was resampled on 08/14/08.

TABLE 8
HISTORICAL RESULTS FOR PRIMARY CVOCs
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Sample Date	Analyte	SVE-A	SVE-B	SVE-C	SVE-D	SVE-E	SVE-F	SVE-G	SVE-INF
		ppb(v/v)							
7/25/2007	1,1,2,2-Tetrachloroethane	410	230	110000	140000	<3800	150	2600F	290000
Base 1	Chloroform	850	52	4400F	530F	<3800	32	610000	53000
	cis-1,2-Dichloroethene	10000	210	450000	10000	5500F	130	5500	220000
	Tetrachloroethene	590	16	10000	18000	5700	10	13000	19000
	Trichloroethene	38000	960B	1300000B	740000B	320000	670	260000	670000B D
	Total VOCs*	50570	1503	1876600	908000	330300	1003	925500	1261100
8/23/2007	1,1,2,2-Tetrachloroethane	13	14	23000	26000	35	12	13000	8500
Base 4	Chloroform	1600D	4.7	330F	110F	6.8F	4.2	94000	4000
	cis-1,2-Dichloroethene	210	4.1	17000	1600	28	3.8	1400	3500
	Tetrachloroethene	120	0.72	1000	1500	4.8F	0.62	2800	530
	Trichloroethene	700	17	37000	37000	540	15	27000	14000
	Total VOCs*	3400	48	80020	66920	628	41	149440	31560
9/19/2007	1,1,2,2-Tetrachloroethane	4.4F	2	1900	81	740	0.95	4000	70F
Base 5	Chloroform	7200	3.8	76F	6.3	30	4.6	22000	3100
	cis-1,2-Dichloroethene	240	4.7	2700	26	340	5.8	260	3200
	Tetrachloroethene	420	0.21	190	9.7	63	0.2	1300	<170
	Trichloroethene	1600	15	7300	370	5200	19	5900	12000
	Total VOCs*	11130	28	12340	493	6406	33	37860	19090
10/18/2007	1,1,2,2-Tetrachloroethane	14	3.3	3200	3700	3.1	2.8	1100	3100
4Q07	Chloroform	4200D	1.6	110F	35F	1.4	1.5	6200	2000
	cis-1,2-Dichloroethene	120	1.2	3300	210	1.1	1	73	1600
	Tetrachloroethene	260	0.78	340	450	0.73	0.86	390	470
	Trichloroethene	1100D	6	16000	4600	5.5	5.3	1500	8100
	Total VOCs*	6507	18	22840	8960	17	17	10663	15930
1/17/2008	1,1,2,2-Tetrachloroethane	730	10	410	4500	14	9.9	450	1000
1Q08	Chloroform	5300	16	60	38F	17	21	32000	3100
	cis-1,2-Dichloroethene	140	17	2100	140	18	22	210F	3500
	Tetrachloroethene	190	2.5	170	300	3.5	860	1100	330
	Trichloroethene	720	51	13000	3100	68	68	5500	11000
	Total VOCs*	7985	101	15680	8040	127	981	40550	19830
4/24/2008	1,1,2,2-Tetrachloroethane	76	1.5	500	4300	2.7	<0.2	9.5	1800
2Q08	Chloroform	4800	0.48	170	7 F	5.1	0.47	6.3	2200
	cis-1,2-Dichloroethene	21	1.3	2500	110	11	0.64	0.72	3100
	Tetrachloroethene	22	0.062F	180	190	2	<0.2	0.29	170
	Trichloroethene	94	2	13000	2600	120	1.1	3.5	7400
	Total VOCs*	5095.3	9.99	16350	7200	147.16	5.15	25.38	15204
7/16/2008	1,1,2,2-Tetrachloroethane	4.4	9.8	20000	14000	7.2	9.4	420	2700
3Q08	Chloroform	6.7	1.9 F	160	<240	1.6 F	1.6 F	2000	420
	cis-1,2-Dichloroethene	1.2 F	6	4000	880	5.2	5.7	47	1400
	Tetrachloroethene	1.9 F	0.55 F	59	670	0.49 F	0.46 F	27	140
	Trichloroethene	13	24	13000	28000	24	24	600	6800
	Total VOCs*	24.1	39.8	37429	43550	36.4	39.1	3212.3	11557

Notes

B: Method Blank Contamination

D: Result obtained from analysis of dilution

F: Estimate -result >MDL and <RL

N/C: Sample not collected.

<: Result is less than laboratory detection limit.

* Sum of detected analytes above reporting limit.

ppb v/v: parts per billion volume per volume

VOC: volatile organic compound

TABLE 9
AVERAGE VOC CONCENTRATIONS USED FOR MASS CALCULATIONS
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

Sample Date	System Influent			System Effluent		
	PID Reading (ppm)	Laboratory Total VOC Influent Concentration (ppbv)	VOC Concentration Used for Mass Emission Calculations ⁽¹⁾ (ppbv)	PID Reading (ppm)	Laboratory Total VOC Effluent Concentration (ppbv)	VOC Concentration Used for Mass Emission Calculations ⁽¹⁾ (ppbv)
7/25/2007	NR	1,261,000	1,261,000	NR	5.82	5.82
7/26/2007	>10,000	NS	803,250 ⁽²⁾	5.7	NS	2.91 ⁽²⁾
7/27/2007	1081	NS	545,500	0	NS	0
7/28/2007	538	NS	269,000	0.2	NS	100
7/29/2007	488	NS	243,000	0.1	NS	50
7/30/2007	279	NS	139,500	2.7	NS	1,350
8/3/2007	NR ⁽³⁾	119,700	119,700	NR ⁽³⁾	207,000	207,000
8/13/2007	NR	NS	108,745 ⁽⁴⁾	NR	NS	0 ⁽⁵⁾
8/16/2007	116	99,780	99,780	0	30.59	30.59
8/23/2007	74.3	31,560	31,560	0.1	42.31	42.31
9/19/2007	21.3	14,800	14,800	27.4	19,090	19,090
10/18/2007	17.5	15,930	15,930	N/C	N/C	15,930 ⁽⁶⁾
1/17/2008	18.8	NS	19,830	N/C	N/C	19,830 ⁽⁶⁾
3/20/2008	10.4	NS	19,076 ⁽⁷⁾	N/C	N/C	19,076 ⁽⁶⁾
4/17/2008	34.5	NS	34,500 ⁽⁸⁾	N/C	N/C	34,500 ⁽⁶⁾
4/24/2008	13.5	15,204	15,204	N/C	N/C	15,204 ⁽⁶⁾
7/16/2008	17.6	11,557	11,557	N/C	N/C	11,557 ⁽⁶⁾
8/1/2008	21.8	NS	11557 ⁽⁹⁾	N/C	N/C	11,557 ⁽⁶⁾

Notes:

- (1) Laboratory sample total VOC concentration used for calculation. If not sample was collected or results are not available, then concentration is half of the PID reading unless otherwise noted. PID readings more accurately reflect declining concentrations trends.
 - (2) Concentration is average of concentrations from 07/25/07 and 07/27/07.
 - (3) To minimize system operation time, the SVE system was online for laboratory sampling only.
 - (4) Concentration is average of concentrations from 08/03/07 and 08/16/07.
 - (5) Concentration estimated to be 0 ppb following carbon change out.
 - (6) Treatment system offline. VOC influent concentration used for mass emission calculation.
 - (7) Start of Rebound Event #1. No sample collected. Concentration is 98.2% of concentration from 1/17/08 and is based on mass rates from four online SVE wells prior to shutdown.
 - (8) End of Rebound Event #1. No sample collected. Concentration from PID readings.
 - (9) No sample collected. Used VOC concentration from 07/16/08.
- NR: PID reading not collected
NS: Sample not collected.
N/C: Not sample collected. Treatment system offline.
N/A: Not applicable.

TABLE 10
MASS EMISSIONS CALCULATIONS
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM - OPERATIONS SUMMARY #7
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

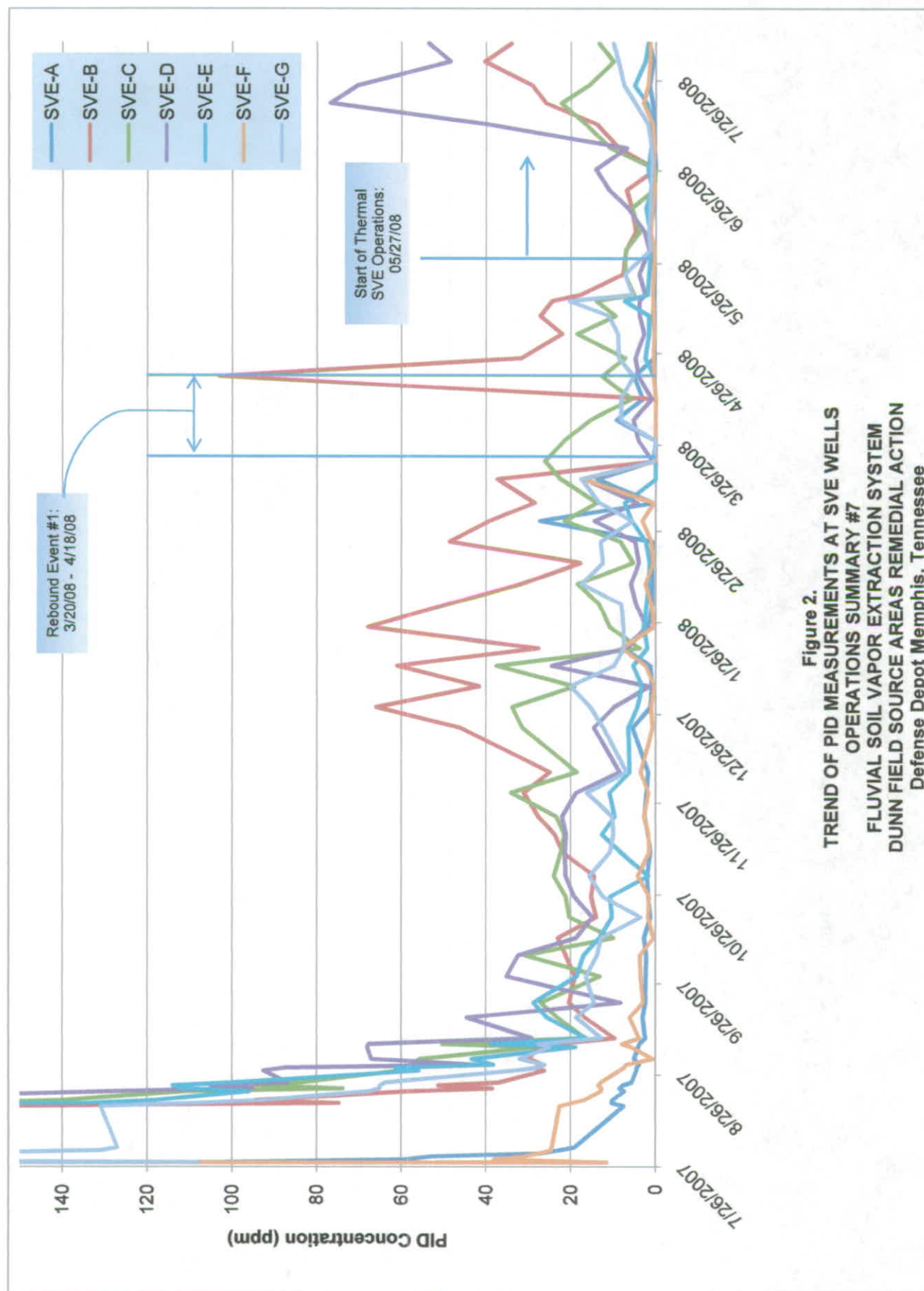
SVE System Data				Influent				Effluent		Treatment System	
		Hours Operating Between Dates	Average Flow rate (scfm)	Average Influent VOC Concentration (ppbv)	Influent Emission Rate ⁽¹⁾ (lb/hr)	Estimated VOC Mass Removal During Period (lbs)	Cumulative Mass Removed From Fluvial Subsurface (lbs)	Average Effluent VOC Concentration (ppbv)	Effluent Emission Rate ⁽²⁾ (lb/hr)	VOC Mass Captured by Treatment System (lbs)	Cumulative VOC Mass Captured by Treatment System (lbs)
Start Date	End Date										
7/25/2007	7/25/2007	4	755	1,082,125	18,995	88.0	88.0	4.4	0.000	88.0	88.0
7/26/2007	7/26/2007	4	755	724,375	11,377	45.5	113.5	1.5	0.000	45.5	113.5
7/27/2007	7/27/2007	24	785	407,250	6,650	159.6	273.1	50	0.001	159.6	273.1
7/28/2007	7/28/2007	24	746	256,000	3,973	95.3	368.4	75	0.001	95.3	368.4
7/29/2007	7/29/2007	24	741	191,250	2,948	70.8	439.2	700	0.009	70.5	438.9
7/30/2007	8/2/2007	66	739	129,600	1,992	131.5	570.7	104,175	1.294	46.1	485.0
8/3/2007	8/12/2007	20	740	114,723	1,766	35.3	606.0	207,000	2.351	(11.7)	473.3 ⁽³⁾
8/13/2007	8/15/2007	39	602	104,768	1,312	51.2	657.2	15.3	0.000	51.2	51.2
8/16/2007	8/22/2007	167	596	65,675	0,814	136.0	793.1	36.5	0.000	135.9	187.1
8/23/2007	9/19/2007	640	758	23,180	0,366	233.9	1,027.1	9,566	0.111	162.7	349.8
9/19/2007	10/18/2007	699	795	15,365	0,254	177.6	1,204.7	17,510	0.290	59.5	409.3 ⁽⁴⁾
10/18/2007	1/17/2008	2,077	748	17,890	0,278	577.6	1,782.3	N/C	0.278	N/A	N/A
1/17/2008	3/20/2008	1413	738	17,517	0,269	380.0	2,162.3	N/C	0.269	N/A	N/A
3/20/2008	4/17/2008	626	385 ⁽⁵⁾	19,076	0,153	95.6	2,257.9	N/C	0.153	N/A	N/A
4/17/2008	4/24/2008	145	784	24,852	0,405	58.8	2,316.7	N/C	0.405	N/A	N/A
4/24/2008	7/16/2008	1981	741	13,381	0,206	408.8	2,725.5	N/C	0.206	N/A	N/A
7/16/2008	8/1/2008	362	713	11,557	0,171	62.0	2,787.5	N/C	0.171	N/A	N/A

Notes:

- (1) Calculation based on TCE which is the primary constituent.
 - (2) Calculation based on xylene (primary constituent from sample collected 07/25), cis-1,2-DCE (primary constituent from sample collected on 8/03/07), vinyl chloride (primary constituent from samples collected on 8/16 and 8/23), or TCE (primary constituent from sample collected on 9/19/07 and 10/18/07).
 - (3) GAC replaced on 13 August 2007.
 - (4) GAC replaced on 26 December 2007.
 - (5) Rebound Event #1 occurred between 03/20/08 and 04/17/08. SVE-B, SVE-E, and SVE-F were offline.
- N/A: Not applicable. Treatment system taken offline on 10/05/07.
N/C: No sample collected. Treatment system offline. Influent emissions rates used for effluent emission rates.

FIGURES

- 1 Fluvial SVE System
- 2 Trend of PID Measurements at SVE Wells
- 3 Trend of PID Measurements at VMP –A Wells
- 4 Trend of PID Measurements at VMP –B Wells
- 5 Influent Concentration Trend - Analytical Results and Field PID Measurements
- 6 Trend of Total VOC Concentrations at SVE Wells and Influent



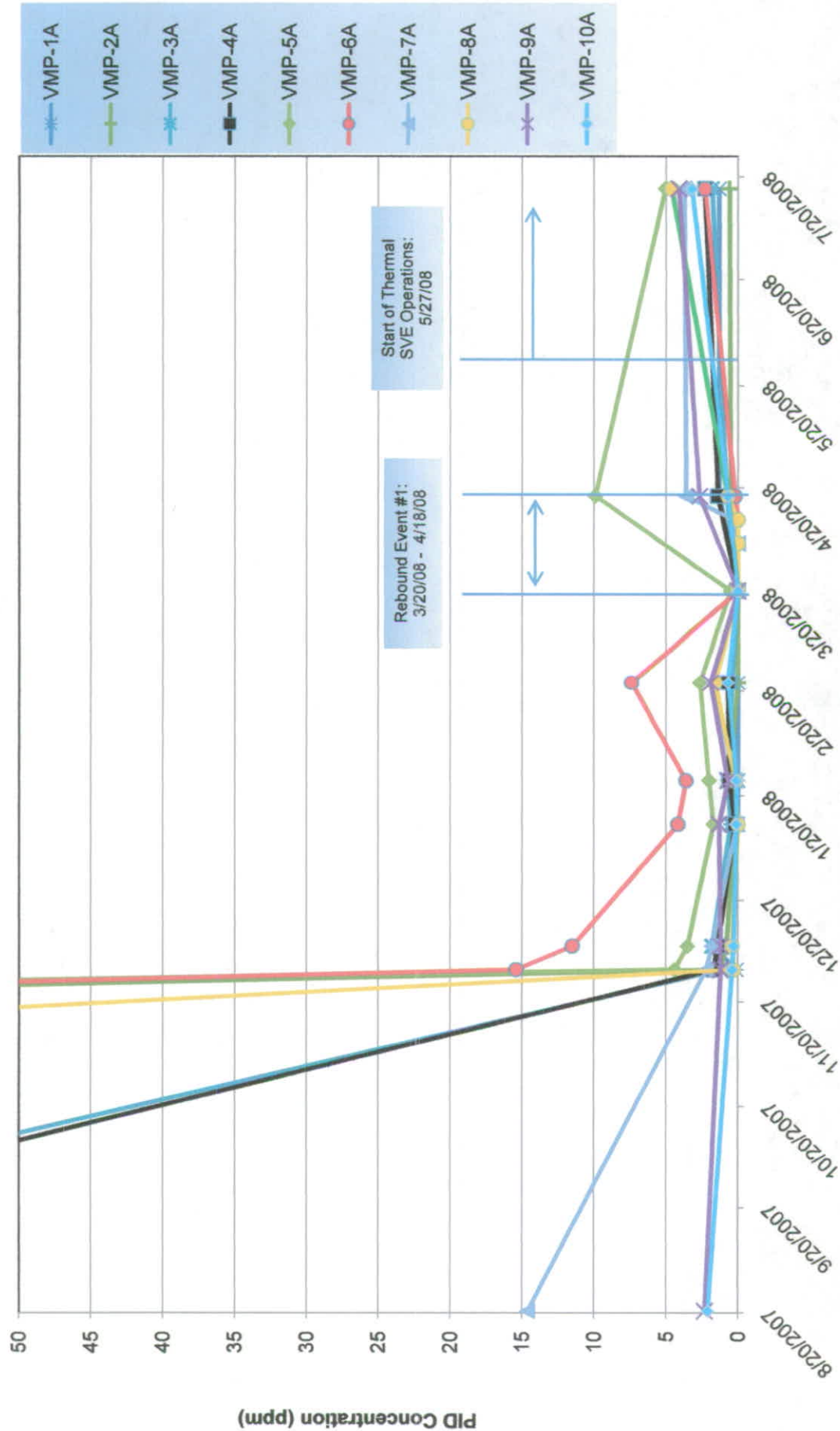


Figure 3.
TREND OF PID MEASUREMENTS AT VMP -A WELLS
OPERATIONS SUMMARY #7
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

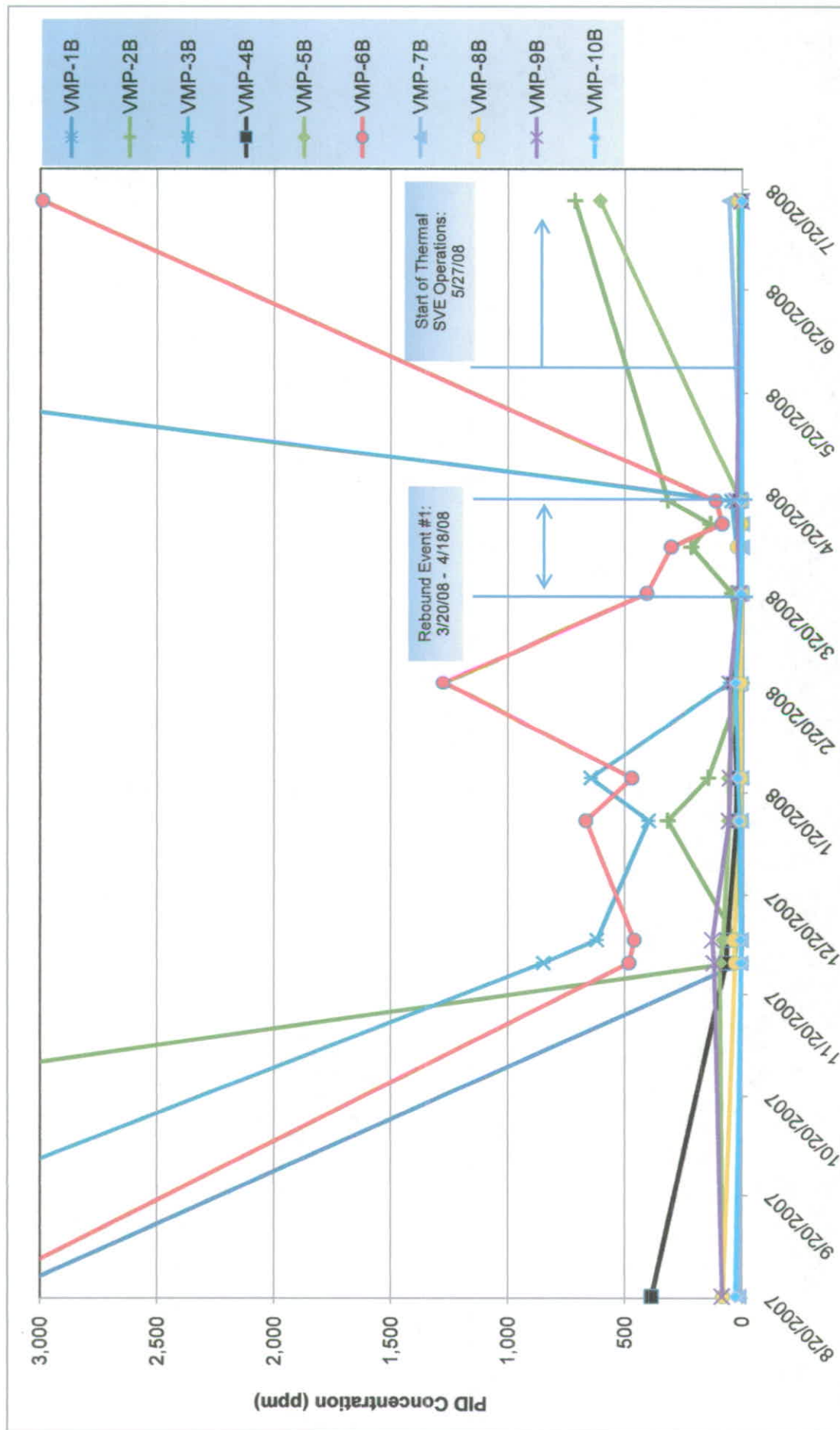


Figure 4.
Trend of PID Measurements at VMP-B Wells
Operations Summary #7
Fluvial Soil Vapor Extraction System
Dunn Field Source Areas Remedial Action
Defense Depot Memphis, Tennessee

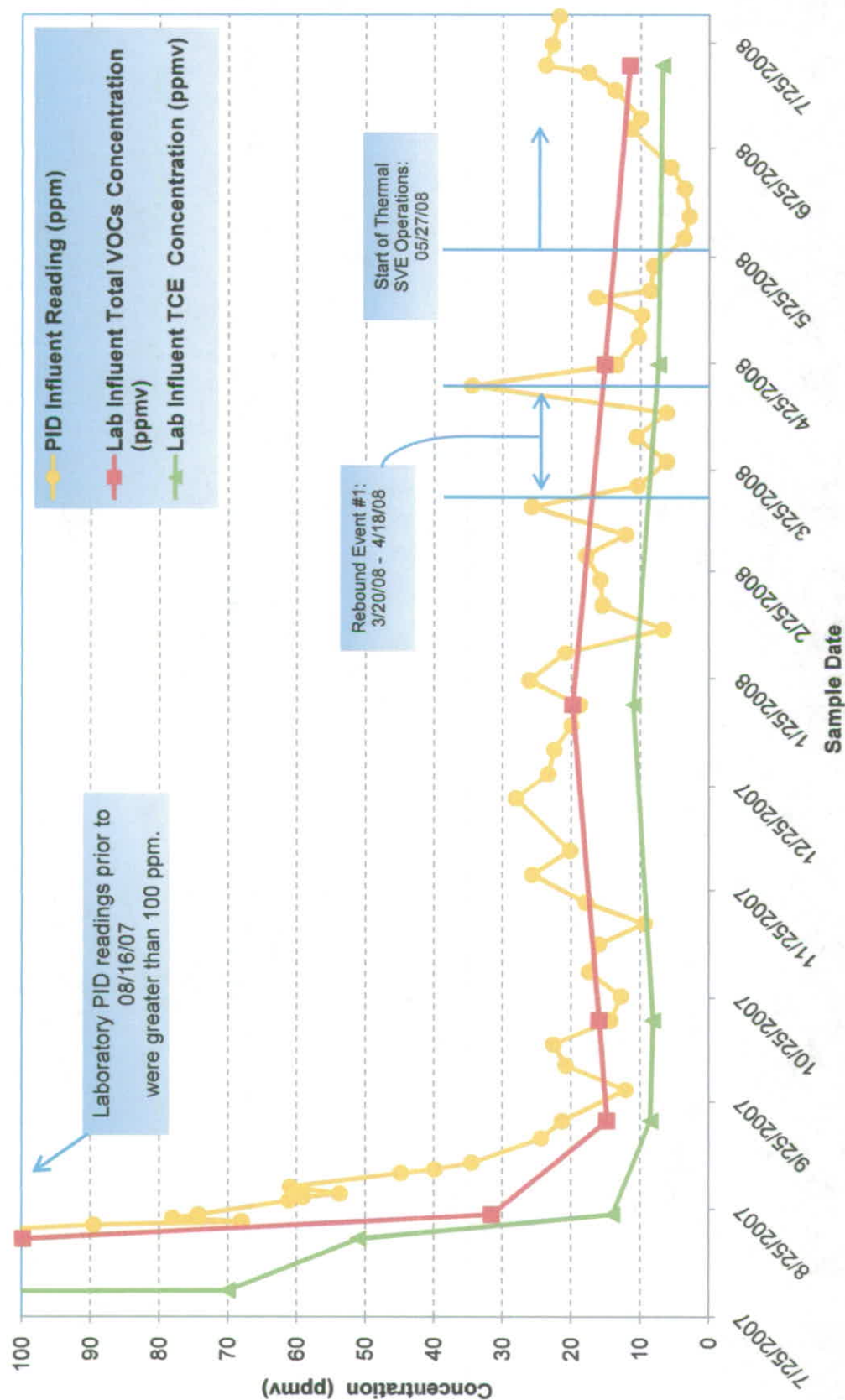


Figure 5.
INFLUENT CONCENTRATION TREND - ANALYTICAL RESULTS AND FIELD PID MEASUREMENTS
OPERATIONS SUMMARY #7
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

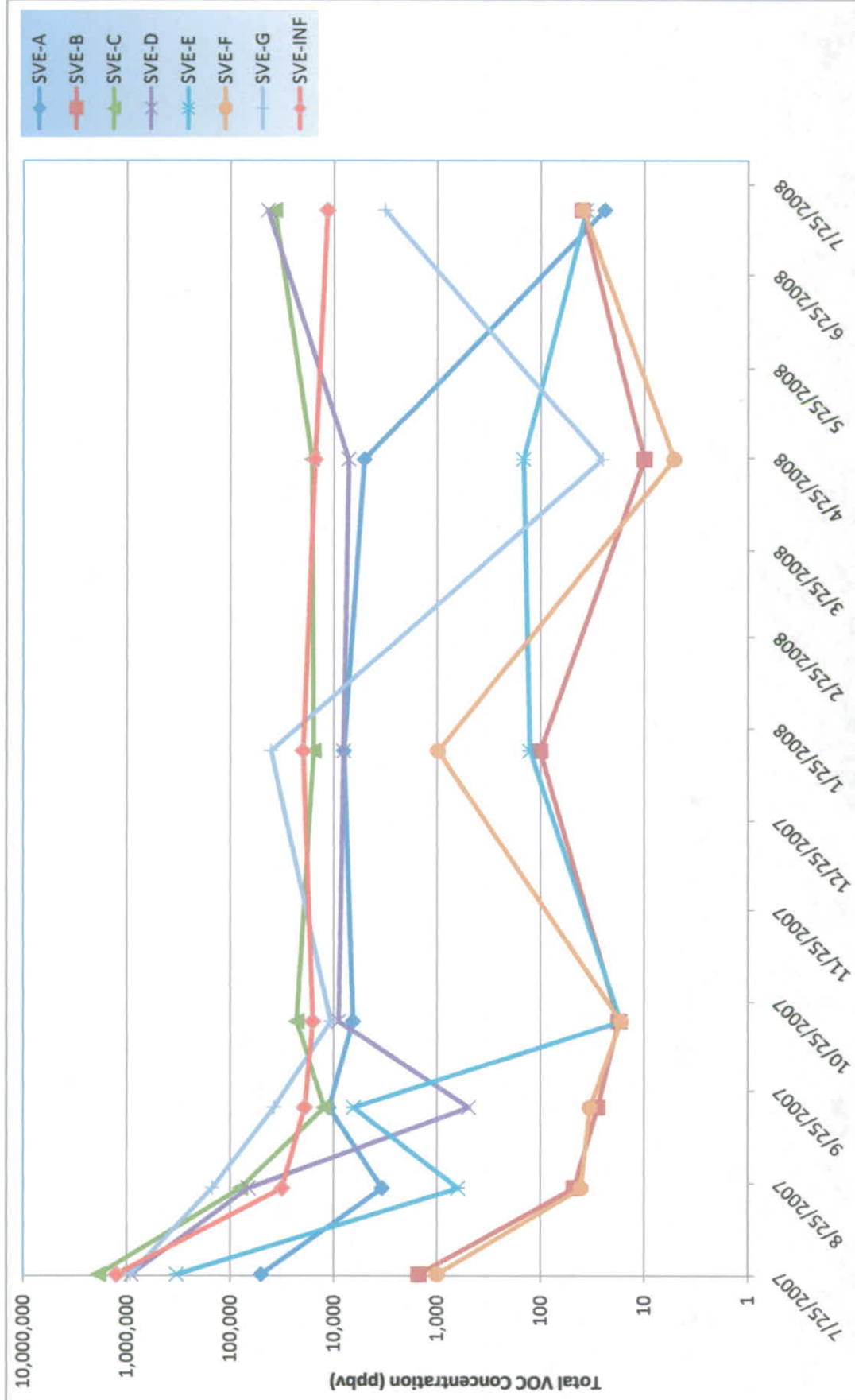


Figure 6.
TREND OF TOTAL VOC CONCENTRATIONS AT SVE WELLS AND INFLUENT
OPERATIONS SUMMARY #7
FLUVIAL SOIL VAPOR EXTRACTION SYSTEM
DUNN FIELD SOURCE AREAS REMEDIAL ACTION
Defense Depot Memphis, Tennessee

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ADMINISTRATIVE RECORD

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