



DEPARTMENT OF THE NAVY
COMMANDER
NAVY REGION HAWAII
850 TICONDEROGA ST STE 110
JBPHH, HAWAII 96860-5101

APR 21 2014 *lw*

5090
Ser N45/283
April 15, 2014

CERTIFIED NO: 7011 0110 0002 1803 7714

Mr. Richard Takaba
Hawaii State Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
Underground Storage Tank Section
919 Ala Moana Boulevard, Room 212
Honolulu, HI 96814

Dear Mr. Takaba:

SUBJECT: RED HILL TANK COMPLEX
SOIL VAPOR SAMPLING RESULTS FOR APRIL 7, 2014
DOH FACILITY ID NO. 9-102271
DOH RELEASE ID NO. 99051, 010011, 020028, AND 140010

Soil vapor samples were collected from beneath Red Hill Tanks 2 through 10 on April 7, 2014.

Soil vapor samples were analyzed in the field for VOC concentrations using a photo-ionization detector. The soil vapor sampling results are being submitted as Enclosure 1.

A conservative approach is to assess the integrity of the associated tank system if VOC concentrations exceed 280,000 ppbv in soil vapor monitoring probes beneath tanks containing JP-5 or JP-8, or 14,000 ppbv in soil vapor monitoring probes beneath tanks containing marine diesel fuel. These values are 50 percent of the calculated vapor concentration from fuel-saturated water.

Soil vapor VOC concentrations detected at Tanks 2, 3, 9, and 10 increased significantly since the last time the probes at those tanks were sampled on March 25, 2014, with the exception of the probes at SV03D. The VOC concentration detected in SV03D decreased from 274,000 ppbv on March 25 to 12,300 ppbv on April 7. Soil vapor VOC concentrations at Tank 4 decreased by an order of magnitude between March 25 and April 7.

Soil vapor VOC concentrations detected at Tanks 5, 6, 7, and 8 during this sampling event were consistent with concentrations detected during the previous sampling event on April 3, 2014. Concentrations of VOCs detected in the front, middle, and outer

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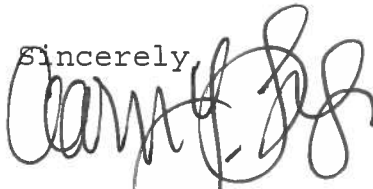
edge soil vapor monitoring probes at Tank 5 were 76,100 ppbv, 413,000 ppbv, and 401,000 ppbv, respectively.

During the March 21 and April 3, 2014 sampling events, Tank 5 was being vented. Tank 5 was not being vented during the April 7, 2014 sampling event.

The next event is tentatively scheduled for the week of April 14, 2014, and will include collecting samples from soil vapor monitoring probes beneath Tanks 5, 6, 7, and 8.

If there are any questions regarding this matter, or if more information is needed, please contact Ms. Raelynn Kishaba at (808) 471-1171, extension 233.

Sincerely,



AARON Y. POENTIS
Director
Regional Environmental Department
By direction of the
Commander

Enclosure: 1. Summary of Soil Vapor Sampling Results for Tanks 2 through 10 through April 7, 2014 (18 pages)

Copy to: LCDR Angela Watson, NAVSUP FLC Pearl Harbor
Mr. Walter Riddlehoover, DLA Energy Pacific

Table 1
Soil Vapor Results for SV02
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

Date	SV02S	SV02M	SV02D
3/24/2008	NC	NC	NC
5/6/2008	129	252	157
5/29/2008	1785	1217	657
7/3/2008	1090	984	525
7/31/2008	728	677	437
9/2/2008	754	693	434
9/29/2008	520	553	456
10/23/2008	493	555	413
11/25/2008	3396	1762	2792
1/14/2009	89	329	312
2/5/2009	188	264	202
2/26/2009	1912	348	184
4/1/2009	169	195	102
4/20/2009	704	557	504
5/27/2009	1473	835	799
6/29/2009	2141	659	511
7/20/2009	1360	628	544
8/28/2009	564	318	258
9/24/2009	488	294	241
10/29/2009	999	425	533
11/19/2009	305	283	241
12/16/2009	356	284	238
1/28/2010	684	283	299
2/22/2010	364	159	135
3/25/2010	394	340	277
4/28/2010	385	282	209
5/26/2010	374	252	294
6/28/2010	400	253	223
7/28/2010	332	232	205
9/29/2010	224	217	207
10/18/2010	525	577	565
11/16/2010	303	424	338
12/14/2010	313	416	330
1/14/2011	494	357	651
2/15/2011	280	298	283
3/15/2011	221	208	217
4/18/2011	327	270	305

Date	SV02S	SV02M	SV02D
5/18/2011	980	562	755
6/22/2011	184	205	162
7/27/2011	101	83	86
9/22/2011	318	268	313
10/27/2011	270	241	211
11/22/2011	235	226	183
12/16/2011	408	333	397
1/20/2012	103	111	239
2/23/2012	132	167	161
3/13/2012	222	155	58
4/16/2012	115	92	149
5/15/2012	146	145	131
6/19/2012	292	276	230
7/10/2012	206	184	194
8/14/2012	389	362	348
10/24/2012	166	139	144
11/26/2012	101	72	110
12/18/2012	106	83	97
1/31/2013	546	914	966
2/28/2013	47	26	18
3/28/2013	12	12	5
4/25/2013	13	15	18
5/30/2013	204	153	176
6/27/2013	13	15	15
7/25/2013	258	252	316
8/29/2013	165	28	11
9/26/2013	304	263	306
10/24/2013	281	271	285
11/21/2013	186	172	140
12/23/2013	21	33	61
1/30/2014	11	11	8
2/24/2014	135	51	82
3/5/2014	1	0	0
3/10/2014	1	11	1
3/25/2014	146	19	47
4/7/2014	575	342	308

ppbv: parts per billion by volume
 NC: Not collected

ENCLOSURE(1)

Figure 1
Soil Vapor Measurements
SV02

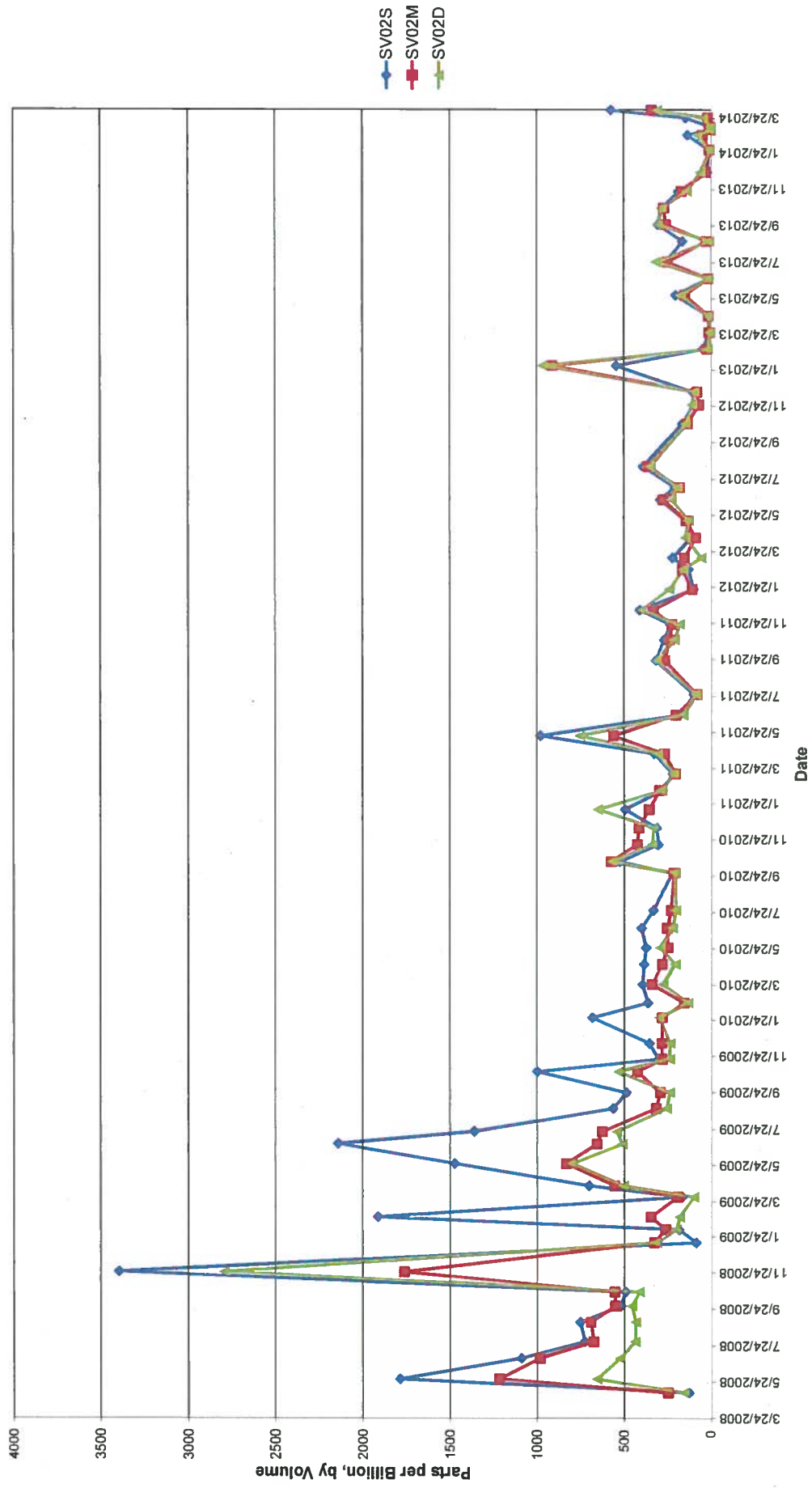


Table 2
Soil Vapor Results for SV03
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

Date	SV03S	SV03M	SV03D
3/24/2008	458	248	579
5/6/2008	668	521	328
5/29/2008	652	685	458
7/3/2008	1504	1044	1024
7/31/2008	1313	1245	951
9/2/2008	1645	1458	1237
9/29/2008	4425	3982	1804
10/23/2008	1423	1261	1058
11/25/2008	1060	1417	742
1/14/2009	4658	1593	1635
2/5/2009	710	1756	1470
2/26/2009	2616	1486	822
4/1/2009	407	611	571
4/20/2009	419	573	546
5/27/2009	568	528	481
6/29/2009	592	665	662
7/20/2009	1000	971	1272
8/28/2009	615	703	587
9/24/2009	658	838	860
10/29/2009	782	816	902
11/19/2009	697	707	740
12/16/2009	553	800	632
1/28/2010	531	569	575
2/22/2010	469	641	457
3/25/2010	410	919	750
4/28/2010	478	733	642
5/26/2010	467	470	621
6/28/2010	540	645	582
6/28/2010	540	645	582
7/28/2010	504	528	520
9/29/2010	242	257	259
10/18/2010	876	691	863
11/16/2010	492	367	581
12/14/2010	178	463	732
1/14/2011	436	555	627
2/15/2011	438	474	542
3/15/2011	272	300	350
4/18/2011	354	316	401

Date	SV03S	SV03M	SV03D
5/18/2011	565	672	840
6/22/2011	386	268	328
7/27/2011	126	115	127
8/26/2011	108	94	146
9/22/2011	318	309	346
10/27/2011	246	294	269
11/22/2011	265	265	338
12/16/2011	274	218	161
1/20/2012	223	101	151
2/23/2012	150	174	190
3/13/2012	173	341	104
4/16/2012	230	100	131
5/15/2012	166	162	196
6/19/2012	329	422	402
7/10/2012	245	246	265
8/14/2012	356	365	410
10/24/2012	246	178	168
11/26/2012	108	136	139
12/18/2012	109	79	78
1/31/2013	17	12	54
2/28/2013	215	104	127
3/28/2013	52	15	42
4/25/2013	27	34	39
5/30/2013	145	160	141
6/27/2013	25	35	35
7/25/2013	179	146	145
8/29/2013	8	2	13
9/26/2013	49	27	35
10/24/2013	277	277	277
11/21/2013	128	150	129
12/23/2013	8	6	17
1/30/2014	41	46	9444
2/24/2014	70	162	5290
3/5/2014	20	17	26800
3/10/2014	8	27	5922
3/25/2014	87	385	274000
4/7/2014	676	1054	12300

ppbv: parts per billion by volume

Figure 2
Soil Vapor Measurements
SV03

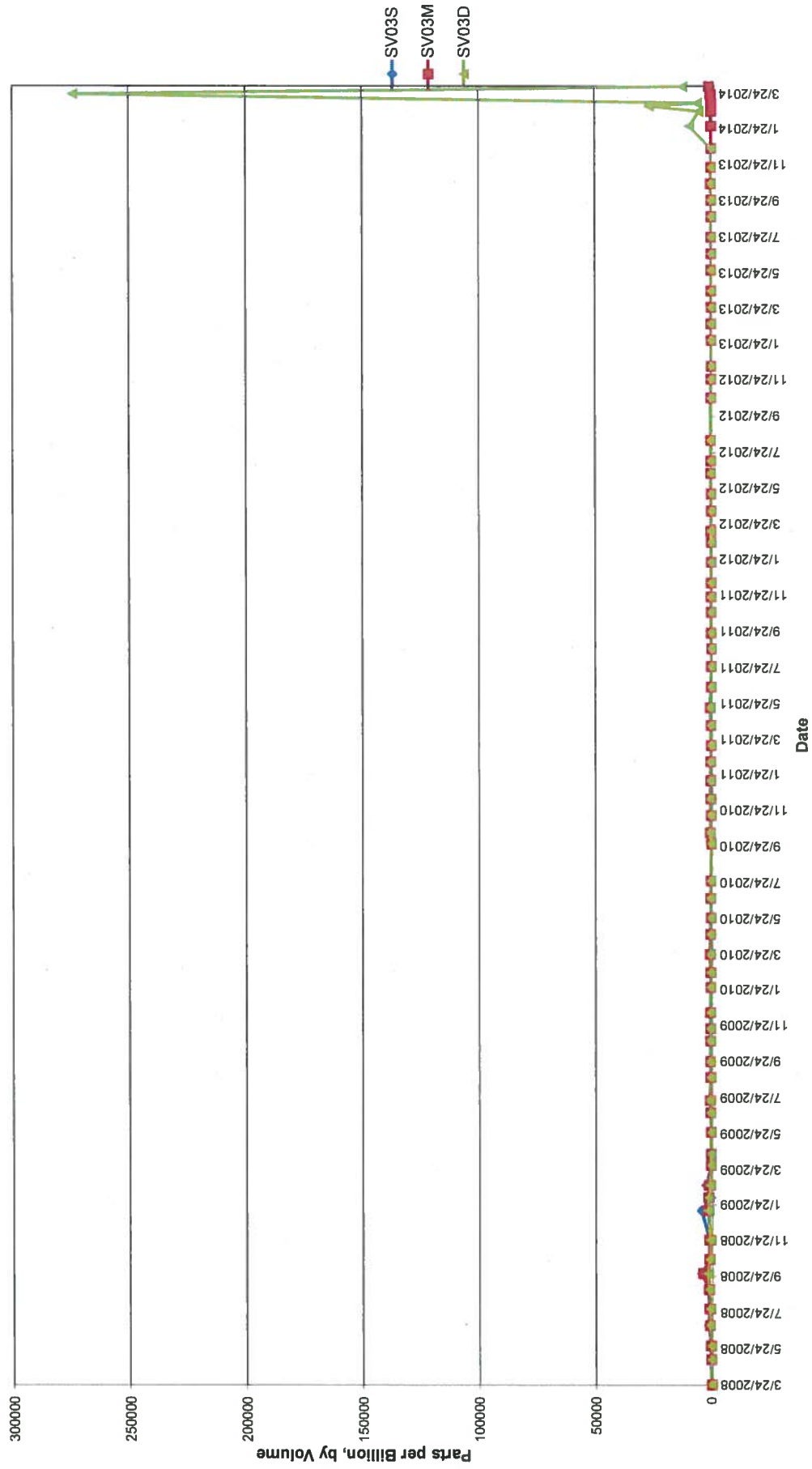


Table 3
Soil Vapor Results for SV04
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

Date	SV04S	SV04M	SV04D
3/24/2008	468	641	827
5/6/2008	1076	1235	1228
5/29/2008	613	634	681
7/3/2008	696	898	806
7/31/2008	836	1009	1144
9/2/2008	972	1270	1233
9/29/2008	941	1454	1436
10/23/2008	802	1192	1321
11/25/2008	460	799	893
1/14/2009	72	1081	1138
2/5/2009	136	561	746
2/26/2009	1920	1147	847
4/1/2009	365	586	608
4/20/2009	465	662	695
5/27/2009	489	627	740
6/29/2009	526	714	796
7/20/2009	603	1354	1010
8/28/2009	511	647	751
9/24/2009	609	734	846
10/29/2009	682	931	881
11/19/2009	569	739	788
12/16/2009	464	655	726
1/28/2010	448	592	616
2/22/2010	381	555	713
3/25/2010	539	761	656
4/28/2010	505	627	683
5/26/2010	463	618	600
6/28/2010	460	582	626
7/28/2010	449	566	588
9/29/2010	297	306	318
10/18/2010	715	843	788
11/16/2010	422	644	440
12/14/2010	335	306	270
1/14/2011	568	555	633
2/15/2011	501	609	609
3/15/2011	292	375	471
4/18/2011	394	475	394

Date	SV04S	SV04M	SV04D
5/18/2011	652	983	978
6/22/2011	356	339	317
7/27/2011	102	187	162
8/26/2011	137	205	162
9/22/2011	359	373	363
10/27/2011	236	281	238
11/22/2011	337	356	345
12/16/2011	709	799	652
1/20/2012	104	121	141
2/23/2012	175	209	436
3/13/2012	146	139	114
4/16/2012	241	141	116
5/15/2012	224	228	253
6/19/2012	360	464	404
7/10/2012	276	287	289
8/14/2012	340	351	358
10/24/2012	221	162	155
11/26/2012	138	187	159
12/18/2012	85	99	66
1/31/2013	38	54	423
2/28/2013	87	79	51
3/28/2013	12	24	24
4/25/2013	28	39	36
5/30/2013	117	131	135
6/27/2013	16	23	26
7/25/2013	115	130	123
8/29/2013	121	192	190
9/26/2013	5	18	11
10/24/2013	295	285	254
11/21/2013	98	129	159
12/23/2013	4	14	11
1/30/2014	132	165	135
2/24/2014	163	149	138
3/5/2014	536	493	520
3/10/2014	116	51	72
3/25/2014	9682	11800	9134
4/7/2014	1382	1217	1035

ppbv: parts per billion by volume

Figure 3
Soil Vapor Measurements
SV04

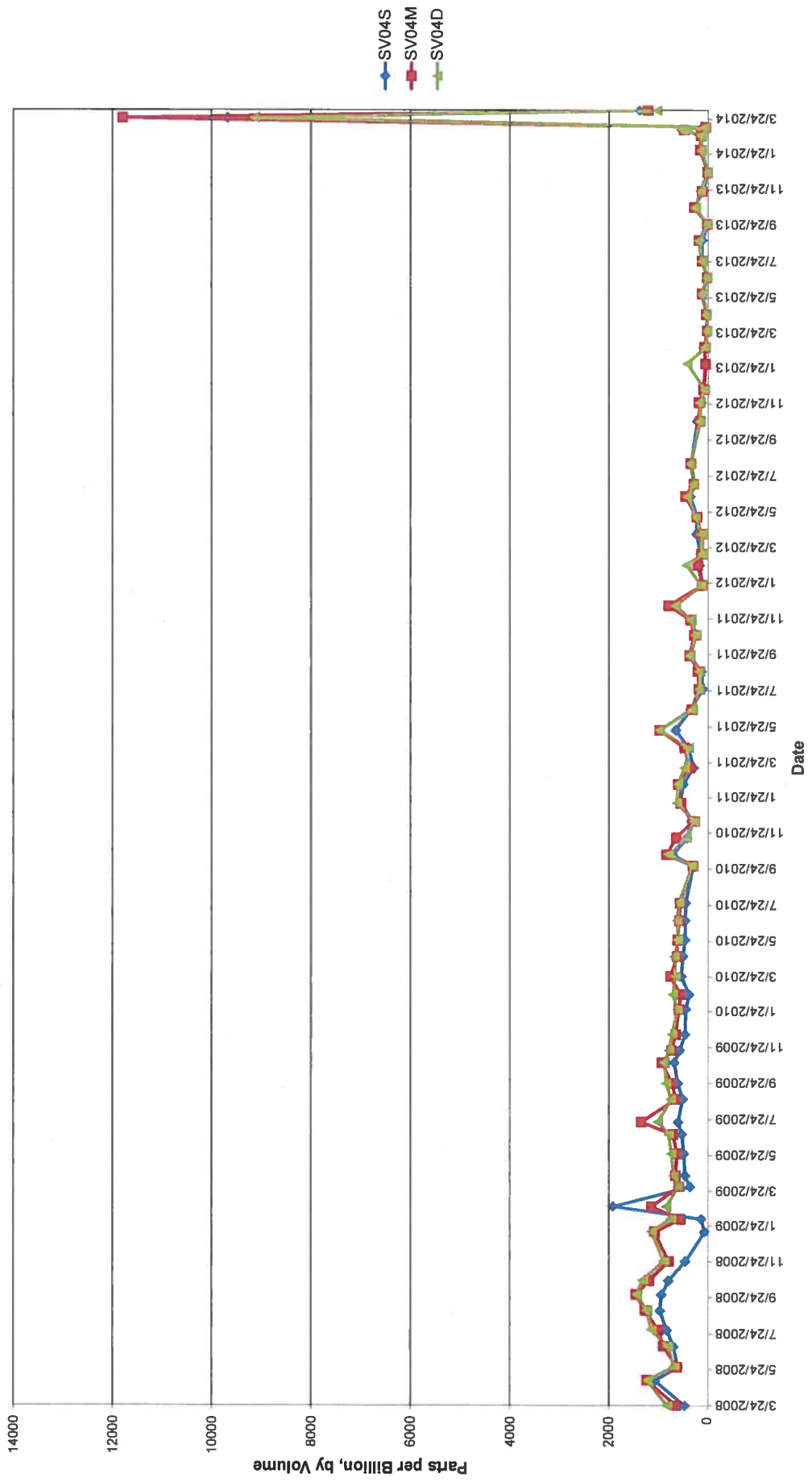


Table 4
Soil Vapor Results for SV05
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

Date	SV05S	SV05M	SV05D
3/24/2008	1295	716	697
5/6/2008	5441	4214	4012
5/29/2008	6523	4636	3984
7/3/2008	5195	4218	3957
7/31/2008	5190	3785	2894
9/2/2008	6905	5581	3681
9/29/2008	7149	6405	3960
10/23/2008	3497	3690	2518
11/25/2008	3750	5221	3741
1/14/2009	9519	20567	12473
2/5/2009	1744	1824	1638
2/26/2009	7015	2820	1616
4/1/2009	1178	996	1179
4/20/2009	1209	1146	1326
5/27/2009	1120	1054	1123
6/29/2009	1055	1061	1131
7/20/2009	1237	1296	1582
8/28/2009	1776	1314	1457
9/24/2009	1901	1722	1906
10/29/2009	1430	1507	1724
11/19/2009	780	2100	2715
12/16/2009	210	2068	3418
1/28/2010	818	976	1227
2/22/2010	487	1453	2234
3/25/2010	1028	1473	1484
4/28/2010	398	1417	1532
5/26/2010	1002	980	1147
6/28/2010	64900	42100	25600
7/28/2010	38167	46633	59433
9/29/2010	NC ₁	NC ₁	NC ₁
10/18/2010	NC ₁	NC ₁	NC ₁
11/16/2010	NC ₁	NC ₁	NC ₁
12/14/2010	NC ₁	NC ₁	NC ₁
1/13/2011	NC ₁	NC ₁	NC ₁
2/15/2011	NC1	NC1	NC1
3/15/2011	NC ₁	NC ₁	NC ₁
4/18/2011	NC ₁	NC ₁	NC ₁
5/18/2011	NC ₁	NC ₁	NC ₁
6/22/2011	NC ₁	NC ₁	NC ₁

Date	SV05S	SV05M	SV05D
7/27/2011	NC ₁	NC ₁	NC ₁
8/26/2011	NC ₁	NC ₁	NC ₁
9/22/2011	NC ₁	NC ₁	NC ₁
10/27/2011	NC ₁	NC ₁	NC ₁
11/22/2011	NC ₁	NC ₁	NC ₁
12/16/2011	NC ₁	NC ₁	NC ₁
1/20/2012	NC ₁	NC ₁	NC ₁
2/23/2012	NC ₁	NC ₁	NC ₁
3/13/2012	NC ₁	NC ₁	NC ₁
4/16/2012	NC ₁	NC ₁	NC ₁
5/15/2012	NC ₁	NC ₁	NC ₁
6/19/2012	NC ₁	NC ₁	NC ₁
7/10/2012	NC ₁	NC ₁	NC ₁
8/14/2012	NC ₁	NC ₁	NC ₁
10/24/2012	NC ₁	NC ₁	NC ₁
11/26/2012	NC ₁	NC ₁	NC ₁
12/18/2012	NC ₁	NC ₁	NC ₁
1/31/2013	NC ₁	NC ₁	NC ₁
2/28/2013	NC ₁	NC ₁	NC ₁
3/28/2013	NC ₁	NC ₁	NC ₁
4/25/2013	NC ₁	NC ₁	NC ₁
5/30/2013	215	221	184
6/27/2013	115	233	232
7/25/2013	208	218	322
8/29/2013	63	68	161
9/26/2013	14	29	114
10/24/2013	229	250	201
11/21/2013	94	120	109
12/23/2013	50	622	794
1/15/2014	96	225000	204000
1/30/2014	818	150000	176000
2/24/2014	597	68200	100000
3/5/2014	492	96600	217000
3/10/2014	308	111000	204000
3/21/2014	593	99600	182000
3/25/2014	3144	271000	209000
4/3/2014	43700	384000	426000
4/7/2014	76100	413000	401000

ppbv: parts per billion by volume
 NC₁: Not collected due to maintenance work

Figure 4
Soil Vapor Measurements
SV05

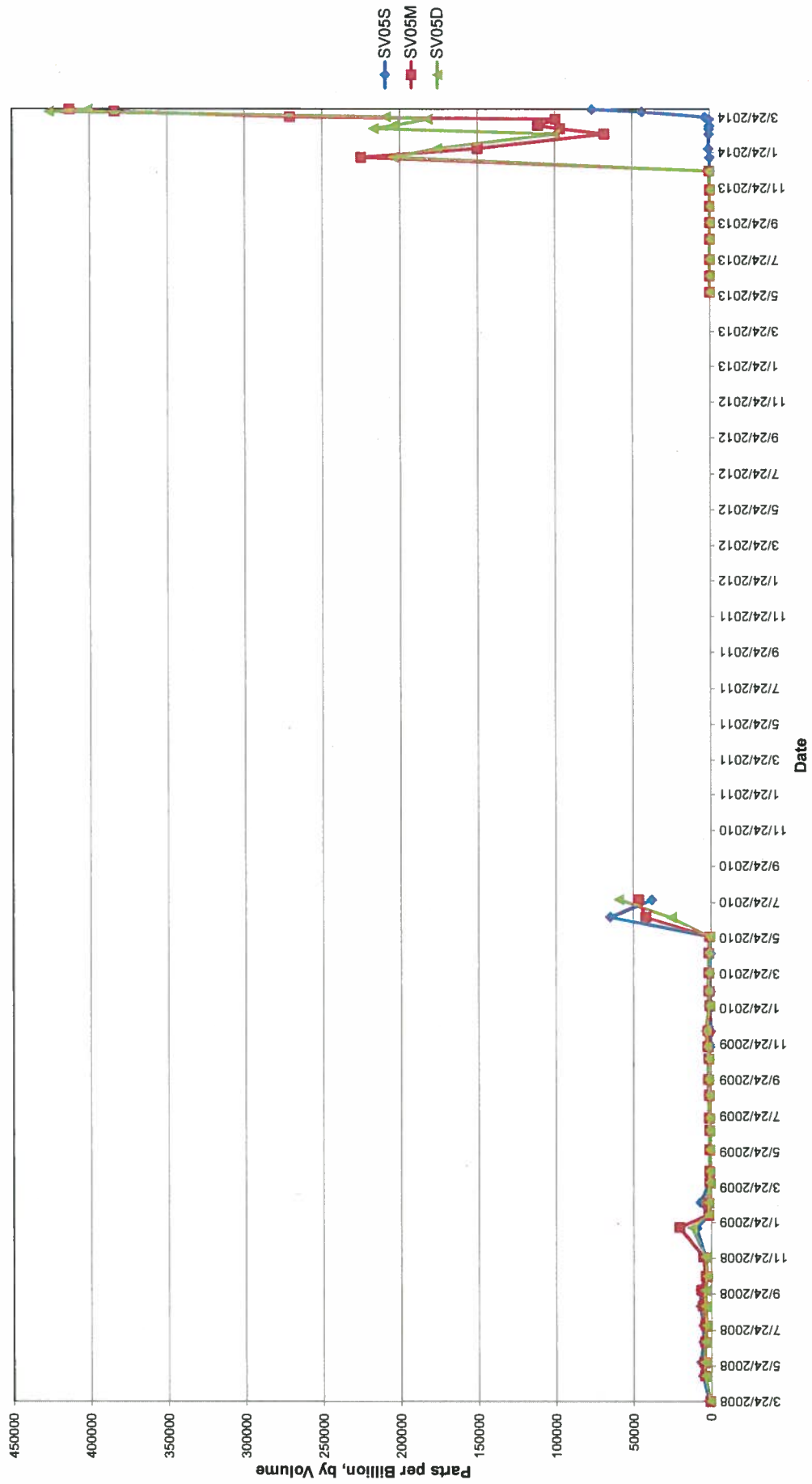


Table 5
Soil Vapor Results for SV06
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

Date	SV06S	SV06M
3/24/2008	18567	8861
5/6/2008	13733	9828
5/29/2008	13333	6932
7/3/2008	10560	5075
7/31/2008	10502	3373
9/2/2008	11416	3030
9/29/2008	10456	2772
10/23/2008	8337	2255
11/25/2008	10683	2143
1/14/2009	32867	13533
2/5/2009	7624	1128
2/26/2009	7936	1160
4/1/2009	6857	688
4/20/2009	6872	692
5/27/2009	6940	535
6/29/2009	6161	584
7/20/2009	7120	860
8/28/2009	5901	1075
9/24/2009	6917	1417
10/29/2009	5430	1027
11/19/2009	6129	2937
12/16/2009	5549	2673
1/28/2010	5721	559
2/22/2010	4841	2775
3/25/2010	5709	1043
4/28/2010	5905	1997
5/26/2010	4483	1261
6/28/2010	4800	1539
7/28/2010	4347	1693
9/29/2010	1090	457
10/18/2010	675	1084
11/16/2010	1142	413
12/14/2010	2043	646
1/14/2011	566	1282
2/15/2011	2245	352
3/15/2011	2542	173
4/18/2011	2412	484
5/18/2011	2343	613

Date	SV06S	SV06M
6/22/2011	221	1558
7/27/2011	100	909
8/26/2011	210	924
9/22/2011	380	1385
10/27/2011	189	1155
11/22/2011	200	1098
12/16/2011	621	651
1/20/2012	342	537
2/23/2012	943	348
3/13/2012	330	816
4/16/2012	357	756
5/15/2012	699	462
6/19/2012	384	498
7/10/2012	305	373
8/14/2012	476	417
10/24/2012	225	474
11/26/2012	NC ₁	NC ₁
12/18/2012	NC ₁	NC ₁
1/31/2013	NC ₁	NC ₁
2/28/2013	NC ₁	NC ₁
3/28/2013	NC ₁	NC ₁
4/25/2013	NC ₁	NC ₁
5/30/2013	NC ₁	NC ₁
6/27/2013	143	378
7/25/2013	280	742
8/29/2013	131	1066
9/26/2013	9	566
10/24/2013	1291	1485
11/21/2013	160	322
12/23/2013	3	39
1/30/2014	6424	4097
2/24/2014	3046	1457
3/5/2014	6165	2033
3/10/2014	7204	1644
3/21/2014	195	605
3/25/2014	2169	551
4/3/2014	32000	18600
4/7/2014	23100	18800

ppbv: parts per billion by volume
 NC₁: Not collected due to
 maintenance work

Figure 5
Soil Vapor Measurements
SV06

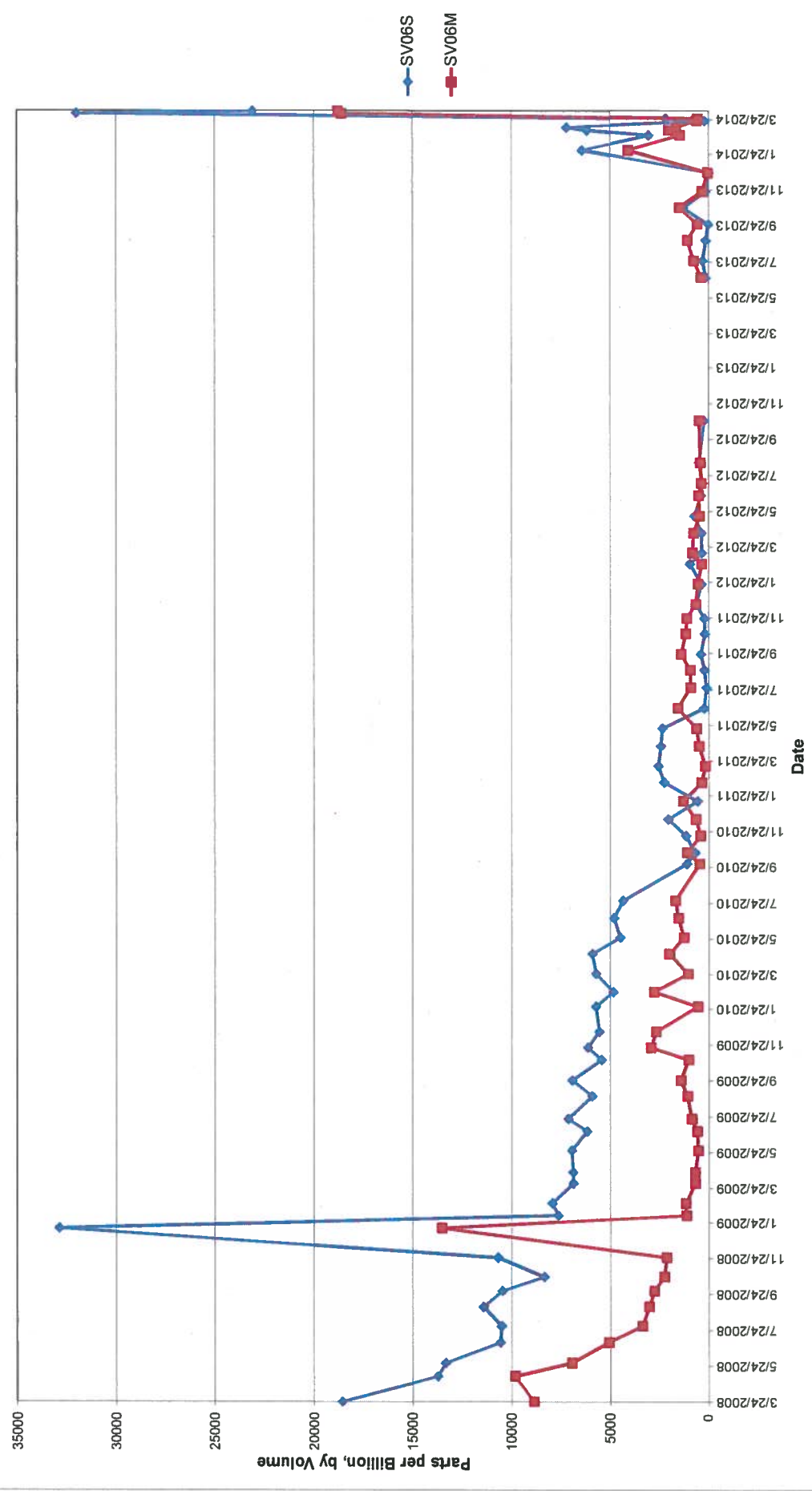


Table 6
Soil Vapor Results for SV07
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

Date	SV07S	SV07M	SV07D
3/24/2008	981	1966	21667
5/6/2008	5331	9047	12433
5/29/2008	NC	8698	12867
7/3/2008	6074	8759	16000
7/31/2008	4572	6737	20367
9/2/2008	4852	7576	21067
9/29/2008	4786	8620	22100
10/23/2008	3224	5459	21733
11/25/2008	1894	4069	12867
1/14/2009	2707	2567	10667
2/5/2009	1208	1780	7718
2/26/2009	7846	3623	9532
4/1/2009	1227	1268	12033
4/20/2009	1334	1434	12700
5/27/2009	1144	1353	18233
6/29/2009	1107	1184	9743
7/20/2009	1660	1595	11667
8/28/2009	1550	1207	3078
9/24/2009	1716	1481	2213
10/29/2009	1042	1214	6121
11/19/2009	657	1210	5342
12/16/2009	599	875	12633
1/28/2010	1032	872	4079
2/22/2010	444	728	3519
3/25/2010	762	886	16200
4/28/2010	288	689	2365
5/26/2010	782	731	3244
6/28/2010	629	628	1786
7/28/2010	703	801	6775
9/29/2010	344	363	372
10/18/2010	839	685	712
11/16/2010	701	288	356
12/14/2010	369	335	323
1/13/2011	210	283	451
2/15/2011	550	351	364
3/15/2011	267	255	296
4/18/2011	321	326	333
5/18/2011	851	871	900

Date	SV07S	SV07M	SV07D
6/22/2011	279	475	274
7/27/2011	137	342	166
8/26/2011	96	132	135
9/22/2011	298	443	361
10/27/2011	310	537	351
11/22/2011	249	431	311
12/16/2011	424	157	114
1/20/2012	96	356	133
2/23/2012	153	213	148
3/13/2012	68	782	144
4/16/2012	258	708	385
5/15/2012	148	1877	394
6/19/2012	421	686	483
7/10/2012	288	638	388
8/14/2012	348	680	477
10/24/2012	232	552	278
11/26/2012	88	87	100
12/18/2012	NC ₁	NC ₁	NC ₁
1/31/2013	NC ₁	NC ₁	NC ₁
2/28/2013	NC ₁	NC ₁	NC ₁
3/28/2013	NC ₁	NC ₁	NC ₁
4/25/2013	NC ₁	NC ₁	NC ₁
5/30/2013	NC ₁	NC ₁	NC ₁
6/27/2013	234	676	273
7/25/2013	164	583	232
8/29/2013	173	104	38
9/26/2013	7	253	7
10/24/2013	281	396	228
11/21/2013	122	122	191
12/23/2013	2	8	5
1/30/2014	6350	6539	5180
2/24/2014	1187	849	690
3/5/2014	4406	3890	4119
3/10/2014	4287	3687	3654
3/21/2014	102	512	170
3/25/2014	17300	15000	13900
4/3/2014	33700	32900	31700
4/7/2014	26100	29400	27700

ppbv: parts per billion by volume
 NC₁: Not collected due to maintenance work

Figure 6
Soil Vapor Measurements
SV07

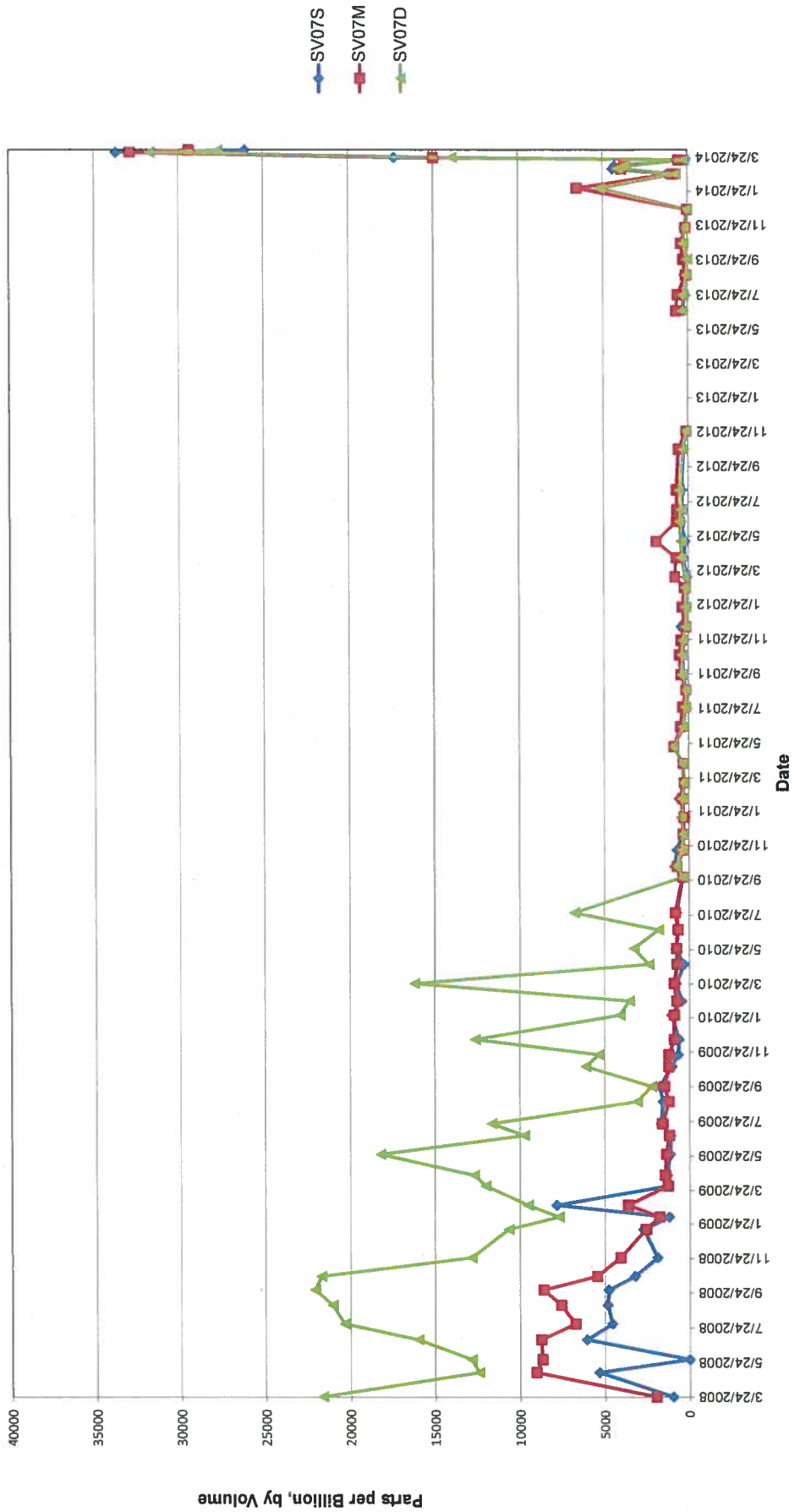


Table 7
Soil Vapor Results for SV08
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

Date	SV08S	SV08M	SV08D
3/24/2008	324	353	428
5/6/2008	4266	3274	2286
5/29/2008	541	607	482
7/3/2008	1764	1730	1397
7/31/2008	602	804	684
9/2/2008	1463	1605	1051
9/29/2008	2397	1859	1152
10/23/2008	1358	1119	866
11/25/2008	2780	2166	1393
1/14/2009	7153	6517	4762
2/5/2009	1211	1263	797
2/26/2009	1289	1019	669
4/1/2009	310	416	367
4/20/2009	400	484	454
5/27/2009	258	367	358
6/29/2009	464	491	474
7/20/2009	612	690	727
8/28/2009	450	546	563
9/24/2009	627	726	752
10/29/2009	617	697	762
11/19/2009	779	860	877
12/16/2009	1157	1247	1382
1/28/2010	508	579	621
2/22/2010	690	727	840
3/25/2010	555	573	612
4/28/2010	688	742	756
5/26/2010	477	560	553
6/28/2010	525	607	609
7/28/2010	515	539	610
9/29/2010	295	345	352
10/18/2010	582	1221	988
11/16/2010	629	612	740
12/14/2010	488	657	471
1/13/2011	556	796	862
2/15/2011	431	485	541
3/15/2011	169	284	304
4/18/2011	364	456	489
5/18/2011	909	1222	1263

Date	SV08S	SV08M	SV08D
6/22/2011	172	412	266
7/27/2011	99	139	320
8/26/2011	84	157	180
9/22/2011	277	301	309
10/27/2011	250	338	309
11/22/2011	177	268	355
12/16/2011	67	211	162
1/20/2012	169	105	340
2/23/2012	222	222	129
3/13/2012	85	134	391
4/16/2012	485	204	377
5/15/2012	106	157	153
6/19/2012	428	466	418
7/10/2012	291	325	290
8/14/2012	296	285	285
10/24/2012	214	216	400
11/26/2012	53	76	51
12/18/2012	NC ₁	NC ₁	NC ₁
1/31/2013	NC ₁	NC ₁	NC ₁
2/28/2013	NC ₁	NC ₁	NC ₁
3/28/2013	NC ₁	NC ₁	NC ₁
4/25/2013	NC ₁	NC ₁	NC ₁
5/30/2013	NC ₁	NC ₁	NC ₁
6/27/2013	224	235	402
7/25/2013	133	176	132
8/29/2013	16	28	19
9/26/2013	15	2	2
10/24/2013	207	2013	197
11/21/2013	76	73	88
12/23/2013	4	2	6
1/30/2014	2170	2698	2952
2/24/2014	601	423	428
3/5/2014	1814	2492	3097
3/10/2014	1819	2348	2274
3/21/2014	102	469	354
3/25/2014	6152	7880	7474
4/3/2014	12800	17100	18100
4/7/2014	13500	14300	17300

ppbv: parts per billion by volume
 NC₁: Not collected due to maintenance work

Figure 7
Soil Vapor Measurements
SV08

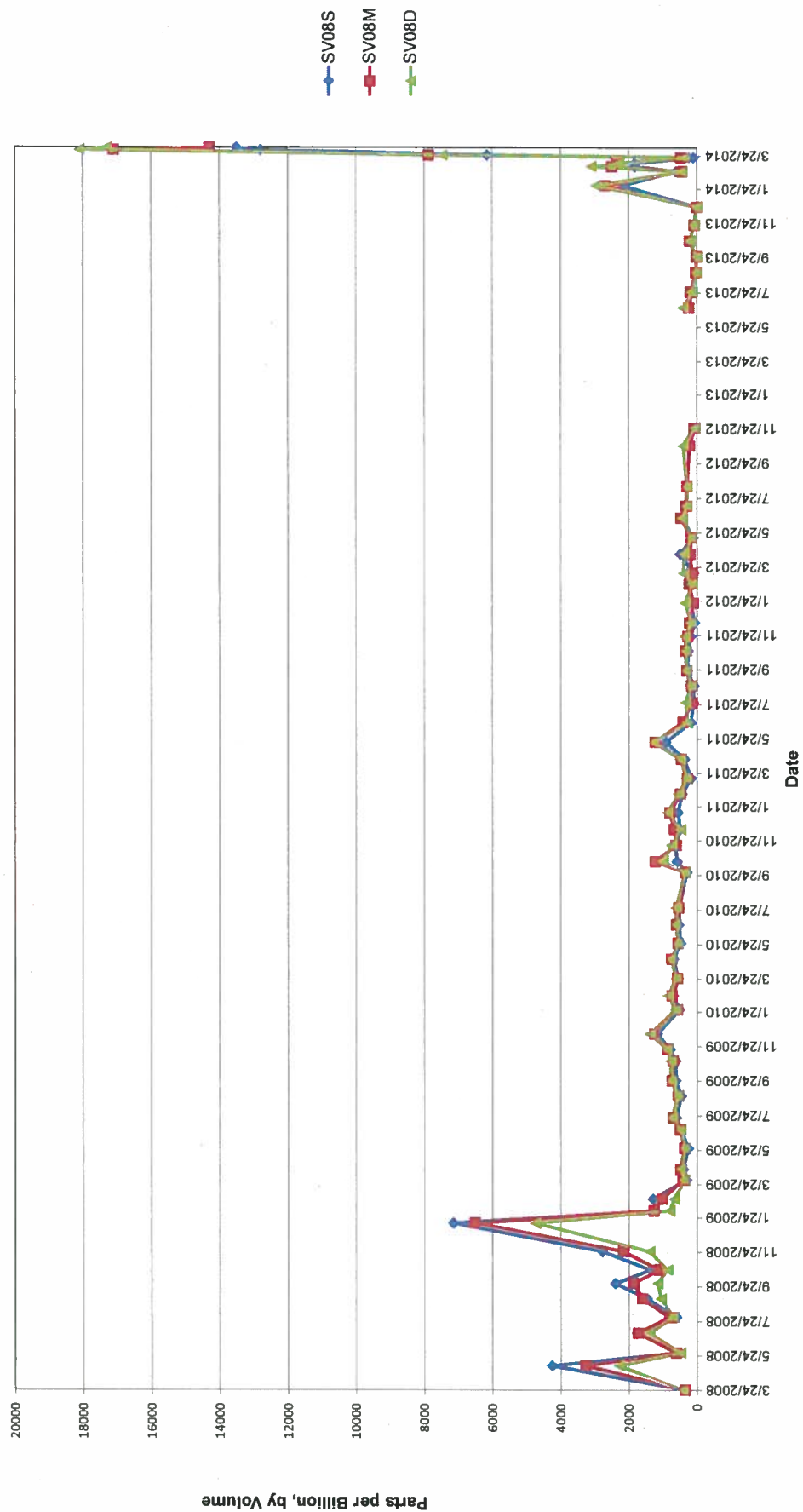


Table 8
Soil Vapor Results for SV09
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

Date	SV08S	SV08M	SV08D
3/24/2008	309	405	NC
5/6/2008	6462	7644	654
5/29/2008	878	825	451
7/3/2008	4190	4238	2301
7/31/2008	1024	961	646
9/2/2008	1949	1616	1047
9/29/2008	2714	2058	1232
10/23/2008	1458	1114	673
11/25/2008	2142	1855	1134
1/14/2009	4851	3250	NC
2/5/2009	786	457	NC
2/26/2009	930	503	NC
4/1/2009	241	233	NC
4/20/2009	329	361	NC
5/27/2009	234	326	183
6/29/2009	400	425	342
7/20/2009	566	645	704
8/28/2009	434	515	512
9/24/2009	663	708	630
10/29/2009	689	710	709
11/19/2009	861	898	928
12/16/2009	1084	1176	1410
1/28/2010	421	473	510
2/22/2010	659	716	877
3/25/2010	555	625	670
4/28/2010	575	743	858
5/26/2010	461	519	543
6/28/2010	531	590	627
7/28/2010	455	549	630
9/29/2010	304	357	377
10/18/2010	592	700	923
11/16/2010	488	567	607
12/14/2010	437	495	633
1/13/2011	574	572	668
2/15/2011	407	405	586
3/15/2011	261	312	NC ₂
4/18/2011	320	365	NC ₂
5/18/2011	918	1102	NC ₂

Date	SV08S	SV08M	SV08D
6/22/2011	223	141	NC ₂
7/27/2011	181	158	NC ₂
8/26/2011	122	100	NC ₂
9/22/2011	302	296	NC ₂
10/27/2011	270	271	NC ₂
11/22/2011	180	243	NC ₂
12/16/2011	170	80	379
1/20/2012	80	148	NC ₂
2/23/2012	130	135	110
3/13/2012	73	360	NC ₂
4/16/2012	344	1212	NC ₂
5/15/2012	137	122	NC ₂
6/19/2012	626	518	NC ₂
7/10/2012	325	298	NC ₂
8/14/2012	339	350	NC ₂
10/24/2012	204	335	208
11/26/2012	72	60	78
12/18/2012	63	83	87
1/31/2013	16	13	66
2/28/2013	58	20	133
3/28/2013	47	37	14
4/25/2013	42	42	59
5/30/2013	226	189	184
6/27/2013	38	39	47
7/25/2013	110	119	184
8/29/2013	8	39	23
9/26/2013	0	3	2
10/24/2013	200	170	167
11/21/2013	89	127	133
12/23/2013	13	8	2
1/30/2014	1488	1963	2408
2/24/2014	307	330	319
3/5/2014	915	1474	1614
3/10/2014	777	1569	1656
3/25/2014	2629	4246	5465
4/7/2014	5750	9329	10400

ppbv: parts per billion by volume
 NC: Not collected
 NC₂: Not collected due to an obstruction in the vapor line

Figure 8
Soil Vapor Measurements
SV09

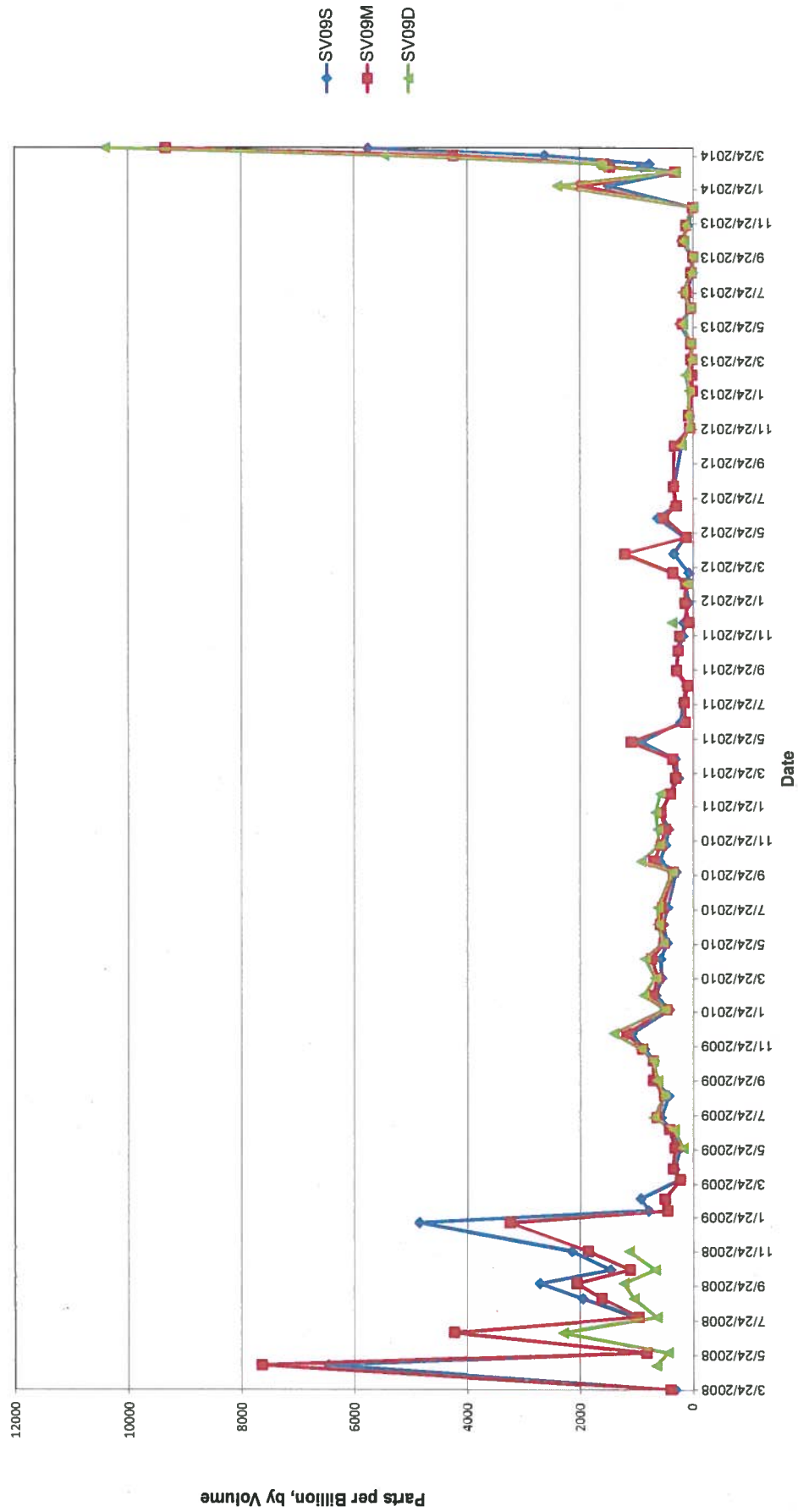


Table 9
Soil Vapor Results for SV10
Soil Vapor Monitoring Letter Report
Red Hill Bulk Fuel Storage Facility

Date	SV10S	SV10D
3/24/2008	246	158
5/6/2008	5368	3713
5/29/2008	521	316
7/3/2008	3212	1677
7/31/2008	855	443
9/2/2008	1410	848
9/29/2008	2266	1205
10/23/2008	1043	646
11/25/2008	1825	860
1/14/2009	5568	2867
2/5/2009	957	423
2/26/2009	798	270
4/1/2009	194	135
4/20/2009	241	174
5/27/2009	194	110
6/29/2009	312	258
7/20/2009	340	424
8/28/2009	352	302
9/24/2009	539	479
10/29/2009	546	496
11/19/2009	751	604
12/16/2009	1093	1141
1/28/2010	356	333
2/22/2010	711	708
3/25/2010	521	815
4/28/2010	662	695
5/26/2010	420	337
6/28/2010	440	402
7/28/2010	417	994
9/29/2010	288	273
10/18/2010	639	686
11/16/2010	454	625
12/14/2010	385	335
1/13/2011	467	501
2/15/2011	310	302
3/15/2011	222	246
4/18/2011	288	297
5/18/2011	979	1077

Date	SV10S	SV10D
6/22/2011	103	216
7/27/2011	82	88
8/26/2011	64	97
9/22/2011	260	301
10/27/2011	245	204
11/22/2011	189	195
12/16/2011	141	92
1/20/2012	224	196
2/23/2012	139	112
3/13/2012	387	283
4/16/2012	323	201
5/15/2012	75	87
6/19/2012	319	306
7/10/2012	288	353
8/14/2012	220	225
10/24/2012	164	130
11/26/2012	51	41
12/18/2012	16	36
1/31/2013	11	2
2/28/2013	91	83
3/28/2013	23	20
4/25/2013	31	40
5/30/2013	91	301
6/27/2013	137	301
7/25/2013	100	61
8/29/2013	529	1621
9/26/2013	0	3
10/24/2013	191	167
11/21/2013	69	76
12/23/2013	7	12
1/30/2014	483	358
2/24/2014	165	147
3/5/2014	365	45
3/10/2014	280	73
3/10/2014	280	73
3/25/2014	1148	493
4/7/2014	3364	2393

ppbv: parts per billion by volume

Figure 9
Soil Vapor Measurements
SV10

