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**CRA**  
Consulting Engineers

**CONESTOGA-ROVERS & ASSOCIATES LIMITED**  
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Waterloo, Ontario, Canada N2  
(519) 884-0510  
SFUND RECORDS CTR  
0222-00624

March 30, 1990

Reference No. 2141

**AR0664**

Mr. Tom Dunkelman (H-7-2)  
Remedial Project Manager  
United States Environmental Protection Agency  
215 Fremont Street  
San Francisco, California  
94105

Dear Mr. Dunkelman:

Re: Data Submittal for February 1990

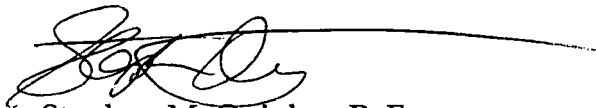
Errol L. Montgomery and Associates have prepared and submitted the February data submittal for the Hassayampa Landfill Remedial Investigation.

Included in that data submittal was an "Appendix F - Results of Stage A - Air Investigation" to be submitted under separate cover. Three (3) copies of the Appendix are enclosed.

Should you have any questions, please do not hesitate to contact our office.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

  
Stephen M. Quigley, P. Eng.

SMQ/cz  
Encl.

c.c. (See List Attached)

c.c. Rebecca Redeker  
Mason Bolitho  
James G. Derouin  
Robert J. Lloyd  
David P. Kimball  
Kim E. Williamson  
Charles A. Bischoff  
William R. Victor  
Terry A. Thompson  
Lt. Col. Ray Swensen  
William J. Cheeseman  
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K. Milliken/C. Case  
Carl C. Meier  
Kenneth G. Ford  
G. S. Hagy  
Cindy Lewis  
G. Eugene Neil  
Robert Cameron  
Richard Alpert  
Ron Frehner

**Appendix F**

**Results of Stage II Air Investigation  
by Conestoga-Rovers & Associates**

March 29, 1990

Reference No. 2141

Mr. William R. Victor  
Errol L. Montgomery  
Suite B  
1075 East Fort Lowell Road  
Tuscon, Arizona  
U.S.A. 85719

Dear Mr. Victor:

Re: Hassayampa RI/FS - Stage 2 - Task B - Air Monitoring

This letter presents a summary of the Stage 2 Air Monitoring investigation conducted at the Hassayampa Landfill on October 23, 1989.

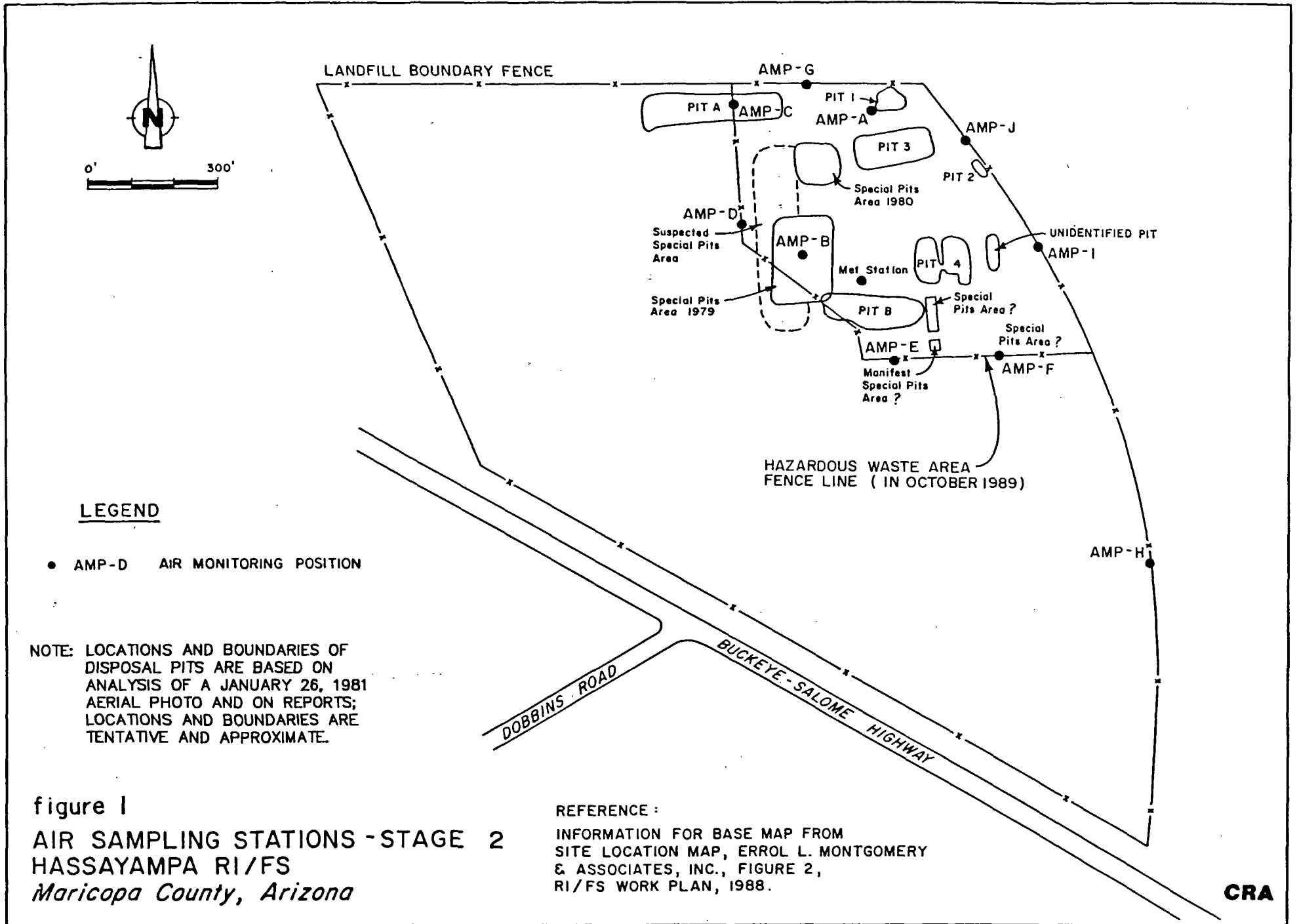
### Field Work

Ten sampling stations were set up on October 23, 1989 around the inactive hazardous waste area. Two of these stations were added during the day's sampling to accommodate a changing wind direction. Figure 1 locates the sampling stations.

At each location, a Tenax tube and Tenax/Charcoal tube connected in series to a battery powered sampling pump was set up 4 to 6 feet above ground surface. The sampling assembly was calibrated before and after sampling using a soap bubble flow meter. Flow rates were also checked periodically throughout the sampling event. Attachment A provides the field calibration sheets for the sampling pumps.

Site meteorological conditions were established using an on-site meteorological station and data obtained from the National Weather Service at Phoenix's Sky Harbor municipal weather office.

The site meteorological station measured wind speed and wind direction. Table 1 presents a summary of the site meteorological conditions as derived from the site meteorological station and the National Weather Service. Figure 2 presents a site specific Wind Rose for the Hassayampa Landfill.



**LEGEND**

● AMP-D AIR MONITORING POSITION

NOTE: LOCATIONS AND BOUNDARIES OF DISPOSAL PITS ARE BASED ON ANALYSIS OF A JANUARY 26, 1981 AERIAL PHOTO AND ON REPORTS; LOCATIONS AND BOUNDARIES ARE TENTATIVE AND APPROXIMATE.

figure 1  
 AIR SAMPLING STATIONS -STAGE 2  
 HASSAYAMPA RI/FS  
 Maricopa County, Arizona

REFERENCE :  
 INFORMATION FOR BASE MAP FROM  
 SITE LOCATION MAP, ERROL L. MONTGOMERY  
 & ASSOCIATES, INC., FIGURE 2,  
 RI/FS WORK PLAN, 1988.

**CRA**

**Table 1**

**Meteorological Data  
October 23, 1989  
Hassayampa Landfill RI/FS**

**Site Specific Meteorological Data**

<b>Wind Direction*</b>	<b>Class 1 (0-2 mph) %</b>	<b>Class 2 (3-4 mph) %</b>	<b>Class 3 (5-6 mph) %</b>	<b>Class 4 (7-8 mph) %</b>	<b>Total %</b>
360	0.0	11.1	0.0	0.0	11.1
120	0.0	11.1	11.1	11.1	33.3
150	0.0	0.0	11.1	0.0	11.1
270	11.1	0.0	0.0	0.0	11.1
300	11.1	22.2	0.0	0.0	33.3

\* = Wind direction indicates the direction from which the wind originates.

**Data From the National Weather Service  
For the Sky Harbor Municipal Airport**

<b>Time</b>	<b>Wind Speed (mph)</b>	<b>Wind Direction</b>	<b>Barometric Pressure (in-Hg)</b>	<b>Ambient Temperature (F)</b>	<b>Relative Humidity (%)</b>
1000	6	120	30.15	76	54
1100	4	60	30.14	78	50
1200	3	180	30.12	83	43
1300	2	30	30.09	84	41
1400	3	30	30.07	85	41
1500	6	210	30.06	87	39
1600	6	240	30.07	87	34
1700	2	180	30.03	86	32
1800	4	300	30.03	83	38

\* = Wind direction indicates the direction from which the wind originates.

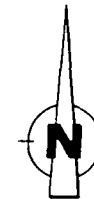
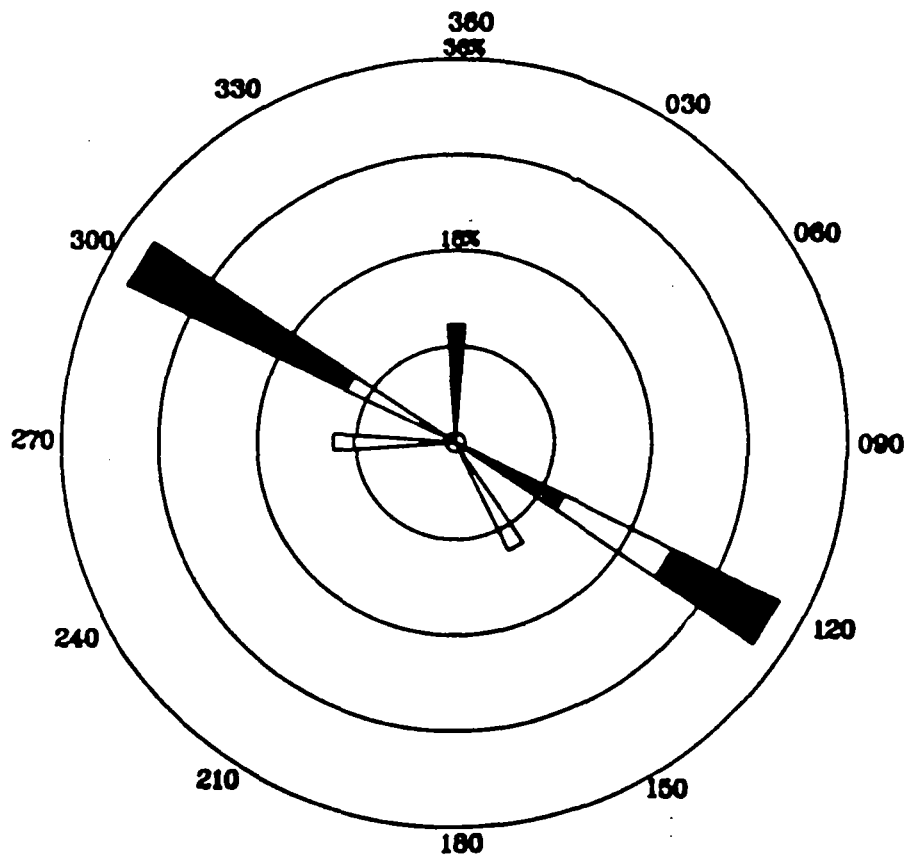


figure 2  
 SITE WIND ROSE - OCTOBER 23, 1989  
 HASSAYAMPA RI/FS  
 Maricopa County, Arizona

CRA



March 29, 1990

Reference No. 2141

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One duplicate sampling station at location AMP-A and one spiked sample tube at location AMP-D were used to assess field Quality Control (QC) procedures. A field blank (a set of tubes handled in the same manner as the other sample tubes without having air drawn through it) and a trip blank were also included in the field QC assessment.

### Analytical Results

The Tenax and Tenax/charcoal tubes were analyzed individually for volatile organic compounds (VOCs) according to USEPA Method 8240 by Air Toxics Ltd. of Rancho Cordova, California. Attachment B provides Air Toxic's analytical data. Table 2 summarizes the analytical data for the samples collected. CRA's QA/QC data review is provided in Attachment C.

Table 3 presents a summary of the on-Site and fence line concentrations found during Stage 2 air monitoring. As shown, mean on-Site concentrations did not exceed the TLV/300 criteria with the exception of carbon tetrachloride.

Similarly, mean fence line concentrations did not exceed the TLV/300 criteria with the exception of carbon tetrachloride and tetrachloroethylene.

It must be noted that sampling location AMP-H, situated along the east fence line and upwind of the landfill for the majority of the sampling event also exhibited concentrations of carbon tetrachloride above TLV/300. This may indicate a laboratory or other source of carbon tetrachloride contamination. Carbon tetrachloride concentrations were qualified as estimated by CRA's QA/QC review (Attachment C). In addition to this review, it was observed that the concentrations of carbon tetrachloride were uniformly detected (600 to 800 ug/m<sup>3</sup>) in seven of the nine sampling stations which were analyzed, including station AMP-H.

The one detection of tetrachloroethylene (1500 ug/m<sup>3</sup>) occurred at sampling station AMP-J. This station was established late in the sampling program (3:35 pm) to attempt to accommodate a changing wind direction.

TABLE 2

RESULTS  
STAGE 2 - AIR MONITORING  
HASSAYAMPA LANDFILL RI/FS

<i>Compound</i>	<i>Detection Limit (A) µg</i>	<i>AMP-A µg/m<sup>3</sup></i>	<i>AMP-B µg/m<sup>3</sup></i>	<i>AMP-C µg/m<sup>3</sup></i>	<i>AMP-E µg/m<sup>3</sup></i>	<i>AMP-F µg/m<sup>3</sup></i>	<i>AMP-G µg/m<sup>3</sup></i>	<i>AMP-H µg/m<sup>3</sup></i>	<i>AMP-I µg/m<sup>3</sup></i>	<i>AMP-J µg/m<sup>3</sup></i>
Chloromethane	0.050	0.490J				0.610J		0.850J	0.736J	
Trichlorofluoromethane	0.025	3.600	2.050J		6.100J	1.900J	2.510J		1.420J	1.100J
1,1 Dichloroethene	0.025	2.380J	0.850						1.100	4.900J
Carbon Disulfide	0.500	2.300U	3.200U	1.200U	1.850U	2.800U	4.400U	3.400U	4.000U	3.200U
Acetone	0.500	2.230	1.750	2.900	20.300J	0.910	2.120	8.500	2.050	1.760
Methylene Chloride	0.025	91.000J	71.000J	12.000	141.000J	91.000J	112.000J	96.000J	116.000J	204.000J
1,1 Dichloroethane	0.025	0.800								1.400
1,1,1-Trichloroethane	0.025	13.000J					3.900J			44.060J
Carbon Tetrachloride	0.025	600J	700J		800J	710J	770J	610J	740J	11300J
Benzene	0.025	3.200J	3.700J	1.200	4.500J	4.700J	5.100J	4.400J	2.890J	
Trichloroethylene	0.025	0.570	1.100							1.600
Toluene	0.025	19.000	15.000		95.000	26.000	72.000	800	30.000	20.000
Tetrachloroethylene	0.025	620								1500
Dibromochloromethane	0.025	0.670								1.600
Ethylbenzene	0.025				0.710		0.560		0.580	
m,p-Xylene	0.025	0.860	0.900		1.900	0.910	1.700			0.570
o-Xylene	0.025				0.570		0.560			
1,2-Dichloropropane	0.025									0.470

Note: Concentrations reported are total concentrations found in front tubes and backup tubes.

J - The associated value is an estimated quantity.

U - The material was analyzed for, but not detected. The associated numerical value is the sample quantitation limit.

(A) - Detection limit may be revised due to laboratory qualification of data.

TABLE 3

STAGE 2 - AIR MONITORING  
HASSAYAMPA LANDFILL RI/FS

	TLV-TWA	TLV-TWA	Mean on Site	Max on Site	Mean	Mean	Max	AMP-H
	( $\mu\text{g}/\text{m}^3$ )(3)	300	( $\mu\text{g}/\text{m}^3$ )(4)	( $\mu\text{g}/\text{m}^3$ )(5)	Fence Line	Fence Line	Fence Line	( $\mu\text{g}/\text{m}^3$ )
		( $\mu\text{g}/\text{m}^3$ )			( $\mu\text{g}/\text{m}^3$ )(6)	( $\mu\text{g}/\text{m}^3$ )(7)	( $\mu\text{g}/\text{m}^3$ )(8)	
Chloromethane			0.490	0.490	0.610	0.67	0.736	0.850
Trichlorofluoromethane	5,600,000 <sup>(9)</sup>	18,666	2.83	3.600	3.50	2.61	6.10	ND
1,1-Dichloroethylene	20,000	66.7	1.62	2.380	ND	3.00	4.90	ND
Carbon Disulfide	30,000	100	2.75	3.200	2.56	2.91	4.40	3.40
Acetone	1,780,000	5,933	2.99	2.230	9.98	7.29	34.00	8.50
Methylene Chloride	175,000	583	81.00	91.000	89.00	112.67	204.00	96.00
1,1-dichloroethane	810,000	2,700	0.800	0.800	ND	1.40	1.40	ND
1,1,1-trichloroethane	1,900,000	6,333	7.90	13.000	2.69	11.45	46.50	1.10
Carbon Tetrachloride (1)	30,000	100	650.0	700.0	760	864	1,300	610.0
Benzene	30,000	100	3.450	3.700	3.88	3.68	5.10	4.40
Trichloroethylene	270,000	900	0.840	1.100	ND	1.60	1.60	ND
Toluene	375,000	1,250	17.00	19.000	64.33	48.60	95.00	800
Tetrachloroethylene (2)	335,000	1,117	620.0	620.0	ND	1,500	1,500	ND
Dibromochloromethane			0.670	0.670	ND	1.60	1.60	ND
Ethylbenzene	435,000	1,450	ND	ND	0.640	0.617	0.710	ND
m,p-Xylene	435,000	1,450	0.880	0.900	1.50	1.27	1.90	ND
o-Xylene	435,000	1,450	ND	ND	0.565	0.565	0.570	ND
1,2-Dichloropropane	350,000	1,167	ND	ND	ND	0.470	0.470	ND

## Notes:

- (1) Airborne concentrations exceed  $\frac{\text{TLV-TWA}}{300}$  criteria.
- (2) Exceeds criterion at one sampling location (AMP-J; fence line) AMP-J began sampling very late (15:30 h).
- (3) American Conference of Governmental Industrial Hygienists - Threshold Limit Values for 1988 - 89.
- (4) Mean of Detects - AMP-A, AMP-B.
- (5) One of AMP-A, AMP-B.
- (6) Mean of Detects - AMP-C, AMP-E, AMP-F, AMP-G.
- (7) Mean of Detects - AMP-C, AMP-E, AMP-F, AMP-G, AMP-I, AMP-J.
- (8) One of AMP-C, AMP-E, AMP-F, AMP-G, AMP-I, AMP-J.
- (9) Ceiling Value (TLV-TWA-C).
- (10) Source: Rowan, Connolly and Brown, 1984.  
Data is averaged irrespective of qualifiers.  
 $\mu\text{g}/\text{m}^3$  - micrograms per cubic meter

March 29, 1990

Reference No. 2141

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The Stage 1 air monitoring data were also compared with the TLV/300 value to determine the relative risk posed by site contaminants. This value was selected as being one appropriate measurement of acceptable concentrations in a residential environment as reported by Rowan, Connolly and Brown, 1984. This article was supplied to the USEPA during the discussion of the approval of the Stage 1 report.

Consistent with the conclusions of the Stage 1 assessment, the Stage 2 air monitoring data indicates that the air quality at the site is generally acceptable when compared to the TLV/300 guideline with the exceptions and qualifications noted above.

The determination of average site airborne concentrations of the species detected in this one day sampling event may be biased due to expected variability in day to day concentrations. Caution should be exercised in interpreting these results as representative of annual average conditions.

If you have any questions, please do not hesitate to contact us.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES



Ron Frehner, P. Eng.

RF/cz

c.c. Hassayampa Technical Committee  
Don Haycock, CRA  
Steve Quigley, CRA

ATTACHMENT A

SAMPLING EQUIPMENT  
FIELD CALIBRATION SHEETS

**TABLE A.1**

**SAMPLE COLLECTION VOLUMES  
HASSAYAMPA LANDFILL RI/FS**

<b>SAMPLING STATION</b>	<b>SAMPLE COLLECTION TIME</b>	<b>SAMPLE VOLUME (LITERS)</b>
AMP-A	1015 - 1613	19.51
AMP-A (DUPLICATE)	1015 - 1613	20.66
AMP-B	1034 - 1632	20.04
AMP-C	1045 - 1647	22.28
AMP-D	1108 - 1705	18.18
AMP-E	1046 - 1641	21.13
AMP-F	1104 - 1714	19.72
AMP-G	1056 - 1651	19.58
AMP-H	1117 - 1722	21.18
AMP-I	1314 - 1732	19.03
AMP-J	1535 - 1814	21.21

# RADIANT CORPORATION

PROJECT: CRA/HL

DATE: 10/23/89

SAMPLING LOCATION: AMP-A

PUMP TYPE AND NUMBER: Alpha-1

DRAWING/DIMENSIONS: \_\_\_\_\_

CANISTER NO. N/A SCN: \_\_\_\_\_

PI: \_\_\_\_\_ PF: \_\_\_\_\_

ATL# 12A/12B

ATL# 13A/13B

SCN: HLO1/HLO2

SCN: HLO3/HLO4 (Dup)

ANALYTE: 8240

ANALYTE: 8240

Clock Time	Elapsed Time	Flow Rate (ml/min)	Clock Time	Elapsed Time	Flow Rate (ml/min)
1015	0	56.61	1015	0	55.61
1231	2:17	71.22	1237	2:22	57.23
1232	2:18	55.01	1441	4:25	59.28
1439	4:24	48.87	—	—	—
1613	5:58	<del>35.8</del> 39.37	1613	5:58	58.67

STB

TOTAL VOL. = 19.51 L

TOTAL VOL. = 20.66 L

COMMENTS: Duplicate samples

At 1443 location was moved 30' East

# RADIAN CORPORATION

OBJECT: CRA/HL

DATE: 10/23/89

SAMPLING LOCATION: AMP-B

PUMP TYPE AND NUMBER: P4LC

DRAWING/DIMENSIONS: \_\_\_\_\_

CANISTER NO. N/A SCN: \_\_\_\_\_

PI: \_\_\_\_\_ Pf: \_\_\_\_\_

ATL# 14A/14B

SCN: HLOS/HLOG

ANALYTE: 8240

Clock Time	Elapsed Time	Flow Rate (ml/min)
1034	0	53.39
1259	2:25	53.21
1434	4:00	58.10
1632	5:58	60.95

STOP

TOTAL VOL. = 20.04 L

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_



**RADIAN**  
CORPORATION

PROJECT: CRA/HL

DATE: 10/23/89

SAMPLING LOCATION: AMP-C

PUMP TYPE AND NUMBER: P4LC

DRAWING/DIMENSIONS: \_\_\_\_\_

CANISTER NO. N/A SCN: \_\_\_\_\_

Pi: \_\_\_\_\_ Pf: \_\_\_\_\_

ATL# 15A/15B

SCN: HLO7/HLO8

ANALYTE: 8240

Clock Time	Elapsed Time	Flow Rate (ml/min)
10:48	0	58.10
11:02	24	58.10
11:02	<del>24</del>	55.95
12:48	2:00	59.91
15:02	4:14	58.58
16:47	5:59	55.59

STOP

TOTAL VOL. = 22.28 L

COMMENTS: \_\_\_\_\_

**RADIAN**  
CORPORATION

PROJECT: CRA/HL  
 SAMPLING LOCATION: AMP-D  
 DRAWING/DIMENSIONS: \_\_\_\_\_

DATE: 10/23/89  
 PUMP TYPE AND NUMBER: P4LC  
 CANISTER NO. N/A SCN: \_\_\_\_\_  
 PI: \_\_\_\_\_ PF: \_\_\_\_\_

11A/11B  
 ATL# ~~16A/16B~~ Jan

SCN: ~~HL09/HL10~~ Jan HL19/HL20  
 ANALYTE: 8240

Clock Time	Elapsed Time	Flow Rate (ml/min)
11:08	0	53.72
11:33	25	53.72
11:40	32	55.65
<del>12:52</del>	<del>1:44</del>	<del>24.81</del>
<del>12:53</del>	<del>1:45</del>	<del>53.81</del>
15:06	3:54	57.35
17:05	5:57	45.84

STOP

TOTAL VOL. = 10.18L

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_

# RADIAN CORPORATION

PROJECT: CRA/HL

DATE: 10/23/89

SAMPLING LOCATION: AMP-E

PUMP TYPE AND NUMBER: P4CC

DRAWING/DIMENSIONS: \_\_\_\_\_

CANISTER NO. N/A SCN: \_\_\_\_\_

PI: \_\_\_\_\_ PF: \_\_\_\_\_

ATL# 16A/16B

SCN: <u>HLO9/H40</u>		
ANALYTE: <u>8240</u>		
Clock Time	Elapsed Time	Flow Rate (ml/min)
1046	0	56.81
1305	<del>101.2</del> 2:19	101.61
1308	<del>55.8</del> 2:20	55.95
1345	3:00	29.36
1346	3:01	46.92
1511	4:25	47.28
16:41	5:55	49.71

STOP

TOTAL VOL. = 2.13 L

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_

**RADIAN**  
CORPORATION

PROJECT: CRA/HL

DATE: 10/23/89

SAMPLING LOCATION: AMP-F

PUMP TYPE AND NUMBER: Alpha 1

DRAWING/DIMENSIONS: \_\_\_\_\_

CANISTER NO. N/A SCN: \_\_\_\_\_

PI: \_\_\_\_\_ PF: \_\_\_\_\_

ATL# 21A/21B

SCN: <u>HL11/HL12</u>		
ANALYTE: <u>8240</u>		
Clock Time	Elapsed Time	Flow Rate (ml/min)
11:04	0	57.13
13:11	2:07 <del>56.7</del>	56.71
15:20	4:16	25.48
15:21	4:17	57.25
17:14	6:10	69.21

STOP

TOTAL VOL. = 19.72 L

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

# RADIAN CORPORATION

PROJECT: CRA/HL  
 SAMPLING LOCATION: AMP-G  
 DRAWING/DIMENSIONS: \_\_\_\_\_

DATE: 10/23/89  
 PUMP TYPE AND NUMBER: Alpha 1  
 CANISTER NO. N/A SCN: \_\_\_\_\_  
 PI: \_\_\_\_\_ PF: \_\_\_\_\_

ATL# 22A/22B

SCN: <u>HL13/HL14</u>		
ANALYTE: <u>8240</u>		
Clock Time	Elapsed Time	Flow Rate (ml/min)
10:56	Ø	38.32
11:21	Ø	38.32
11:21	Ø	56.50
<del>12:45</del>	<del>1:49</del>	<del>38.38</del>
<del>12:46</del>	<del>1:50</del>	<del>55.15</del>
14:56	4:01	40.19
14:57	4:02	55.71

STOP 1651 555 70.11

TOTAL VOL. = 19.56L

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_

# RADIAN CORPORATION

PROJECT: CRA/HL

DATE: 10/23/89

SAMPLING LOCATION: AMP-H

PUMP TYPE AND NUMBER: P4LC

DRAWING/DIMENSIONS: \_\_\_\_\_

CANISTER NO. N/A SCN: \_\_\_\_\_

Pi: \_\_\_\_\_ Pf: \_\_\_\_\_

ATL# 23A/23B

SCN: <u>HL15/HL46</u>		
ANALYTE: <u>8240</u>		
Clock Time	Elapsed Time	Flow Rate (ml/min)
<u>11:17</u>	<u>⊙</u>	<u>57.41</u>
<u>13:21</u>	<u>2:03</u>	<u>60.11</u>
<u>15:28</u>	<u>4:11</u>	<u>57.88</u>
<u>STOP 17:22</u>	<u>6:04</u>	<u>55.43</u>

TOTAL VOL. = 21.18 L

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

# RADIAN CORPORATION

PROJECT: CRA/HL

DATE: 10/23/89

SAMPLING LOCATION: AMP-I

PUMP TYPE AND NUMBER: P2500

DRAWING/DIMENSIONS: \_\_\_\_\_

CANISTER NO. N/A SCN: \_\_\_\_\_

PI: \_\_\_\_\_ PF: \_\_\_\_\_

ATL#25A/25B

SCN: HL21/HL22

ANALYTE: 8240

Clock Time	Elapsed Time	Flow Rate (ml/min)
1314	0	79.46
15:38	2:24	42.96
1539	2:25	85.86
17:32	4:18	93.76

STOP

TOTAL VOL. = 19.03 L

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

# RADIAN CORPORATION

DATE: 10/23  
P-J PUMP TYPE AND NUMBER: P2500  
 CANISTER NO. N/A SCN: \_\_\_\_\_  
 PI: \_\_\_\_\_ PF: \_\_\_\_\_

ATL\* 34A/34B

SCN: HL25/HL26  
 ANALYTE: 8240

Clock Time	Elapsed Time	Flow Rate (ml/min)
:35	0	92.72
:03	:28	84.2
:41	:29	124.7
:34	1:59	126.2
:35	2:00	152.7

2:48      2:13      142.7  
 +9      2:14      212.1  
 3:14      2:39      195.9  
 TOTAL VOL. = 21.21 L

11.0  
 2.7  
 ---  
 13.7  
 (9)



ATTACHMENT B  
ANALYTICAL DATA

**TABLE B.1****AIR MONITORING CROSS REFERENCE DATA - STAGE 2  
HASSAYAMPA LANDFILL RI/FS**

<b>SAMPLING STATION</b>	<b>FIELD SAMPLE ID #</b>		<b>LAB SAMPLE ID #</b>	
	<b>FRONT TUBE</b>	<b>BACK TUBE</b>	<b>FRONT TUBE</b>	<b>BACK TUBE</b>
AMP-A	HL01	HL02	891003-01A	891003-01B
AMP-A (DUPLICATE)	HL03	HL04	891003-02A	891003-02B
AMP-B	HL05	HL06	891003-03A	891003-03B
AMP-C	HL07	HL08	891001-04A	891003-04B
AMP-D	HL19	HL20	891003-10A	891003-10B
AMP-E	HL09	HL10	891003-05A	891003-05B
AMP-F	HL11	HL12	891003-06A	891003-06B
AMP-G	HL13	HL14	891003-07A	891003-07B
AMP-H	HL15	HL16	891003-08A	891003-08B
AMP-I	HL21	HL22	891003-11A	891003-11B
AMP-J	HL25	HL26	891003-13A	891003-13B
FIELD BLANK	HL17	HL18	891003-09A	891003-09B
TRIP BLANK	HL23	HL24	891003-12A	891003-12B

# AIR TOXICS LTD.

SAMPLE NAME: HLO1

ID#: 891003-01A

## VOST SW-846 METHOD 8240

File Name: T10000  
Dir: Pastors

<u>Compound</u>	<u>MDL (ng)</u>	<u>Amount (ng)</u>
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	100
1,1-Dichloroethene	25	33
Carbon Disulfide	500	24J
Acetone	500	26J
Methylene Chloride	25	1100E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	15J
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	240
Carbon Tetrachloride	25	11J
Benzene	25	28
1,2-Dichloroethane	25	ND
Trichloroethene	25	11J
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	430E
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	13J
2-Hexanone	250	ND
Dibromochloromethane	25	14J
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	23J
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

<u>Surrogate</u>	<u>% Recovery</u>	<u>Method Limit</u>
1,2-Dichloroethane-d4	103	75-114%
Toluene-d8	89	85-110%
4-Bromofluorobenzene	114	85-115%

# AIR TOXICS LTD.

SAMPLE NAME: HLO2

ID#: 891003-01B

## VOST SW-846 METHOD 8240

File Name: HLO2  
Date: 10/21/94  
Lab: 10/21/94

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	19J
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	17J
Carbon Disulfide	500	24J
Acetone	500	23J
Methylene Chloride	25	1400E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	30
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethane	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	% Recovery	Method Limit
1,2-Dichloroethane-d4	100	70-110%
Toluene-d8	95	80-110%
4-Bromobenzobenzene	95	80-110%

# AIR TOXICS LTD.

SAMPLE NAME: HL03

ID#: 891003-02A

## VOST SW-846 METHOD 8240

File Name: 1102000      Date of Collection: 10/28/99  
 CDS Folder: 1      Date of Analysis: 10/28/99

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	41
1,1-Dichloroethene	25	29
Carbon Disulfide	500	23J
Acetone	500	25J
Methylene Chloride	25	900E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	17J
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	270
Carbon Tetrachloride	25	13J
Benzene	25	38
1,2-Dichloroethane	25	ND
Trichloroethene	25	12J
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	350
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	12J
2-Hexanone	250	ND
Dibromochloromethane	25	13J
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	11J
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Surrogate	% Recovery	Method Limit
1,2-Dichloroethane-d2	100	70-114%
Toluene-d8	91	80-110%
4-Bromofluorobenzene	100	80-110%

# AIR TOXICS LTD.

SAMPLE NAME: HLO4

ID#: 891003-02B

## VOST SW-846 METHOD 8240

File Name: HLO4 Date of Collection: 10/20/88  
DE: Peppers

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	14J
Carbon Disulfide	500	22J
Acetone	500	14J
Methylene Chloride	25	210
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	34
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Surrogate	% Recovery	Method Limit
1,2-Dichloroethane-d2	100	75-114%
Toluene-d8	84	85-110%
4-Bromochlorobenzene	80	85-115%

# AIR TOXICS LTD.

SAMPLE NAME: HLO5

ID#: 891003-03A

## VOST SW-846 METHOD 8240

File Name:	112200	Page 7 of 10
DB Factor:	1	Page 2 of 10

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	28
1,1-Dichloroethene	25	17J
Carbon Disulfide	500	40J
Acetone	500	17J
Methylene Chloride	25	910E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	57
Carbon Tetrachloride	25	14J
Benzene	25	43
1,2-Dichloroethane	25	ND
Trichloroethene	25	22J
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	300
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	18J
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	Efficiency	Recovery Limit
1,2-Dichloroethane-d2	100	75-114%
Toluene-d8	91	86-110%
4-Bromofluorobenzene	107	86-116%

# AIR TOXICS LTD.

SAMPLE NAME: HL06

ID#: 891003-03B

## VOST SW-846 METHOD 8240

File Name: 1102007 Date of Collection: 10/20/98  
DB: Packer: 10/20/98

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	13J
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	24J
Acetone	500	18J
Methylene Chloride	25	530E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	31
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Standard	% Recovery	Recovery Limits
1,2-Dichloroethane-d4	104	75-114%
Toluene-d8	104	82-110%
4-Bromofluorobenzene	104	82-110%



# AIR TOXICS LTD.

SAMPLE NAME: HLO7

ID#: 891001-04A

## VOST SW-846 METHOD 8240

File Name: TUBE CRACKED Date of Collection: 10/2/89  
DL Factor: ANALYSIS NOT POSSIBLE Date of Analysis: NA

Compound	MDL (nG)	Amount (nG)
Chloromethane	50	NA
Vinyl Chloride	50	NA
Bromomethane	50	NA
Chloroethane	50	NA
Trichlorofluoromethane	25	NA
1,1-Dichloroethene	25	NA
Carbon Disulfide	500	NA
Acetone	500	NA
Methylene Chloride	25	NA
trans-1,2-Dichloroethene	25	NA
1,1-Dichloroethane	25	NA
Vinyl Acetate	250	NA
cis-1,2-Dichloroethene	25	NA
2-Butanone	500	NA
Chloroform	25	NA
1,1,1-Trichloroethane	25	NA
Carbon Tetrachloride	25	NA
Benzene	25	NA
1,2-Dichloroethane	25	NA
Trichloroethene	25	NA
1,2-Dichloropropane	25	NA
Bromodichloromethane	25	NA
trans-1,3-Dichloropropene	25	NA
4-Methyl-2-Pentanone	250	NA
Toluene	25	NA
cis-1,3-Dichloropropene	25	NA
1,1,2-Trichloroethane	25	NA
Tetrachloroethene	25	NA
2-Hexanone	250	NA
Dibromochloromethane	25	NA
Chlorobenzene	25	NA
Ethyl Benzene	25	NA
m,p-Xylene	25	NA
o-Xylene	25	NA
Styrene	25	NA
Bromoform	25	NA
1,1,2,2-Tetrachloroethane	25	NA

Surrogate	% Recovery	Method Limit
1,2-Dichloroethane-d8	NA	75-114%
Toluene-d8	NA	85-110%
4-Bromofluorobenzene	NA	85-110%

# AIR TOXICS LTD.

SAMPLE NAME: HLOS

ID#: 891003-04B

## VOST SW-846 METHOD 8240

File Name: H02808 Date of Collection: 10/28/89  
 DE Factor: 1 Date of Analysis: 10/28/89

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	27J
Acetone	500	65J
Methylene Chloride	25	270
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	27
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
1,1-Dichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Surrogate	% Recovery	Method Limit
1,2-Dichloroethane-d5	100	75-115%
Toluene-d8	98	85-115%
4-Bromofluorobenzene	100	85-115%

# AIR TOXICS LTD.

SAMPLE NAME: HL09

ID#: 891003-05A

## VOST SW-846 METHOD 8240

File Name: 1102908 Date of Collection: 10/23/98  
 DE Project: F Date of Analysis: 10/27/98

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	91
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	20J
Acetone	500	290J
Methylene Chloride	25	2100E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	49
Carbon Tetrachloride	25	17J
Benzene	25	67
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	2000E
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	15J
m,p-Xylene	25	41
o-Xylene	25	12J
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	% Recovery	Method Limit
1,2-Dichloroethane-d4	100	75-114%
Toluene-d8	86	65-110%
4-Bromofluorobenzene	104	65-115%

# AIR TOXICS LTD.

SAMPLE NAME: HL10

ID#: 891003-05B

## VOST SW-846 METHOD 8240

File Name: 1102918 Date of Collection: 10/25/99  
GC Factor: 1 Unit of Analysis: 1000L

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	37
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	19J
Acetone	500	430J
Methylene Chloride	25	890E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	27
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	% Recovery	Method Limit
1,2-Dichloroethane-d2	100	70-110%
Toluene-d8	81	80-110%
4-Bromofluorobenzene	80	80-110%

# AIR TOXICS LTD.

SAMPLE NAME: HL11

ID#: 891003-06A

## VOST SW-846 METHOD 8240

File Name:	T102017	Date of Collection: 10/28/88
OS. Paster:	1	Date of Analysis: 10/28/88

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	25
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	34J
Acetone	500	18J
Methylene Chloride	25	1300E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	25
Carbon Tetrachloride	25	14J
Benzene	25	67
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromochloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	520E
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	18J
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	% Recovery	Method Limits
1,2-Dichloroethane-d2	100	75-114%
Toluene-d8	86	68-110%
4-Bromofluorobenzene	100	66-115%

# AIR TOXICS LTD.

SAMPLE NAME: HL12

ID#: 891003-06B

## VOST SW-846 METHOD 8240

File Name:	1102812	Date of Collection:	10/22/97
DL Factor:	1	Date of Analysis:	10/22/97

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	12J
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	12J
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	21J
Acetone	500	ND
Methylene Chloride	25	500E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	25
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	% Recovery	Method Limit
1,2-Dichloroethane-d4	101	70-110%
Toluene-d8	86	80-110%
4-Bromofluorobenzene	107	80-110%

# AIR TOXICS LTD.

SAMPLE NAME: HL13

ID#: 891003-07A

## VOST SW-846 METHOD 8240

File Name: 1102799 Date of Collection: 10/23/99  
 DE Factor: 1 Date of Analysis: 10/27/99

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	36
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	56J
Acetone	500	27J
Methylene Chloride	25	1300E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethane	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	77
Carbon Tetrachloride	25	15J
Benzene	25	65
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	1400E
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	11J
m,p-Xylene	25	33
o-Xylene	25	11J
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Surrogate	% Recovery	Method Limit
1,2-Dichloroethane-d4	112	76-114%
Toluene-d8	86	66-110%
4-Bromofluorobenzene	100	66-116%

# AIR TOXICS LTD.

SAMPLE NAME: HL14

ID#: 891003-07B

## VOST SW-846 METHOD 8240

File Name:	1102702	Date of Detection: 10/25/99
DE. Factor:	1	Date of Analysis: 10/27/99

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	14J
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	29J
Acetone	500	14J
Methylene Chloride	25	910E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	11J
Carbon Tetrachloride	25	ND
Benzene	25	34
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	% Recovery	Method Limit
1,2-Dichloroethane-d2	111	78-114%
Toluene-d8	101	88-110%
4-Bromofluorobenzene	101	88-115%



# AIR TOXICS LTD.

SAMPLE NAME: HL15

ID#: 891003-08A

## VOST SW-846 METHOD 8240

File Name: 1182788 Date of Collection: 10/28/88  
 DL Factor: 1 Date of Analysis: 10/27/88

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	41J
Acetone	500	90J
Methylene Chloride	25	1360E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	23J
Carbon Tetrachloride	25	13J
Benzene	25	64
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	17J
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Surrogate	% Recovery	Method Limit
1,2-Dichloroethene-d4	113	78-114%
Toluene-d8	181	66-116%
4-Bromofluorobenzene	181	66-116%

# AIR TOXICS LTD.

SAMPLE NAME: HL16

ID#: 891003-08B

## VOST SW-846 METHOD 8240

File Name: 1102708 Date of Collection: 10/28/98  
Oil Factor: 1 Date of Analysis: 10/27/98

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	18J
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	31J
Acetone	500	92J
Methylene Chloride	25	680E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	29
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Surrogate	% Recovery	Method Limit
1,2-Dichloroethane-d4	111	75-114%
Toluene-d8	98	88-110%
4-Bromofluorobenzene	101	88-110%

# AIR TOXICS LTD.

SAMPLE NAME: HL17

ID#: 891003-09A

## VOST SW-846 METHOD 8240

File Name: 1102718 Date of Collection: 10/20/99  
DE Factor: 1 Date of Analysis: 10/27/99

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	25J
Acetone	500	17J
Methylene Chloride	25	ND
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Summation	% Recovery	Method Limit
1,2-Dichloroethane-d8	107	70-114%
Toluene-d8	86	60-110%
4-Bromofluorobenzene	87	60-110%

# AIR TOXICS LTD.

SAMPLE NAME: HL18

ID#: 891003-09B

## VOST SW-846 METHOD 8240

File Name: 110271 Date of Collection: 10/29/90  
DB: Factory Date of Analysis: 10/27/90

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethane	25	ND
Carbon Disulfide	500	17J
Acetone	500	17J
Methylene Chloride	25	ND
trans-1,2-Dichloroethane	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethane	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	% Recovery	Method Limit
1,2-Dichloroethane-d4	104	78-114%
Toluene-d8	82	88-110%
4-Bromofluorobenzene	87	88-118%

# AIR TOXICS LTD.

SAMPLE NAME: HL19 LAB SPIKE

ID#: 891003-10A

## VOST SW-846 METHOD 8240

File Name: 1102718 Date of Collection: 10/28/99  
 Dil. Factor: 1 Date of Analysis: 10/27/99

Compound	MDL (ng)	% RECOV.
Chloromethane	50	NA
Vinyl Chloride	50	NA
Bromomethane	50	NA
Chloroethane	50	NA
Trichlorofluoromethane	25	NA
1,1-Dichloroethene	25	NDQ
Carbon Disulfide	500	NA
Acetone	500	NA
Methylene Chloride	25	NA
trans-1,2-Dichloroethene	25	NA
1,1-Dichloroethane	25	NA
Vinyl Acetate	250	NA
cis-1,2-Dichloroethene	25	NA
2-Butanone	500	NA
Chloroform	25	NA
1,1,1-Trichloroethane	25	NA
Carbon Tetrachloride	25	NA
Benzene	25	111
1,2-Dichloroethane	25	NA
Trichloroethene	25	80
1,2-Dichloropropane	25	NA
Bromodichloromethane	25	NA
trans-1,3-Dichloropropene	25	NA
4-Methyl-2-Pentanone	250	NA
Toluene	25	373Q
cis-1,3-Dichloropropene	25	NA
1,1,2-Trichloroethane	25	NA
Tetrachloroethene	25	NA
2-Hexanone	250	NA
Dibromochloromethane	25	NA
Chlorobenzene	25	49
Ethyl Benzene	25	NA
m,p-Xylene	25	NA
o-Xylene	25	NA
Styrene	25	NA
Bromoform	25	NA
1,1,2,2-Tetrachloroethane	25	NA

Substrate	% Recovery	Method 8240
1,2-Dichloroethane-d2	114	78-114%
Toluene-d8	89	88-110%
4-Bromofluorobenzene	104	88-115%

# AIR TOXICS LTD.

SAMPLE NAME: HL20 LAB SPIKE BACKUP

ID#: 891003-10B

## VOST SW-846 METHOD 8240

File Name: H02713 Date of Collection: 10/26/99  
 Cell Factor: 1 Date of Analysis: 04/27/00

Compound	MDL (nG)	% RECOV.
Chloromethane	50	NA
Vinyl Chloride	50	NA
Bromomethane	50	NA
Chloroethane	50	NA
Trichlorofluoromethane	25	NA
1,1-Dichloroethene	25	21
Carbon Disulfide	500	NA
Acetone	500	NA
Methylene Chloride	25	NA
trans-1,2-Dichloroethene	25	NA
1,1-Dichloroethane	25	NA
Vinyl Acetate	250	NA
cis-1,2-Dichloroethene	25	NA
2-Butanone	500	NA
Chloroform	25	NA
1,1,1-Trichloroethane	25	NA
Carbon Tetrachloride	25	NA
Benzene	25	ND
1,2-Dichloroethane	25	NA
Trichloroethene	25	ND
1,2-Dichloropropane	25	NA
Bromodichloromethane	25	NA
trans-1,3-Dichloropropene	25	NA
4-Methyl-2-Pentanone	250	NA
Toluene	25	ND
cis-1,3-Dichloropropene	25	NA
1,1,2-Trichloroethane	25	NA
Tetrachloroethane	25	NA
2-Hexanone	250	NA
Dibromochloromethane	25	NA
Chlorobenzene	25	ND
Ethyl Benzene	25	NA
m,p-Xylene	25	NA
o-Xylene	25	NA
Styrene	25	NA
Bromoform	25	NA
1,1,2,2-Tetrachloroethane	25	NA

Compound	% Recovery	Method Limit
1,2-Dichloroethane-d5	113	75-114%
Toluene-d8	87	85-110%
4-Bromofluorobenzene	88	85-110%

# AIR TOXICS LTD.

SAMPLE NAME: HL21

ID#: 891003-11A

## VOST SW-846 METHOD 8240

File Name: 1102714 Date of Collection: 10/21/98  
Lab. Factor: 1 Date of Analysis: 10/27/98

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	13J
1,1-Dichloroethene	25	21J
Carbon Disulfide	500	46J
Acetone	500	20J
Methylene Chloride	25	910E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	51
Carbon Tetrachloride	25	14J
Benzene	25	39
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	580E
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	11J
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Surrogate	% Recovery	Method Limit
1,2-Dichloroethane-d4	111	78-114%
Toluene-d8	100	88-110%
4-Bromofluorobenzene	89	88-110%

# AIR TOXICS LTD.

SAMPLE NAME: HL22

ID#: 891003-11B

## VOST SW-846 METHOD 8240

File Name: 1102718 Date of Collection: 10/28/98  
DL Factor: 1 Date of Analysis: 10/27/98

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	14J
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	14J
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	30J
Acetone	500	18J
Methylene Chloride	25	1300E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	17J
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	% Recovery	Method Limit
1,2-Dichloroethane-d4	112	75-114%
Toluene-d8	101	88-110%
4-Bromofluorobenzene	88	88-115%



# AIR TOXICS LTD.

SAMPLE NAME: HL23 TRIP BLANK

ID#: 891003-12A

## VOST SW-846 METHOD 8240

File Name: 1102717 Date of Collection: 10/22/99  
DE Factor: 1 Date of Analysis: 10/27/99

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	28J
Acetone	500	16J
Methylene Chloride	25	ND
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromochloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Surrogate	% Recovery	Method Limit
1,2-Dichloroethane-d4	1100	70-110%
Toluene-d8	1110	80-110%
4-Bromofluorobenzene	100	80-110%

# AIR TOXICS LTD.

SAMPLE NAME: HL24 TRIP BLANK BACKUP

ID#: 891003-12B

## VOST SW-846 METHOD 8240

File Name: 1102719 Date of Collection: 10/22/99  
DE Factor: Date of Analysis: 10/27/99

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	19J
Acetone	500	ND
Methylene Chloride	25	ND
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	14J
Carbon Tetrachloride	25	ND
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Surrogate	% Recovery	Method Limits
1,2-Dichloroethane-d4	99	79-114%
Toluene-d8	99	99-110%
4-Bromobenzene	99	99-116%

# AIR TOXICS LTD.

SAMPLE NAME: HL25

ID#: 891003-13A

## VOST SW-846 METHOD 8240

File Name: 1102728 Date of Collection: 11/27/88  
 DL Factor: 1 Date of Analysis: 12/27/88

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	79
Carbon Disulfide	500	33J
Acetone	500	24J
Methylene Chloride	25	2400E
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	30
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	940E
Carbon Tetrachloride	25	17J
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethene	25	35
1,2-Dichloropropane	25	10.1
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	430E
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethane	25	32
2-Hexanone	250	ND
Dibromochloromethane	25	33
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	12J
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substance	% Recovery	Method Error
1,2-Dichloroethane-50	100	78-114%
Toluene-25	107	89-110%
4-Bromodichlorobenzene	87	86-115%

# AIR TOXICS LTD.

SAMPLE NAME: HL26

ID#: 891003-13B

## VOST SW-846 METHOD 8240

File Name: 110272  
 Date: 11/27/99  
 Lab: 110272

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	23J
1,1-Dichloroethane	25	28
Carbon Disulfide	500	34J
Acetone	500	14J
Methylene Chloride	25	2000E
trans-1,2-Dichloroethane	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethane	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	52
Carbon Tetrachloride	25	10J
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethane	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropane	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropane	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethane	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	Retention	Amount (ng)
1,2-Dichloroethane-d4	112	70-112%
Toluene-d8	104	80-110%
4-Bromochlorobenzene	88	80-110%

# AIR TOXICS LTD.

SAMPLE NAME: LAB BLANK

ID#: 891003-14A

## VOST SW-846 METHOD 8240

File Name: 1182718 Date of Collection: 10/20/98  
 Lab. Folder: 1 Date Analyzed: 10/20/98

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	27J
Acetone	500	10J
Methylene Chloride	25	ND
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropane	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropane	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Substrate	Reference	MDL (ng)
1,2-Dichloroethane-d8	100	70-110%
Toluene-d8	100	80-110%
4-Bromofluorobenzene	50	80-110%

# AIR TOXICS LTD.

SAMPLE NAME: METHOD SPIKE

ID#: 891003-14B

## VOST SW-846 METHOD 8240

File Name: 110272 Date of Collection: 10/2/98  
 DE Factor: 1 Date of Report: 10/2/98

Compound	MDL (ng)	% RECOV.
Chloromethane	50	NA
Vinyl Chloride	50	NA
Bromomethane	50	NA
Chloroethane	50	NA
Trichlorofluoromethane	25	NA
1,1-Dichloroethene	25	98
Carbon Disulfide	500	NA
Acetone	500	NA
Methylene Chloride	25	NA
trans-1,2-Dichloroethene	25	NA
1,1-Dichloroethane	25	NA
Vinyl Acetate	250	NA
cis-1,2-Dichloroethene	25	NA
2-Butanone	500	NA
Chloroform	25	NA
1,1,1-Trichloroethane	25	NA
Carbon Tetrachloride	25	NA
Benzene	25	102
1,2-Dichloroethane	25	NA
Trichloroethene	25	111
1,2-Dichloropropane	25	NA
Bromodichloromethane	25	NA
trans-1,3-Dichloropropene	25	NA
4-Methyl-2-Pentanone	250	NA
Toluene	25	108
cis-1,3-Dichloropropene	25	NA
1,1,2-Trichloroethane	25	NA
Tetrachloroethane	25	NA
2-Hexanone	250	NA
Dibromochloromethane	25	NA
Chlorobenzene	25	115
Ethyl Benzene	25	NA
m,p-Xylene	25	NA
o-Xylene	25	NA
Styrene	25	NA
Bromotorm	25	NA
1,1,2,2-Tetrachloroethane	25	NA

Surrogate	% Recovery	Method Limit
1,2-Dichloroethane-d2	102	75-114%
Toluene-d8	88	85-110%
4-Bromochlorobenzene	102	85-115%

# AIR TOXICS LTD.

SAMPLE NAME: METHOD SPIKE DUPLICATE

ID#: 891003-14C

## VOST SW-846 METHOD 8240

File Name: H02728 Date of Collection: 10/27/88  
 Lab. Folder: 1 Date of Analysis: 10/27/88

Compound	MDL (ng)	% RECOV.
Chloromethane	50	NA
Vinyl Chloride	50	NA
Bromomethane	50	NA
Chloroethane	50	NA
Trichlorofluoromethane	25	NA
1,1-Dichloroethane	25	81
Carbon Disulfide	500	NA
Acetone	500	NA
Methylene Chloride	25	NA
trans-1,2-Dichloroethene	25	NA
1,1-Dichloroethane	25	NA
Vinyl Acetate	250	NA
cis-1,2-Dichloroethene	25	NA
2-Butanone	500	NA
Chloroform	25	NA
1,1,1-Trichloroethane	25	NA
Carbon Tetrachloride	25	NA
Benzene	25	96
1,2-Dichloroethane	25	NA
Trichloroethene	25	100
1,2-Dichloropropane	25	NA
Bromodichloromethane	25	NA
trans-1,3-Dichloropropane	25	NA
4-Methyl-2-Pentanone	250	NA
Toluene	25	104
cis-1,3-Dichloropropane	25	NA
1,1,2-Trichloroethane	25	NA
Tetrachloroethene	25	NA
2-Hexanone	250	NA
Dibromochloromethane	25	NA
Chlorobenzene	25	110
Ethyl Benzene	25	NA
m,p-Xylene	25	NA
o-Xylene	25	NA
Styrene	25	NA
Bromoform	25	NA
1,1,2,2-Tetrachloroethane	25	NA

Substrate	% Recovery	Method Limit
1,2-Dichloroethane-d2	111	78-114%
Toluene-d8	104	88-110%
4-Bromofluorobenzene	104	88-110%

# AIR TOXICS LTD.

SAMPLE NAME: REAGENT BLANK

ID#: 891003-15A

## VOST SW-846 METHOD 8240

File Name: 110207  
 Dir. Factor: 1000

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	ND
Acetone	500	29J
Methylene Chloride	25	ND
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropene	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropene	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethane	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Standard	Response	MDL (ng)
1,2-Dichloroethane-d5	100	75-10%
Toluene-d8	80	60-10%
4-Bromochlorobenzene	100	60-10%



# AIR TOXICS LTD.

SAMPLE NAME: REAGENT BLANK

ID#: 15B

## VOST SW-846 METHOD 8240

File Name:	110201	Date of Collection:	10/27/99
GL Factor:		Date of Analysis:	10/27/99

Compound	MDL (ng)	Amount (ng)
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	ND
Acetone	500	11J
Methylene Chloride	25	ND
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropane	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropane	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Summation	% Recovery	Method Limit
1,2-Dichloroethene-d2	100	70-114%
Toluene-d8	101	80-110%
4-Bromofluorobenzene	87	80-110%

# AIR TOXICS LTD.

SAMPLE NAME: REAGENT BLANK

ID#: 891003-15C

## VOST SW-846 METHOD 8240

File Name:	110218	File #:	00000000000000000000
Cell Factor:		File #:	00000000000000000000

Compound	MDL (ng)	% RECOV.
Chloromethane	50	ND
Vinyl Chloride	50	ND
Bromomethane	50	ND
Chloroethane	50	ND
Trichlorofluoromethane	25	ND
1,1-Dichloroethene	25	ND
Carbon Disulfide	500	ND
Acetone	500	ND
Methylene Chloride	25	ND
trans-1,2-Dichloroethene	25	ND
1,1-Dichloroethane	25	ND
Vinyl Acetate	250	ND
cis-1,2-Dichloroethene	25	ND
2-Butanone	500	ND
Chloroform	25	ND
1,1,1-Trichloroethane	25	ND
Carbon Tetrachloride	25	ND
Benzene	25	ND
1,2-Dichloroethane	25	ND
Trichloroethene	25	ND
1,2-Dichloropropane	25	ND
Bromodichloromethane	25	ND
trans-1,3-Dichloropropane	25	ND
4-Methyl-2-Pentanone	250	ND
Toluene	25	ND
cis-1,3-Dichloropropane	25	ND
1,1,2-Trichloroethane	25	ND
Tetrachloroethene	25	ND
2-Hexanone	250	ND
Dibromochloromethane	25	ND
Chlorobenzene	25	ND
Ethyl Benzene	25	ND
m,p-Xylene	25	ND
o-Xylene	25	ND
Styrene	25	ND
Bromoform	25	ND
1,1,2,2-Tetrachloroethane	25	ND

Structure	% Recovery	Relative Error
1,2-Dichloroethane-d2	112	12.1%
Toluene-d8	82	-11.0%
4-Bromodichloromethane	101	11.0%

# QUALITY ASSURANCE REPORT

Work Order Number: 891003

"VOST" Method 8240

## I. ACCURACY

### Method Spike Recovery (MS)

Sample	Analyte	% Recovery	Method Limits (%)
HL07-140	1,1-Dichloroethene	10	20
	Benzene	7.1	20
	Trichloroethene	1.0	20
	Toluene	1.0	20
	Chlorobenzene	0.1	20

### Method Spike Duplicate Recovery (MSD)

Sample	Analyte	% Recovery	Method Limits (%)
HL07-140	1,1-Dichloroethene	10	20
	Benzene	7.1	20
	Trichloroethene	1.0	20
	Toluene	1.0	20
	Chlorobenzene	0.1	20

## II. PRECISION - Relative Percent Difference Between MS and MSD

Analyte	% RPD	Method Limits (%)
1,1-Dichloroethene	10	20
Benzene	7.1	20
Trichloroethene	1.0	20
Toluene	1.0	20
Chlorobenzene	0.1	20

## III. QA NARRATIVE

1. Sample HL07 was not analyzed due to a broken glass tube end
2. Evidence of breakthrough exists in the lab spike cartridge since 1,1-Dichloroethene was found in the back-up cartridge but not in the primary cartridge which was spiked
3. Toluene exceeded matrix spike recovery limits in the lab spike due to a high native background level

## IV. FLAGS AND DEFINITIONS

- ND Not Detected at the Specified Detection Limit
- NA Not Analyzed
- Q Exceeds Method Specified QC Limits, explanation provide in QA narrative
- J Value reported below Method Specified Detection Limit
- E Value exceeds instrument calibration range

ATTACHMENT C  
DATA VALIDATION REPORT

# MEMO

TO: Ron Frehner  
FROM: Graham Chevreau/Steve Quigley  
REFERENCE NO. 2141/pmck/1  
DATE: March 23, 1990  
RE: Air Monitoring Data - Hassayampa Landfill

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## SAMPLING ROUND II - AIR MONITORING - HASSAYAMPA LANDFILL

The following memo details an analytical data assessment and validation of the air monitoring results obtained by Radian Corporation (Radian) on samples collected from the Hassayampa Landfill site. Samples were collected and analyzed in accordance with USEPA Method T0-1 ("Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air") and T0-2.

The data have been reviewed and validated based on the QA/QC criteria presented in the aforementioned methods. Based on the sampling and analysis protocols and a review of the data set, the following are noted:

### 1) Sample Collection

Sorbent tubes were connected in series to collect organic compounds, as recommended in Method T0-1. Disposable gloves were worn while loading and unloading sorbent tubes and, after analysis, each tube was capped and placed in airtight shipping tubes to prevent contamination during shipping and storage. Samples were preserved at 4°C until analysis.

The weight of Tenax in the first tube was 1.6 gms and the weights of Tenax and charcoal in the second tube were 1 and 1 gms, respectively.

2) Sample Holding Time

USEPA Method T0-1 prescribes two maximum holding times for Tenax cartridges:

- i) 14 days between cartridge preparation and sample collection; and
- ii) 14 days between sample collection and sample analysis.

Tenax cartridges used at the site were prepared October 18, 1989 and sampling was performed on October 23, 1989. Samples were analyzed by October 27, 1989. No qualification of the data is warranted based on holding time violations.

3) Blank SamplesField Blank & Trip Blank

One field blank, which consisted of a pair of sorbent traps connected to a sampling pump and handled in the same manner as the sample tubes, was taken and carbon disulphide and acetone were detected at 25 ng and 17 ng, respectively. Both carbon disulphide and acetone were also detected in the trip blank (26 ng and 16 ng, respectively) as well as 1,1,1-trichloroethane (14 ng).

Lab & Reagent Blanks

Carbon disulphide and acetone were also detected in the lab blank (27 ng and 10 ng, respectively) and acetone in the reagent blank (29 ng).

Blank Summary

All contamination in blanks was below laboratory-established method detection limits; however, certain analytical results should be qualified (see Table 1).

According to the USEPA document entitled "Functional Guidelines for Evaluating Organics Analyses", any compound detected in a sample which was also detected in any associated blank should be qualified when the sample concentration is less than five times the blank concentration (except for common laboratory contaminants such as acetone, in which case the sample concentration should be ten times that of the blank).

TABLE 1

REVISED DATA DUE TO BLANK CONTAMINATION  
STAGE 2 - AIR MONITORING

## HASSAYAMPA LANDFILL RI/FS

<i>Parameter</i>	<i>Location</i>	<i>Reported (ng)</i>	<i>Revision</i>
1,1,1-TCA	AMP I - F	51	ND (51) UJ
	AMP I - total	51	ND (51) UJ
	AMP B - F	57	ND (57) UJ
	AMP B - total	57	ND (57) UJ
	AMP E - F	49	ND (49) UJ
	AMP E - total	49	ND (49) UJ
	AMP F - F	25	ND (25) UJ
	AMP F - total	25	ND (25) UJ
	AMP G - B	11	ND (11)
	AMP G - total	88 J	77 J
	AMP J - B	52	ND (52) UJ
	AMP J - total	992E	940 E
	AMP H - F	23	ND (23) UJ
	AMP H - total	23	ND (27) UJ
acetone	AMP E - F	290	ND (290)
	AMP E - B	430	430 J
	AMP E - total	720	430 J

Notes:

1. UJ = The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quality.
- J = The associated numerical value is an estimated quality.
- E = Value exceeds instrument calibration range.

Based on the above criteria, all sample results should be reported as not-detected (ND) unless the concentrations are greater than the amounts listed below:

<i>Parameter</i>	<i>Revised Detection Limit (ng)</i>
Carbon Disulphide	135
Acetone	290
1,1,1-trichloroethane	70

Based on the above criteria, all carbon disulphide results should be qualified as not detected (U) and the associated numerical quantity in the analytical report should be viewed as the method detection limit.

Similarly, all acetone results should be qualified as not detected (U) with the exception of location AMPE which with revisions as noted in Table 1.

In addition, certain 1,1,1-trichloroethane results should be qualified (see Table 1).

#### 4. MAXIMUM VOLUME

Each compound has a characteristic retention volume (litres of air per gram of adsorbent) which must not be exceeded. The maximum total volume of air which can be sampled is calculated using the following equation:

$$V_{\max} = \frac{V_b \times W}{1.5}$$

$V_b$  = Breakthrough (volume for the least retained compound of interest (Table 1 - Method T0-1))

$W$  = Weight of Tenax in cartridge/gram

1.5 = A safety factor to allow for variability in atmospheric conditions. This factor is appropriate for temperatures in the range of 25-30°C. Higher temperatures would necessitate the use of a safety factor greater than 1.5.

All results for chloroform, carbon tetrachloride, dichloroethane and 1,1,1-trichloroethane should be qualified as estimated in view of the fact that the total volume of air which was drawn through (20 L) exceeded the recommended maximums: chloroform - 10.6 litres; carbon tetrachloride - 10.6 litres; 1,2-dichloroethane - 13.3 litres; 1,1,1-trichloroethane - 8 litres.



5. DUPLICATES

One field duplicate was obtained at station AMP A to evaluate combined laboratory and field sampling precision. The Relative Percent Difference (RPD) of each parameter was calculated, and two compounds were found to have duplicate results outside of the laboratory established control limit of 30 percent: trichlorofluoromethane (84 percent) RPD front tube, and benzene (38 percent) RPD front tube. No qualification, however, is warranted in view of the fact that associated matrix spike/matrix spike duplicate results were shown to be in control.

6. SURROGATES

Surrogate compounds were injected into all samples and standards prior to analysis to determine the efficiency of the purge and trap system in separating the volatile organic compounds. All surrogate compounds were found to be within laboratory established control limits, with the exception of the recoveries of 1,2-dichloroethane-d<sub>4</sub> and toluene-d<sub>8</sub> on the front tube of the trip blank. The recoveries exceeded the control limits by only 2 percent and 1 percent, respectively, and are not significant enough to warrant any qualification of the data.

7. GENERAL

According to Method TO-1, backup cartridges should contain less than 20% of the amount of compounds of interest found in the front cartridges, or be equivalent to the blank cartridges, whichever is greater. In the event that amounts found in the back cartridges are greater than 20% of the amount in the front cartridge, this may be the result of component breakthrough during sampling. Table 2 contains a list of compounds which were found in back cartridge concentrations greater than 20% of the associated front cartridge. All compounds in Table 2 should be qualified as estimated (qualifier J) due to possible component breakthrough.

8. SUMMARY

In summary, all carbon disulphide results should be revised as being not detected, as well as acetone (with the exception of location AMP-E which is qualified in Table 1). All results for 1,1,1-trichloroethane were qualified due to levels found in blanks (see Table 1) except for location AMP-A.

**TABLE 2**  
**QUALIFIED DATA DUE TO**  
**SUSPECTED COMPONENT BREAKTHROUGH**  
**STAGE 2 - AIR MONITORING**

**HASSAYAMPA LANDFILL RI/FS**

Location	Parameter	Front Tube (ng)	Back Tube (ng)	Qualifier
AMP-A	chloromethane	ND	10	J
	1,1-dichloroethene	31	16	J
	methylene chloride	1000	805	J
	benzene	32	32	J
AMP-B	trichlorofluoromethane	28	13	J
	methylene chloride	910	530	J
	benzene	43	31	J
AMP-E	trichlorofluoromethane	91	37	J
	methylene chloride	2100	890	J
	benzene	67	27	J
AMP-F	chloromethane	ND	12	J
	trichlorofluoromethane	25	12	J
	methylene chloride	1300	500	J
	benzene	67	25	J
AMP-G	trichlorofluoromethane	35	14	J
	methylene chloride	1300	910	J
	benzene	65	34	J
AMP-H	chloromethane	ND	18	J
	methylene chloride	1350	680	J
	benzene	64	29	J
AMP I	chloromethane	ND	14	J
	trichlorofluoromethane	13	14	J
	methylene chloride	910	1300	J
	benzene	39	17	J
AMP J	trichlorofluoromethane	ND	23	J
	1,1-dichloroethene	79	26	J
	methylene chloride	2400	2000	J
	carbon tetrachloride	17	10	J

Note: ng = nanograms

Also, all results for chloroform, carbon tetrachloride, 1,2-dichloroethane and 1,1,1-trichloroethane should be qualified as estimated due to excessive sampling volumes.

Certain results (see Table 2) were also qualified for chloromethane, 1,1-dichloroethane, methylene chloride, benzene, trichlorofluoromethane and carbon tetrachloride due to suspected component breakthrough, as illustrated by sample concentrations found in backup cartridges which exceeded 20% of the concentration found in associated front cartridges.