



CONESTOGA-ROVERS & ASSOCIATES LIMITED
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SFUND RECORDS CTR
0222-00623

August 15, 1990

Reference No. 2141

AR0675

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: Revised Data Submittal for February 1990

Errol L. Montgomery & Associates previously prepared and submitted to you the February data submittal (dated March 30, 1990) for the Hassayampa Landfill Remedial Investigation.

Included in that data submittal was an "Appendix F - Results of Stage 2 - Air Investigation" which was submitted under separate cover. While developing the air quality section of the Remedial Investigation Report, it was found that calculation errors were in the original data submitted which significantly change the Stage 2 air quality conclusions. This revised submittal contains the corrected data and associated conclusions. Three (3) copies of the Appendix are enclosed. The attachments to the Appendix are not reproduced since they remain unchanged from the original submission.

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

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

A handwritten signature in black ink, appearing to read 'Stephen M. Quigley', with a long horizontal line extending to the right.

Stephen M. Quigley, P. Eng.

SMQ/dvs/1
Encl.

c.c. (See List Attached)

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Appendix F

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

August 15, 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.

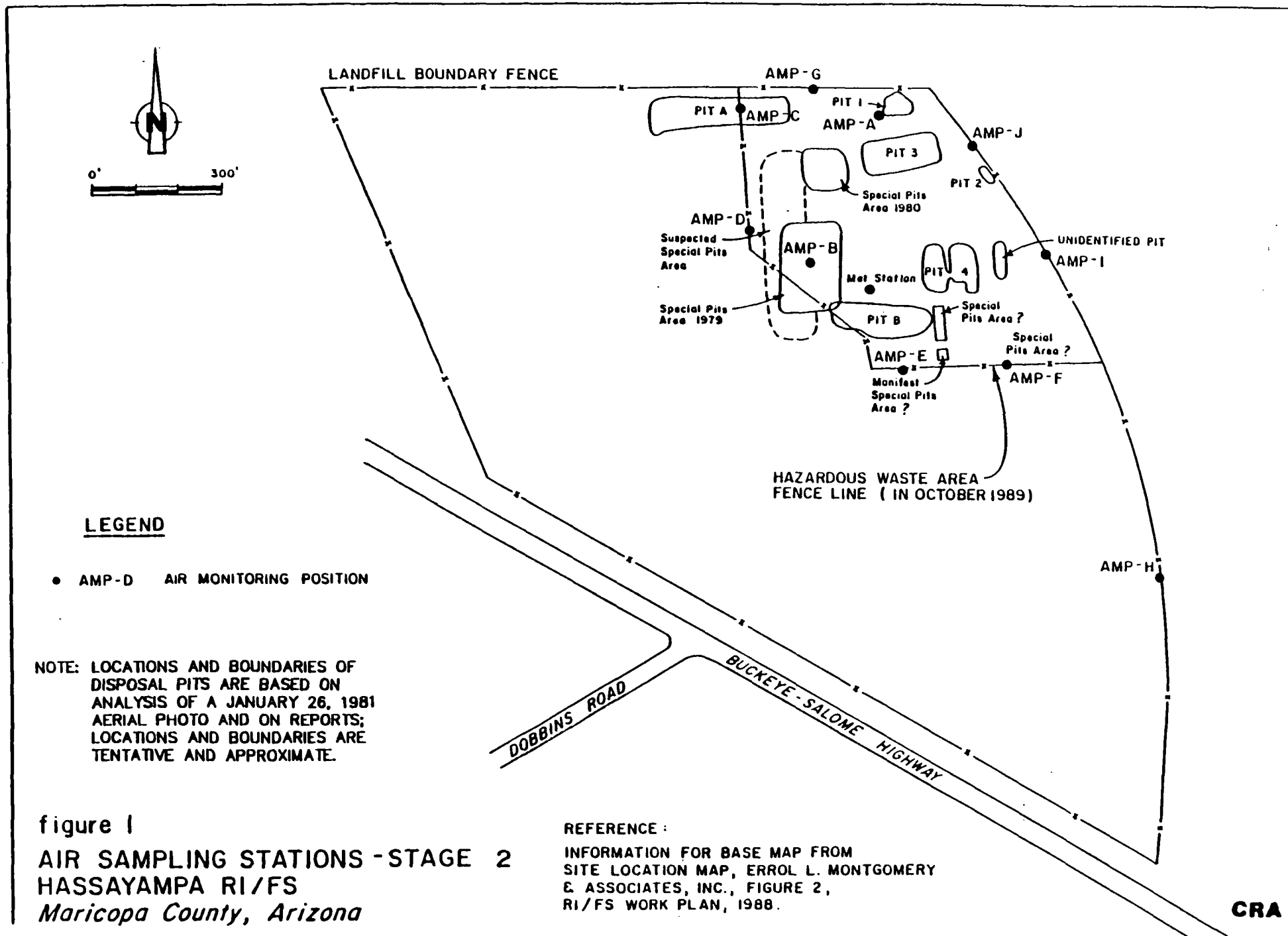


Table 1

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

Site Specific Meteorological Data

Wind Direction*	Class 1 (0-2 mph) %	Class 2 (3-4 mph) %	Class 3 (5-6 mph) %	Class 4 (7-8 mph) %	Total %
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**

Time	Wind Speed (mph)	Wind Direction	Barometric Pressure (in-Hg)	Ambient Temperature (F)	Relative Humidity (%)
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.

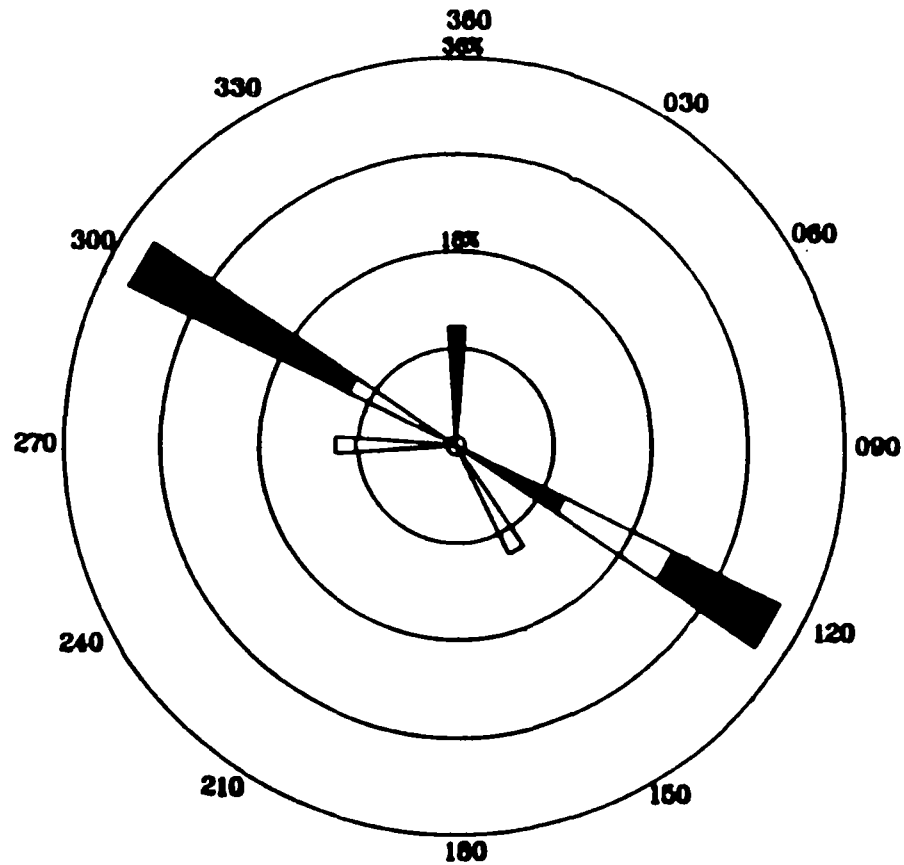


figure 2
 SITE WIND ROSE - OCTOBER 23, 1989
 HASSAYAMPA RI/FS
 Maricopa County, Arizona

CRA

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 Toxics' 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 and mean fence line concentrations did not exceed the TLV/300 criteria.

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.

Some of the compounds detected in the Stage 2 air monitoring were present in higher concentrations than detected during the Stage 1 program. These differences may be associated with a significant rain storm which occurred approximately 48 hours before the Stage 2 field work. However, 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.

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.

TABLE 2
RESULTS
STAGE 2 - AIR MONITORING
HASSAYAMPA LANDFILL RI/FS

<i>Compound</i>	<i>Detection</i>	<i>AMP-A</i>	<i>AMP-B</i>	<i>AMP-C</i>	<i>AMP-E</i>	<i>AMP-F</i>	<i>AMP-G</i>	<i>AMP-H</i>	<i>AMP-I</i>	<i>AMP-J</i>
	<i>Limit (A)</i> µg	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
Chloromethane	0.050	0.490 J				0.610 J		0.850 J	0.736 J	
Trichlorofluoromethane	0.025	3.600	2.050 J		6.100 J	1.900 J	2.510 J		1.420 J	1.100 J
1,1-Dichloroethene	0.025	2.380 J	0.850						1.100	4.900 J
Carbon Disulfide	0.500	2.300 U	3.200 U	1.200 U	1.850 U	2.800 U	4.400 U	3.400 U	4.000 U	3.200 U
Acetone	0.500	2.230 U	1.750 U	2.900 U	34.000 J	0.910 U	2.120 U	8.500 U	2.050 U	1.760 U
Methylene Chloride	0.025	91.000 J	71.000 J	12.000	141.000 J	91.000 J	112.000 J	96.000 J	116.000 J	204.000 J
1,1-Dichloroethane	0.025	0.800								1.400
1,1,1-Trichloroethane	0.025	13.000 J	2.800 UJ		2.300 UJ	1.300 UJ	4.490 J	1.100 UJ	2.700 UJ	46.500 J
Carbon Tetrachloride	0.025	0.600 J	0.700 J		0.800 J	0.710 J	0.770 J	0.610 J	0.740 J	1.300 J
Benzene	0.025	3.200 J	3.700 J	1.200	4.500 J	4.700 J	5.100 J	4.400 J	2.890 J	
Trichloroethylene	0.025	0.570	1.100							1.600
Toluene	0.025	19.000	15.000		95.000	26.000	72.000	0.800	30.000	20.000
Tetrachloroethylene	0.025	0.620								1.500
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.

UJ - The material was analyzed for, but not detected. The sample quantitation limit is an estimated quantity.

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

TABLE 3

**STAGE 2 - AIR MONITORING
HASSAYAMPA LANDFILL RI/FS**

	TLV(TWA) (1)	TLV(TWA) (2)	Mean on site (3)	Max on site (4)	Mean (5)	Mean (6)	Max (7)
	($\mu\text{g}/\text{m}^3$) (9)	$\frac{300}{300}$ ($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	Fence line ($\mu\text{g}/\text{m}^3$)	Fence line ($\mu\text{g}/\text{m}^3$)	Fence line ($\mu\text{g}/\text{m}^3$)
Chloromethane	103,000	343	0.490	0.490	0.610	0.732	0.850
Trichlorofluoromethane	5,620,000 (8)	18,733	2.825	3.600	3.503	2.606	6.100
1,1-Dichloroethylene	20,000	67	1.615	2.380	ND	3.000	4.900
Carbon Disulfide	31,000	103	2.750	3.200	2.563	2.979	4.400
Acetone	1,780,000	5,933	1.990	2.230	9.982	7.463	34.000
Methylene Chloride	174,000	580	81.000	91.000	89.000	110.286	204.000
1,1-Dichloroethane	810,000	2,700	0.800	0.800	ND	1.400	1.400
1,1,1-Trichloroethane	1,910,000	6,367	7.900	13.000	2.697	9.732	46.500
Carbon Tetrachloride	31,000	103	0.650	0.700	0.760	0.822	1.300
Benzene	32,000	107	3.450	3.700	3.875	3.798	5.100
Trichloroethylene	269,000	897	0.835	1.100	ND	1.600	1.600
Toluene	377,000	1,257	17.000	19.000	64.333	40.633	95.000
Tetrachloroethylene	339,000	1,130	0.620	0.620	ND	1.500	1.500
Dibromochloromethane			0.670	0.670	ND	1.600	1.600
Ethylbenzene	434,000	1,447	ND	ND	0.635	0.617	0.710
m,p-Xylene	434,000	1,447	0.880	0.900	1.503	1.270	1.900
o-Xylene	434,000	1,447	ND	ND	0.565	0.565	0.570
1,2-Dichloropropane	347,000	1,157	ND	ND	ND	0.470	0.470

Notes:

- (1) American Conference of Government Industrial Hygienists - Threshold Limit Values for 1989-90
- (2) Source: Rowan, Connolly and Brown, 1984.
- (3) Mean of Detects - AMP-A, AMP-B.
- (4) One of AMP-A, AMP-B.
- (5) Mean of detects - AMP-C, AMP-E, AMP-F, AMP-G.
- (6) Mean of detects - AMP-C, AMP-E, AMP-F, AMP-G, AMP-H, AMP-I, AMP-J.
- (7) One of AMP-C, AMP-E, AMP-F, AMP-G, AMP-H, AMP-I, AMP-J.
- (8) Ceiling Value (TLV-TWA-C).
- (9) $\mu\text{g}/\text{m}^3$ - micrograms per cubic meter.

August 15, 1990

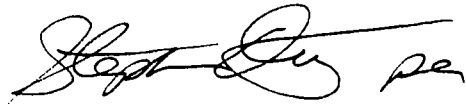
Reference No. 2141

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

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

A handwritten signature in cursive, appearing to read "Ron Frehner", with a horizontal line extending from the end of the signature.

Ron Frehner, P. Eng.

RF/dvs/1

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