

APPENDIX I

Air Monitoring

TOOELE AIR MONITORING - GROUP 2 SWMUS

Ambient air sampling and meteorological monitoring was conducted at the Tooele Army Depot around SWMUS' 3,5,8,9,31 and at a background site from September 11, 1993 to October 3, 1993. Six sample events were chosen for laboratory analysis based upon prevailing wind patterns and sampler locations with respect to the potential sources.

FIELD SAMPLING PROGRAM

Sampler Locations. Figure 1 provides the locations of the six air sampling stations and one meteorological tower. Station **BK** was located on the northeast perimeter of the Depot, approximately 450 meters east of the Administrative building complex. Station **SWMU3** was located in the west-central portion of SWMU 3. Station **SWMU5** was established 50 meters north of the drainage pond and 75 meters northeast of the building 600 foundation in the vicinity of SWMU 5. Station **SWMU8** was centrally located in SWMU 8. Station **SWMU9** was centrally located adjacent to the burn trenches and south of the Mustard Storage Area. The meteorological tower was sited in this same area, approximately 350 meters northeast of the air monitoring station. Finally, station **SWMU31** was situated approximately 300 meters southeast of SWMU 31.

Sample Dates and Parameters. Ambient air samples were collected for six 24-hour episodes (9/21/93, 9/23/93, 9/25/93, 9/27/93, 9/29/93, and 10/1/93). Parameters monitored included total suspended particulates (TSP), metals, mercury, cyanide, semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs). Table 1 details target analytes and associated laboratory detection limits for each set of parameters. Meteorological data was collected continuously from 9/3/93 to 10/3/93. In addition, svoc field spiking and background samples were collected on 9/11/93 and 10/3/93.

Sample Collection and Analytical Methods. TSP and metals were collected on 47 mm glass fiber filters that were aerated at approximately 8.7 standard liter per minute (slpm) for 24 hours. TSP was determined using gravimetric analysis. Following gravimetric analysis for TSP, the filters were digested and analyzed using inductively coupled argon plasma (ICAP) and graphite atomic absorption spectroscopy (GFAA) for determination of arsenic. TSP and metals sampling and laboratory analysis followed guidelines set forth in the *Reference Method for the Determination of Suspended Particulates in the Atmosphere (EPA-600/4-77-027a)*; *40CFR Part 50, Appendix B*; and the *EPA method for the determination of Lead (EPA ERL-0380-045)*.

Mercury was sampled by pulling air through hydrar adsorbent cartridges at 300 standard cubic centimeters per minute (sccm) for 24 hours and analyzed using Cold Vapor Atomic Absorption Spectroscopy techniques. Cyanide samples were collected using impingers and an aeration flowrate of 150 sccm for 24 hours. NIOSH method 7904 was referenced for laboratory analysis procedures.

Passivated canisters were used to collect VOC samples that were analyzed in the laboratory using gas chromatography/mass spectrometry (GC/MS) techniques. Sampling and analysis procedures followed guidelines set forth in EPA method TO-14.

EPA methods TO-4 and TO-13 were referenced for the sampling and analysis of SVOCs and PCBs. Ambient air was drawn through a prefilter and a polyurethane foam (PUF) and XAD-2 sorbent section cartridge at 1.6 slpm for 24 hours. The cartridge was extracted by the laboratory and the SVOCs were analyzed using a GC/MS. PCBs were analyzed by using a Gas Chromatography/Electron Conductivity Detector.

Quality Assurance. Quality assurance (QA) for the ambient air and meteorological monitoring program was maintained by including appropriate quality control (QC) activities (e.g. instrument calibrations, field and trip blanks, and field spikes) as identified in the appropriate reference methods and the U.S. EPA Quality Assurance Handbook for Air Pollution Measurement Systems. Calibrations of all air sampling and meteorological equipment were performed prior to sampling, in the field, by trained personnel. Field and trip blank samples were routinely sent in with the aerated samples to assess background contamination levels. Field spiking for SVOCs using media prespiked in the laboratory was performed both prior to the ambient sampling program on September 11, 1993 and upon completion of the field program on October 3, 1993 to assess collection efficiency. All samples were shipped to the analytical laboratories in containers sealed with evidence tape along with appropriate chain of custody documentation. All laboratory data was reviewed by the project QA/QC coordinator. Necessary sample volume and concentration calculations were performed by EBASCO air quality personnel. The final data was summarized and reported to the program manager by EBASCO.

Laboratory quality control samples were analyzed with the field samples to evaluate the analytical data and to determine the necessity of corrective action for the analytical procedures. Laboratory QC samples for the air program included method blanks, method spikes, and replicate sample analysis. The method blank was used to monitor the introduction of contaminants into the

extraction and analysis process, and to verify that the laboratory was not a source of sample contamination. The method spikes were analytical samples that have known concentrations of control analytes added to clean matrices. The method spikes were used to verify analytical performance and to provide accuracy and precision data. Laboratory replicate samples for air analysis involved performing analysis on one of the field samples in duplicate. The information derived from the replicate sample analysis was used to determine the precision of the analytical method.

SAMPLING RESULTS

Meteorological. Tables 2 to 7 provide hourly and summary wind speed, wind direction, maximum wind speed, sigma theta, 2-meter temperature, and barometric pressure data for the entire field program. All data appear to be within norms for the given season. The overall windrose (Figure 2) compares favorable with the longterm windrose (Figure 3) that was used to choose the location of each air monitoring station. Windroses for each sample episode are contained in this appendix. Winds generally exhibited the expected northwest to southeast diurnal flow pattern with lesser components coming from all quadrants.

VOCs. Table 8 summarizes the results of voc sampling for all target analytes. There were no detections of vinyl chloride, 1,1-Dichloroethene, or 1,1,2,2-Tetrachloroethane. Methylene chloride and methyl isobutyl ketone were occasionally detected at low levels at some of the air monitoring stations. Small concentrations of 1,1,1-Trichloroethane, carbon tetrachloride, and benzene were frequently measured at all stations, including the background site. The remaining target vocs exhibited irregular detection patterns and varied concentrations levels. Chloroform, trichloroethene, and tetrachloroethene were rarely detected at any of the sampling locations except on 9/29/93. During this sampling episode, these three analytes were measured at relatively elevated levels at station SWMU3 (Figure 4). Atmospheric conditions were typically stable overnight, temperatures seasonally warm, and winds light throughout the entire sampling episode. These results seem to indicate that SWMU 3 may be a potential source of chloroform, trichloroethene, and tetrachloroethene. Toluene, ethyl benzene, and total xylenes regularly occurred at low to moderate concentrations at most sampling stations, however, higher levels of these analytes were measured at SWMU31 on 10/1/93 (Figure 5) and SWMU9 on 9/23/93 and 9/27/93. Based upon the meteorology for these sampling episodes, SWMU 9 and SWMU 31 again appear to be potential sources of these compounds. Appendix F4 provides a complete listing of all VOC sampling results.

SVOCs and PCBs. No PCB target analytes were measured at levels above the method's lower detection limits. Table 9 summarizes the results of SVOC sampling. The majority of the target SVOCs were not detected. Those compounds with detections (i.e., naphthalene, diethylphthalate, di-n-butylphthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, and benzyl alcohol) showed comparably high levels in field and trip samples. Furthermore, naphthalene, di-n-butylphthalate, and bis(2-ethylhexyl)phthalate were routinely detected in lab blank samples. These factors seem to indicate that there is a likely source of contamination in the field or laboratory. Appendix F4 provides a complete listing of all SVOC sampling results.

Cyanide. All cyanide samples were non-detects with the exception of SWMU8 on 9/27/93 which was 0.73 micrograms per cubic meter. Winds were predominantly from the northern quadrant throughout the sampling period indicating that the SWMU 8 may be a local source of cyanide.

Mercury. All mercury samples were non-detects with the following exceptions: the concentration at SWMU31 on 9/23/93 was 0.073 micrograms per cubic meter and the concentration at BK on 9/29/93 was 0.042 micrograms per cubic meter. Mercury was also detected at a comparably low level (0.022 micrograms) in the field blank sample on 9/27/93. All these values are just above the method detection limit of 0.020 micrograms per tube (typical sample volume=0.432 cubic meters).

TSP and Metals. All TSP and metals results were deemed invalid due to media and laboratory problems. Laboratory QC checks found that the filters supplied to the field personnel contained high levels of background contaminants for all target elements. Thus it is impossible to delineate between the amount of a given element contributed by the ambient air versus the amount already present on the filter prior to sampling. Furthermore, the variability present in laboratory method blanks and field and trip blank samples disallows any blank correction schemes.

The sources of errors contributing to invalid TSP results are not as easily identified. The results of gravimetric analysis yielded many field samples with negative net weights. Also, many field and trip blank samples showed gross weight changes (both gains and losses) and were out of recommended QC ranges.

Table 1 - Tooele Group 2 SWMUs Air Monitoring Laboratory Detection Limits.

Method	Analyte	Detection Limit	Units
TO-14 (VOCs)	Vinyl Chloride	0.050 - 0.060	ppbv
	Methylene Chloride	0.10 - 0.12	ppbv
	1,1-Dichloroethene	0.050 - 0.060	ppbv
	Chloroform	0.025 - 0.030	ppbv
	1,1,1-Trichloroethane	0.10 - 0.12	ppbv
	Carbon Tetrachloride	0.025 - 0.030	ppbv
	Trichloroethene	0.10 - 0.12	ppbv
	Benzene	0.025 - 0.030	ppbv
	Methyl isobutyl ketone	0.10 - 0.12	ppbv
	Tetrachloroethene	0.10 - 0.12	ppbv
	Toluene	0.10 - 0.12	ppbv
	1,1,2,2-Tetrachloroethane	0.050 - 0.060	ppbv
	Ethyl Benzene	0.10 - 0.12	ppbv
	Total Xylenes	0.10 - 0.12	ppbv
TO-4 (PCBs)	Aroclor 1016	0.30	micrograms
	Aroclor 1221	0.30	micrograms
	Aroclor 1232	0.30	micrograms
	Aroclor 1242	0.30	micrograms
	Aroclor 1248	0.30	micrograms
	Aroclor 1254	0.30	micrograms
	Aroclor 1260	0.30	micrograms
NIOSH 7904	Cyanide	0.08 - 0.09	micrograms
	Mercury	0.020	micrograms
	Arsenic	Not Applicable	
	Chromium	Not Applicable	
	Copper	Not Applicable	
	Nickel	Not Applicable	
	Silver	Not Applicable	
	Zinc	Not Applicable	
	Lead	Not Applicable	
	Aluminum	Not Applicable	
Barium	Not Applicable		
TO-13 (SVOCs)	Butylbenzylphthalate	1.0	micrograms
	bis(2-Ethylhexyl)phthalate	1.0	micrograms
	Di-n-octylphthalate	1.0	micrograms
	Naphthalene	0.50	micrograms
	2-Methylnaphthalene	0.50	micrograms
	Acenaphthylene	0.50	micrograms
	Acenaphthene	0.50	micrograms
	Fluorene	0.50	micrograms
	Phenanthrene	0.50	micrograms
	Anthracene	0.50	micrograms
	Fluoranthene	0.50	micrograms
	Pyrene	0.50	micrograms
	Chrysene	0.50	micrograms
	Benzo (a) anthracene	0.50	micrograms
	Benzo (b) fluoranthene	0.50	micrograms
	Benzo (k) fluoranthene	0.50	micrograms
	Benzo (a) pyrene	0.50	micrograms
	Indeno (1,2,3-cd) pyrene	0.50	micrograms
	Dibenz (a,h) anthracene	0.50	micrograms
Benzo (g,h,i) perylene	0.50	micrograms	

Table 1 continued - Tooele Group 2 SWMUs Air Monitoring Laboratory Detection Limits.

Method	Analyte	Detection Limit	Units
TO-13 (SVOCs)	2-Chlorophenol	1.0	micrograms
	Benzyl Alcohol	1.0	micrograms
	2-Methylphenol	1.0	micrograms
	4-Methylphenol	1.0	micrograms
	2,4-Dimethylphenol	1.0	micrograms
	2,4,6-Trichlorophenol	1.0	micrograms
	2,4,5-Trichlorophenol	1.0	micrograms
	Dimethylphthalate	1.0	micrograms
	2,6-Dinitrotoluene	1.0	micrograms
	4-Nitrophenol	1.0	micrograms
	2,4-Dinitrotoluene	1.0	micrograms
	Diethylphthalate	1.0	micrograms
	4,6-Dinitro-2-methylphenol	1.0	micrograms
	Pentachlorophenol	1.0	micrograms
Di-n-butylphthalate	1.0	micrograms	

TOOLE ARMY DEPOT METEOROLOGICAL DATA
SITE 1 FROM : 9/ 1/1993 TO : 10/03/1993

WIND SPEED (MPH)
SEPTEMBER - 1993

DAY	HOUR																								DAILY MEAN
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
2	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
3	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
4	1.7	2.0	2.7	1.5	1.5	2.1	2.1	2.3	4.5	4.4	4.6	4.7	5.6	8.0	7.7	5.8	4.4	6.0	9.5	13.4	12.0	6.9	3.7	2.8	5.0
5	4.8	6.2	8.6	5.8	4.0	3.0	3.2	2.9	4.8	8.8	8.1	7.7	6.0	4.6	4.3	7.3	6.0	5.8	3.6	2.7	1.1	2.4	3.4	3.0	4.9
6	3.4	2.4	2.6	3.2	3.1	3.0	1.7	2.1	2.7	8.6	7.8	9.1	10.3	9.5	9.8	5.4	9.3	7.4	5.0	3.3	3.1	6.6	8.4	6.1	5.6
7	5.9	4.1	1.8	5.5	4.4	4.1	4.3	4.9	5.0	2.8	4.7	8.7	7.1	9.7	10.2	12.4	13.1	10.6	7.5	7.2	4.6	3.4	3.1	2.0	6.1
8	2.8	3.3	2.5	3.2	2.6	2.7	2.0	2.2	1.9	2.8	3.9	4.1	6.6	7.7	9.2	9.9	9.1	9.2	8.8	5.7	3.1	2.3	2.5	2.5	4.6
9	3.6	3.4	2.4	2.3	2.8	1.6	1.0	.6	1.9	4.4	4.2	4.0	4.1	4.9	5.0	9.6	8.4	8.4	6.9	7.0	2.6	2.3	2.1	2.9	4.0
10	3.2	3.2	3.5	1.5	2.1	2.1	2.2	.9	2.6	3.7	4.9	4.8	6.1	6.2	6.2	7.3	6.7	6.6	5.6	3.4	2.8	3.7	3.3	3.5	4.0
11	3.3	2.8	2.4	2.1	2.3	3.0	1.7	1.2	2.4	5.1	6.1	5.8	7.9	11.4	8.4	9.1	10.3	8.0	5.6	4.9	6.4	6.1	4.2	3.2	5.1
12	2.7	3.2	3.7	3.7	2.9	2.8	15.9	16.1	18.1	19.5	18.4	15.0	15.2	14.4	13.7	16.0	15.4	15.8	11.6	7.9	10.0	15.7	11.6	11.1	11.7
13	12.4	10.2	9.5	9.1	7.8	9.0	8.5	12.0	13.3	14.7	14.8	14.6	15.7	16.1	16.4	15.3	13.7	12.5	9.1	6.9	4.9	2.3	2.5	3.1	10.6
14	2.6	.7	2.0	1.5	2.1	3.0	1.4	2.7	3.1	7.9	9.0	8.7	7.6	9.6	10.3	10.2	9.5	6.8	3.2	5.6	2.8	1.9	1.7	2.9	4.9
15	7.8	8.0	7.5	8.2	7.7	7.7	5.8	9.3	11.6	13.1	10.2	11.6	10.1	8.4	9.0	9.6	9.3	6.2	3.9	2.6	3.4	4.3	5.9	6.7	7.8
16	7.4	7.2	6.6	5.1	5.5	4.9	3.4	2.1	6.5	16.4	15.2	13.6	10.7	8.2	7.4	6.3	3.6	4.1	6.9	3.0	3.7	3.9	3.8	4.0	6.6
17	3.0	3.4	3.0	3.4	7.2	4.0	6.6	8.5	7.6	7.3	6.0	5.2	7.1	5.4	9.0	11.1	11.9	12.4	11.7	8.1	5.5	8.0	6.7	6.4	7.0
18	4.1	4.1	2.1	2.9	1.2	2.2	2.7	.9	1.5	2.4	4.2	5.9	11.7	9.6	5.6	7.0	6.1	4.7	3.5	2.1	2.4	1.4	2.1	1.4	3.8
19	2.2	1.3	1.5	2.0	1.2	1.5	.9	1.3	1.4	2.1	6.4	7.3	6.5	5.6	4.5	6.0	7.2	6.9	5.4	6.0	5.1	1.7	1.6	3.3	3.7
20	2.4	3.3	2.9	1.1	3.0	2.1	4.4	7.4	11.5	11.5	11.8	16.3	15.5	13.5	14.1	12.6	10.2	8.6	1.8	3.5	4.1	5.8	5.5	3.6	7.4
21	3.6	5.3	5.3	10.8	9.5	2.5	2.4	3.5	4.7	3.4	2.8	3.7	5.1	5.6	7.4	9.8	10.6	9.7	9.3	7.3	3.6	1.6	1.2	2.5	5.5
22	2.8	2.5	2.9	2.9	2.7	1.9	2.4	1.2	1.4	2.9	3.4	3.3	3.8	4.9	7.5	10.7	12.4	12.3	9.4	8.1	4.3	2.8	3.5	3.3	4.7
23	3.2	2.2	3.2	2.1	2.1	2.4	2.6	1.0	3.3	3.8	4.5	6.3	12.3	11.9	12.1	11.4	10.8	11.4	7.6	9.5	10.6	10.1	10.4	12.8	7.0
24	10.9	10.7	7.8	3.1	2.5	2.1	1.8	1.8	2.9	3.1	6.1	6.3	9.2	10.6	10.5	8.9	7.9	6.7	5.0	3.0	2.6	1.4	2.3	3.8	5.5
25	3.0	3.1	2.6	2.1	1.9	3.2	2.1	1.0	2.5	4.0	5.0	4.5	7.5	7.1	7.5	8.4	10.1	6.5	3.6	3.2	2.8	3.0	3.3	2.7	4.2
26	3.6	1.8	1.9	.8	2.0	2.1	2.2	1.7	2.1	2.4	3.2	4.1	4.1	5.5	9.4	9.8	9.6	9.0	6.6	4.3	3.3	2.5	2.5	2.0	4.0
27	3.1	1.7	3.4	2.0	2.0	2.8	1.0	1.1	1.3	2.2	3.0	4.0	4.4	3.6	4.3	4.8	7.0	6.5	3.2	2.9	3.2	2.7	2.5	3.2	3.2
28	2.9	2.5	2.5	1.8	2.1	2.2	3.2	1.3	2.8	3.1	4.4	5.6	4.9	4.6	4.5	6.0	8.9	7.4	5.7	4.0	3.7	2.4	1.9	3.0	3.8
29	1.5	3.5	3.3	2.1	3.6	2.3	1.7	1.0	1.4	2.7	4.8	5.1	4.4	5.1	6.3	10.8	9.7	5.0	4.2	5.1	3.8	3.3	2.5	3.0	4.0
30	3.5	3.2	2.7	3.1	3.2	2.4	1.7	1.6	2.7	3.4	5.2	8.3	11.4	12.7	11.6	10.4	10.1	8.0	4.3	4.1	4.5	3.5	2.0	1.6	5.2
HOURLY MEAN	4.1	3.9	3.7	3.5	3.5	3.1	3.3	3.4	4.6	6.2	6.8	7.3	8.2	8.3	8.6	9.3	9.3	8.2	6.3	5.3	4.4	4.1	3.8	3.9	

DAILY MAXIMUMS AND MINIMUMS

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
MAX	***	***	8.0	13.4	8.8	10.3	13.1	9.9	9.6	7.3	11.4	19.5	16.4	10.3	13.1	16.4	12.4	11.7	7.3	16.3	10.8	12.4	12.8	10.9	
MIN	***	***	2.1	1.5	1.1	1.7	1.8	1.9	.6	.9	1.2	2.7	2.3	.7	2.6	2.1	3.0	.9	.9	1.1	1.2	1.2	1.0	1.4	
																								1.0	
DAY	26	27	28	29	30	31																			
MAX	9.8	7.0	8.9	10.8	12.7	***																			
MIN	.8	1.0	1.3	1.0	1.6	***																			

MONTHLY AVERAGE = 5.5 MONTHLY MAXIMUM = 19.5 MONTHLY MINIMUM = .6
 *** IS INVALID OR MISSING CAL IS CALIBRATION CODE

WIND SPEED (MPH)
OCTOBER - 1993

DAY	HOUR																								DAILY MEAN
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	3.4	3.0	2.8	3.7	3.0	3.1	3.2	2.8	4.0	3.7	6.9	8.9	8.9	9.4	9.8	8.9	9.8	6.6	3.3	2.2	2.9	2.2	2.8	2.4	4.9
2	2.7	2.0	3.4	3.1	2.9	2.4	1.7	2.6	3.1	4.0	3.2	4.2	4.4	4.4	6.8	9.5	10.3	9.4	7.3	4.0	2.5	1.5	1.8	1.4	4.1
3	2.8	1.7	2.4	1.8	1.1	1.8	1.9	1.1	2.2	3.0	4.2	4.3	4.5	***	***	***	***	***	***	***	***	***	***	***	2.5
HOURLY MEAN	3.0	2.2	2.9	2.8	2.3	2.4	2.3	2.1	3.1	3.6	4.8	5.8	5.9	6.9	8.3	9.2	10.0	8.0	5.3	3.1	2.7	1.8	2.3	1.9	

DAILY MAXIMUMS AND MINIMUMS

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
MAX	9.8	10.3	4.5	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
MIN	2.2	1.4	1.1	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
DAY	26	27	28	29	30	31																			
MAX	***	***	***	***	***	***																			
MIN	***	***	***	***	***	***																			

MONTHLY AVERAGE = 4.1 MONTHLY MAXIMUM = 10.3 MONTHLY MINIMUM = 1.1
 TOTAL POSSIBLE NUMBER OF OBSERVATIONS = 72 VALID DATA RECOVERY RATE = 84.7% OPERATIONAL RECOVERY RATE = 84.7
 *** IS INVALID OR MISSING CAL IS CALIBRATION CODE

FOOTLE ARMY DEPOT METEOROLOGICAL DATA
 SITE 1 FROM : 9/ 1/1993 TO : 10/03/1993

WIND DIRECTION (DEGREES)
 SEPTEMBER - 1993

DAY	HOUR																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
2	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
3	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
4	106	0	36	88	305	354	13	23	137	137	223	310	300	296	290	278	281	264	309	305	310	313	105	117
5	15	118	149	94	291	1	44	138	139	134	126	117	116	188	147	105	27	353	331	352	353	100	112	142
6	321	14	29	20	33	38	10	275	145	138	128	143	202	186	194	229	220	205	196	346	117	1	344	9
7	107	141	128	110	99	114	95	125	139	252	298	321	332	340	340	342	351	356	335	342	342	20	133	86
8	32	52	48	29	32	23	46	162	174	166	162	288	300	309	327	327	333	339	336	338	65	58	63	14
9	352	21	4	74	29	60	11	263	166	170	181	337	110	292	216	332	330	335	341	343	84	359	34	33
10	42	34	360	44	37	86	24	330	177	162	149	153	247	318	288	265	247	320	353	320	36	20	35	30
11	358	17	84	103	32	28	44	242	154	160	145	173	290	296	281	300	293	282	309	359	348	328	318	133
12	32	46	30	31	24	338	341	338	338	341	340	343	342	341	337	334	339	347	345	308	331	349	350	352
13	351	349	348	346	350	351	327	326	335	339	342	336	333	341	338	339	343	345	337	330	19	79	66	40
14	33	336	16	36	39	16	69	144	162	147	144	137	138	134	159	168	167	192	90	65	96	38	95	102
15	116	108	114	122	125	128	114	130	144	149	170	166	163	199	203	202	202	227	6	5	131	118	114	122
16	121	121	132	117	103	112	138	268	151	166	124	115	122	329	355	251	43	168	129	308	347	6	84	330
17	222	349	4	195	111	163	134	129	144	151	152	158	153	194	345	347	344	341	333	346	136	123	146	128
18	38	215	3	42	155	244	148	91	207	98	320	292	282	317	336	247	277	245	132	49	2	359	10	67
19	31	41	75	15	139	126	71	118	160	185	157	154	153	170	166	148	163	173	128	98	92	240	129	123
20	52	87	88	110	6	21	133	140	139	136	148	193	201	192	211	208	216	200	15	90	101	108	100	81
21	13	1	7	344	351	135	93	138	141	113	15	317	335	329	332	338	341	347	348	347	13	224	80	51
22	48	53	68	34	48	68	36	229	232	192	197	238	279	325	336	333	342	343	345	346	25	62	70	138
23	26	50	21	74	58	38	6	176	153	175	163	180	190	210	215	232	302	310	332	330	335	332	332	341
24	348	342	313	319	144	72	105	186	167	213	296	304	313	323	326	321	319	327	336	337	46	62	36	14
25	7	14	11	71	26	28	54	144	179	154	160	193	281	275	276	306	343	343	337	19	48	13	22	22
26	18	57	34	101	39	29	65	116	147	192	218	297	255	326	328	335	342	343	342	27	105	97	82	36
27	79	78	18	26	63	15	104	25	197	195	193	149	119	328	253	321	343	340	346	9	39	107	70	28
28	44	101	65	71	22	34	32	180	176	171	165	160	162	239	292	345	342	341	328	8	89	12	63	36
29	25	27	15	7	31	53	22	238	142	163	156	149	172	172	293	318	314	312	14	40	105	29	32	14
30	33	134	331	23	31	103	6	284	182	168	144	278	277	277	281	284	300	310	335	354	4	139	144	75

*** IS INVALID OR MISSING CAL IS CALIBRATION CODE

WIND DIRECTION (DEGREES)
 OCTOBER - 1993

DAY	HOUR																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	70	137	43	24	12	32	15	145	155	188	338	339	331	339	337	346	348	344	17	23	55	71	26	42
2	33	46	53	31	357	2	9	137	156	147	183	240	204	233	334	337	333	345	352	13	42	22	47	84
3	34	76	33	14	51	81	26	152	173	153	153	177	140	***	***	***	***	***	***	***	***	***	***	***

TOTAL POSSIBLE NUMBER OF OBSERVATIONS = 72 VALID DATA RECOVERY RATE = 84.7% OPERATIONAL RECOVERY RATE = 84.7%
 *** IS INVALID OR MISSING CAL IS CALIBRATION CODE

TOOLE ARMY DEPOT METEOROLOGICAL DATA
 SITE 1 FROM : 9/ 1/1993 TO : 10/03/1993

SIGMA THETA (DEGREES)
 SEPTEMBER - 1993

DAY	HOUR																								DAILY MEAN
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
2	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
3	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
4	35	19	26	17	34	15	14	20	19	22	31	37	32	24	28	28	46	24	12	12	14	33	45	47	26
5	42	33	15	14	44	43	20	34	17	15	13	17	39	47	22	14	24	15	16	28	33	28	22	38	26
6	16	28	26	13	9	44	37	40	14	21	19	27	23	27	43	18	13	11	39	28	15	12	31	23	
7	13	18	38	11	14	17	11	12	21	58	33	19	31	19	18	14	13	12	10	10	13	17	19	31	20
8	21	11	17	13	26	15	27	24	38	40	38	44	34	31	18	18	15	12	10	31	35	56	40	36	27
9	21	12	16	17	20	21	36	37	36	28	37	52	65	38	49	19	17	13	11	40	51	31	23	23	30
10	16	7	17	29	32	32	25	38	26	29	31	49	42	35	33	21	28	18	11	51	30	25	8	7	27
11	16	13	25	34	15	16	34	18	26	29	28	45	37	19	28	23	16	16	13	10	10	21	42	34	24
12	18	24	13	17	49	47	10	11	11	11	11	12	13	13	14	12	12	12	11	11	10	11	11	11	16
13	11	11	11	11	11	10	12	10	12	13	13	14	12	13	13	13	13	12	10	11	18	39	24	9	14
14	26	31	19	14	11	12	44	16	27	15	15	22	26	23	22	17	15	12	13	11	39	18	39	32	22
15	11	11	11	11	11	11	12	11	11	13	20	21	21	30	24	23	20	23	40	37	32	22	12	13	19
16	13	13	12	12	12	14	26	30	22	11	16	13	16	26	20	28	22	25	21	43	18	22	27	40	21
17	49	35	47	44	15	28	38	12	11	14	26	43	23	43	15	14	12	11	11	15	26	12	11	16	24
18	20	31	29	28	25	26	19	15	45	43	25	33	13	16	14	14	17	12	10	13	24	32	36	33	24
19	13	10	34	19	15	12	18	28	35	35	20	24	31	39	37	19	24	15	12	11	12	33	25	15	22
20	20	18	25	42	17	41	19	13	10	14	23	16	16	15	14	13	15	11	23	13	9	12	13	38	19
21	40	13	32	11	16	24	18	30	16	39	52	52	41	38	28	16	14	11	11	12	40	44	25	23	27
22	29	16	20	22	16	12	12	28	55	39	58	62	44	46	27	14	12	11	11	12	20	19	33	34	27
23	22	48	9	31	12	24	42	32	21	29	42	29	16	18	19	17	18	10	14	11	10	10	10	11	21
24	12	12	16	42	54	27	38	28	30	38	29	31	18	16	16	20	19	12	9	44	16	29	12	10	24
25	11	20	21	16	15	8	16	18	23	22	28	34	35	35	26	34	14	12	16	38	19	37	21	26	23
26	26	23	28	28	21	34	36	33	31	50	60	50	46	36	18	15	13	12	11	18	12	31	39	28	29
27	20	16	10	27	14	12	43	23	38	44	53	52	46	50	43	44	15	11	16	30	10	20	10	12	27
28	16	18	18	28	41	9	8	33	21	26	29	24	36	45	43	32	13	18	16	26	31	33	30	14	25
29	41	10	17	11	5	31	29	25	37	28	23	24	50	47	36	15	12	11	11	26	25	13	27	25	24
30	14	33	26	17	28	48	48	52	23	37	43	29	17	16	16	18	16	13	24	24	35	40	43	44	29
HOURLY MEAN	22	20	21	21	22	22	26	25	26	28	30	32	31	30	25	21	18	14	15	23	23	26	25	25	

DAILY MAXIMUMS AND MINIMUMS

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
MAX	***	***	37	47	47	44	58	56	65	51	45	49	39	44	40	43	49	45	39	42	52	62	48	54	38
MIN	***	***	11	12	13	9	10	10	11	7	10	10	9	11	11	11	11	10	10	9	11	11	9	9	8
									DAY	26	27	28	29	30	31										
									MAX	60	53	45	50	52	***										
									MIN	11	10	8	5	13	***										

MONTHLY AVERAGE = 23.7 MONTHLY MAXIMUM = 64.9 MONTHLY MINIMUM = 4.6
 *** IS INVALID OR MISSING CAL IS CALIBRATION CODE

SIGMA THETA (DEGREES)
 OCTOBER - 1993

DAY	HOUR																								DAILY MEAN
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	25	39	51	14	42	35	31	21	17	25	27	23	23	23	19	17	14	12	20	18	39	31	22	38	26
2	40	23	12	43	33	35	35	18	20	26	42	39	41	40	26	15	12	11	11	22	41	31	19	15	27
3	16	27	30	26	24	13	11	11	29	38	29	36	48	***	***	***	***	***	***	***	***	***	***	***	26
HOURLY MEAN	27	29	31	28	33	28	26	16	22	29	33	33	37	31	23	16	13	11	15	20	40	31	21	27	

DAILY MAXIMUMS AND MINIMUMS

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
MAX	51	43	48	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
MIN	12	11	11	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
									DAY	26	27	28	29	30	31										
									MAX	***	***	***	***	***	***										
									MIN	***	***	***	***	***	***										

MONTHLY AVERAGE = 26.5 MONTHLY MAXIMUM = 51.0 MONTHLY MINIMUM = 10.7
 TOTAL POSSIBLE NUMBER OF OBSERVATIONS = 72 VALID DATA RECOVERY RATE = 84.7% OPERATIONAL RECOVERY RATE = 84.7%
 *** IS INVALID OR MISSING CAL IS CALIBRATION CODE

Table 8 - Tooele Group 2 SWMUs Air Monitoring VOC Results (ppbv)

Analyte	Site	Samples Total	Detects	Avg. Conc.	Max. Conc.	Date of Maximum
Vinyl Chloride	BK	6	0	<0.050	<0.050	---
	SWMU3	6	0	<0.050	<0.050	---
	SWMU5	6	0	<0.050	<0.050	---
	SWMU8	6	0	<0.050	<0.050	---
	SWMU9	5	0	<0.050	<0.050	---
	SWMU31	6	0	<0.050	<0.050	---
	Trip Blank	3	0	<0.050	<0.050	---
Methylene Chloride	BK	6	0	<0.10	<0.10	---
	SWMU3	6	4	0.33	0.98	9/27/93
	SWMU5	6	2	0.15	0.47	9/23/93
	SWMU8	6	2	<0.10	0.24	9/27/93
	SWMU9	5	3	0.41	0.86	9/25/93
	SWMU31	6	3	0.18	0.36	9/23/93
	Trip Blank	3	0	<0.10	<0.10	---
1,1-Dichloroethene	BK	6	0	<0.050	<0.050	---
	SWMU3	6	0	<0.050	<0.050	---
	SWMU5	6	0	<0.050	<0.050	---
	SWMU8	6	0	<0.050	<0.050	---
	SWMU9	5	0	<0.050	<0.050	---
	SWMU31	6	0	<0.050	<0.050	---
	Trip Blank	3	0	<0.050	<0.050	---
Chloroform	BK	6	0	<0.025	<0.025	---
	SWMU3	6	2	1.13	6.70	9/29/93
	SWMU5	6	1	<0.025	0.028	9/23/93
	SWMU8	6	2	<0.025	0.035	9/29/93
	SWMU9	5	0	<0.025	<0.025	---
	SWMU31	6	1	<0.025	0.026	10/1/93
	Trip Blank	3	0	<0.025	<0.025	---
1,1,1-Trichloroethane	BK	6	6	0.14	0.18	9/23/93
	SWMU3	6	6	0.14	0.17	9/23/93
	SWMU5	6	6	0.14	0.18	9/29/93
	SWMU8	6	6	0.15	0.19	9/29/93
	SWMU9	5	5	0.14	0.16	9/29/93
	SWMU31	6	6	0.15	0.19	9/29/93
	Trip Blank	3	0	<0.10	<0.10	---
Carbon Tetrachloride	BK	6	6	0.12	0.13	9/27/93
	SWMU3	6	6	0.12	0.13	9/29/93
	SWMU5	6	6	0.12	0.13	9/29/93
	SWMU8	6	6	0.12	0.13	10/1/93
	SWMU9	5	5	0.12	0.13	9/25/93
	SWMU31	6	6	0.12	0.13	9/27/93
	Trip Blank	3	0	<0.025	<0.025	---
Trichloroethene	BK	6	2	<0.10	0.16	9/21/93
	SWMU3	6	1	0.26	1.30	9/29/93
	SWMU5	6	0	<0.10	<0.10	---
	SWMU8	6	0	<0.10	<0.10	---
	SWMU9	5	3	0.10	0.15	9/23/93
	SWMU31	6	0	<0.10	<0.10	---
	Trip Blank	3	0	<0.10	<0.10	---

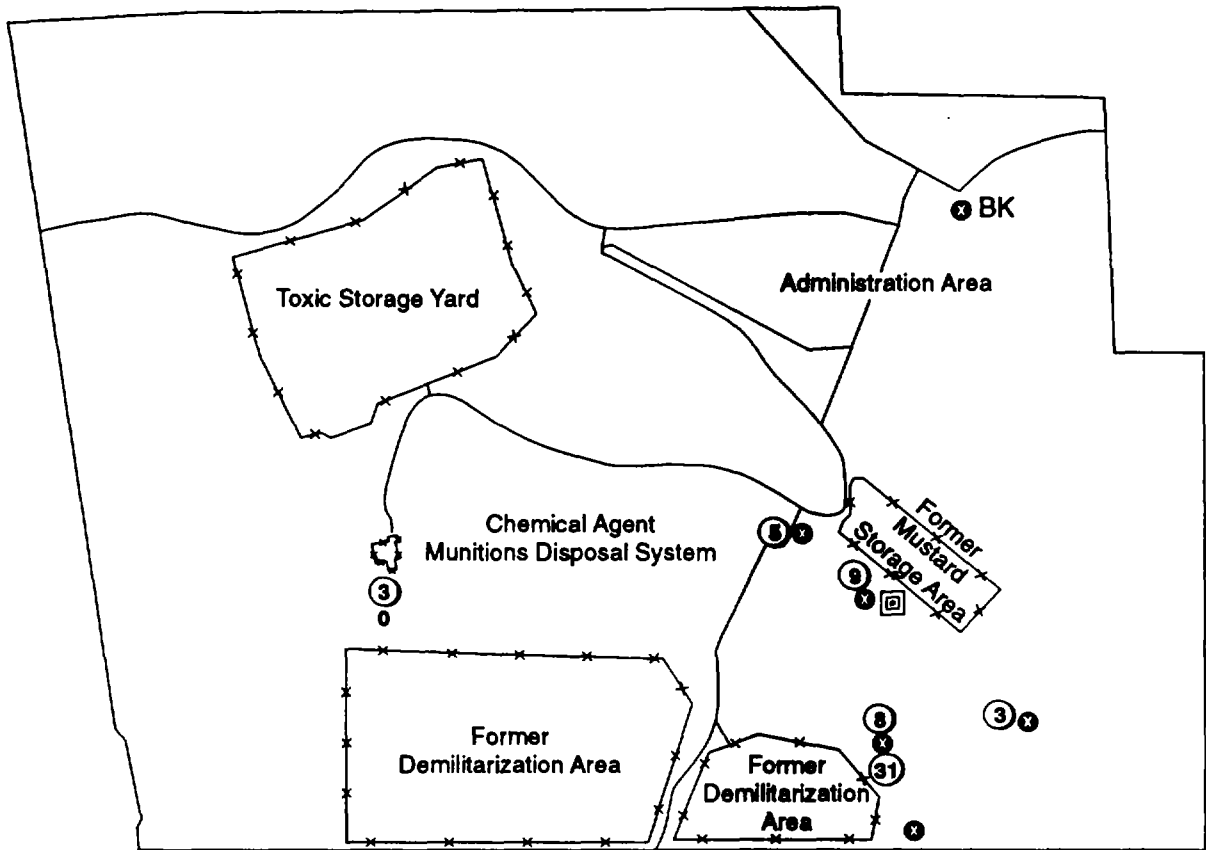
Table 8 continued - Tooele Group 2 SWMUs Air Monitoring VOC Results (ppbv)

Analyte	Site	Samples		Avg. Conc.	Max. Conc.	Date of Maximum
		Total	Detects			
Benzene	BK	6	6	0.11	0.16	9/23/93
	SWMU3	6	6	0.10	0.14	9/29/93
	SWMU5	6	6	0.14	0.20	9/23/93
	SWMU8	6	6	0.10	0.18	9/29/93
	SWMU9	5	5	0.11	0.14	9/23/93
	SWMU31	6	6	0.13	0.25	9/29/93
	Trip Blank	3	1	<0.025	<0.032	9/29/93
Methyl isobutyl ketone	BK	6	2	0.11	0.35	9/21/93
	SWMU3	6	1	<0.10	0.24	9/23/93
	SWMU5	6	1	<0.10	0.31	10/1/93
	SWMU8	6	2	<0.10	0.24	9/29/93
	SWMU9	5	3	0.17	0.49	9/27/93
	SWMU31	6	1	<0.10	0.22	10/1/93
	Trip Blank	3	0	<0.10	<0.10	---
Tetrachloroethene	BK	6	1	<0.10	0.13	9/23/93
	SWMU3	6	3	0.64	3.40	9/29/93
	SWMU5	6	0	<0.10	<0.10	---
	SWMU8	6	0	<0.10	<0.10	---
	SWMU9	5	1	0.18	0.66	9/23/93
	SWMU31	6	2	0.14	0.42	10/1/93
	Trip Blank	3	0	<0.10	<0.10	---
Toluene	BK	6	4	0.17	0.39	9/23/93
	SWMU3	6	5	0.22	0.42	10/1/93
	SWMU5	6	6	0.19	0.27	9/29/93
	SWMU8	6	4	0.23	0.65	10/1/93
	SWMU9	5	5	2.23	9.30	9/27/93
	SWMU31	6	5	2.37	13.0	10/1/93
	Trip Blank	3	0	<0.10	<0.10	---
1,1,2,2-Tetrachloroethane	BK	6	0	<0.050	<0.050	---
	SWMU3	6	0	<0.050	<0.050	---
	SWMU5	6	0	<0.050	<0.050	---
	SWMU8	6	0	<0.050	<0.050	---
	SWMU9	5	0	<0.050	<0.050	---
	SWMU31	6	0	<0.050	<0.050	---
	Trip Blank	3	0	<0.050	<0.050	---
Ethyl Benzene	BK	6	2	<0.10	0.11	9/23/93
	SWMU3	6	1	<0.10	0.12	9/21/93
	SWMU5	6	0	<0.10	<0.10	---
	SWMU8	6	1	<0.10	0.15	9/29/93
	SWMU9	5	2	0.19	0.66	9/23/93
	SWMU31	6	3	0.45	1.50	10/1/93
	Trip Blank	3	0	<0.10	<0.10	---
Total Xylenes	BK	6	3	0.24	0.52	9/29/93
	SWMU3	6	4	0.18	0.58	9/21/93
	SWMU5	6	5	0.13	0.23	9/25/93
	SWMU8	6	4	0.24	0.74	9/29/93
	SWMU9	5	3	0.92	3.80	9/23/93
	SWMU31	6	3	2.63	9.60	10/1/93
	Trip Blank	3	1	0.10	0.21	9/29/93

Table 9 - Tooele Group 2 SWMUs Air Monitoring SVOC Results (micrograms per cubic meter)

Analyte	Site	Samples Total	Detects	Avg. Conc.	Max. Conc.	Date of Maximum
Naphthalene	BK	8	8	2.64	10.42	9/11/93
	SWMU3	6	5	2.43	7.18	9/21/93
	SWMU5	6	6	2.85	7.35	9/21/93
	SWMU8	6	5	1.65	2.77	9/27/93
	SWMU9	6	6	2.05	2.94	9/21/93
	SWMU31	6	6	2.70	5.53	9/21/93
	Field Blank	7	6	3.7	7.0	9/27/93
	Trip Blank	2	2	8.6	14	9/11/93
Diethylphthalate	BK	8	2	<0.43	0.75	9/11/93
	SWMU3	6	0	<0.43	<0.43	---
	SWMU5	6	0	<0.43	<0.43	---
	SWMU8	6	0	<0.43	<0.43	---
	SWMU9	6	0	<0.43	<0.43	---
	SWMU31	6	0	<0.43	<0.43	---
	Field Blank	7	1	<1.0	1.3	10/1/93
	Trip Blank	2	1	1.0	1.5	10/3/93
Di-n-butylphthalate	BK	8	8	31.1	82.6	9/21/93
	SWMU3	6	6	60.8	106	9/29/93
	SWMU5	6	6	62.8	108	9/21/93
	SWMU8	6	6	99.6	169	9/21/93
	SWMU9	6	6	62.5	95.5	9/25/93
	SWMU31	6	6	99.2	230	9/21/93
	Field Blank	7	7	343	1300	9/29/93
	Trip Blank	2	2	40	50	9/11/93
Butylbenzylphthalate	BK	8	2	<0.43	0.58	9/25/93
	SWMU3	6	3	<0.43	0.71	9/25/93
	SWMU5	6	1	<0.43	1.08	9/25/93
	SWMU8	6	1	<0.43	0.58	9/25/93
	SWMU9	6	1	<0.43	0.50	9/23/93
	SWMU31	6	2	<0.43	0.85	9/25/93
	Field Blank	7	2	<1.0	1.1	9/25/93
	Trip Blank	2	1	<1.0	1.4	10/3/93
bis(2-ethylhexyl)phthalate	BK	8	8	2.25	3.85	9/23/93
	SWMU3	6	6	2.82	5.21	9/25/93
	SWMU5	6	6	2.35	6.59	9/25/93
	SWMU8	6	5	1.57	3.04	9/25/93
	SWMU9	6	6	5.48	12.3	9/29/93
	SWMU31	6	6	2.74	6.84	9/25/93
	Field Blank	7	6	3.7	7.8	9/25/93
	Trip Blank	2	2	4.6	5.3	9/11/93
Benzyl Alcohol	BK	8	1	<0.43	0.73	10/3/93
	SWMU3	6	0	<0.43	<0.43	---
	SWMU5	6	0	<0.43	<0.43	---
	SWMU8	6	0	<0.43	<0.43	---
	SWMU9	6	0	<0.43	<0.43	---
	SWMU31	6	0	<0.43	<0.43	---
	Field Blank	7	1	<1.0	3.6	10/3/93
	Trip Blank	2	1	<1.0	1.8	10/3/93

Notes: Typical sample volume = 2.30 cubic meters
 All other target SVOCs non-detects
 Field and Trip blank sample results in micrograms

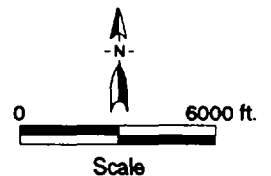


Solid Waste Management Units

- 3. Decon Pad/Disposal Pit (Southeast of Area 2)
- 5. Building 600 Foundation, Drainage Pond, and Ditch
- 8. Surveillance Test Site
- 9. Old Area 2 (including Mustard Holding and Pit Areas)
- 30. CAMDS Landfill
- 31. Demilitarization Area (Northeast of SWMU 1)

Legend

- Air Monitoring Station
- Meteorological Station
- Group 2 SWMUs
- Paved Road
- Unimproved Road
- Fence
- Tooele Army Depot - South Area Boundary

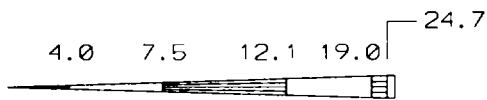
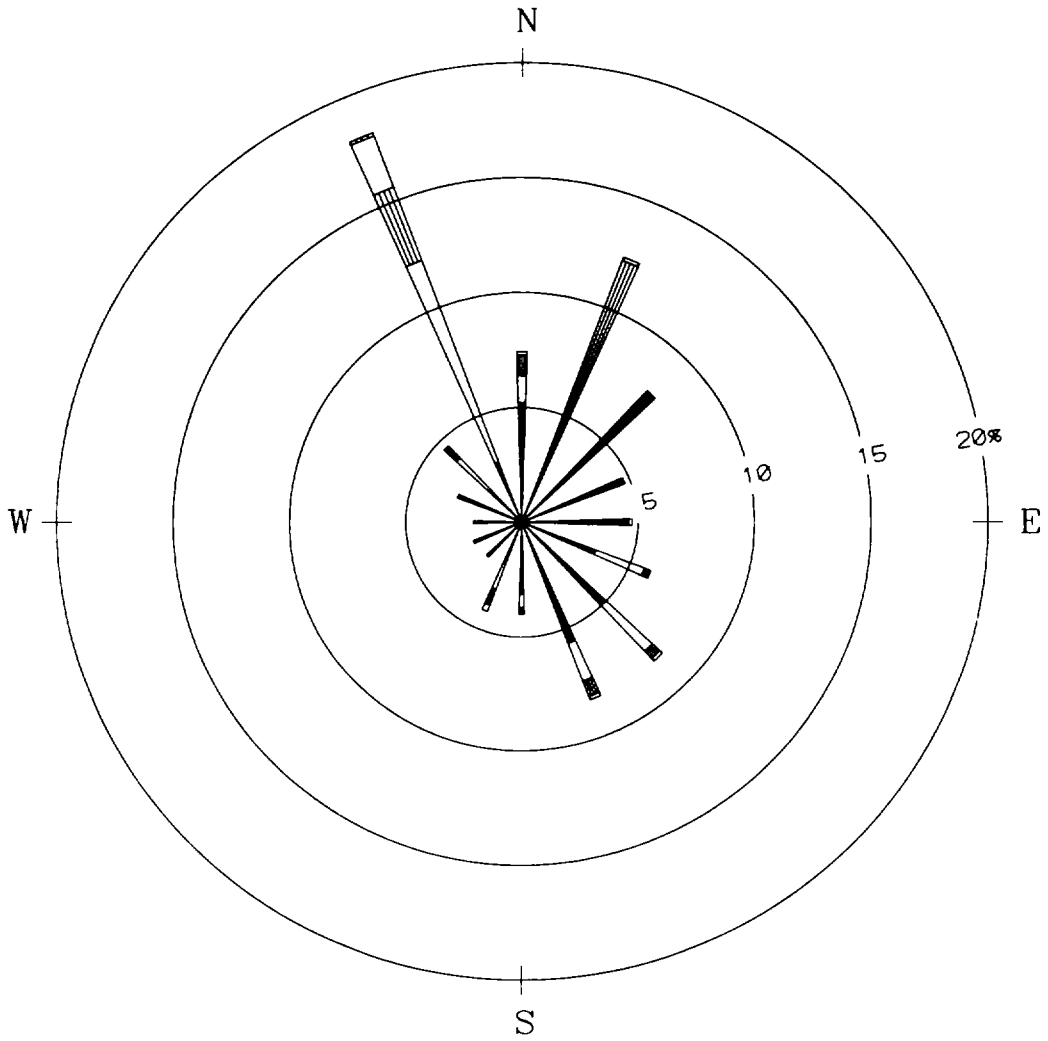


T3 G2 6.94 jb

Source:
NUS Corporation 1987
EBASCO Field Measurement

Figure 1
Location of Air Monitoring and Meteorological Stations

Tooele Army Depot - South Area
Prepared by: Ebasco Services Incorporated

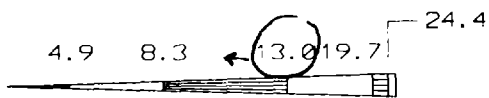
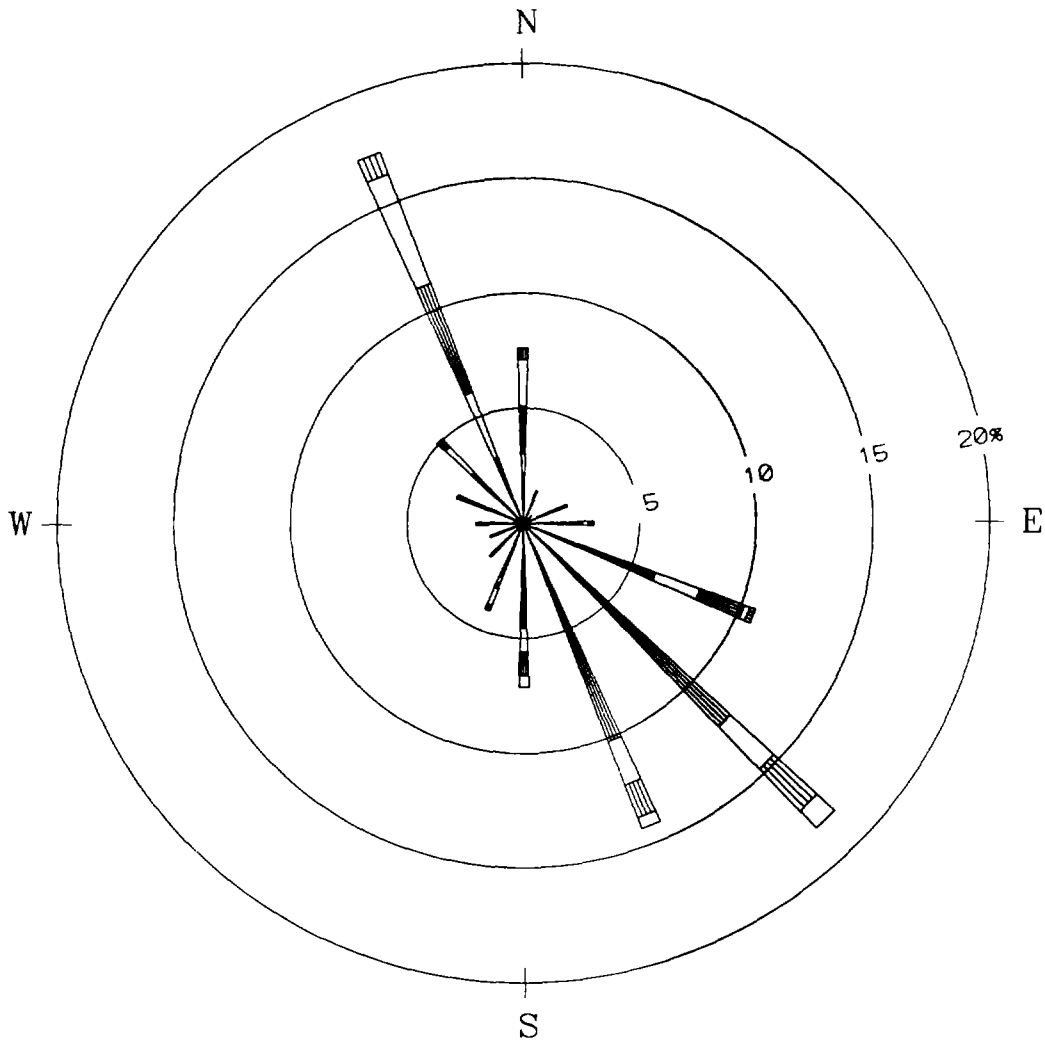


WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

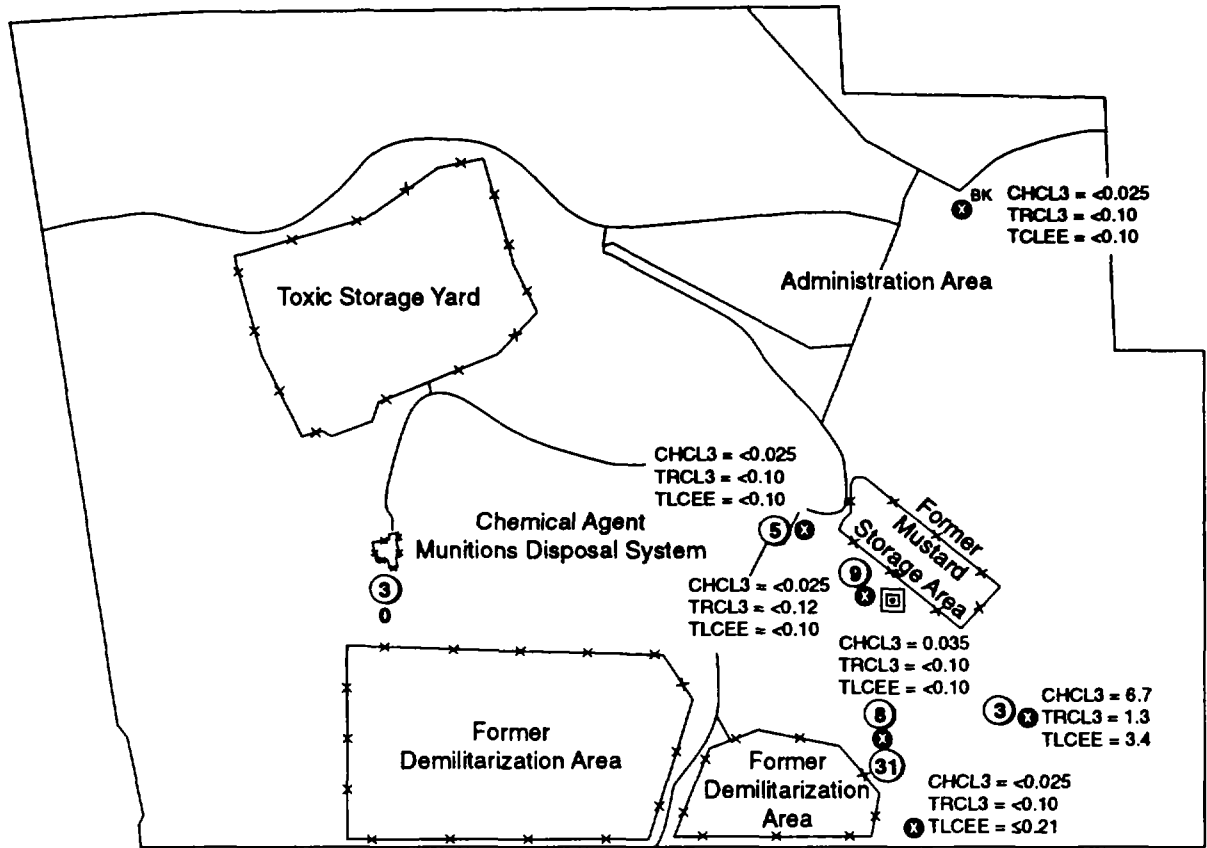
WINDROSE

TOOELE, UTAH 1993

9/5 1200 - 10/3 1300



WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

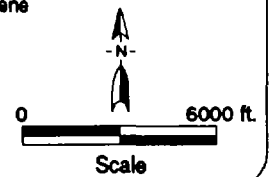


Solid Waste Management Units

- 3. Decon Pad/Disposal Pit (Southeast of Area 2)
- 5. Building 600 Foundation, Drainage Pond, and Ditch
- 8. Surveillance Test Site
- 9. Old Area 2 (including Mustard Holding and Pit Areas)
- 30. CAMDS Landfill
- 31. Demilitarization Area (Northeast of SWMU 1)

Legend

- ⊗ Air Monitoring Station
- ⊠ Meteorological Station
- ③ Group 2 SWMUs
- +— Paved Road
- - - Unimproved Road
- ××× Fence
- Tooele Army Depot - South Area Boundary
- CHCL3 Chloroform
- TRCL3 Trichloroethene
- TLCEE Tetrachloroethene

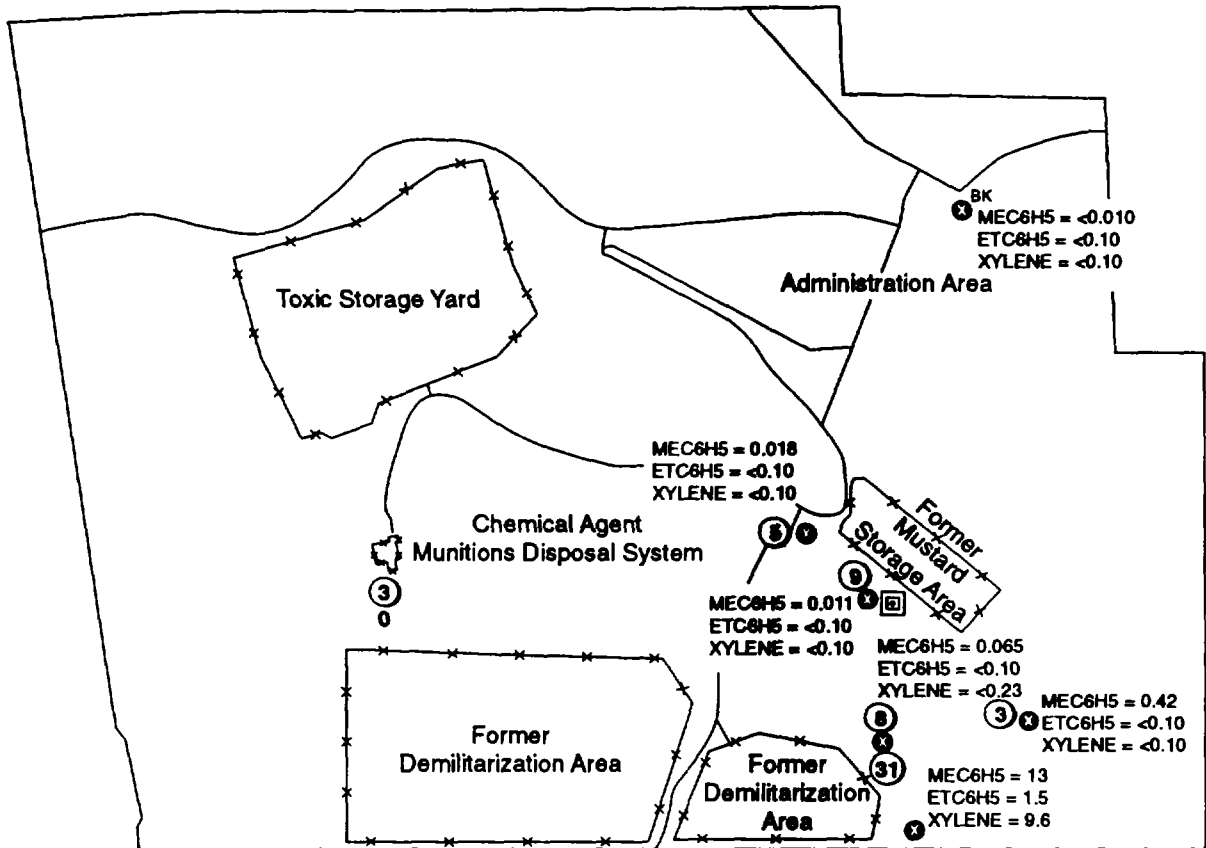


T3G2 6.94.jb

Source:
NUS Corporation 1987
EBASCO Field Measurement

Figure 4
VOC Results (ppbv) and
Windrose 9/29/93

Tooele Army Depot - South Area
Prepared by: Ebasco Services Incorporated

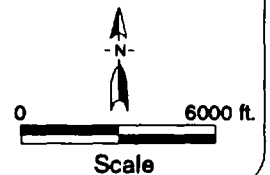


Solid Waste Management Units

- 3. Decon Pad/Disposal Pit (Southeast of Area 2)
- 5. Building 600 Foundation, Drainage Pond, and Ditch
- 8. Surveillance Test Site
- 9. Old Area 2 (including Mustard Holding and Pit Areas)
- 30. CAMDS Landfill
- 31. Demilitarization Area (Northeast of SWMU 1)

Legend

- ⊙ Air Monitoring Station
- ☐ Meteorological Station
- ③ Group 2 SWMUs
- Paved Road
- - - Unimproved Road
- ×××× Fence
- Tooele Army Depot - South Area Boundary
- MEC6H5 Toluene
- ETC6H5 Ethyl Benzene
- XYLENE Total Xylenes

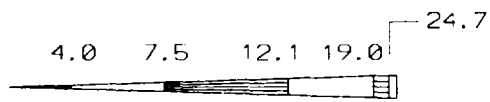
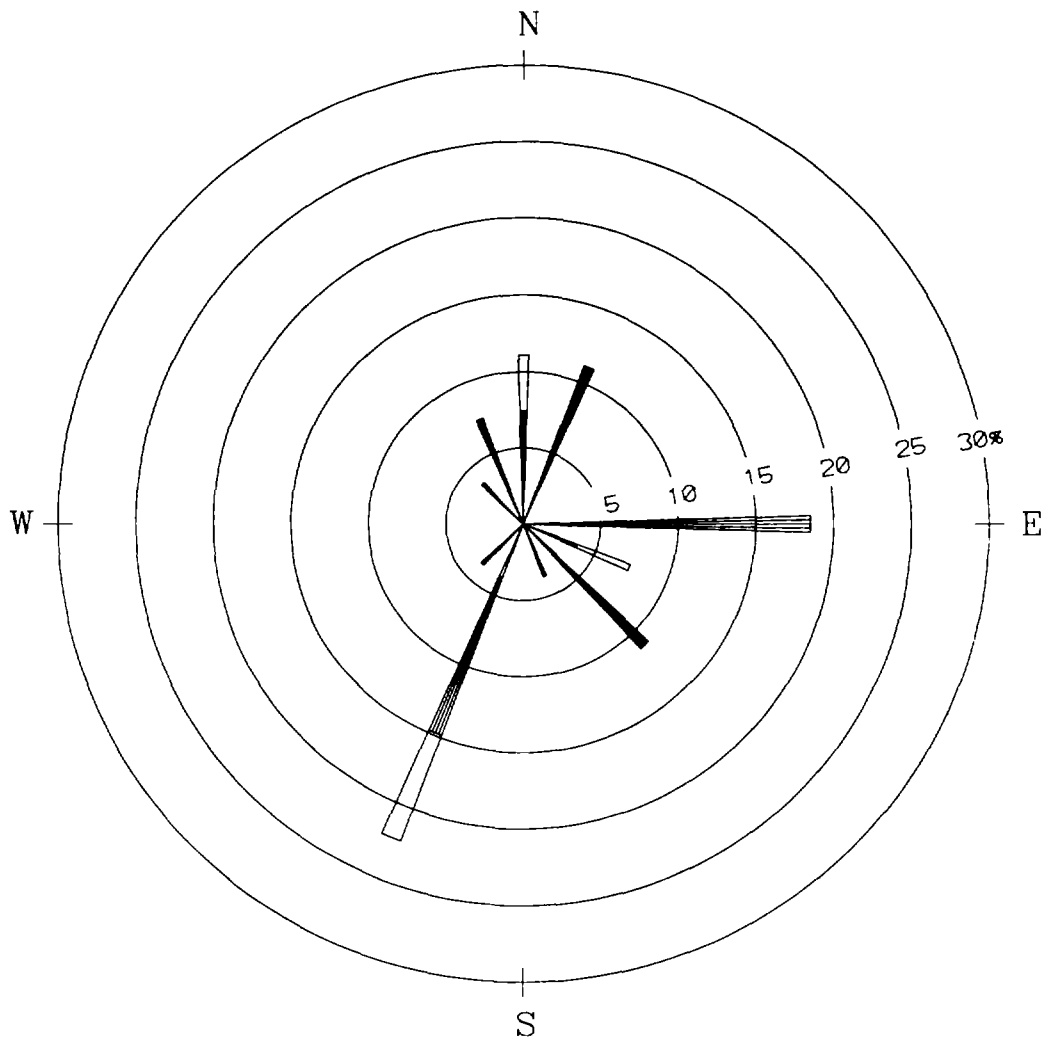


T3G2 6.94.jb

Source:
NUS Corporation 1987
EBASCO Field Measurement

Figure 5
VOC Results (ppbv) and
Windrose - October 1, 1993

Tooele Army Depot - South Area
Prepared by: Ebasco Services Incorporated

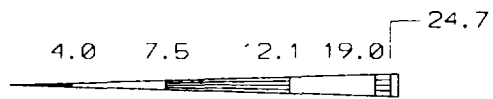
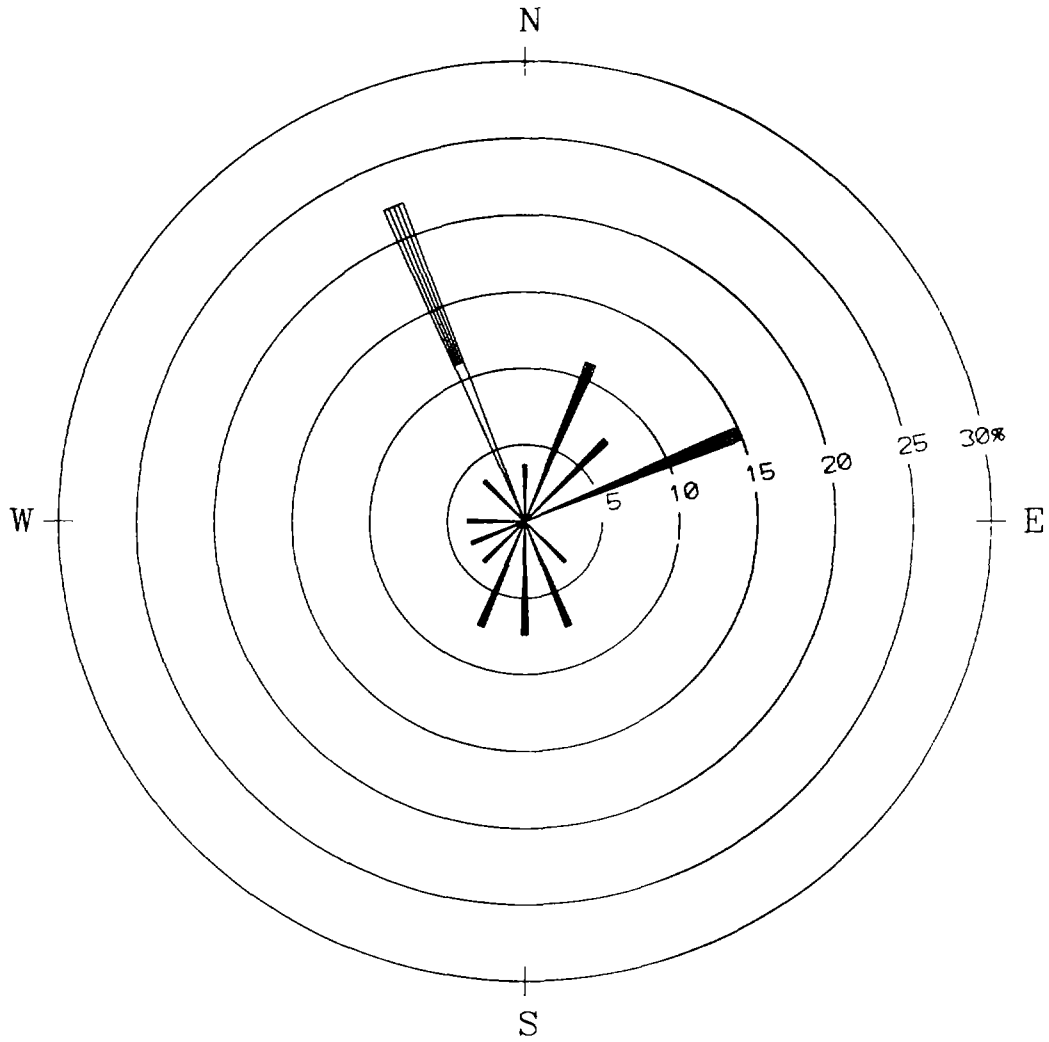


WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

WINDROSE

TOOELE, UT 1993
EPISODE 1

9/20 1100 - 9/21 1300

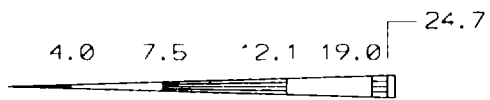
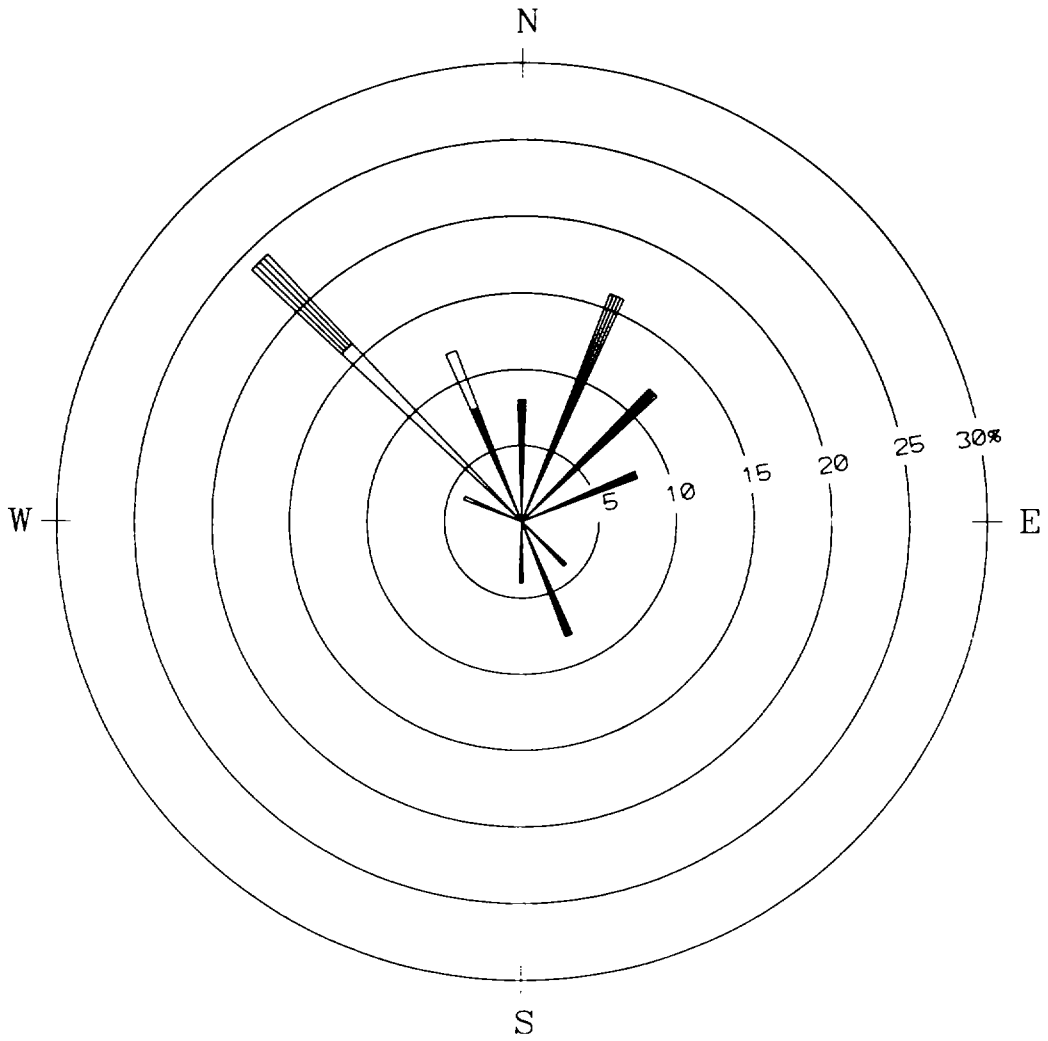


WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

WINDROSE

TOOELE, UTAH 1993
EPISODE 2

9/22 0900 - 9/23 1100

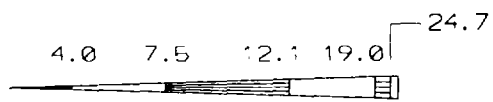
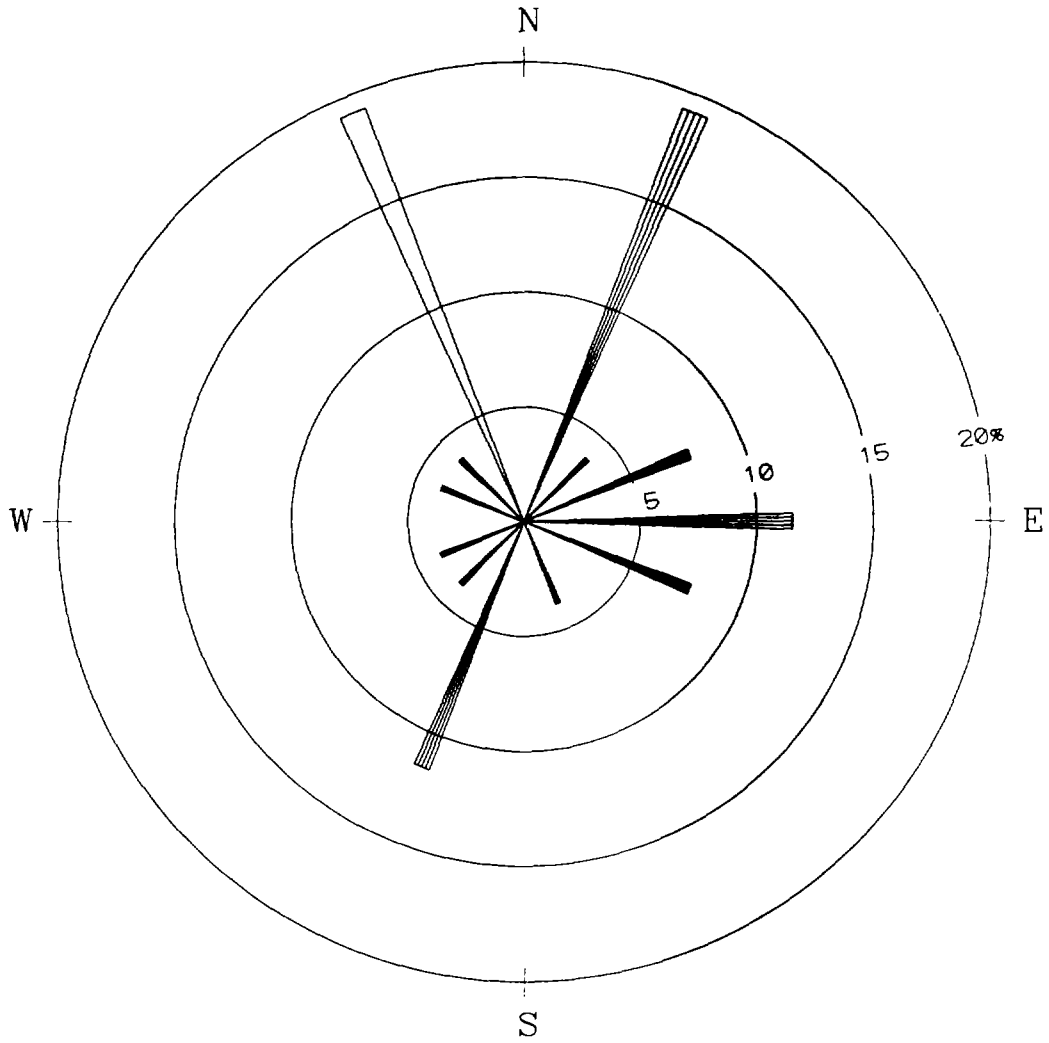


WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

WINDROSE

TOOELE, UTAH 1993
EPISODE 3

9/24 1100 - 9/25 1100

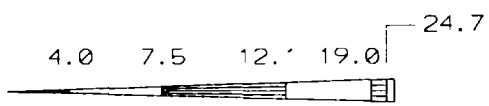
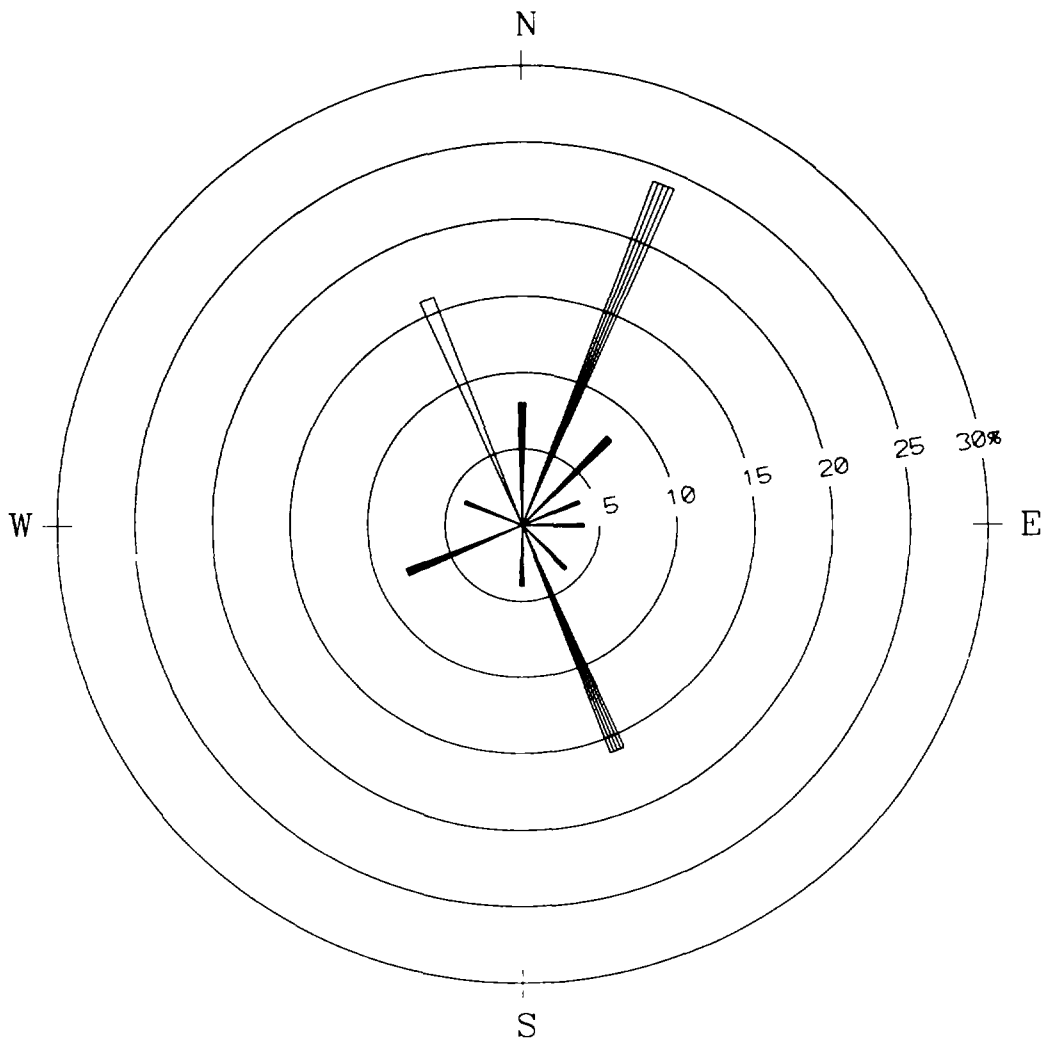


WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

WINDROSE

TOOELE, UTAH 1993
EPISODE 4

9/26 0900 - 9/27 1100

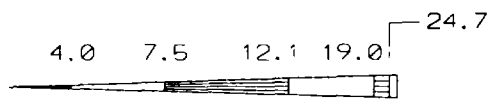
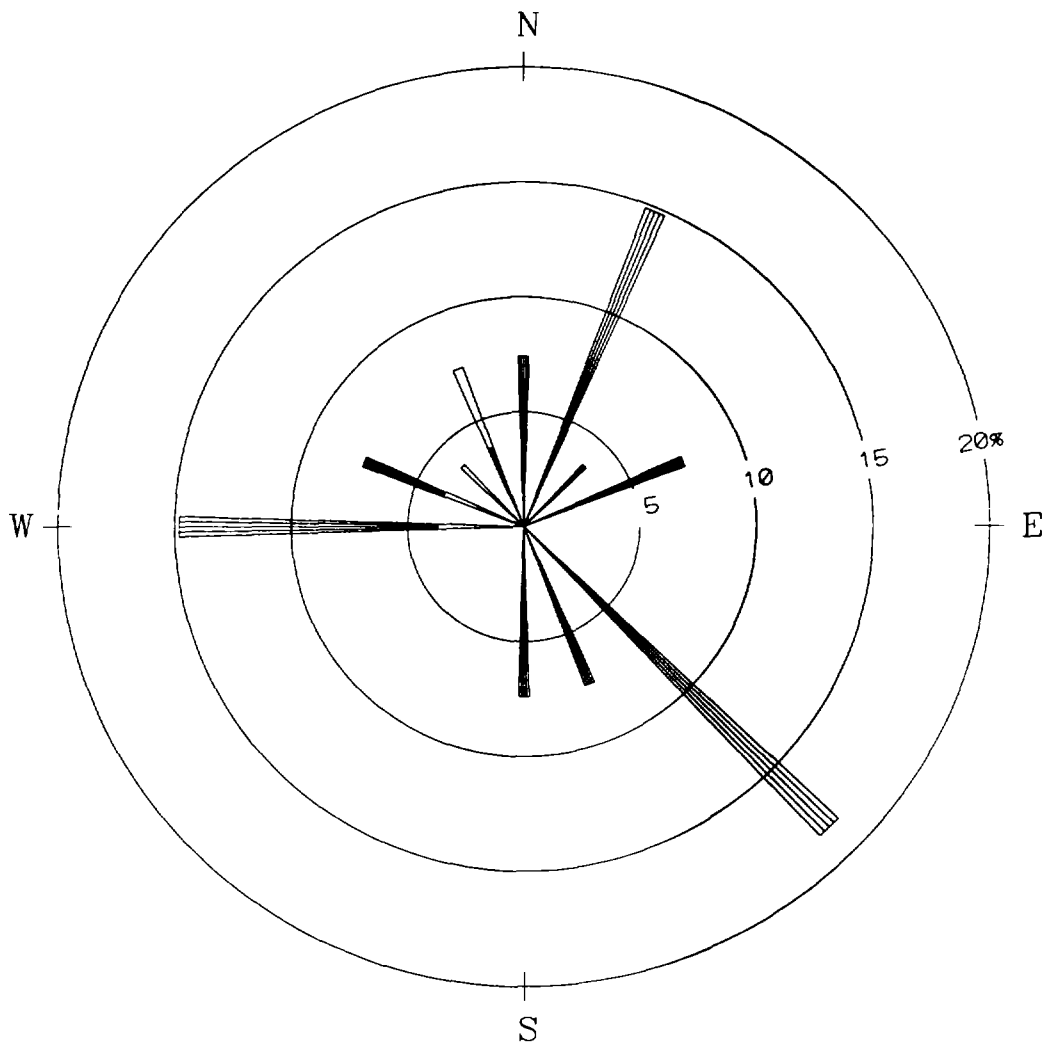


WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

WINDROSE

TOOELE, UTAH 1993
EPISODE 5

9/28 1000 - 9/29 1000



WIND SPEED CLASS BOUNDARIES
(MILES/HOUR)

WINDROSE

TOOELE, UTAH 1993
EPISODE 6

9/30 0900 - 10/1 1100

TOOELE GROUP 2 SWMUS AIR MONITORING - SEMIVOLATILE ORGANIC COMPOUND RESULTS (ug/m3, FBLK & TRIP in micrograms)

DATE	SITE	SAMPID	NAPHTHA LENE	DIETHYL PHTHALATE	DI-N-BUTYL PHTHALATE	BUTYLBENZYL PHTHALATE	BIS(2-ETHYLHEXYL) BENZYL PHTHALATE	BENZYL ALCOHOL
09/11/93	BK	P003	10.42	0.75	41.67	LT 0.43	2.50	LT 0.43
09/11/93	FBLK	P004	4.50	LT 1.00	36.00	LT 1.00	2.20	LT 1.00
09/11/93	TRIP	P005	14.00	LT 1.00	50.00	LT 1.00	5.30	LT 1.00
09/21/93	BK	P013	3.22	LT 0.43	82.61	LT 0.43	1.17	LT 0.43
09/21/93	SWMU3	P014	7.18	LT 0.43	39.49	LT 0.43	1.13	LT 0.43
09/21/93	SWMU5	P015	7.35	LT 0.43	107.84	LT 0.43	1.18	LT 0.43
09/21/93	SWMU8	P016	2.11	LT 0.43	168.78	LT 0.43	1.94	LT 0.43
09/21/93	SWMU9	P017	2.94	LT 0.43	61.40	LT 0.43	1.54	LT 0.43
09/21/93	SWMU31	P018	5.53	LT 0.43	230.41	0.60	1.89	LT 0.43
09/21/93	FBLK	P019	5.20	LT 1.00	300.00	LT 1.00	2.20	LT 1.00
09/23/93	BK	P020	0.69	LT 0.43	25.54	0.48	3.85	LT 0.43
09/23/93	SWMU3	P021	1.48	LT 0.43	60.87	0.48	4.26	LT 0.43
09/23/93	SWMU5	P022	2.91	LT 0.43	36.15	LT 0.43	3.00	LT 0.43
09/23/93	SWMU8	P023	1.79	LT 0.43	72.65	LT 0.43	1.07	LT 0.43
09/23/93	SWMU9	P024	2.58	LT 0.43	40.00	0.50	3.50	LT 0.43
09/23/93	SWMU31	P025	4.13	LT 0.43	83.83	LT 0.43	1.80	LT 0.43
09/23/93	FBLK	P026	1.30	LT 1.00	140.00	LT 1.00	5.50	LT 1.00
09/25/93	BK	P028	1.52	LT 0.43	40.81	0.58	3.14	LT 0.43
09/25/93	SWMU3	P029	0.85	LT 0.43	99.53	0.71	5.21	LT 0.43
09/25/93	SWMU5	P030	0.56	LT 0.43	44.31	1.08	6.59	LT 0.43
09/25/93	SWMU8	P031	1.71	LT 0.43	158.33	0.58	3.04	LT 0.43
09/25/93	SWMU9	P032	0.50	LT 0.43	95.45	LT 0.43	3.36	LT 0.43
09/25/93	SWMU31	P033	0.60	LT 0.43	22.22	0.85	6.84	LT 0.43
09/25/93	FBLK	P034	4.20	LT 1.00	280.00	1.10	7.80	LT 1.00
09/27/93	BK	P035	1.44	LT 0.43	16.95	LT 0.43	2.63	LT 0.43
09/27/93	SWMU3	P036	2.09	LT 0.43	33.19	0.55	1.06	LT 0.43
09/27/93	SWMU5	P037	2.70	LT 0.43	77.25	LT 0.43	0.86	LT 0.43
09/27/93	SWMU8	P038	2.77	LT 0.43	63.83	LT 0.43	1.74	LT 0.43
09/27/93	SWMU9	P039	2.58	LT 0.43	54.30	LT 0.43	1.99	LT 0.43
09/27/93	SWMU31	P040	2.91	LT 0.43	105.49	LT 0.43	1.35	LT 0.43
09/27/93	FBLK	P041	7.00	LT 1.00	310.00	1.10	5.00	LT 1.00
09/29/93	BK	P042	2.42	LT 0.43	10.76	LT 0.43	1.61	LT 0.43
09/29/93	SWMU3	P043	2.88	LT 0.43	106.19	LT 0.43	3.23	LT 0.43
09/29/93	SWMU5	P044	2.40	LT 0.43	19.51	LT 0.43	1.30	LT 0.43
09/29/93	SWMU8	P045	LT 0.22	LT 0.43	67.22	LT 0.43	LT 0.43	LT 0.43
09/29/93	SWMU9	P046	2.37	LT 0.43	83.33	LT 0.43	12.88	LT 0.43
09/29/93	SWMU31	P047	1.94	LT 0.43	145.37	LT 0.43	1.19	LT 0.43
09/29/93	FBLK	P048	LT 0.50	LT 1.00	1300.00	LT 1.00	LT 1.00	LT 1.00
10/01/93	BK	P049	0.60	LT 0.43	14.11	LT 0.43	0.97	LT 0.43
10/01/93	SWMU3	P050	LT 0.22	LT 0.43	25.33	LT 0.43	2.05	LT 0.43
10/01/93	SWMU5	P051	1.16	LT 0.43	92.00	LT 0.43	1.14	LT 0.43
10/01/93	SWMU8	P052	1.38	LT 0.43	66.67	LT 0.43	1.38	LT 0.43
10/01/93	SWMU9	P053	1.33	LT 0.43	40.44	LT 0.43	10.22	LT 0.43
10/01/93	SWMU31	P054	1.07	LT 0.43	8.04	LT 0.43	3.39	LT 0.43
10/01/93	FBLK	P055	3.50	1.30	34.00	LT 1.00	2.60	3.60
10/03/93	BK	P058	0.82	0.61	15.92	LT 0.43	2.16	0.73
10/03/93	TRIP	P060	3.20	1.50	30.00	1.40	3.90	1.80

NOTE: No other target SVOC analytes were detected
 LT #### denotes analyte was not detected above given lower detection limit
 Typical sample volume = 2.30 cubic meters

TOOELE GROUP 2 SUMUS AIR MONITORING - VOLATILE ORGANIC COMPOUND RESULTS (ppbv)

	SITE	SAMPID	VINYL CHLORIDE	METHYLENE CHLORIDE	1,1-DICHLORO ETHENE	CHLOROFORM	1,1,1-TRICHLORO ETHANE	CARBON TETRA CHLORIDE	TRICHLORO ETHENE
09/21/93	BK	S001	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.13	0.110	0.16
09/21/93	SWMU3	S002	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.11	0.120	LT 0.10
09/21/93	SWMU5	S003	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.11	0.120	LT 0.10
09/21/93	SWMU8	S004	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.12	0.110	LT 0.10
09/21/93	SWMU31	S005	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.13	0.110	LT 0.10
09/23/93	BK	S006	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.18	0.110	0.16
09/23/93	SWMU3	S007	LT 0.050	0.14	LT 0.050	LT 0.025	0.17	0.100	LT 0.10
09/23/93	SWMU5	S008	LT 0.050	0.47	LT 0.050	0.028	0.16	0.110	LT 0.10
09/23/93	SWMU8	S009	LT 0.050	0.11	LT 0.050	LT 0.025	0.15	0.110	LT 0.10
09/23/93	SWMU9	S010	LT 0.050	0.41	LT 0.050	LT 0.025	0.15	0.110	0.15
09/23/93	SWMU31	S011	LT 0.050	0.36	LT 0.050	LT 0.025	0.16	0.110	LT 0.10
09/23/93	TRIP	S012	LT 0.050	LT 0.10	LT 0.050	LT 0.025	LT 0.10	LT 0.025	LT 0.10
09/25/93	BK	S013	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.12	0.110	LT 0.10
09/25/93	SWMU3	S014	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.14	0.110	LT 0.10
09/25/93	SWMU5	S015	LT 0.050	0.21	LT 0.050	LT 0.025	0.14	0.110	LT 0.10
09/25/93	SWMU8	S016	LT 0.055	LT 0.11	LT 0.055	LT 0.028	0.14	0.110	LT 0.11
09/25/93	SWMU9	S017	LT 0.055	0.86	LT 0.055	LT 0.028	0.13	0.130	LT 0.11
09/25/93	SWMU31	S018	LT 0.060	LT 0.12	LT 0.060	LT 0.030	0.13	0.110	LT 0.12
09/27/93	BK	S019	LT 0.055	LT 0.11	LT 0.055	LT 0.028	0.12	0.130	LT 0.11
09/27/93	SWMU3	S020	LT 0.060	0.98	LT 0.060	LT 0.030	0.14	0.110	LT 0.12
09/27/93	SWMU5	S021	LT 0.060	LT 0.12	LT 0.060	LT 0.030	0.11	0.120	LT 0.12
09/27/93	SWMU8	S022	LT 0.060	0.24	LT 0.060	LT 0.030	0.14	0.120	LT 0.12
09/27/93	SWMU9	S023	LT 0.060	0.70	LT 0.060	LT 0.030	0.14	0.120	LT 0.12
09/27/93	SWMU31	S024	LT 0.060	0.27	LT 0.060	LT 0.030	0.13	0.130	LT 0.12
09/29/93	BK	S025	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.16	0.130	LT 0.10
09/29/93	SWMU3	S026	LT 0.050	0.17	LT 0.050	6.700	0.17	0.130	1.30
09/29/93	SWMU5	S027	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.18	0.130	LT 0.10
09/29/93	SWMU8	S028	LT 0.050	LT 0.10	LT 0.050	0.035	0.19	0.120	LT 0.10
09/29/93	SWMU9	S029	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.16	0.130	0.12
09/29/93	SWMU31	S030	LT 0.050	0.28	LT 0.050	LT 0.025	0.19	0.110	LT 0.10
09/29/93	TRIP	S031	LT 0.050	LT 0.10	LT 0.050	LT 0.025	LT 0.10	LT 0.025	LT 0.10
10/01/93	BK	S032	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.14	0.130	LT 0.10
10/01/93	SWMU3	S033	LT 0.050	0.61	LT 0.050	0.036	0.11	0.130	LT 0.10
10/01/93	SWMU5	S034	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.14	0.120	LT 0.10
10/01/93	SWMU8	S035	LT 0.050	LT 0.10	LT 0.050	0.027	0.14	0.130	LT 0.10
10/01/93	SWMU9	S036	LT 0.050	LT 0.10	LT 0.050	LT 0.025	0.13	0.120	0.12
10/01/93	SWMU31	S037	LT 0.050	LT 0.10	LT 0.050	0.026	0.14	0.120	LT 0.10
10/01/93	TRIP	S038	LT 0.050	LT 0.10	LT 0.050	LT 0.025	LT 0.10	LT 0.025	LT 0.10

NOTE: LT #### denotes analyte was not detected above given lower detection limit

TOOELE GROUP 2 SUMUS AIR MONITORING - VOLATILE ORGANIC COMPOUND RESULTS (ppbv)

DATE	SITE	SAMPID	BENZENE	METHYLYLSO BUTYLKETONE	TETRACHLORO ETHENE	TOLUENE	1,1,2,2-TETRA CHLOROETHANE	ETHYL BENZENE	TOTAL XYLENES
09/21/93	BK	S001	0.130	0.35	LT 0.10	0.14	LT 0.050	LT 0.10	LT 0.10
09/21/93	SWMU3	S002	0.046	LT 0.10	0.16	0.32	LT 0.050	0.12	0.58
09/21/93	SWMU5	S003	0.100	LT 0.10	LT 0.10	0.12	LT 0.050	LT 0.10	0.12
09/21/93	SWMU8	S004	0.042	LT 0.10	LT 0.10	0.18	LT 0.050	LT 0.10	0.20
09/21/93	SWMU31	S005	0.063	LT 0.10	LT 0.10	LT 0.10	LT 0.050	LT 0.10	LT 0.10
09/23/93	BK	S006	0.160	LT 0.10	0.13	0.39	LT 0.050	0.11	0.51
09/23/93	SWMU3	S007	0.110	0.24	LT 0.10	0.13	LT 0.050	LT 0.10	0.12
09/23/93	SWMU5	S008	0.200	LT 0.10	LT 0.10	0.16	LT 0.050	LT 0.10	0.18
09/23/93	SWMU8	S009	0.110	LT 0.10	LT 0.10	0.16	LT 0.050	LT 0.10	0.15
09/23/93	SWMU9	S010	0.140	LT 0.10	0.66	1.30	LT 0.050	0.66	3.80
09/23/93	SWMU31	S011	0.150	LT 0.10	LT 0.10	0.34	LT 0.050	0.18	1.00
09/23/93	TRIP	S012	LT 0.025	LT 0.10	LT 0.10	LT 0.10	LT 0.050	LT 0.10	LT 0.10
09/25/93	BK	S013	0.065	LT 0.10	LT 0.10	LT 0.10	LT 0.050	LT 0.10	LT 0.10
09/25/93	SWMU3	S014	0.087	LT 0.10	LT 0.10	LT 0.10	LT 0.050	LT 0.10	LT 0.10
09/25/93	SWMU5	S015	0.130	LT 0.10	LT 0.10	0.22	LT 0.050	LT 0.10	0.23
09/25/93	SWMU8	S016	0.092	LT 0.11	LT 0.11	LT 0.11	LT 0.055	LT 0.11	LT 0.11
09/25/93	SWMU9	S017	0.081	0.16	LT 0.11	0.15	LT 0.055	LT 0.11	LT 0.11
09/25/93	SWMU31	S018	0.100	LT 0.12	LT 0.12	0.11	LT 0.060	LT 0.12	LT 0.12
09/27/93	BK	S019	0.070	LT 0.11	LT 0.11	0.14	LT 0.055	LT 0.11	0.25
09/27/93	SWMU3	S020	0.110	LT 0.12	LT 0.12	0.19	LT 0.060	LT 0.12	0.18
09/27/93	SWMU5	S021	0.100	LT 0.12	LT 0.12	0.16	LT 0.060	LT 0.12	LT 0.12
09/27/93	SWMU8	S022	0.077	LT 0.12	LT 0.12	LT 0.12	LT 0.060	LT 0.12	LT 0.12
09/27/93	SWMU9	S023	0.110	0.49	LT 0.12	9.30	LT 0.060	LT 0.12	0.23
09/27/93	SWMU31	S024	0.067	LT 0.12	LT 0.12	0.12	LT 0.060	LT 0.12	LT 0.12
09/29/93	BK	S025	0.140	LT 0.10	LT 0.10	0.25	LT 0.050	0.11	0.52
09/29/93	SWMU3	S026	0.140	LT 0.10	3.40	0.20	LT 0.050	LT 0.10	(
09/29/93	SWMU5	S027	0.190	LT 0.10	LT 0.10	0.27	LT 0.050	LT 0.10	0.77
09/29/93	SWMU8	S028	0.180	0.24	LT 0.10	0.26	LT 0.050	0.15	0.74
09/29/93	SWMU9	S029	0.140	LT 0.10	LT 0.10	0.27	LT 0.050	0.10	0.46
09/29/93	SWMU31	S030	0.250	LT 0.10	0.21	0.60	LT 0.050	0.84	5.00
09/29/93	TRIP	S031	0.032	LT 0.10	LT 0.10	LT 0.10	LT 0.050	LT 0.10	0.21
10/01/93	BK	S032	0.080	0.10	LT 0.10	LT 0.10	LT 0.050	LT 0.10	LT 0.10
10/01/93	SWMU3	S033	0.079	LT 0.10	0.12	0.42	LT 0.050	LT 0.10	LT 0.10
10/01/93	SWMU5	S034	0.130	0.31	LT 0.10	0.18	LT 0.050	LT 0.10	0.10
10/01/93	SWMU8	S035	0.078	0.12	LT 0.10	0.65	LT 0.050	LT 0.10	0.23
10/01/93	SWMU9	S036	0.086	0.12	LT 0.10	0.11	LT 0.050	LT 0.10	LT 0.10
10/01/93	SWMU31	S037	0.120	0.22	0.42	13.00	LT 0.050	1.50	9.60
10/01/93	TRIP	S038	LT 0.025	LT 0.10	LT 0.10	LT 0.10	LT 0.050	LT 0.10	LT 0.10

NOTE: LT #### denotes analyte was not detected above given lower detection limit