

**AMBIENT AIR AND METEOROLOGICAL MONITORING
FOR
TRUE GEOTHERMAL ENERGY COMPANY
KILAUEA MIDDLE EAST RIFT ZONE, ISLAND OF HAWAII
JULY 1990 DATA REPORT**

Submitted to:

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MEASUREMENT TECHNOLOGIES

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1.0 Introduction

Measurement Technologies has been contracted by True Geothermal Energy Company to conduct an air quality and meteorological monitoring program to support incremental exploration and development of the Kilauea Middle East Rift Zone Geothermal Resources Subzone (GRS), Puna District, Island of Hawaii. The data gathered in the monitoring program is being used in support of the exploration and possible development of the geothermal resource.

The monitoring program consists of two (2) monitoring sites. The first site (Site 1) is located in the Kaohe Homesteads area and the second site (Site 2) is located at the geothermal drilling and staging area D-1. The monitored parameters for each site are contained in Table 1-1. The sites are being operated consistent with the guidelines and requirements as outlined in the following documents:

- o "Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD)," U.S. EPA-450/4-80-012, November 1980.
- o "Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV. Meteorological Measurements," U.S. EPA-600/4-82-060, February 1983.
- o "Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II," Ambient Air Specific Methods, U.S. EPA-600/4-77-027a, May 1977.

As part of the monitoring program, Measurement will submit monthly and quarterly reports to True Geothermal Energy Company. The reports will contain the monitoring data, results of the quarterly quality assurance audits and results of quality control activities such as SO₂ and H₂S gas analyzer precision checks, level 1 and 2 checks and multipoint calibration results.

TABLE 1-1 Monitored Parameters

PARAMETER	SITE 1	SITE 2 (MET)
HYDROGEN SULFIDE (H ₂ S)	X	8 PLS
SULFUR DIOXIDE (SO ₂)	X	X
WIND DIRECTION	X	X
WIND SPEED	X	X
VERTICAL WINDS		X
SIGMA THETA	X	X
SIGMA W		X
TEMPERATURE	X	
PRECIPITATION	X	
RAIN WATER (ANIONS & DISSOLVED METALS)	3 PLS	
METALS (ATMOSPHERIC PARTICULATE)	X	
TOTAL SUSPENDED PARTICULATE (TSP)	X	
INHALEABLE PARTICULATES (PM-10)	X	
RADON		X

Section 2.0 of this report contains a operations narrative of significant events and activities that occurred during the month of July. Section 3.0 of this report contains the data collected during the month with graphical presentations and data capture summaries. The data is presented by site numbers and may also be referred to by name. Site 1 and 2 names are Air Quality/Met and Met Site, respectively.

2.0 Operations Summary

This section discusses the operations of the two monitoring sites and any significant events that may affect data quality. A downtime summary is also provided.

2.1 Monthly Operations Summary

Site 1 and 2 operations were routine for the month of July. Results of the radon samples exposed for the July period indicated radon levels below the detectable limit.

Due to insufficient rain water amounts, all of the rainwater samples collected during the month were combined for analyses. The samples had to be combined in order to obtain enough sample to analyze in the detection limit necessary. The duplicate quality control sample is designated as True 11-(1-3)-2. The results of the analysis are contained in Section 3.0, Table 3-8 of this report.

The filter analyses for metals and particulate in July show insignificant concentrations and loadings for the compounds of interest in the program. The results are contained in Section 3.0, Tables 3-9 thru 3-14.

The continuous H₂S analyzer at Site 1 detected low levels of H₂S during July. The levels, however, were 5 parts per billion or less. In addition, the H₂S dosimeter badges located at the Drill site 2 show no concentrations of H₂S during July. Low levels of SO₂ data were measured on July 6, 1990 for the hours of 0700 thru 0900. The highest hourly value was 23 ppb for the 0800 hour.

It might be noted that wind direction data showing zero's as a value, may correlate with a wind speed of zero. The wind direction is a vector average and if the wind speed is zero

the wind direction is not calculated. The wind's are considered calm in these conditions and pollutants are in a stagnet condition, (not being transported).

2.2 Downtime Summary

This section presents the down time summary by site. Down time is considered any time an analyzer or sensor is not collecting valid data. Down time includes calibration time, data lost due to data validation criteria such as insufficient data samples, sensors or analyzers operating outside of allowable limits, etc. Calibration and audit time and time lost due to maintenance and malfunctions is also considered down time.

Data capture at Site 1 was excellent in July, with all parameters exceeding 99 percent data capture. Site 2 also had excellent data capture in July with all parameters having 100 percent data capture for the fourth straight month.

2.3 Major Activities

No major activities were noted during the month of July.

3.0 Data Summary

Section 3.0 contains monthly summary reports and statistic tables for all of the major monitored parameters. In addition, graphical wind rose plots, rain water analyses results, total suspended (TSP) and inhaleable (PM-10) particulate loading and metals analyses are also contained in this section. The data and associated graphical presentations are presented by site. Each sites data is organized and presented as follows:

- o Monthly Summary Report containing the hourly values for each day of the month. Dashes contained in the place of any data signifies that the data falls into a down time category previously discussed in Section 2.0. An asterisk sign in the wind sigma theta signifies calm wind conditions.
- o A graphical wind rose presentation will immediately follow the Monthly Summary Report. The wind rose displays a graphical presentation of the wind speed and direction at each site.
- o Summary Statistic Tables containing the highest and second highest measured values, lowest value, arithmetic mean and standard deviation, data recovery rates and percentile breakdowns of measured values.
- o TSP and PM-10 particulate data showing loading of each filter along with the elemental analyses of each metals filter (Site 1 only).
- o Rain water analyses results showing each sample collected and the results of the metals elemental and anion analyses (Site 1 only).

3.1

Air Quality/Meteorological Monitoring Data Site 1

MONTHLY SUMMARY REPORT

LOCATION: SITE 1		TRUE GEOTHERMAL																								
		WD (DEG)																								
		HOURS (DST)																								
HR-END	DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1		347	347	342	337	347	340	325	327	334	349	347	352	351	349	349	349	347	349	349	347	345	338	333	336	
2		332	333	341	348	351	351	350	353	0	0	347	352	356	354	356	349	355	350	348	349	348	348	346	341	
3		342	342	346	342	341	342	339	343	348	354	351	353	349	353	351	351	350	350	351	347	348	338	338	336	
4		339	337	336	334	340	335	331	333	345	349	338	347	352	350	348	351	351	350	350	339	331	327	334	337	
5		338	351	331	333	342	327	330	334	339	346	350	349	349	347	349	349	349	350	349	340	337	325	313	295	
6		287	297	282	275	249	239	300	328	334	339	341	351	352	355	348	351	351	353	349	346	334	327	322	313	
7		309	309	308	293	283	287	299	329	341	352	339	353	351	357	357	353	354	349	348	347	344	336	323	325	
8		318	321	317	313	315	316	316	320	322	119	123	114	121	125	122	124	132	125	121	133	338	330	311	327	
9		319	317	338	320	313	0	0	331	339	347	349	355	355	354	352	354	353	349	350	341	331	315	305	316	
10		288	287	330	323	327	322	325	337	345	347	353	352	2	352	350	351	350	349	343	341	339	335	329	332	
11		335	330	330	324	320	328	0	330	332	345	349	352	356	351	351	351	351	348	347	349	344	351	19	335	
12		325	337	343	344	345	345	321	317	336	332	344	352	5	56	357	357	350	346	328	318	309	323	0	0	
13		0	0	0	0	0	0	0	0	323	322	339	349	355	350	356	353	351	348	337	302	298	306	288	298	
14		290	279	263	244	0	0	252	322	351	11	353	121	69	90	112	99	119	104	123	145	139	272	310	295	
15		241	250	279	288	257	257	312	324	340	349	357	358	11	73	114	108	82	22	359	344	338	333	335	337	
16		339	334	332	324	319	314	317	332	341	341	343	348	348	351	346	349	349	351	347	338	337	331	336	330	
17		328	329	325	322	0	0	0	0	338	343	343	348	354	357	349	351	353	345	349	343	350	346	337	330	
18		323	145	0	0	0	0	0	0	0	0	0	0	11	37	21	11	34	6	354	1	344	336	331	335	
19		340	0	0	0	0	0	0	0	0	0	0	0	349	59	13	51	92	88	38	22	54	349	292	119	344
20		307	326	313	0	0	0	0	0	337	348	348	352	355	5	126	129	9	82	133	350	119	333	290	0	
21		0	0	0	0	0	0	0	0	0	330	349	54	349	348	353	346	1	349	349	337	335	327	320	0	
22		0	0	0	0	0	0	0	332	333	345	1	349	350	359	356	352	353	110	93	318	312	314	312	316	
23		0	0	0	0	0	0	0	320	342	346	351	358	98	6	355	353	351	349	348	348	341	336	324	329	
24		341	349	344	0	0	0	0	0	336	346	343	350	350	351	351	350	349	349	349	349	351	0	0	0	
25		0	0	0	0	0	0	0	340	342	346	346	348	350	347	353	350	351	349	350	342	335	351	0	0	
26		0	0	0	0	0	0	0	325	334	341	344	347	345	349	350	348	350	348	342	334	340	333	322	0	
27		0	0	0	0	0	0	0	0	135	120	119	123	121	119	74	354	2	351	349	344	342	341	334	338	
28		332	0	0	0	0	0	0	0	345	338	341	349	351	354	9	26	9	349	4	22	20	0	0	0	
29		0	0	0	0	0	0	0	0	345	350	355	8	353	355	357	349	353	348	346	340	340	339	333	330	
30		0	0	0	0	0	0	0	0	343	354	95	125	119	109	119	84	0	345	332	329	312	309	0	0	
31		0	0	0	0	0	0	0	340	344	353	347	351	61	87	19	353	11	350	346	342	335	322	321	324	

Table 3-1. Wind Direction Monthly Summary Site 1

MONTHLY SUMMARY REPORT

LOCATION: SITE 1

TRUE GEOTHERMAL
WS (MPH)

DATA FOR: JUL 1990

HR-END DAY	HOURS (DST)																								
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	6.1	5.2	5.1	5.7	5.4	5.2	5.8	6.0	5.9	6.9	7.1	6.8	6.2	6.8	7.1	7.1	7.4	6.9	6.3	6.7	6.7	7.9	7.5	7.2	
2	6.2	5.3	4.6	4.3	4.0	4.3	3.8	0.3	0.0	0.0	2.6	4.1	3.3	4.0	3.1	4.6	3.5	4.8	4.0	4.4	4.2	3.0	3.5	4.0	
3	4.4	4.7	4.5	4.9	4.9	4.7	4.2	4.5	4.2	3.1	3.3	3.5	4.4	5.0	4.2	5.4	5.8	6.3	6.1	6.3	6.4	6.3	6.5	7.0	
4	6.8	6.3	6.4	6.2	5.6	6.6	7.0	7.0	6.2	5.5	7.0	5.6	6.1	6.9	7.6	6.8	6.3	5.5	5.3	4.5	5.4	5.8	5.8	5.7	
5	5.9	4.2	3.9	4.4	3.6	5.0	5.1	5.5	6.2	6.1	6.7	6.5	6.6	6.5	6.8	6.2	5.0	5.5	4.5	4.6	4.1	3.6	3.1	2.0	
6	1.2	1.7	1.2	1.4	0.7	0.7	1.7	4.8	6.7	6.3	5.6	3.9	3.5	4.2	4.7	4.5	4.5	5.6	5.0	3.9	3.8	3.4	3.0	2.8	
7	2.4	2.7	2.7	1.6	1.5	1.9	2.0	4.4	5.6	3.0	5.3	4.1	5.4	4.7	3.9	4.4	4.1	5.2	4.9	3.9	3.2	2.7	3.9	4.3	
8	4.1	3.7	4.0	3.3	3.0	3.0	3.5	3.1	1.0	1.4	2.7	2.2	2.0	3.1	2.9	2.6	1.8	2.7	1.2	0.8	0.1	2.7	2.3	3.3	
9	2.3	2.5	2.5	2.2	1.8	0.0	0.0	4.2	4.8	4.4	3.3	2.9	4.0	4.4	4.6	3.1	3.4	4.2	3.6	3.8	3.8	2.9	1.9	2.5	
10	1.4	0.8	1.4	2.6	1.0	2.2	3.3	4.4	4.5	5.1	4.2	4.2	4.1	4.7	5.6	5.9	5.9	6.2	4.2	4.8	4.4	4.1	4.4	5.1	
11	4.5	4.9	4.4	4.5	4.5	1.9	0.0	2.0	5.4	4.6	4.8	4.3	4.3	5.2	5.4	4.9	4.6	4.6	4.5	3.6	2.4	1.6	0.6	2.3	
12	2.7	1.4	2.5	2.8	2.7	3.1	3.2	3.1	3.6	4.3	0.9	2.7	1.7	1.0	2.6	2.9	2.5	2.4	2.6	1.8	2.6	0.5	0.0	0.0	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	2.9	4.6	3.9	3.3	4.0	3.5	3.4	3.3	3.5	2.6	0.4	0.1	1.1	1.1	1.0	
14	0.8	0.7	0.4	0.3	0.0	0.0	0.1	1.3	2.0	1.3	2.1	2.3	1.3	1.9	2.3	2.1	2.6	1.7	1.5	0.3	0.0	0.4	0.5	0.6	
15	0.4	0.4	0.2	0.4	0.1	0.3	2.3	3.2	3.5	2.8	2.6	1.8	1.7	0.8	1.0	1.0	1.0	1.4	1.9	3.4	4.1	4.6	5.0	5.4	
16	5.4	5.7	5.9	4.8	4.9	4.4	4.8	5.6	7.6	8.3	7.8	6.4	7.2	7.0	6.3	6.1	6.1	7.2	6.6	7.0	6.8	6.3	5.2	6.8	
17	6.0	5.5	5.4	2.9	0.0	0.0	0.0	0.0	2.9	6.5	5.0	4.9	4.5	4.8	6.2	6.1	7.4	8.0	6.4	7.0	2.8	3.6	3.9	4.8	
18	4.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.3	1.5	1.6	1.2	1.5	2.0	0.9	1.6	1.8	1.4	1.8	
19	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.9	1.6	1.1	1.5	0.6	1.1	0.4	0.0	0.1	0.2	0.4	0.5
20	0.4	1.6	0.3	0.0	0.0	0.0	0.0	0.0	3.7	4.4	3.6	3.2	3.1	1.8	0.8	0.8	1.2	0.7	0.8	0.5	0.5	2.0	0.2	0.0	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.7	3.5	3.1	2.9	3.0	2.3	2.4	3.5	3.8	2.8	3.6	1.5	0.0	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	5.8	4.9	2.7	4.5	3.0	2.8	3.1	4.4	2.3	1.5	0.3	2.2	3.4	1.8	3.5	0.6	
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	5.4	4.9	3.4	2.9	1.3	1.9	4.0	3.8	4.5	4.1	5.2	4.2	3.7	3.9	3.0	2.8	
24	2.2	2.2	2.3	0.0	0.0	0.0	0.0	0.0	4.5	5.1	4.9	4.8	5.2	5.1	5.3	6.7	7.0	7.0	6.8	6.4	5.1	0.0	0.0	0.0	
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	7.2	6.6	6.5	5.6	6.6	5.6	5.7	6.0	6.7	7.3	6.4	6.0	6.7	0.1	0.0	0.0	
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	7.0	7.7	7.0	6.7	6.5	5.8	5.9	7.0	6.3	6.0	6.2	5.5	5.7	4.7	1.1	0.0	
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.7	2.6	2.3	3.0	2.4	1.6	1.8	2.9	3.7	4.3	4.6	5.4	5.3	5.6	5.1		
28	0.9	0.0	0.0	0.0	0.0	0.0	0.0	3.9	6.4	4.9	3.8	3.5	3.9	2.9	1.4	1.9	2.3	1.6	1.0	0.3	0.0	0.0	0.0		
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	4.4	2.5	2.6	4.1	3.7	3.6	3.5	3.2	3.4	3.9	3.5	4.5	3.9	4.3	1.6		
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.2	1.3	2.0	2.7	2.1	1.6	0.8	1.9	2.6	4.0	3.4	2.9	2.2	0.0	0.0		
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	4.5	4.0	3.8	3.9	1.3	1.7	1.6	2.4	1.4	2.6	2.5	2.3	1.3	1.8	3.5	3.8	

Table 3-2. Wind Speed Monthly Summary Site 1

MONTHLY SUMMARY REPORT

TRUE GEOTHERMAL

LOCATION: SITE 1

Sig01

(deg)

DATA FOR: JUL 1990

HR-END DAY	HOURS (DST)																							
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	28.7	26.0	22.4	18.3	30.8	20.1	16.3	16.1	18.5	26.5	28.4	35.7	39.1	39.0	37.8	37.7	33.1	42.3	30.1	22.3	21.8	19.4	17.6	19.3
2	18.7	19.2	31.2	42.2	47.0	28.4	40.2	43.3	39.6	48.3	34.5	48.2	61.5	58.4	66.0	47.8	54.7	37.5	39.5	29.0	25.8	38.3	30.2	22.9
3	20.8	19.6	21.2	19.7	21.9	20.2	19.9	21.6	40.5	57.6	56.2	54.0	46.5	45.0	52.1	41.3	38.4	30.3	29.0	22.5	22.9	17.4	17.1	17.2
4	19.0	17.7	16.8	16.4	21.2	16.8	17.1	17.1	23.2	34.0	22.5	38.0	39.4	36.9	32.8	34.4	36.7	31.9	25.8	19.2	15.3	16.6	17.5	18.5
5	20.5	31.8	18.6	22.4	24.5	17.5	18.3	17.2	20.1	22.9	30.1	34.0	35.6	39.4	33.9	38.3	43.0	35.1	37.8	18.6	16.6	15.4	16.3	19.1
6	28.1	31.1	32.8	38.4	62.0	62.4	45.1	18.3	17.7	25.6	29.0	52.7	60.0	55.1	50.1	51.0	47.9	35.7	26.7	22.4	15.9	15.9	18.3	18.2
7	21.5	17.7	24.2	30.3	24.0	28.4	22.7	17.9	21.9	51.1	26.5	48.1	42.9	49.6	53.1	47.9	48.8	33.0	23.7	30.1	23.6	17.7	15.2	18.0
8	19.3	18.2	23.0	29.8	27.0	29.2	26.4	48.9	58.3	54.2	49.9	62.6	66.2	47.4	55.1	56.5	60.3	51.5	59.3	85.2	45.5	23.0	21.2	20.9
9	21.2	17.5	20.5	17.7	28.0	48.3	57.6	19.2	19.6	34.0	48.1	59.1	53.6	50.5	50.4	63.0	52.3	36.7	30.0	18.8	18.3	35.7	37.5	49.3
10	60.3	68.5	66.2	30.0	27.4	19.1	19.3	20.1	27.8	37.3	50.3	55.3	59.5	47.3	41.9	39.5	37.9	32.9	36.8	18.6	19.2	18.6	16.0	16.5
11	17.7	16.4	16.6	16.6	18.0	45.5	87.8	38.9	24.5	29.6	41.7	47.9	49.2	42.9	41.8	43.3	37.1	35.8	31.9	31.7	44.3	72.3	75.3	25.3
12	16.4	63.1	23.8	43.5	39.6	29.1	20.9	24.0	20.1	17.4	69.7	53.6	72.4	71.3	61.5	56.0	52.1	42.9	34.6	29.0	23.2	64.1	80.6	64.1
13	80.5	93.8	94.8	79.7	63.2	87.3	82.2	62.6	24.0	29.7	25.6	48.9	55.8	51.4	59.2	54.5	50.4	41.8	25.1	39.0	65.5	49.2	63.0	44.6
14	60.8	64.8	63.1	71.5	97.6	97.6	124.5	38.4	53.9	72.8	66.4	62.1	76.7	77.2	70.6	71.3	61.9	68.8	66.2	85.6	63.0	51.2	52.8	51.8
15	45.1	29.7	74.3	64.9	37.7	51.2	27.5	24.1	32.9	53.2	59.4	77.3	62.7	73.2	72.5	80.5	78.6	75.6	51.2	22.4	17.9	16.4	18.2	18.2
16	19.2	16.4	16.3	17.9	17.2	21.0	18.3	16.8	19.6	19.9	22.7	29.6	30.6	29.7	33.9	31.5	32.3	28.4	24.6	18.3	18.3	17.0	17.7	16.8
17	17.0	16.3	15.8	23.5	28.7	35.2	37.9	30.1	23.6	23.2	32.2	42.2	52.0	51.0	39.4	36.2	31.7	22.7	28.7	21.6	60.0	37.5	33.0	18.0
18	18.2	63.5	39.7	32.8	28.7	35.0	38.2	36.9	100.5	72.4	86.5	92.0	73.5	65.5	76.5	73.4	75.9	67.7	54.4	76.5	44.3	35.9	20.2	36.8
19	54.5	62.2	81.3	80.5	81.9	62.9	69.0	52.2	50.9	36.6	35.0	32.5	79.0	71.9	72.9	70.8	82.0	73.0	83.5	71.3	62.5	67.4	66.5	68.2
20	22.7	18.8	58.7	43.7	58.0	80.8	81.6	52.6	18.3	23.6	41.9	53.6	58.3	37.9	57.6	79.6	67.9	75.7	78.9	73.1	83.0	30.9	87.9	108.0
21	97.6	97.6	117.9	97.6	102.8	85.8	122.0	94.4	68.0	54.5	63.7	76.1	44.9	51.1	46.6	49.2	61.3	57.2	29.1	18.0	47.4	40.6	66.8	50.1
22	49.8	35.8	48.9	52.2	66.4	74.6	62.5	18.5	17.4	28.1	54.0	39.7	56.6	62.4	58.3	42.3	69.0	70.9	76.7	30.0	34.4	55.3	26.5	53.2
23	66.6	66.5	53.9	61.9	73.5	92.2	104.9	43.0	21.9	29.1	44.3	54.7	70.2	64.7	53.7	55.3	43.2	36.8	32.9	27.3	21.6	22.0	43.5	54.3
24	54.5	32.2	24.5	45.1	50.6	47.2	39.4	36.1	22.4	26.9	30.8	46.8	47.6	48.4	39.9	26.4	27.8	30.0	25.4	28.2	44.0	34.6	26.4	40.8
25	29.2	29.3	29.5	30.7	31.2	32.8	41.8	28.5	20.1	25.6	26.7	43.2	38.8	42.9	44.8	38.3	33.5	27.8	25.8	20.3	17.0	27.5	30.8	30.9
26	28.4	33.6	40.4	39.9	43.0	53.6	45.9	39.7	17.0	20.2	29.1	33.5	33.5	39.7	41.1	29.6	31.2	29.7	23.8	15.8	18.8	18.0	45.6	108.5
27	97.6	97.6	97.6	97.6	97.6	117.0	90.2	113.7	100.5	57.8	56.1	58.6	58.0	67.0	74.0	78.0	60.4	44.6	31.8	20.5	19.7	19.6	17.6	18.7
28	29.8	41.5	36.7	42.3	47.8	46.7	57.1	33.9	24.0	19.7	36.2	44.3	47.1	47.1	58.0	74.1	71.5	61.6	73.6	76.7	95.3	76.5	85.2	77.8
29	63.0	33.4	71.2	71.5	59.3	34.8	27.6	33.5	32.5	37.4	63.8	63.0	51.4	58.0	58.9	51.5	54.7	46.7	26.5	22.7	19.4	19.0	23.2	26.7
30	35.0	58.8	46.1	64.8	61.5	71.8	59.9	48.2	49.5	58.8	69.8	60.6	59.4	65.4	60.8	73.9	56.2	31.1	19.3	18.5	22.9	25.2	66.8	71.7
31	66.0	81.3	68.5	81.1	32.4	29.5	35.9	20.4	24.8	37.2	47.4	50.3	76.2	77.8	77.8	65.1	70.2	48.5	35.2	20.8	52.2	62.5	18.3	17.9

Table 3-3. Sigma Theta Monthly Summary Site 1

MONTHLY SUMMARY REPORT

LOCATION: SITE 1		TRUE GEOTHERMAL												DATA FOR: JUL 1990											
		TEMP												(DEG F)											
		HOURS (DST)																							
HR-END	DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		68.7	67.6	66.9	66.7	67.0	66.2	65.9	66.7	67.5	71.8	73.5	73.7	73.0	74.1	73.9	73.8	72.1	70.0	68.6	68.7	67.9	67.0	66.5	66.7
2		66.4	66.5	66.9	67.4	67.2	67.7	67.3	67.2	68.1	70.0	72.1	73.4	75.3	76.6	76.5	75.2	73.6	72.0	70.3	69.4	69.2	68.8	68.5	68.2
3		67.8	67.7	67.6	67.6	67.6	67.7	68.9	71.7	73.0	73.7	74.9	76.0	76.6	76.6	74.8	72.5	70.7	69.1	68.1	67.6	67.5	67.5	66.9	
4		67.0	66.4	66.2	66.2	65.8	65.6	65.2	66.1	67.9	67.1	69.8	73.0	74.8	74.7	75.2	74.6	74.8	75.2	70.7	67.1	66.7	67.0	65.9	65.9
5		65.5	66.0	65.9	66.0	66.0	65.9	66.1	67.3	69.7	70.1	71.9	73.7	75.0	75.1	74.8	74.5	73.6	72.3	69.9	67.8	67.0	65.7	65.5	64.9
6		64.5	64.0	63.2	62.6	61.8	61.3	66.4	71.8	72.1	74.0	74.8	76.8	77.2	76.6	75.7	74.7	74.1	73.0	70.4	67.7	67.2	66.6	66.5	66.2
7		65.9	65.7	65.2	63.9	63.4	63.1	64.9	71.0	70.9	70.1	72.9	75.9	76.4	77.2	77.3	76.2	75.3	73.8	71.6	68.9	68.5	67.7	67.4	66.7
8		66.2	66.1	65.8	65.8	66.1	66.5	66.9	67.5	69.5	73.4	75.7	75.1	72.3	72.0	73.6	72.5	71.3	71.0	70.1	69.3	69.3	68.9	68.3	67.9
9		67.4	67.2	67.6	66.8	66.8	67.0	67.9	72.9	73.0	73.5	74.8	76.9	77.8	77.7	77.6	76.6	75.9	76.4	71.3	69.5	68.9	68.5	67.8	67.2
10		66.7	66.7	67.4	67.1	66.7	66.7	69.2	70.7	71.6	72.7	74.8	75.3	75.8	75.9	75.5	74.4	74.1	71.9	67.2	67.2	67.1	66.7	66.3	66.6
11		66.7	66.6	66.3	66.1	65.7	65.2	65.0	68.5	71.6	72.9	74.2	75.0	75.7	76.9	75.3	74.6	72.3	71.2	68.8	68.0	67.9	67.9	67.7	67.3
12		67.5	67.6	67.6	67.4	67.6	67.1	66.8	68.5	70.1	70.0	71.1	70.9	72.8	72.8	72.3	69.4	70.3	67.7	66.7	66.7	66.7	66.6	66.2	
13		66.1	65.5	65.3	65.4	65.4	64.9	65.4	67.6	69.3	69.6	73.4	74.0	76.5	76.4	75.6	73.9	74.2	72.1	69.4	67.5	67.2	67.1	66.5	65.9
14		65.4	65.0	65.3	65.0	64.2	63.3	67.4	76.1	74.4	75.6	76.4	75.9	78.4	77.8	77.0	76.5	73.3	72.1	70.8	69.1	69.1	68.8	68.8	67.7
15		66.2	65.5	65.8	66.7	65.8	65.5	67.2	70.5	72.3	75.2	76.1	77.7	73.8	72.2	73.5	74.9	72.2	72.3	70.4	68.9	68.5	68.3	67.8	67.6
16		67.4	66.8	66.4	65.9	65.2	64.2	64.8	67.4	68.8	68.2	69.9	71.1	70.2	71.5	73.1	72.3	73.4	73.4	70.4	69.3	68.2	67.1	67.0	66.9
17		67.1	67.2	66.8	66.8	66.4	66.1	66.7	68.1	71.7	74.3	76.1	77.5	78.1	77.5	77.3	77.4	75.3	72.1	69.8	69.4	69.4	69.2	69.4	69.2
18		69.1	68.8	69.0	68.9	68.8	68.4	67.5	68.5	69.1	70.8	71.1	71.6	74.6	73.2	73.6	72.1	72.5	72.1	70.1	69.7	69.6	69.4	69.3	69.3
19		68.9	67.6	67.5	67.3	67.3	67.3	68.3	70.2	69.9	71.7	72.2	74.2	71.9	75.2	73.1	71.6	70.8	71.0	70.5	69.9	69.6	69.0	68.6	68.0
20		67.4	67.4	67.3	67.0	67.0	67.2	67.4	68.5	70.9	72.2	72.8	73.0	75.1	72.6	70.4	70.8	70.6	69.6	69.5	69.4	69.2	68.5	68.4	68.3
21		68.1	68.0	67.7	67.6	67.4	66.7	66.6	68.3	71.2	71.2	72.9	72.2	73.8	73.0	76.1	76.3	74.4	73.0	71.1	69.9	69.4	68.5	67.4	67.6
22		67.6	67.6	66.9	66.8	66.6	66.3	68.4	69.4	71.8	73.0	72.7	74.6	75.7	75.4	72.2	74.1	74.7	72.9	69.4	68.3	66.5	66.1	65.6	65.9
23		65.8	65.8	66.0	65.1	64.7	64.6	65.7	69.3	72.3	74.4	76.6	77.5	77.8	78.4	78.8	77.5	75.8	73.8	72.2	70.0	68.6	68.5	67.3	68.0
24		68.5	68.1	67.8	67.6	67.2	67.2	68.2	69.8	71.8	71.1	69.5	73.2	73.9	72.1	70.0	70.5	70.8	70.7	69.5	68.9	68.4	67.6	67.6	67.3
25		66.7	66.3	66.7	66.7	66.7	65.9	65.9	69.3	70.9	69.5	71.9	73.7	73.9	73.6	74.3	73.5	71.6	71.3	70.1	67.9	67.4	67.1	67.3	67.3
26		67.6	66.7	66.3	66.2	65.8	65.1	65.5	67.6	71.3	73.8	75.6	76.9	76.7	77.0	76.2	75.5	74.0	71.6	70.8	69.5	69.0	68.5	68.2	67.7
27		67.0	67.4	67.9	68.0	68.4	68.8	70.3	71.8	73.1	74.3	74.0	74.8	76.0	77.7	77.9	77.0	75.7	74.8	71.9	70.0	69.4	69.2	68.9	68.8
28		68.5	68.4	68.3	67.9	67.8	67.4	67.8	71.7	72.3	70.6	71.5	73.2	73.8	73.4	74.2	74.4	73.0	71.1	70.6	70.1	70.3	70.3	69.9	70.1
29		70.4	70.2	70.2	70.3	69.9	69.9	69.8	71.2	73.9	75.0	77.7	79.2	78.9	79.3	78.0	77.2	76.6	75.1	72.1	71.1	70.8	70.5	70.2	69.9
30		69.9	69.7	69.4	69.5	68.8	68.4	69.2	72.3	73.9	74.8	74.4	76.8	76.9	76.3	73.9	73.8	73.9	72.0	71.0	70.3	69.1	68.4	68.6	68.8
31		68.9	68.8	69.4	69.2	69.2	69.2	69.4	70.8	71.9	74.1	75.5	77.4	77.7	76.7	76.6	76.4	75.2	73.7	71.7	70.6	69.7	69.0	68.1	67.9

Table 3-4. Ambient Temperature Monthly Summary Site 1

MONTHLY SUMMARY REPORT

LOCATION: SITE 1	TRUE GEOTHERMAL																								DATA FOR: JUL 1990
	RAIN (INCH)																								
HR-END DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.05	
2	0.01	0.04	0.13	0.09	0.03	0.00	0.00	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	
5	0.06	0.09	0.01	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	
7	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8	0.02	0.03	0.09	0.04	0.06	0.05	0.01	0.09	0.04	0.00	0.00	0.01	0.19	0.08	0.00	0.10	0.07	0.06	0.08	0.07	0.00	0.00	0.00	0.01	
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.00	0.22	
10	0.30	0.12	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.01	0.00	0.02	0.00	0.00	
11	0.00	0.02	0.00	0.02	0.00	0.14	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.04	0.02	0.00	0.00	
12	0.00	0.01	0.00	0.07	0.00	0.03	0.04	0.01	0.00	0.01	0.05	0.04	0.00	0.00	0.03	0.05	0.04	0.00	0.01	0.01	0.03	0.07	0.02	0.00	
13	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00	
14	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	
15	0.00	0.00	0.01	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.01	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	
17	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.09	0.33	0.16	0.01	0.00	
18	0.07	0.35	0.03	0.00	0.00	0.01	0.09	0.05	0.09	0.00	0.21	0.50	0.03	0.20	0.00	0.11	0.01	0.00	0.25	0.01	0.00	0.00	0.00	0.01	
19	0.20	0.05	0.11	0.00	0.00	0.00	0.00	0.00	0.19	0.01	0.05	0.00	0.34	0.00	0.05	0.06	0.15	0.00	0.00	0.00	0.00	0.00	0.16	0.12	
20	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.01	0.00	0.02	0.06	0.09	0.02	0.14	0.13	0.15	0.06	0.05	0.00	0.00	
21	0.00	0.00	0.00	0.01	0.28	0.05	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.09	0.02	
22	0.00	0.00	0.01	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.02	
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.03	0.17	0.05	
24	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.11	0.00	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.01	0.06	0.10	
25	0.04	0.03	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	
26	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	
27	0.00	0.00	0.01	0.00	0.07	0.20	0.02	0.02	0.07	0.04	0.07	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
28	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.05	0.06	0.09	0.04	0.02	0.01	0.09	0.07	0.12	0.01	0.02	0.11	0.01	0.05	
29	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.01	
30	0.00	0.07	0.15	0.10	0.02	0.00	0.00	0.00	0.00	0.05	0.13	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.01	
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.04	0.00	

Table 3-5. Precipitation Monthly Summary Site 1

MONTHLY SUMMARY REPORT

HR-END DAY	TRUE GEOTHERMAL																							
	SO2 (PPB)																							
	HOURS (DST)																							
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0	1	1	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1
2	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	11	25	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3-6. Sulfur Dioxide Monthly Summary Site 1

MONTHLY SUMMARY REPORT

LOCATION: SITE 1

H2S

TRUE GEOTHERMAL

(PPB)

DATA FOR: JUL 1990

HR-END DAY	HOURS (DST)																							
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0	0	0	0	0	0	0	2	1	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0
2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	3	3
3	2	2	2	2	2	2	3	3	3	3	4	4	4	4	3	2	2	2	0	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
5	0	0	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	0	3	3	4	4	4
6	4	4	4	5	5	5	5	4	5	5	4	3	3	2	1	1	1	1	1	1	1	2	2	2
7	1	1	1	2	2	3	4	2	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2
8	2	2	2	1	1	1	2	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1
9	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	1	0
11	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
22	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	1	0	0	0	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Table 3-7. Hydrogen Sulfide Monthly Summary Site 1



HECO ENVIRONMENTAL LABORATORY
 ENVIRONMENTAL DEPARTMENT
 Rainwater Analysis Report

Report Date: August 15, 1990

Site: True/Geothermal
 Pahoia, Hawaii

Sample Date: 07/01/90 - 08/01/90
 (Received 08/03/90)

Parameter	Conc. (ug/l)	Per Cent Recovery
	True 11(1-3)S	
pH	4.35	
Aluminum	<10.0	100.2
Arsenic	<5.0	111.0
Barium	<20.0	97.9
Cadmium	<1.0	109.5
Chromium	<4.0	85.0
Copper	<10.0	94.5
Iron	<10.0	112.0
Lead	<5.0	107.0
Magnesium	180	96.0
Manganese	<2.0	100.6
Mercury	<0.50	92.0
Selenium	<5.0	107.5
Silver	<2.0	107.8
Sodium	1,360	90.0
Zinc	<10.0	95.0
Bromide	<50	
Chloride	2,830	
Fluoride	49	95.0
Phosphate	<61	
Nitrite	<4	
Nitrate	<13	97.4
Sulfate	1,050	94.9
Sulfite	<150	

Analyzed by: *CK* *DK*
 C. Kishimoto/G. Kitsuwa

Approved by: *[Signature]*
 George Yasutome
 Senior Chemist

Table 3-8. Rain Water Analyses Monthly Summary Site 1
 07/01/90-08/01/90

An HEI Company

SAMPLE ID: M1611
 PARTICLE SIZE: T
 ANALYSIS ID: M1611
 07/04/90
 EXPOSED AREA: 12.80 SQUARE CM
 MASS OF DEPOSIT: 5.+ 10. MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT
AL	.0056+-	.0044	.072+-	.056	1.4336+- 3.0805
SI	.0242+-	.0043	.310+-	.055	6.1952+-12.4392
P	.0000+-	.0015	.000+-	.019	.0000+- .3840
S	.0292+-	.0084	.374+-	.108	7.4752+-15.1043
CL	.1232+-	.0154	1.577+-	.197	31.5392+-63.2015
K	.0128+-	.0025	.164+-	.032	3.2768+- 6.5848
CA	.0088+-	.0017	.113+-	.022	2.2528+- 4.5266
TI	.0017+-	.0006	.022+-	.008	.4352+- .8838
V	.0013+-	.0004	.017+-	.005	.3328+- .6734
CR	.0018+-	.0005	.023+-	.006	.4608+- .9304
MN	.0002+-	.0005	.003+-	.006	.0512+- .1639
FE	.0209+-	.0018	.268+-	.023	5.3504+-10.7107
NI	.0008+-	.0006	.010+-	.008	.2048+- .4375
CU	.0032+-	.0005	.041+-	.006	.8192+- 1.6434
ZN	.0008+-	.0003	.010+-	.004	.2048+- .4167
GA	.0003+-	.0003	.004+-	.004	.0768+- .1717
AS	.0000+-	.0012	.000+-	.015	.0000+- .3072
SE	.0004+-	.0005	.005+-	.006	.1024+- .2415
BR	.0012+-	.0005	.015+-	.006	.3072+- .6276
RB	.0000+-	.0008	.000+-	.010	.0000+- .2048
SR	.0000+-	.0009	.000+-	.012	.0000+- .2304
Y	.0017+-	.0010	.022+-	.013	.4352+- .9073
ZR	.0000+-	.0024	.000+-	.031	.0000+- .6144
MO	.0000+-	.0039	.000+-	.050	.0000+- .9984
PD	.0000+-	.0036	.000+-	.046	.0000+- .9216
AG	.0000+-	.0049	.000+-	.063	.0000+- 1.2544
CD	.0000+-	.0061	.000+-	.078	.0000+- 1.5616
IN	.0000+-	.0079	.000+-	.101	.0000+- 2.0224
SN	.0097+-	.0095	.124+-	.122	2.4832+- 5.5299
SB	.0006+-	.0121	.008+-	.155	.1536+- 3.1128
BA	.0000+-	.0590	.000+-	.755	.0000+-15.1040
LA	.0000+-	.0989	.000+-	1.266	.0000+-25.3184
HG	.0000+-	.0007	.000+-	.009	.0000+- .1792
PB	.0006+-	.0020	.008+-	.026	.1536+- .5971

Table 3-9. Metals Filter Analyses July 4, 1990 Site 1

295/01-010 PROTOCOL: 5 SA

SAMPLE ID: M1612
 PARTICLE SIZE: T
 ANALYSIS ID: M1612
 07/10/90
 EXPOSED AREA: 12.80 SQUARE CM
 MASS OF DEPOSIT: 11.+ 10. MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	.0000+-	.0045	.000+-	.058	.0000+-	.5236
SI	.0090+-	.0032	.115+-	.041	1.0473+-	1.0223
P	.0000+-	.0015	.000+-	.019	.0000+-	.1745
S	.0300+-	.0089	.384+-	.114	3.4909+-	3.3383
CL	.3298+-	.0383	4.221+-	.490	38.3767+-	35.1714
K	.0084+-	.0022	.108+-	.028	.9775+-	.9247
CA	.0138+-	.0022	.177+-	.028	1.6058+-	1.4821
TI	.0006+-	.0006	.008+-	.008	.0698+-	.0944
V	.0003+-	.0004	.004+-	.005	.0349+-	.0563
CR	.0011+-	.0005	.014+-	.006	.1280+-	.1301
MN	.0004+-	.0005	.005+-	.006	.0465+-	.0719
FE	.0166+-	.0015	.212+-	.019	1.9316+-	1.7647
NI	.0011+-	.0005	.014+-	.006	.1280+-	.1301
CU	.0041+-	.0006	.052+-	.008	.4771+-	.4393
ZN	.0003+-	.0004	.004+-	.005	.0349+-	.0563
GA	.0000+-	.0003	.000+-	.004	.0000+-	.0349
AS	.0000+-	.0011	.000+-	.014	.0000+-	.1280
SE	.0001+-	.0005	.001+-	.006	.0116+-	.0591
BR	.0000+-	.0005	.000+-	.006	.0000+-	.0582
RB	.0017+-	.0007	.022+-	.009	.1978+-	.1974
SR	.0000+-	.0008	.000+-	.010	.0000+-	.0931
Y	.0012+-	.0009	.015+-	.012	.1396+-	.1646
ZR	.0000+-	.0022	.000+-	.028	.0000+-	.2560
MO	.0004+-	.0036	.005+-	.046	.0465+-	.4210
PD	.0028+-	.0034	.036+-	.044	.3258+-	.4942
AG	.0000+-	.0044	.000+-	.056	.0000+-	.5120
CD	.0000+-	.0058	.000+-	.074	.0000+-	.6749
IN	.0087+-	.0072	.111+-	.092	1.0124+-	1.2446
SN	.0000+-	.0084	.000+-	.108	.0000+-	.9775
SB	.0000+-	.0115	.000+-	.147	.0000+-	1.3382
BA	.0419+-	.0548	.536+-	.701	4.8756+-	7.7659
LA	.0450+-	.0918	.576+-	1.175	5.2364+-	11.6949
HG	.0001+-	.0007	.001+-	.009	.0116+-	.0821
PB	.0011+-	.0019	.014+-	.024	.1280+-	.2498

Table 3-10. Metals Filter Analyses July 10, 1990 Site 1

295/01-010 PROTOCOL: 5 SA

SAMPLE ID: M1613
 PARTICLE SIZE: T
 ANALYSIS ID: M1613
 07/16/90
 EXPOSED AREA: 12.80 SQUARE CM
 MASS OF DEPOSIT: 11.+ - 10. MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	.0036+-	.0047	.046+-	.060	.4189+-	.6664
SI	.0290+-	.0049	.371+-	.063	3.3745+-	3.1203
P	.0000+-	.0016	.000+-	.020	.0000+-	.1862
S	.0485+-	.0099	.621+-	.127	5.6436+-	5.2583
CL	.2517+-	.0295	3.222+-	.378	29.2887+-	26.8465
K	.0703+-	.0086	.900+-	.110	8.1804+-	7.5037
CA	.0336+-	.0043	.430+-	.055	3.9098+-	3.5894
TI	.0075+-	.0010	.096+-	.013	.8727+-	.8019
V	.0004+-	.0005	.005+-	.006	.0465+-	.0719
CR	.0008+-	.0005	.010+-	.006	.0931+-	.1027
MN	.0000+-	.0005	.000+-	.006	.0000+-	.0582
FE	.0471+-	.0030	.603+-	.038	5.4807+-	4.9947
NI	.0020+-	.0006	.026+-	.008	.2327+-	.2228
CU	.0061+-	.0007	.078+-	.009	.7098+-	.6504
ZN	.0089+-	.0008	.114+-	.010	1.0356+-	.9461
GA	.0000+-	.0004	.000+-	.005	.0000+-	.0465
AS	.0001+-	.0011	.001+-	.014	.0116+-	.1284
SE	.0000+-	.0005	.000+-	.006	.0000+-	.0582
BR	.0000+-	.0005	.000+-	.006	.0000+-	.0582
RB	.0010+-	.0007	.013+-	.009	.1164+-	.1335
SR	.0028+-	.0008	.036+-	.010	.3258+-	.3105
Y	.0000+-	.0010	.000+-	.013	.0000+-	.1164
ZR	.0036+-	.0023	.046+-	.029	.4189+-	.4655
MO	.0034+-	.0037	.044+-	.047	.3956+-	.5610
PD	.0000+-	.0032	.000+-	.041	.0000+-	.3724
AG	.0000+-	.0049	.000+-	.063	.0000+-	.5702
CD	.0000+-	.0061	.000+-	.078	.0000+-	.7098
IN	.0060+-	.0075	.077+-	.096	.6982+-	1.0791
SN	.0043+-	.0089	.055+-	.114	.5004+-	1.1311
SB	.0153+-	.0118	.196+-	.151	1.7804+-	2.1225
BA	.0204+-	.0558	.261+-	.714	2.3738+-	6.8423
LA	.1457+-	.0938	1.865+-	1.201	16.9542+-	18.8863
HG	.0000+-	.0008	.000+-	.010	.0000+-	.0931
PB	.0008+-	.0020	.010+-	.026	.0931+-	.2476

Table 3-11. Metals Filter Analyses July 16, 1990 Site 1

295/01-010 PROTOCOL: 5 SA

SAMPLE ID: M1614
 PARTICLE SIZE: T
 ANALYSIS ID: M1614
 7/22/90 - Fertilizers used at sampler location
 EXPOSED AREA: 12.80 SQUARE CM
 MASS OF DEPOSIT: 11.+ 10. MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER		PERCENT	
AL	.0000+-	.0053	.000+-	.068	.0000+-	.6167
SI	.0158+-	.0042	.202+-	.054	1.8385+-	1.7414
P	.0014+-	.0020	.018+-	.026	.1629+-	.2759
S	.0189+-	.0089	.242+-	.114	2.1993+-	2.2516
CL	.1165+-	.0149	1.491+-	.191	13.5564+-	12.4453
K	.0159+-	.0031	.204+-	.040	1.8502+-	1.7202
CA	.2203+-	.0250	2.820+-	.320	25.6349+-	23.4853
TI	.0083+-	.0011	.106+-	.014	.9658+-	.8873
V	.0000+-	.0006	.000+-	.008	.0000+-	.0698
CR	.0008+-	.0005	.010+-	.006	.0931+-	.1027
MN	.0000+-	.0006	.000+-	.008	.0000+-	.0698
FE	.0289+-	.0021	.370+-	.027	3.3629+-	3.0669
NI	.0013+-	.0006	.017+-	.008	.1513+-	.1542
CU	.0056+-	.0006	.072+-	.008	.6516+-	.5965
ZN	.0018+-	.0004	.023+-	.005	.2095+-	.1960
GA	.0000+-	.0004	.000+-	.005	.0000+-	.0463
AS	.0000+-	.0011	.000+-	.014	.0000+-	.1280
SE	.0005+-	.0005	.006+-	.006	.0582+-	.0786
BR	.0000+-	.0006	.000+-	.008	.0000+-	.0698
RB	.0002+-	.0008	.003+-	.010	.0233+-	.0955
SR	.0000+-	.0009	.000+-	.012	.0000+-	.1047
Y	.0014+-	.0010	.018+-	.013	.1629+-	.1883
ZR	.0000+-	.0025	.000+-	.032	.0000+-	.2909
MO	.0000+-	.0041	.000+-	.052	.0000+-	.4771
PD	.0000+-	.0040	.000+-	.051	.0000+-	.4655
AG	.0000+-	.0051	.000+-	.065	.0000+-	.5935
CD	.0016+-	.0061	.020+-	.078	.1862+-	.7297
IN	.0077+-	.0077	.099+-	.099	.8960+-	1.2109
SN	.0000+-	.0092	.000+-	.118	.0000+-	1.0705
SB	.0000+-	.0124	.000+-	.159	.0000+-	1.4429
BA	.0000+-	.0580	.000+-	.742	.0000+-	6.7491
LA	.0809+-	.0972	1.036+-	1.244	9.4138+-	14.1834
HG	.0000+-	.0008	.000+-	.010	.0000+-	.0931
PB	.0014+-	.0020	.018+-	.026	.1629+-	.2759

Table 3-12. Metals Filter Analyses July 22, 1990 Site 1

295/01-010 PROTOCOL: 5 SA

SAMPLE ID: M1615
 PARTICLE SIZE: T
 ANALYSIS ID: M1615
 07/28/90
 EXPOSED AREA: 12.80 SQUARE CM
 MASS OF DEPOSIT: 1.+ - 10. MICROGRAMS

ELEMENT	UG/CM2		UG/FILTER	
AL	.0000+-	.0043	.000+-	.055
SI	.0160+-	.0036	.205+-	.046
P	.0000+-	.0016	.000+-	.020
S	.0464+-	.0097	.594+-	.124
CL	.1248+-	.0156	1.597+-	.200
K	.0163+-	.0029	.209+-	.037
CA	.0058+-	.0014	.074+-	.018
TI	.0002+-	.0006	.003+-	.008
V	.0009+-	.0005	.012+-	.006
CR	.0017+-	.0005	.022+-	.006
MN	.0002+-	.0005	.003+-	.006
FE	.0169+-	.0015	.216+-	.019
NI	.0009+-	.0006	.012+-	.008
CU	.0034+-	.0005	.044+-	.006
ZN	.0021+-	.0004	.027+-	.005
GA	.0000+-	.0003	.000+-	.004
AS	.0008+-	.0012	.010+-	.015
SE	.0014+-	.0005	.018+-	.006
BR	.0005+-	.0006	.006+-	.008
RB	.0000+-	.0008	.000+-	.010
SR	.0006+-	.0009	.008+-	.012
Y	.0000+-	.0010	.000+-	.013
ZR	.0037+-	.0024	.047+-	.031
MO	.0000+-	.0041	.000+-	.052
PD	.0000+-	.0036	.000+-	.046
AG	.0000+-	.0051	.000+-	.065
CD	.0000+-	.0063	.000+-	.081
IN	.0119+-	.0080	.152+-	.102
SN	.0181+-	.0092	.232+-	.118
SB	.0169+-	.0124	.216+-	.159
BA	.0934+-	.0592	1.196+-	.758
LA	.1115+-	.0973	1.427+-	1.245
HG	.0000+-	.0008	.000+-	.010
PB	.0000+-	.0021	.000+-	.027

Table 3-13. Metals Filter Analyses July 28 1990 Site 1

MEASUREMENT TECHNOLOGIES

8" X 10" FILTER GRAVIMETRIC REPORT

Run Day	NEA ID.	FILTER TYPE	TARE WT. GRAMS	GROSS WT. GRAMS	NET WT. MILLIGRAMS
07/04/90	M1644	PM-10	4.1840	4.1962	12.20
07/04/90	M1645	TSP	4.1959	4.2495	53.60
07/10/90	M1646	PM-10	4.1632	4.1847	21.50
07/10/90	M1647	TSP	4.1833	4.1972	13.90
07/16/90	M1648	PM-10	4.1930	4.2036	10.60
07/16/90	MZ221	TSP	4.6664	4.6822	15.80
07/22/90	MZ222	PM-10	4.6666	4.6809	14.30
07/22/90	MZ223	TSP	4.6844	4.7071	22.70
07/28/90	MZ224	PM-10	4.3047	4.3224	17.70
07/28/90	MZ225	TSP	4.3506	4.3688	18.20

Table 3-14. Total Suspended Particulates (TSP) and Inhaleable Particulates (PM-10) Loading Monthly Summary Site 1

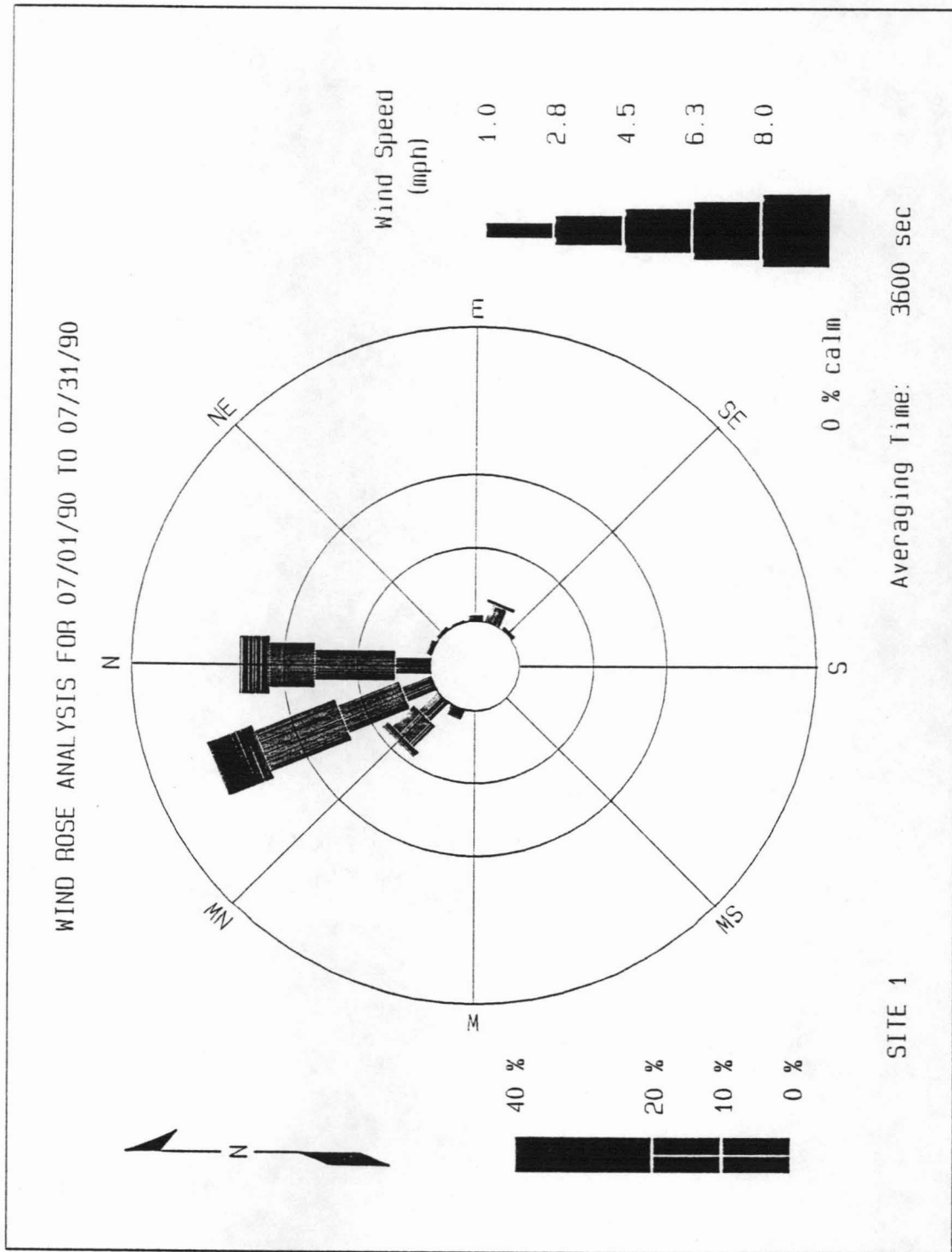


Figure 3-1. Wind Rose Analysis Site 1

WD (DEG) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	359.	07/22/90	13:00:00	
Second Highest:	359.	07/15/90	18:00:00	
Lowest Value:	0.	07/02/90	08:00:00	
Arithmetic Mean:	242.		10.000 Percentile:	0.
Standard Deviation:	146.		20.000 Percentile:	6.
			30.000 Percentile:	133.
Geometric Mean:	88.		40.000 Percentile:	320.
Standard Deviation:	10.		50.000 Percentile:	332.
			60.000 Percentile:	340.
Valid Data:	744		70.000 Percentile:	346.
Invalid Data:	0		80.000 Percentile:	349.
Missing Data:	0		90.000 Percentile:	351.
Data Recovery:	100.00%		100.000 Percentile:	359.

SITE 1 Averaging Time: 3600 sec
 Table 3-15. Wind Direction Summary Statistics Site 1

WS (MPH) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	8.3	07/16/90	09:00:00	
Second Highest:	8.0	07/17/90	17:00:00	
Lowest Value:	0.0	07/02/90	08:00:00	
Arithmetic Mean:	3.0		10.000 Percentile:	0.0
Standard Deviation:	2.3		20.000 Percentile:	0.2
			30.000 Percentile:	1.3
Geometric Mean:	2.4		40.000 Percentile:	2.2
Standard Deviation:	2.4		50.000 Percentile:	3.0
			60.000 Percentile:	3.8
Valid Data:	744		70.000 Percentile:	4.4
Invalid Data:	0		80.000 Percentile:	5.2
Missing Data:	0		90.000 Percentile:	6.3
Data Recovery:	100.00%		100.000 Percentile:	8.3

SITE 1 Averaging Time: 3600 sec
 Table 3-16. Wind Speed Summary Statistics Site 1

Sigél (deg) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	124.5	07/14/90	06:00:00	
Second Highest:	122.0	07/21/90	06:00:00	
Lowest Value:	15.2	07/07/90	22:00:00	
Arithmetic Mean:	44.0		10.000 Percentile:	18.3
Standard Deviation:	22.2		20.000 Percentile:	22.4
			30.000 Percentile:	28.4
Geometric Mean:	38.7		40.000 Percentile:	33.1
Standard Deviation:	1.7		50.000 Percentile:	39.4
			60.000 Percentile:	47.4
Valid Data:	744		70.000 Percentile:	54.5
Invalid Data:	0		80.000 Percentile:	63.0
Missing Data:	0		90.000 Percentile:	74.3
Data Recovery:	100.00%		100.000 Percentile:	124.5

SITE 1

Averaging Time: 3600 sec

Table 3-17. Sigma Theta Summary Statistics Site 1

TEMP (DEG F) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	79.3	07/29/90	13:00:00	
Second Highest:	79.2	07/29/90	11:00:00	
Lowest Value:	61.3	07/06/90	05:00:00	
Arithmetic Mean:	70.3		10.000 Percentile:	66.1
Standard Deviation:	3.6		20.000 Percentile:	67.0
			30.000 Percentile:	67.6
Geometric Mean:	70.2		40.000 Percentile:	68.5
Standard Deviation:	1.1		50.000 Percentile:	69.4
			60.000 Percentile:	70.7
Valid Data:	744		70.000 Percentile:	72.2
Invalid Data:	0		80.000 Percentile:	73.9
Missing Data:	0		90.000 Percentile:	75.7
Data Recovery:	100.00%		100.000 Percentile:	79.3

SITE 1

Averaging Time: 3600 sec

Table 3-18 Ambient Temperature Summary Statistics Site 1

RAIN (INCH) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	0.50	07/18/90	11:00:00	
Second Highest:	0.37	07/13/90	22:00:00	
Lowest Value:	0.00	07/01/90	00:00:00	
Arithmetic Mean:	0.02		10.000 Percentile:	0.00
Standard Deviation:	0.05		20.000 Percentile:	0.00
			30.000 Percentile:	0.00
Geometric Mean:	0.00		40.000 Percentile:	0.00
Standard Deviation:	1.00		50.000 Percentile:	0.00
			60.000 Percentile:	0.00
Valid Data:	744		70.000 Percentile:	0.01
Invalid Data:	0		80.000 Percentile:	0.02
Missing Data:	0		90.000 Percentile:	0.06
Data Recovery:	100.00%		100.000 Percentile:	0.50

SITE 1 Averaging Time: 3600 sec
 Table 3-19. Precipitation Summary Statistics Site 1

SO2 (PPB) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	25.	07/06/90	07:00:00	
Second Highest:	11.	07/06/90	06:00:00	
Lowest Value:	0.	07/01/90	16:00:00	
Arithmetic Mean:	0.		10.000 Percentile:	0.
Standard Deviation:	1.		20.000 Percentile:	0.
			30.000 Percentile:	0.
Geometric Mean:	0.		40.000 Percentile:	0.
Standard Deviation:	1.		50.000 Percentile:	0.
			60.000 Percentile:	0.
Valid Data:	738		70.000 Percentile:	0.
Invalid Data:	6		80.000 Percentile:	0.
Missing Data:	0		90.000 Percentile:	0.
Data Recovery:	99.19%		100.000 Percentile:	25.

SITE 1 Averaging Time: 3600 sec
 Table 3-20. Sulfur Dioxide Summary Statistics Site 1

H2S (PPB) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	5.	07/06/90	04:00:00	
Second Highest:	5.	07/06/90	05:00:00	
Lowest Value:	0.	07/01/90	00:00:00	
Arithmetic Mean:	0.		10.000 Percentile:	0.
Standard Deviation:	1.		20.000 Percentile:	0.
			30.000 Percentile:	0.
Geometric Mean:	0.		40.000 Percentile:	0.
Standard Deviation:	1.		50.000 Percentile:	0.
			60.000 Percentile:	0.
Valid Data:	744		70.000 Percentile:	1.
Invalid Data:	0		80.000 Percentile:	1.
Missing Data:	0		90.000 Percentile:	1.
Data Recovery:	100.00%		100.000 Percentile:	5.

SITE 1 Averaging Time: 3600 sec
 Table 3-21. Hydrogen Sulfide Summary Statistics Site 1

3.2

Meteorological Monitoring Data Site 2

MONTHLY SUMMARY REPORT

LOCATION: SITE 2, MET WS TRUE GEOTHERMAL (MPH) DATA FOR: JUL 1990

HR-END DAY	HOURS (DST)																							
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	5.5	6.4	7.8	6.2	6.7	7.2	7.4	7.7	8.1	8.1	8.3	8.7	8.3	9.7	9.9	9.3	8.9	8.9	7.8	8.6	9.7	9.8	10.1	8.7
2	7.2	5.9	4.6	6.7	6.2	5.8	5.3	5.6	5.3	5.4	6.0	7.8	8.6	8.6	7.7	7.7	6.8	5.5	5.6	5.1	4.2	4.4	3.5	4.6
3	5.4	5.5	5.0	5.1	6.0	5.5	4.4	4.3	4.5	6.4	6.4	6.4	6.4	7.2	7.1	7.2	7.1	6.8	6.5	9.0	7.7	9.4	9.2	9.8
4	9.3	8.8	9.4	8.4	9.1	9.1	8.3	8.3	8.8	6.5	7.2	5.9	7.5	8.4	8.8	8.0	7.1	6.1	5.5	6.7	8.1	7.3	7.5	7.4
5	6.5	4.1	3.4	5.2	5.6	6.2	6.3	6.6	7.3	6.4	7.2	8.4	8.4	7.9	8.4	7.5	6.8	5.9	5.5	5.7	5.6	4.7	3.7	3.6
6	4.3	4.3	3.2	3.4	3.9	4.6	4.5	5.3	7.1	5.6	5.6	7.1	7.0	7.2	7.1	7.4	7.4	5.7	5.6	4.7	5.6	5.4	2.6	2.8
7	3.4	3.0	4.1	4.0	4.5	4.7	4.0	6.3	4.8	4.6	5.9	6.9	7.7	8.1	8.1	7.7	6.6	6.7	6.2	4.2	4.0	3.7	4.7	5.5
8	4.6	4.5	4.9	5.4	4.7	5.0	5.7	3.3	0.0	1.8	5.3	5.7	5.3	7.1	5.6	5.5	4.9	5.6	2.4	2.2	0.5	2.0	1.0	3.1
9	2.4	1.1	1.0	1.1	2.1	0.7	1.8	4.5	3.1	4.0	5.4	5.8	7.3	8.4	8.3	7.8	6.2	5.1	4.7	4.6	3.3	2.6	3.4	4.5
10	1.8	1.3	1.3	1.4	0.4	1.5	2.3	3.2	4.2	5.7	7.9	8.9	8.5	8.6	8.9	9.0	6.9	6.9	5.2	5.6	4.2	4.2	5.8	6.7
11	5.6	5.8	5.4	5.4	5.6	3.7	0.9	4.1	4.9	5.0	5.8	7.0	7.2	8.2	7.1	7.7	7.1	5.9	5.3	5.0	4.2	5.2	4.2	2.4
12	2.1	1.8	1.4	3.4	1.8	2.7	1.9	2.1	2.6	3.4	4.5	4.9	4.6	4.0	5.8	6.7	3.6	3.0	3.2	2.1	2.9	0.7	1.7	3.6
13	1.9	2.2	4.0	3.4	3.3	3.5	2.6	4.8	5.4	2.2	4.2	4.6	5.7	6.4	7.4	6.2	6.4	4.5	1.5	1.0	0.4	1.0	1.8	4.4
14	4.0	2.2	3.9	3.4	1.9	2.5	1.3	1.2	3.4	4.7	5.3	7.3	8.6	8.6	8.7	9.0	6.7	6.2	3.9	0.8	0.2	0.3	0.6	0.4
15	1.0	1.6	0.4	0.7	0.8	2.3	3.2	3.8	4.0	4.7	5.2	6.8	5.1	4.4	4.2	5.6	4.8	4.7	4.2	2.5	4.5	6.1	6.7	6.7
16	7.3	7.8	7.8	5.4	5.9	5.5	6.6	8.9	9.3	10.0	8.4	7.5	7.9	7.8	8.3	7.1	7.1	7.4	8.2	8.9	8.1	8.5	7.9	6.9
17	7.9	7.2	7.0	7.2	7.5	7.9	7.4	7.2	8.1	7.3	6.8	7.7	8.0	8.0	7.9	8.4	7.4	9.6	7.5	5.9	4.7	3.2	3.7	5.4
18	4.2	2.4	4.0	4.0	2.7	4.7	4.9	4.9	6.6	3.4	3.6	5.3	6.4	6.2	5.8	5.1	6.4	5.7	4.1	4.6	4.5	3.5	2.5	1.1
19	0.4	0.7	0.1	0.1	0.1	0.9	0.1	1.8	0.4	0.3	0.4	1.6	6.5	4.8	5.8	6.4	4.6	4.2	2.8	0.7	0.0	0.0	0.0	0.2
20	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	1.1	2.5	1.4	0.4	0.0	1.6	1.6	0.7	0.5	0.5	1.0	0.0	0.0
21	0.1	0.0	0.1	0.2	0.0	0.0	0.1	0.1	0.1	0.2	2.4	1.3	2.2	2.8	1.2	2.0	4.6	3.6	2.1	5.0	1.4	2.0	1.4	1.8
22	0.3	0.5	2.7	1.7	0.7	1.8	2.7	2.5	5.4	3.1	6.0	5.7	4.3	6.6	7.5	7.3	7.8	5.9	3.6	1.6	5.1	4.2	4.4	5.2
23	3.9	4.3	3.7	5.3	5.3	3.7	0.7	0.3	5.1	4.7	3.5	5.5	6.2	5.2	7.3	6.5	7.5	5.9	5.0	4.0	3.7	5.0	3.4	2.7
24	4.6	3.8	2.6	1.6	2.9	3.9	4.8	6.8	7.7	5.2	5.3	8.0	8.3	8.7	7.7	7.8	7.6	7.1	7.2	6.9	8.9	6.9	8.6	6.5
25	7.8	6.6	6.5	5.8	6.0	5.0	7.1	8.0	7.7	6.5	6.7	8.7	7.7	8.4	9.3	8.9	8.2	7.6	6.3	8.3	8.5	8.4	7.3	5.0
26	3.5	5.5	5.2	5.9	4.5	3.8	6.9	6.0	8.7	7.9	7.8	7.1	6.8	7.3	8.4	8.4	7.4	7.9	8.8	7.2	7.5	6.4	2.3	0.6
27	0.4	0.0	0.0	0.0	0.1	0.0	2.7	5.0	5.2	6.5	6.5	5.9	7.8	7.6	7.7	7.1	6.6	6.1	4.8	6.3	7.0	7.5	7.7	5.9
28	6.4	5.6	5.2	4.6	4.4	4.2	4.8	7.0	5.8	7.5	5.8	5.3	5.5	6.2	6.8	6.9	6.7	6.6	5.2	6.3	5.4	6.5	6.2	6.3
29	6.9	5.3	6.4	5.4	5.3	4.1	2.0	2.4	3.1	4.1	4.9	5.9	6.7	7.1	7.0	7.0	6.9	5.9	4.2	4.5	5.6	5.0	4.2	4.1
30	4.8	3.2	0.9	2.0	3.2	0.8	0.1	0.5	0.8	1.4	4.3	4.4	6.8	7.0	5.5	3.1	4.1	3.4	4.1	4.0	3.3	4.0	2.5	1.3
31	0.3	0.5	0.7	1.1	0.7	0.5	1.2	1.5	3.2	4.5	4.3	6.2	7.9	7.2	6.7	6.1	6.0	4.5	2.9	1.9	2.1	3.1	4.1	4.3

Table 3-23. Wind Speed Monthly Summary Site 2

MONTHLY SUMMARY REPORT

TRUE GEOTHERMAL

LOCATION: SITE 2, MET

Sig01

(deg)

DATA FOR: JUL 1990

HR-END DAY	HOURS (DST)																							
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	33.0	28.9	24.6	34.0	20.8	20.7	20.1	25.2	28.5	31.9	33.4	30.8	28.7	27.3	30.0	29.7	31.1	30.8	29.3	24.3	24.7	24.3	21.5	22.7
2	27.0	26.9	29.8	28.6	29.3	30.3	27.9	24.9	27.1	33.5	27.8	25.6	24.1	24.6	25.7	23.7	27.6	30.3	28.9	30.0	31.3	30.2	30.9	28.4
3	28.4	31.5	31.9	31.1	31.3	25.6	31.1	28.9	30.1	26.9	23.8	29.8	28.5	33.3	32.0	31.8	32.8	31.2	30.6	22.7	27.8	20.7	22.4	20.1
4	20.8	23.7	21.5	21.5	19.0	19.2	19.6	21.5	29.0	31.1	30.9	34.4	33.3	32.3	29.3	30.8	30.8	32.0	30.6	19.9	16.4	18.0	20.1	20.3
5	25.2	32.9	27.3	21.2	24.8	18.7	24.1	24.0	28.7	31.7	33.6	30.7	32.8	33.4	32.4	31.7	32.8	31.1	30.1	23.6	21.8	21.5	17.7	14.6
6	13.6	13.2	13.7	13.6	12.8	11.9	13.3	20.7	25.1	33.9	30.7	30.6	29.5	33.7	27.8	28.5	28.6	29.7	33.3	26.4	22.7	20.5	26.2	19.0
7	15.7	17.2	14.2	13.9	11.6	12.4	15.9	23.1	29.7	27.1	33.1	28.7	27.5	27.8	26.7	30.8	32.2	28.7	24.1	29.8	26.3	28.4	17.2	20.2
8	17.7	18.8	16.6	15.8	14.6	14.4	14.9	47.8	43.3	45.7	24.8	23.0	21.8	24.5	29.6	27.6	30.1	26.8	27.5	25.4	25.8	25.9	19.9	22.0
9	25.9	25.4	28.5	24.9	20.8	30.9	21.0	19.6	31.4	34.1	30.3	28.7	29.1	23.7	23.4	25.1	28.1	31.3	26.4	23.6	28.7	28.2	15.4	27.0
10	38.6	65.7	29.3	33.6	32.8	27.0	26.5	37.3	30.2	30.9	24.7	25.2	25.8	26.7	24.5	28.6	31.3	30.0	28.2	26.8	28.5	28.2	20.5	21.6
11	23.6	20.8	20.8	20.8	18.3	28.7	57.7	27.9	26.9	31.7	29.8	29.8	30.9	26.2	26.9	29.1	28.1	29.3	29.7	25.6	27.1	20.7	21.3	31.8
12	33.3	29.8	30.8	28.6	29.0	28.1	22.0	27.4	30.2	32.4	23.5	25.8	24.7	24.9	22.6	23.0	27.5	27.4	23.0	23.0	22.3	40.4	28.5	14.2
13	22.1	14.9	13.1	14.6	16.6	13.5	20.5	16.9	17.9	25.8	36.9	31.8	31.2	29.5	26.2	25.7	23.1	25.9	28.0	19.8	32.2	29.5	39.9	11.2
14	12.1	36.4	16.9	11.7	13.6	15.2	22.1	21.3	30.1	28.6	29.1	21.3	21.5	22.1	21.2	19.9	19.4	19.6	19.1	29.1	45.5	30.4	52.2	29.6
15	16.1	20.1	21.6	28.6	13.9	13.8	21.3	19.8	31.4	26.7	27.3	23.0	24.9	28.9	22.7	20.4	19.8	20.4	24.8	27.9	24.6	19.4	22.7	24.8
16	22.5	22.0	21.9	17.7	15.8	15.8	16.0	20.7	25.8	26.0	30.3	30.7	33.9	31.8	28.0	30.1	31.2	31.4	26.8	19.6	23.1	18.3	20.5	22.7
17	17.1	16.6	17.1	18.7	21.2	19.7	18.1	21.9	24.0	30.6	29.3	30.8	26.8	30.3	32.3	29.5	31.3	25.6	28.0	28.0	23.7	31.7	25.9	20.4
18	28.9	32.8	27.3	26.5	29.3	24.6	21.3	30.8	21.4	26.0	28.0	26.3	22.7	22.6	20.4	26.8	21.4	22.6	25.3	22.7	22.9	22.5	22.9	32.8
19	22.5	18.0	22.4	14.4	17.4	16.4	15.8	17.9	27.0	30.1	31.3	33.9	17.6	22.3	23.7	19.1	24.9	19.9	19.4	17.5	22.9	20.2	41.3	24.1
20	37.2	24.2	15.9	16.5	34.7	13.0	20.2	20.3	26.7	28.2	33.3	27.9	26.8	30.3	37.1	20.7	22.4	24.0	35.8	31.2	26.0	44.1	30.3	23.6
21	17.9	18.2	16.6	27.0	55.1	50.5	25.3	24.2	56.2	24.7	59.9	30.7	43.7	27.0	36.9	23.2	20.9	22.7	29.1	20.3	28.2	30.8	35.6	34.5
22	36.9	31.3	16.6	17.0	16.6	18.0	16.5	21.8	27.1	32.9	23.7	31.1	28.7	24.6	22.0	22.7	20.7	21.0	18.6	29.0	16.1	19.4	22.5	17.0
23	17.4	16.3	18.6	13.7	13.5	13.2	14.3	17.0	24.5	34.7	34.1	24.2	22.3	29.1	26.7	26.7	23.5	26.0	31.8	31.5	30.3	24.8	34.4	37.5
24	25.8	23.4	27.9	30.3	20.8	17.9	22.5	18.8	23.0	30.1	32.3	26.4	27.4	27.6	29.2	33.0	33.7	33.7	31.1	33.4	27.4	30.0	29.1	30.8
25	30.2	30.4	28.9	27.6	29.0	29.2	19.2	21.2	28.9	32.6	31.9	28.1	33.1	28.9	26.8	27.5	30.0	31.7	33.6	23.5	21.6	22.6	23.1	30.6
26	32.0	23.6	26.0	20.7	17.9	16.1	23.5	17.9	23.7	30.4	31.4	30.2	31.9	32.5	29.2	31.3	31.5	24.2	18.5	19.2	22.9	19.3	16.8	21.9
27	17.6	16.4	18.8	14.7	21.8	42.2	32.6	21.4	22.4	20.4	20.5	20.9	20.3	24.8	23.8	24.7	22.1	24.3	30.2	24.0	24.3	22.4	20.5	26.3
28	22.7	20.7	20.2	18.0	17.9	19.0	15.7	18.6	28.0	27.9	29.6	29.3	28.7	26.0	23.6	20.8	22.0	22.5	21.9	19.9	22.6	20.2	20.5	20.7
29	20.7	23.1	22.4	20.7	21.4	23.2	27.8	32.3	31.8	32.4	30.6	31.1	25.9	27.1	23.7	20.8	25.7	24.6	28.0	21.4	25.6	27.1	24.2	23.7
30	22.3	29.0	37.8	29.3	27.4	22.7	21.3	28.0	37.7	31.8	21.4	26.8	24.5	22.1	21.2	20.9	22.5	29.0	26.9	23.2	22.4	13.5	16.1	28.7
31	37.8	38.9	36.4	29.1	27.4	27.1	33.1	33.5	31.5	31.1	30.7	25.2	21.6	21.4	22.5	21.4	20.2	24.8	26.8	26.8	25.9	24.0	21.8	22.7

Table 3-24. Sigma Theta Monthly Summary Site 2

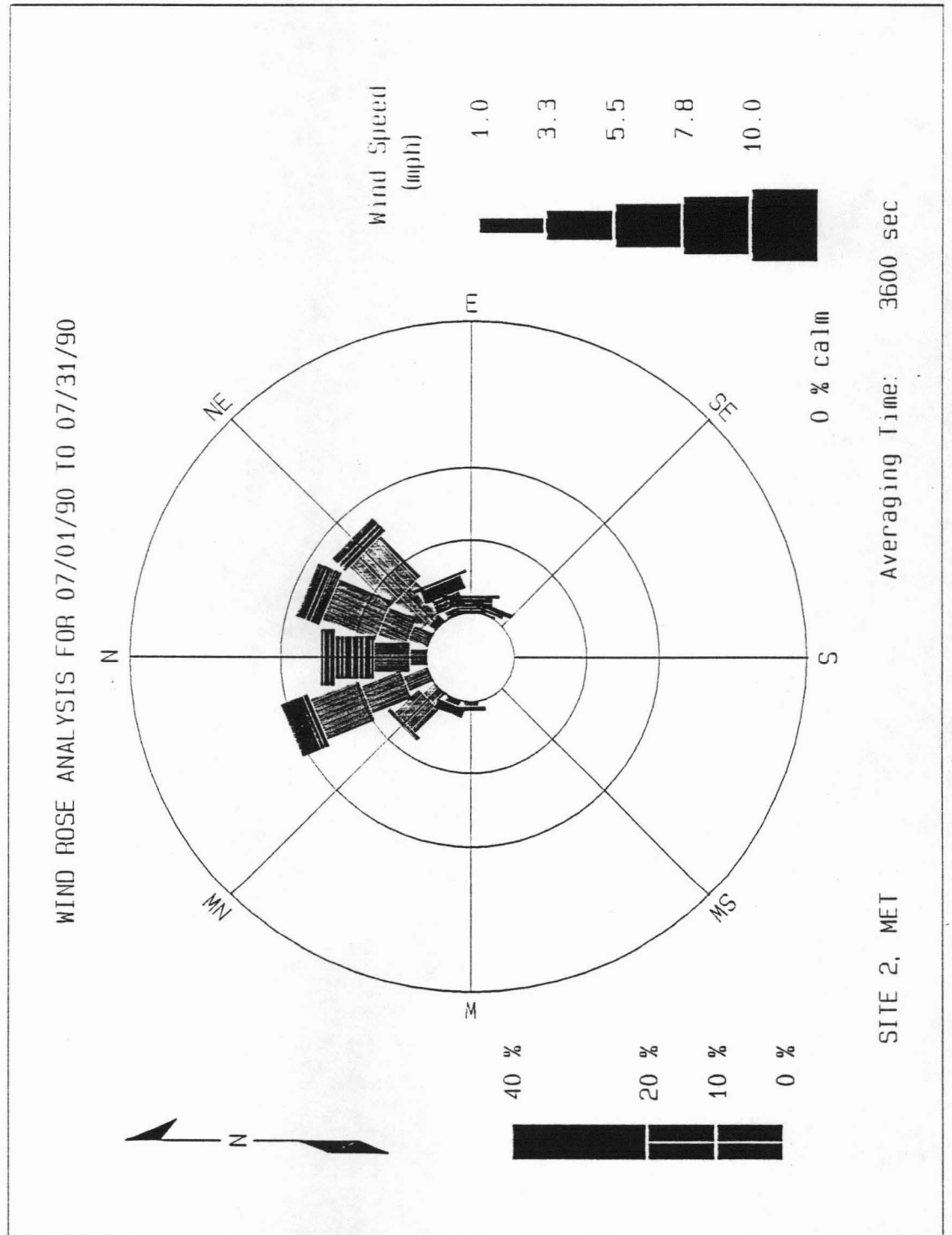


Figure 3-2. Wind Rose Analysis Site 2

WD (DEG) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	360.	07/06/90	19:00:00	
Second Highest:	360.	07/17/90	19:00:00	
Lowest Value:	0.	07/17/90	22:00:00	
Arithmetic Mean:	174.		10.000 Percentile:	16.
Standard Deviation:	148.		20.000 Percentile:	27.
			30.000 Percentile:	37.
Geometric Mean:	87.		40.000 Percentile:	48.
Standard Deviation:	4.		50.000 Percentile:	81.
			60.000 Percentile:	304.
Valid Data:	744		70.000 Percentile:	329.
Invalid Data:	0		80.000 Percentile:	341.
Missing Data:	0		90.000 Percentile:	348.
Data Recovery:	100.00%		100.000 Percentile:	360.

SITE 2, MET Averaging Time: 3600 sec
 Table 3-27. Wind Direction Summary Statistics Site 2

WS (MPH) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	10.1	07/01/90	22:00:00	
Second Highest:	10.0	07/16/90	09:00:00	
Lowest Value:	0.0	07/08/90	08:00:00	
Arithmetic Mean:	4.9		10.000 Percentile:	0.8
Standard Deviation:	2.6		20.000 Percentile:	2.4
			30.000 Percentile:	3.7
Geometric Mean:	3.6		40.000 Percentile:	4.5
Standard Deviation:	2.8		50.000 Percentile:	5.2
			60.000 Percentile:	5.8
Valid Data:	744		70.000 Percentile:	6.6
Invalid Data:	0		80.000 Percentile:	7.3
Missing Data:	0		90.000 Percentile:	8.1
Data Recovery:	100.00%		100.000 Percentile:	10.1

SITE 2, MET Averaging Time: 3600 sec
 Table 3-28. Wind Speed Summary Statistics Site 2

Sigél (deg) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	65.7	07/10/90	01:00:00	
Second Highest:	59.9	07/21/90	10:00:00	
Lowest Value:	11.2	07/13/90	23:00:00	
Arithmetic Mean:	25.7		10.000 Percentile:	17.5
Standard Deviation:	6.7		20.000 Percentile:	20.5
			30.000 Percentile:	22.0
Geometric Mean:	24.9		40.000 Percentile:	23.7
Standard Deviation:	1.3		50.000 Percentile:	25.8
			60.000 Percentile:	27.5
Valid Data:	744		70.000 Percentile:	29.1
Invalid Data:	0		80.000 Percentile:	30.7
Missing Data:	0		90.000 Percentile:	32.6
Data Recovery:	100.00%		100.000 Percentile:	65.7

SITE 2, MET Averaging Time: 3600 sec
 Table 3-29. Sigma Theta Summary Statistics Site 2

VWS (MPH) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	0.2	07/21/90	03:00:00	
Second Highest:	0.2	07/02/90	10:00:00	
Lowest Value:	-0.4	07/14/90	14:00:00	
Arithmetic Mean:	0.0		10.000 Percentile:	-0.2
Standard Deviation:	0.1		20.000 Percentile:	-0.1
			30.000 Percentile:	-0.1
Geometric Mean:	0.0		40.000 Percentile:	0.0
Standard Deviation:	1.0		50.000 Percentile:	0.0
			60.000 Percentile:	0.0
Valid Data:	744		70.000 Percentile:	0.0
Invalid Data:	0		80.000 Percentile:	0.0
Missing Data:	0		90.000 Percentile:	0.1
Data Recovery:	100.00%		100.000 Percentile:	0.2

SITE 2, MET Averaging Time: 3600 sec
 Table 3-30. Vertical Wind Speed Summary Statistics Site 2

SIG W (DEG) SUMMARY STATISTICS FOR 07/01/90 - 07/31/90

Highest Value:	1.304	07/04/90	14:00:00	
Second Highest:	1.264	07/01/90	13:00:00	
Lowest Value:	0.059	07/15/90	04:00:00	
Arithmetic Mean:	0.516			10.000 Percentile: 0.198
Standard Deviation:	0.250			20.000 Percentile: 0.277
				30.000 Percentile: 0.356
Geometric Mean:	0.000			40.000 Percentile: 0.435
Standard Deviation:	1.000			50.000 Percentile: 0.494
				60.000 Percentile: 0.553
Valid Data:	744			70.000 Percentile: 0.632
Invalid Data:	0			80.000 Percentile: 0.731
Missing Data:	0			90.000 Percentile: 0.869
Data Recovery:	100.00%			100.000 Percentile: 1.304

SITE 2, MET

Averaging Time: 3600 sec

Table 3-31. Sigma W Summary Statistics Site 2



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