

5.27 METEOROLOGICAL STATIONS

5.27.1 Site Description and Waste Generation

Eight meteorological stations estimated to be 10 years old are scattered across TEAD-S (Figure 5.27-1). Each station consists of a small metal building (approximately 4 by 12 ft) encircled by a road. A gravel pad at the side or back of each building was formerly used for storage of drums containing wastes which included mercury solutions that were used in the monitoring operation. No drums remained at the meteorological stations at the time of the RFI-Phase I investigation.

According to unpublished reagent preparation procedures obtained in 1990 from the TEAD-S Meteorological Office, the mercury solution that was used at the meteorological stations was sodium tetrachloromercurate. This absorbing reagent was prepared by dissolving 21.76 grams (g) of sodium chloride and 11.8 g of mercuric chloride in approximately 800 milliliters of distilled water and diluting to four liters. Approximately 32 liters of absorbing reagent were used in a week of operation. Other reagents such as sulfamic acid, formaldehyde, and p-rosaniline were used in smaller amounts at the stations. Unknown quantities of solution were spilled at least one station.

5.27.2 Site Hydrogeology

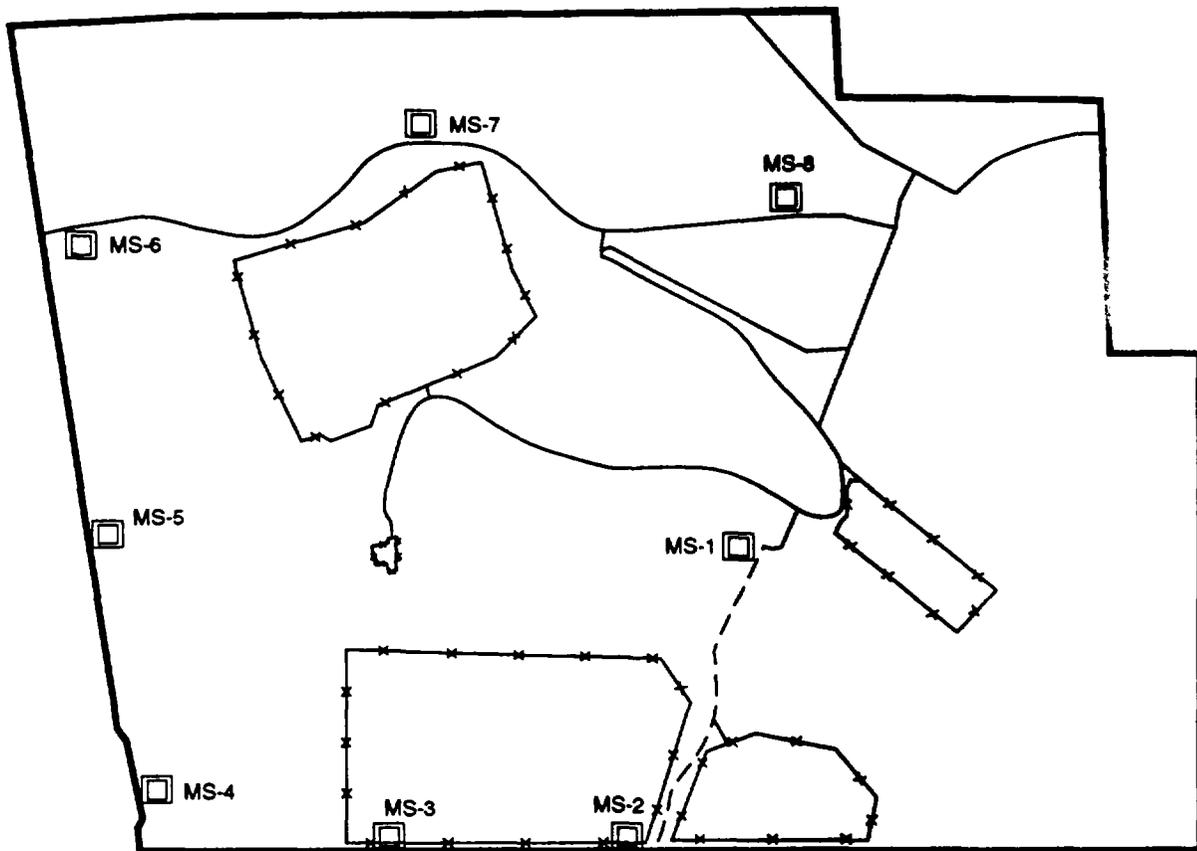
The eight meteorological stations are located throughout TEAD-S and hydrogeological conditions at the stations vary based on their location. Surficial material at the stations consists of graded or disturbed material and in some cases packed gravel. Depths to groundwater can be inferred from the nearest monitoring wells and range from approximately 280 ft near Station MS-8 to 20 ft for stations located along the western border of TEAD-S.

5.27.3 Previous Sampling and RFI-Phase I Sampling Results

No sampling was conducted at the meteorological stations before the RFI-Phase I. During the RFI-Phase I, six samples were collected in the vicinity of each station at a depth of 0 to 6 inches to evaluate contamination from possible spills of absorbing reagent. The samples were collected from each side of the stations and concentrated on the gravel pads where drum storage and possible spills may have occurred. These samples were analyzed for mercury. Table 5.27-1 presents the analytical results for each meteorological station, and Figures 5.27-2 through 5.27-9 illustrate sampling locations and detections of mercury at the eight stations.

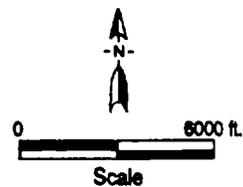
5.27.4 Contamination Assessment

Mercury was detected above background concentrations at meteorological stations 1, 4, 5, 6, 7, and 8. At stations 4 and 7, the mercury concentrations did not exceed 0.54 µg/g, compared to a background concentration of 0.32 µg/g (see Section 5.0). Concentrations at stations 1, 5, and 6 did not exceed 5.0 µg/g. One concentration of mercury in a sample at station 8 was measured at 10 µg/g. The background level of mercury in TEAD-S soil was calculated using data from natural soil rather than for fill material that may have come from a borrow pit at the site. Therefore, these mercury concentrations may be natural in the fill material. A mercury



Legend

-  Meteorological Station
-  Paved Road
-  Unimproved Road
-  Fence
-  Tooele Army Depot - South Area Boundary



Source:
 EBASCO Field Measurement
 Basic Information Maps 1985
 NUS 1987

Figure 5.27-1
Meteorological Stations
 Tooele Army Depot - South Area
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Meteorologic Station	SOIL Mercury (µg/g)	Meteorologic Station	SOIL Mercury (µg/g)
Station MS-1		Station MS-6	
S-SS-M1-01	0.24	S-SS-M6-01	3.1
S-SS-M1-02	5.0	S-SS-M6-02	1.0
S-SS-M1-03	0.50	S-SS-M6-03	0.070
S-SS-M1-04	0.10	S-SS-M6-04	0.030
S-SS-M1-05	5.0	S-SS-M6-05	0.040
Station MS-2		Station MS-7	
S-SS-M2-05	0.15	S-SS-M7-01	0.50
Station MS-3		S-SS-M7-02	0.12
S-SS-M3-05	0.03	S-SS-M7-03	0.17
Station MS-4		S-SS-M7-04	0.50
S-SS-M4-02	0.050	S-SS-M7-05	0.060
S-SS-M4-04	0.54	S-SS-M7-06	0.35
S-SS-M4-05	0.19	Station MS-8	
Station MS-5		S-SS-M8-01	0.040
S-SS-M5-02	5.0	S-SS-M8-02	0.030
S-SS-M5-03	0.23	S-SS-M8-03	0.45
S-SS-M5-04	0.17	S-SS-M8-04	10
S-SS-M5-05	0.050	S-SS-M8-05	5.0
S-SS-M5-06	0.030	S-SS-M8-06	5.5

5-256

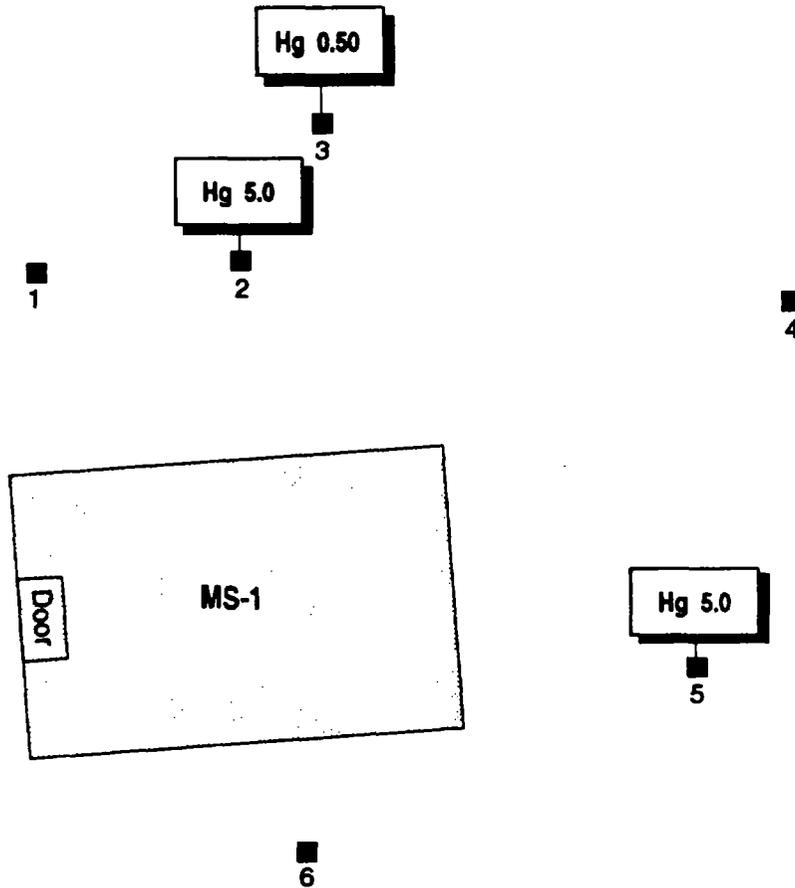
µg/g Microgram per gram

Site-wide Upper Boundaries* for
Soil Background Concentrations

Metal Upper Bound /ppm

Ag	1.9
As	41
Be	0.45
Cd	21
Cr	62
Cu	61
Hg	0.32
Ni	3400
Ni	2.7
Pb	250
Sb	20
Se	5.8
Tl	34
Zn	240

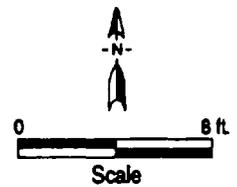
ND = No detections
* Upper bound soil background concentration determined statistically by for all soil background samples



Legend

■ Soil Sample (results in µg/g)

1990 results are bolded



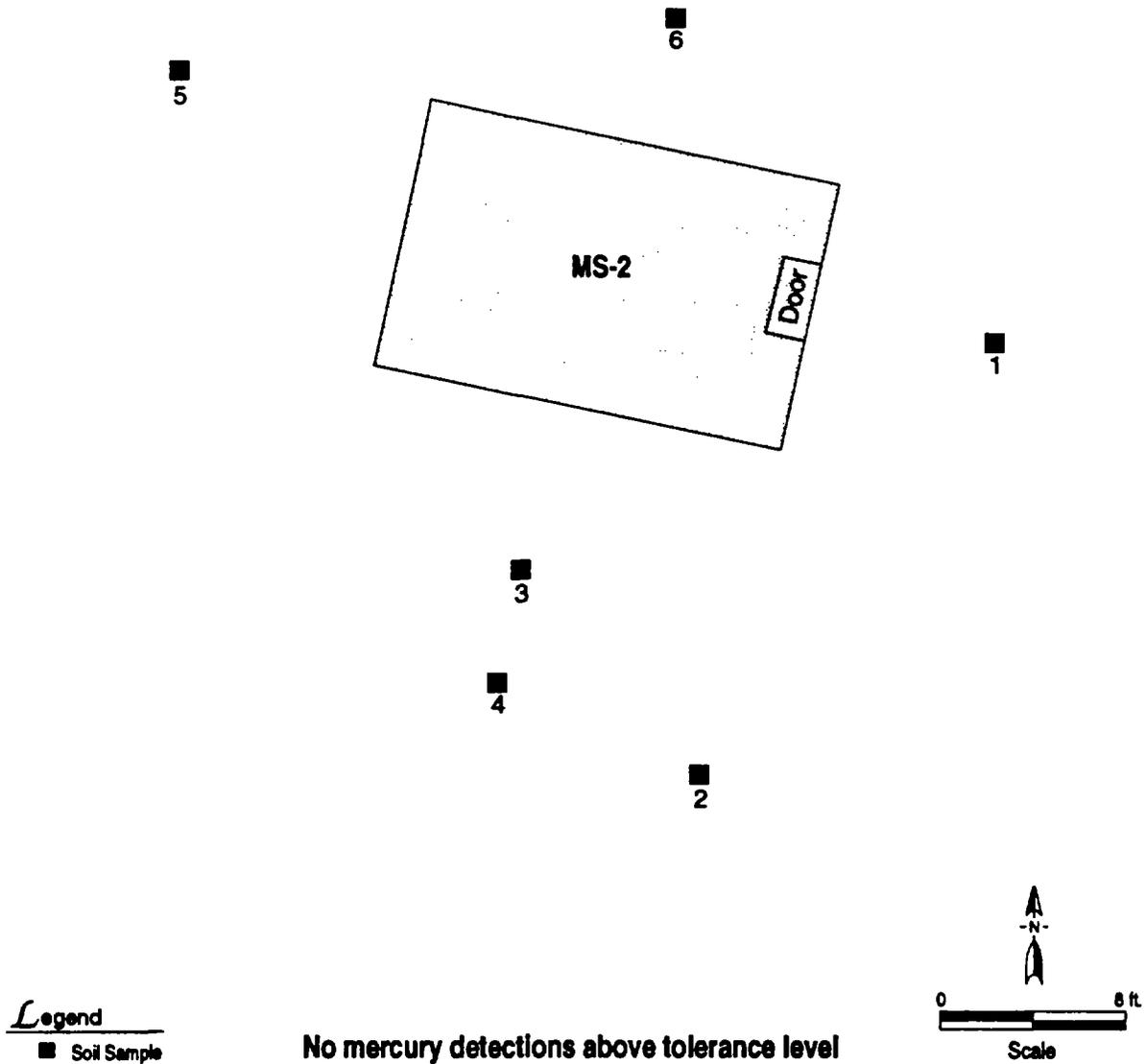
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Figure 5.27-2
Meteorological Station - 1
Mercury

Sitewide Upper Boundaries* for
Soil Background Concentrations

Metal	Upper Bound /ppm
Ag	1.9
As	41
Be	0.45
Cd	21
Cr	62
Cu	61
Hg	0.32
Na	3400
Ni	2.7
Pb	250
Sb	20
Se	5.8
Tl	34
Zn	240

ND = No detections
* Upper bound soil background concentration determined statistically for all soil background samples



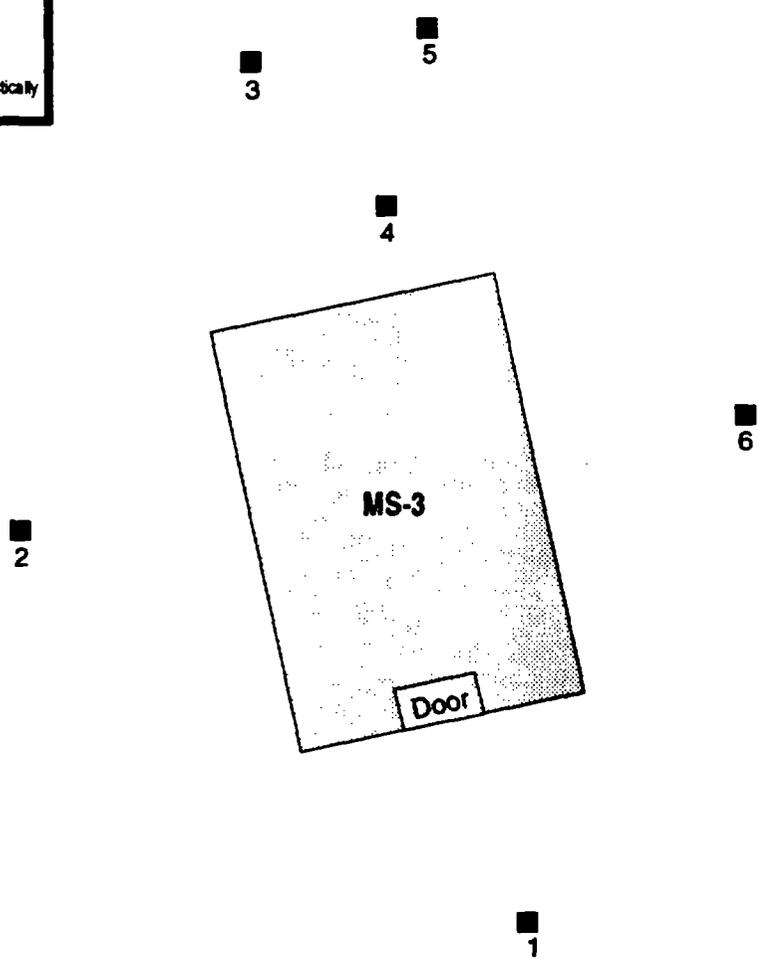
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Figure 5.27-3
Meteorological Station - 2
Mercury

Statewide Upper Boundaries* for Soil Background Concentrations

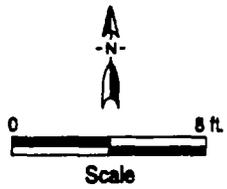
Metal	Upper Bound /ppm
Ag	1.9
As	41
Be	0.45
Cd	21
Cr	62
Cu	61
Hg	0.32
Na	3400
Ni	2.7
Pb	250
Sb	20
Se	5.8
Tl	34
Zn	240

ND = No detections
 * Upper bound soil background concentration determined statistically for all soil background samples



Legend
 ■ Soil Sample

No mercury detections above tolerance level



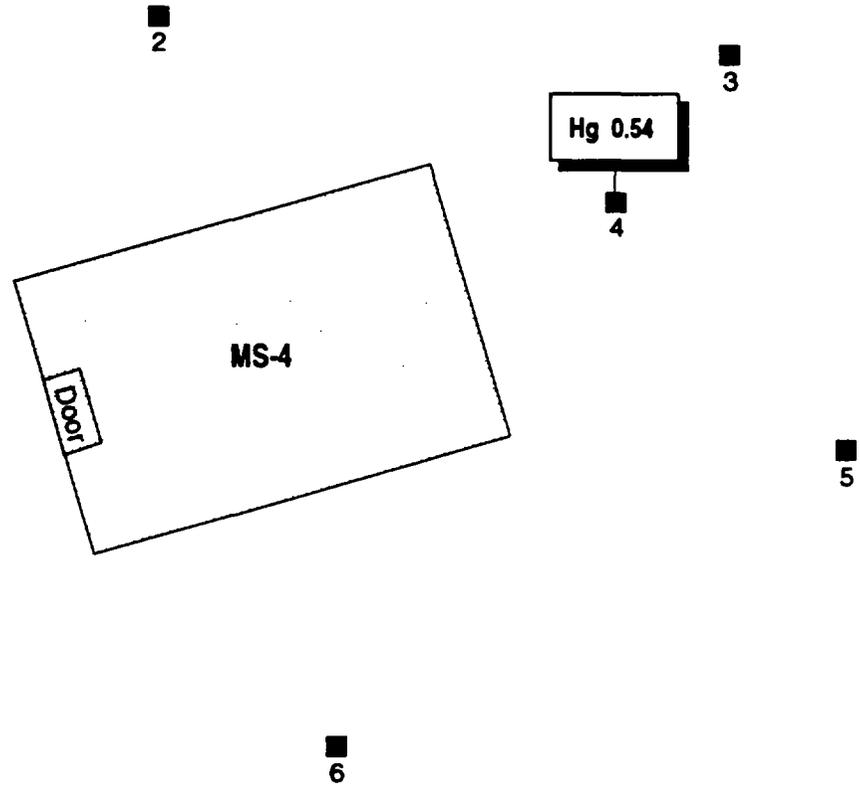
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Figure 5.27-4
Meteorological Station - 3
Mercury

Site-wide Upper Boundaries* for Background Concentrations

Metal	Upper Bound /ppm
Ag	1.9
As	41
Ba	0.45
Cd	21
Cr	62
Cu	61
Hg	0.32
Na	3400
Ni	2.7
Pb	250
Sb	20
Se	5.8
Tl	34
Zn	240

ND = No detections
 * Upper bound soil background concentration determined statistically for all soil background samples



Legend

■ Soil Sample (results in µg/g)

1990 results are bolded

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Figure 5.27-5
Meteorological Station - 4
Mercury

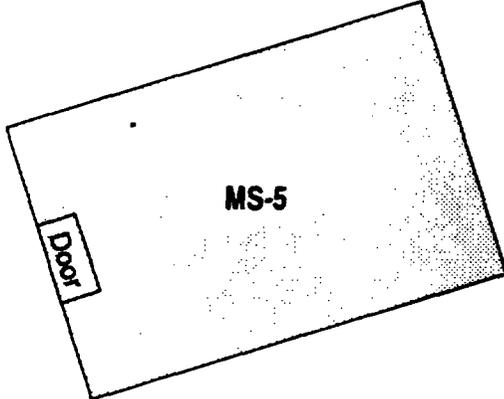
Statewide Upper Boundaries* for
Soil Background Concentrations

Metal	Upper Bound /ppm
Ag	1.0
As	41
Be	0.45
Cd	21
Cr	62
Cu	61
Hg	0.32
Na	3400
Ni	2.7
Pb	250
Sb	20
Se	5.8
Tl	34
Zn	240

ND = No detections
* Upper bound soil background concentration determined statistically for all soil background samples

Hg 5.0

2



3

1

5

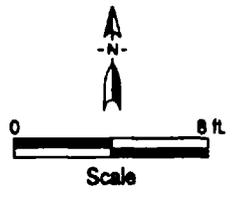
4

6

Legend

■ Soil Sample (results in µg/g)

1990 results are bolded



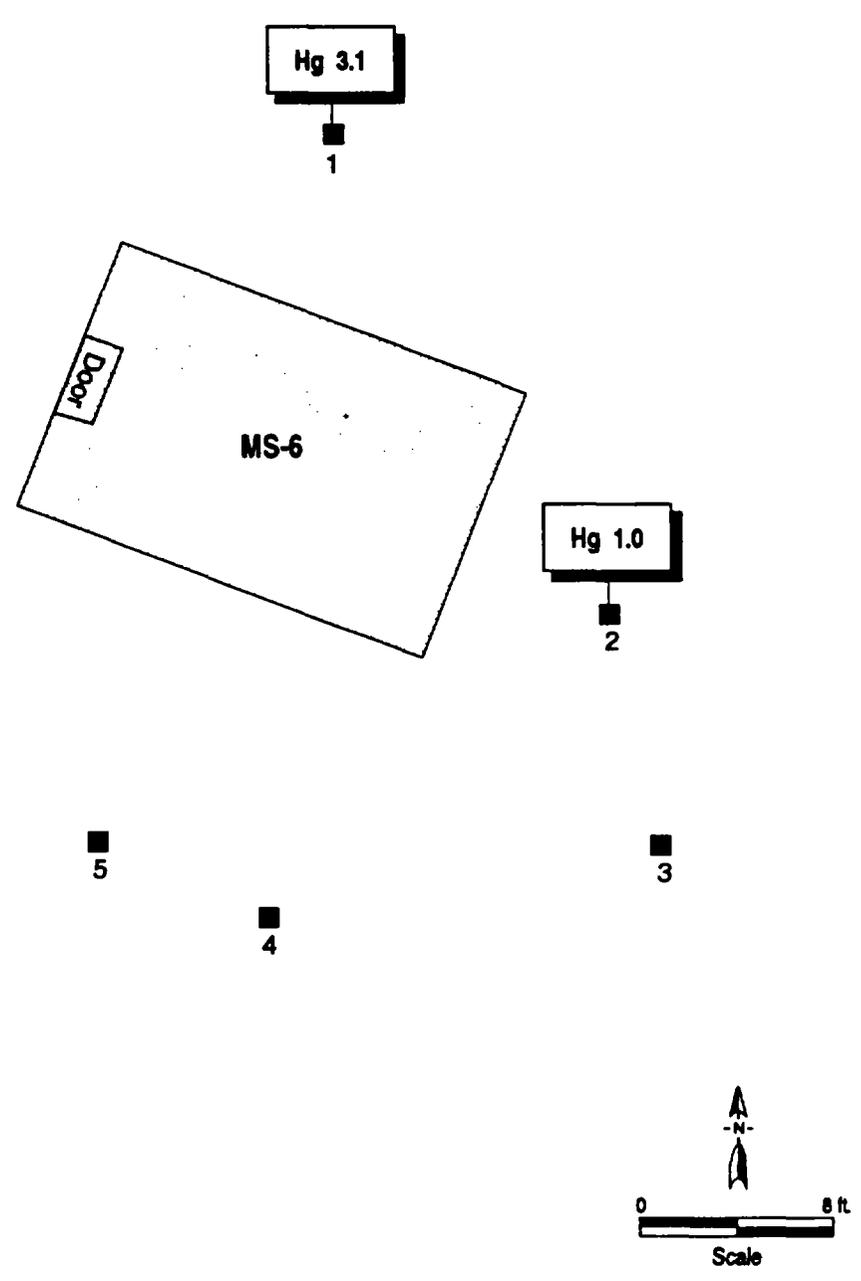
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Figure 5.27-6
Meteorological Station - 5
Mercury

Statewide Upper Boundaries* for
Soil Background Concentrations

Metal	Upper Bound /ppm
Ag	1.9
As	41
Be	0.45
Cd	21
Cr	62
Cu	81
Hg	0.32
Na	3400
Ni	2.7
Pb	250
Sb	20
Se	5.8
Tl	34
Zn	240

ND = No detections
* Upper bound soil background concentration determined statistically for all soil background samples

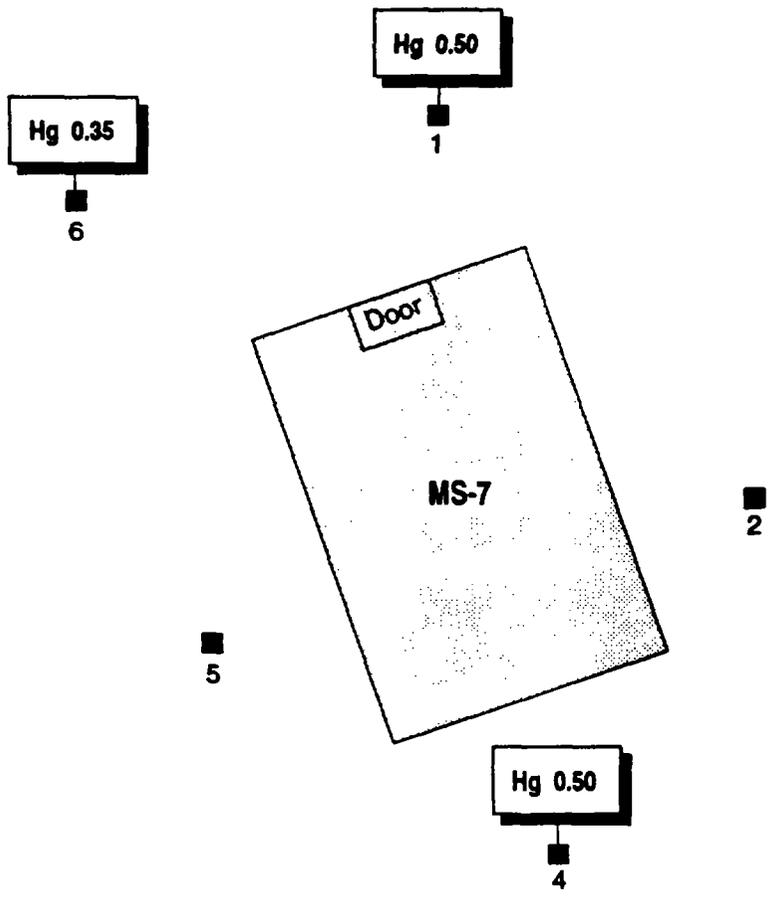


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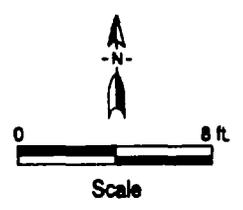
Figure 5.27-7
Meteorological Station - 6
Mercury

Wide Upper Boundaries* for Background Concentrations	
Metal	Upper Bound /ppm
Ag	1.9
As	41
Be	0.45
Cd	21
Cr	62
Cu	61
Hg	0.32
Na	3400
Ni	2.7
Pb	250
Sb	20
Se	5.8
Tl	34
Zn	240

ND = No detections
 * Upper bound soil background concentration determined statistically for all soil background samples



Legend
 ■ Soil Sample (results in µg/g)
 1990 results are bolded



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Figure 5.27-8
 Meteorological Station - 7
 Mercury

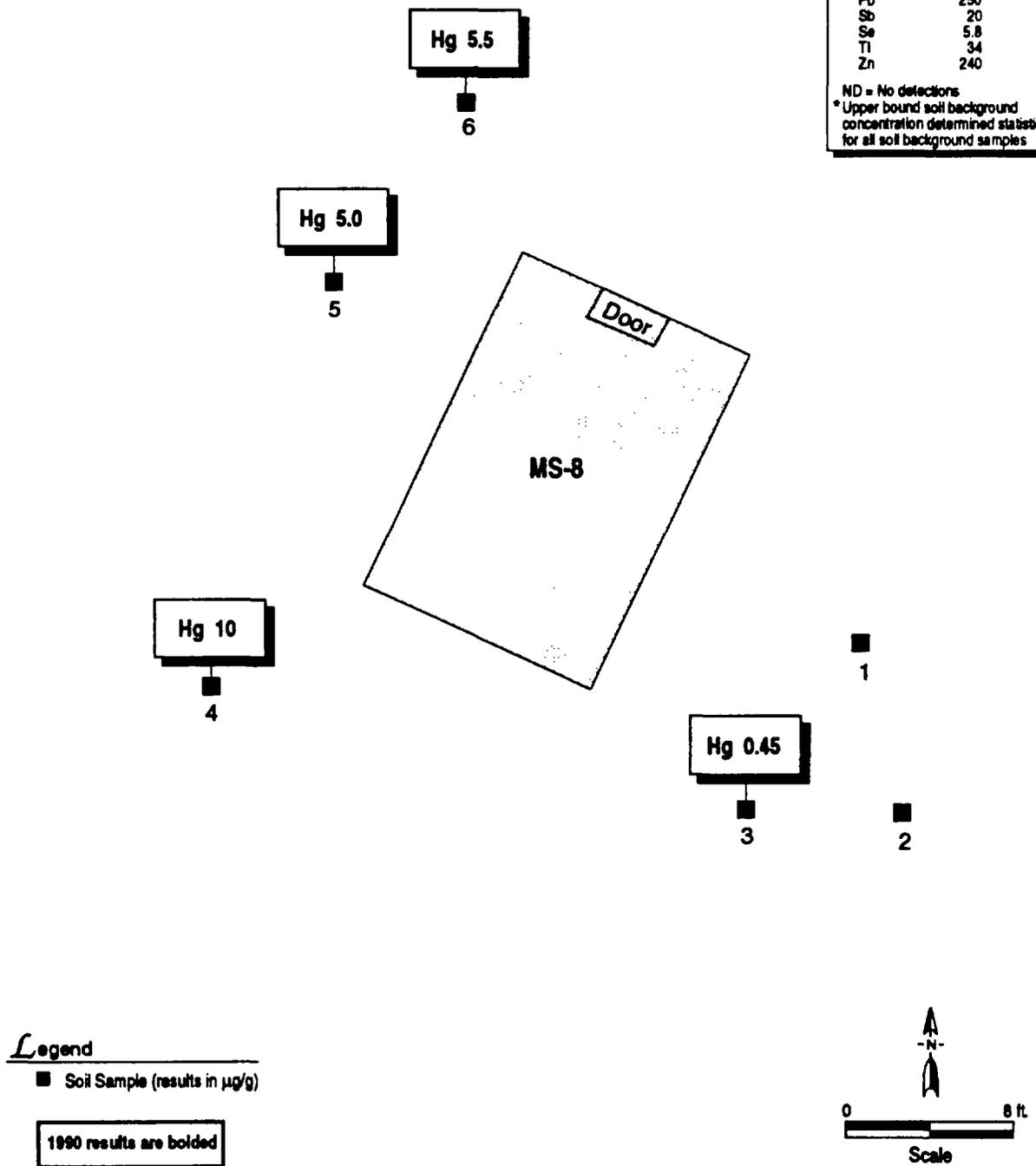
Statewide Upper Boundaries* for Soil Background Concentrations

Metal Upper Bound /ppm

Ag	1.9
As	41
Be	0.45
Cd	21
Cr	62
Cu	61
Hg	0.32
Na	3400
Ni	2.7
Pb	250
Sb	20
Se	5.8
Tl	34
Zn	240

ND = No detections

* Upper bound soil background concentration determined statistically for all soil background samples



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Figure 5.27-9
Meteorological Station - 8
Mercury

concentration of 5.0 µg/g was chosen for the action level for mercury contamination at known releases SWMU 17. This contamination resulted from a spill of the same mercury solutions that were being used at the meteorological stations.

5.27.5 Recommendations

No additional investigation of the meteorological stations is recommended since the RFI-Phase I samples are believed to have provided adequate coverage of the drum storage area at each station. These samples detected no mercury concentrations significantly above the 5.0 µg/g action level established for known releases SWMU 17, elsewhere at TEAD-S.