

2100-38.007

POLLUTION ASSESSMENT REPORT

PHASE I

For:

**Hanson Associates
620 East International Airport Road
Anchorage, Alaska**

By:

**America North Inc.
201 East 56th, Suite 200
Anchorage, Alaska**

August 1989

TABLE OF CONTENTS

1.0 INTRODUCTION

2.0 BACKGROUND

- 2.1 Site Description and History**
- 2.2 Physical Setting**
- 2.3 Hydrogeology**
- 2.4 Previous DEC Site Investigations**

3.0 PHASE I INVESTIGATION RESULTS

- 3.1 Surface Soil Samples**
- 3.2 Subsurface Soil Samples**
- 3.3 Well Point Water Sample Analysis**
- 3.4 Data Interpretation And Relevant Site Characteristics**

4.0 PROPOSED ACTIVITIES FOR THE PHASE II INVESTIGATION

- 4.1 Vertical Extent of Contamination**
- 4.2 Assess Leaching Potential**
- 4.3 Contamination at Depth**
- 4.4 Horizontal Extent of Contamination**
- 4.5 Sanitary Sewer**
- 4.6 Cleaning/Sampling/Waste Materials Disposal Plan**

5.0 ANALYTICAL PROGRAM

6.0 MONITORING SCHEDULE

APPENDIX A Laboratory Analytical Results

APPENDIX B Quality Assurance/Quality Control (QA/QC) Plan

APPENDIX C Health and Safety Plan

LIST OF TABLES

TABLE 1	TNH Soil Analyses Data for M&M Site
TABLE 2	TNH Water Analyses Data for M&M Site
TABLE 3	M&M Site PCB, Total Lead, and pH Analyses Results, Surface Soils
TABLE 4	M&M Site PCB, Total Lead, and pH Analyses Results, Subsurface Soils

LIST OF FIGURES

FIGURE 1 **Site Vicinity Map**

FIGURE 2 **Site Map**

LIST OF PLATES

PLATE 1	Base Map
PLATE 2	Total PCB Concentrations in Surface Samples
PLATE 3	Total Lead Concentrations and pH in Surface Samples
PLATE 4	Total PCB Concentrations at 2 to 3 Feet Below Ground Surface
PLATE 5	Total Lead Concentrations and pH Values at 2 to 3 Feet Below Ground Surface
PLATE 6	Phase II Sampling Locations

1.0 INTRODUCTION

This Phase I Pollution Assessment Report (PAR) was prepared for Hanson Associates (Hanson) by America North, Inc. (ANI) for the property located at 620 East International Airport Road, Anchorage, Alaska. It presents a summary of all known data regarding the site, compiled in both verbal and visual forms. Work which was completed per the Department of Environmental Conservation's (DEC) approved Pollution Assessment Plan (PAP) is incorporated into this report, and data is analyzed and interpreted. Additional site investigation activities are proposed as part of a Phase II assessment. These activities are necessary to further define the nature and extent of the horizontal and vertical contamination at the site. The Quality Assurance/Quality Control (QA/QC) Plan and Health and Safety Plans from the PAP are incorporated as part of this report (Appendices B and C).

This Phase I Pollution Assessment Report conforms with requirements of the Compliance Order by Consent (the Order) signed May 9, 1989. The Order outlines the voluntary site investigation and remediation activities to be performed by Hanson at the M&M site.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance was utilized in preparing this plan since the site is in the CERCLA Information System (CERCLIS) (No. AKD-980664981). All relevant EPA guidance will be used to ensure that all costs incurred will be deemed necessary and consistent with the National Contingency Plan (NCP). Environmental Protection Agency (EPA) polychlorinated biphenyl (PCB) spill site guidance was also used since PCBs are suspected at the site. Guidelines established under CERCLA and the Toxic Substances Control Act (TSCA) have been followed to the extent to which they are applicable at this site.

2.0 BACKGROUND

2.1 Site Description and History

The Hanson Associates property, hereinafter referred to as M & M Enterprises or as the site, is located at 620 East International Airport Road in Anchorage, as shown in Figure 1. Figure 2 shows a site map. The property is owned by Hanson Associates.

The site consists of two interconnected single story wood frame houses which are used for office space, a large yard behind the houses, and an unpaved parking area in front of the houses. An unpaved alley is located east of the site. The rear yard is enclosed by an 8 to 10 foot high fence.

Several operators have leased the site from Hanson Associates since about 1964. Site operations have included metals and battery recycling. M & M Enterprises operated a scrap metal and battery recycling business at the site from 1981 until 1987. M & M Enterprises is owned and operated by Mrs. Mildred McGalliard. Sulfuric acid from the batteries was reportedly handled by draining it into a neutralization tank, neutralizing it with soda ash (sodium carbonate), then draining it via a discharge hose off-site to a sanitary sewer manhole in the alley east of the site. Battery recycling operations were performed on the southeast side of the site.

2.2 Physical Setting

The M & M site is located on the lowland between the Chugach Mountains to the east and Knik and Turnagain Arms of Cook Inlet to the west. The Anchorage plain is a large alluvial fan deposited by streams draining the Chugach Mountains. Surficial deposits at the site are mapped as the Bootlegger Cove clay. Soil borings installed by a DEC contractor in 1986 described granular fill soils underlain by peat and then silt {Tryck, Nyman, and Hayes, (TNH), 1986}. The peat soils underlying the fill ranged in thickness from 3.5 feet to 6.0 feet and represent the wetland which was filled at the time of development. Beneath the silt, a gray clayey silt with occasional sand lenses was encountered which is believed to be the Bootlegger Cove Formation. The Bootlegger Cove Formation ranges in thickness from about 26 feet to 125 feet in the Anchorage area. The minimum thickness of this formation observed in well logs within a three mile radius of the site was 60 feet.

The site lies at an elevation of approximately 105 feet above Mean Sea Level (MSL). Campbell Creek flows to the south-southwest about one-eighth mile southeast of the site. The average discharge of Campbell Creek is 65.5 cubic feet per second (USGS, 1984).

2.3 Hydrogeology

Two aquifers are defined at the site; a shallow aquifer not used for water supply and a deeper confined aquifer which provides ground water to Anchorage wells regionally. The Bootlegger Cove Formation acts as the confining unit between the two aquifers. The depth to ground water in the shallow aquifer was found by DEC to be between one and six feet at the site. Borings drilled 2.5 to 3.0 feet below ground level (during Phase I activities) generally encountered a water table. These borings were all within the confines of the yard (see Plate 1).

2.4 Previous DEC Site Investigations

DEC contractors performed a file review and a site investigation in 1986. The file review included interviews with Mrs. Mildred McGalliard and Mr. Rolph Hanson as well as records review. The site investigation entailed installation of soil borings and monitor wells, and sampling and analysis of soils and ground water. Figure 3 shows well and sampling locations. This section summarizes the results of the TNH investigation.

Soil Sampling Results

Soil samples were taken from the east side of the back yard at two depths (surface and 1 foot) from each of three locations for analysis of lead sulfate, pH, conductivity, and solids. Total lead levels were highest at the surface and decreased with depth. The highest lead concentration (7200 mg/kg) was measured at the surface at sample location 3 adjacent to the fence on the southeast side of the yard. The pH of the soil samples at the three locations was low (around 3), indicating acidic conditions. This is the area where battery recycling operations were performed.

A total of four soil borings and monitoring wells were installed on-site and off-site. Soil from each of the borings was sampled at the surface, at 10-11 feet, and at the bottom of the hole, 15 to 20 feet below the surface. Boring NW was installed off-site, northwest of the site, for background data. The background total lead level at the surface was 43mg/kg; levels below the surface were 4 - 5 mg/kg. The sample collected at ten feet at NW exhibited a low pH of 4; the sample was collected from the peat layer which characteristically is low pH. The surface soil sample collected at FG

measured 5000 mg/kg total lead. Boring FG is located just outside the fence on the east side of the yard. Below the surface at FG, lead levels were comparable to background (43 mg/kg). Boring IW was installed in the northwest corner of the yard and showed total lead concentrations greater than 1000 mg/kg at the surface and at 10 feet. The sample from 15 feet, however, was again at background levels. Boring SW, located southwest of the site near Campbell Creek, showed a total lead level (900 mg/kg) greater than background (43 mg/kg) at the surface. Lead concentrations were only slightly elevated at 7 feet below ground level and were at background concentrations again at 20 feet. This data is summarized in Table 1.

Soil samples were collected at four locations along the assumed surface water flow route from the site toward Campbell Creek; they were analyzed for PCBs. All measured PCB levels were less than 3 ppm.

Water Sampling Results

A monitoring well was installed in each of the four soil borings. Ground water collected from the wells was analyzed for pH, conductivity, sulfate, and lead. The well bores were backfilled with contaminated drill cuttings, an unacceptable practice. However, the data obtained from these wells can still be useful in evaluating the water quality. Any error associated with the poor well construction would cause the concentrations measured in ground water samples to appear higher than those actually present in the native ground water. Well FG-1, located off-site adjacent to the fence on the southeast side of the property, showed the highest concentrations of all constituents measured and the lowest pH. Total lead was measured in well FG-1 at a concentration of 0.047 mg/l, less than the Federal drinking water standard of 0.05 mg/L. Sulfate and pH exceeded secondary drinking water standards (6.5-8.5) in all four wells. pH measured in the background well NW1 was also outside of the range of the secondary drinking water standards for pH. The peat soils found in this area are naturally acidic and may be responsible for low pH found in the ground water.

3.0 PHASE I INVESTIGATION RESULTS

America North, Inc. collected surface and subsurface soil samples and installed a well point for collection of a ground water sample per the approved PAP. The purpose of Phase I was to perform an initial assessment of the extent of the PCB and lead contamination in soils and ground water at the site. Plate 1 shows the location of surface and subsurface soil samples, and Appendix A contains laboratory analytical results.

3.1 Surface Soil Samples

Surface soil samples were collected at 19 locations within the M&M yard (Plate 1) and at two background locations identified on Figure 2. These samples were submitted and analyzed for PCB (EPA Method 8080), total lead {by inductively coupled plasma system (ICP)}, and pH. Surface PCB concentrations are listed in Table 3 and shown on Plate 2. Total lead and pH values are also listed in Table 3, but displayed on Plate 3.

PCBs. The average PCB concentration is 18 ppm. Eleven of the nineteen values are greater than the 10 ppm cleanup level dictated by the Order. These points are consistently in the west and northwest portion of the yard (except point 2D).

Total Lead and pH. Total lead concentrations in the top one centimeter of soil/trash averaged 40,000 ppm. pH generally ranged from 6 to 7, with only one value below 5.8 (5.05). Total lead concentrations are well above the 500 ppm cleanup standard dictated by the Order. Samples were collected concurrent with and per procedures appropriate for EPA Method 8080. This collection technique may be responsible for detected lead levels which were consistently elevated compared to surface lead levels previously measured by the DEC contractor (TNH, 1987).

3.2 Subsurface Soil Samples

Subsurface soil samples were collected at nine locations in the M&M yard. These samples were obtained using a stainless steel hand auger. The sampling interval ranged from approximately 2.2 feet to 3.0 feet below the ground surface. Samples

were analyzed for PCBs per EPA Method 8080, and total lead per ICP. Soil pH was also measured; analytical results are summarized in Table 4.

PCBs. PCB concentrations at seven of nine subsurface locations sampled (Plate 3) were consistently either non-detectable, or below 1 ppm. Point 4E, in the southeast corner of the yard, was less than 3 ppm. This is below the 10 ppm cleanup standard. Point 6B exhibited the highest surface PCB concentrations at 93.4 ppm. Point 6B was the only subsurface sample which exhibited PCB concentrations (15.3 ppm) above cleanup standards. This is not particularly surprising in that it was also the only boring in which refuse material was observed in the boring profile below approximately 6 inches depth (observed to about 1.5 feet below ground surface).

Total Lead and pH. Total lead concentrations in the sampled intervals (2.2 feet to 3.0 feet below ground surface) are at background or slightly above background concentrations at all locations except one (Table 4). Background lead concentrations are estimated from TNH report data, since no subsurface background data was collected during the ANI Phase I investigation. TNH report data indicates background total lead concentrations range from 3 to 5 ppm (below 7 feet below ground surface). Subsurface total lead values in the M&M yard range from 4 to 36 ppm (average 17 ppm), except for Point 4E at a concentration of 140 and 211 ppm (duplicate analyses).

Subsurface pH values range from 4.1 to 7.0 (Table 4). Although three values are less than the cleanup level of 5.0, the values are still above the pH of the soils at 10 foot depth in the background sample collected by TNH at Boring NW (TNH, 1987).

3.3 Well Point Water Sample Analysis

Water collected from the well point was analyzed for lead content (by graphite furnace) and pH. Results indicate lead concentrations (0.053 ppm) slightly exceed primary drinking water regulation standards outlined in 18 AAC 80.050 (0.050 ppm). Water pH was 3.58. Analytical results are included in Appendix A.

3.4 Data Interpretation And Relevant Site Characteristics

Per DEC requests, surface soil samples were collected from two locations outside the M&M yard which may represent background concentrations of total lead and PCBs (Figure 2). BKG1 was collected in a heavily vegetated area 500 feet east of the yard. BKG2 was collected in a field approximately 600 feet west of the yard which was virtually barren of vegetation and appears to be fill.

To obtain a truly representative background sample within a reasonable distance of the yard is difficult since almost all surface cover is asphalt, cement, buildings, sod, or imported fill. It is surprising that lead levels at BKG1 are so high (195 ppm). Due to the physical location of BKG1, it does not appear likely that lead contamination at this point would be attributable to activities at the M&M yard. Surface lead concentrations seem to be quite variable, and it is possible to conclude that in fact background lead levels are naturally higher at the surface than in the subsurface (10-50 at the surface, 5-15 in the subsurface).

Plates 2 through 5 illustrate PCB, total lead, and pH values at the ground surface and 2.5 feet below ground level. PCB concentrations are slightly elevated above cleanup standards in the western portion of the yard at the ground surface. Total lead concentrations measured in samples were significantly elevated above Order cleanup levels at all surface sampling locations.

PCBs are a problem in the subsurface at only one location (6B), which is just off the main cement slab in the southwest corner of the yard. Subsurface disturbance to unusual depths was also observed at this locale. The measured concentration of PCBs at 2.5 feet below the ground surface at 6B is just above cleanup requirements.

Total lead measured by ICP is at or slightly elevated above background levels in the subsurface. The only exception is point 4E, where measured levels range from 140 to 211 ppm (duplicate analyses). This is still well below the 500 ppm cleanup standard dictated by the Order.

Relevant Site Characteristics. Ground water gradients and more detailed soil profiles will be provided as part of the Phase II assessment. Based on augering of nine holes to a depth of 2 to 2.5 feet below ground surface (in the confines of the M&M

yard), soils are generally a sandy, gravelly fill with abundant cobbles and occasional boulders. These soils are slightly silty, and in some areas of the yard are highly organic. The layer of surface trash ranges in thickness from 3 to 9 inches, although in one boring (6B) trash was observed to 1.5 feet below the ground surface.

A peat layer was not encountered within three feet of the surface, but organic material was intermixed with the fill in some borings.

The yard is adequately secured on three sides. The board fence along the east side of the yard is in disrepair and will be upgraded to prevent unauthorized entrance.

Based on data available from Phase I, it appears a rather extensive remediation/cleanup project is necessary. Based on Phase I investigation results, the contamination is relatively confined to the surface trash and soils which are within the boundaries of the M&M yard. While Phase II is being conducted to further define this contamination, various alternatives for remediating the contamination will be investigated. A combination of off-site disposal and on-site treatment techniques may prove most feasible.

4.0 PROPOSED ACTIVITIES FOR THE PHASE II INVESTIGATION

Based on the Phase I investigation, an additional site investigation is warranted to further define the extent of contamination at the M&M site. Total lead and PCB concentrations at 2.5 feet below the ground surface are at or only slightly above background levels (the notable exception is location 6B for PCBs).

Objectives of Phase II are as follows:

- refine the vertical extent of contamination;
- assess the leaching potential of the lead contamination;
- investigate contamination at depth (8 to 15 feet below the ground surface);
- monitor ground water quality down gradient from the site;
- further define the horizontal extent of contamination;
- confirm the soundness of the sanitary sewer at the southeast corner of the site;

- outline a cleaning/sampling plan for disposing miscellaneous non-hazardous solid waste.

4.1 Vertical Extent of Contamination

Phase I data manifested characteristic PCB insolubility. PCBs were not expected at depth, and were only encountered where the surface concentration was highest and subsurface disturbance was evident. Therefore, a limited number of shallow subsurface soil samples (5) will be analyzed to verify PCB confinement to the very shallow subsurface. The five sampling locations are indicated on Plate 6. These were chosen based on highest surface PCB concentrations. Samples will be collected immediately below the trash layer, from 0.5 to 1.0 feet below the ground surface.

Phase I subsurface data also indicated elevated total lead concentrations are confined to the shallow subsurface. Samples will be collected at eight locations in the M&M yard from immediately below the trash layer (0.5 to 1.0 feet below the ground surface). Most of these locations coincide with surface sampling locations which were highest in total lead, although sampling points were also chosen to provide areally representative data across the yard. Sampling locations are identified on Plate 6.

4.2 Assess Leaching Potential

Phase II will investigate the leaching potential of the lead contamination on site. The eight shallow subsurface samples which will be collected for total lead analysis will also be analyzed for elemental lead by extraction procedure toxicity (EP Tox) analyses. This will characterize the tendency of the lead on-site (at the sampled depths) to migrate or leach. Sampling locations are indicated on Plate 6.

Two of the sampling locations which exhibited the highest surface total lead concentrations will be resampled and subjected to analyses by EP Tox procedures (Plate 6). Because of lead concentration variability in the surface, they will also be analyzed for total lead by ICP. This procedure will permit an assessment of the relative leachability of the high lead concentrations measured in the surface layer.

4.3 Contamination at Depth

Analyses of samples which were collected from depth (below 3 feet) at the four boring locations indicate that significantly elevated lead concentrations were detected in only one boring (TNH, 1987) at one depth. Deep subsurface data is abridged from the TNH report and presented in Table 1. Collection of soil samples below the water table (by standard procedures) generally creates suspicion of the integrity of the samples. To verify the integrity of sample IWS2, ANI proposes to advance a boring in the general vicinity of IWS2 and submit a soil sample from approximately the same depth interval for total lead (ICP) and elemental lead (EP Tox) analyses. This boring is designated ANIB-1, Plate 6 and Figure 2. If contamination is encountered at the level indicated by the TNH analyses, a measure of the leaching potential of the lead at the locale could be made. A monitoring well will not be installed at this location since ground water quality data from the previous well (which was constructed using nonstandard construction techniques) indicated that lead concentrations are at background levels.

*Is this data from TNH report?
It is it is 100 yds. away
cannot be used*

One sample from this boring will be submitted for analysis from near the peat/silt contact. Continuous split-spoon drives from 7 feet below ground surface to approximately 12 feet below ground surface will be taken to more fully characterize the strata beneath the site.

A boring (designated ANIB-2 on Plate 6 and Figure 2) will be advanced off the southeast corner of the yard. This boring will be completed as a flush-mount monitor well. One soil sample from the peat/silt interface will be submitted for lead analysis by ICP and EP Tox procedures, though continuous drives will be taken from approximately 7 - 12 feet below the ground surface to characterize site strata.

A third boring, designated ANIB-3, will be advanced at a point approximately 250 feet southeast of boring ANIB-2. This boring will offset TNH boring B-2 to the northeast, and a monitoring well will be constructed in boring ANIB-3. As in ANIB-2, continuous drives will be taken from about 7 to 12 feet below the ground surface, and one sample will be submitted for total lead analysis by ICP and EP Tox. This sample will be collected near the peat/silt interface. All samples from depth which are submitted for total lead analysis will also be analyzed for pH.

Elevations of all valid monitoring wells will be determined by a land surveyor registered in the state of Alaska. A potentiometric surface map will be constructed using water levels obtained from ANI wells, and TNH wells which can yield reliable water table elevation data (B-1 and B-3). Well ANIB-2 and ANIB-3 will provide water quality data in the area which is down gradient (with respect to the water table) from the M&M yard. Water samples will be collected from ANIB-2 and ANIB-3 and submitted for analyses to determine total lead concentrations. Ground water samples will also be submitted for sulfate analysis. Ground water pH and conductivity will be measured at the time of collection.

4.4 Horizontal Extent of Contamination

Surface soil samples will be collected at locations east and west of the M&M yard to define the extent of the surface contamination. A sample will be collected from the gravel yard immediately west of the M&M yard, and immediately east of the alley roadway. These sampling locations are designated 6A and 2G, respectively in Plate 6. The samples will be analyzed for PCBs per EPA Method 8080, and total lead by ICP. Soil pH will also be measured.

Since surfaces to the north are either under buildings or paved (as well as upgradient), the boundaries of the yard define the northern extent of contamination. Surfaces to the south are also paved, although to the southeast, between the M&M yard and Campbell Creek, this is not the case. At TNH boring B-2, surface lead concentrations were slightly elevated above 500 ppm (670/900 ppm); a surface soil sample will be collected at ANIB-3 to document surface lead contamination in this area. This sample will be analyzed for total lead by ICP.

4.5 Sanitary Sewer

Because of concern over degradation of the sanitary sewer near the southeast corner of the yard, the manhole at that location will be accessed and the condition of the pipe will be noted visually. If possible, it will also be photographically documented. ??

4.6 Cleaning/Sampling/Waste Materials Disposal Plan

Extensive solid waste of a non-hazardous nature exists on-site. These materials may be contaminated if soil particles are attached to them, or if they are of a porous nature. It is proposed the solid waste of a substantial nature (truck beds, wooden spools, metal pipes, car bodies, miscellaneous metal refuse, plastic wire casings) be cleaned on-site with a pressure wash system. An area in the southwest portion of the yard (Plate 6) would be designated as the cleaning area (since PCB concentrations are highest there). Contaminated water/soil particles would be released to the ground surface near sampling point 6B. Visquine would be laid along the access path to prevent contamination of the truck tires when traveling in and out of the yard.

The first load of representative materials would be cleaned, and two representative wipe samples and two representative destructive samples analyzed to verify suitability for disposal at the MOA landfill (PCB concentrations less than 1 ppm). If the waste materials are acceptable, disposal will proceed uninterrupted, although periodic monitoring of cleaning operations will be necessary.

A limited quantity of material can be disposed in this manner. A preliminary estimate is approximately 100-200 tons. Materials which will not be cleaned and disposed include soil and substances of a porous nature which have been in direct contact with soil. Drums of lead waste will not be disposed. These drums, and the remaining contaminated soil and materials, will be addressed in the cleanup plan.

5.0 ANALYTICAL PROGRAM

This section will outline the analytical program which will be required to complete Phase II.

EPA Method 8080 for PCBs

- surface soil samples will be collected at the following locations and analyzed per EPA Method 8080: 6A, 2G.
- subsurface soil samples will be collected at a depth from 0.5 feet to 1.0 feet below the ground surface and analyzed for PCBs: 2D, 4A, 4B, 4C, and 5B.

- two wipe samples and two destructive samples of materials will be collected.

Total Lead by ICP, and pH

- surface soil samples will be collected and analyzed for total lead by ICP at the following locations: 6A, 2G, 3E, 5D, ANIB-3.
- subsurface soil samples will be collected from a depth of 0.8 feet to 1.0 feet below the ground surface and analyzed for total lead: 3D, 3E, 3F, 4A, 4C, 4E, 5B, 5D.
- a subsurface sample will be collected at 2 to 2.5 feet below the ground surface and analyzed for total lead and EP Toxicity lead at 3E.
- deep subsurface (8 feet to 12 feet) samples will be analyzed (by ICP) for total lead: ANIB-1, ANIB-2, ANIB-3.
- the pH of all samples submitted for total lead analysis will also be measured.

Elemental Lead by EP Toxicity Method

- surface soil samples will be collected and analyzed for EP Toxicity lead: 3E, 5D.
- subsurface soil samples will be collected from a depth of 0.5 to 1.0 feet below the ground surface and analyzed for EP Toxicity lead: 3D, 3E, 3F, 4A, 4C, 4E, 5B, 5D.
- deep subsurface (8 feet to 12 feet) samples will be analyzed for EP Toxicity lead: ANIB-1, ANIB-2, ANIB-3.

Lead Analysis Per EPA Method 239.2, and Sulfate Per EPA Method 375.4 (water)

- water samples will be collected from monitor wells ANIB-2 and ANIB-3 and submitted for analysis per EPA 239.2 for lead and 375.4 for sulfates. Conductivity and pH will also be measured at the time of collection.

QA/QC Program

- One duplicate sample for PCB (EPA Method 8080) analysis will be collected. Two duplicate samples for total lead by ICP and elemental lead by EP Toxicity method will be submitted for analysis.

6.0 MONITORING SCHEDULE

Wells ANIB-2 and ANIB-3 will be monitored every 6 months for at least three years from the time the first samples are collected. Water levels in B-1, B-3, ANIB-2 and ANIB-3 will be measured at these intervals. The wells will be appropriately purged, and samples collected. Samples will be analyzed for lead and sulfate concentrations. Conductivity and pH will also be measured at the time of collection. Standard practices will be followed when collecting samples.

TABLES

TABLE 1
TNH Soil Analyses Data for M&M Site*

Sample #	Boring	Depth (ft.)	Lead Concentration (ug/g dry wt.)	pH
NWS2	B-1	10-11	4.8	4.0
NWS3	B-1	17-18	3.7	6.63
SWS2	B-2	7.5-8.5	43.0	6.38
SWS3	B-2	19.5-20.5	4.1	9.62
FGS2	B-3	10-11	2.2	6.33
FGS3	B-3	15-16	5.4	7.23
IWS2	B-4	10	1500	6.47
] replicate	
IWS3	B-4	15-16	1600	
			4.2	6.52

*Abridged from Table 1 of September, 1987 TNH CERCLA Site Inspection Report

TABLE 2
TNH Water Analyses Data for M&M Site*

Sample #	Boring	Lead Concentration (mg/l)	Sulfate (mg/l)	pH
NW1	B-1	0.003	15.1	5.9
SW1	B-2	0.015	40.	6.2
FG1	B-3	0.047	11000	5.4
IW1	B-4	0.003	470	6.3

*Abridged from Table 2 of September, 1987 TNH CERCLA Site Inspection Report

TABLE 3
M & M Site
PCB, Total Lead, and pH Analyses Results
Surface Soils

Location	Depth (feet)	Sample #	Aroclor 1242	Aroclor 1260	*Total PCBs (ppm)	**Total Lead (ppm)	pH
BKG1	0	890712-BKG1-0-22	--	0.163	0.163	195	5.94
BKG2	0	890712-BKG2-0-23	--	--	ND	8.67	7.16
1E	0	890712-1E-0-14	--	2.96	2.96	1880	6.90
2D	0	890712-2D-0-09	--	40.9	40.9	6180	6.70
2E	0	890712-2E-0-15	1.37	12.1	13.5	39,600	5.96
2F	0	890712-2F-0-18	0.247	0.199	0.446	87,200	6.28
3A	0	890712-3A-0-01	4.94	7.41	12.4	19,400	6.10
3D	0	890712-3D-0-10	1.67	10.3	12.0	45,500	5.05
3E	0	890712-3E-0-16	1.57	6.92	8.49	108,000	6.12
3F	0	890712-3F-0-20	--	2.47	2.47	22,500	6.24
3F	0	890712-3F-0-19	0.339	0.243	0.582	46,100	6.34
4A	0	890712-4A-0-02	14.4	8.85	23.3	33,300	6.77
4B	0	890712-4B-0-03	13.6	11.7	25.3	24,400	7.00
4C	0	890712-4C-0-06	11.6	18.6	30.2	59,100	6.80
4D	0	890712-4D-0-11	0.562	1.26	1.82	83,400	5.94
4E	0	890712-4E-0-17	0.198	0.292	0.49	38,500	5.87
5A	0	890712-5A-0-21	8.49	20.0	28.5	153,000	6.96
5B	0	890712-5B-0-04	10.4	10.2	20.6	17,000	7.51
5C	0	890712-5C-0-07	--	11.4	11.4	5470	6.38
5D	0	890712-5D-0-12	--	6.02	6.02	94,900	6.44
5D	0	890712-5D-0-13	--	4.18	4.18	8680	6.78
6B	0	890712-6B-0-05	33.3	60.1	93.4	8370	7.52
6C	0	890712-6C-0-08	--	9.15	9.15	840	7.38

* Test by EPA Method 8080; detection limit is 0.010 ppm, except for BKG2 (0.040 ppm).

** Total Lead by ICP.

TABLE 4

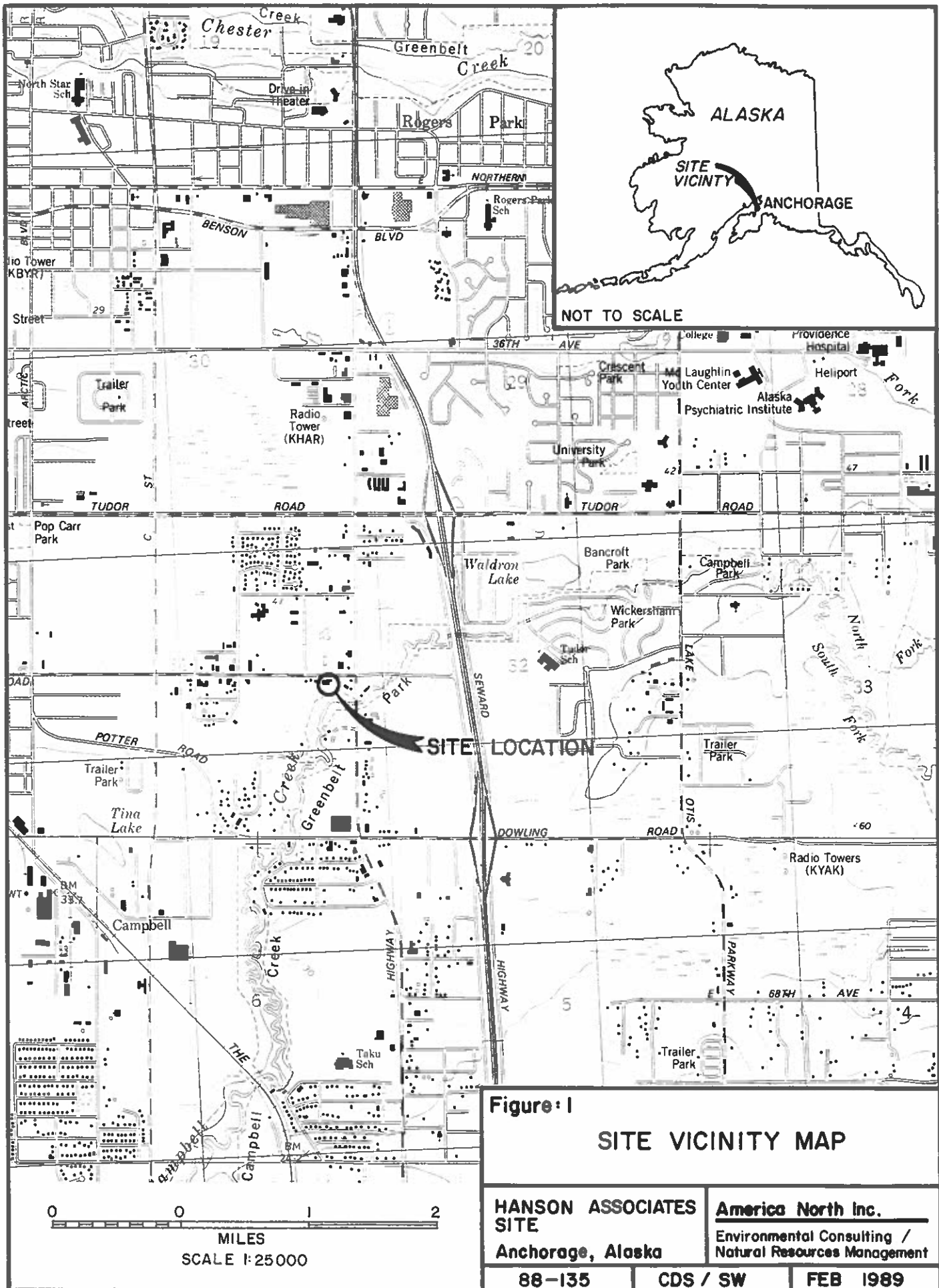
**M & M Site
PCB, Total Lead, and pH Analyses Results
Subsurface Soils**

Location	Depth (feet)	Sample #	Aroclor 1242	Aroclor 1260	*Total PCBs (ppm)	**Total Lead (ppm)	pH
1E	2.5	890713-1E-2-01	--	--	ND	4.3	6.89
3D	2.5	890713-3D-2-02	--	--	ND	36.4	4.12
3A	2.5	890713-3A-2-03	--	0.015	0.015	18.2	5.81
4A	2.5	890713-4A-2-04	--	0.052	0.052	7.88	6.30
4B	2.5	890713-4B-2-05	--	0.322	0.322	18.9	6.31
6B	2.5	890713-6B-2-06	--	15.3	15.3	16.0	7.02
4E	2.5	890713-4E-2-07	--	2.48	2.48	140	5.88
4E	2.5	890713-4E-2-08	--	2.74	2.74	211	5.71
3F	2.5	890713-3F-2-09	--	--	ND	5.45	4.10
3E	2.5	890713-3E-2-10	--	--	ND	28.1	4.13

* Test by EPA Method 8080; detection limit is 0.010 ppm.

** Total Lead by ICP.

FIGURES





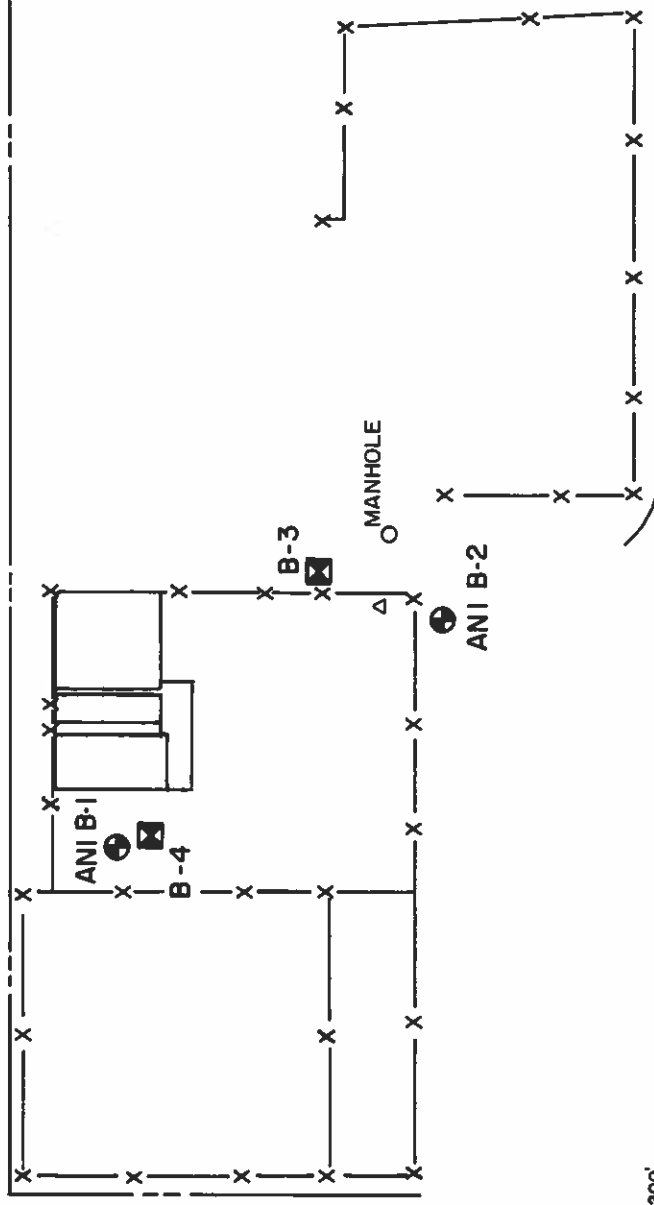
E. INTERNATIONAL

FAIRBANKS ST.

Campbell Creek

B-1

150' west BKG 2



LEGEND

- ⊕ ANI DEEP BORING (PROPOSED)
- ⊗ TNH DEEP BORING
- ⊙ SURFACE BACKGROUND SAMPLES
- △ WELL POINT



Figure 2

SITE MAP

HANSON ASSOCIATES M & M SITE	America North Inc.	CDS/LW	AUG. 1989
	Environmental Consulting / Natural Resources Management		
88 - 135			

PLATES

APPROX. SCALE IN FT. 1" = 20'

0 10 20 30 40

(4.2) SAMPLE DUPLICATE VALUES

CONCRETE PAD

SURFACE SAMPLE LOCATION FOR
PCBs, TOTAL LEAD, AND PH

SUBSURFACE SAMPLE LOCATION
FOR PCBs, TOTAL LEAD, AND PH

WELL POINT

40.9

TOTAL PCB CONCENTRATIONS IN
SURFACE SAMPLES, PARTS PER MILLION
(ppm), (ROUNDED TO 0.1 ppm)
ANALYSIS PER EPA METHOD 8080

LEGEND

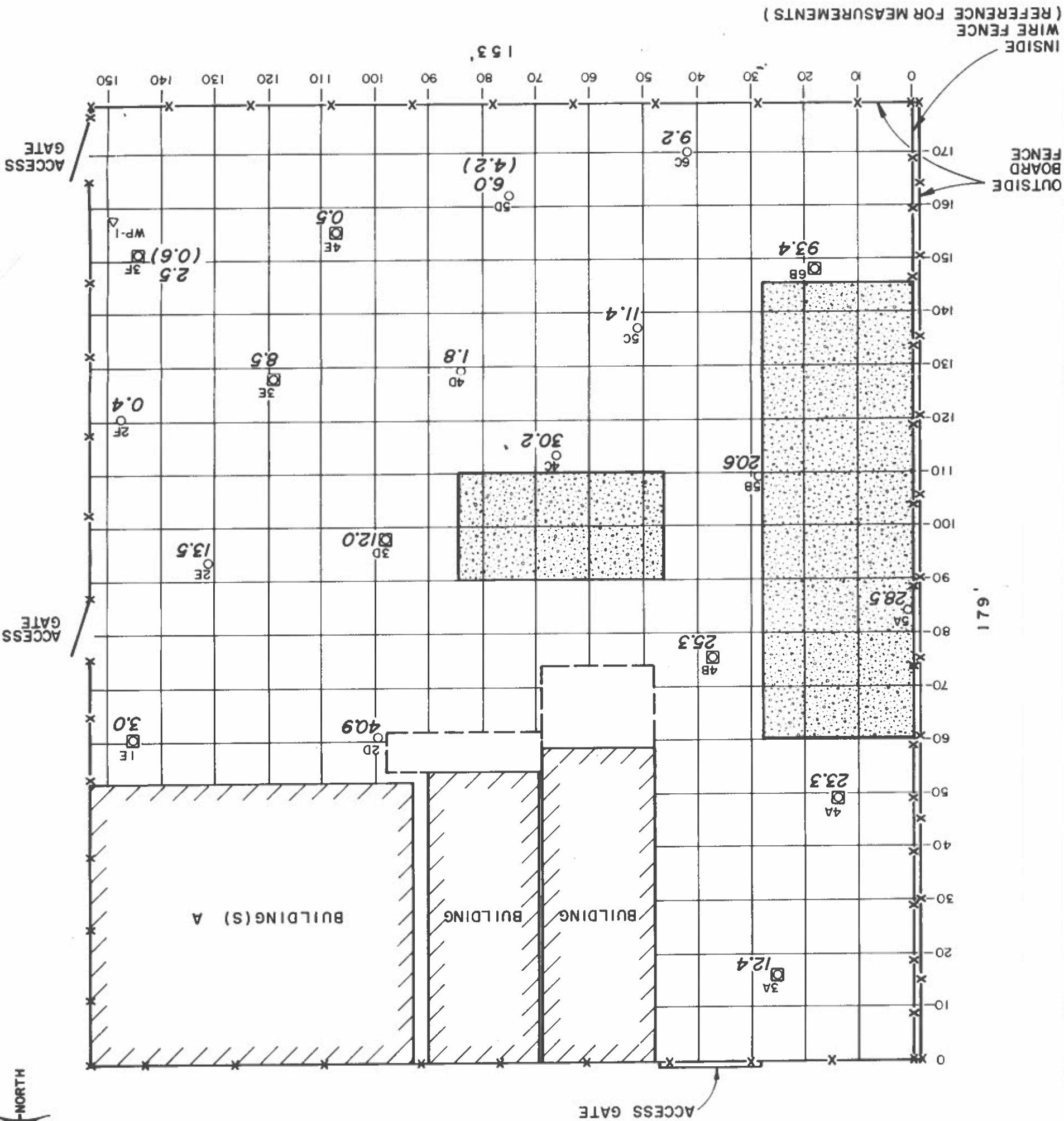


PLATE - 3
TOTAL LEAD CONCENTRATIONS
AND PH IN SURFACE SAMPLES

PLATE - 3

APPROX. SCALE IN FT.: 1" = 20'

(6.8) SAMPLE DUPLICATE VALUES

6,180/6.7
TOTAL LEAD CONCENTRATIONS (per ICP)
IN PARTS PER MILLION (ppm), AND
PH IN SURFACE SAMPLES

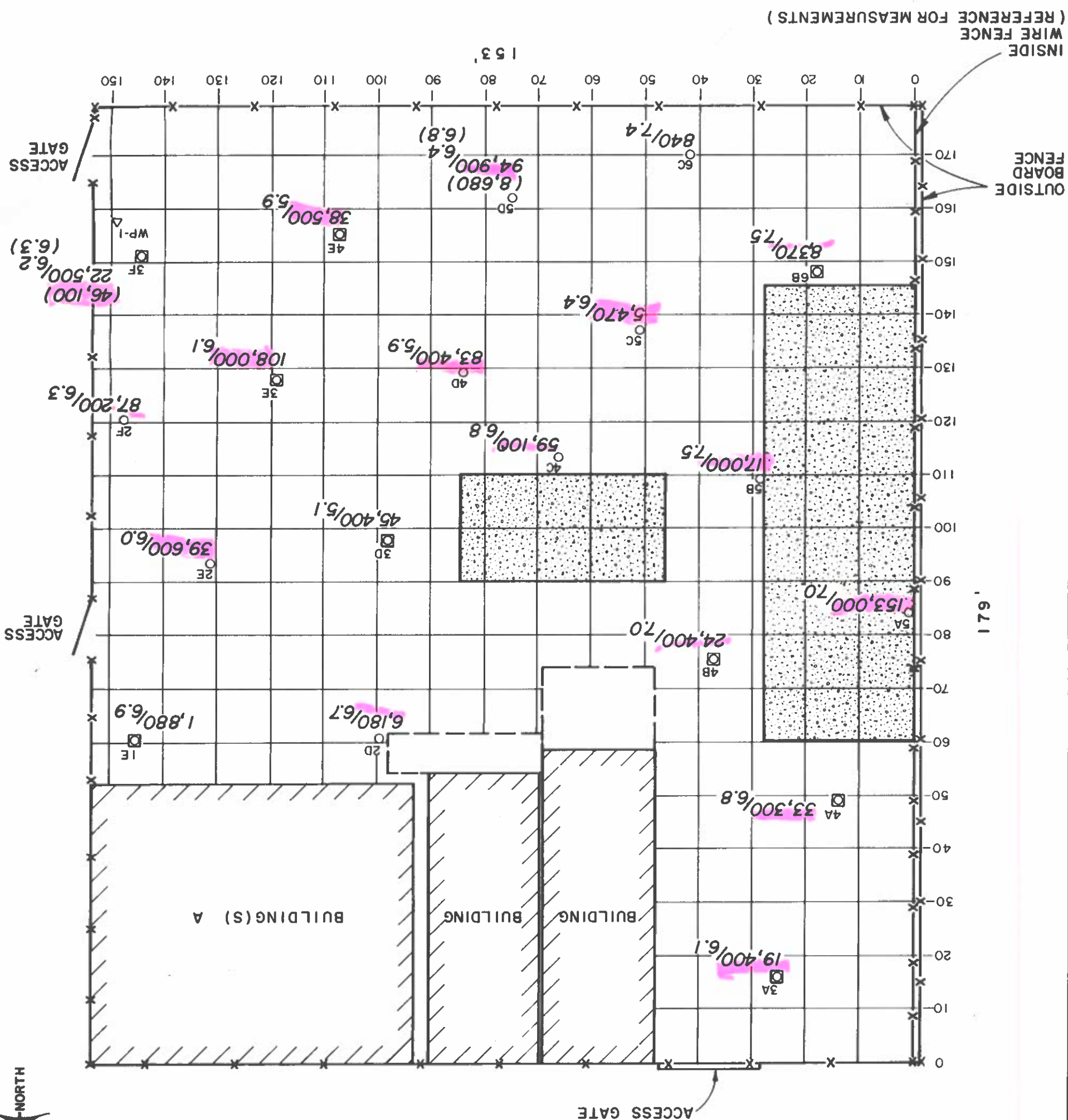
WP-1
WELL POINT

SURFACE SAMPLE LOCATION FOR
PCBS , TOTAL LEAD,AND PH

SUBSURFACE SAMPLE LOCATION
FOR PCBS , TOTAL LEAD,AND PH

CONCRETE PAD

LEGEND



APPROX. SCALE IN FT.: 1" = 20'

(2.74) SAMPLE DUPLICATE VALUES

TOTAL PCB CONCENTRATIONS, PARTS PER MILLION (ppm), AT 2 TO 2.5 FEET BELOW THE GROUND SURFACE. ANALYSIS PER EPA METHOD 8080. ND - NON DETECTABLE (CONCENTRATIONS BELOW 0.01 ppm).

2d SURFACE SAMPLE LOCATION FOR
PCBS, TOTAL LEAD, AND PH

3d SUBSURFACE SAMPLE LOCATION
FOR PCBS, TOTAL LEAD, AND PH

WP-1

WELL POINT

CONCRETE PAD

LEGEND

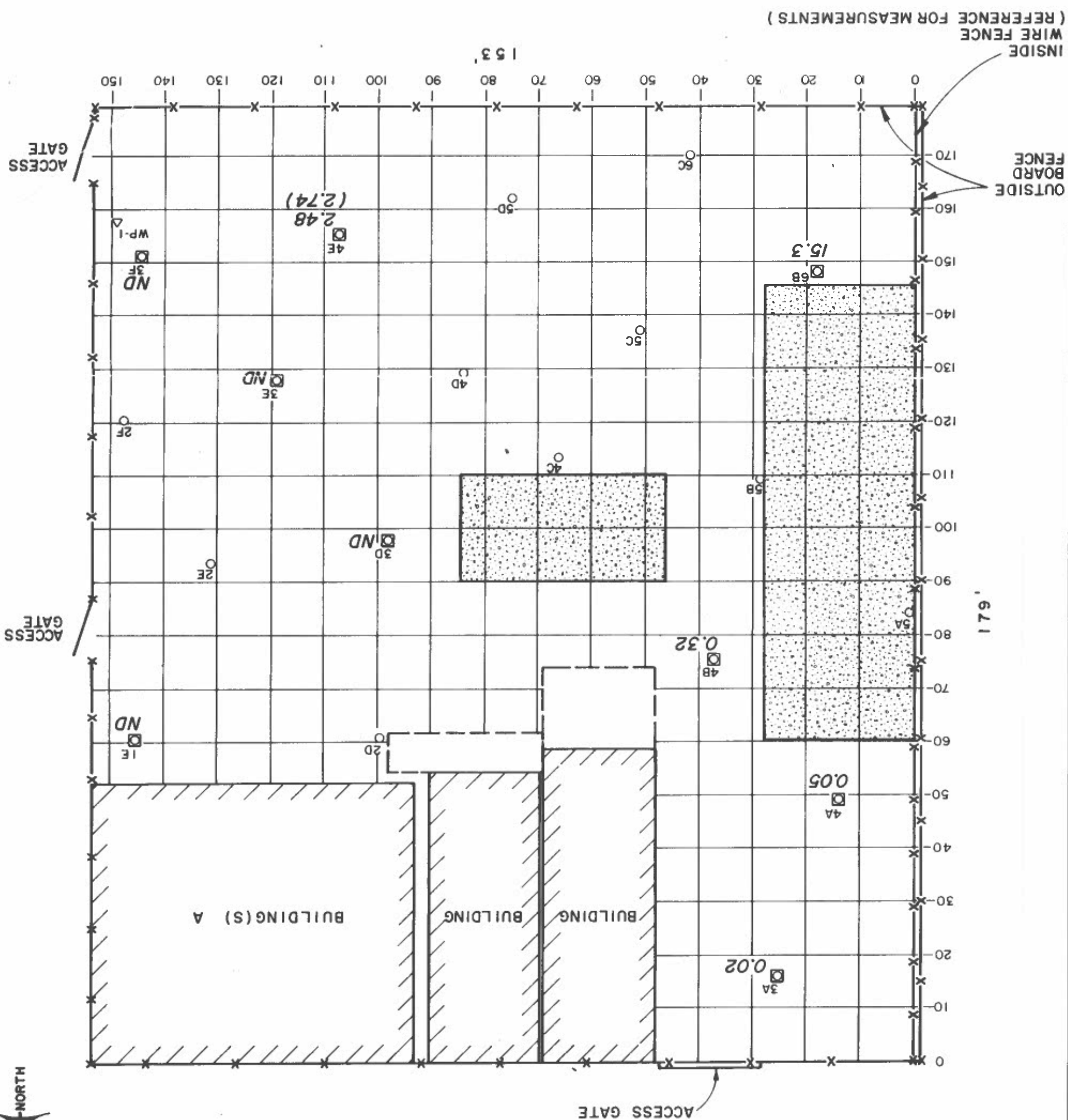


PLATE - 5 TOTAL LEAD CONCENTRATIONS & PH VALUES AT 2 to 3 ft. BELOW GROUND SURFACE

APPROX. SCALE IN FT: 1" = 20'

SAMPLE DUPLICATE VALUES

(5.7)

TOTAL LEAD CONCENTRATIONS (per ICP)
IN PARTS PER MILLION (ppm) AND PH
FOR SAMPLES COLLECTED FROM 2 to 2.5
feet BELOW THE GROUND SURFACE.

4.3/6.9

WELL POINT

WP-1

SURFACE SAMPLE LOCATION FOR
PCBS, TOTAL LEAD, AND PH

SUBSURFACE SAMPLE LOCATION
FOR PCBS, TOTAL LEAD, AND PH

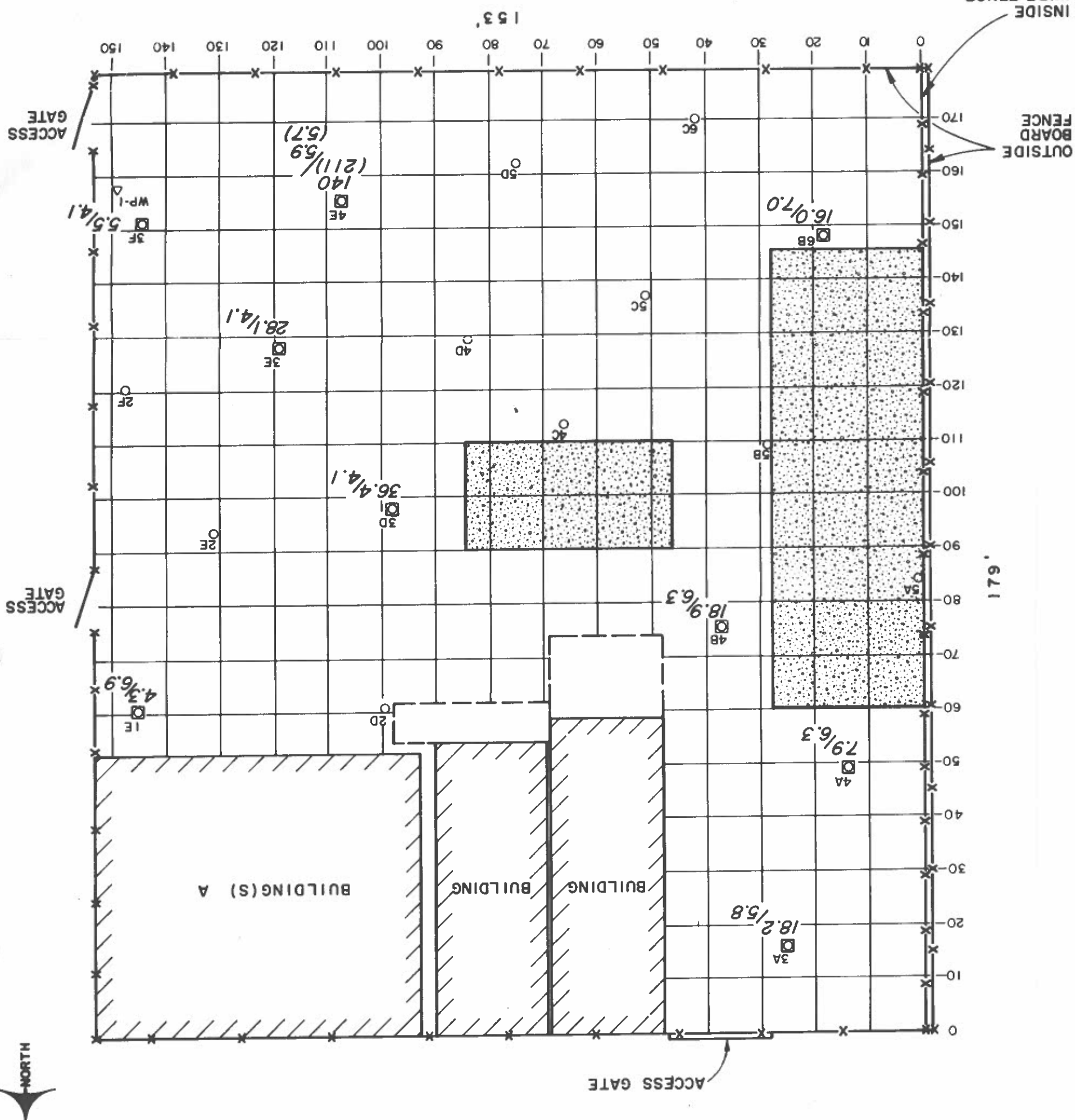
3D

2D

CONCRETE PAD

LEGEND

WIRE FENCE (REFERENCE FOR MEASUREMENTS)



APPROX. SCALE IN FT.: 1" = 20'
 0 10 20 30 40

- SURFACE SAMPLE LOCATION FOR
 PCBs, TOTAL LEAD, AND PH
 SUBSURFACE SAMPLE LOCATION
 FOR PCBs, TOTAL LEAD, AND PH
 WELL POINT
 PCB AT 0.5-1.0' BELOW GROUND
 SURFACE
 LEAD BY EP TOX AND ICP, PH AT
 0.5-1.0' BELOW GROUND SURFACE
 LEAD BY EP TOX AND ICP, PH AT
 GROUND SURFACE

- CONCRETE PAD
 SURFACE SAMPLE LOCATION FOR
 PCBs, TOTAL LEAD, AND PH
 SUBSURFACE SAMPLE LOCATION
 FOR PCBs, TOTAL LEAD, AND PH
 WELL POINT
 PCB AT 0.5-1.0' BELOW GROUND
 SURFACE
 LEAD BY EP TOX AND ICP, PH AT
 0.5-1.0' BELOW GROUND SURFACE
 LEAD BY EP TOX AND ICP, PH AT
 GROUND SURFACE

- LEAD BY EP TOX AND ICP, PH AT 2.5 ft.
 BELOW GROUND SURFACE
 ANI. DEEP BORING (PROPOSED)
 T.N.H. DEEP BORING

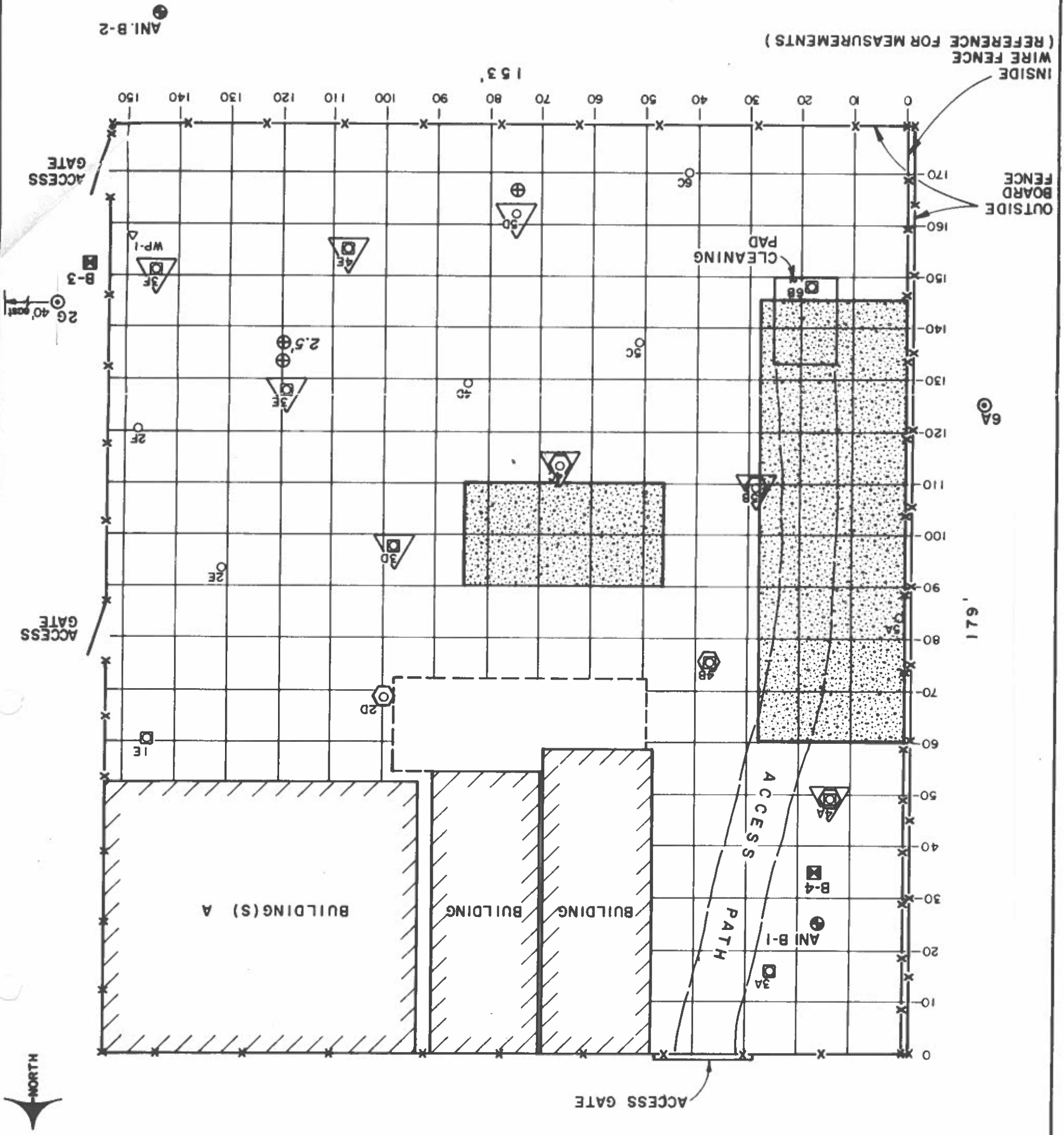
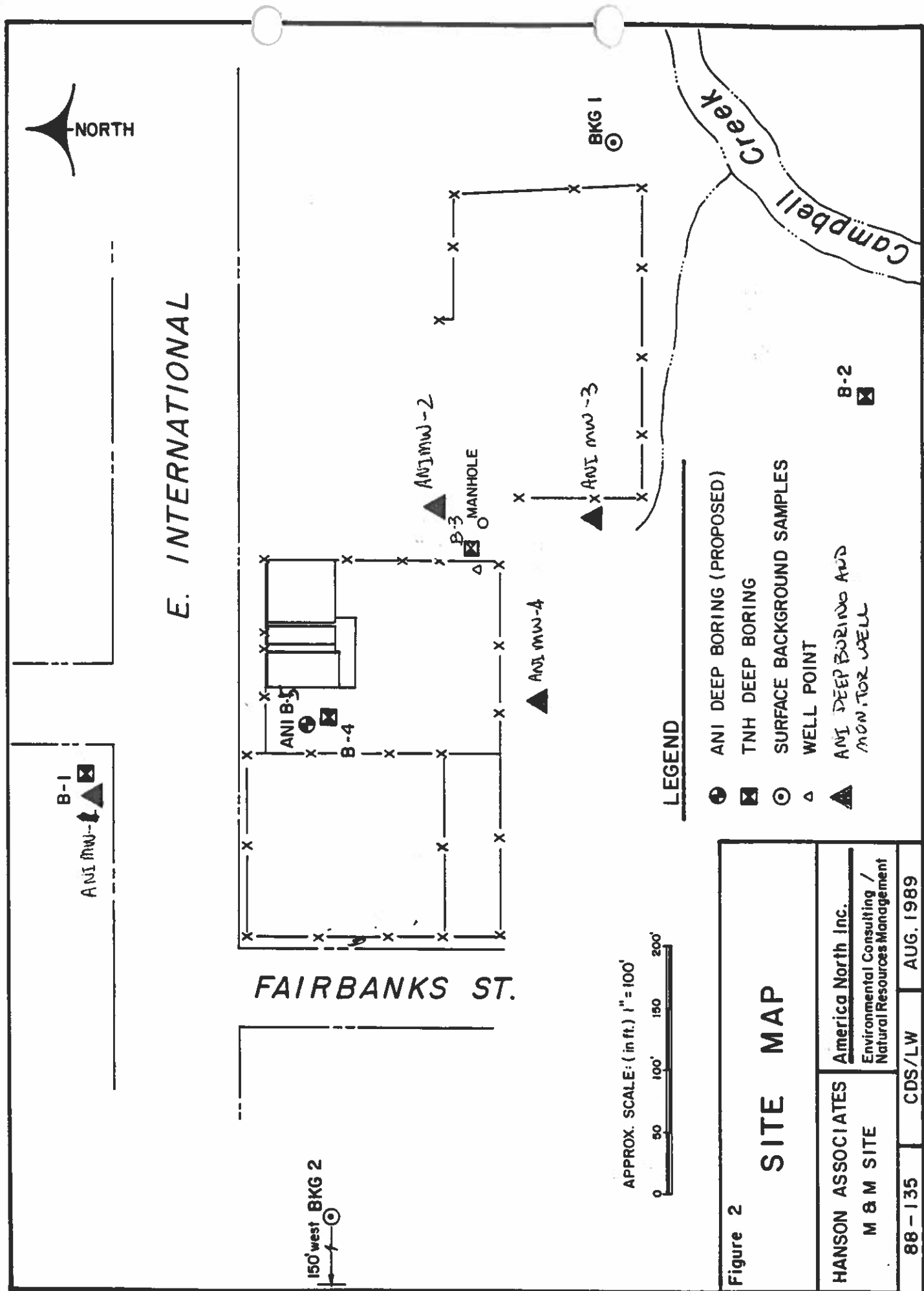


Table 1

Sample ID	PCB, ppm			Lead, ppm		
	Surface	.5-1 ft.	2-3 ft.	Surface	.5-1	2-3 ft.
1E	3		ND	1880		4.3
2D	40.9	prop		6180		
2E	13.5	✓		39600		
2F	0.4			87200		
3A	12.4	✓	0.02	19400		18.2
3D	12.0	✓	ND	45400	prop	36.4
3E	8.5		ND	108000	prop	28.1
3F	2.5		ND	22500	prop	5.5
4A	23.3	prop	0.05	33300	prop	7.9
4B	25.3	prop	0.32	24400		18.9
4C	30.2	prop		59100	prop	
4D	1.8			83400		
4E	0.5		2.48	38500	prop	140
5A	28.5	prop		153000	prop	
5B	20.6	prop		17000	prop	
5C	11.4	✓		5470		
5D	6.0			94900	prop	
6B	93.4		15.3	8370		16.0



HANSON ASSOCIATES M & M SITE		America North Inc. Environmental Consulting / Natural Resources Management	88-135	CDS/LW	AUG. 1989
---------------------------------	--	--	--------	--------	-----------

REVISED

POLLUTION ASSESSMENT REPORT

PHASE I

For:

**Hanson Associates
141 East Potter Drive
Anchorage, Alaska 99509**

By:

**America North Inc.
201 East 56th, Suite 200
Anchorage, Alaska 99518**

October 1989

TABLE OF CONTENTS

1.0 INTRODUCTION

2.0 BACKGROUND

- 2.1 Site Description and History**
- 2.2 Physical Setting**
- 2.3 Hydrogeology**
- 2.4 Previous DEC Site Investigations**

3.0 PHASE I INVESTIGATION RESULTS

- 3.1 Surface Soil Samples**
- 3.2 Subsurface Soil Samples**
- 3.3 Well Point Water Sample Analysis**
- 3.4 Data Interpretation And Relevant Site Characteristics**

4.0 PROPOSED ACTIVITIES FOR THE PHASE II INVESTIGATION

- 4.1 Vertical Extent of Contamination**
- 4.2 Assess Leaching Potential**
- 4.3 Contamination at Depth**
- 4.4 Horizontal Extent of Contamination**
- 4.5 Sanitary Sewer**
- 4.6 Cheaning/Sampling/Waste Materials Disposal Plan**

5.0 ANALYTICAL PROGRAM

6.0 MONITORING SCHEDULE

APPENDIX A Laboratory Analytical Results

APPENDIX B Quality Assurance/Quality Control (QA/QC) Plan

APPENDIX C Health and Safety Plan

LIST OF FIGURES

FIGURE 1	Site Vicinity Map
FIGURE 2	Site Map
FIGURE 3	TNH Sampling Location Map
FIGURE 4	TNH Lead Concentrations in Soils

LIST OF TABLES

TABLE 1	TNH Soil Analyses Data for M&M Site
TABLE 2	TNH Water Analyses Data for M&M Site
TABLE 3	M&M Site PCB, Total Lead, and pH Analyses Results, Surface Soils
TABLE 4	M&M Site PCB, Total Lead, and pH Analyses Results, Subsurface Soils

LIST OF PLATES

PLATE 1	Base Map
PLATE 2	Total PCB Concentrations in Surface Samples
PLATE 3	Total Lead Concentrations and pH in Surface Samples
PLATE 4	Total PCB Concentrations at 2 to 3 Feet Below Ground Surface
PLATE 5	Total Lead Concentrations and pH Values at 2 to 3 Feet Below Ground Surface
PLATE 6	Phase II Sampling Locations

1.0 INTRODUCTION

This Phase I Pollution Assessment Report (PAR) was prepared for Hanson Associates (Hanson) by America North, Inc. (ANI) for the property located at 620 East International Airport Road, Anchorage, Alaska, known as the M & M Enterprises Site (Site). It presents a summary of all known data regarding the Site, compiled in both verbal and visual forms. Work which was completed per the Alaska Department of Environmental Conservation (DEC)-approved Pollution Assessment Plan (PAP) is incorporated into this report, and data is analyzed and interpreted. Additional site investigation activities are proposed as part of a Phase II assessment. These activities are necessary to further define the nature and extent of the horizontal and vertical contamination at the Site. The Quality Assurance/Quality Control (QA/QC) Plan and Health and Safety Plan from the PAP are incorporated as part of this report (Appendices B and C).

This Phase I Pollution Assessment Report conforms with requirements of the Compliance Order by Consent (the Order) signed May 9, 1989. The Order outlines the voluntary site investigation and remediation activities to be performed by Hanson at the Site.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance was utilized in preparing this plan since the site is in the CERCLA Information System (CERCLIS) (No. AKD-980664981). All relevant EPA guidance will be used to ensure that all costs incurred will be deemed necessary and consistent with the National Contingency Plan (NCP). Environmental Protection Agency (EPA) polychlorinated biphenyl (PCB) spill site guidance was also used since PCBs were suspected at the Site. Guidelines established under CERCLA and the Toxic Substances Control Act (TSCA) have been followed to the extent to which they are applicable at this Site.

2.0 BACKGROUND

2.1 Site Description and History

The Hanson Associates property, hereinafter referred to as the M & M Enterprises Site or as the Site, is located at 620 East International Airport Road in Anchorage, as shown in Figure 1. Figure 2 shows a site map. The property is owned by Hanson Associates.

The Site consists of two interconnected single story wood frame houses which are used for office space, a large yard behind the houses, and an unpaved parking area in front of the houses. An unpaved alley is located east of the Site. The rear yard is enclosed by an 8 to 10 foot high fence.

Several operators have leased the Site from Hanson Associates since about 1964. Site operations have included metals and battery recycling. M & M Enterprises, owned by Mrs. Mildred McGalliard, operated a scrap metal and battery recycling business at the Site from 1981 until 1987. Battery recycling operations are of particular concern since sulfuric acid from the batteries was reportedly handled by draining it into a neutralization tank, neutralizing it with soda ash (sodium carbonate), then draining it via a discharge hose off-site to a sanitary sewer manhole in the alley east of the Site. Battery recycling operations were performed on the southeast side of the Site.

2.2 Physical Setting

The M & M Site is located on the lowland between the Chugach Mountains to the east and Knik and Turnagain Arms of Cook Inlet to the west. The Anchorage plain is a large alluvial fan deposited by streams draining the Chugach Mountains. Surficial deposits at the Site are mapped as the Bootlegger Cove clay. Soil borings installed by a DEC contractor in 1986 described granular fill soils underlain by peat and then silt {Tryck, Nyman, and Hayes (TNH), 1986}. The peat soils underlying the fill range in thickness from 3.5 feet to 6.0 feet, and they represent the wetland which was filled at the time of development. Beneath the silt, a gray clayey silt with occasional sand lenses was encountered which is believed to be the Bootlegger Cove Formation. The Bootlegger Cove Formation ranges in thickness from about 26 feet to 125 feet in the

Anchorage area. The minimum thickness of this formation observed in well logs within a three mile radius of the Site was 60 feet.

The Site lies at an elevation of approximately 105 feet above Mean Sea Level (MSL). Campbell Creek flows to the south-southwest about one-eighth mile southeast of the Site. The average discharge of Campbell Creek is 65.5 cubic feet per second (USGS, 1984).

2.3 Hydrogeology

Two aquifers are defined at the Site; a shallow aquifer not used for water supply and a deeper confined aquifer which provides ground water to Anchorage wells regionally. The Bootlegger Cove Formation acts as the confining unit between the two aquifers. The depth to ground water in the shallow aquifer was found by the DEC contractor to be between one and six feet at the Site. Borings drilled 2.5 to 3.0 feet below ground level (during Phase I activities) generally encountered a water table. These borings were all within the confines of the yard (see Plate 1).

2.4 Previous DEC Site Investigations

DEC contractors performed a file review and a site investigation in 1986. The file review included interviews with Mrs. Mildred McGalliard and Mr. Rolph Hanson as well as records review. The site investigation entailed installation of soil borings and monitor wells, and sampling and analysis of soils and ground water. Figure 3 shows monitor well locations.

This section summarizes the results of the TNH investigation. DEC has expressed concern for the quality and scientific validity of the investigation; therefore, TNH results will generally need to be verified or refuted during ANI's Phase I and Phase II investigations.

Soil Sampling Results

Soil samples were taken from the east side of the back yard at two depths (surface and 1 foot) from each of three locations for analysis of lead sulfate, pH, conductivity, and solids. Total lead levels were highest at the surface and decreased with depth. The

highest lead concentration (7200 mg/kg) was measured at the surface at sample location 3 adjacent to the fence on the southeast side of the yard. The pH of the soil samples at the three locations was low (around 3), indicating acidic conditions. This is the area where battery recycling operations were performed.

A total of four soil borings and monitoring wells were installed on-site and off-site. Soil from each of the borings was sampled at the surface, at 10-11 feet, and at the bottom of the hole, 15 to 20 feet below the surface.

Boring NW was installed off-site to the northwest for background data. The background total lead level at the surface was 43 mg/kg; levels below the surface were 4 - 5 mg/kg. The sample collected at ten feet at NW exhibited a low pH of 4; the sample was collected from the peat layer which characteristically is low pH.

The surface soil sample collected at FG measured 5000 mg/kg total lead. Boring FG is located just outside the fence on the east side of the yard. Below the surface at FG, lead levels were comparable to background (43 mg/kg).

Boring IW was installed in the northwest corner of the yard and showed total lead concentrations greater than 1000 mg/kg at the surface and at 10 feet. The sample from 15 feet, however, was again at background levels.

Boring SW, located southwest of the Site near Campbell Creek, showed a total lead level (900 mg/kg) greater than background (43 mg/kg) at the surface. Lead concentrations were only slightly elevated at 7 feet below ground level and were at background concentrations again at 20 feet. This data is summarized in Table 1, and Figure 4 (TNH, 1987) illustrates lead concentrations in the subsurface.

Soil samples were collected at four locations along the assumed surface water flow route from the site toward Campbell Creek; they were analyzed for PCBs. All measured PCB levels were less than 3 ppm.

Water Sampling Results

A monitoring well was installed in each of the four soil borings. Ground water collected from the wells was analyzed for pH, conductivity, sulfate, and lead. The well bores were backfilled with contaminated drill cuttings, an unacceptable practice. However, the data obtained from these wells can still be useful in evaluating the water quality. Any error associated with the poor well construction would cause the concentrations measured in ground water samples to appear higher than those actually present in the native ground water. Well FG-1, located off-site adjacent to the fence on the southeast side of the property, showed the highest concentrations of all constituents measured and the lowest pH. Total lead was measured in well FG-1 at a concentration of 0.047 mg/l, less than the Federal drinking water standard of 0.05 mg/L. Sulfate and pH exceeded secondary drinking water standards (6.5-8.5) in all four wells; however, even in the background well (NW1), the pH was outside of the range of the secondary drinking water standards for pH. The peat soils found in this area are naturally acidic and may be responsible for low pH found in the ground water.

3.0 PHASE I INVESTIGATION RESULTS

America North, Inc. collected surface and subsurface soil samples and installed a well point for collection of a ground water sample per the approved PAP. The purpose of Phase I was to perform an initial assessment of the extent of the PCB and lead contamination in soils and ground water at the Site. Plate 1 shows the location of surface and subsurface soil samples, and Appendix A contains laboratory analytical results.

3.1 Surface Soil Samples

Surface soil samples were collected at 19 locations within the M&M yard (Plate 1) and at two background locations identified on Figure 2. These samples were submitted and analyzed for PCB (EPA Method 8080), total lead {by inductively coupled plasma system (ICP)}, and pH. Surface PCB concentrations are listed in Table 3 and shown on Plate 2. Total lead and pH values are also listed in Table 3, but displayed on Plate 3.

PCBs. The average PCB concentration is 18 ppm. Eleven of the nineteen values are greater than the 10 ppm cleanup level dictated by the Order. These points are consistently in the west and northwest portion of the yard (except point 2D).

Soil at points 6B and 2D are of greater concern than soils at other sampled locations in the yard. At these points, PCB concentrations approach (40.9 ppm) or exceed (93.4 ppm) a 50 ppm TSCA guideline; soil contaminated at levels above this guideline may require different treatment (during cleanup) than soils contaminated with PCBs between 10 and 50 ppm. Therefore, Phase II will outline more detailed sampling in these two areas.

Total Lead and pH. Total lead concentrations in the top one centimeter of soil/trash averaged 40,000 ppm. pH generally ranged from 6 to 7, with only one value below 5.8 (5.05). Total lead concentrations are well above the 500 ppm cleanup standard dictated by the Order.

Samples were collected concurrent with and per procedures appropriate for EPA Method 8080. This collection technique may be responsible for detected lead levels which were consistently elevated compared to surface lead levels previously measured by the DEC contractor (TNH, 1987). Phase II sampling activities will help to define lead concentrations in the very shallow subsurface (6 to 12 inches below ground surface). These samples will be collected using standard sampling protocol for lead.

3.2 Subsurface Soil Samples

Subsurface soil samples were collected at nine locations in the M&M yard. These samples were obtained using a stainless steel hand auger. The sampling interval ranged from approximately 2.2 feet to 3.0 feet below the ground surface. Samples were analyzed for PCBs per EPA Method 8080, and total lead per ICP. Soil pH was also measured; analytical results are summarized in Table 4.

PCBs. PCB concentrations at seven of nine subsurface locations sampled (Plate 3) were consistently either non-detectable, or below 1 ppm. Point 4E, in the southeast corner of the yard, was less than 3 ppm. This is below the 10 ppm cleanup standard. Point 6B was the only subsurface sample which exhibited PCB concentrations (15.3

ppm) above cleanup standards (point 6B also exhibited the highest surface PCB concentrations at 93.4 ppm). The finding of contamination at depth is not particularly surprising in that it was also the only boring in which refuse material was observed in the boring profile below approximately 6 inches depth (observed to about 1.5 feet below ground surface).

Total Lead and pH. Total lead concentrations in the sampled intervals (2.2 feet to 3.0 feet below ground surface) are at background or slightly above background concentrations at all locations except one (Table 4). Background subsurface lead concentrations are estimated from TNH report data, since no subsurface background data was collected during the ANI Phase I investigation. TNH report data indicates background total lead concentrations range from 3 to 5 ppm (below 7 feet below ground surface). Subsurface total lead values in the M&M yard range from 4 to 36 ppm (average 17 ppm), except for Point 4E at a concentration of 140 and 211 ppm (duplicate analyses).

Subsurface pH values range from 4.1 to 7.0 (Table 4). Although three values are less than the cleanup level of 5.0, the values are still above the pH of the soils at 10 foot depth in the background sample collected by TNH at Boring NW (TNH, 1987).

3.3 Well Point Water Sample Analysis

Water collected from the well point was analyzed for lead content (by graphite furnace) and pH. Results indicate lead concentrations (0.053 ppm) slightly exceed primary drinking water regulation standards outlined in 18 AAC 80.050 (0.050 ppm). Water pH was 3.58. Analytical results are included in Appendix A.

3.4 Data Interpretation And Relevant Site Characteristics

Per DEC requests, surface soil samples were collected from two locations outside the M&M yard and analyzed for PCBs, lead, and pH. The concentrations measured should represent background concentrations of total lead and PCBs (Figure 2), although their validity is slightly suspect. BKG1 was collected in a heavily vegetated area 500 feet east of the yard. BKG2 was collected in a field approximately 600 feet west of the yard which was virtually barren of vegetation and appears to be fill.

To obtain a truly representative background sample within a reasonable distance of the yard is difficult since almost all surface cover is asphalt, cement, buildings, sod, or imported fill. It is surprising that lead levels at BKG1 are so high (195 ppm). Due to the physical location of BKG1, it does not appear likely that lead contamination at this point would be attributable to activities at the M&M yard. Surface lead concentrations seem to be quite variable, and it is possible to conclude that in fact background lead levels are naturally higher at the surface than in the subsurface (10-50 at the surface, 5-15 in the subsurface). This characteristic may be the result of automobile emissions effecting surface lead concentrations across the entire area.

Plates 2 through 5 illustrate PCB, total lead, and pH values at the ground surface and 2.5 feet below ground level. PCB concentrations are slightly elevated above cleanup standards in the western portion of the yard at the ground surface. Total lead concentrations measured in samples were significantly elevated above Order-specified cleanup levels at all surface sampling locations.

PCBs are a problem in the subsurface at only one location (6B), which is just off the main cement slab in the southwest corner of the yard. Subsurface disturbance to unusual depths was also observed at this locale. The measured concentration of PCBs at 2.5 feet below the ground surface at sampling location 6B is just above cleanup requirements.

Total lead measured by ICP is at or slightly elevated above background levels in the subsurface. The only exception is point 4E, where measured levels range from 140 to 211 ppm (duplicate analyses). This is still below the 500 ppm cleanup standard dictated by the Order.

Relevant Site Characteristics. Ground water gradients and more detailed soil profiles will be provided as part of the Phase II assessment. Based on augering of nine holes to a depth of 2 to 2.5 feet below ground surface (in the confines of the M&M yard), soils are generally a sandy, gravelly fill with abundant cobbles and occasional boulders. These soils are slightly silty, and in some areas of the yard are highly organic (although a peat layer was not encountered within three feet of the surface). The layer of surface trash ranges in thickness from 3 to 9 inches, although in one boring (6B) trash was observed to 1.5 feet below the ground surface.

The yard is adequately secured on three sides. The board fence along the east side of the yard is in disrepair and will be upgraded to prevent unauthorized entrance.

Based on data available from Phase I, it appears a rather extensive remediation/cleanup project is necessary. Based on Phase I investigation results, the contamination is relatively confined to the surface trash and soils which are within the boundaries of the M&M yard. While Phase II is being conducted to further define this contamination, various alternatives for remediating the contamination will be investigated. A combination of off-site disposal and on-site treatment techniques may prove most feasible.

4.0 PROPOSED ACTIVITIES FOR THE PHASE II INVESTIGATION

Based on the Phase I investigation, an additional site investigation is warranted to further define the extent of contamination at the M&M Site. Total lead and PCB concentrations at 2.5 feet below the ground surface are at or only slightly above background levels (the notable exception is location 6B for PCBs).

Objectives of Phase II are as follows:

- refine the vertical extent of contamination;
- assess the leaching potential of the lead contamination;
- investigate contamination at depth (8 to 15 feet below the ground surface), and characterize Site geology and hydrogeology;
- monitor ground-water quality at the Site;
- further define the horizontal extent of contamination;
- confirm the soundness of the sanitary sewer at the southeast corner of the Site;
- outline a cleaning/sampling plan for disposing miscellaneous non-hazardous solid waste.

4.1 Vertical Extent of Contamination

Phase I data manifested characteristic PCB insolubility. PCBs were not expected at depth; PCB concentrations above cleanup standards were detected at depth only where the surface PCB concentration was highest and subsurface disturbance was evident. Therefore, shallow subsurface soil samples will be collected at locations where surface PCB concentrations exceed 15 ppm to verify PCB confinement to the

very shallow subsurface. The sampling locations are indicated on Plate 6. Samples will be collected immediately below the trash layer, from 0.5 to 1.0 feet below the ground surface.

In the vicinities of sampling points 2D and 6B, additional subsurface samples will be collected to more fully characterize contamination in these areas. Sampling points are shown on Plate 7.

Phase I subsurface data also indicated elevated total lead concentrations are confined to the shallow subsurface. Samples will be collected at eight locations in the M&M yard from immediately below the trash layer (0.5 to 1.0 feet below the ground surface) for total lead analysis by ICP, and also for lead analysis by extraction procedure toxicity (EP Tox) procedures. Most of these locations coincide with surface sampling locations which were highest in total lead, although sampling points were also chosen to provide areally representative data across the yard. Sampling locations are identified on Plate 6.

Ten additional locations will be sampled and analyzed for total lead by ICP. These samples will be collected 0.5 feet below ground surface, and they coincide with previous surface sampling locations which are not being sampled for dual lead analysis (ICP and EP Tox).

4.2 Assess Leaching Potential

Phase II will investigate the leaching potential of the lead contamination on-site. The eight shallow subsurface soil samples which will be collected for total lead analysis and elemental lead analysis by EP Tox procedures will provide such information. This data will characterize the tendency of the lead on-site (at the sampled depths) to migrate or leach. Sampling locations are indicated on Plate 6.

Two of the sampling locations which exhibited the highest surface total lead concentrations will be resampled and subjected to analyses by EP Tox procedures (Plate 6). Because of lead concentration variability in the surface, they will also be analyzed for total lead by ICP. This procedure will permit an assessment of the relative leachability of the high lead concentrations measured in the surface layer.

Two soil samples from depth in each ANI boring will be submitted for analysis for lead by both ICP and EP Tox procedures. This practice will facilitate assessment of leaching potential of lead in soils at depth.

4.3 Contamination at Depth

Analyses of samples which were collected from depth (below 3 feet) at the four boring locations indicate that significantly elevated lead concentrations were detected in only one boring (TNH, 1987) at one depth. Deep subsurface data is abridged from the TNH report and presented in Table 1.

ANI will install its own system of borings and monitoring wells to assess contamination at the Site. The initial boring will be continuously split-spoon sampled from approximately five feet below ground surface (bgs) to total depth. Subsequent borings may be more selectively sampled depending on conditions encountered in the field. The borings will be terminated in the Bootlegger Cove clay, estimated to be from 15 to 20 feet bgs. As indicated in the QA/QC Plan, borings will be logged by an ANI geologist. Recovered split-spoon samples that are not submitted for analysis will be marked and stored in core boxes for later reference.

To verify the integrity of sample IWS2 [since collection of soil samples below the water table (by standard procedures) generally creates suspicion of the integrity of the samples], ANI proposes to advance a boring in the general vicinity of IWS2. ANI will submit four to five soil samples from depth intervals to be determined in the field for total lead (ICP) analysis (this boring is designated ANIB-2, Plate 6 and Figure 2). Sample selection will depend on field pH measurements of the soil samples; if soil pH varies measurably, samples will be chosen from intervals exhibiting different segments of this range. The samples which exhibit the highest and lowest pH in the interval sampled will also be analyzed for lead by EP Tox procedures. If contamination is encountered at the level indicated by the TNH analyses, a measure of the leaching potential of the lead at the locale can thus be made. A monitoring well will be installed at this location to obtain ground-water quality data.

A boring (designated ANIB-1 on Figure 2) will be advanced to the north of the yard to obtain subsurface background information. This boring will be completed as a monitor well. Four to five soil samples from the sampled interval will be submitted

for lead analysis by ICP. Two samples will be submitted for lead analysis by EP Tox procedures. Continuous drives will be taken from approximately five feet below the ground surface to total depth to characterize subsurface strata.

A third boring, designated ANIB-3, will be advanced at a point approximately 30 feet northeast of the manhole at the southeast corner of the yard. This boring will offset TNH boring B-3 (the ANI boring is to the east of TNH boring B-3), and a monitoring well will be constructed in boring ANIB-3. As in ANIB-2, continuous drives will be taken from about five feet below the ground surface to TD, and four to five samples will be submitted for total lead analysis by ICP. Two samples will be submitted for lead analysis by EP Tox procedures based on field pH measurements.

Borings will be advanced south of the Site (ANIB-5), and southeast of the Site (ANIB-4). these borings will be sampled as previous borings, and monitor wells will be installed according to procedures outlined in the QA/QC Plan.

Elevations of all ANI monitoring wells will be determined by a land surveyor registered in the state of Alaska. A potentiometric surface map will be constructed using water levels obtained from ANI wells. Water levels will be measured monthly (from the time the wells are developed) to determine the ground water gradient during the course of a year. After the first year, water levels will coincide only with water sampling events (semi-annual).

Well ANIB-1 will provide background water quality data. Well ANIB-2 will provide ground-water quality data from the subsurface within the yard boundaries. Wells ANIB-3, ANIB-4, and ANIB-5 will provide water quality data in the area which is currently considered down gradient (with respect to the water table) from the M&M yard. Ground water samples will be collected from all ANI monitor wells and submitted for analysis to determine total lead concentrations. Water samples will also be submitted for sulfate analysis. Ground water pH and conductivity will be measured at the time of collection.

4.4 Horizontal Extent of Contamination

Surface soil samples will be collected at locations east, west, and south of the M&M yard to define the extent of the surface contamination. If surface contamination is

identified, additional surface and subsurface sampling may be necessary in the future.

One sample (6A in Plate 6) will be collected from the gravel yard immediately west of the M&M yard. The lot west of the M&M yard is paved to a point approximately 120 feet south of the northern boundary of the yard; therefore, only a limited area of soil is accessible for sampling. The soil will be sampled immediately beneath the gravel fill which is at the location.

Two surface soil samples will be collected immediately east of the alley roadway. These sampling locations are designated 1F and 3G in Plate 6. A third surface soil sample will be collected at boring ANIB-3 (near Point 2G).

Two soil samples will be collected immediately south of the yard. The area is paved, and samples will be collected by drilling through the pavement and collecting soil samples near the pavement base/native soil interface (though exact definition may be difficult). Sampling locations are identified as 5E and ANIB-5 on Plate 6 and Figure 2.

Surface soil samples will be analyzed for PCBs per EPA Method 8080, and total lead by ICP. Soil pH will also be measured.

Since surfaces to the north are either under buildings or paved (as well as up gradient with respect to the water table), the boundaries of the yard are considered to define the northern extent of contamination.

4.5 Sanitary Sewer

Because of concern over degradation of the sanitary sewer near the southeast corner of the yard, the manhole at that location was accessed. The concrete "chimney" opens to a four-foot diameter vault which is approximately eight feet deep. Visual examination indicates that an approximately eight-inch diameter sewer pipe feeds into the floor of the vault from the west. An open "gutter" serves as the fluid conduit across the base of the vault, and it feeds out to an eight-inch diameter sewer pipe on the east side of the vault.

Mr. Hanson indicated the manhole and line were installed in the early 1980s; if this is the case, construction is probably of ductile iron which would be very resistant to degradation by acids. Water was observed flowing freely through the gutter at the time of inspection, and manhole or sewer line degradation was not evident. Anchorage Water and Wastewater Utility (AWWU) will be contacted to perform a more thorough inspection of the manhole and sewer line during upcoming sampling activities. The Contamination Assessment Report will contain a schematic diagram of the manhole, and results of the AWWU inspection. Excavation is not anticipated at this time.

4.6 Cleaning/Sampling/Waste Materials Disposal Plan

Extensive solid waste of a non-hazardous nature exists on-site. These materials may be contaminated if soil particles are attached to them, or if they are of a porous nature. A plan will be outlined for decontaminating materials and verifying the absence of contamination.

It is proposed the solid waste of a substantial nature (truck beds, wooden spools, metal pipes, car bodies, miscellaneous metal refuse, plastic wire casings) be cleaned on-site by wiping with dry absorbent pads to remove contaminated soil. The pads will be containerized for proper disposal. Before being considered "clean", visible soil particles will be removed from individual articles.

The first load of representative materials would be cleaned, and representative wipe samples and destructive samples analyzed to verify suitability for recycling at a local metal recycling facility or disposal at the MOA landfill. Cleaned material will be staged temporarily in a designated portion of the yard awaiting analytical results. If results indicate materials are acceptable for disposal or off-site recycling, the materials will be removed. As additional materials are cleaned, representative sampling will be performed by ANI personnel. Actual sampling frequency will be discussed with DEC staff, and periodic progress reports will be submitted.

If representative sample analysis indicates the proposed method (dry wipes) is not successful in decontaminating the subject trash, a "closed" solvent wash system will be investigated. An evaluation of "success" may incorporate assessment of background PCB concentrations in items such as newspapers.

A limited quantity of material can be disposed in this manner. A preliminary estimate is approximately 100-200 tons. Materials which will not be cleaned and disposed include soil and substances of a porous nature which have been in direct contact with soil. Drums of lead waste will not be disposed. These drums, and the remaining contaminated soil and materials, will be addressed in the cleanup plan.

5.0 ANALYTICAL PROGRAM

This section will outline the analytical program which will be required to complete Phase II.

EPA Method 8080 for PCBs

- Surface soil samples will be collected at the following locations and analyzed per EPA Method 8080: 1E, 3G, 5E, 6A, ANIB-3, ANIB-5, 2D-1, 2D-2, 6B-1, 6B-2, 6B-3, 6B-4, 6B-5.
- Subsurface soil samples will be collected at a depth from 0.5 feet to 1.0 feet below the ground surface and analyzed for PCBs: 2D, 4A, 4B, 4C, 5B, and 6B-A.
- An appropriate number of wipe samples and destructive samples of materials will be collected and analyzed prior to materials removal operations.

Total Lead by ICP, and pH

- Surface soil samples will be collected and analyzed for total lead by ICP at the following locations: 1E, 3E, 3G, 5D, 5E, 6A, ANIB-2, ANIB-3, ANIB-5.
- Subsurface soil samples will be collected from a depth of 0.5 feet to 1.0 feet below the ground surface and analyzed for total lead: 2E, 2F, 3A, 3D, 3E, 3F, 4A, 4C, 4D, 4E, 5B, 5D, 6B-A.
- Four to five soil samples from each boring (5 to 20 feet) will be analyzed (by ICP) for total lead: ANIB-1, ANIB-2, ANIB-3, ANIB-4, ANIB-5.
- The pH of all surface and shallow subsurface samples submitted for total lead analysis will also be measured; the pH of deep samples will be measured in the field.

Elemental Lead by EP Toxicity Method

- Surface soil samples will be collected and analyzed for EP Toxicity lead: 3E, 5D.
- Subsurface soil samples will be collected from a depth of 0.5 to 1.0 feet below the ground surface and analyzed for EP Toxicity lead: 3D, 3E, 3F, 4A, 4C, 4E, 5B, 5D.
- Two deep subsurface (5 feet to 20 feet) samples from each boring will be analyzed for EP Toxicity lead (analyzed intervals dependent on field screening): ANIB-1, ANIB-2, ANIB-3, ANIB-4, ANIB-5.

Lead Analysis Per EPA Method 239.2, and Sulfate Per EPA Method 375.4 (water)

- Water samples will be collected from monitor wells ANIB-1 through ANIB-5 and submitted for analysis per EPA 239.2 for lead and 375.4 for sulfates. Conductivity and pH will also be measured at the time of collection.

QA/QC Program

- Two duplicate samples for PCB (EPA Method 8080) analysis will be collected. Four to five duplicate samples for total lead by ICP will be submitted for analysis, while two duplicate samples will be submitted for elemental lead analysis by EP Tox. One duplicate water sample will be submitted for analysis.

6.0 MONITORING SCHEDULE

Wells ANIB-1 through ANIB-5 will be sampled every 6 months for at least three years from the time the first samples are collected. Water levels in all ANI monitoring wells will be measured at monthly intervals for the first year. Subsequent to that, water level measurements will be coincident with sampling episodes. An effort will be made to coordinate sampling events with periods of high and low water table conditions.

The wells will be appropriately purged, and samples collected. Samples will be analyzed for lead and sulfate concentrations. Conductivity and pH will also be

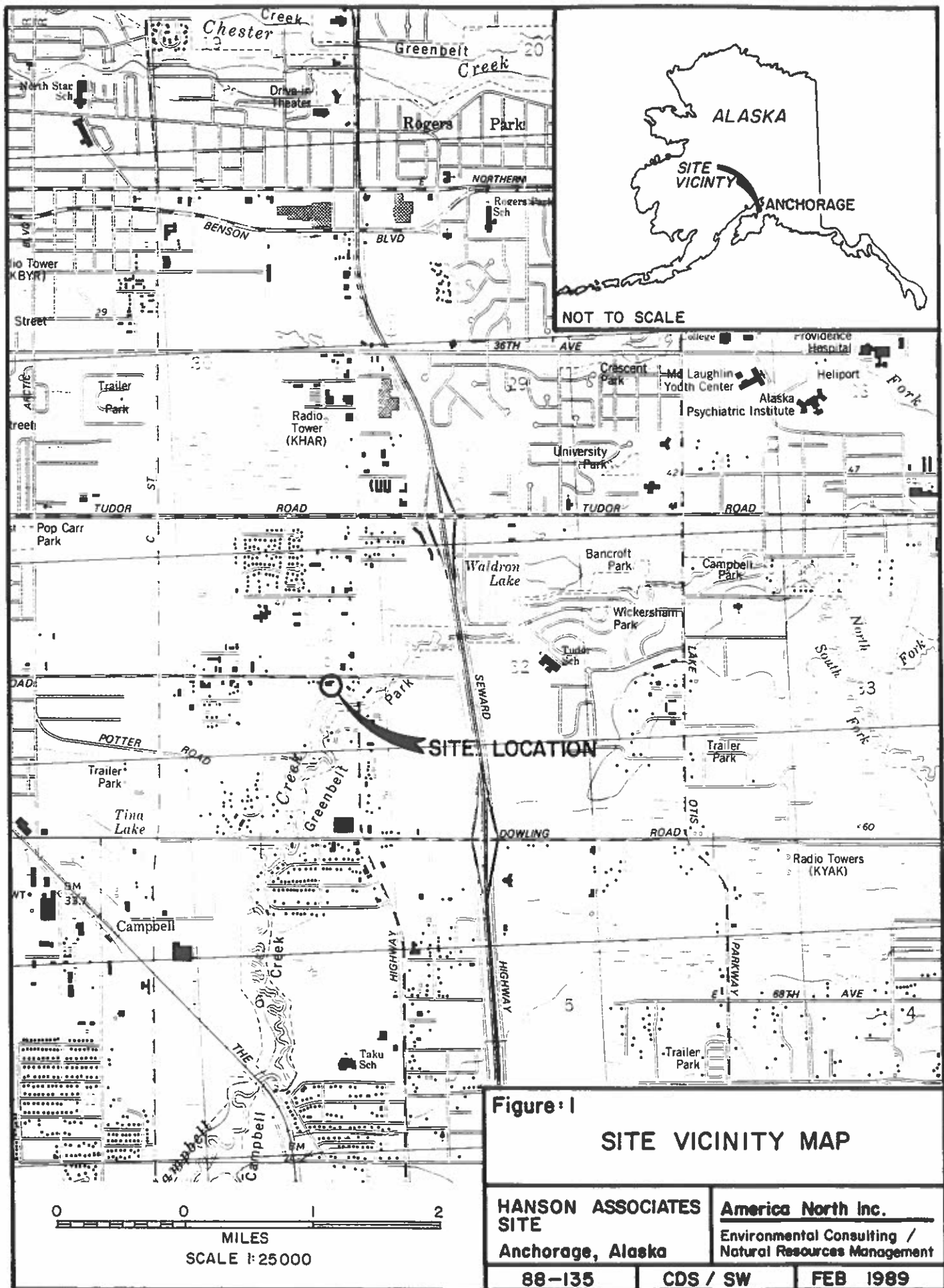
measured at the time of collection. Standard practices will be followed when collecting and analyzing samples.

LIST OF REFERENCES

Tryck, Nyman & Hayes; Science Applications International Corporation; Shannon and Wilson; 1987 (September). "M & M Enterprises -- AKD-980664981; CERCLA Site Inspection Report"; 33 pp.

USEPA, 1986 (May); U.S. Environmental Protection; Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup; Office of Toxic Substances, Washington D.C.; EPA - 560/5-86-017; 45 pp.

FIGURES



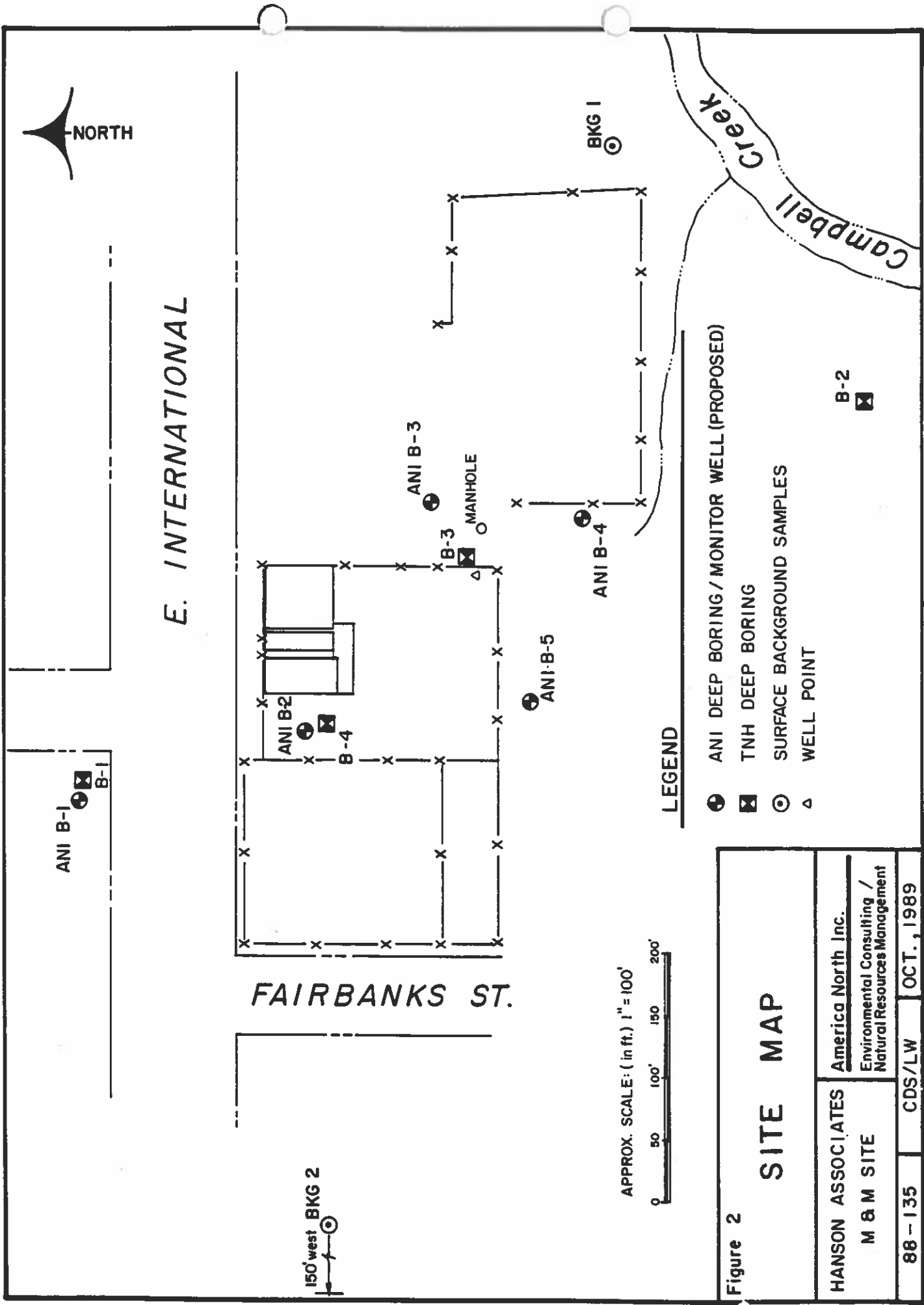
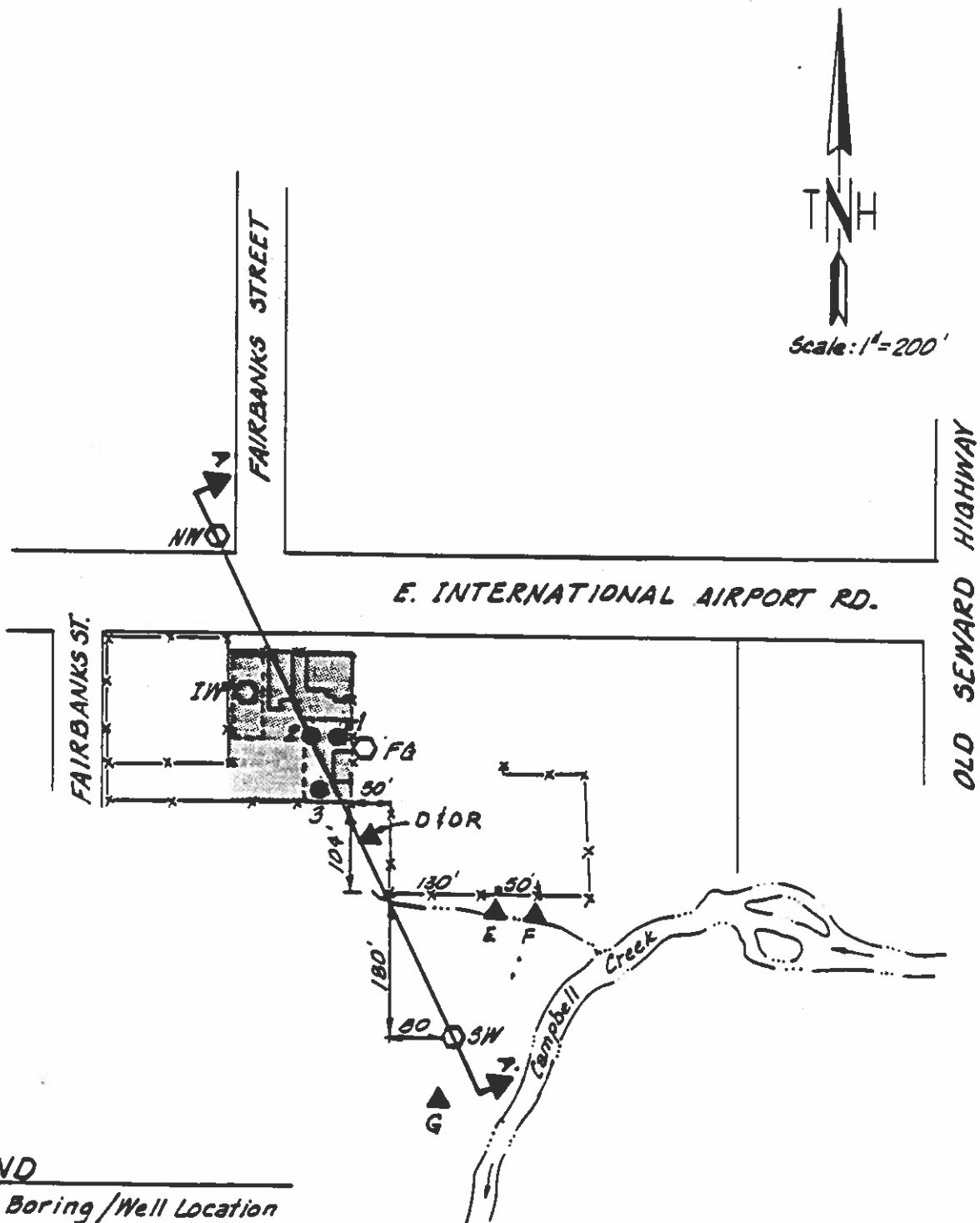


Figure 2

HANSON ASSOCIATES M & M SITE		America North Inc. Environmental Consulting / Natural Resources Management	
88 - 135	CDS/LW	OCT., 1989	



LEGEND

- Test Boring/Well Location
- Surface Soil Samples
- ▲ PCB Soil Samples

TRYCK
NYMAN
SHAYES

ALASKA HAZARDOUS WASTE PROGRAM

M & M ENTERPRISES

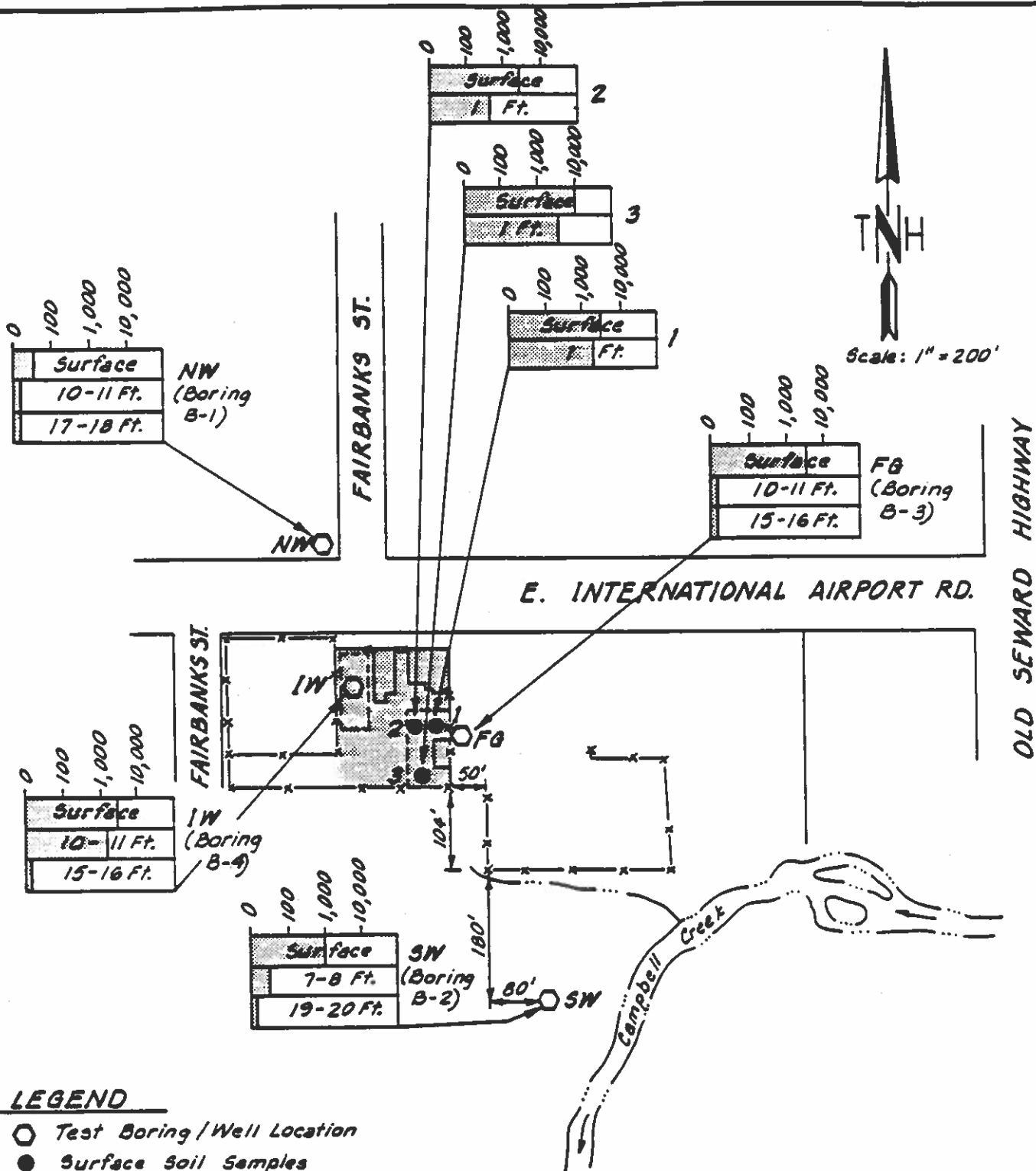
SAMPLING LOCATION MAP

FIGURE

3

SAC

III



TRYCK
NYMAN
& HAYES

ALASKA HAZARDOUS WASTE PROGRAM
M & M ENTERPRISES
LEAD CONCENTRATIONS IN SOIL

FIGURE

4

TABLES

TABLE 1
TNH Soil Analyses Data for M&M Site*

Sample #	Boring	Depth (ft.)	Lead Concentration (ug/g dry wt.)	pH
NWS2	B-1	10-11	4.8	4.0
NWS3	B-1	17-18	3.7	6.63
SWS2	B-2	7.5-8.5	43.0	6.38
SWS3	B-2	19.5-20.5	4.1	9.62
FGS2	B-3	10-11	2.2	6.33
FGS3	B-3	15-16	5.4	7.23
IWS2	B-4	10	1500	6.47
] replicate	
IWS3	B-4	15-16	1600	
			4.2	6.52

*Abridged from Table 1 of September, 1987 TNH CERCLA Site Inspection Report

TABLE 2
TNH Water Analyses Data for M&M Site*

Sample #	Boring	Lead Concentration (mg/l)	Sulfate (mg/l)	pH
NW1	B-1	0.003	15.1	5.9
SW1	B-2	0.015	40.	6.2
FG1	B-3	0.047	11000	5.4
IW1	B-4	0.003	470	6.3

*Abridged from Table 2 of September, 1987 TNH CERCLA Site Inspection Report

TABLE 3
M & M Site
PCB, Total Lead, and pH Analyses Results
Surface Soils

Location	Depth (feet)	Sample #	Aroclor 1242	Aroclor 1260	*Total PCBs (ppm)	**Total Lead (ppm)	pH
BKG1	0	890712-BKG1-0-22	--	0.163	0.163	195	5.94
BKG2	0	890712-BKG2-0-23	--	--	ND	8.67	7.16
1E	0	890712-1E-0-14	--	2.96	2.96	1880	6.90
2D	0	890712-2D-0-09	--	40.9	40.9	6180	6.70
2E	0	890712-2E-0-15	1.37	12.1	13.5	39,600	5.96
2F	0	890712-2F-0-18	0.247	0.199	0.446	87,200	6.28
3A	0	890712-3A-0-01	4.94	7.41	12.4	19,400	6.10
3D	0	890712-3D-0-10	1.67	10.3	12.0	45,500	5.05
3E	0	890712-3E-0-16	1.57	6.92	8.49	108,000	6.12
3F	0	890712-3F-0-20	--	2.47	2.47	22,500	6.24
3F	0	890712-3F-0-19	0.339	0.243	0.582	46,100	6.34
4A	0	890712-4A-0-02	14.4	8.85	23.3	33,300	6.77
4B	0	890712-4B-0-03	13.6	11.7	25.3	24,400	7.00
4C	0	890712-4C-0-06	11.6	18.6	30.2	59,100	6.80
4D	0	890712-4D-0-11	0.562	1.26	1.82	83,400	5.94
4E	0	890712-4E-0-17	0.198	0.292	0.49	38,500	5.87
5A	0	890712-5A-0-21	8.49	20.0	28.5	153,000	6.96
5B	0	890712-5B-0-04	10.4	10.2	20.6	17,000	7.51
5C	0	890712-5C-0-07	--	11.4	11.4	5470	6.38
5D	0	890712-5D-0-12	--	6.02	6.02	94,900	6.44
5D	0	890712-5D-0-13	--	4.18	4.18	8680	6.78
6B	0	890712-6B-0-05	33.3	60.1	93.4	8370	7.52
6C	0	890712-6C-0-08	--	9.15	9.15	840	7.38

* Test by EPA Method 8080; detection limit is 0.010 ppm, except for BKG2 (0.040 ppm).

** Total Lead by ICP.

TABLE 4

**M & M Site
PCB, Total Lead, and pH Analyses Results
Subsurface Soils**

Location	Depth (feet)	Sample #	Aroclor 1242	Aroclor 1260	*Total PCBs (ppm)	**Total Lead (ppm)	pH
1E	2.5	890713-1E-2-01	--	--	ND	4.3	6.89
3D	2.5	890713-3D-2-02	--	--	ND	36.4	4.12
3A	2.5	890713-3A-2-03	--	0.015	0.015	18.2	5.81
4A	2.5	890713-4A-2-04	--	0.052	0.052	7.88	6.30
4B	2.5	890713-4B-2-05	--	0.322	0.322	18.9	6.31
6B	2.5	890713-6B-2-06	--	15.3	15.3	16.0	7.02
4E	2.5	890713-4E-2-07	--	2.48	2.48	140	5.88
4E	2.5	890713-4E-2-08	--	2.74	2.74	211	5.71
3F	2.5	890713-3F-2-09	--	--	ND	5.45	4.10
3E	2.5	890713-3E-2-10	--	--	ND	28.1	4.13

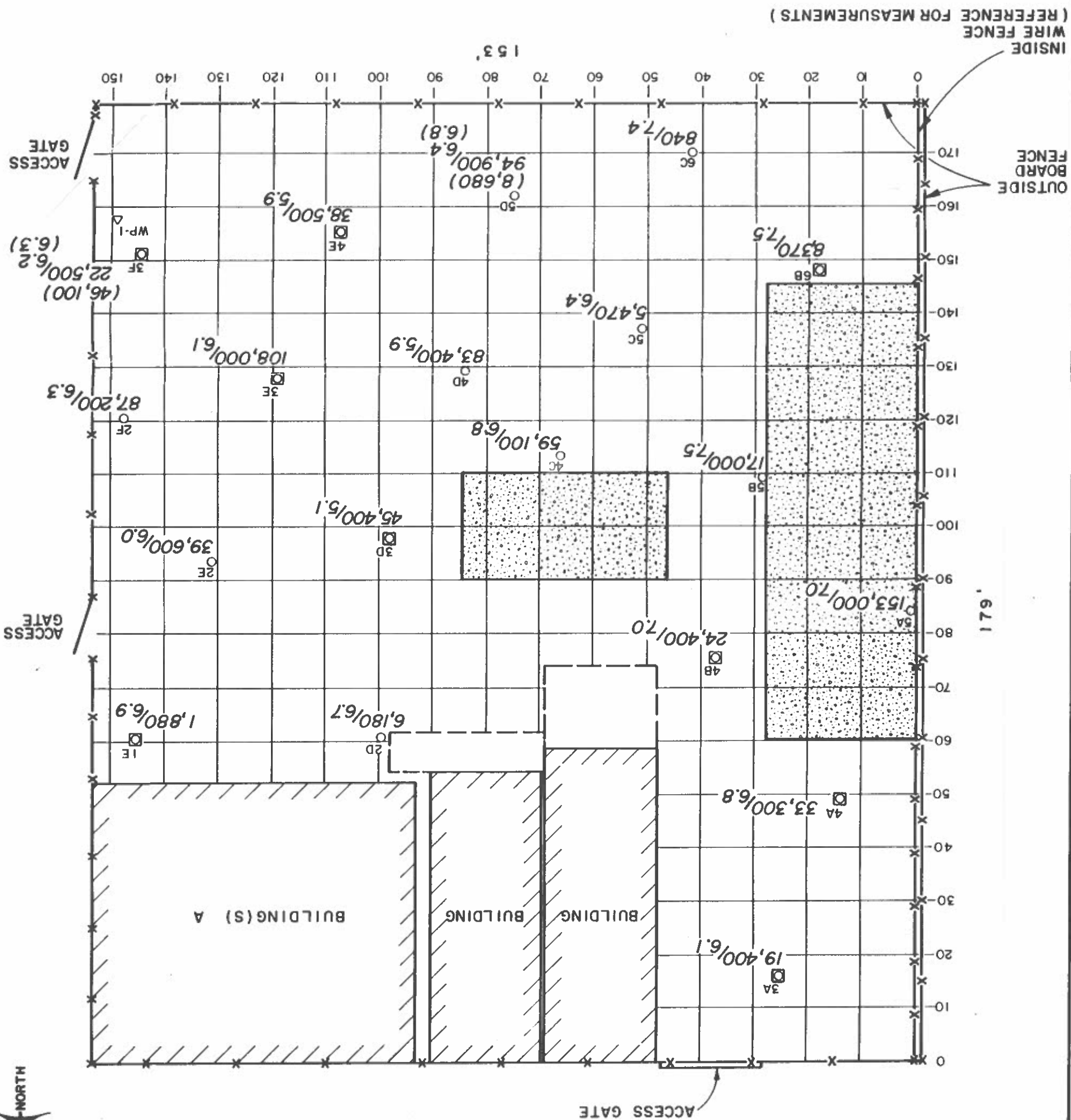
* Test by EPA Method 8080; detection limit is 0.010 ppm.

** Total Lead by ICP.

PLATES

APPROX. SCALE IN FT. 1" = 20'
 0 10 20 30 40

(6.8)
 6,180/6.7
 TOTAL LEAD CONCENTRATIONS (per ICP)
 IN PARTS PER MILLION (ppm), AND
 PH IN SURFACE SAMPLES
 SAMPLE DUPLICATE VALUES
 SURFACE SAMPLE LOCATION FOR
 PCBs, TOTAL LEAD, AND PH
 SUBSURFACE SAMPLE LOCATION
 FOR PCBs, TOTAL LEAD, AND PH
 WELL POINT
 CONCRETE PAD
 LEGEND



88-135		CDS/LW	AUG. 1989
HANSON ASSOCIATES		M & M SITE	
America North Inc.		Environmental Consulting / Natural Resources Management	

BASE MAP

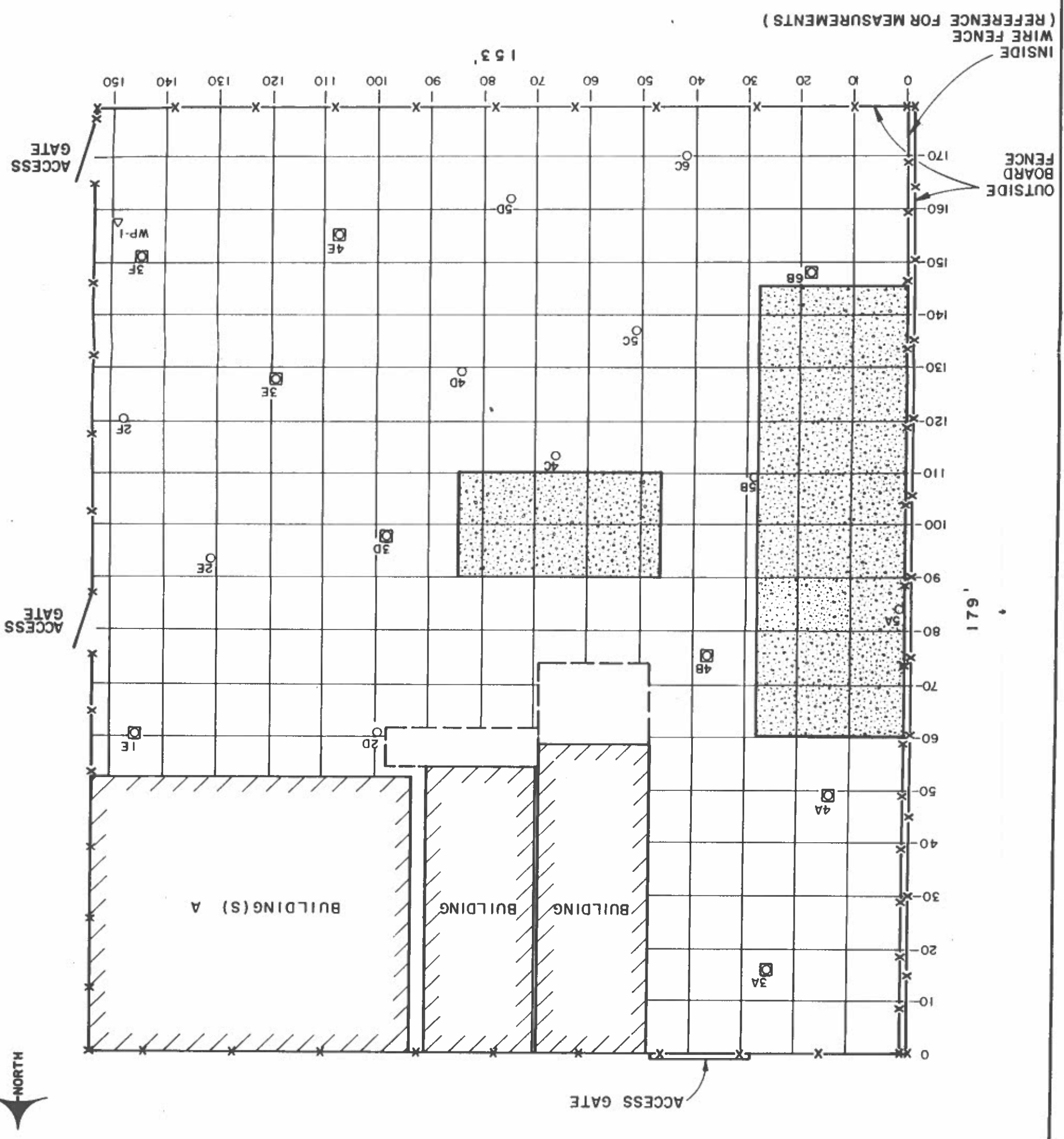
PLATE - I

APPROX. SCALE IN FT.: 1" = 20'

0 10 20 30 40

LEGEND

CONCRETE PAD
 SURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND PH
 SUBSURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND PH
 WELL POINT



SAMPLE DUPLICATE VALUES

40.9

WP-1

☐

20



INSIDE
WIRE FENCE
(REFERENCE FOR MEASUREMENTS)



88-135	CDS/LW	AUG. 1989
--------	--------	-----------

Environmental Consulting / Natural Resources Management

M & M SITE

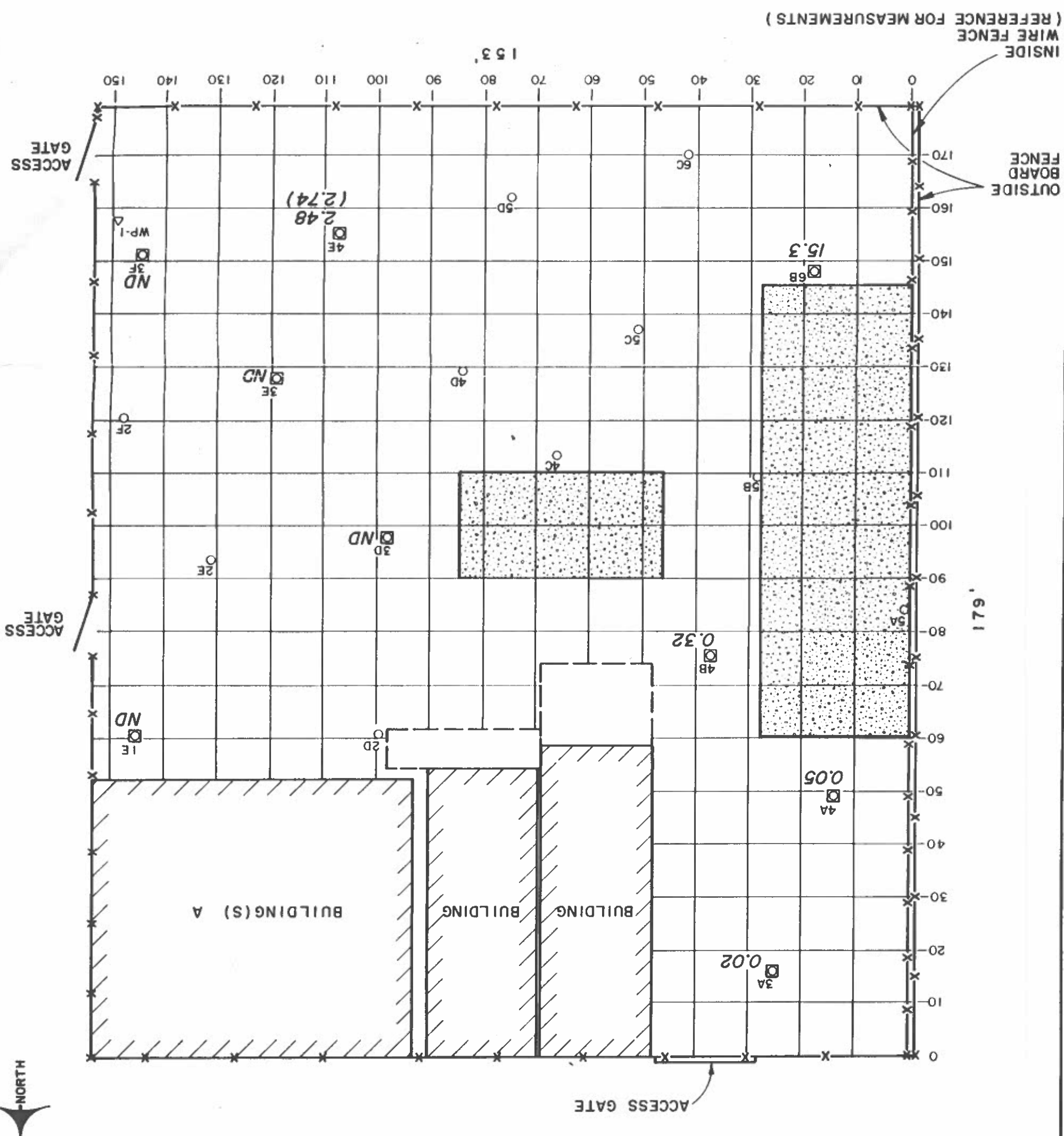
IN SURFACE SAMPLES

APPROX. SCALE IN FT.: 1" = 20'
 0 10 20 30 40

(2.74)
 0.02
 TOTAL PCB CONCENTRATIONS, PARTS PER
 MILLION (ppm), AT 2 to 2.5 feet BELOW THE
 GROUND SURFACE. ANALYSIS PER EPA
 METHOD 8080. ND - NON DETECTABLE
 (CONCENTRATIONS BELOW 0.01 ppm).
 SAMPLE DUPLICATE VALUES

CONCRETE PAD
 SURFACE SAMPLE LOCATION FOR
 PCBs, TOTAL LEAD, AND PH
 SUBSURFACE SAMPLE LOCATION
 FOR PCBs, TOTAL LEAD, AND PH
 WELL POINT
 WP-1

LEGEND

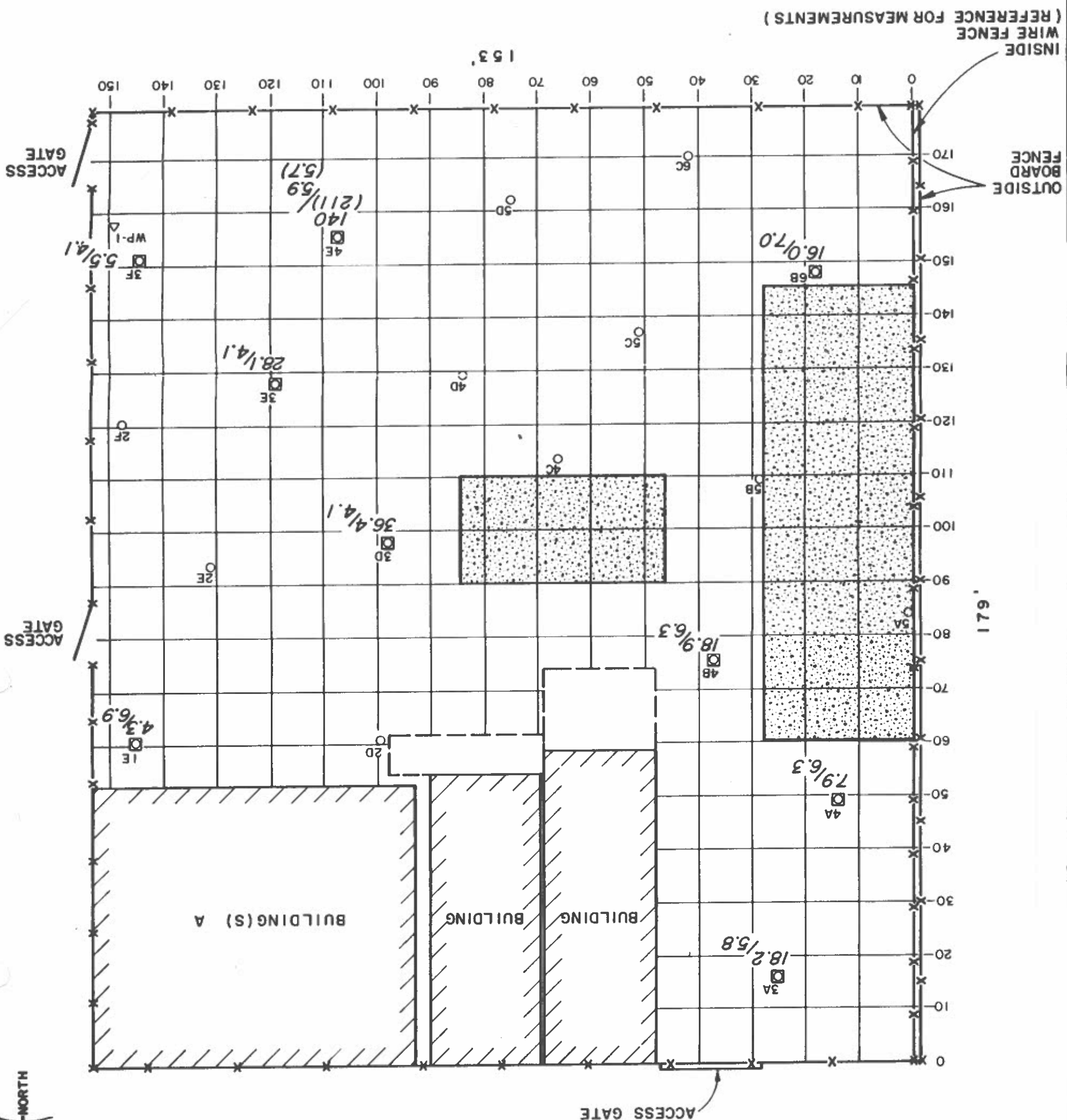


APPROX. SCALE IN FT.: 1" = 20'
 0 10 20 30 40

(5.7)
 SAMPLE DUPLICATE VALUES
 TOTAL LEAD CONCENTRATIONS (per ICP)
 IN PARTS PER MILLION (ppm) AND PH
 FOR SAMPLES COLLECTED FROM 2 to 2.5
 FEET BELOW THE GROUND SURFACE.

WP-1
 SURFACE SAMPLE LOCATION FOR
 PCBs, TOTAL LEAD, AND PH
 SUBSURFACE SAMPLE LOCATION
 FOR PCBs, TOTAL LEAD, AND PH
 WELL POINT
 CONCRETE PAD

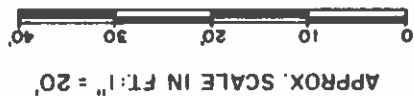
LEGEND



HANSON ASSOCIATES
M & M SITE

PHASE II
SAMPLING LOCATIONS

PLATE - 6



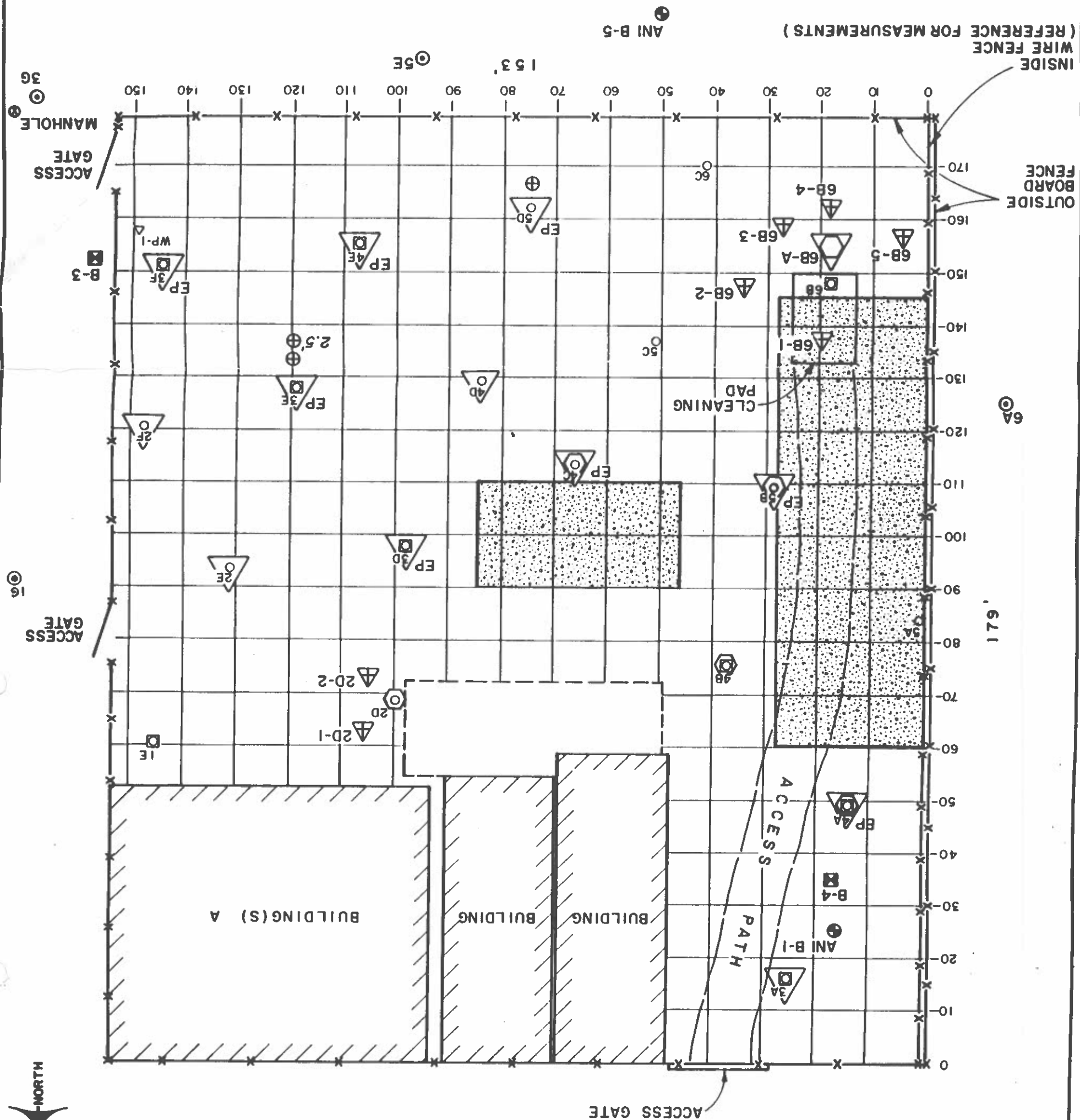
WELL POINT
PCB AT 0.5-1.0' BELOW GROUND SURFACE
LEAD BY ICP, PH AT 0.5-1.0
BELOW GROUND SURFACE; EP TOX
SAMPLES DESIGNATED BY EP
LEAD BY EP TOX AND ICP, PH AND ICP
METAL SCAN AT GROUND SURFACE

SURFACE SAMPLE LOCATION FOR
PCBS, TOTAL LEAD, AND PH

SUBSURFACE SAMPLE LOCATION
FOR PCBS, TOTAL LEAD, AND PH

CONCRETE PAD

LEND



**M&M ENTERPRISES SITE
HANSON ASSOCIATES
ANCHORAGE, ALASKA**

HEALTH AND SAFETY PLAN

SUMMARY PAGE

Site: Hanson Associates / M & M Enterprises Site
Location: Anchorage, Alaska

Owner: Hanson Associates
Contact: Rolph Hanson 562-2453

Consultant: America North Inc.
Contact: Field Manager: Brad Authier
562-3452 (W)
248-5634 (H)
Jim Smith
248-0061 (H)

Hospital: Humana Emergency -- 264-1222
Ambulance: (911)
Police: (911)
Fire Depart.: (911)

SIGNATURE PAGE

**I CERTIFY THAT I HAVE READ AND UNDERSTAND THIS HEALTH AND
SAFETY PLAN AND THAT I HAVE RECEIVED 40 HOURS OF TRAINING FOR
WORK AT SITES CONTAINING HAZARDOUS MATERIALS.**

SIGNATURES

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION	1
2.0 PROJECT DESCRIPTION	1
3.0 SITE DESCRIPTION	1
4.0 ON-SITE ORGANIZATION AND COORDINATION	2
5.0 HAZARD EVALUATION	2
5.1 Chemical Hazards	
5.2 Mechanical Hazards	
5.3 Other Hazards	
6.0 HAZARD MITIGATION MEASURES	3
6.1 Hazardous Materials Training	
6.2 Personal Protective Equipment	
7.0 DECONTAMINATION PLANS	4
8.0 EMERGENCY COMMUNICATION PROCEDURES	4

1.0 INTRODUCTION

This Health and Safety Plan was prepared for Hanson Associates by America North Inc. (ANI) regarding the M & M Enterprises site, hereinafter referred to as the site, in Anchorage, Alaska. It discusses potential hazards at the site and the measures which will be implemented during field activities to minimize these hazards.

2.0 PROJECT DESCRIPTION

The project will entail collecting surface soil samples during Phase I of the investigation to assess the extent of contamination resulting from battery and metals recycling operations at the site. Depending on the results of this Phase I survey, additional surface and possibly subsurface samples will be collected and analyzed. Contaminants of concern include PCBs associated with transformers that were stored and recycled at the site, and lead and sulfuric acid associated with the battery recycling operation.

3.0 SITE DESCRIPTION

The Hanson Associates property, or the site, is located at 620 East International Airport Road in Anchorage, as shown in Figure 1. Figure 2 shows a site map. The property is owned by Hanson Associates.

The site consists of two interconnected single story wood frame houses which are used for office space, a large yard behind the houses, and an unpaved parking area in front of the houses. An unpaved alley is located east of the site. The rear yard is enclosed by an eight to ten foot high fence.

The site lies at an elevation of approximately 105 feet above Mean Sea Level (MSL). Campbell Creek flows to the south-southwest about one-eighth mile southeast of the site. The average discharge of Campbell Creek is 65.5 cubic feet per second (USGS, 1984).

Several operators have leased the site from Hanson Associates since about 1964. Site operations have included metals and battery recycling. M & M Enterprises operated a scrap metal and battery recycling business at the site from 1981 until 19**. M & M Enterprises is owned and operated by Mrs. Mildred McGalliard. Sulfuric acid from the batteries was reportedly handled by draining it into a neutralization tank, neutralizing it with soda ash (sodium carbonate), then draining it via a discharge hose off-site to a sanitary sewer manhole in the alley east of the site. Battery recycling operations were performed on the southeast side of the site.

An investigation performed by ADEC contractors determined that high levels of lead were present in soils at the site. At the sampling locations used in this survey, acidic conditions were also encountered (pH as low as approximately 2.3). Although PCBs were not detected in any of the samples in concentrations exceeding 3 ppm, higher concentrations seem possible given the reported historic use of the site.

4.0 ON-SITE ORGANIZATION AND COORDINATION

Brad Authier with America North, Inc. will be the on-site health and safety officer for Phase I of the project. Any personnel involved with sample collection in this phase will have 40 hours of approved health and safety training. Subcontractor assistance is not required for Phase I; however, if additional personnel are required for later phases, Mr. Authier will be responsible for coordination of field activities.

5.0 HAZARD EVALUATION

5.1 Chemical Hazards

The constituents listed below are of greatest concern. Appendix A provides chemical information on each of these substances. Since battery acids were handled at the site, acidic soils or substances may possibly be encountered. The lowest pH of any of the soil samples analyzed by the previous ADEC investigation was 2.28. Dermal contact with or ingestion of acidic substances is hazardous and must be avoided.

PCB and lead contamination present hazards by absorption or ingestion, normally by dust laden with these contaminants. Again, dermal contact must be avoided, and any route which could facilitate ingestion of dust or soil must be precluded.

<u>Substance</u>	<u>Maximum Observed or Anticipated Concentration</u>	<u>Primary Hazards</u>
PCB Aroclor	1260 2.8 ug/g	Ingestion; dermal contact
Lead	12000 ug/g	Ingestion; dust inhalation

5.2 Mechanical Hazards

Mechanical hazards will exist during Phase I of the project due to the salvage material and debris located at the site. If Phase II is necessary and a drilling rig is utilized, additional mechanical hazards will be present.

5.3 Other Hazards

Other hazards which will be associated with this project include the proximity of the location to a busy municipal street in the event a crossing is necessary. If a drill rig is used, noise levels may present a hazard.

6.0 HAZARD MITIGATION MEASURES

6.1 Hazardous Materials Training

All persons working on-site will have been trained in an OSHA approved 40 hour health and safety course which provides instruction in hazardous materials, safety measures, decontamination, and emergency procedures. The site manager has additional training as a supervisor for work at hazardous materials sites. Health and safety meetings will be held at regular intervals if Phase II is initiated. All on-site workers will read and sign this plan.

6.2 Personal Protective Equipment

Protection Levels C and D as outlined below will provide adequate protection for personnel during sampling (and drilling, if necessary) activities. Hearing protection will be available to protect against noise.

<u>Activity</u>	<u>Contaminants</u>	<u>Personal Protective Equipment</u>
Surface Sampling	PCBs, Lead, Acidic Conditions	Saranax, disposable boots, gloves

If conditions are windy (dusty), personnel will be prepared to use an air-purifying respirator and goggles. In the event Phase II is initiated and a drilling rig is used, hardhats will be used in addition to the equipment previously mentioned.

7.0 DECONTAMINATION PLANS

Personnel decontamination will be performed in the contaminant reduction zone. Used disposable coveralls, boots, and gloves will be collected in a drum and stored on site for disposal. Wash facilities are available in the building on-site, or at ANI offices three blocks away.

The Phase I investigation will determine whether unusually high levels of contaminants are present at the site. If upgrading of the level of protection and a greater specificity of exclusion and decontamination zones are necessary for Phase II, such details will be addressed at that time.

8.0 EMERGENCY COMMUNICATION PROCEDURES

In the event of an accident or emergency, it is the responsibility of all workers on the site to call the police, ambulance, or other appropriate emergency groups as soon as possible. The site manager will telephone the client, the consultant, and the

subconsultant contacts as soon as possible after implementing emergency measures to respond to the problem.

In case of an accident, after all response measures have been performed, an accident report will be prepared. The report will describe the date, time, location, and details of incident, the persons involved, any injuries or damages sustained, and the probable cause of the incident. This report will be maintained in ANI's files for at least 20 years.

APPENDIX A

HAZARDOUS SUBSTANCE INFORMATION

Aroclor 1260 - PCB - Polychlorinated Biphenyl

- CAS No. 11096-82-5
- RTECSS No. TQ 1362000
- 60% (w/w) Chlorine

I. PHYSICAL/CHEMICAL PROPERTIES

PROPERTY	SOURCE
Natural physical state (at ambient temps):	
Light-yellow, soft, sticky resin.	NIOSH
Molecular Weight: na (see below)	NIOSH
<u>Empirical formula</u>	<u>Percent</u>
C ₁₂ H ₈ Cl ₄	1
C ₁₂ H ₅ Cl ₅	12
C ₁₂ H ₄ Cl ₆	38
C ₁₂ H ₃ Cl ₇	41
C ₁₂ H ₂ Cl ₈	8
Density: 1.62 mg/L	NIOSH
Solubility: 0.027 mg/L	EPA
(aqueous)	
Solubility: Very soluble	EPA
(lipid)	
Distillation 395-420°C	EPA
(range)	
Melting point: Unknown	
Vapor pressure: 4.05 x 10 ⁻⁶ mm Hg 25°C	EPA
Vapor density: unknown	
Flash Point: None to boiling point	EPA
(Open cup)	
Other: May be contaminated by polychlorinated dibenzofurans	

II. HAZARDOUS CHARACTERISTICS

A. TOXICOLOGICAL ? HAZARD		CONCENTRATION (PEL, TLV, other)	SOURCE
Inhalation	Yes	0.5 mg/M ³ (PEL, TLV) 0.001 mg/M ³ (Recommendation)	OSHA, ACGIH NIOSH
Ingestion	Yes	0.008 µg/L (For an excess cancer risk of 10 ⁻⁶) 0.079 ng/L (For an excess cancer risk of 10 ⁻⁶)	EPA (water only) EPA (water and fish)
Skin/eye absorption		Yes	EPA/NIOSH
Skin/eye contact		Yes	EPA/NIOSH
Carcinogenic		Suspect	EPA/NIOSH
Teratogenic		Suspect	EPA/NIOSH
Mutagenic		No	EPA/NIOSH
Aquatic		Bioaccumulates	EPA
Other		na	
B. PHYSICAL ? HAZARD		CONCENTRATION	SOURCE
Combustibility	No		
Toxic byproducts:	Yes		
Chlorinated hydrocarbons			
Flammability	No		
Explosivity	No		

7 INCIDENT/ACCIDENT REPORT FORM

AMERICA NORTH, INC.

HAZARDOUS WASTE INCIDENT/ACCIDENT REPORT

DATE _____ PROJECT LOCATION _____ PROJECT NUMBER _____

DESCRIPTION OF INCIDENT, INCLUDING: INJURIES, PROPERTY DAMAGE, EMERGENCY ACTION TAKEN, AND PERSONNEL INVOLVED (use additional sheets if needed):

WITNESSES OF INCIDENT:

POSSIBLE OR KNOWN CAUSES:

WHAT ACTIONS ARE NEEDED TO PREVENT A SIMILAR INCIDENT:

REPORTER

SITE SAFETY OFFICER

PROJECT MANAGER

**M& M ENTERPRISES SITE
HANSON ASSOCIATES**

ANCHORAGE, ALASKA

**QUALITY ASSURANCE
QUALITY CONTROL PLAN**

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION	1
2.0 PROJECT DESCRIPTION AND ORGANIZATION	1
3.0 DATA QUALITY OBJECTIVES	1
4.0 MONITORING WELL AND WELL POINT DRILLING, INSTALLATION, AND DEVELOPMENT	2
4.1 Monitor Wells	
4.2 Well Pont Installation and Development	
5.0 SAMPLING PROCEDURES	4
5.1 Soils	
5.1.1 Surface soils	
5.1.2 Subsurface soils	
5.2 Ground Water	
5.3 Wipe Tests for Non-Porous Materials	
5.4 Destructive Sampling for Porous Materials	
6.0 FIELD MEASUREMENTS	7
6.1 Soil Logging	
6.2 Water Level Measurements	
7.0 NON-HAZARDOUS WASTE REMOVAL	8
8.0 DECONTAMINATION PROCEDURES	8
9.0 SAMPLE STORAGE AND HANDLING PROCEDURES	9
10.0 RECORD-KEEPING PROCEDURES	10
11.0 DATA REDUCTION, VALIDATION AND REPORTING	11
12.0 QUALITY CONTROL VERIFICATION PROCEDURES	11
APPENDIX A: Analytical Laboratory QA/QC Plan	13

1.0 INTRODUCTION

This QA/QC Plan was prepared for the Phase 1 site investigation to be performed at the Hanson Associates property located at 620 East International Airport Road in Anchorage, Alaska, to be referred to hereinafter as the site.

2.0 PROJECT DESCRIPTION AND ORGANIZATION

The project will be conducted utilizing a phased approach. Phase 1 will entail surface soil sampling. The objective of Phase 1 is to determine whether lead, PCB, or acid contamination has occurred due to site activities and, if so, to assess the extent of contamination. The scope of Phase 2 will be determined based on the results of Phase 1. Phase 2 will include removal of miscellaneous materials from the site and any additional investigation necessary to define the extent of contamination and to design remedial measures. Procedures which will be required for Phase 1 have been included as well as those which have a likelihood of being used for Phase 2.

Figure 1 shows the organization chart for the project. Brad Authier is the Project Manager and site Health and Safety Officer and is responsible for organizing and managing the field program, the safety program, data interpretation, and all report writing. Jim Smith is the Quality Control Officer and is responsible for reviewing data, performing quality control checks, and alerting the project manager if a problem with data quality is observed.

3.0 DATA QUALITY OBJECTIVES

The data quality objectives of the project are to obtain data which are representative, reliable, precise, complete, and accurate. In addition, we need to obtain numeric concentration values for the constituents of concern which will enable delineation of areas where concentrations are greater than the applicable standards. To achieve these objectives, procedures for the following areas have been developed and outlined in this plan: sampling methods; analytical methods; quality control samples; and sampling locations.

4.0 MONITORING WELL AND WELL POINT DRILLING, INSTALLATION, AND DEVELOPMENT

4.1 Monitor Wells

The ground water monitoring wells will be drilled, installed, completed, and developed according to the methods in this section. All well drilling and installation will be supervised and documented by an ANI geologist. All down-hole equipment will be decontaminated prior to use at each borehole or well as described in Section 8. Procedures described in the Health and Safety Plan will be followed during well drilling and installation.

The monitoring wells will be drilled and installed using a truck-mounted drill rig with an eight-inch hollow stem auger. The subsurface materials will be logged as the borehole is advanced by collecting samples with a riven split-spoon sampler or by collecting cuttings off of the auger. Logs of subsurface materials encountered will be prepared in the field by the ANI geologist (Section 6.1). The boreholes will be drilled to approximately fifteen feet.

The monitoring wells will be completed as follows. A silt trap or end cap will be placed on the bottom of each well to keep silt from entering the well. The well screen will extend from about five feet above the water level encountered during drilling to about five feet below the water level. Sloughing of the hold, particularly below the water table, may require adaptation of this specification. Plain PVC pipe will be extended from the screen to the surface. A PVC cap will be placed on the top of the well. Sandpack will be emplaced from the bottom of the screen to at least one foot above the top of the well screen. A bentonite pellet seal at least two feet thick will be placed above the sandpack. The well bore will be grouted to the surface. A locking steel protective casing will be cemented at the surface to protect the well.

The wells will be constructed by placing the completion materials in the hollow-stem auger and carefully pulling up the auger to leave the materials in place. Because of sloughing problems near and below the water table, it may not be possible to place sandpack below the water table. Determination of the adequacy of the sandpack installation will be made in the field by ANI personnel. Depths will be measured

frequently outside the auger using a tape graduated to 0.01 feet to ensure that materials are emplaced at the selected depths.

The following materials will be used in well construction. The wells will be of clean flush-threaded Schedule 40 two-inch PVC pipe. Clean rubber gloves will be worn by persons handling the well casing and screen during installation. No PVC glue will be used in the monitoring wells. Screens slots will be either factory-cut slots or machine-wrapped screen; no slots will be hand-cut. Screen slots will be 0.01 inch (10 slot). Only clean bagged silica sand will be used to sandpack each well. Bentonite pellets will be used for the seal. The well bore will be grouted to the surface using Volclay grout mixed according to manufacturer's directions.

A notch will be cut in the top of the PVC casing following well installation to indicate the permanent measuring point. Documentation of well drilling and installation will include a log of subsurface materials encountered, an inventory of material used in construction, and a diagram of the well construction. The permanent measuring point will be surveyed after installation is complete.

After installation, each well will be developed by bailing or pumping until clear water is produced or until all water is removed from the well. Wells will not be surged in any way during development since this has been shown to increase the long-term silt production of wells.

It is anticipated that no boreholes will be abandoned during the current investigation. In the event that any are abandoned, they will be backfilled with grout or cement to the ground surface. Boreholes are never to be backfilled with drill cuttings.

4.2 Well Point Installation and Development

Well points for monitoring water quality will be installed according to the methods in this section. Clean, new two-inch outside diameter well point screen and casing will be driven using a sledge hammer. A boring will be initiated using a hand auger to a point above the water table (two to four feet, depending on location in the year). The hole will be cleaned of cuttings and slough, if possible, and two and one half feet of screen will be driven to a point approximately one foot below the water table. If

screen is exposed in the hole, clean bagged silica sand will be used to backfill, the hole to one foot above the screen, then bentonite will be used to fill the annulus to the surface. Clean new latex gloves will be worn by personnel installing the well point. Casing will extend one to three feet above the ground surface and a cap will be securely screwed on.

5.0 SAMPLING PROCEDURES

5.1 Soils

5.1.1 Surface soils

Prior to surface soil sample collection, the sample area will be marked by a 15 cm by 15 cm template. This size sample area is required to obtain a sufficient volume of soil to perform all of the analytical tests. The area will be scraped to a depth of about 1 cm using a clean stainless steel sampling utensil. Two clean eight-ounce amber sample jars will be filled at each sample location. The two jars will be filled side by side to fill them as uniformly as possible. Samples will be handled and stored as discussed in Section 7. Disposable latex sampling gloves will be worn by sampling personnel and changed between sampling points. Sampling utensils and templates will be decontaminated between sampling points as described in Section 6 below.

Twenty surface sampling locations and nine subsurface are identified in Phase I of the sampling and analysis plan. At two surface locations and one subsurface location, duplicate samples will be collected for quality control. These samples will not be identified as duplicates, but instead will be given a unique sample identification number. One of the twenty surface locations will provide background information on the contaminants of interest for the project.

5.1.2 Subsurface soils

The Phase I subsurface soil samples will be collected using a hand sampling auger. The hole will be drilled to a depth of two and one half feet below the ground surface

with a six inch diameter power auger or hand auger, depending on soil conditions. The hole will then be cleaned and an undisturbed sample will be collected with a clean, stainless steel four-inch diameter hand sampling auger. The sample will be placed directly into a clean plastic bag, homogenized, then placed evenly in two clean 250 milliliter amber wide-mouth sample jars. Soils will be logged during drilling of the boring.

Field personnel will wear clean latex gloves and use a clean stainless steel spoon when transferring the sample from the plastic bag to the sample bottles. The bottles will be completely filled and appropriately stored in the field.

Subsurface soil samples, below 2.5 feet, will be collected using split spoon samplers driven through a hollow stem auger. The boring will be augered to the desired sampling depth while a ram in the hollowstem auger precludes cuttings from entering the auger cavity. This ram will then be removed and a split-spoon sampler will be inserted and driven through the desired sampling interval using a hydraulic, rig-mounted hammer. The split-spoon sampler will then be removed and personnel will carefully open the sampler and log the soils, using the procedures set forth in section 5.1. The sample from the interval of interest will be removed and sealed in a clean plastic bag. If the soil is frozen, it will be allowed to thaw to facilitate homogenization. The sample will be homogenized by mixing it thoroughly in the plastic bag.

A portion of the homogenized sample will be placed in two 250 milliliter glass bottles equipped with teflon backed lids for transport to the contract laboratory. Field personnel will wear clean latex gloves and use a clean stainless steel spoon when transferring the sample from the plastic bag to the sample bottles. The bottles will be completely filled and appropriately stored in the field.

Samples will be collected at each depth specified, and identified with a unique identification number. It is proposed that one duplicate sample be collected for every ten samples, thus providing a quality control measure. Procedures described below for sample storage and handling, record-keeping, and decontamination will be followed.

5.2 Ground Water

If necessary, ground water samples will be collected using the methods and procedures described in this section. All measuring and sampling equipment will be decontaminated prior to use at each well. Where wells are known to be contaminated, wells will be sampled from cleanest to dirtiest.

Each well will be purged prior to sampling it. The water level will be measured as described in Section 5.2 and will be used to calculate the volume of water standing in the well. The well will be purged by bailing with a teflon bailer or pumping with a submersible or peristaltic pump. Three well volumes or another appropriate volume will be purged from each well prior to sampling. If the well is purged dry, it will be sampled after the water level has recovered to at least 80% of its original level.

Samples will be collected in appropriate bottles and will be preserved according to the requirements of the analysis method. Procedures for storage, handling, record-keeping, and chain-of-custody as described in this plan will be followed for all samples.

5.3 Wipe Tests for Non-Porous Materials

Wipe sampling for PCBs may be required prior to disposing of non-porous miscellaneous materials on the site; for example, scrap metal or plastic wire casings. If wipe samples are taken, they will be collected according to the procedures described in this section and in EPA TSCA guidance (EPA, 1986). Solvent such as isooctane or hexane will be applied to a piece of 11 cm filter paper or gauze pad. The moistened filter paper or gauze pad will then be held with clean rubber gloves or a stainless steel forceps and rubbed thoroughly over a 100 square centimeter area of the surface to be sampled. The area to be sampled will be delineated by a template. Following sampling, the paper or pad will be placed in a clean sample bottle. Procedures described below for storage, handling, decontamination, waste disposal, and record-keeping will be followed. Health and safety protocol presented in the attached plan will be adhered to.

5.4 Destructive Sampling for Porous Materials

Destructive sampling for PCBs may be appropriate for porous miscellaneous materials at the site. Newspapers and wood are examples of porous materials which may require sampling. In destructive sampling, the entire sample is submitted to the laboratory for analysis. The sample will be placed in a sample jar if it is small enough; otherwise, it will be placed in a plastic bag. Standard procedures for sample storage, handling, decontamination, waste disposal, record-keeping, health and safety will be followed.

6.0 FIELD MEASUREMENTS

6.1 Soil Logging

Descriptive logs of materials encountered while drilling will be prepared by the ANI geologist for each borehole drilled. Samples of subsurface materials will be obtained by collecting cuttings off the auger and by driving split spoon samplers inside of the hollow stem auger.

The logs will contain all of the following plus any other information noted by the geologist. Soils will be described according to the Unified Classification System (UCS) and will refer to color, textural composition (gravel/sand/silt/clay), UCS type and symbol, relative density or stiffness, relative moisture content, and possibly other features. The depths at which different soil types, frost-line, and water are encountered will be noted to the nearest half-foot where possible. The name of the drilling company and driller, and the date and time the boring is drilled will be included on the well log. The depth and type of samples which are collected will be marked on the log, as well as any instrument measurements taken, if applicable.

6.2 Water Level Measurements

Ground water levels will be measured in monitoring wells to provide information of the rate and direction of flow and the hydrologic characteristics of the aquifers, if necessary. All equipment used to measure ground water levels will be cleaned prior to its use in each well. When more than one well is to be measured during a

sampling episode, the wells will be measured in order from the cleanest to the dirtiest. Where liquid product is present in a monitoring well, the thickness of the product will also be measured. The procedures described in this section will be followed when measuring water levels to ensure that data are representative and accurate.

Water levels will be measured using a steel measuring tape, and chalk or water-finding paste. The lower foot of the tape is graduated and can be read in 0.01 foot intervals. To obtain water level measurements, the raised gradations on the bottom foot of the tape will be coated with chalk before the tape is lowered carefully into the well. The foot marker nearest the water depth will be held at the permanent measurement point for a second. Water level measurements will be read until the same reading to 0.01 foot is obtained twice.

The following information shall be recorded in the field book when water levels are measured: depth to water; the depth to and thickness of product; date, time, and method of measurement; and, person measuring levels.

7.0 NON-HAZARDOUS WASTE REMOVAL

If the Phase I investigation determines that areas of the yard do not exhibit contamination exceeding the standards specified in the Order, the non-hazardous materials in these areas may be removed by Hanson or his designee. This practice will be confirmed with ADEC, and limited materials sampling may be necessary to confirm that substances are not hazardous. Such non-contaminated areas must be readily accessible without impacting contaminated areas of the yard. Routes and areas will be delineated based on Phase I results, and it will be necessary to gain approval of a materials disposition plan from the ADEC. Such non-hazardous, non-contaminated materials will be disposed of at the Municipality of Anchorage Landfill. Removal of these materials will facilitate Phase II sampling.

8.0 DECONTAMINATION PROCEDURES

The decontamination procedures outlined below were developed to ensure that collected samples are representative of actual environmental conditions.

Drill rigs and other machinery such as wrenches, chains, and trucks which come in contact with down-hole equipment will be steam- cleaned before being mobilized on-site. All equipment which goes down-hole such as augers, drill bits, and samplers will be steam- cleaned or cleaned with a trisodium-phosphate (TSP) detergent wash followed by two clean water rinses prior to being used in each borehole. After drilling borings, equipment contacting soil or the ground surface (tires, jack pads, etc.) will be decontaminated prior to moving outside the general area delineated by the borings. Furthermore, the drilling sequence will be set up to minimize the possibility of impacting stockpiled cuttings.

All equipment used for sampling soils or ground water such as templates, stainless steel spoons, bailers and split-spoon samplers will be washed with a TSP detergent solution, rinsed twice with clean water, and rinsed once with deionized water before it is used for each sample. Furthermore, iso-octane will be used to decontaminate the stainless steel spoon used for collecting surface soil samples if PCBs are a suspected contaminant. This solution will be captured and properly disposed of. New bailer rope will be used for each well. Precautions will be taken while bailing to prevent the bailer and rope from contacting the ground. Steel tapes used for measuring water levels will be completely washed before being brought on site; cleaning between wells will consist of rinsing the submersible portion of the tape with deionized water. These requirements may be modified or expanded in Phase II depending on the extent of contamination identified in Phase I. If necessary, the location and areal distribution of exclusion and contaminant reduction zones will be identified and related procedures specified.

All PVC well construction materials will be new, cleaned, and wrapped in plastic if they are to be transported or stored before installation. Persons handling the well casing or screen will wear disposable gloves during installation. Sand will be clean and bagged; bulk sand will not be used.

9.0 SAMPLE STORAGE AND HANDLING PROCEDURES

9.1 Samples for Lab Analysis

This section describes protocols for handling and storing samples once they are collected. The protocols are intended to ensure that sample integrity is maintained from the field to the laboratory.

All samples will be collected in clean, new containers and will be preserved as required by the method of analysis. At each PCB and pH surface sampling location, two 8 ounce amber jars will be filled and identified as described in section 4.1.2. At each lead and pH sampling location, two 8 ounce amber jars will be filled and identified as described in section 4.1.2. If a location is to be sampled and analyzed for PCBs, lead, and pH, a total of two sample jars is still all that is required to fulfill sample volume requirements. Furthermore, by collecting two jars at each location, consistency in sampling is assured.

At the end of each day of sample collection, the samples will be submitted to the laboratory for analysis, thereby eliminating any potential problems with regard to holding times. Cooling of the samples immediately in the field is not necessary. A chain of custody will accompany all samples and it will list the sample identification, date and time of collection, personnel responsible for sample collection, the number of containers per sample, ANI identification, project identification, and analysis required. The date and time the samples are submitted to the laboratory will be noted next to the relinquishing and accepting signatures.

9.2 Waste Disposal

Waste materials created during the investigation will be disposed of as follows: sampling gloves and other disposable safety gear will be containerized on site and disposed of at a later time pending laboratory analysis; spent solvent will also be captured and stored for later disposal.

10.0 RECORD-KEEPING PROCEDURES

Thorough documentation of activities and tracking of samples is essential to the value of any project. The record-keeping tasks described below will be performed to provide defensible results and traceable operations.

A separate field book will be maintained for activities conducted at the M & M site. Notes on all activities will be recorded in the field book in pen on a daily basis. Daily entries will include at a minimum the following: date; beginning and ending times; name of person recording; boreholes or wells drilled; samples collected; other operations performed; and names of other persons performing work at the site. Each

daily entry will begin on a new page and blank lines on the final page for each day will be crossed out to the bottom.

A boring log will be completed in the field for each boring drilled. The log will be prepared as described in Section 5.1 and will include lithologies, the name of the drilling company and the driller, the date, the initials of the person logging the borehole and other pertinent information.

Well completion diagrams will be completed for each monitoring well installed. The depth and screen interval of the well, depths and type of sand, cement and other backfill materials used, date, water level, and other information will be included on the well completion diagram.

All sample containers will be labeled with indelible ink immediately after the sample is collected. Labels will include the date, time, sampler, sample identification, ANI identification, and analysis to be performed. Chain-of-custody procedures will be followed and documented using chain-of-custody forms for all samples.

11.0 DATA REDUCTION, VALIDATION AND REPORTING

Analytical data provided by the contract laboratory will be reviewed, analyzed, and summarized per EPA specifications. Analyses from duplicate samples will be compared to each other to assess the reproducibility of results. This data, together with an assessment of site contamination based on the sampling and analysis work, will be provided in a Sampling and Analysis Report for Phase I. The Sampling and Analysis Report for Phase I will be submitted in a timely manner after completion and review of the analytical results.

12.0 QUALITY CONTROL VERIFICATION PROCEDURES

Duplicate and blank soil and ground water samples will be submitted to the laboratory at a rate of 10% or one per sampling episode. The purpose of the duplicate samples is to check the reproducibility and precision of the laboratory performing

the analyses. Duplicate samples are collected at the same time and location and analyzed for the same constituents as one of the samples sent to the lab.

If water samples are collected, blank samples (water) will be provided to the lab. The purpose of a blank sample is to assess the error or contamination introduced as a result of the sampling procedure. Blank samples are aliquots of deionized water which are treated in an identical manner as the samples.

APPENDIX A
ANALYTICAL LABORATORY QA/QC PLAN

**M& M ENTERPRISES SITE
HANSON ASSOCIATES**

ANCHORAGE, ALASKA

**QUALITY ASSURANCE
QUALITY CONTROL PLAN**

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION	1
2.0 PROJECT DESCRIPTION AND ORGANIZATION	1
3.0 DATA QUALITY OBJECTIVES	1
4.0 MONITORING WELL AND WELL POINT DRILLING, INSTALLATION, AND DEVELOPMENT	2
4.1 Monitor Wells	
4.2 Well Pont Installation and Development	
5.0 SAMPLING PROCEDURES	4
5.1 Soils	
5.1.1 Surface soils	
5.1.2 Subsurface soils	
5.2 Ground Water	
5.3 Wipe Tests for Non-Porous Materials	
5.4 Destructive Sampling for Porous Materials	
6.0 FIELD MEASUREMENTS	7
6.1 Soil Logging	
6.2 Water Level Measurements	
7.0 NON-HAZARDOUS WASTE REMOVAL	8
8.0 DECONTAMINATION PROCEDURES	8
9.0 SAMPLE STORAGE AND HANDLING PROCEDURES	9
10.0 RECORD-KEEPING PROCEDURES	10
11.0 DATA REDUCTION, VALIDATION AND REPORTING	11
12.0 QUALITY CONTROL VERIFICATION PROCEDURES	11
APPENDIX A: Analytical Laboratory QA/QC Plan	13

1.0 INTRODUCTION

This QA/QC Plan was prepared for the Phase 1 site investigation to be performed at the Hanson Associates property located at 620 East International Airport Road in Anchorage, Alaska, to be referred to hereinafter as the site.

2.0 PROJECT DESCRIPTION AND ORGANIZATION

The project will be conducted utilizing a phased approach. Phase 1 will entail surface soil sampling. The objective of Phase 1 is to determine whether lead, PCB, or acid contamination has occurred due to site activities and, if so, to assess the extent of contamination. The scope of Phase 2 will be determined based on the results of Phase 1. Phase 2 will include removal of miscellaneous materials from the site and any additional investigation necessary to define the extent of contamination and to design remedial measures. Procedures which will be required for Phase 1 have been included as well as those which have a likelihood of being used for Phase 2.

Figure 1 shows the organization chart for the project. Brad Authier is the Project Manager and site Health and Safety Officer and is responsible for organizing and managing the field program, the safety program, data interpretation, and all report writing. Jim Smith is the Quality Control Officer and is responsible for reviewing data, performing quality control checks, and alerting the project manager if a problem with data quality is observed.

3.0 DATA QUALITY OBJECTIVES

The data quality objectives of the project are to obtain data which are representative, reliable, precise, complete, and accurate. In addition, we need to obtain numeric concentration values for the constituents of concern which will enable delineation of areas where concentrations are greater than the applicable standards. To achieve these objectives, procedures for the following areas have been developed and outlined in this plan: sampling methods; analytical methods; quality control samples; and sampling locations.

4.0 MONITORING WELL AND WELL POINT DRILLING, INSTALLATION, AND DEVELOPMENT

4.1 Monitor Wells

The ground water monitoring wells will be drilled, installed, completed, and developed according to the methods in this section. All well drilling and installation will be supervised and documented by an ANI geologist. All down-hole equipment will be decontaminated prior to use at each borehole or well as described in Section 8. Procedures described in the Health and Safety Plan will be followed during well drilling and installation.

The monitoring wells will be drilled and installed using a truck-mounted drill rig with an eight-inch hollow stem auger. The subsurface materials will be logged as the borehole is advanced by collecting samples with a riven split-spoon sampler or by collecting cuttings off of the auger. Logs of subsurface materials encountered will be prepared in the field by the ANI geologist (Section 6.1). The boreholes will be drilled to approximately fifteen feet.

The monitoring wells will be completed as follows. A silt trap or end cap will be placed on the bottom of each well to keep silt from entering the well. The well screen will extend from about five feet above the water level encountered during drilling to about five feet below the water level. Sloughing of the hold, particularly below the water table, may require adaptation of this specification. Plain PVC pipe will be extended from the screen to the surface. A PVC cap will be placed on the top of the well. Sandpack will be emplaced from the bottom of the screen to at least one foot above the top of the well screen. A bentonite pellet seal at least two feet thick will be placed above the sandpack. The well bore will be grouted to the surface. A locking steel protective casing will be cemented at the surface to protect the well.

The wells will be constructed by placing the completion materials in the hollow-stem auger and carefully pulling up the auger to leave the materials in place. Because of sloughing problems near and below the water table, it may not be possible to place sandpack below the water table. Determination of the adequacy of the sandpack installation will be made in the field by ANI personnel. Depths will be measured

frequently outside the auger using a tape graduated to 0.01 feet to ensure that materials are emplaced at the selected depths.

The following materials will be used in well construction. The wells will be of clean flush-threaded Schedule 40 two-inch PVC pipe. Clean rubber gloves will be worn by persons handling the well casing and screen during installation. No PVC glue will be used in the monitoring wells. Screens slots will be either factory-cut slots or machine-wrapped screen; no slots will be hand-cut. Screen slots will be 0.01 inch (10 slot). Only clean bagged silica sand will be used to sandpack each well. Bentonite pellets will be used for the seal. The well bore will be grouted to the surface using Volclay grout mixed according to manufacturer's directions.

A notch will be cut in the top of the PVC casing following well installation to indicate the permanent measuring point. Documentation of well drilling and installation will include a log of subsurface materials encountered, an inventory of material used in construction, and a diagram of the well construction. The permanent measuring point will be surveyed after installation is complete.

After installation, each well will be developed by bailing or pumping until clear water is produced or until all water is removed from the well. Wells will not be surged in any way during development since this has been shown to increase the long-term silt production of wells.

It is anticipated that no boreholes will be abandoned during the current investigation. In the event that any are abandoned, they will be backfilled with grout or cement to the ground surface. Boreholes are never to be backfilled with drill cuttings.

4.2 Well Point Installation and Development

Well points for monitoring water quality will be installed according to the methods in this section. Clean, new two-inch outside diameter well point screen and casing will be driven using a sledge hammer. A boring will be initiated using a hand auger to a point above the water table (two to four feet, depending on location in the ~~year~~ yard). The hole will be cleaned of cuttings and slough, if possible, and two and one half feet of screen will be driven to a point approximately one foot below the water table. If

screen is exposed in the hole, clean bagged silica sand will be used to backfill the hole to one foot above the screen, then bentonite will be used to fill the annulus to the surface. Clean new latex gloves will be worn by personnel installing the well point. Casing will extend one to three feet above the ground surface and a cap will be securely screwed on.

5.0 SAMPLING PROCEDURES

5.1 Soils

5.1.1 Surface soils

Prior to surface soil sample collection, the sample area will be marked by a 15 cm by 15 cm template. This size sample area is required to obtain a sufficient volume of soil to perform all of the analytical tests. The area will be scraped to a depth of about 1 cm using a clean stainless steel sampling utensil. Two clean eight-ounce amber sample jars will be filled at each sample location. The two jars will be filled side by side to fill them as uniformly as possible. Samples will be handled and stored as discussed in Section 7. Disposable latex sampling gloves will be worn by sampling personnel and changed between sampling points. Sampling utensils and templates will be decontaminated between sampling points as described in Section 6 below.

Twenty surface sampling locations and nine subsurface are identified in Phase I of the sampling and analysis plan. At two surface locations and one subsurface location, duplicate samples will be collected for quality control. These samples will not be identified as duplicates, but instead will be given a unique sample identification number. One of the twenty surface locations will provide background information on the contaminants of interest for the project.

5.1.2 Subsurface soils

The Phase I subsurface soil samples will be collected using a hand sampling auger. The hole will be drilled to a depth of two and one half feet below the ground surface

with a six inch diameter power auger or hand auger, depending on soil conditions. The hole will then be cleaned and an undisturbed sample will be collected with a clean, stainless steel four-inch diameter hand sampling auger. The sample will be placed directly into a clean plastic bag, homogenized, then placed evenly in two clean 250 milliliter amber wide-mouth sample jars. Soils will be logged during drilling of the boring.

Field personnel will wear clean latex gloves and use a clean stainless steel spoon when transferring the sample from the plastic bag to the sample bottles. The bottles will be completely filled and appropriately stored in the field.

Subsurface soil samples, below 2.5 feet, will be collected using split spoon samplers driven through a hollow stem auger. The boring will be augered to the desired sampling depth while a ram in the hollowstem auger precludes cuttings from entering the auger cavity. This ram will then be removed and a split-spoon sampler will be inserted and driven through the desired sampling interval using a hydraulic, rig-mounted hammer. The split-spoon sampler will then be removed and personnel will carefully open the sampler and log the soils, using the procedures set forth in section 5.1. The sample from the interval of interest will be removed and sealed in a clean plastic bag. If the soil is frozen, it will be allowed to thaw to facilitate homogenization. The sample will be homogenized by mixing it thoroughly in the plastic bag.

A portion of the homogenized sample will be placed in two 250 milliliter glass bottles equipped with teflon backed lids for transport to the contract laboratory. Field personnel will wear clean latex gloves and use a clean stainless steel spoon when transferring the sample from the plastic bag to the sample bottles. The bottles will be completely filled and appropriately stored in the field.

Samples will be collected at each depth specified, and identified with a unique identification number. It is proposed that one duplicate sample be collected for every ten samples, thus providing a quality control measure. Procedures described below for sample storage and handling, record-keeping, and decontamination will be followed.

5.2 Ground Water

If necessary, ground water samples will be collected using the methods and procedures described in this section. All measuring and sampling equipment will be decontaminated prior to use at each well. Where wells are known to be contaminated, wells will be sampled from cleanest to dirtiest.

Each well will be purged prior to sampling it. The water level will be measured as described in Section 5.2 and will be used to calculate the volume of water standing in the well. The well will be purged by bailing with a teflon bailer or pumping with a submersible or peristaltic pump. Three well volumes or another appropriate volume will be purged from each well prior to sampling. If the well is purged dry, it will be sampled after the water level has recovered to at least 80% of its original level.

Samples will be collected in appropriate bottles and will be preserved according to the requirements of the analysis method. Procedures for storage, handling, record-keeping, and chain-of-custody as described in this plan will be followed for all samples.

5.3 Wipe Tests for Non-Porous Materials

Wipe sampling for PCBs may be required prior to disposing of non-porous miscellaneous materials on the site; for example, scrap metal or plastic wire casings. If wipe samples are taken, they will be collected according to the procedures described in this section and in EPA TSCA guidance (EPA, 1986). Solvent such as isooctane or hexane will be applied to a piece of 11 cm filter paper or gauze pad. The moistened filter paper or gauze pad will then be held with clean rubber gloves or a stainless steel forceps and rubbed thoroughly over a 100 square centimeter area of the surface to be sampled. The area to be sampled will be delineated by a template. Following sampling, the paper or pad will be placed in a clean sample bottle. Procedures described below for storage, handling, decontamination, waste disposal, and record-keeping will be followed. Health and safety protocol presented in the attached plan will be adhered to.

5.4 Destructive Sampling for Porous Materials

Destructive sampling for PCBs may be appropriate for porous miscellaneous materials at the site. Newspapers and wood are examples of porous materials which may require sampling. In destructive sampling, the entire sample is submitted to the laboratory for analysis. The sample will be placed in a sample jar if it is small enough; otherwise, it will be placed in a plastic bag. Standard procedures for sample storage, handling, decontamination, waste disposal, record-keeping, health and safety will be followed.

6.0 FIELD MEASUREMENTS

6.1 Soil Logging

Descriptive logs of materials encountered while drilling will be prepared by the ANI geologist for each borehole drilled. Samples of subsurface materials will be obtained by collecting cuttings off the auger and by driving split spoon samplers inside of the hollow stem auger.

The logs will contain all of the following plus any other information noted by the geologist. Soils will be described according to the Unified Classification System (UCS) and will refer to color, textural composition (gravel/sand/silt/clay), UCS type and symbol, relative density or stiffness, relative moisture content, and possibly other features. The depths at which different soil types, frost-line, and water are encountered will be noted to the nearest half-foot where possible. The name of the drilling company and driller, and the date and time the boring is drilled will be included on the well log. The depth and type of samples which are collected will be marked on the log, as well as any instrument measurements taken, if applicable.

6.2 Water Level Measurements

Ground water levels will be measured in monitoring wells to provide information of the rate and direction of flow and the hydrologic characteristics of the aquifers, if necessary. All equipment used to measure ground water levels will be cleaned prior to its use in each well. When more than one well is to be measured during a

sampling episode, the wells will be measured in order from the cleanest to the dirtiest. Where liquid product is present in a monitoring well, the thickness of the product will also be measured. The procedures described in this section will be followed when measuring water levels to ensure that data are representative and accurate.

Water levels will be measured using a steel measuring tape, and chalk or water-finding paste. The lower foot of the tape is graduated and can be read in 0.01 foot intervals. To obtain water level measurements, the raised gradations on the bottom foot of the tape will be coated with chalk before the tape is lowered carefully into the well. The foot marker nearest the water depth will be held at the permanent measurement point for a second. Water level measurements will be read until the same reading to 0.01 foot is obtained twice.

The following information shall be recorded in the field book when water levels are measured: depth to water; the depth to and thickness of product; date, time, and method of measurement; and, person measuring levels.

7.0 NON-HAZARDOUS WASTE REMOVAL

If the Phase I investigation determines that areas of the yard do not exhibit contamination exceeding the standards specified in the Order, the non-hazardous materials in these areas may be removed by Hanson or his designee. This practice will be confirmed with ADEC, and limited materials sampling may be necessary to confirm that substances are not hazardous. Such non-contaminated areas must be readily accessible without impacting contaminated areas of the yard. Routes and areas will be delineated based on Phase I results, and it will be necessary to gain approval of a materials disposition plan from the ADEC. Such non-hazardous, non-contaminated materials will be disposed of at the Municipality of Anchorage Landfill. Removal of these materials will facilitate Phase II sampling.

8.0 DECONTAMINATION PROCEDURES

The decontamination procedures outlined below were developed to ensure that collected samples are representative of actual environmental conditions.

Drill rigs and other machinery such as wrenches, chains, and trucks which come in contact with down-hole equipment will be steam- cleaned before being mobilized on-site. All equipment which goes down-hole such as augers, drill bits, and samplers will be steam- cleaned or cleaned with a trisodium-phosphate (TSP) detergent wash followed by two clean water rinses prior to being used in each borehole. After drilling borings, equipment contacting soil or the ground surface (tires, jack pads, etc.) will be decontaminated prior to moving outside the general area delineated by the borings. Furthermore, the drilling sequence will be set up to minimize the possibility of impacting stockpiled cuttings.

All equipment used for sampling soils or ground water such as templates, stainless steel spoons, bailers and split-spoon samplers will be washed with a TSP detergent solution, rinsed twice with clean water, and rinsed once with deionized water before it is used for each sample. Furthermore, iso-octane will be used to decontaminate the stainless steel spoon used for collecting surface soil samples if PCBs are a suspected contaminant. This solution will be captured and properly disposed of. New bailer rope will be used for each well. Precautions will be taken while bailing to prevent the bailer and rope from contacting the ground. Steel tapes used for measuring water levels will be completely washed before being brought on site; cleaning between wells will consist of rinsing the submersible portion of the tape with deionized water. These requirements may be modified or expanded in Phase II depending on the extent of contamination identified in Phase I. If necessary, the location and areal distribution of exclusion and contaminant reduction zones will be identified and related procedures specified.

All PVC well construction materials will be new, cleaned, and wrapped in plastic if they are to be transported or stored before installation. Persons handling the well casing or screen will wear disposable gloves during installation. Sand will be clean and bagged; bulk sand will not be used.

9.0 SAMPLE STORAGE AND HANDLING PROCEDURES

9.1 Samples for Lab Analysis

This section describes protocols for handling and storing samples once they are collected. The protocols are intended to ensure that sample integrity is maintained from the field to the laboratory.

All samples will be collected in clean, new containers and will be preserved as required by the method of analysis. At each PCB and pH surface sampling location, two 8 ounce amber jars will be filled and identified as described in section 4.1.2. At each lead and pH sampling location, two 8 ounce amber jars will be filled and identified as described in section 4.1.2. If a location is to be sampled and analyzed for PCBs, lead, and pH, a total of two sample jars is still all that is required to fulfill sample volume requirements. Furthermore, by collecting two jars at each location, consistency in sampling is assured.

At the end of each day of sample collection, the samples will be submitted to the laboratory for analysis, thereby eliminating any potential problems with regard to holding times. Cooling of the samples immediately in the field is not necessary. A chain of custody will accompany all samples and it will list the sample identification, date and time of collection, personnel responsible for sample collection, the number of containers per sample, ANI identification, project identification, and analysis required. The date and time the samples are submitted to the laboratory will be noted next to the relinquishing and accepting signatures.

9.2 Waste Disposal

Waste materials created during the investigation will be disposed of as follows: sampling gloves and other disposable safety gear will be containerized on site and disposed of at a later time pending laboratory analysis; spent solvent will also be captured and stored for later disposal.

10.0 RECORD-KEEPING PROCEDURES

Thorough documentation of activities and tracking of samples is essential to the value of any project. The record-keeping tasks described below will be performed to provide defensible results and traceable operations.

A separate field book will be maintained for activities conducted at the M & M site. Notes on all activities will be recorded in the field book in pen on a daily basis. Daily entries will include at a minimum the following: date; beginning and ending times; name of person recording; boreholes or wells drilled; samples collected; other operations performed; and names of other persons performing work at the site. Each

daily entry will begin on a new page and blank lines on the final page for each day will be crossed out to the bottom.

A boring log will be completed in the field for each boring drilled. The log will be prepared as described in Section 5.1 and will include lithologies, the name of the drilling company and the driller, the date, the initials of the person logging the borehole and other pertinent information.

Well completion diagrams will be completed for each monitoring well installed. The depth and screen interval of the well, depths and type of sand, cement and other backfill materials used, date, water level, and other information will be included on the well completion diagram.

All sample containers will be labeled with indelible ink immediately after the sample is collected. Labels will include the date, time, sampler, sample identification, ANI identification, and analysis to be performed. Chain-of-custody procedures will be followed and documented using chain-of-custody forms for all samples.

11.0 DATA REDUCTION, VALIDATION AND REPORTING

Analytical data provided by the contract laboratory will be reviewed, analyzed, and summarized per EPA specifications. Analyses from duplicate samples will be compared to each other to assess the reproducibility of results. This data, together with an assessment of site contamination based on the sampling and analysis work, will be provided in a Sampling and Analysis Report for Phase I. The Sampling and Analysis Report for Phase I will be submitted in a timely manner after completion and review of the analytical results.

12.0 QUALITY CONTROL VERIFICATION PROCEDURES

Duplicate and blank soil and ground water samples will be submitted to the laboratory at a rate of 10% or one per sampling episode. The purpose of the duplicate samples is to check the reproducibility and precision of the laboratory performing

the analyses. Duplicate samples are collected at the same time and location and analyzed for the same constituents as one of the samples sent to the lab.

If water samples are collected, blank samples (water) will be provided to the lab. The purpose of a blank sample is to assess the error or contamination introduced as a result of the sampling procedure. Blank samples are aliquots of deionized water which are treated in an identical manner as the samples.

APPENDIX C SITE HEALTH & SAFETY PLAN

**M&M ENTERPRISES SITE
HANSON ASSOCIATES**

ANCHORAGE, ALASKA

HEALTH AND SAFETY PLAN

SUMMARY PAGE

Site: Hanson Associates / M & M Enterprises Site
Location: Anchorage, Alaska

Owner: Hanson Associates
Contact: Rolph Hanson 562-2453

Consultant: America North Inc.
Contact: Field Manager: Brad Authier
562-3452 (W)
248-5634 (H)
Jim Smith
248-0061 (H)

Hospital: Humana Emergency -- 264-1222
Ambulance: (911)
Police: (911)
Fire Depart.: (911)

SIGNATURE PAGE

I CERTIFY THAT I HAVE READ AND UNDERSTAND THIS HEALTH AND SAFETY PLAN AND THAT I HAVE RECEIVED 40 HOURS OF TRAINING FOR WORK AT SITES CONTAINING HAZARDOUS MATERIALS.

SIGNATURES




Donald Miller

Brad Arthur

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION	1
2.0 PROJECT DESCRIPTION	1
3.0 SITE DESCRIPTION	1
4.0 ON-SITE ORGANIZATION AND COORDINATION	2
5.0 HAZARD EVALUATION	2
5.1 Chemical Hazards	
5.2 Mechanical Hazards	
5.3 Other Hazards	
6.0 HAZARD MITIGATION MEASURES	3
6.1 Hazardous Materials Training	
6.2 Personal Protective Equipment	
7.0 DECONTAMINATION PLANS	4
8.0 EMERGENCY COMMUNICATION PROCEDURES	4

1.0 INTRODUCTION

This Health and Safety Plan was prepared for Hanson Associates by America North Inc. (ANI) regarding the M & M Enterprises site, hereinafter referred to as the site, in Anchorage, Alaska. It discusses potential hazards at the site and the measures which will be implemented during field activities to minimize these hazards.

2.0 PROJECT DESCRIPTION

The project will entail collecting surface soil samples during Phase I of the investigation to assess the extent of contamination resulting from battery and metals recycling operations at the site. Depending on the results of this Phase I survey, additional surface and possibly subsurface samples will be collected and analyzed. Contaminants of concern include PCBs associated with transformers that were stored and recycled at the site, and lead and sulfuric acid associated with the battery recycling operation.

3.0 SITE DESCRIPTION

The Hanson Associates property, or the site, is located at 620 East International Airport Road in Anchorage, as shown in Figure 1. Figure 2 shows a site map. The property is owned by Hanson Associates.

The site consists of two interconnected single story wood frame houses which are used for office space, a large yard behind the houses, and an unpaved parking area in front of the houses. An unpaved alley is located east of the site. The rear yard is enclosed by an eight to ten foot high fence.

The site lies at an elevation of approximately 105 feet above Mean Sea Level (MSL). Campbell Creek flows to the south-southwest about one-eighth mile southeast of the site. The average discharge of Campbell Creek is 65.5 cubic feet per second (USGS, 1984).

Several operators have leased the site from Hanson Associates since about 1964. Site operations have included metals and battery recycling. M & M Enterprises operated a scrap metal and battery recycling business at the site from 1981 until 19**. M & M Enterprises is owned and operated by Mrs. Mildred McGalliard. Sulfuric acid from the batteries was reportedly handled by draining it into a neutralization tank, neutralizing it with soda ash (sodium carbonate), then draining it via a discharge hose off-site to a sanitary sewer manhole in the alley east of the site. Battery recycling operations were performed on the southeast side of the site.

An investigation performed by ADEC contractors determined that high levels of lead were present in soils at the site. At the sampling locations used in this survey, acidic conditions were also encountered (pH as low as approximately 2.3). Although PCBs were not detected in any of the samples in concentrations exceeding 3 ppm, higher concentrations seem possible given the reported historic use of the site.

4.0 ON-SITE ORGANIZATION AND COORDINATION

Brad Authier with America North, Inc. will be the on-site health and safety officer for Phase I of the project. Any personnel involved with sample collection in this phase will have 40 hours of approved health and safety training. Subcontractor assistance is not required for Phase I; however, if additional personnel are required for later phases, Mr. Authier will be responsible for coordination of field activities.

5.0 HAZARD EVALUATION

5.1 Chemical Hazards

The constituents listed below are of greatest concern. Appendix A provides chemical information on each of these substances. Since battery acids were handled at the site, acidic soils or substances may possibly be encountered. The lowest pH of any of the soil samples analyzed by the previous ADEC investigation was 2.28. Dermal contact with or ingestion of acidic substances is hazardous and must be avoided.

PCB and lead contamination present hazards by absorption or ingestion, normally by dust laden with these contaminants. Again, dermal contact must be avoided, and any route which could facilitate ingestion of dust or soil must be precluded.

<u>Substance</u>	<u>Maximum Observed or Anticipated Concentration</u>	<u>Primary Hazards</u>
PCB Aroclor	1260 2.8 ug/g	Ingestion; dermal contact
Lead	12000 ug/g	Ingestion; dust inhalation

5.2 Mechanical Hazards

Mechanical hazards will exist during Phase I of the project due to the salvage material and debris located at the site. If Phase II is necessary and a drilling rig is utilized, additional mechanical hazards will be present.

5.3 Other Hazards

Other hazards which will be associated with this project include the proximity of the location to a busy municipal street in the event a crossing is necessary. If a drill rig is used, noise levels may present a hazard.

6.0 HAZARD MITIGATION MEASURES

6.1 Hazardous Materials Training

All persons working on-site will have been trained in an OSHA approved 40 hour health and safety course which provides instruction in hazardous materials, safety measures, decontamination, and emergency procedures. The site manager has additional training as a supervisor for work at hazardous materials sites. Health and safety meetings will be held at regular intervals if Phase II is initiated. All on-site workers will read and sign this plan.

6.2 Personal Protective Equipment

Protection Levels C and D as outlined below will provide adequate protection for personnel during sampling (and drilling, if necessary) activities. Hearing protection will be available to protect against noise.

<u>Activity</u>	<u>Contaminants</u>	<u>Personal Protective Equipment</u>
Surface Sampling	PCBs, Lead, Acidic Conditions	Saranax, disposable boots, gloves

If conditions are windy (dusty), personnel will be prepared to use an air-purifying respirator and goggles. In the event Phase II is initiated and a drilling rig is used, hardhats will be used in addition to the equipment previously mentioned.

7.0 DECONTAMINATION PLANS

Personnel decontamination will be performed in the contaminant reduction zone. Used disposable coveralls, boots, and gloves will be collected in a drum and stored on site for disposal. Wash facilities are available in the building on-site, or at ANI offices three blocks away.

The Phase I investigation will determine whether unusually high levels of contaminants are present at the site. If upgrading of the level of protection and a greater specificity of exclusion and decontamination zones are necessary for Phase II, such details will be addressed at that time.

8.0 EMERGENCY COMMUNICATION PROCEDURES

In the event of an accident or emergency, it is the responsibility of all workers on the site to call the police, ambulance, or other appropriate emergency groups as soon as possible. The site manager will telephone the client, the consultant, and the

subconsultant contacts as soon as possible after implementing emergency measures to respond to the problem.

In case of an accident, after all response measures have been performed, an accident report will be prepared. The report will describe the date, time, location, and details of incident, the persons involved, any injuries or damages sustained, and the probable cause of the incident. This report will be maintained in ANI's files for at least 20 years.