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M & M ENTERPRISES SITE
PHASE II
POLLUTION ASSESSMENT REPORT
(COBC #89-2-1-9-130-1)

Prepared for:

HANSON ASSOCIATES
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ANCHORAGE, ALASKA 99509

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DECEMBER 7, 1989

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1.0 EXECUTIVE SUMMARY

Phase II site investigation activities were conducted at the Hanson Associates M & M Site in Anchorage, Alaska, during October and November, 1989. The results of this investigation are summarized below:

- Concentrations of PCBs in surface soil samples outside the confines of the yard are near background levels (less than one ppm).

- Total lead concentrations in surface soil samples collected outside the yard were only slightly elevated above background levels south and west of the yard (6 to 30 ppm); however, lead concentrations were above the cleanup level of 500 ppm in the alley east of the yard.

- Two of six samples collected for PCB analysis from 0.5 to 1.0 feet below ground surface (bgs) within the confines of the yard exhibited concentrations greater than 50 parts per million (ppm).

- Total lead concentrations in soil samples collected from 0.5 to 1.0 feet bgs exceeded the cleanup level of 500 ppm at only 3 of 13 locations sampled in the yard.

- Extraction Procedure (EP) toxicity results indicate the leaching potential of lead at the Site appears to be very low; only one of eighteen samples analyzed was detected for lead at concentrations exceeding one ppm (5.55 ppm).

- ANI drilled five borings to depths ranging from 16 to 21.5 feet bgs and installed five ground-water monitoring wells at the Site; soils were classified using the Unified Soil Classification System. Analyses of 18 soil samples collected from these borings indicate the absence of lead contamination in subsurface soils. Only one sample exhibited lead concentrations slightly elevated above background.

- Water samples were collected from the five ANI ground-water monitoring wells; lead was nondetectable in all samples (<0.005 ppm); sulfates exceeded secondary

drinking water quality standards in only one well (ANIB-2); the lowest laboratory-measured pH was 6.38.

- Based on monitoring well water level data, the water table associated with the shallow, unconfined aquifer at the Site slopes to the east-southeast at a gradient ranging from 0.010 to 0.017.

- The integrity of the manhole near the southeast corner of the yard has not been compromised due to reported discharge of neutralized battery acid to the manhole. An inspection was performed by personnel from Anchorage Water and Wastewater Utilities.

2.0 INTRODUCTION

This Phase II Pollution Assessment Report (PAR II) was prepared for Hanson Associates (Hanson) by America North Inc. (ANI) for the property located at 620 East International Airport Road in Anchorage, Alaska. This subject property is known as the M & M Enterprises Site (Site). The PAR 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) and Revised Phase I Pollution Assessment Report (PAR I) is incorporated into this report, and data is analyzed and interpreted.

Phase I investigation activities did not fully define the extent of contamination at the Site; therefore, Phase II activities were proposed and approved, and conducted at the Site in October and November, 1989. Limited additional investigation activities are proposed in this report to further characterize the nature and extent of contamination at the Site (both horizontally and vertically).

This Phase II 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.

3.0 BACKGROUND

3.1 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 the Site vicinity map (Figure 1). Details of the Site are illustrated in Figure 2. 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. This fence has been recently upgraded to prevent unauthorized entry.

Several operators have leased the Site from Hanson Associates since about 1964. Site operations have included appliance processing, and metals and battery recycling. Subsequent to 1974 and prior to 1981, scores of appliances (primarily washing and drying machines) can be observed in aerial photographs of the Site. From 1981 to 1987, M & M Enterprises operated a scrap metal and battery recycling business at the Site. M & M Enterprises is owned by Mrs. Mildred McGalliard.

Former battery recycling operations were performed on the southeast side of the Site. These operations are of particular concern at the Site since sulfuric acid from batteries was reportedly handled by draining it into a neutralization tank, neutralizing it with soda ash (sodium bicarbonate), then draining it via a discharge hose off-site to a sanitary sewer manhole in the alley east of the Site. Acid inadvertently released to the ground surface could potentially enter soils at the Site. If acid enters Site soils, oxidized lead (which may

be suspended in the acid) could theoretically migrate in the subsurface, and precipitate in sediments (as the acid becomes diluted) where higher pH conditions exist. Phase II investigation activities were proposed to detect the existence of contamination in the subsurface.

3.2 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 (Schmoll, 1972). 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].

Five borings were drilled by ANI in October, 1989. Soils were classified according to the Unified Soil Classification System (USCS). A fence diagram illustrating the nature and distribution of soil types in the shallow subsurface at the Site is presented on Plate 1.

Fill soils vary from well-graded sands to well graded gravel with cobbles. The highly organic peat soils underlying the fill range in thickness from 2.5 feet to 6.0 feet, and they are remnants of the wetland that was filled at the time of development. Beneath the peat, a dark gray, silty clay with occasional sand/gravel lenses was encountered. These lenses were well-developed on the west side of the subject property, but graded to silty clays to the east and southeast. This grading is graphically depicted on Plate 1.

The stratigraphic interval below the peat is believed to be a portion of 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. Therefore, only a portion of the Bootlegger Cove Formation was penetrated by ANI monitoring wells at the Site (maximum boring depth was 21.5 feet below ground surface).

The Site lies at an elevation of approximately 110 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).

3.3 Hydrogeology

Two aquifers are defined at the Site; a shallow, unconfined 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 (Freetney, 1980). The depth to ground water in the unconfined aquifer ranged from 2.0 to 6.5 feet below the ground surface. Measurements were taken November 17, 1989, in the five monitoring wells installed by ANI at the Site. During periods of unusually heavy rainfall, water levels are near the ground surface. This is based on observation of the Site in September; heavy precipitation occurred during this time period, and an apparent water table surface was observed in depressions in the yard.

The water table elevations measured in the five ground-water monitoring wells are contoured in Figure 3. The slope of the water-table surface in the shallow, unconfined aquifer at the Site can be observed. The ground-water gradient ranges from 0.010 to 0.017. Ground-water flow is generally toward the east-southeast, although in the area slightly to the northeast of the Site, the ground water flow direction apparently exhibits a more southerly vector. This flow configuration is roughly perpendicular to the course of Campbell Creek in the vicinity of the Site.

Ground-water monitoring wells recovered relatively rapidly during purging operations, indicating normal hydraulic conductivities for the sands and silts encountered at the Site. Based on visual observation of drive samples from the borings, the hydraulic conductivity of the silty clays at the Site is estimated to be relatively low. Primary water movement is probably through the near-surface granular fill soils and peat, although some water movement is expected to occur through the discontinuous sand and gravel stringers (below the peat) at the Site.

3.4 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 ground-water monitoring wells, and sampling and analysis of soils and ground water. Figure 4 shows monitoring 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 are presented for background information purposes.

3.4.1 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 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 exhibits 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.

Boring IW was installed in the northwest corner of the yard and indicated 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 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.

3.4.2 Water Sampling Results

A ground-water 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 annular space surrounding the monitoring well casings was 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.

4.0 PHASE II INVESTIGATION ACTIVITIES

Various activities were performed for Phase II to further investigate the nature and extent of contamination at the Site. Surface and shallow subsurface samples were collected, borings were drilled and split-spoon samples collected, and ground-water monitoring wells were installed and water samples collected. Appropriate samples were submitted for analysis. An inspection of the on-site sewer manhole was also performed.

4.1 Surface and Shallow Subsurface Sampling

A total of 14 surface and 15 shallow subsurface samples were collected and submitted for various laboratory analyses. Surface samples were collected for PCB analysis (EPA

Method 8080) in the M & M yard, and exterior to the yard boundaries. EPA sampling protocol described in the QA/QC Plan was adhered to were possible. Surface soil samples were collected for lead analysis (by ICP) outside the yard confines.

Soil samples were collected in the shallow subsurface by removing the surface soil or trash layer to a depth of 4 to 11 inches below the ground surface. Generally, trash was removed to expose the gravel layer immediately (within one to two inches) below the trash layer. The sample was collected with a stainless-steel spoon and homogenized in a stainless-steel bowl before being placed in wide-mouth amber sample jars and enclosed with a teflon-lined lid. The samples were cooled to 4°C, and all samples arrived at the laboratory within 24 hours of collection.

Strict decontamination procedures were followed during sampling activities to minimize the possibility of cross contamination between samples. Health and safety procedures were also adhered to. Samples were delivered to the laboratory under standard chain-of-custody procedures.

4.2 Subsurface Borings

Five borings were drilled on and adjacent to the Site. These borings were drilled with a CME-45 portable drill rig using eight-inch diameter hollow-stem auger equipment. Subsurface soil samples were collected by driving a "bull nose" split-spoon sampler through the hollow-stem auger. Sampling was initiated in each boring from 2.5 to 4.0 feet bgs, and subsequent drives were taken at approximately two-foot intervals (to the total depth of the boring).

Soil samples were homogenized in a stainless steel bowl prior to placement in wide-mouthed plastic sample jars. Strict decontamination and chain-of-custody procedures were followed. Logs of borings are included in Appendix D.

Recovery was poor on a number of drives because of the presence of gravels and cobbles; therefore, samples were not available for all intervals sampled. The pH for soil samples was measured in the laboratory. Based on pH data and soil profile considerations, samples were submitted for analyses for total lead by ICP, total lead by graphite furnace (GF), and elemental lead by EP toxicity procedures.

4.3 Ground-Water Monitoring Wells

Monitoring wells were installed in all ANI deep borings. These wells were screened from approximately 18 feet to 8 feet bgs. Ten feet of two-inch diameter, 20 slot PVC well screen were used in each boring; blank casing extended to the ground surface. The annulus was sand packed with 8-12 Colorado silica sand; sand was emplaced through the hollow-stem auger to approximately two feet above the uppermost screen slot. A bentonite seal (at least two-feet thick) was placed in the annulus above the sandpack. The boring was then grouted with cement to the surface, and a protective steel cover with locking cap placed around and over the PVC well casing.

Monitoring well casing elevations were surveyed by a registered land surveyor. Wells were developed, then purged with a teflon bailer that was decontaminated between each well. Three casing volumes of water were removed from each well prior to collecting a sample; water pH, conductivity, and temperature were measured after removal of each well volume to determine whether ground-water conditions had stabilized in the well. Water samples were then field filtered using a 45-micron filter and nalgene filtering apparatus. Samples were preserved with nitric acid in laboratory-prepared bottles, cooled, and immediately submitted to the laboratory for analysis.

4.4 Manhole Inspection

ANI Staff initially inspected the sewer manhole near the southeast corner of the yard in September. A schematic of the manhole configuration is presented in Figure 6. Although degradation of the structure was not apparent from a surface observation point Anchorage Water and Wastewater Utilities (AWWU) was contacted to perform a more detailed inspection.

AWWU personnel physically inspected the sewer manhole December 4, 1989. Their inspection revealed that the materials used to construct the manhole were not apparently degraded by the neutralized battery acid which was reportedly drained into the structure. Scale was removed from the bench and side-wall surface, and pitting or other indications of degradation were not observed. Visual inspection (with a mirror) of lines entering and exiting the manhole indicated that these conduits are intact. Documentation of this inspection is contained in Appendix G.

5.0 PHASE I AND PHASE II INVESTIGATION RESULTS

Phase I investigation activities were conducted at the M & M Site in July, 1989. ANI collected surface and subsurface (two to three feet bgs) soil samples. These samples were analyzed for total lead and polychlorinated byphenols (PCBs). A well point was also installed to collect a water sample. Activities were conducted according to the DEC-approved Pollution Assessment Plan.

Phase II activities were conducted in October and November, 1989, per the DEC-approved Revised Phase I Pollution Assessment Report. Additional surface and subsurface (0.5 to 1.0 feet bgs) samples were collected to more fully characterize the nature and extent of contamination at the Site. Furthermore, five borings were drilled at the Site and ground-water monitoring wells installed. Site geology and hydrogeology were characterized, and deeper subsurface contamination was investigated. Ground-water samples were also collected and submitted for analysis to assess the presence of contaminants in the shallow water-table aquifer.

The results of these investigation activities will be discussed below. Analytical results for both Phases are contained in Appendix A and B.

5.1 Determination of Contaminant Background Levels

Samples were collected during Phase I to assess background concentrations of PCBs and lead at the ground surface. Samples were collected during Phase II activities to determine subsurface background concentrations of lead.

Natural background PCB concentrations are nondetectable; however, since most of the surface soils in the area are fill material, detectable concentrations of PCBs may be inherent. BKG1, a background sample collected 500 feet east of the yard, exemplifies this with PCB concentrations of nearly 0.2 ppm. These minor concentrations of PCBs in area soils may therefore be attributable to sources other than the M & M yard.

Background lead concentrations in native soils range from approximately two to six ppm. This range of values is based on analytical results for samples collected from borings at the Site. TNH and Phase I data indicate a wide variation in background lead

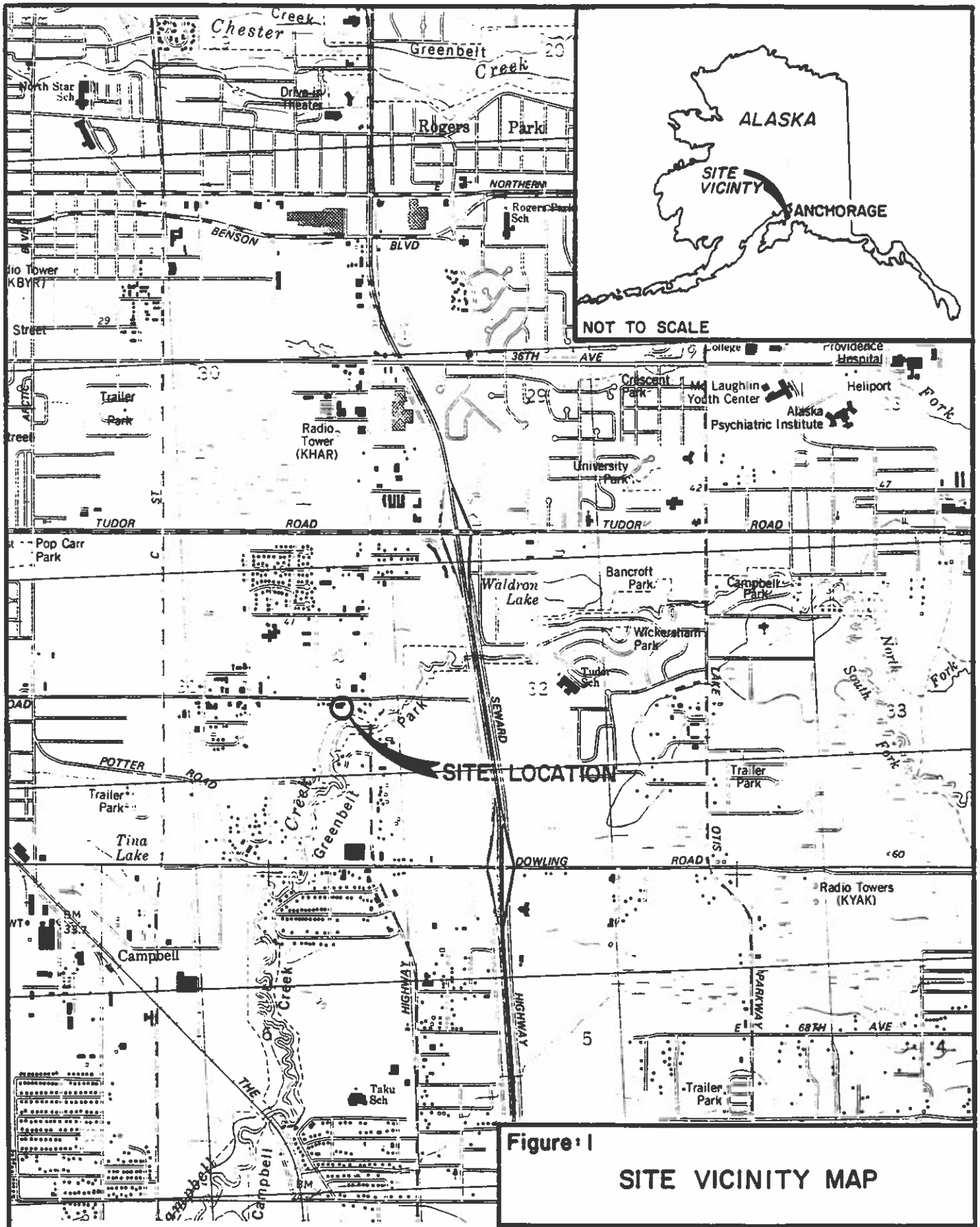


Figure: 1

SITE VICINITY MAP

HANSON ASSOCIATES SITE Anchorage, Alaska	America North Inc. Environmental Consulting / Natural Resources Management

88-135	CDS / SW	FEB 1989

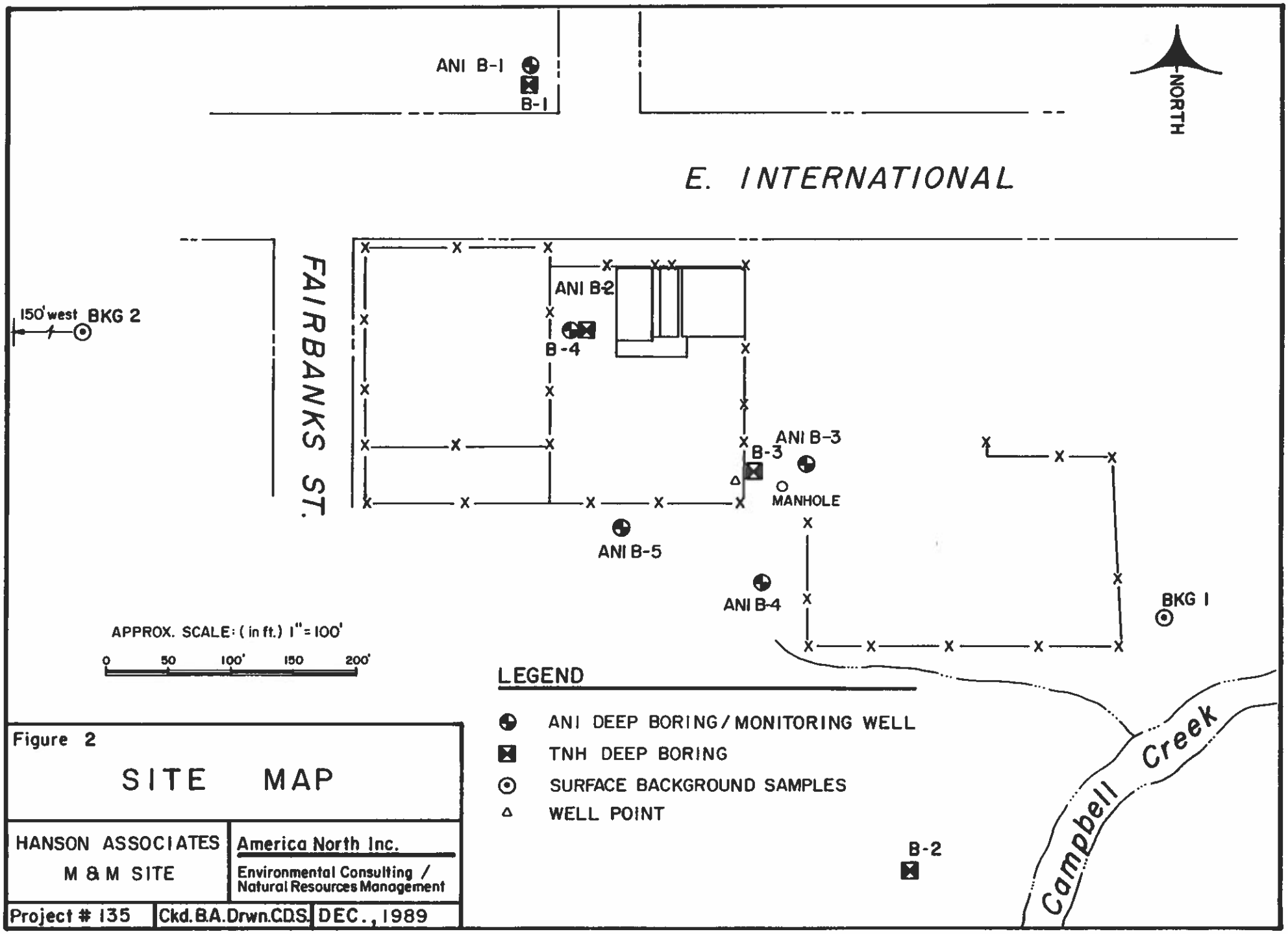


Figure 2

SITE MAP

HANSON ASSOCIATES M & M SITE	America North Inc. Environmental Consulting / Natural Resources Management
Project # 135	Ckd. B.A. Drwn. C.D.S. DEC., 1989

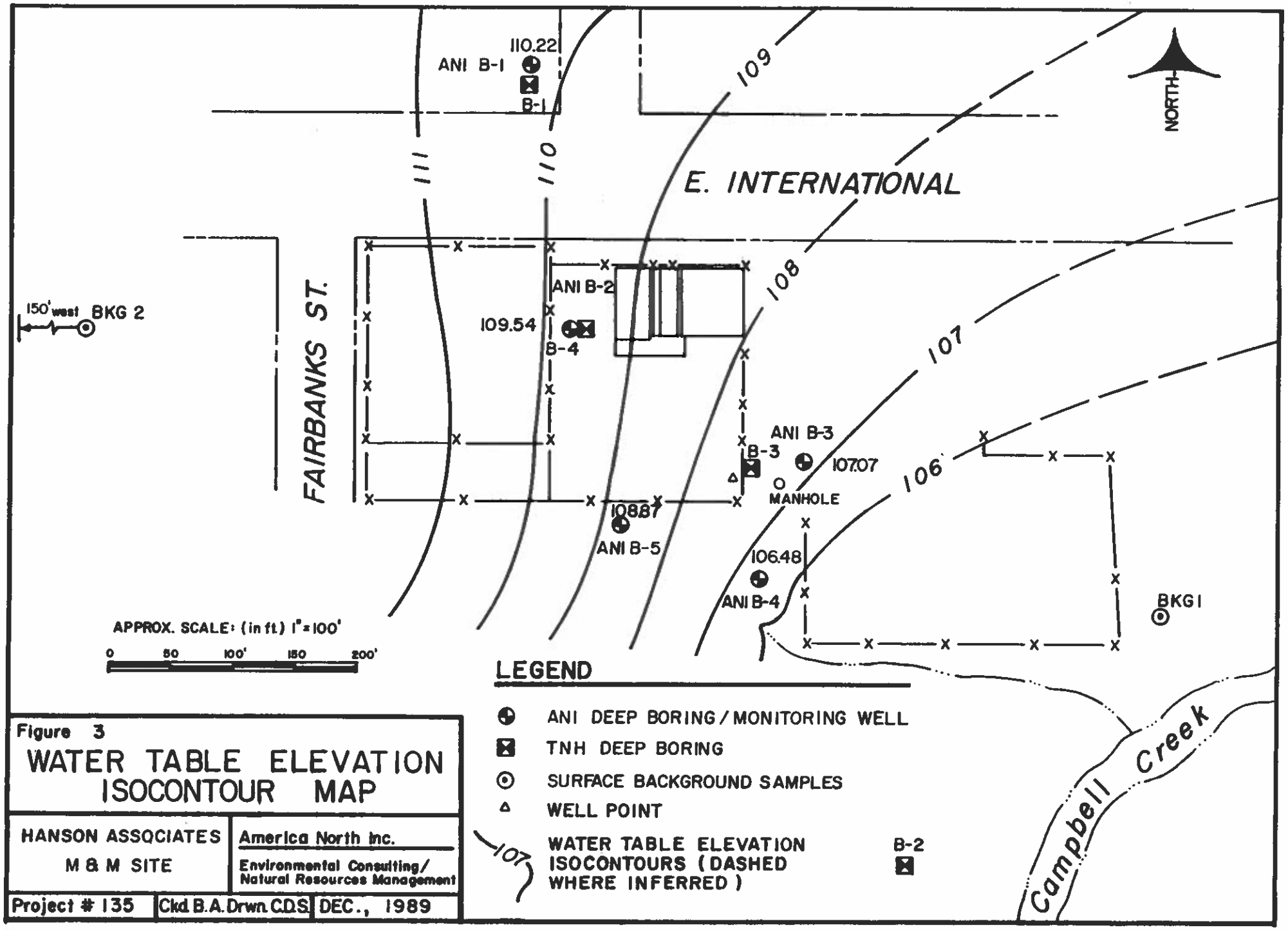
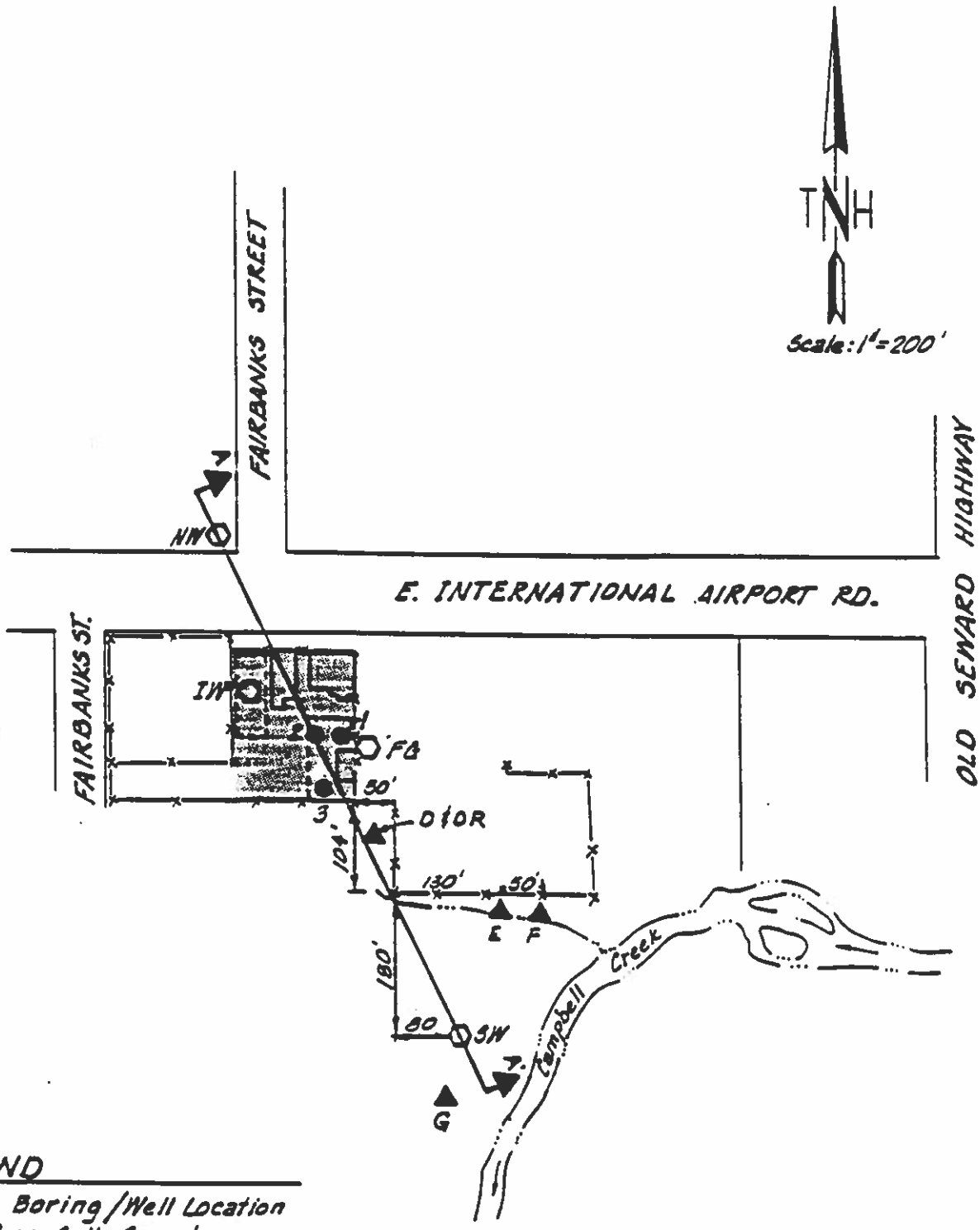


Figure 3

WATER TABLE ELEVATION ISOCONTOUR MAP

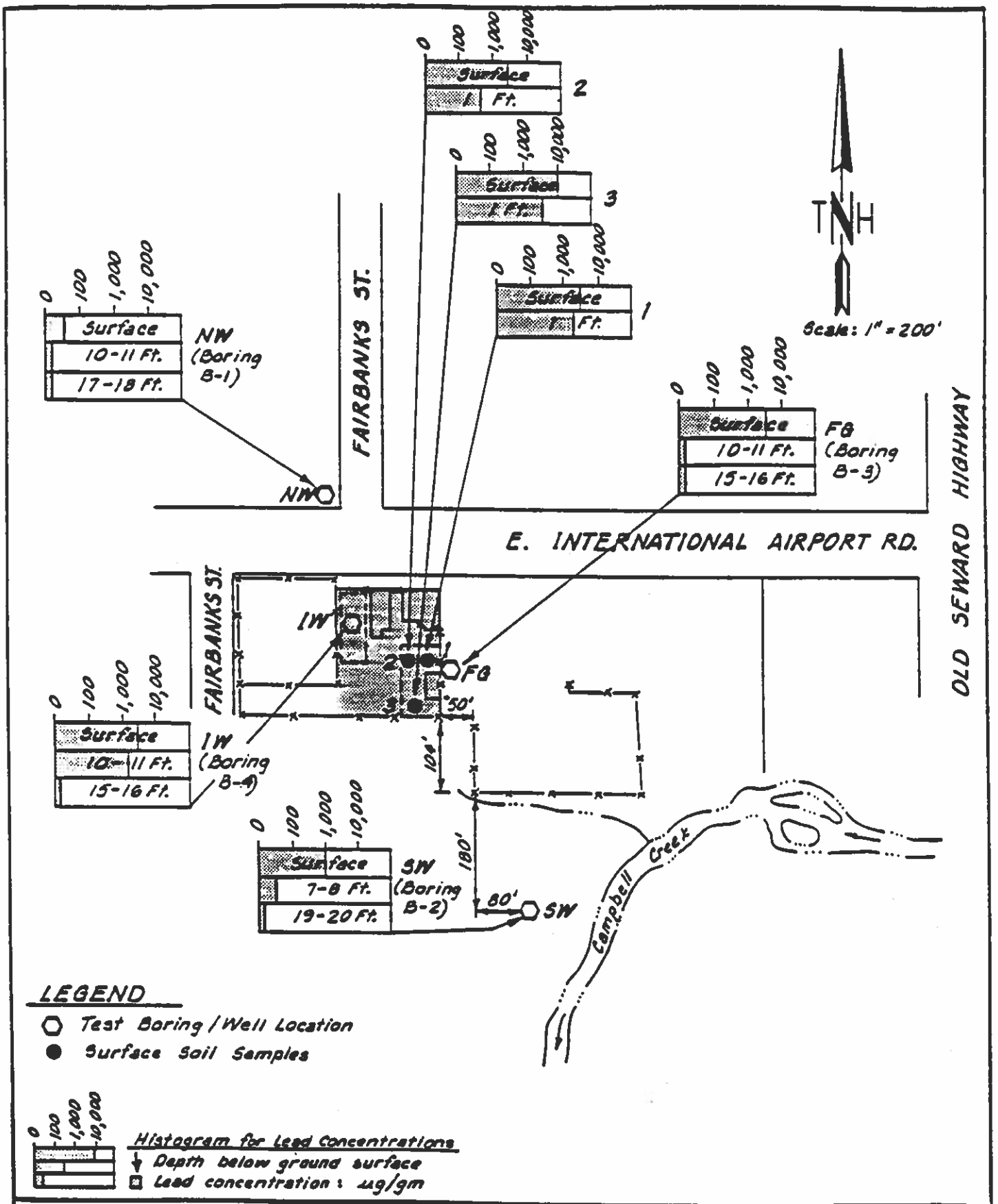
HANSON ASSOCIATES M & M SITE	America North Inc. Environmental Consulting/ Natural Resources Management
Project # 135	Ckd. B.A. Drwn. C.D.S. DEC., 1989



LEGEND

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

TRYCK NYMAN & HAYES SAIC	ALASKA HAZARDOUS WASTE PROGRAM M & M ENTERPRISES SAMPLING LOCATION MAP	FIGURE 4



TRYCK NYMAN & HAYES

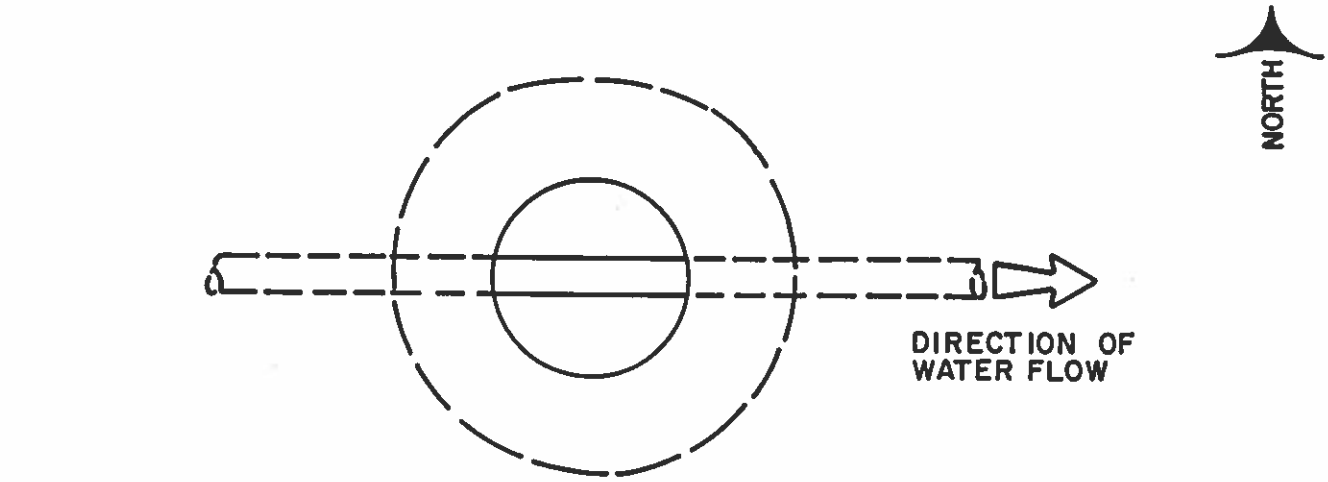
SAIC

ALASKA HAZARDOUS WASTE PROGRAM

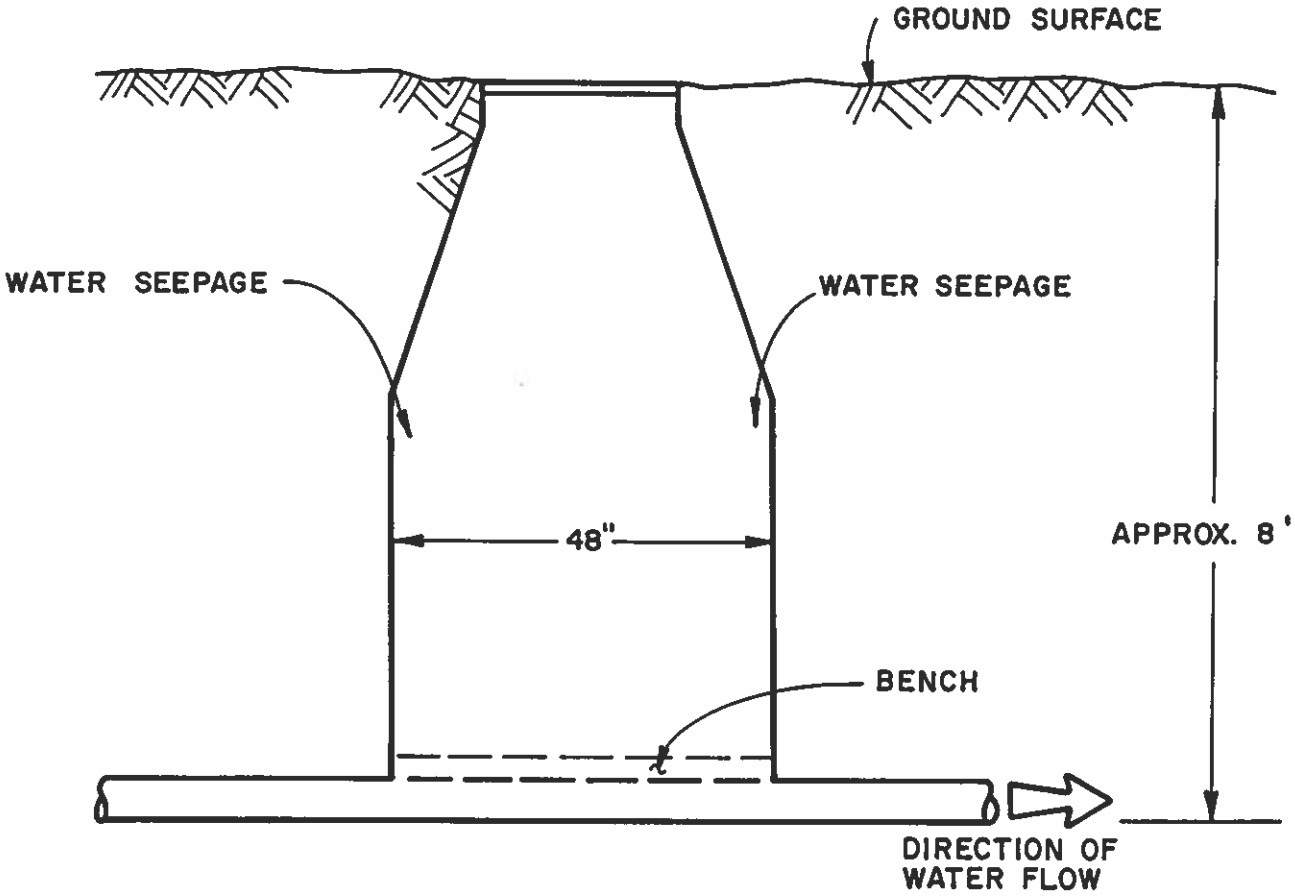
M & M ENTERPRISES

LEAD CONCENTRATIONS IN SOIL

FIGURE 5



PLAN VIEW



CROSS - SECTION

NOTE :
DIMENSIONS ARE APPROXIMATE.

0 1 2
SCALE IN FEET

Figure 6

MANHOLE SCHEMATIC

HANSON ASSOCIATES M & M SITE	America North Inc. Environmental Consulting / Natural Resources Management

Project # 135	Ckd. B.A. Drwn. CDS	DEC., 1989

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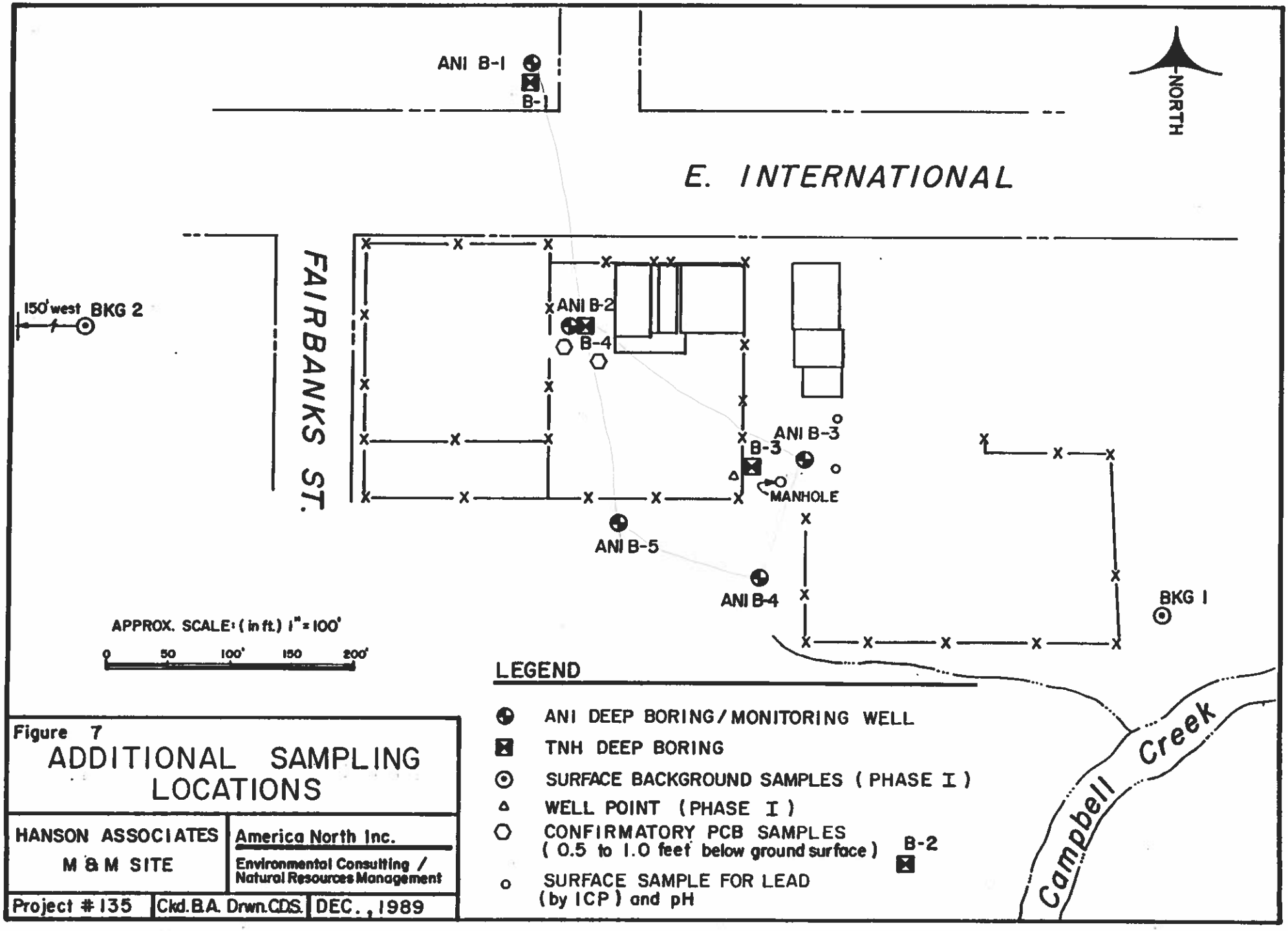

Figure 7

ADDITIONAL SAMPLING LOCATIONS

HANSON ASSOCIATES M & M SITE	America North Inc. Environmental Consulting / Natural Resources Management
Project # 135	Ckd. B.A. Drwn. CDS. DEC., 1989

concentrations at the surface due to non-native fill and automobile emissions. Although lead concentrations measured in background samples range from approximately 8 to 190 ppm, a likely range of background concentrations for surface soils at the Site is from 8 ppm to approximately 50 ppm.

5.2 Soil Contamination (PCBs)

PCBs are insoluble in water and tend to adhere to soil particles, thus inhibiting or retarding migration in the subsurface. This insolubility was the basis for focusing on surface sampling in Phase I with limited subsurface (2.0 to 3.0 feet) sampling. As expected, Phase I revealed that PCBs were concentrated in surface trash, with only limited contamination at depth. Phase II was intended to investigate the extent of contamination in the interval between the trash surface and a depth of 2.0 to 3.0 feet bgs.

5.2.1 Results

Phase I analytical results are summarized in Table 3, and Phase II results are summarized in Table 5. Surface PCB concentrations are illustrated on Plate 2, and subsurface concentrations are illustrated on Plates 3 and 4.

Surface. Surface sampling points associated with the initial (Phase I) grid (US EPA, 1986) yielded an average PCB concentration of 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 western portion of the yard; therefore, the emphasis of Phase II sampling was in this portion of the yard.

Phase I sampling determined that two sampling points (2D and 6B) exhibited PCB concentrations approaching or exceeding a 50 ppm TSCA guideline. Phase II investigated the vicinity of these surface sampling locations in greater detail. Two locations offsetting Point 2D (40.9 ppm) were sampled and PCB concentrations were significantly reduced (5.1 and 16.6 ppm). Point 6B exhibited significantly elevated levels of PCBs (93.4 ppm); five surface locations offsetting this point by approximately 15 feet in different directions were sampled. Elevated levels of PCBs (greater than 50 ppm) appear to trend north-south in this vicinity.

Surface soil samples were collected at locations outside the yard during Phase II to investigate the horizontal extent of PCB contamination. Samples were collected west, south, and east of the yard. Because of the buildings and a major thoroughfare to the north of the yard, samples were not collected beyond the northern boundary of the yard.

Immediately beyond the western boundary of the yard, Point 6B was sampled from one to four inches bgs. This soil appeared to be gravel fill placed in the parking area. Concentrations were below 1 ppm. Two locations were sampled immediately south of the yard; the pavement was cut and a near-surface interval was sampled. PCB concentrations were non-detectable to less than 1 ppm. Three locations were sampled in the alley east of the yard; these samples were appropriately collected, and results indicate that PCB concentrations are less than 1 ppm at all three locations. Therefore, it does not appear that elevated concentrations of PCBs are present outside the confines of the yard.

Subsurface (0.5 to 1.0 feet bgs). Phase II investigated near-surface PCB contamination, focusing on the shallow subsurface in the western portion of the yard. Samples were collected from 5 to 11 inches below the ground/trash surface, immediately below the apparent base of the trash layer. Four locations ranged from 0.2 to 15.7 ppm; however, two locations in the northwest portion of the yard (4A and 4B) exhibited concentrations exceeding 50 ppm. One should note that PCB concentrations at these locations at 2.5 feet bgs are 0.05 and 0.32 ppm. Confirmatory samples should be collected near sampling points 4A and 4B at approximately the base of the trash layer (see Figure 7).

Subsurface (2.2 to 3.0 feet bgs). PCB concentrations at seven of nine subsurface locations sampled (2.2 to 3.0 feet bgs) were consistently either non-detectable, or below 1 ppm; Points 4E and 6B are the exceptions. 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 (from below one foot bgs) which exhibited PCB concentrations (15.3 ppm) above cleanup standards. Point 6B also exhibited the highest surface PCB concentrations in the yard 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 six inches depth (observed to about 1.5 feet bgs).

5.2.2 Interpretation

Available data indicates that elevated concentrations of PCBs are confined to the boundaries of the M & M yard. Surface and subsurface sampling results indicate the presence of "hot spots" near the southern edge and northeast corner of the main cement slab. PCB concentrations at these "hot spots" range from 23.3 ppm to 93.4 ppm at the surface, and 10.6 ppm to 87.1 ppm at 4 to 11 inches bgs.

Based on Phase I and Phase II sampling results, the vertical migration of PCBs is very limited. High PCB concentrations at Points 4A and 4B from 5 to 11 inches bgs may be attributable to the sampling interval's close proximity to the apparent base of the surface trash. Due to Site conditions, sampling methods were unsophisticated, and the introduction of surface contamination into the sample cannot be ruled out. Nevertheless, the presence of elevated concentrations of PCBs at Points 4A and 4B (to depths of 11 and 5 inches, respectively) is apparently substantiated.

5.3 Soil Contamination (Lead and pH)

Elemental lead is a metal which is insoluble in water unless it is suspended in a low pH solution. Once in solution, oxidized lead may precipitate if a higher pH environment is encountered (as the acidic solution is diluted). Phase I investigated lead contamination at the ground surface and 2.2 to 3.0 feet bgs in the M & M yard. Phase II investigated the extent of contamination outside the boundaries of the yard, as well as in the shallow subsurface (0.5 to 1.0 feet bgs) within the yard. Borings were drilled both on- and off-site to investigate lead contamination (Section 5.3). Also, the leaching potential of the lead contamination at the site was assessed in Phase II by subjecting a number of samples to analysis by US EPA Extraction Procedure (EP) Toxicity procedures (Section 5.4).

5.3.1 Results

Phase I analytical results {including total lead by inductively coupled plasma system (ICP), and pH} are summarized in Table 3. Phase II results for surface and shallow subsurface soil samples are summarized in Table 5. Table 6 summarizes analytical data associated with soil samples from the five ANI borings.

Surface lead concentrations are displayed on Plate 5, while subsurface lead concentrations are displayed on Plate 6 (0.5 to 1.0 feet bgs), and on Plate 7 (2.2 to 3.0 feet bgs). Plate 1 is a fence diagram based on data obtained from borings at the Site; pH profiles are presented on Plate 8.

Surface. Results of the Phase I investigation revealed that 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 at the surface of the soil/trash layer are above the 500 ppm cleanup standard dictated by the Order; however, samples were collected concurrent with and per procedures appropriate for EPA Method 8080 for PCBs. This procedure may have produced artificially high results with respect to lead concentrations.

Phase II investigated surface lead contamination outside the confines of the yard. Analytical results for the sample collected immediately outside the western boundary of the yard (6A) indicate that lead levels are near background concentrations. Immediately south of the yard at locations ANIB-5 and 5E, lead concentrations are near background levels. East of the yard, elevated levels of lead were measured in two samples collected in the alley roadway. Slightly further east of these two points, a soil sample was collected at ANIB-3; lead concentrations were measured at 331 ppm at this locale (below the Site cleanup level). It therefore appears that lead contamination exists in the alley roadway. Additional samples (two) should be collected in the grassy area east of the roadway to delineate the horizontal extent of contamination in this direction (see Figure 7).

Subsurface (0.5 to 1.0 feet bgs). Thirteen locations within the confines of the M & M yard were sampled and analyzed for lead by ICP. The samples were collected from depths of 4 inches to 11 inches below the ground or trash surface; generally, the sample was collected from immediately below the trash layer. Lead concentrations in three of the thirteen samples analyzed exceeded 500 ppm. Two of these locations were immediately south of the small cement slab (4C and 4D), while one location was near the eastern yard boundary (2E). Soil pH at these three locations ranged from 5.24 to 6.63. Lead levels at 10 of the 13 locations were generally elevated above background levels, but did not exceed 500 ppm.

Soil pH in the shallow subsurface ranged from 4.10 to 7.66. Only four locations exhibited values of pH less than 5.0, and these locations were generally in the southeast portion of the yard (3D, 3E, and 3F).

Subsurface (2.2 to 3.0 feet bgs). Total lead concentrations in the sampled intervals are at background or slightly above background concentrations at all locations except one (Table 4). Subsurface total lead values in the M & M yard range from 4 to 36 ppm (average of 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). Three values are less than 5.0, and correspond to the points of low pH in the shallow subsurface (0.5 to 1.0 feet bgs).

Subsurface (borings). ANI drilled five borings at and adjacent to the Site, and boring logs are included in Appendix D. Samples were obtained by driving a split-spoon sampler, and collected samples were screened for pH in the laboratory (Plate 1 illustrates pH profiles in the subsurface). Based on pH screening, appropriate samples were submitted for analysis by ICP, GF, and EP toxicity. Results indicate that elevated levels of lead were encountered in only one sample (Boring ANIB-5 at 4.0 feet bgs). At this interval, a poorly graded sand was encountered. This interval is above the peat layer, and may represent fill that was placed on the peat. Therefore, elevated lead levels at this sampling point may not be attributable to contamination originating at the M & M yard.

Eighteen samples were analyzed for total lead by ICP and GF. Except for sample ANIB-5-04 (41.6 ppm), the highest lead concentration observed in the boring samples analyzed was 6.65 ppm.

5.3.2 Interpretation

Lead was detected at most surface sampling locations in the M & M yard at levels above the cleanup standard of 500 ppm. During Phase II near-surface sampling (4 to 11 inches bgs), lead concentrations were detected at greater than 500 ppm at only 3 of 13 sampling locations. Furthermore, lead was not detected above cleanup levels at any of the nine locations which were sampled during Phase I at depths ranging from 2.2 to 3.0 feet bgs.

Soil pH in the yard ranged from 4.1 to 7.0. A zone of low pH (4 to 5) can be noted in the shallow subsurface near the southeast corner of the yard. This zone trends northwest-southeast and it apparently exists below the ground surface. This zone includes points 3D, 3E, and 3F. The low pH may be associated with decomposition of organic matter, but it may also be attributed to acid releases at some time in the past. Subsurface lead concentrations are at or near background in the six samples collected in this zone.

If acid carrying oxidized lead is released to the ground surface it would penetrate the subsurface through soil pores and disperse below the water table. Dilution of this aqueous phase would occur, and resulting higher (solution) pH would cause lead to precipitate. Ground-water flow, the most likely horizontal transport medium, could spread the contamination down-gradient (with respect to the water table) from the point of release. A contamination plume, if present, would be expected beneath and down-gradient of the release. Four borings were installed at the Site and downgradient from the Site to investigate this possibility.

With respect to the boring results, lead was analytically detected above background levels at only one depth in one boring, and the origin of the lead contamination at even that one point is questionable. Soil pH profiles followed a relatively predictable pattern vertically, with the peat layer characteristically exhibiting the lowest pH. Reasonably representative subsurface stratigraphic sections were sampled by the boring configuration employed at the Site, and based on this scheme it does not appear that lead has migrated into subsurface soils at the Site or downgradient from the Site.

Based on information presented in this section, lead concentrations exceed current Compliance Order cleanup levels only in the trash layer and possibly the uppermost one to two inches of soil within the confines of the yard. Lead concentrations also exceed cleanup levels in the surface soils in the alley east of the yard. A portion of this contamination may be due to automobile emissions, but concentrations are high enough that substantial contamination may be attributable to activities at the yard. Additional sampling is recommended east of the alley to confirm the horizontal extent of contamination (see Figure 7).

5.4 Ground-Water Contamination (Lead, Sulfates)

Ground-water monitoring wells were installed in the five ANI borings and the shallow, unconfined aquifer was sampled according to standardized ANI protocol.

5.4.1 Results

Results of ground-water sample analyses indicate lead concentrations are nondetectable (less than 0.005 parts per million). This sampling episode was conducted November 17, 1989. Results are summarized in Table 7.

During a previous sampling episode (October 26, 1989), samples were collected for analysis of sulfates. Only one sample (ANIB-2) was detected for sulfate above Federal Secondary Drinking Water Standards. During the November sampling episode, ANIB-2 was resampled for sulfate analysis. In both instances, water collected from ANIB-2 exceeded these standards.

The pH of each water sample was measured in the field, and in the laboratory (October sampling event). The lowest value of pH was measured in the water sample collected from monitoring well ANIB-1 (6.25 and 6.33--field measurements) and the highest value of pH was measured in downgradient monitoring well ANIB-4 (7.08 and 7.05--field measurements).

5.4.2 Interpretation

Lead contamination is non-detectable in ground-water samples collected from the shallow water table aquifer at the Site and directly down-gradient from the Site. Sulfates slightly exceed secondary Federal Drinking Water Standards only at ANIB-2 located in the M & M yard. Water pH variation is minimal at the Site, with the lowest pH noted in the background well (ANIB-1). This pH is nearly equivalent, however, to the pH measured in ANIB-2.

5.5 Leaching Potential Assessment (Lead)

Eight shallow subsurface soil samples (0.5 to 1.0 feet bgs), and two samples from each of five borings were submitted for analyses for lead by EP toxicity procedures. The

purpose of this exercise was evaluation of the tendency of the lead to leach or become mobile in Site soils.

5.5.1 Results and Interpretation

Samples which were collected from 5 to 11 inches bgs exhibited lead concentrations ranging from 0.01 to 5.55 ppm; only one value exceeded one ppm. All samples (from borings) which were submitted for analysis by EP toxicity procedures were detected for lead at less than 0.09 ppm. Results therefore indicate very low potential for lead mobility when soils are subjected to EP toxicity procedures.

6.0 ANALYTICAL QA/QC PROGRAM

Duplicate soil and water samples were collected and submitted for analysis at a frequency of approximately 10%. Chemical and Geological Laboratories (Chem Geo) of Anchorage, Alaska was the primary laboratory. Duplicate soil samples were submitted to Columbia Analytical Services (Columbia) of Longview, Washington; blind duplicate water samples were submitted to Chem Geo.

6.1 Results

Nineteen soil samples were analyzed for PCBs per EPA Method 8080 during Phase II. Two duplicate samples were submitted to Columbia. Duplicate samples were split from a homogenized mixture of soil. The measured concentration for duplicate sample 891013-013-6B-2-0-Dup was within 15% of the original sample result; however, the measured PCB concentration for 891013-6B-5-0-Dup deviated approximately 66% from Chem Geo's analysis. This is a wide variation and may be the result of remaining inhomogeneity in the original sample, or possibly laboratory QA/QC procedures.

Thirty-eight soil samples were submitted for analysis by ICP and GF for lead. Four duplicate samples were submitted to Columbia; duplicate sample results were within 16% of original sample results in the case of sample 891013-2F-5. Lead concentrations for the other three duplicate samples were determined to be below the detection limits of the analytical method (20 ppm), and such a finding was in basic agreement with original Chem Geo analyses.

Eighteen soil sample were subjected to analysis per EP Toxicity procedures. Two duplicate samples were submitted to Columbia and both were nondetectable for lead (detection limit is 0.05 ppm). This is also in basic agreement with analytical results for the original samples submitted to Chem Geo.

Forty-six soil samples were submitted for pH determination. Four duplicate samples were submitted to Columbia. Deviation for duplicate analyses from original analyses ranged from less than one to five percent for three samples. Results for a fourth duplicate (ANIB-2-06) deviated 17% from the original analyses.

Blind duplicate water samples were submitted to Chem Geo in Anchorage. Duplicate analysis for sulfate deviated 11%; pH deviated less than one percent and lead was nondetectable in original and blind duplicate samples.

6.2 Interpretation

Generally, deviation between original and duplicate analyses was within an acceptable range. Acceptable precision (for soil samples analyzed per EPA Method 8080) as a percentage of relative standard deviation (between laboratories) is 35 percent (pers. comm., Cougan, 1989). Deviation exceeded this value between sample results for 891013-6B-5-0 and its duplicate. Statistical analysis is not possible, however, based on the limited number of duplicate samples analyzed. Inhomogeneity in duplicate soil samples is suspected as the primary reason for deviation in results. It is unlikely cross-contamination is responsible for deviation in the instance of sample 891013-6B-5-0.

7.0 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, 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 will 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.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Phase II activities determined that the horizontal extent of PCB contamination is confined within the boundaries of the M & M yard. PCB concentrations exceed 50 ppm in two areas of the yard; Phase II confirmed high PCBs near the south end of the main cement slab (sample point 6B) and detected high PCBs near the north end of the slab. At least two confirmatory samples should be collected in the area of 4A and 4B to verify high PCB concentrations (Figure 7).

Except for Point 6B, Phase I and Phase II data indicate that vertical migration of PCBs is minimal: high levels were noted at sampling locations 4A and 4B from 5 to 11 inches

bgs, but at these points near 2.5 feet bgs, PCB concentrations were less than 0.05 and 0.4 ppm, respectively.

Lead contamination is generally confined to the surface trash layer within the yard. Lead concentrations decrease significantly with depth, even in the trash layer--from 5 to 11 inches below the top of the trash layer/ground surface, only 3 of 13 locations sampled exceed a cleanup level (500 ppm). This is significant since the Phase I investigation determined that lead concentrations at the surface of the trash layer average 40,000 ppm.

The horizontal extent of lead contamination has not been fully defined east of the yard. Elevated levels of lead were discovered in the alley, and at least two to three additional samples should be collected in the grassy area east of the alley to establish the eastern extent of contamination (Figure 7).

Analysis of subsurface samples from borings at the Site and downgradient from the Site determined that elevated concentrations of lead exist at only one interval in ANIB-5, and higher (45.5 ppm) lead levels in this sample are suspect since the interval may not be native soil. Therefore, boring results appear to indicate that lead contamination has not migrated into the deeper subsurface.

Ground-water samples collected from ANI monitoring wells indicate the absence of lead contamination in the shallow, unconfined aquifer at the Site. Furthermore, sulfates exceed Federal Secondary Drinking Water Standards in only one well (ANIB-2). It should be noted that secondary standards pertain to aesthetic qualities of water. Water pH was also within a reasonable range of values, although ANIB-1 (background well) and ANIB-2 were at or slightly below the drinking water standard (6.5).

Ground-water levels will be measured in monitoring wells on a monthly basis for the first year. After that, water level measurements will coincide with semi-annual ground-water sampling events (May, 1990 through November, 1992).

Non-hazardous materials removal will be scheduled to begin in May/June, 1990. Contamination treatment and disposal options will be discussed with DEC prior to preparation of the Cleanup Plan.

LIST OF REFERENCES

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FIGURES

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] replicate	6.47
			1600	
IWS3	B-4	15-16	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.

TABLE 5
HANSON ASSOCIATES M & M SITE
SUMMARY OF PHASE II ANALYTICAL RESULTS
(Excluding Soil and Water Samples from Borings)*

SAMPLE NUMBER	LOCATION	DEPTH (Inches bgs)	PCB CONCENTRATIONS (PPM)	LEAD BY ICP (PPM)	LEAD BY EP TOX (PPM)	pH
891013-1G-0	1G	0	0.6	3970	NA	7.42
891013-2D-1-0	2D-1	0	5.1	NA	NA	NA
891013-2D-2-0	2D-2	0	16.6	NA	NA	NA
891013-3G-0	3G	0	0.2	6510	NA	7.08
891030-6A-0	6A	1-4	0.6	23.6	NA	7.89
891013-6B-1-0	6B-1	0	53.2	NA	NA	NA
891013-6B-2-0	6B-2	0	14.1 (12)	NA	NA	NA
891013-6B-3-0	6B-3	0	35.3	NA	NA	NA
891013-6B-4-0	6B-4	0	61.6	NA	NA	NA
891013-6B-5-0	6B-5	0	38.3 (13)	NA	NA	NA
891013-2D-6	2D	6	0.2	NA	NA	NA
891013-2E-5	2E	5	NA	752	NA	6.29
891013-2F-5	2F	5	NA	283 (329)	NA	6.80 (7.12)
891013-3A-5	3A	5	NA	91	NA	4.81
891013-3D-6	3D	6	NA	14	0.02	4.10

* Values in parentheses are analytical results for duplicate samples (submitted to Columbia Analytical Services).
** Full metals scan by ICP available.
PPM - Parts per million
bgs - Below ground surface
NA - Not applicable (sample not analyzed for parameter indicated).

TABLE 5 (continued)
HANSON ASSOCIATES M & M SITE
SUMMARY OF PHASE II ANALYTICAL RESULTS
(Excluding Soil and Water Samples from Borings)*

SAMPLE NUMBER	LOCATION	DEPTH (Inches bgs)	PCB CONCENTRATIONS (PPM)	LEAD BY ICP (PPM)	LEAD BY EP TOX (PPM)	pH
891013-3E-6 **	3E	6	NA	96	0.99	4.77
891013-3F-8	3F	8	NA	9 (<20)	0.01 (<0.05)	4.32 (4.33)
891013-4A-11	4A	11	87.1	365	0.82	5.74
891013-4B-5	4B	5	63.5	NA	NA	NA
891013-4C-5	4C	5	15.7	745	5.55	6.63
891013-4D-10	4D	10	NA	3300	NA	5.24
891013-4E-5	4E	5	NA	4	0.01	7.32
891013-5B-6	5B	6	6.4	299	0.12	7.49
891013-5D-7 **	5D	7	NA	92	0.02	6.53
891025-5E-0	5E	1-4	<0.02	6	NA	8.10
891013-6B-A-4	6B-A	4	10.6	211	NA	7.66
8910ANIB3-0	ANIB3	0	0.2	NA	NA	7.53
8910ANIB3-1	ANIB3	0-6	NA	331	NA	5.89
8910ANIB5-2	ANIB5	2-12	0.4	30	NA	7.81

* Values in parentheses are analytical results for duplicate samples (submitted to Columbia Analytical Services).
** Full metals scan by ICP available.
PPM - Parts per million
bgs - Below ground surface
NA - Not applicable (sample not analyzed for parameter indicated).

TABLE 6
HANSON ASSOCIATES M & M SITE
Summary of Phase II Analytical Results for Soil Samples from Borings

SAMPLE NUMBER	pH	LEAD CONCENTRATION ppm (ICP and GF)	LEAD CONCENTRATION by EP TOXICITY PROCEDURES (ppm)
ANIB1-08	8.48	NA	NA
ANIB1-10	6.02	1.42	0.084
ANIB1-12	6.48	<5	NA
ANIB1-14	7.56	<5	NA
ANIB1-16	8.81	6.17	ND
ANIB1-20	9.27	NA	NA
ANIB2-06	5.46 (6.36)	6.65 (<20)	0.016 (<0.05)
ANIB2-08	5.85	<5	NA
ANIB2-10	7.30	3.89	ND
ANIB2-14	8.32	<5	NA
ANIB2-16	8.67	NA	NA
ANIB3-06	7.71	6.60	0.010
ANIB3-08	8.10	<5	NA
ANIB3-10	8.33	NA	NA
ANIB3-12	8.42	5.52	0.012
ANIB3-14	8.37	NA	NA
ANIB4-08	7.55	5.76	0.011
ANIB4-10	8.07	<5	NA
ANIB4-16	8.67	5.03	ND
ANIB4-18	8.51	NA	NA
ANIB5-04	5.99	41.6	0.076
ANIB5-06	5.88	<5 (<20)	NA
ANIB5-08	6.47 (6.62)	NA	NA
ANIB5-10	6.60	<5	NA
ANIB5-12	8.34	4.80	ND
ANIB5-16	8.37	NA	NA

NA = No Analysis Performed

ND = Non Detectable [less than 0 005 parts per million (ppm)]

NOTE: Values in parentheses are results of duplicate analyses performed by Columbia Analytical Services

TABLE 7

HANSON ASSOCIATES M & M SITE

Summary of Phase II Analytical Results for ANI Monitor Well Water Samples

Collected October 26, 1989

SAMPLE NUMBER	FIELD pH	FIELD CONDUCTIVITY (µg/cm)	FIELD TEMPERATURE (°F)	LABORATORY pH	SULFATE	LEAD
AB1	6.25	1690	42.4	6.54	6.5	NAP
AB2	6.39	2770	42.6	6.38 (6.43)	395 (350)	NAP
AB3	6.52	2380	43.1	6.79	45	NAP
AB4	7.08	940	44.2	7.20	15	NAP
AB5	6.40	1480	43.2	6.53	17	NAP

Summary of Phase II Analytical Results for ANI Monitor Well Water Samples

Collected November 17, 1989

SAMPLE NUMBER	FIELD pH	FIELD CONDUCTIVITY (µg/cm)	FIELD TEMPERATURE (°F)	LABORATORY pH*	SULFATE	LEAD
891117-ANIB1	6.28	2410	41.1	NA	NA	ND
89117-ANIB2	6.33	2780	37.6	NA	613	ND
89117-ANIB3	6.70 (6.62)	2310 (2230)	39.8 (38.9)	NA	NA	ND (ND)
89117-ANIB4	7.05	680	41.4	NA	NA	ND
89117-ANIB5	6.55	1716	38.7	NA	NA	ND

Field measurements recorded at time of sample collection
Parentheses indicate duplicate analyses (blind duplicate submitted to Chemical & Geological Laboratories)
NA = No Analysis Performed
NAP = Analyses not applicable because samples not filtered
ND = Non Detectable (detection limit is 0.005 parts per million)
*Laboratory pH not measured for November 17 samples because sample was preserved with acid

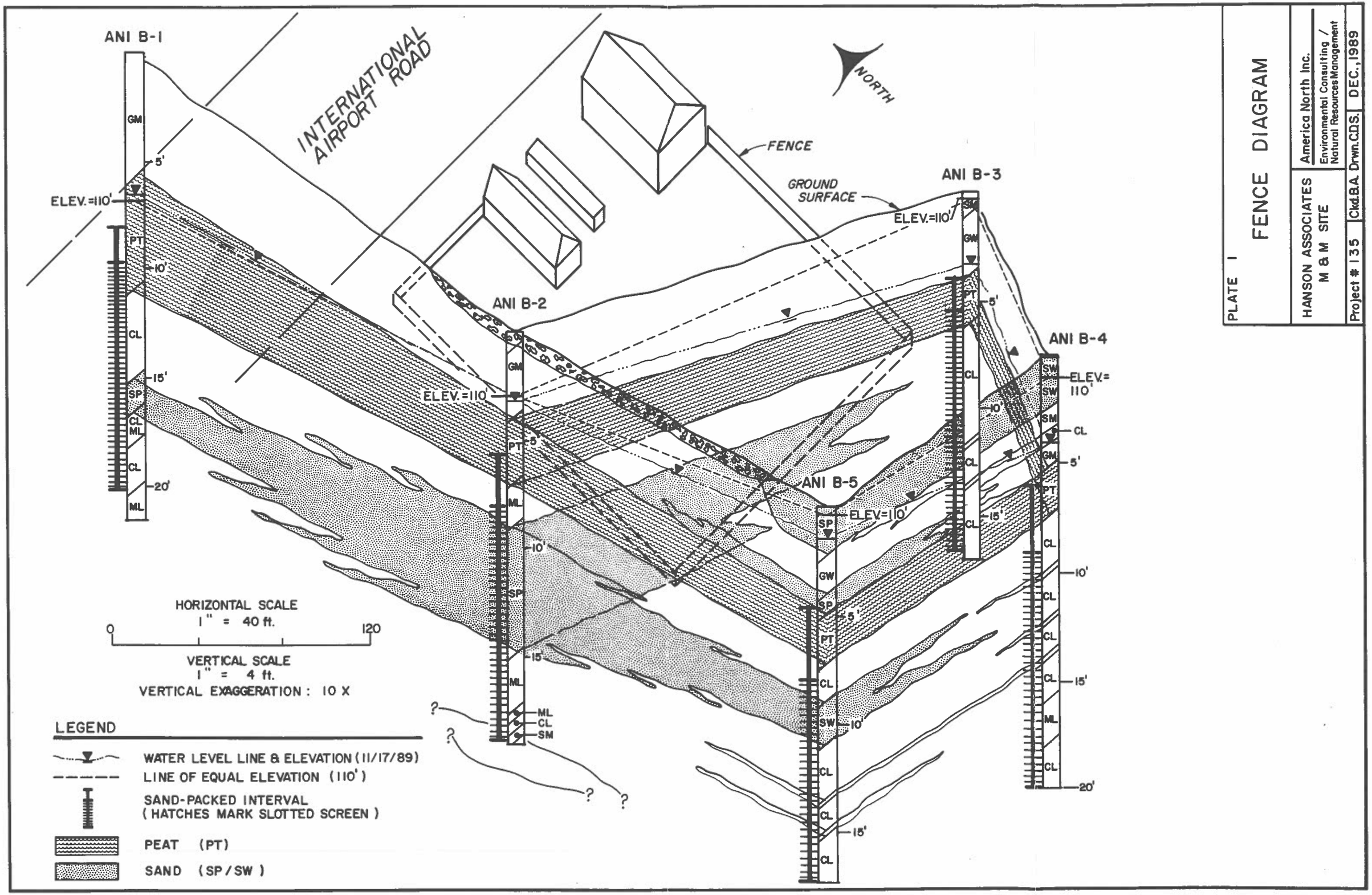
TABLE 8

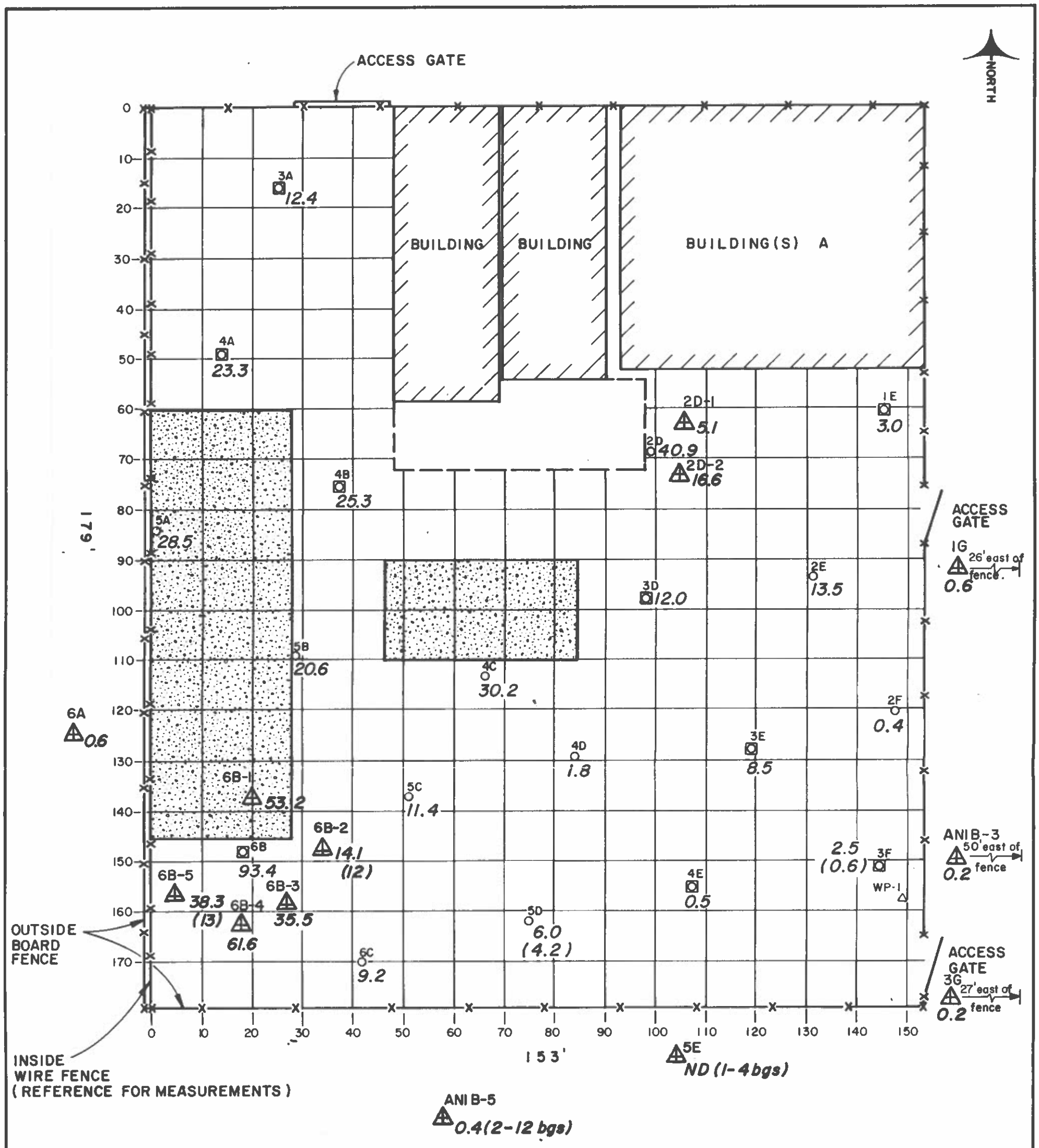
HANSON ASSOCIATES M & M SITE

Monitoring Well Casing Elevations and Water Level Data

WELL IDENTIFICATION	DATUM ELEVATION	OCTOBER 26, 1989		NOVEMBER 17, 1989	
		WATER LEVEL DEPTH	WATER LEVEL ELEVATION	WATER LEVEL DEPTH	WATER LEVEL ELEVATION
ANIB-1	119.38	8.31	111.07	9.16	110.22
ANIB-2	114.92	4.75	110.17	5.38	109.54
ANIB-3	112.78	6.44	106.34	5.71	107.07
ANIB-4	110.93	3.61	107.32	4.45	106.48
ANIB-5	110.87	1.38	109.49	2.00	108.87

PLATES


ANI B-1
INTERNATIONAL AIRPORT ROAD
NORTH
FENCE
GROUND SURFACE
ANI B-3
ANI B-2
ANI B-4
ANI B-5
ELEV.=110'
HORIZONTAL SCALE
1" = 40 ft.
0
120
VERTICAL SCALE
1" = 4 ft.
VERTICAL EXAGGERATION : 10 X
LEGEND
WATER LEVEL LINE & ELEVATION (11/17/89)
LINE OF EQUAL ELEVATION (110')
SAND-PACKED INTERVAL
(HATCHES MARK SLOTTED SCREEN)
PEAT (PT)
SAND (SP/SW)
PLATE 1
FENCE DIAGRAM
HANSON ASSOCIATES
M & M SITE
America North Inc.
Environmental Consulting / Natural Resources Management
Project # 135
Ckd.B.A. Drwn.C.D.S.
DEC., 1989



LEGEND

	CONCRETE PAD
2D	SURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND pH
3D	SUBSURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND pH
WP-1	WELL POINT
40.9	TOTAL PCB CONCENTRATIONS IN SURFACE SAMPLES, PARTS PER MILLION (ppm), (ROUNDED TO 0.1 ppm) ANALYSIS PER EPA METHOD 8080
(4.2)	SAMPLE DUPLICATE VALUES
6A 6.0	TOTAL PCB CONCENTRATIONS (ppm) IN SURFACE SOIL SAMPLES COLLECTED IN OCTOBER, 1989. (PHASE II)
ND	NOT DETECTABLE (0.02 ppm)
bgs	BELOW GROUND SURFACE (inches)

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

0 10 20 30 40

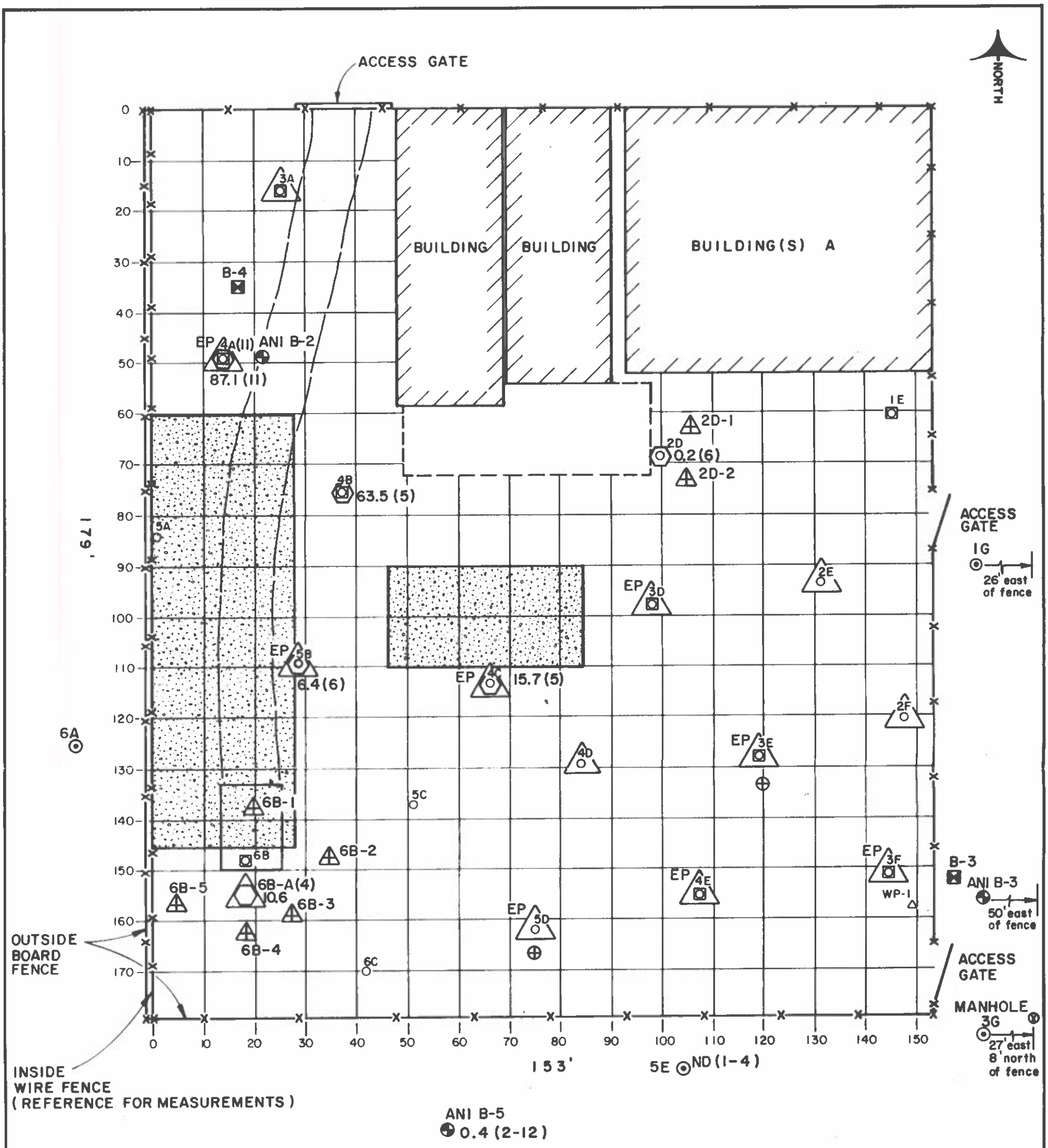
PLATE - 2

TOTAL PCB CONCENTRATIONS IN SURFACE SAMPLES

HANSON ASSOCIATES
M & M SITE

America North Inc.
Environmental Consulting / Natural Resources Management

Project# 135 | Ckd. B.A. Drwn. C.D.S. | DEC., 1989



LEGEND

- CONCRETE PAD
- 2D — SURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND pH
- 3D — SUBSURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND pH (2.5 feet bgs)
- WP-1 — WELL POINT
- PCB AT 0.5-1.0' BELOW GROUND/TRASH SURFACE; CONCENTRATION IN ppm. VALUE IN ( ) DEPTH OF SAMPLE IN INCHES. (PHASE II)
- EP — LEAD BY ICP, PH AT 0.5-1.0 (bgs) BELOW GROUND SURFACE; EP TOX SAMPLES DESIGNATED BY EP (PHASE II)
- ICP METAL SCAN AT 0.5' BELOW GROUND/TRASH SURFACE (PHASE II)
- 6B-2 — SURFACE SAMPLE LOCATION FOR PCB's (PHASE II)
- ANI B-2 — A.N.I. DEEP BORING/MONITORING WELL (PHASE II)
- B-3 — T.N.H. DEEP BORING

APPROX. SCALE IN FT: 1" = 20'

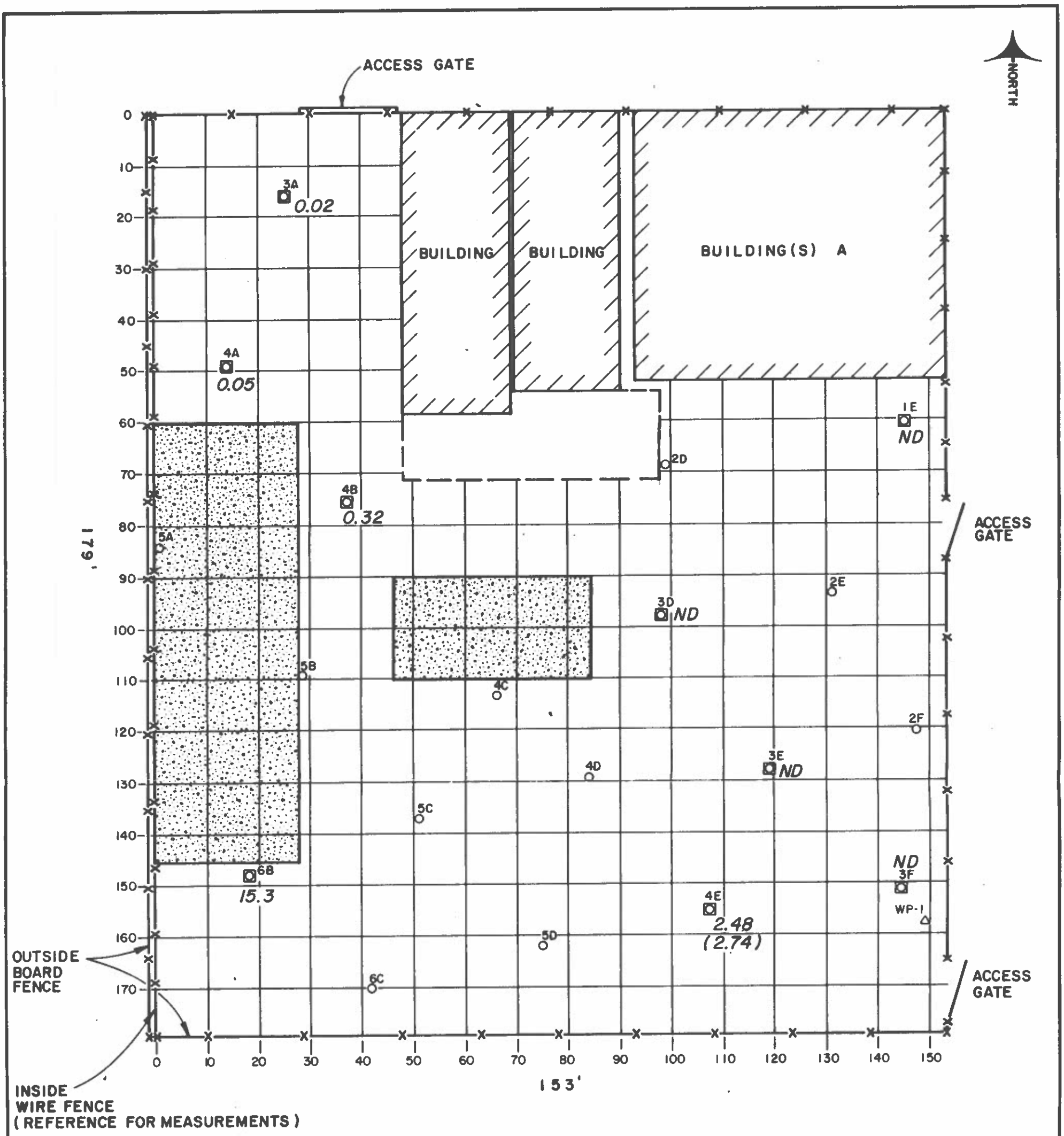
0 10 20' 30 40'

PLATE - 3

SUBSURFACE (0.5 to 1.0 feet bgs) TOTAL PCB CONCENTRATIONS

HANSON ASSOCIATES M & M SITE	America North Inc. Environmental Consulting / Natural Resources Management

Project #135	Ckd B.A. Drwn.C.D.S.	DEC., 1989



LEGEND

	CONCRETE PAD
2D	SURFACE SAMPLE LOCATION FOR PCBs , TOTAL LEAD,AND PH
3D	SUBSURFACE SAMPLE LOCATION FOR PCBs , TOTAL LEAD,AND PH
WP-1	WELL POINT
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 DEDUCTABLE (CONCENTRATIONS BELOW 0.01 ppm).
(2.74)	SAMPLE DUPLICATE VALUES

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

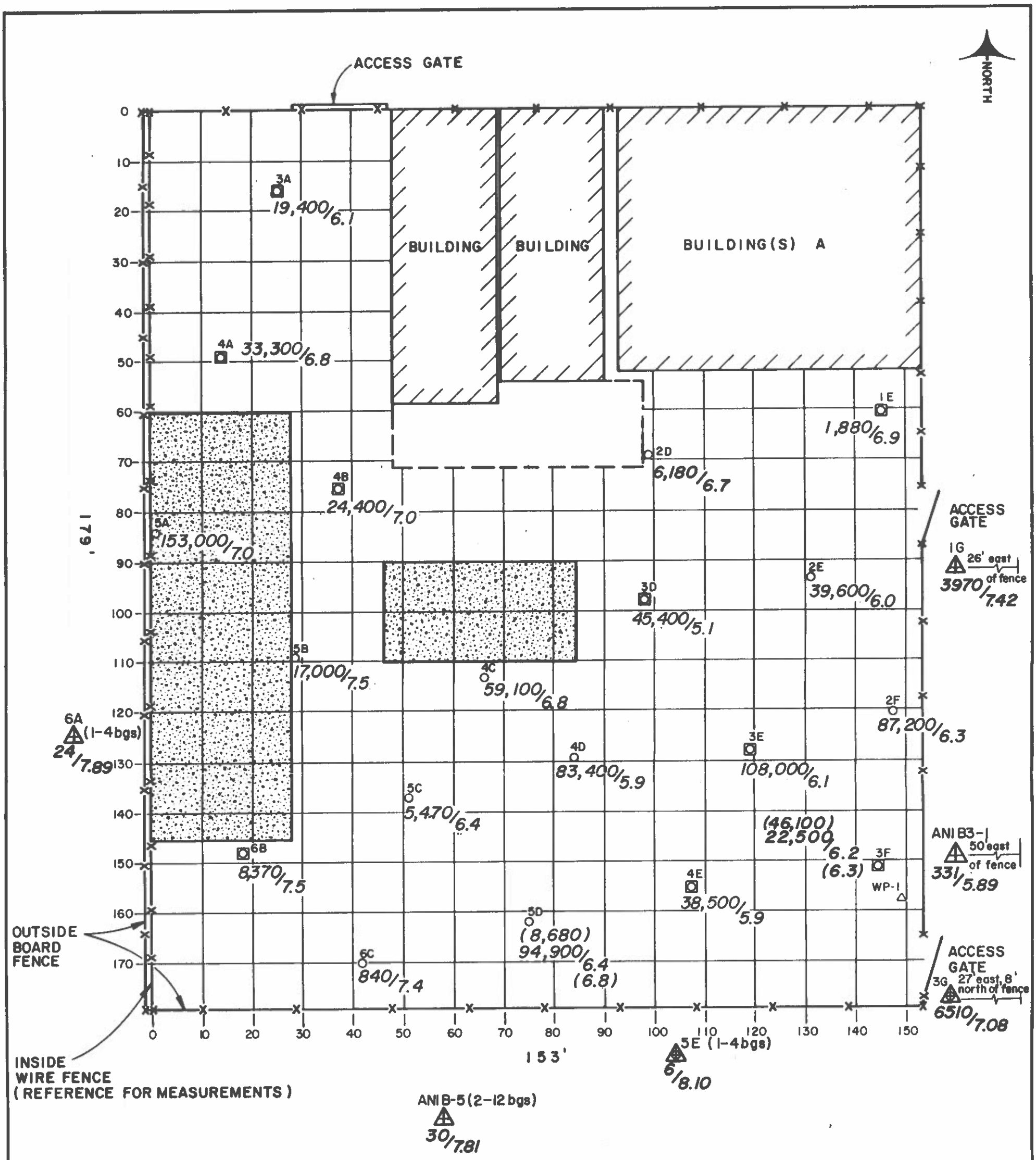
0 10 20 30 40'

PLATE - 4

TOTAL PCB CONCENTRATIONS AT 2 to 3 feet BELOW GRND. SURFACE

HANSON ASSOCIATES M & M SITE	America North Inc. Environmental Consulting / Natural Resources Management

Project # 135	Ckd. B.A. Drwn. C.D.S.	DEC. 1989



LEGEND

	CONCRETE PAD
2D	SURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND PH
3D	SUBSURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND PH
WP-1	WELL POINT
6,180/6.7	TOTAL LEAD CONCENTRATIONS (per ICP) IN PARTS PER MILLION (ppm), AND PH IN SURFACE SAMPLES
(6.8)	SAMPLE DUPLICATE VALUES
6A 24/7.89	PHASE II TOTAL LEAD CONCENTRATIONS (per ICP) IN PARTS PER MILLION (ppm), AND pH IN SURFACE SAMPLES
bgs	BELOW GROUND SURFACE, MEASURED IN INCHES

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

0 10 20' 30 40'

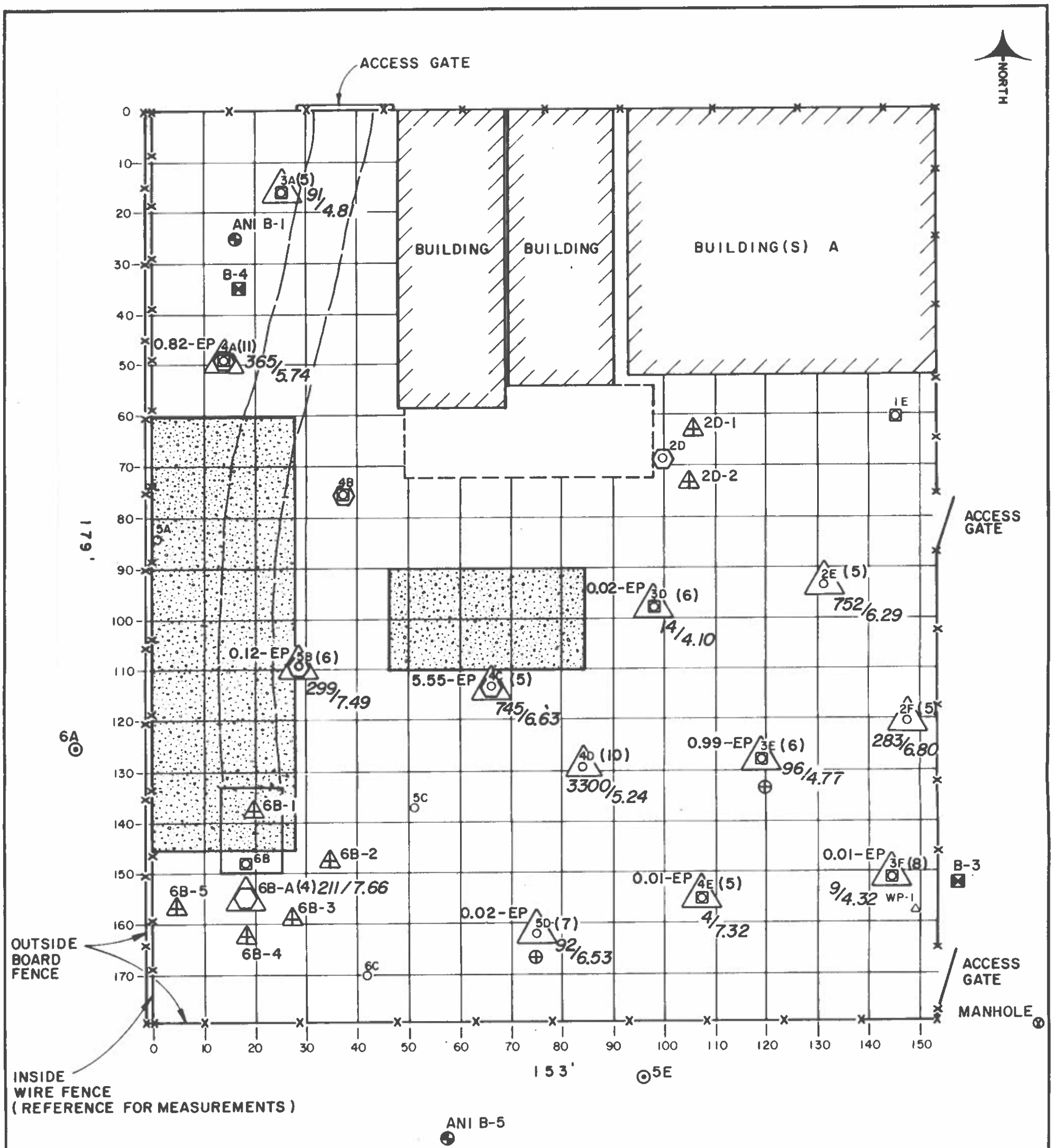
PLATE - 5

TOTAL LEAD CONCENTRATIONS AND pH IN SURFACE SAMPLES

HANSON ASSOCIATES
M & M SITE

America North Inc.
Environmental Consulting / Natural Resources Management

Project # 135 | Ckd. B.A. Drwn. C.D.S | DEC., 1989



LEGEND

- CONCRETE PAD
- 2D — SURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND pH
- 3D — SUBSURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND pH (2.5 feet bgs)
- WP-1 — WELL POINT
- PCB AT 0.5-1.0' BELOW GROUND SURFACE (bgs)
- 0.12-EP (6) 299/7.49 — LEAD BY ICP, pH AT 0.5-1.0 BELOW GROUND SURFACE; EP TOX SAMPLES DESIGNATED BY EP; RESULTS IN ppm. VALUE IN ( ) DEPTH OF SAMPLE IN INCHES.
- 6B-2 — SURFACE SAMPLE LOCATION FOR PCB's
- ANI B-2 — A.N.I. DEEP BORING / MONITORING WELL
- B-3 — T.N.H. DEEP BORING
- ICP METAL SCAN

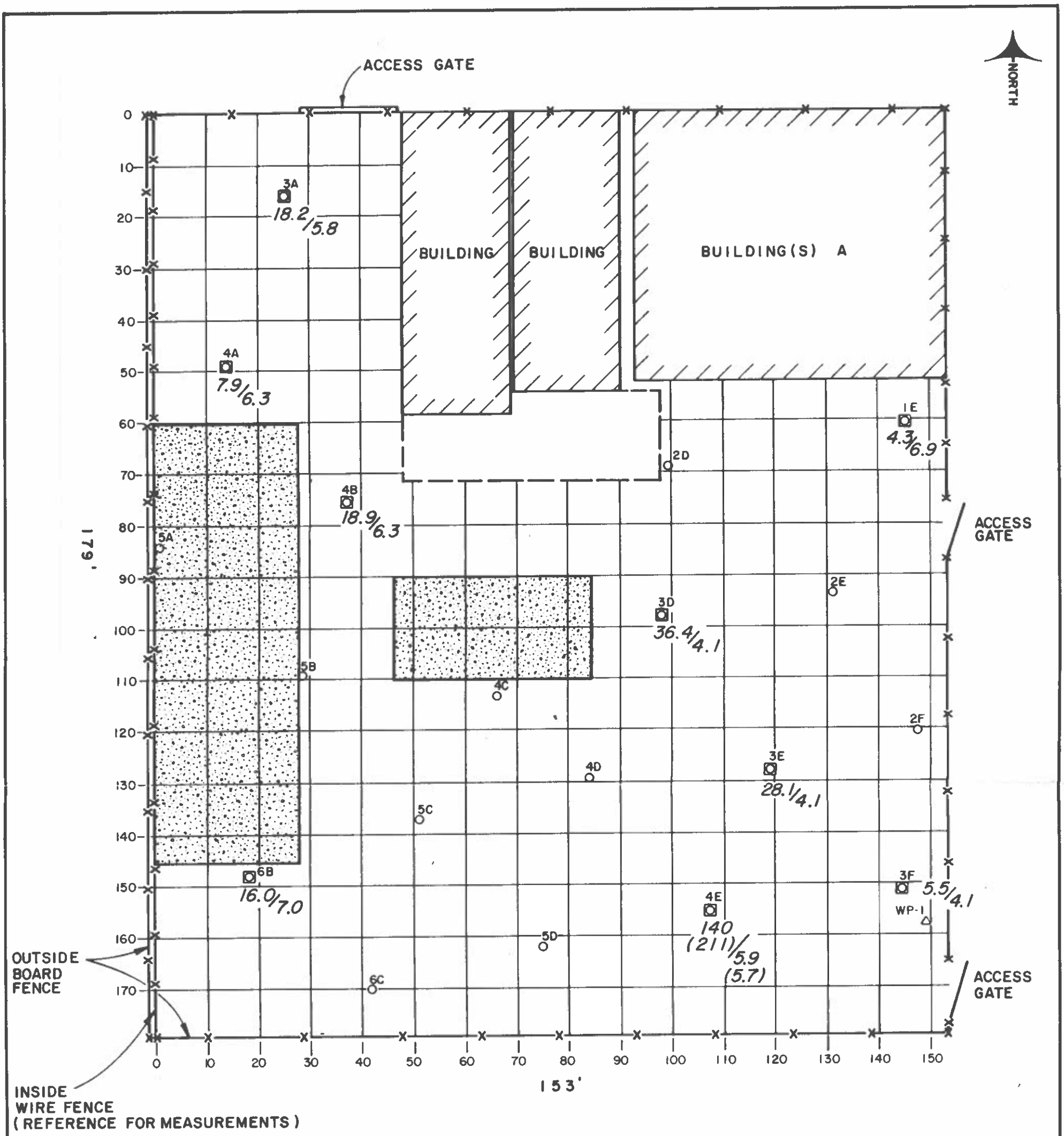
APPROX. SCALE IN FT: 1" = 20'

0 10 20' 30 40'

PLATE - 6

SUBSURFACE (0.5 to 1.0 feet bgs) TOTAL LEAD, EP TOX and pH values

HANSON ASSOCIATES M & M SITE	America North Inc. Environmental Consulting / Natural Resources Management
Project # 135	Ckd. B.A. Drwn. C.D.S DEC., 1989



LEGEND

	CONCRETE PAD
2D	SURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND PH
3D	SUBSURFACE SAMPLE LOCATION FOR PCBs, TOTAL LEAD, AND PH
WP-1	WELL POINT
4.3/6.9	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.
(5.7)	SAMPLE DUPLICATE VALUES

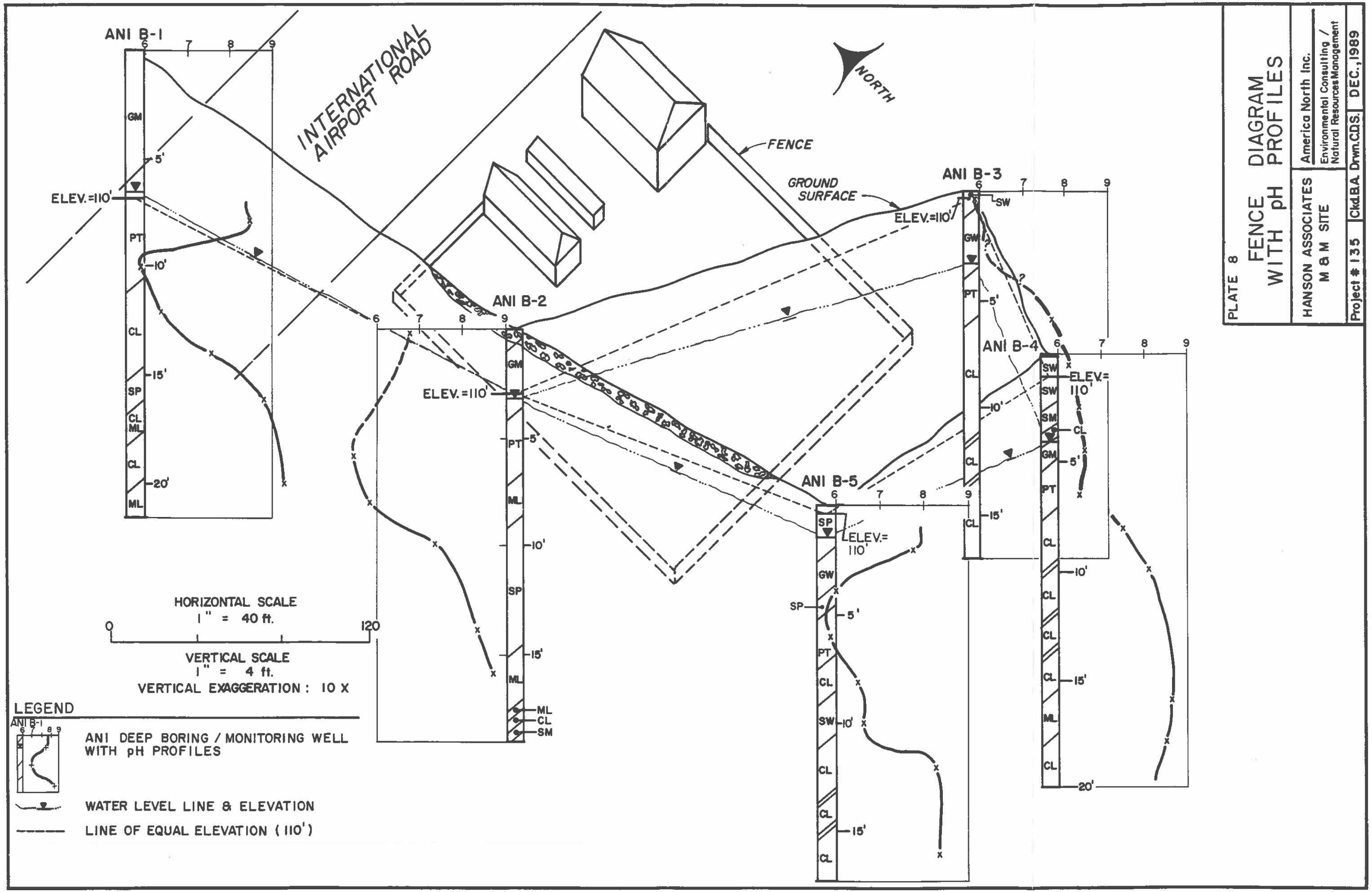
APPROX. SCALE IN FT: 1" = 20'

0 10 20' 30 40'

PLATE-7 TOTAL LEAD CONCENTRATIONS & PH VALUES AT 2 to 3 ft. BELOW GROUND SURFACE

HANSON ASSOCIATES M & M SITE	America North Inc. Environmental Consulting / Natural Resources Management

Project # 135	Ckd. B.A. Drwn. C.D.S.	DEC. 1989


ANI B-1
ANI B-2
ANI B-3
ANI B-4
ANI B-5
INTERNATIONAL AIRPORT ROAD
NORTH
FENCE
GROUND SURFACE
ELEV.=110'
HORIZONTAL SCALE
1" = 40 ft.
0
120
VERTICAL SCALE
1" = 4 ft.
VERTICAL EXAGGERATION : 10 X
LEGEND
ANI DEEP BORING / MONITORING WELL WITH pH PROFILES
WATER LEVEL LINE & ELEVATION
LINE OF EQUAL ELEVATION (110')
PLATE 8
FENCE WITH pH
DIAGRAM PROFILES
HANSON ASSOCIATES
M & M SITE
America North Inc.
Environmental Consulting / Natural Resources Management
Project # 135
Ckd.B.A.
Drwn.C.D.S.
DEC., 1989

APPENDIX A

Laboratory Analytical Results: Phase I

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 10:54

Client Sample ID:890712-3A-0-01
PWSID :UA
Collected JUL 12 89 @ 10:05 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 1 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	4.94/7.41 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	19,400 mg/kg	ICP	
pH	6.10 units		
TOTAL PCB'S	12.4 PPM		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 10:54

Client Sample ID:890712-4A-0-02
PWSID :UA
Collected JUL 12 89 @ 10:15 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special MGM SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 2 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	14.4/8.85 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	33,300 mg/kg	ICP	
pH	6.77 units		
TOTAL PCB'S	**23.3 PPM**		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 10:55

Client Sample ID:890712-4B-0-03
PWSID :UA
Collected JUL 12 89 @ 10:35 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 3 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	13.6/11.7 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	24,400 mg/kg	ICP	
pH	7.00 units		
TOTAL PCB'S	**25.3 PPM**		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 10:55

Client Sample ID:890712-SB-0-04
PWSID :UA
Collected JUL 12 89 @ 10:35 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special Instruct: M&M SITE REFERENCE QUOTE
CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 4 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	10.4/10.2 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	17,000 mg/kg	ICP	
pH	7.51 units		
TOTAL PCB'S	**20.6 PPM**		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than. GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 10:56

Client Sample ID:890712-6B-0-05
PWSID :UA
Collected JUL 12 89 @ 11:05 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 5 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	33.3/60.1 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	8370 mg/kg	ICP	
pH	7.52 units		
TOTAL PCB'S	**93.4 PPM**		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 10:57

Client Sample ID:890712-4C-0-06
PWSID :UA
Collected JUL 12 89 @ 11:25 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Steph C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 6 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	11.6/18.6 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	59.100 mg/kg	ICP	
pH	6.80 units		
TOTAL PCB'S	**30.2 PPM**		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than. GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 10:57

Client Sample ID:890712-5C-0-07
PWSID :UA
Collected JUL 12 89 @ 11:55 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 7 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	11.4 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	5470 mg/kg	ICP	
pH	6.38 units		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 10:58

Client Sample ID:890712-6C-0-08
PWSID :UA
Collected JUL 12 89 @ 12:20 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special MGM SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 8 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	9.15 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	840 mg/kg	ICP	
pH	7.38 units		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 10:59

Client Sample ID:890712-2D-0-09
PWSID :UA
Collected JUL 12 89 @ 12:35 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Steph C. Ede

Client Name : HANSON ASSOC
Client Acct : HANSOWN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special MGM SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 9 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	40.9 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	6180 mg/kg	ICP	
pH	6.70 units		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:00

Client Sample ID:890712-3D-0-10
PWSID :UA
Collected JUL 12 89 @ 12:50 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special Instruct: M&M SITE REFERENCE QUOTE
CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 10 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	1.67/10.3 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	45.500 mg/kg	ICP	
pH	5.05 units		
TOTAL PCB'S	**12.0 PPM**		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:00

Client Sample ID:890712-4D-0-11
PWSID :UA
Collected JUL 12 89 @ 13:05 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 11 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.562/1.26 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	83,400 mg/kg	ICP	
pH	5.94 units		
TOTAL PCB'S	1.82 PPM		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:01

Client Sample ID:890712-SD-0-12
PWSID :UA
Collected JUL 12 89 @ 13:45 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special Instruct: M&M SITE REFERENCE QUOTE
CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 12 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	6.02 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	94.900 mg/kg	ICP	
pH	6.44 units		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:02

Client Sample ID:890712-SD-0-13
PWSID :UA
Collected JUL 12 89 @ 13:50 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 13 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	4.18 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	8680 mg/kg	ICP	
pH	6.78 units		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:02

Client Sample ID:890712-1E-0-14
PWSID :UA
Collected JUL 12 89 @ 14:10 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 14 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	2.96 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	1880 mg/kg	ICP	
pH	6.90 units		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:03

Client Sample ID:890712-2E-0-15
PWSID :UA
Collected JUL 12 89 @ 14:25 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 15 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	1.37/12.1 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	39.600 mg/kg	ICP	
pH	5.96 units		
TOTAL PCB'S	13.5 PPM		
LEAD, DUPLICATE	38.400 MG/KG		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:04

Client Sample ID:890712-3E-0-16
PWSID :UA
Collected JUL 12 89 @ 14:40 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 16 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	1.57/6.92 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	108.000 mg/kg	ICP	
pH	6.12 units		
TOTAL PCB'S	**8.49 PPM**		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:04

Client Sample ID:890712-4E-0-17
PWSID :UA
Collected JUL 12 89 @ 15:05 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special Instruct: M&M SITE REFERENCE QUOTE
CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 17 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.198/.292 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	38.500 mg/kg	ICP	
pH	5.87 units		
TOTAL PCB'S	0.490 PPM		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:06

Client Sample ID:890712-2F-0-18
PWSID :UA
Collected JUL 12 89 @ 15:20 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special Instruct: M&M SITE REFERENCE QUOTE
CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 19 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.247/0.199 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	87,200 mg/kg	ICP	
pH	6.28 units		
TOTAL PCB'S	**0.446 PPM**		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than. GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:07

Client Sample ID:890712-3F-0-19
PWSID :UA
Collected JUL 12 89 @ 15:35 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special Instruct: M&M SITE REFERENCE QUOTE
CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 20 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.339/0.243 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	46,100 mg/kg	ICP	
pH	6.34 units		
TOTAL PCB'S	**0.582 PPM**		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:05

Client Sample ID:890712-3F-0-20
PWSID :UA
Collected JUL 12 89 @ 15:35 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Steph C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special Instruct: M&M SITE REFERENCE QUOTE
CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 18 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	2.47 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	22.500 mg/kg	ICP	
pH	6.24 units		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:07

Client Sample ID:890712-5A-0-21
PWSID :UA
Collected JUL 12 89 @ 16:05 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 21 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	8.49/20.0 ppm	EPA 8080	
------AROCLOR	1242/1260		
LEAD	153.000 mg/kg	ICP	
pH	6.96 units		
TOTAL PCB'S	**28.5 PPM**		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:08

Client Sample ID:890712-BKG1-0-22
PWSID :UA
Collected JUL 12 89 @ 16:45 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By :

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 22 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.163 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	195 mg/kg	ICP	
pH	5.94 units		

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14896
Date Report Printed: AUG 6 89 @ 11:09

Client Sample ID:890712-BKG2-0-23
PWSID :UA
Collected JUL 12 89 @ 17:15 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 1 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE REFERENCE QUOTE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6302 Lab Smpl ID: 23 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	ND(0.040) ppm	EPA 8080	
------AROCLOR			
LEAD	8.67 mg/kg	ICP	
pH	7.16 units		
LEAD DUPLICATE	7.91 MG/KG		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALISIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed: AUG 8 89 @ 19:47

Client Sample ID:890713-1E-2-01
PWSID :CA
Collected JUL 13 89 @ 11:30 hrs.
Received JUL 14 89 @ 12:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTZIER

Analysis Completed :AUG 2 89
Laboratory Supervisor :STEPHEN C. EDE
Released by :

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special MGM SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6304 Lab Smpl ID: 1 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	ND(0.01) ppm	EPA 8080	
------AROCLOR			
LEAD	4.30 mg/kg	ICP	
pH	6.39 units		

Sample SAMPLE COLLECTED BY B.A
Remarks: PCB COMPLETE 7-31-89

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed: AUG 8 89 @ 19:48

Client Sample ID:890713-BD-2-02
PWSID :UA
Collected JUL 13 89 @ 11:45 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 2 89
Laboratory Supervisor, :STEPHEN C. EDE
Released By :

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6304 Lab Smpl ID: 2 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	ND(0.01) ppm	EPA 8080	
------AROCLOR			
LEAD	36.4 mg/kg	ICP	
pH	4.12 units		

Sample SAMPLE COLLECTED BY B.A
Remarks: PCB COMPLETE 7-31-89

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed: AUG 8 89 @ 19:49

Client Sample ID:890713-3A-2-03
PWSID :UA
Collected JUL 13 89 @ 12:30 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 2 89
Laboratory Supervisor :STEPHEN C. EDE
Released By :

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6304 Lab Smpl ID: 3 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.015 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	18.2 mg/kg	ICP	
pH	5.61 units		

Sample SAMPLE COLLECTED BY B.A
Remarks: PCB COMPLETE 7-31-89.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed: AUG 8 89 @ 19:49

Client Sample ID:890713-4A-2-04
PWSID :UA
Collected JUL 13 89 @ 13:15 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 2 89
Laboratory Supervisor,:STEPHEN C. EDE
Released By :

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6304 Lab Smpl ID: 4 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.052 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	7.88 mg/kg	ICP	
pH	6.30 units		

Sample SAMPLE COLLECTED BY B.A
Remarks: PCB COMPLETE 7-31-89.

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed: AUG 8 89 @ 19:50

Client Sample ID:890713-48-2-05
PWSID :UA
Collected JUL 13 89 @ 13:40 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 2 89
Laboratory Supervisor :STEPHEN C. EDE
Released By :

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6304 Lab Smpl ID: 5 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.322 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	18.9 mg/kg	ICP	
pH	5.31 units		

Sample SAMPLE COLLECTED BY B.A
Remarks:

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed: AUG 8 89 @ 19:51

Client Sample ID:890713-6B-2-06
PWSID :UA
Collected JUL 13 89 @ 14:20 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC D
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :AUG 2 89
Laboratory Supervisor :STEPHEN C. EDE
Released By :

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6304 Lab Smpl ID: 6 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	15.3 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	16.0 mg/kg	ICP	
pH	7.02 units		

Sample SAMPLE COLLECTED BY B.A
Remarks: PCB COMPLETE 7-31-89

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed: AUG 8 89 @ 19:51

Client Sample ID:890713-4E-2-07
PWSID :UA
Collected JUL 13 89 @ 17 1[illegible] hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 2 89
Laboratory Supervisor :STEPHEN C. [illegible]EDE
Released By : [illegible]

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special MGM SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6304 Lab Smpl ID: 7 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	2.48 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	140 mg/kg	ICP	
pH	5.88 units		

Sample SAMPLE COLLECTED BY B.A
Remarks: PCB COMPLETE 7-31-89.

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed: AUG 8 89 @ 19:52

Client Sample ID:890713-4E-2-08
PWSID :UA
Collected JUL 13 89 @ 17:10 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 2 89
Laboratory Supervisor :STEPHEN C. EDE
Released By :

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special MGM SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6304 Lab Smpl ID: 8 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	2.74 ppm	EPA 8080	
------AROCLCR	1260		
LEAD	211 mg/kg	ICP	
pH	5.71 units		

Sample SAMPLE COLLECTED BY B.A
Remarks: PCB COMPLETE 7-31-89.

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed. AUG 8 89 @ 19:53

Client Sample ID:790713-3F-2-09
PWSID :UA
Collected JUL 13 89 @ 17.35 hrs.
Received JUL 14 89 @ 10:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 2 89
Laboratory Supervisor :STEPHEN C. EDE
Released By :

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special M&M SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref #: 6304 Lab Smpl ID: 9 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	ND(0.01) ppm	EPA 8080	
------AROCLOR			
LEAD	5 45 mg/kg	ICP	
pH	4.10 units		

Sample SAMPLE COLLECTED BY B.A
Remarks: PCB COMPLETE 7-31-89.

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than. GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14895
Date Report Printed: AUG 8 89 @ 19:54

Client Sample ID:890713-SE-2-10
PWSID :NA
Collected JUL 13 89 @ 19:10 hrs.
Received JUL 14 89 @ 12:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :AUG 2 89
Laboratory Supervisor: STEPHEN C. EDE
Released By :

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE REC D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)HANSON ASSOC
2)AMERICA NORTH

Special NGM SITE
Instruct: CHAIN OF CUSTODY

Chemlab Ref # 6304 Lab Smpl ID: 10 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	ND(0.01) ppm	EPA 8080	
------AROCLOR			
LEAD	23.1 mg/kg	ICP	
pH	4.13 units		
LEAD, DUPLICATE	**26.9 MG/KG**		

Sample SAMPLE COLLECTED BY B.A
Remarks: PCB COMPLETE 7-31-89.

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 14953
Date Report Printed: AUG 1 89 @ 20:05

Client Sample ID:8907717-WP-1
PWSID :UA
Collected JUL 17 89 @ 11:55 hrs.
Received JUL 17 89 @ 12:20 hrs.
Preserved with :AS REQUIRED

Analysis Completed :JUL 28 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Steph C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE REC'D
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)AMERICA NORTH INC
2)

Special M & M SITE.
Instruct:

Chemlab Ref #: 6364 Lab Smpl ID: 1 Matrix: WATER

Parameter Tested	Result/Units	Method	Allowable Limits
pH	3.58 units		
LEAD	0.058 mg/l	GF	

Sample SAMPLE COLLECTED BY BRAD AUTHIER.
Remarks:

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

APPENDIX B

Laboratory Analytical Results: Phase II

PHASE II
ELEMENT SCAN
ANALYTICAL RESULTS

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 5 89 @ 10:30

Client Sample ID:891013-3E-6
PWSID :UA
Collected OCT 13 89 @ 13:45 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Analysis Completed :NOV 3 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 10 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
ICP-25 ELEMENT SCAN	n/a n/a	ICP	
ALUMINUM	14,100 mg/kg	ICP	
ARSENIC	3.30 mg/kg	GF	
BARIUM	58 mg/kg	ICP	
BORON	11 mg/kg	ICP	
CALCIUM	13,300 mg/kg	ICP	
CADMIUM	0.81 mg/kg	GF	
CHROMIUM	15 mg/kg	ICP	
COPPER	910 mg/kg	ICP	
IRON	32,300 mg/kg	ICP	
LEAD	96 mg/kg	ICP	
MAGNESIUM	7460 mg/kg	ICP	
MANGANESE	470 mg/kg	ICP	
MERCURY	ND(2.5) mg/kg	ICP	
NICKEL	23 mg/kg	ICP	
PHOSPHOROUS	542 mg/kg	ICP	
POTASSIUM	523 mg/kg	ICP	
SELENIUM	ND(2.5) mg/kg	ICP	
SILICON	415 mg/kg	ICP	
SILVER	ND(2.5) mg/kg	ICP	
SODIUM	255 mg/kg	ICP	
STRONTIUM	50 mg/kg	ICP	
TIN	ND(5) mg/kg	ICP	
VANADIUM	57 mg/kg	ICP	
ZINC	89 mg/kg	ICP	
ZIRCONIUM	5.4 mg/kg	ICP	
LEAD EP TOXICITY	0.99 mg/l	GF	
pH	4.77 units		

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 5 89 @ 10:30

Client Sample ID:891013-3E-6
PWSID :UA
Collected OCT 13 89 @ 13:45 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Analysis Completed :NOV 3 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 10 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

28 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:15

Client Sample ID:891013-5D-7
PWSID :UA
Collected OCT 13 89 @ 14:35 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :NOV 3 89
Laboratory Supervisor :STEPHEN C. EDE
Released By :

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 11 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
ICP-25 ELEMENT SCAN	n/a n/a	ICP	
ALUMINUM	18,600 mg/kg	ICP	
ARSENIC	4.37 mg/kg	ICP	
BARIUM	75 mg/kg	ICP	
BORON	9.7 mg/kg	ICP	
CALCIUM	12,600 mg/kg	ICP	
CADMIUM	0.592 mg/kg	ICP	
CHROMIUM	19 mg/kg	ICP	
COPPER	137 mg/kg	ICP	
IRON	37,200 mg/kg	ICP	
LEAD	92 mg/kg	ICP	
MAGNESIUM	10,700 mg/kg	ICP	
MANGANESE	849 mg/kg	ICP	
MERCURY	ND(2.5) mg/kg	ICP	
NICKEL	38 mg/kg	ICP	
PHOSPHOROUS	785 mg/kg	ICP	
POTASSIUM	823 mg/kg	ICP	
SELENIUM	ND(2.5) mg/kg	ICP	
SILICON	647 mg/kg	ICP	
SILVER	ND(2.5) mg/kg	ICP	
SODIUM	287 mg/kg	ICP	
STRONTIUM	53 mg/kg	ICP	
TIN	ND(5) mg/kg	ICP	
VANADIUM	73 mg/kg	ICP	
ZINC	138 mg/kg	ICP	
ZIRCONIUM	11 mg/kg	ICP	
LEAD EP TOXICITY	0.022 mg/l	GF	
pH	6.53 units		

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:16

Client Sample ID:891013-5D-7
PWSID :UA
Collected OCT 13 89 @ 14:35 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Analysis Completed :NOV 3 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 11 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

28 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

PHASE II
SURFACE AND NEAR-SURFACE
SOIL SAMPLE ANALYTICAL RESULTS
(FOR LEAD, PCBs, pH)

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:22

Client Sample ID:891013-1~~8~~G-0
PWSID :UA
Collected OCT 13 89 @ 13:30 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 19 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.58 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	3970 mg/kg	ICP	
pH	7.42 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

4 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:09

Client Sample ID:891013-2D-1-0
PWSID :UA
Collected OCT 13 89 @ 16:30 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 23 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 2 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	5.05 ppm	EPA 8080	
------AROCLOR	1260		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:09

Client Sample ID:891013-2D-2-0
PWSID :UA
Collected OCT 13 89 @ 16:45 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Analysis Completed :OCT 23 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 3 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL ------AROCLOR	16.6 ppm 1260	EPA 8080	

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

2 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:17

Client Sample ID:891013-2E-5
PWSID :UA
Collected OCT 13 89 @ 15:30 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 12 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
LEAD	752 mg/kg	ICP	
pH	6.29 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:18

Client Sample ID:891013-2F-5
PWSID :UA
Collected OCT 13 89 @ 15:50 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 13 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
LEAD	283 mg/kg	ICP	
pH	6.80 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:18

Client Sample ID:891013-3A-5
PWSID :UA
Collected OCT 13 89 @ 11:40 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 14 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
LEAD	91.2 mg/kg	ICP	
pH	4.81 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:24

Client Sample ID:891013-3D-6
PWSID :UA
Collected OCT 13 89 @ 13:00 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 22 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
LEAD	14.4 mg/kg	ICP	
LEAD EP TOXICITY	0.0208 mg/l	GF	
pH	4.10 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

3 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:25

Client Sample ID:891013-3F-8
PWSID :UA
Collected OCT 13 89 @ 15:00 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Steph C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 23 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
LEAD	9.02 mg/kg	ICP	
LEAD EP TOXICITY	0.0060 mg/l	GF	
pH	4.32 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

3 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:23

Client Sample ID:891013-3G-0
PWSID :UA
Collected OCT 13 89 @ 18:30 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 20 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.22 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	6510 mg/kg	ICP	
pH	7.08 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:20

Client Sample ID:891013-4A-11
PWSID :UA
Collected OCT 13 89 @ 11:45 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 16 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	87.1 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	365 mg/kg	ICP	
LEAD EP TOXICITY	0.818 mg/l	GF	
pH	5.74 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

S Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:10

Client Sample ID:891013-4B-5
PWSID :UA
Collected OCT 13 89 @ 12:05 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 23 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 4 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	63.5 ppm	EPA 8080	
------AROCLOR	1260		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:20

Client Sample ID:891013-4C-5
PWSID :UA
Collected OCT 13 89 @ 12:29 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 17 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	15.7 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	745 mg/kg	ICP	
LEAD EP TOXICITY	5.55 mg/l	GF	
pH	6.63 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

5 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:19

Client Sample ID:891013-4D-10
PWSID :UA
Collected OCT 13 89 @ 14:05 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 15 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
LEAD	3300 mg/kg	ICP	
pH	5.24 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:25

Client Sample ID:891013-4E-5
PWSID :UA
Collected OCT 13 89 @ 14:20 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 24 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
LEAD	4.02 mg/kg	ICP	
LEAD EP TOXICITY	0.0058 mg/l	GF	
pH	7.32 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

3 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:21

Client Sample ID:891013-5B-6
PWSID :UA
Collected OCT 13 89 @ 12:15 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 18 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	6.41 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	299 mg/kg	ICP	
LEAD EP TOXICITY	0.119 mg/l	GF	
pH	7.49 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

5 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17917
Date Report Printed: NOV 29 89 @ 14:41

Client Sample ID:891025-5E-0
PWSID :UA
Collected OCT 25 89 @ 16:15 hrs.
Received OCT 26 89 @ 17:50 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :NOV 18 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)

Special Instruct: HANSON ASSOCIATES/M & M SITE.

Chemlab Ref #: 8314 Lab Smpl ID: 2 Matrix: SOILS

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	5.74	mg/kg dry	GF	
POLYCHLORINATE BIPHENYLS-SOIL ------AROCLOR	ND(0.02)	ppm	EPA 8080	

Sample Remarks: SAMPLE COLLECTED BY B/A. PH'S COMPLETED AND REPORTED WITH WO# 8272. LEAD DONE BY 3050 DIGESTION & THEN RUN BY ICP.

---

3 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY PARAMETER

Client PO# : NONE RECEIVED Req #:

Work Order No. : 17900
Client Account : HANSONN
Date Report Printed: NOV 26 89 @ 14:37
Released By : L

Sample Rec'd : OCT 30 89
Ordered By : BRAD AUTHIER/AMERICA NORTH

REPORTS ADDRESS #1
HANSON ASSOC
ROLPH HANSON
P O BOX 91516
ANCHORAGE AK. 99509

REPORTS ADDRESS #2

Special Instructions: JOB #135: HANSON: M&M SITE.

Chemlab Ref #: 6302
Analysis Completed: NOV 18 89 Matrix : SOILS

Lab Sample ID	Client's Sample Identification	Parameter : POLYCHLORINATE BIPHENYLS-SOIL	------AROCLOR	LSAD	pH
		Limits / Method : EPA 8080		GP	
1	391030-6A-0 BORING #6A 0-1'	0.567 ppm	1260	23.6 mg/kg dry	7.89 units

Report Remarks: SAMPLE COLLECTED BY B.A. PCB MIX AROCLOR 1260.

* See Special Instructions Above
ND= None Detected ** See Sample Remarks Above
NA= Not Analyzed LT=Less Than. GT=Greater Than

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:23

Client Sample ID:891013-6B-A-4
PWSID :UA
Collected OCT 13 89 @ 16:10 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 31 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 21 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	10.6 ppm	EPA 8080	
------AROCLOR	1260		
LEAD	211 mg/kg	ICP	
pH	7.66 units		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

4 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:10

Client Sample ID:891013-6B-1-0
PWSID :UA
Collected OCT 13 89 @ 17:00 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 23 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 5 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	53.2 ppm	EPA 8080	
------AROCLOR	1260		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:11

Client Sample ID:891013-6B-2-0
PWSID :UA
Collected OCT 13 89 @ 17:30 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 23 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 6 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	14.1 ppm	EPA 8080	
------AROCLOR	1260		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:11

Client Sample ID:891013-6B-3-0
PWSID :UA
Collected OCT 13 89 @ 17:50 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 23 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 7 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	35.3 ppm	EPA 8080	
------AROCLOR	1260		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:12

Client Sample ID:891013-6B-4-0
PWSID :UA
Collected OCT 13 89 @ 18:05 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 23 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 8 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	61.6 ppm	EPA 8080	
------AROCLOR	1260		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17551
Date Report Printed: NOV 4 89 @ 12:13

Client Sample ID:891013-6B-5-0
PWSID :UA
Collected OCT 13 89 @ 18:15 hrs.
Received OCT 16 89 @ 07:45 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : LISA HAAS

Analysis Completed :OCT 23 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON AND ASSOCIATES. M&M. CALL UPON COMPLETION FOR P/U.

Chemlab Ref #: 8051 Lab Smpl ID: 9 Matrix: SOILS

Parameter Tested	Result/Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	38.3 ppm	EPA 8080	
------AROCLOR	1260		

Sample Remarks: SAMPLE COLLECTED BY BRAD AUTHIER, ANNETTE DUFFY

---

2 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17917
Date Report Printed: NOV 29 89 @ 14:41

Client Sample ID:8910-ANIB3-0
PWSID :UA
Collected OCT 25 89 @ 14:05 hrs.
Received OCT 26 89 @ 17:50 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :NOV 18 89
Laboratory Supervisor :STEPHEN C. EDE
Released By :

Send Reports to:
1)HANSON ASSOC
2)

Special Instruct: HANSON ASSOCIATES/M & M SITE.

Chemlab Ref #: 8314 Lab Smpl ID: 3 Matrix: SOILS

Parameter Tested	Result	Units	Method	Allowable Limits
POLYCHLORINATE BIPHENYLS-SOIL	0.153	ppm	EPA 8080	
------AROCLOR	1.260			

Sample Remarks: SAMPLE COLLECTED BY B/A. PH'S COMPLETED AND REPORTED WITH WO# 8272. LEAD DONE BY 3050 DIGESTION & THEN RUN BY ICP.

---

2 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17917
Date Report Printed: NOV 29 89 @ 14:41

Client Sample ID:8910-ANIB3-1
PWSID :UA
Collected OCT 24 89 @ 14:10 hrs.
Received OCT 26 89 @ 17:50 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :NOV 28 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)HANSON ASSOC
2)

Special Instruct: HANSON ASSOCIATES/M & M SITE.

Chemlab Ref #: 8314 Lab Smpl ID: 4 Matrix: SOILS

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	331	mg/kg dry	GF	

Sample Remarks: SAMPLE COLLECTED BY B/A. PH'S COMPLETED AND REPORTED WITH WO# 8272. LEAD DONE BY 3050 DIGESTION & THEN RUN BY ICP.

---

1 Tests Performed
ND= None Detected
NA= Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

UA=Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 17917
Date Report Printed: NOV 29 89 @ 14:40

Client Sample ID:8910 ANIB5-2
PWSID :UA
Collected OCT 25 89 @ 13:25 hrs.
Received OCT 26 89 @ 17:50 hrs.
Preserved with :AS REQUIRED

Client Name : HANSON ASSOC
Client Acct : HANSONN
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :NOV 18 89
Laboratory Supervisor :STEPHEN C. EDE
Released By :

Send Reports to:
1)HANSON ASSOC
2)

Special Instruct: HANSON ASSOCIATES/M & M SITE.

Chemlab Ref #: 8314 Lab Smpl ID: 1 Matrix: SOILS

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	29.7	mg/kg dry	GF	
POLYCHLORINATE BIPHENYLS-SOIL	0.374	ppm	EPA 8080	
------AROCLOR	1,260			

Sample Remarks: SAMPLE COLLECTED BY B/A. PH'S COMPLETED AND REPORTED WITH WO# 8272. LEAD DONE BY 3050 DIGESTION & THEN RUN BY ICP.

---

3 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

Columbia Analytical Services, Inc.
1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

CAS

October 30, 1989

Brad Chastain
America North Inc.
201 East 56th, Suite 200
Anchorage, Ak 99518

RE: Soil Analysis

Dear Brad:

Enclosed are the results of the soil samples submitted to our lab on October 17, 1989. For your reference, our service request number for this work is 892470.

Please call if you have any questions.

Respectfully submitted:

Mike Shelton

Mike Shelton
COLUMBIA ANALYTICAL SERVICES, INC.

das/MIS

RECEIVED
RECEIVED
NOV 2 1989

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: America North Inc.
SUBMITTED BY: Brad Chastain
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 10/17/89
WORK ORDER #: 892470

Inorganic Parameters

Sample Name:			891013-2F-5 DUP	891013-3F-8-DU
Lab Code:			2470-1	2470-2
	Method	MRL		
pH	9045	-	7.12	4.33

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Mike Pelton Date 10/31/89

1317 South 13th Street • P.O. Box 479 • Kelso, WA 98626 • (206) 577-7222 • Fax (206) 636-1068

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: America North Inc.
SUBMITTED BY: Brad Chastain
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 10/17/89
WORK ORDER #: 892470

Total Metals
mg/Kg
Dry Weight Basis

Sample Name:			891013-2F-5-DUP	891013-3F-8-DUP
Lab Code:			2470-1	2470-2
	Method	MRL		
Lead	6010	20	329	ND

ND means None Detected at or above MRL
MRL means Method Reporting Limit

Approved by Mike Shelton Date 10/31/89

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CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: America North Inc.
SUBMITTED BY: Brad Chastain
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 10/17/89
WORK ORDER #: 892470

EPTOX Metals
mg/L
in EPTOX Extract

Sample Name:			891013-3F-8-DUP
Lab Code:			2470-2
	Method	MRL	
Lead	6010	0.05	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Mike Pelton Date 10/31/89

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CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: America North Inc.
SUBMITTED BY: Brad Chastain
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 10/17/89
DATE EXTRACTED: 10/19/89
DATE ANALYZED: 10/20/89
WORK ORDER #: 892470

PCB Analyses
EPA Methods 3550/8080
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		891013-6B-2-0-DUP	891013-6B-5-0-DUP
Lab Code:		2470-3	2470-4
	MRL		
Aroclor:			
1016	1	ND	ND
1221	1	ND	ND
1232	1	ND	ND
1242	1	ND	ND
1248	1	ND	ND
1254	1	ND	ND
1260	1	12	13
Total Aroclors	1	12	13

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

6B-2-0: 14.1
6B-5-0: 38.3

Approved by: Colin Elliott Date: 10/30/89

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CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: America North Inc.
SUBMITTED BY: Brad Chastain
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 10/17/89
DATE EXTRACTED: 10/19/89
DATE ANALYZED: 10/20/89
WORK ORDER #: 892470

PCB Analyses
EPA Methods 3550/8080
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		Method Blank
Lab Code:		2470-MB
	MRL	
Aroclor:		
1016	1	ND
1221	1	ND
1232	1	ND
1242	1	ND
1248	1	ND
1254	1	ND
1260	1	ND
Total Aroclors	1	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by: Colin Elliott Date: 10/31/89

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PHASE II
ANALYTICAL RESULTS FOR SOIL SAMPLES
COLLECTED FROM BORINGS

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY PARAMETER

Client PO# : NONE RECEIVED Req #:

Work Order No. : 17848
Client Account : AMERICP
Date Report Printed: OCT 27 89 @ 21:44
Released By : 2

Sample Rec'd : OCT 26 89
Ordered By : BRAD AUTHIER

REPORTS ADDRESS #1
AMERICA NORTH INC
SEE SPECIAL INSTR. "ORDERED BY"

REPORTS ADDRESS #2

Special Instruct: M & M SITE JOB #135 HANSON & ASSOC. CONTINUED ON WO#17849.

Chemlab Ref #: 8272
Analysis Completed: OCT 27 89 Matrix : SOILS
Parameter : pH

Lab Sample ID	Client's Sample Identification	Limits : Method :	
1	8910-ANIB1-08		8.48 units
2	8910-ANIB1-10		6.02 units
3	8910-ANIB1-12		6.48 units
4	8910-ANIB1-14		7.56 units
5	8910-ANIB1-~~20~~ 16		8.81 units
6	8910-ANIB1-20		9.27 units
7	8910-ANIB2-06		5.46 units
8	8910-ANIB2-08		5.85 units
9	8910-ANIB2-10		7.30 units
10	8910-ANIB2-14		8.32 units
11	8910-ANIB2-16		8.67 units
12	8910-ANIB~~2~~3-06		7.71 units
13	8910-ANIB3-08		8.10 units
14	8910-ANIB3-10		8.33 units
15	8910-ANIB3-12		8.42 units

RECEIVED
NOV 6 1989

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY PARAMETER

Client PO# : NONE RECEIVED Req #:

Work Order No. : 17848
Client Account : AMERICP
Date Report Printed: OCT 27 89 @ 21:45
Released By : 2

Sample Rec'd : OCT 26 89
Ordered By : BRAD AUTHIER

REPORTS ADDRESS #1
AMERICA NORTH INC
SEE SPECIAL INSTR. "ORDERED BY"

REPORTS ADDRESS #2

Special Instruct: M & M SITE JOB #135 HANSON & ASSOC. CONTINUED ON WO#17849.

Chemlab Ref #: 8272
Analysis Completed: OCT 27 89 Matrix : SOILS
Parameter : pH
Limits :
Method :

Lab Sample ID	Client's Sample Identification	
16	8910-ANIB3-14	8.37 units
17	8910-ANIB4-08	7.55 units
18	8910-ANIB4-10	8.07 units
19	8910-ANIB4-16	8.67 units
20	8910-ANIB4-18	8.51 units
21	8910-ANIB5-04	5.99 units
22	8910-ANIB5-06	5.88 units
23	8910-ANIB5-08	6.47 units
24	8910-ANIB5-10	6.60 units
25	8910-ANIB5-12	8.34 units

Report Remarks:

* See Special Instructions Above
** See Sample Remarks Above
ND= None Detected
NA= Not Analyzed
LT=Less Than, GT=Greater Than

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY PARAMETER

Client PO# : NONE RECEIVED Req #:

Work Order No. : 17849
Client Account : AMERICP
Date Report Printed: OCT 27 89 @ 21:49
Released By : 2

Sample Rec'd : OCT 26 89
Ordered By : BRAD AUTHIER

REPORTS ADDRESS #1
AMERICA NORTH INC
SEE SPECIAL INSTR. "ORDERED BY"

REPORTS ADDRESS #2

Special Instruct: M & M SITE JOB #135 HANSON & ASSOC. CONTINUED FROM WO#17848.

Chemlab Ref #: 8272
Analysis Completed: OCT 27 89 Matrix : SOILS
Parameter : pH
Limits :
Method :

Lab Sample ID	Client's Sample Identification	
26	8910-ANI B5-16	8.37 units
27	8910-ANIB5-2	7.81 units
28	891025-SE-0	8.10 units
29	8910ANI B3-0	7.53 units
30	8910ANI B3-1	5.89 units

Report Remarks:

* See Special Instructions Above
** See Sample Remarks Above
ND- None Detected
NA- Not Analyzed
LT-Less Than, GT-Greater Than

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY PARAMETER

Client PO# : NONE RECEIVED Req #:

Work Order No. : 17915
Client Account : AMERICP
Date Report Printed: NOV 13 89 @ 13:15
Released By : 2

Sample Rec'd : OCT 26 89
Ordered By : BRAD AUTHIER

REPORTS ADDRESS #1
AMERICA NORTH INC
SEE SPECIAL INSTR. "ORDERED BY"

REPORTS ADDRESS #2

Special
Instruct:

Chemlab Ref #: 8313
Analysis Completed: NOV 2 89 Matrix : SOILS
Parameter :

Lab Sample ID	Client's Sample Identification	Limits : Method :	LEAD ICP
1	8910-ANI B1-12		ND(5) mg/kg
2	8910-ANI B1-14		ND(5) mg/kg
3	8910-ANI B2-08		ND(5) mg/kg
4	8910-ANI B2-14		ND(5) mg/kg
5	8910-ANI B3-08		ND(5) mg/kg
6	8910-ANI B4-10		ND(5) mg/kg
7	8910-ANI B5-06		ND(5) mg/kg
8	8910-ANI B5-10		ND(5) mg/kg

Report
Remarks:

* See Special Instructions Above
ND= None Detected
** See Sample Remarks Above
NA= Not Analyzed
LT=Less Than, GT=Greater Than

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY PARAMETER

Client PO# : NONE RECEIVED Req #:

Work Order No. : 18488
Client Account : HANSONN
Date Report Printed: DEC 1 89 @ 16:51
Released By : 3

Sample Rec'd : OCT 26 89
Ordered By : BRAD AUTHIER

REPORTS ADDRESS #2

REPORTS ADDRESS #1
HANSON ASSOC
ROLPH HANSON
P O BOX 91516
ANCHORAGE, AK. 99509

Special Instruct: REFERENCE PREVIOUS WORKORDER #17914. **NO CHARGE**

Chemlab Ref #: 8312
Analysis Completed: NOV 17 89 Matrix : SOILS

Lab Sample ID	Client's Sample Identification	Parameter : EP TOXICITY LEAD Limits : Method : 6010/7421
1	8910-ANI B1-10	0.084 mg/l
2	8910-ANI B1-16	ND(0.005) mg/l
3	8910-ANI B2-06	0.016 mg/l
4	8910-ANI B2-10	ND(0.005) mg/l
5	8910-ANI B3-06	0.010 mg/l
6	8910-ANI B3-12	0.012 mg/l
7	8910-ANI B4-08	0.011 mg/l
8	8910-ANI B4-16	ND(0.005) mg/l
9	8910-ANI B5-04	0.076 mg/l
10	8910-ANI B5-12	ND(0.005) mg/l

Report Remarks:

* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than

ND= None Detected
NA= Not Analyzed

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY PARAMETER

Client PO# : NONE RECEIVED Req #:

Work Order No. : 17914
Client Account : HANSONN
Date Report Printed: NOV 20 89 @ 17:11
Released By : 3

Sample Rec'd : OCT 26 89
Ordered By : BRAD AUTHIER

REPORTS ADDRESS #1
HANSON ASSOC
ROLPH HANSON
P O BOX 91516
ANCHORAGE, AK. 99509

REPORTS ADDRESS #2

RECEIVED
NOV 22 1989

Special
Instruct:

Chemlab Ref #: 8312
Analysis Completed: NOV 17 89

Matrix : SOILS
Parameter : LEAD
Limits :
Method : GF

Lab Sample ID	Client's Sample Identification	
1	8910-ANI B1-10	1.42 ppm/dry wt
2	8910-ANI B1-16	6.17 ppm/dry wt
3	8910-ANI B2-06	6.65 ppm/dry wt
4	8910-ANI B2-10	3.89 ppm/dry wt
5	8910-ANI B3-06	6.60 ppm/dry wt
6	8910-ANI B3-12	5.52 ppm/dry wt
7	8910-ANI B4-08	5.76 ppm/dry wt
8	8910-ANI B4-16	5.03 ppm/dry wt
9	8910-ANI B5-04	41.6 ppm/dry wt
10	8910-ANI B5-12	4.80 ppm/dry wt

Report Remarks: TOTAL LEAD DETERMINED BY 3050 DIGESTION AND GRAPHITE FURNACE ATOMIC ABSORPTION.

* See Special Instructions Above
** See Sample Remarks Above
ND- None Detected
NA- Not Analyzed
LT-Less Than, GT-Greater Than

Columbia Analytical Services, Inc.
1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

CAS

November 14, 1989

Brad Authier
America North Inc.
201 East 56th, Suite 200
Anchorage, Ak 99518

RE: Hanson Assoc. M & M (135) Project

Dear Brad:

Enclosed are the results of the soil samples submitted to our lab on November 1, 1989. For your reference, our service request number for this work is 892639.

Please call if you have any questions.

Respectfully submitted:

Mike Shelton

Mike Shelton
COLUMBIA ANALYTICAL SERVICES, INC.

bdr/MIS

RECEIVED
NOV 20 1989

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: America North Inc.
SUBMITTED BY: Brad Authier
PROJECT: Hanson Assoc. M & M (135)
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 11/01/89
WORK ORDER #: 892639

Inorganic Parameters

Sample Name:			8910-ANIB2-06-DUP	8910-ANB5-06-DUP
Lab Code:			2639-1	2639-2
	Method	MRL		
pH	9045	-	6.36	6.62

MRL means Method Reporting Limit

Approved by Mike Skelton Date 11/14/89

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CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: America North Inc.
SUBMITTED BY: Brad Authier
PROJECT: Hanson Assoc. M & M (135)
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 11/01/89
WORK ORDER #: 892639

Total Metals
mg/Kg
Dry Weight Basis

Sample Name:			8910-ANIB2-06 DUP	8910-ANB5-06-DUP
Lab Code:			2639-1	2639-2
	Method	MRL		
Lead	6010	20	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Mike Pelton Date 11/14/89

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CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: America North Inc.
SUBMITTED BY: Brad Authier
PROJECT: Hanson Assoc. M & M (135)
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 11/01/89
WORK ORDER #: 892639

EPTOX Metals
mg/L
In EPTOX Extract

Sample Name:			8910-ANIB2-06-DUP
Lab Code:			2639-1
	Method	MRL	
Lead	6010	0.05	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Mike Shelton Date 11/14/89

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PHASE II
ANALYTICAL RESULTS FOR WATER SAMPLES
MONITORING WELLS ANIB-1 THROUGH ANIB-5

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 18323
Date Report Printed: NOV 29 89 @ 10:07

Client Sample ID:ANIB-1 89117
PWSID :UA
Collected NOV 17 89 @ hrs.
Received NOV 17 89 @ 16:00 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :NOV 28 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON M & M. **NO CHARGE**

Chemlab Ref #: 8578 Lab Smpl ID: 1 Matrix: WATER

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	ND(0.005)	mg/l	GF	

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

1 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 18323
Date Report Printed: NOV 29 89 @ 10:08

Client Sample ID:ANIB-2 89117
PWSID :UA
Collected NOV 17 89 @ hrs.
Received NOV 17 89 @ 16:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :NOV 28 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON M & M. **NO CHARGE**

Chemlab Ref #: 8578 Lab Smpl ID: 2 Matrix: WATER

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	ND(0.005)	mg/l	GF	

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

1 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 18323
Date Report Printed: NOV 29 89 @ 10:08

Client Sample ID:ANIB-3 89117
PWSID :UA
Collected NOV 17 89 @ hrs.
Received NOV 17 89 @ 16:00 hrs.
Preserved with :AS REQUIRED

Analysis Completed :NOV 28 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON M & M. **NO CHARGE**

Chemlab Ref #: 8578 Lab Smpl ID: 3 Matrix: WATER

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	ND(0.005)	mg/l	GF	

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

1 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 18323
Date Report Printed: NOV 29 89 @ 10:08

Client Sample ID:ANIB-4 89117
PWSID :UA
Collected NOV 17 89 @ hrs.
Received NOV 17 89 @ 16:00 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :NOV 28 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special HANSON M & M. **NO CHARGE**
Instruct:

Chemlab Ref #: 8578 Lab Smpl ID: 4 Matrix: WATER

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	ND(0.005)	mg/l	GF	

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

1 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 18323
Date Report Printed: NOV 29 89 @ 10:09

Client Sample ID:ANIB-5 89117
PWSID :UA
Collected NOV 17 89 @ hrs.
Received NOV 17 89 @ 16:00 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :NOV 28 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special HANSON M & M. **NO CHARGE**
Instruct:

Chemlab Ref #: 8578 Lab Smpl ID: 5 Matrix: WATER

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	ND(0.005)	mg/l	GF	

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

1 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 18323
Date Report Printed: NOV 29 89 @ 10:09

Client Sample ID:ANIB-6 89117
PWSID :UA
Collected NOV 17 89 @ hrs.
Received NOV 17 89 @ 16:00 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :NOV 28 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special Instruct: HANSON M & M. **NO CHARGE**

Chemlab Ref #: 8578 Lab Smpl ID: 6 Matrix: WATER

Parameter Tested	Result	Units	Method	Allowable Limits
LEAD	ND(0.005)	mg/l	GF	

Sample Remarks: SAMPLE COLLECTED BY B.A.

---

1 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

CORRECTED

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY PARAMETER

Client PO# : NONE RECEIVED Req #:

Work Order No. : 17845
Client Account : AMERICP
Date Report Printed: NOV 14 89 @ 12:32
Released By : 3 Stephen C. Ede

Sample Rec'd : OCT 26 89
Ordered By : JIM SMITH

REPORTS ADDRESS #1
AMERICA NORTH INC
SEE SPECIAL INSTR. "ORDERED BY"

REPORTS ADDRESS #2

Special M & M HANSEN #135-01
Instruct:

Chemlab Ref #: 8266
Analysis Completed: OCT 31 89 Matrix : WATER

Lab Sample ID	Client's Sample Identification	Parameter :	pH	SULFATE	LEAD
		Limits :			
		Method :			GF
1	A B1		6.54 units	6.5 mg/l	0.122 mg/l
2	A B2		6.38 units	395 mg/l	0.542 mg/l
3	A B3		6.79 units	45 mg/l	0.560 mg/l
4	A B4		7.20 units	15 mg/l	0.270 mg/l
5	A B5		6.53 units	17 mg/l	0.242 mg/l
6	A B6		6.43 units	350 mg/l	0.502 mg/l

RECEIVED
NOV 16 1989

Report M & M HANSEN
Remarks:

* See Special Instructions Above
ND- None Detected
** See Sample Remarks Above
NA- Not Analyzed
LT-Less Than, GT-Greater Than

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343
FEDERAL TAX ID # 92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 18323
Date Report Printed: NOV 29 89 @ 10:10

Client Sample ID:ANIB-2 89117
PWSID :UA
Collected NOV 17 89 @ hrs.
Received NOV 17 89 @ 16:00 hrs.
Preserved with :AS REQUIRED

Client Name : AMERICA NORTH INC
Client Acct : AMERICP
P.O.# NONE RECEIVED
Req #
Ordered By : BRAD AUTHIER

Analysis Completed :NOV 28 89
Laboratory Supervisor :STEPHEN C. EDE
Released By : Stephen C. Ede

Send Reports to:
1)AMERICA NORTH INC
2)

Special HANSON M & M. **NO CHARGE**
Instruct:

Chemlab Ref #: 8578 Lab Smpl ID: 7 Matrix: WATER

Parameter Tested	Result	Units	Method	Allowable Limits
SULFATE	613	mg/l		

Sample SAMPLE COLLECTED BY B.A.
Remarks:

---

1 Tests Performed
ND- None Detected
NA- Not Analyzed

* See Special Instructions Above
** See Sample Remarks Above
LT-Less Than, GT-Greater Than

UA-Unavailable

APPENDIX C

Phase II Chain-of-Custody Documents

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

TELEPHONE (907) 562-2343

ANCHORAGE INDUSTRIAL CENTER
5633 B Street
Anchorage, Alaska 99518

BILL: America North, Inc.

8578

CHAIN OF CUSTODY RECORD

SURVEY: Hanson M & M

SAMPLERS: (Signature) Brad Authier

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
ANIB-1	891117-ANIB1	11/17/89	0935	Water (filtered & acidified)		1	Lead by Graphit Furnace
ANIB-2	891117-ANIB2	11/17/89	1440	water			
ANIB-3	891117-ANIB3	11/17/89	1345	water			
ANIB-4	891117-ANIB4	11/17/89	1125	water			
ANIB-5	891117-ANIB5	11/17/89	1040	water			
ANIB-6	891117-ANIB6	11/17/89	1410	water			Lead by GF
ANIB-2	891117-ANIB2-1	11/17/89	1445	water (unfiltered)		1	Sulfate

CONDITION OF SAMPLES UPON RECEIPT AT FIELD:
CUSTODY SEALS SIGNED AND INTACT: YES ☐ NO ☐
COMMENTS: ex: *(sampling witness)*

CONDITION OF SAMPLES UPON RECEIPT AT LAB:
CUSTODY SEALS SIGNED AND INTACT: YES ☐ NO ☐
COMMENTS:

METHOD OF SHIPMENT FROM LAB TO FIELD:

METHOD OF SHIPMENT FROM FIELD TO LAB:

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Brad Authier 11/17/89 1600		
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by Mobile Laboratory for field analysis *(Signature)*	Date/Time
Dispatched by: *(Signature)* / Date/Time	Received for Laboratory by:	Date/Time 11/17/89 1600

Environmental Consulting/Natural Resources Management

8266

CHAIN OF CUSTODY RECORD

SURVEY: M&M Hansen # 135-01

SAMPLERS: (Signature) JN Smith

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE Water Comp.	SAMPLE TYPE Water Grab.	SAMPLE TYPE Air	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
VIB1	M&M Hansen	26 Oct 89	1424		✓			1	239.2/375.4/pH
VIB2			1517		✓			1	
VIB3			1609		✓			1	
VIB4			1529		✓			1	
VIB5			1650		✓			1	
VIB6					✓			1	

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
JN Smith		
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time

Dispatched by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time
		Joyce M. Wendlebank	10/26/89 1655

Method of Shipment:

Completed 10/31/89

201 East 56th, Suite 200 • Anchorage, Alaska 99518 • (907) 562-3452

A- Analysis completed by ICP on 11/2/89
B- Analysis completed by GF on 11/17/89

AMERICA NORTH INC.
Chain-of-Custody
Hanson Associates
M & M Enterprises Site

Sample number: 8910-ANIB1-08 Date: 10/24/89
Location: M&M Site Time: 10:20
Job Name: Hanson Associates Job No.: 135
Boring No. ANI-B1 Depth: 8-9.5
Sampler: B. Authier Remarks: pH Screen, Lead by ICP

B

Sample number: 8910-ANIB1-16 Date: 10/26/89
Location: M&M Site Time: 11:10
Job Name: Hanson Associates Job No.: 135
Boring No. ANI-B1 Depth: 16-17.5
Sampler: B. Authier Remarks: pH Screen, Lead by ICP

Sample number: 8910-ANIB1-10 Date: 10/24/89
Location: M&M Site Time: 10:30
Job Name: Hanson Associates Job No.: 135
Boring No. ANI-B1 Depth: 10-11.5
Sampler: B. Authier Remarks: pH Screen, Lead by ICP

Sample number: 8910-ANIB1-20 Date: 10/26/89
Location: M&M Site Time: 1135
Job Name: Hanson Associates Job No.: 135
Boring No. ANI-B1 Depth: 20-21.5
Sampler: B. Authier Remarks: pH Screen, Lead by ICP

Sample number: 8910-ANIB1-12 Date: 10/24/89
Location: M&M Site Time: 1040
Job Name: Hanson Associates Job No.: 135
Boring No. ANI-B1 Depth: 12-13.5
Sampler: B. Authier Remarks: pH Screen, Lead by ICP

B

Sample number: 8910-ANIB2-06 Date: 10/26/89
Location: M&M Site Time: 0905
Job Name: Hanson Associates Job No.: 135
Boring No. ANI-B2 Depth: 6.5-8.5
Sampler: B. Authier Remarks: pH Screen, Lead by ICP, Lead by EP Tox

A

Sample number: 8910-ANIB1-14 Date: 10/26/89
Location: M&M Site Time: 1050
Job Name: Hanson Associates Job No.: 135
Boring No. ANI-B1 Depth: 14-15.5
Sampler: B. Authier Remarks: pH Screen, Lead by ICP

A

Sample number: 8910-ANIB2-08 Date: 10/26/89
Location: M&M Site Time: 0920
Job Name: Hanson Associates Job No.: 135
Boring No. ANI-B2 Depth: 8.5-10
Sampler: B. Authier Remarks: pH Screen, Lead by ICP

Relinquished by:	Received by:
Brad Authier 17:50 10/26/89	[signature] 17:50 10-26-89
Relinquished by:	Received by:

AMERICA NORTH INC.
Chain-of-Custody
Hanson Associates
M & M Enterprises Site

B

Sample number: 8910-ANIB2-10
Date: 10/26/89
Time: 0930
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 10.5-12.5
Boring No. ANI-B2
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

A

Sample number: 8910-ANIB3-08
Date: 10/24/89
Time: 1440
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 8-9.5
Boring No. ANI-B3
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Sample number: 8910-ANIB2-14
Date: 10/26/89
Time: 0945
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 15-17
Boring No. ANI-B2
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Sample number: 8910-ANIB3-10
Date: 10/24/89
Time: 1445
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 10-11.5
Boring No. ANI-B3
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Sample number: 8910-ANIB2-16
Date: 10/26/89
Time: 1000
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 17.5-19
Boring No. ANI-B2
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

B

Sample number: 8910-ANIB3-12
Date: 10/24/89
Time: 1455
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 12-13.5
Boring No. ANI-B3
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

B

Sample number: 8910-ANIB3-06
Date: 10/24/89
Time: 1430
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 6-7.5
Boring No. ANI-B3
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Sample number: 8910-ANIB3-14
Date: 10/24/89
Time: 1505
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 14-15.5
Boring No. ANI-B3
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Relinquished by: Brad Authier 10/26/89 17:50

Received by: [signature] 17:50 10-26-89

Relinquished by:

Received by:

AMERICA NORTH INC.
Chain-of-Custody
Hanson Associates
M & M Enterprises Site

3

Sample number: 8910-ANIB4-08
Date: 10/25/89
Time: 1010
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 8-9.5
Boring No. ANI-B4
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

B

Sample number: 8910-ANIB5-04
Date: 10/25/89
Time: 1335
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 4-6
Boring No. ANI-B5
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Sample number: 8910-ANIB4-10
Date: 10/25/89
Time: 1015
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 9.5-11
Boring No. ANI-B4
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

A

Sample number: 8910-ANIB5-06
Date: 10/25/89
Time: 1345
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 6-8'
Boring No. ANI-B5
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Sample number: 8910-ANIB4-16
Date: 10/25/89
Time: 11:10
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 17-18.5
Boring No. ANI-B4
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Sample number: 8910-ANIB5-08
Date: 10/25/89
Time: 1350
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 8-9.7
Boring No. ANI-B5
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Sample number: 8910-ANIB4-18
Date: 10/25/89
Time: 11:25
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 18.5-20
Boring No. ANI-B4
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

A

Sample number: 8910-ANIB5-10
Date: 10/25/89
Time: 1400
Location: M&M Site
Job No.: 135
Job Name: Hanson Associates
Depth: 10-12
Boring No. ANI-B5
Remarks: pH Screen, Lead by ICP
Sampler: B. Authier

Relinquished by: Brad Authier 17:50 10/26/89

Received by: [signature] 17:50 10-26-89

Relinquished by:

Received by:

AMERICA NORTH INC.

Chain-of-Custody

Hanson Associates

M & M Enterprises Site

Sample number: 8910-ANIB5-12 Date: 10/25/89 Time: 1410 Location: M&M Site Job No.: 135 Job Name: Hanson Associates Depth: 12-17.5 Boring No. ANI-B5 Remarks: pH Screen, Lead by ICP Sampler: B. Authier	
Sample number: 8910-ANIB5-16 Date: 10/25/89 Time: 1430 Location: M&M Site Job No.: 135 Job Name: Hanson Associates Depth: 16-17.5' Boring No. ANI-B5 Remarks: pH Screen, Lead by ICP Sampler: B. Authier	
Relinquished by: Brad Authier 17:50 10/26/89	Received by: 17:50 10-26-89
Relinquished by:	Received by:

892639

America No[illegible] Inc.

Environmental Consulting/Natural Resources Management

TO: Columbia Analytical Services
1152 3rd Avenue
Longview, WA 98632
ATTN: Dave Edelman

CHAIN OF CUSTODY RECORD

SURVEY: Hanson Assoc. M&M (#135)

SAMPLERS: (Signature) Brad Authier

STATION NUMBER	Sample # ~~STATION LOCATION~~	DATE	TIME	SAMPLE TYPE Water Comp.	Water Grab.	Air Soil	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
ANIB-2	8910-ANIB2-06-DUP	10/26/89	0905			X		1	pH; Pb by EP TOX, ICP
ANIB-5	8910-ANIB5-06-DUP	10/26/89	1345			X		1	pH; Pb by ICP

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Brad Authier 10/30/89 1300		
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time

Dispatched by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time
		Fran Adair	11/1/89 4:15

Method of Shipment:

Please call & confirm reception.
analysis approved 11/14/89

201 East 56th, Suite 200 • Anchorage, Alaska 99518 • (907) 562-3452

TELEPHONE (907) 562-2343

ANCHORAGE INDUSTRIAL CENTER
5633 B Street
Anchorage, Alaska 99518

8302

CHAIN OF CUSTODY RECORD

SURVEY: Hanson Associates M & M (ANI #135)

SAMPLERS: (Signature) Brad Arthier

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
	891030-6A-0	10/30/89	1330	Soil	-	1	8080 for PCB's; pH; Pb by ICP

CONDITION OF SAMPLES UPON RECEIPT AT FIELD:

CUSTODY SEALS SIGNED AND INTACT: YES ☐ NO ☐

COMMENTS: ex: *(sampling witness)*

CONDITION OF SAMPLES UPON RECEIPT AT LAB:

CUSTODY SEALS SIGNED AND INTACT: YES ☐ NO ☐

COMMENTS:

METHOD OF SHIPMENT FROM LAB TO FIELD:

METHOD OF SHIPMENT FROM FIELD TO LAB:

Relinquished by: *(Signature)* Brad Arthier 10/30/89 1400	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by Mobile Laboratory for field analysis *(Signature)*	Date/Time
Dispatched by: *(Signature)* / Date/Time	Received for Laboratory by: Joyce M. Wendebank	Date/Time 10/30/89 1400

America Nor... Inc.

Environmental Consulting/Natural Resources Management

CHAIN OF CUSTODY RECORD

SURVEY: Hanson Associates/M&M Site

SAMPLERS: (Signature) Brad Authier, Dave McGivern

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE Water Comp.	SAMPLE TYPE Water Grab.	SAMPLE TYPE Soil Air	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
B5	8910-ANIB5-2	10/25/89	1325			X		1	Pb by ICP; pH; 8080 for PCBs
5E	891025-5E-0	10/25/89	1615			X		2	Pb by ICP; pH, 8080 for PCBs
B3	8910-ANIB3-0	10/25/89	1405			X		1	8080
B3	8910-ANIB3-1	10/26/89	1410			X		1	Pb by ICP, pH

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Brad Authier 10/26/89 1750	[signature]	10-26-89 17:50
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time
Dispatched by: (Signature) Date/Time	Received for Laboratory by:	Date/Time
Method of Shipment:		

201 East 56th, Suite 200 • Anchorage, Alaska 99518 • (907) 562-3452

CIA 892470 Sheet 1 of 1

America North Inc.

Environmental Consulting/Natural Resources Management

CHAIN OF CUSTODY RECORD

TO: Columbia Analytical Laboratories

DAVE EDELMAN

SURVEY: Harson Associates M:M

SAMPLERS: (Signature) Brad Outhier, Annette Dudley by EDA

STATION NUMBER	Sample ID # ~~STATION LOCATION~~	DATE	TIME	SAMPLE TYPE Water Comp.	Water Grab.	SOIL	Sediment	NO OF CONTAINERS	ANALYSIS REQUIRED
2F	891013-2F-5-DUP	10/13/89	1550			X	5	2	Lead by ICP; pH
3F	891013-3F-8-DUP	10/13/89	1500			X	8	2	Lead by ICP & EP Toxicity; pH
6B-2	891013-6B-2-0-DUP	10/13/89	1730			X	0	2	EPA 8080 for PCBs
6B-5	891013-6B-5-0-DUP	10/13/89	1315			X	0	2	EPA 8080 for PCBs

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Brad Outhier	10/16/89 10:25	Bhenderson	10/16/89 1025
Bhenderson	10/16/89 1255		

Relinquished by: (Signature)

Received by: (Signature)

Relinquished by: (Signature)

Received by: (Signature)

Dispatched by: (Signature) Date/Time

Received for Laboratory by: Dan Clair Date/Time 10/17/89 2:00

Method of Shipment:

analytical approved 10/31/89

201 East 56th, Suite 200 • Anchorage, Alaska 99518 • (907) 562-3452

Environmental Consulting/Natural Resources Management

REF. # 8051

Page 1 of 3

CHAIN OF CUSTODY RECORD

SURVEY: Hanford 100 Area

SAMPLERS: (Signature) [illegible] Annette [illegible]

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE Water Comp.	Water Grab.	Air	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
2D	89-10-13-2D-6	10/13/89	[illegible]			X	6	2	[illegible]
2D-1	89-10-13-2D-1-6	10/13/89	16:32			X	6	2	
2D-2	89-10-13-2D-2-6	10/13/89	16:45			X	6	2	
4B	89-10-13-4B-5	10/13/89	12:05			X	5	1	
6B-1	89-10-13-6B-1-0	10/13/89	17:00			X	0	2	
6B-2	89-10-13-6B-2-0	10/13/89	17:30			X	0	2	
6B-3	89-10-13-6B-3-0	10/13/89	17:50			X	0	2	
6B-4	89-10-13-6B-4-0	10/13/89	[illegible]			X	0	2	
6B-5	89-10-13-6B-5-0	10/13/89	[illegible]			X	0	2	[illegible] for PCB
[illegible]									
3E	89-10-13-3E-6	10/13/89	1345			X	6	3	Metals scan (ICP), Pb, EP TOX, pH
5D	89-10-13-5D-7	10/13/89	1435			X	7	2	Metals scan (ICP), Pb, EP TOX, pH

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Brad Luthier 10/16/89 07:45		
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time
Dispatched by: (Signature) — Date/Time	Received for Laboratory by: [illegible]	Date/Time 10-16-89 0745

Method of Shipment:

Environmental Consulting/Natural Resources Management

CHAIN OF CUSTODY RECORD

SURVEY: Hanson Associates M:M

SAMPLERS: (Signature) Brad Luthier, Rick Duffey

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE Water Comp.	Water Grab.	Air	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
2E	89/1013-2E-5	10/13/89	15.30			X	5	2	Pb by ICP, pH
2F	89/1013-2F-5	10/13/89	15 50			X	5	2	↓
3A	89/1013-3A-5	10/13/89	1120			X	5	2	↓
4D	89/1013-4D-10	10/13/89	1245			X	10	2	Pb by ICP, pH
4A	89/1013-4A-11	10/13/89	1125			X	11	2	EPTOX for PCBs, Lead by EPTOX & ICP, pH
4C	89/1013-4C-5	10/13/89	1229			X	5	2	↓
5B	89/1013-5B-6	10/13/89	1215			X	6	2	EPTOX for PCBs, Lead by EPTOX & ICP, pH
1G	89/1013-1G-0	10/13/89	1330			X	0	2	EPTOX for PCBs; Lead by ICP, pH
3G	89/1013-3G-0	10/13/89	1830			X	0	2	↓
3B-A	89/1013-3B-A-4	10/13/89	1610			X	4	2	EPTOX for PCBs; Lead by ICP, pH

Relinquished by: (Signature) Brad Luthier	10/16/89 07:45	Received by: (Signature)	Date/Time
Relinquished by: (Signature)		Received by: (Signature)	Date/Time
Relinquished by: (Signature)		Received by: (Signature)	Date/Time
Relinquished by: (Signature)		Received by Mobile Laboratory for field analysis: (Signature)	Date/Time
Dispatched by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time 10-16-89 0745
Method of Shipment:			

201 East 56th, Suite 200 • Anchorage, Alaska 99518 • (907) 562-3452

Environmental Consulting/Natural Resources Management

CHAIN OF CUSTODY RECORD

Ecological Services

SURVEY: Hanson Associates 11/5/11

SAMPLERS: (Signature) Brad Luther, Annette Dutcher

STATION NUMBER	SAMPLE ID # / STATION LOCATION	DATE	TIME	SAMPLE TYPE: Water Comp.	Water Grab.	Soil Air	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
5D	[illegible]-5D-6	10/13/89	1300			X	6	2	Lead by ICP; EP Tox; pH
3F	[illegible]-3F-8	10/13/89	1500			X	8	2	Lead by ICP; EP Tox; pH
4E	[illegible]-4E-5	10/13/89	1420			X	5	2	Lead by ICP; EP Tox; pH

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Brad Luther 10/16/89 0745		
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time
Dispatched by: (Signature) Date/Time	Received for Laboratory by: [illegible]	Date/Time 10-16-89 0745

Method of Shipment:

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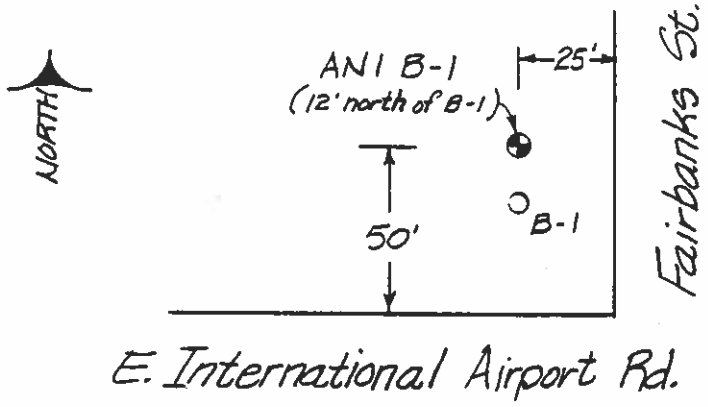
APPENDIX D

Boring Logs

FIELD LOG OF BORING

OCATION OF BORING:



PROJECT: Hanson Associates M & M Site	BORING #: ANIB-1
	TOTAL DEPTH: 21.5
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE: CME-45 w/hollow-stem auger	
DRILLERS NAME: Scott Klinkenbeard	
SAMPLING METHOD: 2 1/4" ID split spoon	
HAMMER WT: 340 lbs	DROP: 2.5' - 3.0'
STARTED / TIME: 0945	DATE: 10/24/89
COMPLETED / TIME: 1250	DATE: 10/24/89

BORING DEPTH (FT)	21.5'		
CASTING DEPTH (FT)			
WATER DEPTH (FT)	8.31	(5.86' bgs)	
TIME:	1500		
DATE:	10/26/89		
BACKFILLED	TIME:	DATE:	BY:
SURFACE ELEV: 119.38'		DATUM: Top of PVC	

CONDITIONS: Overcast, temps in upper 20's.

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICPGF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
										1	
										2	
										3	
										4	
										5	
6	SS	3 2	18	16	G		NA	NA	GM	6	
		2							PT	7	
	SS	1 1	18	16	G		8.5	NA	PT	8	
		2								9	
0		2 2	18	18	G		6.0	1.42	PT	10	

Samples placed in 500 ml plastic sample jars (wide-mouth)

SILTY GRAVEL w/SAND, very dark brown (10 YR 2/2); 40% fines, low plasticity, 45% gravel, 15% fine to medium grained sand; moist; organic matter present; GM.

Driller noted change at 5.5 feet below ground surface (bgs).

PEAT, brown (7.5 YR 4/2) to weak red (10 R 4/3); highly organic; PT.

G = GOOD P = POOR SS = SPLIT SPOON SAMPLE

FIELD LOG OF BORING

SHEET 2 OF 3

LOCATION OF BORING:

PROJECT: Hanson Associates M & M Site	BORING #: ANIB-1
	TOTAL DEPTH:
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE:	
DRILLERS NAME:	
SAMPLING METHOD:	
HAMMER WT:	DROP:
STARTED / TIME:	DATE:
COMPLETED / TIME:	DATE:

BORING DEPTH (FT)			
CASTING DEPTH (FT)			
WATER DEPTH (FT)			
TIME:			
DATE:			

BACKFILLED	TIME:	DATE:	BY:
SURFACE ELEV:		DATUM:	
CONDITIONS:			

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP GF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
										11	
										12	
2		3 8	18	16	G		6.5	<5	CL		
		12								13	
14		3 5	14	12	G		7.6	<5		14	
		12							SP	15	
16		8 13	18	16	G		8.8	6.17		16	
		19							CL-ML	17	
8		10 13	18	16	G		NA	NA	CL	18	
		11								19	
0		9 10	18	16	G		9.3	NA	ML	20	

SILTY CLAY, very dark gray (5 YR 3/1); 90% fines, low plasticity, 10% fine sand; firm; moist; CL-ML; (observed thinly interbedded SILTY SAND; dark gray (7.5 YR 4/0); 30% fines, low plasticity, 70% very fine to medium sand; SM).

SILTY SAND, dark gray (7.5 YR 4.5/0); 15% fines, low plasticity, 85% very fine to medium grained sand ; poorly graded; loose to medium dense; moist; SP.

SILTY CLAY, dark gray (2.5 YR 4/0); 90% fines, low plasticity, 10% very fine sand; firm; moist; CL-ML.

LEAN CLAY WITH SAND, dark gray (2.5 YR 4/0); 70% fines, low to medium plasticity, 20% sand, 10% gravel; firm; moist; (thinly interbedded SP as above); CL.

GRAVELLY SILT, very dark gray (5 YR 3/1); 50% fines, low plasticity, 30% gravel, 20% very fine sand; firm to stiff; moist; ML.

NA = NO ANALYSIS PERFORMED

FIELD LOG OF BORING

SHEET 3 OF 3

LOCATION OF BORING:

PROJECT: Hanson Associates M & M Site	BORING #: ANIB-1
	TOTAL DEPTH:
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE:	
DRILLERS NAME:	
SAMPLING METHOD:	
HAMMER WT:	DROP:
STARTED / TIME:	DATE:
COMPLETED / TIME:	DATE:

BORING DEPTH (FT)			
CASTING DEPTH (FT)			
WATER DEPTH (FT)			
TIME:			
DATE:			

BACKFILLED	TIME:	DATE:	BY:
SURFACE ELEV:		DATUM:	
CONDITIONS:			

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP GF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
										21	
		11								22	
										23	
										24	
										25	
										26	
										27	
										28	
										29	
										30	

Terminated hole at 21.5 feet bgs: sufficient data obtained.

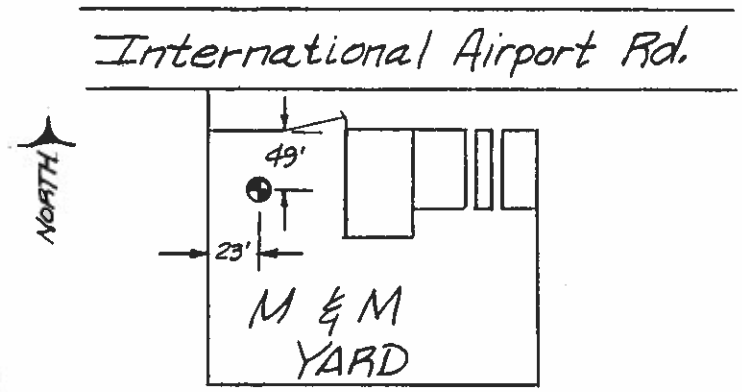
Installed 2" ID Monitor Well.

NA = NO ANALYSIS PERFORMED

FIELD LOG OF BORING

SHEET 1 OF 2

LOCATION OF BORING:



PROJECT: Hanson Associates M & M Site	BORING #: ANIB-2
	TOTAL DEPTH: 19'
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE: CME-45 w/hollow-stem auger	
DRILLERS NAME: Scott Klinkenbeard	
SAMPLING METHOD: 2 1/4" ID split spoon	
HAMMER WT: 340 lbs	DROP: 2.5' to 3.0'
STARTED / TIME: 0820	DATE: 10/26/89
COMPLETED / TIME: 1100	DATE: 10/26/89

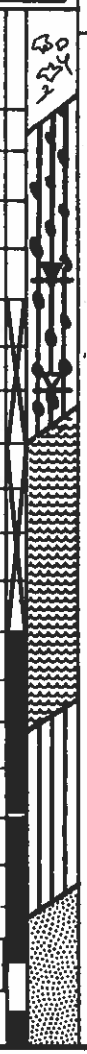
BORING DEPTH (FT)	19'		
CASTING DEPTH (FT)			
WATER DEPTH (FT)	4.75'	(2.75' bgs)	
TIME:	1535		
DATE:	10/26/89		

BACKFILLED	TIME:	DATE:	BY:

SURFACE ELEV: 114.92	DATUM: Top of PVC

CONDITIONS: Overcast, low 20's, snow cover.

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP GF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
									GM		
2.5	SS	10	24	4	P		NA	NA	GM	1	
		18 / 6								2	
4.5	SS	4 / 2	24	0	NR		NA	NA		3	
		3 / 3							PT	4	
6.5	SS	3 / 2	24	23	G		5.5	6.65	PT	5	
		4 / 7								6	
8.5	SS	10 / 5	18	15	G		5.9	<5	ML	7	
		5 / 7								8	
10.5	SS	10	24	22	G		7.3	3.89	SP	9	
										10	



Samples placed in 500 ml plastic sample jars (wide mouth)
TRASH w/SILTY GRAVEL.

SILTY GRAVEL WITH SAND, brown; 20% fines, low plasticity, 60% gravel, 20% sand; trash (contamination) captured in sample tube; GM.

PEAT, dark reddish brown (2.5 YR 2.5/4); slightly moist to moist; PT.

CLAYEY SILT, dark gray (7.5 YR 4/0); 90% fines, low plasticity, 10% very fine grained sand; firm; moist; ML.

SAND, dark gray (2.5 Y 4/0); 10% fines, low plasticity, 90% fine to medium grained sand; poorly graded; loose; moist; SP.

NA = NO ANALYSIS PERFORMED

G = GOOD P = POOR SS = SPLIT SPOON SAMPLE

FIELD LOG OF BORING

SHEET 2 OF 2

LOCATION OF BORING:

PROJECT: Hanson Associates M & M Site	BORING #: ANIB2
	TOTAL DEPTH:
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE:	
DRILLERS NAME:	
SAMPLING METHOD:	
HAMMER WT:	DROP:
STARTED / TIME:	DATE:
COMPLETED / TIME:	DATE:

BORING DEPTH (FT)			
CASTING DEPTH (FT)			
WATER DEPTH (FT)			
TIME:			
DATE:			
BACKFILLED	TIME:	DATE:	BY:
SURFACE ELEV:		DATUM:	
CONDITIONS:			

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP GF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
		12 14							SP	11 12	
		19								13	
3	SS	9 13	18	17	G		NA	NA	SP	14	
		17								15	
15	SS	11 13	24	22	G		8.3	<5	ML	16	
		20 24								17	
7.5	SS	15	18	16	G		8.7	NA	ML	18	
		17 15							CL SM	19	
										20	

SAND, dark gray (2.5 Y 4/0); 20% fines, low plasticity, 80% very fine to fine grained sand; thin (<2 cm) sandy silt and clayey silt stringers (<20% of stratigraphic interval); silt content increasing downward; loose to medium dense; moist; SP.

CLAYEY SILT, dark gray (2.5 Y 4/0); 85% fines, low to medium plasticity, 15% very fine grained sand; firm; moist; interbedded with SILTY SAND; 10% fines, low plasticity, 80% very fine to fine grained sand; medium dense; slightly moist to moist; ML.

SILT; black (10 YR 2/1); 90% silt, 5% clay, 5% very fine sand; wet; ML.

SILTY CLAY, dark gray (2.5 Y 4/0); 70% clay, 30% silt; low to medium plasticity; moist; CL.

SILTY SAND, dark gray (2.5 Y 4/0); 30% fines, low plasticity, 70% sand; wet; SM.

Terminated hole at 19.5 feet bgs: sufficient data obtained. Installed 2" ID Monitor Well.

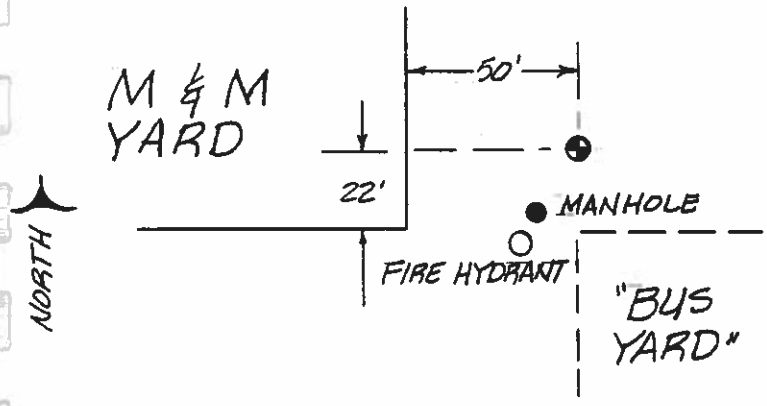
NA = NO ANALYSIS PERFORMED

P = POOR G = GOOD SS = SPLIT SPOON SAMPLE

FIELD LOG OF BORING

SHEET 1 OF 2

LOCATION OF BORING:

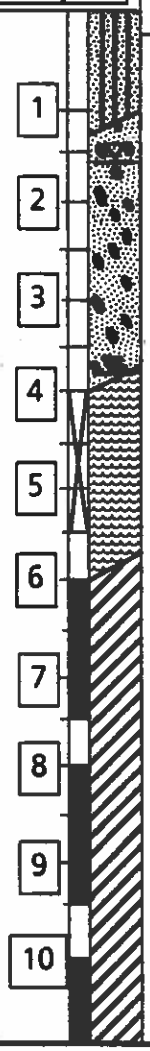


PROJECT: Hanson Associates M & M Site	BORING #: ANIB-3
	TOTAL DEPTH: 16'
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE: CME-45 w/hollow-stem auger	
DRILLERS NAME: Scott Klinkenbeard	
SAMPLING METHOD: 2 1/4" ID split spoon	
HAMMER WT: 340 lbs	DROP: 2.5' - 3.0'
STARTED / TIME: 1400	DATE: 10/24/89
COMPLETED / TIME: 1620	DATE: 10/24/89

BORING DEPTH (FT)	16'		
CASTING DEPTH (FT)			
WATER DEPTH (FT)	6.44	(3.94' bgs)	
TIME:	1555		
DATE:	10/26/89		
BACKFILLED	TIME:	DATE:	BY:
SURFACE ELEV: 112.78		DATUM: Top of PVC	

CONDITIONS: Overcast, temps. in the low 30's.

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP-GF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
									SM	1	
									GW	2, 3	
4	SS	3 3 3	18	0	NR		NA	NA	PT	4	
6	SS	4 5 7	18	16	G		7.7	6.60	CL	5, 6	
8	SS	4 5 6	18	16	G		8.1	<5	CL	7, 8, 9	
10	SS	4 5	18	16	G		8.3	NA	CL	10	



Samples placed in 500 ml plastic jars (wide-mouth)

SILTY SAND, dark brown (7.5 YR 3/3); abundant organic material; slightly moist; SM.

SANDY GRAVEL, brown (7.5 YR 3/3); 10% fines, low plasticity, 20% medium to coarse sand, 70% gravel w/cobbles and boulders; moist to wet; GW.

PEAT, dark reddish brown (2.5 YR 2/4); probably pushed rock ahead of drive; PT

SILTY CLAY, mottled gray (10 YR 5/1) to brown (10 YR 4/3), becoming dark gray (2.5 Y 4/0) at 9.0', and very dark gray (7.5 R 3/0) at 10.0'; 90% fines, low to medium plasticity, 10% very fine to fine grained sand; clay content slightly increasing downward; soft to firm; damp to moist; CL.

NA = NO ANALYSIS PERFORMED

G = GOOD P = POOR SS = SPLIT SPOON SAMPLE

FIELD LOG OF BORING

SHEET 2 OF 2

LOCATION OF BORING:

PROJECT: Hanson Associates M & M Site	BORING #: ANIB-3
	TOTAL DEPTH:
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE:	
DRILLERS NAME:	
SAMPLING METHOD:	
HAMMER WT:	DROP:
STARTED / TIME:	DATE:
COMPLETED / TIME:	DATE:

BORING DEPTH (FT)			
CASTING DEPTH (FT)			
WATER DEPTH (FT)			
TIME:			
DATE:			

BACKFILLED	TIME:	DATE:	BY:
SURFACE ELEV:		DATUM:	
CONDITIONS:			

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP GF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
										11	
		6								12	
12	SS	3 4	18	16	G		8.4	5.52	CL	13	
		5								14	
14	SS	6 9	18	16	G		8.4	NA	CL	15	
		9								16	
										17	
										18	
										19	
										20	

SILTY CLAY, very dark gray (7.5 YR 3/0); 90% fines, low to medium plasticity, 10% very fine to fine grained sand; firm; interval from 10.0' down exhibits very thinly interbedded (<1" thick) SILTY SAND stringers (6" to 10" apart); CL.

Drilled to 16' bgl and terminated hole; sufficient data obtained.
Installed 2" ID monitor well.

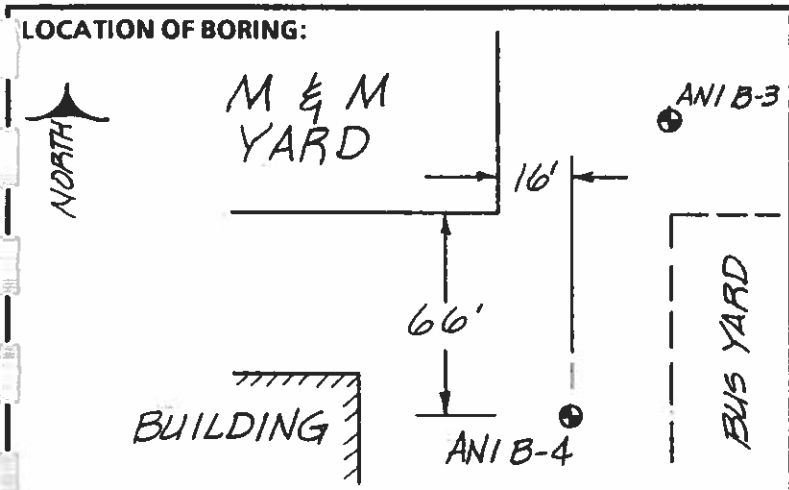
NA = NO ANALYSIS PERFORMED

G = GOOD P = POOR SS = SPLIT SPOON SAMPLE

FIELD LOG OF BORING

SHEET 1 OF 2

LOCATION OF BORING:



PROJECT: Hanson Associates M & M Site	BORING #: ANIB-4
	TOTAL DEPTH: 20'
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE: CME-45 w/ hollow-stem auger	
DRILLERS NAME: Scott Klinkenbeard	
SAMPLING METHOD: 2 1/4" ID Split Spoon	
HAMMER WT: 340 lbs	DROP: 2.5' - 3.0'
STARTED / TIME: 0915	DATE: 10/25/89
COMPLETED / TIME: 1220	DATE: 10/25/89

BORING DEPTH (FT)	20'		
CASTING DEPTH (FT)			
WATER DEPTH (FT)	3.61	(3.81 bgs)	
TIME:	1615		
DATE:	10/26/89		

BACKFILLED	TIME:	DATE:	BY:

SURFACE ELEV: 110.93	DATUM: Top of PVC
CONDITIONS: Clear, cold (temps in 20s)	

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP GI ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
									SW	1	
										2	
2.5	SS	5	18	16	G		NA	NA		3	
		4 6							SM CL		
4.0	SS	13 6	18	4	P		NA	NA	GM	4	
		4								5	
6.0	SS	5 5	18	0	NR		NA	NA	PT	6	
		5								7	
8.0	SS	4 5	18	4	P		7.6	5.76	CL	8	
9.5	SS	6 8	18	16	G		8.1	<5	CL	9	
		9 7								10	

Samples placed in 500 ml plastic jars (wide-mouth)
Top 1" is pavement.

SAND, dark brown (10 YR 3/3); organic material present (pavement base and fill?); slightly moist; SW.

SILTY SAND, dark yellowish brown (10 YR 3/4); 20% fines, low plasticity, 80% fine to medium grained sand; moderately well-graded; loose; SM.

SILTY CLAY, dark yellowish brown (10 YR 3/4) to dark gray (7.5 YR 4/4); low to medium plasticity; soft to firm; CL.

SILTY GRAVEL, w/cobbles and boulders (no recovery); driller estimated water table at 5.5' bgl; GM.

PEAT; highly organic; soft; PT.

SILTY CLAY, dark gray (7.5 YR 4.5/0); low to medium plasticity; observed pebble near depth of 10.5' bgl -- may be very thin gravel/cobble stringers; wet; CL.

NA = NO ANALYSIS PERFORMED

G = GOOD P = POOR SS = SPLIT SPOON SAMPLE

FIELD LOG OF BORING

SHEET 2 OF 2

LOCATION OF BORING:

PROJECT: Hanson Associates M & M Site	BORING #: ANIB-4
	TOTAL DEPTH:
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE:	
DRILLERS NAME:	
SAMPLING METHOD:	
HAMMER WT:	DROP:
STARTED / TIME:	DATE:
COMPLETED / TIME:	DATE:

BORING DEPTH (FT)			
CASTING DEPTH (FT)			
WATER DEPTH (FT)			
TIME:			
DATE:			

BACKFILLED	TIME:	DATE:	BY:
SURFACE ELEV:		DATUM:	
CONDITIONS:			

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP GF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
										11	
										12	
12	SS	7 8	18	1	P		NA	NA	CL		
		9								13	
										14	
4	SS	13 17	17	0	NR		NA	NA			
		80								15	
										16	
17	SS	9 7	18	16	G		8.7	5.03	ML	17	
18.5	SS	7 10	18	16	G		8.5	NA		18	
		12 16							CL	19	
										20	

SILTY CLAY, dark gray (7.5 YR 4.5/0); low to medium plasticity; firm; possibly thin gravel/cobble layers contributing to poor recovery; CL.

SANDY SILT, black (5 YR 2.5/1); 70% fines, low plasticity, 30% very fine grained sand; firm; wet; interval appears to correlate to silt interval at 18' bgl in ANIB-2; ML.

SILTY CLAY, dark gray (7.5 YR 4.5/0); 85% fines, low plasticity, 15% very fine grained sand; clay content increasing downward; occasional thin (< 1 cm) lenses of SANDY SILT w/clay; firm; moist; CL.

Terminated hole at 20.0' bgs; sufficient data obtained. Constructed monitor well in boring.

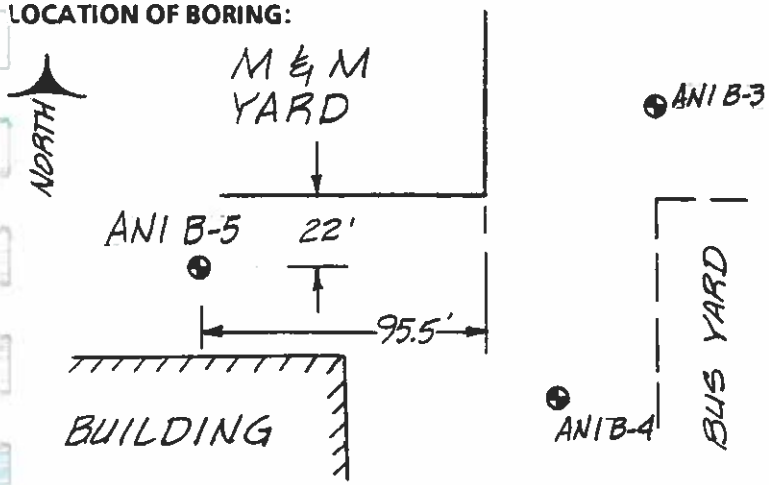
NA = NO ANALYSIS PERFORMED

G = GOOD P = POOR SS = SPLIT SPOON SAMPLE

FIELD LOG OF BORING

SHEET 1 OF 2

LOCATION OF BORING:



PROJECT: Hanson Associates M & M Site	BORING #: ANIB-5
	TOTAL DEPTH: 18'
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE: CME-45 w/hollow-stem auger	
DRILLERS NAME: Scott Klinkenbeard	
SAMPLING METHOD: 2 1/4" ID split spoon	
HAMMER WT: 340 lbs	DROP: 2.5' - 3.0'
STARTED / TIME: 1310	DATE: 10/25/89
COMPLETED / TIME: 1525	DATE: 10/25/89

BORING DEPTH (FT)	18'		
CASTING DEPTH (FT)			
WATER DEPTH (FT)	1.38	(1.58' bgs)	
TIME:	1635		
DATE:	10/26/89		
BACKFILLED	TIME:	DATE:	BY:
SURFACE ELEV: 110.87		DATUM: Top of PVC	

CONDITIONS: Clear, calm, cold (low 30's)

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP GF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
									SP	1	
2.5	SS	5	18	4	P		NA	NA	GW	2	
		7 / 7								3	
4.0	SS	4 / 7	24	18	G		6.0	41.6	SP	4	
		7 / 6							PT	5	
6.0	SS	2 / 1	24	22	G		5.9	<5	PT	6	
		1 / 1							CL	7	
8.0	SS	2 / 2	22	20	G		6.5	NA	CL	8	
		3 / 3							SW	9	
10.0	SS	4 / 5	24	22	G		6.6	<5		10	

Samples placed in 500 ml plastic jars (wide-mouth)
Pavement is 1" thick at location.

SAND, brown (7.5 YR 3/2); slightly silty (base for pavement or fill?); moderately sorted; moist; SP.

SANDY GRAVEL, brown (7.5 YR 3/2); 30% medium to coarse sand, 70% gravels; well graded; loose; moist to wet; GW.

SAND, gray (5 YR 4/1); fine to medium grained; poorly graded; loose; wet; SP.

PEAT, reddish brown (5 YR 5/4); highly organic; moist; PT.

CLAYEY SILT w/SAND, dark gray (7.5 YR 4/0); 75% fines, low plasticity, 25% very fine grained to fine grained sand; poorly graded; soft; moist; CL.

SAND, dark gray (7.5 YR 3/0); 10% fines, low plasticity, 90% fine to coarse grained sand; well graded; loose; wet; SW.

NA = NO ANALYSIS PERFORMED

G = GOOD P = POOR SS = SPLIT SPOON SAMPLE

FIELD LOG OF BORING

SHEET 2 OF 2

LOCATION OF BORING:

PROJECT: Hanson Associates M & M Site	BORING #: ANIB-5
	TOTAL DEPTH:
JOB #: 135	LOGGED BY: B. Authier
PROJ. MGR.: B. Authier	EDITED BY: B. Chastain
DRILLING CONTRACTOR: Discovery Drilling	
DRILL RIG TYPE:	
DRILLERS NAME:	
SAMPLING METHOD:	
HAMMER WT:	DROP:
STARTED / TIME:	DATE:
COMPLETED / TIME:	DATE:

BORING DEPTH (FT)			
CASTING DEPTH (FT)			
WATER DEPTH (FT)			
TIME:			
DATE:			

BACKFILLED	TIME:	DATE:	BY:
SURFACE ELEV:		DATUM:	
CONDITIONS:			

SAMPLE DEPTH	SAMPLER TYPE	BLOWS / 6 IN	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION		pH	LEAD BY ICP GF ppm	SOIL SYMBOL USCS	DEPTH IN FEET	GRAPHIC LOG
										11	
		3 7							CL	12	
12		9 11	18	16	G		8.3	4.80	CL	13	
		19								14	
14		12 10	18	16	G		NA	NA	CL	15	
		7								16	
16		5 8	18	15	G		8.4	NA	CL	17	
		11								18	
										19	
										20	

SILTY CLAY w/SAND, dark gray (7.5 YR 4.5/0); 75% fines, low plasticity, 25% very fine grained to fine grained sand; ; firm; moist; CL: (rare, thin layers of SILTY GRAVEL w/SAND; 40% fines, low plasticity, 30% very fine to fine grained sand; 30% gravel; moist; GM).

NOTE: Silt and clay content increasing downward.

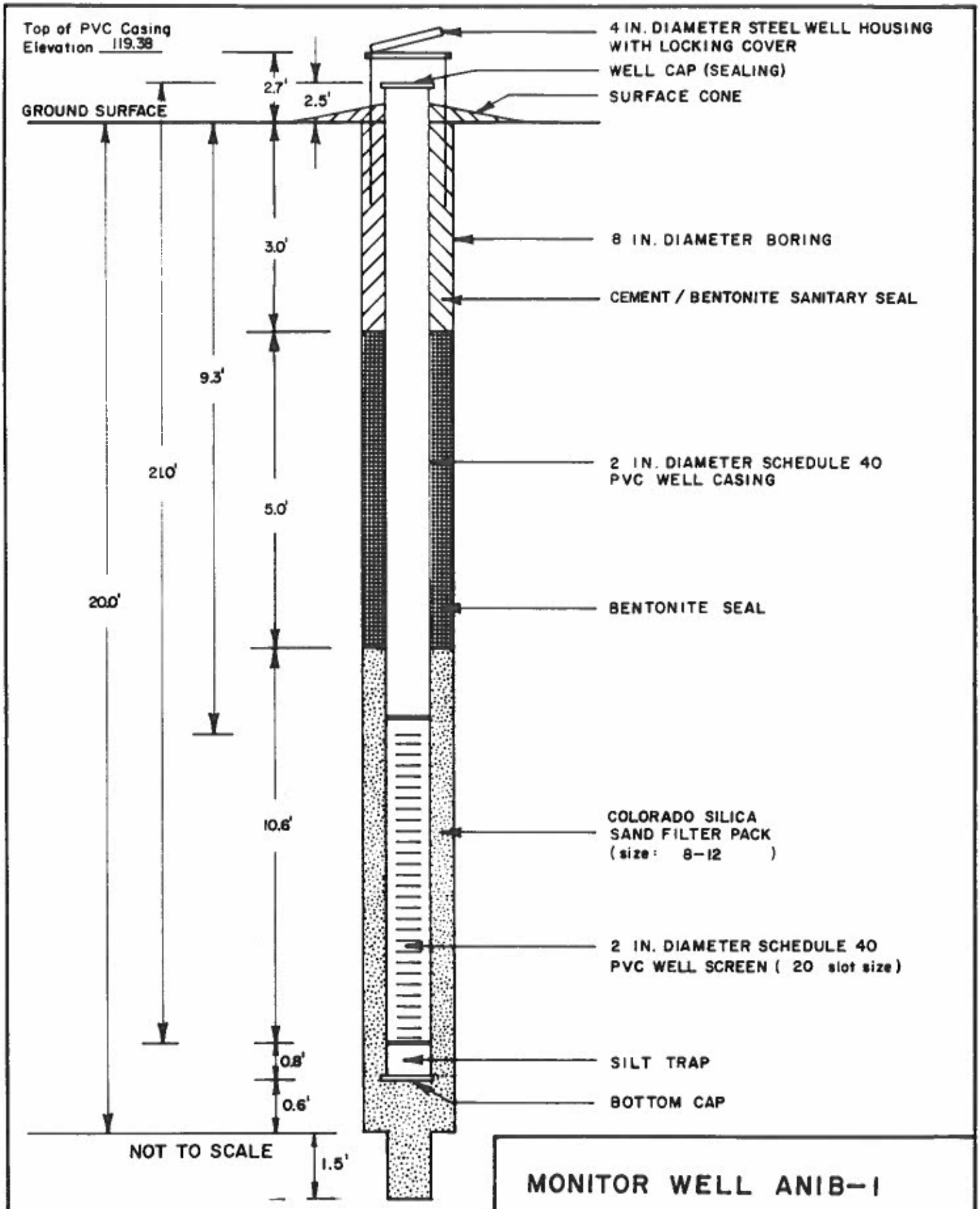
Terminated hole at 18.0' bgs; sufficient data obtained. Constructed monitor well in boring.

NA = NO ANALYSIS PERFORMED

G = GOOD P = POOR SS = SPLIT SPOON SAMPLE

APPENDIX E

Monitoring Well Schematics

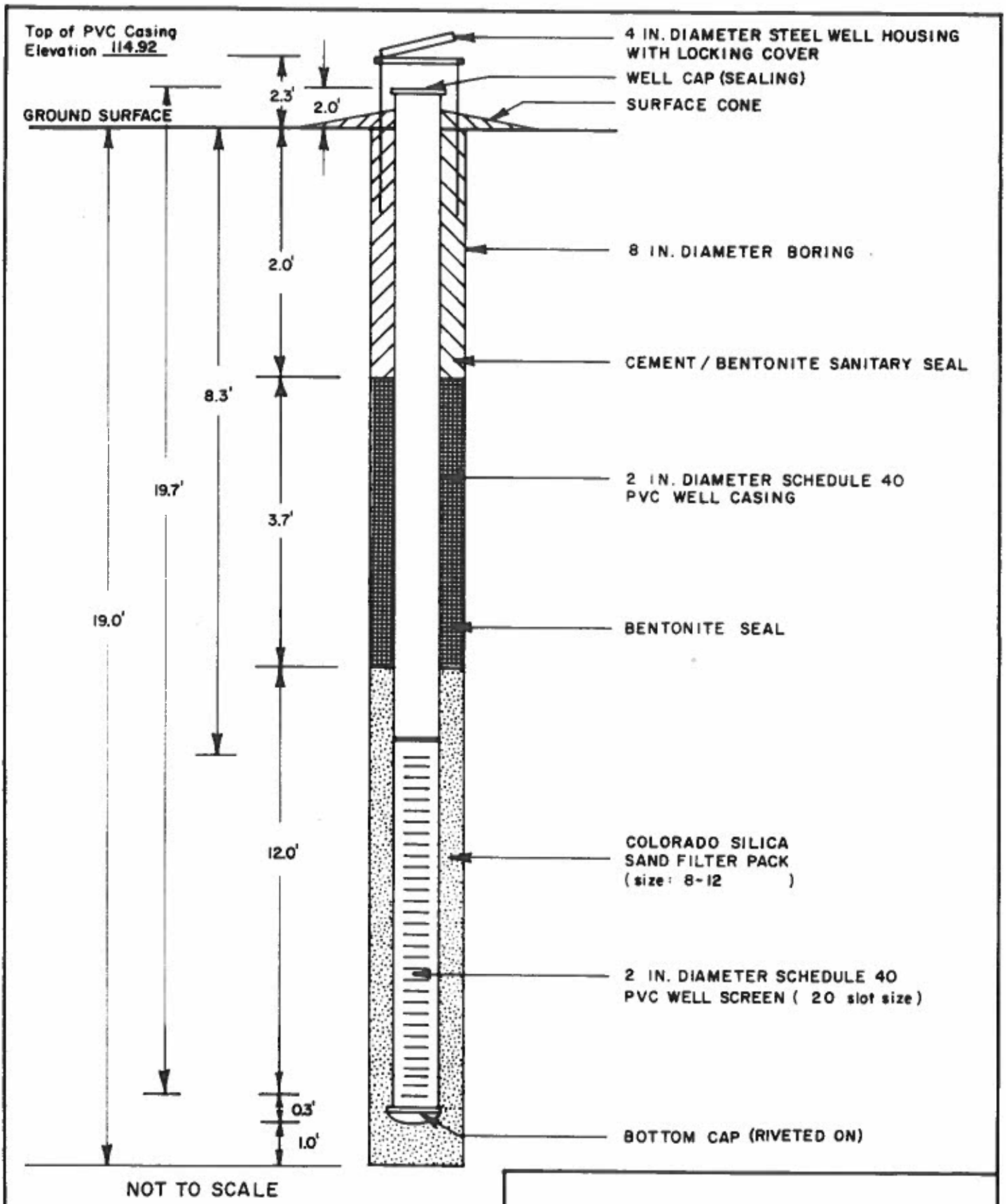


MONITOR WELL ANIB-1

HANSON ASSOCIATES M & M Site	America North Inc. Environmental Consulting / Natural Resources Management

Project # 135	Ckd. B.A. Drwn. CDS	DEC., 1989

130871

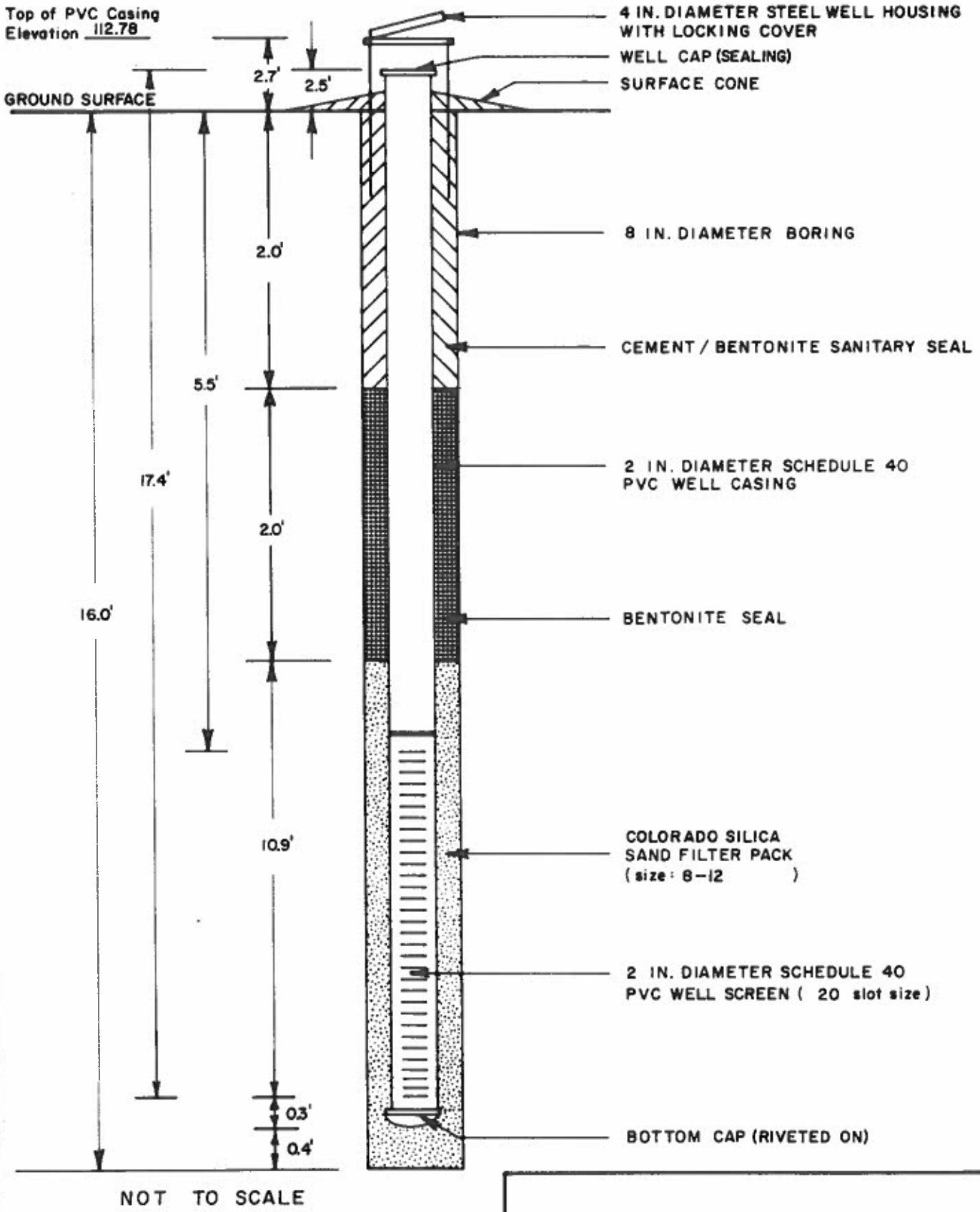


MONITOR WELL ANIB-2

HANSON ASSOCIATES M & M Site	America North Inc. Environmental Consulting / Natural Resources Management

ANI #135	BA CDS/RF	NOV. 1989

130571



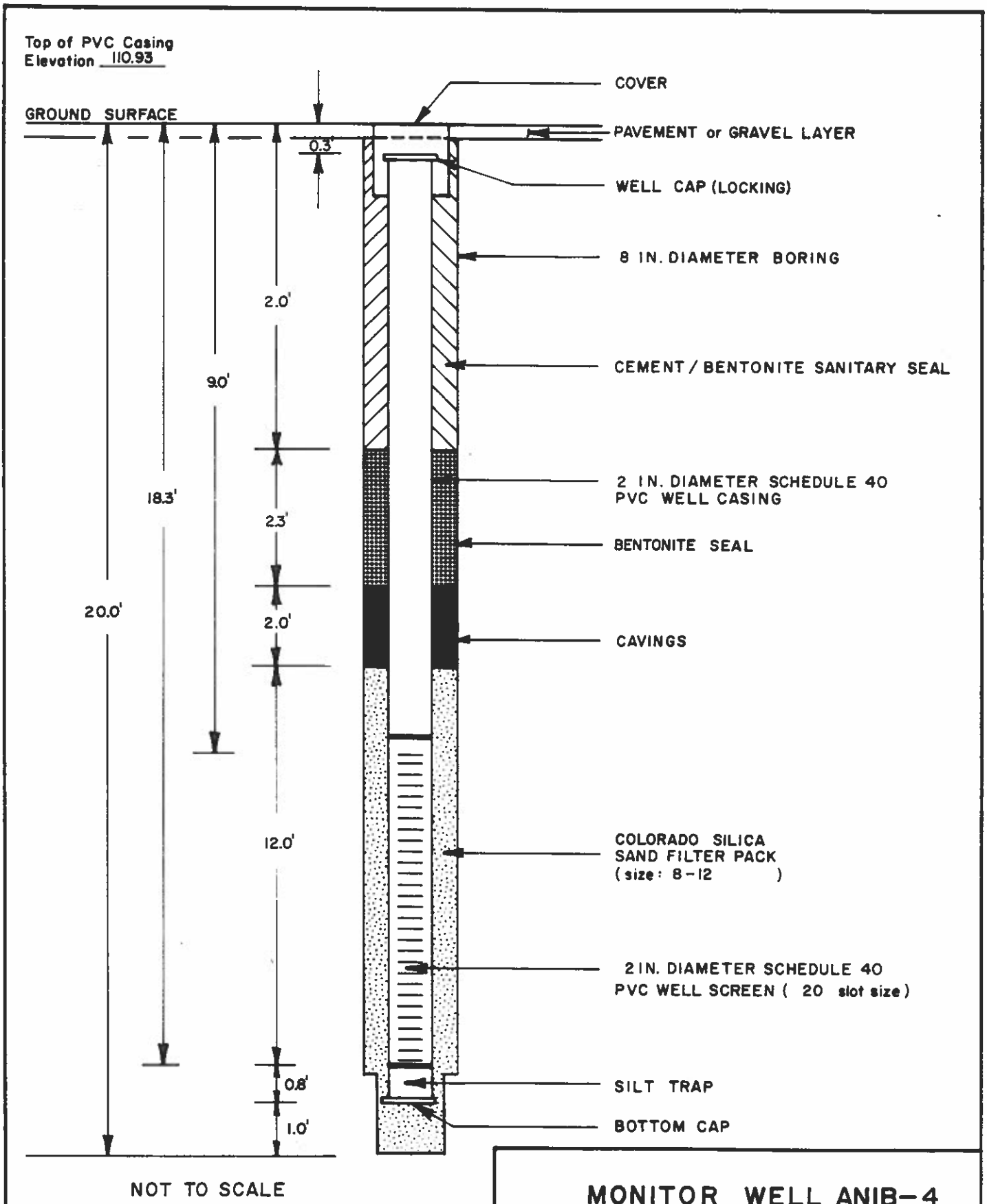
NOT TO SCALE

MONITOR WELL ANIB-3

HANSON ASSOCIATES M & M Site	America North Inc. Environmental Consulting / Natural Resources Management

ANI # 135	BA	CDS/RF	NOV. 1989

130871



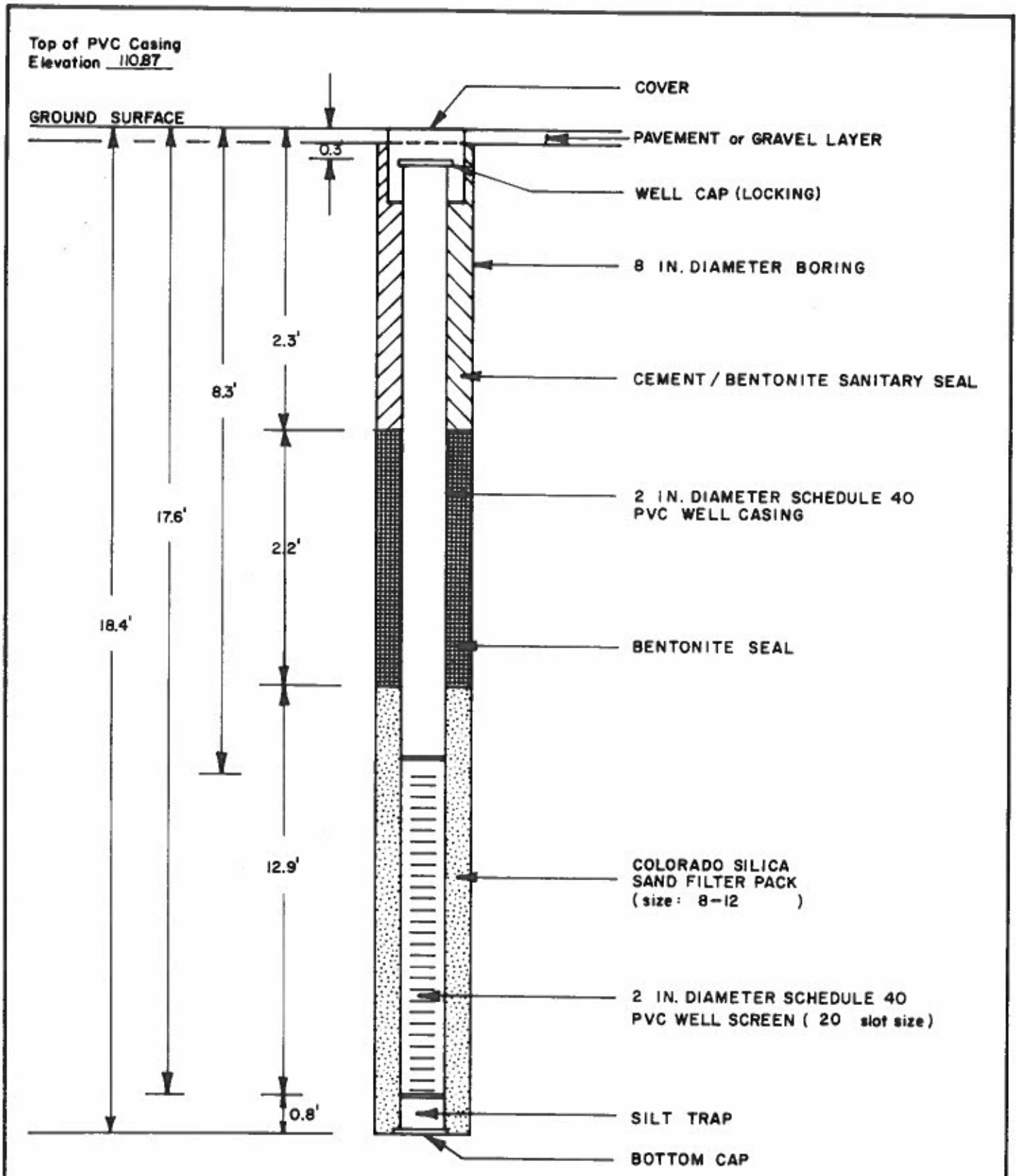
NOT TO SCALE

MONITOR WELL ANIB-4

HANSON ASSOCIATES M&M Site	America North Inc. Environmental Consulting / Natural Resources Management

ANI # 135	BA CDS/RF	NOV. 1989

130671



NOT TO SCALE

MONITOR WELL ANIB-5

HANSON ASSOCIATES M & M Site	America North Inc. Environmental Consulting / Natural Resources Management

ANI # 135	BA CDS/RF	NOV 1989

130571

APPENDIX F

Monitoring Well Water Sampling Data Sheets

AMERICA NORTH INC. WATER SAMPLE FIELD DATA SHEET

Project Number: 135
Client: Hanson
Location: M & M Site
Sampler: B. Authier
Ground Water: X
Casing Diameter: 2 inch. X 3 inch 4 inch 6 inch Other
Casing Elevation (feet/MSL): 119.38
Depth of Well (feet): 21.8 (From TOC)
Depth to Water (feet): 9.16 (110.22 AMSL)

Sample ID.: 891117-ANIB1
Date: 11/17/89
Sample Point Designation: ANIB-1
Other (NR)
Calculated Purge Vol. (gal.): 2.0/vol.
Actual Purge Vol. (gal.): 5.5 gal. total

FIELD MEASUREMENTS

TIME	VOLUME (GAL.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
0900	2.0	6.47	2340	39.2	very cloudy (dark)	
0907	1.9	6.22	2400	41.0	cloudy	
0915	1.6	6.28	2410	41.1	slightly cloudy	

ODOR:

PURGE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Submersible Pump		Bailer (PVC)	Centrifugal Pump	Other
Peristaltic Pump		Dipper	Pneumatic Displacement Pump	

SAMPLE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Surface Sampler		Bailer (PVC)	Dipper	Other
Peristaltic Pump		Submersible Pump		

Well Integrity: Good, but cap is in base of protective casing (when arrived)

Remarks: Emptied bailer into 5-gallon bucket: total bailed volume about 5.5 gallon. Filtering sample to place in preserved jar (amber glass with teflon lid). Process slow. Finished filtering 120 ml. by 0935. Sample # is 891117-ANIB1 -- 0.16 gallon per foot of casing (2"ID); 0.31 gallon per bailer. No cap on well.

Signature Brad Authier

AMERICA NORTH INC.

WATER SAMPLE FIELD DATA SHEET

Project Number 135 | Sample ID. 891117-ANIB2

Client Hanson | Date 11/17/89
Location M & M Site | Sample Point Designation ANIB-2
Sampler B. Authier
Ground Water X | Other (NR)
Casing Diameter: 2 inch. X 3 inch 4 inch 6 inch Other
Casing Elevation (feet/MSL): 114.92 | Calculated Purge Vol. (gal.): 2.3/Vol.
Depth of Well (feet): 20.0 (from TOC) | Actual Purge Vol. (gallon): 6.9 Gallon
Depth to Water (feet): 5.38 (109.54 AMSL)

FIELD MEASUREMENTS

TIME	VOLUME (GAL.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1438	2.3	6.30	2850	38.6	Black	
1441	2.3	6.25	2850	38.3	Black	
1445	2.3	6.33	2780	37.6	Black	

ODOR:

PURGE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Submersible Pump		Bailer (PVC)	Centrifugal Pump	Other
Peristaltic Pump		Dipper	Pneumatic Dis-placement Pump	

SAMPLE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Surface Sampler		Bailer (PVC)	Dipper	Other
Peristaltic Pump		Submersible Pump		

WELL INTEGRITY: Good

REMARKS: Begin bailing at 14:35. Collected 891117-ANIB2 in nalgene filtering apparatus; will take to vehicle to apply suction. Check of pH meter: in 7.0 solution registers 7.3. Had to replace filter after it clogged and only filtering 10cc (put in clean plastic bottle while replacing); 0.31 gallon per bailer; 0.16 gallons per foot of casing.

Signature Brad Authier

AMERICA NORTH INC.

WATER SAMPLE FIELD DATA SHEET

Project Number: 135
Client: Hanson
Location: M & M Site
Sampler: B. Authier
Ground Water: X
Casing Diameter: 2 inch. X 3 inch 4 inch 6 inch Other
Casing Elevation (feet/MSL): 112.78
Depth of Well (feet): 17.72 (from TOC)
Depth to Water (Feet): 5.71 (107.07 AMSL)

Sample ID.: 891117-ANIB3
Date: 11/17/89
Sample Point Designation: ANIB-3
Other (NR)
Calculated Purge Vol. (gal.): 1.9 gal./vol.
Actual Purge Vol. (gal.): 5.7 gallon

FIELD MEASUREMENTS

TIME	VOLUME (GAL.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1330	1.9	6.78	2220	39.7	Cloudy	
1335	1.9	6.67	2300	41.1	Cloudy	
1340	1.9	6.70	2310	39.8	Cloudy	
1410	----	6.62	2230	38.9	Cloudy	Duplicate

ODOR: None (Stagnant)

PURGE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Submersible Pump		Bailer (PVC)	Centrifugal Pump	Other
Peristaltic Pump		Dipper	Pneumatic Dis-placement Pump	

SAMPLE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Surface Sampler		Bailer (PVC)	Dipper	Other
Peristaltic Pump		Submersible Pump		

Well Integrity:

Remarks: Cap was air tight; water level rising in PVC (initially) when taking readings; 1st level @ 1245. 6.12 @ 12.50; 5.93 @ 1255; 5.75 @ 1305; 5.72 @ 1310, 5.715 @ 1317.

Began filtering at 1340. Sample # is 891117-ANIB3. Began filtering 891117-ANIB6 (duplicate) at 1410. Arrived at location at 1235 after getting haircut (left at 1150).

Signature Brad Authier

AMERICA NORTH INC.

WATER SAMPLE FIELD DATA SHEET

Project Number: 135
Client: Hanson
Location: M & M Site
Sampler: B. Authier
Ground Water: X
Casing Diameter: 2 inch. X 3 inch 4 inch 6 inch Other
Casing Elevation (feet/MSL): 110.93
Depth of Well (feet): 18.8 (from TOC)
Depth to Water (feet): 4.45 (106.48 AMSL)

Sample ID.: 891117-ANIB4
Date: 11/27/89
Sample Point Designation: ANIB-4
Other (NR)
Calculated Purge Vol. (gal.): 2.3 gal. /vol
Actual Purge Vol. (gal.): 6.9 gal (total)1

FIELD MEASUREMENTS

TIME	VOLUME (GAL.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1055	2.3	6.72	720	41.5	Black	
1100	2.3	6.82	810	41.4	Black	
1105	2.3	7.05	680	41.4	Black	

ODOR: Stagnant

PURGE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Submersible Pump		Bailer (PVC)	Centrifugal Pump	Other
Peristaltic Pump		Dipper	Pneumatic Dis-placement Pump	

SAMPLE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Surface Sampler		Bailer (PVC)	Dipper	Other
Peristaltic Pump		Submersible Pump		

Well Integrity: Good

Remarks: Began filtering sample at 1108. Finished at 1125. Filtered with 0.45 micron filter under vacuum pressure (same on all samples collected for lead analysis). Preserved with acid (placed in bottles at laboratory).

0.31 gallon bailer: 0.16 gallon per foot of 2 inch ID csg.

Signature Brad Authier

AMERICA NORTH INC.

WATER SAMPLE FIELD DATA SHEET

Project Number: 135
Client: Hanson
Location: M & M Site
Sampler: B. Authier
Ground Water: X
Casing Diameter: 2 inch. X 3 inch 4 inch 6 inch Other
Casing Elevation (feet/MSL): 110.87
Depth of Well (feet): 18.1 (from TOC)
Depth to Water (feet): 2.00 (108.87 AMSL)

Sample ID.: 891117-ANIB5
Date: 11/17/89
Sample Point Designation: ANIB-%
Other (NR)
Calculated Purge Vol. (gal.): 2.6 gal/vol
Actual Purge Vol. (gal.): 7.5 gal

FIELD MEASUREMENTS

TIME	VOLUME (GAL.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1005	2.5 11 bailers	6.52	1700	38.3	clear to slightly cloudy	
1012	2.5	6.52	1735	39.7	cloudy	
1020	2.5	6.55	1716	38.7	cloudy	

ODOR: None to stagnant

PURGE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Submersible Pump		Bailer (PVC)	Centrifugal Pump	Other
Peristaltic Pump		Dipper	Pneumatic Displacement Pump	

SAMPLE METHOD

2" Bladder Pump	X	Bailer (Teflon)	Well Wizard	Dedicated
Surface Sampler		Bailer (PVC)	Dipper	Other
Peristaltic Pump		Submersible Pump		

Well Integrity: Good; very tight cap; no frozen water in/around casing.

Remarks: Arrive at well at 9:50. Locate by measuring 95.5' from corner; 22' south of fence. Filtered 891117-ANIB5 at this location. Done at 10:40. 0.31 gal/bailer: 0.16 gal/ft of 2" ID csg.

Signature Brad Authier

APPENDIX G

AWWU Sewer Manhole Inspection Report

MUNICIPALITY OF ANCHORAGE

MEMORANDUM

POUCH 6-650 ANCHORAGE, ALASKA 99502-0650

TO Brad Anthion - Division Cont. DATE Dec 4, 89

REFERENCE MH located Hanson Hallway @ 6.20 Intl. Airport.

MESSAGE Fred met AWWU crew at 1:30 pm 12/4/89 and checked MH with crew. No apparent deterioration of MH on bottom barrel section or invert and work bench. Heavy mineral deposits and infiltration coming into MH at cone/barrel joint. MH checked for lack of oxygen and other gases when entered - good oxygen no gases. Battery caps found in bottom of MH at time of inspection

267-4513

PLEASE REPLY IN AREA BELOW Thank You! FROM Alan Becker

REPLY

REPLY DATE FROM

91-008 (3 82