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NSWC CRANE
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DEPARTMENT OF THE NAVY
NAVAL WEAPONS SUPPORT CENTER
CRANE, INDIANA 47522-5000

IN REPLY REFER TO:
5090/H11.9
095

24 JUN 1991

U.S. Environmental Protection Agency
Region V
Attn: Ms. Carol Witt-Smith (5HR-13)
230 South Dearborn Street
Chicago, IL 60604

Dear Ms. Witt-Smith:

Submitted for review is the Draft RCRA Facility Investigation (RFI) Phase II Soils Report for the Old Rifle Range, Solid Waste Management Unit 07/09. The requirement for submittal of this report was set forth in the Corrective Actions portion of the Hazardous Waste Part B Permit issued to Naval Weapons Support Center Crane (NWSCC) in January 1990.

Copies of this report have also been forwarded to all other members of the Technical Review Committee (TRC). The letter accompanying these reports to the TRC members indicated they had 45 days to review them. The accompanying letter asked the TRC members if they had any comments to send them to Mr. Byron Brant at Northern Division, in Philadelphia and Ms. Carol Witt-Smith at Region V, EPA, in Chicago.

NWSCC point of contact is Mr. Jim Hunsicker, Code 095, telephone 812-854-3233. Northern Division, Naval Facilities Engineering Command (NORTHNAVFACENGCOM) point of contact is Mr. Byron Brant, Code 1423/BB, telephone 215-897-6280.

Sincerely,

Commander, CEC, USN
Public Works Officer
By direction of the
Commanding Officer

Encl:
(1) Draft RFI Phase II Soils Report for the Old Rifle Range, Solid Waste Management Unit 07/09.
(2) Certification Statement

Copy to:
NORTHNAVFACENGCOM, Philadelphia (Code 1423/BB) (w/o encl)
COMNAVSEASYSCOM (SEA 654E) (w/o encl)
USAE-WES, Bill Murphy (GG-YH) (w/o encl)
USAE-WILMINGTON, Bob Magee (EN-GG) (w/o encl)

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE

J. W. HAYS
Commander, CEC, USN
Public Works Officer

TITLE

24 JUN 1991

DATE

Enclosure (2)

ORR Report

IN5 170 023 498
April 1991

Draft

RFI Phase II, Soils

Old Rifle Range Report for: SWMU 07/09 Naval Weapons Support Center, Crane, Indiana

Prepared By:

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Vol I of II

EXECUTIVE SUMMARY

The Naval Weapons Support Center in Crane Indiana (NWSC, Crane) is a naval manufacturing facility located in southwestern Indiana. Its mission is to provide material, technical, and logistic support to the Navy. One of its primary and most prominent tasks is that it serves as an inland ammunition production and storage center.

In 1989 NWSC, Crane was given a Final RCRA Storage Permit. The permit contained Corrective Action Requirements. The requirements included the need for RCRA Facilities Investigations (RFI) to be done at various sites where releases of hazardous waste were possible. These units are called Solid Waste Management Units (SWMU) and are mostly active and inactive disposal sites. RFIs have three phases. A phase II study is a contaminant verification study. A RFI Phase II, soils investigation was performed at the Old Rifle Range (ORR) waste disposal site. This study was conducted by U.S. Army Corps of Engineers personnel. The field work was done in July and August, 1990, analytical work was done in July, August, and September, 1990, and the data reduction and report writing was done in October, November, and December, 1990. This study was done as part of the Navy's Installation Restoration Program (IRP).

The Old Rifle Range is one of NWSC, Crane's open burning areas units. Open burning\flashing, a thermal distruction process for explosive wastes, was and is operated at the Old Rifle Range site. It was listed as a site in the Initial Assessment Study. Flashing, an incineration process for explosive wastes, was and is operated at the Old Rifle Range site. The flashing operations were carried out in earthen containment structures or flash pits. Today, earth filled steel pans are used. These pans are set on earthen berms called flash pads. A surface and shallow subsurface soils investigation was instituted at the site. The objectives of the study were to:

1) Describe the soil conditions around the site,
2) Identify and characterize the flashing operation residuals,
3) Determine if these operational residues have spread away from the flash pits.

Soil samples were collected using both hollow stem augering and hand augering technique. Soil samples were taken from within the flash pad areas and from locations outside and away from the flash pad areas. Samples from within the pits were used to determine the chemical character of the waste residues. Samples from the borings located away from the flash pits were used to verify contaminant release. A set plan was developed for this investigation. To guard the data quality, a set of rigid QA/QC procedures were used. The QC level selected for this study is a NESSA QC Level "C". The soil samples were analyzed for the presence of volatile and semivolatile organic compounds (EPA Methods 8240 and 8270), inorganic compounds including toxic metals and phosphorus, and explosive compounds. Colorimetry analytical methods were used to detect explosive compounds. All other analytical methods used were EPA SW 846 analytical methods.

Soil descriptions were drawn from 13 auger borings done in 1990, 15 groundwater monitoring wells drilled in 1981 and 1983, field observations, and physical soil test data. Soils were classified according to the Unified Soil Classification System. Particle size gradation and natural water content tests were done following U.S. Army Corps of Engineers' procedures. The present day land surface and the top-of-rock surface have resulted from erosive and depositional processes attributed to the present day and ancestral Turkey Creek drainage system. Soil thicknesses vary from 2 feet to 30 feet. Soil types are predominately clays (CL, CH, and GC). The composite soil profile is made up of residual soil, colluvium, and alluvium. Iron oxide concretions and manganese stain are distributed throughout the soil profile. Zonal concentration of these features are attributed to seasonal water table fluctuations. These soils were generated by natural processes including weathering of the parent rock, overbank alluvial deposition, and hillslope sheet wash. The parent rock are sandstones and shales of Pennsylvanian and Mississippian Age. Groundwater was generally encountered at the top-of-rock. The groundwater movement closely follows the top-of-rock. This is to the southeast toward Turkey Creek. The gravelly clay and silty sand units serve as groundwater conduits.

In soil samples collected from within the flash pits, concentrations of magnesium, copper, lead, and tin were greater than similar levels found in the surrounding soil samples. The elevated concentrations (concentrations above established control levels) of magnesium, copper, lead, and tin were not seen in the soil samples taken from borings outside of the pits. Control levels are metal concentrations expected to be background concentration levels. These levels were established for the site of study by analyzing soil samples collected at sites not influenced by the studied waste activity. Exaggerated sodium contaminant levels were found in the pit samples. These concentration levels are over 100 ppm above sodium levels observed in soil samples taken from soil borings located outside of the pits. Concentrations of sodium seen in the pit samples are likely the result of waste disposal operations. Total phosphorus was not evident as a waste activity residue within the flashing pits but was observed in greater concentrations in soils near the flash pits. The phosphorus results could represent natural soil variability, a release from the flash pits, or some other effect.

Explosive compounds 2,4-DNT and TNT were found in one of the flash pits. TNT and TNB were found in 3 soil samples from borings (07/09-06-90, 07/09-05-90, and 07/09-04-90) located adjacent to the flash pits. All of the samples were surface samples taken from the .02 to 0.5 inch depth interval. Several VOCs were found. The VOC concentrations were generally just above detection limits for those compounds. Low concentrations of semi-volatiles were detected in the flash pit soil samples. There were no clear organic compound contaminant patterns attributable to the waste disposal activities. Only one semi-volatile (EPA Method 8270) organic compound was found in the soil samples from outside of the flash pits. The semivolatile compounds found in the flash pits were not found outside of the pits. There is no directly discernible pattern to the volatile and semivolatile organic compound contamination which could be associated with the flash pit activity.

No RFI Phase III Soils Study is needed at the Old Rifle Range. The remediation of the soils in the burn pits should be included as part of the closure plan for the Old Rifle Range open burning unit.

CONTRIBUTORS

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1.0 INTRODUCTION

1.1.0 BACKGROUND. Naval Weapons Support Center (NWSC), Crane is a naval manufacturing facility located in southwestern Indiana. It is located 40 miles southwest of Bloomington, Indiana and 74 miles south of Indianapolis, Indiana. NWSC, Crane's location is shown on Figure 1.1. The facility covers approximately 62,463 acres in Davies, Greene, and Martin Counties. It is located in a rural, sparsely populated area. The acreage surrounding the base is either wooded or farmed land. The majority of NWSC, Crane is covered by forest. Its surface topography is defined by gently undulating terrain cut by well-defined stream valleys. The surface elevations range from 470' in the valleys to 800' on the ridges.

1.2.0 FACILITY HISTORY. The facility, originally called Naval Ammunition Depot (NAD), Burns City, was opened in 1941 to serve as an inland ammunition production and storage center. The Depot's name was changed to NAD, Crane in 1943. The name was changed again in 1975 to Naval Weapons Support Center, Crane. Today the center's mission is to provide material, technical, and logistic support to the Navy for ships and crafts equipment, shipboard weapons systems, and assigned expendable and nonexpendable ordnance items; and to perform additional functions as directed by the Commander, Naval Sea Systems Command. In 1977 all of the DOD's ammunition procurement responsibility was transferred to the Army. The Army has assumed ordnance production, storage, and related responsibilities under the single service manager directive. All environmental activities on the installation, including permitting activities, remained the responsibility of the Navy. In 1989 NWSC, Crane was granted a Final RCRA Storage Permit. Under this permit NWSC, Crane must evaluate its hazardous waste management practices at its past and present disposal sites.

Solid Waste Management Units (SWMU) were named as part of the RCRA permit. The permit's corrective action requirements were negotiated between the U.S. Navy and the U.S. EPA Region V. Some SWMUs were possible dump sites identified in the Initial Assessment Study. One of the corrective action requirements is that NWSC, Crane must conduct a RCRA Facility Investigation (RFI) at its SWMUs. Surface and shallow subsurface soil investigations are parts of that RFI process. A RFI Phase II, Soils Study was conducted at an area known as the Old Rifle Range (ORR). The services of the U.S. Army Corps of Engineers Waterways Experiment Station (USACEWES) has been retained by Northern Division, Naval Facilities Engineering Command under contract IN5 170 023 498 to provide environmental investigative services at NWSC Crane. Personnel from the Wilmington Engineering District, Wilmington, N.C. have assisted USACEWES on this project. The field work was done in July and August, 1990, analytical work was done in July, August, and September, 1990, and the data reduction and report writing was done in October, November, and December, 1990.

1.3.0 SITE SETTING. The Old Rifle Range site was used as the Marine rifle range. Today it is used as a site for explosive waste treatment and disposal. It was named as a SWMU in the RCRA permit. The ORR is a 10 acre site located near the center of the facility in the NW 1/4 of Section 35 and the SW 1/4 of Section 26, T5N, R4W (Figure 1.1). An explosive waste disposal process, flashing, is operated at this site. Open burning/flashing is a thermal incineration process used to dispose of explosive contaminated waste. The presently operated process was started at a time which preceded 1983. Prior to the operation being moved to this site, the operation was located at the Ammunition Burn Grounds, another of NWSC, Crane's disposal facilities. Disposal practices carried on at the ORR must be permitted by the EPA. In 1989 NWSC, Crane was issued a Final RCRA Storage Permit. NWSC, Crane is now seeking a Subpart X, Miscellaneous Units (Open Burning, Open Detonation), permit for the site.

1.4.0 PROJECT OBJECTIVE. RFI Phase II studies are verification studies. Their purpose is to determine if a chemical release has ocured and to characterize the host medium. This study looked at soil samples in two ways. The physical attributes of the soil were characterized and the chemical pollutants in the soil were identified. These goals were accomplishes by:

1) collecting soil samples from unspoiled sites to be used to gather information about the natural soil conditions,

2) collecting soil samples from the pit to be used to determine the chemical composition of the flashing residues found in the pit soils,

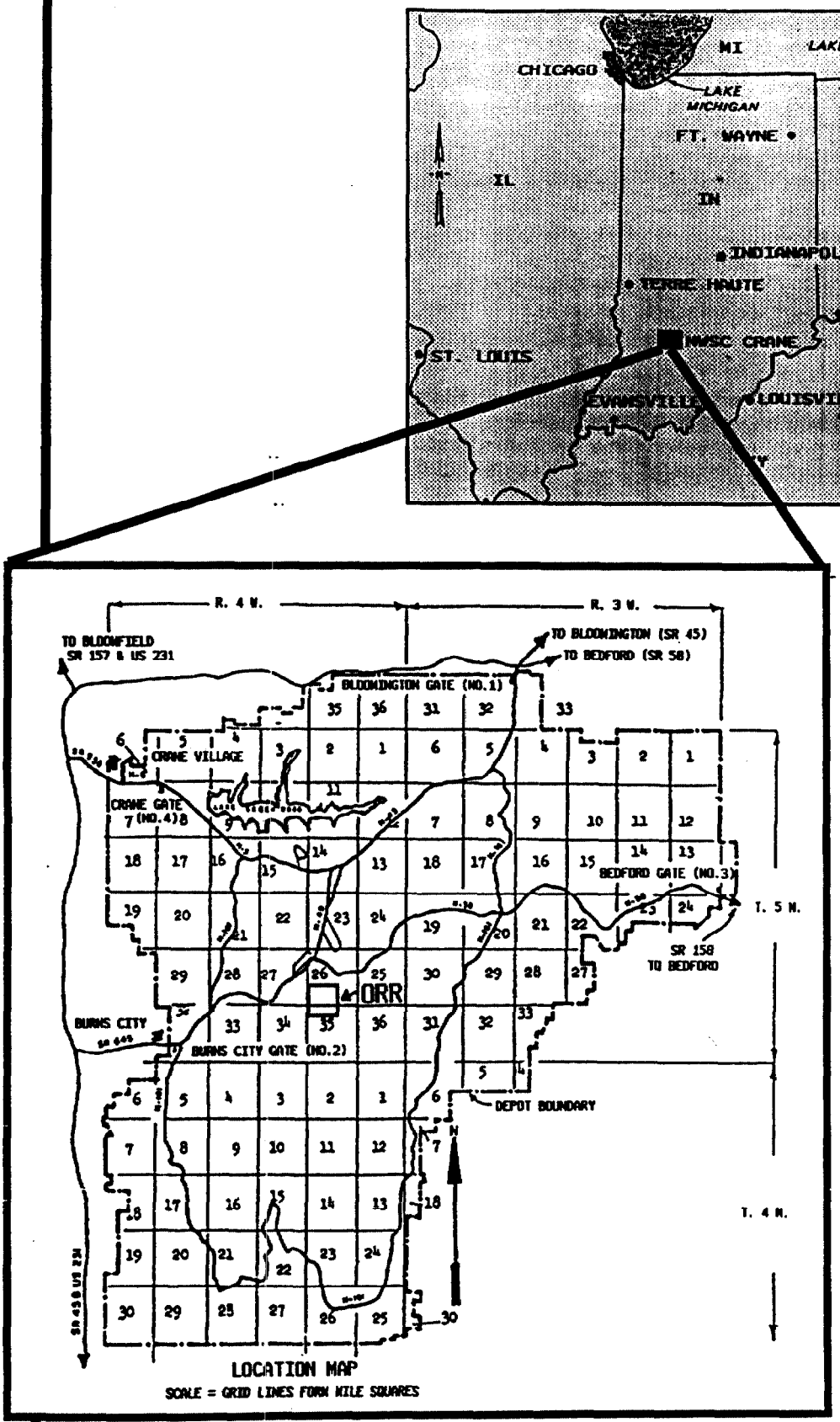


Figure 1.1 Location map for NWSC, Crane. The insert is a facility locator map. The position of Old Rifle Range (ORR) is shown.

3) collecting soil samples from around the pits to determine if flash residue chemicals are present in those soils.

The physical characterization of the soils was accomplished using common U.S. Army Corps of Engineers' procedures. The chemical characterization was accomplished using EPA, SW 836 methods.

2.0 PREVIOUS STUDIES

The situation at the ORR had been described in several reports. These reports (listed by date; oldest first) are:

1) Dunbar, Joseph B., Hydrogeological Investigation of Waste Disposal Sites at the Naval Weapons Support Center Crane, Indiana, US. Army Corps of Engineers, Waterways Experiment Station, 1982.

2) Naval Energy and Environmental Support Activity, Initial Site Assessment of Naval Weapons Service Center Crane, Indiana, May, 1983.

3) Dunbar, Joseph B., Hydrogeological Site Characterization of the Old Rifle Range for Hazardous Waste Disposal Facility, Naval Weapons Support Center Crane, Indiana, US. Army Corps of Engineers, Waterways Experiment Station, 1984.

4) Hazardous Material Technical Center, Conformation Study for Sites 2, 4, 6, and 10 at the Naval Weapons Support Center Crane, June, 1985.

5) Hunt, Richard W., Geology and Hydrogeology of the Ammunition Burning Ground Crane Naval Weapons Support Center, US. Army Corps of Engineers, Waterways Experiment Station, 1987.

3.0 PROCEDURES:

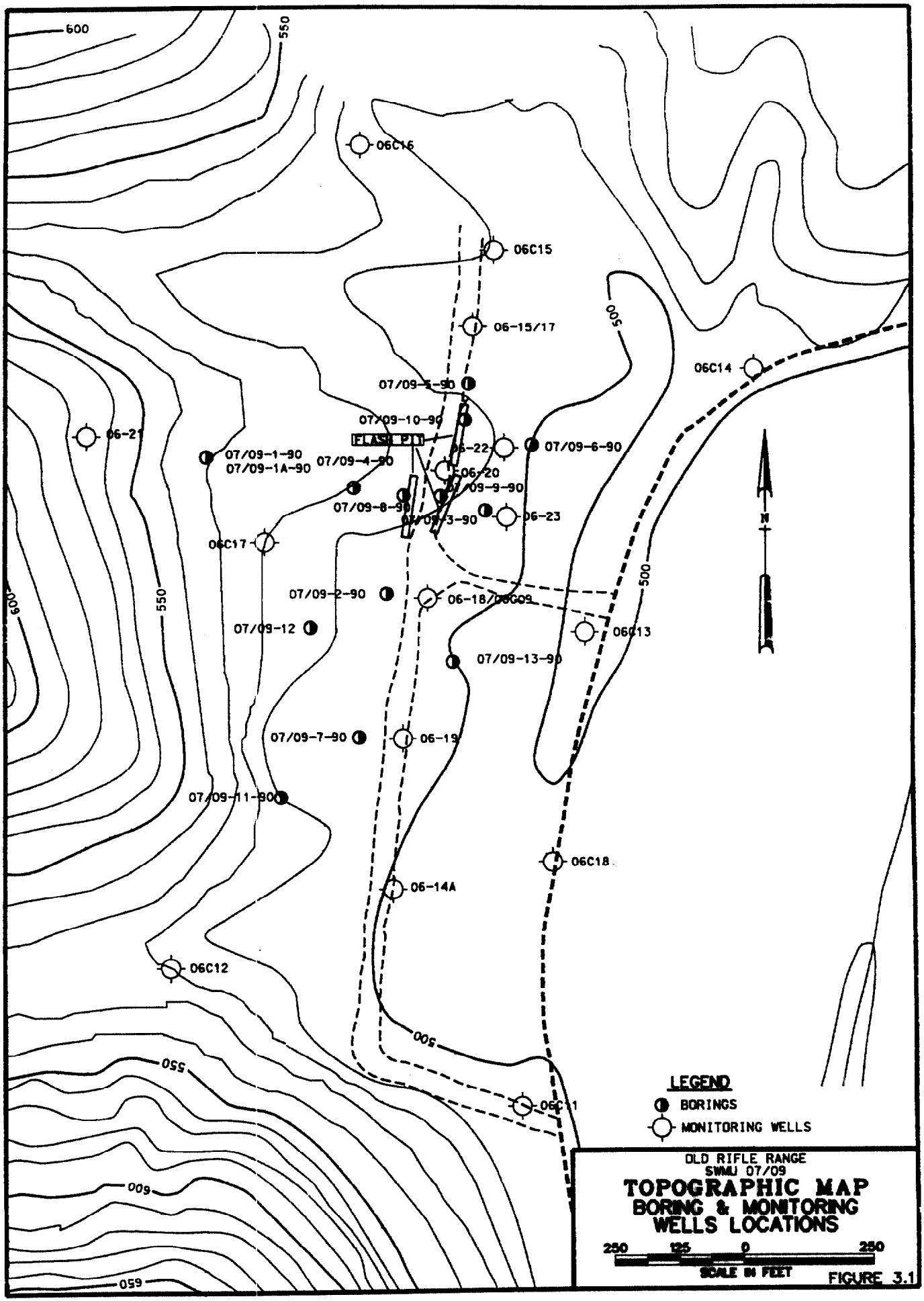
3.1.0 APPROACH. The study effort was focused toward verifying the presence of contaminants in the soil column. To characterize the site, two primary tasks were accomplished. Background conditions were characterized and the contaminant character was developed. Samples from borings placed in the more remote regions of the site were used to establish the uncontaminated background condition. Samples taken from within the flash pits were used to develop a contaminant signature. A contaminant signature is a suite of analytes which is used to indicate the presence of a particular contaminant. Additional borings were drilled to test the possibility of the release of contaminant from the disposal operation. They were placed in areas where contaminant migration was probable.

Stratified samples were taken from vertical soil borings. Three borings were hand augered and ten borings were drilled using a truck mounted drilling rig. The boring locations are shown on Figure 3.1. Those soil samples were used to identify contaminant levels and soil characteristics. For testing of the physical properties of the soils, at least one disturbed soil sample per boring was collected. When soil thickness allowed, soil samples for chemical analyte detection were taken at the following depth intervals, 3" to 6", 12" to 18", 18" to 24", 36" to 42", and 6" above the top-of-rock. Figure 3.2 is a simplified boring diagram. The exact locations of the borings were surveyed by surveyors from the Corps of Engineers, Louisville Engineering District. The locations for borings 07/09-10-90, 07/09-12-90, and 07/09-13-90 were not surveyed. The locations of the unsurveyed borings were determined using measured distances from known points (i.e. groundwater monitoring wells.) At least two distances were used to fix the location of each boring. The boring numbers are contractions made up of the IAS and SWMU numbers (07/09), the boring site number (7), and the year in which the boring was drilled (90).

Table 3.1
Bore hole locations. Coordinates in Indiana State Grid Coordinates.

Boring Number	Northing	Easting	Elevation
07/09-1-90	485267	572841	543.58
07/09-2-90	485268	572829	544.42
07/09-3-90	485162	573382	510.99
07/09-4-90	485206	573127	520.27
07/09-5-90	485410	573351	509.50
07/09-6-90	485291	573472	505.42
07/09-8-90	485141	573223	514.36
07/09-9-90	485190	573296	512.95
07/09-10-90	484722	573135	504.77
07/09-11-90	484606	572982	513.50

3.2.0 FIELD METHODS. At the ORR hand augering was used inside of the flash pits. The objective of the sampling was to collect samples from the various soil intervals within the pit. Care was taken so as to not puncture the impermeable plastic pit liner which lined the bottom of the pit structures. Figure 3.3 is a schematic drawing of the pit structures. A cleaned shovel was used to expose the sand layer. Grab samples were taken using precleaned hand augers. Care was taken to prevent the sampler from contacting the hole walls. One 8-ounce sample of soil was taken for explosive and metal analysis from each soil layer. The gravel layer was not sampled.


600
550
06C16
06C15
06-15/17
500
06C14
07/09-5-90
07/09-10-90
FLASH PIT
06-21
07/09-1-90
07/09-1A-90
07/09-4-90
06-22
07/09-6-90
06-20
07/09-9-90
07/09-8-90
07/09-3-90
06-23
06C17
550
07/09-2-90
06-18/06C09
500
07/09-12
06C13
07/09-13-90
07/09-7-90
06-19
07/09-11-90
06C18
06-14A
06C12
500
550
06C11
600
650
N
LEGEND
BORINGS
MONITORING WELLS
OLD RIFLE RANGE
SWMU 07/09
TOPOGRAPHIC MAP
BORING & MONITORING
WELLS LOCATIONS
250 125 0 250
SCALE IN FEET
FIGURE 3.1

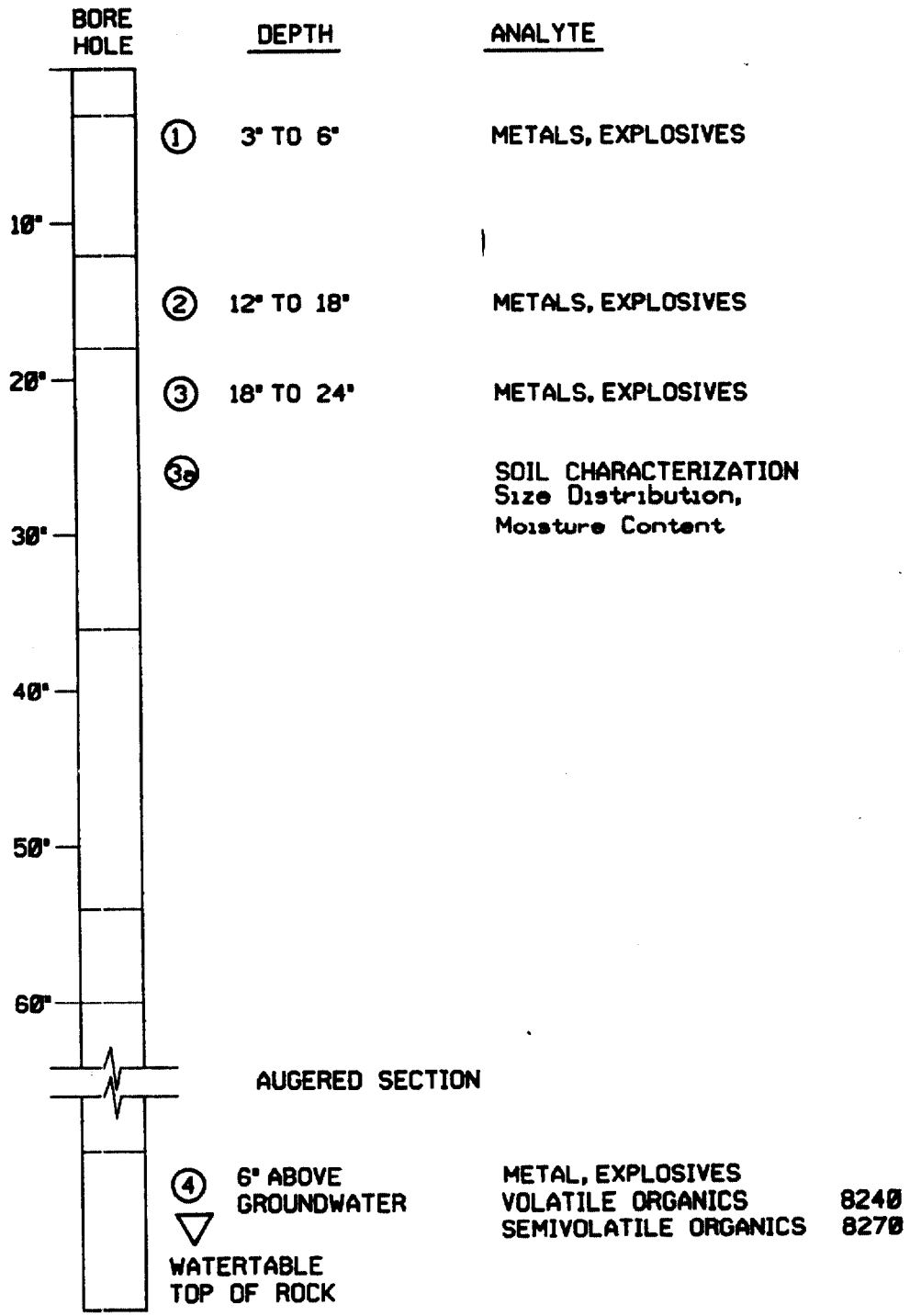
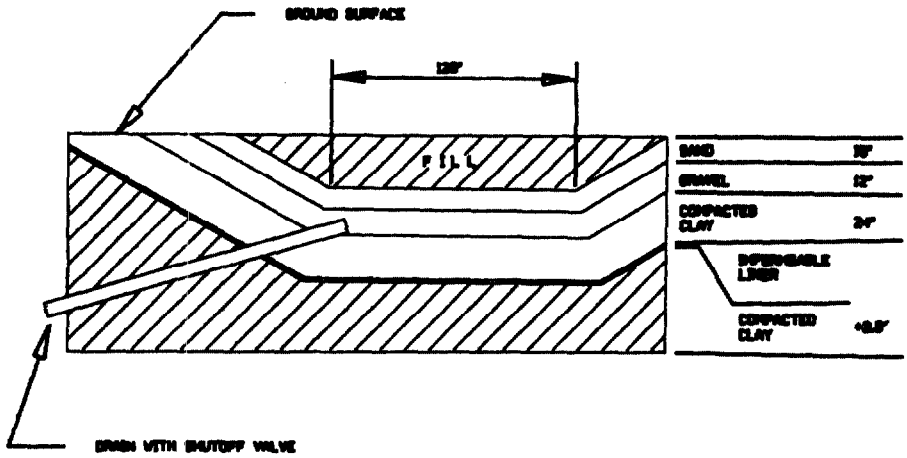
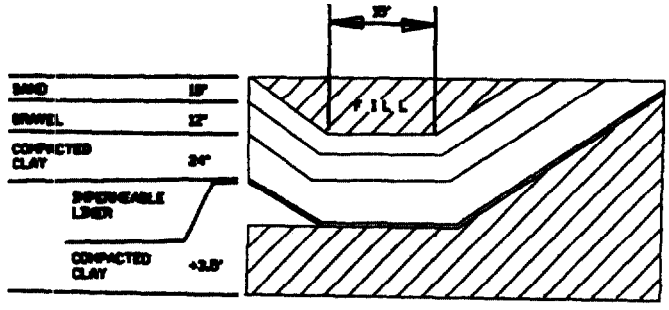


Figure 3.2
Diagram of Boring Log with Sample Points
NWSC Crane Phase II Soils



SIDE VIEW



END VIEW

Figure 3.3
Schematic of Flashing Pit Construction

Soil borings outside of the flash pits were placed using a Failing 1500 drilling rig equipped with a hollow stem auger. Samples were taken at specified depths. All sample depths were above the groundwater table and top- of-rock. A shelby tube sampler was advanced through a hollow stem auger, pressed to its full length, and then extracted. At the surface the soil was extracted from the sampler, peeled, and bottled in the shortest time possible. Peeling is the process that removes the portion of the sample which is in direct contact with the sampler. Ends of the sample were not used. Samples for volatile analysis were taken, bottled, and capped within 15 seconds from the time the sampler was opened. All other samples were extruded into wide- mouth glass jars or other containers with minimal disturbance of the sample. One 8 ounce soil sample was collected for inorganic and explosive compound detection. The auger advanced to the vicinity of the groundwater table or top-of-rock whichever was encountered first. At that point a sample was taken. This sample was analyzed for the presence of explosives, inorganics, and Appendix IX organics. One 8-ounce soil sample was collected for inorganic, explosive, and semivolatile compound testing. Two 40 mL samples were taken for volatile compound analysis. Following sample collection, the hole was backfilled using a cement grout and drill cuttings. The cuttings from the first 5' of the hole, not removed for sampling, were contained in drums. The drums were marked and left on the site. The markings included information describing the contents of the drum, and the boring from which the cuttings were taken. NWSC, Crane took custody of the drums and are responsible for the disposal of their contents.

Soil samples were collected and placed into sterilized (ICHEM) sample jars, bottles, and vials. The sample jars or bottles were then sealed. The sealed containers were placed in locked ice chests (coolers) for storage at a temperature of 4 degrees Celsius. Preservatives were not used. The coolers containing the samples with their accompanying Chain of Custody forms were transported to the analytical lab for analysis. Transport was by an overnight, air freight carrier service. A seal was placed on each cooler to ensure that the samples had not been disturbed during transport to the laboratory.

3.3.0 CHEMICAL TESTING. The soils were tested for the presence of explosives, inorganic metals, volatile organics, and semivolatile organic chemicals. A full list of analytical parameters are shown on Table 3.2. A list of the organis compounds looked for are shown on Tables 5.8A and 5.10A. The decision to select certain chemical compounds for analysis was based on the probability of the contaminant being found at the site. The area was used to treat solid and aqueous explosive (H-6, "D", Amatol, Ninol, Comp A-3, TNT, Tritonal, and black powder) waste, and to reclaim metallic parts from assorted munitions. In each soil boring one set of samples was collected for organic compound analysis. This analysis was determined to be necessary because organic chemicals are commonly used in industry and they are used in various munitions.

Since 11/81 the ORR groundwater has been monitored for water quality. Maximum contaminate levels (MCLs) which are found in the National Primary and Secondary Drinking Water Regulations, 40 CFR 141,142, and 143, were used as the basis for determining groundwater contamination. Groundwater contamination was detected during the 1981 groundwater sampling program (Dunbar, 1982 & HMTC, 1985). Concentrations exceeding Drinking Water Standards of metals, explosives, and phenols were found in some of the samples. The results from the groundwater analysis completed in 1989 indicated that no MCLs were exceeded.

Table 3.2
LIST OF PARAMETERS

Explosives	Inorganics		Organics
HMX	Aluminum	Lead	8240 Volatiles
TNT	Antimony	Magnesium	8270 Semivol.
RDX	Arsenic	Manganese	
TNB	Barium	Mercury	
2,4 DNT	Beryllium	Nickel	
2,6 DNT	Cadmium	Phosphorus	
TETRYL	Calcium	Selenium	
	Chromium	Silver	
	Cobalt	Sodium	
	Copper	Thallium	
	Iron	Zinc	

To ensure the samples and their resultant chemical data is representative of the site conditions, a quality control program was started. The Quality Control (QC) Level selected for the ORR investigation is a level"C". This QC level is explained in the Naval Energy and Environmental Support Activity (NEESA) guidance 20.2-047b "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program". The Navy's plan require the usage of EPA approved methods when available, a duplication of 10% of the samples, the collection and analysis of rinsate blanks on a daily basis, the collection and analysis of field blanks (source water samples), and the use of trip blanks with all VOC Shipments. The intent of this plan is to insure that data collected is comparable with known conditions, that sources of extraneous contamination can be determined and that decisions made during the data are meaningful and supported.

As part of this quality control program, a sample tracking procedure was used. This process starts in the field with chain of custody procedures and sample isolation and preservation. The tracking procedures are continued in the laboratory. A complete laboratory quality assurance/quality control plan was followed. Document management was started upon the receipt of the samples. Log books, bench sheets, and reports were kept. All data is checked by the analyst, the inorganic team leader or the organic team leader, and the laboratory Chief before the data was released. The data was checked for completeness. The completeness check was to ensure that: (1) all samples and analyses have been processed, (2) complete records including Chain of Custody for each analysis and associated QC samples were used, (3) procedures specified in project planning were followed, and (4) all calibrations were performed. The following items are checked:

1. Completeness,
2. Duplicate values for precision,
3. Recovery of spikes for accuracy,
4. Method blanks for contamination,
5. Surrogate recoveries for organic analysis,
6. Data for QA check samples, and
7. Reasonableness and trends.

If data fell outside of acceptable limits as described in the analytical method's procedures, the sample was rerun if the required amount of sample was available. If the rerun results continued to fall outside acceptable limits and the QA check sample data was good, then data may be reported with qualifying explanations. Acceptable data was usually defined by the specific procedural method (i.e., SW-846).

Final data reports went through several review and approval levels. The generated data was finally checked for validity. The data was evaluated with respect to:

1. Detection limits,
2. Control limits for duplicates, spikes, blanks, and surrogates,
3. Data control within control limits and corrective actions, and
4. Flagging of consistently out of control data.

A validation report was prepared as a final step in the data preparation process.

3.4.0 PHYSICAL PARAMETER ANALYSIS. Soil samples were characterized using standard US Army Corps of Engineers geotechnical methods. These methods are found in Corps of Engineers' manual EM 1110-2-1906, Laboratory Soils Testing, 1970. The soil samples were described and classified in the field by the field crew and in the laboratory by the analyst. The lab classification consisted of a visual classification, a sieve and hydrometer analysis, determination of natural water content, Unified Soil Classification System classification, and organic content. The sieve analysis determines the gradation of grain sizes ranging from the number 4 sieve to the number 200 sieve. To determine the percentage of silt and clay in the fine fraction of the sample, hydrometer analytical methods were used.

4.0 SITE CHARACTERIZATION

4.1.0 GEOLOGIC SETTING. The Old Rifle Range is located on the Crawford Upland, a rugged, dissected plateau formed by differential erosion of Pennsylvanian and Mississippian Age shales and sandstones of the Mississippian Age Stephensport Group Big Clifty Formation. The ORR is situated in the dissected alluvial valley of Turkey Creek. The surrounding hills are formed by rocks of the Pennsylvanian Age Raccoon Creek Group. The unconsolidated sediments of the ORR site are composed of residual soils formed by weathering of the underlying parent rock, alluvium, and colluvium derived from the hillslopes.

The geology of the ORR site was characterized with 15 groundwater monitoring borings and clayey gravel (Dunbar, 1984), the 13 auger borings described in Section 3.0 FIELD METHODS, field observations, and physical soil test data. The location of the borings are presented in Figure 4.1. Geologic Sections A-A', B-B', and C-C' (Figure 4.2, 4.3, and 4.4, respectively) are modified from Dunbar (1984). Description of the sections and the drilling logs were presented in the Dunbar (1984) report. The stratigraphic assignment of the sandstone is changed from Hardinsburg to Big Clifty Formation to reflect the recent investigations by Hunt (1985). Geologic section D-D', E- E', and F-F' (Figures 4.5, 4.6, and 4.7, respectively) present the 1990 soil auger boring data. The detailed individual field boring logs are found in Appendix A. Collectively, the sections portray the soil and rock stratigraphic relationships to the flashing pits at the site.

4.2.0 SOIL CONDITIONS. The soil thickness at the ORR site ranged from less than 2 feet to almost 30 feet. The areal variability of soil thickness is shown on Figure 4.8. The top of rock surface map (Figure 4.9) reflects the erosional effects of the ancestral Turkey Creek and its tributaries. Comparison of Figure 4.8 and 4.9 indicate the thickest soil corresponded to areas of deepest incision of the top-of-rock surface. The thicker (greater than 15 feet) packages of soil are alluvial and colluvial filling of the Turkey Creek Valley. Prior to fluvial incision, a residual soil formed from the weathering of parent rock material. Remnants of the residual soil make up a portion of the soil stratigraphic sequence.

The soil auger borings were classified according to the Unified Soil Classification System (USCS). The soil types which compose the ORR site soils are predominately clays and clayey gravels (CL, CH, and GC). The surface clays contain roots and natural organic debris. Throughout the clay soil profile are iron oxide concretions and manganese stains. The concentration of concretions seems to be related to the zone of seasonal fluctuation of the water table. The clay (CH) represents the residual soil, a weathering product of the shale as observed in borings 07/09-1-90, 07/09-4-90, and 07/09-11-90.

The clay (CH) found in boring 07/09-3-90 is an isolated lens in the alluvium or possibly a paleosol. The clayey gravel (GC) unit is colluvial infilling and alluvial reworking of sediments coming into the Turkey Creek valley from the surrounding hillslopes. The gravel portion of the clay (GC) is chiefly gravel sized sandstone fragments. The clay (CL) was deposited from hillslope sheetwash and/or Turkey Creek overbank processes. A thin (2 to 3 feet) layer of silty sand (SM) was found in borings 07/09-2-90, 07/09-3-90, and 07/09-7- 90. This silty sand bed is at the base of the alluvial sequence.

The alluvial and colluvial filling of ORR is visible on geologic section D-D' (Figure 4.5). The basal alluvial sand overlies top-of-rock. The colluvial fill, shown as the clayey gravel (GC), was deposited in two episodes. The first episode filled the area in the vicinity of 07/09-3-90. The fat clay (CH) was deposited then additional clayey gravel (GC) colluvium was deposited. The sequence was capped with lean clay (CL) by hillslope sheetwash and Turkey Creek overbank deposition. The residual soil unit represented by the fat clay (CH), overlying the parent rock material, can be seen on sections E-E' and F-F' (Figures 4.6 and 4.7, respectively). The composite soil stratigraphic sequence consisting of residual soil, colluvium, and alluvium is portrayed on section F-F' (Figure 4.7).

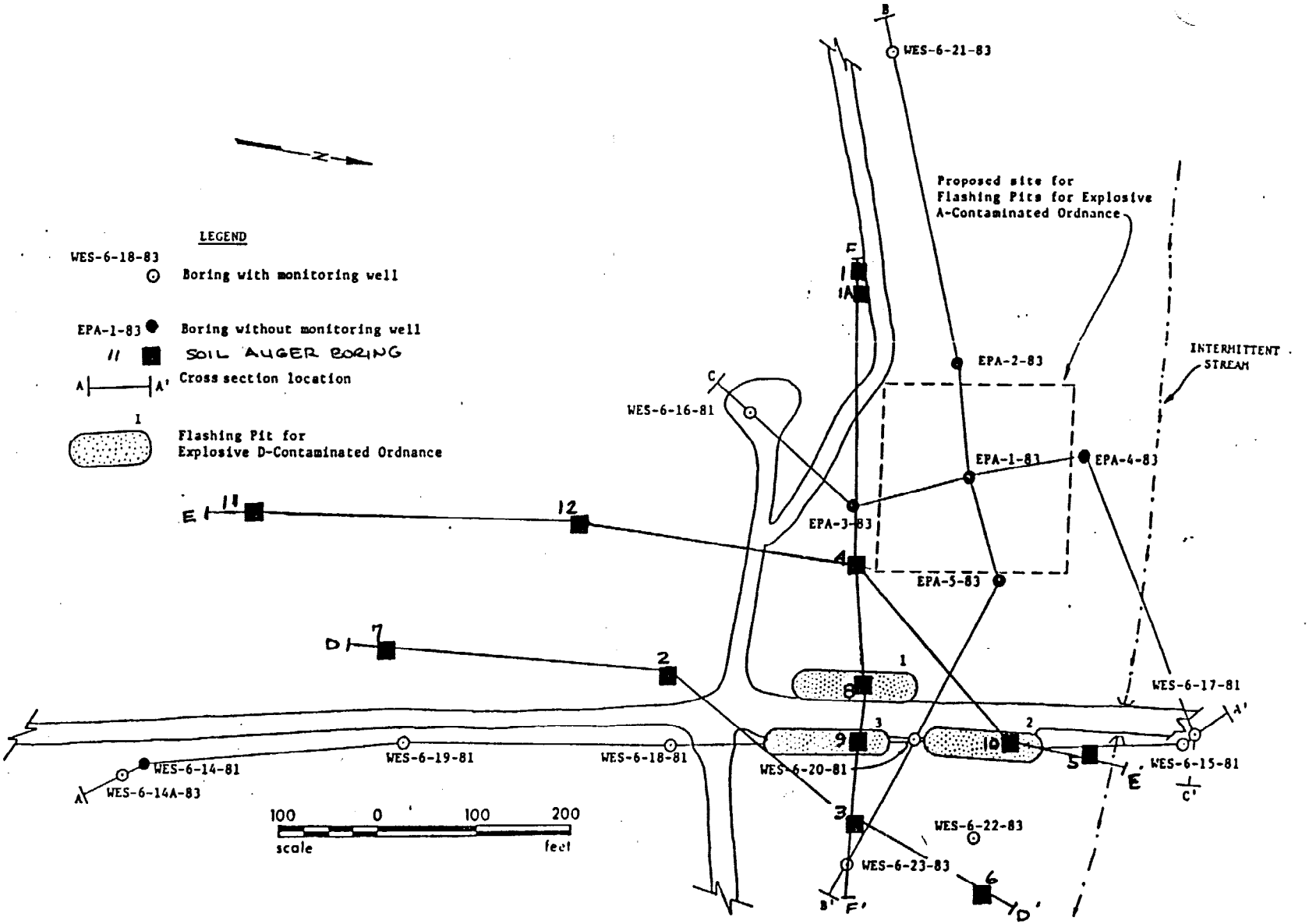


FIGURE 4.1 Old Rifle Range Boring, Monitoring Wells, Flashing Pits, and Cross Section Locations. (Modified after Dunbar, 1984)

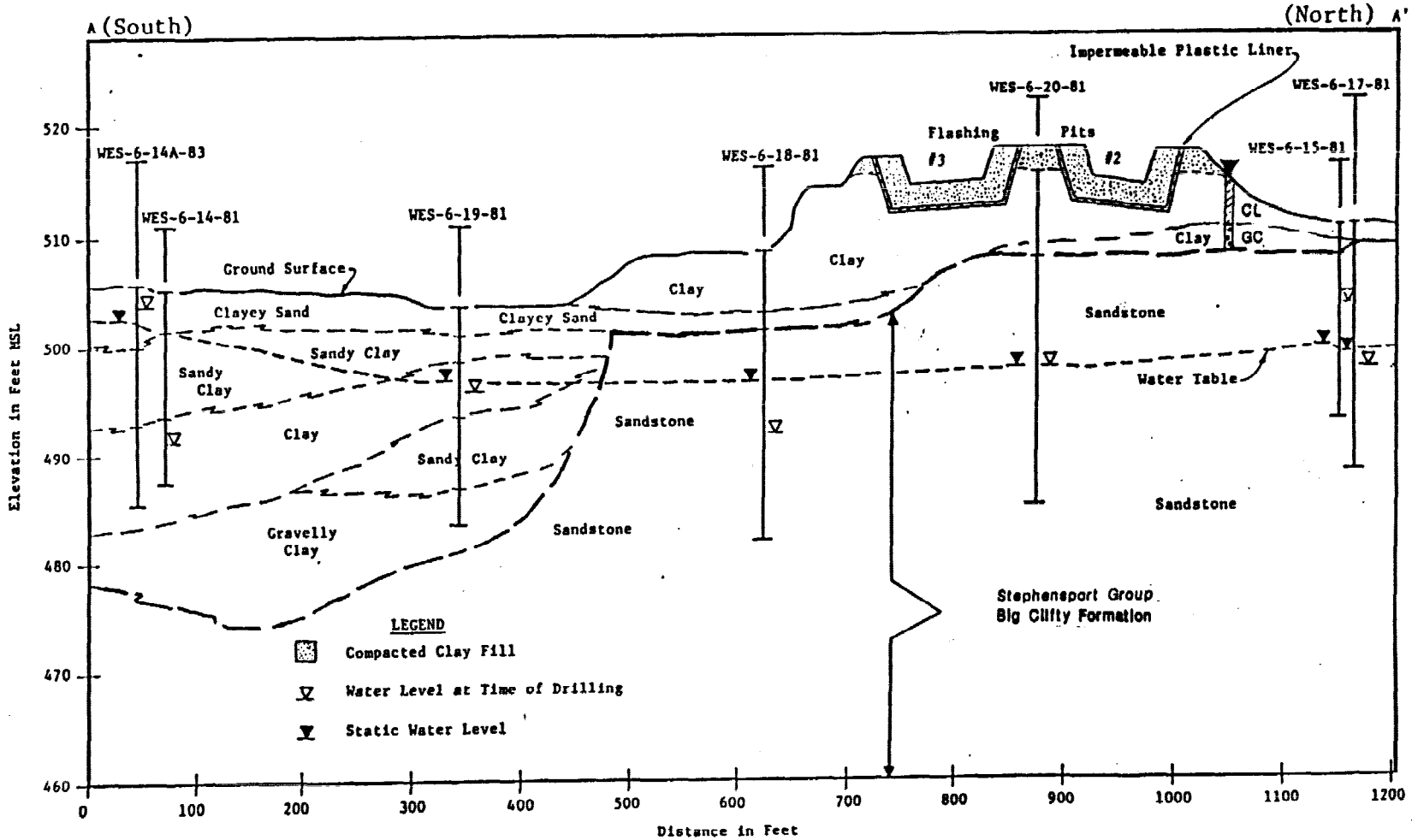


FIGURE 4.2 Old Rifle Range Geological Section A-A'.

(Modified after Dunbar, 1984)

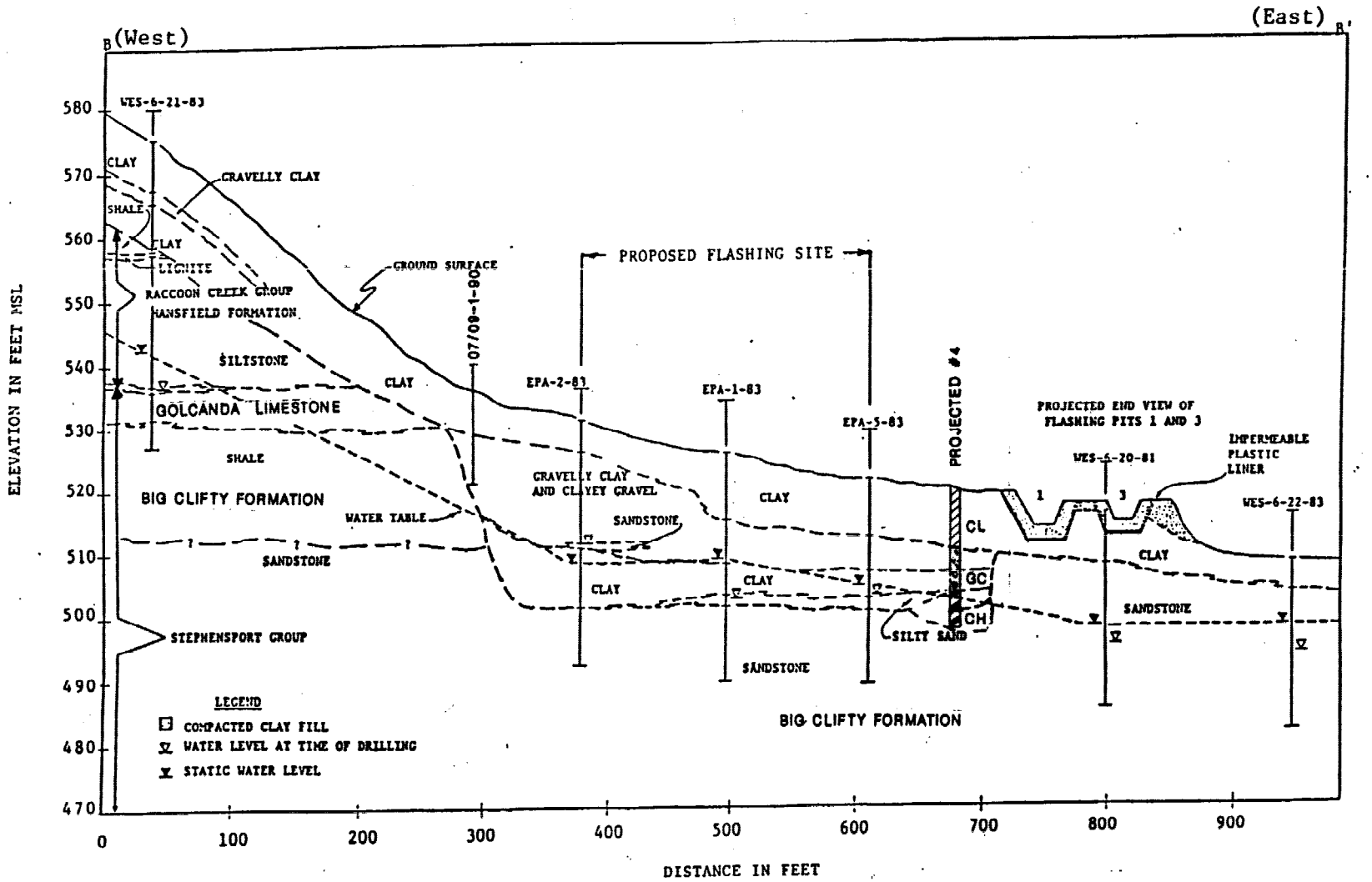


FIGURE 4.3 Old Rifle Range Geological Cross Section B–B'

(Modified after Dunbar, 1984)

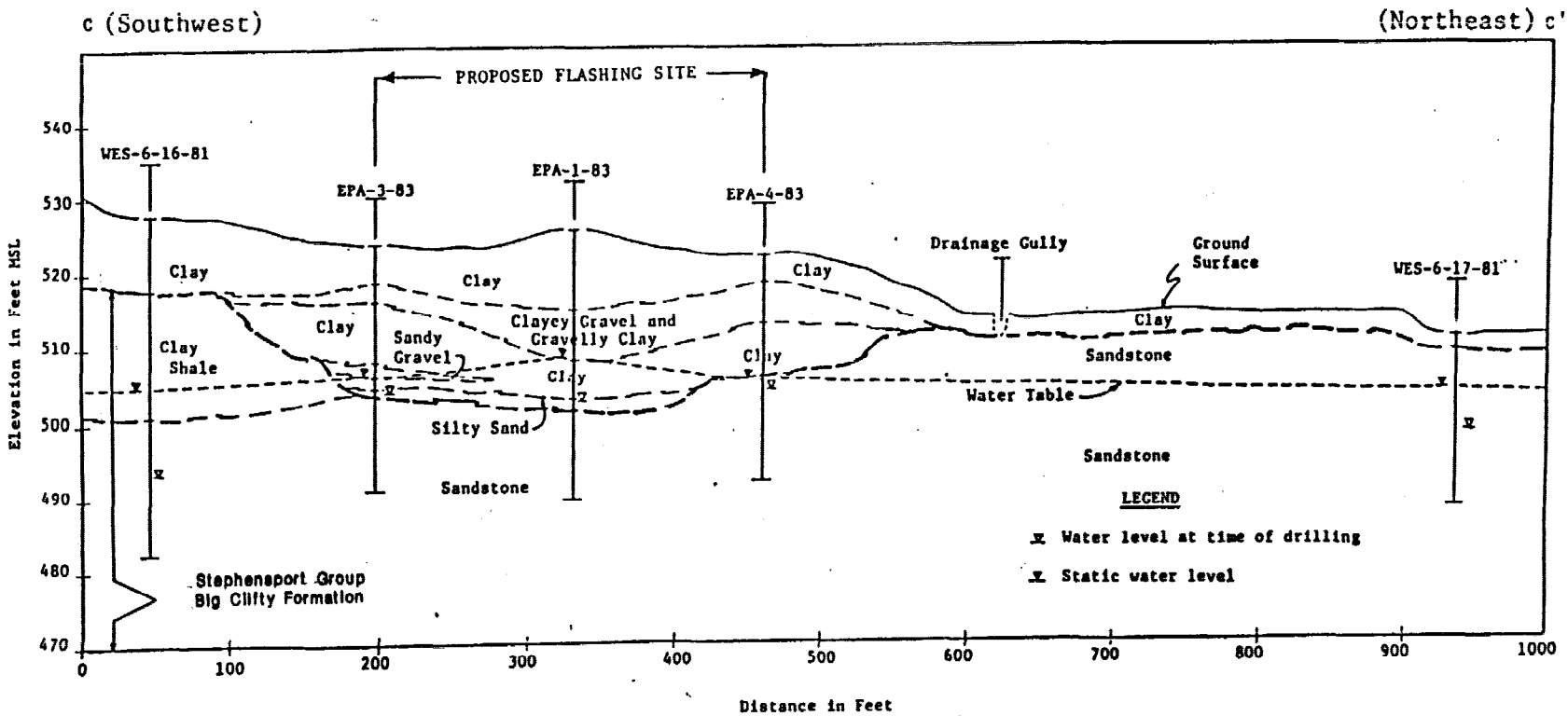


FIGURE 4.4 Old Rifle Range Geological Cross Section C–C'.

(Modified after Dunbar, 1984)

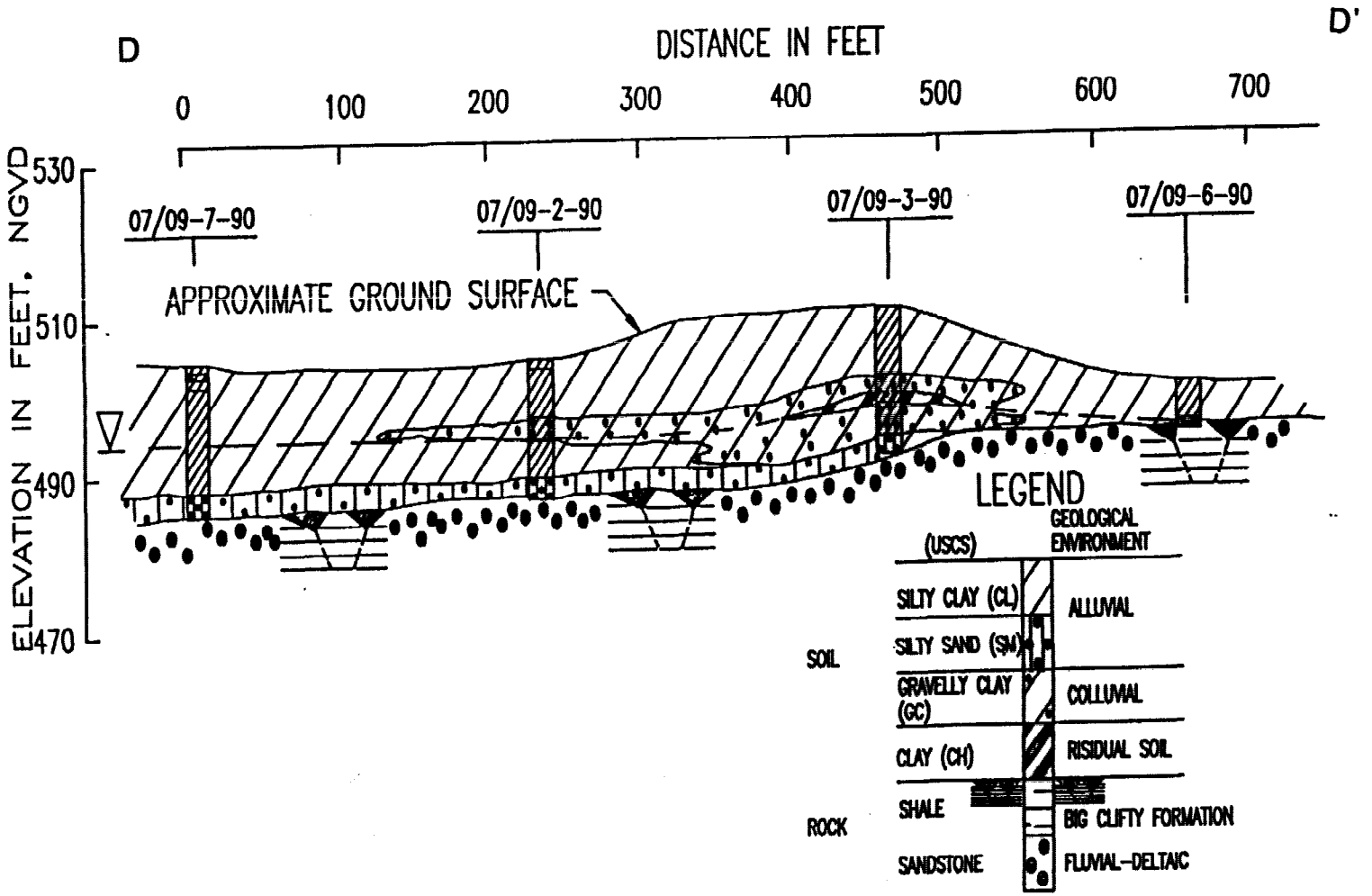


FIGURE 4.5 Old Rifle Range Geological Section D-D'

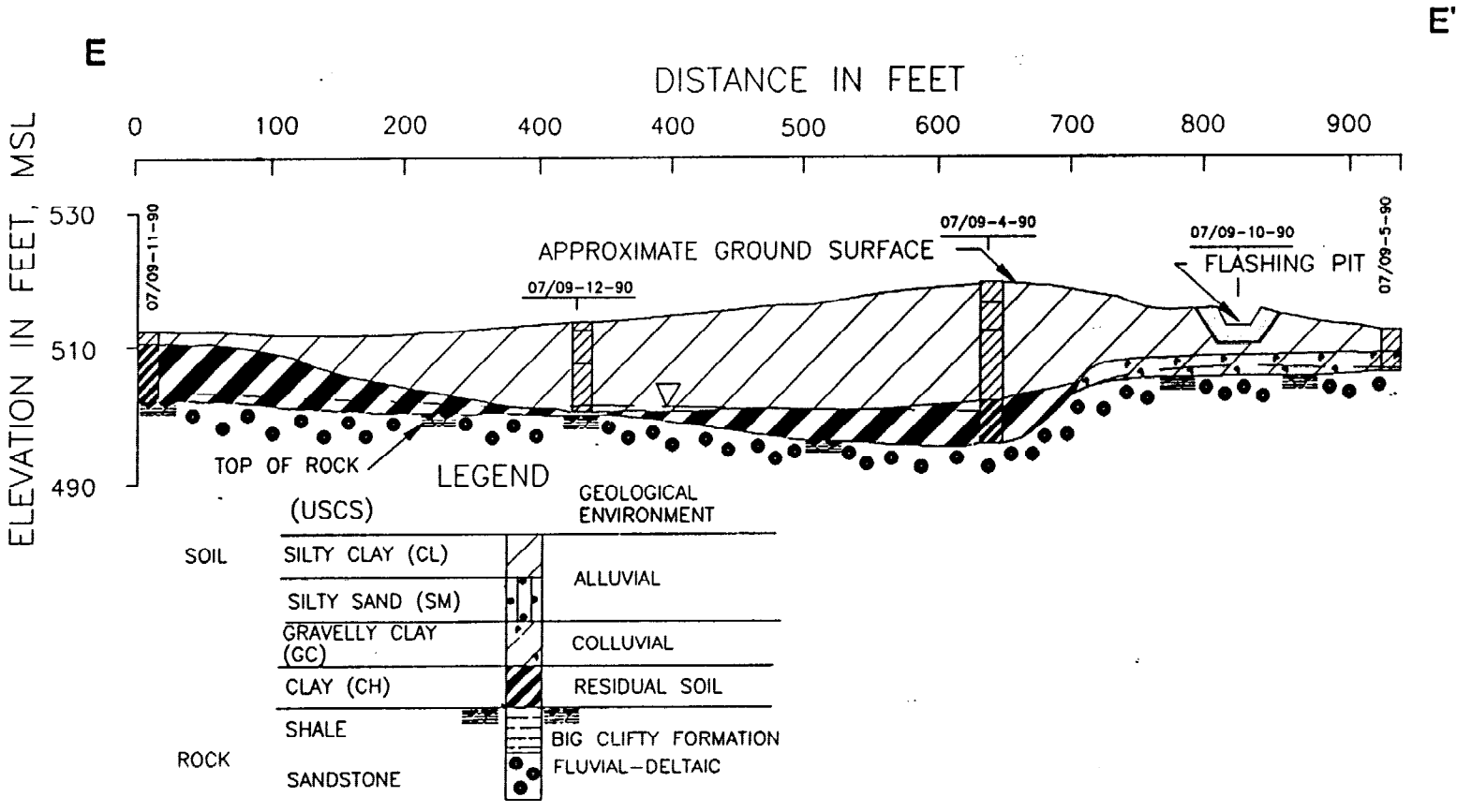


FIGURE 4.6 Old Rifle Range Geological Cross Section E-E'

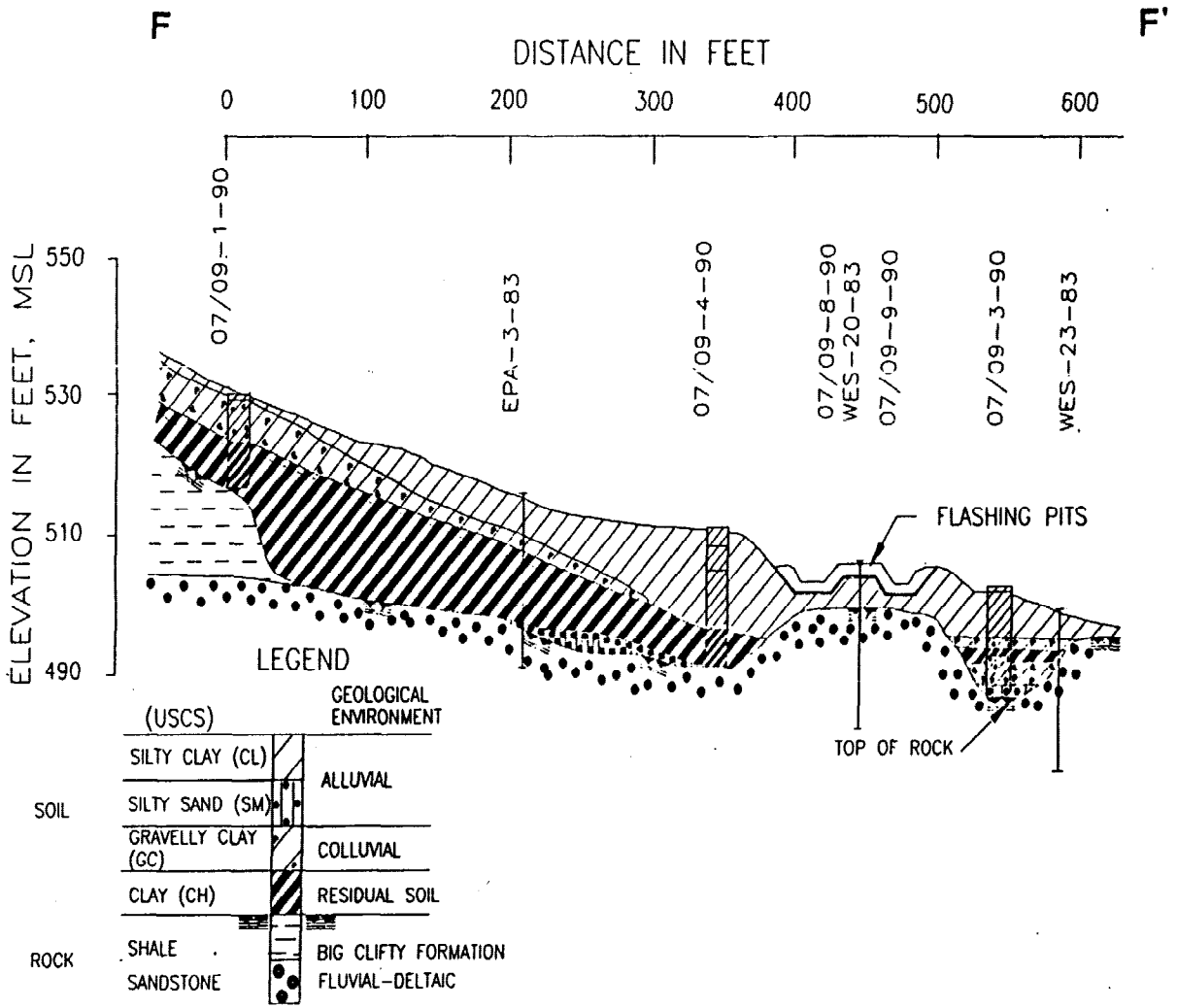


FIGURE 4.7 Old Rifle Range Geological Cross Section F-F'

CRANE OLD RIFLE RANGE

SOIL THICKNESS MAP

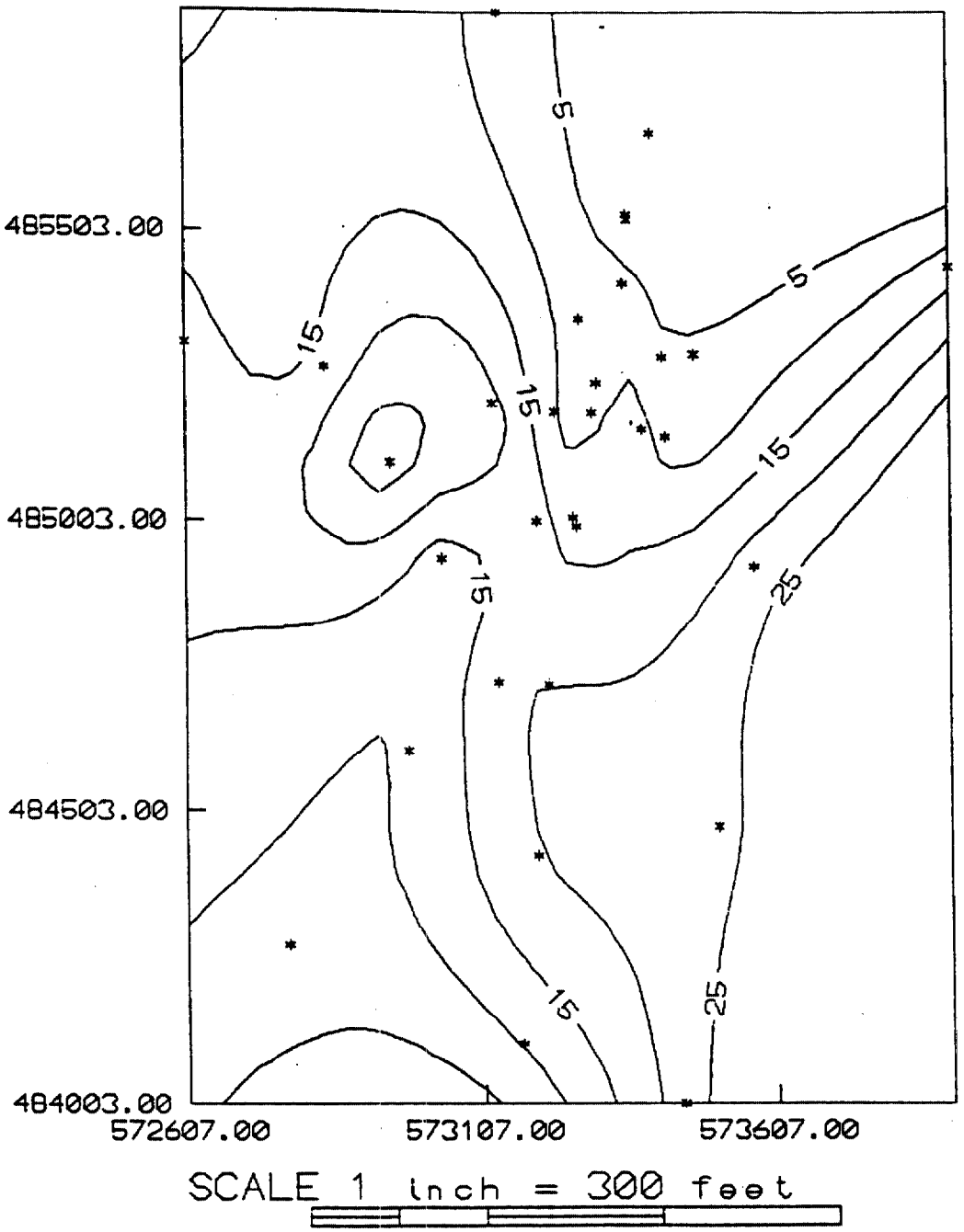


FIGURE 4.8

CRANE OLD RIFLE RANGE

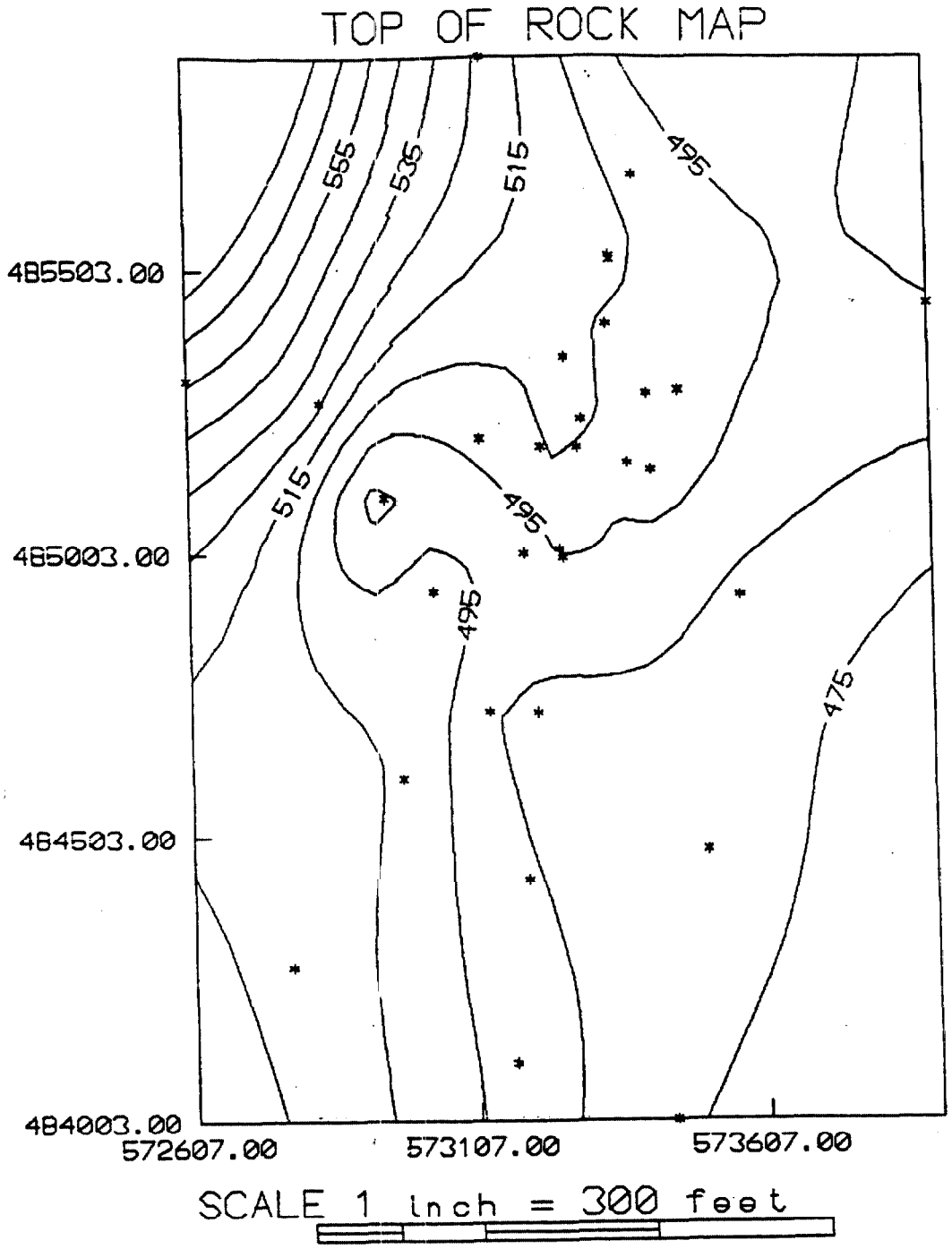


FIGURE 4.9

4.3.0 HYDROGEOLOGY. To obtain groundwater data the soil auger borings were left open, prior to grouting, to measure water levels. A water table map (Figure 4.10) was constructed utilizing the open auger boring water levels and measurements of groundwater levels in the nearby monitoring wells. Groundwater usually entered the borings when top-of-rock was encountered. In borings 07/09-5-90 and 07/09-6-90, water came into the hole when the clayey gravel (GC) was intersected. In boring 07/09-7-90, the silty sand (SM) bed above top-of-rock produced water. Therefore, the clayey gravel (GC) and the silty sand (SM) unit are conduits of groundwater flow. The movements of groundwater at the ORR site closely follows the top-of-rock surface. Comparison of the top-of-rock map and the water table map, (Figures 4.9 and 4.10), indicates the same southeastern trend towards Turkey Creek. Vertical infiltration of water through the soil also occures. This is evident by near vertical iron oxide stains seen in the soil.

CRANE OLD RIFLE RANGE

WATER TABLE MAP

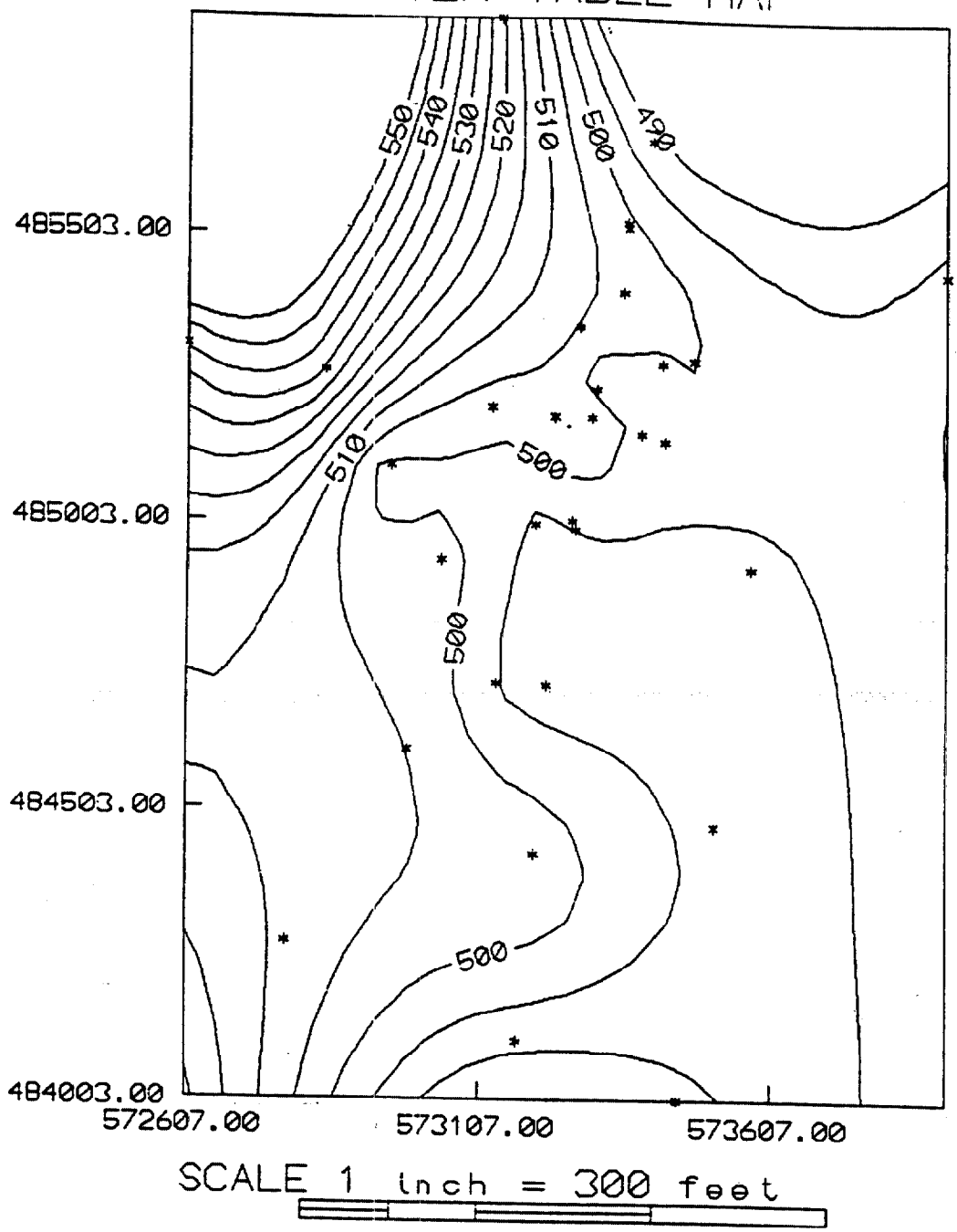


FIGURE 4.10

5.0 CHEMICAL ANALYTICAL RESULTS

5.1 INTRODUCTION. Thirteen test borings were made at the Old Rifle Range. (See Fig. 5.1).

For the purposes of data analyses, the following sample groupings are made. Borings 12, 11, and 1A were selected to be "control or background" borings. These borings were located several hundred feet to the southwest of the flashing pits (SWMU#07/09) and up-slope from those waste disposal facilities. Boring 1A was located adjacent to a groundwater monitoring well in which contamination was not detected during previous investigations (See Section 2.0 **PREVIOUS STUDIES**). Soils from borings 12, 11, and 1A were sampled to identify characteristics of soils in the vicinity of the flashing pits as if no waste disposal activities had occurred at those facilities, but all other influences on soil characteristics had taken place. Borings 7, 4, and 2 were near (within approximately 150 feet) and generally to the west and up- slope from the flashing pits. Borings 7, 4, and 2 were west of the road serving the area. Borings 6, 5, and 3 were near (within approximately 150 feet) and generally to the east and down-slope of the flashing pits. Borings 6, 5, and 3 were to the east of the service road. If contaminants are being released from the solid waste management units, the near borings (7, 4, 2, 6, 5, 3) should provide some indication of that occurrence. A release is defined as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, dumping or disposing into the environment. Borings 10, 9, and 8 were located inside the flashing pits. These samples were taken to provide characteristics of the residues left by the waste incineration processes.

The results of the chemical analysis performed on the soil samples are presented in tabular format. These data tables along with abbreviation definitions are found in Appendix A. To assist in data interpretation and determine sources of error, the results from the QC sampling analyses, the method blanks and equipment rinses, are given. All chemical data was checked for validity (Appendix D, Validation Letter).

To assure that the data is truly representative of existent site conditions a Quality Control program was started. This program consisted of running check samples to allow for the detection and quantification of laboratory and/or field induced contamination. The program also includes tests to determine to what degree the analytical results were repeatable and therefore, reliable. The number and kinds of check samples are determined by the level of QC. The Navy's QC Level C calls for 10% duplication, rinsate blanks collected each day and analyzed on alternate days, field blanks collected and analyzed for each water source used, and method blanks run at a rate of one per set of samples and at least once every 12 hours. (Method blanks are determined by following the procedure step by step including all of the reagents and solvents, in the quantity required by the analytical method. Method blanks are a measure of cumulative interferences from the laboratory or the analytical method. Equipment rinses are samples obtained by running analyte- free water over/through sample equipment after it has been cleaned. Analyses of equipment rinses are used evaluate equipment cleaning procedures and determine if sampling equipment contributed to cross contamination of field samples.)

Figure 5.1 shows the location of the test borings and the Old Rifle Range layout. Soil samples were taken from specific layers within the sample borings using 3 inch Shelby tubes. The depth from which each soil sample was taken and the dates of sample collection is indicated in Figure 5.2.

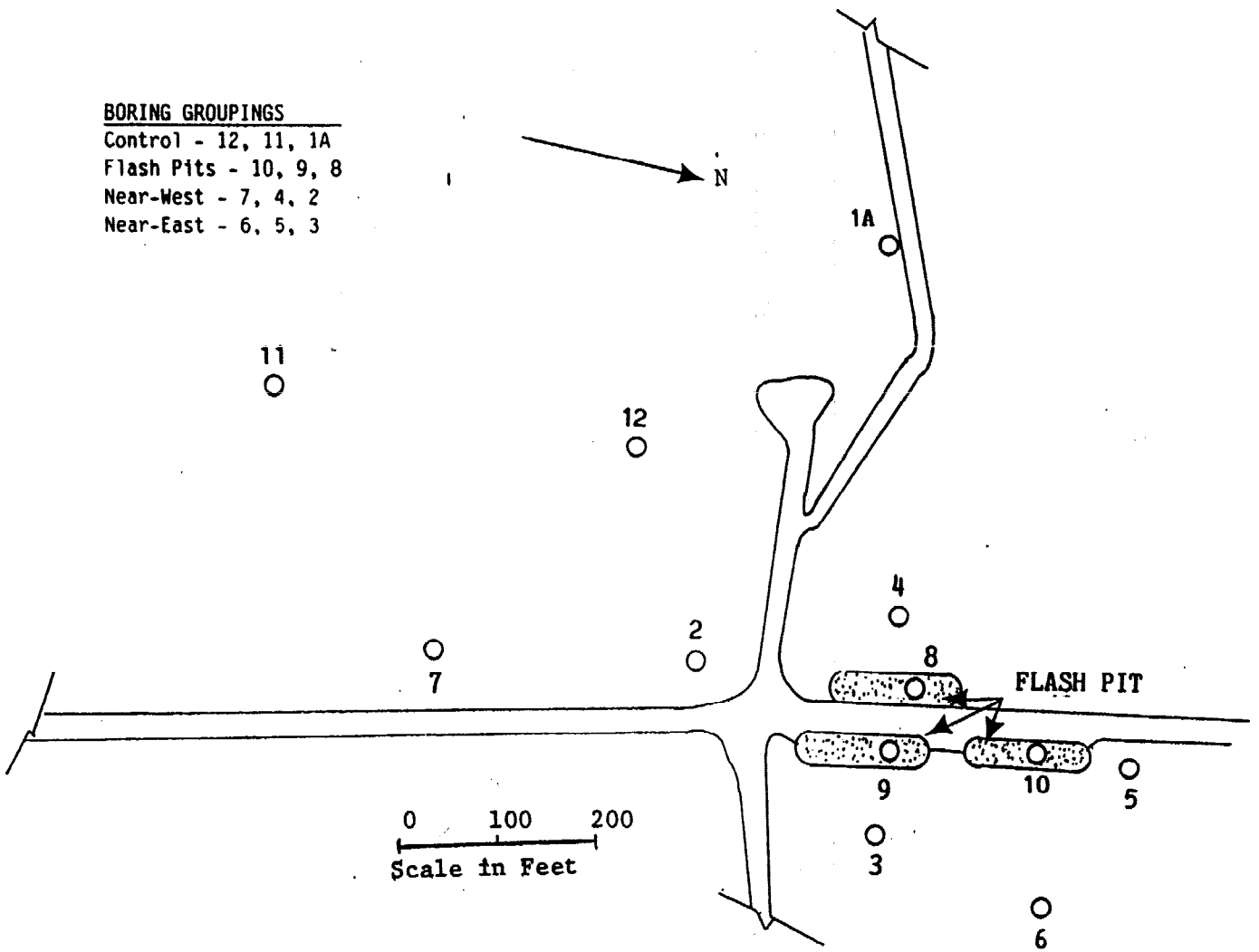


Figure 5.1 Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Location of soil borings and flashing pits. See Figure 5.2 for boring dates.

3-6 12-18 18-24 36-42
1 2 3 4
0-6 4 12

5, 6, 3, 9, 10

Mg 8-1 8-2 9-1 10-1

Cu 8-1 8-2 9-1 9-2 10-1 10-2

Pb 8-1 8-2 9-2 10-1 10-2 4-1 5-4

Sn 8-5

Fe 5-4

Be 5-4

Mn 5-2 5-3 5-4 6-2 6-3 6-4

Zn 8-1 8-2 10-1 10-2

Co 5-4 6-4

Ni 5-4 6-4

As 5-4

Cr 5-4

TP 6-1 6-2 6-3 6-4 5-1 5-2 5-3 5-4

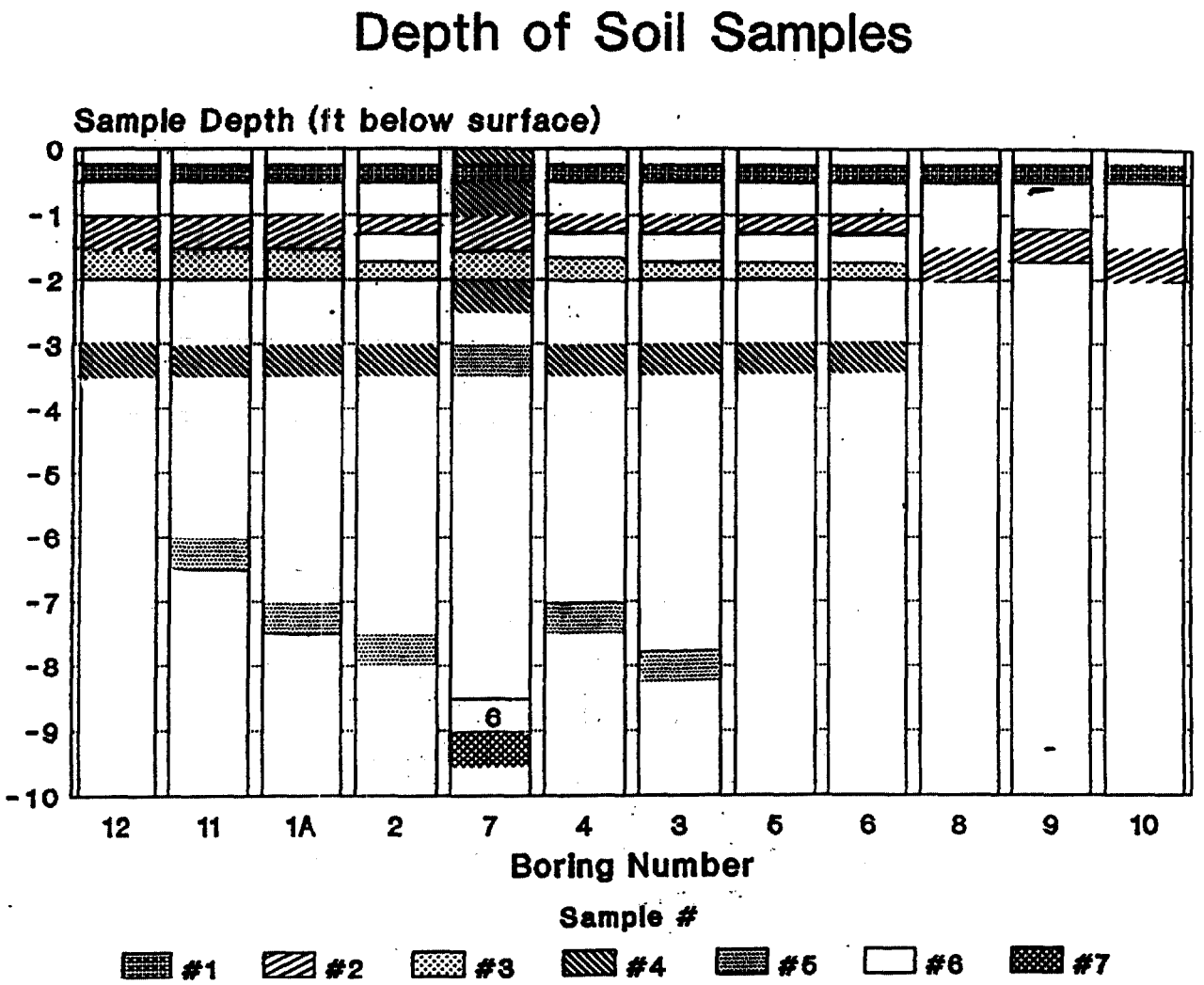
Na 8-1 8-2 9-1 10-1

Ba 5-1 5-2 5-3 5-4 6-2 6-3 6-4

Mn 5-2 5-3 5-4 6-2 6-3 6-4

Zn 8-1 8-2 10-1 10-2

Figure 5.2. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Depth of soil samples and dates of collection.



Old Rifle Range, NWSC Crane, Indiana
Dates Samples Collected

Control Stations		Up-Slope/West-of-Road		Down-Slope/East-of Road		Flash Pan	
Boring 12	02 AUG 90	Boring 2	01 AUG 90	Boring 3	26 JUL 90	Boring 8	04 AUG 90
Boring 11	31 JUL 90	Boring 7	30 JUL 90	Boring 5	25 JUL 90	Boring 9	03 AUG 90
Boring 1A	03 AUG 90	Boring 4	24 JUL 90	Boring 6	27 JUL 90	Boring 10	04 AUG 90

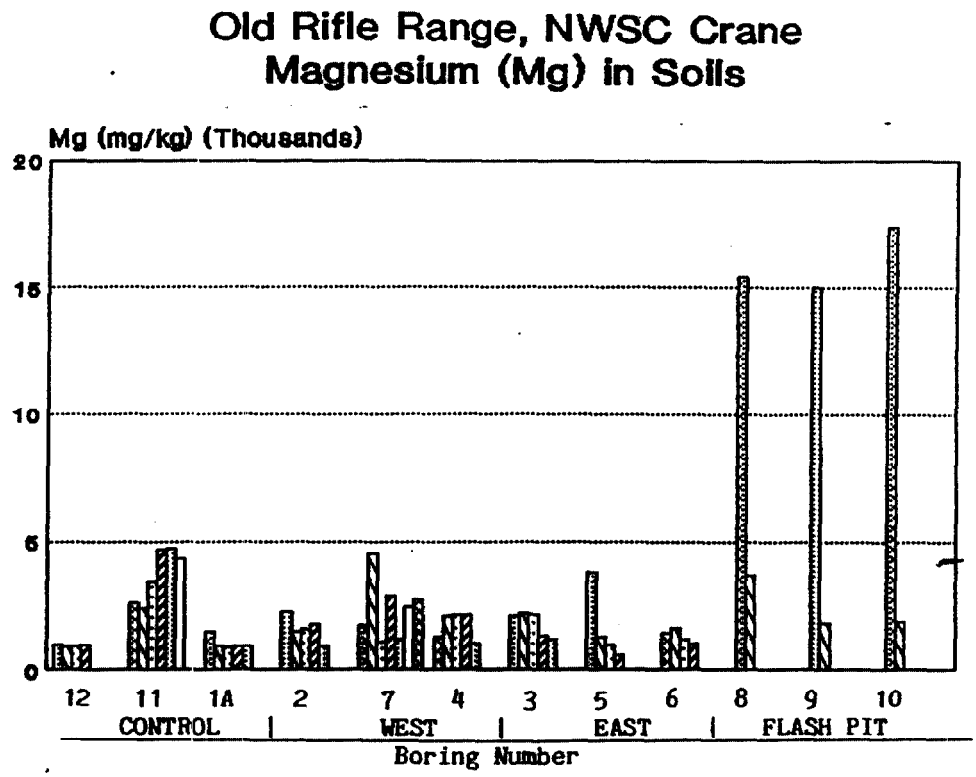
5.2 DISCUSSION

5.2(1) METALS AND INORGANICS. The results of analyses of Old Rifle Range soils for selected inorganic analytes are given in Table 5.1 (See Appendix A). Table 5.2 (See Appendix A) is a statistical analysis of the results of inorganic soils analyses. Analyte concentrations in the soils are given as mg/kg (ppm) on a dry weight basis. The detection limit is provided (following the < symbol) where specific metals in the soils were not detected. The results for specific inorganic constituents are also given graphically in Figures 5.3 through 5.10. These bar charts provide constituent concentrations for each sample taken from a boring. The bars are oriented from shallowest sample in the boring, on the left, to deepest sample in the boring, on the right. Figures 5.3A through 5.10A show the mean constituent concentrations for all samples from each boring.

Mercury was not present in detectable quantities in any of the soil samples taken. Cadmium, selenium, silver, antimony, and thallium were either not present in detectable quantities or were present in concentrations within 1.0 ppm of the detection limits for those metals. The results presented in Table 5.1 (See Appendix A) and summarized in Table 5.2 (See Appendix A) do not indicate significant differences in concentrations of these metals between soils from the control borings and those from the flashing pit borings and borings near the pits. Thus no release of these inorganic constituents is evident.

Figures 5.3 and 5.4 (discrete samples displayed) and Figures 5.3A and 5.4A (mean of all samples displayed) indicate a greater concentration of magnesium, copper, lead, and tin in flashing pit soil samples (borings 8, 9, 10) (tin only in boring 8) than all other samples. Highest concentrations determined in the flashing pit soil samples for these metals were: magnesium - 17,400 mg/kg; copper - 73.4 mg/kg; lead - 618 mg/kg; and tin - 340 mg/kg. The mean magnesium, copper, and lead concentrations for all soil samples from the flash pits were significantly greater ($P > .05$) than corresponding mean concentrations for the control samples (borings 12, 11, and 1A)(Table 5.2, Appendix A). Statistical evaluations were not performed on the tin data as the maximum tin concentration (340 mg/kg) was reported from one flash pit sample. Only two other samples, both from control boring 1A, had tin concentrations above the detection limits. These boring 1A samples had tin concentrations of 7.8 and 9.0 mg/kg. Waste flashing activities are likely leaving residues containing magnesium, copper, lead, and tin within the flashing facilities. The soils of the near borings east and west of the road do not contain mean concentrations of magnesium, copper, lead, and tin which significantly exceed those of the control borings indicating no evidence of a release of these metals in a gradient away from the flashing pits (Table 5.2, Appendix A).

The flashing pit (boring numbers 8, 9, and 10) soils had concentrations of iron, beryllium, cobalt, nickel, aluminum, barium, manganese, zinc, arsenic, and chromium that were comparable or less than the control or near- pit borings (Figures 5.5 and 5.5A, 5.6 and 5.6A, 5.7 and 5.7A, 5.8 and 5.8A, 5.9 and 5.9A). If the waste disposal activities were producing residues containing these metals it is likely that spikes indicating metals concentrations above background conditions would have been observed in the flashing pit samples. Soil samples from boring 11 had the highest concentration of aluminum, barium, manganese, zinc, and nickel of all samples taken (Figures 5.6, 5.7, and 5.8). Boring 11 was a "control" boring and the boring most distant from the flash pits. Soil samples taken from borings 2 and 5 had distinct concentration peaks (concentrations of analyte distinctly higher than other soil samples) of iron, beryllium, arsenic and chromium concentrations relative to the other borings sampled (Figures 5.5 and 5.9). The peaks in concentrations observed were from the deepest soil samples taken (sample 02/#5 - 3.0 to 3.5 feet and 05/#4 - 7.5 to 8.0 feet). Borings 2 and 5 exhibit a similar trend for cobalt (Figure 5.6). Because similar concentration peaks of these metal constituents were not found in the flashing pit samples, these findings are not believed to be the result of activities at the flashing pits. Whether the boring 11, 5, and 2 results represent natural variability in the chemical characteristics of the Old Rifle Range soils or some anthropogenic effect cannot be determined with available data. Based on these soils data, the waste disposal operations have not left iron, beryllium, cobalt, nickel, aluminum, barium, manganese, zinc, arsenic, and chromium as residues in the flash pit soils or contributed them as contaminants to nearby soils.



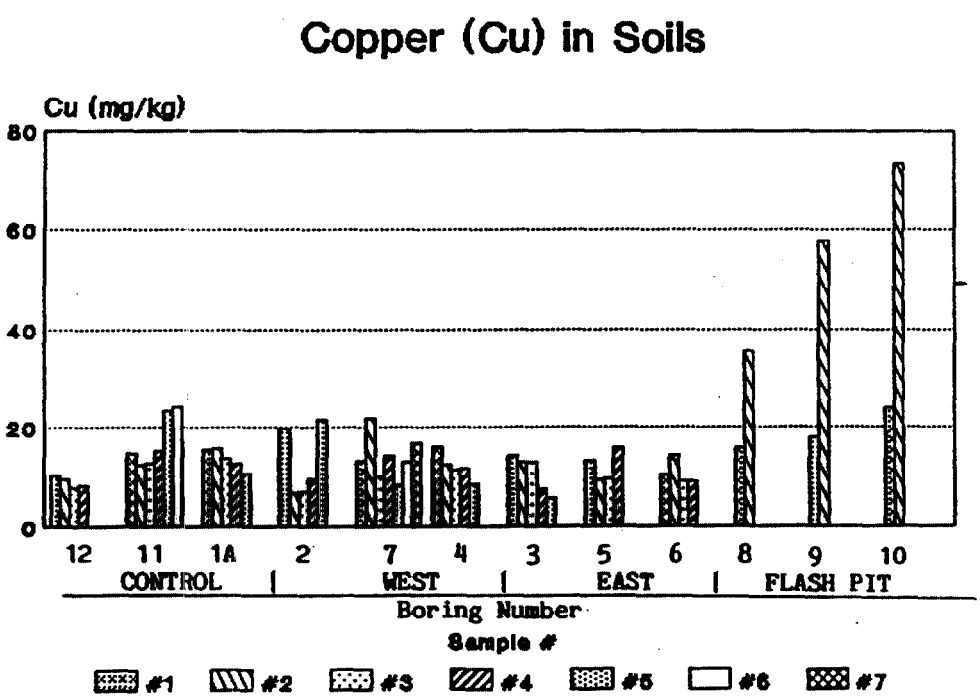
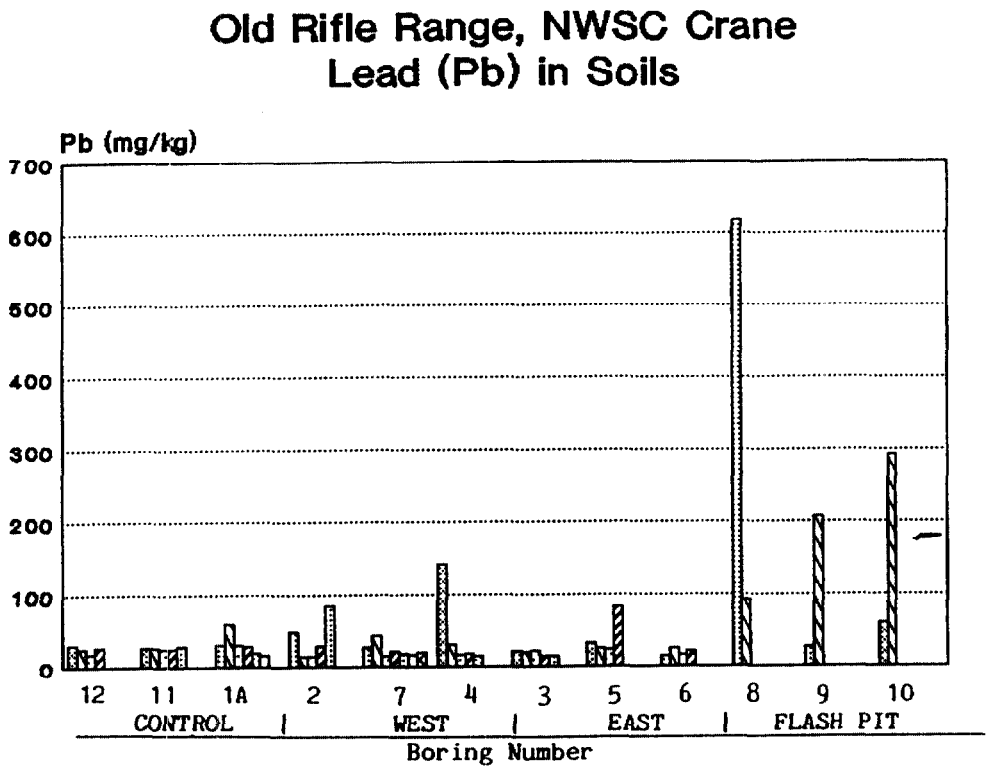


Figure 5.3. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Magnesium and copper concentrations in individual soil samples. All samples are shown in depth sequence for each boring. See Figures 5.1 and 5.2 for boring location and sample depth.



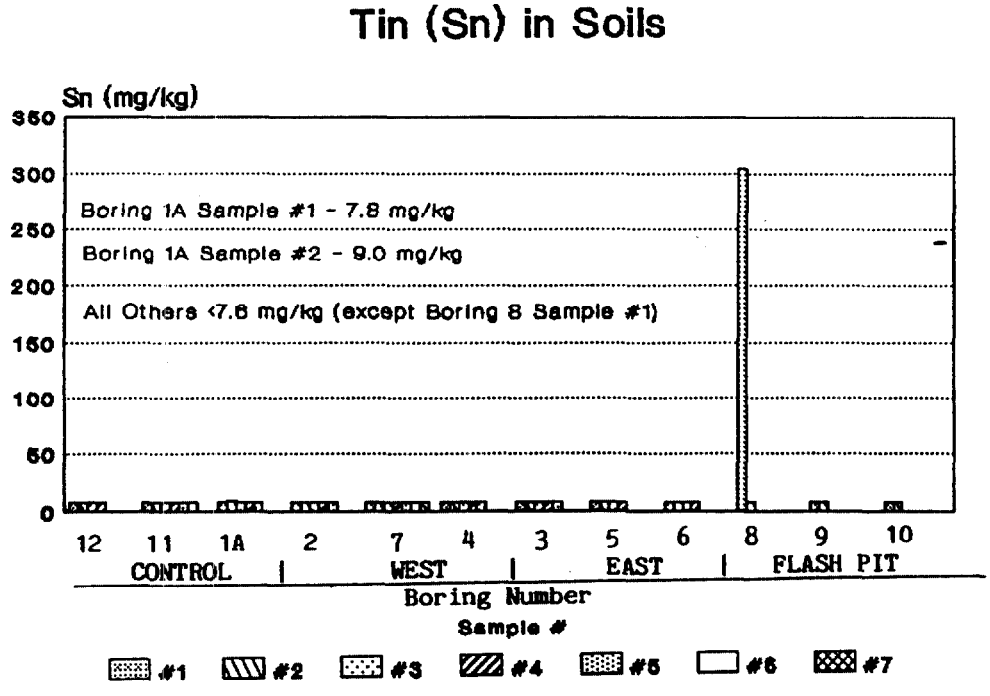
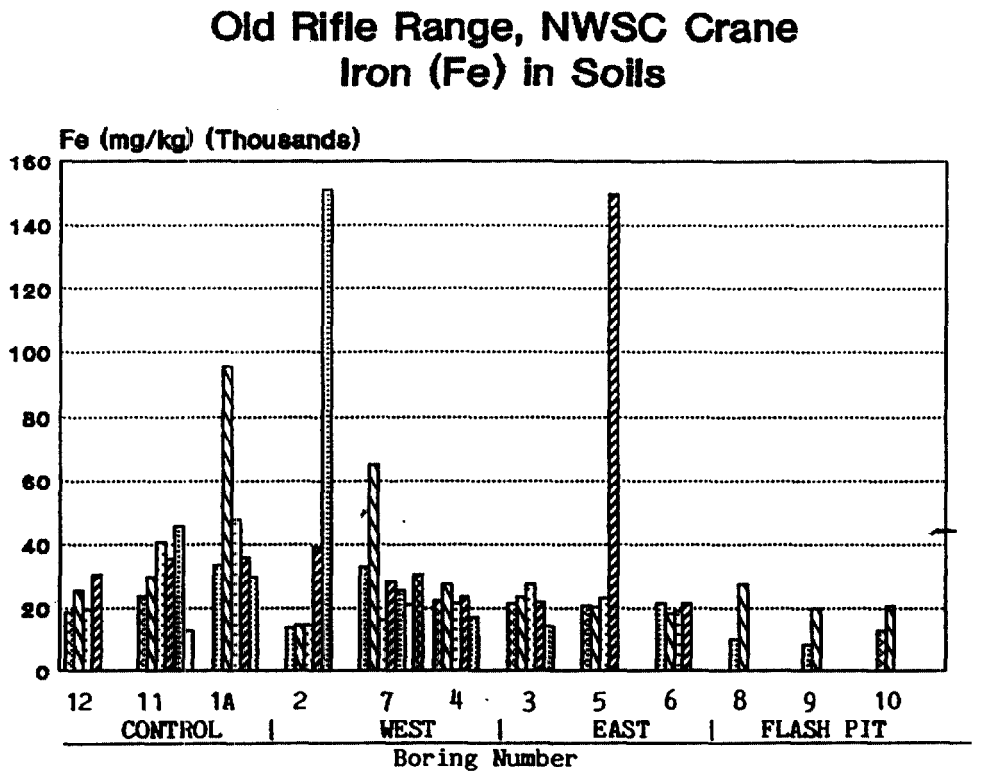


Figure 5.4. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Lead and tin concentrations in individual soil samples. All samples are shown in depth sequence for each boring. See Figures 5.1 and 5.2 for boring location and sample depth.



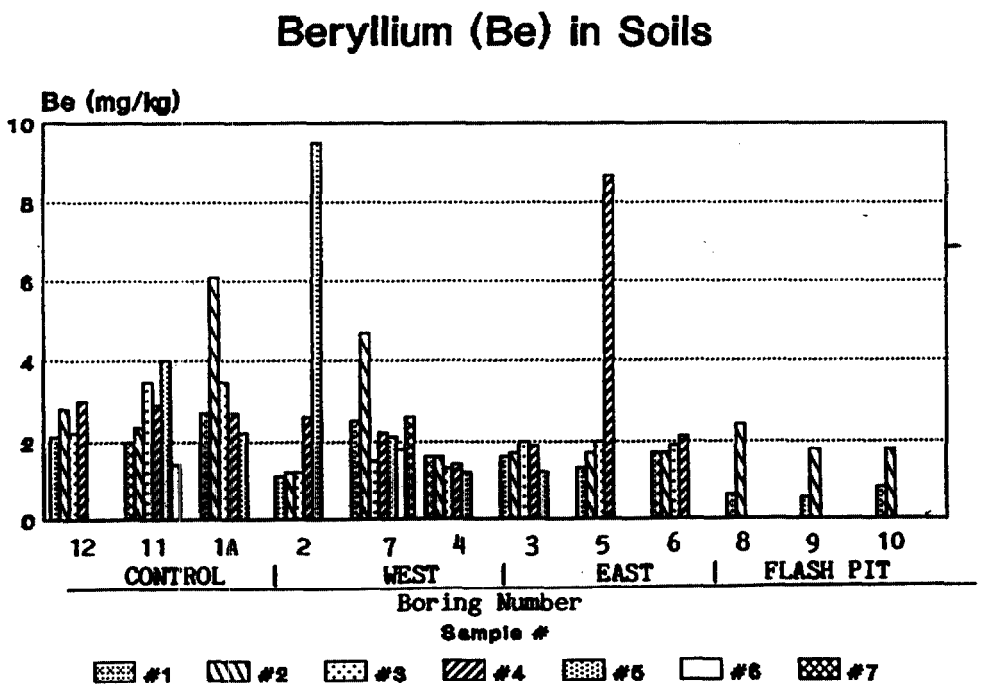
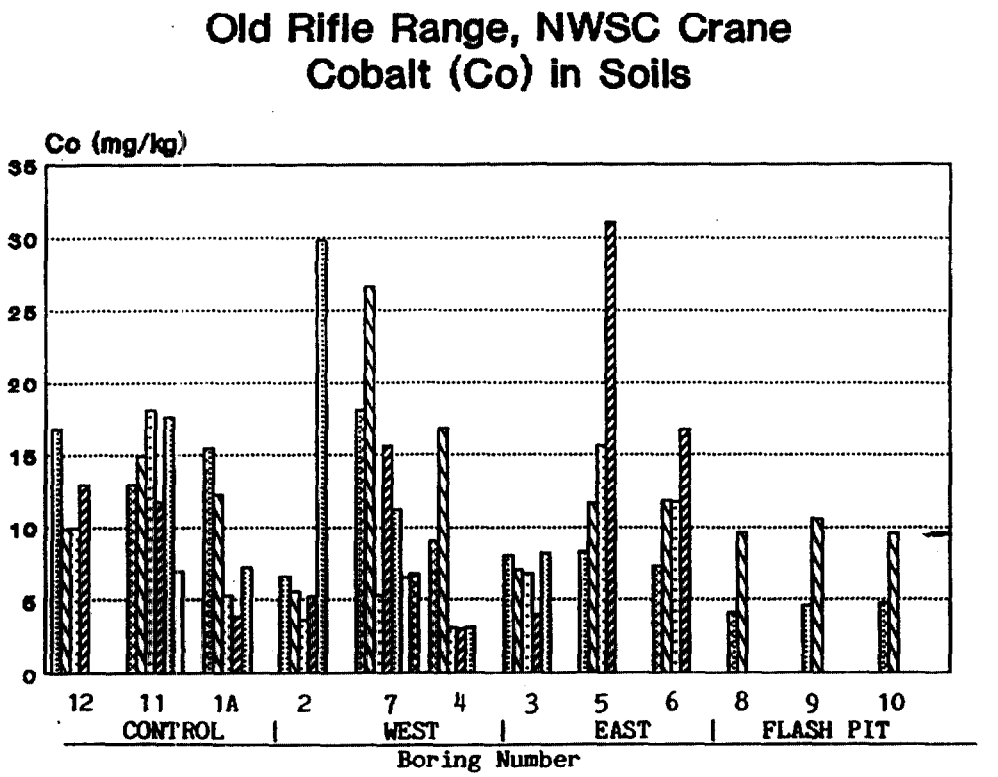


Figure 5.5. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Iron and beryllium concentrations in individual soil samples. All samples are shown in depth sequence for each boring. See Figures 5.1 and 5.2 for boring location and sample depth.



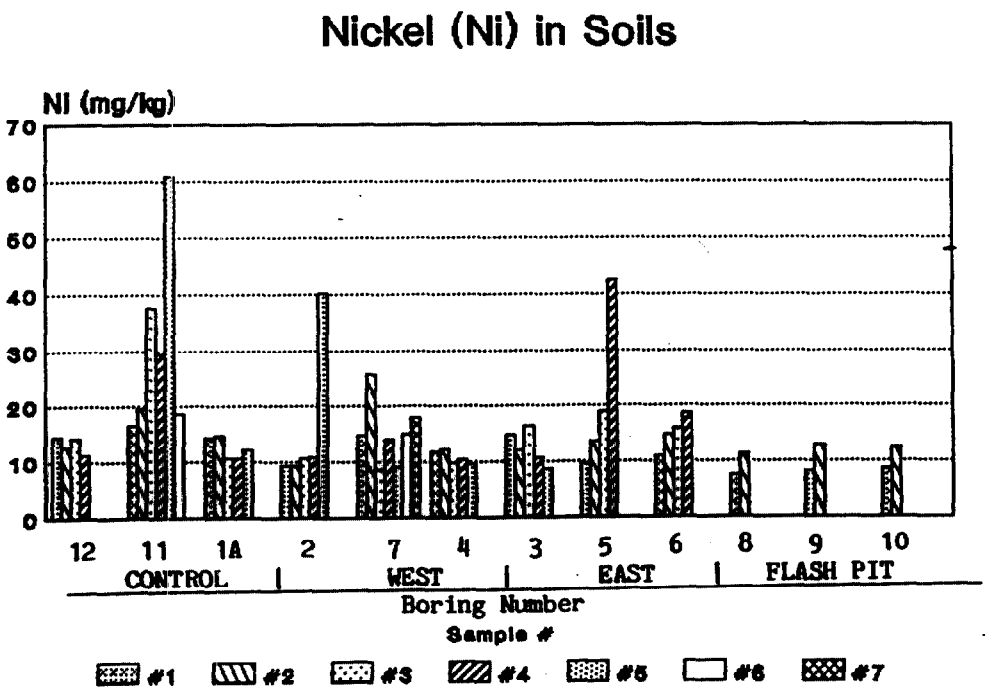
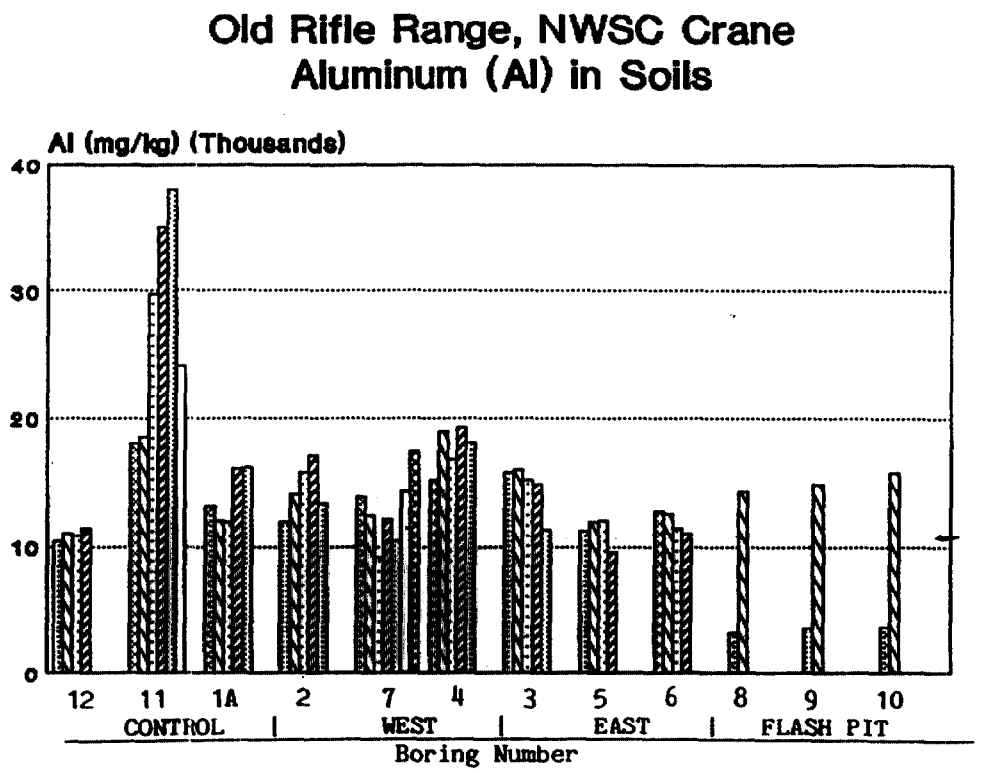


Figure 5.6. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Cobalt and nickel concentrations in individual soil samples. All samples are shown in depth sequence for each boring. See Figures 5.1 and 5.2 for boring location and sample depth.



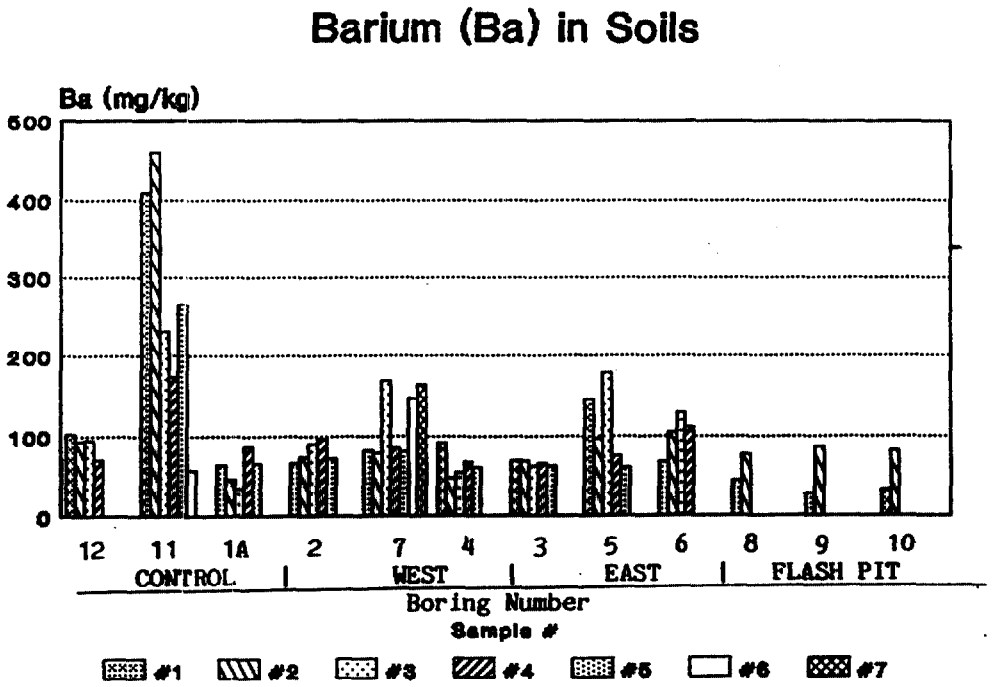
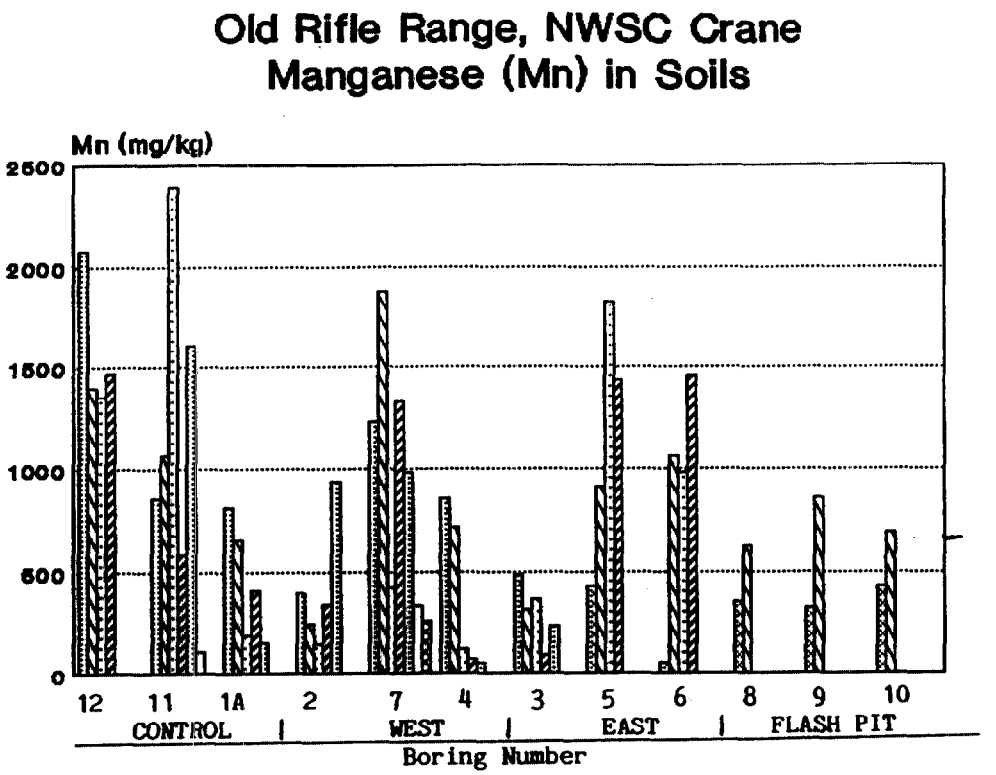


Figure 5.7. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Alumimum and barium concentrations in individual soil samples. All samples are shown in depth sequence for each boring. See Figures 5.1 and 5.2 for boring location and sample depth.



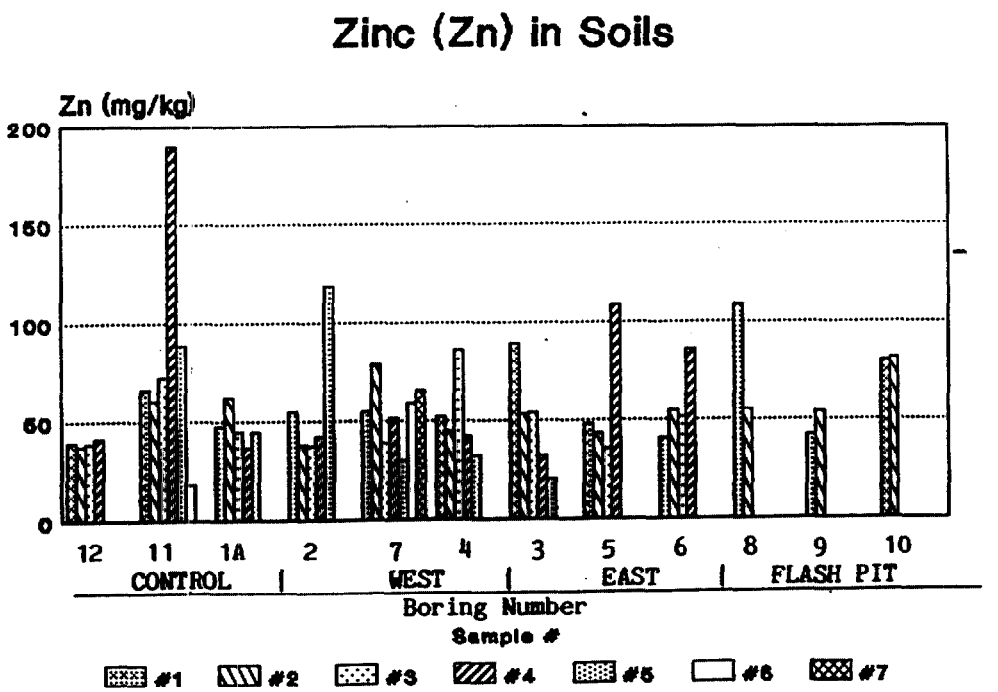
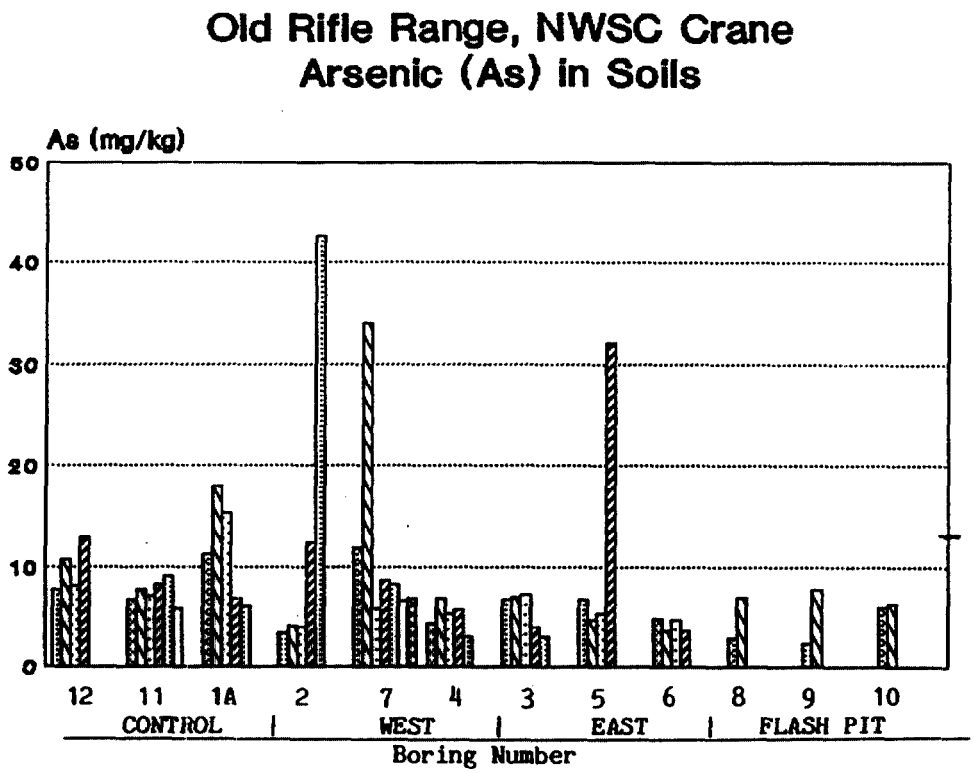


Figure 5.8. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Manganese and zinc concentrations in individual soil samples. All samples are shown in depth sequence for each boring. See Figures 5.1 and 5.2 for boring location and sample depth.



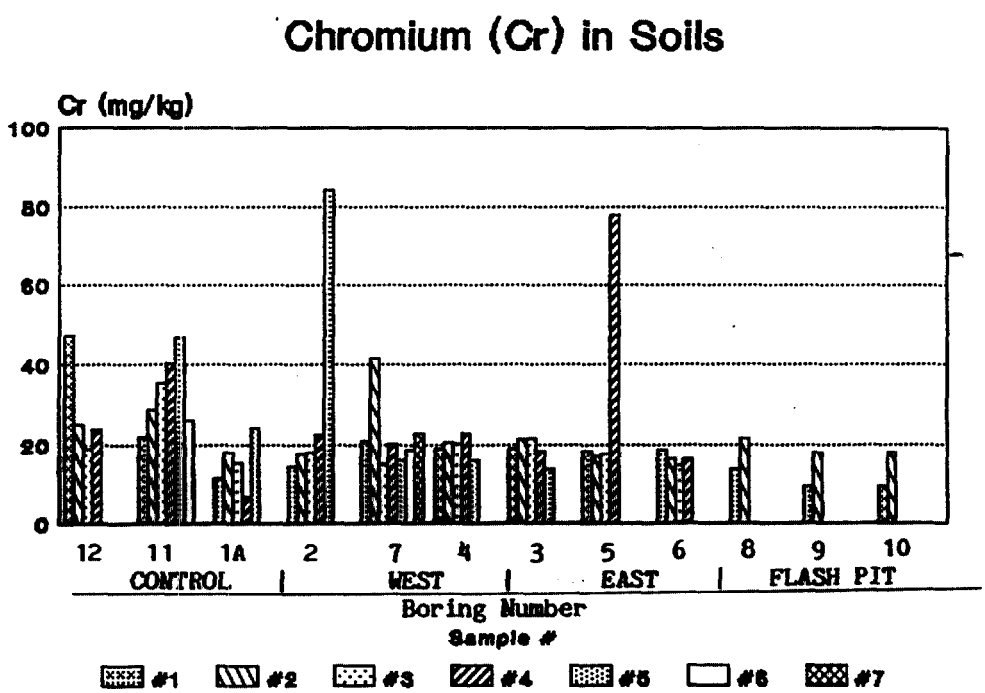
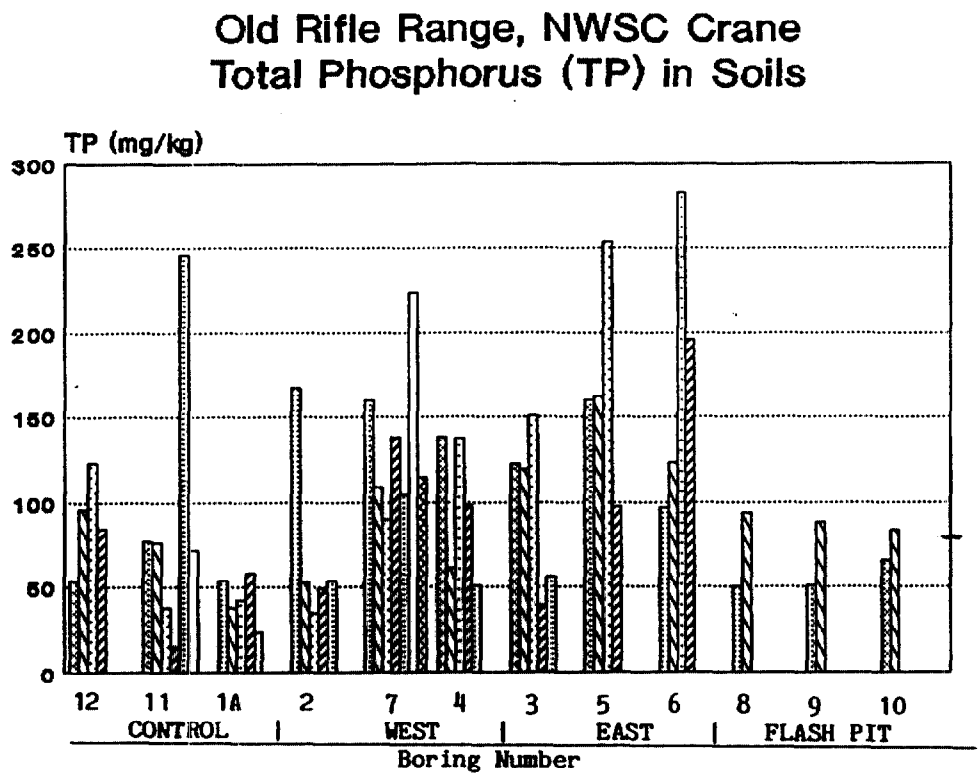


Figure 5.9. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Arsenic and chromium concentrations in individual soil samples. All samples are shown in depth sequence for each boring. See Figures 5.1 and 5.2 for boring location and sample depth.



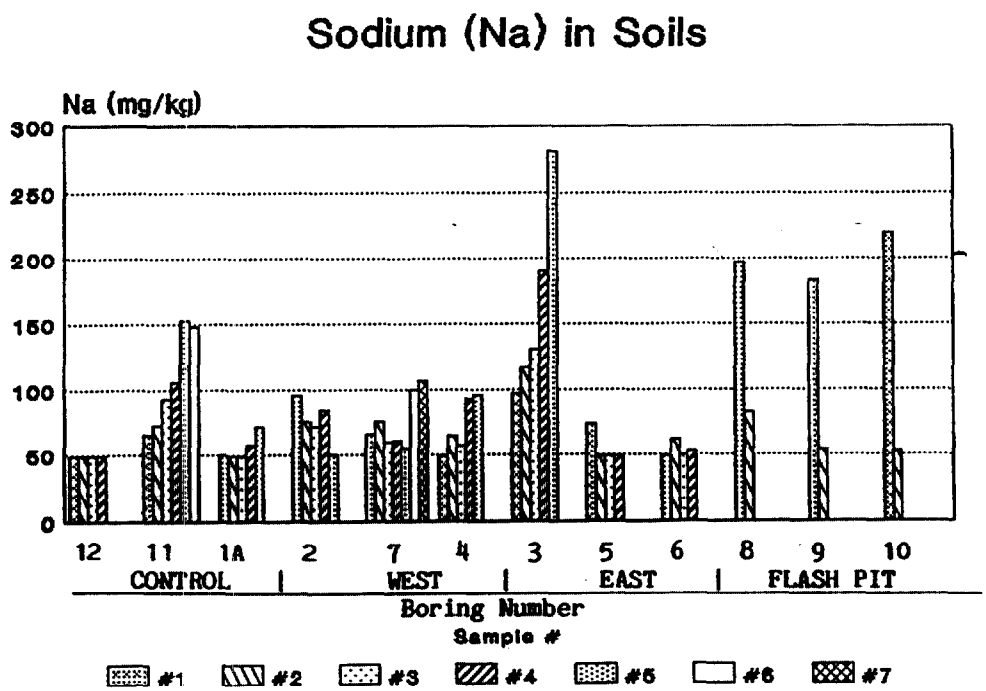
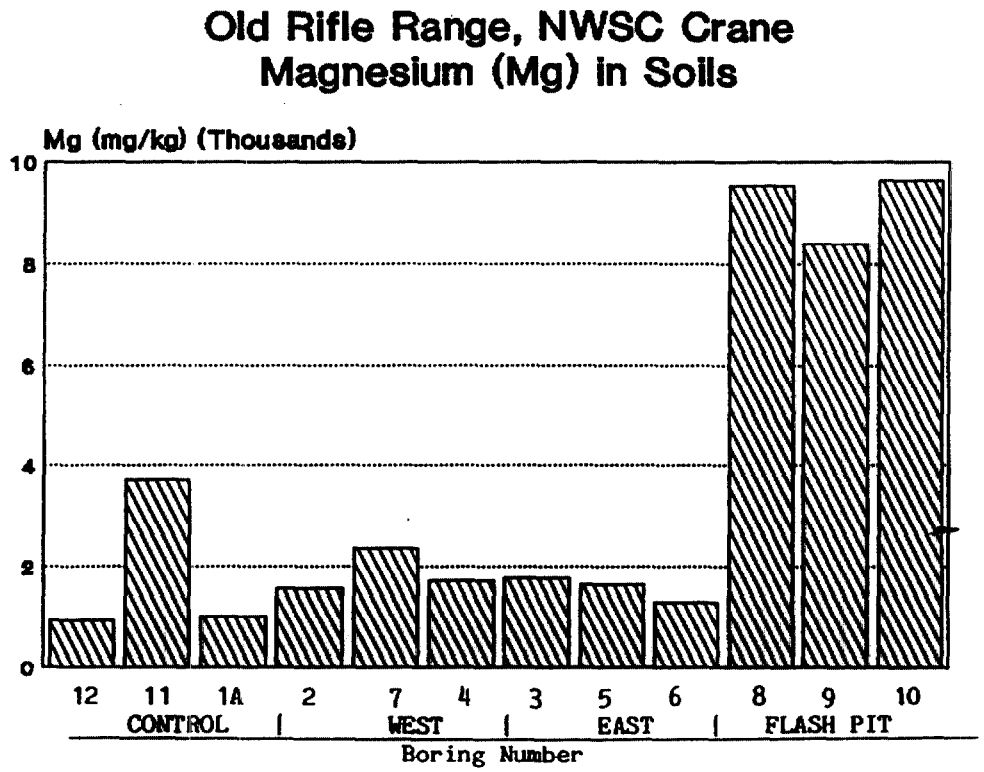


Figure 5.10. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Total phosphorus and sodium concentrations in individual soil samples. All samples are shown in depth sequence for each boring. See Figures 5.1 and 5.2 for boring location and sample depth.



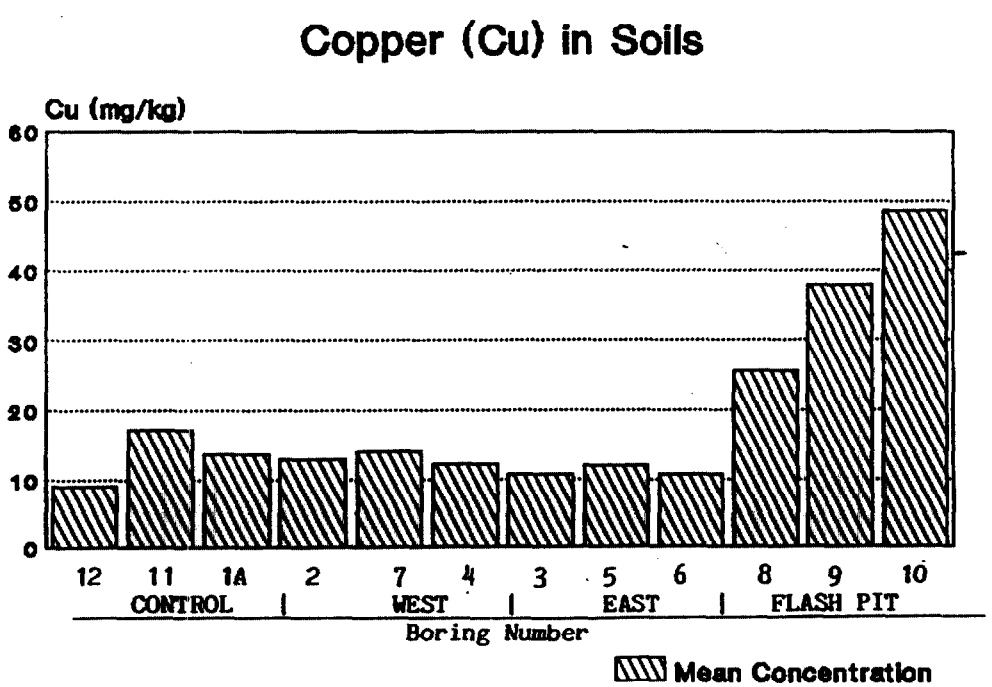
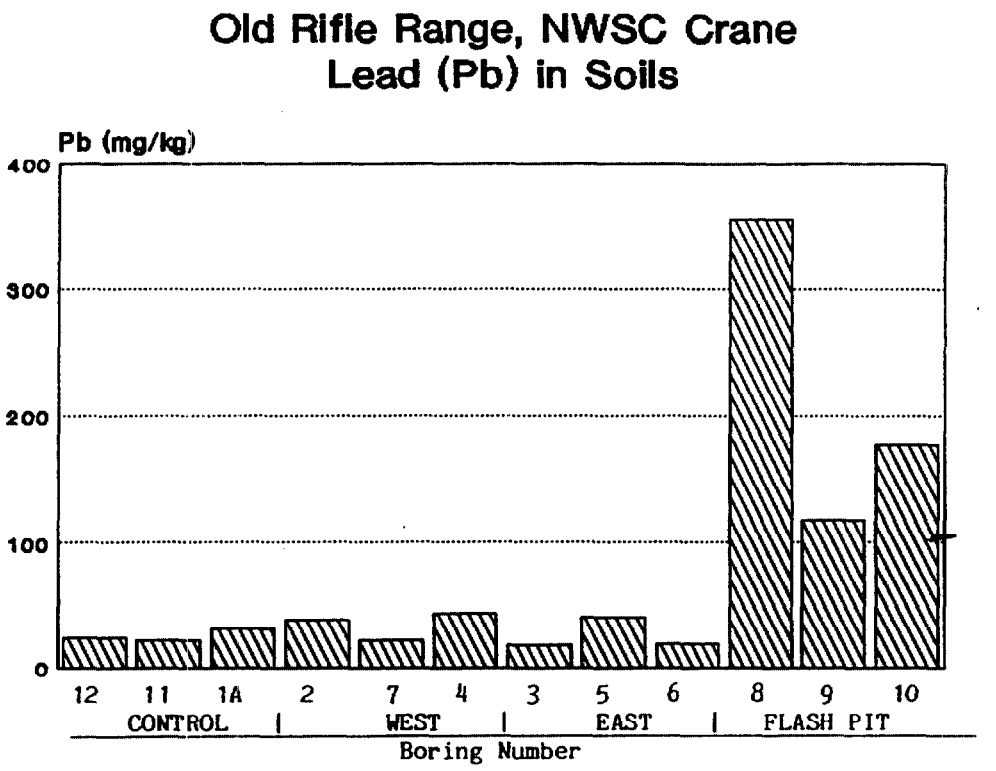


Figure 5.3A. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Mean concentration of magnesium and copper in soil samples by boring. See Figures 5.1 and 5.2 for boring location and sample depth.



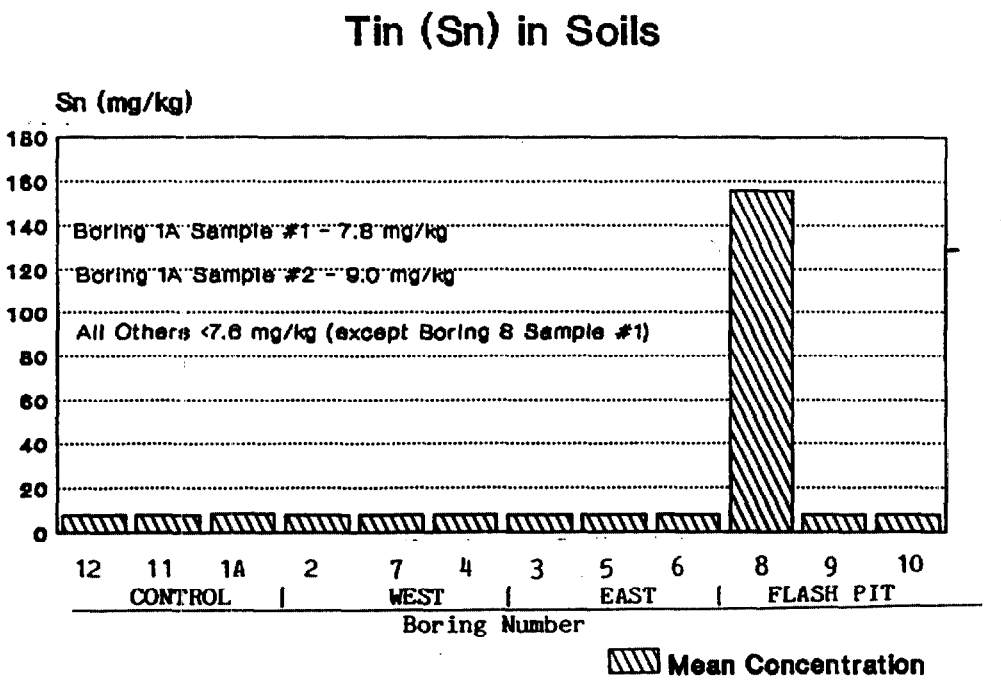
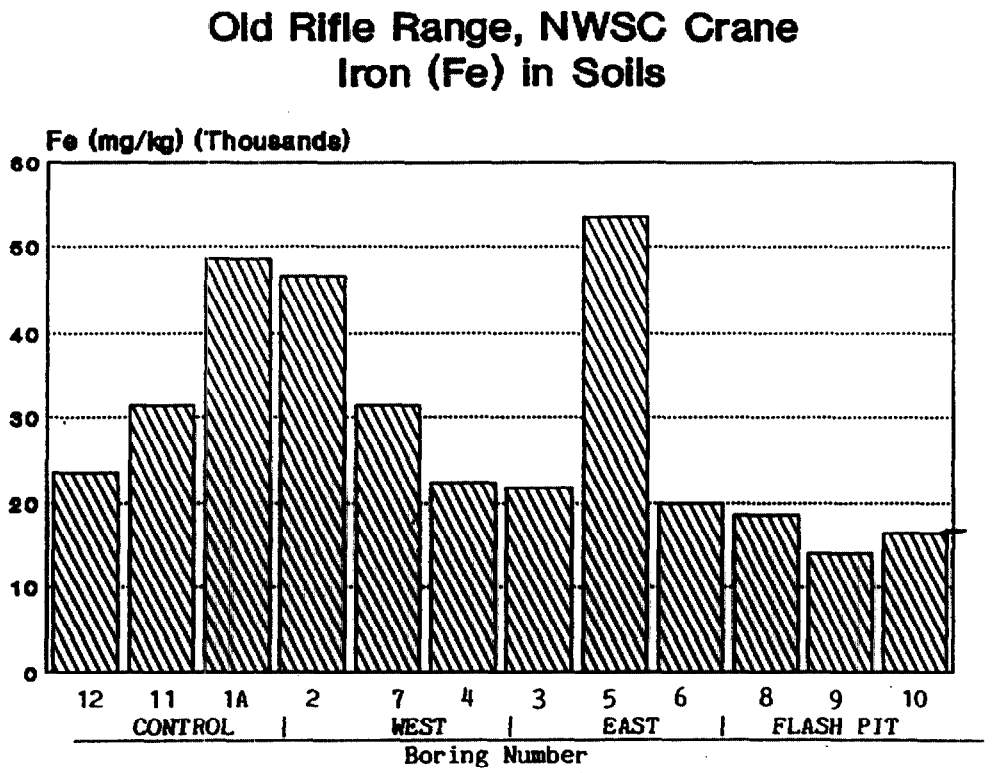


Figure 5.4A. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Mean concentration of lead and tin in soil samples by boring. See Figures 5.1 and 5.2 for boring location and sample depth.



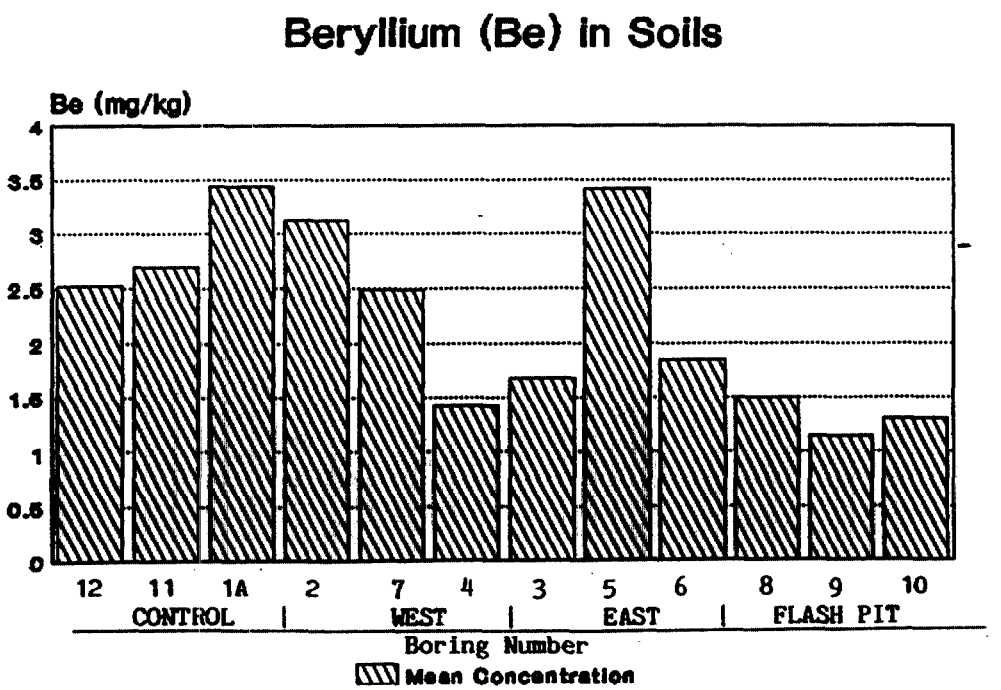
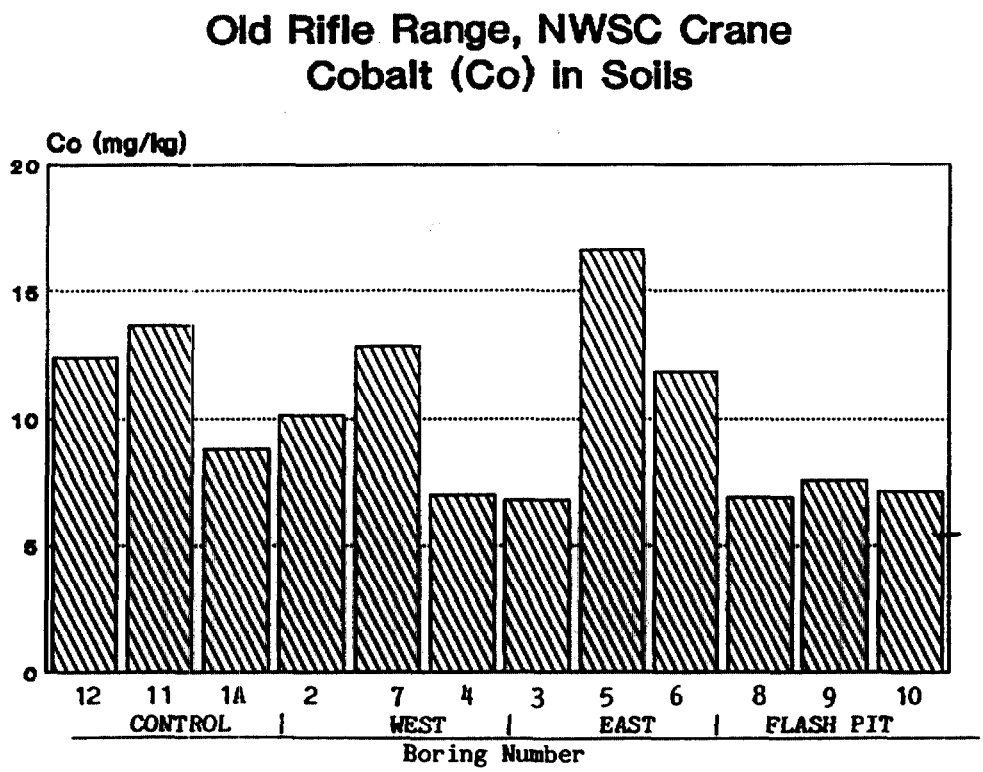


Figure 5.5A. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Mean concentration of iron and beryllium in soil samples by boring. See Figures 5.1 and 5.2 for boring location and sample depth.



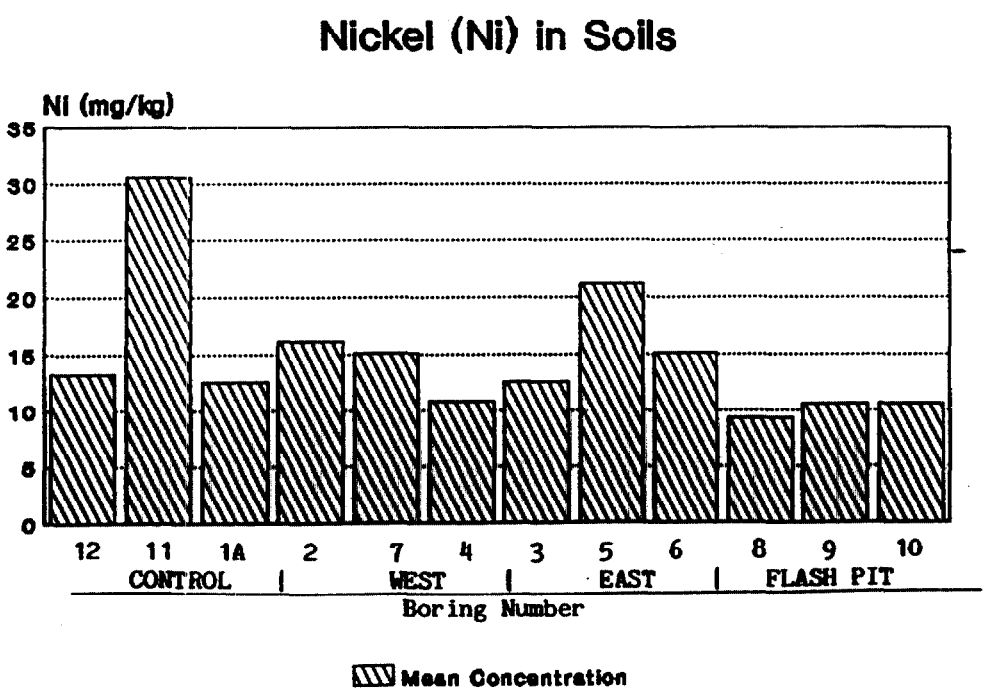
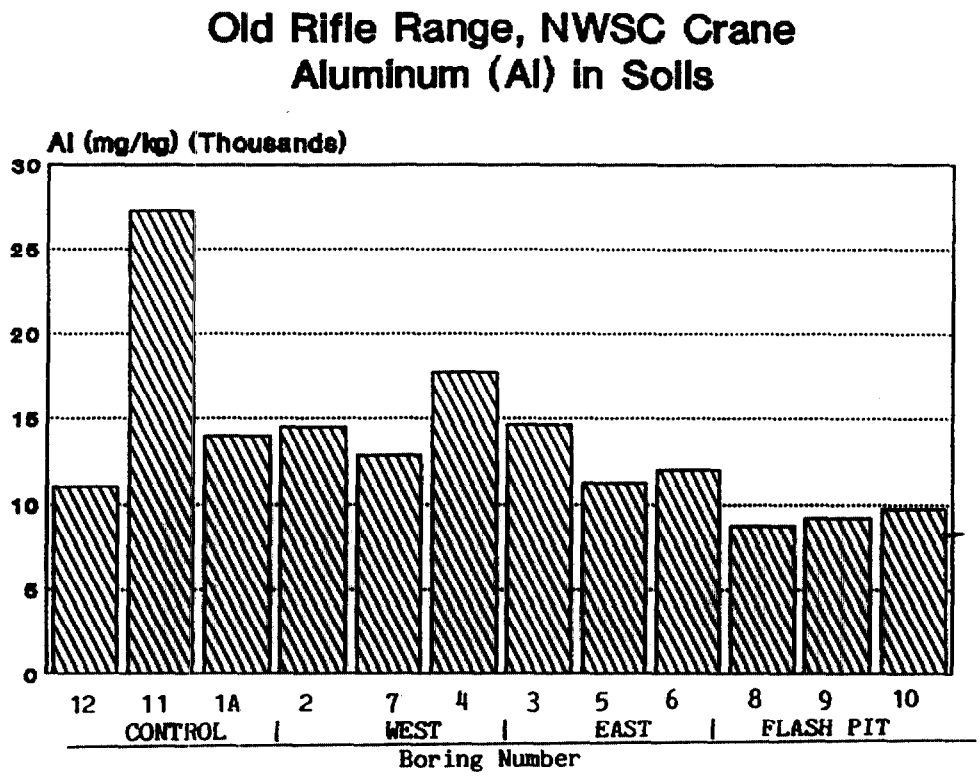


Figure 5.6A. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Mean concentration of cobalt and nickel in soil samples by boring. See Figures 5.1 and 5.2 for boring location and sample depth.



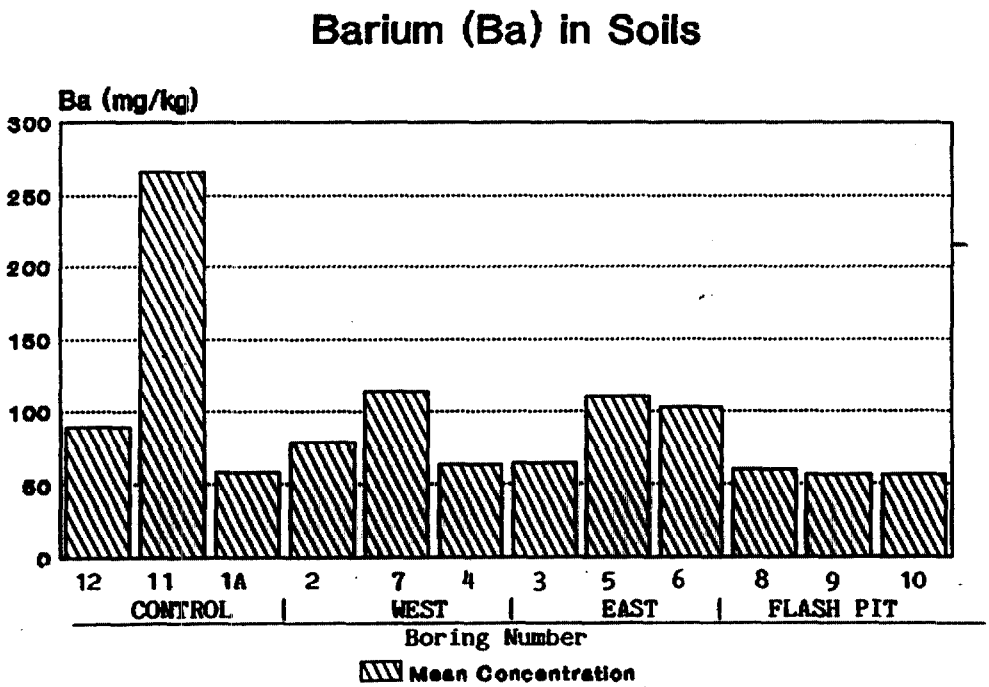
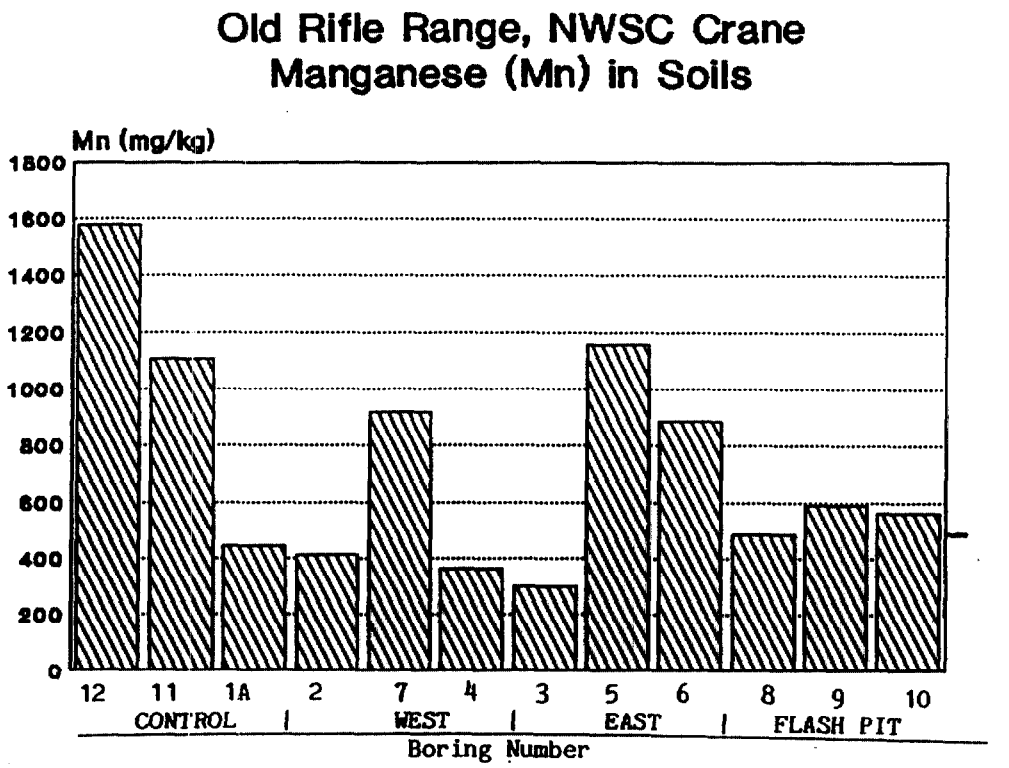


Figure 5.7A. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Mean concentration of aluminum and barium concentrations in soil samples by boring. See Figures 5.1 and 5.2 for boring location and sample depth.



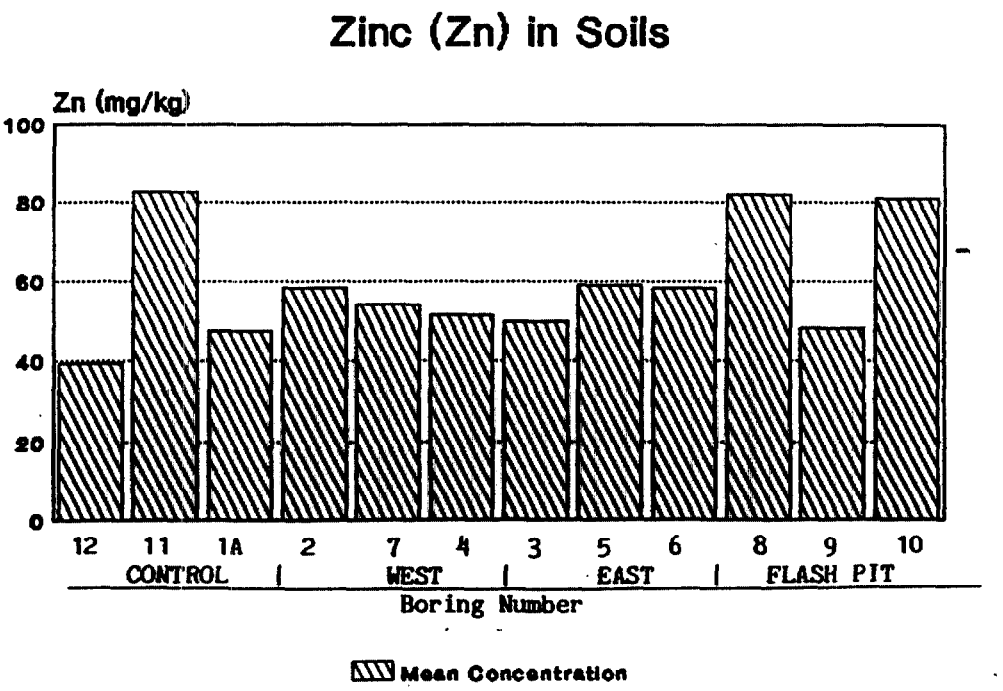
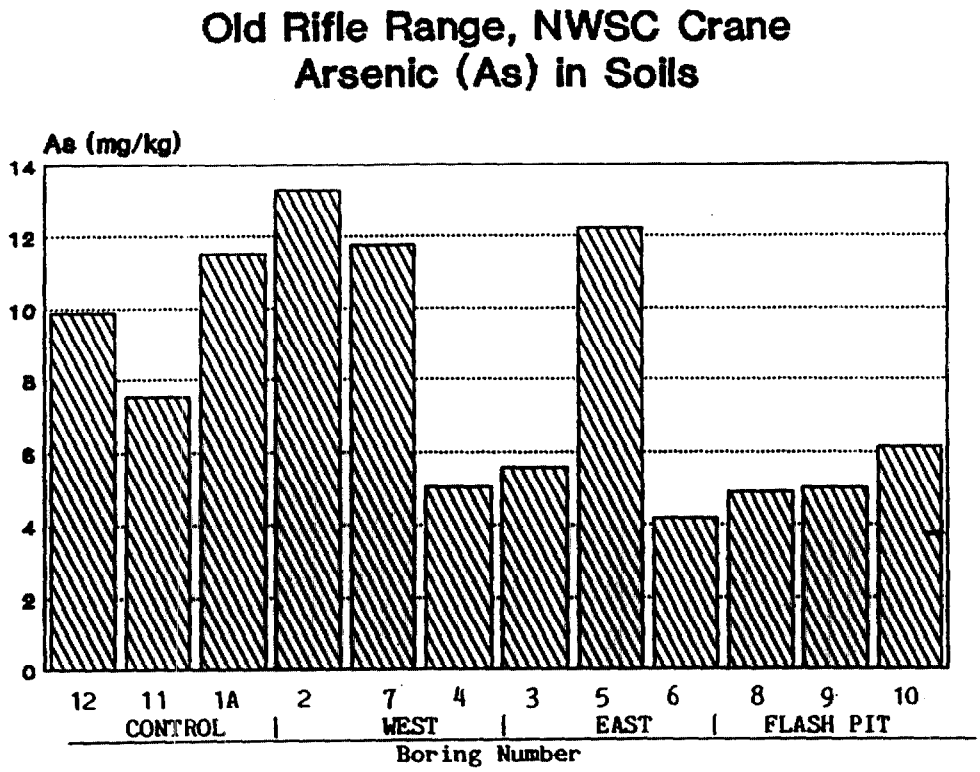


Figure 5.8A. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Mean concentration of manganese and zinc in soil samples by boring. See Figures 5.1 and 5.2 for boring location and sample depth.



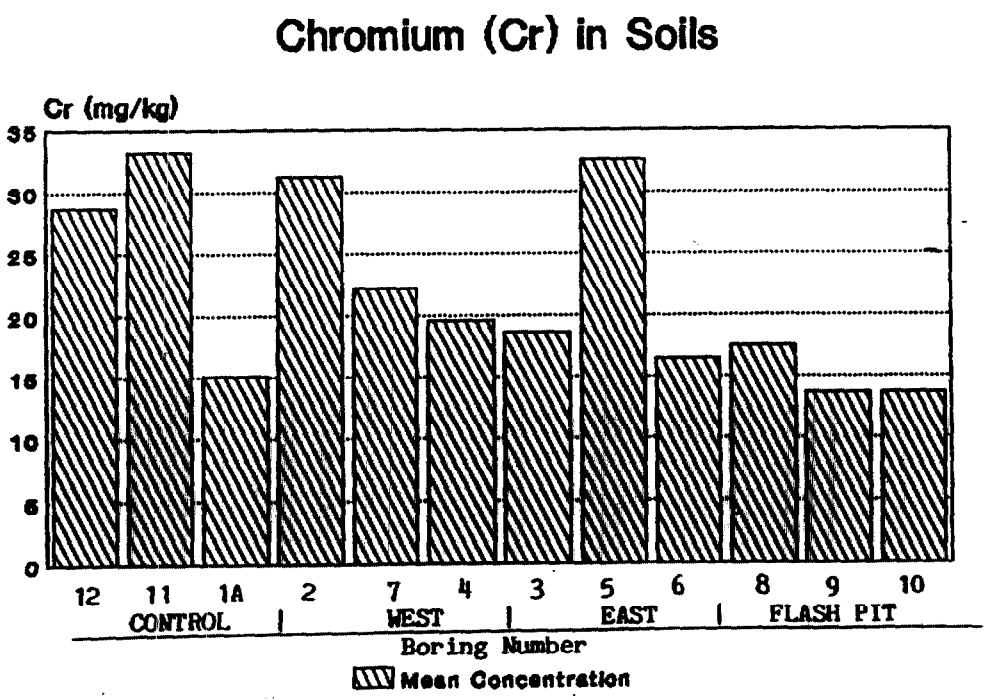
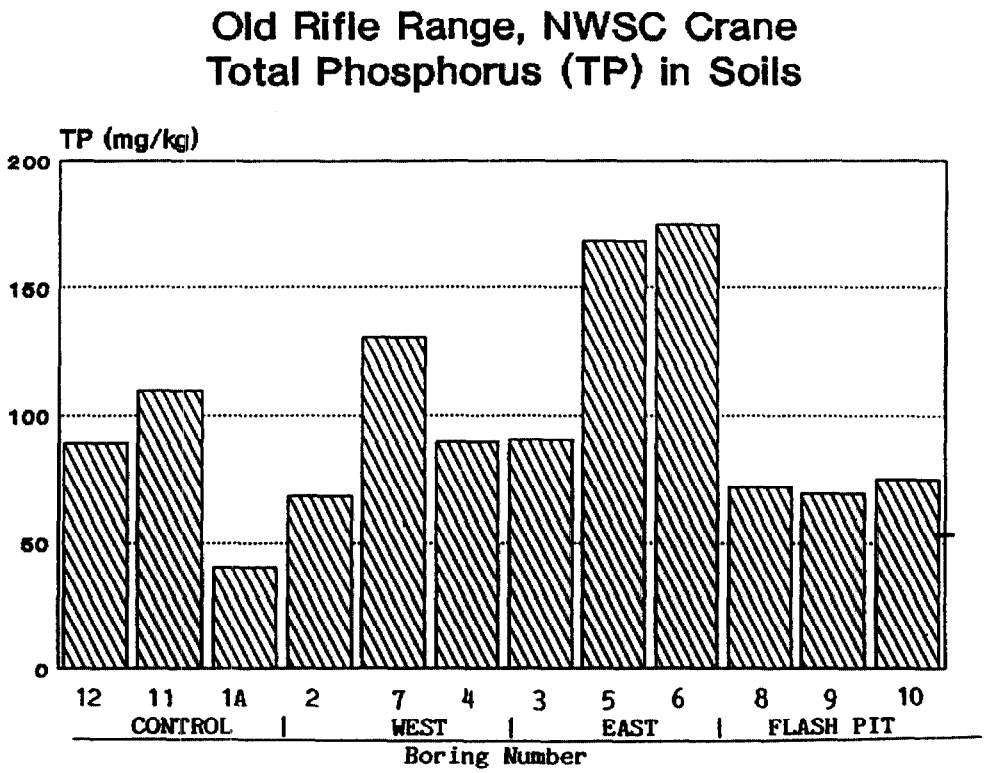


Figure 5.9A. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Mean concentration of arsenic and chromium in soil samples by boring. See Figures 5.1 and 5.2 for boring location and sample depth.



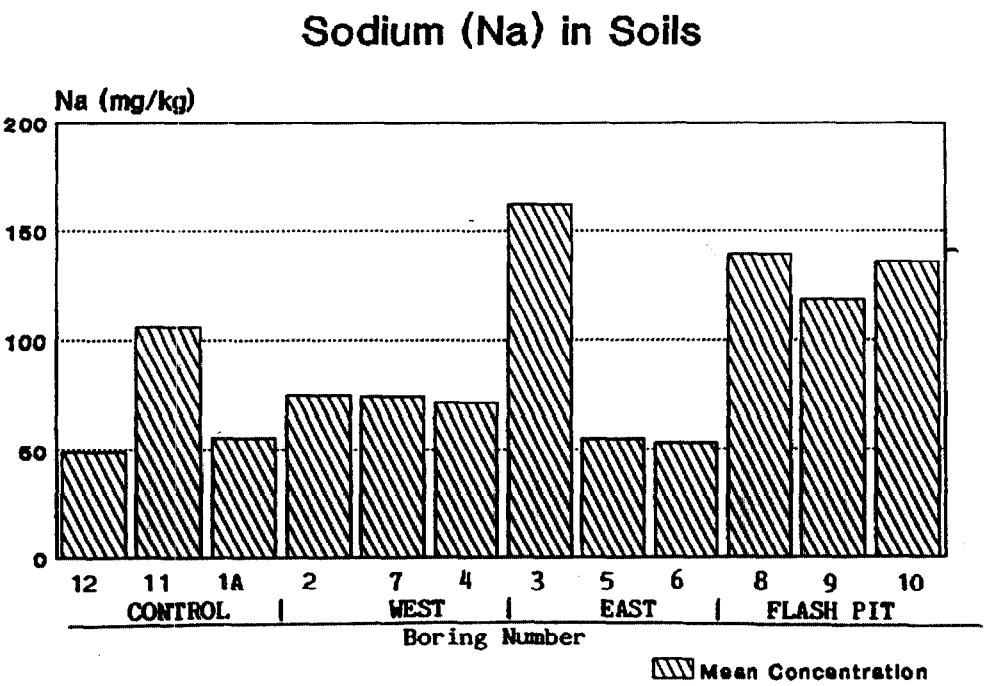


Figure 5.10A. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Mean concentration of total phosphorus and sodium in soil samples by boring. See Figures 5.1 and 5.2 for boring location and sample depth.

Soil samples from boring 3 (east of the flashing pits) had concentrations of sodium that were greater than those reported for the control soils (borings 12, 11, and 1A) and the other near-flash pit soils from borings 7, 4, and 2 (west of pits) and 6 and 5 (east of pits) (Figure 5.10). The concentration of sodium in boring 3 increased with sample depth. Maximum concentration from boring 3 was 281 mg/kg (sample #5, 7.8 - 8.3 feet below surface). Sodium in the surface soils (.2 to .5 feet below surface) of the flashing pits was always greater than the surface soils from the out-of-pit borings. Mean sodium concentration of the flashing pit surface soils was 200 mg/kg as compared to a maximum concentration of 96.6 mg/kg (boring 3 sample #1) for all other surface soil samples taken. However, sodium concentrations in the deeper (approximately 1.5 to 2.0 feet below the surface, sample #2) flashing pit samples were all less than 100 mg/kg. The mean sodium concentration for all soil samples from the flash pits and borings east of the flash pits (borings 6, 5, and 3) were greater (but not significantly greater ($P > .05$)) than corresponding all sample mean concentrations for the control borings (borings 12, 11, and 1A) (Table 5.2, Appendix A). The flash pit all sample mean sodium concentration was very close to being significantly ($P > .05$) greater than the control means. The concentrations of sodium in the flashing pit surface soils are likely the result of waste disposal activities. The factors contributing to the pattern of sodium concentrations in soils observed in boring 3, a boring near flashing pits, cannot be determined from available data. A release of sodium from the flash pits may have occurred and produced the sodium concentrations observed at boring 3.

Total phosphorus concentrations in Old Rifle Range soils were highly variable with boring location and sample depth (Figures 5.10 and 5.10A). Total phosphorus concentrations greater than those found in the flash pit soil samples were reported at all borings except 1A. The mean total phosphorus concentration for all soil samples from the flash pits was less than the corresponding mean for the control borings. However, all sample mean total phosphorus concentrations for the borings east and west of the flash pits were greater than the mean for the control borings. The east/control comparison of all sample means was significant ($P > .05$) while the west/control comparison was very close to being significant. Based on comparisons of flash pit and control soils, the waste disposal activities did not produce observable phosphorus residues in the flash pit soils. However, near-pit soils to the east and west did have phosphorus concentrations that were greater than those observed for the controls. Whether these results represent natural variability in the characteristics of the Old Rifle Range soils, a release from the flash pits, or other anthropogenic effect cannot be determined with available data.

Method Blanks. The results of analysis of method blanks used in association with the inorganic analyses of Old Rifle Range soils are provided in Table 5.3 (See Appendix A). The concentration of constituents in the method blanks was 100 to 1000 times less than the concentrations determined for the soil samples. These method blank analyses do not change the interpretation of inorganic constituent data previously presented.

Equipment Rinses. Inorganic analytes were found in all equipment rinses analyzed (Table 5.4, Appendix A). However, the concentrations of inorganic constituents in the rinses from borings 8, 7, 4, and 1A were not great enough to change the interpretation of data as previously discussed. The equipment rinse for boring 7 was different than the rinses for borings 4,8, and 1A in that more inorganic analytes were detected. The reasons for this difference are not known.

5.2(2) Explosives. The results of analyses of the Old Rifle Range soils for selected explosive compounds are given in Table 5.5 (See Appendix A). No explosive compounds were found in soil samples from the "control or background" borings, borings 12, 11, and 1A. Soils from boring 8, within the flashing pit to the west of the service road, contained 2,4-DNT and TNT. The 2,4-DNT (1.70 mg/kg) was found in the surface sample (sample #1 - .2 to .5 feet below the surface) while the TNT (3.08 mg/kg) was found in the deeper sample (sample #2 - 1.5 to 2.0 feet below the surface). TNB was not detected in samples of flash pit soils. Outside of the flash pits, TNT was found in surface soil samples (.2 to .5 feet below surface) at borings 6, 5, and 4. TNB was found in the surface soil sample from borings 4 and 5. The TNT concentrations at borings 4 and 6 as well as the TNB concentrations at borings 4 and 5 were less than 0.200 mg/kg. Those concentrations of explosive compounds were detected by the analytical instrumentation but not in sufficient amounts to statistically quantify, therefore the concentrations are estimated. The concentration of TNT for boring 5 near the flashing pits was less than 0.5 mg/kg. This boring 5 sample contained the

highest explosive concentration observed outside of the flashing pits. In summary, a release of TNT and TNB, explosive compounds, has occurred and the observed contamination was in the surface samples only.

Method Blanks. No explosive compounds tested were detected in the method blanks analyzed in association with the Old Rifle Range soils analyses (Table 5.6, Appendix A). These method blanks analyses do not change ton interpretation of explosive compound data previously presented.

Equipment Rinses. No explosive compounds tested were detected in equipment rinses (Table 5.7, Appendix A). Therefore contamination of field samples by the sample equipment is not evident.

5.2(3) VOLATILE ORGANICS (EPA Method 8240). The results of analyses of Old Rifle Range soils for volatile organic compounds (EPA Method 8240 in Test Methods for Evaluating Organic and Inorganic Waste, Physical/Chemical Methods SW846, Third Edition, November 1986 with December 1988 revisions) are given in Table 5.8 (See Appendix A). Methylene chloride and acetone were found in all soil samples taken. These constituents were also found in the associated method blanks (Table 5.9, Appendix A). These results likely indicate sample contamination from the laboratory environment rather than from processes associated with the field conditions. Volatiles which may not be solely associated with laboratory environment contaminants were also detected. The following volatile organic compounds were detected:

Volatile Organic	Boring/Sample # (Sample Depth - ft below surface)
Trans-1,3-dichloropropene	6/#4 (3.0 - 3.5)
2-butanone	10/#2 and 8/#2 (1.5 - 2.0); 9/#2 (1.2 - 1.7) 3/#3 (7.8 - 8.3)
T-xylene	11/#5 (6.0 - 6.5); 2/#5 (7.5 - 8.0)
ethylbenzene	11/#5 (6.0 - 6.50)

The reported concentrations of 2-butanone, ethylbenzene, and trans-1,3- dichloropropene were "J" values, detected by the analytical instrumentation but not in sufficient amounts to statistically quantify. Therefore, those concentrations are estimated. The t-xylene concentrations were 0.010 and 0.007 mg/kg (ppm) for borings 11 and 2, respectively. These t-xylene concentrations were close to but greater than the detection limit for t- xylene.

Volatile organic compounds were found in flash pit soils (borings 8, 9, and 10), control soils (boring 11), east-of-pit soils (borings 6 and 3), and west-of-pit soils (boring 2). A characteristic suite of volatile organic compounds was not common to the flash pit soils and soils outside of the flash pits. Only 2-butanone was common to both. These findings indicate that a release of 2-butanone from the flash pits may have occurred. Three other volatile organic compounds, trans-1,3-dichloropropene, ethylbenzene, and t- xylene were reported from 1, 1, and 2 soil samples, respectively. Insufficient information is available to determine if the occurrence of trans- 1,3-dichloropropene, ethylbenzene, and t-xylene in Old Rifle Range soils are the result of waste disposal activities at the flashing pits and thus represent a release of those contaminants.

Volatile organic compounds that were tentatively identified during the volatile organic soils analysis are provided in Table 5.10 (See Appendix A).

Method Blanks. Acetone and methylene chloride were reported in the method blanks for the volatile organic analyses (Table 5.9, Appendix A) and indicate a laboratory contamination source for these constituents. These method blank analysis results were considered in the interpretation of the volatile organic soils analyses.

Equipment Rinses. Acetone and methylene chloride were reported in the sampling equipment rinses (Table 5.11, Appendix A). As acetone and methylene chloride were detected in the method blank associated with the analyses of these rinses, these constituents are believed to be laboratory contaminants. Chloroform was detected in all the equipment rinses. This volatile organic compound may have been derived from the initial washing with potable water. Chloroform was not detected in any of the Old Rifle Range soil samples, therefore cross contamination of soils with this compound was not a problem. Bromodichloromethane was detected in low concentrations ("J" value which is below the statistical quantitation limits) in the rinse from boring 7. As with chloroform, bromodichloromethane was not detected in any Old Rifle Range soil samples taken.

5.2(4) Semivolatile Organics (EPA Method 8270). The results of analyses of Old Rifle Range soils for semivolatile organic compounds (EPA Method 8240 in Test Methods for Evaluating Organic and Inorganic Waste, Physical/Chemical Methods SW846, Third Edition, November 1986 with December 1988 revisions) are given in Table 5.12 (Appendix A). Dibutyphthalate and bis(2-ethylhexyl)phthalate were found in all but one of the soil samples taken. The results also indicate that these constituents were frequently found in the associated method blanks as well as the samples (Table 5.13, Appendix A). Thus, dibutyphthalate and bis(2- ethylhexyl)phthalate are likely sample contaminants from the laboratory environment rather than processes associated with the waste disposal activities. The polycyclic aromatic hydrocarbons (PAH) phenanthrene and 2- methylnapthalene were found in soil samples from boring 10 and 9 (flashing pit) samples. The reported concentrations of PAHs were "J" values, detected by the analytical instrumentation but not in sufficient amounts to statistically quantify. Therefore, the PAH concentrations are estimated. Soils collected from borings 8 and 9 contained 4-methylphenol. N-nitrosodimethylamine was detected in soils from boring 2 (sample #5, 7.5 - 8.0 feet below surface). The 4-methylphenol and N-nitrosodimethylamine was detected in concentrations below statistical quantitation limits (the concentrations given are estimated "J" values).

Table 5.14 (See Appendix A) provides a list of tentatively identified semivolatile organic compounds detected in Old Rifle Range soil samples.

A release of semivolatile organic compounds produced by waste disposal activities at the flash pits is not evident. While soils within the flash pits contained PAHs and a phenol, only N-nitrosodimethylamine was detected in soils outside the flash pits. It cannot be determined if the N- nitrosodimethylamine found outside the flash pits is the result of a release from the waste disposal unit or some other activity at the Old Rifle Range site.

Method Blanks. As discussed previously, method blanks analyzed for semivolatile organic compounds contained dibutylphthalate and bis(2- ethylhexyl)phthalate at estimated concentrations below the instrument detection limits ("J" Values) (Table 5.13, Appendix A).

Equipment Rinses. Analyses of equipment rinses for semivolatile organics detected 1,4-dichlorobenzene, diethyl phthalate, and bis(2-ethylhexyl) phthalate at estimated concentrations below the instrument detection limits ("J" Values) (Table 5.15, Appendix A). However, 1,4-dichlorobenzene and bis(2-ethylhexyl) phthalate also occurred in the method blank, indicating a laboratory contamination. Diethyl phthalate was not detected in any of the Old Rifle Range soils analyzed. Diethyl phthalate may have been derived from plastic containers used to hold rinsing solutions.

6.0 CONCLUSIONS

Thirteen soil borings were drilled at the Old Rifle Range. These borings were used to collect soil samples for physical characterization and chemical pollutant identification. Soils were analyzed for the presence of organic compounds, metal and inorganic compounds, and explosive compounds. Three background borings were placed in locations where natural, uncontaminated conditions were expected to exist. Results from all other samples were compared to the data generated from those background samples. Soils were 2' to 30' thick. The land surface and rock surface were carved by fluvial incision of the present date and ancestral Turkey Creek and its tributaries. The soils are predominantly clays (CL, CH, and GC). The soils resulted from alluvial, and colluvial processes. The clay soils were streaked by iron oxide concretions and manganese stains. Zones of concretions seem to be related to seasonal fluctuation of the water table. Groundwater usually entered the borings when top-of-rock was encountered. Gravelly clay and silty sand units act as conduits for horizontal groundwater movements. This movement closely follows the rock surface. The groundwater movement is in a southeast direction toward Turkey Creek.

The waste disposal activities contributed residues of magnesium, copper, lead, tin, and sodium to flashing pit soils. A release of magnesium, copper, lead, and tin to soils outside of the flashing pits was not observed. A release of sodium may have occurred. Total phosphorus was not evident as a waste activity residue within the flashing pits but was observed in greater concentrations in soils near the flash pits. Whether these results represent natural variability in the characteristics of the Old Rifle Range soils, a release from the flash pits, or some other anthropogenic effect cannot be determined with available data.

Several soil samples, outside of the flashing pits, had distinct concentration peaks of aluminum, arsenic, barium, beryllium, chromium, cobalt, iron, manganese, nickel, and zinc which were not observed in the flashing pit soils. These concentration peaks are not thought to be the result of releases from waste disposal activities but may reflect either natural variability in the chemical characteristics of these soils or some other anthropogenic effect.

Explosive compounds, 2,4-DNT and TNT were found in soils from flash pit boring 8 at approximately 2 - 3 mg/kg (ppm) concentrations. Soils from three different sample locations, borings 6, 4, and 5, near to the flash pits contained residues of either TNT and TNB or both. The explosives were found in the samples nearest the surface. A release of TNT and TNB, explosive compounds, has occurred.

Several volatile organic compounds (as determined by EPA method 8240) were found in the Old Rifle Range soils sampled. The concentrations found were generally just above detection limits or estimated concentrations that were below the statistical quantitation limits for the analyses. A clear pattern of contamination (release) of Old Rifle Range soils with volatile organic compounds which can be attributed to waste disposal activities at the flashing pits is not evident.

Soil samples taken from within the flash pits contained polycyclic aromatic hydrocarbons (PAHs) and a phenol at low concentrations. Semivolatile organics found within the flash pits were not found outside of the pits. N- nitrosodimethylamine was detected at boring 2. The boring is located outside of the flash pit. The source of the N-nitrosodimethylamine is not known. A clear pattern of contamination (release) of Old Rifle Range soils with semivolatile organic compounds which can be attributed to waste disposal activities at the flashing pits is not evident.

7.0 RECOMMENDATIONS

A) No RFI Phase III Soils Study is needed at the Old Rifle Range. The contamination found during the Phase II Soils Study was concentrated in the pit samples (borings 8, 9, and 10) and in the soil borings (4, 5, and 6) situated in the vivinity of the pits. No contamination was detected in borings 1A, 2, 3, 7, 11, or 12. The contamination levels detected in the soil are "J" concentrations. This means that the levels are below reliable detection levels and therefore, considered low level.

B) The remediation of the soils in the burning pits should be done as part of the closure plan for the Old Rifle Range open burning unit.

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Appendix A

Tables for Section 5.0

Tables 5.1 to 5.15

TABLE 5.1 (Page 1 of 4). Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Results of inorganic analyses of soil samples collected in the vicinity of SWMU#07/09. Concentrations are mg/kg (ppm) dry weight.

	Sample ID*/ Analyte	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag
	- 12/#1 (.2 - .5)	<0.3U	7.7	2.1	<0.5U	47.2	10.4	29.8	<0.1U	14.5	<0.3U	<1.3U
	12/#2 (1.0 - 1.5)	<0.3U	10.8	2.8	<0.5U	25.1	9.6	25.3	<0.1U	12.8	0.2BW	<1.3U
	12/#3 (1.5 - 2.0)	0.4BW	8.1	2.2	<0.5U	19.0	7.8	17.5	<0.1U	14.4	0.3B	<1.3U
	12/#4 (3.0 - 3.5)	<0.3U	12.9	3.0	<0.5U	23.8	8.2	27.4	<0.1U	11.3	0.4B	<1.3U
C	- 11/#1 (.2 - .5)	<0.3U	6.8	2.0	<0.5U	21.9	14.9	26.5	<0.1U	16.6	0.3B	<1.3U
O	11/#2 (1.0 - 1.5)	<0.3U	7.7	2.3	<0.5U	28.7	12.5	27.9	<0.1U	19.7	0.3B	<1.3U
N	11/#3 (1.5 - 2.0)	<0.3U	7.1	3.5	<0.5U	35.4	12.8	26.0	<0.1U	37.5	<0.3U	1.9
T	11/#4 (3.0 - 3.5)	<0.3U	8.3	2.9	<0.5U	40.3	15.4	25.1	<0.1U	29.4	<0.3UW	<1.3U
R	11/#5 (6.0 - 6.5)	<0.3U	9.2	4.0	0.5	47.0	23.4	28.2	<0.1U	60.8	<0.3U	<1.3U
O	11/#6 (9.0 - 9.5)	<0.3U	5.9	1.4	<0.5U	25.9	24.3	0.1	<0.1U	18.8	<0.3U	<1.3U
L	- 01A/#1 (.2 - .5)	<0.3U	11.3	2.7	<0.5U	29.4	15.6	31.3	<0.1U	14.3	<0.3U	<1.3U
	01A/#2 (1.0 - 1.5)	<0.3U	18.0	6.1	<0.5U	68.8	15.9	60.7	<0.1U	14.8	0.3BW	<1.3U
	01A/#3 (1.5 - 2.0)	<0.3U	15.3	3.5	<0.5U	47.8	13.7	30.7	<0.1U	10.6	<0.3U	<1.3U
	01A/#4 (3.0 - 3.5)	0.3B	6.9	2.7	<0.5U	28.9	12.8	28.9	<0.1U	10.7	<0.3UW	<1.3U
	01A/#5 (7.0 - 7.5)	<0.3U	6.1	2.2	<0.5U	24.1	10.7	20.6	<0.1U	12.0	<0.3UW	<1.3U
F	- 10/#1 (.2 - .5)	0.7B	6.0	0.8	<0.5U	9.3	24.1	60.8	<0.1U	8.6	<0.3U	<1.3U
L	10/#2 (1.5 - 2.0)	<0.3U	6.3	1.8	<0.5U	18.0	73.4	292	<0.1U	12.5	<0.3U	<1.3U
A	- 09/#1 (.2 - .5)	<0.3U	2.3	0.5	<0.5U	9.5	18.1	27.0	<0.1U	8.2	<0.3U	<1.3U
S	09/#2 (1.2 - 1.7)	<0.3U	7.7	1.8	<0.5U	17.8	57.8	208	<0.1U	12.9	<0.3U	<1.3U
H	- 08/#1 (.2 - .4)	0.4B	2.8	0.6	<0.5U	13.5	16.0	618	<0.1U	7.5	<0.3U	1.7
	08/#2 (1.5 - 2.0)	<0.3U	7.0	2.4	<0.5U	21.5	35.4	91.8	<0.1U	11.3	<0.3U	<1.3U

Note:

* Sample ID is as follows - Boring Number/Sample Number (sample depth in feet below the surface). See Figures 1 and 2.

U Analyte was analyzed for but not detected. Detection limit (Instrument Detection Limit) given after the < symbol.

B Reported value is less than the Contract Required Detection Limit but greater than the Instrument Detection Limit

W Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance

TABLE 5.1 (Page 2 of 4). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of inorganic analyses of soil samples collected in the vicinity of SWMU#07/09. Concentrations are mg/kg (ppm) dry weight.

	Sample ID*/ Analyte	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag
	- 07/#1 (.2 - .5)	0.9	11.9	2.5	<0.5U	20.9	13.2	27.1	<0.1U	14.9	0.5	<1.3U
	07/#2 (1.0 - 1.5)	<0.3U	34.0	4.7	<0.5U	41.7	21.9	43.6	<0.1U	25.7	0.9	<1.3U
	07/#3 (1.5 - 2.0)	<0.3U	5.9	1.5	<0.5U	15.0	10.2	14.6	<0.1U	8.6	<0.3B	<1.3U
	07/#4 (2.0 - 2.5)	0.3	8.8	2.2	<0.5U	20.3	14.4	21.8	<0.1U	14.1	<0.4B	<1.3U
	07/#5 (3.0 - 3.5)	<0.3U	8.3	2.1	<0.5U	16.0	8.3	18.5	<0.1U	9.0	<0.4B	<1.3U
	07/#6 (8.5 - 9.0)	<0.3U	6.6	1.8	<0.5U	18.5	13.1	16.2	<0.1U	15.1	<0.3U	<1.3U
W	07/#7 (9.0 - 9.5)	0.8	6.9	2.6	<0.5U	22.7	16.8	19.4	<0.1U	17.9	<0.3U	<1.3U
E	- 04/#1 (.2 - .5)	<0.3U	4.3	1.6	<0.5U	18.8	16.1	142	<0.1U	11.9	<0.3U	<1.3U
S	04/#2 (1.0 - 1.3)	1.2	6.9	1.6	<0.5U	20.6	12.6	29.8	<0.1U	12.4	0.4B	<1.3U
T	04/#3 (1.6 - 2.0)	0.5	5.4	1.3	<0.5U	20.2	11.4	16.7	<0.1U	9.8	<0.3U	<1.3U
	04/#4 (3.0 - 3.5)	0.5	5.7	1.4	<0.5U	22.8	11.8	18.4	<0.1U	10.5	<0.3U	<1.3U
	04/#5 (7.0 - 7.5)	0.7	2.9	1.2	<0.5U	15.8	8.5	14.5	<0.1U	9.6	<0.3U	<1.3U
	- 02/#1 (.2 - .5)	<0.3U	3.3	1.1	<0.5U	14.2	19.7	48.0	<0.1U	9.4	<0.3UW	<1.3U
	02/#2 (1.0 - 1.3)	<0.3U	4.1	1.2	<0.5U	17.6	6.6	14.8	<0.1U	9.2	<0.3UW	<1.3U
	02/#3 (1.7 - 2.0)	<0.3U	3.9	1.2	<0.5U	17.9	7.0	14.4	<0.1U	10.6	<0.3UW	<1.3U
	02/#4 (3.0 - 3.5)	<0.3U	12.4	2.6	<0.5U	22.4	9.7	28.6	<0.1U	10.9	<0.3UW	<1.3U
	02/#5 (7.5 - 8.0)	<0.3UW	42.7	9.5	<0.5U	84.4	21.7	86.0	<0.1U	40.3	<0.3UW	<1.3U
	- 06/#1 (.2 - .5)	<0.3U	4.9	1.7	<0.5U	18.6	10.3	15.1	<0.1U	10.9	<0.3U	<1.3U
	06/#2 (1.0 - 1.3)	<0.3U	3.6	1.7	<0.5U	16.4	14.3	25.1	<0.1U	14.9	0.4B	<1.3U
	06/#3 (1.7 - 2.0)	<0.3U	4.7	1.9	<0.5U	14.7	9.2	16.4	<0.1U	15.9	0.3B	<1.3U
	06/#4 (3.0 - 3.5)	<0.3U	3.6	2.1	<0.5U	16.1	9.2	21.7	<0.1U	18.7	0.4B	<1.3U
E	- 05/#1 (.2 - .5)	0.5	6.7	1.3	<0.5U	18.1	13.3	32.1	<0.1U	9.6	<0.3U	<1.3U
A	05/#2 (1.0 - 1.3)	0.3	4.7	1.7	<0.5U	16.9	9.3	25.0	<0.1U	13.7	<0.3U	<1.3U
S	05/#3 (1.7 - 2.0)	<0.3U	5.3	2.0	<0.5U	17.6	9.6	23.1	<0.1U	18.9	0.4B	<1.3U
T	05/#4 (3.0 - 3.5)	<0.3U	32.2	8.7	<0.5U	77.9	15.9	83.4	<0.1U	42.4	0.3B	<1.3U
	- 03/#1 (.2 - .5)	0.3W	6.7	1.6	0.7	18.8	14.4	21.3	<0.1U	14.9	0.3B	<1.3U
	03/#2 (1.0 - 1.3)	0.5W	7.0	1.7	<0.5U	21.2	12.9	20.5	<0.1U	12.0	<0.3U	<1.3U
	03/#3 (1.7 - 2.0)	<0.3U	7.2	2.0	<0.5U	21.4	12.9	21.1	<0.1U	16.4	<0.3U	1.3U
	03/#4 (3.0 - 3.5)	<0.3U	4.0	1.9	<0.5U	18.2	7.4	13.9	<0.1U	10.6	<0.3U	<1.3U
	03/#5 (7.8 - 8.3)	<0.3U	2.9	1.2	<0.5U	13.7	5.6	13.9	<0.1U	8.6	<0.3U	<1.3U

Note:

* Sample ID is as follows - Boring Number/Sample Number (sample depth in feet below the surface). See Figures 1 and 2.

U Analyte was analyzed for but not detected. Detection limit (Instrument Detection Limit) given after the < symbol.

B Reported value is less than the Contract Required Detection Limit but greater than the Instrument Detection Limit

W Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance

TABLE 5.1 (Page 3 of 4). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of inorganic analyses of soil samples collected in the vicinity of SWMU#07/09. Concentrations are mg/kg (ppm) dry weight.

	Sample ID*/ Analyte	Tl	Zn	Al	Ba	Co	Fe	Mg	Mn	Sn	Na	
	- 12/#1 (.2 - .5)	0.2B	39.5	10500	102	16.8	18800	975	2080	<7.6U	<48.9U	53.4
	12/#2 (1.0 - 1.5)	<0.2U	37.8	11100	91.9	9.9	25400	919	1400	<7.6U	<48.9U	95.8
	12/#3 (1.5 - 2.0)	<0.2U	38.8	10900	94.1	10.0	19400	934	1360	<7.6U	<48.9U	123
	12/#4 (3.0 - 3.5)	<0.2U	41.8	11500	70.4	12.9	30800	964	1470	<7.6U	<48.9U	84.8
C	- 11/#1 (.2 - .5)	0.3B	66.3	18000	409	12.9	23600	2600	853	<7.6U	65.1B	77.0
O	11/#2 (1.0 - 1.5)	0.3B	60.6	18600	460	14.9	29700	2360	1070	<7.6U	72.2B	76.3
N	11/#3 (1.5 - 2.0)	0.2BW	72.4	29700	231	18.0	40800	3430	2390	<7.6U	93.2B	38.1
T	11/#4 (3.0 - 3.5)	0.3BW	190	35100	175	11.7	35300	4700	586	<7.6U	106B	15.0
R	11/#5 (6.0 - 6.5)	0.4BW	88.5	38100	266	17.6	45800	4740	1610	<7.6U	153 B	246
O	11/#6 (9.0 - 9.5)	0.2B	18.3	24100	57.2	7.0	12600	4330	110	<7.6U	148 B	71.9
L	- 01A/#1 (.2 - .5)	<0.2U	47.6	13200	62.8	15.4	33600	1420	809	7.8	49.9B	54.1
	01A/#2 (1.0 - 1.5)	<0.2U	62.8	12100	45.8	12.2	95700	934	657	9.0	<48.9U	38.2
	01A/#3 (1.5 - 2.0)	<0.2U	45.0	12000	33.2	5.3	47900	895	189	<7.6U	<48.9U	42.5
	01A/#4 (3.0 - 3.5)	<0.2U	37.2	16100	85.4	3.9	36000	913	412	<7.6U	57.2B	58.4
	01A/#5 (7.0 - 7.5)	<0.2U	45.0	16200	64.4	7.2	29700	938	151	<7.6U	71.7B	23.7
F	- 10/#1 (.2 - .5)	<0.2U	80.0	3660	32.3	4.8	12500	17400	431	<7.6U	219 B	66.0
L	10/#2 (1.5 - 2.0)	0.2B	81.8	15800	80.6	9.5	20500	1860	693	<7.6U	52.7B	83.7
A	- 09/#1 (.2 - .5)	<0.2U	42.5	3550	26.6	4.6	8120	15000	320	<7.6U	183 B	50.5
S	09/#2 (1.2 - 1.7)	<0.2U	53.8	14900	86.5	10.6	19900	1810	855	<7.6U	53.8B	88.3
H	- 08/#1 (.2 - .4)	0.2U	109	3190	44.3	4.2	9970	15400	351	340	197 B	50.3
	08/#2 (1.5 - 2.0)	0.2B	55.2	14300	76.1	9.6	27300	3670	622	<7.6U	82.0B	93.4

Note:

* Sample ID is as follows - Boring Number/Sample Number (sample depth in feet below the surface). See Figures 1 and 2.

U Analyte was analyzed for but not detected. Detection limit (Instrument Detection Limit) given after the < symbol.

B Reported value is less than the Contract Required Detection Limit but greater than the Instrument Detection Limit

W Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance

TABLE 5.1 (Page 4 of 4). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of inorganic analyses of soil samples collected in the vicinity of SWMU#07/09. Concentrations are mg/kg (ppm) dry weight.

	Sample ID*/ Analyte	Tl	Zn	Al	Ba	Co	Fe	Mg	Mn	Sn	Na	TP
	- 07/#1 (.2 - .5)	<0.2U	54.8	13900	81.2	18.0	33000	1740	1230	<7.6U	65.6B	160
	07/#2 (1.0 - 1.5)	<0.2U	78.9	12500	77.8	26.6	65200	4550	1880	<7.6U	75.4B	109
	07/#3 (1.5 - 2.0)	<0.2U	38.9	9210	170	5.3	16300	1050	423	<7.6U	59.3B	89.5
	07/#4 (2.0 - 2.5)	<0.2U	51.2	12200	84.3	15.6	28300	2890	1330	<7.6U	60.3B	138
	07/#5 (3.0 - 3.5)	<0.2U	30.1	10500	79.0	11.2	25600	1170	981	<7.6U	54.4B	104
	07/#6 (8.5 - 9.0)	<0.2BW	59.3	14300	147	6.5	21000	2450	338	<7.6U	99.7B	224
W	07/#7 (9.0 - 9.5)	<0.2B	65.6	17400	164	6.8	30600	2750	260	<7.6U	107 B	115
E	- 04/#1 (.2 - .5)	0.3B	52.2	15200	91.0	9.0	22100	1250	857	<7.6U	<49.0U	138
S	04/#2 (1.0 - 1.3)	0.4B	45.2	19000	47.0	16.8	27300	2100	715	<7.6U	64.0B	60.9
T	04/#3 (1.6 - 2.0)	0.3B	86.3	16800	53.2	3.1B	21400	2130	124	<7.6U	56.9B	137
	04/#4 (3.0 - 3.5)	0.3B	42.4	19300	66.3	<3.0U	23400	2130	70.6	<7.6U	93.3B	98.1
	04/#5 (7.0 - 7.5)	0.3B	32.5	18100	59.6	3.1B	17200	1040	51.8	<7.6U	95.8B	51.1
	- 02/#1 (.2 - .5)	0.2B	54.8	12000	65.6	6.6	13700	2210	400	<7.6U	96.2B	167
	02/#2 (1.0 - 1.3)	0.2B	38.7	14100	72.8	5.6	14800	1450	246	<7.6U	75.4B	53.3
	02/#3 (1.7 - 2.0)	0.2B	37.6	15800	88.9	3.6	14500	1570	144	<7.6U	71.3B	34.7
	02/#4 (3.0 - 3.5)	<0.2U	42.6	17100	95.5	5.2	38900	1780	344	<7.6U	83.8B	49.2
	02/#5 (7.5 - 8.0	<0.2U	119	13400	71.2	29.8	151000	898	939	<7.6U	62.2B	53.6
	- 06/#1 (.2 - .5)	0.2B	41.3	12800	67.0	7.3	21500	1410	55	<7.6U	<49.0U	96.5
	06/#2 (1.0 - 1.3)	0.2B	54.9	12600	104	11.8	18100	1630	1060	<7.6U	61.8B	123
	06/#3 (1.7 - 2.0)	0.3B	51.4	11500	129	11.7	18900	1190	980	<7.6U	49.7B	283
	06/#4 (3.0 - 3.5)	0.3B	86.2	11100	111	16.7	21500	1000	1460	<7.6U	52.2B	196
E	- 05/#1 (.2 - .5)	0.2B	48.2	11300	145	8.3	20600	3770	427	<7.6U	73.7B	160
A	05/#2 (1.0 - 1.3)	0.3B	43.6	12000	96.5	11.6	20200	1250	913	<7.6U	<49.0U	162
S	05/#3 (1.7 - 2.0)	0.2B	36.1	12100	179	15.6	22900	981	1830	<7.6U	<49.0U	254
T	05/#4 (3.0 - 3.5)	0.2B	109.0	9590	74.5	31.0	150000	565	1440	<7.6U	<49.0U	97.3
	- 03/#1 (.2 - .5)	0.2B	89.5	15800	68.2	8.0	21500	2080	487	<7.6U	96.6B	122
	03/#2 (1.0 - 1.3)	0.2B	53.5	16000	67.8	7.1	23500	2180	316	<7.6U	116	B119
	03/#3 (1.7 - 2.0)	0.3B	54.1	15200	61.8	6.8	27400	2110	368	<7.6U	130	B151
	03/#4 (3.0 - 3.5)	0.2B	32.4	14900	64.4	4.0	21800	1310	93.1	<7.6U	190	B39.3
	03/#5 (7.8 - 8.3)	0.2B	20.2	11400	60.9	8.2	14300	1150	236	<7.6U	281	B55.8

Note:

* Sample ID is as follows - Boring Number/Sample Number (sample depth in feet below the surface). See Figures 1 and 2.

U Analyte was analyzed for but not detected. Detection limit (Instrument Detection Limit) given after the < symbol.

B Reported value is less than the Contract Required Detection Limit but greater than the Instrument Detection Limit

W Post-digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance

TABLE 5.2 (Page 1 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Statistical analysis of results of inorganic analyses of soil samples collected in the vicinity of SWMU#07/09. Data is grouped as follows: Control - borings 12, 11, and 1A; West - borings 7, 4, and 2; East - borings 6, 5, and 3. Statistics were computed using all samples from each boring. For samples with concentrations reported as < a specific detection limit, the detection limit was used to compute the statistics. Means are analyte concentrations in soils as mg/kg (ppm) dry weight. Only concentrations reported above detection limits were used for determination of max and min.

Analyte Sample Type	Statistic	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag
Control	mean	(0.3)(2)	9.5	2.9	(0.5)(1)	34.2	13.9	27.1	(0.1)	19.8	0.3	(1.3)(1)
n=15	s.d.	-	3.6	1.1	-	13.6	4.8	12.1	-	13.5	0.04	-
	max	0.4	18.0	6.1	0.5	68.8	24.3	60.7	-	60.8	0.2	1.9
	min	0.3	5.9	1.4	-	19.0	7.8	0.1	-	10.6	0.4	-
Flash Pits	mean	(0.4)(2)	5.3	1.3	(0.5)	14.9	37.5*	**216.3***	(0.1)	10.2	0.3	(1.4)(1)
n=6	s.d.	-	2.3	0.8	-	5.0	23.3	220.3	-	2.4	-	-
	max	0.7	7.7	2.4	-	21.5	73.4	618.0	-	12.9	-	1.7
	min	0.4	2.8	0.6	-	9.3	16.0	27.0	-	7.5	-	-
West	mean	0.5	**10.2**	2.4	(0.5)	24.1	13.1	**33.8**	(0.1)	14.1	**0.4**	(1.3)
n=17	s.d.	0.3	11.2	2.0	-	16.7	4.8	33.3	-	8.0	0.2	-
	max	1.2	42.7	9.5	-	84.4	21.9	142.0	-	40.3	0.9	-
	min	0.3	2.9	1.1	-	15.0	6.6	14.4	-	8.6	0.4	-
East	mean	0.3	7.2	2.3	(0.5)(1)	22.3	11.1	25.6	(0.1)	16.0	0.3	(1.3)
n=13	s.d.	0.1	7.6	2.0	-	16.9	3.1	18.1		8.6	0.1	-
	max	0.5	32.2	8.7	0.7	77.9	15.9	83.4	-	42.2	0.4	-
	min	0.3	2.9	1.2	-	13.7	5.6	13.9	-	8.6	0.3	-

Note:

(mean) - Mean reported in parentheses. The following 2 situations may exist:
(a) all data was reported as < detection limits and detection limit is given in ()
(b) only 1 or 2 concentrations ≥ than the detection limits were reported. The second number in () is the number of observations ≥ the detection limits. Means are computed using all samples from boring including using the detection limit for those samples with results reported as < detection limits.

mean- **Mean is indicated in bold.** Concentration is greater than the corresponding concentration for the control group.

* - Concentration of soil analyte reported is significantly different (greater) (P > .05) than the concentration of that analyte in the control group.

(a) - Concentration of soil analyte reported approaches or is very close to that which is significantly greater (P > .05) than the concentration of that analyte in the control group.

n - Number of Samples.

TABLE 5.2 (Page 2 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Statistical analysis of results of inorganic analyses of soil samples collected in the vicinity of SWMU#07/09. Data is grouped as follows: Control - borings 12, 11, and 1A; West - borings 7, 4, and 2; East - borings 6, 5, and 3. Statistics were computed using all samples from each boring. For samples with concentrations reported as < a specific detection limit, the detection limit was used to compute the statistics. Means are analyte concentrations in soils as mg/kg (ppm) dry weight. Only concentrations reported above detection limits were used for determination of max and min.

Analyte Sample Type	Statistic	Tl	Zn	Al	Ba	Co	Fe	Mg	Mn	Sn	Na	TP
Control	mean	0.2	59.4	18480	149.9	11.7	35007	2070	1010	(7.7)(2)	74.0	73.2
n=15	s.d.	0.06	40.1	9121	133.9	5.0	19471	1515	699	-	35.9	55.6
	max	0.4	190.0	38100	460.0	18.0	95700	4740	2390	9.0	153.0	246.0
	min	0.2	18.3	10500	33.2	3.9	12600	895	110	7.8	49.9	15.0
Flash Pits	mean	(0.2)(2)	**70.4**	9233	57.7	7.2	16382	**9190***	545	(63.0)(1)	**131.3**(a)	72.0
n=6	s.d.	-	24.5	6337	26.4	3.0	7389	7462	212	-	76.5	19.1
	max	0.2	109.0	15800	86.5	10.6	27300	17400	855	340.0	219.0	93.4
	min	0.2	42.5	3190	26.6	4.2	8120	1810	320	-	52.7	50.3
West	mean	0.2	54.7	14754	89.1	10.3	33194	1950	607	(7.6)	**74.7**	104.8(a)
n=17	s.d.	0.1	22.6	2948	36.6	8.3	32763	901	523	-	18.0	51.8
	max	0.4	119.0	19000	170.0	29.8	151000	4550	1880	-	107.0	224.0
	min	0.2	30.1	9210	47.0	3.0	13700	898	52	-	49.0	34.7
East	mean	0.2	55.4	12792	94.5	11.4	20554	1587	744	(7.6)	95.9	**143.0***
n=13	s.d.	0.04	25.1	2035	37.5	6.9	3466	815	578	-	70.2	70.4
	max	0.3	109.0	16000	179.0	31.0	27400	3770	1830	-	281.0	283.0
	min	0.2	20.2	9590	60.9	4.0	14300	565	55	-	49.0	39.3

Note:

(mean)- Mean reported in parentheses. The following 2 situations may exist:
(a) all data was reported as < detection limits and detection limit is given in ()
(b) only 1 or 2 concentrations ≥ than the detection limits were reported. The second number in () is the number of observations ≥ the detection limits. Means are computed using all samples from boring including using the detection limit for those samples with results reported as < detection limits.

mean - Mean is indicated in **bold**. Concentration is greater than the corresponding concentration for the control group.

*- Concentration of soil analyte reported is significantly different (greater) (P > .05) than the concentration of that analyte in the control group.

(a)- Concentration of soil analyte reported approaches or is very close to that which is significantly greater (P > .05) than the concentration of that analyte in the control group.

n- Number of Samples.

TABLE 5.3. Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of inorganic analyses of method blanks association with analyses of soil samples. Concentrations are mg/kg (ppm) dry weight. Detectable concentrations are shown in **bold**.

Method Blank ID*/Analyte	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Na	Se	Ag
MB/Borings 11, 2	<0.003U	<0.002U	<0.005U	<0.005U	<0.011U	<0.006U	<0.114U	<0.100U	<0.011U	<0.30U	<0.013U
MB/Borings 5, 4	<0.003U	<0.002U	<0.005U	<0.005U	<0.010U	<0.025U	<0.114U	<0.100U	<0.040U	<0.003U	<0.013U
MB/Borings 7, 6, 3	0.003W	<0.002U	<0.002U	<0.005U	<0.011U	**0.007**	<0.114U	<0.100U	**0.050**	<0.30U	<0.013U
MB/Borings 12, 10, 9, 8, 1A	<0.003U	<0.002U	<0.002U	<0.005U	<0.011U	<0.006U	<0.114U	<0.100U	<0.011U	<0.30U	**0.024**

Method Blank ID*/Analyte	Tl	Zn	Al	Ba	Co	Fe	Mg	Mn	Sn	Na	TP
MB/Borings 11, 2	<0.20U	**0.113**	**0.120B**	<0.011U	<0.030U	**0.063B**	<0.748U	<0.005U	<0.076U	<0.489U	0.058
MB/Borings 5, 4	<0.002U	**0.081**	**0.109B**	<0.011U	<0.030U	**0.039B**	<0.748U	<0.005U	<0.076U	<0.489U	<0.100
MB/Borings 7, 6, 3	<0.002U	**0.138**	**1.59**	<0.011U	<0.030U	**0.116**	<0.748U	<0.005U	<0.076U	<0.489U	<0.100
MB/Borings 12, 10, 9, 8, 1A	<0.002U	**0.120**	**0.084B**	<0.011U	<0.030U	**0.045B**	<0.748U	<0.005U	<0.076U	<0.489U	**0.058**

Note:

* Sample ID - MB (Method Blank)/Boring numbers associated with that method blank. See Figure 1 for boring locations.

U Analyte was analyzed for but not detected. Detection limits (Instrument Detection Limit) are given after the < symbol.

B Reported value is less than the Contract Required Detection Limit but greater than the Instrument Detection Limit

W Post digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

Table 5.4. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Results of inorganic analysis of water collected from final equipment rinsing and other wash mixtures. Results are in mg/l (ppm). Results in bold are concentrations greater than detection limits. Detection limits are given after the < symbol.

Sample ID	Rinse	Rinse	Rinse	Rinse	Detergent	Steam H2O
Analyte/Boring	**08**	**07**	**04**	**1A**	**RINSE 07**	**04**
As	<0.002U	**0.005**	<0.002U	<0.002U	**0.013**	**0.034**
Be	<0.002U	**0.007**	<0.002U	<0.002U	**0.015**	<0.002U
Cd	<0.0044U	**0.049**	<0.005U	<0.0044U	<0.005U	**0.005**
Cr	<0.0114U	<0.030U	<0.011U	<0.0114U	**0.143**	<0.030U
Cu	<0.0059U	**0.297**	**0.020B**	<0.0059U	**0.107**	**0.010B**
Pb	<0.0114U	**2.17**	**0.148**	<0.001U	**0.133**	**0.137**
Hg	<0.0002U	<0.0002	<0.0002U	<0.0002U	<0.0002U	<0.0002U
Ni	<0.011U	**0.190**	**0.082**	<0.011U	**0.134**	**0.029B**
Se	<0.30UW	<0.30UW	<0.30UW	<0.30UW	<0.30UW	<0.30UW
Ag	<0.013U	<0.013U	<0.013U	<0.013U	<0.013U	<0.013U
Tl	<0.002U	<0.002U	<0.002U	<0.002U	<0.002UW	<0.002UW
Zn	**0.085**	**4.25**	**18.5**	**0.206**	**4.44**	**15.3**
Al	**0.661**	**5.31**	**1.66**	**0.588**	**100**	**6.66**
Ba	**0.0263**	**0.146B**	**0.036B**	**0.0245**	**0.806**	**0.117B**
Co	<0.030U	<0.030U	<0.030U	<0.030U	**0.046B**	**0.032B**
Fe	**0.193**	**120**	**14.9**	**1.23**	**171**	**17.4**
Mg	**4.06B**	**2.76B**	**3.53B**	**3.60B**	**16.2**	**4.80B**
Mn	**0.017**	**1.17**	**0.415**	**0.007B**	**2.38**	**1.48**
Na	**4.16B**	**3.45B**	**4.30B**	**4.20B**	**134**	**6.12**
TP	<0.050U	**0.201**	NA	NA	NA	NA
Sn	<0.076U	<0.076U	<0.076U	<0.076U	<0.076U	<0.076U
Sb	<0.003U	0.005B	<0.003U	<0.003U	<0.003U	<0.003U

Note:

U - Analyte was analyzed for but not detected

B - Reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit

W - Post-detection spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance

Detergent Rinse - detergent solution used as a preliminary equipment rinse

Steam H2O - water condensate collected during washing of drill rig with steam

NA - No analysis, insufficient sample recieved at lab

TABLE 5.5. (Page 1 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of analysis of soil samples for explosive compounds. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of explosives are shown in **bold**.

	Sample ID / Analyte	2,4-DNT	TNT	TETRYL	DNB	TNB	RDX	HMX	2,6-DNT
	- 12/#1 (.2 - .5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-
	12/#2 (1.0 - 1.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-
	12/#3 (1.5 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-
	12/#4 (3.0 - 3.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-
C -	11/#1 (.2 - .5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
O	11/#2 (1.0 - 1.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
N	11/#3 (1.5 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
T	11/#4 (3.0 - 3.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
R	11/#5 (6.0 - 6.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
O	11/#6 (9.0 - 9.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
L -	01A/#1 (.2 - .5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	01A/#2 (1.0 - 1.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	01A/#3 (1.5 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	01A/#4 (3.0 - 3.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	01A/#5 (7.0 - 7.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
F -	10/#1 (.2 - .5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-
L	10/#2 (1.5 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-
A -	09/#1 (.2 - .5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-
S	09/#2 (1.2 - 1.7)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-
H -	08/#1 (.2 - .5)	**1.70**	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-
	08/#2 (1.5 - 2.0)	<0.250U	**3.08**	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	-

Note:

Sample ID is as follows - Boring Number/Sample Number (sample depth in feet below the surface). See Figures 1 and 2.

U Analyte was analyzed for but not detected. Detection limits are given after the < symbol

J Estimated value below the statistical quantitation limits

- No results reported. Lab reports indicate 2,4-DNT cannot be separated from 2,6-DNT

TABLE 5.5. (Page 2 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of analysis of soil samples for explosive compounds. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of explosives are shown in **bold**.

	Sample ID / Analyte	2,4-DNT	TNT	TETRYL	DNB	TNB	RDX	HMX	2,6-DNT
	07/#1 (.2 - .5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	07/#2 (1.0 - 1.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	07/#3 (1.5 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	07/#4 (2.0 - 2.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	07/#5 (3.0 - 3.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	07/#6 (8.5 - 9.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
W	07/#7 (9.0 - 9.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
E -	04/#1 (.2 - .5)	<0.250U	**0.199J**	<0.65U	<0.250U	**0.159J**	<1.00U	<2.20U	<0.260U
S	04/#2 (1.0 - 1.3)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
T	04/#3 (1.6 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	04/#4 (3.0 - 3.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	04/#5 (7.0 - 7.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
-	02/#1 (.2 - .5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	02/#2 (1.0 - 1.3)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	02/#3 (1.7 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	02/#4 (3.0 - 3.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	02/#5 (7.5 - 8.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	06/#1 (.2 - .5)	<0.250U	**0.147J**	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	06/#2 (1.0 - 1.3)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	06/#3 (1.7 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	06/#4 (3.0 - 3.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
E -	05/#1 (.2 - .5)	<0.250U	**0.433**	<0.65U	<0.250U	**0.183J**	<1.00U	<2.20U	<0.260U
A	05/#2 (1.0 - 1.3)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
S	05/#3 (1.7 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
T	05/#4 (3.0 - 3.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
-	03/#1 (.2 - .5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	03/#2 (1.0 - 1.3)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	03/#3 (1.7 - 2.0)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	03/#4 (3.0 - 3.5)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U
	03/#5 (7.8 - 8.3)	<0.250U	<0.250U	<0.65U	<0.250U	<0.250U	<1.00U	<2.20U	<0.260U

Note:

Sample ID is as follows - Boring Number/Sample Number (sample depth in feet below the surface). See Figures 1 and 2.

U Analyte was analyzed for but not detected. Detection limits are given after the < symbol

J Estimated value below the statistical quantitation limits

- No results reported. Lab reports indicate 2,4-DNT cannot be separated from 2,6-DNT

Table 5.6. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Results of analyses of method blanks associated with analyses of soils for explosive compounds. No detectable concentrations of indicated explosive analytes were found. Detection limits are given after the < symbol and are in mg/kg (ppm) dry weight units.

Sample	MB	MB	MB	MB
Analyte/Boring#	**11, 2**	**5, 4**	**7, 6, 3**	**12, 10, 9, 8, 1A**
2,4-DNT	<0.25U	<0.25U	<0.25U	<0.25U
TNT	<0.25U	<0.25U	<0.25U	<0.25U
TETRYL	<0.65U	<0.65U	<0.65U	<0.65U
DNB	<0.25U	<0.25U	<0.25U	<0.25U
TNB	<0.25U	<0.25U	<0.25U	<0.25U
RDX	<1.0U	<1.0U	<1.0U	<1.0U
HMX	<2.2U	<2.2U	<2.2U	<2.2U
2,6-DNT	<0.26U	<0.26U	<0.26U	N/A

Note:

U - Analyte was analyzed for but not detected

MB - Method blank for the borings indicated

N/A - No results reported. Lab data sheets indicate that 2,4-DNT cannot be separated from 2,6-DNT.

Table 5.7. Old Rifle Range - NWSC Crane, Indiana, SWMU#07/09. Results of analyses of water collected from final equipment rinsing explosive compounds. Deionized water used for the rinsing was also analyzed for explosives. No detectable concentrations of indicated explosive analytes were found. Detection limits are given after the < symbol and are in mg/kg (ppm) dry weight units.

Sample ID	RINSE	RINSE	DEION	METHOD
Analyte/Boring	**1A**	**08**	**H2O**	**Blank**
2,4-DNT	<0.020U	<0.020U	<0.020U	<0.020U
TNT	<0.020U	<0.020U	<0.020U	<0.020U
TETRYL	<0.050U	<0.020U	<0.020U	<0.020U
DNB	<0.020U	<0.020U	<0.020U	<0.020U
TNB	<0.020U	<0.020U	<0.020U	<0.020U
RDX	<0.020U	<0.020U	<0.020U	<0.020U
HMX	<0.020U	<0.020U	<0.020U	<0.020U
2,6-DNT	N/A	N/A	N/A	N/A

Note:

U - Analyte was analyzed for but not detected.

N/A - No results reported.

Table 5.8. (Page 1 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of EPA Method 8240 * (volatile organics) soil analyses. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see appendix A for full compound names.

Analyte/Sample	12#4	11#5	1A#5	10#2	09#2	08#2	07#6	04#5	02#5	06#4	05#4**	03#5
ClMETH	<0.012U	<0.012U	<0.012U	<0.011U	<0.011U	<0.011U	<0.01U	<0.011U	<0.011U	<0.01U	-	<0.01U
BrMETH	<0.012U	<0.012U	<0.012U	<0.011U	<0.011U	<0.011U	<0.01U	<0.011U	<0.011U	<0.01U	-	<0.01U
VnlCl	<0.012U	<0.012U	<0.012U	<0.011U	<0.011U	<0.011U	<0.01U	<0.011U	<0.011U	<0.01U	-	<0.01U
ClETHA	<0.012U	<0.012U	<0.012U	<0.011U	<0.011U	<0.011U	<0.01U	<0.011U	<0.011U	<0.01U	-	<0.01U
MeCl	**0.23B**	**0.19B**	**0.10B**	**0.13B**	**0.41B**	**0.106B**	**0.179B**	**0.12B**	**0.54B**	**0.102B**	-	**0.049B**
11DClETE	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.056U	<0.005U	-	<0.005U
11DClETA	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
t-DClETE	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
c-DClETE	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
CHCl3	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
12DClETA	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
111TCA	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
CCl4	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
BrDClMe	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
12DClPR	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
t13ClPRE	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	**0.0012J**	-	<0.005U
TCE	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
DBrClMe	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
c13ClPRE	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
112TCA	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
BENZENE	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
CHBR3	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
1122TClA	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
TEClETE	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
TOLUENE	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U		<0.005U

Note:

Sample ID is as follows - 12#4, boring 12/sample 4. See Figures 1 and 2.

J - Estimated value below the statistical quantitation limits

U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.

B - Analyte is found in the associated blank as well as in the sample.

* - EPA Method 8240 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

** - No analysis performed for 05#4, sample vial was not received at lab

Table 5.8. (Page 2 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of EPA Method 8240 * (volatile organics) soil analyses. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see appendix A for full compound names.

Analyte/Sample	12#4	11#5	1A#5	10#2	09#2	08#2	07#6	04#5	02#5	06#4	05#4**	03#5
ClBEN	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
ETBEN	<0.0061U	**0.006J**	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	**0.004J**	<1.6U	-	<0.005U
ACETONE	**0.02BJ**	**0.05BJ**	**0.027BJ**	**0.061BJ**	**0.082BJ**	**0.09BJ**	**0.024BJ**	**0.016J**	**0.05BJ**	**0.120B**	-	**0.056BJ**
BUTANO	<0.12U	<0.12U	<0.12U	**0.020J**	**0.029**	**0.044J**	<0.10U	<0.11U	<0.11U	<0.10U	-	**0.0019J**
CS2	<0.0061U	<0.0062U	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
2HEXANO	<0.061U	<0.062U	<0.058U	<0.057U	<0.057U	<0.057U	<0.05U	<0.057U	<0.056U	<0.05U	-	<0.05U
4Me2PE	<0.061U	<0.062U	<0.058U	<0.057U	<0.057U	<0.057U	<0.05U	<0.057U	<0.056U	<0.05U	-	<0.05U
STYRENE	<0.0061U	<0.0062U	<0.0058U	<0.057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	<0.0056U	<0.005U	-	<0.005U
VnACETA	<0.0061U	<0.062U	<0.058U	<0.057U	<0.057U	<0.057U	<0.05U	<0.057U	<0.056U	<0.05U	-	<0.05U
T-XYLENE	<0.0061U	**0.010**	<0.0058U	<0.0057U	<0.0057U	<0.0057U	<0.005U	<0.0057U	**0.007**	<0.005U	-	<0.005U

Note:

Sample ID is as follows - 12#4, boring 12/sample 4. See Figures 1 and 2.

J - Estimated value below the statistical quantitation limits

U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.

B - Analyte is found in the associated blank as well as in the sample.

* - EPA Method 8240 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

** - No analysis performed for 05#4, sample vial was not received at lab

Table 5-8A. EPA method 8240, Volatile compounds, (Test Methods for Evaluating Organic and Inorganic Wastes, Physical/Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions). Abbreviations used in report tables along with full analyte names.

ClMETH - Chloromethane
BrMETH - Bromomethane
VnlCl - Vinyl Chloride
ClETHA - Chloroethane
MeCl - Methylene Chloride
11DClETE - 1,1-Dichloroethene
11DClETA - 1,1-Dichloroethane
t-DClETE - Trans-1,2-Dichloroethene
c-DClETE - cis-1,2-Dichloroethene
CHCl3 - Chloroform
12DClETA - 1,2-Dichloroethane
111TCA - 1,1,1-Trichloroethane
CCl4 - Carbon Tetrachloride
BrDClMe - Bromodichloromethane
12DClPR - 1,2-Dichloropropane
t13ClPRE - Trans-1,3-Dichloropropene
TCE - Trichloroethene
DBrClMe - Dibromochloromethane
c13ClPRE - Cis-1,3-Dichloropropene
112TCA - 1,1,2-Trichloroethane
BENZENE - Benzene
CHBR3 - Bromoform
1122TClA - 1,1,2,2,-Tetrachloroethane
TEClETE - Tetrachloroethene
TOLUENE - Toluene
ClBEN - Chlorobenzene
ETBEN - Ethylbenzene
ACETONE - Acetone
BUTANO - 2-Butanone
CS2 - Carbondisulfide
2HEXANO - 2-Hexanone
4Me2PE - 4-Methyl-2-Pentanone
STYRENE - Styrene
VnACETA - Vinyl Acetate
T-XYLENE - T-Xylene

Table 5.9. Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of volatile organic* analyses of method blanks associated with soils analyses. Concentrations are mg/kg (ppm) dry weight. Detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see Appendix A for full compound names.

METHOD BLANK	MB	MB	MB	MB
Analyte/Boring#	**3, 6, 7**	**4**	**12, 10, 9, 8, 1A**	**11, 2**
ClMETH	<0.010U	<0.010U	<0.010U	<0.010U
BrMETH	<0.010U	<0.010U	<0.010U	<0.010U
VnlCl	<0.010U	<0.010U	<0.010U	<0.010U
ClETHA	<0.010U	<0.010U	<0.010U	<0.010U
MeCl	**0.022**	**0.022**	**0.009B**	**0.0095**
11DClETE	<0.005U	<0.005U	<0.005U	<0.005U
11DClETA	<0.005U	<0.005U	<0.005U	<0.005U
t-DClETE	<0.005U	<0.005U	<0.005U	<0.005U
c-DClETE	<0.005U	<0.005U	<0.005U	<0.005U
CHCl3	<O.005U	<0.005U	<0.005U	<0.005U
12DClETA	<0.005U	<0.005U	<0.005U	<0.005U
111TCA	<0.005U	<0.005U	<0.005U	<0.005U
CCl4	<0.005U	<0.005U	<0.005U	<0.005U
BrDClMe	<0.005U	<0.005U	<0.005U	<0.005U
12DClPR	<0.005U	<0.005U	<0.005U	<0.005U
t13ClPRE	<0.005U	<0.005U	<0.005U	<0.005U
TCE	<0.005U	<0.005U	<0.005U	<0.005U
DBrClMe	<0.005U	<0.005U	<0.005U	<0.005U
13ClPRE	<0.005U	<0.005U	<0.005U	<0.005U
112TCA	<0.005U	<0.005U	<0.005U	<0.005U
BENZENE	<0.005U	<0.005U	<0.005U	<0.005U
CHBR3	<0.005U	<0.005U	<0.005U	<0.005U
1122TClA	<0.005U	<0.005U	<0.005U	<0.005U
TEClETE	<0.005U	<0.005U	<0.005U	<0.005U
TOLUENE	<0.005U	<0.005U	<0.005U	<0.005U
ClBEN	<0.005U	<0.005U	<0.005U	<0.005U
ETBEN	<0.005U	<0.005U	<0.005U	<0.005U
ACETONE	**0.029J**	<0.005U	**0.0083**	**0.0081J**
BUTANO	<0.10U	<0.10U	<0.10U	<0.10U
CS2	<0.005U	<0.005U	<0.005U	<0.005U
2HEXANO	<0.050U	<0.050U	<0.050U	<0.050U
4Me2PE	<0.050U	<0.050U	<0.050U	<0.050U
STYRENE	<0.005U	<0.005U	<0.005U	<0.005U
VnACETA	<0.050U	<0.050U	<0.050U	<0.050U
T-XYLENE	<0.005U	<0.005U	<0.005U	<0.005U

Note: Method Blank ID is as follows - MB 3, 6, 7- method blank associated with analyses of soils from borings 3, 6, AND 7

J - Estimated value below the statistical quantitation limit

U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.

* - EPA Method 8240 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/ Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.10. Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Semivolatile organic compounds* tentatively identified from soil samples. Estimated concentrations are mg/kg (ppm) dry weight.

Sample Number	Compound	RT	CAS No	Estimated Conc (mg/kg)
12#4	unknown compound	4.39		.0085
	unknown hydrocarbon	7.40		.00085
	3-hexen-2-one	7.61	763939	.0015
11#6	3-hexen-2-one	7.61	763939	1.60
	unknown hydrocarbon	7.39		.890
	unknown compound	4.40		5.40
1A#5	3-hexen-2-one	7.53	763939	.0014
	unknown compound	4.45		.014
10#2	1-(3-ethyloxiranyl) ethanone	7.31	17257817	.00078
	3-hexen-2-one	7.51	763939	.0015
	unknown compound	4.47		.022
9#2	unknown hydrocarbon	7.14		.014
	unknown hydrocarbon	7.38		.0016
	unknown compound	4.37		.028
	1-methyl-1H-1,2,4-triazole	7.60	6086211	.0036
8#2	3-hexen-2-one	7.48	763939	.0014
	unknown compound	4.39		.028
	unknown compound	5.83		.018
	sulfur, S8	29.21	10544500	.0015
7#7	unknown compound	4.44		31.00
	unknown compound	5.95		1.20
	unknown compound	6.65		1.80
	unknown compound	7.24		5.60
	unknown compound	7.55		7.80
	3-hexen-2-one	7.61	763939	12.00
	hexanedioic acid, dioctyl ester	35.47	123795	.760
4#5	3-hexen-2-one	7.60	763939	1.50
	unknown hydrocarbon	7.38		.780
	unknown compound	4.49		8.20
2#5	unknown compound	5.12	96140	7.70
	unknown compound	8.48		2.40
6#4	unknown compound	4.38		4.30
	unknown compound	7.42		.98
	3-hexen-2-one	7.61	763939	1.50
5#2	unknown compound	4.44		31.00
	unknown compound	5.95		1.20
	3-hexen-2-one	7.75	763939	12.00
	hexanidioric acid,dioctyl ester	35.47	123795	.760
	2-methyl-1,3-dioxolane-2-butanol	6.13	5745755	1.30
	unknown compound	6.65		1.80
	unknown compound	7.24		5.60
	unknown compund	7.55		7.80
3#5	unknown compound	4.47		5.90
	unknown compound	7.42		.86
	3-hexen-2-one	7.63	763939	1.60
Method Blank	3-hexen-2-one	7.53	763939	.0014
	unknown compound	7.34		.0007
	ethyl ester, 2-hydroxybutanoic acid	4.45	52089540	.008

Note: RT - Retention Time; CAS No - Chemical Abstract Service Registry numbers
Sample Number - 12#4 Boring 12/sample 4. See Figures 5.1 and 5.2 for locations and sampling dates
* - EPA Method 8270 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/ Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.10A. EPA method 8270 semivolatile compounds, (Test Methods for Evaluating Organic and Inorganic Wastes, Physical/Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions). Abbreviations used in report tables along with full analyte names.

PHENOL - Phenol
2ClPHEN - 2-Chlorophenol
2NIPHE - 2-Nitrophenol
24DMePHE - 2,4-Dimethylphenol
24DClPHE - 2,4-Dichlorophenol
4Cl3MePH - 4-Chloro-3-Methylphenol
246TClPH - 2,4,6-Trichlorophenol
24DNPH - 2,4-Dinitrophenol
4NPHE - 4-Nitrophenol
2M46DNPH - 2-Methyl-4,6-Dinotrophenol
PClPHE - Pentachlorophenol
BENZOAC - Benzoic Acid
2MEPHE - 2-Methylphenol
4MEPHE - 4-Methylphenol
245TClPH - 2,4,5-Trichlorophenol
BZLAL - Benzyl Alcohol
NNDMEAM - N-Nitrosodimethylamine
BClIPrE - Bis(2-Chloroisopropyl)Ether
NNDNPAM - N-Nitroso-Di-N-Propylamine
NITROBEN - Nitrobenzene
ISOPHOR - Isophorone
BClEtoME - Bis(2-Chloroethoxy)Methane
26DNTOL - 2,6-Dinitrotoluene
24DNTOL - 2,4-Dinitrotoluene
12DPHYD - 1,2-Diphenylhydrazine
BENZIDI - Benzidine
33DClBEZ - 3,3'Dichlorobenzidine
BClEtE - Bis(2-Chloroethyl)Ether
13DClB - 1,3-Dichlorobenzene
14DCLB - 1,4-Dichlorobenzene
12DClB - 1,2-Dichlorobenzene
HClETA - Hexachloroethane
124TClB - 1,2,4-Trichlorobenzene
NAPHTH - Naphthalene
HClBU - Hexachlorobutadiene
HClCYPD - Hexachlorocyclopentadiene
2ClNAPH - 2-Chloronaphthalene
ACENAY - Acenaphthylene
DMePHTH - Dimethyl Phthalate
ACENAP - Acenaphthene
FLUORE - Fluorene
DEtPHTH - Diethyl Phthalate
4ClPHPHE - 4-Chlorophenyl Phenyl Ether
NNDPHAM - N-Nitrosodiphenyl Amine
4BrPHET - 4-Bromophenyl Ether
HClBEN - Hexachlorobenzene
PHENAN - Phenanthrene
ANTRAC - Anthracene
DBuPHTH - Dibutylphthalate
FLANTHE - Fluoranthene
PYRENE - Pyrene
BuBePHTH - Butylbenzylphthalate
CHRYSE - Chrysene
BAANTHR - Benzo(a)Anthracene
B2EHPH - Bis(2-Ethylhexyl)Phthalate
DNOcPHT - Di-N-Octylphthalate
BBFLANT - Benzo(b)Fluoranthene
BKFLANT - Benzo(k)Fluoranthene
BAPYRE - Benzo(a)Pyrene
I123PYR - Indeno(1,2,3-C,D)Pyrene
B-GHI-PY - Benzo(G,H,I)Perylene
ANILINE - Aniline
4ClANIL - 4-Chloroaniline
DBENZOFU - Dibenzofuran
2MeNAPH - 2-Methylnaphthalene
2NANIL - 2-Nitroaniline
3NANIL - 3-Nitroaniline
4NANIL - 4-Nitroaniline

Table 5.11. Old Rifle Range - NWSC Crane, SWMU# 07/09. Results of volatile organic analyses * of sampling equipment rinses and trip and method blanks. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of organic analyte are shown in bold. Analytes are given as abreviations; see Appendix A for full compound names.

SAMPLE TYPE	RINSE	RINSE	RINSE	TRIP	METHOD
Analyte/Boring	**07**	**11**	**02**	**Blank**	**Blank**
ClMETH	<0.010U	<0.010U	<0.010U	<0.010U	<0.010U
BrMETH	<0.010U	<0.010U	<0.010U	<0.010U	<0.010U
VnlCl	<0.010U	<0.010U	<0.010U	<0.010U	<0.010U
ClETHA	<0.010U	<0.010U	<0.010U	<0.010U	<0.010U
MeCl	**0.033B**	**0.0096B**	**0.012B**	**0.019B**	**0.0094**
11DClETE	<0.010U	<0.010U	<0.010U	<0.010U	<0.010U
11DClETA	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
t-DClETE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
c-DClETE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
CHCl3	**0.010**	**0.012**	**0.010**	<0.005U	<0.005U
12DClETA	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
111TCA	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
CCl4	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
BrDClMe	**0.0015J**	<0.005U	<0.005U	<0.005U	<0.005U
12DClPR	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
t13ClPRE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
TCE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
DBrClMe	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
c13ClPRE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
112TCA	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
BENZENE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
CHBR3	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
1122TClA	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
TEClETE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
TOLUENE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
ClBEN	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
ETBEN	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
ACETONE	**0.005J**	**0.012J**	**0.010J**	**0.011J**	<0.005U
BUTANO	<0.10U	<0.10U	<0.10U	<0.10U	<0.10U
CS2	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
2HEXANO	<0.050U	<0.050U	<0.050U	<0.050U	<0.050U
4Me2PE	<0.050U	<0.050U	<0.050U	<0.050U	<0.050U
STYRENE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U
VnACETA	<0.050U	<0.050U	<0.050U	<0.050U	<0.050U
T-XYLENE	<0.005U	<0.005U	<0.005U	<0.005U	<0.005U

Note: J - Estimated value below the statistical quantitation limit
U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.
B - Analyte found in the method blank as well as in the sample.
* - EPA Method 8240 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/ Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.12. (Page 1 of 3). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of EPA Method 8270 * (semivolatile organics) soil analyses. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see appendix A for full compound names.

Analyte/Sample	12#4	11#6	1A#5	10#2	09#2	08#2	07#7	04#5	02#5	06#4	05#4	03#5
PHENOL	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
2ClPHEN	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
2NIPHE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
24DMePHE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
24DClPHE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
4Cl3MePH	<1.5U	<1.6U	<1.5U	<1.6U	<1.5U	<1.5U	<1.6U	<1.5U	<2.4U	<1.6U	<1.4U	<1.6U
246TClPH	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
24DNPH	<3.8U	<3.9U	<3.8U	<3.9U	<3.6U	<3.7U	<4.0U	<3.8U	<6.0U	<3.9U	<3.4U	<3.9U
4NPHE	<3.8U	<3.9U	<3.8U	<3.9U	<3.6U	<3.7U	<4.0U	<3.8U	<6.0U	<3.9U	<3.4U	<3.9U
2M46DNPH	<3.8U	<3.9U	<3.8U	<3.9U	<3.6U	<3.7U	<4.0U	<3.8U	<6.0U	<3.9U	<3.4U	<3.9U
PClPHE	<3.8U	<3.9U	<3.8U	<3.9U	<3.6U	<3.7U	<4.0U	<3.8U	<6.0U	<3.9U	<3.4U	<3.9U
BENZOAC	<3.8U	<3.9U	<3.8U	<3.9U	<3.6U	<3.7U	<4.0U	<3.8U	<6.0U	<3.9U	<3.4U	<3.9U
2MEPHE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
4MEPHE	<0.77U	<0.78U	<0.75U	<0.78U	**0.16J**	**0.47J**	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
245TClPH	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
BZLAL	<1.5U	<1.6U	<1.5U	<1.6U	<1.5U	<1.5U	<1.6U	<1.5U	<2.4U	<1.6U	<1.4U	<1.6U
NNDMEAM	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	**0.04J**	<0.78U	<0.68U	<0.78U
BClIPrE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
NNDNPAM	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
NITROBEN	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
ISOPHOR	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
BClEtoME	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
26DNTOL	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
24DNTOL	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
12DPHYD	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
BENZIDI	<3.8U	<3.9U	<3.8U	<3.9U	<3.6U	<3.7U	<4.0U	<3.8U	<6.0U	<3.9U	<0.68U	<3.9U

Note: Sample ID is as follows - 12#4, boring 12/sample 4. See Figures 1 and 2.

J - Estimated value below the statistical quantitation limits

U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.

B - Analyte is found in the associated blank as well as in the sample.

* - EPA Method 8270 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.12. (Page 2 of 3). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of EPA Method 8270 * (semivolatile organics) soil analyses. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see appendix A for full compound names.

Analyte/Sample	12#4	11#6	1A#5	10#2	09#2	08#2	07#7	04#5	02#5	0 6#4	05#4	0 3#5
33DClBEZ	<1.5U	<1.6U	<1.5U	<1.6U	<1.5U	<1.5U	<1.6U	<1.5U	<2.4U	<1.6U	<0.68U	<1.6U
BClEtE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
13DClB	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
14DCLB	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
12DClB	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
HClETA	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
124TClB	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
NAPHTH	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
HClBU	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
HClCYPD	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
2ClNAPH	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
ACENAY	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
DMePHTH	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
ACENAP	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
FLUORE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
DEtPHTH	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
4ClPHPHE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
NNDPHAM	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
4BrPHET	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
HClBEN	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
PHENAN	<0.77U	<0.78U	<0.75U	**0.03J**	**0.05J**	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
ANTRAC	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
DBuPHTH	**0.50BJ**	**0.10BJ**	**0.09BJ**	**0.28BJ**	**0.29BJ**	**0.17BJ**	**0.18BJ**	**0.20BJ**	**0.17BJ**	**0.24BJ**	**0.14BJ**	**0.23B J**
FLANTHE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
PYRENE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
BuBePHTH	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U

Note: Sample ID is as follows - 12#4, boring 12/sample 4. See Figures 1 and 2.

J - Estimated value below the statistical quantitation limits

U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.

B - Analyte is found in the associated blank as well as in the sample.

* - EPA Method 8270 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.12. (Page 3 of 3). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of EPA Method 8270 * (semivolatile organics) soil analyses. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see appendix A for full compound names.

Analyte/Sample	12#4	11#6	1A#5	10#2	09#2	08#2	07#7	04#5	02#5	06#4	05#4	03#5
CHRYSE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
BAANTHR	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
B2EHPH	**0.10J**	**0.06J**	**0.11J**	**0.57J**	**<0.73U**	**0.29J**	**0.15BJ**	**1.40B**	**0.13J**	**0.16BJ**	**0.17BJ**	**0.11BJ**
DNOcPHT	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
BBFLANT	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
BKFLANT	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
BAPYRE	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
I123PYR	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
B-GHI-PY	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
ANILINE	<1.5U	<1.6U	<1.5U	<1.6U	<1.5U	<1.5U	<1.6U	<1.5U	<2.4U	<1.6U	<1.4U	<1.6U
4ClANIL	<1.5U	<1.6U	<1.5U	<1.6U	<1.5U	<1.5U	<1.6U	<1.5U	<2.4U	<1.6U	<1.4U	<1.6U
DBENZOFU	<0.77U	<0.78U	<0.75U	<0.78U	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
2MeNAPH	<0.77U	<0.78U	<0.75U	**0.03J**	<0.73U	<0.74U	<0.79U	<0.75U	<1.2U	<0.78U	<0.68U	<0.78U
2NANIL	<3.8U	<3.9U	<3.8U	<3.9U	<3.6U	<3.7U	<4.0U	<3.8U	<6.0U	<3.9U	<3.4U	<3.9U
3NANIL	<3.8U	<3.9U	<3.8U	<3.9U	<3.6U	<3.7U	<4.0U	<3.8U	<6.0U	<3.9U	<3.4U	<3.9U
4NANIL	<3.8U	<3.9U	<3.8U	<3.9U	<3.6U	<3.7U	<4.0U	<3.8U	<6.0U	<3.9U	<3.4U	<3.9U

Note: Sample ID is as follows - 12#4, boring 12/sample 4. See Figures 1 and 2.
J - Estimated value below the statistical quantitation limits
U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.
B - Analyte is found in the associated blank as well as in the sample.
* - EPA Method 8270 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.13. (Page 1 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of semivolatile organic* analyses of method blanks associated with soils analyses. Concentrations are mg/kg (ppm) dry weight. Detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see Appendix A for full compound names.

METHOD BLANK	MB	MB	MB	MB
ANALYTE/BORING #	3, 6	4, 5	12, 10, 9, 8, 1A	11, 2
PHENOL	<0.66U	<0.66U	<0.66U	<0.66U
2ClPHEN	<0.66U	<0.66U	<0.66U	<0.66U
2NIPHE	<0.66U	<0.66U	<0.66U	<0.66U
24DMePHE	<0.66U	<0.66U	<0.66U	<0.66U
24DClPHE	<0.66U	<0.66U	<0.66U	<0.66U
4Cl3MePH	<1.3U	<1.3U	<1.3U	<1.3U
246TClPH	<0.66U	<0.66U	<0.66U	<0.66U
24DNPH	<3.3U	<3.3U	<3.3U	<3.3U
4NPHE	<3.3U	<3.3U	<3.3U	<3.3U
2M46DNPH	<3.3U	<3.3U	<3.3U	<3.3U
PClPHE	<3.3U	<3.3U	<3.3U	<3.3U
BENZOAC	<3.3U	<3.3U	<3.3U	<3.3U
2MEPHE	<0.66U	<0.66U	<0.66U	<0.66U
4MEPHE	<0.66U	<0.66U	<0.66U	<0.66U
245TClPH	<0.66U	<0.66U	<0.66U	<0.66U
BZLAL	<1.3U	<1.3U	<1.3U	<1.3U
NNDMEAM	<0.66U	<0.66U	<0.66U	<0.66U
BClIPrE	<0.66U	<0.66U	<0.66U	<0.66U
NNDNPAM	<0.66U	<0.66U	<0.66U	<0.66U
NITROBEN	<0.66U	<0.66U	<0.66U	<0.66U
ISOPHOR	<0.66U	<0.66U	<0.66U	<0.66U
BClEtoME	<0.66U	<0.66U	<0.66U	<0.66U
26DNTOL	<0.66U	<0.66U	<0.66U	<0.66U
24DNTOL	<0.66U	<0.66U	<0.66U	<0.66U
12DPHYD	<0.66U	<0.66U	<0.66U	<0.66U
BENZIDI	<3.3U	<3.3U	<3.3U	<3.3U
33DClBEZ	<1.3U	<1.3U	<1.3U	<1.3U
BClEtE	<0.66U	<0.66U	<0.66U	<0.66U
13DClB	<0.66U	<0.66U	<0.66U	<0.66U
14DCLB	<0.66U	<0.66U	<0.66U	<0.66U
12DClB	<0.66U	<0.66U	<0.66U	<0.66U
HClETA	<0.66U	<0.66U	<0.66U	<0.66U
124TClB	<0.66U	<0.66U	<0.66U	<0.66U
NAPHTH	<0.66U	<0.66U	<0.66U	<0.66U
HClBU	<0.66U	<0.66U	<0.66U	<0.66U
HClCYPD	<0.66U	<0.66U	<0.66U	<0.66U
2ClNAPH	<0.66U	<0.66U	<0.66U	<0.66U
ACENAY	<0.66U	<0.66U	<0.66U	<0.66U

Note: Method Blank ID is as follows - MB 3, 6 - method blank associated with analyses of soils from borings 3 and 6

J - Estimated value below the statistical quantitation limit

U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.

* - EPA Method 8270 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/ Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.13. (Page 2 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results of semivolatile organic* analyses of method blanks associated with soils analyses. Concentrations are mg/kg (ppm) dry weight. Detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see Appendix A for full compound names.

METHOD BLANK	MB	MB	MB	MB
Analyte/Boring #	**3, 6**	**4, 5**	**12, 10, 9, 8, 1A**	**11, 2**
DMePHTH	<0.66U	<0.66U	<0.66U	<0.66U
ACENAP	<0.66U	<0.66U	<0.66U	<0.66U
FLUORE	<0.66U	<0.66U	<0.66U	<0.66U
DEtPHTH	<0.66U	<0.66U	<0.66U	<0.66U
4ClPHPHE	<0.66U	<0.66U	<0.66U	<0.66U
NNDPHAM	<0.66U	<0.66U	<0.66U	<0.66U
4BrPHET	<0.66U	<0.66U	<0.66U	<0.66U
HClBEN	<0.66U	<0.66U	<0.66U	<0.66U
PHENAN	<0.66U	<0.66U	<0.66U	<0.66U
ANTRAC	<0.66U	<0.66U	<0.66U	<0.66U
DBuPHTH	**0.17J**	**0.17J**	**0.12J**	**0.12J**
FLANTHE	<0.66U	<0.66U	<0.66U	<0.66U
PYRENE	<0.66U	<0.66U	<0.66U	<0.66U
BuBePHTH	<0.66U	<0.66U	<0.66U	<0.66U
CHRYSE	<0.66U	<0.66U	<0.66U	<0.66U
BAANTHR	<0.66U	<0.66U	<0.66U	<0.66U
B2EHPH	**0.13J**	**0.13J**	<0.66U	<0.66U
DNOcPHT	<0.66U	<0.66U	<0.66U	<0.66U
BBFLANT	<0.66U	<0.66U	<0.66U	<0.66U
BKFLANT	<0.66U	<0.66U	<0.66U	<0.66U
BAPYRE	<0.66U	<0.66U	<0.66U	<0.66U
I123PYR	<0.66U	<0.66U	<0.66U	<0.66U
B-GHI-PY	<0.66U	<0.66U	<0.66U	<0.66U
ANILINE	<1.3U	<1.3U	<1.3U	<1.3U
4ClANIL	<1.3U	<1.3U	<1.3U	<1.3U
DBENZOFU	<0.66U	<0.66U	<0.66U	<0.66U
2MeNAPH	<0.66U	<0.66U	<0.66U	<0.66U
2NANIL	<3.3U	<3.3U	<3.3U	<3.3U
3NANIL	<3.3U	<3.3U	<3.3U	<3.3U
4NANIL	<3.3U	<3.3U	<3.3U	<3.3U

Note: Method Blank ID is as follows - MB 3, 6 - method blank associated with analyses of soils from borings 3 and 6

J - Estimated value below the statistical quantitation limit

U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.

* - EPA Method 8270 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/ Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.14. Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Volatile organic compounds* tentatively identified from soil samples. Estimated concentrations are mg/kg dry weight.

Sample Number	Compound	RT	CAS No	Estimated Conc.
12#4	unknown compound	4.33		.016
	unknown compound	5.66		.012
11#5	isocyanatomethane	7.92	624839	.047
	ethylcyclobutane	7.92	4806615	.0062
1A#5	4-methyl-2-hexanamine	1.08	105419	.044
10#2	4-methyl-2-pentamine	0.78	108098	.035
	2-methyl-1,3-propanediol	6.79		.008
	unknown compound	1.09		.550
	unknown compound	5.66		.0057
9#5	4-methyl-2-hexanamine	1.08	105419	.210
	3-methylpentane	6.80	96140	.030
	unknown compound	5.90		.013
8#2	4-methylhexamine	0.87	105419	.190
	4-methylpentanamine	1.11	108098	.350
7#6	unknown compound	5.57		.098
4#5	3,4-dimethyl-1-hexene	5.89	16745941	.019
	methylcyclopentane	7.82	96377	.067
	unknown compound	5.89		.0068
2#5	3-methylpentane	6.75	96140	.590
	methylcyclopentane	7.91	96377	.057
	unknown compound	5.72		.021
6#4	N-(1-methylpropyl)-foramide	4.11	53798893	.016
	isocyanatomethane	6.62	624839	.033
	unknown compound	8.62		.026
3#5	N-(1-methylbutylidene) -methanamine	7.85	22431090	.0068

Note:

RT - Retention Time

CAS No - Chemical Abstract Service Registry numbers

Sample Number - 12#4 Boring 12/sample 4. See Figures 1 and 2 for lacations and sampling dates

* - EPA Method 8240 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/ Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.15. (Page 1 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results semivolatile organic* analyses of sampling equipment rinses and method blank. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see Appendix A for full compound names.

SAMPLE	RINSE	RINSE	DEION	METHOD
Analyte/Boring	**1A**	**8**	**H2O**	**Blank**
PHENOL	<0.011U	<0.011U	<0.011U	<0.010U
2ClPHEN	<0.011U	<0.011U	<0.011U	<0.010U
2NIPHE	<0.011U	<0.011U	<0.011U	<0.010U
24DMePHE	<0.011U	<0.011U	<0.011U	<0.010U
24DClPHE	<0.011U	<0.011U	<0.011U	<0.010U
4Cl3MePH	<0.022U	<0.022U	<0.022U	<0.020U
246TClPH	<0.011U	<0.011U	<0.011U	<0.010U
24DNPH	<0.056U	<0.056U	<0.056U	<0.050U
4NPHE	<0.056U	<0.056U	<0.056U	<0.050U
2M46DNPH	<0.056U	<0.056U	<0.056U	<0.050U
PClPHE	<0.056U	<0.056U	<0.056U	<0.050U
BENZOAC	<0.056U	<0.056U	<0.056U	<0.050U
2MEPHE	<0.011U	<0.011U	<0.011U	<0.010U
4MEPHE	<0.011U	<0.011U	<0.011U	<0.010U
245TClPH	<0.011U	<0.011U	<0.011U	<0.010U
BZLAL	<0.022U	<0.022U	<0.022U	<0.020U
NNDMEAM	<0.011U	<0.011U	<0.011U	<0.010U
BClIPrE	<0.011U	<0.011U	<0.011U	<0.010U
NNDNPAM	<0.011U	<0.011U	<0.011U	<0.010U
NITROBEN	<0.011U	<0.011U	<0.011U	<0.010U
ISOPHOR	<0.011U	<0.011U	<0.011U	<0.010U
BClEtoME	<0.011U	<0.011U	<0.011U	<0.010U
26DNTOL	<0.011U	<0.011U	<0.011U	<0.010U
24DNTOL	<0.011U	<0.011U	<0.011U	<0.010U
12DPHYD	<0.011U	<0.011U	<0.011U	<0.010U
BENZIDI	<0.056U	<0.056U	<0.056U	<0.050U
33DClBEZ	<0.022U	<0.022U	<0.022U	<0.020U
BClEtE	<0.011U	<0.011U	<0.011U	<0.010U
13DClB	<0.011U	<0.011U	<0.011U	<0.010U
14DCLB	**0.0028BJ**	**0.0026BJ**	**0.0030BJ**	**0.0026J**
12DClB	<0.011U	<0.011U	<0.011U	<0.010U
HClETA	<0.011U	<0.011U	<0.011U	<0.010U
124TClB	<0.011U	<0.011U	<0.011U	<0.010U
NAPHTH	<0.011U	<0.011U	<0.011U	<0.010U
HClBU	<0.011U	<0.011U	<0.011U	<0.010U
HClCYPD	<0.011U	<0.011U	<0.011U	<0.010U
2ClNAPH	<0.011U	<0.011U	<0.011U	<0.010U

Note: J - Estimated value below the statistical quantitation limit
U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.
B - Analyte found in the method blank as well as in the sample.
* - EPA Method 8270 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Table 5.15. (Page 2 of 2). Old Rifle Range - NWSC Crane, Indiana, SWMU# 07/09. Results semivolatile organic* analyses of sampling equipment rinses and method blank. Concentrations are mg/kg (ppm) dry weight. Samples with detectable concentrations of organic analyte are shown in **bold**. Analytes are given as abbreviations; see Appendix A for full compound names.

SAMPLE	RINSE	RINSE	DEION	METHOD
Analyte/Boring	**1A**	**8**	**H2O**	**Blank**
ACENAY	<0.011U	<0.011U	<0.011U	<0.010U
DMePHTH	<0.011U	<0.011U	<0.011U	<0.010U
ACENAP	<0.011U	<0.011U	<0.011U	<0.010U
FLUORE	<0.011U	<0.011U	<0.011U	<0.010U
DEtPHTH	**0.0018J**	**0.011J**	**0.0014J**	<0.020U
4ClPHPHE	<0.011U	<0.011U	<0.011U	<0.010U
NNDPHAM	<0.011U	<0.011U	<0.011U	<0.010U
4BrPHET	<0.011U	<0.011U	<0.011U	<0.010U
HClBEN	<0.011U	<0.011U	<0.011U	<0.010U
PHENAN	<0.011U	<0.011U	<0.011U	<0.010U
ANTRAC	<0.011U	<0.011U	<0.011U	<0.010U
DBuPHTH	<0.011U	<0.011U	<0.011U	<0.010U
FLANTHE	<0.011U	<0.011U	<0.011U	<0.010U
PYRENE	<0.011U	<0.011U	<0.011U	<0.010U
BuBePHTH	<0.011U	<0.011U	<0.011U	<0.010U
CHRYSE	<0.011U	<0.011U	<0.011U	<0.010U
BAANTHR	<0.011U	<0.011U	<0.011U	<0.010U
B2EHPH	**0.0029BJ**	**0.0028BJ**	<0.011U	**0.0015J**
DNOcPHT	<0.011U	<0.011U	<0.011U	<0.010U
BBFLANT	<0.011U	<0.011U	<0.011U	<0.010U
BKFLANT	<0.011U	<0.011U	<0.011U	<0.010U
BAPYRE	<0.011U	<0.011U	<0.011U	<0.010U
I123PYR	<0.011U	<0.011U	<0.011U	<0.010U
B-GHI-PY	<0.011U	<0.011U	<0.011U	<0.010U
ANILINE	<0.022U	<0.022U	<0.022U	<0.020U
4ClANIL	<0.022U	<0.022U	<0.022U	<0.020U
DBENZOFU	<0.011U	<0.011U	<0.011U	<0.010U
2MeNAPH	<0.011U	<0.011U	<0.011U	<0.010U
2NANIL	<0.056U	<0.056U	<0.056U	<0.050U
3NANIL	<0.056U	<0.056U	<0.056U	<0.050U
4NANIL	<0.056U	<0.056U	<0.056U	<0.050U

Note: J - Estimated value below the statistical quantitation limit
U - Compound was analyzed for but not detected. Detection limits are given after the < symbol.
B - Analyte found in the method blank as well as in the sample.
* - EPA Method 8270 -in Test Methods for Evaluating Organic and Inorganic Waste, Physical/Chemical Methods, SW846, Third Edition, November 1986, with December 1988 revisions.

Appendix B

Boring Logs

Boring 07/09-1-90 to 07/09-12-90

DRILLING LOG	NORDIV	NWSC CRANE, IN	OF 2 SHEETS

1. PROJECT (SWMU #07/09) NWSC CRANE: OLD RIFLE RANGE	10. SIZE AND TYPE OF BIT 3" Shelby
2. LOCATION (Coordinates or Station) (SEE MAP)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY USA COE WES	12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 1500
4. HOLE NO. (As shown on drawing title and file number) 07/09-1-90	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ALG 5; UNDISTURBED SOIL 3
5. NAME OF DRILLER ELASTIC BROWN	14. TOTAL NUMBER CORE BOXES 0
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER (depth 7.4)
	16. DATE HOLE: STARTED 20 July 90; COMPLETED 21 July 90
7. THICKNESS OF OVERBURDEN 15.4	17. ELEVATION TOP OF HOLE 543.6
8. DEPTH DRILLED INTO ROCK 0	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 15.4	19. SIGNATURE OF INSPECTOR Paul Edwin Albritton

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		CLAY (CL), SILTY, BR, LOW PLASTIC w/ ORGANIC MTL-GR & SMELL		1, 1A	SAMPLED w/ 3" SHELBY TUBE PUSHED w/ MELLY EXTRUDED SOIL. SKINED SAMPLES w/ STAINLESS STEEL KNIFES
542.6	1		CLAY (GC) YEL&RD Sandy, dry, stiff w/ ROCK FRAGS, i.e., Sandstone chunks gravel size		2, 2A, 3	STOPPED SAMPLE DUE TO BURNING OPERATION.
	2		CLAY-GRAVEL MIX CON'T YEL, RED & BK MOTTLED			21 JULY 90. RAIN LAST NIGHT W.L. IN HOLE = 0.0 (i.e. FULL w/ RAINWATER) CLEAN OUT w/ 7" FOLDING Auger to 2.0'
	3				4	PUSHED 3" SHELBY
	4					CLEAN OUT w/ 3" HOLLOW STEM AUGER 4.0
						PUSHED 3" SHELBY
	5					CLEAN OUT → 5.5
	6		NOTE ROCK FRAGS present but not as abdunant as @ 1.0'–4.0'			SHELBY PUSHED TUBE to 7.5"
	7					7.5
535.6	8					
	9		CLAY (CH) RD-BR w/ YEL SANDY POCKETS w/ SCAT Ss FRAGS MOTTLED BK PROB MNO_2 stains			PUSH TUBE to 10.0

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PROJECT CRANE ORR | HOLE NO. 07/09-1-90

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 543.6 **Hole No.** 07/09-1-90

PROJECT CRANE OLD RIFLE RANGE INSTALLATION WES SHEET 2 OF 2 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		CLAY (CH) RD w/ GR MOTTLING. DAMP, STIFF			SAMPLED w/ 3" Shelby TUBE PUSHED w/ HYDRAULIC FEED 2.5'
	11		w/ FeO_2 Concretions			NOTE PUSHED EASIER THAN ABOVE
	12		(PROB. ZONE of SEASONAL SATURATION)		3A	CLEANED → 12.5'
	13		DAMP to MOIST			PUSHED 2.5' w/3" Shelby tube
	14		Noted Num. MnO_2 BLACK BLOTCHES AND w/ SCAT SS FRAGS		5 V	TOOK Shavings for Volitile analyses.
528.2	15.4					
	16		TOP OF ROCK (B.O.H) Sandstone L.GR. V.F GRAINED cuttings on tip of auger.			AUGER REFUSAL w/ SCRAPING SOUND LEFT HOLE OPEN TO MEASURE W.L. COVERED TOP OF HOLE TO PREVENT RAIN & SURFACE RUNOFF OUT
	17					23 July 90 WL = 7.4'
	18					GROUTED 6 AUG 90
	19					MIX = 32.5 GAL WATER 2 BAGS CEMENT 3 QTS QUIK-GEL
	20					

ENG FORM 1836-A JUN 67 (ER 1110-1-1801) GPO 1969 O-F-526-003 PROJECT CRANE ORR HOLE NO. 07/09- -90

Hole No. 07/09-1A-90

DRILLING LOG	DIVISION NORDIV	INSTALLATION NWSC CRANE, IN	SHEET 1 OF 1 SHEETS

1. PROJECT CRANE OLD RIFLE RANGE	10. SIZE AND TYPE OF BIT 3" Shelby Tube
2. LOCATION (Coordinates or Station) SEE MAP	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY USA CE WES	12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 1500
4. HOLE NO. (As shown on drawing title and file number) 07/09-1A-90	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 9; ~~UNDISTURBED~~ SOIL 0
5. NAME OF DRILLER ELASTIC BROWN	14. TOTAL NUMBER CORE BOXES 0
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 3 August 90; COMPLETED 3 Aug 90
7. THICKNESS OF OVERBURDEN 7.5	17. ELEVATION TOP OF HOLE ✓
8. DEPTH DRILLED INTO ROCK 0	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 7.5	19. SIGNATURE OF INSPECTOR Geologist = Paul E Allenton

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		SILT (ML) BR & GR CLAYEY, DAMP SOFT W/ ROOTS		1	SAMPLING W/ 3" SHELBY TUBE PUSH 2.0 REC 2.0
	1.0		CLAY (GC) W/ BR GRAVEL SIZE SS FRAGS DRY, V.STIFF (RESIDUAL SOIL)		2	
					3	
	2					CLEAN OUT W/ 3" HOLLOW STEM AUGER
	3		W/ YELLOW, RED MOTTLING		4	PUSH 1.7 REC 1.7
	4		ONLY OCC. ROCK FRAGS			
	5					CLEAN OUT
	6					PUSH 2.5'
	7				5	5 ✓
	7.5		BOTTOM OF HOLE			
	8					NOTE TOP OF ROCK IN BORING 07/09-1-90 = 15.4 IT WL = 7.4 8-9-90 WL IN 1A = DRY 8-6-90 GROUTED W/ 12 GAL OF WATER 1 BAGS OF CEMENT 1 Qt 2 of QUIKGEL

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT CRANE ORR | HOLE NO. 07/09-1A-90

HOLE NO. 07/09-2-90

DRILLING LOG	DIVISION NORDIV	INSTALLATION NWSC CRANE, IN	SHEET 1 OF 2 SHEETS

1. PROJECT: CRANE OLD RIFLE RANGE
2. LOCATION (Coordinates or Station): IN A DITCH (SEE MAP)
3. DRILLING AGENCY: USA CE WES
4. HOLE NO. (As shown on drawing title and file number): 07/09-2-90
5. NAME OF DRILLER: ELASTIC BROWN
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 17.1
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 17.1
10. SIZE AND TYPE OF BIT: 3" Shelby
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: ~~DISTURBED~~ ALL 5; ~~UNDISTURBED~~ SOIL 2
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 1 August 90; COMPLETED 1 Aug 90
17. ELEVATION TOP OF HOLE: ?
18. TOTAL CORE RECOVERY FOR BORING: —
19. SIGNATURE OF INSPECTOR: Geologist Paul E Albertson

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0		SILT (ML), BR, CLAYEY w/ SAND (SM) SEAMS w/ NUM ROOTS MOIST, SOFT		1, 1A	Sampled w/ 3" Shelby tube. Push 2.5 Rec 2.5
	1		CLAY (CL), BR, SILTY, MOIST, SOFT w/ Fe ox stains		2, 2A	
	2		& w/ Fe ox concretions		3	Clean out w/ 3" Hollow Stem auger
	3		con't Fe stains w/ near vertical pattern		4	Push 2.5 Rec 2.5
	4					
	5					clean out
	6					Push 2.2 Rec 2.2
	7		CLAY (CL). BR w/ GRAVEL SIZE Ss frags & Fe ox concretions & BK MnO_2 conc.		3A	Refusal. Clean out
	8				5 (5V)	a&b Push 0.7 Rec 0.7
	9					
	10					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT: CRANE ORR | HOLE NO. 07/09-2-90

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE

Hole No. 07/09-2-90

PROJECT: Crane ORR

INSTALLATION: Crane

SHEET 2 OF 2 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		CLAY (CL), BR, SANDY, STIFF			AUGERED
	12					
	14					
	15.0					
	16		SAND (SM) L.BR, SILTY, CLAYEY SATURATED			
	17		TOP OF ROCK			REFUSAL HNU READING = 0 WL = 12.7 @ 1117 WES-6-9C = 14.6 WES-6-18 = 13.1 GROUTED 6AUG90 WL. = 10.9 MIX = 35 Gal WATER 4 BAGS CEMENT w/ 4 QTZ, QUIK-GEL

ENG FORM 1836-A, JUN 67 (ER 1110-1-1801) GPO 1966 OF-620-605

PROJECT: CRANE ORR

HOLE NO. 07/09-2-90

DRILLING LOG	DIVISION NORDIV	INSTALLATION NWSC CRANE, IN	SHEET 1 OF 2 SHEETS

1. PROJECT NWSC CRANE (SWMU-# 07/09) OLD RIFLE RANGE	10. SIZE AND TYPE OF BIT 3" Shelby
2. LOCATION (Coordinates or Station) SEE MAP	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY CE WES	12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 1500
4. HOLE NO. (As shown on drawing title and file number) 07/09 - 3 - 90	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ~~AUG~~ 5; UNDISTURBED SOIL 3
5. NAME OF DRILLER ELASTIC BROWN	14. TOTAL NUMBER CORE BOXES 0
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE: STARTED 26 July 90; COMPLETED 26 July 90
	17. ELEVATION TOP OF HOLE 511.0
7. THICKNESS OF OVERBURDEN 18.3	18. TOTAL CORE RECOVERY FOR BORING %
8. DEPTH DRILLED INTO ROCK 0	19. SIGNATURE OF INSPECTOR Geologist Paul Edwin Albritton
9. TOTAL DEPTH OF HOLE 18.3	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		CLAY (CL), BR. to L.BR SILTY W/ SILT seams DRY W/ ROOTS w/ SCAT LS GRAVEL		1, 1A	SAMPLED W/ 3" SHELBY TUBE PUSH 2.5
510.0	1		CLAY (CL) L.BR W/ GR. MOTTLING & BK DOT & RUST stains DAMP, STIFF		2, 3	
	2					CLEAN OUT W/ 3" HOLLOW STEM AUGER
	3				4, 2A	2 PUSH 2.5
	4					CLEAN OUT
	5		Δ MOIST			PUSH 2.5
	6		noted near vert. SOIL CRACK			
	7					CLEAN OUT
	8				5, 5Y	PUSH 2.5
502.5	8.5		Fe cem. CONCRETION		3A	
	9		CLAY (SC) SANDY, ORANGE-BR. W/ BK DOTS MOIST, STIFF			
	10					

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PROJECT CRANE ORR

HOLE NO. 07/09-3-90

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 511.0 | Hole No. 07/09-3-90

PROJECT CRANE OLD RIFLE RANGE | INSTALLATION CRANE ORD | SHEET 2 OF 2 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		CLAY (SC) CON'T			
500.5	10.5					PUSH 2.5
			CLAY (CL-CH) GR w/ BR MOTTLING. MOIST, "GUMMY" STIFF			
	11					
499.0						
	12		CLAY (GC) w/ GRAVEL SIZE Fe cem. concretions MIXED w/ SS FRAGS			
						AUGER
	14					
	15					
	16					
495.5	16.5					
			SAND (SM) L. BR. SILTY, F. GRAINED			
	17					
	18					
493.7	18.5					REFUSAL. 18.3
			TOP OF ROCK			
	19					27 JULY 90 W.L. 12.0
						6 AUG 90 W.L. = 12.7
						GROUTED MIX = 35 Gal WATER 4 BAGS OF CEMENT 4 Qtz of QUIK-GEL

ENG FORM 1836-A (ER 1110-1-1801) | PROJECT CRANE ORD | HOLE NO. 07/09-3-90

DRILLING LOG | DIVISION NORDIV | INSTALLATION NWSC CRANE, IN | SHEET 1 OF 2 SHEETS

1. PROJECT (SWMU # 07/09) NWSC CRANE OLD RIFLE RANGE
2. LOCATION (Coordinates or Station) SEE MAP
3. DRILLING AGENCY CE WES
4. HOLE NO. (As shown on drawing title and file number) 07/09 -4-90
5. NAME OF DRILLER E. BROWN
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG FROM VERT.
7. THICKNESS OF OVERBURDEN 23.1
8. DEPTH DRILLED INTO ROCK 0
9. TOTAL DEPTH OF HOLE 23.1
10. SIZE AND TYPE OF BIT 3" Shelby & Augers
11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5 (ALL); ~~UNDISTURBED~~ SOIL 3
14. TOTAL NUMBER CORE BOXES 0
15. ELEVATION GROUND WATER (depth 18.6)
16. DATE HOLE: STARTED 24 JULY 90; COMPLETED 24 July 90
17. ELEVATION TOP OF HOLE 520.3
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR Geologist = Paul Edwin Albertson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
519.3	0 – 1.0		SILT (ML), D. BR CLAYEY, MOIST, SOFT W/ ORGANICS & ROOTS		1, 1A	SAMPLED W/ 3" SHELBY TUBE; PUSH 2.5
	1.0 – 3		CLAY (CL) L. BR W/ GR & BK MOTTLING DAMP STIFF W/ CONCRETIONS		2, 2A, 3	CLEAN OUT W/ 3" HOLLOW STEM AUGER
	3 – 5.0		CLAY (CL) CON'T L. GR W/ L. RD-BR STAINS & BLOTCHS ALONG SANDY SEAMS & POCKETS W/ CONCRETIONS		4	PUSH 2.5; CLEAN OUT 5.0
	5.0 – 7					PUSH 2.5
	7 – 10		CLAY (CL) L. BR SILTY, SANDY MOIST & SOFT W/ SS FRAGS		5, 5V, 3A	PUSH 2.5; CLEAN OUT 10

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT CRANE, OLD RIFLE RANGE | HOLE NO. 07/09/-4-90

DRILLING LOG (Cont Sheet)	ELEVATION TOP OF HOLE 520.5	Hole No. 07/09-4-90
PROJECT CRANE ORR	INSTALLATION CRANE, IN	SHEET 2 OF 2 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
△ SCALE	10		CLAY (CL) CON'T			STOPPED SAMPING CON'T HOLE W/ HOLLOW STEM AUGERS
	12					
	14					
	16					
503.3	17.0		CLAY (CH) RD-BR W/ GR MOTTLING			
	18					
	20					
	22					
497.2	23.1		TOP OF ROCK PROB. SANDSTONE, BR. F. GRAINED, HARD			AUGER REFUSAL
						COVERED HOLE OVERNITE 25 JULY 90 WL = 18.6 GROUTED ON 6 AUG 90 MIX = 55 GAL OF GROUT 3 1/2 BAGS OF CEMENT 5 Qtz of Quik-GEL

DRILLING LOG	NORDIV	NWSC CRANE, IN	OF 1 SHEETS

1. PROJECT (SWMU #F 07/09) NWSC CRANE OLD RIFLE RANGE
2. LOCATION (Coordinates or Station) SEE MAP
3. DRILLING AGENCY CE WES
4. HOLE NO. (As shown on drawing title and file number) 07/09 - 5 - 90
5. NAME OF DRILLER ELASTIC BROWN
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN 5.9
8. DEPTH DRILLED INTO ROCK 0
9. TOTAL DEPTH OF HOLE 5.9
10. SIZE AND TYPE OF BIT 3" Shelby tubes & Auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: ~~DISTURBED~~ ALG 4; ~~UNDISTURBED~~ 3
14. TOTAL NUMBER CORE BOXES 0
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 25 July 90; COMPLETED 25 July
17. ELEVATION TOP OF HOLE 509.5
18. TOTAL CORE RECOVERY FOR BORING ____ %
19. SIGNATURE OF INSPECTOR Paul E. Albertson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		CLAY (CL), BR, SILTY, DAMP-DRY SOFT, W/ SCAT GRAVEL W/ ORGANIC & ROOTS		1	SAMPLED W/ 3" SHELBY TUBE
508.5	1				1A	PUSH 2.5
			CLAY (CL) BR & GR W/ BK. DOTS SILTY, DRY, STIFF		2	
					2A	
	2		W/ OCC GRAVEL		3	
						CLEAN OUT W/ 3" HOLLOW STEM AUGER
506.5	3		W/ OCC SS FRAGS			PUSH 1.5
			CLAY (SC) GRAVEL MIX BR, DAMP W/ NUM. SS FRAGS		4 / 4	
					3A	
	4					REFUSAL - JACKED RIG
						BENT TUBE
						WATER COMING IN.
	5					CLEAN → 5.0
						PUSH 0.9
504.6	5.9					REFUSAL
	6		TOP OF ROCK. SANDSTONE, L.BR F. GRAINED, HARD			
						26 JULY 90 W.L. 5.6
	7					
						27 JULY 90 W.L. = 4.6
	8					
						GROUTED 6 AUG 90 12 GAL OF GROUT FROM A MIX OF 55 GAL WATER 4 BAGS OF CEMENT 4 QTZ OF QUIK-GEL
	9					
	10					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT CRANE ORR | HOLE NO. 07/09-5-90

DRILLING LOG	DIVISION NORDIV	INSTALLATION NWSC, CRANE, IN	SHEET 1 OF 1 SHEETS

1. PROJECT NWSC CRANE OLD RIFLE RANGE (SWMU #07/09)
2. LOCATION (Coordinates or Station) (SEE MAP)
3. DRILLING AGENCY USA COE WES
4. HOLE NO. (As shown on drawing title and file number) 07/09-6-90
5. NAME OF DRILLER ELASTIC BROWN
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN 5.9
8. DEPTH DRILLED INTO ROCK 0
9. TOTAL DEPTH OF HOLE 5.9
10. SIZE AND TYPE OF BIT 3" Shelby tube & Auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: ~~DISTURBED~~ ALL 4; ~~UNDISTURBED~~ SOIL 2
14. TOTAL NUMBER CORE BOXES 0
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 27 July 90; COMPLETED 27 July 90
17. ELEVATION TOP OF HOLE 505.4
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR Geologist = Paul E. Albritton

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		SILT (ML) LI BR "LEACHED BLOND" DRY, POWDERY, W/ ROOTS & EARTHWORMS		1	SAMPLED W/ 3" SHELBY TUBE PUSH 2.5
504.4	1		SILT (ML), BR, CLAYEY, DAMP STIFF W/ SCAT Ss Frags.		2, 1A, 3	
	2					CLEAN OUT W/ 7" FOLDING AUGER
	3				4 (4 V)	PUSH 2.5
501.4	4		CLAY (GC), GRAVEL MIX W/ NUM. Ss FRAGS		2A	
500.6	4.8		WEA. SANDSTONE, Fe ox BR. soft to medium, F. grained W/ CLAY FILLED CRACKS			WATER COMING IN HOLE. WL. 4.4'
499.5	5.9		← TOP OF HARD ROCK			REFUSAL
	6					6 AUG 90 - DRY HOLE GROUTED - 12 GALS OF GROUT MIX 55 GAL WATER 4 BAGS - CEMENT 4 Qtz - QUIK-GEL
	7					
	8					
	9					
	10					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT CRANE ORR | HOLE NO. 07/09-6-90

DRILLING LOG

DIVISION: NORDIV

INSTALLATION: NWSC CRANE, IN

SHEET 1 OF 2 SHEETS

1. PROJECT: CRANE OLD RIFLE RANGE
2. LOCATION (Coordinates or Station): SEE MAP
3. DRILLING AGENCY: USA CE WES
4. HOLE NO. (As shown on drawing title and file number): 07/09 - 7-90
5. NAME OF DRILLER: ELASTIC BROWN
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 19.0
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 19.0
10. SIZE AND TYPE OF BIT: 3" Shelby tube *
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: ~~DISTURBED~~ AG 7; ~~UNDISTURBED~~ SOIL 2
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 7-30-90; COMPLETED 7-30-90
17. ELEVATION TOP OF HOLE: 504.8
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Geologist Paul E. Allston

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		SILT (ML), L. BR DAMP, SOFT w/ NUM. ROOTS		1	SAMPLED w/ 3" SHELBY TUBE PUSH 2.5 REC 1.0 due to COMPACTION
503.8	1		CLAY (GC) BR w/ SAND & SCAT. GRAVEL DRY-DAMP V. STIFF		2	
503.1	1.7				3	
	2		CLAY (CL), L. GR w/ Fe OX RD-BR MOTTLING DAMP & STIFF		4	COMPOSITE OF 0.0'-2.5' *
	3					CLEAN OUT w/ 7" FOLDING AUGER
					5	PUSH 2.5
	4		w/ NUM. concretions BK & Rust BR. NOTED! Near vertical Fe ox stained soil CRACK		1A	
	5					CLEAN OUT
	6					PUSH 2.5
	7					CLEAN OUT
	8					
	9		MOISTURE CONTENT INCREASE TO MOIST		6 / 6V	TOOK 2, 6V's for duplication
					7	
	10					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT: CRANE ORR

HOLE NO. 07/09-7-90

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE 504.8 **Hole No.** 07/09-7-90

PROJECT CRANE ORR | INSTALLATION CRANE | SHEET 2 OF 2 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		CLAY (CL) CON'T GR W/ BR MOTTLING "GUMMY" & STIFF			ADVANCED HOLE W/ AUGERS
	12					
	14					
488.8	16		SAND (SM) GR. (Steel Blue Gr) SILTY, F. GRAINED. WET TO SATURATED			WATER COMING IN.
	18					
486.2	18.6					
485.8	19.0		WEA. SS & SAND BR.		2A	REFUSAL
			TOP OF ROCK – HARD			GRINDING SOUND.
	20					WATER LEVEL RISES TO ~5.0 DUE HOLE FALLING IN.
	22					CLEAN OUT, AGAIN TO 19.0'
						WL = 7.0 ↓ 9.0 10.0
						CONCLUSION: SAND ZONE 16-19' IS UNDER ARTESIAN PRESSURE
						8-4-90 W.L= 3.75
						8-6-90 W.L= 3.7
						GROUTED - 23 GALS OF 55 GAL WATER 4 BAGS OF CEMENT 4 QTZ OF QUIK-GEL

DRILLING LOG	DIVISION NOR DIV	INSTALLATION NWSC CRANE, IN	SHEET 1 OF 1 SHEETS

1. PROJECT: Crane OLD RIFLE RANGE
2. LOCATION (Coordinates or Station): (SEE MAP)
3. DRILLING AGENCY: USA CE - WES
4. HOLE NO. (As shown on drawing title and file number): 07/09-8-90
5. NAME OF DRILLER: DAN TAYLOR
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 2.0
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 2.0
10. SIZE AND TYPE OF BIT: 2" SCOOP & 3" Hand Auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: JIM-GEM "QUICKIE"
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 2; UNDISTURBED
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 9 Aug 90; COMPLETED 9 Aug 90
17. ELEVATION TOP OF HOLE: 514.9
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Paul Albritton

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		SAND (SP), BR, COARSE w/ Pea GRAVEL			SAMPLED w/ STAINLESS STEEL SCOOP
514.0	0.9				1	
	1		GRAVEL (GP) #2 CRUSH ROCK LIMESTONE			ADVANCED HOLE w/ SPADE & BAR
512.9	1.5					
512.4	2		CLAY (CL) (GR) SILTY, DAMP, STIFF w/ ORGANIC		2	2 V STAINLESS STEEL 3" AUGER
			BOTTOM OF HOLE			BACK FILLED HOLE 1) CLAY CUTTINGS & COMPACTED 2) #2 ROCK 3) SAND, i.e., Returned MATERIAL TO DESIGN BEDDING

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT: CRANE ORR

HOLE NO. 07/09-8-90

DRILLING LOG	DIVISION NOR DIV	INSTALLATION NWSC CRANE, IN	SHEET 1 OF 1 SHEETS

1. PROJECT: CRANE OLD RIFLE RANGE
2. LOCATION (Coordinates or Station): (SEE MAP) IN THE PIT
3. DRILLING AGENCY: USA CE-WES
4. HOLE NO. (As shown on drawing title and file number): 07/09-9-90
5. NAME OF DRILLER: PAUL ALBERTSON
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 1.7
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 1.7
10. SIZE AND TYPE OF BIT: 3" HAND AUGER
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: JIM-GEM "QUICKIE"
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 2; UNDISTURBED
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: DRY
16. DATE HOLE: STARTED 3 Aug 90; COMPLETED 3 Aug 90
17. ELEVATION TOP OF HOLE: 512.9
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Paul Albertson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
512.4	0 / 0.5		SAND (SP), BR, COARSE w/ Pea GRAVEL, DRY occ.-SCAT RUSTY NAILS 6"		1	SAMPLED w/ 2" STAINLESS STEEL SCOOP
511.8	1.1		GRAVEL (#2 ROCK) 2" to 4" CRUSHED LIMESTONE 14"			ADVANCED HOLE w/ SPADE & BAR
511.2	1.7		CLAY (CL), GR, SILTY, ORGANIC w/ ORG FRAGS		2	2 V SAMPLED w/ STAINLESS STEEL HAND AUGER
	2.		BOTTOM OF HOLE			BACK FILLED w/ 1) CLAY = 1.1 - 1.7 2) ROCK = 0.5-1.7 3) SAND = 0.0-0.5

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT: CRANE ORR

HOLE NO. 07/09-9-90

DRILLING LOG	DIVISION NORDIV	INSTALLATION NWSC CRANE, IN	SHEET 1 OF 1 SHEETS

1. PROJECT: CRANE OLD RIFLE RANGE
2. LOCATION (Coordinates or Station): (SEE MAP)
3. DRILLING AGENCY: USA CE-WES
4. HOLE NO. (As shown on drawing title and file number): 07/09-10-90
5. NAME OF DRILLER: DAN TAYLOR
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 2.0
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 2.0
10. SIZE AND TYPE OF BIT: 5" AUGER
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: JIM GEM "QUICKIE"
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 2; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: DRY
16. DATE HOLE: STARTED 4 AUGUST 90; COMPLETED 4 AUG 90
17. ELEVATION TOP OF HOLE: ✓ 513.±
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Paul Albritton

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		SAND (SP), BR, COARSE w/ PEA GRAVEL DAMP - (RAINED IN MORNING)			
512.5	0.5				1	SAMPLED w/ 2" STAINLESS STEEL SCOOP
	1		GRAVEL (GP) #2 CRUSH ROCK Limestone w/ COPPER Bullet			ADVANCED HOLE w/ SPADE & BAR
511.6	1.4					
511.0			CLAY (CL), GR w/ ORGANIC SCAT FE OX stains ALONG silty-SAND seams		2	SAMPLE w/ 3' STAINLESS STEEL AUGER
	2.0		Bottom of Hole			Back Filled w/ 1) CLAY 1.4-2.0', 2) Rock 0.5-1.4', 3) SAND 0.0-0.5 i.e., to DESIGN Bedding.

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT: CRANE ORR | HOLE NO. 07/09-10-90

Hole No. 07/09-11-90

DRILLING LOG	DIVISION NorDiv	INSTALLATION Crane	SHEET 1 OF 1 SHEETS

1. PROJECT Crane (SMWU # 07/09) OLD RIFLE RANGE	10. SIZE AND TYPE OF BIT 3" Shelby tube
2. LOCATION (Coordinates or Station) By walnut trees see map	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY USA CE WES	12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 1500
4. HOLE NO. (As shown on drawing title and file number) 07/09-11-90	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: ~~DISTURBED~~ ALG 6; ~~UNDISTURBED~~ 2 soil
5. NAME OF DRILLER ELASTIC BROWN	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. THICKNESS OF OVERBURDEN 10.0	16. DATE HOLE: STARTED 31 July 90; COMPLETED 31 July 90
8. DEPTH DRILLED INTO ROCK 0	17. ELEVATION TOP OF HOLE 513.5
9. TOTAL DEPTH OF HOLE 10.0	18. TOTAL CORE RECOVERY FOR BORING %
	19. SIGNATURE OF INSPECTOR Geologist Paul E Albatson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
512.0	0–1		CLAY (CL), L. BR, SILTY, DRY, STIFF w/ Roots on top w/ SCAT Ss Frags & Fe Ox concretions		1, 2	SAMPLED w/ 3" SHELBY TUBE; PUSH 2.5 REC 1.5 due to compaction
505.5	2–8.0		CLAY (CH) D. BR DAMP, V. STIFF w/ occ concretions & BK MnO_2 stains; w/ soft zone prob. due to Δ moisture content		3, 4, 1A, 5, 5V	CLEAN OUT w/ 3" HOLLOW STEM AUGER; PUSH 2.5 REC 1.0; Clean out; PUSH 2.5 REC 1.5; DUPLICATES a & b
504.0	8.0–9.5		CLAY (CH), GR, "Gummy", Stiff w/ num. Calc Concretions		6	PUSH 2.5 REC 1.5; 8-6-90 WL = 8.2 GROUTED 25 GALS OF MIX OF 55 GAL-WATER 4 BAGS-CEMENT 4 QTS-QUIK-GEL
503.5	9.5–10		WEA. ROCK. Shaley Clay Blue-GR w/ FeOx TOP OF ROCK HARD = SS		2A	8-4-90 WL = 8.4 DRY HOLE - 31 July 90

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT Crane ORR HOLE NO. 07/09-11-90

DRILLING LOG	DIVISION NORDIV	INSTALLATION NWSC CRANE, IN	SHEET 1 OF 2 SHEETS

1. PROJECT: CRANE OLD RIFLE RANGE
2. LOCATION (Coordinates or Station): SEE MAP
3. DRILLING AGENCY: USA CE WES
4. HOLE NO. (As shown on drawing title and file number): 07/09-12-90
5. NAME OF DRILLER: ELASTIC BROWN
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 12.6
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 12.6
10. SIZE AND TYPE OF BIT: 3" Shelby Tube
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED 2 301L
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 2 August 90; COMPLETED 2 Aug 90
17. ELEVATION TOP OF HOLE: 514.6
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Geologist Paul E Albertson

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0		GRASS			
			SILT (ML), L.BR, CLAYEY, DRY W/ NUM. ROOTS		1	SAMPLED W/ 3" SHELBY TUBE
	1		CLAY (CL) L.GR. W/ Fe Ox STAINS & concretions DAMP,		2	Push 2.5 Rec 1.2 - due to compaction
	2				3	
						Cleaned out w/ 3" Hollow Stem Auger
	3				4 V	Push 2.5 Rec 1.6 due to compaction
			Δ moist		1A	
	4					
	5					clean out
5			SATURATED			2 Aug 90 — WL @ 5.5
508.6	6.0		CLAY (CL) L.GR w/ Fe Ox Stains & BK MnO_2 Stains		2k	
	7					clean out
	8					HNU = 0 8-6-90 W.L = 11.9' GROUTED 35 GAL - WATER 4 QTZ - QUIK GEL 3 BAGS - CEMENT
	9					
	10					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT: CRANE ORR

HOLE NO. 07/09-12-90

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE 514.6 | Hole No. 07/09-12-90

PROJECT CRANE OLD RIFLE RANGE | INSTALLATION CRANE ORR | SHEET 2 OF 2 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		CLAY CON'T			AUGER
	11					
	12					
502.0	12.6		BOTTOM OF HOLE			REFUSAL
			TOP OF ROCK PROB. SANDSTONE			SCRAPING SOUND.
						8-6-90 see REMARKS SHEET 1

ENG FORM 1836-A JUN 67 (ER 1110-1-1801) GPO 1966 OF-620-003

PROJECT CRANE ORR | HOLE NO. 07/09-12-90

Appendix C

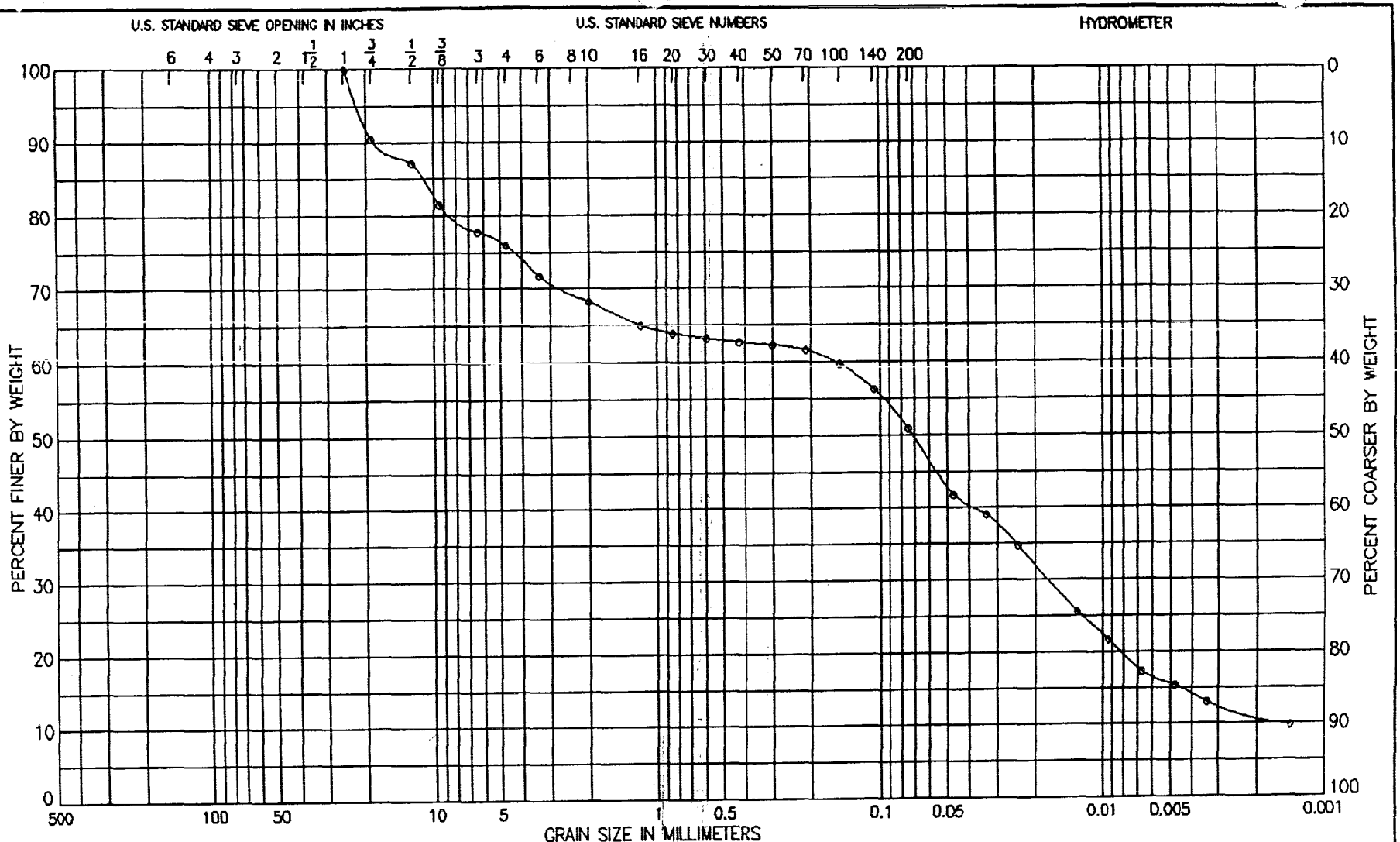
Soil Data

1. Gradation Curves

Boring 07/09-1-90 to 07/09-7-90 and 07/09-12-90

2. Gradation Curves and Sieve Analyses

Boring 07/09-13-90



LL	PL	PI	GS	NAT W,%	ORG,%
30	17	13	2.70 EST	20.2	2.8

CLASSIFICATION

GRAVELLY SANDY CLAY (CL), BROWN

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

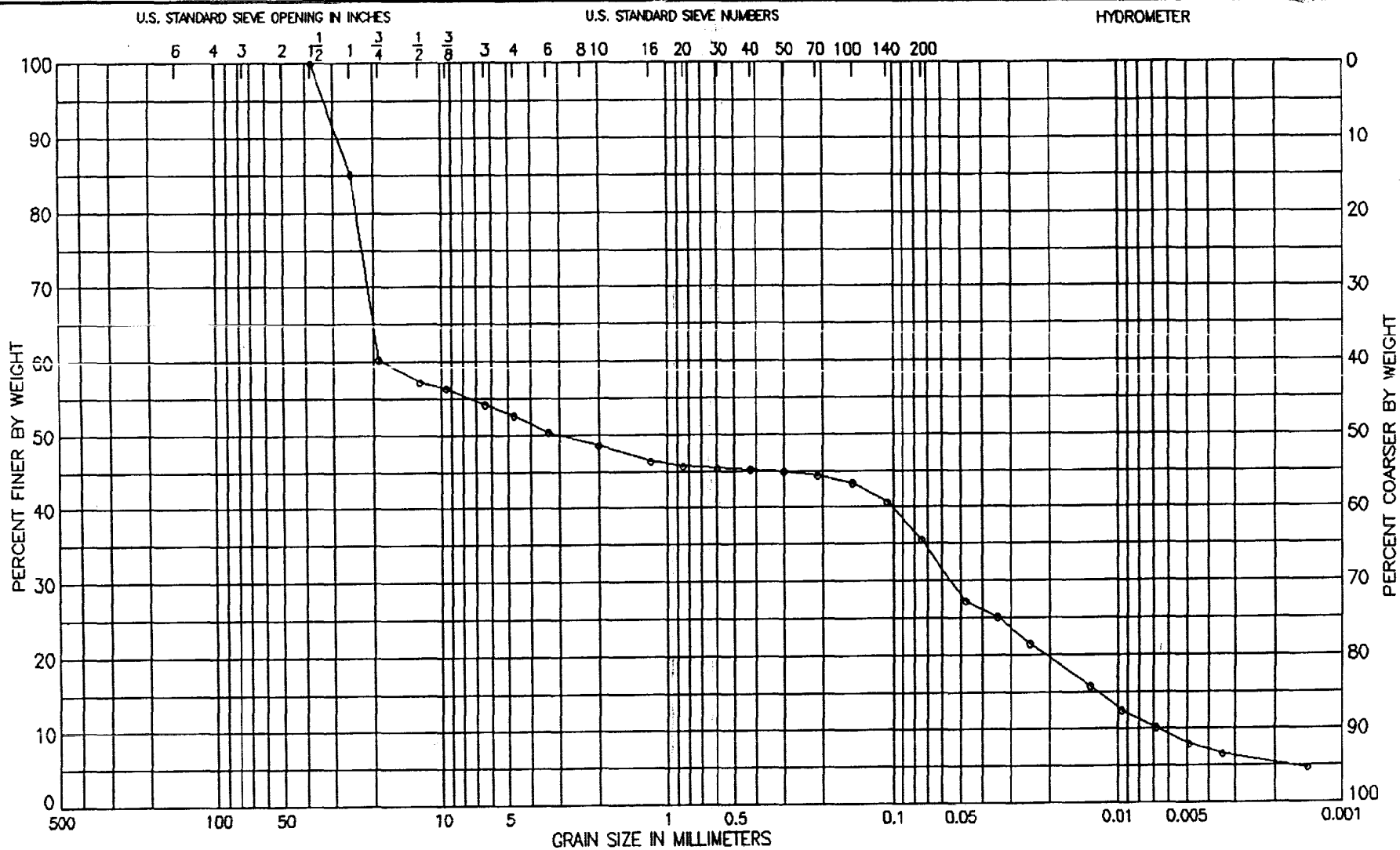
PROJECT CRANE ORR

BORING NO. 07/09-1-90 SAMPLE NO. 1A

DEPTH/ELEV 6.0-12.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
24	16	8	2.70 EST	14.0	1.0

CLASSIFICATION

SANDY CLAYEY GRAVEL (GC), BROWN

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

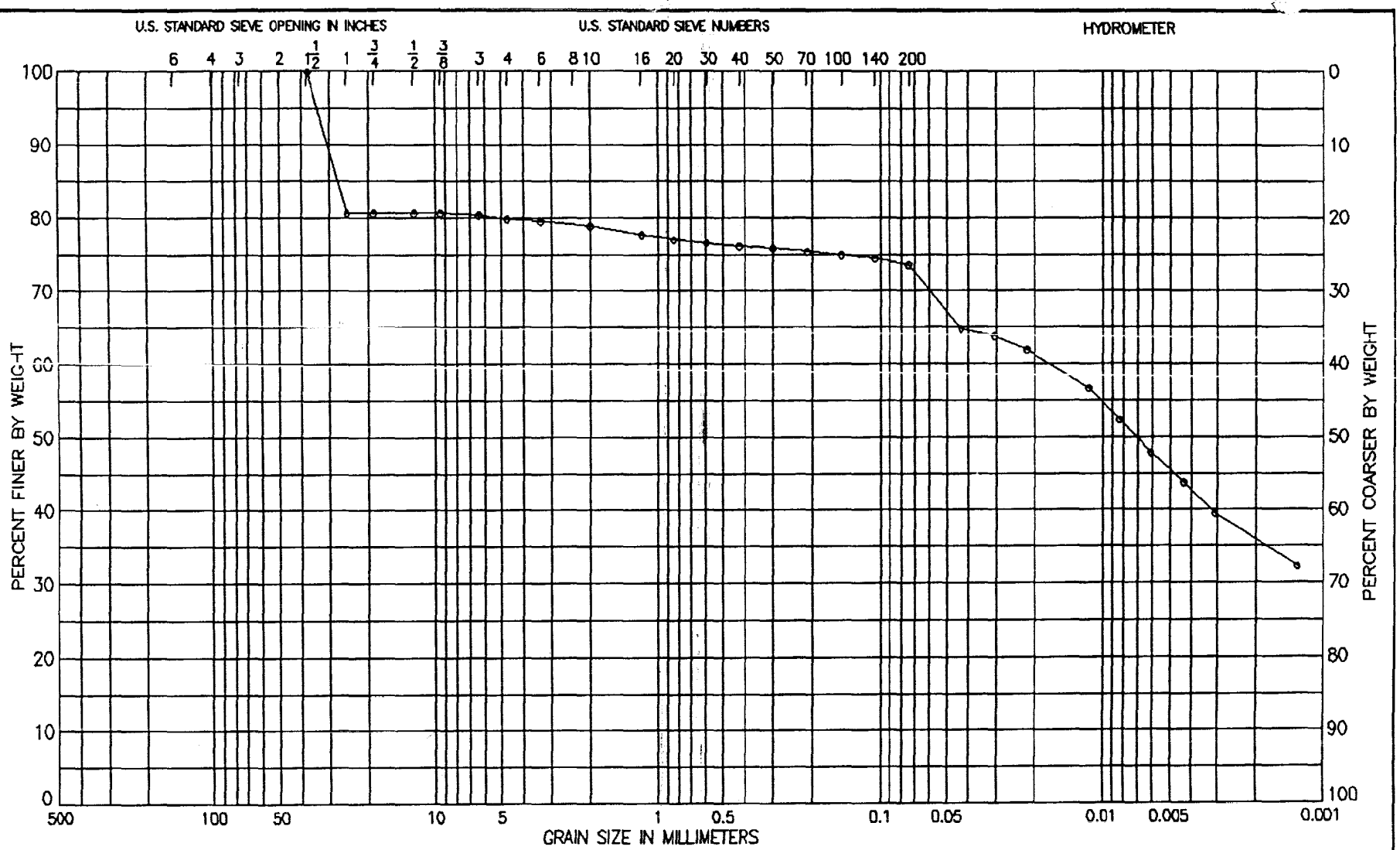
PROJECT CRANE ORR

BORING NO. 07/09-1-90 SAMPLE NO. 2A

DEPTH/ELEV 1.0-2.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



COBBLES	GRAVEL		SAND			SILT or CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

LL	PL	PI	GS	NAT W,%	ORG,%
63	24	39	2.70 EST	26.9	3.4

CLASSIFICATION

GRAVELLY CLAY (CH), BROWN; WITH SAND

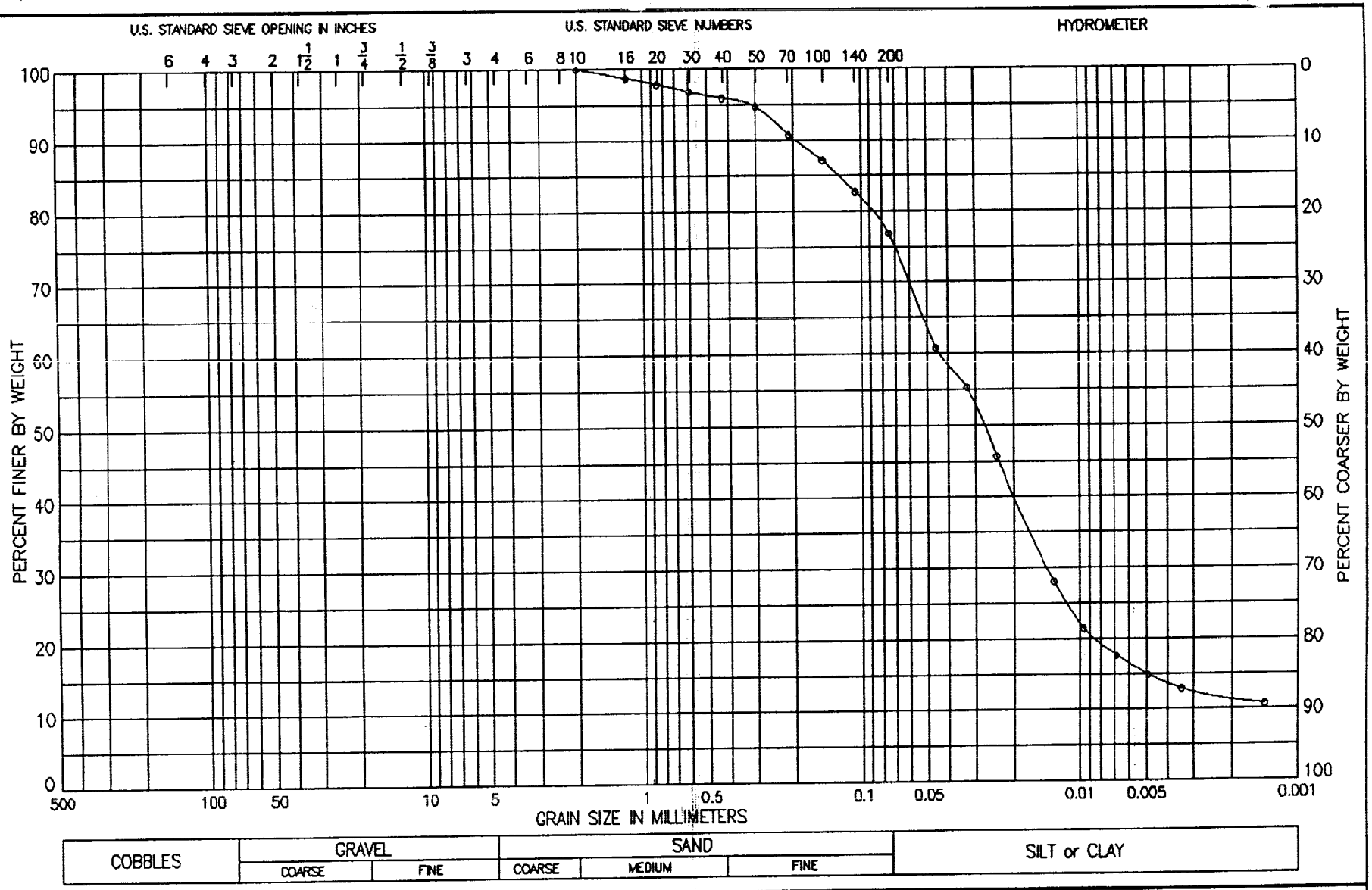
INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

PROJECT CRANE ORR

BORING NO. 07/09-1-90 SAMPLE NO. 3A

DEPTH/ELEV 12.0-12.5 DATE 03 OCT 90

GRADATION CURVE | LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
28	18	10	2.70 EST	20.9	1.9

CLASSIFICATION
SANDY CLAY (CL), BROWN

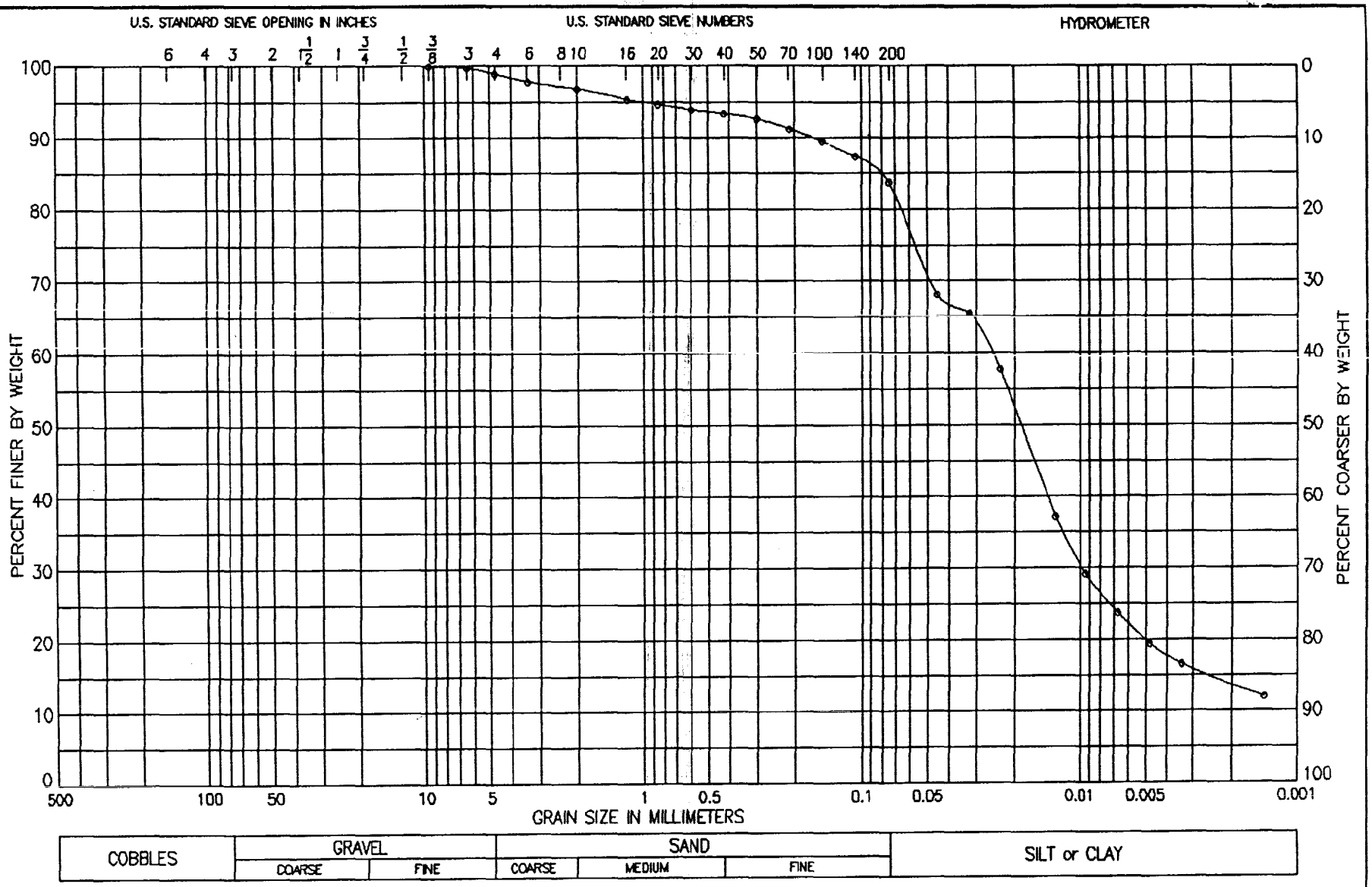
PROJECT CRANE ORR

BORING NO. 07/09-2-90 SAMPLE NO. 1A

DEPTH/ELEV 0.5-1.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES – STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
26	18	8	2.70 EST	21.9	1.3

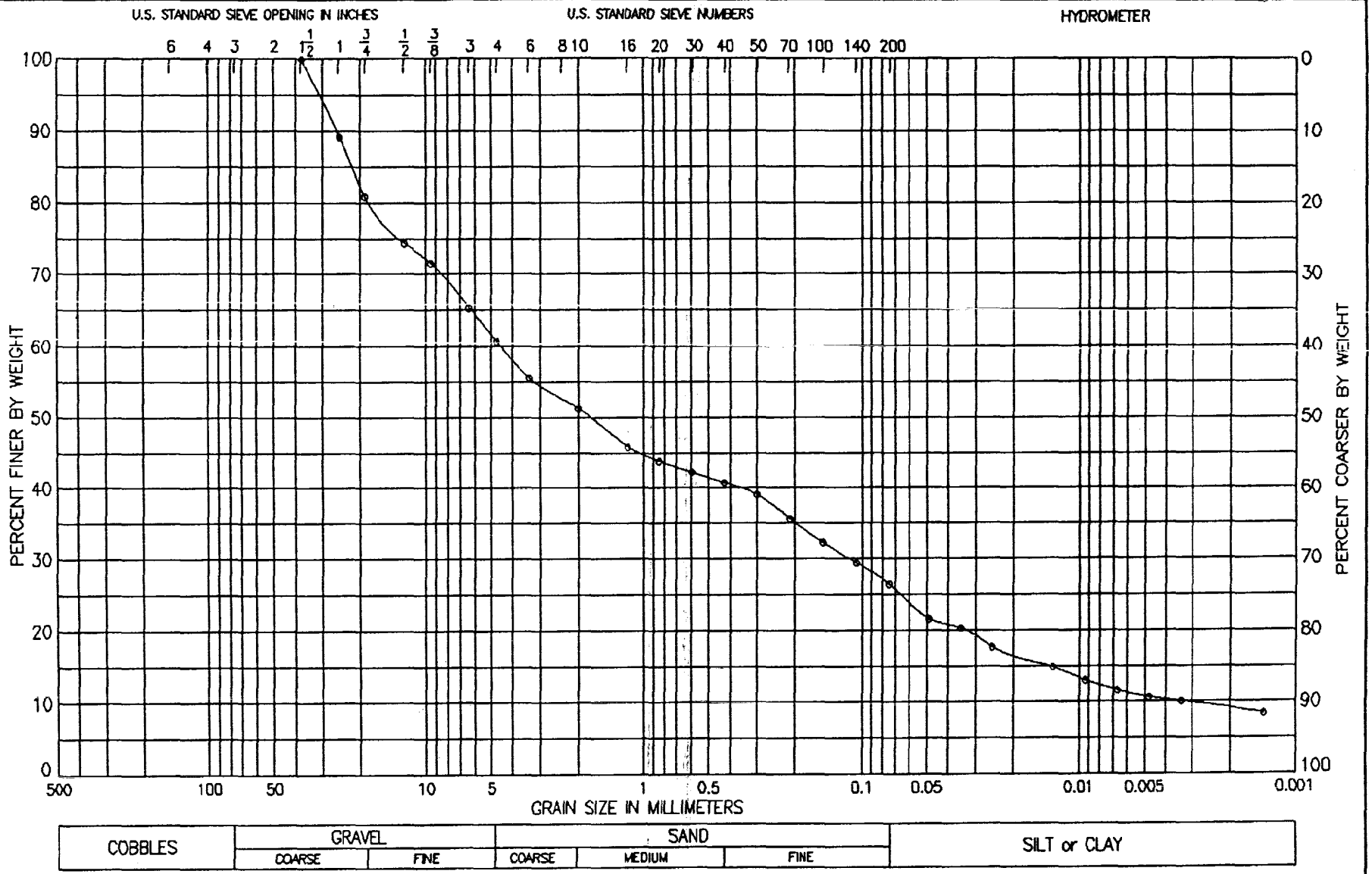
CLASSIFICATION
SANDY CLAY (CL), BROWN

PROJECT CRANE ORR

BORING NO. 07/09-2-90 SAMPLE NO. 2A

DEPTH/ELEV 1.3-1.7 DATE 03 OCT 90

GRADATION CURVE | LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
40	18	22	2.70 EST	15.5	3.5

CLASSIFICATION

SANDY CLAYEY GRAVEL (GC), BROWN

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

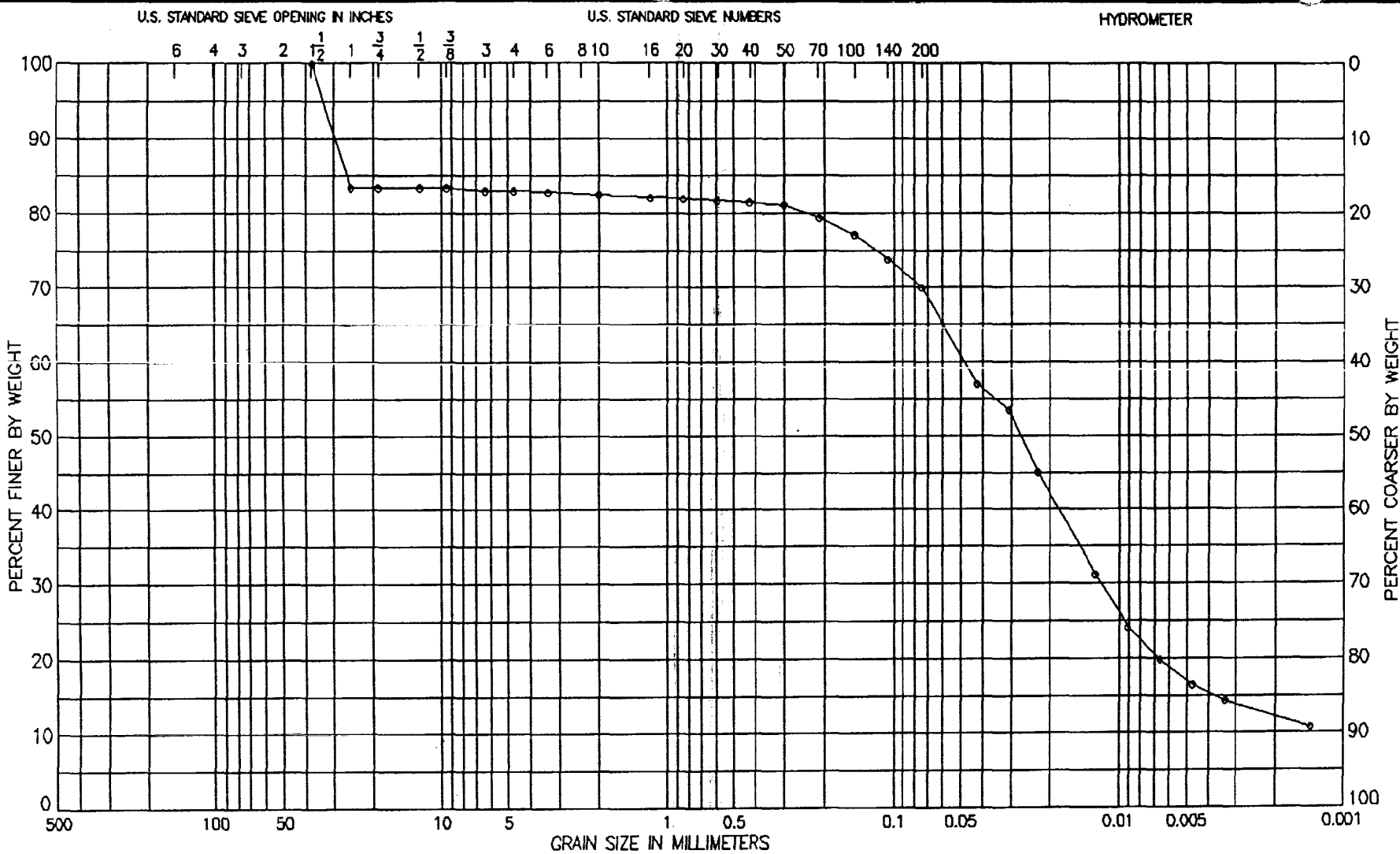
PROJECT CRANE ORR

BORING NO. 07/09-2-90 SAMPLE NO. 3A

DEPTH/ELEV 7.0-7.5 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
30	17	13	2.70 EST	11.3	2.4

CLASSIFICATION

SANDY GRAVELLY CLAY (CL), BROWN

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

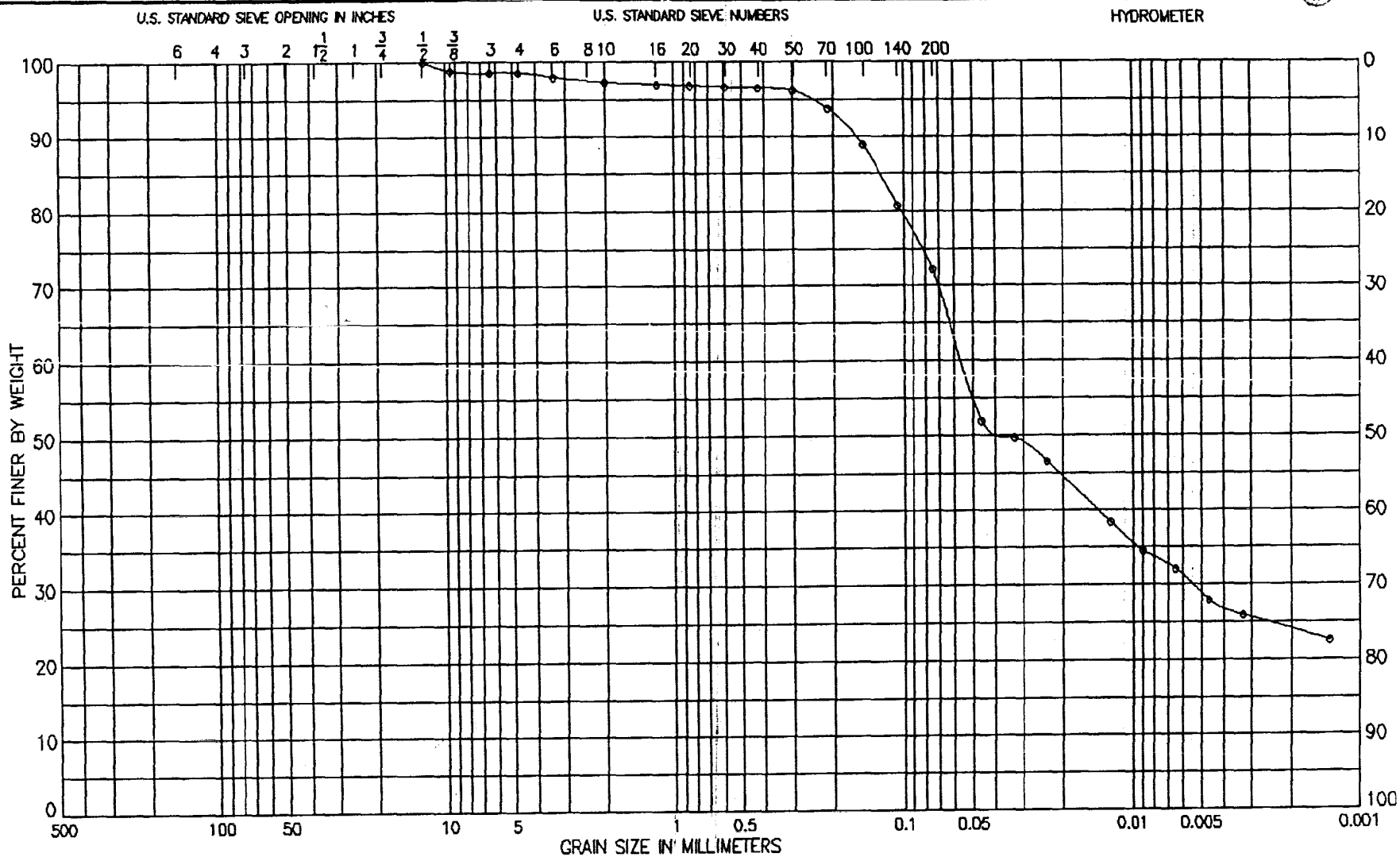
PROJECT CRANE ORR

BORING NO. 07/09-3-90 SAMPLE NO. 1A

DEPTH/ELEV 0.5-1.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
33	15	18	2.70 EST	18.0	2.0

CLASSIFICATION
SANDY CLAY (CL), BROWN

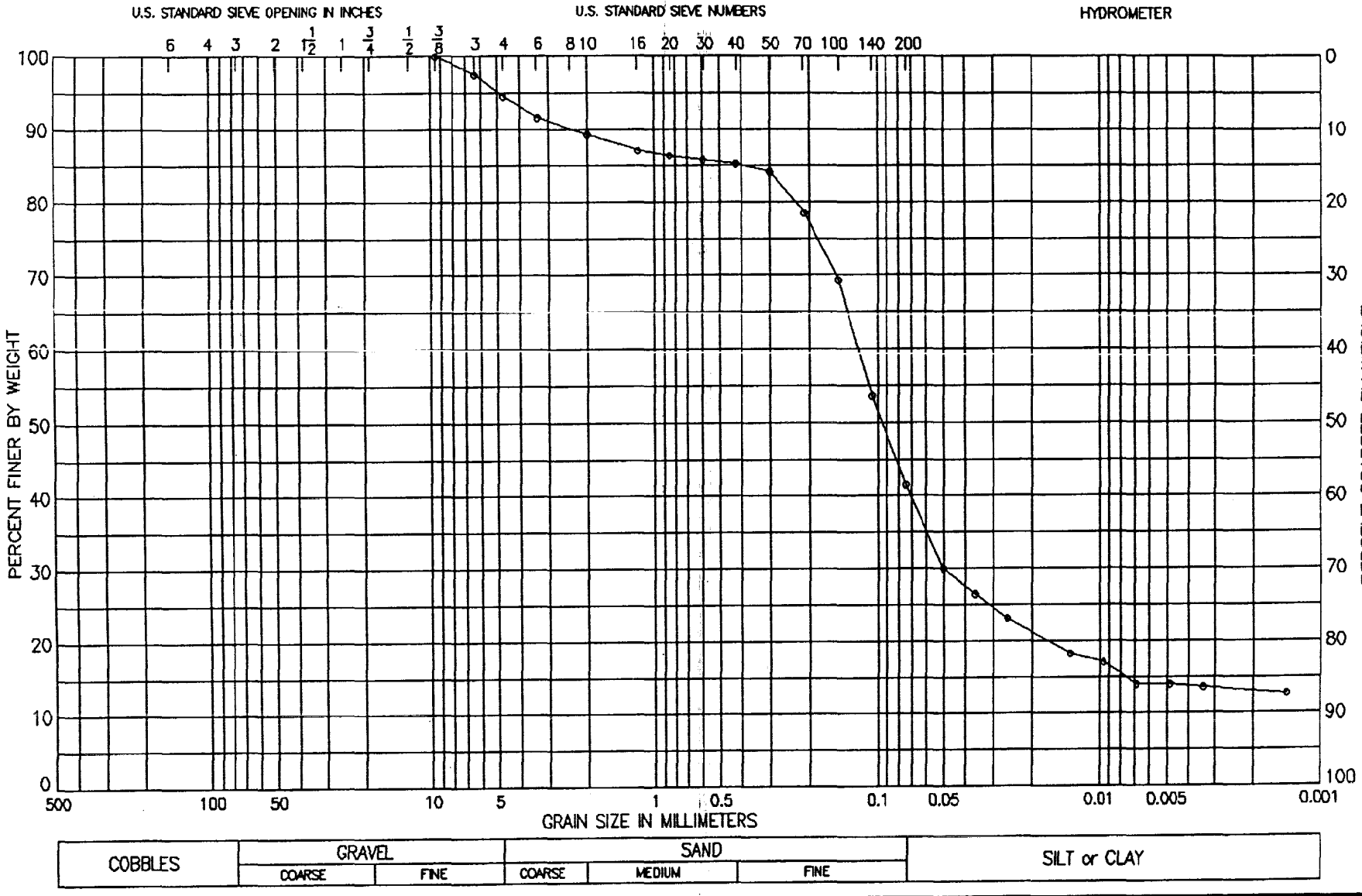
PROJECT CRANE ORR

BORING NO. 07/09-3-90 SAMPLE NO. 2A

DEPTH/ELEV 3.5-4.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
27	16	11	2.70 EST	17.6	2.8

CLASSIFICATION

CLAYEY SAND (SC), BROWN; WITH GRAVEL

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

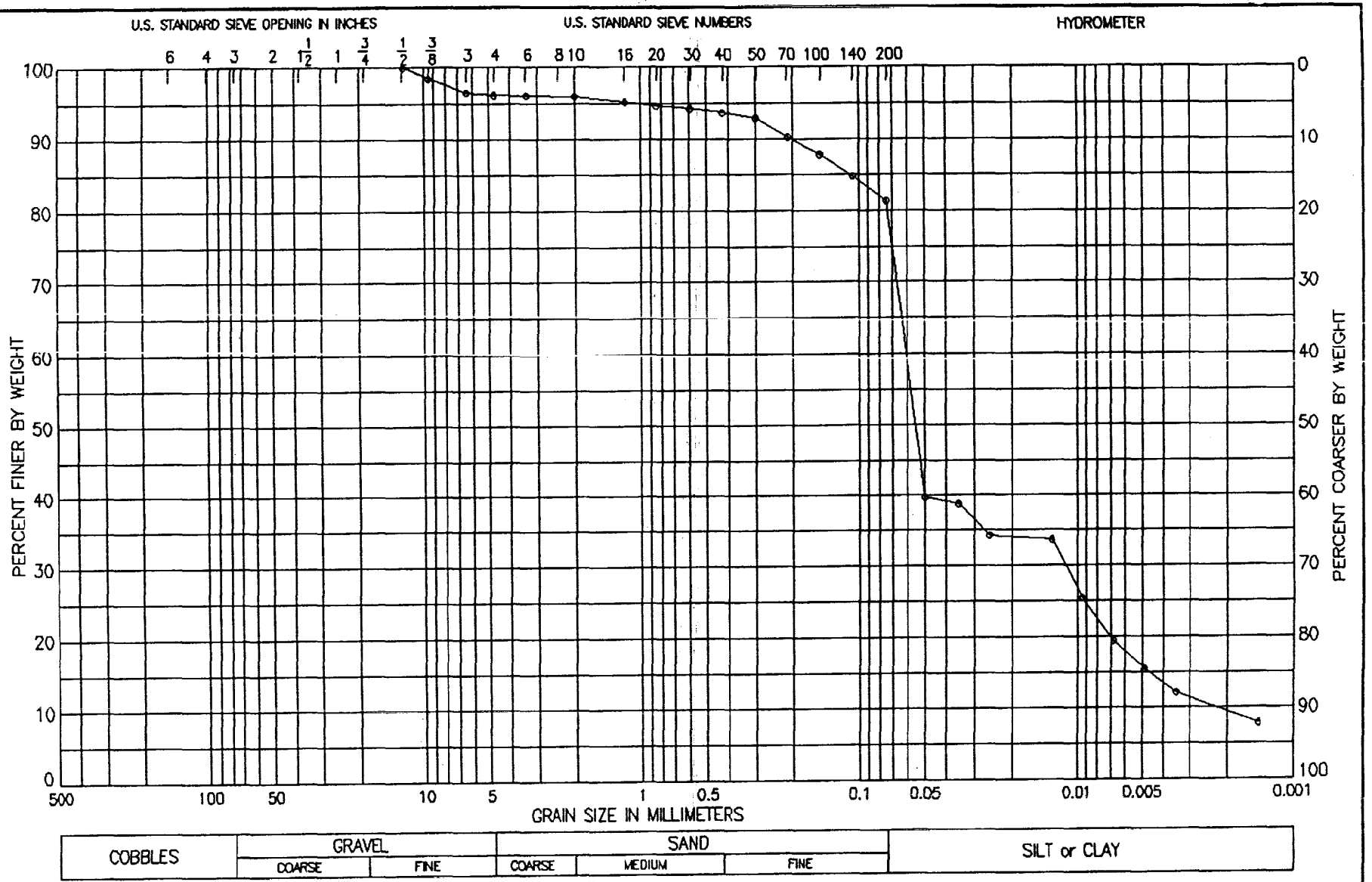
PROJECT CRANE ORR

BORING NO. 07/09-3-90 SAMPLE NO. 3A

DEPTH/ELEV 8.9-9.4 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
31	20	11	2.70 EST	20.6	2.6

CLASSIFICATION

SANDY CLAY (CL), BROWN; TRACE OF GRAVEL

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

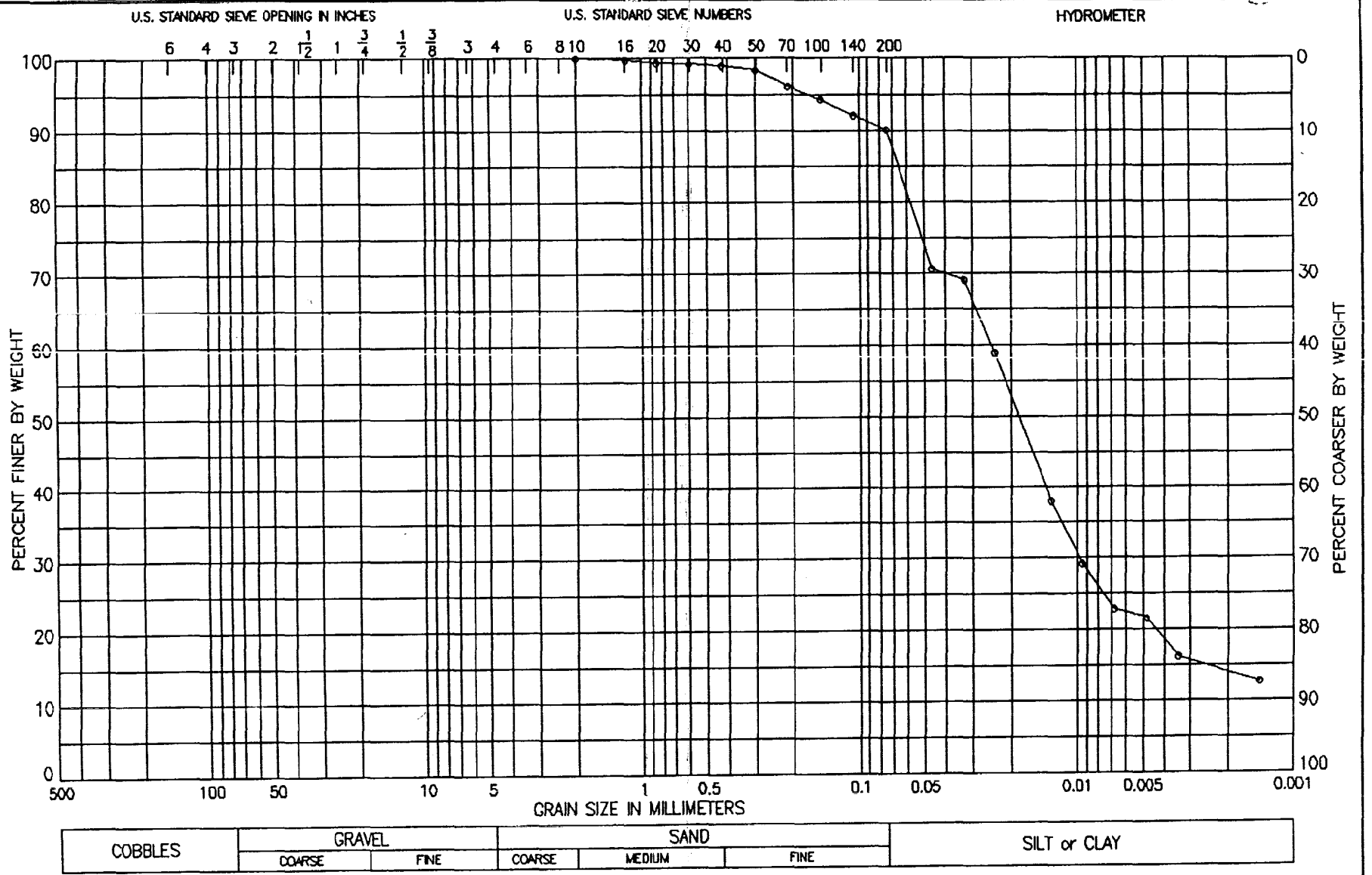
PROJECT CRANE ORR

BORING NO. 07/09-4-90 SAMPLE NO. 1A

DEPTH/ELEV 0.5-1.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
34	23	11	2.70 EST	22.9	1.8

CLASSIFICATION
SILTY CLAY (CL), BROWN; WITH SAND

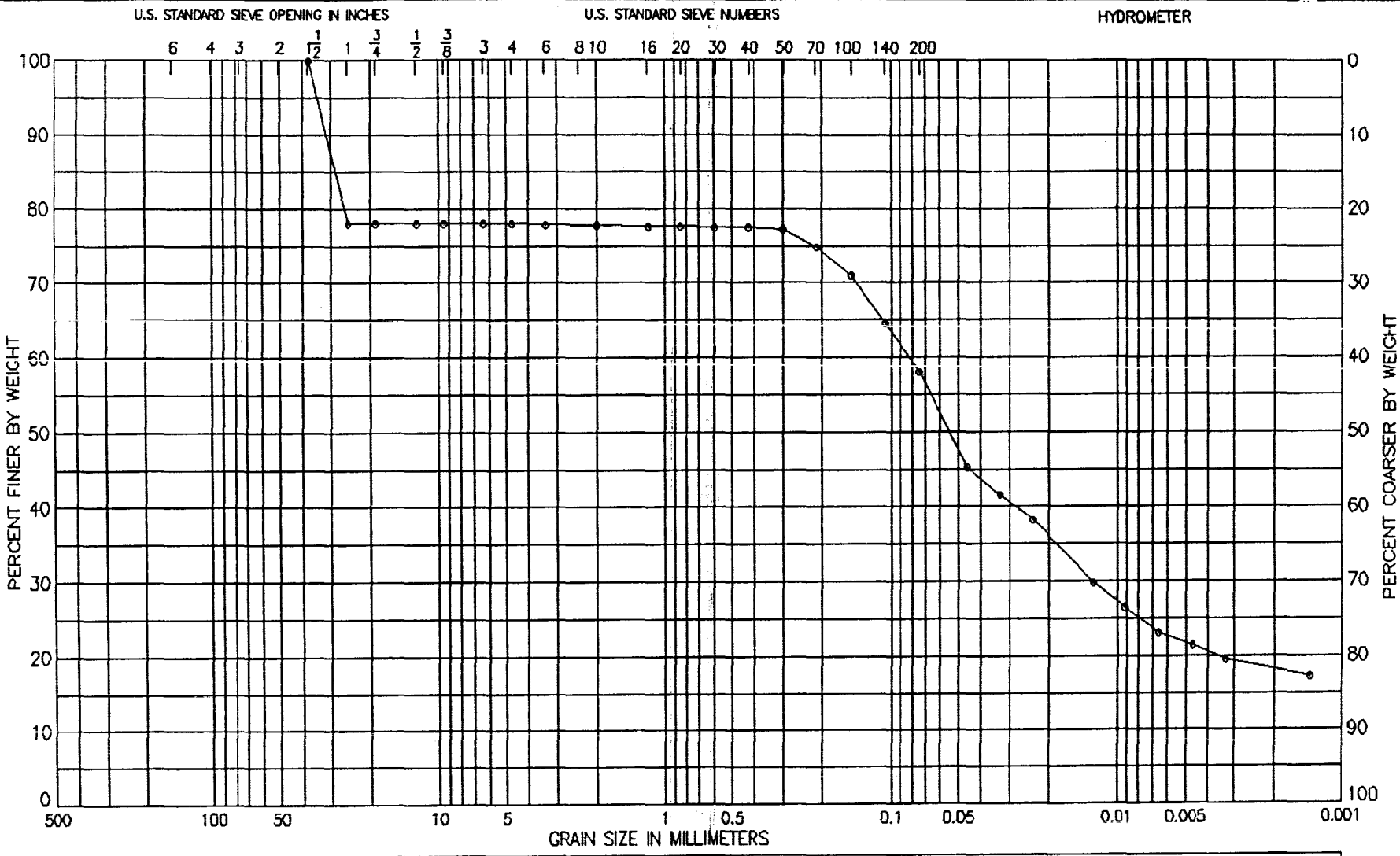
PROJECT CRANE ORR

BORING NO. 07/09-4-90 SAMPLE NO. 2A

DEPTH/ELEV 1.3-1.6 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
41	17	24	2.70 EST	21.2	2.4

CLASSIFICATION

SANDY GRAVELLY CLAY (CL), BROWN

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

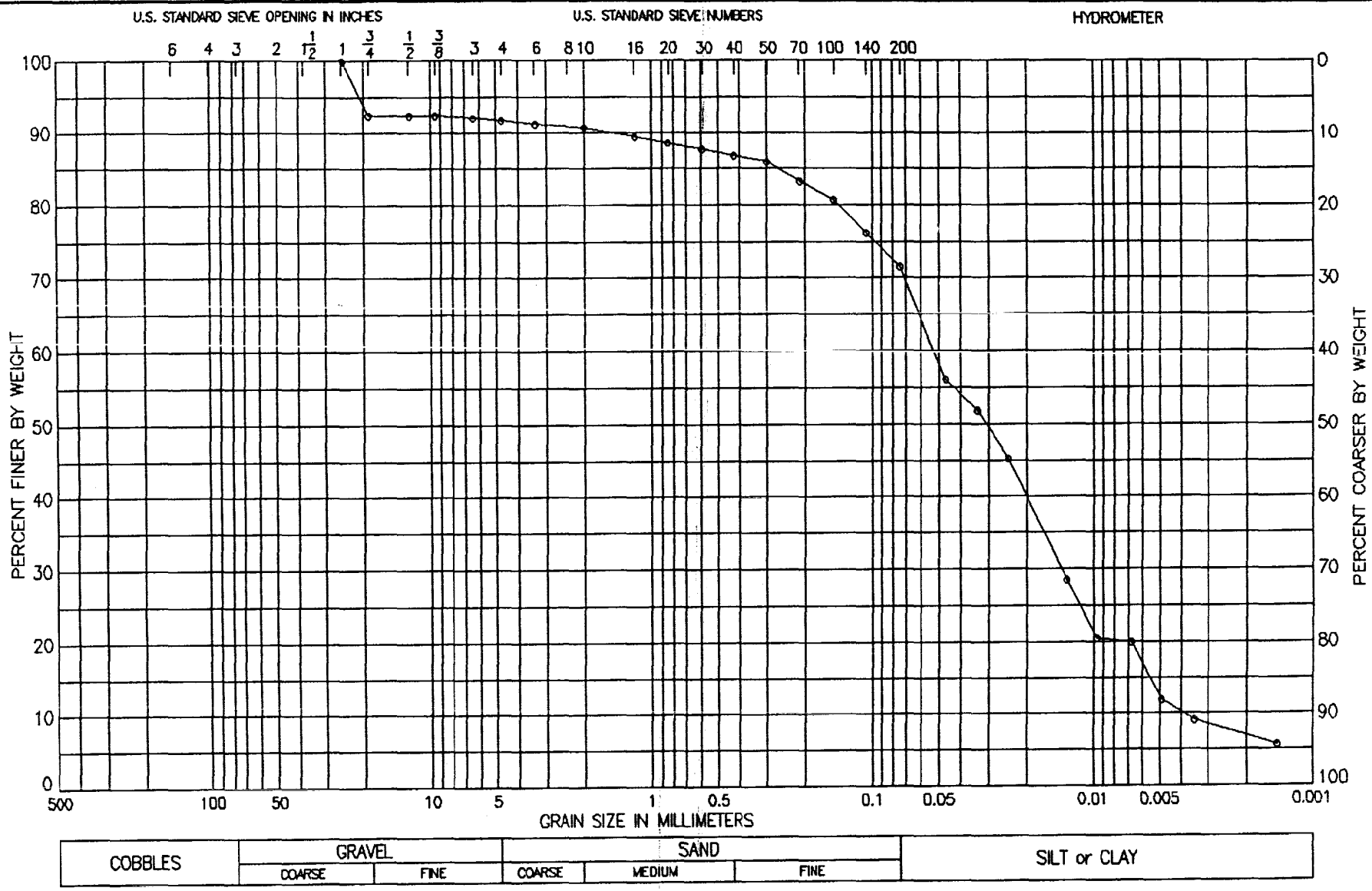
PROJECT CRANE ORR

BORING NO. 07/09-4-90 SAMPLE NO. 3A

DEPTH/ELEV 7.5-8.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
31	22	9	2.70 EST	21.8	3.0

CLASSIFICATION

SANDY SILTY CLAY (CL), BROWN; WITH GRAVEL

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

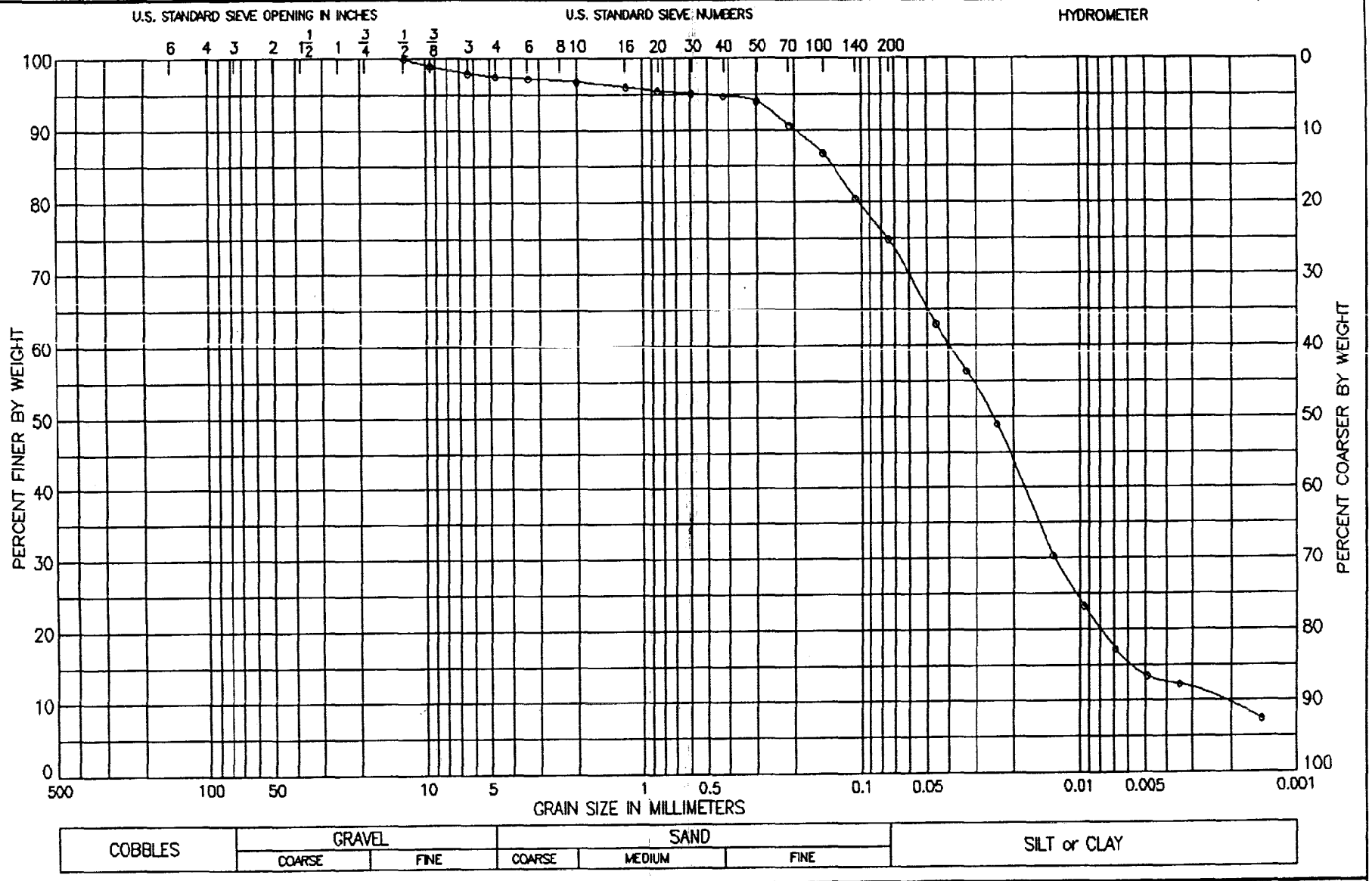
PROJECT CRANE ORR

BORING NO. 07/09-5-90 SAMPLE NO. 1A

DEPTH/ELEV 0.5-1.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
28	18	10	2.70 EST	17.7	2.5

CLASSIFICATION
SANDY CLAY (CL), BROWN

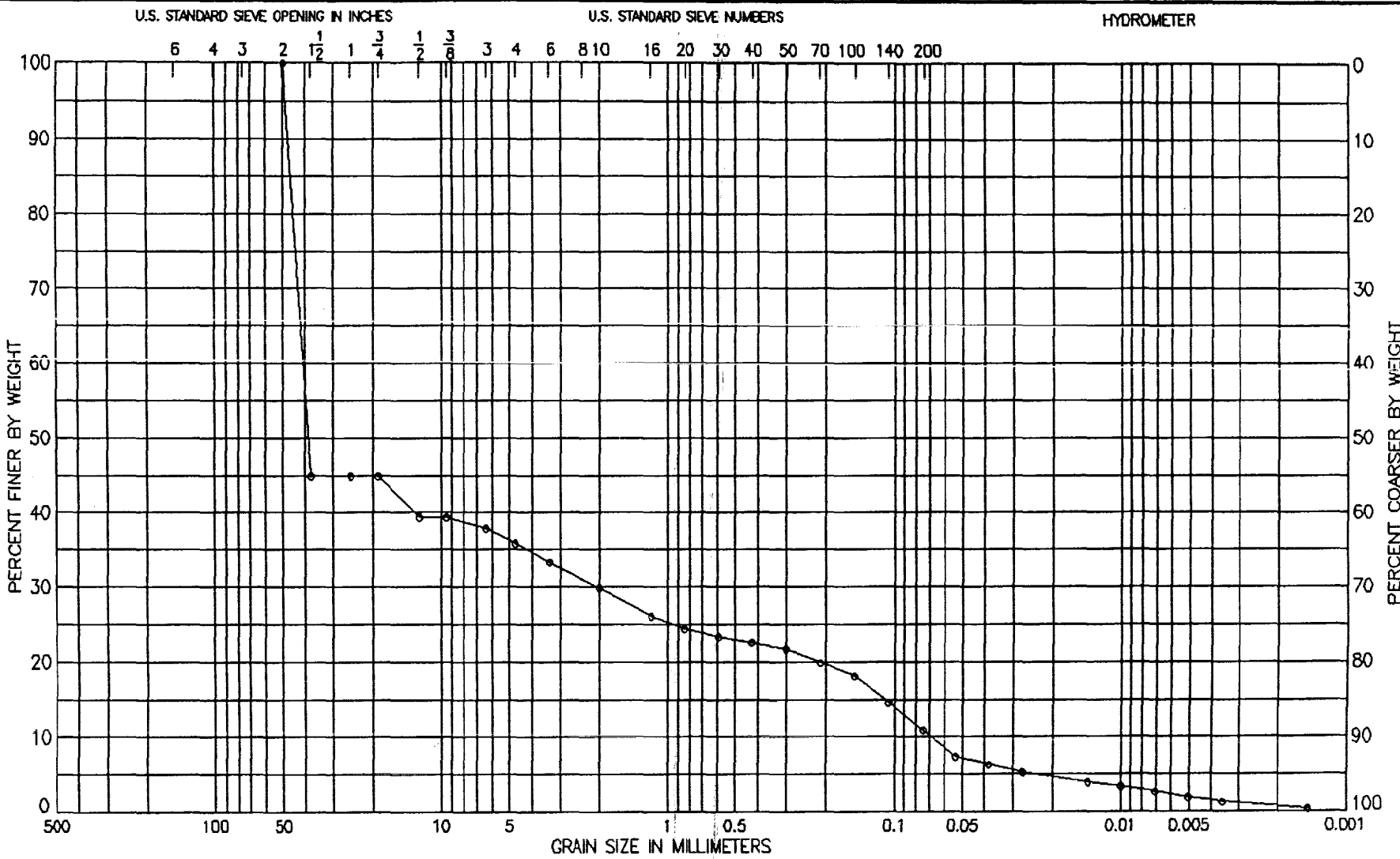
PROJECT CRANE ORR

BORING NO. 07/09-5-90 SAMPLE NO. 2A

DEPTH/ELEV DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES – STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
24	18	6	2.69 EST	11.7	3.4

CLASSIFICATION

SANDY CLAYEY GRAVEL (GW-GC), BROWN

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

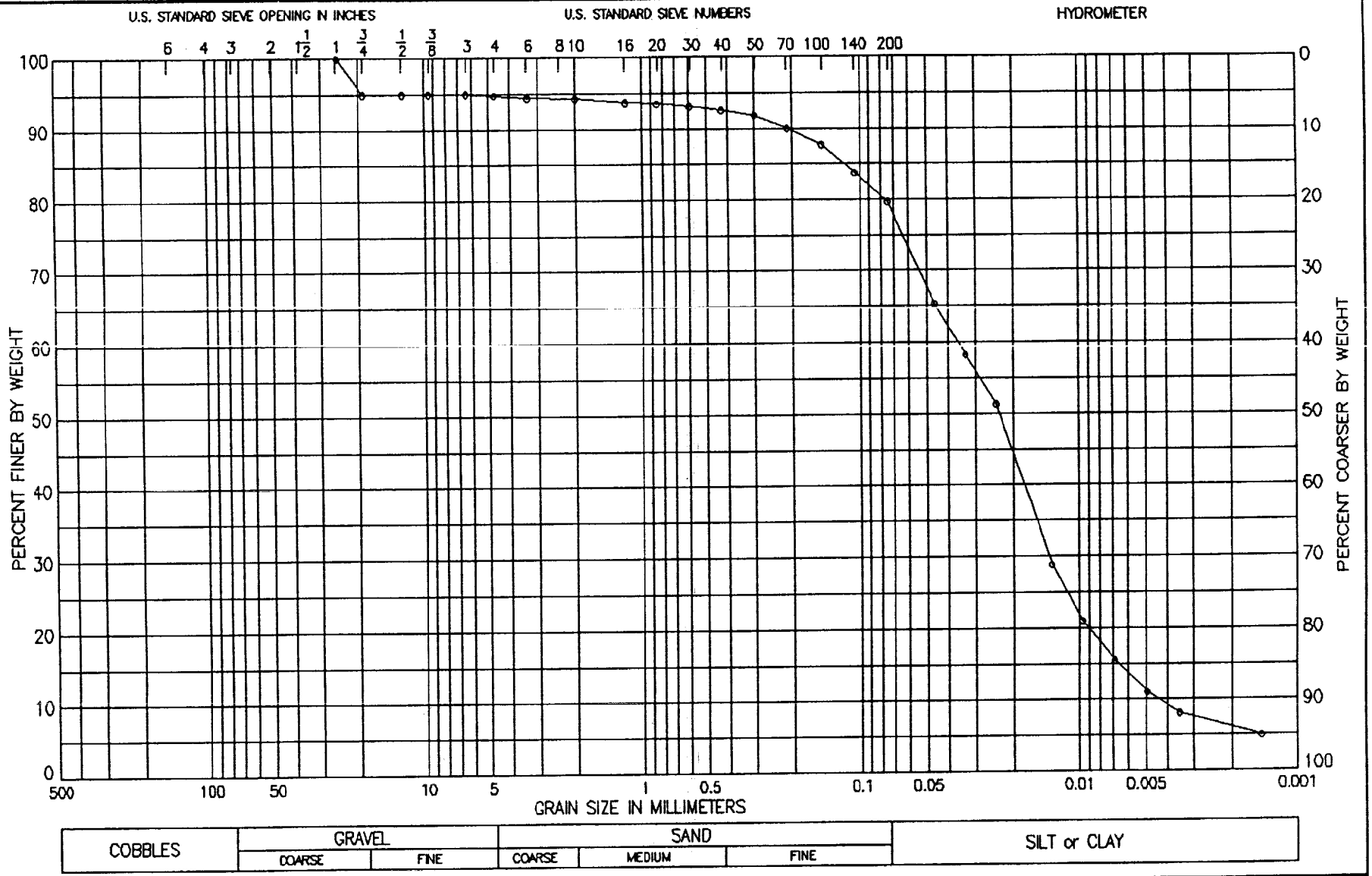
GRADATION CURVE

LABORATORY USAE WES - STF/GL

PROJECT CRANE ORR

BORING NO. 07/09-5-90 SAMPLE NO.

DEPTH/ELEV 3.5-4.0 DATE 03 OCT 90



LL	PL	PI	GS	NAT W,%	ORG,%
35	24	11	2.70 EST	22.7	2.6

CLASSIFICATION

SANDY SILTY CLAY (CL), BROWN; WITH GRAVEL

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

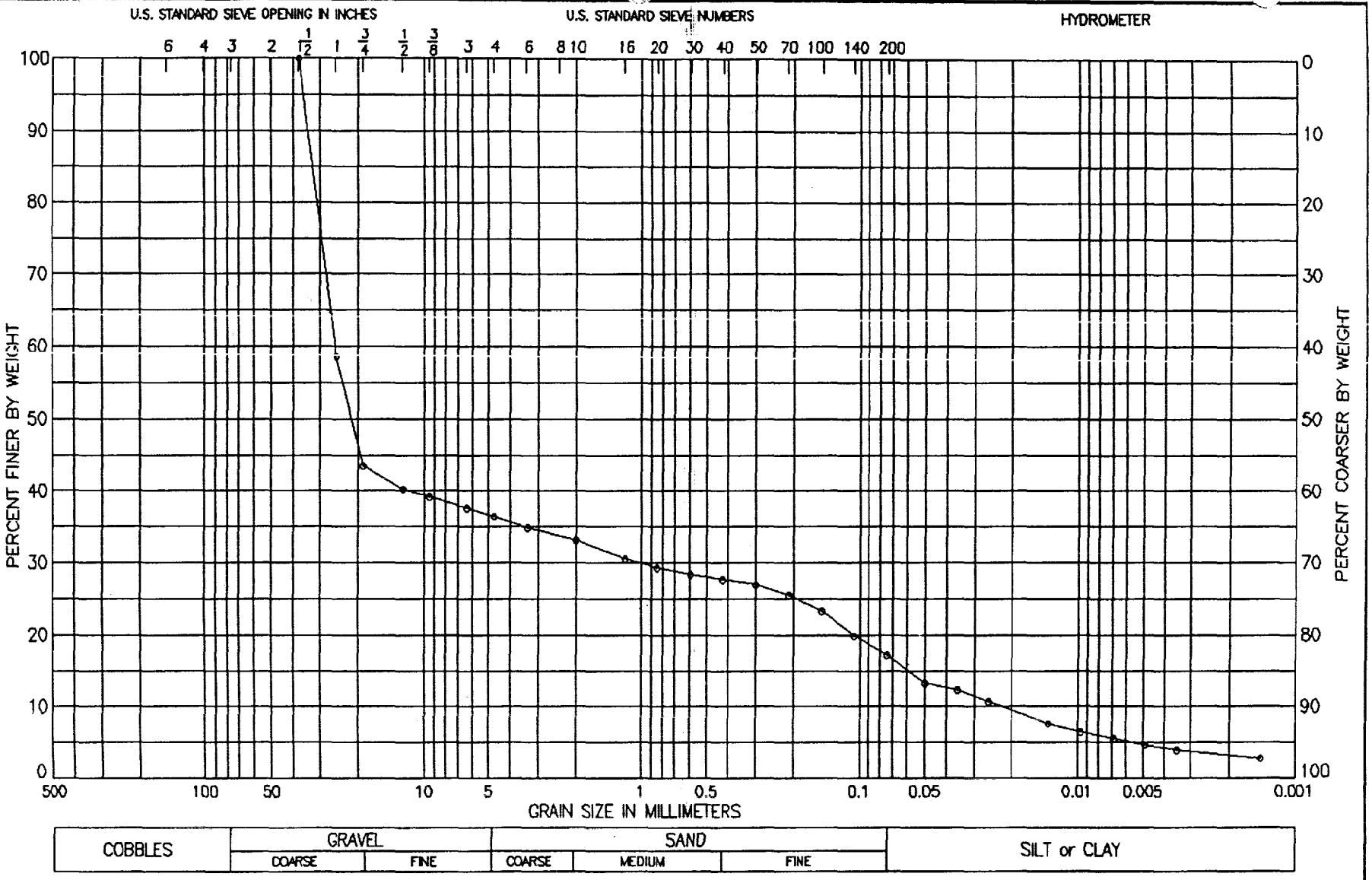
PROJECT CRANE ORR

BORING NO. 07/09-6-90 SAMPLE NO. 1A

DEPTH/ELEV 1.3-1.7 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES – STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
27	18	9	2.70 EST	16.3	2.3

CLASSIFICATION

SANDY CLAYEY GRAVEL (GC), BROWN

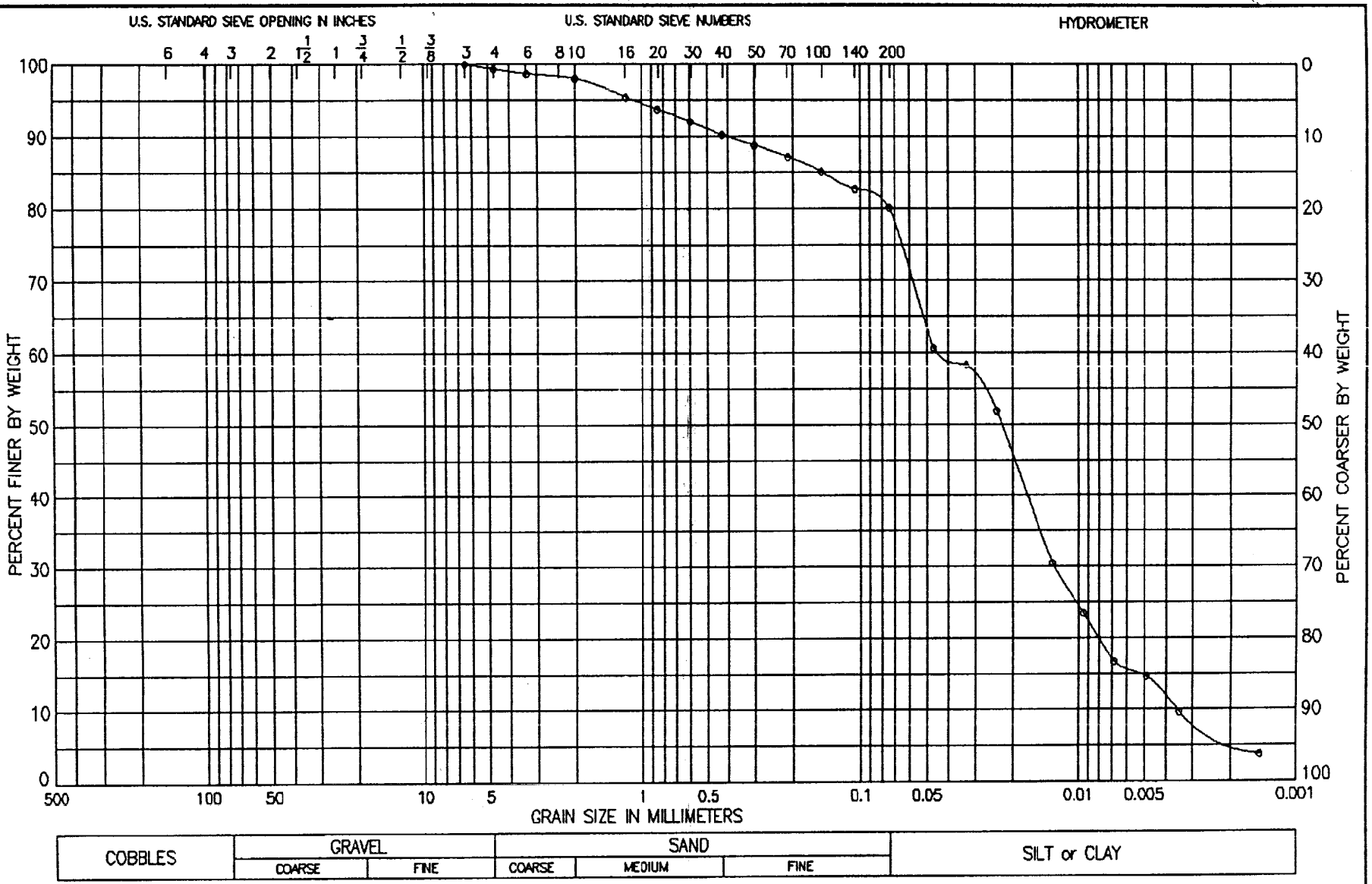
INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

PROJECT CRANE ORR

BORING NO. 07/09-6-90 SAMPLE NO. 2A

DEPTH/ELEV 4.0-4.5 DATE 03 OCT 90

GRADATION CURVE | LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
31	23	8	2.70 EST	21.7	1.9

CLASSIFICATION
SANDY SILTY CLAY (CL), BROWN

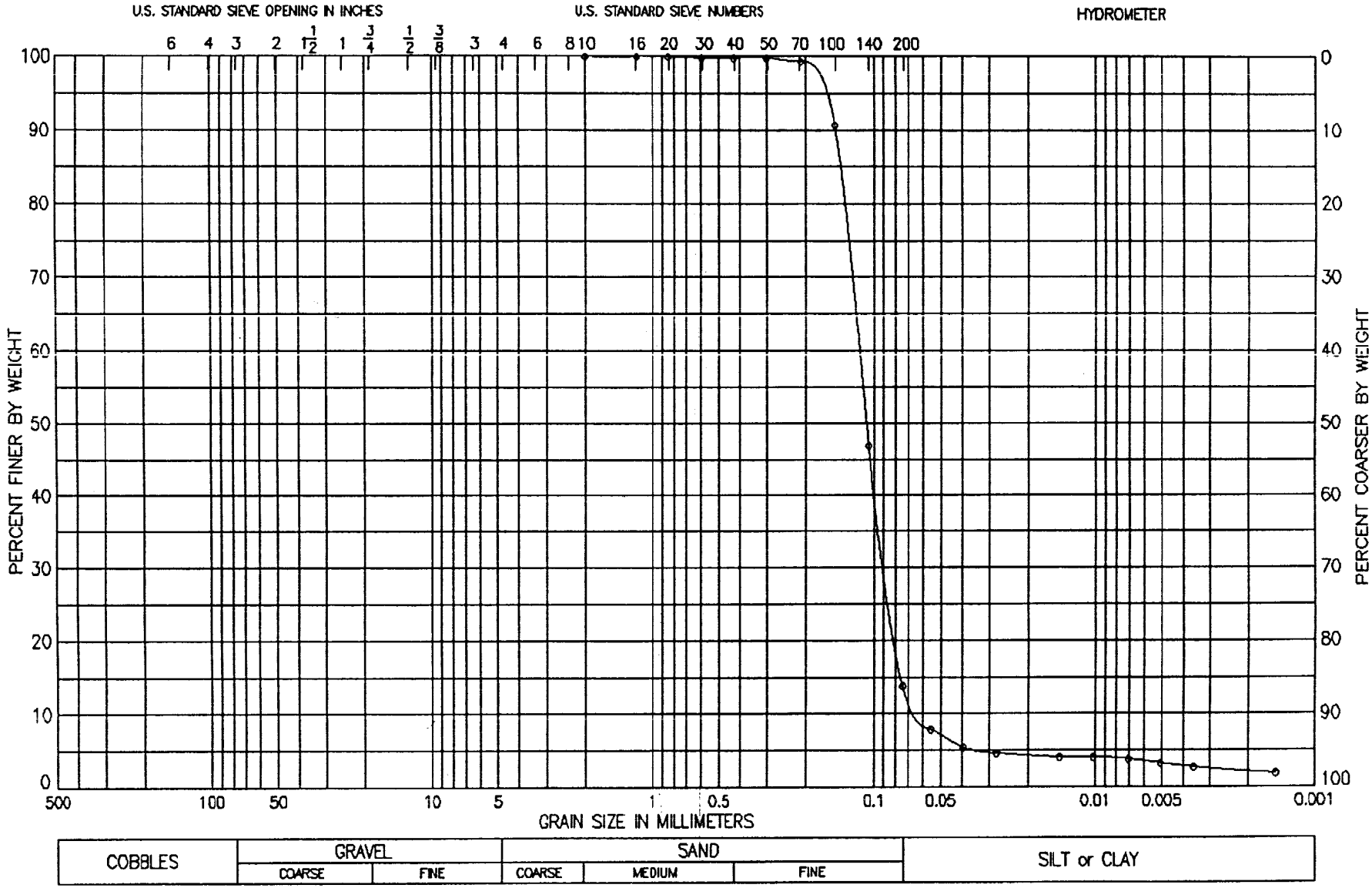
PROJECT CRANE ORR

BORING NO. 07/09-7-90 SAMPLE NO. 1A

DEPTH/ELEV 3.5-4.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES – STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
NP			2.67 EST	23.3	.4

CLASSIFICATION
SILTY SAND (SM), GRAY

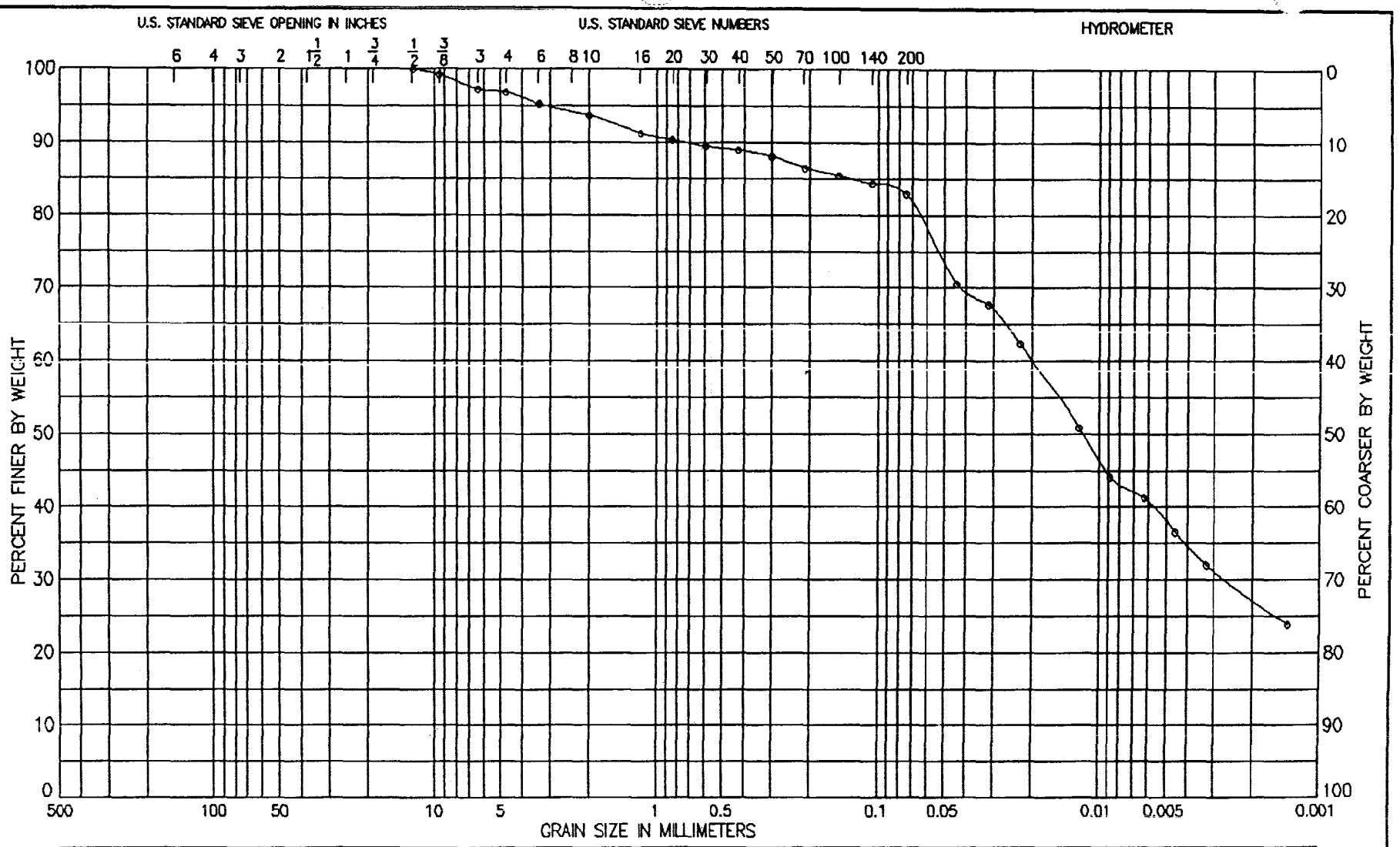
PROJECT CRANE ORR

BORING NO. 07/09-7-90 SAMPLE NO. 2A

DEPTH/ELEV 18.0-19.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
57	19	38	2.70 EST	22.1	3.1

CLASSIFICATION

SANDY CLAY (CH), BROWN; TRACE OF GRAVEL

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

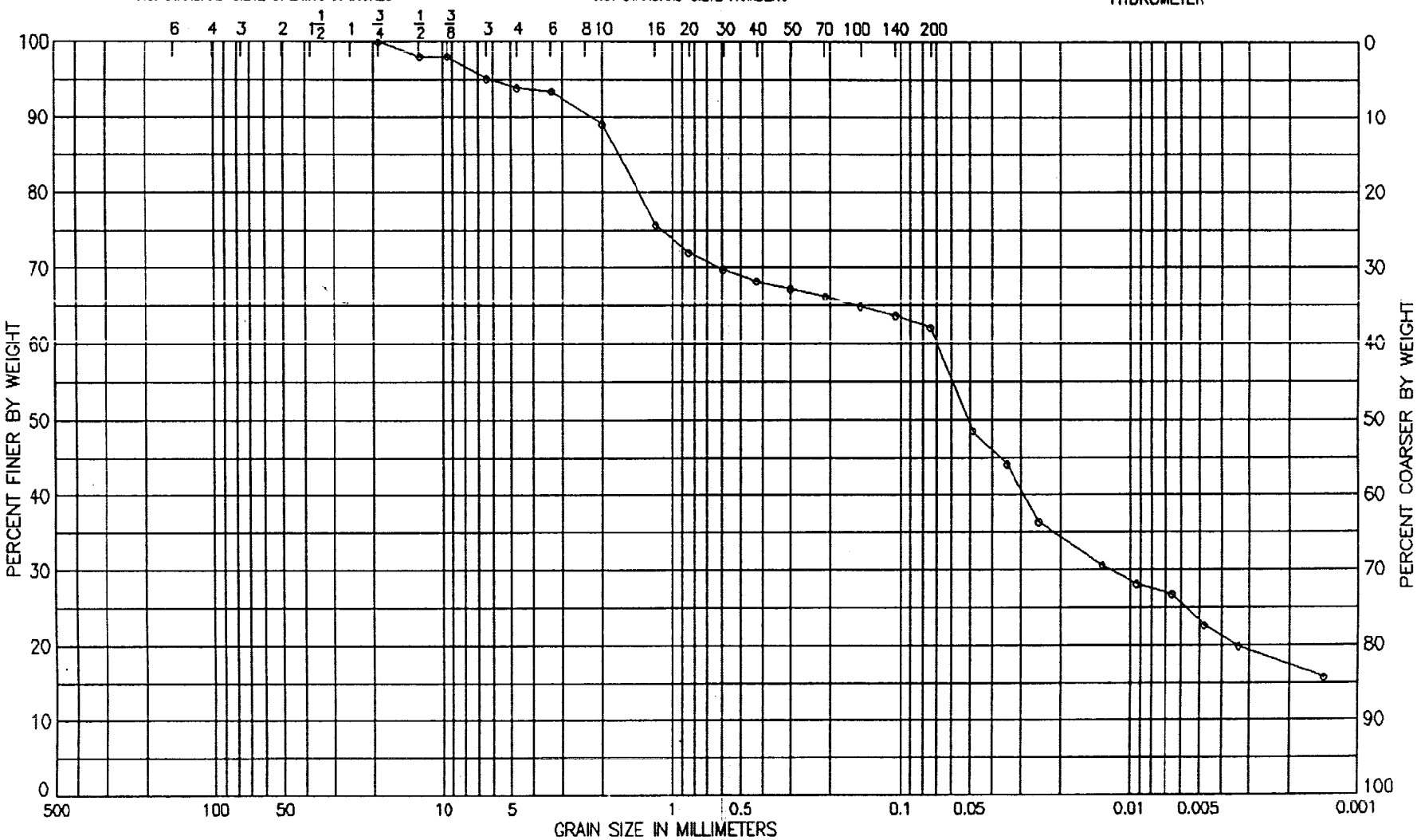
PROJECT CRANE ORR

BORING NO. 07/09-11-90 SAMPLE NO. 1A

DEPTH/ELEV 3.5-4.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES – STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
55	21	34	2.70 EST	19.1	1.2

CLASSIFICATION

SANDY CLAY (CH), BROWN; WITH GRAVEL

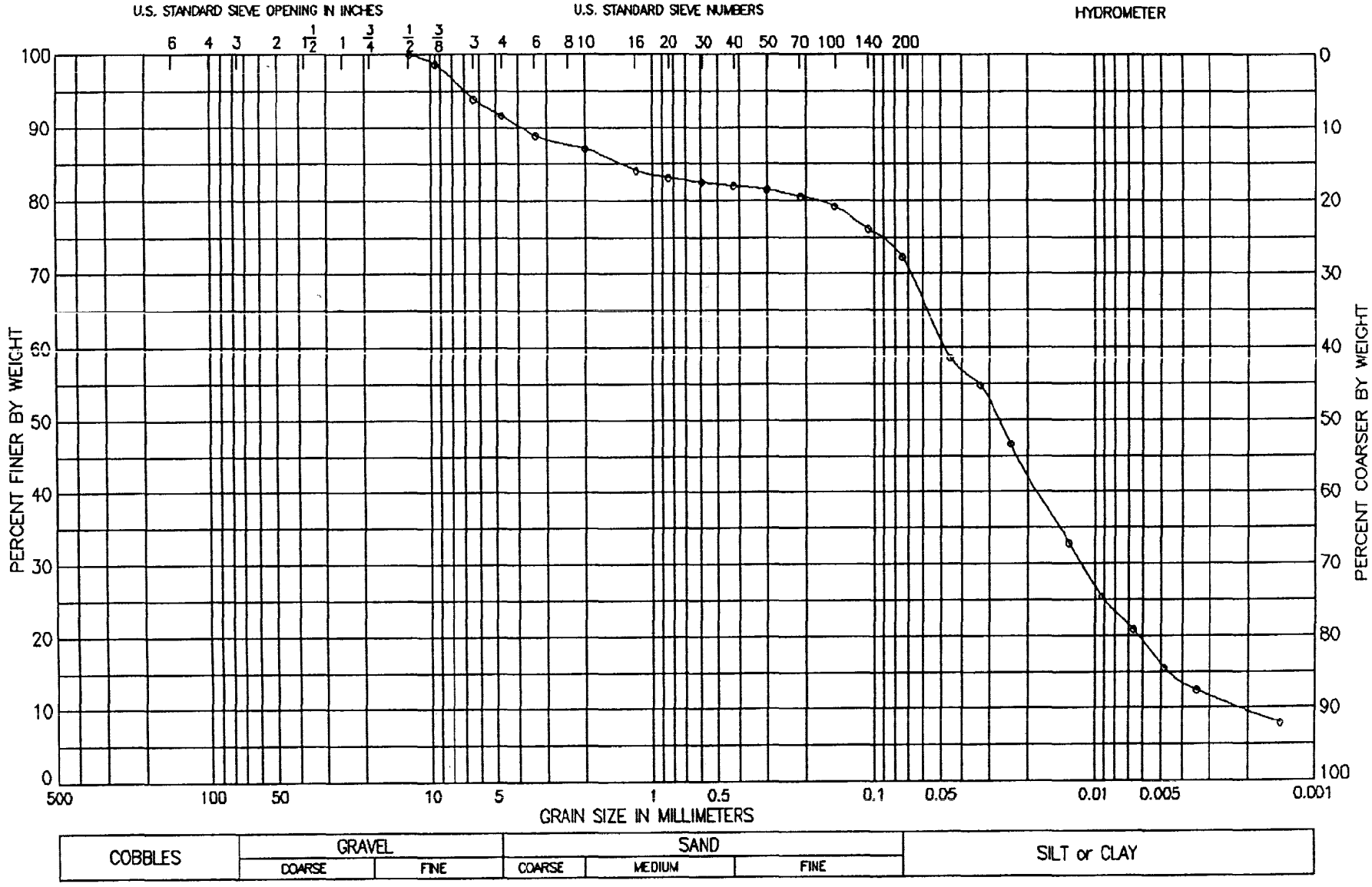
INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

PROJECT CRANE ORR

BORING NO. 07/09-11-90 SAMPLE NO. 2A

DEPTH/ELEV 9.5-9.9 DATE 03 OCT 90

GRADATION CURVE | LABORATORY USAE WES – STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
34	22	12	2.70 EST	24.3	2.8

CLASSIFICATION

SANDY SILTY CLAY (CL), BROWN; WITH GRAVEL

INSUFFICIENT SAMPLE FOR ACCURATE GRADATION

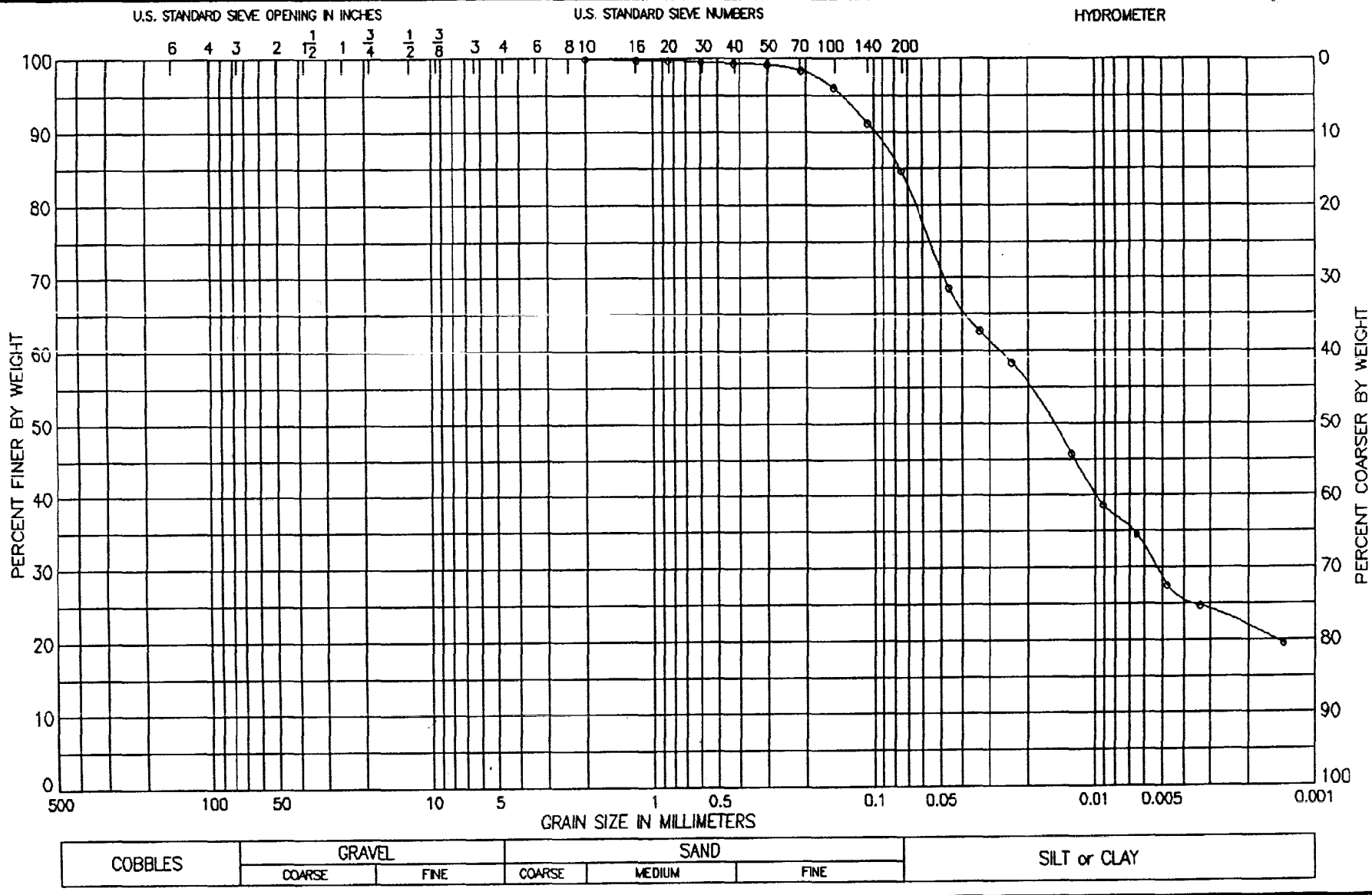
PROJECT CRANE ORR

BORING NO. 07/09-12-90 SAMPLE NO. 1A

DEPTH/ELEV 3.5-4.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS	NAT W,%	ORG,%
30	14	16	2.70 EST	14.0	1.2

CLASSIFICATION
SANDY CLAY (CL), BROWN

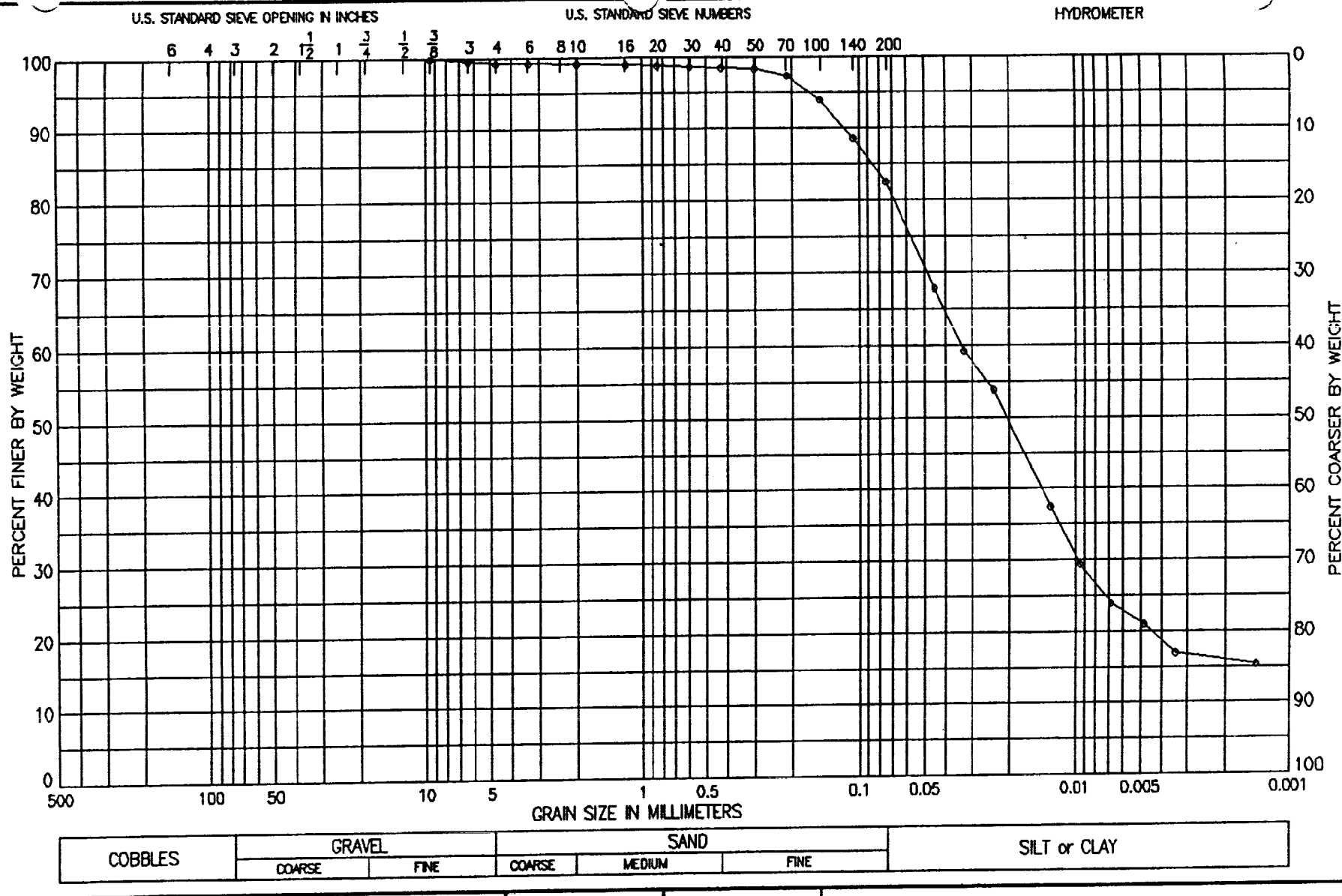
PROJECT CRANE ORR

BORING NO. 07/09-12-90 SAMPLE NO. 2A

DEPTH/ELEV 6.5-7.0 DATE 03 OCT 90

GRADATION CURVE

LABORATORY USAE WES - STF/GL



LL	PL	PI	GS 2.70 EST	NAT W,% 7.3	ORG,% 1.9

CLASSIFICATION
SANDY CLAY (CL), BROWN

PROJECT OLD RIFLE RANGE
CRANE, IN

BORING NO. 07/09-13-90 SAMPLE NO. 1A

DEPTH/ELEV 0.5 - 1.0 DATE 11 MAR 91

GRADATION CURVE

LABORATORY USAE WES - STF/GL

SIEVE ANALYSIS

PROJECT: OLD RIFLE RANGE
CRANE, IN

BORING: 07/09-13-90 SAMPLE: 1A DF: MD2891 .DAT
DEPTH: 0.5 - 1.0 DATE: 11 MAR 91

O-LIMITS-RAN GS: 2.70 est WC: 7.30 OC: 1.90
LASSIFICATION: 108
SANDY CLAY (CL), BROWN

TOTAL WEIGHT OF SAMPLE: 229.2 gms.
ARTIAL WEIGHT AFTER SPLIT: 58.5 gms.

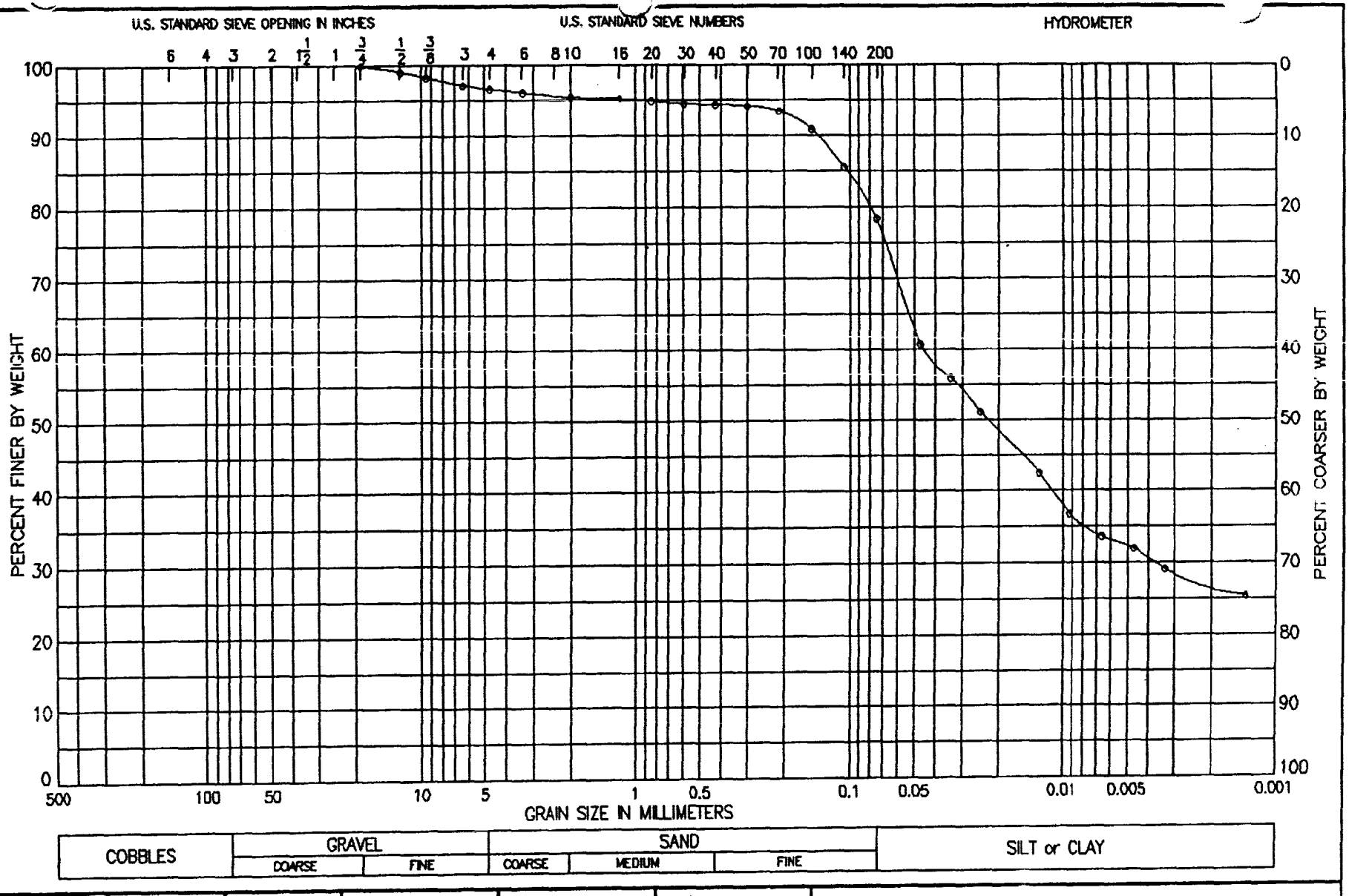
WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	CUMULATIVE PERCENTS
.0	3/8 in	9.500	100.0	.0
.7	No 3	6.350	99.7	.3
.8	No 4	4.750	99.3	.7
.0	No 6	3.350	99.3	.7
.2	No 10	2.000	99.3	.7
.1	No 16	1.180	99.1	.9
.2	No 20	.850	98.9	1.1
.3	No 30	.600	98.7	1.3
.4	No 40	.425	98.6	1.4
.5	No 50	.300	98.4	1.6
1.1	No 70	.212	97.4	2.6
3.1	No 100	.150	94.0	6.0
6.3	No 140	.106	88.6	11.4
9.9	No 200	.075	82.5	17.5

YDROMETER:

RDGS	TEMP			
25.4	21.5	.0451	67.9	32.1
22.2	21.5	.0331	59.3	40.7
20.2	21.5	.0239	53.9	46.1
14.1	21.5	.0131	37.5	62.5
11.1	21.5	.0095	29.4	70.6
9.1	21.5	.0069	24.0	76.0
7.9	22.0	.0048	21.0	79.0
6.3	22.5	.0035	17.0	83.0
5.9	21.5	.0014	15.4	84.6

PERCENT GRAVEL = .7
PERCENT SAND = 16.9
PERCENT FINES = 82.5

EDE



LL	PL	PI	GS 2.70 EST	NAT W,% 19.9	ORG,% 3.4

CLASSIFICATION
SANDY CLAY (CL), BROWN; TRACE OF GRAVEL

PROJECT OLD RIFLE RANGE
CRANE, IN

BORING NO. 07/09-13-90 SAMPLE NO. 2A

DEPTH/ELEV 4.5 – 5.0 DATE 11 MAR 91

GRADATION CURVE | LABORATORY USAE WES – STF/GL

SIEVE ANALYSIS

PROJECT: OLD RIFLE RANGE
CRANE, IN

BORING: 07/09-13-90 SAMPLE: 2A DF: MD2891 .DAT
DEPTH: 4.5 - 5.0 DATE: 11 MAR 91

)-LIMITS-RAN GS: 2.70 est WC: 19.90 OC: 3.40
LASSIFICATION: 126
SANDY CLAY (CL), BROWN; TRACE OF GRAVEL

TOTAL WEIGHT OF SAMPLE: 488.6 gms.
ARTIAL WEIGHT AFTER SPLIT: 53.1 gms.

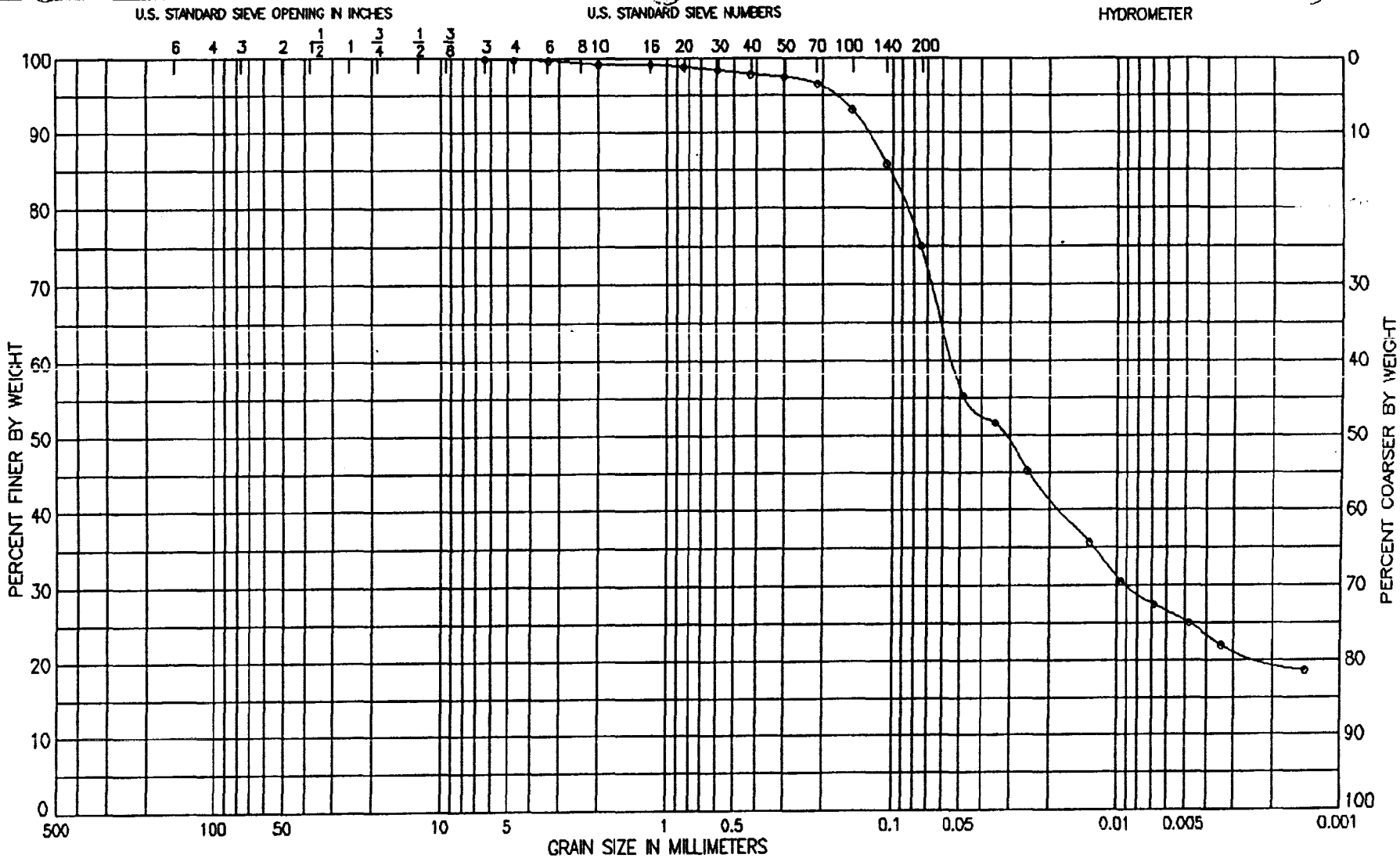
WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	CUMULATIVE PERCENTS
.0	3/4 in	19.100	100.0	.0
4.2	1/2 in	12.500	99.1	.9
4.0	3/8 in	9.500	98.3	1.7
5.6	No 3	6.350	97.2	2.8
2.5	No 4	4.750	96.7	3.3
2.6	No 6	3.350	96.1	3.9
3.4	No 10	2.000	95.4	4.6
.1	No 16	1.180	95.3	4.7
.3	No 20	.850	94.9	5.1
.5	No 30	.600	94.5	5.5
.6	No 40	.425	94.4	5.6
.7	No 50	.300	94.2	5.8
1.1	No 70	.212	93.5	6.5
2.5	No 100	.150	90.9	9.1
5.5	No 140	.106	85.6	14.4
9.5	No 200	.075	78.4	21.6

YDROMETER:

RDGS	TEMP			
21.5	21.5	.0471	60.8	39.2
19.8	21.5	.0339	55.9	44.1
18.1	21.5	.0244	51.1	48.9
15.1	21.5	.0130	42.5	57.5
13.1	21.5	.0094	36.8	63.2
12.0	21.5	.0067	33.7	66.3
11.3	22.0	.0047	32.0	68.0
10.2	22.5	.0034	29.1	70.9
9.1	21.5	.0014	25.4	74.6

PERCENT GRAVEL = 3.3
PERCENT SAND = 18.3
PERCENT FINES = 78.4

EDE



LL	PL	PI	GS 2.70 EST	NAT W,% 18.5	ORG,% 2.0

CLASSIFICATION
SANDY CLAY (CL), BROWN

PROJECT OLD RIFLE RANGE
CRANE, IN

BORING NO. 07/09-13-90 SAMPLE NO. 3A

DEPTH/ELEV 6.0 – 6.5 DATE 11 MAR 91

GRADATION CURVE | LABORATORY USAE WES – STF/GL

SIEVE ANALYSIS

PROJECT: OLD RIFLE RANGE
CRANE, IN

BORING: 07/09-13-90 SAMPLE: 3A DF: MD2891 .DAT
DEPTH: 6.0 - 6.5 DATE: 11 MAR 91

)-LIMITS-RAN GS: 2.70 est WC: 18.50 OC: 2.00
LASSIFICATION: 144
SANDY CLAY (CL), BROWN

TOTAL WEIGHT OF SAMPLE: 384.0 gms.
ARTIAL WEIGHT AFTER SPLIT: 51.6 gms.

WEIGHTS gm.	SIEVE SIZE or NUMBER	OPENING mm	PERCENT FINER	CUMULATIVE PERCENTS
.0	No 3	6.350	100.0	.0
.4	No 4	4.750	99.9	.1
.3	No 6	3.350	99.8	.2
2.1	No 10	2.000	99.3	.7
.0	No 16	1.180	99.3	.7
.2	No 20	.850	98.9	1.1
.4	No 30	.600	98.5	1.5
.7	No 40	.425	97.9	2.1
.9	No 50	.300	97.5	2.5
1.4	No 70	.212	96.6	3.4
3.2	No 100	.150	93.1	6.9
7.0	No 140	.106	85.8	14.2
12.6	No 200	.075	75.0	25.0

YDROMETER:

RDGS	TEMP			
18.3	21.5	.0487	55.3	44.7
17.1	21.5	.0349	51.6	48.4
15.0	21.5	.0252	45.2	54.8
11.9	21.5	.0134	35.7	64.3
10.2	21.5	.0096	30.6	69.4
9.2	21.5	.0068	27.5	72.5
8.3	22.0	.0048	25.1	74.9
7.2	22.5	.0034	22.0	78.0
6.3	21.5	.0014	18.6	81.4

PERCENT GRAVEL = .1
PERCENT SAND = 24.9
PERCENT FINES = 75.0

EDE

DEPARTMENT OF THE ARMY
WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS
3909 HALLS FERRY ROAD
VICKSBURG, MISSISSIPPI 39180-6199

REPLY TO
ATTENTION OF

26 September 1990

Environmental Laboratory

U. S. Army Engineer District, Wilmington
ATTN: Mr. Robert Magee
69 Darlington Avenue
Wilmington, NC 28403

Dear Bob:

Enclosed are the results for Site 1 (Old Rifle Range), Crane. All analyses are complete except for antimony which is not enclosed. Both of our antimony lamps burned out during the course of the project. As soon as new Sb lamps arrive the analyses will be completed.

If you have any immediate questions, please contact me; otherwise Ann Strong, C/ALG, will be back in the office 2 October 1990.

Sincerely,

Richard A. Karn

Richard A. Karn
Research Chemist
Analytical Laboratory Group

IN5 170 023 498
April 1991

Appendix D

Chemical Analytical Data

Control Records
Volatile Organic Data
Semivolatile Organic Data
Metal, Inorganic, and Explosive Data
Validation Report

Vol II of II

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: OLD RIFLE RANGE (CRANE)

SAMPLERS: (Signature)

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS
				LAB ID- 6757- 6770
7/24/90	0930	07/09-4-90 #1	1	
"	0:935	#2	1	
"	0:938	#3	1	
"	0:950	#4	1	
"	10:30	#5	1	
"	10:31	#5 V	1	VOA- Vial not filled completely lbs
7-26-90	0:945	40 ML RESINATE	1	VOA- Bubbles Present lbs
"	0950	500 ML RESINATE	1	
7-25-90	14:43	07/09-5-90 #1	1	
"	14:45	#2	1	
"	14:48	#3	1	
"	15:17	#4	1	
"		#4 V	1	Did not arrive. lbs 7/27/90

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Albritton	26 July 90 950	Linda K. Stevenson			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES F 4196 R Nov 88

PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: CRANE OLD RIFLE RANGE

SAMPLERS: (Signature) Paul E Albritton

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS
				LAB ID 6804 - 6812
26 July 90	11:00	07/09-5-90 (500ml) Steam cleaning water	1	
" "	11:07	07/09-5-90 40ml " "	1	
"	13:20	07/09-5-90 40ml Resinate	1	
	13:36	07/09-5-90 Soil #1	1	
	13:39	07/09-3-90 #2	1	
	:41	07/09-3-90 #3	1	
	14:00	07/09-3-90 #4	1	
	14:30	07/09-3-90 #5V	1	
	14:33	07/09-3-90 #5	1	
27 July 90	12:19	07/09-6-90 #1	1	
	12:21	" " #2	1	
	12:25	" " #3	1	
	12:39	" " 4V	1	
	12:45	" " 4	1	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Paul E Albritton	7-30-90 12:49	Linda K. Stevenson			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Remarks	

WES F .196 R Nov

PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: CRANE OLD RIFLE RANGE

SAMPLERS: (Signature) Paul E Allinton

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS
				LAB ID- 6813- 6849
7-30-90	0801	07/09-7-90 #1 05'	1	
	0804	2 1.0'	1	
	0809	3 2.0'	1	
	0812	4 COMPOSITE	1	
	0837	5	1	
	0909	6V(a)	1	
	0909	6V(b)	1	
	0913	6	1	
	0916	7	1	
	1047	500 mL Tide Water	1	
	1048	500 mL Rensate	1	
	1050	40 mL Rinsate	1	
	1051	40 Rinsate	1	

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Allinton	7-30-90 12:49	Linda K. Stevens			
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Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES FORM 96 R 14

PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: CRANE OLD RIFLE RANGE

SAMPLERS: (Signature) Paul E Albertson

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS
				LAB ID 6876 - 6894
7-31-90	10:24	07/09-11-90 #1	1	
	10:25	2	1	
	10:26	3	1	
	10:55	4	1	
	10:56	5	1	
	10:59	5V(a)	1	
	10:59	5V(b)	1	
	1125	6	1	
8-1-90	0845	07/09-2-90 #1	1	
	0847	2	1	
	0850	3	1	
	0915	4	1	
	0950	5	1	
	0945	5Va	1	
	0946	5Vb	1	
	1100	FINAL RINSE	2	small bubble

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Albertson	8-2-90 0930	Linda K Stevenson			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES FORM 6 PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: CRANE OLD RIFLE RANGE

SAMPLERS: (Signature) Paul E Albertson

REMARKS: LAB ID 6918-6952

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS
8-3-90	1309	07/09-8-90 #1	1
	1000	2	1
	1355	3Va	1
	1350	3Vb	1
	1455	07/09-14-90 1	1
	1459	2	1
	1500	3	1
	1515	4	1
	1525	5V	2
	1530	5	1
8-4-90	0915	07/09-10-90 #1	1
	1010	2	1
	1008	2V	2
	1038	07/09-9-90 #1	1
	1106	#2	1
	1101	#2V	2

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Albertson	8-6-90 0800	Linda K. Stevenson			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES FORM 96 R 86

PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: CRANE OLD RIFLE RANGE

SAMPLERS: (Signature) Paul E Albertson

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS (LAB ID 6918 - 6952)
8-2-90	1310	07/09-12-90 #1	1	
	1311	2	1	
	1313	3	1	
	1334	4	1	
	1332	4V	2	
	1442	FINAL RINSE	2	Bubbles
8-3-90	1600	07/09-1A-90 FINAL RINSE	1	
	1550	GLASS PLASTIC	1	
	1555	Final Rinse 40 ml	2	
	1545	Crane Deionized H2O	1	
8-4-90	1630	07/09-9/10-90	2	Bubbles these vials were 07/09-9-90, NOT 07/09-10
	1422	07/08-8-90 Rinse	2	Bubbles labeled 07/09-8-90, NOT 07/08-8-90
	1424	Plastic " "	1	
	1426	Glass	1	

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Albertson	8-6-90 0800	Linda K. Stevenson			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES FORM R 16 86 PREVIOUS EDITIONS OBSOLETE

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Toluene - d8 (TOL) MATRIX: soil

LCL: 81 UCL: 117

	Date	Samp.	Rec. %
01	–	6766B	103
02	–	6820B	107
03	–	6887B	101
04	–	6933B	100
05			
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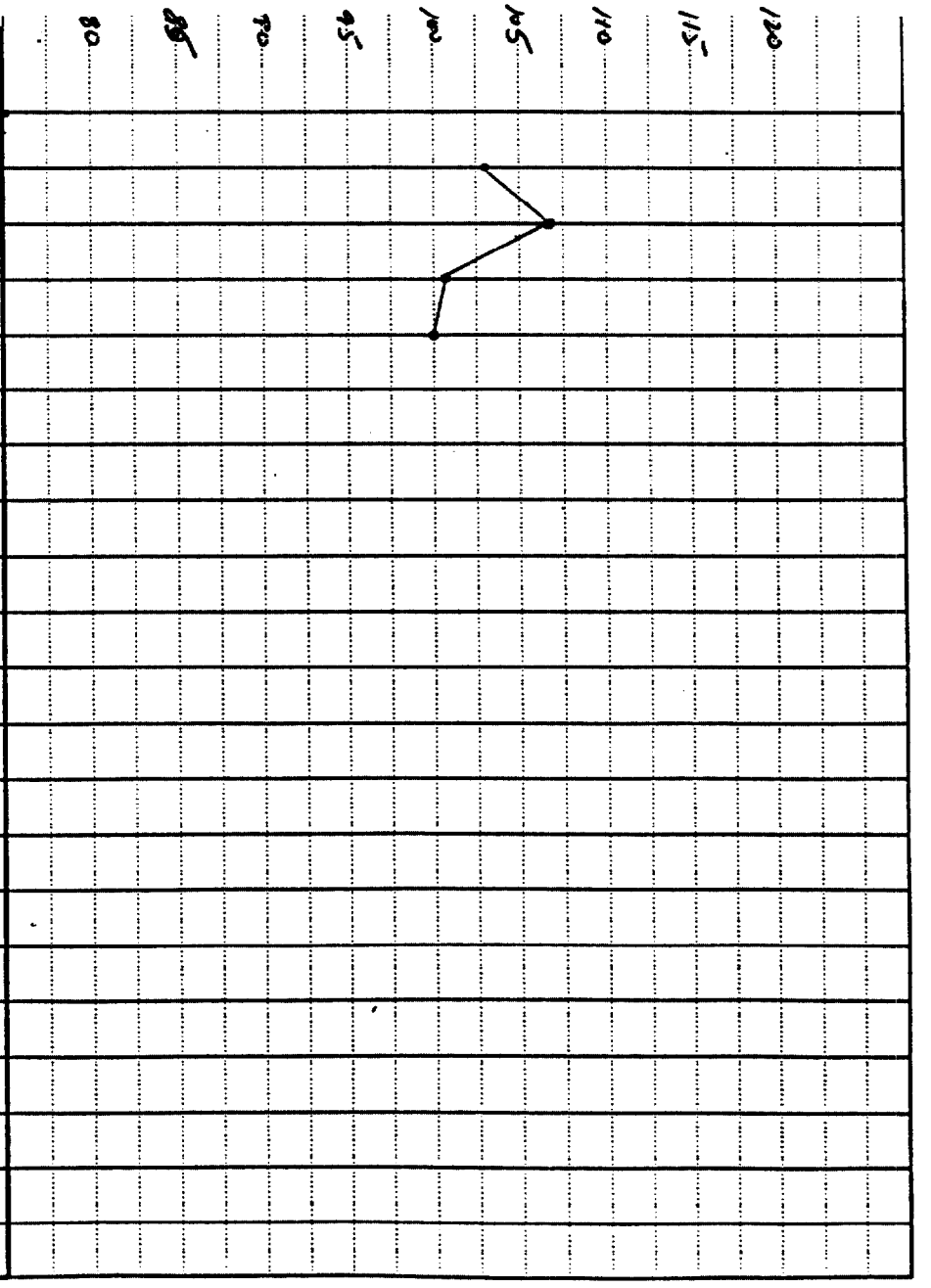

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BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: BromoFluorobenzene (BFB) MATRIX: Soil

LCL: 74 UCL: 121

	Date	Samp.	Rec.
01	-	6766B	107
02	-	6820B	103
03	-	6887B	94.4
04	-	6933B	98.4
05			
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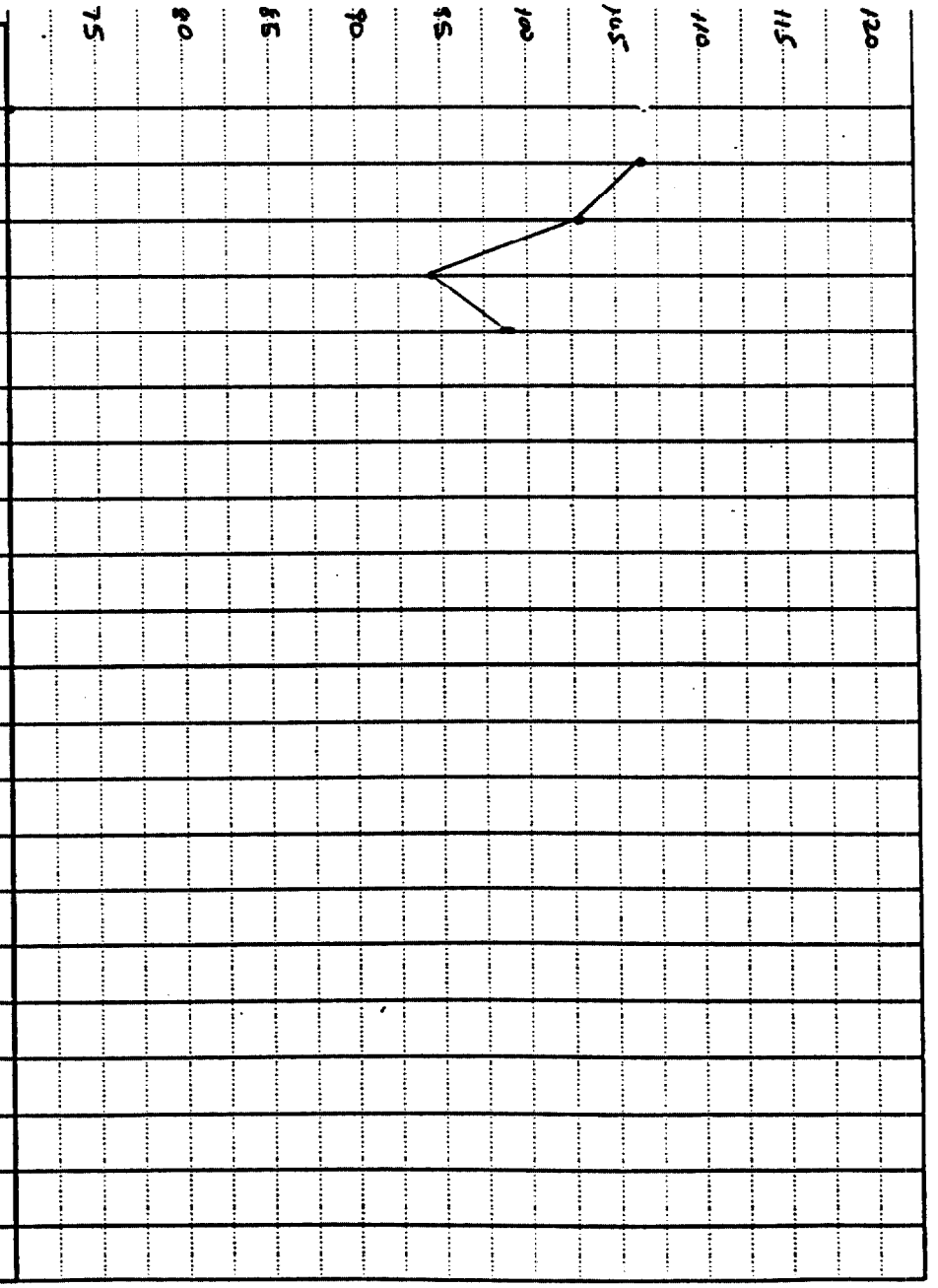

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 1,2 -Dichloroethane - d4 (DCE) MATRIX: Soil

LCL: 70 UCL: 121

	Date	Samp.	Rec. %
01	—	6766B	97.9
02	—	6820B	107
03	—	6887B	101
04	—	6933B	98.4
05			
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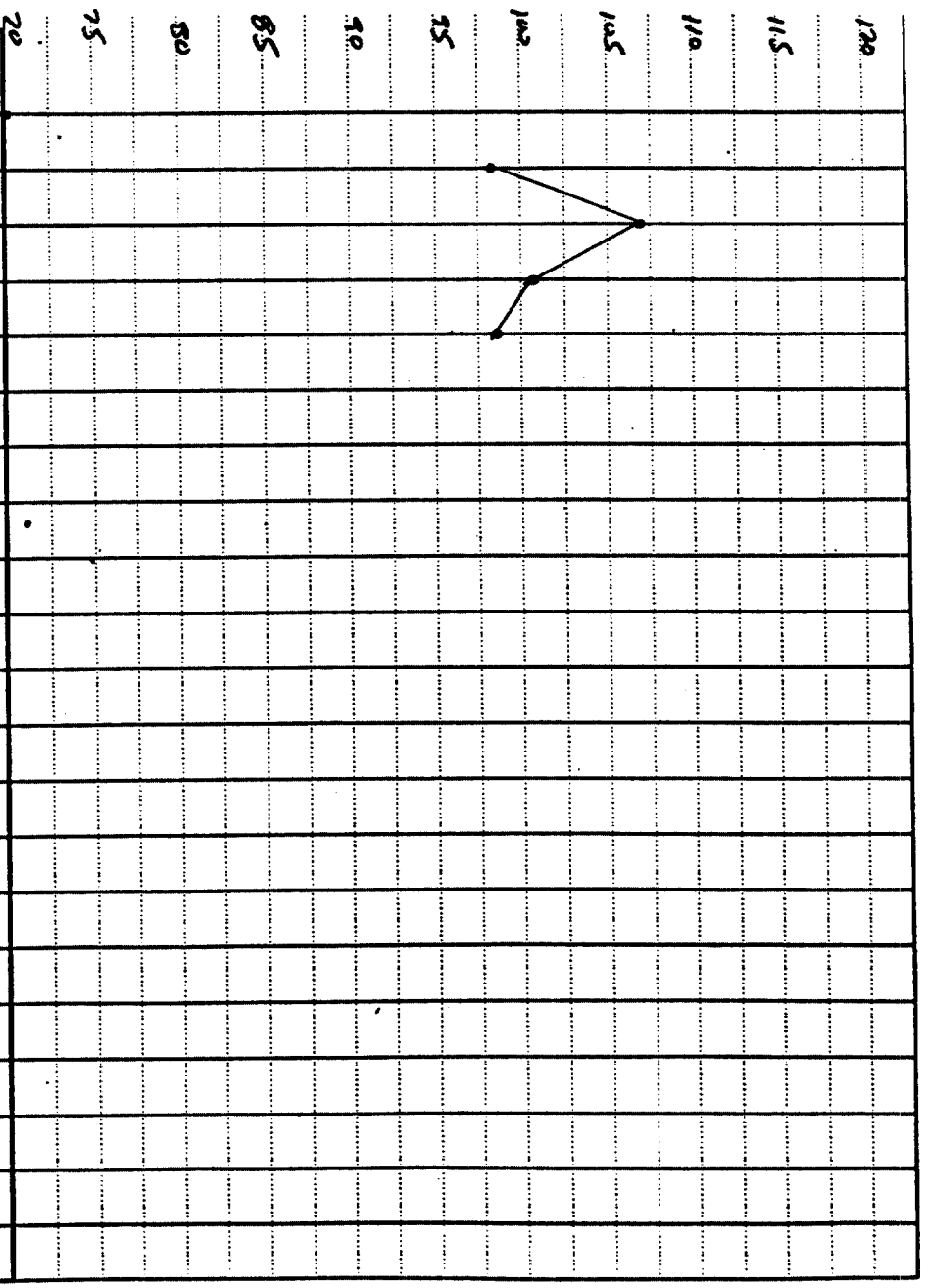

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BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Nitrobenzene-d5 (NBZ) MATRIX: Soil

LCL: 23 UCL: 120

	Date	Samp.	Rec. %
01	-	6767B	44.8
02	-	6829B	44.8
03	-	6893B	32.8
04	-	6948B	32.8
05			
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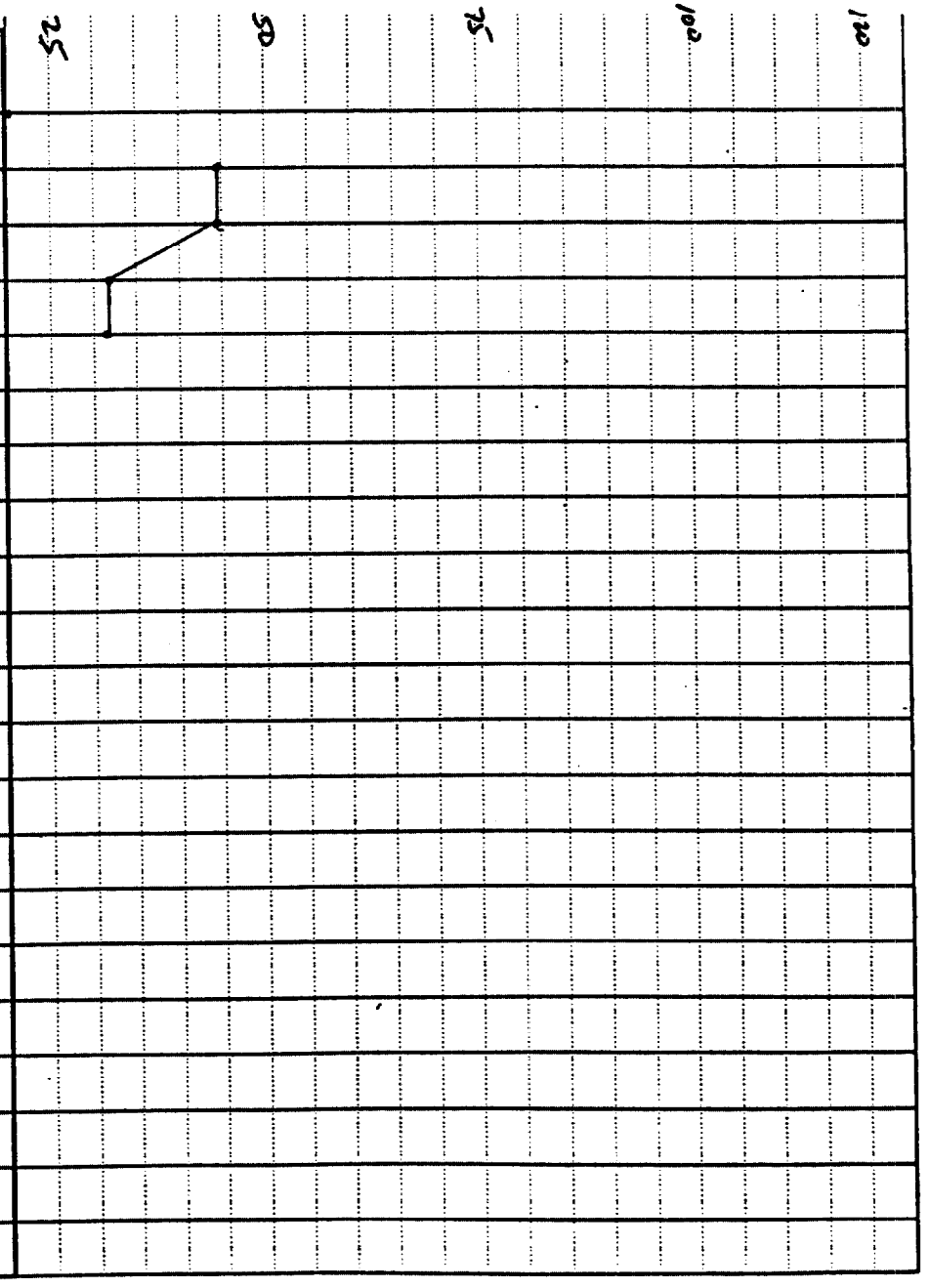

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 2-Fluorobiphenyl (FBP) MATRIX: Soil

LCL: 30 UCL: 115

	Date	Samp.	Rec. %
01	—	6767B	78.4
02	—	6829B	78.4
03	—	6893B	48.9
04	—	6948B	48.9
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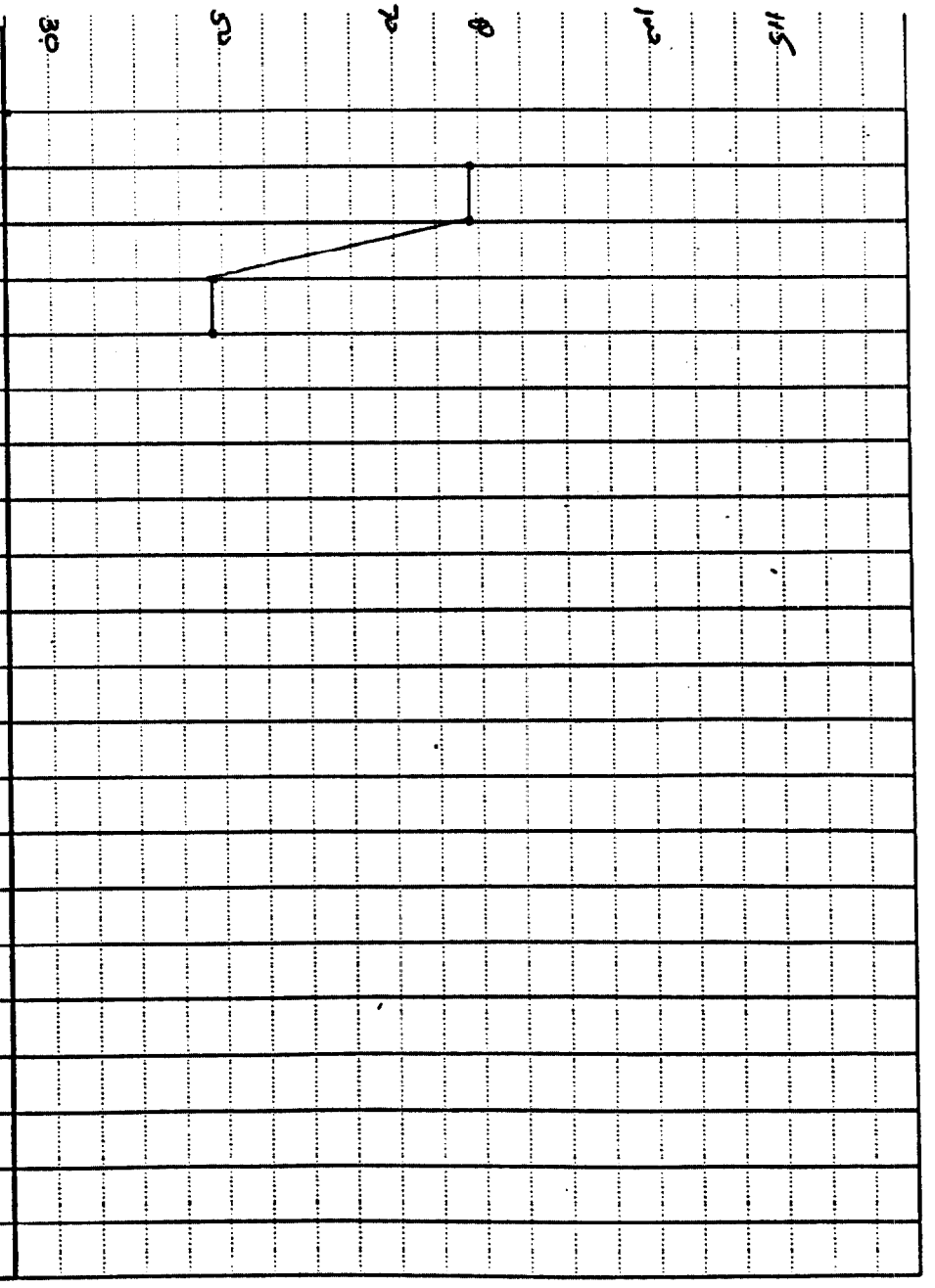

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Terphenyl - d14 MATRIX: Soil

LCL: 18 UCL: 137

	Date	Samp.	Rec. %
01	—	6767B	116
02	—	6829B	116
03	—	6893B	67.6
04	—	6948B	67.6
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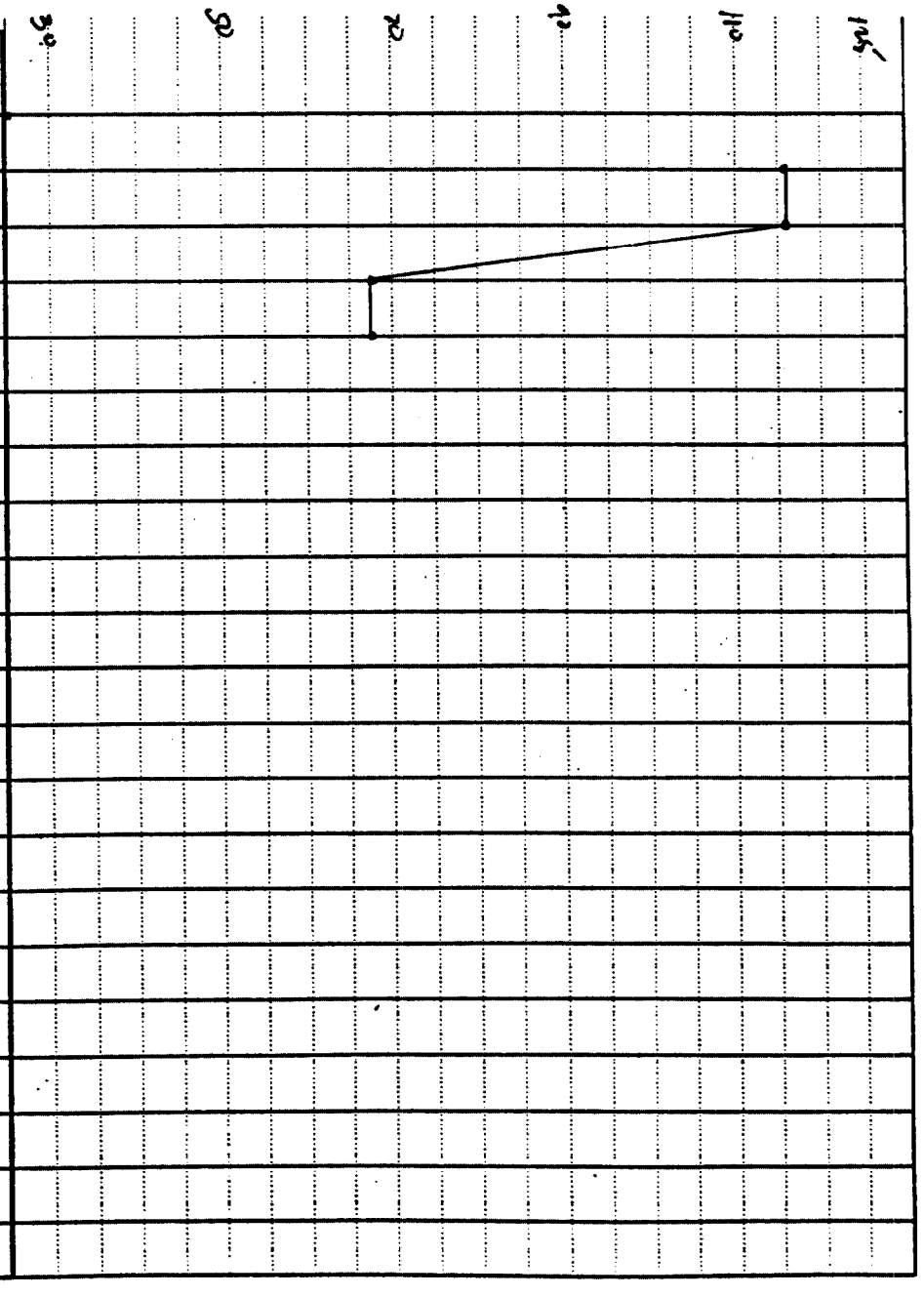

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Phenol -d6 (PHL) MATRIX: Soil

LCL: 24 UCL: 113

	Date	Samp.	Rec. %
01	–	6767B	104
02	–	6829B	104
03	–	6893B	83.4
04	–	6948B	83.4
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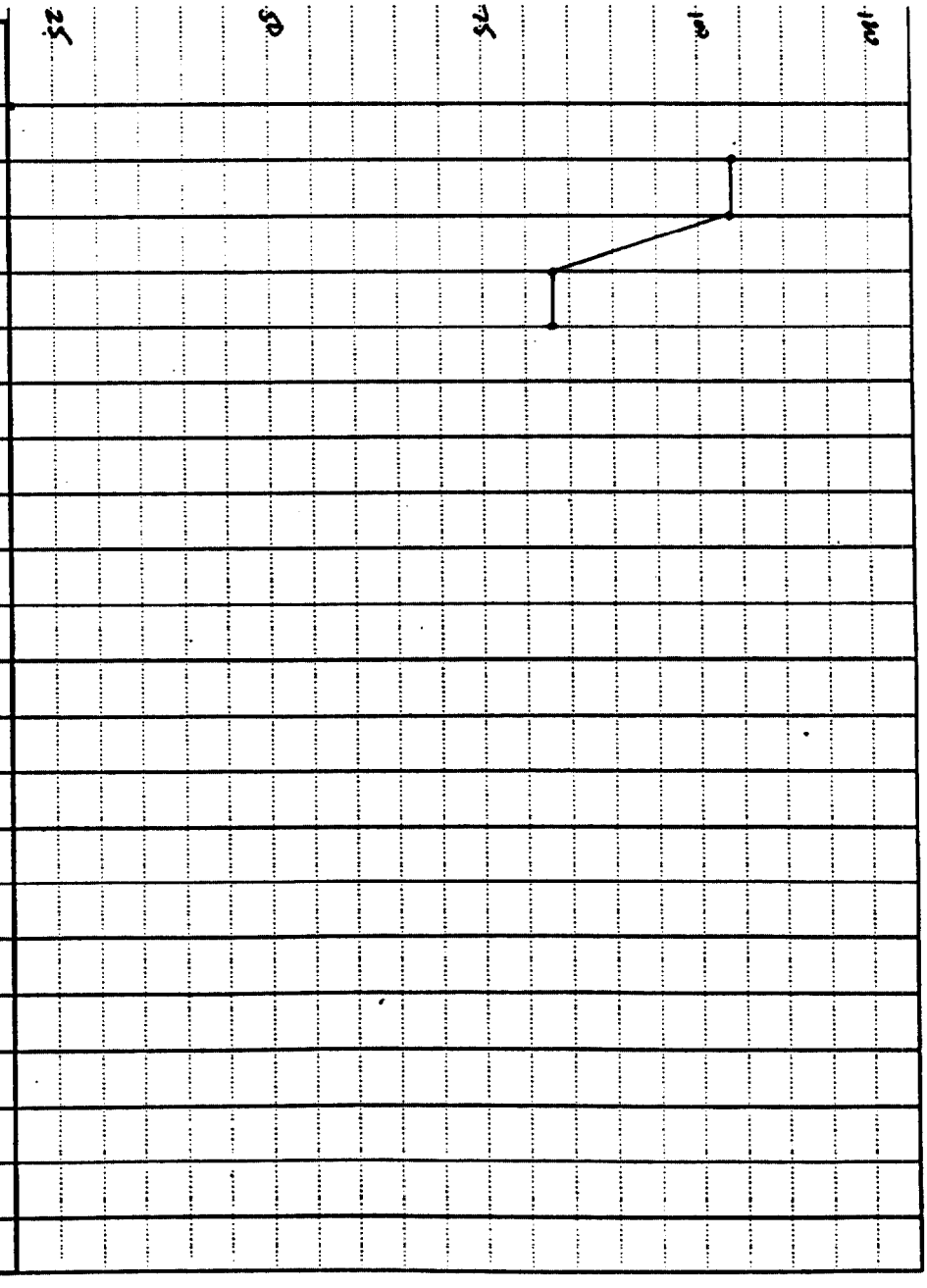

Km

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 2 - Fluorophenol (2FP) MATRIX: Soil

LCL : 25 UCL: 121

	Date	Samp.	Rec. %
01		6767B	71.0
02		6829B	71.0
03		6893B	53.6
04		6948B	53.6
05			
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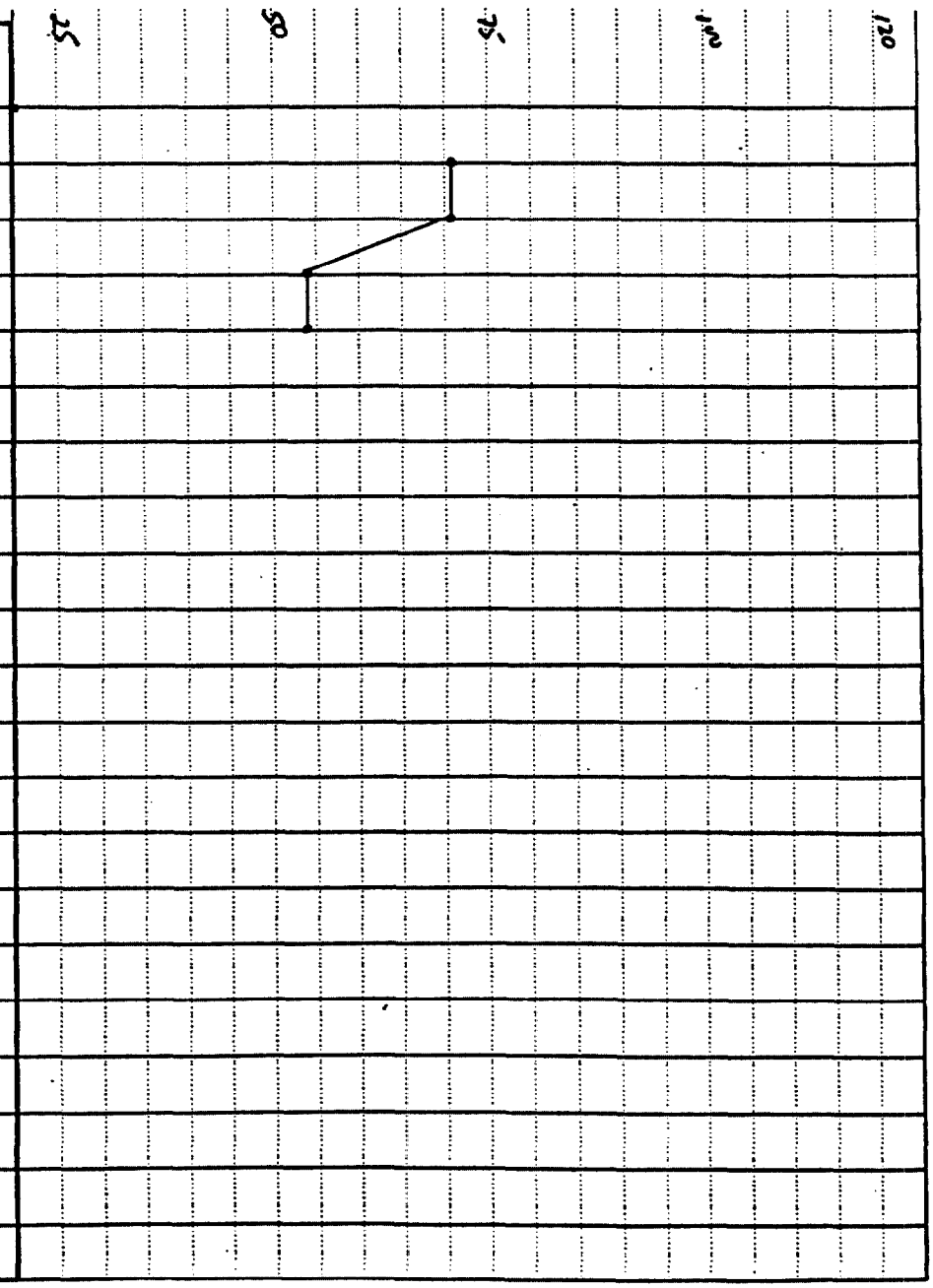

Km

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 2,4,6-Tribromophenol (TBP) MATRIX: Soil

LCL: 19 UCL: 122

	Date	Samp.	Rec. %
01	—	6767 B	43.1
02	—	6829 B	43.1
03	—	6893 B	42.1
04	—	6948 B	42.1
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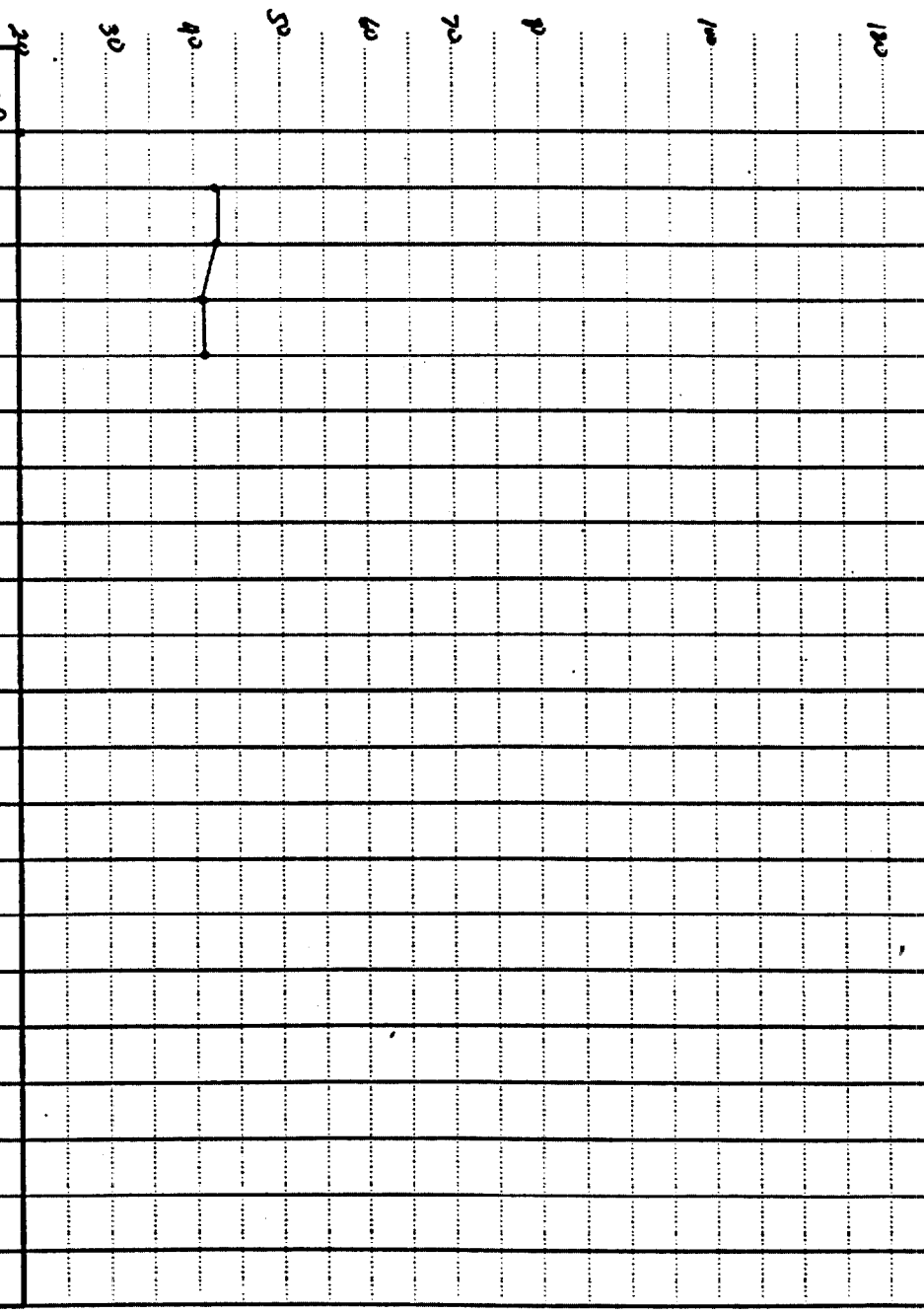

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Toluene-d 8 MATRIX: water

LCL: 88 UCL: 110

	Date	Samp.	Rec. %
01	-	6769B	103
02	-	6826B	103
03	-	6889B	102
04	-	6938B	95.7
05			
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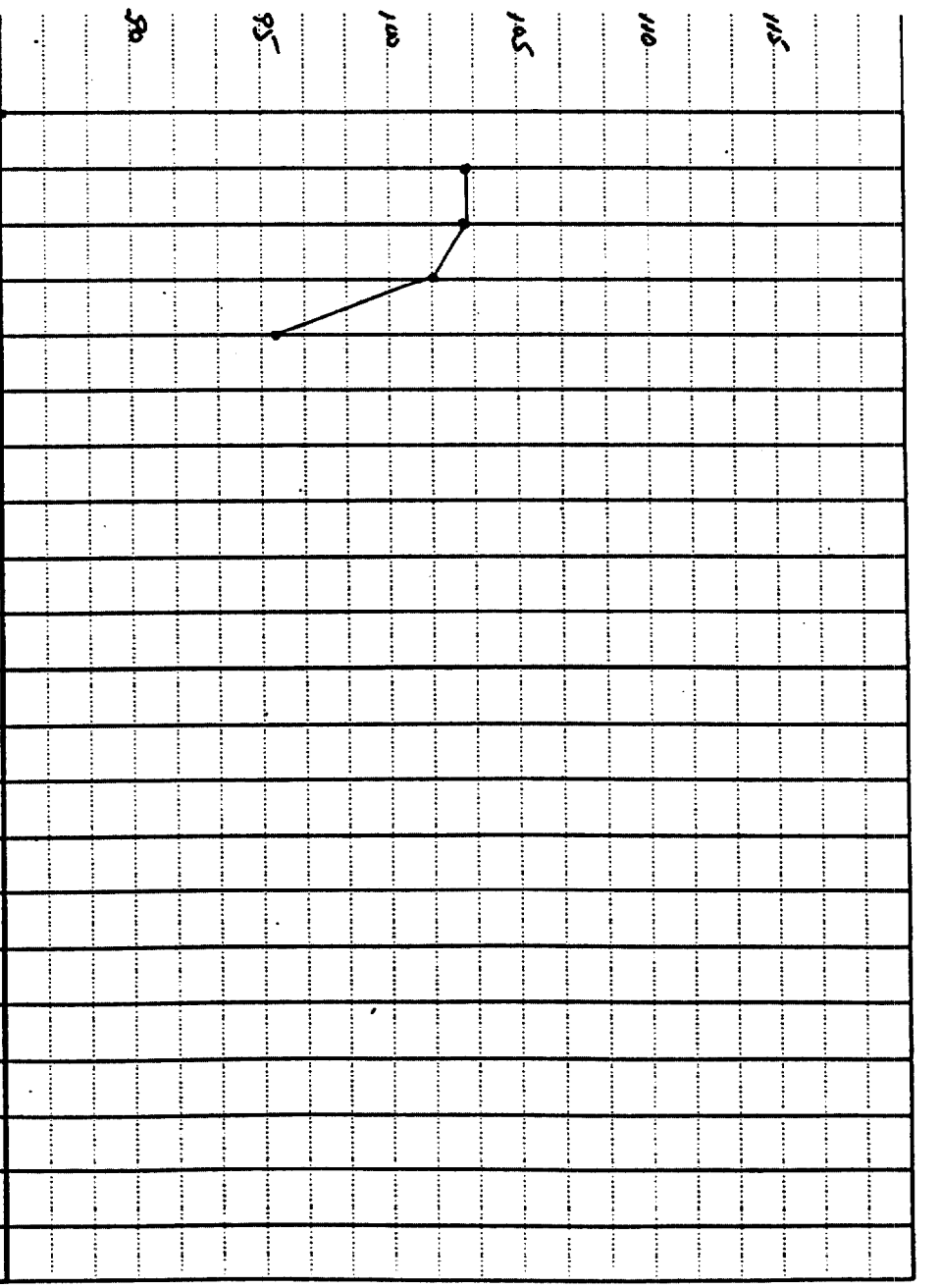

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: BromoFluorobenzene MATRIX: water

LCL: 86 UCL: 115

	Date	Samp.	Rec. %
01	–	6769 B	107
02	–	6826 B	100
03	–	6889B	93.0
04	–	6938 B	90.9
05			
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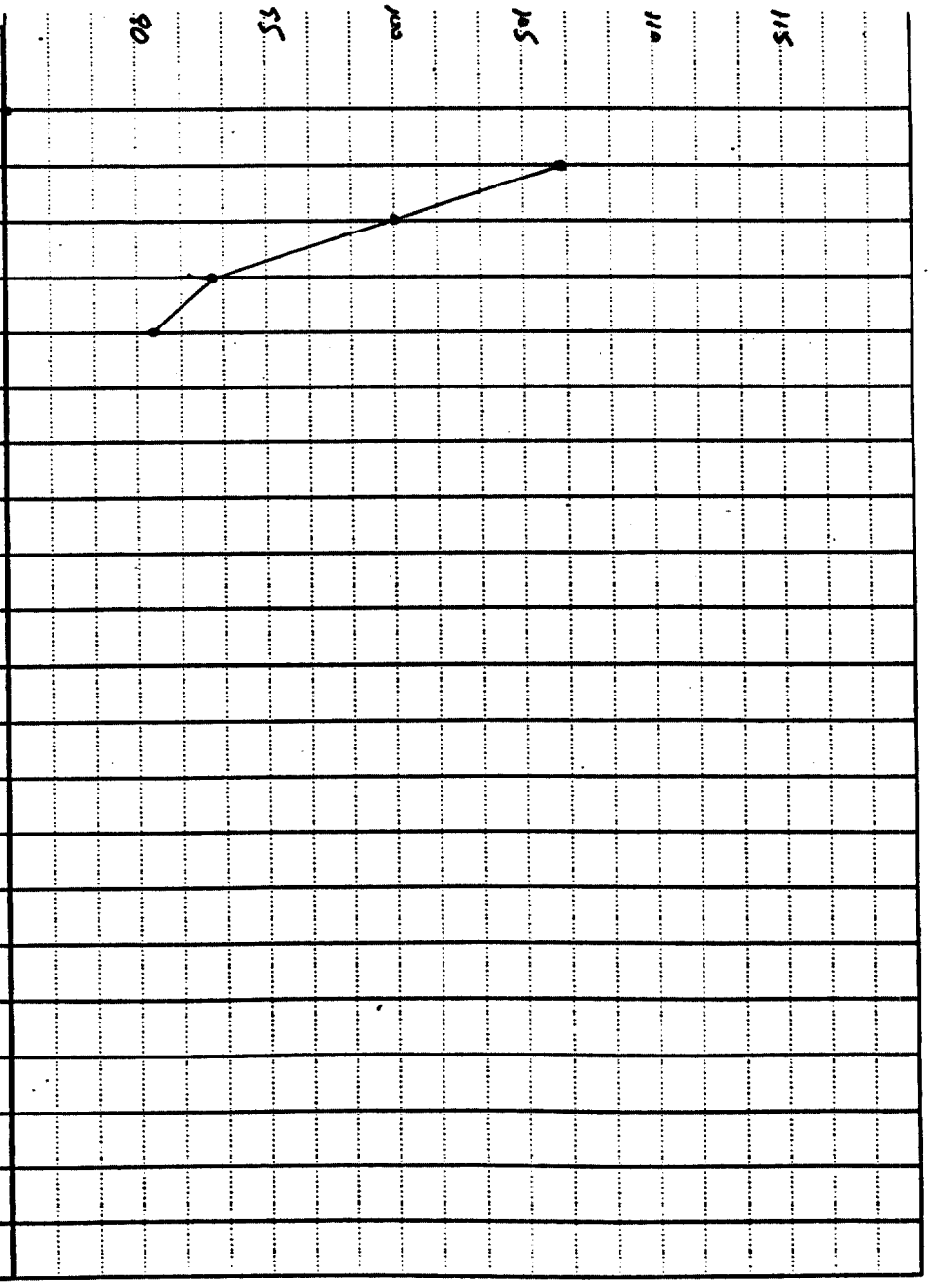

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 1,2-Dichloroethane-d4 MATRIX: water

LCL: 76 UCL: 114

	Date	Samp.	Rec.
01	–	6769B	97.9
02	–	6826B	98.7
03	–	6889B	111.
04	–	6938B	103.
05			
06			
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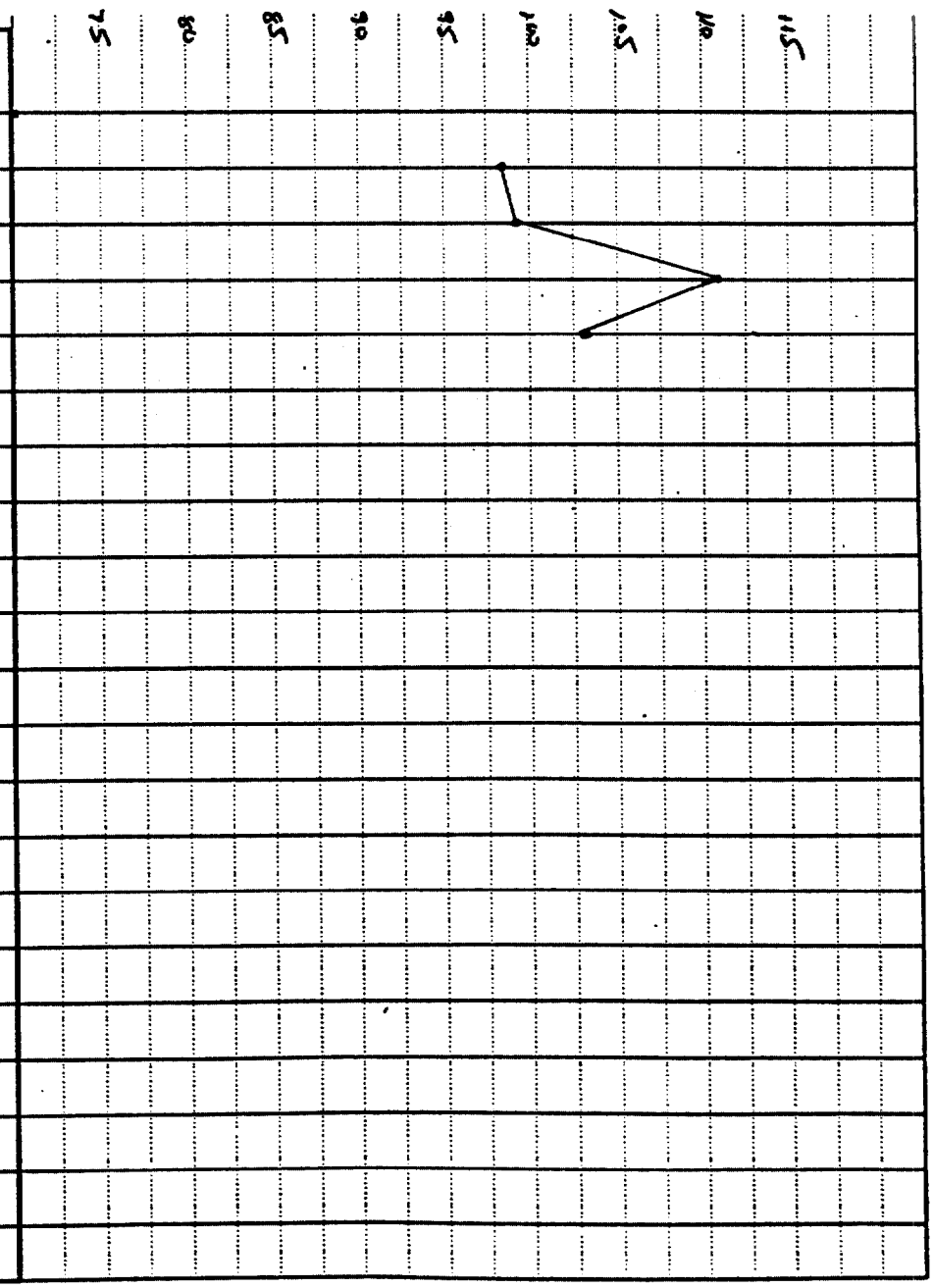

jcm

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals GF

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Arsenic (As)

MATRIX: Soil NBS 1645

LCL :

UCL:

	Date	Samp.	Rec. mg/kg
01	–	6757	60.3
02	–	6864	65.7
03	–	6876	58.8
04	–	6918	67.0
05			
06			
07			
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09		=	
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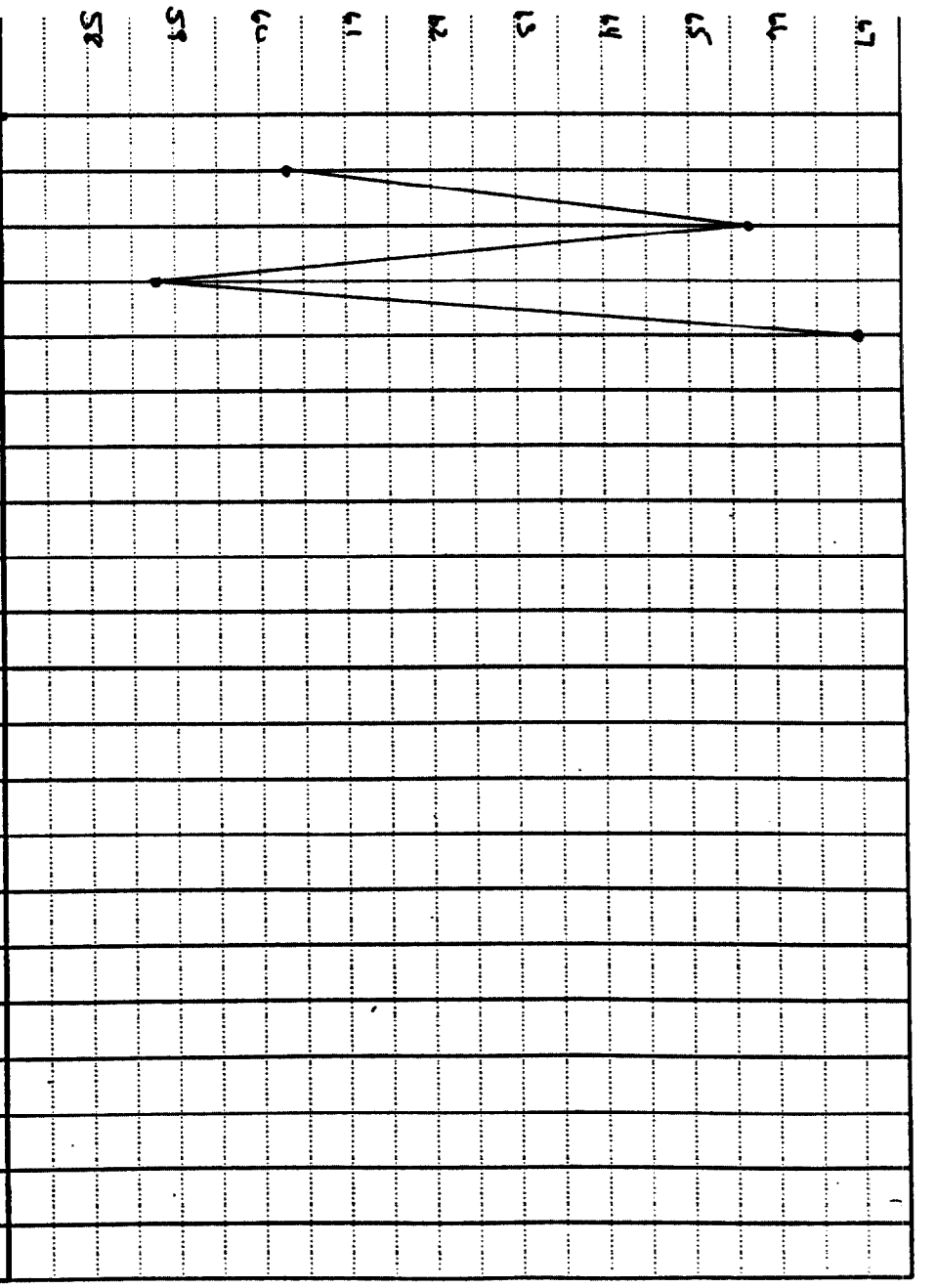

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals GF

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Selenium (Se)

MATRIX: Soil NBS-1645

LCL :

UCL:

	Date	Samp.	Rec. mg/kg
01	–	6757	0.90
02	–	6804	2.00
03	–	6876	0.60
04	–	6918	0.30
05			
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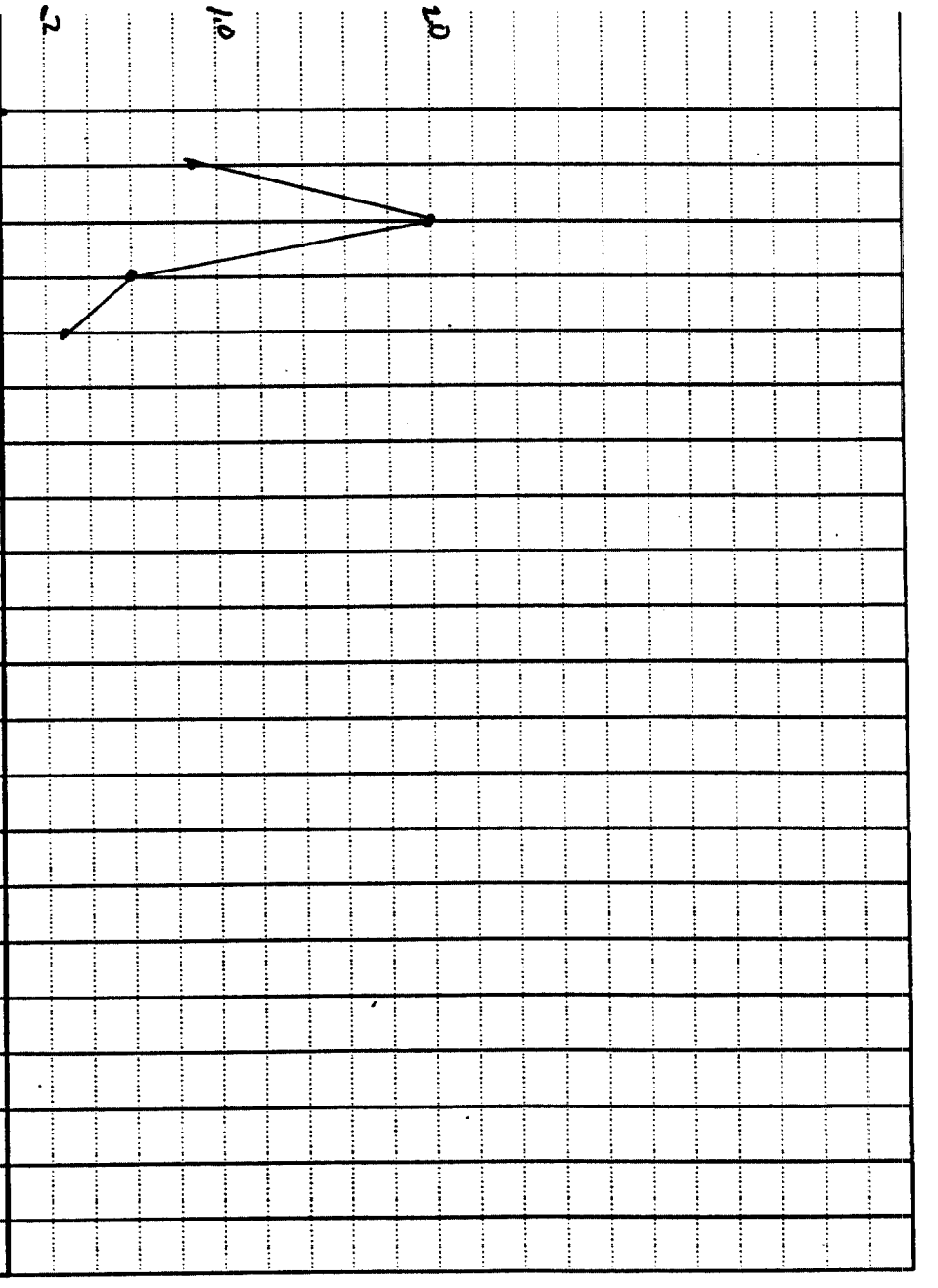

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals GF

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Thallium (TL)

MATRIX: Soil - NBS 1645

LCL :

UCL:

	Date	Samp.	Rec. mg/kg
01	—	6757	1.00
02	-	6804	1.10
03	-	6876	1.20
04	—	6918	1.20
05			
06			
07			
08			
09			
10			
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12			
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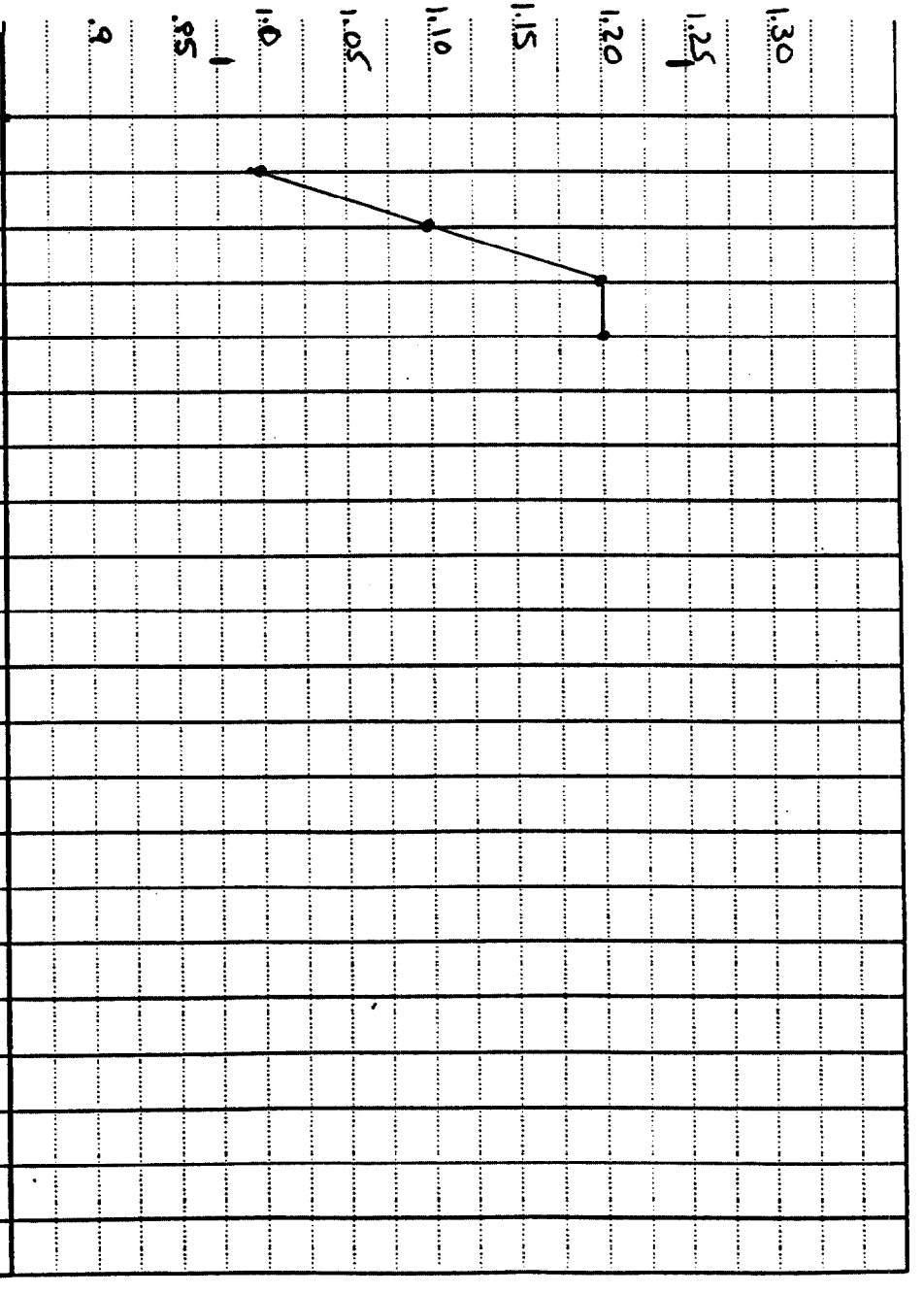

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals CVA

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Mercury (Hg)

MATRIX: Soil NBS 1645

LCL: 0.6

UCL: 1.6

	Date	Samp.	Rec. mg/kg
01	–	6757	0.8
02	–	6804	1.0
03	–	6876	1.0
04	–	6918	1.0
05			
06			
07			
08			
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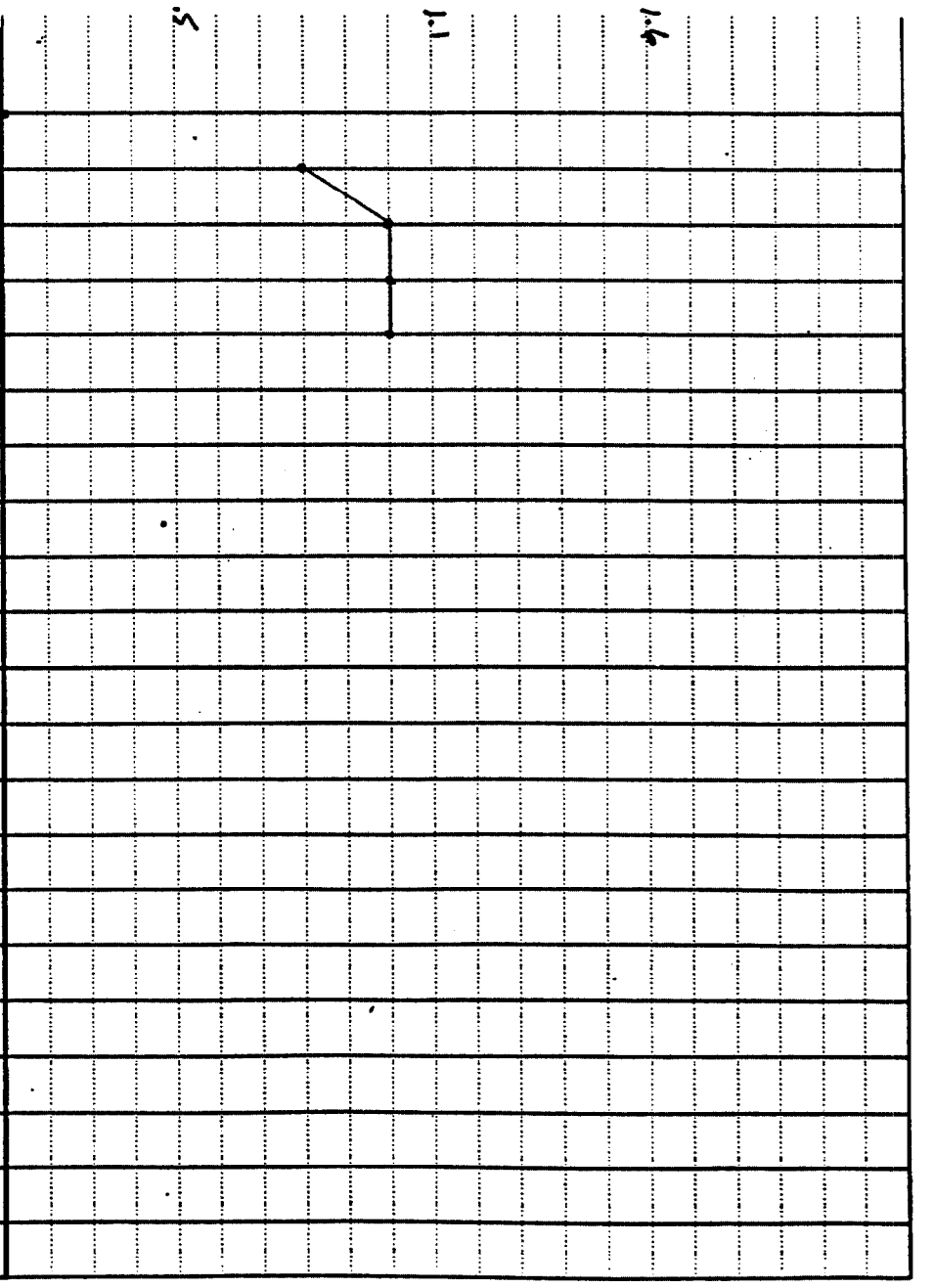
16			
17			
18			
19			
20			



BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Cadmium (Cd)

MATRIX: soil NBS-1645

LCL: 9.5

UCL: 12.2

	Date	Samp.	Rec. mg/kg
01	–	6757	5.89
02	–	6804	6.10
03	–	6876	10.6
04	–	6918	6.60
05			
06			
07			
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18			
19			
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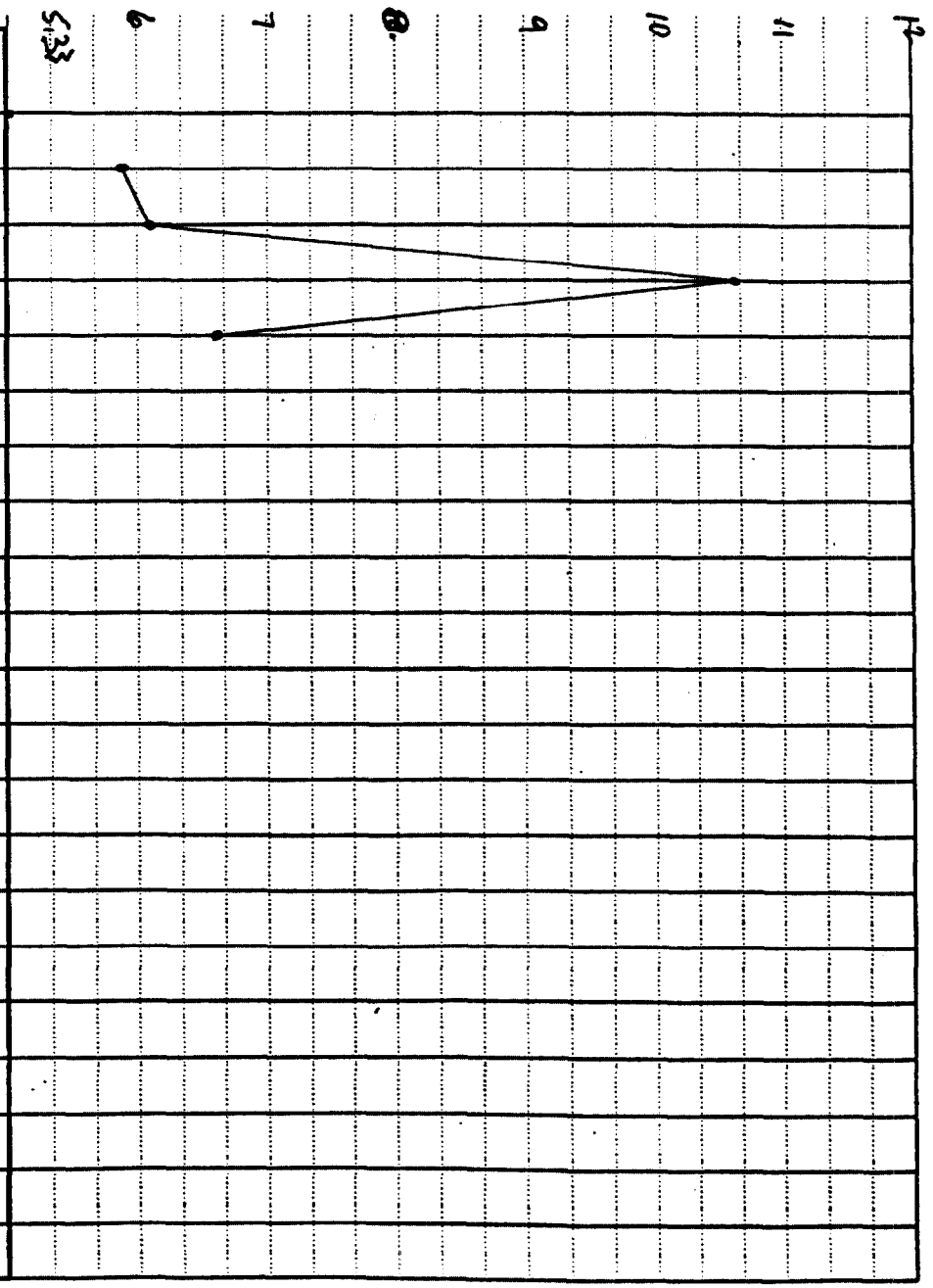

KM

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Chromium (Cr)

MATRIX: Soil - NBS 1645

LCL: 27

UCL: 30

	Date	Samp.	Rec.
01	–	6757	29.7
02	–	6804	26.6
03	–	6876	29.5
04	–	6918	28.9
05			
06			
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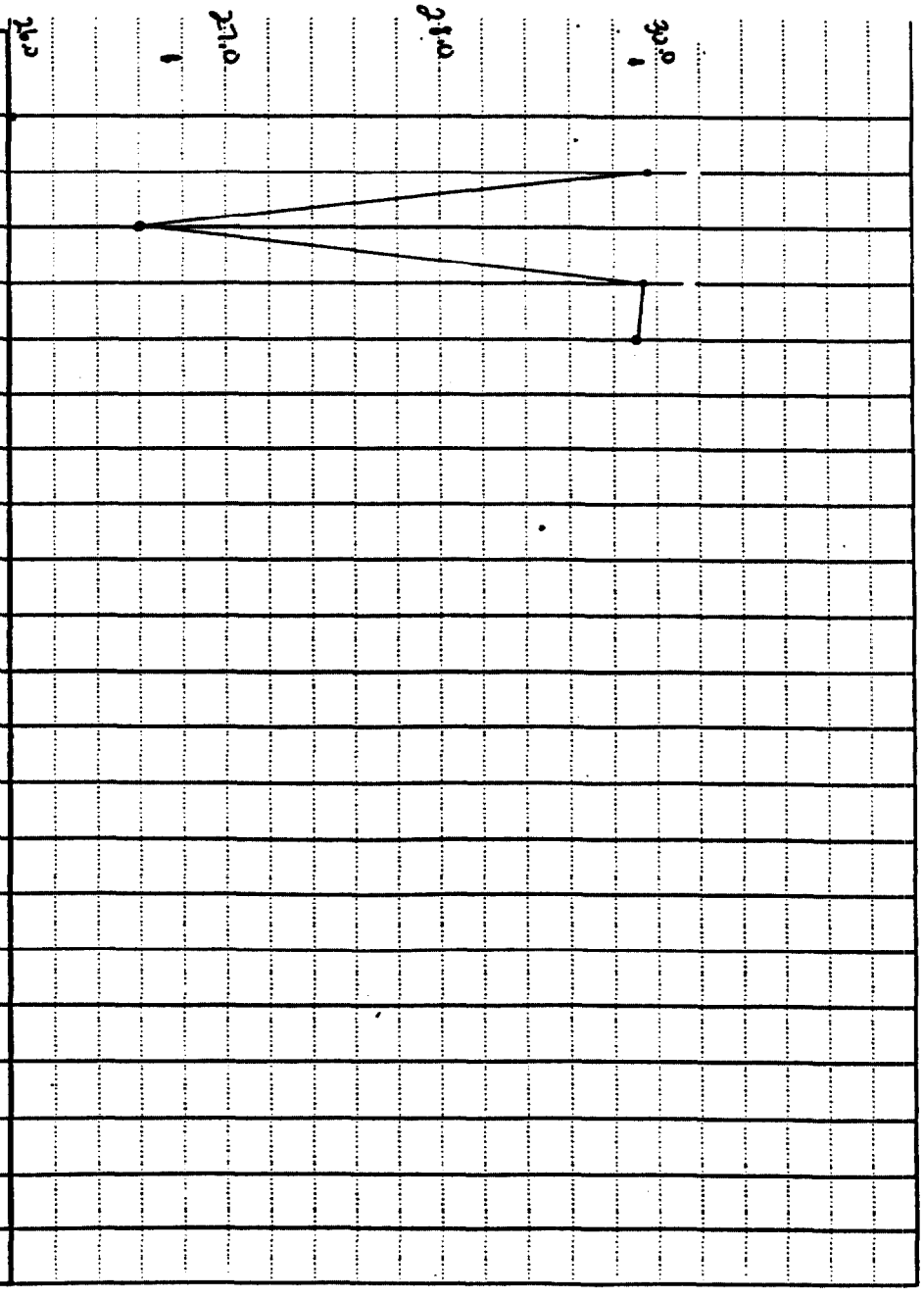

$\times 10^3$ mg/kg

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Copper (Cu)

MATRIX: Soil - NBS 1645

LCL: 94

UCL: 118

	Date	Samp.	Rec. mg/kg
01	-	6757	97.8
02	-	6804	108.
03	-	6876	104.
04	-	6918	107.
05			
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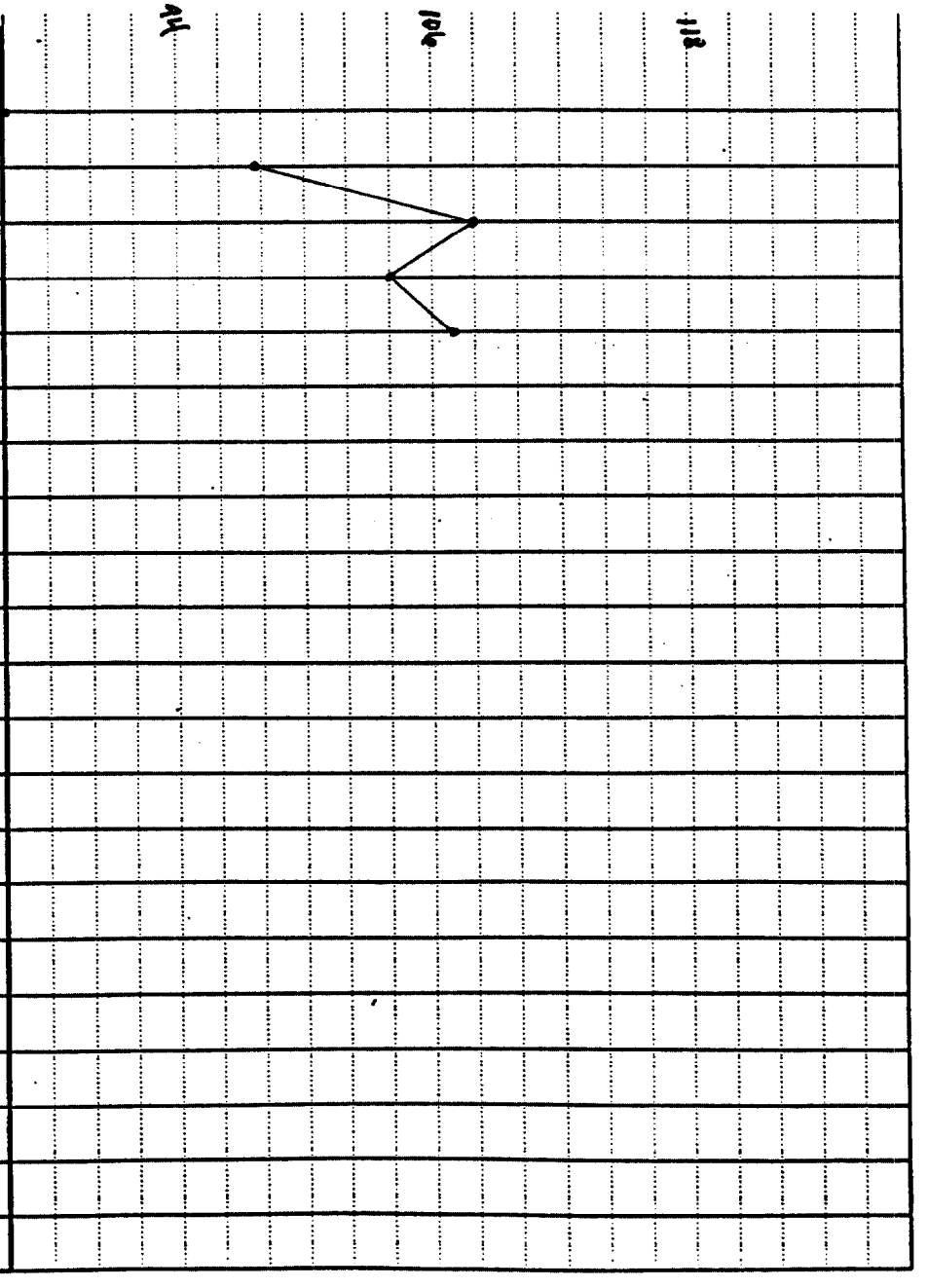
20			



Fm

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Lead (Pb)

MATRIX: Soil - NBS 1645

LCL: 560

UCL: 1050

	Date	Samp.	Rec. mg/kg
01	-	6757	609.
02	-	6804	649.
03	-	6876	587.
04	-	6918	669.
05			
06			
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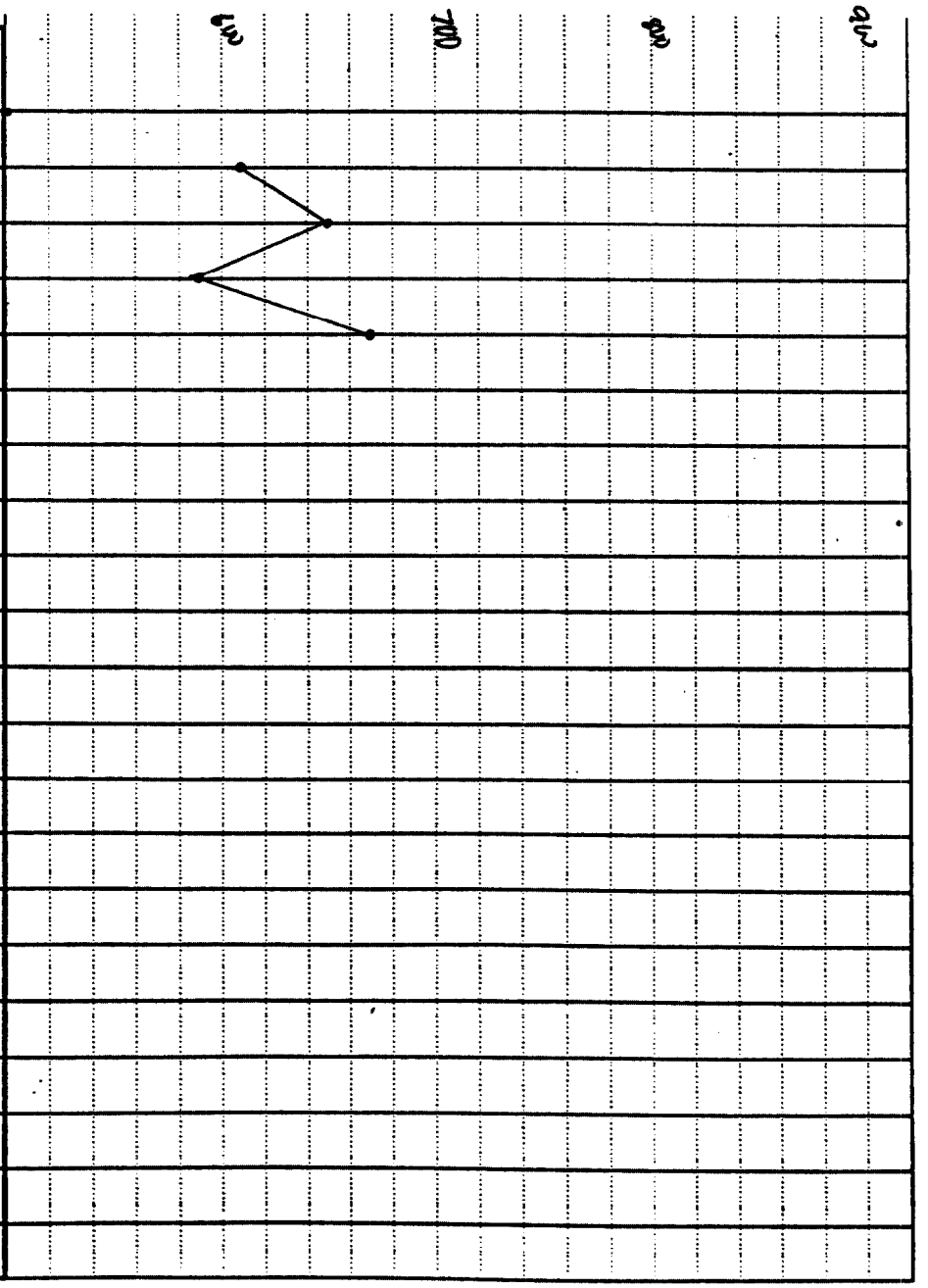
20			



BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Nickel (Ni)

MATRIX: soil - NBS 1645

LCL: 30

UCL: 50

	Date	Samp.	Rec. mg/kg
01	-	6757	32.4
02	-	6804	31.9
03	-	6876	30.5
04	-	6918	30.1
05			
06			
07			
08			
09			
10			
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14			
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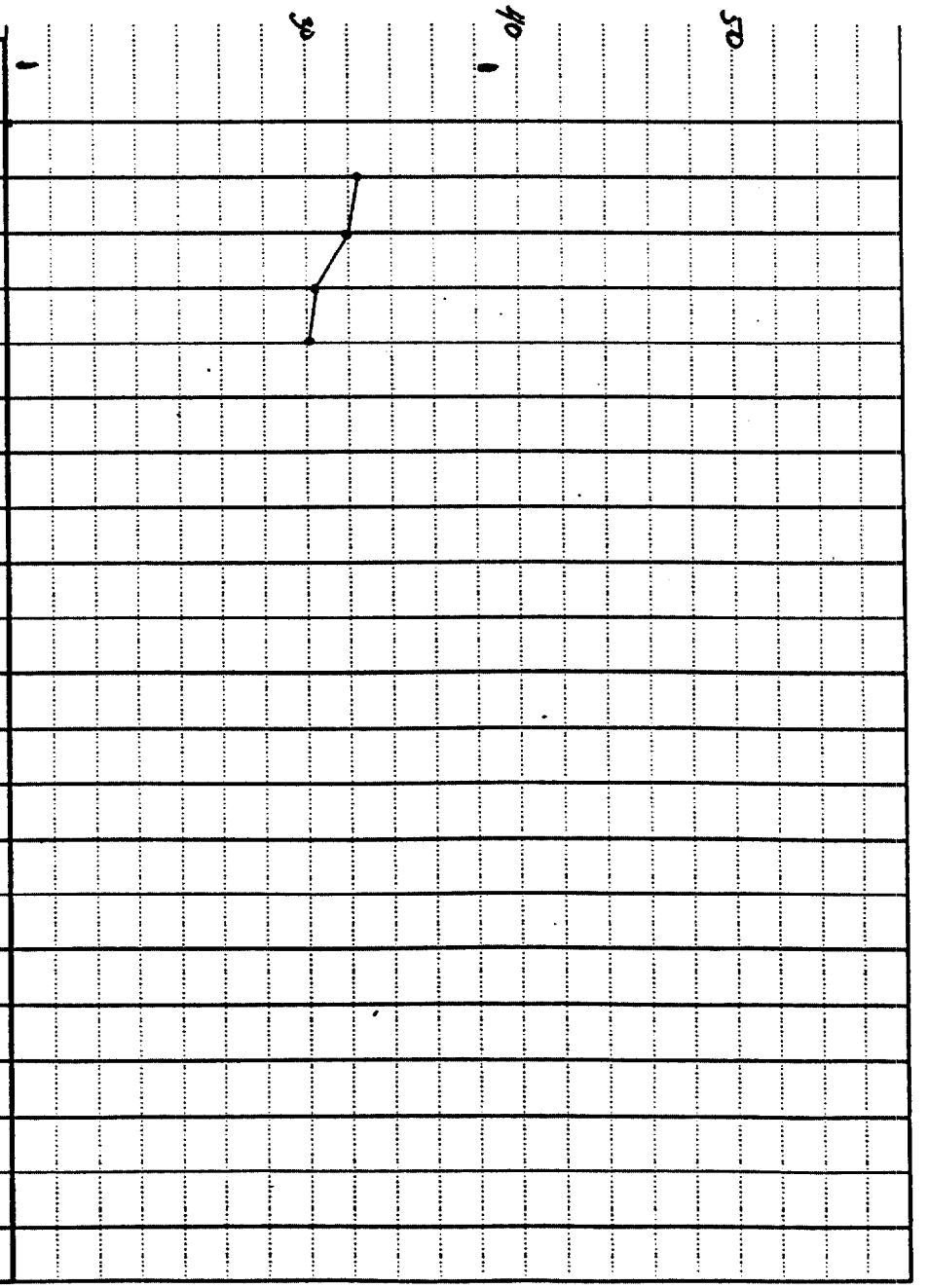
16			
17			
18			
19			
20			



km

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Zinc (Zn)

MATRIX: Soil - NBS 1645

LCL: 14.6

UCL: 18.6

	Date	Samp.	Rec. *
01	-	6757	16.3
02	-	6804	14.4
03	-	6876	16.4
04	-	6918	16.3
05			
06			
07			
08			
09			
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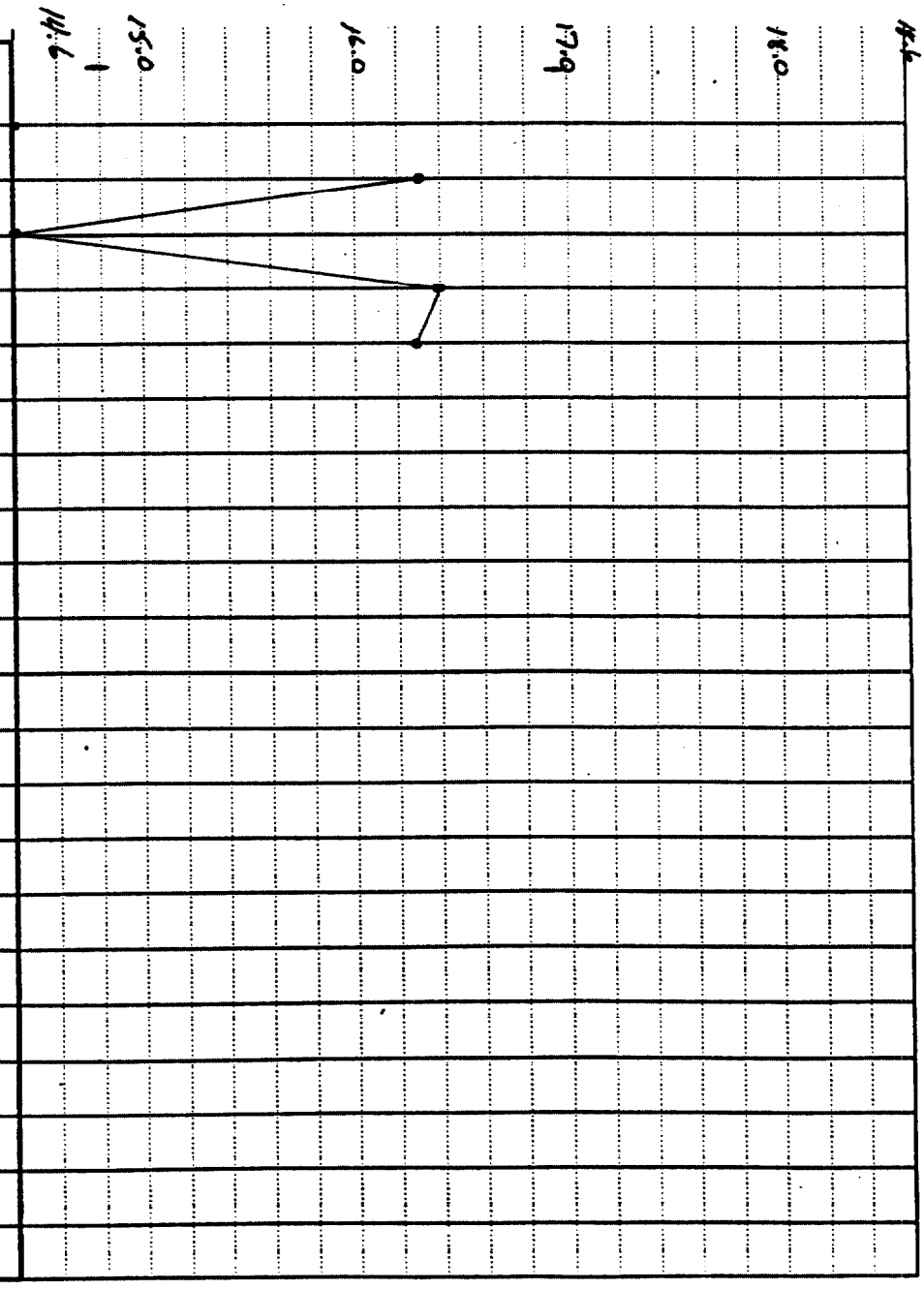
14			
15			
16			
17			
18			
19			
20			



* $\times 10^2$ mg/kg

U.S. EPA - CLP

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

ICP ID Number: 25 Date: 7/30/90

Flame AA ID Number: _____

Furnace AA ID Number: 35

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M	
Aluminum	308.22		200	38	P	
Antimony	217.6	BZ	60	3	F	
Arsenic	193.7	BZ	10	2	F	
Barium	455.40		200	11.1	P	
Beryllium	234.86		5	2	P	
Cadmium	214.44		5	4.4	P	
Calcium	317.93		5000	224	P	
Chromium	206.15		10	11.4	P	
Cobalt	228.62		50	30	P	
Copper	324.75		25	6	P	
Iron	259.94		100	10	P	
Lead	283.3	BZ	5	3	F	
Magnesium	279.08		5000	748	P	
Manganese	257.61		15	5	P	
Mercury	253.65	BZ	0.2	0.14	CV	*
Nickel	231.60		40	11.2	P	
Potassium	766.49		5000	2278	P	
Selenium	196.0	BZ	5	3	F	
Silver	328.07		10	12.8	P	
Sodium	589.59		5000	489	P	
Thallium	276.8	BZ	10	2	F	
Vanadium	310.23		50		P	
Zinc	213.86		20	8.2	P	
Tin	284.00		---	76.2	p	**

Comments:

* Cold Vapor Mercury AA ID Number: 65

** Not on CLP.

U.S. EPA - CLP

12A
ICP INTERELEMENT CORRECTION FACTORS (QUARTERLY)

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

ICP ID Number: 25 Date: 07/30/90

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	
Aluminum	308.22		.000109	-.0000343	.00000725	
Antimony						
Arsenic						
Barium						
Beryllium	234.86	.0000000	.0000000	.0000697	.000000	
Cadmium	214.44	.00000694	.00000408	.00000068	.00000318	
Calcium						
Chromium	206.15	.00000251	.00000191	-.0000010	-.0000035	
Cobalt						
Copper	324.75	.00000400	.00000600	.00000738	.0000120	
Iron	259.94	.0000112	.0000502		.0000466	
Lead	220.35	-.000654	-.0000175	.000312	.0000332	
Magnesium						
Manganese	257.61	.0000120	.00000800	.0000987	.0000300	
Mercury						
Nickel	231.60	.00000735	.00000696	.0000311	.0000283	
Potassium						
Selenium						
Silver	328.07	.0000150	.00000747	-.0000065	.000000	
Sodium						
Thallium						
Vanadium						
Zinc	213.86	.00000320	.00000236	.0000880	.0000213	

Comments:

U.S. EPA - CLP

13
ICP LINEAR RANGES (QUARTERLY)

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

ICP ID Number: 25 Date: 7/30/90

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Aluminum	3.00	15,000	P
Antimony			NR
Arsenic			NR
Barium	3.00	11,000	P
Beryllium	3.00	1,500	P
Cadmium	3.00	11,000	P
Calcium	3.00	120,000	P
Chromium	3.00	11,000	P
Cobalt	3.00	11,000	P
Copper	3.00	15,000	P
Iron	3.00	15,000	P
Lead	3.00	13,000	P
Magnesium	3.00	120,000	P
Manganese	3.00	11,000	P
Mercury			NR
Nickel	3.00	15,000	P
Potassium	3.00	120,000	P
Selenium			NR
Silver	3.00	3,000	P
Sodium	3.00	120,000	P
Thallium			NR
Vanadium	3.00	11,000	P
Zinc	3.00	15,000	P
Tin	3.00	11,000	P

Comments:

JOB FILE: 06823 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....		19	20	21	22
ANALYTE.....		32	35	67	900
PPM.....		MN	NA	TP	SN
SAMP #	DESCRIPTION				ROW
06823	07/09-05-90	CONC	1.48	6.12	IS #1 0.107	1
	STEAM CLEAN H2O	%REC				
		DUPL				
		OID	01250244	01250244	01400262	01250253	
06824	7/30/90	CONC	2.38	134	IS #1 0.412	2
	TIDE WATER	%REC				
		DUPL				
		OID	01250244	01250244	01400262	01250253	
06825	7/30/90	CONC	1.17	3.45 B	0.201	1.42	3
	REINSATE	%REC			86.0		
		DUPL			0.220		
		OID	01250244	01250244	01400262	01250253	
BL#01	METHOD BLANK	CONC	<0.005 U	<0.489 U	<0.050 U	<0.076 U	4
		%REC					
		DUPL					
		OID	01250244	01250244	01400262	01250253	
BL#02	DUPLICATE	CONC	2.41	133	N/A	0.478	5
	DIGEST (06824)	%REC					
		DUPL					
		OID	01250244	01250244	01400262	01250253	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN

FOOTNOTES:
#1 Insufficient sample.

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/31/90 Lab Sample ID: 6876/6886

1) Analysis: METALS Date Extracted/Digested: 8/7/90

2) Analysis: TP Date Extracted/Digested: 9/15/90

3) Analysis: EXPLOSIVES Date Extracted/Digested: 8/15/90

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

COLUMN.....		1	2	3	4	5	6
ANALYTE.....		1	2	3	4	5	6
MG/KG.....		SB	AS	BE	CD	CR	CU
SAMP #	DESCRIPTION						ROW
06876	07/09/11/90 #1	CONC	6.80	2.00	<0.500 U	21.9	14.9	1
	7/31/90	%REC	95.0					
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
06877	07/09-11-90 #2	CONC	7.70	2.33	<0.500 U	28.7	12.5	2
	7/31/90	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
06878	07/09-11-90 #3	CONC	7.10	3.50	<0.500 U	35.4	12.8	3
	7/31/90	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
06879	07/09-11-90 #4	CONC	8.30	2.90	<0.500 U	40.3	15.4	4
	7/31/90	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
06880	07/09-11-90 #5	CONC	9.20	4.00	0.500	47.0	23.4	5
	7/31/90	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
06881	07/09-11-90 #6	CONC	5.90	1.40	<0.500 U	25.9	24.3	6
	7/31/90	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....	1	2	3	4	5	6	
	ANALYTE.....	1	2	3	4	5	6	
	MG/KG.....	SB	AS	BE	CD	CR	CU	
SAMP #	DESCRIPTION							ROW
06882	07/09-2-90 #1	CONC	3.30	1.10	<0.500 U	14.2	19.7	7
	8/1/90	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
06883	07/09-2-90 #2	CONC	4.10	1.20	<0.500 U	17.6	6.60	8
	8/1/90	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
06884	07/09-2-90 #3	CONC	3.90	1.20	<0.500 U	17.9	7.00	9
	8/1/90	%REC	102.5					
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
06885	07/09-2-90 #4	CONC	12.4	2.60	<0.500 U	22.4	9.70	10
	8/1/90	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
06886	07/09-2-90 #5	CONC	42.7	9.50	<0.500 U	84.4	21.7	11
	8/1/90	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
BL#01	METHOD BLANK	CONC	<0.002 U	<0.005 U	<0.005 U	<0.011 U	<0.006 U	12
		%REC		93.8	97.0	98.4	98.6	
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

COLUMN.....		1	2	3	4	5	6
ANALYTE.....		1	2	3	4	5	6
MG/KG.....		SB	AS	BE	CD	CR	CU
SAMP #	DESCRIPTION						ROW
BL#02	DUPLICATE	CONC	6.70	2.00	<0.500 U	21.5	14.8	13
	DIGEST (6876)	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	
BL#03	STD. REFERENCE	CONC	58.8	5.60	10.6	29500	104	14
	MAT. - NBS 1645	%REC						
		DUPL						
		OID	04350255	01250237	01250237	01250237	01250237	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

COLUMN.....		7	8	9	10	11	12
ANALYTE.....		7	8	9	10	11	12
MG/KG.....		PB	HG	NI	SE	AG	TL
SAMP #	DESCRIPTION						ROW
06876	07/09/11/90 #1	CONC 26.5	<0.100 U	16.6	0.30 B	<1.30 U	0.30 B	1
	7/31/90	%REC	103.0		90.0		114.0	
		DUPL	<0.100 U					
		OID 01250236	09650236	01250237	04350259	01250230	04350251	
06877	07/09-11-90 #2	CONC 27.9	<0.100 U	19.7	0.30 B	<1.30 U	0.30 B	2
	7/31/90	%REC						
		DUPL	<0.100 U					
		OID 01250236	09650236	01250237	04350259	01250230	04350251	
06878	07/09-11-90 #3	CONC 26.0	<0.100 U	37.5	<0.30 U	1.90	0.20 BW	3
	7/31/90	%REC						
		DUPL	<0.100 U					
		OID 01250236	09650236	01250237	04350259	01250230	04350251	
06879	07/09-11-90 #4	CONC 25.1	<0.100 U	29.4	<0.30 UW	<1.30 U	0.30 BW	4
	7/31/90	%REC						
		DUPL	<0.100 U					
		OID 01250236	09650236	01250237	04350259	01250230	04350251	
06880	07/09-11-90 #5	CONC 28.2	<0.100 U	60.8	<0.30 U	<1.30 U	0.40 BW	5
	7/31/90	%REC						
		DUPL	<0.100 U					
		OID 01250236	09650236	01250237	04350259	01250230	04350251	
06881	07/09-11-90 #6	CONC 0.089	<0.100 U	18.8	<0.30 U	<1.30 U	0.20 B	6
	7/31/90	%REC						
		DUPL	<0.100 U					
		OID 01250236	09650236	01250237	04350259	01250230	04350251	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		7	8	9	10	11	12
	MG/KG.....		PB	HG	NI	SE	AG	TL
SAMP #	DESCRIPTION							ROW
06882	07/09-2-90 #1	CONC	48.0	<0.100 U	9.40	<0.30 UW	<1.30 U	0.20 B	7
	8/1/90	%REC						
		DUPL		<0.100 U				
		OID	01250236	09650236	01250237	04350259	01250230	04350251
06883	07/09-2-90 #2	CONC	14.8	<0.100 U	9.20	<0.30 UW	<1.30 U	0.20 B	8
	8/1/90	%REC						
		DUPL		<0.100 U				
		OID	01250236	09650236	01250237	04350259	01250230	04350251
06884	07/09-2-90 #3	CONC	14.4	<0.100 U	10.6	<0.30 UW	<1.30 U	0.20 B	9
	8/1/90	%REC		95.0				
		DUPL		<0.100 U				
		OID	01250236	09650236	01250237	04350259	01250230	04350251
06885	07/09-2-90 #4	CONC	28.6	<0.100 U	10.9	<0.30 UW	<1.30 U	<0.20 U	10
	8/1/90	%REC						
		DUPL		<0.100 U				
		OID	01250236	09650236	01250237	04350259	01250230	04350251
06886	07/09-2-90 #5	CONC	86.0	<0.100 U	40.3	<0.30 UW	<1.30 U	<0.20 U	11
	8/1/90	%REC						
		DUPL		<0.100 U				
		OID	01250236	09650236	01250237	04350259	01250230	04350251
BL#01	METHOD BLANK	CONC	<0.114 U	<0.100 U	<0.011 U	<0.30 U	<0.013 U	<0.20 U	12
		%REC			97.8		73.9	
		DUPL						
		OID	01250236	09650236	01250237	04350259	01250230	04350251

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....	7	8	9	10	11	12	
	ANALYTE.....	7	8	9	10	11	12	
	MG/KG.....	PB	HG	NI	SE	AG	TL	
SAMP #	DESCRIPTION							ROW
BL#02	DUPLICATE	CONC 28.4	<0.100	16.8	<0.30 U	<1.30 U	0.30 B	13
	DIGEST (6876)	%REC						
		DUPL						
		OID 01250236	09650236	01250237	04350259	01250230	04350251	
BL#03	STD. REFERENCE	CONC 587	<0.100	30.5	0.60	1.60	1.20 B	14
	MAT. - NBS 1645	%REC	1.0					
		DUPL						
		OID 01250236	09650236	01250237	04350259	01250230	04350251	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

COLUMN.....		13	14	15	16	17	18	
ANALYTE.....		13	24	25	29	30	31	
MG/KG.....		ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06876	07/09/11/90 #1	CONC 66.3	18000	409	12.9	23600	2600	1
	7/31/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
06877	07/09-11-90 #2	CONC 60.6	18600	460	14.9	29700	2360	2
	7/31/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
06878	07/09-11-90 #3	CONC 72.4	29700	231	18.0	40800	3430	3
	7/31/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
06879	07/09-11-90 #4	CONC 190	35100	175	11.7	35300	4700	4
	7/31/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
06880	07/09-11-90 #5	CONC 88.5	38100	266	17.6	45800	4740	5
	7/31/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
06881	07/09-11-90 #6	CONC 18.3	24100	57.2	7.00	12600	4330	6
	7/31/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 8 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....	13	14	15	16	17	18	
	ANALYTE.....	13	24	25	29	30	31	
	MG/KG.....	ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06882	07/09-2-90 #1	CONC 54.8	12000	65.6	6.60	13700	22210	7
	8/1/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
06883	07/09-2-90 #2	CONC 38.7	14100	72.8	5.60	14800	1450	8
	8/1/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
06884	07/09-2-90 #3	CONC 37.6	15800	88.9	3.60	14500	1570	9
	8/1/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
06885	07/09-2-90 #4	CONC 42.9	17100	95.5	5.20	38900	1780	10
	8/1/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
06886	07/09-2-90 #5	CONC 119	13400	71.2	29.8	151000	898	11
	8/1/90	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
BL#01	METHOD BLANK	CONC 0.113	0.120 B	<0.011 U	<0.030 U	0.063 B	<0.748 U	12
		%REC 97.2	99.4	98.6	106.2	99.6	91.8	
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 9 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....	13	14	15	16	17	18	
	ANALYTE.....	13	24	25	29	30	31	
	MG/KG.....	ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
BL#02	DUPLICATE	CONC 69.1	17900	404	13.1	23600	2540	13
	DIGEST (6876)	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	
BL#03	STD. REFERENCE	CONC 164	6210	55.1	9.10	98800	7460	14
	MAT. - NBS 1645	%REC						
		DUPL						
		OID 01250237	01250239	01250237	01250236	01250239	01250237	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 10 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....		19	20	21	22	23	24	
	ANALYTE.....		32	35	67	900	901	902	
	MG/KG.....		MN	NA	TP	SN	2,4-DNT	TNT	
SAMP #	DESCRIPTION								ROW
06876	07/09/11/90 #1	CONC	853	65.1 B	77.0	54.0	<0.25 U	<0.25 U	1
	7/31/90	%REC			96.5			116.8	
		DUPL			67.7		<0.25 U	<0.025 U	
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
06877	07/09-11-90 #2	CONC	1070	72.2 B	76.3	49.6	<0.25 U	<0.25 U	2
	7/31/90	%REC							
		DUPL							
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
06878	07/09-11-90 #3	CONC	2390	93.2 B	38.1	71.5	<0.25 U	<0.25 U	3
	7/31/90	%REC							
		DUPL							
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
06879	07/09-11-90 #4	CONC	586	106 B	15.0	103	<0.25 U	<0.25 U	4
	7/31/90	%REC							
		DUPL							
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
06880	07/09-11-90 #5	CONC	1610	153 B	246	98.6	<0.25 U	<0.25 U	5
	7/31/90	%REC							
		DUPL							
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
06881	07/09-11-90 #6	CONC	110	148 B	71.9	93.8	<0.25 U	<0.25 U	6
	7/31/90	%REC							
		DUPL							
		OID	01250239	01250237	01400262	01250232	51960237	51960237	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 11 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....		19	20	21	22	23	24
	ANALYTE.....		32	35	67	900	901	902
	MG/KG.....		MN	NA	TP	SN	2,4-DNT	TNT
SAMP #	DESCRIPTION							ROW
06882	07/09-2-90 #1	CONC	400	96.2 B	167	57.5	<0.25 U	<0.25 U	7
	8/1/90	%REC						
		DUPL						
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
06883	07/09-2-90 #2	CONC	246	75.4 B	53.3	36.4	<0.25 U	<0.25 U	8
	8/1/90	%REC						112.9
		DUPL						
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
06884	07/09-2-90 #3	CONC	144	71.3 B	34.7	38.8	<0.25 U	<0.25 U	9
	8/1/90	%REC						
		DUPL						
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
06885	07/09-2-90 #4	CONC	344	83.8 B	49.2	44.8	<0.25 U	<0.25 U	10
	8/1/90	%REC						
		DUPL						
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
06886	07/09-2-90 #5	CONC	939	62.2 B	53.6	59.6	<0.25 U	<0.25 U	11
	8/1/90	%REC						
		DUPL						
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
BL#01	METHOD BLANK	CONC	<0.005 U	<0.489 U	0.058	<0.076 U	<0.25 U	<0.25 U	12
		%REC	98.7	100.0		104.6		
		DUPL						
		OID	01250239	01250237	01400262	01250232	51960237	51960237	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 12 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....		19	20	21	22	23	24	
	ANALYTE.....		32	35	67	900	901	902	
	MG/KG.....		MN	NA	TP	SN	2,4-DNT	TNT	
SAMP #	DESCRIPTION								ROW
BL#02	DUPLICATE	CONC	839	68.8 B	33.4	50.7	N/A	N/A	13
	DIGEST (6876)	%REC							
		DUPL							
		OID	01250239	01250237	01400262	01250232	51960237	51960237	
BL#03	STD. REFERENCE	CONC	725	112	369	33300	N/A	N/A	14
	MAT. - NBS 1645	%REC							
		DUPL							
		OID	01250239	01250237	01400262	01250232	51960237	51960237	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 13 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....		25	26	27	28	29	30	
	ANALYTE.....		903	904	905	906	907	908	
	MG/KG.....		TETRYL	DNB	TNB	RDX	HMX	2,6 DNT	
SAMP #	DESCRIPTION								ROW
06876	07/09/11/90 #1	CONC	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<22 U	<0.25 U	1
	7/31/90	%REC	146.7		116.8				
		DUPL	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<22 U	<0.26 U	
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
06877	07/09-11-90 #2	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	2
	7/31/90	%REC							
		DUPL							
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
06878	07/09-11-90 #3	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	3
	7/31/90	%REC							
		DUPL							
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
06879	07/09-11-90 #4	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	4
	7/31/90	%REC							
		DUPL							
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
06880	07/09-11-90 #5	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	5
	7/31/90	%REC							
		DUPL							
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
06881	07/09-11-90 #6	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	6
	7/31/90	%REC							
		DUPL							
		OID	51960237	51960237	51960237	51960237	51960237	51960237	

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX	2,6 DNT	2,6 DNT

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 14 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		903	904	905	906	907	908
	MG/KG.....		TETRYL	DNB	TNB	RDX	HMX	2,6 DNT
SAMP #	DESCRIPTION							ROW
06882	07/09-2-90 #1	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	7
	8/1/90	%REC						
		DUPL						
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
06883	07/09-2-90 #2	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	8
	8/1/90	%REC	160.7		111.9			
		DUPL						
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
06884	07/09-2-90 #3	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	9
	8/1/90	%REC						
		DUPL						
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
06885	07/09-2-90 #4	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	10
	8/1/90	%REC						
		DUPL						
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
06886	07/09-2-90 #5	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	11
	8/1/90	%REC						
		DUPL						
		OID	51960237	51960237	51960237	51960237	51960237	51960237	
BL#01	METHOD BLANK	CONC	<0.65 U	<0.25	<0.25 U	<1.0 U	<22 U	<0.26 U	12
		%REC						
		DUPL						
		OID	51960237	51960237	51960237	51960237	51960237	51960237	

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX	2,6 DNT	2,6 DNT

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 15 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

COLUMN.....		25	26	27	28	29	30	
ANALYTE.....		903	904	905	906	907	908	
MG/KG.....		TETRYL	DNB	TNB	RDX	HMX	2,6 DNT	
SAMP #	DESCRIPTION							ROW
BL#02	DUPLICATE	CONC	N/A	N/A	N/A	N/A	N/A	N/A	13
	DIGEST (6876)	%REC						
		DUPL						
		OID	51960237	51960237	51960237	51960237	51960237	51960237
BL#03	STD. REFERENCE	CONC	N/A	N/A	N/A	N/A	N/A	N/A	14
	MAT. - NBS 1645	%REC						
		DUPL						
		OID	51960237	51960237	51960237	51960237	51960237	51960237

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX	2,6 DNT	2,6 DNT

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 16 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

COLUMN..... 31
ANALYTE..... 909
MG/KG..... % MOISTR

SAMP #	DESCRIPTION			ROW
06876	07/09/11/90 #1	CONC	15.4	1
	7/31/90	%REC		
		DUPL		
		OID	01150229	
06877	07/09-11-90 #2	CONC	13.7	2
	7/31/90	%REC		
		DUPL		
		OID	01150229	
06878	07/09-11-90 #3	CONC	17.8	3
	7/31/90	%REC		
		DUPL		
		OID	01150229	
06879	07/09-11-90 #4	CONC	20.4	4
	7/31/90	%REC		
		DUPL		
		OID	01150229	
06880	07/09-11-90 #5	CONC	20.4	5
	7/31/90	%REC		
		DUPL		
		OID	01150229	
06881	07/09-11-90 #6	CONC	18.1	6
	7/31/90	%REC		
		DUPL		
		OID	01150229	

% MOISTR % MOISTURE

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 17 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

COLUMN..... 31
ANALYTE..... 909
MG/KG..... % MOISTR

SAMP #	DESCRIPTION			ROW
06882	07/09-2-90 #1	CONC	20.0	7
	8/1/90	%REC		
		DUPL		
		OID	01150229	
06883	07/09-2-90 #2	CONC	16.7	8
	8/1/90	%REC		
		DUPL		
		OID	01150229	
06884	07/09-2-90 #3	CONC	18.5	9
	8/1/90	%REC		
		DUPL		
		OID	01150229	
06885	07/09-2-90 #4	CONC	17.8	10
	8/1/90	%REC		
		DUPL		
		OID	01150229	
06886	07/09-2-90 #5	CONC	12.3	11
	8/1/90	%REC		
		DUPL		
		OID	01150229	
BL#01	METHOD BLANK	CONC	N/A	12
		%REC		
		DUPL		
		OID	01150229	

% MOISTR % MOISTURE

JOB FILE: 06876 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 18 OF 18)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 03 SEP 90

COLUMN..... 31
ANALYTE..... 909
MG/KG..... % MOISTR

SAMP #	DESCRIPTION			ROW
BL#02	DUPLICATE	CONC	N/A	13
	DIGEST (6876)	%REC		
		DUPL		
		OID	01150229	
BL#03	STD. REFERENCE	CONC	N/A	14
	MAT. - NBS 1645	%REC		
		DUPL		
		OID	01150229	

% MOISTR % MOISTURE

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 8/2/90 Lab Sample ID: 6918/6932

1) Analysis: METALS Date Extracted/Digested: 8/7/90

2) Analysis: TP Date Extracted/Digested: 9/15/90

3) Analysis: EXPLOSIVES Date Extracted/Digested: 8/15/90

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	1	2	3	4	5	6	
	ANALYTE.....	1	2	3	4	5	6	
	MG/KG.....	SB	AS	BE	CD	CR	CU	
SAMP #	DESCRIPTION							ROW
06918	07/09/-12-90 #1	CONC	7.70	2.10	<0.500 U	47.2	10.4	1
	8/2/90	%REC	107.5					
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06919	07/09-12-90 #2	CONC	10.8	2.80	<0.500 U	25.1	9.60	2
	8/2/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06920	07/09-12-90 #3	CONC	8.10	2.20	<0.500 U	19.0	7.80	3
	8/2/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06921	07/09/12/90 #4	CONC	12.9	3.00	<0.500 U	23.8	8.20	4
	8/2/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06922	07/09-8-90 #1	CONC	2.80	0.600	<0.500 U	13.5	16.0	5
	8/3/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06923	07/09-8-90 #2	CONC	7.00	2.40	<0.500 U	21.5	35.4	6
	8/3/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....		1	2	3	4	5	6
ANALYTE.....		1	2	3	4	5	6
MG/KG.....		SB	AS	BE	CD	CR	CU
SAMP #	DESCRIPTION						ROW
06924	07/09-1A-90 #1	CONC	11.3	2.70	<0.500 U	29.4	15.6	7
	8/3/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06925	07/09-1A-90 #2	CONC	18.0	6.10	<0.500 U	68.8	15.9	8
	8/3/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06926	07/09-1A-90 #3	CONC	15.3	3.50	<0.500 U	47.8	13.7	9
	8/3/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06927	07/90-1A-90 #4	CONC	6.90	2.70	<0.500 U	28.9	12.8	10
	8/3/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06928	07/09-1A-90 #5	CONC	6.10	2.20	<0.500 U	24.1	10.7	11
	8/3/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06929	07/09-10-90 #1	CONC	6.00	0.800	<0.500 U	9.30	24.1	12
	8/4/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....		1	2	3	4	5	6
ANALYTE.....		1	2	3	4	5	6
MG/KG.....		SB	AS	BE	CD	CR	CU
SAMP #	DESCRIPTION						ROW
06930	07/09-10-90 #2	CONC	6.30	1.80	<0.500 U	18.0	73.4	13
	8/4/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06931	07/09-9-90 #1	CONC	2.30	0.500	<0.500 U	9.5	18.1	14
	8/4/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
06932	07/09-9-90 #2	CONC	7.70	1.80	<0.500 U	17.8	57.8	15
	8//4/90	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
BL#01	METHOD BLANK	CONC	<0.002	<0.002 U	<0.005 U	<0.011 U	<0.006 U	16
		%REC		114.0	97.2	97.6	96.4	
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
BL#02	DUPLICATE	CONC	7.60	2.00	<0.500 U	31.3	10.0	17
	DIGEST (06918)	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	
BL#03	STD. REFERENCE	CONC	67.0	5.80	6.60	2890	107	18
	MAT. - NBS 1645	%REC						
		DUPL						
		OID	04350256	01250250	01250249	01250249	01250249	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	7	8	9	10	11	12	
	ANALYTE.....	7	8	9	10	11	12	
	MG/KG.....	PB	HG	NI	SE	AG	TL	
SAMP #	DESCRIPTION							ROW
06918	07/09/-12-90 #1	CONC 29.8	<0.100 U	14.5	<0.003 U	<1.30 U	0.20 B	1
	8/2/90	%REC	101.0				104.0	
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06919	07/09-12-90 #2	CONC 25.3	<0.100 U	12.8	0.20 BW	<1.30 U	<0.20 U	2
	8/2/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06920	07/09-12-90 #3	CONC 17.5	<0.100 U	14.4	0.30 B	<1.30 U	<0.20 U	3
	8/2/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06921	07/09/12/90 #4	CONC 27.4	<0.100 U	11.3	0.40 B	<1.30 U	<0.20 U	4
	8/2/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06922	07/09-8-90 #1	CONC 618	<0.100 U	7.46	<0.30 U	1.70	<0.20 U	5
	8/3/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06923	07/09-8-90 #2	CONC 91.9	<0.100 U	11.3	<0.30 U	<1.30 U	0.20 B	6
	8/3/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	7	8	9	10	11	12	
	ANALYTE.....	7	8	9	10	11	12	
	MG/KG.....	PB	HG	NI	SE	AG	TL	
SAMP #	DESCRIPTION							ROW
06924	07/09-1A-90 #1	CONC 31.3	<0.100 U	14.3	<0.30 U	<1.30 U	<0.20 U	7
	8/3/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06925	07/09-1A-90 #2	CONC 60.7	<0.100 U	14.8	0.40 BW	<1.30 U	<0.20 U	8
	8/3/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06926	07/09-1A-90 #3	CONC 30.7	<0.100 U	10.6	<0.30 U	<1.30 U	<0.20 U	9
	8/3/90	%REC	98.0				110.0	
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06927	07/90-1A-90 #4	CONC 28.9	<0.100 U	10.7	<0.30 UW	<1.30 U	<0.20 U	10
	8/3/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06928	07/09-1A-90 #5	CONC 20.6	<0.100 U	12.0	<0.30 UW	<1.30 U	<0.20 U	11
	8/3/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	
06929	07/09-10-90 #1	CONC 60.8	<0.100 U	8.60	<0.30 U	<1.30 U	<0.20 U	12
	8/4/90	%REC						
		DUPL	<0.100 U					
		OID 01250243	09650239	01250249	04350261	01250251	04350252	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		7	8	9	10	11	12
	MG/KG.....		PB	HG	NI	SE	AG	TL
SAMP #	DESCRIPTION							ROW
06930	07/09-10-90 #2	CONC	292	<0.100 U	12.5	<0.30 U	<1.30 U	0.20 B	13
	8/4/90	%REC						
		DUPL		<0.100 U				
		OID	01250243	09650239	01250249	04350261	01250251	04350252
06931	07/09-9-90 #1	CONC	27.0	<0.100 U	8.20	<0.30 U	<1.30 U	<0.20 U	14
	8/4/90	%REC						
		DUPL		<0.100 U				
		OID	01250243	09650239	01250249	04350261	01250251	04350252
06932	07/09-9-90 #2	CONC	208	<0.100 U	12.9	<0.30 U	<1.30 U	<0.20 U	15
	8//4/90	%REC						
		DUPL		<0.100 U				
		OID	01250243	09650239	01250249	04350261	01250251	04350252
BL#01	METHOD BLANK	CONC	<0.0114 U	<0.100 U	<0.011 U	<0.30 U	0.024	<0.002 U	16
		%REC	103.0		96.8		87.2	
		DUPL						
		OID	01250243	09650239	01250249	04350261	01250251	04350252
BL#02	DUPLICATE	CONC	27.9	N/A	14.4	<0.30 U	<1.30 U	<0.20 U	17
	DIGEST (06918)	%REC						
		DUPL						
		OID	01250243	09650239	01250249	04350261	01250251	04350252
BL#03	STD. REFERENCE	CONC	669		30.1	0.30 BW	<1.30 U	1.20	18
	MAT. - NBS 1645	%REC		100.0				
		DUPL						
		OID	01250243	09650239	01250249	04350261	01250251	04350252

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....		13	14	15	16	17	18	
ANALYTE.....		13	24	25	29	30	31	
MG/KG.....		ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06918	07/09/-12-90 #1	CONC	39.5	10500	102	16.8	18800	975	1
	8/2/90	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
06919	07/09-12-90 #2	CONC	37.8	11100	91.9	9.90	25400	919	2
	8/2/90	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
06920	07/09-12-90 #3	CONC	38.8	10900	94.1	10.0	19400	934	3
	8/2/90	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
06921	07/09/12/90 #4	CONC	41.8	11500	70.4	12.9	30800	964	4
	8/2/90	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
06922	07/09-8-90 #1	CONC	109	3190	44.3	4.20	9970	15400	5
	8/3/90	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
06923	07/09-8-90 #2	CONC	55.2	14300	76.1	9.60	27300	3670	6
	8/3/90	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 8 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	13	14	15	16	17	18	
	ANALYTE.....	13	24	25	29	30	31	
	MG/KG.....	ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06924	07/09-1A-90 #1	CONC 47.6	13200	62.8	15.4	33600	1420	7
	8/3/90	%REC						
		DUPL						
		OID 01250249	01250240	01250241	01250251	01250240	01250244	
06925	07/09-1A-90 #2	CONC 62.8	12100	45.8	12.2	95700	934	8
	8/3/90	%REC						
		DUPL						
		OID 01250249	01250240	01250241	01250251	01250240	01250244	
06926	07/09-1A-90 #3	CONC 45.0	12000	33.2	5.30	47900	895	9
	8/3/90	%REC						
		DUPL						
		OID 01250249	01250240	01250241	01250251	01250240	01250244	
06927	07/90-1A-90 #4	CONC 37.2	16100	85.4	3.90	36000	913	10
	8/3/90	%REC						
		DUPL						
		OID 01250249	01250240	01250241	01250251	01250240	01250244	
06928	07/09-1A-90 #5	CONC 45.0	16200	64.4	7.20	29700	938	11
	8/3/90	%REC						
		DUPL						
		OID 01250249	01250240	01250241	01250251	01250240	01250244	
06929	07/09-10-90 #1	CONC 80.8	3660	32.3	4.80	12500	17400	12
	8/4/90	%REC						
		DUPL						
		OID 01250249	01250240	01250241	01250251	01250240	01250244	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 9 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		13	14	15	16	17	18
	ANALYTE.....		13	24	25	29	30	31
	MG/KG.....		ZN	AL	BA	CO	FE	MG
SAMP #	DESCRIPTION							ROW
06930	07/09-10-90 #2	CONC	81.8	15800	80.6	9.50	20500	1860	13
	8/4/90	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
06931	07/09-9-90 #1	CONC	42.5	3550	26.6	4.60	8120	15000	14
	8/4/90	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
06932	07/09-9-90 #2	CONC	53.8	14900	86.5	10.6	19900	1810	15
	8//4/90	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
BL#01	METHOD BLANK	CONC	0.120	0.084 B	<0.011 U	<0.030 U	0.045 B	<0.748 U	16
		%REC	97.2	95.6	99.8	84.4	99.8	97.6	
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
BL#02	DUPLICATE	CONC	37.5	10500	100	15.3	18100	963	17
	DIGEST (06918)	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	
BL#03	STD. REFERENCE	CONC	1630	5580	52.7	6.00	95700	6650	18
	MAT. - NBS 1645	%REC						
		DUPL						
		OID	01250249	01250240	01250241	01250251	01250240	01250244	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 10 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....		19	20	21	22	23	24	
ANALYTE.....		32	35	67	900	901	902	
MG/KG.....		MN	NA	TP	SN	2,4-DNT	TNT	
SAMP #	DESCRIPTION							ROW
06918	07/09/-12-90 #1	CONC 2080	<48.9 U	53.4	36.4	<0.250 U #1	<0.250 U	1
	8/2/90	%REC		93.0				
		DUPL		55.3				
		OID 01250240	01250241	01400262	01250253	51960241	51960241	
06919	07/09-12-90 #2	CONC 1400	<48.9 U	95.8	34.4	<0.250 U #1	<0.250 U	2
	8/2/90	%REC					77.8	
		DUPL				<0.250 U	<0.250 U	
		OID 01250240	01250241	01400262	01250253	51960241	51960241	
06920	07/09-12-90 #3	CONC 1360	<48.9 U	123	31.7	<0.250 U #1	<0.250 U	3
	8/2/90	%REC						
		DUPL						
		OID 01250240	01250241	01400262	01250253	51960241	51960241	
06921	07/09/12/90 #4	CONC 1470	<48.9 U	84.8	36.9	<0.250 U #1	<0.250 U	4
	8/2/90	%REC						
		DUPL						
		OID 01250240	01250241	01400262	01250253	51960241	51960241	
06922	07/09-8-90 #1	CONC 351	197 B	50.3	551	1.70 #1	<0.250 U	5
	8/3/90	%REC					53.5	
		DUPL						
		OID 01250240	01250241	01400262	01250253	51960241	51960241	
06923	07/09-8-90 #2	CONC 622	82.0 B	93.4	84.1	<0.250 U #1	3.08	6
	8/3/90	%REC						
		DUPL						
		OID 01250240	01250241	01400262	01250253	51960241	51960241	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

FOOTNOTES:
#1 2,4-DNT cannot be separated from 2,6-DNT.

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 11 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....	19	20	21	22	23	24
ANALYTE.....	32	35	67	900	901	902
MG/KG.....	MN	NA	TP	SN	2,4-DNT	TNT

SAMP #	DESCRIPTION								ROW
06924	07/09-1A-90 #1	CONC	809	49.9 B	54.1	50.6	<0.250 U #1	<0.250 U	7
	8/3/90	%REC							
		DUPL							
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
06925	07/09-1A-90 #2	CONC	657	<48.9 U	38.2	78.6	<0.250 U #1	<0.250 U	8
	8/3/90	%REC						83.6	
		DUPL							
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
06926	07/09-1A-90 #3	CONC	189	<48.9 U	42.5	55.9	<0.250 U #1	<0.250 U	9
	8/3/90	%REC			96.0				
		DUPL			45.7				
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
06927	07/90-1A-90 #4	CONC	412	57.2 B	58.4	42.8	<0.250 U #1	<0.250 U	10
	8/3/90	%REC							
		DUPL							
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
06928	07/09-1A-90 #5	CONC	151	71.7 B	23.7	33.2	<0.250 U #1	<0.250 U	11
	8/3/90	%REC							
		DUPL							
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
06929	07/09-10-90 #1	CONC	431	219 B	66.0	298	<0.250 U #1	<0.250 U	12
	8/4/90	%REC							
		DUPL							
		OID	01250240	01250241	01400262	01250253	51960241	51960241	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

FOOTNOTES:
#1 2,4-DNT cannot be separated from 2,6-DNT.

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 12 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		19	20	21	22	23	24
	ANALYTE.....		32	35	67	900	901	902
	MG/KG.....		MN	NA	TP	SN	2,4-DNT	TNT
SAMP #	DESCRIPTION							ROW
06930	07/09-10-90 #2	CONC	693	52.7 B	83.7	50.4	<0.250 U #1	<0.250 U	13
	8/4/90	%REC						
		DUPL						
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
06931	07/09-9-90 #1	CONC	320	183 B	50.5	269	<0.250 U #1	<0.250 U	14
	8/4/90	%REC						
		DUPL						
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
06932	07/09-9-90 #2	CONC	855	53.8 B	88.3	44.8	<0.250 U #1	<0.250 U	15
	8//4/90	%REC						
		DUPL						
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
BL#01	METHOD BLANK	CONC	<0.005 U	<0.489 U	0.058	<0.076 U	<0.250 U #1	<0.250 U	16
		%REC	98.6	103.2		103.4		
		DUPL						
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
BL#02	DUPLICATE	CONC	193	<48.9 U	64.3	23.4	N/A	N/A	17
	DIGEST (06918)	%REC						
		DUPL						
		OID	01250240	01250241	01400262	01250253	51960241	51960241	
BL#03	STD. REFERENCE	CONC	650	1080	369	36300	N/A	N/A	18
	MAT. - NBS 1645	%REC						
		DUPL						
		OID	01250240	01250241	01400262	01250253	51960241	51960241	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

FOOTNOTES:
#1 2,4-DNT cannot be separated from 2,6-DNT.

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 13 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	25	26	27	28	29	
	ANALYTE.....	903	904	905	906	907	
	MG/KG.....	TETRYL	DNB	TNB	RDX	HMX	
SAMP #	DESCRIPTION						ROW
06918	07/09/-12-90 #1	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	1
	8/2/90	%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	
06919	07/09-12-90 #2	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	2
	8/2/90	%REC 86.7		82.4			
		DUPL <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	
		OID 51960241	51960241	51960241	51960241	51960241	
06920	07/09-12-90 #3	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	3
	8/2/90	%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	
06921	07/09/12/90 #4	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	4
	8/2/90	%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	
06922	07/09-8-90 #1	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	5
	8/3/90	%REC 54.6		59.8			
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	
06923	07/09-8-90 #2	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	6
	8/3/90	%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX		

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 14 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	25	26	27	28	29	
	ANALYTE.....	903	904	905	906	907	
	MG/KG.....	TETRYL	DNB	TNB	RDX	HMX	
SAMP #	DESCRIPTION						ROW
06924	07/09-1A-90 #1	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	7
	8/3/90	%REC					
		DUPL					
		OID	51960241	51960241	51960241	51960241	51960241
06925	07/09-1A-90 #2	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	8
	8/3/90	%REC	96.6		94.7		
		DUPL					
		OID	51960241	51960241	51960241	51960241	51960241
06926	07/09-1A-90 #3	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	9
	8/3/90	%REC					
		DUPL					
		OID	51960241	51960241	51960241	51960241	51960241
06927	07/90-1A-90 #4	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	10
	8/3/90	%REC					
		DUPL					
		OID	51960241	51960241	51960241	51960241	51960241
06928	07/09-1A-90 #5	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	11
	8/3/90	%REC					
		DUPL					
		OID	51960241	51960241	51960241	51960241	51960241
06929	07/09-10-90 #1	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	12
	8/4/90	%REC					
		DUPL					
		OID	51960241	51960241	51960241	51960241	51960241

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX		

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/24/90 Lab Sample ID: 6757/6765

1) Analysis: Metals Date Extracted/Digested: 7/30/90

2) Analysis: TP Date Extracted/Digested: 9/4/90

3) Analysis: EXPLOSIVES Date Extracted/Digested: 8/15/90

4) Analysis: Date Extracted/Digested:

5) Analysis: Date Extracted/Digested:

6) Analysis: Date Extracted/Digested:

7) Analysis: Date Extracted/Digested:

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		1	2	3	4	5	6
	ANALYTE.....		1	2	3	4	5	6
	MG/KG.....		SB	AS	BE	CD	CR	CU
SAMP #	DESCRIPTION							ROW
06757	07/09-4-90 #1	CONC	<0.29 U	4.29	1.59	<0.498 U	18.8	16.1	1
	7/24/90	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
06758	07/09-4-90 #2	CONC	1.20	6.89	1.60	<0.499 U	20.6	12.6	2
	7/24/90	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
06759	07/09-4-90 #3	CONC	0.50	5.39	1.30	<0.500 U	20.2	11.4	3
	7/24/90	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
06760	07/09-04-90 #4	CONC	0.50	5.69	1.39	<0.497 U	22.8	11.8	4
	7/24/90	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
06761	07/09-4-90 #5	CONC	0.70	2.89	1.20	<0.499 U	15.8	8.49	5
	7/24/90	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
06762	07/09-5-90 #1	CONC	0.50	6.69	1.30	<0.499 U	18.1	13.3	6
	7/25/90	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

COLUMN.....		1	2	3	4	5	6	
ANALYTE.....		1	2	3	4	5	6	
MG/KG.....		SB	AS	BE	CD	CR	CU	
SAMP #	DESCRIPTION							ROW
06763	07/09-5-90 #2	CONC	0.30	4.69	1.70	<0.499 U	16.9	9.28	7
	7/25/90	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
06764	07/09-5-90 #3	CONC	<0.30 U	5.29	1.99	<0.497 U	17.6	9.55	8
	7/25/90	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
06765	07/09-5-90 #4	CONC	<0.30 U	32.2	8.65	<0.497 U	77.9	15.9	9
	7/25/90	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
BL#01	METHOD BLANK	CONC	<0.003 U	<0.002 W	<0.005 U	<0.005 U	<0.010 U	<0.025 U	10
		%REC			96.6	96.2	108.4	101.6	
		DUPL						0.11 C	
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
BL#02	DUPLICATE	CONC	0.40	4.19	1.50	<0.500 U	19.0	16.7	11
	DIGEST (6757)	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	
BL#03	STD. REFERENCE	CONC	3.19	60.3	4.39	5.89	29700	97.8	12
	MAT. - NBS 1645	%REC						
		DUPL						
		OID	20350226	20350221	01250221	01250223	01250223	01250221	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

COLUMN.....			7	8	9	10	11	12
ANALYTE.....			7	8	9	10	11	12
MG/KG.....			PB	HG	NI	SE	AG	TL
SAMP #	DESCRIPTION							ROW
06757	07/09-4-90 #1	CONC	142	<0.100 U	11.9	<0.299 U	<1.29 U	0.30 B	1
	7/24/90	%REC		105.0				98.0	
		DUPL		<0.100 U					
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
06758	07/09-4-90 #2	CONC	29.8	<0.100 U	12.4	0.400 B	<1.30 U	0.40 B	2
	7/24/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
06759	07/09-4-90 #3	CONC	16.7	<0.100 U	9.80	<0.300 U	<1.30 U	0.30 B	3
	7/24/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
06760	07/09-04-90 #4	CONC	18.4	<0.100 U	10.5	<0.300 U	<1.29 U	0.30 B	4
	7/24/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
06761	07/09-4-90 #5	CONC	14.5	<0.100 U	9.59	<0.299 U	<1.30 U	0.30 B	5
	7/24/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
06762	07/09-5-90 #1	CONC	32.1	<0.100 U	9.58	<0.300 U	<1.30 U	0.20 B	6
	7/25/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650227	01250223	20350226	01250228	04350249	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		7	8	9	10	11	12
	MG/KG.....		PB	HG	NI	SE	AG	TL
SAMP #	DESCRIPTION							ROW
06763	07/09-5-90 #2	CONC	25.0	<0.100 U	13.7	<0.300 U	<1.30 U	0.30 B	7
	7/25/90	%REC						
		DUPL		<0.100 U				
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
06764	07/09-5-90 #3	CONC	23.1	<0.100 U	18.9	0.400 B	<1.29 U	0.20 B	8
	7/25/90	%REC						
		DUPL		<0.100 U				
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
06765	07/09-5-90 #4	CONC	83.4	<0.100 U	42.4	0.300 B	<1.29 U	0.20 B	9
	7/25/90	%REC		96.0				114.0	
		DUPL		<0.100 U				
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
BL#01	METHOD BLANK	CONC	<0.114 U	<0.100 U	<0.040 U	<0.003 U	<0.013 U	<0.002 U	10
		%REC			103.2		96.7		
		DUPL						
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
BL#02	DUPLICATE	CONC	1.59	N/A	11.9	<0.300 U	<1.30 U	0.30 B	11
	DIGEST (6757)	%REC						
		DUPL						
		OID	01250235	09650227	01250223	20350226	01250228	04350249	
BL#03	STD. REFERENCE	CONC	609		32.4	0.90	<1.30 U	1.00 B	12
	MAT. - NBS 1645	%REC		72.7				
		DUPL						
		OID	01250235	09650227	01250223	20350226	01250228	04350249	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....	13	14	15	16	17	18	
	ANALYTE.....	13	24	25	29	30	31	
	MG/KG.....	ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06757	07/09-4-90 #1	CONC 52.2	15200	91.0	8.96	22100	1250	1
	7/24/90	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
06758	07/09-4-90 #2	CONC 45.2	19000	47.0	16.8	27300	2100	2
	7/24/90	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
06759	07/09-4-90 #3	CONC 86.3	16800	53.2	3.10 B	21400	2130	3
	7/24/90	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
06760	07/09-04-90 #4	CONC 42.4	19300	66.3	<2.98 U	23400	2130	4
	7/24/90	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
06761	07/09-4-90 #5	CONC 32.5	18100	59.6	3.10 B	17200	1040	5
	7/24/90	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
06762	07/09-5-90 #1	CONC 48.2	11300	145	8.28	20600	3770	6
	7/25/90	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....	13	14	15	16	17	18	
	ANALYTE.....	13	24	25	29	30	31	
	MG/KG.....	ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06763	07/09-5-90 #2	CONC 43.6	12000	96.5	11.6	20200	1250	7
	7/25/90	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
06764	07/09-5-90 #3	CONC 36.1	12100	179	15.6	22900	981	8
	7/25/90	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
06765	07/09-5-90 #4	CONC 109	9590	74.5	31.0	150000	565	9
	7/25/90	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
BL#01	METHOD BLANK	CONC 0.081	0.109 B	<0.011 U	<0.030 U	0.039 B	<0.748 U	10
		%REC 98.8	89.0	93.2	93.0	97.8	93.0	
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
BL#02	DUPLICATE	CONC 59.0	15600	92.2	8.69	22900	1320	11
	DIGEST (6757)	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	
BL#03	STD. REFERENCE	CONC 1630	5390	49.2	8.78	97000	5840	12
	MAT. - NBS 1645	%REC						
		DUPL						
		OID 01250223	01250226	01250227	01250227	01250226	01250227	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		19	20	21	22	23	24	
	ANALYTE.....		32	35	67	900	901	902	
	MG/KG.....		MN	NA	TP	SN	2,4-DNT	TNT	
SAMP #	DESCRIPTION								ROW
06757	07/09-4-90 #1	CONC	857	<48.7 U	138	85.1	<0.25 U	0.199 J	1
	7/24/90	%REC			103.5			105.9	
		DUPL			159		<0.25 U	0.174 J	
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
06758	07/09-4-90 #2	CONC	715	64.0 B	60.9	37.2	<0.25 U	<0.25 U	2
	7/24/90	%REC							
		DUPL							
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
06759	07/09-4-90 #3	CONC	124	56.9 B	137	36.3	<0.25 U	<0.25 U	3
	7/24/90	%REC							
		DUPL							
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
06760	07/09-04-90 #4	CONC	70.6	93.3 B	98.1	34.3	<0.25 U	<0.25 U	4
	7/24/90	%REC							
		DUPL					<0.25 U	<0.25 U	
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
06761	07/09-4-90 #5	CONC	51.8	95.8 B	51.1	25.6	<0.25 U	<0.25 U	5
	7/24/90	%REC							
		DUPL							
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
06762	07/09-5-90 #1	CONC	427	73.7 B	160	61.6	<0.25 U	0.433	6
	7/25/90	%REC						80.2	
		DUPL							
		OID	01250221	01250227	01400256	01350237	51960234	51960234	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 8 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		19	20	21	22	23	24	
	ANALYTE.....		32	35	67	900	901	902	
	MG/KG.....		MN	NA	TP	SN	2,4-DNT	TNT	
SAMP #	DESCRIPTION								ROW
06763	07/09-5-90 #2	CONC	913	<48.8 U	162	17.4	<0.25 U	<0.25 U	7
	7/25/90	%REC							
		DUPL							
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
06764	07/09-5-90 #3	CONC	1830	<48.6 U	254	17.7	<0.25 U	<0.25 U	8
	7/25/90	%REC							
		DUPL							
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
06765	07/09-5-90 #4	CONC	1440	<48.6 U	97.3	29.2	<0.25 U	<0.25 U	9
	7/25/90	%REC							
		DUPL					<0.25 U	<0.25 U	
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
BL#01	METHOD BLANK	CONC	<0.005 U	<0.489	<0.100 U	<0.076 U	<0.25 U	<0.25 U	10
		%REC	98.2	98.4		98.6			
		DUPL							
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
BL#02	DUPLICATE	CONC	870	50.3 B	162	84.4	N/A	N/A	11
	DIGEST (6757)	%REC							
		DUPL							
		OID	01250221	01250227	01400256	01350237	51960234	51960234	
BL#03	STD. REFERENCE	CONC	615	998	N/A	26000	N/A	N/A	12
	MAT. - NBS 1645	%REC							
		DUPL							
		OID	01250221	01250227	01400256	01350237	51960234	51960234	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 9 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

COLUMN.....	25	26	27	28	29	30
ANALYTE.....	903	904	905	906	907	908
MG/KG.....	TETRYL	DNB	TNB	RDX	HMX	2,6-DNT

SAMP #	DESCRIPTION								ROW
06757	07/09-4-90 #1	CONC	<0.65 U	<0.25 U	0.159 J	<1.0 U	<2.2 U	<0.26 U	1
	7/24/90	%REC	168.2		85.0				
		DUPL	<0.65 U	<0.25 U	0.149 J	<1.0 U	<2.2 U	<0.26 U	
		OID	51960234	51960234	51960234	51960234	51960234	51960234	
06758	07/09-4-90 #2	CONC	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U	2
	7/24/90	%REC							
		DUPL							
		OID	51960234	51960234	51960234	51960234	51960234	51960234	
06759	07/09-4-90 #3	CONC	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U	3
	7/24/90	%REC							
		DUPL							
		OID	51960234	51960234	51960234	51960234	51960234	51960234	
06760	07/09-04-90 #4	CONC	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U	4
	7/24/90	%REC							
		DUPL	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U	
		OID	51960234	51960234	51960234	51960234	51960234	51960234	
06761	07/09-4-90 #5	CONC	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U	5
	7/24/90	%REC							
		DUPL							
		OID	51960234	51960234	51960234	51960234	51960234	51960234	
06762	07/09-5-90 #1	CONC	<0.65 U	<0.25 U	0.183 J	<1.0 U	<2.2 U	<0.26 U	6
	7/25/90	%REC	166.4		91.1				
		DUPL							
		OID	51960234	51960234	51960234	51960234	51960234	51960234	

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX	2,6-DNT	2,6-DNT

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 10 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		903	904	905	906	907	908
	MG/KG.....		TETRYL	DNB	TNB	RDX	HMX	2,6-DNT.
SAMP #	DESCRIPTION							ROW
06763	07/09-5-90 #2	CONC	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U	7
	7/25/90	%REC						
		DUPL						
		OID	51960234	51960234	51960234	51960234	51960234	51960234
06764	07/09-5-90 #3	CONC	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U	8
	7/25/90	%REC						
		DUPL						
		OID	51960234	51960234	51960234	51960234	51960234	51960234
06765	07/09-5-90 #4	CONC	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U	9
	7/25/90	%REC						
		DUPL	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U
		OID	51960234	51960234	51960234	51960234	51960234	51960234
BL#01	METHOD BLANK	CONC	<0.65 U	<0.25 U	<0.25 U	<1.0 U	<2.2 U	<0.26 U	10
		%REC						
		DUPL						
		OID	51960234	51960234	51960234	51960234	51960234	51960234
BL#02	DUPLICATE DIGEST (6757)	CONC	N/A	N/A	N/A	N/A	N/A	N/A	11
		%REC						
		DUPL						
		OID	51960234	51960234	51960234	51960234	51960234	51960234
BL#03	STD. REFERENCE MAT. - NBS 1645	CONC	N/A	N/A	N/A	N/A	N/A	N/A	12
		%REC						
		DUPL						
		OID	51960234	51960234	51960234	51960234	51960234	51960234

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX	2,6-DNT	2,6-DNT

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 11 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

COLUMN..... 31
ANALYTE..... 909
MG/KG..... % MOISTR

SAMP #	DESCRIPTION			ROW
06757	07/09-4-90 #1	CONC	16.2	1
	7/24/90	%REC		
		DUPL		
		OID	01150211	
06758	07/09-4-90 #2	CONC	19.5	2
	7/24/90	%REC		
		DUPL		
		OID	01150211	
06759	07/09-4-90 #3	CONC	15.9	3
	7/24/90	%REC		
		DUPL		
		OID	01150211	
06760	07/09-04-90 #4	CONC	16.8	4
	7/24/90	%REC		
		DUPL		
		OID	01150211	
06761	07/09-4-90 #5	CONC	17.2	5
	7/24/90	%REC		
		DUPL		
		OID	01150211	
06762	07/09-5-90 #1	CONC	16.7	6
	7/25/90	%REC		
		DUPL		
		OID	01150211	

% MOISTR % MOISTURE

JOB FILE: 06757 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 12 OF 12)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

COLUMN..... 31
ANALYTE..... 909
MG/KG..... % MOISTR

SAMP #	DESCRIPTION			ROW
06763	07/09-5-90 #2	CONC	15.9	7
	7/25/90	%REC		
		DUPL		
		OID	01150211	
06764	07/09-5-90 #3	CONC	19.1	8
	7/25/90	%REC		
		DUPL		
		OID	01150211	
06765	07/09-5-90 #4	CONC	10.6	9
	7/25/90	%REC		
		DUPL		
		OID	01150211	
BL#01	METHOD BLANK	CONC	N/A	10
		%REC		
		DUPL		
		OID	01150211	
BL#02	DUPLICATE	CONC	N/A	11
	DIGEST (6757)	%REC		
		DUPL		
		OID	01150211	
BL#03	STD. REFERENCE	CONC	N/A	12
	MAT. - NBS 1645	%REC		
		DUPL		
		OID	01150211	

% MOISTR % MOISTURE

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/24/90 Lab Sample ID: 6770

1) Analysis: METALS Date Extracted/Digested: 8/28/90

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06770 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....		1	2	3	4	5	6	
ANALYTE.....		1	2	3	4	5	6	
PPM.....		SB	AS	BE	CD	CR	CU	
SAMP #	DESCRIPTION							ROW
06770	RESINATE	CONC	<0.002	<0.002 U	<0.005 U	<0.011 U	0.020 B	1
	7/24/90	%REC	107.5					
		DUPL						
		OID	01250261	01250248	01250149	01250249	01250247	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06770 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

	COLUMN.....	7	8	9	10	11	12	
	ANALYTE.....	7	8	9	10	11	12	
	PPM.....	PB	HG	NI	SE	AG	TL	
SAMP #	DESCRIPTION							ROW
06770	RESINATE	CONC	0.148	<0.0002 U	0.082	<0.30 UW	<0.013 U	<0.002 U	1
	7/24/90	%REC		86.0		80.0		88.0	
		DUPL		<0.0004 U					
		OID	01250244	09650233	01250247	04350262	01250253	04350253	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06770 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....		13	14	15	16	17	18
ANALYTE.....		13	24	25	29	30	31
PPM.....		ZN	AL	BA	CO	FE	MG
SAMP #	DESCRIPTION						ROW
06770	RESINATE	CONC	18.5	1.66	0.036 B	<0.030 U	14.9	3.53 B	1
	7/24/90	%REC						
		DUPL						
		OID	01250250	01250254	01250250	01250249	01250254	01250244

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06770 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....	19	20	21	22
ANALYTE.....	32	35	67	900
PPM.....	MN	NA	TP	SN

SAMP #	DESCRIPTION							ROW
06770	RESINATE	CONC	0.415	4.30 B	IS	#1	<0.076 U	1
	7/24/90	%REC						
		DUPL						
		OID	01250249	01250244	00000262		01250253	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN

FOOTNOTES:
#1 Insufficient sample.

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/26/90 Lab Sample ID: 6804/6819

1) Analysis: METALS Date Extracted/Digested: 7/31/90

2) Analysis: TP Date Extracted/Digested: 9/4/90

3) Analysis: EXPLOSIVES Date Extracted/Digested: 8/15/90

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....	1	2	3	4	5	6	
	ANALYTE.....	1	2	3	4	5	6	
	MG/KG.....	SB	AS	BE	CD	CR	CU	
SAMP #	DESCRIPTION							ROW
06804	07/09-3-90 #1	CONC 0.30 W	6.70	1.60	0.700	18.8	14.4	1
	7/26/90	%REC	86.0					
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
06805	07/09-3-90 #2	CONC 0.50 W	6.99	1.70	<0.499 U	21.2	12.9	2
	7/26/90	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
06806	07/09-3-90 #3	CONC <0.30 U	7.20	2.00	<0.499 U	21.4	12.9	3
	7/26/90	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
06807	07/09-3-90 #4	CONC <0.30 U	4.00	1.90	<0.500 U	18.2	7.40	4
	7/26/90	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
06808	07/09-3-90 #5	CONC <0.30 U	2.90	1.20	<0.500 U	13.7	5.60	5
	7/26/90	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
06809	07/09-6-90 #1	CONC <0.30 U	4.90	1.70	<0.500 U	18.6	10.3	6
	7/27/90	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....		1	2	3	4	5	6	
	ANALYTE.....		1	2	3	4	5	6	
	MG/KG.....		SB	AS	BE	CD	CR	CU	
SAMP #	DESCRIPTION								ROW
06810	07/09-6-90 #2	CONC	<0.30 U	3.60	1.70	<0.500 U	16.4	14.3	7
	7/27/90	%REC							
		DUPL							
		OID	20359236	04350254	01250233	01250233	01250233	01250233	
06811	07/09-6-90 #3	CONC	<0.30 U	4.70	1.90	<0.499 U	14.7	9.19	8
	7/27/90	%REC							
		DUPL							
		OID	20359236	04350254	01250233	01250233	01250233	01250233	
06812	07/09-6-90 #4	CONC	<0.30 U	3.60	2.10	<0.500 U	16.1	9.19	9
	7/27/90	%REC							
		DUPL							
		OID	20359236	04350254	01250233	01250233	01250233	01250233	
06813	07/09-7-90 #1	CONC	0.90	11.9	2.50	<0.500 U	20.9	13.2	10
	07/30/90	%REC							
		DUPL							
		OID	20359236	04350254	01250233	01250233	01250233	01250233	
06814	07/09-7-90 #2	CONC	<0.30 U	34.0	4.70	<0.500 U	41.7	21.9	11
	7/30/90	%REC							
		DUPL							
		OID	20359236	04350254	01250233	01250233	01250233	01250233	
06815	07/09/7/90 #3	CONC	<0.30 U	5.91	1.50	<0.500 U	15.0	10.2	12
	7/30/90	%REC							
		DUPL							
		OID	20359236	04350254	01250233	01250233	01250233	01250233	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....	1	2	3	4	5	6	
	ANALYTE.....	1	2	3	4	5	6	
	MG/KG.....	SB	AS	BE	CD	CR	CU	
SAMP #	DESCRIPTION							ROW
06816	07/09-7-90 #4	CONC 0.30	8.80	2.20	<0.500 U	20.3	14.4	13
	COMPOSITE 7/30	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
06817	07/09-7-90 #5	CONC <0.30 U	8.30	2.10	<0.499 U	16.0	8.28	14
	7/30/90	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
06818	07/09-7-90 #6	CONC <0.30 U	6.59	1.80	<0.500 U	18.5	13.1	15
	7/30/90	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
06819	07/09-7-90 #7	CONC 0.80	6.90	2.60	<0.500 U	22.7	16.8	16
	7/30/90	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
BL#01	METHOD BLANK	CONC 0.003 W	<0.002 U	<0.002 U	<0.005 U	<0.011 U	0.007	17
		%REC		98.2	101.0	102.4	93.4	
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	
BL#02	DUPLICATE	CONC 0.30	6.80	1.60	0.699	19.1	13.2	18
	DIGEST (6804)	%REC						
		DUPL						
		OID 20359236	04350254	01250233	01250233	01250233	01250233	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	1	2	3	4	5	6
MG/KG.....	SB	AS	BE	CD	CR	CU

SAMP #	DESCRIPTION								ROW
BL#03	STD. REFERENCE	CONC	6.20	65.7	5.20	6.10	26,600	108	19
	MAT. - NBS 1645	%REC							
		DUPL							
		OID	20359236	04350254	01250233	01250233	01250233	01250233	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....	7	8	9	10	11	12	
	ANALYTE.....	7	8	9	10	11	12	
	MG/KG.....	PB	HG	NI	SE	AG	TL	
SAMP #	DESCRIPTION							ROW
06804	07/09-3-90 #1	CONC	21.3	<0.100 U	14.9	0.30 B	<1.30 U	0.20 B	1
	7/26/90	%REC		117.0				102.0	
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06805	07/09-3-90 #2	CONC	20.5	<0.100 U	12.0	<0.30 U	<1.30 U	0.20 B	2
	7/26/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06806	07/09-3-90 #3	CONC	21.1	<0.100 U	16.4	<0.30 U	<1.30 U	0.30 B	3
	7/26/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06807	07/09-3-90 #4	CONC	13.9	<0.100 U	10.6	<0.30 U	<1.30 U	0.20 B	4
	7/26/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06808	07/09-3-90 #5	CONC	13.9	<0.100 U	8.60	<0.30 U	<1.30 U	0.20 B	5
	7/26/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06809	07/09-6-90 #1	CONC	15.0	<0.100 U	10.9	<0.30 U	<1.30 U	0.20 B	6
	7/27/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN.....		7	8	9	10	11	12	
ANALYTE.....		7	8	9	10	11	12	
MG/KG.....:		PB	HG	NI	SE	AG	TL	
SAMP #	DESCRIPTION							ROW
06810	07/09-6-90 #2	CONC	25.1	<0.100 U	14.9	0.40 B	<1.30 U	0.20 B	7
	7/27/90	%REC						
		DUPL		<0.100 U				
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06811	07/09-6-90 #3	CONC	16.4	<0.100 U	15.9	0.30 B	<1.30 U	0.30 B	8
	7/27/90	%REC						
		DUPL		<0.100 U				
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06812	07/09-6-90 #4	CONC	21.7	<0.100 U	18.7	0.40 B	<1.30 U	0.30 B	9
	7/27/90	%REC		114.0				
		DUPL		<0.100 U				
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06813	07/09-7-90 #1	CONC	27.1	<0.100 U	14.9	0.50	<1.30 U	<0.20 U	10
	07/30/90	%REC						
		DUPL		<0.100 U				
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06814	07/09-7-90 #2	CONC	43.6	<0.100 U	25.7	0.90	<1.30 U	<0.20 U	11
	7/30/90	%REC						
		DUPL		<0.100 U				
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06815	07/09/7/90 #3	CONC	14.6	<0.100 U	8.60	0.30 B	<1.30 U	<0.20 U	12
	7/30/90	%REC						
		DUPL		<0.100 U				
		OID	01250235	09650233	01250233	20359237	01250228	04350250	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....	7	8	9	10	11	12	
	ANALYTE.....	7	8	9	10	11	12	
	MG/KG.....	PB	HG	NI	SE	AG	TL	
SAMP #	DESCRIPTION							ROW
06816	07/09-7-90 #4	CONC	21.8	<0.100 U	14.1	0.40 B	<1.30 U	<0.20 U	13
	COMPOSITE 7/30	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06817	07/09-7-90 #5	CONC	18.5	<0.100 U	8.98	0.40 B	<1.30 U	<0.20 U	14
	7/30/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06818	07/09-7-90 #6	CONC	16.2	<0.100 U	15.1	<0.30 U	<1.30 U	0.20 BW	15
	7/30/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
06819	07/09-7-90 #7	CONC	19.4	<0.100 U	17.9	<0.30 U	<1.30 U	0.20 B	16
	7/30/90	%REC							
		DUPL		<0.100 U					
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
BL#01	METHOD BLANK	CONC	<0.114 U	<0.100 U	0.050	<0.003 UW	<0.013 U	<0.002 U	17
		%REC	105.0		94.0		95.0		
		DUPL							
		OID	01250235	09650233	01250233	20359237	01250228	04350250	
BL#02	DUPLICATE	CONC	19.4	N/A	13.0	2.00	<1.30 U	0.20 B	18
	DIGEST (6804)	%REC							
		DUPL							
		OID	01250235	09650233	01250233	20359237	01250228	04350250	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 8 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN.....		7	8	9	10	11	12	
ANALYTE.....		7	8	9	10	11	12	
MG/KG.....		PB	HG	NI	SE	AG	TL	
SAMP #	DESCRIPTION							ROW
BL#03	STD. REFERENCE	CONC 649	1.0	31.9	2.00	<1.30 U	1.10	19
	MAT. - NBS 1645	%REC						
		DUPL						
		OID 01250235	09650232	01250233	20359237	01250228	04350250	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 9 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN.....		13	14	15	16	17	18
ANALYTE.....		13	24	25	29	30	31
MG/KG.....		ZN	AL	BA	CO	FE	MG
SAMP #	DESCRIPTION						ROW
06804	07/09-3-90 #1	CONC 89.5	15800	68.2	8.00	21500	20.8	1
	7/26/90	%REC					
		DUPL					
		OID 01250233	01250234	01250233	01250229	01250234	01250233
06805	07/09-3-90 #2	CONC 53.5	16000	67.8	7.09	23500	2180	2
	7/26/90	%REC					
		DUPL					
		OID 01250233	01250234	01250233	01250229	01250234	01250233
06806	07/09-3-90 #3	CONC 54.1	15200	61.8	6.79	27400	2110	3
	7/26/90	%REC					
		DUPL					
		OID 01250233	01250234	01250233	01250229	01250234	01250233
06807	07/09-3-90 #4	CONC 32.4	14900	64.4	4.00	21800	1310	4
	7/26/90	%REC					
		DUPL					
		OID 01250233	01250234	01250233	01250229	01250234	01250233
06808	07/09-3-90 #5	CONC 20.2	11400	60.9	8.20	14300	1150	5
	7/26/90	%REC					
		DUPL					
		OID 01250233	01250234	01250233	01250229	01250234	01250233
06809	07/09-6-90 #1	CONC 41.3	12800	67.0	7.29	21500	1410	6
	7/27/90	%REC					
		DUPL					
		OID 01250233	01250234	01250233	01250229	01250234	01250233

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 10 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....	13	14	15	16	17	18	
	ANALYTE.....	13	24	25	29	30	31	
	MG/KG.....	ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06810	07/09-6-90 #2	CONC 54.9	12600	104	11.8	18100	1630	7
	7/27/90	%REC						
		DUPL						
		OID 01250233	01250234	01250233	01250229	01250234	01250233	
06811	07/09-6-90 #3	CONC 51.4	11500	129	11.7	18900	1190	8
	7/27/90	%REC						
		DUPL						
		OID 01250233	01250234	01250233	01250229	01250234	01250233	
06812	07/09-6-90 #4	CONC 86.2	11100	111	16.7	21500	1000	9
	7/27/90	%REC						
		DUPL						
		OID 01250233	01250234	01250233	01250229	01250234	01250233	
06813	07/09-7-90 #1	CONC 54.8	13900	81.2	18.0	33000	1740	10
	07/30/90	%REC						
		DUPL						
		OID 01250233	01250234	01250233	01250229	01250234	01250233	
06814	07/09-7-90 #2	CONC 78.9	12500	77.8	26.6	65200	4550	11
	7/30/90	%REC						
		DUPL						
		OID 01250233	01250234	01250233	01250229	01250234	01250233	
06815	07/09/7/90 #3	CONC 38.9	9210	170	5.30	16300	1050	12
	7/30/90	%REC						
		DUPL						
		OID 01250233	01250234	01250233	01250229	01250234	01250233	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 11 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN.....		13	14	15	16	17	18	
ANALYTE.....		13	24	25	29	30	31	
MG/KG.....		ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06816	07/09-7-90 #4	CONC	51.2	12200	84.3	15.6	28300	2890	13
	COMPOSITE 7/30	%REC						
		DUPL						
		OID	01250233	01250234	01250233	01250229	01250234	01250233	
06817	07/09-7-90 #5	CONC	30.1	10500	79.0	11.2	25600	1170	14
	7/30/90	%REC						
		DUPL						
		OID	01250233	01250234	01250233	01250229	01250234	01250233	
06818	07/09-7-90 #6	CONC	59.3	14300	147	6.50	21000	2450	15
	7/30/90	%REC						
		DUPL						
		OID	01250233	01250234	01250233	01250229	01250234	01250233	
06819	07/09-7-90 #7	CONC	65.6	17400	164	6.80	30600	2750	16
	7/30/90	%REC						
		DUPL						
		OID	01250233	01250234	01250233	01250229	01250234	01250233	
BL#01	METHOD BLANK	CONC	0.138	1.59	<0.011 U	<0.030 U	0.116	<0.748 U	17
		%REC	93.0	101.0	102.0	96.0	101.0	101.6	
		DUPL						
		OID	01250233	01250234	01250233	01250229	01250234	01250233	
BL#02	DUPLICATE	CONC	53.4	15700	68.4	7.79	21900	2070	18
	DIGEST (6804)	%REC						
		DUPL						
		OID	01250233	01250234	01250233	01250229	01250234	01250233	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 12 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN.....		13	14	15	16	17	18
ANALYTE.....		13	24	25	29	30	31
MG/KG.....		ZN	AL	BA	CO	FE	MG
SAMP #	DESCRIPTION						ROW
BL#03	STD. REFERENCE	CONC	1440	6280	56.9	7.30	10200	6500	19
	MAT. - NBS 1645	%REC							
		DUPL							
		OID	01250233	01250234	01250233	01250229	01250234	01250233	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 13 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....	19	20	21	22	23	24
	ANALYTE.....	32	35	67	900	901	902
	MG/KG.....	MN	NA	TP	SN	2,4-DNT	TNT
SAMP #	DESCRIPTION						ROW
06804	07/09-3-90 #1	CONC 487	96.6 B	122	37.3	<0.250 U	<0.250 U	1
	7/26/90	%REC		115.5			105.0	
		DUPL		122		<0.250 U	<0.250 U	
		OID 01250233	01250233	01400256	01250232	51960248	51960248	
06805	07/09-3-90 #2	CONC 316	116 B	119	41.9	<0.250 U	<0.250 U	2
	7/26/90	%REC						
		DUPL						
		OID 01250233	01250233	01400256	01250232	51960248	51960248	
06806	07/09-3-90 #3	CONC 368	130 B	151	46.0	<0.250 U	<0.250 U	3
	7/26/90	%REC						
		DUPL						
		OID 01250233	01250233	01400256	01250232	51960248	51960248	
06807	07/09-3-90 #4	CONC 93.1	190 B	39.3	26.6	<0.250 U	<0.250 U	4
	7/26/90	%REC						
		DUPL						
		OID 01250233	01250233	01400256	01250232	51960248	51960248	
06808	07/09-3-90 #5	CONC 236	281 B	55.8	22.1	<0.250 U	<0.250 U	5
	7/26/90	%REC						
		DUPL						
		OID 01250233	01250233	01400256	01250232	51960248	51960248	
06809	07/09-6-90 #1	CONC 55.0	<48.9 U	96.5	31.1	<0.250 U	0.147 J	6
	7/27/90	%REC						
		DUPL						
		OID 01250233	01250233	01400256	01250232	51960248	51960248	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 14 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....		19	20	21	22	23	24
	ANALYTE.....		32	35	67	900	901	902
	MG/KG.....		MN	NA	TP	SN	2,4-DNT	TNT
SAMP #	DESCRIPTION							ROW
06810	07/09-6-90 #2	CONC	1060	61.8 B	123	34.7	<0.250 U	<0.250 U	7
	7/27/90	%REC						102.0	
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
06811	07/09-6-90 #3	CONC	980	49.7 B	283	25.6	<0.250 U	<0.250 U	8
	7/27/90	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
06812	07/09-6-90 #4	CONC	1460	52.2 B	196	15.8	<0.250 U	<0.250 U	9
	7/27/90	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
06813	07/09-7-90 #1	CONC	1230	65.6 B	160	39.4	<0.250 U	<0.250 U	10
	07/30/90	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
06814	07/09-7-90 #2	CONC	1880	75.4 B	109	108	<0.250 U	<0.250 U	11
	7/30/90	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
06815	07/09/7/90 #3	CONC	423	59.3 B	89.5	24.4	<0.250 U	<0.250 U	12
	7/30/90	%REC						101.0	
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 15 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....		19	20	21	22	23	24	
	ANALYTE.....		32	35	67	900	901	902	
	MG/KG.....		MN	NA	TP	SN	2,4-DNT	TNT	
SAMP #	DESCRIPTION								ROW
06816	07/09-7-90 #4	CONC	1330	60.3 B	138	56.3	<0.250 U	<0.250 U	13
	COMPOSITE 7/30	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
06817	07/09-7-90 #5	CONC	981	54.4 B	104	21.7	<0.250 U	<0.250 U	14
	7/30/90	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
06818	07/09-7-90 #6	CONC	338	99.7 B	224	48.8	<0.250 U	<0.250 U	15
	7/30/90	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
06819	07/09-7-90 #7	CONC	260	1070 B	115	54.0	<0.250 U	<0.250 U	16
	7/30/90	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
BL#01	METHOD BLANK	CONC	<0.005 U	<0.489 U	<0.100 U	<0.076 U	<0.250 U	<0.250 U	17
		%REC	95.8	100.6		103.0			
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	
BL#02	DUPLICATE	CONC	489	101 B	95.0	36.6	N/A	N/A	18
	DIGEST (6804)	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 16 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN.....	19	20	21	22	23	24
ANALYTE.....	32	35	67	900	901	902
MG/KG.....	MN	NA	TP	SN	2,4-DNT	TNT

SAMP #	DESCRIPTION								ROW
BL#03	STD. REFERENCE	CONC	686	1090	N/A	37700	N/A	N/A	19
	MAT. - NBS 1645	%REC							
		DUPL							
		OID	01250233	01250233	01400256	01250232	51960248	51960248	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN
2,4-DNT	2,4-DNT	TNT	TNT

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 17 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....	25	26	27	28	29	30	
	ANALYTE.....	903	904	905	906	907	908	
	MG/KG.....	TETRYL	DNB	TNB	RDX	HMX	2,6 DNT	
SAMP #	DESCRIPTION							ROW
06804	07/09-3-90 #1	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	<0.260 U	1
	7/26/90	%REC 149.5		108.9				
		DUPL <0.650	<0.250 U	<0.250 U	<1.00 U	<2.20 U	<0.260 U	
		OID 51960248	51960248	51960248	51960248	51960248	51960248	
06805	07/09-3-90 #2	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	2
	7/26/90	%REC						
		DUPL						
		OID 51960248	51960248	51960248	51960248	51960248	51960248	
06806	07/09-3-90 #3	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	3
	7/26/90	%REC						
		DUPL						
		OID 51960248	51960248	51960248	51960248	51960248	51960248	
06807	07/09-3-90 #4	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	4
	7/26/90	%REC						
		DUPL						
		OID 51960248	51960248	51960248	51960248	51960248	51960248	
06808	07/09-3-90 #5	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	5
	7/26/90	%REC						
		DUPL						
		OID 51960248	51960248	51960248	51960248	51960248	51960248	
06809	07/09-6-90 #1	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	6
	7/27/90	%REC						
		DUPL						
		OID 51960248	51960248	51960248	51960248	51960248	51960248	

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX	2,6 DNT	2,6 DNT

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 18 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN.....	25	26	27	28	29	30
ANALYTE.....	903	904	905	906	907	908
MG/KG.....	TETRYL	DNB	TNB	RDX	HMX	2,6 DNT

SAMP #	DESCRIPTION								ROW
06810	07/09-6-90 #2	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	7
	7/27/90	%REC	154.0		101.0				
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
06811	07/09-6-90 #3	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	8
	7/27/90	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
06812	07/09-6-90 #4	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	9
	7/27/90	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
06813	07/09-7-90 #1	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	10
	07/30/90	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
06814	07/09-7-90 #2	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	11
	7/30/90	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
06815	07/09/7/90 #3	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	12
	7/30/90	%REC	146.7		103.0				
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX	2,6 DNT	2,6 DNT

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 19 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

	COLUMN.....		25	26	27	28	29	30	
	ANALYTE.....		903	904	905	906	907	908	
	MG/KG.....		TETRYL	DNB	TNB	RDX	HMX	2,6 DNT	
SAMP #	DESCRIPTION								ROW
06816	07/09-7-90 #4	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	13
	COMPOSITE 7/30	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
06817	07/09-7-90 #5	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	14
	7/30/90	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
06818	07/09-7-90 #6	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	15
	7/30/90	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
06819	07/09-7-90 #7	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	16
	7/30/90	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
BL#01	METHOD BLANK	CONC	<0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20	<0.260 U	17
		%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	
BL#02	DUPLICATE	CONC	N/A	N/A	N/A	N/A	N/A	N/A	18
	DIGEST (6804)	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX	2,6 DNT	2,6 DNT

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 20 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN.....	25	26	27	28	29	30
ANALYTE.....	903	904	905	906	907	908
MG/KG.....	TETRYL	DNB	TNB	RDX	HMX	2,6 DNT

SAMP #	DESCRIPTION								ROW
BL#03	STD. REFERENCE	CONC	N/A	N/A	N/A	N/A	N/A	N/A	19
	MAT. - NBS 1645	%REC							
		DUPL							
		OID	51960248	51960248	51960248	51960248	51960248	51960248	

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX	2,6 DNT	2,6 DNT

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 21 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN..... 31
ANALYTE..... 909
MG/KG..... % MOISTR

SAMP #	DESCRIPTION			ROW
06804	07/09-3-90 #1	CONC	15.2	1
	7/26/90	%REC		
		DUPL		
		OID	01150212	
06805	07/09-3-90 #2	CONC	12.5	2
	7/26/90	%REC		
		DUPL		
		OID	01150212	
06806	07/09-3-90 #3	CONC	9.0	3
	7/26/90	%REC		
		DUPL		
		OID	01150212	
06807	07/09-3-90 #4	CONC	13.5	4
	7/26/90	%REC		
		DUPL		
		OID	01150212	
06808	07/09-3-90 #5	CONC	14.9	5
	7/26/90	%REC		
		DUPL		
		OID	01150212	
06809	07/09-6-90 #1	CONC	13.6	6
	7/27/90	%REC		
		DUPL		
		OID	01150212	

% MOISTR % MOISTURE

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 22 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN..... 31
ANALYTE..... 909
MG/KG..... % MOISTR

SAMP #	DESCRIPTION			ROW
06810	07/09-6-90 #2	CONC	19.2	7
	7/27/90	%REC		
		DUPL		
		OID	01150212	
06811	07/09-6-90 #3	CONC	18.2	8
	7/27/90	%REC		
		DUPL		
		OID	01150212	
06812	07/09-6-90 #4	CONC	16.0	9
	7/27/90	%REC		
		DUPL		
		OID	01150212	
06813	07/09-7-90 #1	CONC	17.2	10
	07/30/90	%REC		
		DUPL		
		OID	01150212	
06814	07/09-7-90 #2	CONC	11.8	11
	7/30/90	%REC		
		DUPL		
		OID	01150212	
06815	07/09/7/90 #3	CONC	17.0	12
	7/30/90	%REC		
		DUPL		
		OID	01150212	

% MOISTR % MOISTURE

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 23 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN..... 31
ANALYTE..... 909
MG/KG..... % MOISTR

SAMP #	DESCRIPTION			ROW
06816	07/09-7-90 #4	CONC	18.1	13
	COMPOSITE 7/30	%REC		
		DUPL		
		OID	01150212	
06817	07/09-7-90 #5	CONC	17.4	14
	7/30/90	%REC		
		DUPL		
		OID	01150212	
06818	07/09-7-90 #6	CONC	19.9	15
	7/30/90	%REC		
		DUPL		
		OID	01150212	
06819	07/09-7-90 #7	CONC	18.7	16
	7/30/90	%REC		
		DUPL		
		OID	01150212	
BL#01	METHOD BLANK	CONC	N/A	17
		%REC		
		DUPL		
		OID	01150212	
BL#02	DUPLICATE	CONC	N/A	18
	DIGEST (6804)	%REC		
		DUPL		
		OID	01150212	

% MOISTR % MOISTURE

JOB FILE: 06804 DATE: 19 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 24 OF 24)**********

JOB DESCRIPTION: OLD RIFLE RANGE - CRANE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 30 AUG 90

COLUMN..... 31
ANALYTE..... 909
MG/KG..... % MOISTR

SAMP #	DESCRIPTION			ROW
BL#03	STD. REFERENCE	CONC	N/A	19
	MAT. - NBS 1645	%REC		
		DUPL		
		OID	01150212	

% MOISTR % MOISTURE

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/26/90 Lab Sample ID: 6823/6825

1) Analysis: METALS Date Extracted/Digested: 8/28/90

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06823 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....		1	2	3	4	5	6
ANALYTE.....		1	2	3	4	5	6
PPM.....		SB	AS	BE	CD	CR	CU
SAMP #	DESCRIPTION						ROW
06823	07/09-05-90	CONC	0.034	<0.002 U	0.005	<0.030 U	0.010 B	1
	STEAM CLEAN H2O	%REC	112.5					
		DUPL						
		OID	04350258	01250248	01250248	01250249	01250247	
06824	7/30/90	CONC	0.013	0.015	<0.005 U	0.143	0.107	2
	TIDE WATER	%REC						
		DUPL						
		OID	04350258	01250248	01250248	01250249	01250247	
06825	7/30/90	CONC	0.005	0.007	0.049	<0.030 U	0.297	3
	REINSATE	%REC						
		DUPL						
		OID	04350258	01250248	01250248	01250249	01250247	
BL#01	METHOD BLANK	CONC	<0.002 U	<0.002 U	0.005 U	<0.011 U	<0.030 U	4
		%REC						
		DUPL						
		OID	04350258	01250248	01250248	01250249	01250247	
BL#02	DUPLICATE	CONC	0.009	0.016	0.005	0.146	0.109	5
	DIGEST (06824)	%REC						
		DUPL						
		OID	04350258	01250248	01250248	01250249	01250247	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06823 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		7	8	9	10	11	12
	PPM.....		PB	HG	NI	SE	AG	TL
SAMP #	DESCRIPTION							ROW
06823	07/09-05-90	CONC	0.137	<0.0002 U	0.029 B	<0.30 UW	<0.013 U	<0.002 U	1
	STEAM CLEAN H2O	%REC		92.0				86.0	
		DUPL		<0.0004 U					
		OID	01250244	09650232	01250244	04350262	01250253	04350253	
06824	7/30/90	CONC	0.133	<0.0002 U	0.134	<0.30 UW	<0.013 U	<0.002 UW	2
	TIDE WATER	%REC							
		DUPL							
		OID	01250244	09650232	01250244	04350262	01250253	04350253	
06825	7/30/90	CONC	2.17	<0.0002 U	0.190	<0.30 UW	<0.013 U	<0.002 U	3
	REINSATE	%REC							
		DUPL							
		OID	01250244	09650232	01250244	04350262	01250253	04350253	
BL#01	METHOD BLANK	CONC	<0.0114 U	N/A	<0.011 U	<0.003 U	<0.013 U	<0.002 U	4
		%REC							
		DUPL							
		OID	01250244	09650232	01250244	04350261	01250253	04350253	
BL#02	DUPLICATE	CONC	0.158	N/A	0.144	<0.30 UW	<0.013 U	<0.002 U	5
	DIGEST (06824)	%REC							
		DUPL							
		OID	01250244	09650232	01250244	04350262	01250253	04350253	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06823 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....		13	14	15	16	17	18	
ANALYTE.....		13	24	25	29	30	31	
PPM.....		ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06823	07/09-05-90	CONC	15.3	6.66	0.117 B	0.032 B	17.4	4.80 B	1
	STEAM CLEAN H2O	%REC						
		DUPL						
		OID	01250250	01250254	01250250	01250249	01250254	01250244	
06824	7/30/90	CONC	4.44	100	0.806	0.046 B	171	16.2	2
	TIDE WATER	%REC						
		DUPL						
		OID	01250250	01250254	01250250	01250249	01250254	01250244	
06825	7/30/90	CONC	425	5.31	0.146 B	<0.030 U	120	2.76 B	3
	REINSATE	%REC						
		DUPL						
		OID	01250250	01250254	01250250	01250249	01250254	01250244	
BL#01	METHOD BLANK	CONC	0.044	0.070 B	<0.011 U	<0.030 U	0.028 B	<0.748 U	4
		%REC						
		DUPL						
		OID	01250250	01250254	01250250	01250249	01250254	01250244	
BL#02	DUPLICATE	CONC	4.56	108	0.822	0.052	176	17.0	5
	DIGEST (06824)	%REC						
		DUPL						
		OID	01250250	01250254	01250250	01250249	01250254	01250244	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06918 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 15 OF 15)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	25	26	27	28	29	
	ANALYTE.....	903	904	905	906	907	
	MG/KG.....	TETRYL	DNB	TNB	RDX	HMX	
SAMP #	DESCRIPTION						ROW
06930	07/09-10-90 #2	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	13
	8/4/90	%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	
06931	07/09-9-90 #1	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	14
	8/4/90	%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	
06932	07/09-9-90 #2	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	15
	8//4/90	%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	
BL#01	METHOD BLANK	CONC <0.650 U	<0.250 U	<0.250 U	<1.00 U	<2.20 U	16
		%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	
BL#02	DUPLICATE	CONC N/A	N/A	N/A	N/A	N/A	17
	DIGEST (06918)	%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	
BL#03	STD. REFERENCE	CONC N/A	N/A	N/A	N/A	N/A	18
	MAT. - NBS 1645	%REC					
		DUPL					
		OID 51960241	51960241	51960241	51960241	51960241	

TETRYL	TETRYL	DNB	DNB
TNB	TNB	RDX	RDX
HMX	HMX		

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 8/3/90 Lab Sample ID: 6943/6944

1) Analysis: METALS Date Extracted/Digested: N/A (H2O)

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06943 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	1	2	3	4	5	6
PPM.....	SB	AS	BE	CD	CR	CU

SAMP #	DESCRIPTION							ROW
06943	07/09-1A-90	CONC	<0.002 U	<0.002 U	<0.0044 U	<0.0114 U	<0.0059 U	1
	FINAL RINSE 8/3	%REC	105.0	108.0	91.2	90.4	100.4	
		DUPL		<0.002 U	<0.0044 U	<0.0114 U	<0.0059 U	
		OID	04350259	01250254	01250254	01250254	01250254	
06944	07/09-8-90	CONC	<0.002 U	<0.002 U	<0.0044 U	<0.0114 U	<0.0059 U	2
	RINSE 8/4/90	%REC						
		DUPL						
		OID	04350259	01250254	01250254	01250254	01250254	

SB	Antimony	AS	Arsenic
BE	Beryllium	CD	Cadmium
CR	Chromium	CU	Copper

JOB FILE: 06943 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

COLUMN.....		7	8	9	10	11	12	
ANALYTE.....		7	8	9	10	11	12	
PPM.....		PB	HG	NI	SE	AG	TL	
SAMP #	DESCRIPTION							ROW
06943	07/09-1A-90	CONC	<0.001 U	<0.0002 U	<0.011 U	<0.30 UW	<0.013 U	<0.002 U	1
	FINAL RINSE 8/3	%REC	100.0	106.0	96.4	80.0		86.0	
		DUPL		<0.0004 U	<0.011 U				
		OID	04350263	09650232	01250254	04350262	01250253	04350253	
06944	07/09-8-90	CONC	0.012	<0.0002 U	<0.011 U	<0.30 UW	<0.013 U	<0.002 U	2
	RINSE 8/4/90	%REC							
		DUPL							
		OID	04350263	09650232	01250254	04350262	01250253	04350253	

PB	Lead	HG	Mercury
NI	Nickel	SE	Selenium
AG	Silver	TL	Thallium

JOB FILE: 06943 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

COLUMN.....		13	14	15	16	17	18	
ANALYTE.....		13	24	25	29	30	31	
PPM.....		ZN	AL	BA	CO	FE	MG	
SAMP #	DESCRIPTION							ROW
06943	07/09-1A-90	CONC	0.206	0.588	0.0245	<0.030 U	1.23	3.60 B	1
	FINAL RINSE 8/3	%REC	96.8			94.6		102.2	
		DUPL	0.176		0.0275	<0.030 U		3.48 B	
		OID	01250254	01250254	01250255	01250255	01250254	01250255	
06944	07/09-8-90	CONC	0.085	0.661	0.0263	<0.030 U	0.193	4.06 B	2
	RINSE 8/4/90	%REC							
		DUPL							
		OID	01250254	01250254	01250255	01250255	01250254	01250255	

ZN	Zinc	AL	Aluminum
BA	Barium	CO	Cobalt
FE	Iron	MG	Magnesium

JOB FILE: 06943 DATE: 25 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 4)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

COLUMN.....	19	20	21	22
ANALYTE.....	32	35	67	900
PPM.....	MN	NA	TP	SN

SAMP #	DESCRIPTION						ROW
06943	07/09-1A-90	CONC	0.007 B	4.20 B	IS #1	<0.076 U	1
	FINAL RINSE 8/3	%REC	100.8	95.0			
		DUPL	<0.005 U	4.17 B			
		OID	01250254	01250255	01400262	01250253	
06944	07/09-8-90	CONC	0.017	4.16 B	<0.050 U	<0.076 U	2
	RINSE 8/4/90	%REC			85.5		
		DUPL			0.081		
		OID	01250254	01250255	01400262	01250253	

MN	Manganese	NA	Sodium
TP	Total Phosphorus	SN	TIN

FOOTNOTES:
#1 Insufficient sample.

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/24/90 Lab Sample ID: 6766

1) Analysis: VOLATILES Date Extracted/Digested: 8/30/90

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

JOB FILE: 06766 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 AUG 90

	COLUMN.....		1	2	3	4	5	6	
	ANALYTE.....		183	184	185	186	187	188	
	MG/KG.....		ClMETH	BrMETH	VNLCL	ClETHA	MECL	11DClETE	
SAMP #	DESCRIPTION								ROW
06766	07/09-4-90 #5V	CONC	<0.011	<0.011	<0.011	<0.011	0.12	<0.0057	1
	7/24/90	%REC							
		DUPL							
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.010	<0.010	<0.010	<0.010	0.022	<0.0050	2
		%REC							
		DUPL							
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

ClMETH Chloromethane
VNLCL Vinyl Chloride
MECL Methylene Chloride
BrMETH Bromomethane
ClETHA Chloroethane
11DClETE 1,1-Dichloroethene

JOB FILE: 06766 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 AUG 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		189	190	191	192	193	194
	MG/KG.....		11DCLETA	t-DCLETE	c-DCLETE	CHCL3	12DCLETA	111TCA
SAMP #	DESCRIPTION							ROW
06766	07/09-4-90 #5V	CONC	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	1
	7/24/90	%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211
BL#01	METHOD BLANK	CONC	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	2
		%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211

11DCLETA 1,1-Dichloroethane
c-DCLETE cis-1,2-Dichloroethene
12DCLETA 1,2-Dichloroethane
t-DCLETE Trans-1,2-Dichloroethene
CHCL3 Chloroform
111TCA 1,1,1-Trichloroethane

JOB FILE: 06766 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 AUG 90

COLUMN.....			13	14	15	16	17	18
ANALYTE.....			195	196	197	198	199	200
MG/KG.....			CCL4	BrDClME	12DClPR	t13ClPRE	TCE	DBrClME
SAMP #	DESCRIPTION							ROW
06766	07/09-4-90 #5V	CONC	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	1
	7/24/90	%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	2
		%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

CCL4 Carbon Tetrachloride
12DClPR 1,2-Dichloropropane
TCE Trichloroethene
BrDClME Bromodichloromethane
t13ClPRE Trans-1,3-Dichloropropene
DBrClME Dibromochloromethane

JOB FILE: 06766 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 AUG 90

	COLUMN.....		19	20	21	22	23	24
	ANALYTE.....		201	202	203	205	206	207
	MG/KG.....		c13ClPRE	112TCA	BENZENE	CHBr3	1122TClA	TEClETE
SAMP #	DESCRIPTION							ROW
06766	07/09-4-90 #5V	CONC	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	1
	7/24/90	%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	2
		%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

c13ClPRE Cis-1,3-Dichloropropene
BENZENE Benzene
1122TClA 1,1,2,2-Tetrachloroethane
112TCA 1,1,2-Trichloroethane
CHBr3 Bromoform
TEClETE Tetrachloroethene

JOB FILE: 06766 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 AUG 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		208	209	210	213	214	215
	MG/KG.....		TOLUENE	ClBEN	ETBEN	ACETONE	BUTANO	CS2
SAMP #	DESCRIPTION							ROW
06766	07/09-4-90 #5V	CONC	<0.0057	<0.0057	<0.0057	0.016 J #1	<0.11	<0.0057	1
	7/24/90	%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211
BL#01	METHOD BLANK	CONC	<0.0050	<0.0050	<0.0050	<0.10	<0.10	<0.0050	2
		%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211

TOLUENE	Toluene	ClBEN	Chlorobenzene
ETBEN	Ethylbenzene	ACETONE	Acetone
BUTANO	2-Butanone	CS2	Carbondisulfide

FOOTNOTES:
#1 J indicates value below statistical quantitation limits.

JOB FILE: 06766 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 AUG 90

	COLUMN.....		31	32	33	34	35	36
	ANALYTE.....		216	217	218	219	220	221
	MG/KG.....		2HEXANO	4Me2PE	STYRENE	VNACETA	T-XYLENE	12DClE-S
SAMP #	DESCRIPTION							ROW
06766	07/09-4-90 #5V	CONC	<0.057	<0.057	<0.0057	<0.057	<0.0057	85.4%	1
	7/24/90	%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.050	<0.050	<0.0050	<0.050	<0.0050	97.9%	2
		%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

2HEXANO 2-Hexanone
STYRENE Styrene
T-XYLENE T-Xylene
4Me2PE 4-Methyl-2-Pentanone
VNACETA Vinyl Acetate
12DClE-S 1,2-Dichloroethane-d4(Surrogate (76-114))

JOB FILE: 06766 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 AUG 90

COLUMN.....		37	38	39	
ANALYTE.....		222	223	900	
MG/KG.....		TOL-d8-S	4BrFB-S	% MOISTR	
SAMP #	DESCRIPTION				ROW
06766	07/09-4-90 #5V	CONC	91.3%	93.0%	15.5	1
	7/24/90	%REC				
		DUPL				
		OID	08930211	08930211	08150211	
BL#01	METHOD BLANK	CONC	103%	107%	N/A	2
		%REC				
		DUPL				
		OID	08930211	08930211	08150211	

TOL-d8-S Toluene-D8(Surrogate (88-110)) 4BrFB-S 4-Bromofluorobenzene(Surrogate (86-115))
% MOISTR % MOISTURE

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

7/09-4-90-5

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) _____ Lab Sample ID: 6766

Sample wt/vol: X (g/mL) ____ Lab File ID: _____

Level: (low/med) _____ Date Received: 7/27/90

% Moisture: not dec. 84.5% Date Analyzed: 7/30/90

Column: (pack/cap) _____ Dilution Factor: _____

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	—	unknown	5.34	6.8	—
2.	16745941	3,4-dimethyl-1-hexene	5.89	19	30
3.	96377	methylcyclopentane	7.82	67	67
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

Revision 1
December 1987

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/25/90 Lab Sample ID: 6769

1) Analysis: VOLATILES Date Extracted/Digested: N/A (H2O)

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06769 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	183	184	185	186	187	188
PPM.....	ClMETH	BrMETH	VNLCL	ClETHA	MECL	11DClETE

SAMP #	DESCRIPTION								ROW
06769	RESINATE	CONC	<0.010	<0.010	<0.010	<0.010	0.0040 J #1	<0.005	1
	7/24/90	%REC							
		DUPL	<0.010	<0.010	<0.010	<0.010	0.0074	<0.005	
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.010	<0.010	<0.010	<0.010	0.022	<0.005	2
		%REC							
		DUPL							
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

ClMETH	Chloromethane	BrMETH	Bromomethane
VNLCL	Vinyl Chloride	ClETHA	Chloroethane
MECL	Methylene Chloride	11DClETE	1,1-Dichloroethene

FOOTNOTES:
#1 J indicates value below statistical quantitation limits

JOB FILE: 06769 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

	COLUMN.....		7	8	9	10	11	12	
	ANALYTE.....		189	190	191	192	193	194	
	PPM.....		11DCLETA	t-DCLETE	c-DCLETE	CHCL3	12DCLETA	111TCA	
SAMP #	DESCRIPTION								ROW
06769	RESINATE	CONC	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	1
	7/24/90	%REC							
		DUPL	<0.005	<0.005	<0.005	0.0099	<0.005	<0.005	
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2
		%REC							
		DUPL							
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

11DCLETA 1,1-Dichloroethane
c-DCLETE cis-1,2-Dichloroethene
12DCLETA 1,2-Dichloroethane
t-DCLETE Trans-1,2-Dichloroethene
CHCL3 Chloroform
111TCA 1,1,1-Trichloroethane

JOB FILE: 06769 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

	COLUMN.....	13	14	15	16	17	18	
	ANALYTE.....	195	196	197	198	199	200	
	PPM.....	CCL4	BrDClME	12DClPR	t13ClPRE	TCE	DBrClME	
SAMP #	DESCRIPTION							ROW
06769	RESINATE	CONC	<0.005	0.0007 J #1	<0.005	<0.005	<0.005	1
	7/24/90	%REC						
		DUPL	<0.005	0.0012 J	<0.005	<0.005	<0.005	
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.002	<0.005	<0.005	<0.005	2
		%REC						
		DUPL						
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

CCL4 Carbon Tetrachloride
12DClPR 1,2-Dichloropropane
TCE Trichloroethene
BrDClME Bromodichloromethane
t13ClPRE Trans-1,3-Dichloropropene
DBrClME Dibromochloromethane

FOOTNOTES:
#1 J indicates value below statistical quantitation limits

JOB FILE: 06769 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....		19	20	21	22	23	24	
ANALYTE.....		201	202	203	205	206	207	
PPM.....		c13ClPRE	112TCA	BENZENE	CHBr3	1122TClA	TEClETE	
SAMP #	DESCRIPTION							ROW
06769	RESINATE	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1
	7/24/90	%REC							
		DUPL	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2
		%REC							
		DUPL							
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

c13ClPRE Cis-1,3-Dichloropropene
BENZENE Benzene
1122TClA 1,1,2,2-Tetrachloroethane
112TCA 1,1,2-Trichloroethane
CHBr3 Bromoform
TEClETE Tetrachloroethene

JOB FILE: 06769 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

	COLUMN.....	25	26	27	28	29	30	
	ANALYTE.....	208	209	210	213	214	215	
	PPM.....	TOLUENE	ClBEN	ETBEN	ACETONE	BUTANO	CS2	
SAMP #	DESCRIPTION							ROW
06769	RESINATE	CONC	<0.005	<0.005	<0.005	<0.100	<0.100	<0.005	1
	7/24/90	%REC							
		DUPL	<0.005	<0.005	<0.005	<0.100	<0.100	<0.005	
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.100	<0.100	<0.005	2
		%REC							
		DUPL							
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

TOLUENE	Toluene	ClBEN	Chlorobenzene
ETBEN	Ethylbenzene	ACETONE	Acetone
BUTANO	2-Butanone	CS2	Carbondisulfide

JOB FILE: 06769 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....		31	32	33	34	35	36
ANALYTE.....		216	217	218	219	220	221
PPM.....		2HEXANO	4Me2PE	STYRENE	VNACETA	T-XYLENE	12DClE-S
SAMP #	DESCRIPTION						ROW
06769	RESINATE	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	93.1%	1
	7/24/90	%REC							
		DUPL	<0.050	<0.050	<0.005	<0.050	<0.005	95.5%	
		OID	08930211	08930211	08930211	08930211	08930211	08930211	
BL#01	METHOD BLANK	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	97.9%	2
		%REC							
		DUPL							
		OID	08930211	08930211	08930211	08930211	08930211	08930211	

2HEXANO 2-Hexanone
STYRENE Styrene
T-XYLENE T-Xylene
4Me2PE 4-Methyl-2-Pentanone
VNACETA Vinyl Acetate
12DClE-S 1,2-Dichloroethane-d4(Surrogate (76-114))

JOB FILE: 06769 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....	37	38
ANALYTE.....	222	223
PPM.....	TOL-d8-S	4BrFB-S

SAMP #	DESCRIPTION				ROW
06769	RESINATE	CONC	102%	89.7%	1
	7/24/90	%REC			
		DUPL	100%	91.7%	
		OID	08930211	08930211	
BL#01	METHOD BLANK	CONC	103%	107%	2
		%REC			
		DUPL			
		OID	08930211	08930211	

TOL-d8-S Toluene-D8(Surrogate (88-110)) 4BrFB-S 4-Bromofluorobenzene(Surrogate (86-115))

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RINSATE 7/24/90

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/mL) X Lab File ID: ~~6766~~ 6769

Level: (low/med) _____ Date Received: 7/27/90

% Moisture: not dec. _____ Date Analyzed: 7/30/90

Column: (pack/cap) _____ Dilution Factor: _____

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	—	unknown	6.71	26	—
2.	922678	2-Propynoic acid, methyl este	7.82	10	27
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
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20.					
21.					
22.					
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24.					
25.					
26.					
27.					
28.					
29.					
30.					

Revision 1
December 1987

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/31/90 Lab Sample ID: 6889/6892

1) Analysis: VOLATILES Date Extracted/Digested: N/A (H2O)

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06889 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 17 AUG 90

COLUMN.....		1	2	3	4	5	6	
ANALYTE.....		183	184	185	186	187	188	
PPM.....		ClMETH	BrMETH	VNLCL	ClETHA	MECL	11DClETE	
SAMP #	DESCRIPTION							ROW
06889	07/09-7-90	CONC	<0.010	<0.010	<0.010	<0.010	0.033 B	<0.010	1
	FINAL RINSE	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06890	07/09-11-90	CONC	<0.010	<0.010	<0.010	<0.010	0.0096 B	<0.010	2
	FINAL RINSE	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06891	07/09-2-90	CONC	<0.010	<0.010	<0.010	<0.010	0.012 B	<0.010	3
	FINAL RINSE	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06892	TRIP BLANK	CONC	<0.010	<0.010	<0.010	<0.010	0.019 B	<0.010	4
	FROM LAB	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
BL#01	METHOD BLANK	CONC	<0.010	<0.010	<0.010	<0.010	0.0094 B	<0.010	5
		%REC						89.0	
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	

ClMETH Chloromethane
VNLCL Vinyl Chloride
MECL Methylene Chloride
BrMETH Bromomethane
ClETHA Chloroethane
11DClETE 1,1-Dichloroethene

JOB FILE: 06889 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 17 AUG 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		189	190	191	192	193	194
	PPM.....		11DCLETA	t-DCLETE	c-DCLETE	CHCL3	12DCLETA	111TCA
SAMP #	DESCRIPTION							ROW
06889	07/09-7-90	CONC	<0.005	<0.005	<0.005	0.010	<0.005	<0.005	1
	FINAL RINSE	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06890	07/09-11-90	CONC	<0.005	<0.005	<0.005	0.012	<0.005	<0.005	2
	FINAL RINSE	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06891	07/09-2-90	CONC	<0.005	<0.005	<0.005	0.010	<0.005	<0.005	3
	FINAL RINSE	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06892	TRIP BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
	FROM LAB	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	5
		%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	

11DCLETA 1,1-Dichloroethane
c-DCLETE cis-1,2-Dichloroethene
12DCLETA 1,2-Dichloroethane
t-DCLETE Trans-1,2-Dichloroethene
CHCL3 Chloroform
111TCA 1,1,1-Trichloroethane

JOB FILE: 06889 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 17 AUG 90

	COLUMN.....	13	14	15	16	17	18	
	ANALYTE.....	195	196	197	198	199	200	
	PPM.....	CCL4	BrDClME	12DClPR	t13ClPRE	TCE	DBrClME	
SAMP #	DESCRIPTION							ROW
06889	07/09-7-90	CONC	<0.005	0.0015 J #1	<0.005	<0.005	<0.005	<0.005	1
	FINAL RINSE	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06890	07/09-11-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2
	FINAL RINSE	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06891	07/09-2-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
	FINAL RINSE	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06892	TRIP BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
	FROM LAB	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	5
		%REC					90.4		
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218	

CCL4	Carbon Tetrachloride	BrDClME	Bromodichloromethane
12DClPR	1,2-Dichloropropane	t13ClPRE	Trans-1,3-Dichloropropene
TCE	Trichloroethene	DBrClME	Dibromochloromethane

FOOTNOTES:
#1 J indicates value below statistical quantitation limits.

JOB FILE: 06889 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 17 AUG 90

	COLUMN.....		19	20	21	22	23	24	
	ANALYTE.....		201	202	203	205	206	207	
	PPM.....		c13ClPRE	112TCA	BENZENE	CHBr3	1122TClA	TEClETE	
SAMP #	DESCRIPTION								ROW
06889	07/09-7-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1
	FINAL RINSE	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06890	07/09-11-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2
	FINAL RINSE	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06891	07/09-2-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
	FINAL RINSE	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
06892	TRIP BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
	FROM LAB	%REC							
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	5
		%REC			102.4				
		DUPL							
		OID	08930218	08930218	08930218	08930218	08930218	08930218	

c13ClPRE Cis-1,3-Dichloropropene
BENZENE Benzene
1122TClA 1,1,2,2-Tetrachloroethane
112TCA 1,1,2-Trichloroethane
CHBr3 Bromoform
TEClETE Tetrachloroethene

JOB FILE: 06889 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (NAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 17 AUG 90

COLUMN.....		25	26	27	28		29	30
ANALYTE.....		208	209	210	213		214	215
PPM.....		TOLUENE	ClBEN	ETBEN	ACETONE		BUTANO	CS2
SAMP #	DESCRIPTION							ROW
06889	07/09-7-90	CONC	<0.005	<0.005	<0.005	0.005 J #1	<0.10	<0.005 1
	FINAL RINSE	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218
06890	07/09-11-90	CONC	<0.005	<0.005	<0.005	0.012 J #1	<0.10	<0.005 2
	FINAL RINSE	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218
06891	07/09-2-90	CONC	<0.005	<0.005	<0.005	0.010 J #1	<0.10	<0.005 3
	FINAL RINSE	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218
06892	TRIP BLANK	CONC	<0.005	<0.005	<0.005	0.011 J #1	<0.10	<0.005 4
	FROM LAB	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.10	<0.10	<0.005 5
		%REC	101.0	100.0				
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218

TOLUENE Toluene
ETBEN Ethylbenzene
BUTANO 2-Butanone
ClBEN Chlorobenzene
ACETONE Acetone
CS2 Carbondisulfide

FOOTNOTES:
#1 J indicates value below statistical quantitation limits.

JOB FILE: 06889 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 17 AUG 90

	COLUMN.....		31	32	33	34	35	36
	ANALYTE.....		216	217	218	219	220	221
	PPM.....		2HEXANO	4Me2PE	STYRENE	VNACETA	T-XYLENE	12DClE-S
SAMP #	DESCRIPTION							ROW
06889	07/09-7-90	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	104% 1
	FINAL RINSE	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218
06890	07/09-11-90	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	103% 2
	FINAL RINSE	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218
06891	07/09-2-90	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	102% 3
	FINAL RINSE	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218
06892	TRIP BLANK	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	96.3% 4
	FROM LAB	%REC						
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218
BL#01	METHOD BLANK	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	111% 5
		%REC						103
		DUPL						
		OID	08930218	08930218	08930218	08930218	08930218	08930218

2HEXANO 2-Hexanone
STYRENE Styrene
T-XYLENE T-Xylene
4Me2PE 4-Methyl-2-Pentanone
VNACETA Vinyl Acetate
12DClE-S 1,2-Dichloroethane-d4(Surrogate (76-114))

JOB FILE: 06889 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 17 AUG 90

COLUMN.....	37	38
ANALYTE.....	222	223
PPM.....	TOL-d8-S	4BrFB-S

SAMP #	DESCRIPTION				ROW
06889	07/09-7-90	CONC	100%	99.8%	1
	FINAL RINSE	%REC			
		DUPL			
		OID	08930218	08930218	
06890	07/09-11-90	CONC	101%	103%	2
	FINAL RINSE	%REC			
		DUPL			
		OID	08930218	08930218	
06891	07/09-2-90	CONC	101%	101%	3
	FINAL RINSE	%REC			
		DUPL			
		OID	08930218	08930218	
06892	TRIP BLANK	CONC	98.5%	98.3%	4
	FROM LAB	%REC			
		DUPL			
		OID	08930218	08930218	
BL#01	METHOD BLANK	CONC	102%	93.0%	5
		%REC	101	94.4	
		DUPL			
		OID	08930218	08930218	

TOL-d8-S Toluene-D8(Surrogate (88-110)) 4BrFB-S 4-Bromofluorobenzene(Surrogate (86-115))

RK

JOB FILE: 06933 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 16 AUG 90

	COLUMN.....		1	2	3	4	5	6	
	ANALYTE.....		183	184	185	186	187	188	
	MG/KG.....		ClMETH	BrMETH	VNLCL	ClETHA	MECL	11DClETE	
SAMP #	DESCRIPTION								ROW
06933	07/09-12-90 #4V	CONC	<0.012 U	<0.012 U	<0.012 U	<0.012 U	0.23 B	<0.0061 U	1
	8/2/90	%REC							
		DUPL	<0.012 U	<0.012 U	<0.012 U	<0.012 U	0.43 B	<0.0061 U	
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06934	07/09-8-90 #2V	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	0.106 B	<0.0057 U	2
	8/3/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06935	07/09-1A-90 #5V	CONC	<0.012 U	<0.012 U	<0.012 U	<0.012 U	0.099 B	<0.0058 U	3
	8/3/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06936	07/09-10-90 #2V	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	0.13 B	<0.0057 U	4
	8/4/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06937	07/09-9-90 #2V	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	0.41 B	<0.0057 U	5
	8/4/90	%REC							
		DUPL	<0.045 U	<0.045 U	<0.045 U	<0.045 U	1.1 B	<0.022 U	
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	<0.010 U	<0.010 U	0.009	<0.005 U	6
		%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	

ClMETH Chloromethane
VNLCL Vinyl Chloride
MECL Methylene Chloride
BrMETH Bromomethane
ClETHA Chloroethane
11DClETE 1,1-Dichloroethene

JOB FILE: 06933 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 16 AUG 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		189	190	191	192	193	194
	MG/KG.....		11DCLETA	t-DCLETE	c-DCLETE	CHCL3	12DCLETA	111TCA
SAMP #	DESCRIPTION							ROW
06933	07/09-12-90 #4V	CONC	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	1
	8/2/90	%REC						
		DUPL	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U
		OID	08930221	08930221	08930221	08930221	08930221	08930221
06934	07/09-8-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	2
	8/3/90	%REC						
		DUPL						
		OID	08930221	08930221	08930221	08930221	08930221	08930221
06935	07/09-1A-90 #5V	CONC	<0.0058 U	<0.0058 U	<0.0058 U	<0.0058 U	<0.0058 U	<0.0058 U	3
	8/3/90	%REC						
		DUPL						
		OID	08930221	08930221	08930221	08930221	08930221	08930221
06936	07/09-10-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	4
	8/4/90	%REC						
		DUPL						
		OID	08930221	08930221	08930221	08930221	08930221	08930221
06937	07/09-9-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	5
	8/4/90	%REC						
		DUPL	<0.022 U	<0.022 U	<0.022 U	<0.022 U	<0.022 U	<0.022 U
		OID	08930221	08930221	08930221	08930221	08930221	08930221
BL#01	METHOD BLANK	CONC	<0.005 U	<0.005 U	<0.005 U	<0.005 U	<0.005 U	<0.005 U	6
		%REC						
		DUPL						
		OID	08930221	08930221	08930221	08930221	08930221	08930221

11DCLETA 1,1-Dichloroethane
c-DCLETE cis-1,2-Dichloroethene
12DCLETA 1,2-Dichloroethane
t-DCLETE Trans-1,2-Dichloroethene
CHCL3 Chloroform
111TCA 1,1,1-Trichloroethane

JOB FILE: 06933 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 16 AUG 90

	COLUMN.....		13	14	15	16	17	18	
	ANALYTE.....		195	196	197	198	199	200	
	MG/KG.....		CCL4	BrDClME	12DClPR	t13ClPRE	TCE	DBrClME	
SAMP #	DESCRIPTION								ROW
06933	07/09-12-90 #4V	CONC	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	1
	8/2/90	%REC							
		DUPL	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06934	07/09-8-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	2
	8/3/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06935	07/09-1A-90 #5V	CONC	<0.0058 U	<0.0058 U	<0.0058 U	<0.0058 U	<0.0058 U	<0.0058 U	3
	8/3/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06936	07/09-10-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	4
	8/4/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06937	07/09-9-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	5
	8/4/90	%REC							
		DUPL	<0.022 U	<0.022 U	<0.022 U	<0.022 U	<0.022 U	<0.022 U	
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
BL#01	METHOD BLANK	CONC	<0.005 U	<0.005 U	<0.005 U	<0.005 U	<0.005 U	<0.005 U	6
		%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	

CCL4 Carbon Tetrachloride
12DClPR 1,2-Dichloropropane
TCE Trichloroethene
BrDClME Bromodichloromethane
t13ClPRE Trans-1,3-Dichloropropene
DBrClME Dibromochloromethane

JOB FILE: 06933 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 16 AUG 90

	COLUMN.....		19	20	21	22	23	24	
	ANALYTE.....		201	202	203	205	206	207	
	MG/KG.....		c13ClPRE	112TCA	BENZENE	CHBr3	1122TClA	TEClETE	
SAMP #	DESCRIPTION								ROW
06933	07/09-12-90 #4V	CONC	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	1
	8/2/90	%REC							
		DUPL	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	<0.0061 U	
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06934	07/09-8-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	2
	8/3/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06935	07/09-1A-90 #5V	CONC	<0.0058 U	<0.0058 U	<0.0058 U	<0.0058 U	<0.0058 U	<0.0058 U	3
	8/3/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06936	07/09-10-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	4
	8/4/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06937	07/09-9-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	<0.0057 U	5
	8/4/90	%REC							
		DUPL	<0.022 U	<0.022 U	<0.022 U	<0.022 U	<0.022 U	<0.022 U	
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
BL#01	METHOD BLANK	CONC	<0.005 U	<0.005 U	<0.005 U	<0.005 U	<0.005 U	<0.005 U	6
		%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	

c13ClPRE Cis-1,3-Dichloropropene
BENZENE Benzene
1122TClA 1,1,2,2-Tetrachloroethane
112TCA 1,1,2-Trichloroethane
CHBr3 Bromoform
TEClETE Tetrachloroethene

JOB FILE: 06933 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 16 AUG 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		208	209	210	213	214	215
	MG/KG.....		TOLUENE	ClBEN	ETBEN	ACETONE	BUTANO	CS2
SAMP #	DESCRIPTION							ROW
06933	07/09-12-90 #4V	CONC	<0.0061 U	<0.0061 U	<0.0061 U	0.018 BJ	<0.12 U	<0.0061 U	1
	8/2/90	%REC						
		DUPL	<0.0061 U	<0.0061 U	<0.0061 U	0.061 BJ	<0.12 U	<0.0061 U
		OID	08930221	08930221	08930221	08930221	08930221	08930221
06934	07/09-8-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	0.089 BJ	0.044 J	<0.0057 U	2
	8/3/90	%REC						
		DUPL						
		OID	08930221	08930221	08930221	08930221	08930221	08930221
06935	07/09-1A-90 #5V	CONC	<0.0058 U	<0.0058 U	<0.0058 U	0.027 BJ	<0.12 U	<0.0058 U	3
	8/3/90	%REC						
		DUPL						
		OID	08930221	08930221	08930221	08930221	08930221	08930221
06936	07/09-10-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	0.061 BJ	0.020 J	<0.0057 U	4
	8/4/90	%REC						
		DUPL						
		OID	08930221	08930221	08930221	08930221	08930221	08930221
06937	07/09-9-90 #2V	CONC	<0.0057 U	<0.0057 U	<0.0057 U	0.082 BJ	0.029 J	<0.0057 U	5
	8/4/90	%REC						
		DUPL	<0.022 U	<0.022 U	<0.022 U	0.17 BJ	<0.45 U	<0.022 U
		OID	08930221	08930221	08930221	08930221	08930221	08930221
BL#01	METHOD BLANK	CONC	<0.005 U	<0.005 U	<0.005 U	0.0083 J	<0.10 U	<0.005 U	6
		%REC						
		DUPL						
		OID	08930221	08930221	08930221	08930221	08930221	08930221

TOLUENE Toluene
ETBEN Ethylbenzene
BUTANO 2-Butanone
ClBEN Chlorobenzene
ACETONE Acetone
CS2 Carbondisulfide

JOB FILE: 06933 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 16 AUG 90

		COLUMN.....	31	32	33	34	35	36	
		ANALYTE.....	216	217	218	219	220	221	
		MG/KG.....	2HEXANO	4Me2PE	STYRENE	VNACETA	T-XYLENE	12DClE-S	
SAMP #	DESCRIPTION								ROW
06933	07/09-12-90 #4V	CONC	<0.061 U	<0.061 U	<0.0061 U	<0.061 U	<0.0061 U	103%	1
	8/2/90	%REC							
		DUPL	<0.061 U	<0.061 U	<0.0061 U	<0.061 U	<0.0061 U	101%	
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06934	07/09-8-90 #2V	CONC	<0.057 U	<0.057 U	<0.0057 U	<0.057 U	<0.0057 U	104%	2
	8/3/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06935	07/09-1A-90 #5V	CONC	<0.058 U	<0.058 U	<0.0058 U	<0.058 U	<0.0058 U	109%	3
	8/3/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06936	07/09-10-90 #2V	CONC	<0.057 U	<0.057 U	<0.0057 U	<0.057 U	<0.0057 U	121%	4
	8/4/90	%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
06937	07/09-9-90 #2V	CONC	<0.057 U	<0.057 U	<0.0057 U	<0.057 U	<0.0057 U	112%	5
	8/4/90	%REC							
		DUPL	<0.22 U	<0.22 U	<0.022 U	<0.22 U	<0.022 U	116%	
		OID	08930221	08930221	08930221	08930221	08930221	08930221	
BL#01	METHOD BLANK	CONC	<0.050 U	<0.050 U	<0.005 U	<0.050 U	<0.005 U	98.4%	6
		%REC							
		DUPL							
		OID	08930221	08930221	08930221	08930221	08930221	08930221	

2HEXANO 2-Hexanone
STYRENE Styrene
T-XYLENE T-Xylene
4Me2PE 4-Methyl-2-Pentanone
VNACETA Vinyl Acetate
12DClE-S 1,2-Dichloroethane-d4(Surrogate (70-121))

JOB FILE: 06933 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 16 AUG 90

COLUMN.....	37	38	39
ANALYTE.....	222	223	900
MG/KG.....	TOL-d8-S	4BrFB-S	% MOISTR

SAMP #	DESCRIPTION					ROW
06933	07/09-12-90 #4V	CONC	98.7%	84.8%	19.1	1
	8/2/90	%REC				
		DUPL	94.4%	108%		
		OID	08930221	08930221	08150219	
06934	07/09-8-90 #2V	CONC	93.9%	90.5%	12.9	2
	8/3/90	%REC				
		DUPL				
		OID	08930221	08930221	08150219	
06935	07/09-1A-90 #5V	CONC	96.1%	107%	14.5	3
	8/3/90	%REC				
		DUPL				
		OID	08930221	08930221	08150219	
06936	07/09-10-90 #2V	CONC	99.0%	99.8%	13.8	4
	8/4/90	%REC				
		DUPL				
		OID	08930221	08930221	08150219	
06937	07/09-9-90 #2V	CONC	101%	94.4%	12.7	5
	8/4/90	%REC				
		DUPL	101%	95.1%		
		OID	08930221	08930221	08150219	
BL#01	METHOD BLANK	CONC	100%	98.4%	N/A	6
		%REC				
		DUPL				
		OID	08930221	08930221	08150219	

TOL-d8-S Toluene-D8(Surrogate (88-110)) 4BrFB-S 4-Bromofluorobenzene(Surrogate (86-115))
% MOISTR % MOISTURE

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
07/09-12-90 #4 U

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/2/90

Matrix: (soil/water) _____ Lab Sample ID: 6933

Sample (wt/vol: 5.08 (g/mL) _____ Lab File ID: 7V1815

Level: (low/med) _____ Date Received: 7 Aug 90

% Moisture: not dec. 11.1 Date Analyzed: 9 Aug 90

Column: (pack/cap) _____ Dilution Factor: _____

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.73	16	—
2. —	unknown	5.66	12	—
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
07/09-8-90 #2V

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/3/90

Matrix: (soil/water) _____ Lab Sample ID: 6934

Sample wt/vol: 5.08 (g/mL) _____ Lab File ID: 2U1816

Level: (low/med) _____ Date Received: 7 Aug 90

% Moisture: not dec. 12.9 Date Analyzed: 9 Aug 90

Column: (pack/cap) _____ Dilution Factor: 1

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 105419	4-methylhexanoic	0.87	190	49
2. 108098	4-methylpentanamine	1.11	350	48
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-1A-90 #5 U

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/3/90

Matrix: (soil/water) _____ Lab Sample ID: 6935

Sample wt/vol: 5.01 (g/mL) _____ Lab File ID: 7V1817

Level: (low/med) _____ Date Received: 7 Aug 90

% Moisture: not dec. 14.5 Date Analyzed: 9 Aug 90

Column: (pack/cap) _____ Dilution Factor: —

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 105419	4-methyl-2-hexanone	1.08	44	49
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
07/09-10-90#2U

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/4/90

Matrix: (soil/water) _____ Lab Sample ID: 6936

Sample wt/vol: 5.05 (g/mL) _____ Lab File ID: ~~6936~~ >U1818

Level: (low/med) _____ Date Received: 7 Aug 90

% Moisture: not dec. 13.8 Date Analyzed: 9 Aug 90

Column: (pack/cap) _____ Dilution Factor: —

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 108098	4-methyl-2-pentanone	0.78	33	48
2. —	unknown	1.09	550	—
3. —	unknown	5.66	5.7	—
4. —	2-methyl-1,3-propanediol	6.79	8.0	11
5.				
6.				
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
07/09-9-90 #2V

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/4/90

Matrix: (soil/water) _____ Lab Sample ID: 6937

Sample (wt/vol: 5.00 (g/mL) _____ Lab File ID: >V1819

Level: (low/med) – Date Received: 7Aug 90

% Moisture: not dec. 12.7 Date Analyzed: 9Aug 90

Column: (pack/cap) _____ Dilution Factor: —

Number TICs found: 3 CONCENTRATION UNITS: (ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 105419	4-methyl-2-hexanamine	1.08	210	49
2. —	unknown	5.90	13	—
3. 96140	3-methylpentane	6.80	30	52
4.				
5.				
6.				
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Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/31/90 Lab Sample ID: 6887/6888

1) Analysis: VOLATILES Date Extracted/Digested: 8/7/90

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/26/90 Lab Sample ID: 6820/6822

1) Analysis: VOLATILES Date Extracted/Digested: 8/2/90

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06820 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 11 AUG 90

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	183	184	185	186	187	188
MG/KG.....	ClMETH	BrMETH	VNLCL	ClETHA	MECL	11DClETE

SAMP #	DESCRIPTION								ROW
06820	07/09-3-90 #5V	CONC	<0.01	<0.01	<0.01	<0.01	0.049 B	<0.005	1
	07/26/90	%REC							
		DUPL							
		OID	08930214	08930214	08930214	08930214	08930214	08930214	
06821	07/09-6-90 #4V	CONC	<0.01	<0.01	<0.01	<0.01	0.102 B	<0.005	2
		%REC							
		DUPL							
		OID	08930214	08930214	08930214	08930214	08930214	08930214	
06822	07/09-7-90 #6V	CONC	<0.01	<0.01	<0.01	<0.01	0.179 B	<0.005	3
		%REC							
		DUPL							
		OID	08930214	08930214	08930214	08930214	08930214	08930214	
BL#01	METHOD BLANK	CONC	<0.01	<0.01	<0.01	<0.01	0.022	<0.005	4
		%REC							
		DUPL							
		OID	08930214	08930214	08930214	08930214	08930214	08930214	

ClMETH Chloromethane
VNLCL Vinyl Chloride
MECL Methylene Chloride
BrMETH Bromomethane
ClETHA Chloroethane
11DClETE 1,1-Dichloroethene

JOB FILE: 06820 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 11 AUG 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		189	190	191	192	193	194
	MG/KG.....		11DCLETA	t-DCLETE	c-DCLETE	CHCL3	12DCLETA	111TCA
SAMP #	DESCRIPTION							ROW
06820	07/09-3-90 #5V	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1
	07/26/90	%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
06821	07/09-6-90 #4V	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
06822	07/09-7-90 #6V	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214

11DCLETA 1,1-Dichloroethane
c-DCLETE cis-1,2-Dichloroethene
12DCLETA 1,2-Dichloroethane
t-DCLETE Trans-1,2-Dichloroethene
CHCL3 Chloroform
111TCA 1,1,1-Trichloroethane

JOB FILE: 06820 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 11 AUG 90

	COLUMN.....		13	14	15	16	17	18
	ANALYTE.....		195	196	197	198	199	200
	MG/KG.....		CCL4	BrDClME	12DClPR	t13ClPRE	TCE	DBrClME
SAMP #	DESCRIPTION							ROW
06820	07/09-3-90 #5V	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1
	07/26/90	%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
06821	07/09-6-90 #4V	CONC	<0.005	<0.005	<0.005	0.0012 J	<0.005	<0.005	2
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
06822	07/09-7-90 #6V	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214

CCL4 Carbon Tetrachloride
12DClPR 1,2-Dichloropropane
TCE Trichloroethene
BrDClME Bromodichloromethane
t13ClPRE Trans-1,3-Dichloropropene
DBrClME Dibromochloromethane

JOB FILE: 06820 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 11 AUG 90

COLUMN.....		19	20	21	22	23	24	
ANALYTE.....		201	202	203	205	206	207	
MG/KG.....		c13ClPRE	112TCA	BENZENE	CHBr3	1122TClA	TEClETE	
SAMP #	DESCRIPTION							ROW
06820	07/09-3-90 #5V	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1
	07/26/90	%REC							
		DUPL							
		OID	08930214	08930214	08930214	08930214	08930214	08930214	
06821	07/09-6-90 #4V	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2
		%REC							
		DUPL							
		OID	08930214	08930214	08930214	08930214	08930214	08930214	
06822	07/09-7-90 #6V	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
		%REC							
		DUPL							
		OID	08930214	08930214	08930214	08930214	08930214	08930214	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
		%REC							
		DUPL							
		OID	08930214	08930214	08930214	08930214	08930214	08930214	

c13ClPRE Cis-1,3-Dichloropropene
BENZENE Benzene
1122TClA 1,1,2,2-Tetrachloroethane
112TCA 1,1,2-Trichloroethane
CHBr3 Bromoform
TEClETE Tetrachloroethene

JOB FILE: 06820 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 11 AUG 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		208	209	210	213	214	215
	MG/KG.....		TOLUENE	ClBEN	ETBEN	ACETONE	BUTANO	CS2
SAMP #	DESCRIPTION							ROW
06820	07/09-3-90 #5V	CONC	<0.005	<0.005	<0.005	0.056 BJ	0.0019 J	<0.005	1
	07/26/90	%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
06821	07/09-6-90 #4V	CONC	<0.005	<0.005	<0.005	0.120 B	<0.10	<0.005	2
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
06822	07/09-7-90 #6V	CONC	<0.005	<0.005	<0.005	0.024 BJ	<0.10	<0.005	3
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	0.029 J	<0.10	<0.005	4
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214

TOLUENE	Toluene	ClBEN	Chlorobenzene
ETBEN	Ethylbenzene	ACETONE	Acetone
BUTANO	2-Butanone	CS2	Carbondisulfide

JOB FILE: 06820 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 11 AUG 90

	COLUMN.....		31	32	33	34	35	36
	ANALYTE.....		216	217	218	219	220	221
	MG/KG.....		2HEXANO	4Me2PE	STYRENE	VNACETA	T-XYLENE	12DClE-S
SAMP #	DESCRIPTION							ROW
06820	07/09-3-90 #5V	CONC	<0.05	<0.05	<0.005	<0.05	<0.005	113% 1
	07/26/90	%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
06821	07/09-6-90 #4V	CONC	<0.05	<0.05	<0.005	<0.05	<0.005	107% 2
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
06822	07/09-7-90 #6V	CONC	<0.05	<0.05	<0.005	<0.05	<0.005	109% 3
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214
BL#01	METHOD BLANK	CONC	<0.05	<0.05	<0.005	<0.05	<0.005	107% 4
		%REC						
		DUPL						
		OID	08930214	08930214	08930214	08930214	08930214	08930214

2HEXANO 2-Hexanone
STYRENE Styrene
T-XYLENE T-Xylene
4Me2PE 4-Methyl-2-Pentanone
VNACETA Vinyl Acetate
12DClE-S 1,2-Dichloroethane-d4(Surrogate (76-114))

JOB FILE: 06820 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 11 AUG 90

COLUMN.....		37	38	39
ANALYTE.....		222	223	900
MG/KG.....		TOL-d8-S	4BrFB-S	% MOISTR
SAMP #	DESCRIPTION				ROW
06820	07/09-3-90 #5V	CONC	98.2%	96.5%	15.5	1
	07/26/90	%REC				
		DUPL				
		OID	08930214	08930214	08150214	
06821	07/09-6-90 #4V	CONC	98.6%	79.2%	19.0	2
		%REC				
		DUPL				
		OID	08930214	08930214	08150214	
06822	07/09-7-90 #6V	CONC	103%	95.1%	18.8	3
		%REC				
		DUPL				
		OID	08930214	08930214	08150214	
BL#01	METHOD BLANK	CONC	107%	103%	N/A	4
		%REC				
		DUPL				
		OID	08930214	08930214	08150214	

TOL-d8-S Toluene-D8(Surrogate (88-110)) 4BrFB-S 4-Bromofluorobenzene(Surrogate (86-115))
% MOISTR % MOISTURE

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
7/09-3-90-5

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) _____ Lab Sample ID: 6820

Sample wt/vol: 5.24 (g/mL) _____ Lab File ID: >V1771

Level: (low/med) _____ Date Received: 31 July 90

% Moisture: not dec. 15.5 Date Analyzed: 2 Aug 90

Column: (pack/cap) _____ Dilution Factor: —

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	22431090	N-(1-methylbutylidene)-methanamine	7.85	6.8	26
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) _____ Lab Sample ID: 6821

Sample wt/vol: 5.29 (g/mL) _____ Lab File ID: 201722

Level: (low/med) _____ Date Received: 31 July 90

% Moisture: not dec. 19.0 Date Analyzed: 2 Aug 90

Column: (pack/cap) _____ Dilution Factor: —

Number TICs found: 3

CONCENTRATION UNITS: (ug/L or ug/Kg) _____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	53798893	N-(1-methylpropyl)-formamide	4.11	16	25
2.	624839	isocyanatomethane	6.62	33	31
3.		unknown	8.62	26	—
4.					
5.					
6.					
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) _____ Lab Sample ID: 6822

Sample wt/vol: 5.01 (g/mL) _____ Lab File ID: 7V1795

Level: (low/med) _____ Date Received: 31 July 90

% Moisture: not dec. 18.8 Date Analyzed: 7 Aug 90

Column: (pack/cap) _____ Dilution Factor: —

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	unknown	5.57	9.8	—
2.				
3.				
4.				
5.				
6.				
7.				
8.				
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Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 8/2/90 Lab Sample ID: 6938/6942

1) Analysis: VOLATILES Date Extracted/Digested: N/A (H2O)

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

JOB FILE: 06938 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 16 AUG 90

	COLUMN.....		1	2	3	4	5	6
	ANALYTE.....		183	184	185	186	187	188
	PPM.....		ClMETH	BrMETH	VNLCL	ClETHA	MECL	11DClETE
SAMP #	DESCRIPTION							ROW
06938	07/09-12-90	CONC	<0.010	<0.010	<0.010	<0.010	0.0094 B	<0.005	1
	FINAL RINSE 8/2	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06939	07/09-1A-90	CONC	<0.010	<0.010	<0.010	<0.010	0.011 B	<0.005	2
	FINAL RINSE 8/2	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06940	07/09-9-90	CONC	<0.010	<0.010	<0.010	<0.010	0.0059 B	<0.005	3
	RINSE 8/3/90	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06941	07/09-8-90	CONC	<0.010	<0.010	<0.010	<0.010	0.0040 BJ	<0.005	4
	RINSE	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06942	TRIP BLANK	CONC	<0.010	<0.010	<0.010	<0.010	0.025 B	<0.005	5
		%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
BL#01	METHOD BLANK	CONC	<0.010	<0.010	<0.010	<0.010	0.020	<0.005	6
		%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220

ClMETH Chloromethane
VNLCL Vinyl Chloride
MECL Methylene Chloride
BrMETH Bromomethane
ClETHA Chloroethane
11DClETE 1,1-Dichloroethene

JOB FILE: 06938 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 16 AUG 90

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	189	190	191	192	193	194
PPM.....	11DCLETA	t-DCLETE	c-DCLETE	CHCL3	12DCLETA	111TCA

SAMP #	DESCRIPTION								ROW
06938	07/09-12-90	CONC	<0.005	<0.005	<0.005	0.0027 J	<0.005	<0.005	1
	FINAL RINSE 8/2	%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06939	07/09-1A-90	CONC	<0.005	<0.005	<0.005	0.0016 J	<0.005	<0.005	2
	FINAL RINSE 8/2	%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06940	07/09-9-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
	RINSE 8/3/90	%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06941	07/09-8-90	CONC	<0.005	<0.005	<0.005	0.0018 J	<0.005	<0.005	4
	RINSE	%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06942	TRIP BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	5
		%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6
		%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	

11DCLETA 1,1-Dichloroethane
c-DCLETE cis-1,2-Dichloroethene
12DCLETA 1,2-Dichloroethane
t-DCLETE Trans-1,2-Dichloroethene
CHCL3 Chloroform
111TCA 1,1,1-Trichloroethane

JOB FILE: 06938 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 16 AUG 90

	COLUMN.....		13	14	15	16	17	18
	ANALYTE.....		195	196	197	198	199	200
	PPM.....		CCL4	BrDClME	12DClPR	t13ClPRE	TCE	DBrClME
SAMP #	DESCRIPTION							ROW
06938	07/09-12-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1
	FINAL RINSE 8/2	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06939	07/09-1A-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2
	FINAL RINSE 8/2	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06940	07/09-9-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
	RINSE 8/3/90	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06941	07/09-8-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
	RINSE	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06942	TRIP BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	5
		%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6
		%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220	

CCL4 Carbon Tetrachloride
12DClPR 1,2-Dichloropropane
TCE Trichloroethene
BrDClME Bromodichloromethane
t13ClPRE Trans-1,3-Dichloropropene
DBrClME Dibromochloromethane

JOB FILE: 06938 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 16 AUG 90

	COLUMN.....		19	20	21	22	23	24
	ANALYTE.....		201	202	203	205	206	207
	PPM.....		c13ClPRE	112TCA	BENZENE	CHBr3	1122TClA	TEClETE
SAMP #	DESCRIPTION							ROW
06938	07/09-12-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1
	FINAL RINSE 8/2	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06939	07/09-1A-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2
	FINAL RINSE 8/2	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06940	07/09-9-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
	RINSE 8/3/90	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06941	07/09-8-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
	RINSE	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06942	TRIP BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	5
		%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	6
		%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220

c13ClPRE Cis-1,3-Dichloropropene
BENZENE Benzene
1122TClA 1,1,2,2-Tetrachloroethane
112TCA 1,1,2-Trichloroethane
CHBr3 Bromoform
TEClETE Tetrachloroethene

JOB FILE: 06938 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 16 AUG 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		208	209	210	213	214	215
	PPM.....		TOLUENE	ClBEN	ETBEN	ACETONE	BUTANO	CS2
SAMP #	DESCRIPTION							ROW
06938	07/09-12-90	CONC	<0.005	<0.005	<0.005	0.0032 BJ	<0.10	<0.005	1
	FINAL RINSE 8/2	%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06939	07/09-1A-90	CONC	<0.005	<0.005	<0.005	0.0077 BJ	<0.10	<0.005	2
	FINAL RINSE 8/2	%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06940	07/09-9-90	CONC	<0.005	<0.005	<0.005	0.014 BJ	<0.10	<0.005	3
	RINSE 8/3/90	%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06941	07/09-8-90	CONC	<0.005	<0.005	<0.005	0.0018 BJ	<0.10	<0.005	4
	RINSE	%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
06942	TRIP BLANK	CONC	<0.005	<0.005	<0.005	0.0021 BJ	<0.10	<0.005	5
		%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	0.011 J	<0.10	<0.005	6
		%REC							
		DUPL							
		OID	08930220	08930220	08930220	08930220	08930220	08930220	

TOLUENE Toluene
ETBEN Ethylbenzene
BUTANO 2-Butanone
ClBEN Chlorobenzene
ACETONE Acetone
CS2 Carbondisulfide

JOB FILE: 06938 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 16 AUG 90

	COLUMN.....		31	32	33	34	35	36
	ANALYTE.....		216	217	218	219	220	221
	PPM.....		2HEXANO	4Me2PE	STYRENE	VNACETA	T-XYLENE	12DClE-S
SAMP #	DESCRIPTION							ROW
06938	07/09-12-90	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	101% 1
	FINAL RINSE 8/2	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06939	07/09-1A-90	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	106% 2
	FINAL RINSE 8/2	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06940	07/09-9-90	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	105% 3
	RINSE 8/3/90	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06941	07/09-8-90	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	102% 4
	RINSE	%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
06942	TRIP BLANK	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	105% 5
		%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220
BL#01	METHOD BLANK	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	103% 6
		%REC						
		DUPL						
		OID	08930220	08930220	08930220	08930220	08930220	08930220

2HEXANO 2-Hexanone
STYRENE Styrene
T-XYLENE T-Xylene
4Me2PE 4-Methyl-2-Pentanone
VNACETA Vinyl Acetate
12DClE-S 1,2-Dichloroethane-d4(Surrogate (76-114))

JOB FILE: 06938 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 16 AUG 90

COLUMN.....	37	38
ANALYTE.....	222	223
PPM.....	TOL-d8-S	4BrFB-S

SAMP #	DESCRIPTION				ROW
06938	07/09-12-90	CONC	91.3%	89.3%	1
	FINAL RINSE 8/2	%REC			
		DUPL			
		OID	08930220	08930220	
06939	07/09-1A-90	CONC	96.3%	94.4%	2
	FINAL RINSE 8/2	%REC			
		DUPL			
		OID	08930220	08930220	
06940	07/09-9-90	CONC	92.2%	99.8%	3
	RINSE 8/3/90	%REC			
		DUPL			
		OID	08930220	08930220	
06941	07/09-8-90	CONC	95.2%	93.9%	4
	RINSE	%REC			
		DUPL			
		OID	08930220	08930220	
06942	TRIP BLANK	CONC	97.3%	95.0%	5
		%REC			
		DUPL			
		OID	08930220	08930220	
BL#01	METHOD BLANK	CONC	95.7%	90.9%	6
		%REC			
		DUPL			
		OID	08930220	08930220	

TOL-d8-S Toluene-D8(Surrogate (88-110)) 4BrFB-S 4-Bromofluorobenzene(Surrogate (86-115))

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 8/2/90 Lab Sample ID: 6933/6937

1) Analysis: VOLATILES Date Extracted/Digested: 8/7/90

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06887 DATE: 24 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 17 AUG 90

	COLUMN.....		1	2	3	4	5	6	
	ANALYTE.....		183	184	185	186	187	188	
	MG/KG.....		ClMETH	BrMETH	VNLCL	ClETHA	MECL	11DClETE	
SAMP #	DESCRIPTION								ROW
06887	07/09-11-90 #5V	CONC	<0.012	<0.012	<0.012	<0.012	0.19 B	<0.0062	1
	7/31/90	%REC							
		DUPL							
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
06888	07/09-2-90 #5V	CONC	<0.011	<0.011	<0.011	<0.011	0.54 B	<0.056	2
	8/1/90	%REC							
		DUPL	<0.026	<0.026	<0.026	<0.026	0.78 B	<0.013	
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
BL#01	METHOD BLANK	CONC	<0.010	<0.010	<0.010	<0.010	0.0095	<0.005	3
		%REC							
		DUPL							
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
BL#02	MATRIX SPIKE	CONC	<0.010	<0.010	<0.010	<0.010	1.3 B #1	0.18 #1	4
	(06888)	%REC							
		DUPL	<0.010	<0.010	<0.010	<0.010	0.75 B	0.15	
		OID	08930219	08930219	08930219	08930219	08930219	08930219	

ClMETH Chloromethane
VNLCL Vinyl Chloride
MECL Methylene Chloride
BrMETH Bromomethane
ClETHA Chloroethane
11DClETE 1,1-Dichloroethene

FOOTNOTES:
#1 Spiked at 250 ng/sample.

JOB FILE: 06887 DATE: 24 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 17 AUG 90

	COLUMN.....		7	8	9	10	11	12	
	ANALYTE.....		189	190	191	192	193	194	
	MG/KG.....		11DCLETA	t-DCLETE	c-DCLETE	CHCL3	12DCLETA	111TCA	
SAMP #	DESCRIPTION								ROW
06887	07/09-11-90 #5V	CONC	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	1
	7/31/90	%REC							
		DUPL							
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
06888	07/09-2-90 #5V	CONC	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	2
	8/1/90	%REC							
		DUPL	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
		%REC							
		DUPL							
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
BL#02	MATRIX SPIKE	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
	(06888)	%REC							
		DUPL	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
		OID	08930219	08930219	08930219	08930219	08930219	08930219	

11DCLETA 1,1-Dichloroethane
c-DCLETE cis-1,2-Dichloroethene
12DCLETA 1,2-Dichloroethane
t-DCLETE Trans-1,2-Dichloroethene
CHCL3 Chloroform
111TCA 1,1,1-Trichloroethane

JOB FILE: 06887 DATE: 24 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 17 AUG 90

	COLUMN.....		13	14	15	16	17	18	
	ANALYTE.....		195	196	197	198	199	200	
	MG/KG.....		CCL4	BrDClME	12DClPR	t13ClPRE	TCE	DBrClME	
SAMP #	DESCRIPTION								ROW
06887	07/09-11-90 #5V	CONC	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	1
	7/31/90	%REC							
		DUPL							
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
06888	07/09-2-90 #5V	CONC	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	2
	8/1/90	%REC							
		DUPL	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
		%REC							
		DUPL							
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
BL#02	MATRIX SPIKE	CONC	<0.005	<0.005	<0.005	<0.005	0.22 #1	<0.005	4
	(06888)	%REC							
		DUPL	<0.005	<0.005	<0.005	<0.005	0.19	<0.005	
		OID	08930219	08930219	08930219	08930219	08930219	08930219	

CCL4 Carbon Tetrachloride
12DClPR 1,2-Dichloropropane
TCE Trichloroethene
BrDClME Bromodichloromethane
t13ClPRE Trans-1,3-Dichloropropene
DBrClME Dibromochloromethane

FOOTNOTES:
#1 Spiked at 250 ng/sample.

JOB FILE: 06887 DATE: 24 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 17 AUG 90

	COLUMN.....		19	20	21	22	23	24
	ANALYTE.....		201	202	203	205	206	207
	MG/KG.....		c13ClPRE	112TCA	BENZENE	CHBr3	1122TClA	TEClETE
SAMP #	DESCRIPTION							ROW
06887	07/09-11-90 #5V	CONC	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	1
	7/31/90	%REC						
		DUPL						
		OID	08930219	08930219	08930219	08930219	08930219	08930219
06888	07/09-2-90 #5V	CONC	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	2
	8/1/90	%REC						
		DUPL	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
		OID	08930219	08930219	08930219	08930219	08930219	08930219
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
		%REC						
		DUPL						
		OID	08930219	08930219	08930219	08930219	08930219	08930219
BL#02	MATRIX SPIKE	CONC	<0.005	<0.005	0.24 #1	<0.005	<0.005	<0.005	4
	(06888)	%REC						
		DUPL	<0.005	<0.005	0.22	<0.005	<0.005	<0.005
		OID	08930219	08930219	08930219	08930219	08930219	08930219

c13ClPRE Cis-1,3-Dichloropropene
BENZENE Benzene
1122TClA 1,1,2,2-Tetrachloroethane
112TCA 1,1,2-Trichloroethane
CHBr3 Bromoform
TEClETE Tetrachloroethene

FOOTNOTES:
#1 Spiked at 250 ng/sample.

JOB FILE: 06887 DATE: 24 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 17 AUG 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		208	209	210	213	214	215
	MG/KG.....		TOLUENE	ClBEN	ETBEN	ACETONE	BUTANO	CS2
SAMP #	DESCRIPTION							ROW
06887	07/09-11-90 #5V	CONC	<0.0062	<0.0062	0.0061 J	0.054 BJ	<0.12	<0.0062	1
	7/31/90	%REC						
		DUPL						
		OID	08930219	08930219	08930219	08930219	08930219	08930219
06888	07/09-2-90 #5V	CONC	<0.0056	<0.0056	0.0041 J	0.047 BJ	<0.11	<0.0056	2
	8/1/90	%REC						
		DUPL	<0.013	<0.013	<0.013	0.041 BJ	<0.26	<0.013
		OID	08930219	08930219	08930219	08930219	08930219	08930219
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	0.0081 J	<0.10	<0.005	3
		%REC						
		DUPL						
		OID	08930219	08930219	08930219	08930219	08930219	08930219
BL#02	MATRIX SPIKE	CONC	0.23 #1	0.24 #1	0.025	0.088 BJ	<0.10	<0.005	4
	(06888)	%REC						
		DUPL	0.21	0.22	0.0051	0.053 BJ	<0.10	<0.005
		OID	08930219	08930219	08930219	08930219	08930219	08930219

TOLUENE Toluene
ETBEN Ethylbenzene
BUTANO 2-Butanone
ClBEN Chlorobenzene
ACETONE Acetone
CS2 Carbondisulfide

FOOTNOTES:
#1 Spiked at 250 ng/sample.

JOB FILE: 06887 DATE: 24 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 17 AUG 90

	COLUMN.....		31	32	33	34	35	36	
	ANALYTE.....		216	217	218	219	220	221	
	MG/KG.....		2HEXANO	4Me2PE	STYRENE	VNACETA	T-XYLENE	12DClE-S	
SAMP #	DESCRIPTION								ROW
06887	07/09-11-90 #5V	CONC	<0.062	<0.062	<0.0062	<0.062	0.0099	112%	1
	7/31/90	%REC							
		DUPL							
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
06888	07/09-2-90 #5V	CONC	<0.056	<0.056	<0.0056	<0.056	0.0067	77.7%	2
	8/1/90	%REC							
		DUPL	<0.13	<0.13	<0.013	<0.13	0.0029 J	108%	
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
BL#01	METHOD BLANK	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	101%	3
		%REC							
		DUPL							
		OID	08930219	08930219	08930219	08930219	08930219	08930219	
BL#02	MATRIX SPIKE	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	108%	4
	(06888)	%REC							
		DUPL	<0.050	<0.050	<0.005	<0.050	<0.005	110%	
		OID	08930219	08930219	08930219	08930219	08930219	08930219	

2HEXANO 2-Hexanone
STYRENE Styrene
T-XYLENE T-Xylene
4Me2PE 4-Methyl-2-Pentanone
VNACETA Vinyl Acetate
12DClE-S 1,2-Dichloroethane-d4(Surrogate (70-121))

JOB FILE: 06887 DATE: 24 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 17 AUG 90

COLUMN.....	37	38	39
ANALYTE.....	222	223	900
MG/KG.....	TOL-d8-S	4BrFB-S	% MOISTR

SAMP #	DESCRIPTION					ROW
06887	07/09-11-90 #5V	CONC	102%	97.5%	19.2	1
	7/31/90	%REC				
		DUPL				
		OID	08930219	08930219	05150219	
06888	07/09-2-90 #5V	CONC	97.4%	87.6%	11.1	2
	8/1/90	%REC				
		DUPL	101%	92.1%		
		OID	08930219	08930219	05150219	
BL#01	METHOD BLANK	CONC	101%	94.4%	N/A	3
		%REC				
		DUPL				
		OID	08930219	08930219	05150219	
BL#02	MATRIX SPIKE	CONC	97.4%	89.8%	N/A	4
	(06888)	%REC				
		DUPL	94.4%	83.7%		
		OID	08930219	08930219	05150219	

TOL-d8-S Toluene-D8(Surrogate (88-110)) 4BrFB-S 4-Bromofluorobenzene(Surrogate (86-115))
% MOISTR % MOISTURE

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

7/09-11--90-5

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) _____ Lab Sample ID: 6887D

Sample wt/vol: 5.00 (g/mL) _____ Lab File ID: >V1797

Level: (low/med) _____ Date Received: 3 Aug 90

% Moisture: not dec. 19.2 Date Analyzed: 7 Aug 90

Column: (pack/cap) _____ Dilution Factor: —

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	624839	isocyanatomethane	6.77	47	32
2.	4806615	ethylcyclobutane	7.92	6.2	62
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

7/09-2-90-5

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) _____ Lab Sample ID: 6888

Sample wt/vol: 5.05 (g/mL) _____ Lab File ID: >V1798

Level: (low/med) _____ Date Received: 3 Aug 90

% Moisture: not dec. 11.1 Date Analyzed: 7 Aug 90

Column: (pack/cap) _____ Dilution Factor: —

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	unknown	5.72	21	—
2. 96140	3-methylpentane	6.75	590	32
3. 96377	methylcyclopentane	7.91	57	67
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/30/90 Lab Sample ID: 6826/6828

1) Analysis: VOLATILES Date Extracted/Digested: N/A (H2O)

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06826 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

	COLUMN.....		1	2	3	4	5	6	
	ANALYTE.....		183	184	185	186	187	188	
	PPM.....		ClMETH	BrMETH	VNLCL	ClETHA	MECL	11DClETE	
SAMP #	DESCRIPTION								ROW
06826	07/09-05-90	CONC	<0.010	<0.010	<0.010	<0.010	0.011 B	<0.005	1
	STEAM CLEAN H2O	%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
06827	07/09-5-90	CONC	<0.010	<0.010	<0.010	<0.010	0.023 B	<0.005	2
	RESINATE	%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
06828	07/09-7-90	CONC	<0.010	<0.010	<0.010	<0.010	0.0075 B	<0.005	3
	RESINATE	%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
BL#01	METHOD BLANK	CONC	<0.010	<0.010	<0.010	<0.010	0.019	<0.005	4
		%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
BL#02	MATRIX SPIKE	CONC	<0.010	<0.010	<0.010	<0.010	0.0075 B	0.012 #1	5
	(06828)	%REC							
		DUPL	<0.010	<0.010	<0.010	<0.010	0.0039 B	0.011	
		OID	08930213	08930213	08930213	08930213	08930213	08930213	

ClMETH Chloromethane
VNLCL Vinyl Chloride
MECL Methylene Chloride
BrMETH Bromomethane
ClETHA Chloroethane
11DClETE 1,1-Dichloroethene

FOOTNOTES:
#1 Spiked at 0.050 mg/L.

JOB FILE: 06826 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	189	190	191	192	193	194
PPM.....	11DCLETA	t-DCLETE	c-DCLETE	CHCL3	12DCLETA	111TCA

SAMP #	DESCRIPTION								ROW
06826	07/09-05-90	CONC	<0.005	<0.005	<0.005	0.0074	<0.005	<0.005	1
	STEAM CLEAN H2O	%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
06827	07/09-5-90	CONC	<0.005	<0.005	<0.005	0.014	<0.005	<0.005	2
	RESINATE	%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
06828	07/09-7-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	0.0067	3
	RESINATE	%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
		%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
BL#02	MATRIX SPIKE	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	0.0070	5
	(06828)	%REC							
		DUPL	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
		OID	08930213	08930213	08930213	08930213	08930213	08930213	

11DCLETA 1,1-Dichloroethane
c-DCLETE cis-1,2-Dichloroethene
12DCLETA 1,2-Dichloroethane
t-DCLETE Trans-1,2-Dichloroethene
CHCL3 Chloroform
111TCA 1,1,1-Trichloroethane

JOB FILE: 06826 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

	COLUMN.....		13	14	15	16	17	18
	ANALYTE.....		195	196	197	198	199	200
	PPM.....		CCL4	BrDClME	12DClPR	t13ClPRE	TCE	DBrClME
SAMP #	DESCRIPTION							ROW
06826	07/09-05-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1
	STEAM CLEAN H2O	%REC						
		DUPL						
		OID	08930213	08930213	08930213	08930213	08930213	08930213
06827	07/09-5-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	2
	RESINATE	%REC						
		DUPL						
		OID	08930213	08930213	08930213	08930213	08930213	08930213
06828	07/09-7-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	3
	RESINATE	%REC						
		DUPL						
		OID	08930213	08930213	08930213	08930213	08930213	08930213
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4
		%REC						
		DUPL						
		OID	08930213	08930213	08930213	08930213	08930213	08930213
BL#02	MATRIX SPIKE	CONC	<0.005	<0.005	<0.005	<0.005	0.048 #1	<0.005	5
	(06828)	%REC						
		DUPL	<0.005	<0.005	<0.005	<0.005	0.046	<0.005
		OID	08930213	08930213	08930213	08930213	08930213	08930213

CCL4 Carbon Tetrachloride
12DClPR 1,2-Dichloropropane
TCE Trichloroethene
BrDClME Bromodichloromethane
t13ClPRE Trans-1,3-Dichloropropene
DBrClME Dibromochloromethane

FOOTNOTES:
#1 Spiked at 0.050 mg/L.

JOB FILE: 06826 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....	19	20	21	22	23	24
ANALYTE.....	201	202	203	205	206	207
PPM.....	c13ClPRE	112TCA	BENZENE	CHBr3	1122TClA	TEClETE

SAMP #	DESCRIPTION									ROW
06826	07/09-05-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		1
	STEAM CLEAN H2O	%REC								
		DUPL								
		OID	08930213	08930213	08930213	08930213	08930213	08930213		
06827	07/09-5-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		2
	RESINATE	%REC								
		DUPL								
		OID	08930213	08930213	08930213	08930213	08930213	08930213		
06828	07/09-7-90	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		3
	RESINATE	%REC								
		DUPL								
		OID	08930213	08930213	08930213	08930213	08930213	08930213		
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		4
		%REC								
		DUPL								
		OID	08930213	08930213	08930213	08930213	08930213	08930213		
BL#02	MATRIX SPIKE	CONC	<0.005	<0.005	0.050	#1 <0.005	<0.005	<0.005		5
	(06828)	%REC								
		DUPL	<0.005	<0.005	0.048	<0.005	<0.005	<0.005		
		OID	08930213	08930213	08930213	08930213	08930213	08930213		

c13ClPRE Cis-1,3-Dichloropropene
BENZENE Benzene
1122TClA 1,1,2,2-Tetrachloroethane
112TCA 1,1,2-Trichloroethane
CHBr3 Bromoform
TEClETE Tetrachloroethene

FOOTNOTES:
#1 Spiked at 0.050 mg/L.

JOB FILE: 06826 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		208	209	210	213	214	215
	PPM.....		TOLUENE	ClBEN	ETBEN	ACETONE	BUTANO	CS2
SAMP #	DESCRIPTION							ROW
06826	07/09-05-90	CONC	0.0098	<0.005	<0.005	0.0060 BJ	0.0023 J	<0.005	1
	STEAM CLEAN H2O	%REC						
		DUPL						
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
06827	07/09-5-90	CONC	<0.005	<0.005	<0.005	0.0017 BJ	<0.10	<0.005	2
	RESINATE	%REC						
		DUPL						
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
06828	07/09-7-90	CONC	0.0016 J	<0.005	<0.005	<0.10	0.022 J	<0.005	3
	RESINATE	%REC						
		DUPL						
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
BL#01	METHOD BLANK	CONC	<0.005	<0.005	<0.005	0.015 J	<0.10	<0.005	4
		%REC						
		DUPL						
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
BL#02	MATRIX SPIKE	CONC	0.055 #1	0.051 #1	<0.005	0.0050 BJ	0.027 J	<0.005	5
	(06828)	%REC						
		DUPL	0.051	0.050	<0.005	0.0055 BJ	0.025 J	<0.005	
		OID	08930213	08930213	08930213	08930213	08930213	08930213	

TOLUENE	Toluene	ClBEN	Chlorobenzene
ETBEN	Ethylbenzene	ACETONE	Acetone
BUTANO	2-Butanone	CS2	Carbondisulfide

FOOTNOTES:
#1 Spiked at 0.050 mg/L.

JOB FILE: 06826 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....	31	32	33	34	35	36
ANALYTE.....	216	217	218	219	220	221
PPM.....	2HEXANO	4Me2PE	STYRENE	VNACETA	T-XYLENE	12DClE-S

SAMP #	DESCRIPTION								ROW
06826	07/09-05-90	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	98.8%	1
	STEAM CLEAN H2O	%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
06827	07/09-5-90	CONC	<0.050	<0.050	<0.005	<0.050	0.0018 J	101%	2
	RESINATE	%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
06828	07/09-7-90	CONC	<0.050	<0.050	<0.005	<0.050	<0.005	88.4%	3
	RESINATE	%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
BL#01	METHOD BLANK	CONC	0.0011	<0.050	<0.005	<0.050	<0.005	98.7%	4
		%REC							
		DUPL							
		OID	08930213	08930213	08930213	08930213	08930213	08930213	
BL#02	MATRIX SPIKE	CONC	0.0015 B	<0.050	<0.005	<0.050	0.0039 J	93.5%	5
	(06828)	%REC							
		DUPL	<0.050	<0.050	<0.005	<0.050	<0.005	89.4%	
		OID	08930213	08930213	08930213	08930213	08930213	08930213	

2HEXANO 2-Hexanone
STYRENE Styrene
T-XYLENE T-Xylene
4Me2PE 4-Methyl-2-Pentanone
VNACETA Vinyl Acetate
12DClE-S 1,2-Dichloroethane-d4(Surrogate (70-121))

JOB FILE: 06826 DATE: 23 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 7)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 31 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 31 AUG 90

COLUMN.....	37	38
ANALYTE.....	222	223
PPM.....	TOL-d8-S	4BrFB-S

SAMP #	DESCRIPTION				ROW
06826	07/09-05-90	CONC	107%	90.9%	1
	STEAM CLEAN H2O	%REC			
		DUPL			
		OID	08930213	08930213	
06827	07/09-5-90	CONC	102%	97.4%	2
	RESINATE	%REC			
		DUPL			
		OID	08930213	08930213	
06828	07/09-7-90	CONC	103%	91.8%	3
	RESINATE	%REC			
		DUPL			
		OID	08930213	08930213	
BL#01	METHOD BLANK	CONC	103%	100%	4
		%REC			
		DUPL			
		OID	08930213	08930213	
BL#02	MATRIX SPIKE	CONC	106%	101%	5
	(06828)	%REC			
		DUPL	100%	102%	
		OID	08930213	08930213	

TOL-d8-S Toluene-D8(Surrogate (81-117)) 4BrFB-S 4-Bromofluorobenzene(Surrogate (74-121))

ALG QUALITY ASSURANCE CORRECTIVE ACTION FORM

ANALYSIS: VOA DATE: 8/1/90

ANALYST: R. Karn INSTRUMENT: HP 5996

PROBLEM: Low recovery of 1,1-Dichloroethene in matrix spike

SAMPLE NUMBER(S) AFFECTED: 6828 MS, 6828 MSD

RECOMMENDED CORRECTIVE ACTION: Evaluate matrix spike soln.

CORRECTIVE ACTION TAKEN BY ANALYST: Opened new vial of matrix spike soln. Same result happened on the % recovery for 1,1-dichloroethene (20-25% range).

COMMENTS: This is a resinate sample and large concentration of hexane is present. This appears to be a possible cause of problem.

DATE CORRECTIVE ACTION TAKEN: 8/1/90

REVIEWED BY: Karen Myers

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/24/90 Lab Sample ID: 6767/6768

1) Analysis: Semivolatiles Date Extracted/Digested: 8/1/90

2) Analysis: Date Extracted/Digested:

3) Analysis: Date Extracted/Digested:

4) Analysis: Date Extracted/Digested:

5) Analysis: Date Extracted/Digested:

6) Analysis: Date Extracted/Digested:

7) Analysis: Date Extracted/Digested:

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	234	235	236	237	238	239
MG/KG.....	PHENOL	2ClPHEN	2NIPHE	24DMePHE	24DClPHE	4Cl3MePH

SAMP #	DESCRIPTION								ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<1.5 U	1
	7/24/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
06768	07/09-5-90 #4	CONC	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<1.4 U	2
	7/25/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<1.3 U	3
		%REC	100.5	90.0				90.0	
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#02	MATRIX SPIKE	CONC	8.2	7.8	<0.75 U	<0.75 U	<0.75 U	1.0 J	4
	(06767)	%REC							
		DUPL	7.6	7.2	<0.76 U	<0.76 U	<0.76 U	<1.5 U	
		OID	08950215	08950215	08950215	08950215	08950215	08950215	

PHENOL Phenol
2NIPHE 2-Nitrophenol
24DClPHE 2,4-Dichlorophenol
2ClPHEN 2-Chlorophenol
24DMePHE 2,4-Dimethylphenol
4Cl3MePH 4-Chloro-3-Methylphenol

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		240	241	242	243	244	245
	MG/KG.....		246TClPH	24DNPH	4NPHE	2M46DNPH	PClPHE	BENZOAC
SAMP #	DESCRIPTION							ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<3.8 U	<3.8 U	<3.8 U	<3.8 U	<3.8 U	1
	7/24/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
06768	07/09-5-90 #4	CONC	<0.63 U	<3.4 U	<3.4 U	<3.4 U	<3.4 U	<3.4 U	2
	7/25/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#01	METHOD BLANK	CONC	<0.66 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	3
		%REC			165.0		105.0	
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#02	MATRIX SPIKE	CONC	<0.75 U	<3.8 U	4.9	<3.8 U	8.3	<3.8 U	4
	(06767)	%REC						
		DUPL	<0.75 U	<3.8 U	3.8	<3.8 U	6.8	<3.8 U
		OID	08950215	08950215	08950215	08950215	08950215	08950215

246TClPH 2,4,6-Trichlorophenol
4NPHE 4-Nitrophenol
PClPHE Pentachlorophenol
24DNPH 2,4-Dinitrophenol
2M46DNPH 2-Methyl-4,6-Dinotrophenol
BENZOAC Benzoic Acid

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		13	14	15	16	17	18
	ANALYTE.....		246	247	248	249	250	251
	MG/KG.....		2MEPHE	4MEPHE	245TClPH	BZLAL	2FPHE-S	PHE-D6-S
SAMP #	DESCRIPTION							ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<1.5 U	97.4%	121%	1
	7/24/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
06768	07/09-5-90 #4	CONC	<0.68 U	<0.68 U	<0.68 U	<1.4 U	87.8%	100%	2
	7/25/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<1.3 U	71.0%	104%	3
		%REC					82.6	103	
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	<0.75 U	<1.5 U	98.6%	123%	4
	(06767)	%REC							
		DUPL	<0.76 U	<0.76 U	<0.76 U	<1.5 U	93.1%	118%	
		OID	08950215	08950215	08950215	08950215	08950215	08950215	

2MEPHE 2-Methylphenol
4MEPHE 4-Methylphenol
245TClPH 2,4,5-Trichlorophenol
BZLAL Benzyl Alcohol
2FPHE-S 2-Fluorophenol(Surrogate (25-121))
PHE-D6-S Phenol-D6(Surrogate (24-113))

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

COLUMN.....			19	20	21	22	23	24
ANALYTE.....			252	263	264	265	266	267
MG/KG.....			246TBP-S	NNDMeAM	BClIPrE	NNDNPAM	NITROBEN	ISOPHOR
SAMP #	DESCRIPTION							ROW
06767	07/09-4-90 #5	CONC	62.4%	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	1
	7/24/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
06768	07/09-5-90 #4	CONC	61.1%	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	2
	7/25/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#01	METHOD BLANK	CONC	43.1%	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	3
		%REC	52.7			117.0		
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#02	MATRIX SPIKE	CONC	65.1%	<0.75 U	<0.75 U	4.5	<0.75 U	<0.75 U	4
	(06767)	%REC						
		DUPL	47.8%	<0.76 U	<0.76 U	4.2	<0.76 U	<0.76 U	
		OID	08950215	08950215	08950215	08950215	08950215	08950215	

246TBP-S 2,4,6-Tribromophenol(Surrogate (19-122))
BClIPrE Bis(2-Chloroisopropyl)Ether
NITROBEN Nitrobenzene
NNDMeAM N-Nitrosodimethylamine
NNDNPAM N-Nitroso-Di-N-Propylamine
ISOPHOR Isophorone

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		268	269	270	271	272	273
	MG/KG.....		BClEtoME	26DNTOL	24DNTOL	12DPHYD	BENZIDI	33DClBEZ
SAMP #	DESCRIPTION							ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<3.8 U	<1.5 U	1
	7/24/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
06768	07/09-5-90 #4	CONC	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	2
	7/25/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<3.3 U	<1.3 U	3
		%REC			21.6			
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	3.3	<0.75 U	<3.8 U	<1.5 U	4
	(06767)	%REC						
		DUPL	<0.76 U	<0.76 U	1.8	<0.76 U	<3.8 U	<1.5 U
		OID	08950215	08950215	08950215	08950215	08950215	08950215

BClEtoME Bis(2-Chloroethoxy)Methane
24DNTOL 2,4-Dinitrotoluene
BENZIDI Benzidine
26DNTOL 2,6-Dinitrotoluene
12DPHYD 1,2-Diphenylhydrazine
33DClBEZ 3,3'Dichlorobenzidine

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

COLUMN.....	31	32	33	34	35	36
ANALYTE.....	284	285	286	287	288	289
MG/KG.....	BClEtE	13DClB	14DClB	12DClB	HClETA	124TClB

SAMP #	DESCRIPTION								ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	1
	7/24/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
06768	07/09-5-90 #4	CONC	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	2
	7/25/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	3
		%REC			87.0			96.0	
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	3.5	<0.75 U	<0.75 U	3.7	4
	(06767)	%REC							
		DUPL	<0.76 U	<0.76 U	3.1	<0.76 U	<0.76 U	3.6	
		OID	08950215	08950215	08950215	08950215	08950215	08950215	

BClEtE Bis(2-Chloroethyl)Ether
14DClB 1,4-Dichlorobenzene
HClETA Hexachloroethane
13DClB 1,3-Dichlorobenzene
12DClB 1,2-Dichlorobenzene
124TClB 1,2,4-Trichlorobenzene

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		37	38	39	40	41	42
	ANALYTE.....		290	291	292	293	294	295
	MG/KG.....		NAPHTH	HClBU	HClCYPD	2ClNAPH	ACENAY	DMePHTH
SAMP #	DESCRIPTION							ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	1
	7/24/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
06768	07/09-5-90 #4	CONC	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	2
	7/25/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	3
		%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	4
	(06767)	%REC						
		DUPL	<0.76 U	<0.76 U	<0.76 U	<0.76 U	<0.76 U	<0.76 U
		OID	08950215	08950215	08950215	08950215	08950215	08950215

NAPHTH Naphthalene
HClCYPD Hexachlorocyclopentadiene
ACENAY Acenaphthylene
HClBU Hexachlorobutadiene
2ClNAPH 2-Chloronaphthalene
DMePHTH Dimethyl Phthalate

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 8 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		43	44	45	46	47	48
	ANALYTE.....		296	297	298	299	300	301
	MG/KG.....		ACENAP	FLUORE	DEtPHTH	4ClPHPHE	NNDPHAM	4BrPHET
SAMP #	DESCRIPTION							ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	1
	7/24/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
06768	07/09-5-90 #4	CONC	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	2
	7/25/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	3
		%REC	96.0					
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#02	MATRIX SPIKE	CONC	3.5	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	4
	(06767)	%REC						
		DUPL	3.4	<0.76 U	<0.76 U	<0.76 U	<0.76 U	<0.76 U
		OID	08950215	08950215	08950215	08950215	08950215	08950215

ACENAP Acenaphthene
DEtPHTH Diethyl Phthalate
NNDPHAM N-Nitrosodiphenyl Amine
FLUORE Fluorene
4ClPHPHE 4-Chlorophenyl Phenyl Ether
4BrPHET 4-Bromophenyl Ether

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 9 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		49	50	51	52	53	54	
	ANALYTE.....		302	303	304	305	306	307	
	MG/KG.....		HClBEN	PHENAN	ANTRAC	DBuPHTH	FLANTHE	PYRENE	
SAMP #	DESCRIPTION								ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	0.20 BJ	<0.75 U	<0.75 U	1
	7/24/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
06768	07/09-5-90 #4	CONC	<0.68 U	<0.68 U	<0.68 U	0.14 BJ	<0.68 U	<0.68 U	2
	7/25/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	0.17 J	<0.66 U	<0.66 U	3
		%REC						144.0	
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	<0.75 U	0.16 BJ	<0.75 U	4.1	4
	(06767)	%REC							
		DUPL	<0.76 U	<0.76 U	<0.76 U	0.27 BJ	<0.76 U	4.3	
		OID	08950215	08950215	08950215	08950215	08950215	08950215	

HClBEN	Hexachlorobenzene	PHENAN	Phenanthrene
ANTRAC	Anthracene	DBuPHTH	Dibutylphthalate
FLANTHE	Fluoranthene	PYRENE	Pyrene

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 10 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		55	56	57	58	59	60	
	ANALYTE.....		308	309	310	311	312	313	
	MG/KG.....		BuBePHTH	CHRYSE	BAANTHR	B2EHPH	DNOcPHT	BBFLANT	
SAMP #	DESCRIPTION								ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	1.4 B	<0.75 U	<0.75 U	1
	7/24/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
06768	07/09-5-90 #4	CONC	<0.68 U	<0.68 U	<0.68 U	0.17 BJ	<0.68 U	<0.68 U	2
	7/25/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	0.13 J	<0.66 U	<0.66 U	3
		%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	<0.75 U	0.51 BJ	<0.75 U	<0.75 U	4
	(06767)	%REC							
		DUPL	<0.76 U	<0.76 U	<0.76 U	0.68 BJ	<0.76 U	<0.76 U	
		OID	08950215	08950215	08950215	08950215	08950215	08950215	

BuBePHTH Butylbenzylphthalate
BAANTHR Benzo(a)Anthracene
DNOcPHT Di-N-Octylphthalate
CHRYSE Chrysene
B2EHPH Bis(2-Ethylhexyl)Phthalate
BBFLANT Benzo(b)Fluoranthene

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 11 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		61	62	63	64	65	66	
	ANALYTE.....		314	315	316	317	318	319	
	MG/KG.....		BKFLANT	BAPYRE	I123PYR	DBAHANT	B-GHI-PY	ANILINE	
SAMP #	DESCRIPTION								ROW
06767	07/09-4-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<1.5 U	1
	7/24/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
06768	07/09-5-90 #4	CONC	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<0.68 U	<1.4 U	2
	7/25/90	%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<1.3 U	3
		%REC							
		DUPL							
		OID	08950215	08950215	08950215	08950215	08950215	08950215	
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<1.5 U	4
	(06767)	%REC							
		DUPL	<0.76 U	<0.76 U	<0.76 U	<0.76 U	<0.76 U	<1.5 U	
		OID	08950215	08950215	08950215	08950215	08950215	08950215	

BKFLANT Benzo(k)Fluoranthene
BAPYRE Benzo(a)Pyrene
I123PYR Indeno(1,2,3-C,D)Pyrene
DBAHANT Dibenzo(A,H)Anthracene
B-GHI-PY Benzo(G,H,I)Perylene
ANILINE Aniline

JOB FILE: 06767 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 12 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE ROAD (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 27 JUL 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		67	68	69	70	71	72
	ANALYTE.....		320	321	322	323	324	325
	MG/KG.....		4ClANIL	DBENZOFU	2MeNAPH	2NANIL	3NANIL	4NANIL
SAMP #	DESCRIPTION							ROW
06767	07/09-4-90 #5	CONC	<1.5 U	<0.75 U	<0.75 U	<3.8 U	<3.8 U	<3.8 U 1
	7/24/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
06768	07/09-5-90 #4	CONC	<1.4 U	<0.68 U	<0.68 U	<3.4 U	<3.4 U	<3.4 U 2
	7/25/90	%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#01	METHOD BLANK	CONC	<1.3 U	<0.66 U	<0.66 U	<3.3 U	<3.3 U	<3.3 U 3
		%REC						
		DUPL						
		OID	08950215	08950215	08950215	08950215	08950215	08950215
BL#02	MATRIX SPIKE	CONC	<1.5 U	<0.75 U	<0.75 U	<3.8 U	<3.8 U	<3.8 U 4
	(06767)	%REC						
		DUPL	<1.5 U	<0.76 U	<0.76 U	<3.8 U	<3.8 U	<3.8 U
		OID	08950215	08950215	08950215	08950215	08950215	08950215

4ClANIL 4-Chloroaniline
2MeNAPH 2-Methylnaphthalene
3NANIL 3-Nitroaniline
DBENZOFU Dibenzofuran
2NANIL 2-Nitroaniline
4NANIL 4-Nitroaniline

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07109-06-90-4

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 7/27/90

Matrix: (soil/water) _____ Lab Sample ID: 6830

Sample (wt/vol: 30.19 (g/mL) _____ Lab File ID: >A1925

Level: (low/med) _____ Date Received: 7/31/90

% Moisture: not dec. 84 dec. _____ Date Extracted: 8/2/90

Extraction: (SepF/Cont/Sonc) Soxh Date Analyzed: 8/3/90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: _____

Number TICs found: 3

CONCENTRATION UNITS: (ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.38	4300	—
2. —	unknown	5.42	980	—
3. 763939	3-hexen-2-one	7.61	1500	52
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-7-90-7

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 7/30/90

Matrix: (soil/water) _____ Lab Sample ID: 6831

Sample wt/vol: _____ (g/mL) _____ Lab File ID: 7A1926

Level: (low/med) _____ Date Received: 7/31/90

% Moisture: not dec. _____ dec. _____ Date Extracted: 8/2/90

Extraction: (SepF/Cont/Sonc) Sonc Date Analyzed: 8/3/90

GPC Cleanup: (Y/N) ____ pH: _____ Dilution Factor: _____

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.44	31000	—
2. —	unknown	5.95	1200	—
3. 5745755	2-methyl-1,3-dioxolane-2-butanol	6.13	1300	20
4. —	unknown	6.65	1800	—
5. —	unknown	7.24	5600	—
6. —	unknown	7.55	7800	—
7. 763939	3-hexen-2-one	7.75	12000	52
8. 123795	~~unknown~~	38.49	760	56
9.	hexanedioic acid, dioctyl ester			
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-7-90-7

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 7/30/90

Matrix: (soil/water) _____ Lab Sample ID: 6831

Sample (wt/vol: _____ (g/mL) _____ Lab File ID: 2A1926

Level: (low/med) _____ Date Received: 7/31/90

% Moisture: not dec. _____ dec. _____ Date Extracted: 8/2/90

Extraction: (SepF/Cont/Sonc) Sonc Date Analyzed: 8/3/90

GPC Cleanup: (Y/N) ____ pH: _____ Dilution Factor: —

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.44	31000	—
2. —	unknown	5.95	1200	—
3. 5745755	2-methyl-1,3-dioxolane-2-butanol	6.13	1300	20
4. —	unknown	6.65	1800	—
5. —	unknown	7.24	5600	—
6. —	unknown	7.55	7800	—
7. 763939	3-hexen-2-one	7.75	12000	52
8. 123795	~~unknown~~	33.49	760	56
9.	hexanedioic acid, diethyl ester			
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 7/31/90 Lab Sample ID: 6893/6894

1) Analysis: SEMIVOLATILES Date Extracted/Digested: 8/7/90

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		1	2	3	4	5	6	
	ANALYTE.....		234	235	236	237	238	239	
	MG/KG.....		PHENOL	2ClPHEN	2NIPHE	24DMePHE	24DClPHE	4Cl3MePH	
SAMP #	DESCRIPTION								ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<1.6 U	1
	7/31/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<2.4 U	2
	8/1/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<1.3 U	3
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

PHENOL Phenol
2NIPHE 2-Nitrophenol
24DClPHE 2,4-Dichlorophenol
2ClPHEN 2-Chlorophenol
24DMePHE 2,4-Dimethylphenol
4Cl3MePH 4-Chloro-3-Methylphenol

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		7	8	9	10	11	12	
	ANALYTE.....		240	241	242	243	244	245	
	MG/KG.....		246TClPH	24DNPH	4NPHE	2M46DNPH	PClPHE	BENZOAC	
SAMP #	DESCRIPTION								ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<3.9 U	<3.9 U	<3.9 U	<3.9 U	<3.9 U	1
	7/31/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<1.2 U	<6.0 U	<6.0 U	<6.0 U	<6.0 U	<6.0 U	2
	8/1/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	3
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

246TClPH 2,4,6-Trichlorophenol
4NPHE 4-Nitrophenol
PClPHE Pentachlorophenol
24DNPH 2,4-Dinitrophenol
2M46DNPH 2-Methyl-4,6-Dinotrophenol
BENZOAC Benzoic Acid

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....	13	14	15	16	17	18	
	ANALYTE.....	246	247	248	249	250	251	
	MG/KG.....	2MEPHE	4MEPHE	245TClPH	BZLAL	2FPHE-S	PHE-D5-S	
SAMP #	DESCRIPTION							ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<0.78 U	<0.78 U	<1.6 U	85.3%	127%	1
	7/31/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<1.2 U	<1.2 U	<1.2 U	<2.4 U	44.0%	63.9%	2
	8/1/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<1.3 U	53.6%	83.4%	3
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

2MEPHE 2-Methylphenol
4MEPHE 4-Methylphenol
245TClPH 2,4,5-Trichlorophenol
BZLAL Benzyl Alcohol
2FPHE-S 2-Fluorophenol(Surrogate (25-121))
PHE-D5-S Phenol-D5(Surrogate (24-113))

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		19	20	21	22	23	24
	ANALYTE.....		252	263	264	265	266	267
	MG/KG.....		246TBP-S	NNDMeAM	BClIPrE	NNDNPAM	NITROBEN	ISOPHOR
SAMP #	DESCRIPTION							ROW
06893	07/09-11-90 #6	CONC	44.2%	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	1
	7/31/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06894	07/09-2-90 #5	CONC	70.9%	0.042 J	<1.2 U	<1.2 U	<1.2 U	<1.2 U	2
	8/1/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
BL#01	METHOD BLANK	CONC	42.1%	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	3
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220

246TBP-S 2,4,6-Tribromophenol(Surrogate (19-121))
BClIPrE Bis(2-Chloroisopropyl)Ether
NITROBEN Nitrobenzene
NNDMeAM N-Nitrosodimethylamine
NNDNPAM N-Nitroso-Di-N-Propylamine
ISOPHOR Isophorone

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		268	269	270	271	272	273
	MG/KG.....		BClEtoME	26DNTOL	24DNTOL	12DPHYD	BENZIDI	33DClBEZ
SAMP #	DESCRIPTION							ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<3.9 U	<1.6 U	1
	7/31/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<6.0 U	<2.4 U	2
	8/1/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<3.3 U	<1.3 U	3
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

BClEtoME Bis(2-Chloroethoxy)Methane
24DNTOL 2,4-Dinitrotoluene
BENZIDI Benzidine
26DNTOL 2,6-Dinitrotoluene
12DPHYD 1,2-Diphenylhydrazine
33DClBEZ 3,3'Dichlorobenzidine

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		31	32	33	34	35	36
	ANALYTE.....		284	285	286	287	288	289
	MG/KG.....		BClEtE	13DClB	14DClB	12DClB	HClETA	124TClB
SAMP #	DESCRIPTION							ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	1
	7/31/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06894	07/09-2-90 #5	CONC	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<1.2 U	2
	8/1/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	3
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220

BClEtE Bis(2-Chloroethyl)Ether
14DClB 1,4-Dichlorobenzene
HClETA Hexachloroethane
13DClB 1,3-Dichlorobenzene
12DClB 1,2-Dichlorobenzene
124TClB 1,2,4-Trichlorobenzene

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		37	38	39	40	41	42	
	ANALYTE.....		290	291	292	293	294	295	
	MG/KG.....		NAPHTH	HClBU	HClCYPD	2ClNAPH	ACENAY	DMePHTH	
SAMP #	DESCRIPTION								ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	1
	7/31/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<1.2 U	2
	8/1/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	3
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

NAPHTH Naphthalene
HClCYPD Hexachlorocyclopentadiene
ACENAY Acenaphthylene
HClBU Hexachlorobutadiene
2ClNAPH 2-Chloronaphthalene
DMePHTH Dimethyl Phthalate

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 8 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		43	44	45	46	47	48	
	ANALYTE.....		296	297	298	299	300	301	
	MG/KG.....		ACENAP	FLUORE	DEtPHTH	4ClPHPHE	NNDPHAM	4BrPHET	
SAMP #	DESCRIPTION								ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	1
	7/31/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<1.2 U	2
	8/1/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	3
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

ACENAP Acenaphthene
DEtPHTH Diethyl Phthalate
NNDPHAM N-Nitrosodiphenyl Amine
FLUORE Fluorene
4ClPHPHE 4-Chlorophenyl Phenyl Ether
4BrPHET 4-Bromophenyl Ether

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 9 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		49	50	51	52	53	54	
	ANALYTE.....		302	303	304	305	306	307	
	MG/KG.....		HClBEN	PHENAN	ANTRAC	DBuPHTH	FLANTHE	PYRENE	
SAMP #	DESCRIPTION								ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<0.78 U	<0.78 U	<0.096 BJ	<0.78 U	<0.78 U	1
	7/31/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<1.2 U	<1.2 U	<1.2 U	0.17 BJ	<1.2 U	<1.2 U	2
	8/1/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	0.12 J	<0.66 U	<0.66 U	3
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

HClBEN Hexachlorobenzene
ANTRAC Anthracene
FLANTHE Fluoranthene
PHENAN Phenanthrene
DBuPHTH Dibutylphthalate
PYRENE Pyrene

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 10 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		55	56	57	58	59	60	
	ANALYTE.....		308	309	310	311	312	313	
	MG/KG.....		BuBePHTH	CHRYSE	BAANTHR	B2EHPH	DNOcPHT	BBFLANT	
SAMP #	DESCRIPTION								ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<0.78 U	<0.78 U	0.059 J	<0.78 U	<0.78 U	1
	7/31/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<1.2 U	<1.2 U	<1.2 U	0.13 J	<1.2 U	<1.2 U	2
	8/1/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	3
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

BuBePHTH Butylbenzylphthalate
BAANTHR Benzo(a)Anthracene
DNOcPHT Di-N-Octylphthalate
CHRYSE Chrysene
B2EHPH Bis(2-Ethylhexyl)Phthalate
BBFLANT Benzo(b)Fluoranthene

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 11 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		61	62	63	64	65	66	
	ANALYTE.....		314	315	316	317	318	319	
	MG/KG.....		BKFLANT	BAPYRE	I123PYR	DBAHANT	B-GHI-PY	ANILINE	
SAMP #	DESCRIPTION								ROW
06893	07/09-11-90 #6	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<1.6 U	1
	7/31/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<1.2 U	<2.4 U	2
	8/1/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<1.3 U	3
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

BKFLANT Benzo(k)Fluoranthene
I123PYR Indeno(1,2,3-C,D)Pyrene
B-GHI-PY Benzo(G,H,I)Perylene
BAPYRE Benzo(a)Pyrene
DBAHANT Dibenzo(A,H)Anthracene
ANILINE Aniline

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 12 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....		67	68	69	70	71	72	
	ANALYTE.....		320	321	322	323	324	325	
	MG/KG.....		4ClANIL	DBENZOFU	2MeNAPH	2NANIL	3NANIL	4NANIL	
SAMP #	DESCRIPTION								ROW
06893	07/09-11-90 #6	CONC	<1.6 U	<0.78 U	<0.78 U	<3.9 U	<3.9 U	<3.9 U	1
	7/31/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06894	07/09-2-90 #5	CONC	<2.4 U	<1.2 U	<1.2 U	<6.0 U	<6.0 U	<6.0 U	2
	8/1/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<1.3 U	<0.66 U	<0.66 U	<3.3 U	<3.3 U	<3.3 U	3
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

4ClANIL 4-Chloroaniline
2MeNAPH 2-Methylnaphthalene
3NANIL 3-Nitroaniline
DBENZOFU Dibenzofuran
2NANIL 2-Nitroaniline
4NANIL 4-Nitroaniline

JOB FILE: 06893 DATE: 28 AUG 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 13 OF 13)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 03 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 31 AUG 90

	COLUMN.....	73	74	75	76
	ANALYTE.....	326	327	328	900
	MG/KG.....	NB-D5-S	2FlBP-S	PTERP-S	% MOISTR
SAMP #	DESCRIPTION				ROW
06893	07/09-11-90 #6	CONC 63.2%	80.1%	104%	15.1 1
	7/31/90	%REC			
		DUPL			
		OID 08950220	08950220	08950220	05150226
06894	07/09-2-90 #5	CONC 35.6%	82.1%	83.9%	13.5 2
	8/1/90	%REC			
		DUPL			
		OID 08950220	08950220	08950220	05150226
BL#01	METHOD BLANK	CONC 32.8%	48.9%	67.6%	N/A 3
		%REC			
		DUPL			
		OID 08950220	08950220	08950220	05150226

NB-D5-S Nitrobenzene-D5(Surrogate (35-114))
PTERP-S p-Terphenyl-D14(Surrogate (33-141))
2FlBP-S 2-Fluorobiphenyl(Surrogate (43-116))
% MOISTR % MOISTURE

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VOA BLK

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) _____ Lab Sample ID: 6893 B

Sample (wt/vol): 30.0 (g/mL) _____ Lab File ID: >A1930

Level: (low/med) _____ Date Received: 3 Aug 90

% Moisture: not dec. — dec. _____ Date Extracted: 8 Aug 9

Extraction: (SepF/Cont/Sonc) Sonc Date Analyzed: 8 Aug 90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: —

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 52039540	ethyl ester, 2-hydroxybenzoic acid	4.45	8,000	31
2. —	unknown	7.34	8,700	—
3. 763939	3-hexen-2-one	7.53	1,400	52
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-11-90#6

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 7/31/90

Matrix: (soil/water) _____ Lab Sample ID: 6893

Sample (wt/vol): 30.29 (g/mL) _____ Lab File ID: 7A1931

Level: (low/med) _____ Date Received: 3 Aug 90

% Moisture: not dec. 15 dec. _____ Date Extracted: 8 Aug 90

Extraction: (SepF/Cont/Sonc) Soxh Date Analyzed: 8 Aug 90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: —

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.40	5,400	—
2. —	unknown - hydrocarbon	7.39	8,890	—
3. 763939	3-hexen-2-one	7.61	1,600	~~JB~~
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-2-90 #5

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 7/31/90

Matrix: (soil/water) _____ Lab Sample ID: 6894

Sample (wt/vol: 18.58 (g/mL) _____ Lab File ID: 7A1994

Level: (low/med) _____ Date Received: 8/3/90

% Moisture: not dec. 11 dec. _____ Date Extracted: 8/10/90

Extraction: (SepF/Cont/Sonc) Soxh Date Analyzed: 8/22/90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: —

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	5.12	7700	—
2. —	unknown	8.48	2400	—
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 8/3/90 Lab Sample ID: 6945/6947

1) Analysis: SEMIVOLATILES Date Extracted/Digested: N/A (H20)

2) Analysis: Date Extracted/Digested:

3) Analysis: Date Extracted/Digested:

4) Analysis: Date Extracted/Digested:

5) Analysis: Date Extracted/Digested:

6) Analysis: Date Extracted/Digested:

7) Analysis: Date Extracted/Digested:

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		1	2	3	4	5	6	
	ANALYTE.....		234	235	236	237	238	239	
	PPM.....		PHENOL	2ClPHEN	2NIPHE	24DMePHE	24DClPHE	4Cl3MePH	
SAMP #	DESCRIPTION								ROW
06945	07/09-1A-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.022 U	1
	FINAL RINSE 8/3	%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	
06946	DEIONISED H2O	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.022 U	2
	8/3/90	%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	
06947	07/09-8-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.022 U	3
	RINSE	%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.020 U	4
		%REC	37	75				75	
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	

PHENOL Phenol
2NIPHE 2-Nitrophenol
24DClPHE 2,4-Dichlorophenol
2ClPHEN 2-Chlorophenol
24DMePHE 2,4-Dimethylphenol
4Cl3MePH 4-Chloro-3-Methylphenol

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		240	241	242	243	244	245
	PPM.....		246TClPH	24DNPH	4NPHE	2M46DNPH	PClPHE	BENZOAC
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	<0.011 U	<0.056 U	<0.056 U	<0.056 U	<0.056 U	<0.056 U	1
	FINAL RINSE 8/3	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06946	DEIONISED H2O	CONC	<0.011 U	<0.056 U	<0.056 U	<0.056 U	<0.056 U	<0.056 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06947	07/09-8-90	CONC	<0.011 U	<0.056 U	<0.056 U	<0.056 U	<0.056 U	<0.056 U	3
	RINSE	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
BL#01	METHOD BLANK	CONC	<0.010 U	<0.050 U	<0.050 U	<0.050 U	<0.050 U	<0.050 U	4
		%REC			42		100	
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226

246TClPH 2,4,6-Trichlorophenol
4NPHE 4-Nitrophenol
PClPHE Pentachlorophenol
24DNPH 2,4-Dinitrophenol
2M46DNPH 2-Methyl-4,6-Dinotrophenol
BENZOAC Benzoic Acid

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 3 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		13	14	15	16	17	18
	ANALYTE.....		246	247	248	249	250	251
	PPM.....		2MEPHE	4MEPHE	245TClPH	BZLAL	2FPHE-S	PHE-D5-S
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.022 U	59.5%	43.0%	1
	FINAL RINSE 8/3	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06946	DEIONISED H2O	CONC	<0.011 U	<0.011 U	<0.011 U	<0.022 U	58.7%	40.6%	2
	8/3/90	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06947	07/09-8-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.022 U	54.6%	41.9%	3
	RINSE	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	<0.010 U	<0.020 U	54.4%	36.3%	4
		%REC					47.7	35.9
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226

2MEPHE 2-Methylphenol
4MEPHE 4-Methylphenol
245TClPH 2,4,5-Trichlorophenol
BZLAL Benzyl Alcohol
2FPHE-S 2-Fluorophenol(Surrogate (21-100))
PHE-D5-S Phenol-D5(Surrogate (10-94))

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		19	20	21	22	23	24
	ANALYTE.....		252	263	264	265	266	267
	PPM.....		246TBP-S	NNDMeAM	BClIPrE	NNDNPAM	NITROBEN	ISOPHOR
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	95.8%	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	1
	FINAL RINSE 8/3	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06946	DEIONISED H2O	CONC	99.8%	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06947	07/09-8-90	CONC	105%	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	3
	RINSE	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
BL#01	METHOD BLANK	CONC	105%	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	4
		%REC	96.5			73		
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226

246TBP-S 2,4,6-Tribromophenol(Surrogate (10-123))
BClIPrE Bis(2-Chloroisopropyl)Ether
NITROBEN Nitrobenzene
NNDMeAM N-Nitrosodimethylamine
NNDNPAM N-Nitroso-Di-N-Propylamine
ISOPHOR Isophorone

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

COLUMN.....		25	26	27	28	29	30	
ANALYTE.....		268	269	270	271	272	273	
PPM.....		BClEtoME	26DNTOL	24DNTOL	12DPHYD	BENZIDI	33DClBEZ	
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.056 U	<0.022 U	1
	FINAL RINSE 8/3	%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	
06946	DEIONISED H2O	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.056 U	<0.022 U	2
	8/3/90	%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	
06947	07/09-8-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.056 U	<0.022 U	3
	RINSE	%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.050 U	<0.020 U	4
		%REC		84					
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	

BClEtoME Bis(2-Chloroethoxy)Methane
24DNTOL 2,4-Dinitrotoluene
BENZIDI Benzidine
26DNTOL 2,6-Dinitrotoluene
12DPHYD 1,2-Diphenylhydrazine
33DClBEZ 3,3'Dichlorobenzidine

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		31	32	33	34	35	36
	ANALYTE.....		284	285	286	287	288	289
	PPM.....		BClEtE	13DClB	14DClB	12DClB	HClETA	124TClB
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	<0.011 U	<0.011 U	0.0028 BJ	<0.011 U	<0.011 U	<0.011 U	1
	FINAL RINSE 8/3	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06946	DEIONISED H2O	CONC	<0.011 U	<0.011 U	0.0030 BJ	<0.011 U	<0.011 U	<0.011 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06947	07/09-8-90	CONC	<0.011 U	<0.011 U	0.0026 BJ	<0.011 U	<0.011 U	<0.011 U	3
	RINSE	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	0.0026 J	<0.010 U	<0.010 U	<0.010 U	4
		%REC			56			61
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226

BClEtE Bis(2-Chloroethyl)Ether
14DClB 1,4-Dichlorobenzene
HClETA Hexachloroethane
13DClB 1,3-Dichlorobenzene
12DClB 1,2-Dichlorobenzene
124TClB 1,2,4-Trichlorobenzene

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		37	38	39	40	41	42
	ANALYTE.....		290	291	292	293	294	295
	PPM.....		NAPHTH	HClBU	HClCYPD	2ClNAPH	ACENAY	DMePHTH
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	1
	FINAL RINSE 8/3	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06946	DEIONISED H2O	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06947	07/09-8-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	3
	RINSE	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	4
		%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226

NAPHTH Naphthalene
HClCYPD Hexachlorocyclopentadiene
ACENAY Acenaphthylene
HClBU Hexachlorobutadiene
2ClNAPH 2-Chloronaphthalene
DMePHTH Dimethyl Phthalate

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 8 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		43	44	45	46	47	48
	ANALYTE.....		296	297	298	299	300	301
	PPM.....		ACENAP	FLUORE	DEtPHTH	4ClPHPHE	NNDPHAM	4BrPHET
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	<0011 U	<0.011 U	0.0018 J	<0.011 U	<0.011 U	<0.011 U	1
	FINAL RINSE 8/3	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06946	DEIONISED H2O	CONC	<0011 U	<0.011 U	0.0014 J	<0.011 U	<0.011 U	<0.011 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06947	07/09-8-90	CONC	<0011 U	<0.011 U	<0.011 J	<0.011 U	<0.011 U	<0.011 U	3
	RINSE	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	4
		%REC	72					
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226

ACENAP Acenaphthene
DEtPHTH Diethyl Phthalate
NNDPHAM N-Nitrosodiphenyl Amine
FLUORE Fluorene
4ClPHPHE 4-Chlorophenyl Phenyl Ether
4BrPHET 4-Bromophenyl Ether

JOB FILE: 06945 DATE: 20 SEP 90

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		49	50	51	52	53	54
	ANALYTE.....		302	303	304	305	306	307
	PPM.....		HClBEN	PHENAN	ANTRAC	DBuPHTH	FLANTHE	PYRENE
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	1
	FINAL RINSE 8/3	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06946	DEIONISED H2O	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06947	07/09-8-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	3
	RINSE	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	4
		%REC						86
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226

HClBEN Hexachlorobenzene
ANTRAC Anthracene
FLANTHE Fluoranthene
PHENAN Phenanthrene
DBuPHTH Dibutylphthalate
PYRENE Pyrene

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 10 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		55	56	57	58	59	60
	ANALYTE.....		308	309	310	311	312	313
	PPM.....		BuBePHTH	CHRYSE	BAANTHR	B2EHPH	DNOcPHT	BBFLANT
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	<0.011 U	<0.011 U	<0.011 U	0.0029 BJ	<0.011 U	<0.011 U	1
	FINAL RINSE 8/3	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06946	DEIONISED H2O	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06947	07/09-8-90	CONC	<0.011 U	<0.011 U	<0.011 U	0.0028 BJ	<0.011 U	<0.011 U	3
	RINSE	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	<0.010 U	0.0015 J	<0.010 U	<0.010 U	4
		%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226

BuBePHTH Butylbenzylphthalate
BAANTHR Benzo(a)Anthracene
DNOcPHT Di-N-Octylphthalate
CHRYSE Chrysene
B2EHPH Bis(2-Ethylhexyl)Phthalate
BBFLANT Benzo(b)Fluoranthene

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 11 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		61	62	63	64	65	66	
	ANALYTE.....		314	315	316	317	318	319	
	PPM.....		BKFLANT	BAPYRE	I123PYR	DBAHANT	B-GHI-PY	ANILINE	
SAMP #	DESCRIPTION								ROW
06945	07/09-1A-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.022 U	1
	FINAL RINSE 8/3	%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	
06946	DEIONISED H2O	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.022 U	2
	8/3/90	%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	
06947	07/09-8-90	CONC	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.011 U	<0.022 U	3
	RINSE	%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	
BL#01	METHOD BLANK	CONC	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.020 U	4
		%REC							
		DUPL							
		OID	08950226	08950226	08950226	08950226	08950226	08950226	

BKFLANT Benzo(k)Fluoranthene
I123PYR Indeno(1,2,3-C,D)Pyrene
B-GHI-PY Benzo(G,H,I)Perylene
BAPYRE Benzo(a)Pyrene
DBAHANT Dibenzo(A,H)Anthracene
ANILINE Aniline

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 12 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		67	68	69	70	71	72
	ANALYTE.....		320	321	322	323	324	325
	PPM.....		4ClANIL	DBENZOFU	2MeNAPH	2NANIL	3NANIL	4NANIL
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	<0.022 U	<0.011 U	<0.011 U	<0.056 U	<0.056 U	<0.056 U	1
	FINAL RINSE 8/3	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06946	DEIONISED H2O	CONC	<0.022 U	<0.011 U	<0.011 U	<0.056 U	<0.056 U	<0.056 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
06947	07/09-8-90	CONC	<0.022 U	<0.011 U	<0.011 U	<0.056 U	<0.056 U	<0.056 U	3
	RINSE	%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226
BL#01	METHOD BLANK	CONC	<0.020 U	<0.010 U	<0.010 U	<0.050 U	<0.050 U	<0.050 U	4
		%REC						
		DUPL						
		OID	08950226	08950226	08950226	08950226	08950226	08950226

4ClANIL 4-Chloroaniline
2MeNAPH 2-Methylnaphthalene
3NANIL 3-Nitroaniline
DBENZOFU Dibenzofuran
2NANIL 2-Nitroaniline
4NANIL 4-Nitroaniline

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 13 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

	COLUMN.....		73	74	75	76	77	78
	ANALYTE.....		326	327	328	900	901	902
	PPM.....		NB-D5-S	2FlBP-S	PTERP-S	2,4-DNT	TNT	TETRYL
SAMP #	DESCRIPTION							ROW
06945	07/09-1A-90	CONC	85.3%	75.2%	89.3%	<0.020 U	<0.020 U	<0.050 U	1
	FINAL RINSE 8/3	%REC					98.1		
		DUPL				<0.020 U	<0.020 U	<0.050 U	
		OID	08950226	08950226	08950226	51960239	51960239	51960239	
06946	DEIONISED H2O	CONC	82.6%	74.6%	89.2%	<0.020 U	<0.020 U	<0.050 U	2
	8/3/90	%REC							
		DUPL							
		OID	08950226	08950226	08950226	51960239	51960239	51960239	
06947	07/09-8-90	CONC	80.4	76.2%	86.1%	<0.020 U	<0.020 U	<0.050 U	3
	RINSE	%REC							
		DUPL							
		OID	08950226	08950226	08950226	51960239	51960239	51960239	
BL#01	METHOD BLANK	CONC	80.1%	68.2%	91.8%	<0.020 U	<0.020	<0.050 U	4
		%REC	70.9	67.7	87.1		92.9		
		DUPL							
		OID	08950226	08950226	08950226	51960239	51960239	51960239	

NB-D5-S Nitrobenzene-D5(Surrogate (35-114))
PTERP-S p-Terphenyl-D14(Surrogate (33-141))
TNT TNT
2FlBP-S 2-Fluorobiphenyl(Surrogate (43-116))
2,4-DNT 2,4-DNT
TETRYL TETRYL

JOB FILE: 06945 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 14 OF 14)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: Water EST. COMP. DATE: 07 SEP 90

COLUMN.....	79	80	81	82
ANALYTE.....	903	904	905	906
PPM.....	DNB	TNB	RDX	HMX

SAMP #	DESCRIPTION						ROW
06945	07/09-1A-90	CONC	<0.020 U	<0.020 U	<0.020 U	<0.020 U	1
	FINAL RINSE 8/3	%REC		99.8			
		DUPL	<0.020 U	<0.020 U	<0.020 U	<0.020 U	
		OID	51960239	51960239	51960239	51960238	
06946	DEIONISED H2O	CONC	<0.020 U	<0.020 U	<0.020 U	<0.020 U	2
	8/3/90	%REC					
		DUPL					
		OID	51960239	51960239	51960239	51960238	
06947	07/09-8-90	CONC	<0.020 U	<0.020 U	<0.020 U	<0.020 U	3
	RINSE	%REC					
		DUPL					
		OID	51960239	51960239	51960239	51960238	
BL#01	METHOD BLANK	CONC	<0.020 U	<0.020 U	<0.020 U	<0.020 U	4
		%REC		99.9			
		DUPL					
		OID	51960239	51960239	51960239	51960239	

DNB	DNB	TNB	TNB
RDX	RDX	HMX	HMX

Lab Name: CE-WES ANALYTICAL LAB GRP Project: CRANE - OLD RIFLE RANGE

SDG: 8/2/90 Lab Sample ID: 6948/6952

1) Analysis: SEMIVOLATILES Date Extracted/Digested: 8/7/90

2) Analysis: _____ Date Extracted/Digested: _____

3) Analysis: _____ Date Extracted/Digested: _____

4) Analysis: _____ Date Extracted/Digested: _____

5) Analysis: _____ Date Extracted/Digested: _____

6) Analysis: _____ Date Extracted/Digested: _____

7) Analysis: _____ Date Extracted/Digested: _____

INORGANIC QUALIFIERS

B - Indicates reported value is less than the Contract Required detection limit (CRDL) but greater than the Instrument Detection Limit.

U - Indicates analyte was analyzed for but not detected.

W - Indicates post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

ORGANIC QUALIFIERS

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value below instrument detection limit.

B - Indicates analyte is found in the associated blank as well as in the sample.

E - Identifies compounds whose concentrations exceed the calibration range of th GC/MS instrument for that specific analysis.

D - Indentifies all compounds identified in an analysis at a secondary dilution factor.

RK

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 1 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		1	2	3	4	5	6	
	ANALYTE.....		234	235	236	237	238	239	
	MG/KG.....		PHENOL	2ClPHEN	2NIPHE	24DMePHE	24DClPHE	4Cl3MePH	
SAMP #	DESCRIPTION								ROW
06948	07/09-12-90 #4	CONC	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<1.5 U #1	1
	8/2/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06949	07/09-8-90 #2	CONC	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<1.5 U	2
	8/3/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06950	07/09-1A-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<1.5 U	3
	8/3/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06951	07/09-10-90 #2	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<1.6 U	4
	8/4/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06952	07/09-9-90 #2	CONC	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<1.5 U	5
	8/4/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<1.3 U	6
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

PHENOL Phenol
2NIPHE 2-Nitrophenol
24DClPHE 2,4-Dichlorophenol
2ClPHEN 2-Chlorophenol
24DMePHE 2,4-Dimethylphenol
4Cl3MePH 4-Chloro-3-Methylphenol

FOOTNOTES:
#1 Spiked at 0.200 mg per sample.

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 2 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		1	2	3	4	5	6
	ANALYTE.....		234	235	236	237	238	239
	MG/KG.....		PHENOL	2ClPHEN	2NIPHE	24DMePHE	24DClPHE	4Cl3MePH
SAMP #	DESCRIPTION							ROW
BL#02	MATRIX SPIKE	CONC	8.1 #1	7.8 #1	<0.75 U	<0.75 U	<0.75 U	<1.5 U 7
	(06952)	%REC						
		DUPL	7.9	7.5	<0.74 U	<0.74 U	<0.74 U	6.1
		OID	08950220	08950220	08950220	08950220	08950220	08950226

PHENOL Phenol
2NIPHE 2-Nitrophenol
24DClPHE 2,4-Dichlorophenol
2ClPHEN 2-Chlorophenol
24DMePHE 2,4-Dimethylphenol
4Cl3MePH 4-Chloro-3-Methylphenol

FOOTNOTES:
#1 Spiked at 0.200 mg per sample.

JOB FILE: 06948 DATE: 04 SEP 90

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		7	8	9	10	11	12
	ANALYTE.....		240	241	242	243	244	245
	MG/KG.....		246TClPH	24DNPH	4NPHE	2M46DNPH	PClPHE	BENZOAC
SAMP #	DESCRIPTION							ROW
06948	07/09-12-90 #4	CONC	<0.77 U	<3.8 U	<3.8 U	<3.8 U	<3.8 U	<3.8 U 1
	8/2/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06949	07/09-8-90 #2	CONC	<0.74 U	<3.7 U	<3.7 U	<3.7 U	<3.7 U	<3.7 U 2
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06950	07/09-1A-90 #5	CONC	<0.75 U	<3.8 U	<3.8 U	<3.8 U	<3.8 U	<3.8 U 3
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06951	07/09-10-90 #2	CONC	<0.78 U	<3.9 U	3.9 U	<3.9 U	<3.9 U	<3.9 U 4
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06952	07/09-9-90 #2	CONC	<0.73 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U 5
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
BL#01	METHOD BLANK	CONC	<0.66 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U	<3.3 U 6
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220

246TClPH 2,4,6-Trichlorophenol
4NPHE 4-Nitrophenol
PClPHE Pentachlorophenol
24DNPH 2,4-Dinitrophenol
2M46DNPH 2-Methyl-4,6-Dinotrophenol
BENZOAC Benzoic Acid

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 4 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	240	241	242	243	244	245
MG/KG.....	246TClPH	24DNPH	4NPHE	2M46DNPH	PClPHE	BENZOAC

SAMP #	DESCRIPTION												ROW
BL#02	MATRIX SPIKE	CONC	<0.75 U	<3.8 U	3.8	#1	<3.8 U	6.0	#1	<3.8 U	7
	(06952)	%REC									
		DUPL	<0.74 U	<3.7 U	3.5		<3.7 U	6.2		<3.7 U	
		OID	08950220	08950226	08950220		08950220	08950226		08950220	

246TClPH 2,4,6-Trichlorophenol
4NPHE 4-Nitrophenol
PClPHE Pentachlorophenol
24DNPH 2,4-Dinitrophenol
2M46DNPH 2-Methyl-4,6-Dinotrophenol
BENZOAC Benzoic Acid

FOOTNOTES:
#1 Spiked at 0.200 mg per sample.

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 5 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		13	14	15	16	17	18
	ANALYTE.....		246	247	248	249	250	251
	MG/KG.....		2MEPHE	4MEPHE	245TClPH	BZLAL	2FPHE-S	PHE-D6-S
SAMP #	DESCRIPTION							ROW
06948	07/09-12-90 #4	CONC	<0.77 U	<0.77 U	<0.77 U	<1.5 U	97.7%	124%	1
	8/2/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06949	07/09-8-90 #2	CONC	<0.74 U	0.47 J	<0.74 U	<1.5 U	91.3%	111%	2
	8/3/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06950	07/09-1A-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<1.5 U	89.9%	109%	3
	8/3/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06951	07/09-10-90 #2	CONC	<0.78 U	<0.78 U	<0.78 U	<1.6 U	62.4%	70.2%	4
	8/4/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06952	07/09-9-90 #2	CONC	<0.73 U	0.16 J	<0.73 U	<1.5 U	97.4%	116%	5
	8/4/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<1.3 U	53.6%	83.4%	6
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

2MEPHE 2-Methylphenol
4MEPHE 4-Methylphenol
245TClPH 2,4,5-Trichlorophenol
BZLAL Benzyl Alcohol
2FPHE-S 2-Fluorophenol(Surrogate (21-100))
PHE-D6-S Phenol-D6(Surrogate (10-94))

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 6 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....	13	14	15	16	17	18
ANALYTE.....	246	247	248	249	250	251
MG/KG.....	2MEPHE	4MEPHE	245TClPH	BZLAL	2FPHE-S	PHE-D6-S

SAMP #	DESCRIPTION								ROW
BL#02	MATRIX SPIKE	CONC	<0.75 U	0.29 J	<0.75 U	<1.5 U	107%	143%	7
	(06952)	%REC							
		DUPL	<0.74 U	0.26 J	<0.74 U	<1.5 U	102%	145%	
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

2MEPHE 2-Methylphenol
4MEPHE 4-Methylphenol
245TClPH 2,4,5-Trichlorophenol
BZLAL Benzyl Alcohol
2FPHE-S 2-Fluorophenol(Surrogate (21-100))
PHE-D6-S Phenol-D6(Surrogate (10-94))

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 7 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		19	20	21	22	23	24
	ANALYTE.....		252	263	264	265	266	267
	MG/KG.....		246TBP-S	NNDMeAM	BClIPrE	NNDNPAM	NITROBEN	ISOPHOR
SAMP #	DESCRIPTION							ROW
06948	07/09-12-90 #4	CONC	46.1%	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<0.77 U	1
	8/2/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06949	07/09-8-90 #2	CONC	74.3%	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06950	07/09-1A-90 #5	CONC	33.3%	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	3
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06951	07/09-10-90 #2	CONC	37.2%	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	4
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06952	07/09-9-90 #2	CONC	46.5%	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	5
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
BL#01	METHOD BLANK	CONC	42.1%	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	6
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220

246TBP-S 2,4,6-Tribromophenol(Surrogate (10-123))
BClIPrE Bis(2-Chloroisopropyl)Ether
NITROBEN Nitrobenzene
NNDMeAM N-Nitrosodimethylamine
NNDNPAM N-Nitroso-Di-N-Propylamine
ISOPHOR Isophorone

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 8 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....	19	20	21	22	23	24
ANALYTE.....	252	263	264	265	266	267
MG/KG.....	246TBP-S	NNDMeAM	BClIPrE	NNDNPAM	NITROBEN	ISOPHOR

SAMP #	DESCRIPTION								ROW
BL#02	MATRIX SPIKE	CONC	55.1%	<0.75 U	<0.75 U	4.0 #1	<0.75 U	<0.75 U	7
	(06952)	%REC							
		DUPL	77.9%	<0.74 U	<0.74 U	3.9	<0.74 U	<0.74 U	
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

246TBP-S 2,4,6-Tribromophenol(Surrogate (10-123))
BClIPrE Bis(2-Chloroisopropyl)Ether
NITROBEN Nitrobenzene
NNDMeAM N-Nitrosodimethylamine
NNDNPAM N-Nitroso-Di-N-Propylamine
ISOPHOR Isophorone

FOOTNOTES:
#1 Spiked at 0.100 mg per sample.

JOB FILE: 06948 DATE: 04 SEP 90

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		25	26	27	28	29	30
	ANALYTE.....		268	269	270	271	272	273
	MG/KG.....		BClEtoME	26DNTOL	24DNTOL	12DPHYD	BENZIDI	33DClBEZ
SAMP #	DESCRIPTION							ROW
06948	07/09-12-90 #4	CONC	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<3.8 U	<1.5 U	1
	8/2/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06949	07/09-8-90 #2	CONC	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<3.7 U	<1.5 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06950	07/09-1A-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<3.8 U	<1.5 U	3
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06951	07/09-10-90 #2	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<3.9 U	<1.6 U	4
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06952	07/09-9-90 #2	CONC	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<3.6 U	<1.5 U	5
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<3.3 U	<1.3 U	6
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

BClEtoME Bis(2-Chloroethoxy)Methane
24DNTOL 2,4-Dinitrotoluene
BENZIDI Benzidine
26DNTOL 2,6-Dinitrotoluene
12DPHYD 1,2-Diphenylhydrazine
33DClBEZ 3,3'Dichlorobenzidine

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 10 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....		25	26	27	28	29	30	
ANALYTE.....		268	269	270	271	272	273	
MG/KG.....		BClEtoME	26DNTOL	24DNTOL	12DPHYD	BENZIDI	33DClBEZ	
SAMP #	DESCRIPTION							ROW
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	3.4 #1	<0.75 U	<3.8 U	<1.5 U	7
	(06952)	%REC						
		DUPL	<0.74 U	<0.74 U	3.5	<0.74 U	<3.7 U	<1.5 U	
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

BClEtoME Bis(2-Chloroethoxy)Methane
24DNTOL 2,4-Dinitrotoluene
BENZIDI Benzidine
26DNTOL 2,6-Dinitrotoluene
12DPHYD 1,2-Diphenylhydrazine
33DClBEZ 3,3'Dichlorobenzidine

FOOTNOTES:
#1 Spiked at 0.100 mg per sample.

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 11 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		31	32	33	34	35	36
	ANALYTE.....		284	285	286	287	288	289
	MG/KG.....		BClEtE	13DClB	14DClB	12DClB	HClETA	124TClB
SAMP #	DESCRIPTION							ROW
06948	07/09-12-90 #4	CONC	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<0.77 U	1
	8/2/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06949	07/09-8-90 #2	CONC	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06950	07/09-1A-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	3
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06951	07/09-10-90 #2	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	4
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06952	07/09-9-90 #2	CONC	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	5
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	6
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

BClEtE Bis(2-Chloroethyl)Ether
14DClB 1,4-Dichlorobenzene
HClETA Hexachloroethane
13DClB 1,3-Dichlorobenzene
12DClB 1,2-Dichlorobenzene
124TClB 1,2,4-Trichlorobenzene

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 12 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		31	32	33	34	35	36
	ANALYTE.....		284	285	286	287	288	289
	MG/KG.....		BClEtE	13DClB	14DClB	12DClB	HClETA	124TClB
SAMP #	DESCRIPTION							ROW
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	3.2 #1	<0.75 U	<0.75 U	3.5 #1 7
	(06952)	%REC						
		DUPL	<0.74 U	<0.74 U	3.2	<0.74 U	<0.74 U	3.6
		OID	08950220	08950220	08950220	08950220	08950220	08950220

BClEtE Bis(2-Chloroethyl)Ether
14DClB 1,4-Dichlorobenzene
HClETA Hexachloroethane
13DClB 1,3-Dichlorobenzene
12DClB 1,2-Dichlorobenzene
124TClB 1,2,4-Trichlorobenzene

FOOTNOTES:
#1 Spiked at 0.100 mg per sample.

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 13 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		37	38	39	40	41	42	
	ANALYTE.....		290	291	292	293	294	295	
	MG/KG.....		NAPHTH	HClBU	HClCYPD	2ClNAPH	ACENAY	DMePHTH	
SAMP #	DESCRIPTION								ROW
06948	07/09-12-90 #4	CONC	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<0.77 U	1
	8/2/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06949	07/09-8-90 #2	CONC	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	2
	8/3/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06950	07/09-1A-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	3
	8/3/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06951	07/09-10-90 #2	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	4
	8/4/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06952	07/09-9-90 #2	CONC	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	5
	8/4/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	6
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

NAPHTH Naphthalene
HClCYPD Hexachlorocyclopentadiene
ACENAY Acenaphthylene
HClBU Hexachlorobutadiene
2ClNAPH 2-Chloronaphthalene
DMePHTH Dimethyl Phthalate

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 14 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....		37	38	39	40	41	42	
ANALYTE.....		290	291	292	293	294	295	
MG/KG.....		NAPHTH	HClBU	HClCYPD	2ClNAPH	ACENAY	DMePHTH	
SAMP #	DESCRIPTION							ROW
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	7
	(06952)	%REC						
		DUPL	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

NAPHTH Naphthalene
HClBU Hexachlorobutadiene
HClCYPD Hexachlorocyclopentadiene
2ClNAPH 2-Chloronaphthalene
ACENAY Acenaphthylene
DMePHTH Dimethyl Phthalate

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 15 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		43	44	45	46	47	48
	ANALYTE.....		296	297	298	299	300	301
	MG/KG.....		ACENAP	FLUORE	DEtPHTH	4ClPHPHE	NNDPHAM	4BrPHET
SAMP #	DESCRIPTION							ROW
06948	07/09-12-90 #4	CONC	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<0.77 U	1
	8/2/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06949	07/09-8-90 #2	CONC	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06950	07/09-1A-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	3
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06951	07/09-10-90 #2	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	4
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06952	07/09-9-90 #2	CONC	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	5
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	6
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220

ACENAP Acenaphthene
DEtPHTH Diethyl Phthalate
NNDPHAM N-Nitrosodiphenyl Amine
FLUORE Fluorene
4ClPHPHE 4-Chlorophenyl Phenyl Ether
4BrPHET 4-Bromophenyl Ether

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 16 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		43	44	45	46	47	48
	ANALYTE.....		296	297	298	299	300	301
	MG/KG.....		ACENAP	FLUORE	DEtPHTH	4ClPHPHE	NNDPHAM	4BrPHET
SAMP #	DESCRIPTION							ROW
BL#02	MATRIX SPIKE	CONC	3.2 #1	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U 7
	(06952)	%REC						
		DUPL	3.4	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U
		OID	08950220	08950220	08950220	08950220	08950220	08950220

ACENAP Acenaphthene
DEtPHTH Diethyl Phthalate
NNDPHAM N-Nitrosodiphenyl Amine
FLUORE Fluorene
4ClPHPHE 4-Chlorophenyl Phenyl Ether
4BrPHET 4-Bromophenyl Ether

FOOTNOTES:
#1 Spiked at 0.100 mg per sample.

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 18 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	49	50	51	52	53	54	
	ANALYTE.....	302	303	304	305	306	307	
	MG/KG.....	HClBEN	PHENAN	ANTRAC	DBuPHTH	FLANTHE	PYRENE	
SAMP #	DESCRIPTION							ROW
BL#02	MATRIX SPIKE	CONC <0.75 U	<0.75 U	<0.75 U	0.13 BJ	<0.75 U	7.0 #1	7
	(06952)	%REC						
		DUPL <0.74 U	<0.74 U	<0.74 U	0.12 BJ	<0.74 U	7.1	
		OID 08950220	08950220	08950220	08950220	08950220	08950220	

HClBEN Hexachlorobenzene
ANTRAC Anthracene
FLANTHE Fluoranthene
PHENAN Phenanthrene
DBuPHTH Dibutylphthalate
PYRENE Pyrene

FOOTNOTES:
#1 Spiked at 0.100 mg per sample.

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 19 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		55	56	57	58	59	60
	ANALYTE.....		308	309	310	311	312	313
	MG/KG.....		BuBePHTH	CHRYSE	BAANTHR	B2EHPH	DNOcPHT	BBFLANT
SAMP #	DESCRIPTION							ROW
06948	07/09-12-90 #4	CONC	<0.77 U	<0.77 U	<0.77 U	0.097 J	<0.77 U	<0.77 U	1
	8/2/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06949	07/09-8-90 #2	CONC	<0.74 U	<0.74 U	<0.74 U	0.29 J	<0.74 U	<0.74 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06950	07/09-1A-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	0.11 J	<0.75 U	<0.75 U	3
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06951	07/09-10-90 #2	CONC	<0.78 U	<0.78 U	<0.78 U	0.57 J	<0.78 U	<0.78 U	4
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06952	07/09-9-90 #2	CONC	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	5
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	6
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220

BuBePHTH Butylbenzylphthalate
BAANTHR Benzo(a)Anthracene
DNOcPHT Di-N-Octylphthalate
CHRYSE Chrysene
B2EHPH Bis(2-Ethylhexyl)Phthalate
BBFLANT Benzo(b)Fluoranthene

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 20 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	55	56	57	58	59	60	
	ANALYTE.....	308	309	310	311	312	313	
	MG/KG.....	BuBePHTH	CHRYSE	BAANTHR	B2EHPH	DNOcPHT	BBFLANT	
SAMP #	DESCRIPTION							ROW
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	7
	(06952)	%REC						
		DUPL	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

BuBePHTH Butylbenzylphthalate
BAANTHR Benzo(a)Anthracene
DNOcPHT Di-N-Octylphthalate
CHRYSE Chrysene
B2EHPH Bis(2-Ethylhexyl)Phthalate
BBFLANT Benzo(b)Fluoranthene

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 21 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		61	62	63	64	65	66	
	ANALYTE.....		314	315	316	317	318	319	
	MG/KG.....		BKFLANT	BAPYRE	I123PYR	DBAHANT	B-GHI-PY	ANILINE	
SAMP #	DESCRIPTION								ROW
06948	07/09-12-90 #4	CONC	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<0.77 U	<1.5 U	1
	8/2/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06949	07/09-8-90 #2	CONC	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<1.5 U	2
	8/3/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06950	07/09-1A-90 #5	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<1.5 U	3
	8/3/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06951	07/09-10-90 #2	CONC	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<0.78 U	<1.6 U	4
	8/4/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
06952	07/09-9-90 #2	CONC	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<1.5 U	5
	8/4/90	%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	
BL#01	METHOD BLANK	CONC	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<0.66 U	<1.3 U	6
		%REC							
		DUPL							
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

BKFLANT Benzo(k)Fluoranthene
I123PYR Indeno(1,2,3-C,D)Pyrene
B-GHI-PY Benzo(G,H,I)Perylene
BAPYRE Benzo(a)Pyrene
DBAHANT Dibenzo(A,H)Anthracene
ANILINE Aniline

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 22 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

COLUMN.....		61	62	63	64	65	66
ANALYTE.....		314	315	316	317	318	319
MG/KG.....		BKFLANT	BAPYRE	I123PYR	DBAHANT	B-GHI-PY	ANILINE
SAMP #	DESCRIPTION						ROW
BL#02	MATRIX SPIKE	CONC	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<0.75 U	<1.5 U	7
	(06952)	%REC						
		DUPL	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<1.5 U	
		OID	08950220	08950220	08950220	08950220	08950220	08950220	

BKFLANT Benzo(k)Fluoranthene
I123PYR Indeno(1,2,3-C,D)Pyrene
B-GHI-PY Benzo(G,H,I)Perylene
BAPYRE Benzo(a)Pyrene
DBAHANT Dibenzo(A,H)Anthracene
ANILINE Aniline

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 23 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		67	68	69	70	71	72
	ANALYTE.....		320	321	322	323	324	325
	MG/KG.....		4ClANIL	DBENZOFU	2MeNAPH	2NANIL	3NANIL	4NANIL
SAMP #	DESCRIPTION							ROW
06948	07/09-12-90 #4	CONC	<1.5 U	<0.77 U	<0.77 U	<3.8 U	<3.8 U	<3.8 U	1
	8/2/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06949	07/09-8-90 #2	CONC	<1.5 U	<0.74 U	<0.74 U	<3.7 U	<3.7 U	<3.7 U	2
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06950	07/09-1A-90 #5	CONC	<1.5 U	<0.75 U	<0.75 U	<3.8 U	<3.8 U	<3.8 U	3
	8/3/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06951	07/09-10-90 #2	CONC	<1.6 U	<0.78 U	0.034 J	<3.9 U	<3.9 U	<3.9 U	4
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
06952	07/09-9-90 #2	CONC	<1.5 U	<0.73 U	<0.73 U	<3.6 U	<3.6 U	<3.6 U	5
	8/4/90	%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220
BL#01	METHOD BLANK	CONC	<1.3 U	<0.66 U	<0.66 U	<3.3 U	<3.3 U	<3.3 U	6
		%REC						
		DUPL						
		OID	08950220	08950220	08950220	08950220	08950220	08950220

4ClANIL 4-Chloroaniline
2MeNAPH 2-Methylnaphthalene
3NANIL 3-Nitroaniline
DBENZOFU Dibenzofuran
2NANIL 2-Nitroaniline
4NANIL 4-Nitroaniline

JOB FILE: 06948 DATE: 04 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 24 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RD0G117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....		67	68	69	70	71	72
	ANALYTE.....		320	321	322	323	324	325
	MG/KG.....		4ClANIL	DBENZOFU	2MeNAPH	2NANIL	3NANIL	4NANIL
SAMP #	DESCRIPTION							ROW
BL#02	MATRIX SPIKE	CONC	<1.5 U	<0.75 U	<0.75 U	<3.8 U	<3.8 U	<3.8 U	7
	(06952)	%REC						
		DUPL	<1.5 U	<0.74 U	<0.74 U	<3.7 U	<3.7 U	<3.7 U
		OID	08950220	08950220	08950220	08950220	08950220	08950220

4ClANIL 4-Chloroaniline
2MeNAPH 2-Methylnaphthalene
3NANIL 3-Nitroaniline
DBENZOFU Dibenzofuran
2NANIL 2-Nitroaniline
4NANIL 4-Nitroaniline

JOB FILE: 06948 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 25 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	73	74	75	76
	ANALYTE.....	326	327	328	900
	MG/KG.....	NB-D5-S	2FlBP-S	PTERP-S	% MOISTR
SAMP #	DESCRIPTION				ROW
06948	07/09-12-90 #4	CONC 58.3%	78.0%	109%	18.4 1
	8/2/90	%REC			
		DUPL			
		OID 08950220	08950220	08950220	05150219
06949	07/09-8-90 #2	CONC 86.0%	77.6%	157%	12.7 2
	8/3/90	%REC			
		DUPL			
		OID 08950220	08950220	08950220	05150219
06950	07/09-1A-90 #5	CONC 75.7%	74.0%	154%	12.5 3
	8/3/90	%REC			
		DUPL			
		OID 08950220	08950220	08950220	05150219
06951	07/09-10-90 #2	CONC 56.1%	49.5%	109%	15.9 4
	8/4/90	%REC			
		DUPL			
		OID 08950220	08950220	08950220	05150219
06952	07/09-9-90 #2	CONC 92.0%	77.9%	196%	12.3 5
	8/4/90	%REC			
		DUPL			
		OID 08950220	08950220	08950220	05150219
BL#01	METHOD BLANK	CONC 32.8%	48.9%	67.6%	N/A 6
		%REC			
		DUPL			
		OID 08950220	08950220	08950220	05150219

NB-D5-S Nitrobenzene-D5(Surrogate (35-114)) 2FlBP-S 2-Fluorobiphenyl(Surrogate (43-116))
PTERP-S p-Terphenyl-D14(Surrogate (33-141)) % MOISTR % MOISTURE

JOB FILE: 06948 DATE: 20 SEP 90

********** ANALYTICAL LABORATORY GROUP - DATA REPORTING SHEET (PAGE 26 OF 26)**********

JOB DESCRIPTION: CRANE - OLD RIFLE RANGE (MAGEE) JOB NUMBER: RDOG117E1170001 RECEIPT DATE: 07 AUG 90
CHEM. PRESERVATIVE: TYPE OF SAMPLE: SEDIMENT EST. COMP. DATE: 07 SEP 90

	COLUMN.....	73	74	75	76
	ANALYTE.....	326	327	328	900
	MG/KG.....	NB-D5-S	2FlBP-S	PTERP-S	% MOISTR
SAMP #	DESCRIPTION				ROW
BL#02	MATRIX SPIKE	CONC 96.4%	87.3%	225%	N/A 7
	(06952)	%REC			
		DUPL 97.2%	86.4%	217%	
		OID 08950220	08950220	08950220	05150219

NB-D5-S Nitrobenzene-D5(Surrogate (35-114))
2FlBP-S 2-Fluorobiphenyl(Surrogate (43-116))
PTERP-S p-Terphenyl-D14(Surrogate (33-141))
% MOISTR % MOISTURE

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-12-90#4

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/2/90

Matrix: (soil/water) _____ Lab Sample ID: 6948

Sample wt/vol: 31.74 (g/mL) _____ Lab File ID: 7A1933

Level: (low/med) _____ Date Received: 7 Aug 90

% Moisture: not dec. 18 dec. _____ Date Extracted: 8 Aug 90

Extraction: (SepF/Cont/Sonc) Soxh Date Analyzed: 8 Aug 90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: —

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.39	8.5	—
2. —	unknown - hydrocarbon	7.40	0.85	—
3. 763939	3-hexen-2-one	7.61	1.5	52
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-8-90#2

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/3/90

Matrix: (soil/water) _____ Lab Sample ID: 6949

Sample (wt/vol): 31.07 (g/mL) _____ Lab File ID: 7A1934

Level: (low/med) _____ Date Received: 7 Aug 90

% Moisture: not dec. 13 dec. _____ Date Extracted: 9 Aug 90

Extraction: (SepF/Cont/Sonc) Sonc Date Analyzed: 8 Aug 90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: _____

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.39	28	—
2. —	unknown	5.83	1.8	
3. 763939	3-hexen-2-one	7.48	1.4	60
4. 10544500	Sulfur, S8	29.21	1.5	79
5.				
6.				
7.				
8.				
9.				
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29.				
30.				

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-1A-90#5

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/3/90

Matrix: (soil/water) _____ Lab Sample ID: 6951

Sample (wt/vol): 30.31 (g/mL) _____ Lab File ID: 7A1935

Level: (low/med) _____ Date Received: 7 Aug 90

% Moisture: not dec. 12 dec. _____ Date Extracted: 8 Aug 90

Extraction: (SepF/Cont/Sonc) Sonc Date Analyzed: 8 Aug 90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: —

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.45	14	—
2. 763939	3-hexen-2-one	7.53	1.4	52
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
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17.				
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21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-10-90#2

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/4/90

Matrix: (soil/water) _____ Lab Sample ID: 6951

Sample wt/vol: 30.41 (g/mL) _____ Lab File ID: 7A1936

Level: (low/med) _____ Date Received: 7 Aug 90

% Moisture: not dec. 16 dec. _____ Date Extracted: 8 Aug 90

Extraction: (SepF/Cont/Sonc) Soxh Date Analyzed: 8 Aug 90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: —

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.47	22	—
2. 17257817	1-(3-ethyloxiranyl) ethanone	7.31	0.78	52
3. 763939	3-hexen-2-one	7.51	1.5	
4.				
5.				
6.				
7.				
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9.				
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23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

07/09-9-90H2

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/4/90

Matrix: (soil/water) _____ Lab Sample ID: 6952

Sample wt/vol: 31.31 (g/mL) _____ Lab File ID: >A1937

Level: (low/med) _____ Date Received: 7 Aug 90

% Moisture: not dec. 12 dec. _____ Date Extracted: 8 Aug 90

Extraction: (SepF/Cont/Sonc) Soxh Date Analyzed: 8 Aug 90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: —

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. —	unknown	4.37	28	—
2. —	unknown-hydrocarbon	7.14	1.4	—
3.	—	7.38	1.6	—
4. 6086211	1-methyl-1H-1,2,4-triazole	7.60	3.6	45
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1E

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SVBLK

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) _____ Lab Sample ID: 6893 B

Sample (wt/vol: 30.0 (g/mL) _____ Lab File ID: >A1930

Level: (low/med) _____ Date Received: 3 Aug 90

% Moisture: not dec. — dec. _____ Date Extracted: 8 Aug 9

Extraction: (SepF/Cont/Sonc) Sonh Date Analyzed: 8 Aug 90

GPC Cleanup: (Y/N) _____ pH: _____ Dilution Factor: —

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 52039540	ethyl ester, 2-hydroxybenzoic acid	4.45	8.0	31
2. —	unknown	7.34	0.70	—
3. 763939	3-hexen-2-one	7.53	1.4	52
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3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: CRANE - Old Rifle Range

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 8/4/90

Matrix Spike - EPA Sample No.: 07/69-9-90#2 Level: (low/med) _____

6952

26.72gm - dry wt of Sample

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC
Phenol	7485	730 u	8100	108*	26- 90
2-Chlorophenol	7485	730 u	7800	104*	25-102
1,4-Dichlorobenznene	3742	730 u	3200	85.5	28-104
N-Nitroso-di-n-prop.(1)	3742	730 u	4000	107	41-126
1,2,4-Trichlorobenzene	3742	730 u	3500	93.5	38-107
4-Chloro-3-methylphenol	7485	1500 u	1500 u	—	26-103
Acenaphthene	3742	730 u	3200	85.5	31-137
4-Nitrophenol	7485	3600 u	3800	102	11-114
2,4-Dinitrotoluene	3742	730 u	3400	90.9	28- 89
Pentachlorophenol	7485	3600 u	6000	80.2	17-109
Pyrene	7485	730 u	7000	187	35-142

26.99g - dry wt of Sample

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	7410	7900	107*	2.5	35	26- 90
2-Chlorophenol	7410	7500	101	3.9	50	25-102
1,4-Dichlorobenzene	3705	3200	86.3	0	27	28-104
N-Nitroso-di-n-prop.(1)	3705	3900	105	2.5	38	41-126
1,2,4-Trichlorobenzene	3705	3600	97.2	2.8	23	38-107
4-Chloro-3-methylphenol	7410	6100	82.3	122*	33	26-103
Acenaphthene	3705	3400	91.2	6.0	19	31-137
4-Nitrophenol	7410	3500	47.2	8.2	50	11-114
2,4-Dinitrotoluene	3705	3400	91.7	0	47	28- 89
Pentachlorophenol	7410	6200	83.4	3.2	47	17-109
Pyrene	3705	7100	192*	1.4	36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 11 outside limits
Spike Recovery: 5 out of 28 outside limits

Comments: High recoveries attributed to matrix effects

DEPARTMENT OF THE ARMY
WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS
3909 HALLS FERRY ROAD
VICKSBURG, MISSISSIPPI 39180-6199

REPLY TO
ATTENTION OF

26 September 1990

Environmental Laboratory

U. S. Army Engineer District, Wilmington
ATTN: Mr. Robert Magee
69 Darlington Avenue
Wilmington, NC 28403

Dear Bob:

Enclosed are the results for Site 1 (Old Rifle Range), Crane. All analyses are complete except for antimony which is not enclosed. Both of our antimony lamps burned out during the course of the project. As soon as new Sb lamps arrive the analyses will be completed.

If you have any immediate questions, please contact me; otherwise Ann Strong, C/ALG, will be back in the office 2 October 1990.

Sincerely,

Richard A. Karn

Richard A. Karn
Research Chemist
Analytical Laboratory Group

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: OLD RIFLE RANGE (CRANE)

SAMPLERS: (Signature)

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS
				LAB ID- 6757- 6770
7/24/90	0:930	07/09-4-90 #1	1	
"	0:935	#2	1	
"	0:938	#3	1	
"	0:950	#4	1	
"	10:30	#5	1	
"	10:31	#5V	1	VOA- Vial not filled completely lbs
7-26-90	0:945	40 ML RESINATE	1	VOA- Bubbles Present lbs
"	0950	500ML RESINATE	1	
7-25-90	14:43	07/09-5-90 #1	1	
"	14:45	#2	1	
"	14:48	#3	1	
"	15:17	#4	1	
"		#4 V	1	Did not arrive. lbs 7/27/90

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Allinton	26 July 90 950	Linda K. Stevenson			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES F... .96

PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: CRANE OLD RIFLE RANGE

SAMPLERS: (Signature) Paul E Albritton

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS
26 July 90	11:00	07/09-5-90 (500ml) steam cleaning water	1	LAB ID 6804-6812
" "	11:07	07/09-5-90 40ml " "	1	
"	13:20	07/09-5-90 40ml Resinate	1	
	13:36	07/09-5-90 Soil #1	1	
	13:39	07/09-3-90 #2	1	
	:41	07/09-3-90 #3	1	
	14:00	07/09-3-90 #4	1	
	14:30	07/09-3-90 #5V	1	
	14:33	07/09-3-90 #5	1	
27 July 90	12:19	07/09-6-90 #1	1	
	12:21	" " #2	1	
	12:25	" " #3	1	
	12:39	" " 4V	1	
	12:45	" " 4	1	

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Albritton	7-30-90 12:49	Linda K. Stevenson			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES F R No. 096

PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: CRANE OLD RIFLE RANGE

SAMPLERS: (Signature) Paul E Allinton

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS
7-30-90	0801	07/09-7-90 #1 05'	1	LAB ID- 6813-6849
	0804	2 1.0'	1	
	0809	3 2.0'	1	
	0812	4 COMPOSITE	1	
	0837	5	1	
	0909	6V(a)	1	
	0909	6V(b)	1	
	0913	6	1	
	0916	7	1	
	1047	500 mL Tide Water	1	
	1048	500 mL Rinsate	1	
	1050	40 mL Rinsate	1	
	10.51	40 Rinsate	1	

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Allinton	7-30-90 12:49	Linda K. Stevens			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES FORM R No 96

PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: CRANE OLD RIFLE RANGE

SAMPLERS: (Signature) Paul E Albertson

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS
				LAB ID 6876 - 6894
7-31-90	10:24	07/09-11-90 #1	1	
	10:25	2	1	
	10:26	3	1	
	10:55	4	1	
	10:56	5	1	
	10:59	5V(a)	1	
	10:59	5V(b)	1	
	1125	6	1	
8-1-90	0845	07/09-2-90 #1	1	
	0847	2	1	
	0850	3	1	
	0915	4	1	
	0950	5	1	
	0948	5Va	1	
	0946	5Vb	1	
	1100	FINAL RINSE	2	small bubble

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Albertson	8-2-90 0930	Linda K Stevenson			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES FORM R No 6

PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: CRANE OLD RIFLE RANGE

SAMPLERS: (Signature) Paul E Albritton

REMARKS: LAB ID 6918-6952

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS
8-3-90	1309	07/09-8-90 #1	1
	1000	2	1
	1355	~~3~~ 3Va	1
	1350	~~3~~ 3Vb	~~1~~
	1455	07/09-14-90 1	1
	1459	2	1
	1500	3	1
	1515	4	1
	1525	5 V ~~4X~~	2
	1530	5	1
8-4-90	0915	07/09-10-90 #1	1
	1010	2	1
	1008	2 V	2
	1038	07/09-9-90 #1	1
	1106	#2	1
	1101	#2 V	2

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Albritton	8-6-90 0800	Linda K. Stevenson			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES FORM 1 JUN 96

PREVIOUS EDITIONS OBSOLETE

USAE WATERWAYS EXPERIMENT STATION

CHAIN OF CUSTODY RECORD

PROJECT NAME: Crane Old Rifle Range

SAMPLERS: (Signature) Paul E Albertson

DATE	TIME	SAMPLE ID	NO. OF CONTAINERS	REMARKS
				LAB ID 6918-6952
8-2-90	1310	07/09-12-90 #1	1	
	1311	2	1	
	1313	3	1	
	1334	4	1	
	1332	4V	2	
	1442	FINAL RINSE	2	Bubbles
8-3-90	1600	07/09-1A-90 FINAL RINSE	1	
	1550	GLASS → PLASTIC →	1	
	1555	Final Rinse 40 ml	2	
	1545	Crane Deionized H2O	1	
8-4-90	1630	07/09-9&10-90	2	Bubbles these vials were 07/09-9-90, NOT 07/09-10
	1422	07/08-8-90 Rinse	2	Bubbles labeled 07/09-8-90, NOT 07/08-8-90
	1424	Plastic " "	1	
	1426	Glass	1	

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Paul E Albertson	8-6-90 0800	Linda K. Stevenson			
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Date /Time	Remarks	

WES FORM RN '96 PREVIOUS EDITIONS OBSOLETE

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Toluene - d8 (TOL) MATRIX: soil

LCL: 81 UCL: 117

	Date	Samp.	Rec. %
01	–	6766B	103
02	–	6820B	107
03	–	6887B	101
04	–	6933B	100
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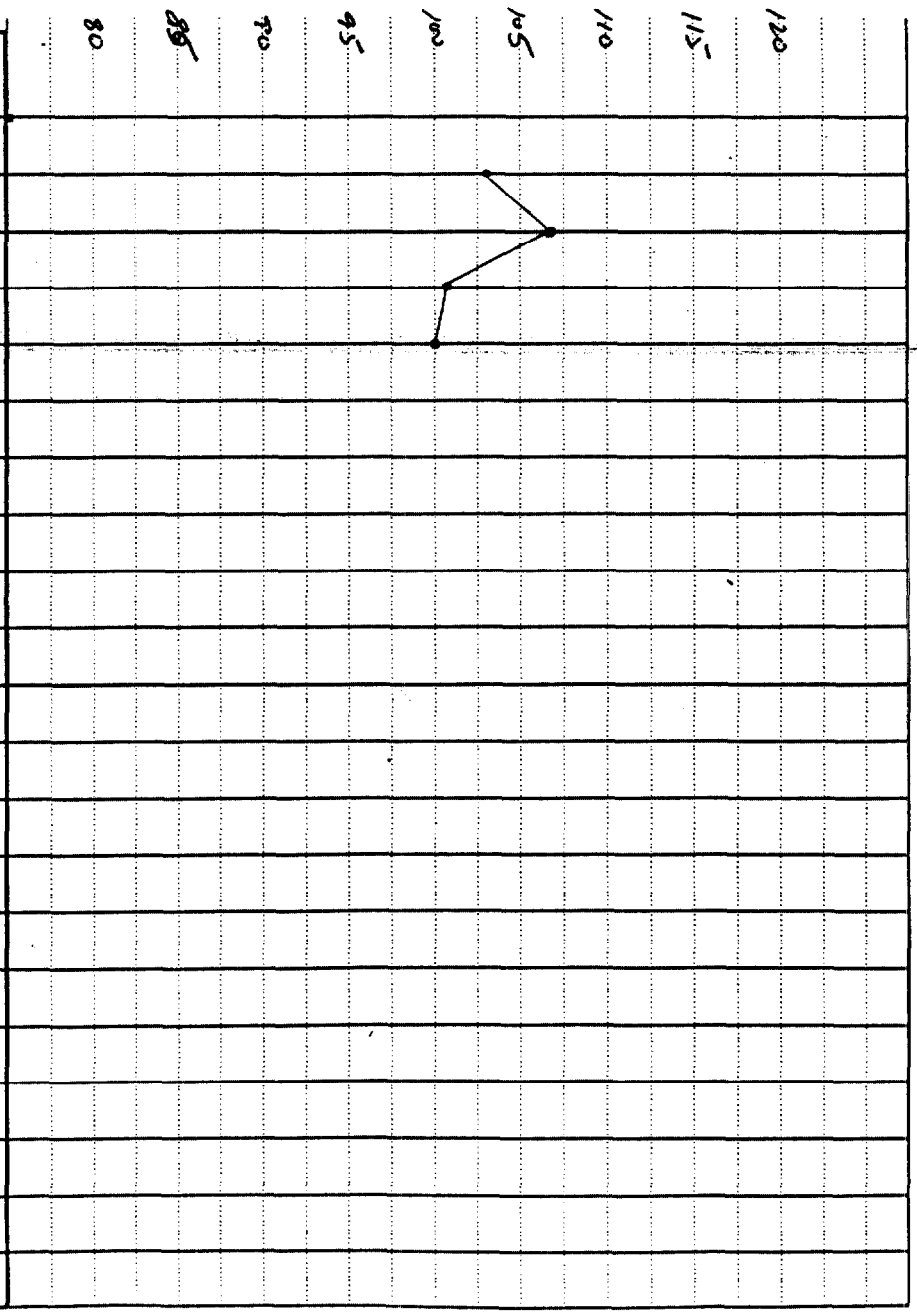

m

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: BromoFluorobenzene (BFB) MATRIX: Soil

LCL: 74 UCL: 121

	Date	Samp.	Rec.
01	-	6766B	107
02	-	6820B	103
03	-	6887B	94.4
04	-	6933B	98.4
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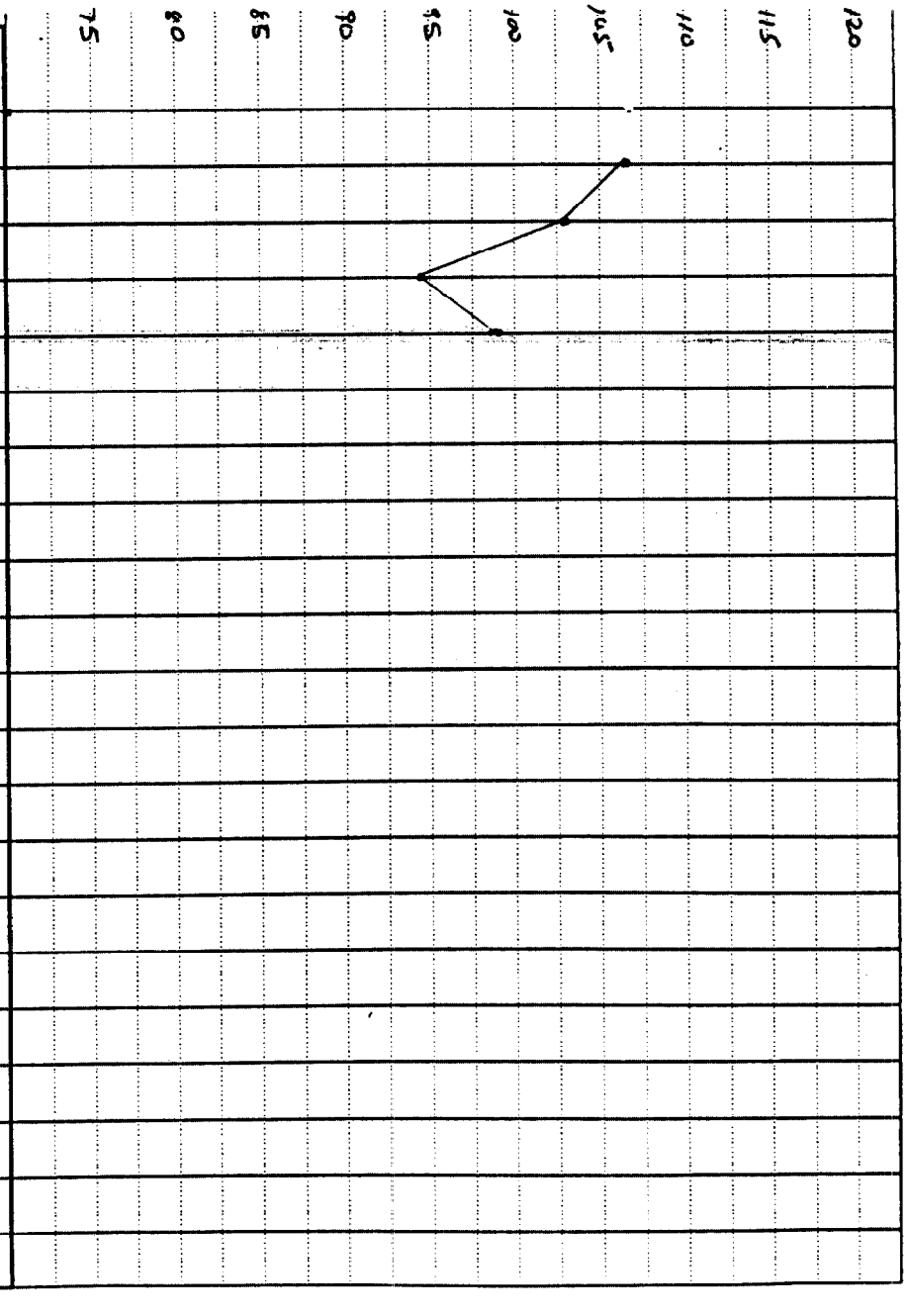

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 1,2 -Dichloroethane - d4 (DCE) MATRIX: Soil

LCL: 70 UCL: 121

	Date	Samp.	Rec. %
01	–	6766B	97.9
02	–	6820B	107
03	–	6887B	101
04	–	6933B	98.4
05			
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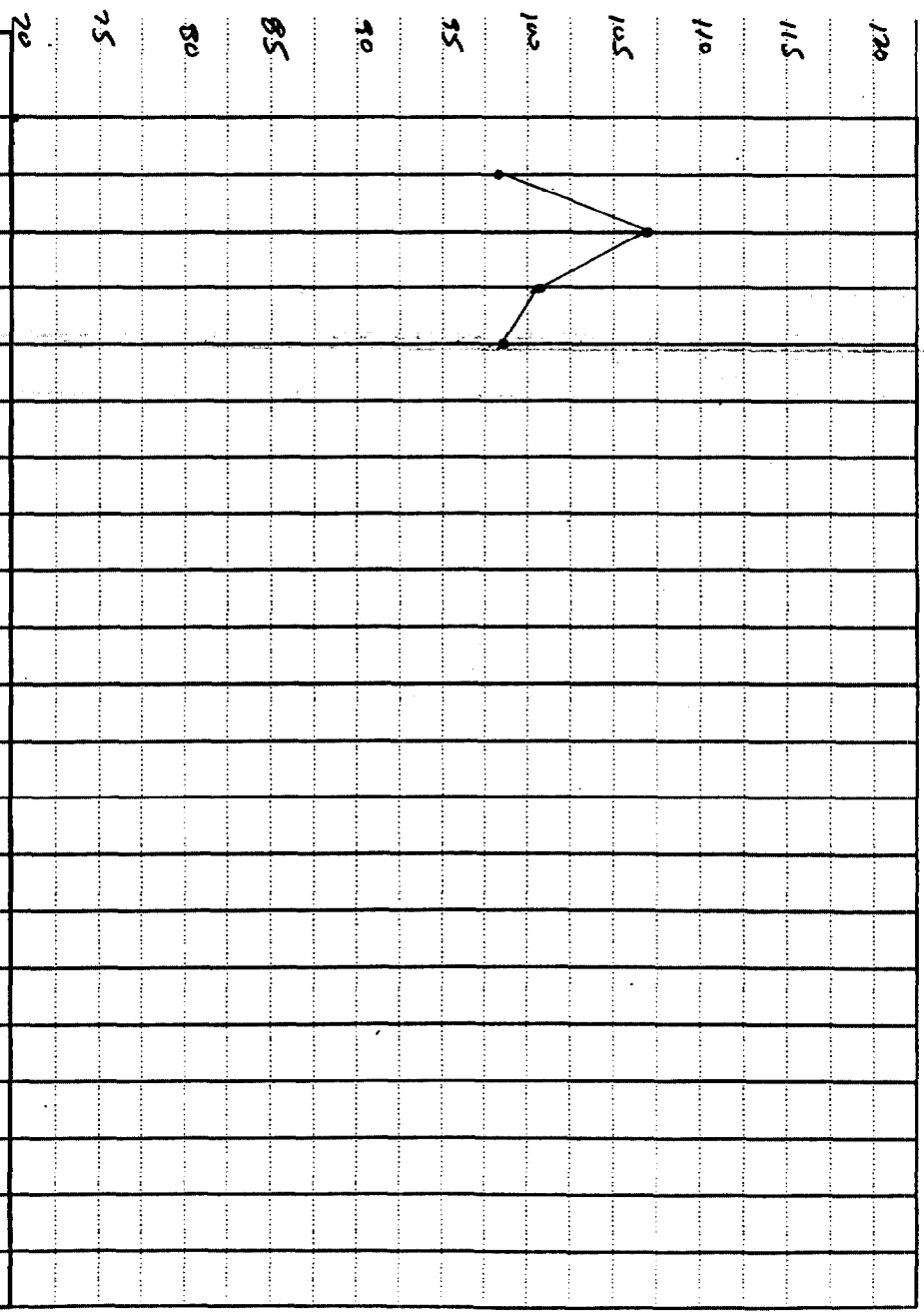

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BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Nitrobenzene-d5 (NBZ) MATRIX: Soil

LCL: 23 UCL: 120

	Date	Samp.	Rec. %
01	-	6767B	44.8
02	-	6829B	44.8
03	-	6893B	32.8
04	-	6948B	32.8
05			
06			
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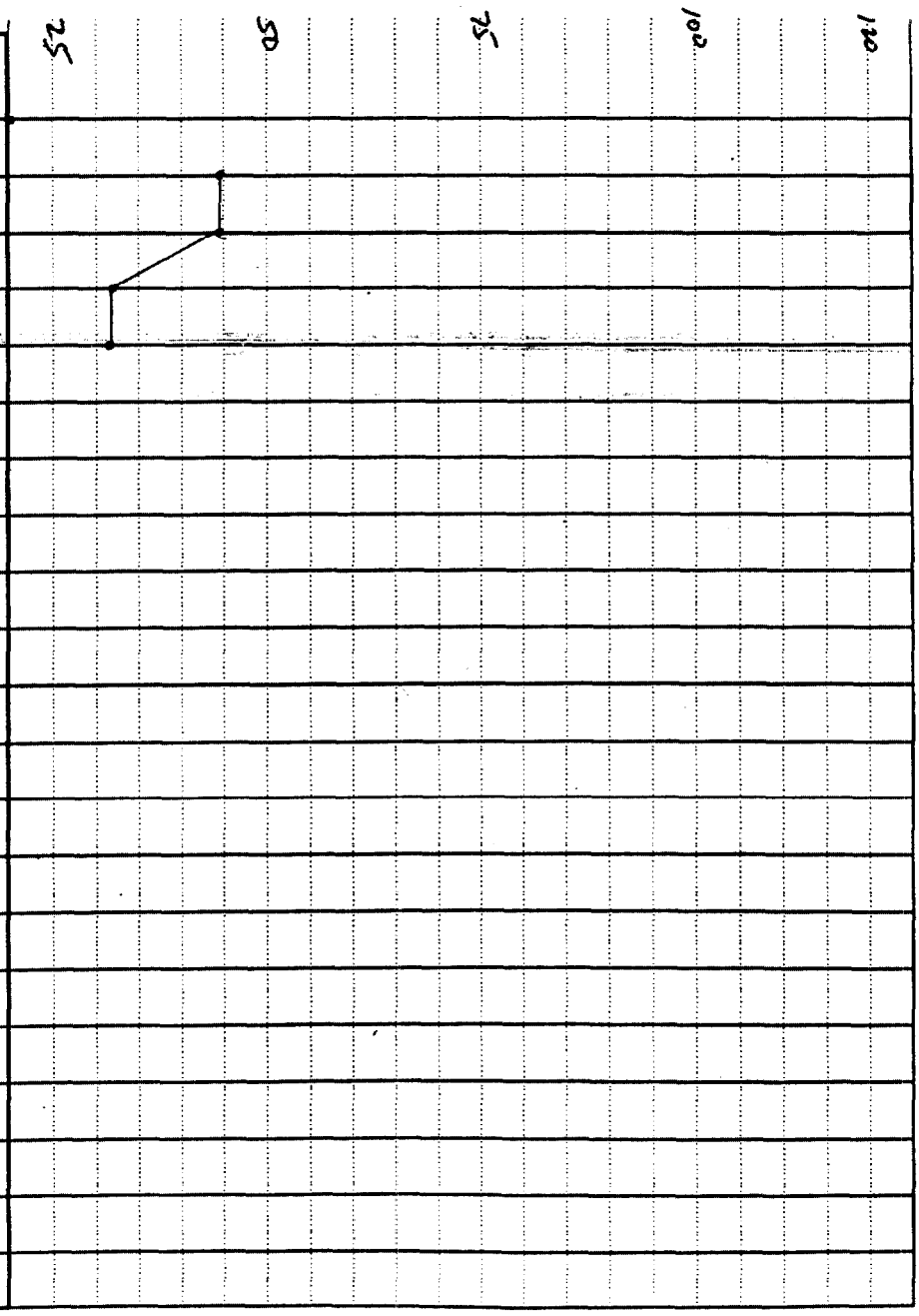

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 2-Fluorobiphenyl (FBP) MATRIX: Soil

LCL: 30 UCL: 115

	Date	Samp.	Rec. %
01	—	6767B	78.4
02	—	6829B	78.4
03	—	6893B	48.9
04	—	6948B	48.9
05			
06			
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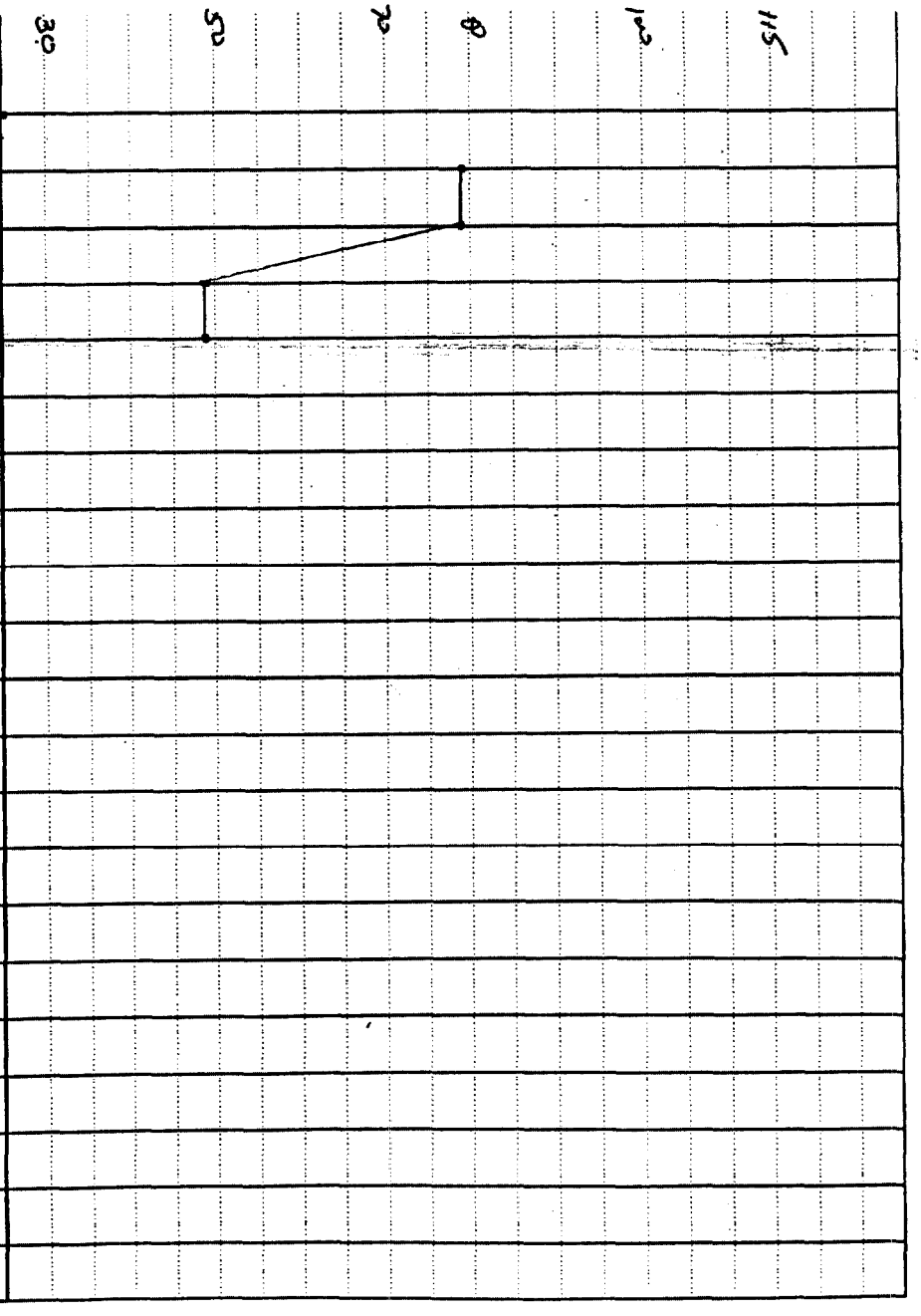

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Terphenyl - d14 MATRIX: Soil

LCL: 18 UCL: 137

	Date	Samp.	Rec. %
01	—	6767B	116
02	—	6829B	116
03	—	6893B	67.6
04	—	6948B	67.6
05			
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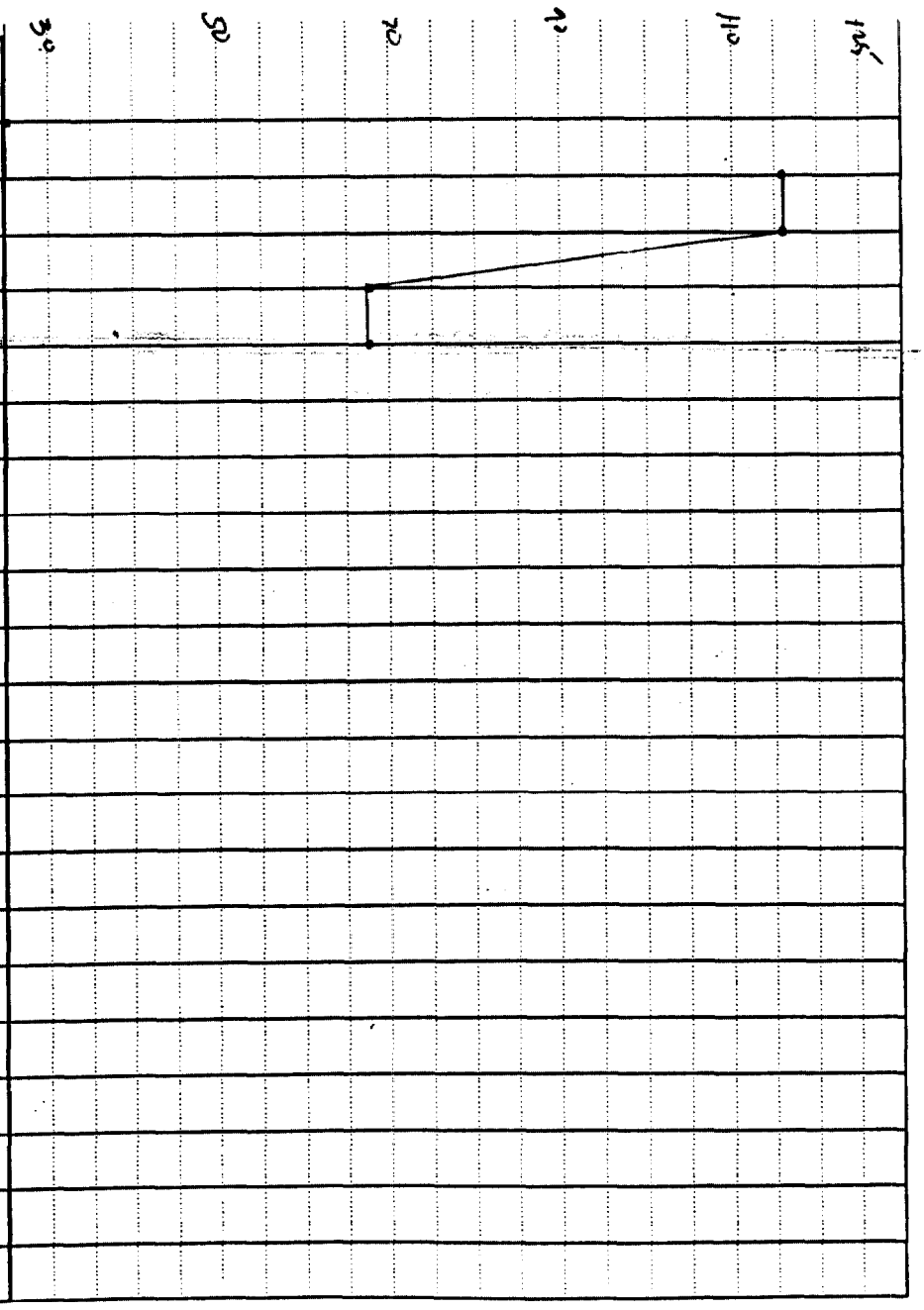

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Phenol -d6 (PHL) MATRIX: Soil

LCL: 24 UCL: 113

	Date	Samp.	Rec. %
01	–	6767B	104
02	–	6829B	104
03	–	6893B	83.4
04	–	6948B	83.4
05			
06			
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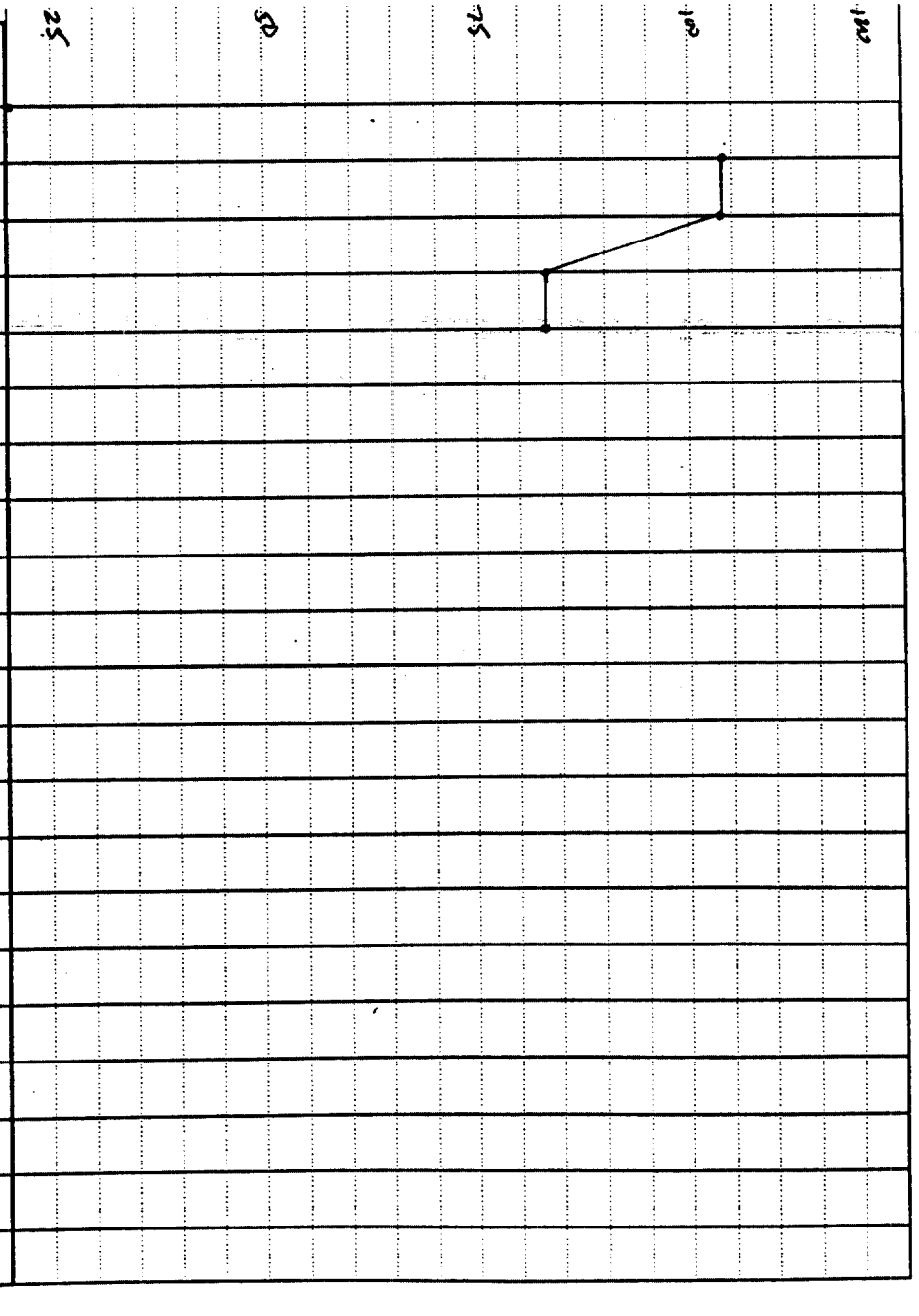

m

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 2 - Fluorophenol (2FP) MATRIX: Soil

LCL : 25 UCL: 121

	Date	Samp.	Rec. %
01		6767B	71.0
02		6829B	71.0
03		6893B	53.6
04		6948B	53.6
05			
06			
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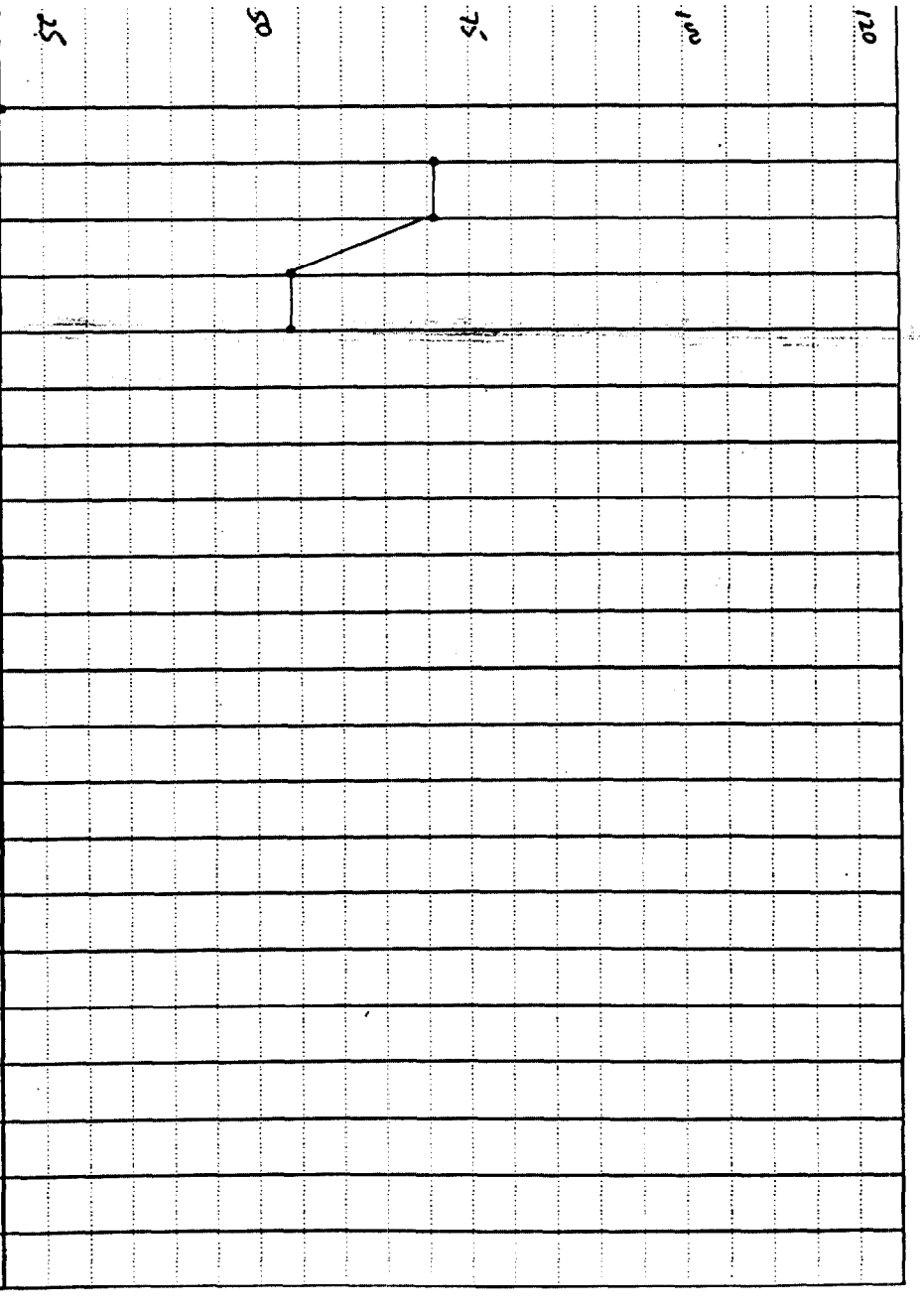

Km

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: BNA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 2,4,6-Tribromophenol (TBP) MATRIX: Soil

LCL: 19 UCL: 122

	Date	Samp.	Rec. %
01	—	6767 B	43.1
02	—	6829 B	43.1
03	—	6893 B	42.1
04	—	6948 B	42.1
05			
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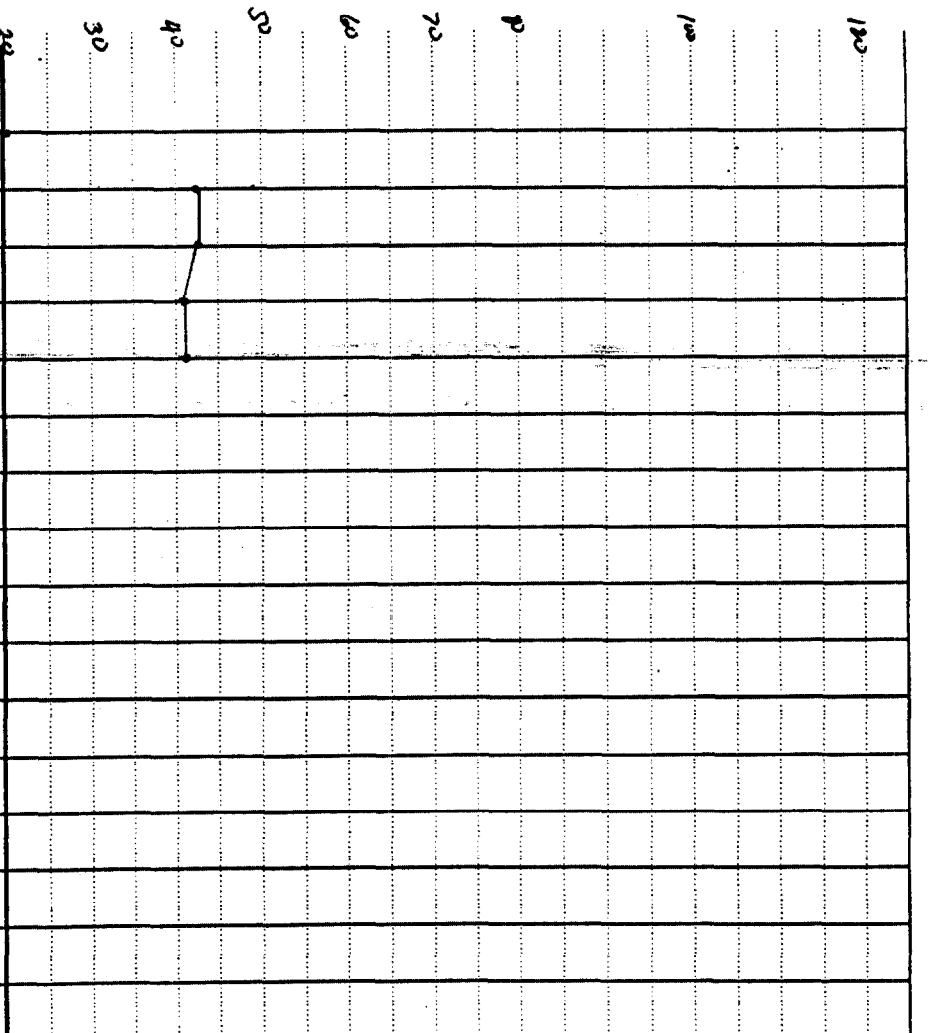

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Toluene-d 8 MATRIX: water

LCL: 88 UCL: 110

	Date	Samp.	Rec. %
01	-	6769B	103
02	-	6826B	103
03	-	6889B	102
04	-	6938B	95.7
05			
06			
07			
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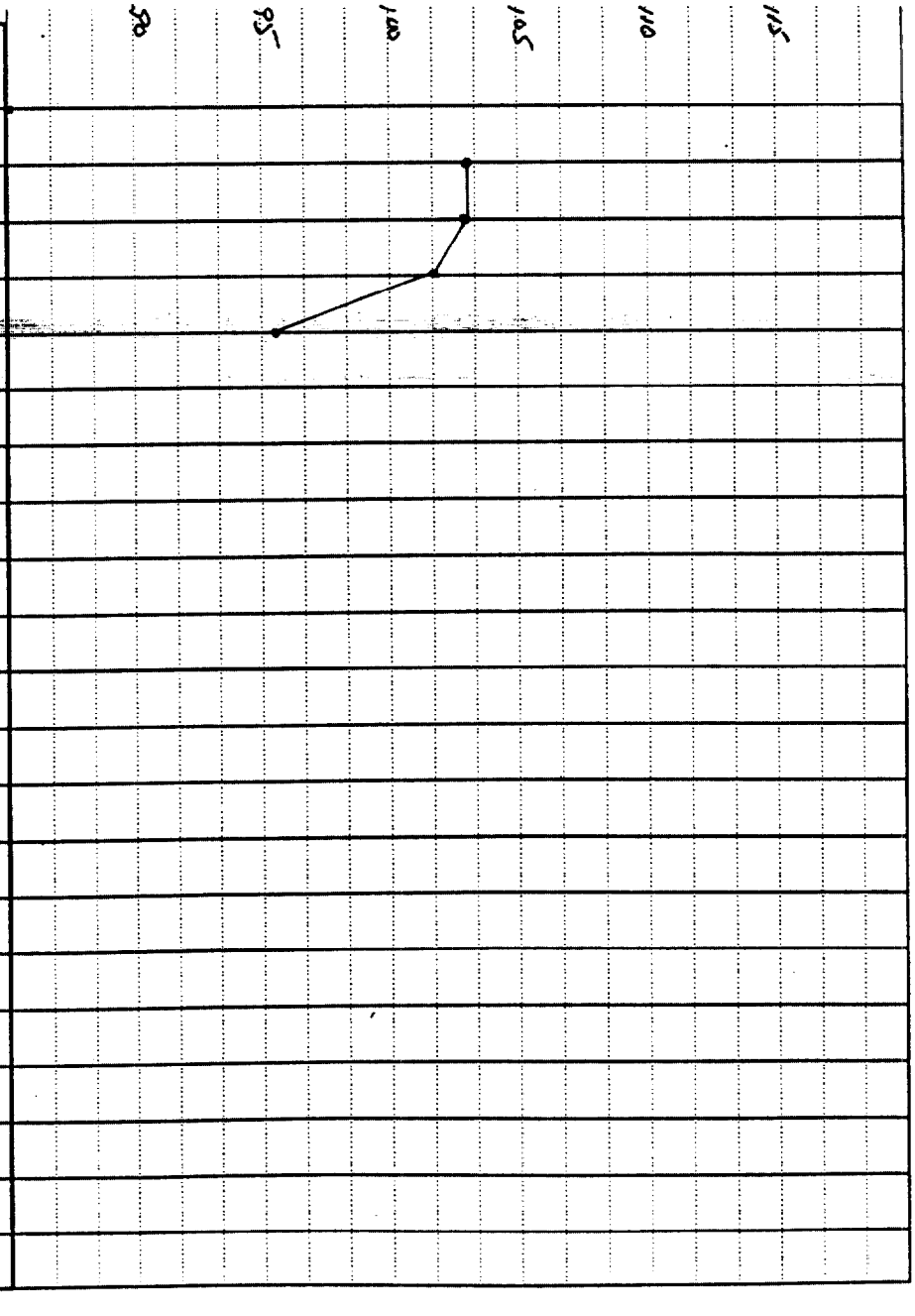

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: BromoFluorobenzene MATRIX: water

LCL: 86 UCL: 115

	Date	Samp.	Rec. %
01	–	6769B	107
02	–	6826B	100
03	–	6889B	93.0
04	–	6938B	90.9
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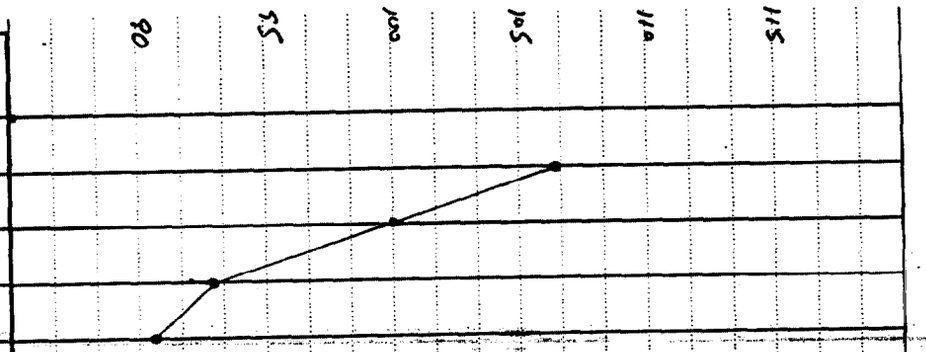

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: VOA - Blank Surrogate Recovery SDG NO.: 7/24/90 - 8/4/90

ANALYTE: 1,2-Dichloroethane-d4 MATRIX: Water

LCL: 76 UCL: 114

	Date	Samp.	Rec.
01	–	6769B	97.9
02	–	6826B	98.7
03	–	6889B	111.
04	–	6938B	103.
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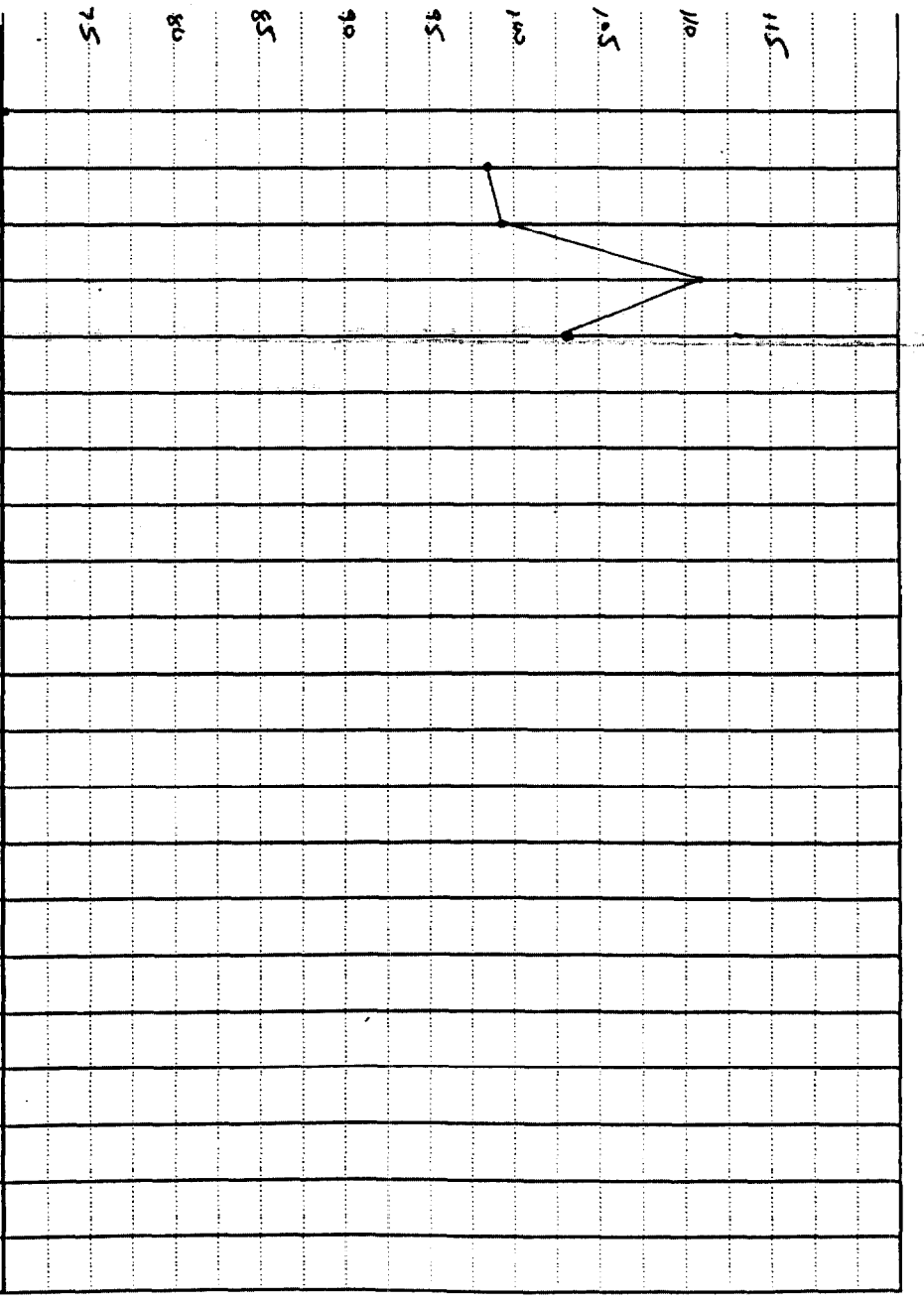

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals GF

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Arsenic (AS)

MATRIX: Soil NBS 1645

LCL :

UCL:

	Date	Samp.	Rec. mg/kg
01	-	6757	60.3
02	-	6864	65.7
03	-	6876	58.8
04	-	6818	67.0
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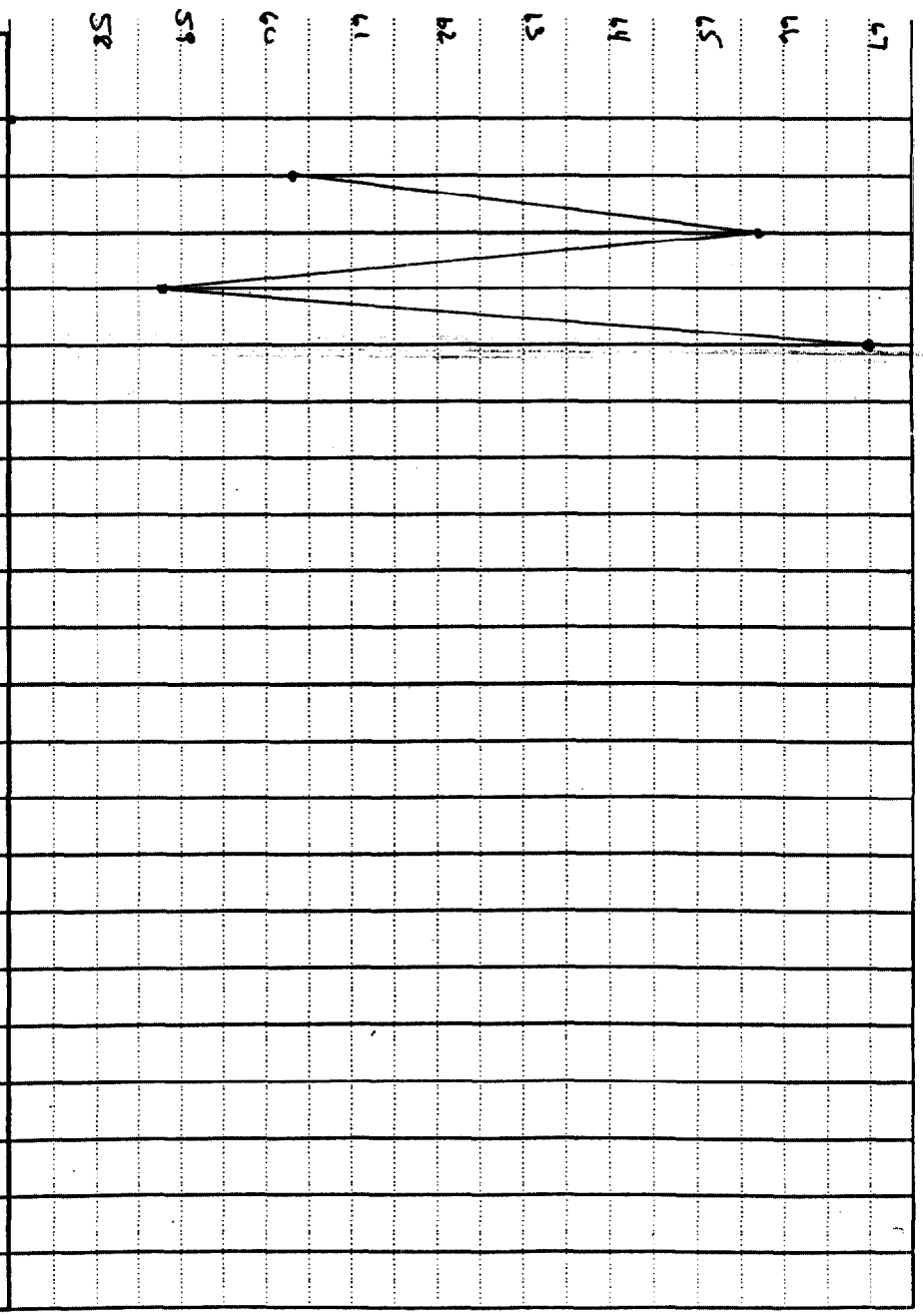

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals GF

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Selenium (Se)

MATRIX: Soil NBS-1645

LCL :

UCL:

	Date	Samp.	Rec. mg/kg
01	–	6757	0.90
02	–	6804	2.00
03	–	6876	0.60
04	–	6918	0.30
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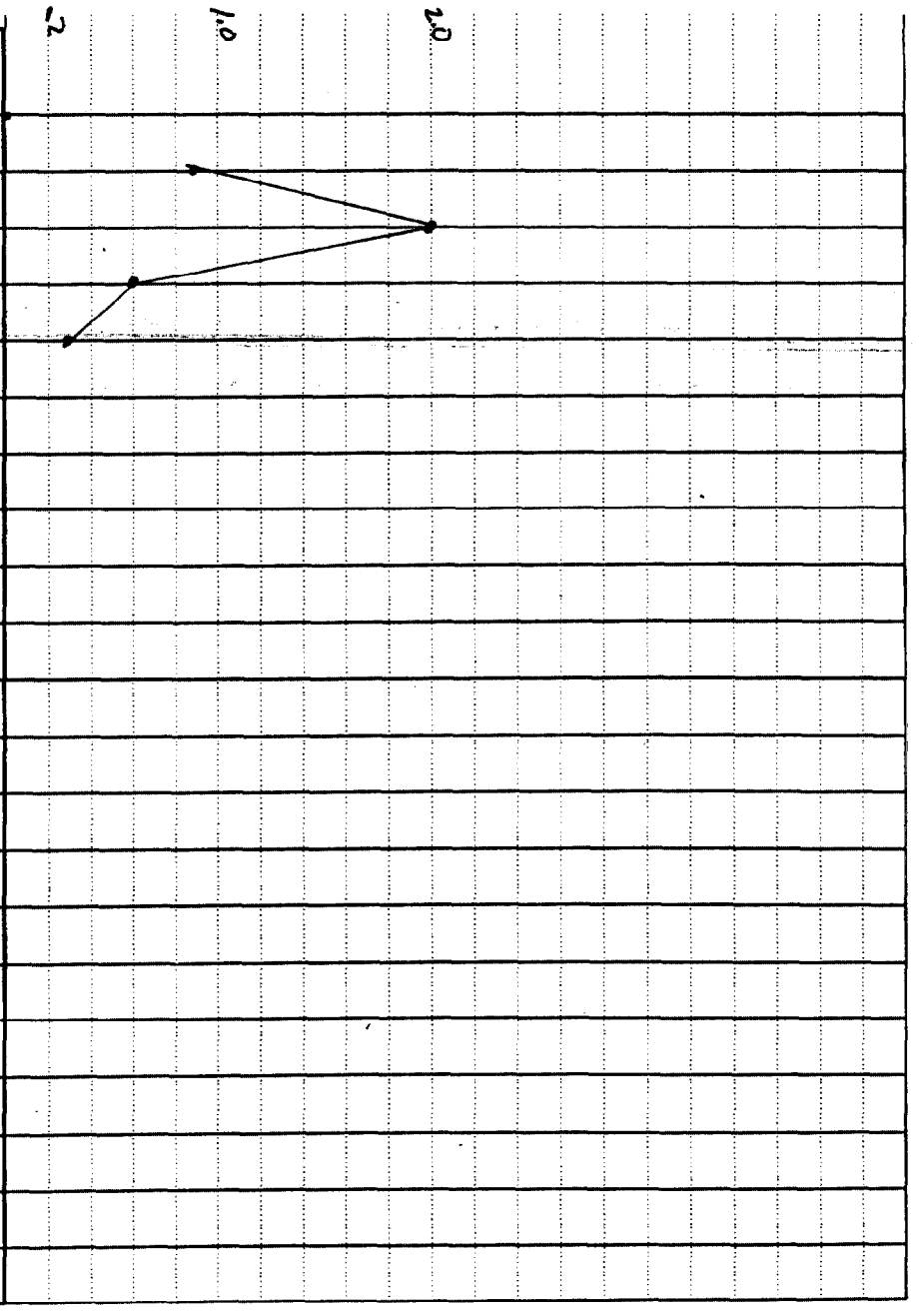

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals GF SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Thallium (TL) MATRIX: Soil - NBS 1645

LCL: UCL:

	Date	Samp.	Rec. mg/kg
01	—	6757	1.00
02	-	6804	1.10
03	-	6876	1.20
04	—	6918	1.20
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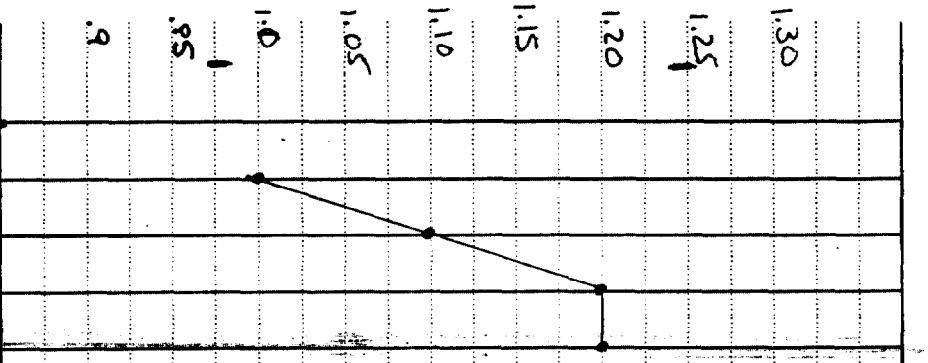

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals CVA

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Mercury (Hg)

MATRIX: Soil NBS 1645

LCL: 0.6

UCL: 1.6

	Date	Samp.	Rec. mg/kg
01	–	6757	0.8
02	–	6804	1.0
03	–	6876	1.0
04	-	6918	1.0
05			
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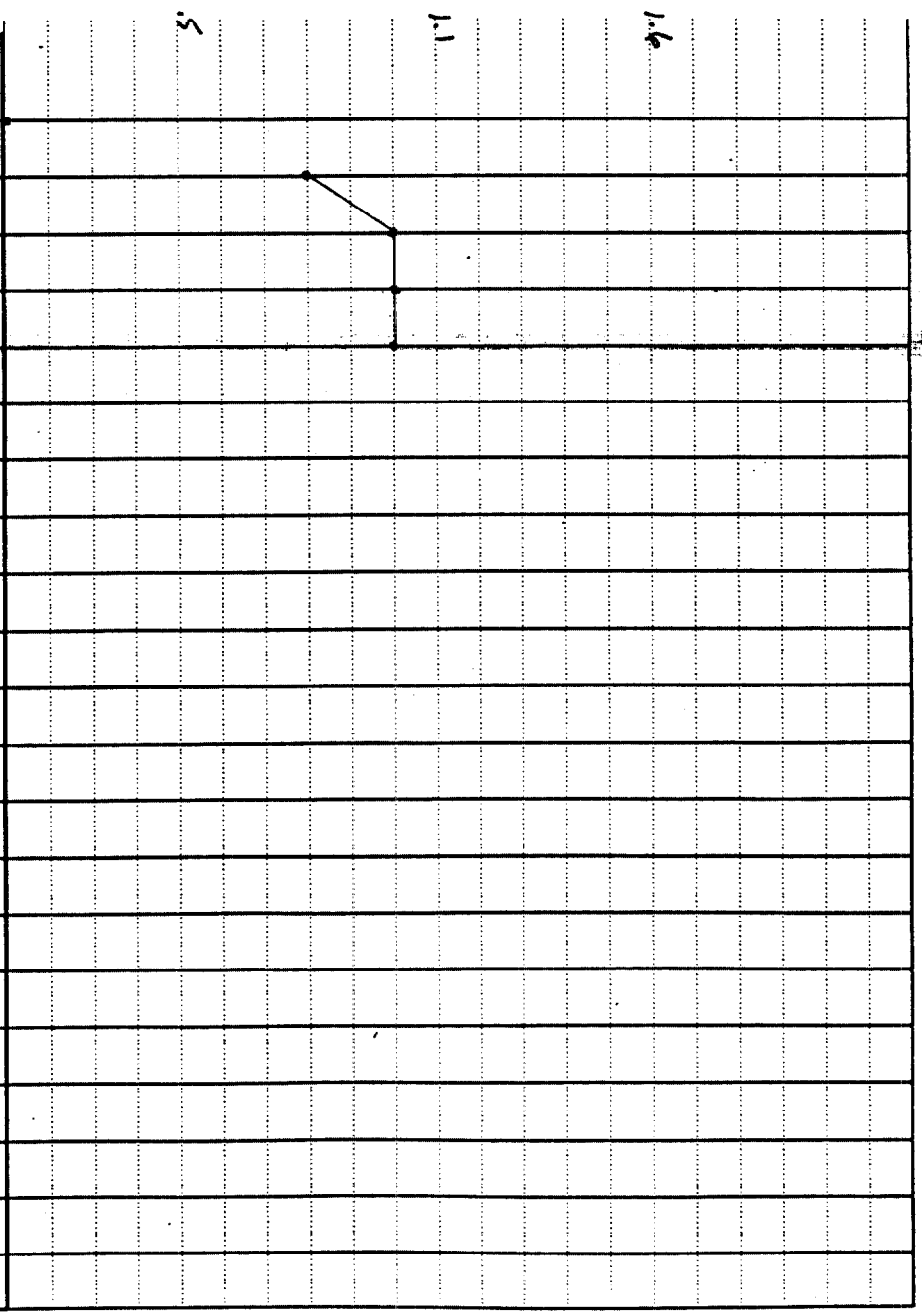

BLANK/SPIKE CONTROL CHART KM

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Cadmium (Cd)

MATRIX: soil NBS-1645

LCL: 9.5

UCL: 12.2

	Date	Samp.	Rec. mg/kg
01	-	6757	5.89
02	-	6804	6.10
03	-	6876	10.6
04	-	6918	6.60
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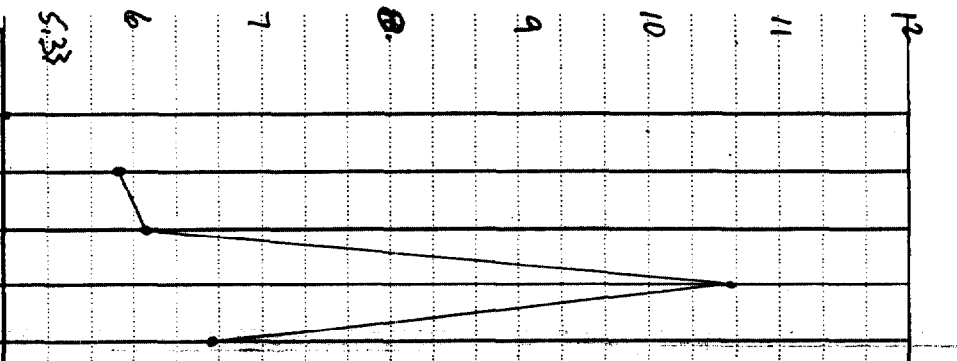

KM

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Chromium (Cr)

MATRIX: Soil - NBS 1645

LCL: 27

UCL: 30

	Date	Samp.	Rec. #
01	–	6757	29.7
02	–	6804	26.6
03	–	6876	29.5
04	–	6918	28.9
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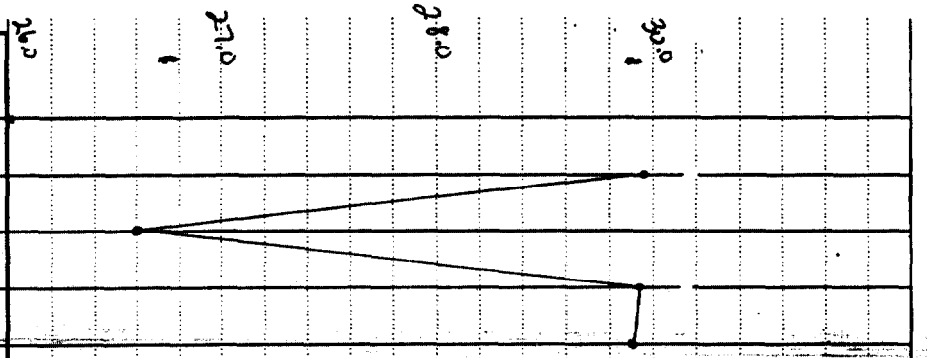

$\times 10^3$ mg/kg

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Copper (Cu)

MATRIX: Soil - NBS 1645

LCL: 94

UCL: 118

	Date	Samp.	Rec. mg/kg
01	-	6757	97.8
02	-	6804	108.
03	-	6876	104.
04	-	6918	107.
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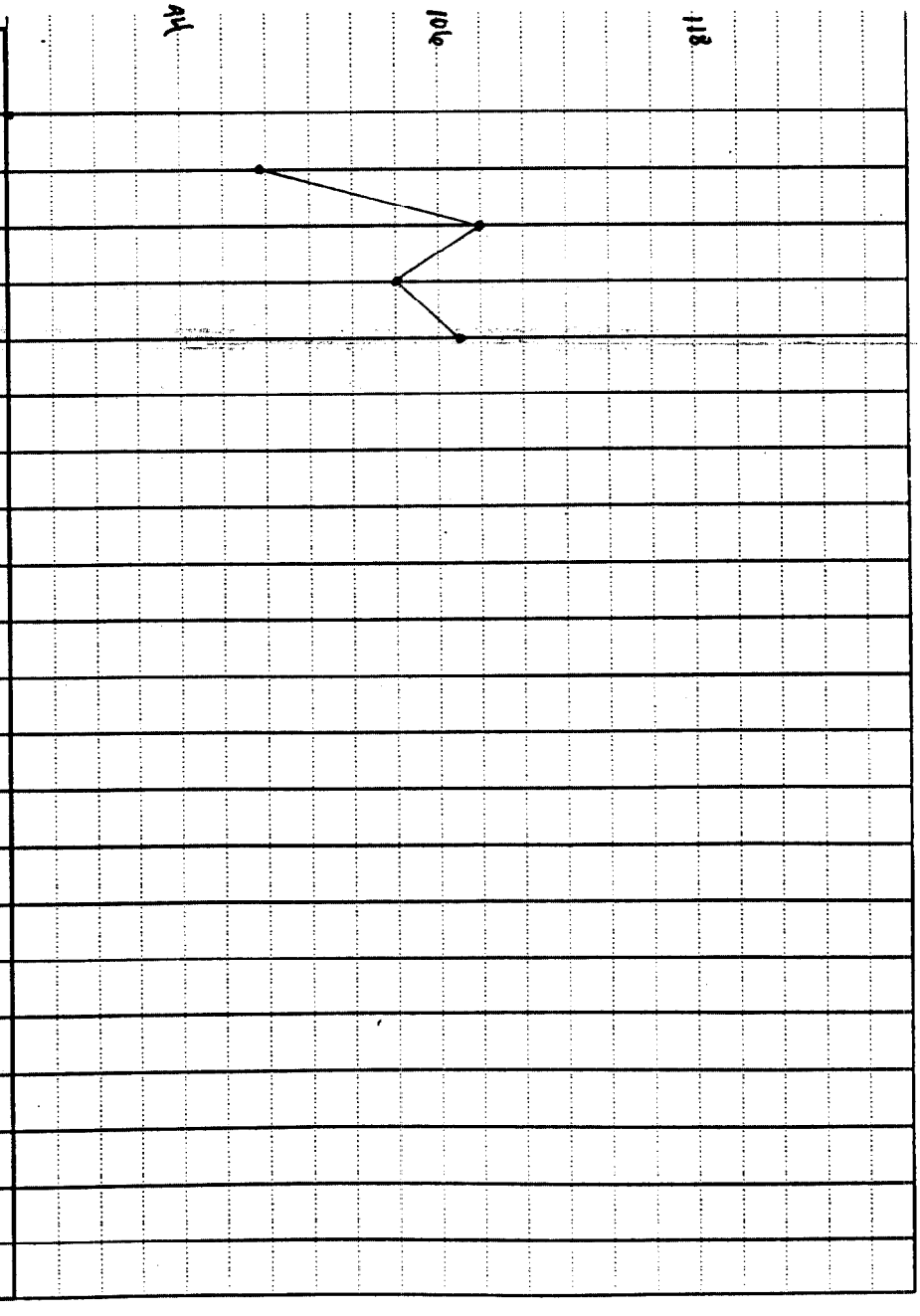

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Lead (Pb)

MATRIX: Soil - NBS 1645

LCL: 560

UCL: 1050

	Date	Samp.	Rec. mg/kg
01	-	6757	609.
02	-	6804	649.
03	-	6876	587.
04	-	6918	669.
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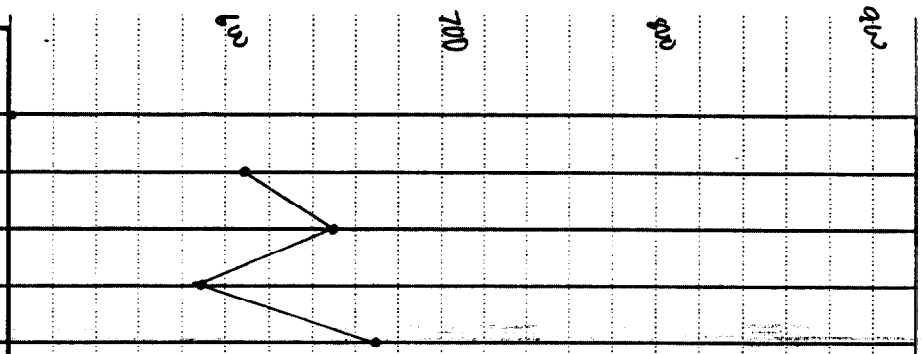

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Nickel (Ni)

MATRIX: Soil - NBS 1645

LCL: 30

UCL: 50

	Date	Samp.	Rec. mg/kg
01	-	6757	32.4
02	-	6804	31.9
03	-	6876	30.5
04	-	6918	30.1
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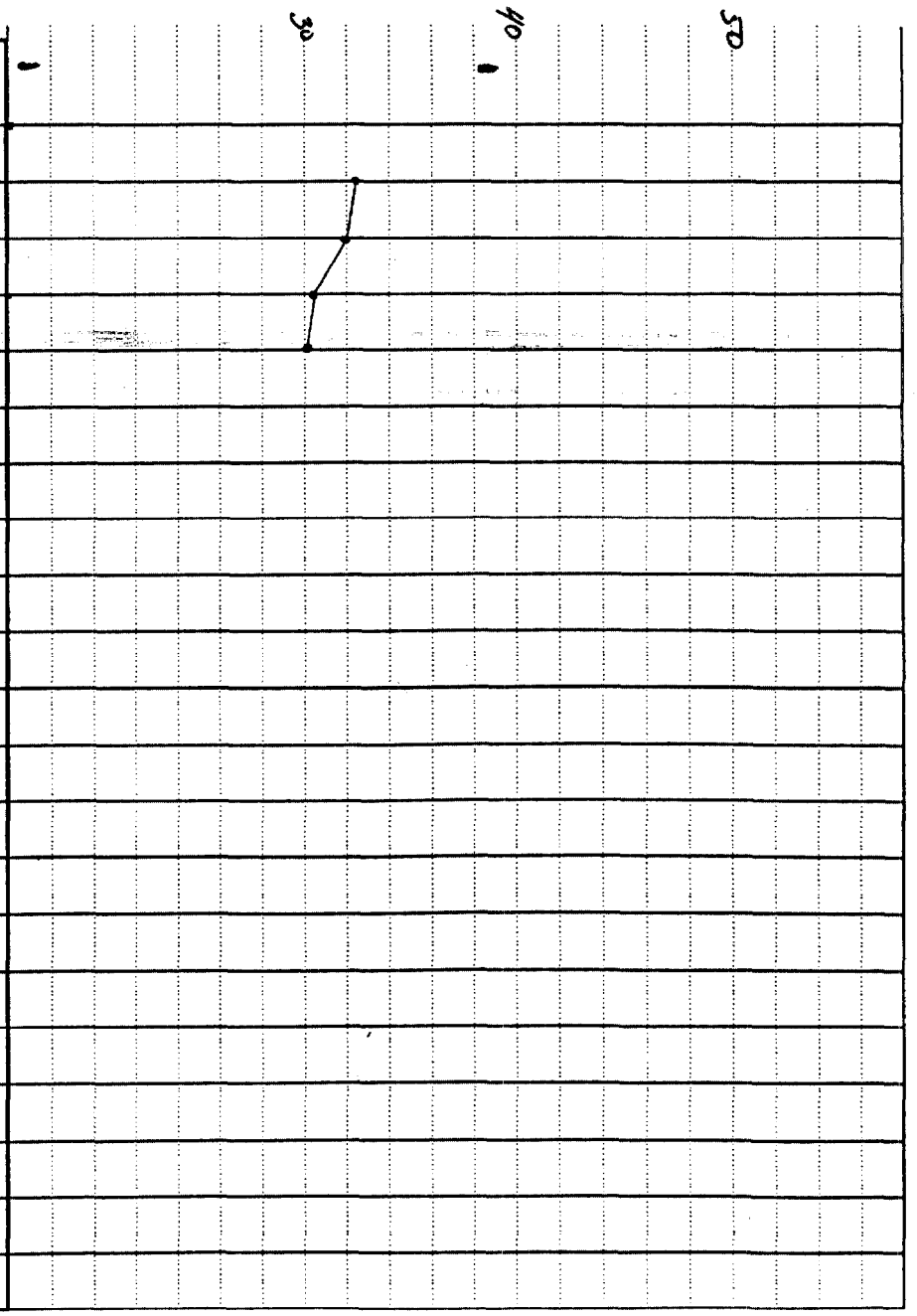

km

BLANK/SPIKE CONTROL CHART

LAB NAME: CE-WES ANALYTICAL LAB GRP

PROJECT: Crane - Old Rifle Range

ANALYSIS: Metals ICP

SDG NO.: 7/24/90 - 8/4/90

ANALYTE: Zinc (Zn)

MATRIX: Soil - NBS 1645

LCL: 14.6

UCL: 18.6

	Date	Samp.	Rec. *
01	-	6757	16.3
02	-	6864	14.4
03	-	6876	16.4
04	-	6918	16.3
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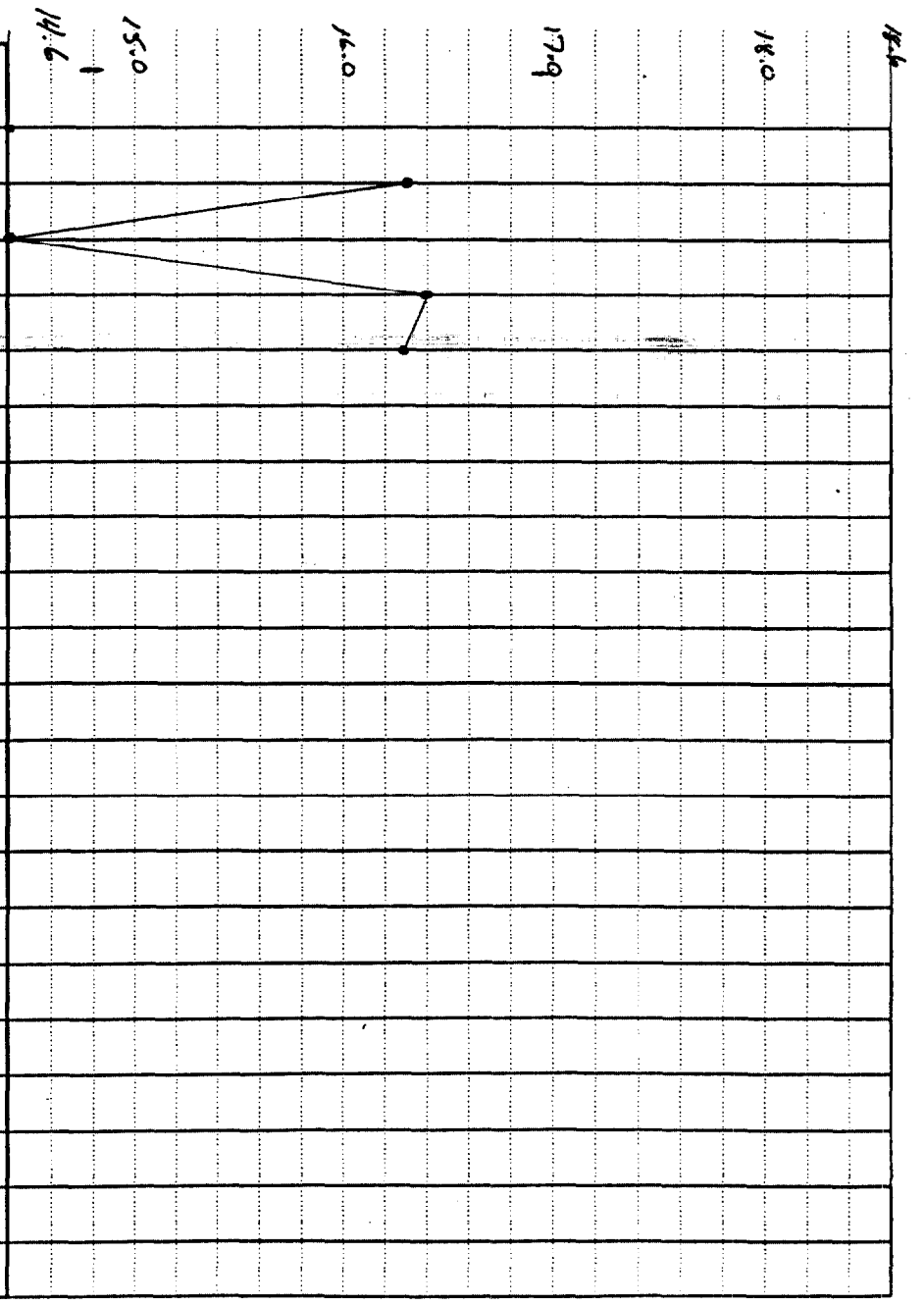

* $\times 10^2$ mg/kg

U.S. EPA - CLP

11
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

ICP ID Number: 25 Date: 7/30/90

Flame AA ID Number: _____

Furnace AA ID Number: 35

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.22		200	38	P
Antimony	217.6	BZ	60	3	F
Arsenic	193.7	BZ	10	2	F
Barium	455.40		200	11.1	P
Beryllium	234.86		5	2	P
Cadmium	214.44		5	4.4	P
Calcium	317.93		5000	224	P
Chromium	206.15		10	11.4	P
Cobalt	228.62		50	30	P
Copper	324.75		25	6	P
Iron	259.94		100	10	P
Lead	283.3	BZ	5	3	F
Magnesium	279.08		5000	748	P
Manganese	257.61		15	5	P
Mercury	253.65	BZ	0.2	0.14	CV *
Nickel	231.60		40	11.2	P
Potassium	766.49		5000	2278	P
Selenium	196.0	BZ	5	3	F
Silver	328.07		10	12.8	P
Sodium	589.59		5000	489	P
Thallium	276.8	BZ	10	2	F
Vanadium	310.23		50		P
Zinc	213.86		20	8.2	P
Tin	284.00		---	76.2	p **

Comments:
* Cold Vapor Mercury AA ID Number: 65
** Not on CLP.

U.S. EPA - CLP

12A
ICP INTERELEMENT CORRECTION FACTORS (QUARTERLY)

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

ICP ID Number: 25 Date: 07/30/90

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	
Aluminum	308.22		.000109	-.0000343	.00000725	
Antimony						
Arsenic						
Barium						
Beryllium	234.86	.0000000	.0000000	.0000697	.000000	
Cadmium	214.44	.00000694	.00000408	.00000068	.00000318	
Calcium						
Chromium	206.15	.00000251	.00000191	-.0000010	-.0000035	
Cobalt						
Copper	324.75	.00000400	.00000600	.00000738	.0000120	
Iron	259.94	.0000112	.0000502		.0000466	
Lead	220.35	-.000654	-.0000175	.000312	.0000332	
Magnesium						
Manganese	257.61	.0000120	.00000800	.0000987	.0000300	
Mercury						
Nickel	231.60	.00000735	.00000696	.0000311	.0000283	
Potassium						
Selenium						
Silver	328.07	.0000150	.00000747	-.0000065	.000000	
Sodium						
Thallium						
Vanadium						
Zinc	213.86	.00000320	.00000236	.0000880	.0000213	

Comments:

U.S. EPA - CLP

13
ICP LINEAR RANGES (QUARTERLY)

Lab Name: CE-WES ANALYTICAL LAB GRP Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

ICP ID Number: 25 Date: 7/30/90

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Aluminum	3.00	15,000	P
Antimony			NR
Arsenic			NR
Barium	3.00	11,000	P
Beryllium	3.00	1,500	P
Cadmium	3.00	11,000	P
Calcium	3.00	120,000	P
Chromium	3.00	11,000	P
Cobalt	3.00	11,000	P
Copper	3.00	15,000	P
Iron	3.00	15,000	P
Lead	3.00	13,000	P
Magnesium	3.00	120,000	P
Manganese	3.00	11,000	P
Mercury			NR
Nickel	3.00	15,000	P
Potassium	3.00	120,000	P
Selenium			NR
Silver	3.00	3,000	P
Sodium	3.00	120,000	P
Thallium			NR
Vanadium	3.00	11,000	P
Zinc	3.00	15,000	P
Tin	3.00	11,000	P

Comments: