BROWN AND CALDWELL



RCRA Facility Investigation (RFI) Report Dyno Nobel Facility Port Ewen, New York

December 1999

# Eckenfelder/Brown and Caldwell

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## RCRA FACILITY INVESTIGATION (RFI) REPORT, DYNO NOBEL FACILITY PORT EWEN, NEW YORK

Prepared for:

Hercules Incorporated and Dyno Nobel, Inc.

Prepared by:

Brown and Caldwell 440 Franklin Turnpike Mahwah, New Jersey 07430

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#### 1.0 INTRODUCTION

A RCRA Facility Assessment (RFA) of the DYNO Nobel, Port Ewen, New York Facility Kearny in October, 1993 and was revised by completed by A.T. ECKENFELDER INC., now Brown and Caldwell, in August 1994. The RFA identified 46 Solid Waste Management Units (SWMUs) and four Areas of Concern (AOCs). In addition, two additional SWMUs (Nos. 47 and 48) were identified after the RFA was complete. On April 15, 1996, DYNO Nobel entered into an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC), which stipulated, among other things, that 25 SWMUs and/or AOCs be the subject of a RCRA Facility Investigation (RFI). Additionally, a RCRA Facility Assessment Sampling Visit (RFA-SV) documented in the Sampling Visit Report, DYNO Nobel Facility, Port Ewen, New York (ECKENFELDER INC., February 1997) indicated that 12 additional SWMUs or AOCs required further investigation as part of an RFI. In response to the Order on Consent and the results of the Sampling Visit, a work plan titled RCRA Facility Investigation Work Plan, DYNO Nobel Facility, Port Ewen, New York, (ECKENFELDER INC., April 1997) was submitted to and approved by the NYSDEC for the investigation of 38 SWMUs and/or AOCs as listed in Table 1-1 (note: SWMU 26 consists of four locations). Those SWMUs not identified in Table 1-1 were eliminated from further consideration during the RFA-SV and do not contain concentrations of organic or inorganic constituents above the established screening criteria.

The screening criteria (included on the inorganic analytical results tables in Section 6.0) are obtained from Appendix A of the USEPA Soil Screening Guidance: Technical Background Document, May 1996 and correspond to a migration to groundwater criteria for a Dilution-Attenuation Factor (DAF) of 20. These values are typically less than those established for ingestion and are consistent with the industrial use of the facility. Further, the DAF of 20 is most applicable to the site given the extensive clay deposits underlying the active portions of the facility. Where screening criteria where not given for a specific

analyte under the USEPA Guidance Document (i.e., aluminum, cobalt and copper), a screening level was obtained from the New Jersey Residential Screening Criteria (copper), or the NYSDEC TAGM HWR-94-4046 (aluminum and cobalt).

The USEPA Guidance document referenced above uses conservative, risk-based assumptions to develop the screening criteria. As stated in the Guidance document, these values are conservative and site-specific risk analysis may result in higher values. These values are thus used herein to identify those areas where concentrations of specific metals above the screening criteria may warrant further evaluation (i.e., as part of a corrective measures study). The areas identified in the text and figures of this report, therefore, only represent areas where further evaluation is warranted rather than where corrective action is required. The need and type of corrective action at each location will be determined as part of the Corrective Measures Study (CMS)

The following report presents the results of the RFI, which was completed in accordance with the approved work plan referenced above and its companion documents which include:

- Quality Assurance Project Plan For RFI Related Investigations at the DYNO Nobel Facility, Port Ewen, New York. ECKENFELDER INC., January 1995.
- Health and Safety Plan for RFI Work, DYNO Nobel Facility, Port Ewen,
   New York. ECKENFELDER INC., May 1995.

Section 2.0 presents a brief description of the SWMUs and AOCs addressed during the RFI. Section 3.0 then presents a summary of the work completed at the site to date and which formed the basis for the work completed as part of the RFI. These data, along with data collected during the RFI, are then used to summarize the site hydrogeology in Section 4.0. The field procedures used to collect the data are discussed in Section 5.0 followed by the results of the RFI work completed at each SWMU and AOC in

Section 6.0. Section 7.0 presents the QA/QC data collected during the RFI. The results of the investigation are then summarized in the context of the site hydrogeology in Section 8.0.

## TABLE 1-1

## SWMUs AND AOCs INVESTIGATED IN THE RFI

SWMU No.	SWMU Name
1	Shooting Pond
2	Buring Cage/Incinerator
3	Copper Wire Burning Area
4	Iron Wire Burning Area
5	Wire Burning Area III
6-7	Open Burning Pads
8	Former Burning Area
9 .	Waste Powder Catch Basins - Building 2037
10	Waste Powder Catch Basins - Building 2048
11	Waste Powder Catch Basins - Building 2049
13	Former Waste Powder Catch Basins - Lead Azide Building
15	Waste Powder Magazines
21	Lead Recycling Unit Area
22	Former Landfill
23	Former Dump
24	Former Wastewater Treatment Facility
26	Burnable Waste Satellite Accumulation Areas (4 locations)
27	Sanitary Sewer System
29	Drainage ditch (Downgrade of Building 2049)
30	Drainage Ditch (Downgrade of Building 2036)
32	Old Dump (near water tower)
33	Mercury Fulminate Tanks Area
34	Old Waste Burning Grounds (near Shooting Pond)
35	Stone Fence Dump
37	Shell Plant Drum Storage Area
38	Grenade Disposal Area
39	Former Washwater Discharge Area - Building 2009
40	Pilot Line Condensate Collection Sump
41	Detonator Production Building Condensate Collection Sumps
42	SAC Building Steam Collection Containers
46	Vacuum Line Condensate Collection Sumps (Building 2059)
47	Building 2058 Fuse Room
48	Mercury Fulminate Area
100	A OCI Maria
<u>AOC</u>	AOC Name
A	Kerosene Tank Leak
A B	Open Burning Pads Area
G	Open Detonation Pit
Đ	Detonation Test Building
Ð	Demiration reschanting

### 2.0 DESCRIPTION OF SWMUs AND AOCs

The SWMUs and AOCs to be addressed as part of the RFI, as defined by the Order on Consent and the Sampling Visit, are presented below. A description of the wastes handled at each unit is taken from the RFA. Acronyms used in the following descriptions and throughout the report are summarized in Table 2-1.

SWMU No. 1: Shooting Pond - The unit managed off-specification PETN, DDNP, HMX, PBX, RDX, lead azide, lead styphnate, detonation caps and devices, and sump powder waste. Interim Corrective Measures at this unit did not find any explosives at reactive quantities. However, as reported in the Sampling Visit Report, metals concentrations were found in the pond sediment above the screening criteria.

SWMU No. 2: Burning Cage Incinerator - This unit managed approximately 1,200 to 2,500 pounds of explosive contaminated waste per burn with approximately 500 pounds of ash generated at each of two to four burns per week.

SWMU No. 3: Copper Wire Burning Area - This unit managed (burned) scrap copper wire covered with plastic insulation until July 1993. The waste usually included some blasting caps. The waste potentially contained, or has in the past contained, arsenic, copper, cadmium, lead, mercury, selenium, silver, and chromium.

SWMU No. 4: Iron Wire Burning Area - This unit managed (burned) scrap iron wire covered with plastic insulation. The waste usually included some blasting caps. The waste potentially contained arsenic, barium, cadmium, lead, mercury, selenium, silver, and chromium.

SWMU No. 5: Wire Burning Area III - Facility personnel were not able to identify what waste had been burned at the unit. The unit showed dark stains and was littered with bits of paper and wire.

SWMU Nos. 6 and 7: Open Burning Pads - These units managed up to 500 pounds at a time of reactive and ignitable wastes which were not suitable for open detonation. The residual waste may have also contained arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, or tellurium.

SWMU No. 8: Former Burning Area - This unit managed reactive and ignitable wastes which were not suitable for open detonation. The residual waste may have contained arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, or tellurium.

SWMU No. 9: Waste Powder Catch Basins - Building 2037 - This unit managed waste powder (unknown type) in water.

SWMU No. 10: Waste Powder Catch Basins - Building 2048 - This unit managed waste PETN, RDX, HMX, PBX, and DDNP powder in water.

SWMU No. 11: Waste Powder Catch Basins - Building 2049 - This unit managed waste DDNP powder (unknown type) in water.

SWMU No. 12: Waste Powder Catch Basins - Weber City Building - This unit managed waste DDNP and PETN powder in water. As noted in the RFA, this area is no longer accessible due to recent building construction, and is therefore not addressed in this work plan.

SWMU No. 13: Former Waste Powder Catch Basins - Lead Azide Building - The unit managed waste lead azide powder in water (K046).

SWMU No. 15: Waste Powder Magazine - This unit managed waste detonators, waste powder, and waste powder wipes from production buildings throughout the facility.

SWMU No. 21: Lead Recycling Unit Area - This unit managed waste ignition powders and blasting cap components containing lead and selenium.

SWMU No. 22: Former Landfill - Potentially hazardous and non-hazardous wastes, including ash, flashed debris, and general building debris are reported to have been disposed in this unit.

SWMU No. 23: Former Dump - This unit managed used equipment, and used 55-gallon drums. This unit may also have potentially managed PCB-containing transformers.

SWMU No. 24: Former Wastewater Treatment Facility - This unit is known to have managed acidic wastewaters and waste degreaser solvents, and potentially explosive-containing process waters and explosive-containing waste oils.

SWMU No. 26: Burnable Waste Satellite Areas - These units consisted of open-topped metal dumpsters, which managed waste packaging materials possibly contaminated with explosive materials.

SWMU No. 27: Sanitary Sewer System - This system of underground sewer pipes managed non-hazardous sanitary waste and waste waters potentially contaminated with any of the explosive powders used on site.

SWMU No. 29: Drainage Ditch (Downgradient of Building 2049) - This unit managed process wastewaters containing potentially explosive material and may have managed waste degreaser solvents.

SWMU No. 30: Drainage Ditch (Downgradient of Building 2036) - This unit managed acidic process wastewaters potentially containing explosive material and waste degreaser solvents.

SWMU No. 32: Old Dump (near water tower) - The wastes managed by this unit are unknown. Miscellaneous metal debris and the remains of old drums were observed during the second VSI.

SWMU No. 33: Mercury Fulminate Tanks Area - This unit formally consisted of wooden tanks which managed a protective water bath that may have contained trace amounts of mercury fulminate.

SWMU No. 34: Old Waste Burning Grounds (near Shooting Pond) - This unit reportedly managed explosive wastes from on-site production areas.

SWMU No. 35: Stone Fence Dump - The wastes managed by this unit include metal drums and debris. It could not be determined if other materials have also been managed at the unit.

SWMU No. 37: Former Shell Plant Drum Storage Area - This unit managed waste degreaser solvents, including TCE and freon, in drums stored directly on the ground.

SWMU No. 38: Suspected Grenade Disposal Areas - This unit consists of two separate areas (designated north and south) which were suspected to contain grenade shells.

SWMU No. 39: Former Wash Water Discharge Area (Building 2009) - This unit managed PETN and DDNP powders in water.

SWMU No. 40: Pilot Line Condensate Collection Sump - This unit managed steam condensate that contained trace amounts of lead styphnate.

SWMU No. 41: Detonator Production Building Condensate Collection Sump - This unit managed steam condensate containing small amounts of explosive powders.

SWMU No. 42: SAC Building Steam Collection Canisters - This unit managed steam condensate containing fuse powders and DDNP.

SWMU No. 46: Vacuum Line Condensate Collection Sump - Building 2059 - This unit managed steam condensate that potentially contained trace amounts of antimony sulfide, barium salts, boron, HMX, RDX, dibutylphthalate, diphenylamine, graphite, latex, lead azide, lead dioxide, lead styphnate, nitrocellulose, nitroglycerin, PETN, potassium nitrate, stearic acid, tetrazene, tetryl, viton, and zirconium.

SWMU No. 47: Building 2058 Fuse Room - This unit consisted of a wooden box which collected wash water with ignition and fuse powders containing lead and selenium.

SWMU No. 48: Mercury Fulminate Area - This unit consists of a fill area for construction and demolition debris from various projects throughout the facility. The presence of mercury fulminate has been documented in this area.

AOC A: Kerosene Tank Leak - This AOC contains soil stained with a small amount of kerosene which has leaked from a storage tank.

AOC B: Open Burning Pads Area - This AOC is an area of soil to which waste explosive debris and kerosene has been released.

AOC C: Open Detonation Pit - This AOC consists of a metal sided pit which managed detonators and blasting caps produced at the facility.

AOC D: Detonation Test Building - This unit is used to test detonators and blasting caps produced at the facility.

#### TABLE 2-1

#### ACRONYMS USED WITHIN THIS RFI

AOC = Area of Concern

DDNP = Secondary Explosive (Diazodinitrophenol)

HMX = Secondary Explosive (Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetramine)

ICM = Interim Corrective Measures

LMNR = Lead Mononitroresorcinol

PETN = Secondary Explosive (Pentaerythritol tetranitrate)

QAPjP = Quality Assurance Project Plan

RCRA = Resource Conservation Recovery Act

RDX = Secondary Explosive (Hexahydro-1,3,5-trinitro-1,3,5-triazine)

RFA = RCRA Facility Assessment

RFI = RCRA Facility Investigation

SV = Sampling Visit

SWMU = Solid Waste Management Unit

TNT = 2,4,6-Trinitrotoluene

TPH = Total Petroleum Hydrocarbons

VSI = Visual Site Inspection

#### 3.0 PREVIOUS INVESTIGATIONS

Previous investigations of this facility have been under two independent programs: the Resource Conservation and Recovery Act (RCRA) and the New York State Superfund Program. The reports generated from these investigations are summarized in Table 3-1.

Investigations under the RCRA program have consisted of the completion of a RCRA Facility Assessment (RFA), which included a Preliminary Review (PR) of available relevant documents, and a visual site inspection (VSI). The PR and VSI were completed by A.T. Kearney Inc., under contract to the U.S. Environmental Protection Agency, and the results are reported in the RFA Report. The original RFA report, completed by A.T. Kearney in July 1993 has been revised by ECKENFELDER INC., on behalf of Hercules and DYNO Nobel, and at the request of NYSDEC, to correct various factual errors.

The RFA Report presents a detailed description of the site history and operation and identifies individual Solid Waste Management Units (SWMUs) and/or Areas of Concern (AOCs) which potentially resulted in a release to the environment. These areas were identified through a review of file materials and visual inspections and are evaluated as to their potential to release hazardous waste or constituents to the environment. Based on this evaluation, the RFA Report documents those SWMUs and/or AOCs which either a) require no further action; b) require confirmatory sampling (i.e., a RCRA Facility Assessment Sampling Visit (RFA-SV); c) require a RCRA Facility Investigation to collect information on a known or suspected release to the environment; or d) require that an interim corrective measure (ICM) be implemented on an expedited basis.

On the basis of the RFA, 17 SWMUs and/or AOCs were targeted for the implementation of Interim Corrective Measures (discussed below) and 19 SWMUs and/or AOCs were targeted for a RFA-SV as documented in the Sampling Visit Report (ECKENFELDER INC., February 1997). Of the 19 SWMUs and/or AOCs evaluated

under the RFA-SV, 10 were determined to require further investigation as part of the RFI and are thus included in this report. The total number of SWMUs and/or AOCs to be investigated as part of the RFI is thus 38 (see Table 1-1).

Additional work completed on the basis of the RFA included a site-wide groundwater investigation to provide a better understanding the site hydrogeology. This investigation was conducted in accordance with the Groundwater Investigation Work Plan, DYNO Nobel, Port Ewen, New York (ECKENFELDER INC., April 1995). The goals of this investigation included the following:

- To obtain a better understanding of the site hydrogeology including groundwater flow direction, hydraulic conductivity, and vertical and horizontal gradients;
- To estimate the horizontal extent of groundwater impacts in the vicinity of the Shell Plant;
- To recommend the location of monitoring wells associated with the Shell Plant based on data obtained from this investigation;
- To evaluate the potential for off-site migration of contaminants that may be associated with the detonation pond; and
- To determine groundwater use in the vicinity of the site, including the use and location of private wells, as well as the availability of public water supplies.

The results of this investigation are reported in the Groundwater Investigation Report, DYNO Nobel Inc. Site, Port Ewen, New York (ECKENFELDER INC., January 1996). The findings of the Groundwater Investigation as they relate to the site-wide

hydrogeology, supplemented by the additional data collected during the RFI, are summarized in Section 4.0. Data collected specific to the Shell Plant area are discussed in Section 6.0.

#### 3.1 POTENTIAL RECEPTORS

As noted in subsequent sections, the soil and water quality data indicate that any exceedances of water or soil quality criteria are constrained within the site boundaries. However, in order to provide information regarding the potential impact to human population in the unlikely event of a release from the facility, an evaluation of groundwater and surface water use within a one mile radius of the site was conducted as part of the Groundwater Investigation. As reported in the Groundwater Investigation Report (ECKENFELDER INC., January, 1996), any potential receptors (i.e., those located downgradient of the facility) are located within the area served by the Port Ewen Water Supply. The area identified as not having access to the public water supply is located upgradient of the facility. Given that site specific data indicates that any exceedances of soil or groundwater quality criteria are constrained within the site boundaries, coupled with the hydrogeologic characteristics of the site as discussed in Section 4.0 and to a lesser degree the availability of public water, there is little if any possibility for groundwater related health concerns to neighboring residents.

#### 3.2 INTERIM CORRECTIVE MEASURES

Interim corrective actions for explosives were undertaken during the period July 24, through October 7, 1996. This work was conducted to address health and safety concerns associated with areas of the facility which may contain explosives at reactive concentrations. A total of 17 SWMUs were screened by UXB International Inc. for primary and secondary explosives. Two locations (SWMU No. 41: Detonator Production Building Condensate Collection Sumps, and SWMU No. 48: Mercury Fulminate Area) were found to contain explosive quantities of both primary and secondary explosives. This material was removed until subsequent sampling indicated

that explosive quantities were no longer present. Three locations (SWMU No. 1: Former Detonation Pond, and SWMU Nos. 38S and 38N: Suspected Grenade Disposal Areas North and South) were found to contain numerous caps and related debris that was collected in five gallon pails for disposal. These activities are documented in "Documentation of Interim Corrective Measures (ICM) for Explosives, DYNO Nobel Facility, Port Ewen, New York" (ECKENFELDER INC., January 1997).

The objectives of the ICM for explosives were met and the screened areas were deemed safe for further investigation activities as described in Sections 5 and 6.

TABLE 3-1
SUMMARY OF PREVIOUS INVESTIGATIONS AND REPORTS

Name of Investigation	Investigation/Reports By	Final Report Date			
New York State Superfund Program					
Phase I Investigation Phase II Investigation	EA Science and Technology Gibbs and Hill Inc.	December 1983 July 1990			
USEPA Resource Conservation a	and Recovery Act				
RCRA Facility Assessment (RFA)a	A.T. Kearney Inc. ECKENFELDER INC.	August 1994b			
Groundwater Investigation Report	ECKENFELDER INC.	January 1996c			
RFI Task II Report	ECKENFELDER INC.	August 1996			
Documentation of Interim Corrective Measures	UXB International ECKENFELDER INC.	January 1997			
Sampling Visit Report	ECKENFELDER INC.	February 1997c			

a Includes a Preliminary Review (PR) and Visual Site Inspection (VSI).

b The A.T. Kearney report was revised and finalized, at the request of NYSDEC, by ECKENFELDER INC., on behalf of Hercules and DYNO Nobel.

c Documents pending review by NYSDEC.

#### 4.0 SITE HYDROGEOLOGY

The hydrogeology of the site has been previously described in the Groundwater Investigation DYNO Nobel Inc. Site, Port Ewen, New York Report, (ECKENFELDER INC., January 1996). The following presents a summary of these data with updated maps reflecting a recent round of water level data and the installation of three bedrock monitoring wells near the east-central portion of the facility associated with the Shell Plant area. For additional details such as individual hydraulic conductivity test results, monitoring well logs, etc., for wells completed prior to the RFI, the reader is referred to the Groundwater Investigation Report referenced above.

The location of monitoring wells installed across the site are illustrated on Sheet 001. The data collected from these locations, as well as the shallow RFI borings which reached bedrock along the north western edge of the property, indicate that bedrock across the site ranges from an elevation of approximately 224 feet NGVD near well MW-1, near which there are obvious outcrops, to 80 feet NGVD near the center of the site at MW-12D. Moving eastward, the bedrock then rises again beneath the wetlands to an elevation of approximately 130 feet near MW-17S. A Structural contour map of the top of the bedrock surface, presented in the Groundwater Investigation Report, indicates that the bedrock surface forms a buried valley oriented in a northeastward direction and located beneath the active portions of the site. The bedrock valley is offset to the western side of the topographic valley represented by the wetlands. The bedrock beneath the site consists of the Austin Glen Formation of the Normanskill Unit and is composed of graywacke that grades upward to a shale.

The overburden beneath the site consists of silt and clay deposits underlain by a sand and gravel layer. The upper 15 feet of the silt and clay deposits can generally be described as a moist, brown, Silty CLAY, trace f Sand. This then grades to a wet gray Silty CLAY to CLAY, trace to no f Sand. This gray Silty CLAY layer ranges in thickness from 3.5 feet in MW-17S to 66.8 feet thick in MW-12D.

Underlying the Silty CLAY is a Sand and Gravel layer identified in 22 borings across the site. The Sand and Gravel layer ranges from 3.5 feet below ground surface at MW-17S to 66.8 feet below ground surface in MW-12D. The Sand and Gravel layer is not present in the northwest portion of the site near MW-1 and, where its thickness could be determined, ranges in thickness from approximately 1.0 feet in HP-10 to greater than 23 feet at MW-11D.

The combined thickness of the overburden deposits ranges from 1.5 feet in MW-1 to 85.1 feet in MW-12D, and is depicted on the isopachous map presented with the Groundwater Investigation Report. The thickness contours are consistent with the contours presented on the structural contour map discussed above and exhibit a similar northeast orientation. The overburden deposits are thin along the western edge of the facility bordering Hussey Hill, thicken in the center of the bedrock valley (i.e., the central portion of the site), and thin in the eastern portion of the facility in the vicinity of the wetlands.

Groundwater flow within the deposits described above has been subdivided based upon the grain size of the underlying soils (i.e., Silty CLAY versus Sand and Gravel) and bedrock. Two groundwater contour maps (for the shallow overburden and deep overburden deposits) were generated using water level measurements collected on September 28, 1999. Potentiometric surface contours (i.e., the water table) for the shallow overburden deposits are depicted on Sheet 002. Sheet 003 illustrates the piezometric surface contours for the deep overburden deposits. The data used in the preparation of these maps are presented in Table 4-1.

The potentiometric surface map of the shallow overburden (Sheet 002) indicates, in general, that the groundwater in these deposits flows from Hussey Hill towards the wetlands in the eastern portion of the site. The groundwater flow direction then turns to the north-northeast, mimicking the surface water flow patterns. Groundwater flow in the deep overburden deposits (Sheet 003) follows a similar pattern with flow towards the northeast and the discharge area represented by the wetlands.

It should be noted that the groundwater flow maps for both the shallow and deep overburden deposits indicate a groundwater low (i.e., discharge point) associated with the wetlands northeast of the active facility. This results in converging groundwater flow lines and precludes the migration of potential contaminants from the facility east of the wetlands. As discussed further in the Groundwater Investigation Report (ECKENFELDER INC., January 1996), private wells potentially screened within the sand and gravel deposits east of the wetland area are located upgradient of any potential plume which may migrate from the facility, and are thus not considered potential receptors.

The lateral hydraulic conductivity of the shallow overburden deposits was estimated using the results of the slug tests. Slug tests were conducted on the thirteen wells screened within these deposits, and ranged from 8.1 x 10-4 cm/sec at MW-8 to 4.3 x 10-7 cm/sec in MW-13S. The geometric mean lateral hydraulic conductivity is 1.6 x 10-5 cm/sec. The values of hydraulic conductivity for the wells screened within the deep overburden deposits ranged from a high of 1.9 x 10-2 cm/sec in MW-13D, to a low of 2.3 x 10-4 cm/sec in MW-5. The geometric mean lateral hydraulic conductivity for this unit was thus calculated at 2.6 x 10-3 cm/sec. (Groundwater Investigation Report (ECKENFELDER INC., January 1996).

A comparison of the water level data collected at the various couplet locations installed across the site indicates that the hydraulic gradients are downward in the vicinity of the active portion of the site and, generally, upward at the perimeter of the site. On the basis of these gradients, and the relatively low hydraulic conductivity of the shallow overburden deposits, as compared with the higher hydraulic conductivity of the deep overburden deposits (see Groundwater Investigation Report), groundwater flow within the shallow overburden is anticipated to be predominately vertical, while flow in the deep overburden (Sand and Gravel deposits) is anticipated to be predominantly horizontal.

This assumption is supported by the Tangent Law for the refraction of groundwater flow lines between two units with different values of hydraulic conductivity (Freeze and Cherry, 1979).

Vertical seepage velocities within the Silty CLAY deposits were calculated in the Groundwater Investigation Report at approximately 1.7 x 10<sup>-3</sup> ft/day or approximately 0.61 feet per year. Conversely, horizontal seepage velocities in the Sand and Gravel deposits are calculated at approximately 0.45 feet per day or 163 feet per year.

Groundwater flow within the bedrock has been evaluated based upon the data collected at three bedrock monitoring well locations installed during the RFI. These include MW-20R, MW-21R, and MW-22R. These data indicate that flow within the bedrock occurs within a highly fractured zone within the upper bedrock which likely, from a hydrogeologic standpoint, behaves as one hydrostratigraphic unit with the overlying Sand and Gravel deposits. The hydraulic conductivity of the upper fractured bedrock was estimated from slug tests conducted at wells MW-20R, MW-21R, and MW-22R. These results indicate the fractured rock is very permeable with values ranging from 2.8 cm/sec to 5.3 x 10<sup>-3</sup> cm/sec and the plots are presented in Appendix A.

Groundwater flow within the bedrock, as determined from these three monitoring points, is to the northeast as illustrated in the potentiometric surface map presented in Figure 4-1. The bedrock groundwater flow direction in this area is consistent with that of the sand and gravel unit as would be anticipated.

Groundwater quality data were collected during the Groundwater Investigation from wells located throughout the site. These data indicate that with the exception of the Shell Plant Area discussed further in Section 6.0, and an estimated value of 8.5J µg/L for TCE at MW-13S, there were no exceedances of NYS Class GA water quality standards or MCLs for organic constituents (additional details are provided in the Groundwater Investigation Report).

The soluble inorganic results indicated exceedances of NYS water quality standards for selenium at wells MW-15S and MW-15D and barium at MW-16S. The remaining analytes were either not detected or were below the water quality standard, where available. In comparison, the total metals analyses indicated an exceedance of water quality standards, with the exception of mercury and silver, in at least one location for all the analyzed metals. As discussed in the Groundwater Investigation Report, this is attributed to the high turbidity of the samples, which are obtained from wells screened in Silty CLAY deposits. Furthermore, although it is recognized that the NYSDEC generally requires the analysis of total metals for comparison to water quality standards, the disparity between total and soluble reported values cannot be ignored and must be taken into consideration when evaluating the collected data.

In summary, the water quality data collected during the Groundwater Investigation indicate that there are exceedances of water quality standards associated with one or two individual SWMUs. Specifically, those associated with the Shell Plant (SWMUs 24 and 30) and possibly AOC C comprising the open detonation pit. The data, however, does not support the presence of a site-wide groundwater impact as originally suggested by Gibbs and Hill (1990). Water quality data collected during the RFI further support this conclusion and are discussed in Section 6.0 with each SWMU, as applicable.

TABLE 4-1 GROUNDWATER ELEVATIONS September 28, 1999

<del></del>		9/28/99		
Well	Screen	Reference	Depht to	Groundwater
Name	Intervals	Elevation	Groundwater	Elevation
MW-1	R	227.4	21.74	205.66
MW-2A	S	170.7	15.70	155.00
MW-2B	D	171.7	15.28	156.42
MW-3	S	167.2	7.79	159.41
MW-4A	S	158.9	6.45	152.45
MW-4B	S	158.3	6.97	151.33
MW-5	D	193.1	26.75	166.35
MW-6	D	180.9	27.03	153.87
MW-7	D	182.8	29.51	153.29
MW-8	S	153.9	9.82	144.08
MW-9	S	148.0	4.89	143.11
MW-10	S	149.0	6.90	142.10
MW-11S	S	164.4	7.95	156.45
MW-11D	D .	163.9	7.35	156.55
MW-12S	S	168.9	7.34	161.56
MW-12D	D	168.4	15.47	152.93
MW-13S	S	162.5	8.06	154.44
MW-13D	D	162.4	17.09	145.31
MW-14S	S	175.6	5.45	170.15
MW-14D	D	176.1	9.43	166.67
MW-158	S	162.0	7.56	154.44
MW-15D	D	162.0	7.39	154.61
MW-16S	\$	159.3	19.28	140.02
MW-16D	D	143.9	16.78	127.12
MW-17S	S	146.8	4.00	142.80:
MW-18S	S	147.5	4.67	142.83
MW-19S	. 8	156,3	2.83	153.47
MW-20D	D	161.4	11.07	150.33
MW-20R	R	161.0	11.79	149.21
MW-21D	D	164.1	17.29	146.81
MW-21R	R	163.8	17.28	146.52
MW-22D	Đ	151.9	9.68	142.22
MW-22R	R	151.6	9.72	141.88
MW-23S	S	165.2	4.93	160.27
SG-1	NA .	147.5	1.12	146.38
		,	•	

R - Well screened in top of bedrock

D - Well screened in sand and gravel unit

S - Well screened in shallow water table (Silt and Clay)

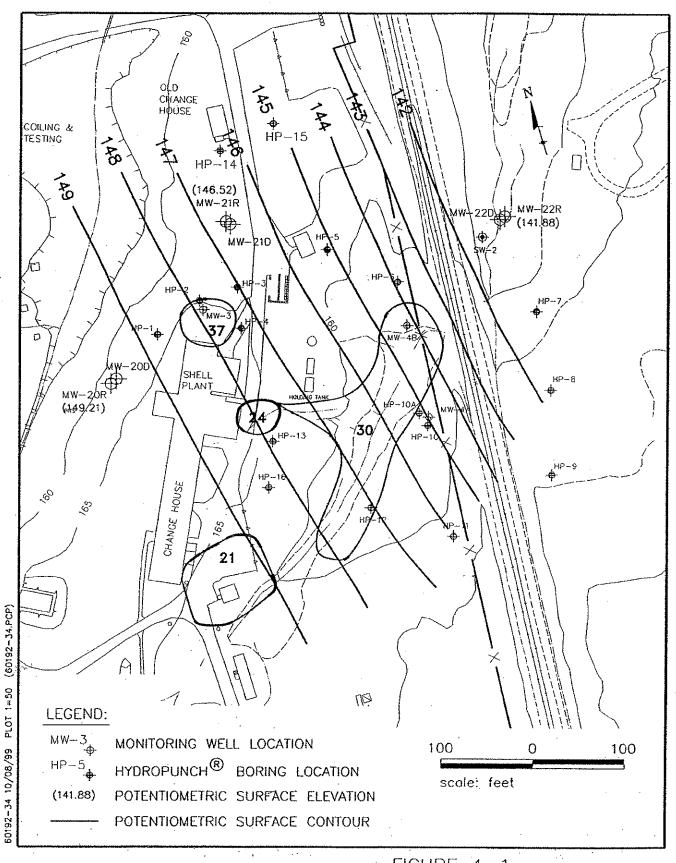


FIGURE 4-1
CALDWELL
TOP OF ROCK POTENTIOMETRIC SURFACE MAP
SEPTEMBER 28, 1999

#### 5.0 FIELD PROCEDURES

The field procedures used to collect the data for the RFI Investigation were consistent with the procedures presented in the approved work plans and are summarized below.

#### 5.1 SOIL SAMPLING

Shallow soil samples, i.e., those collected at depths of less than one foot, were collected with a stainless steel core sampler in accordance with the following procedures:

A new pair of disposable latex gloves was donned prior to the collection of each sample. The shallow soil samples were collected by excavating to the desired depth with a pick and shovel or drilling with a stainless steel hand auger. The sample itself was then collected with a smaller diameter stainless steel core sampler. The hand tools and core sampler were decontaminated between each location and immediately prior to collection of the sample in accordance with the procedures presented in Appendix A, Section 7.0 of the Work Plan. The collected sample was extracted from the core sampler and immediately placed in the appropriate pre-labeled sample container. Samples collected from SWMUs suspected or documented to contain volatile organic compounds were screened with a photoionization detector and handled in accordance with standard chain of custody protocol. Excess portions of the samples were visually described for grain size classification in accordance with the Burmister System.

Soil samples collected at depths greater than 1.0 feet below ground surface were collected with an auger drilling rig and split-spoon sampler with the remaining aspects of the sampling as described above. Split spoons were also used for the collection of soil/sediment samples collected in the former detonation pond (SWMU No. 1) and surrounding wetland areas. However, the borings in these areas were advanced with a tripod and the cathead was manually carried to the location or mounted on a barge, as needed. In these instances, an open borehole was maintained by driving casing through the soft sediment and sampling ahead of the casing. The casing was then removed and

the hole immediately collapsed in on itself. At locations outside of the wetland areas, boreholes less than four feet in depth were backfilled with the excavated soil cuttings. Boreholes greater than four feet in depth were filled with cement/bentonite grout by the tremie method and the soil cuttings were spread around the borehole.

Records of the sampling were maintained in a dedicated field book in which the sampling location and identification number, physical description of the sample, sample depth and interval, and other pertinent notations were made. Each sample location was marked with a stake indicating the SWMU and sample number and was later surveyed by North Engineers and Surveyors of Kingston New York. Boring Logs for locations greater than 1.0 feet in depth are presented in Appendix B.

#### 5.2 TEST PITS

Test pits were conducted for the purpose of defining the limits of waste at selected SWMUs. The areas of interest were investigated by excavating a shallow trench (6 inches to 1 foot in depth and 1 to 2 feet wide) at the perimeter of the suspected fill area. The perimeter of the waste was then staked and the procedure was repeated until the fill area was defined. The disturbed area was then backfilled with the excavated material. Record keeping consisted of a brief description of the waste material (where present) and surrounding soil in a dedicated field book. Each stake marking the perimeter of the waste was labeled with the SWMU number and a sequential test pit number (i.e., TP-1, TP-2, etc.) which was later surveyed by North Engineers and Surveyors.

### 5.3 MONITORING WELL INSTALLATION

Monitoring wells were installed during the RFI at locations associated with SWMUs 24, 30 and 37, SWMU 29 and SWMU 48. Bedrock wells, installed only at SWMUs 24, 30 and 37, were constructed of 4-inch diameter black steel grouted approximately three feet into bedrock. The well was then completed with an open borehole extending 15 to

20 feet below the casing. Overburden wells completed at these SWMUs were installed with 2-inch diameter stainless steel risers and ten foot stainless steel well screens in the sand and gravel unit overlying bedrock. Overburden wells completed at the remaining locations were constructed of 2-inch diameter PVC equipped with a ten foot long screen placed 10 to 25 feet below the ground surface. Split-spoon samples were collected continuously at each location or cluster and each well was developed to remove fine-grained materials from around the screened or open interval upon completion. Soil boring and well construction logs for these locations are presented in Appendix B.

### 5.4 IN-SITU HYDRAULIC CONDUCTIVITY TESTING (SLUG TESTING)

Following development, in-situ hydraulic conductivity tests (slug tests) were conducted at each of the newly installed wells. These tests consisted of rapidly lowering the water level in the well and measuring the change in the water level with respect to time as the well is allowed to recover to static conditions. The water levels were measured either manually or by means of a pressure transducer using an automatic data logger, depending on the rate of recovery. A detailed description of the procedures followed in conducting and evaluating these tests are presented in Appendix A of the Work Plan. Data plots for those wells tested as part of the RFI Investigation are presented in Appendix A. Previous plots of tests conducted during the groundwater investigation are presented in the appendices to the Groundwater Investigation Report.

### 5.5 GROUNDWATER QUALITY SAMPLING

Groundwater samples collected as part of this RFI were obtained using low-flow techniques and in-line measurement of field parameters. This method was employed to help limit the amount of turbidity in the collected samples.

Consistent with the previous groundwater sampling at this facility, both filtered and unfiltered groundwater samples were collected for metals analysis. This procedure was followed because previous investigations have indicated that the site monitoring wells

yield turbid samples even after development and the use of low flow sampling methods. Therefore, given the variability introduced into the metals analysis data by suspended sediment, and the desire to obtain consistent and comparable data at all locations, filtered samples were collected for the analysis of metals and will be used for comparison to groundwater standards. This approach is consistent with the recommendations presented in the article "Filtration of Groundwater Samples: A Review of Industry Practice" (Robert A. Saar, Groundwater Monitoring Review, Winter, 1997).

Quality assurance sampling and analytical procedures were conducted in accordance with the approved QAPjP.

#### 6.0 RFI INVESTIGATION RESULTS

The RFI Investigation was undertaken to define the horizontal and vertical extent of soils, which exceed the screening criteria for inorganic constituents as listed in the tables following this section. This work was completed in a series of phases, consisting of Phase I through IV for horizontal delineation and Phase V for vertical delineation. The horizontal delineation work was completed in accordance with the approved Work Plan dated April 1997 while the vertical delineation work was completed in accordance with an approved supplemental work plan dated April 30, 1999 and revised in response to comments obtained from the NYSDEC in a meeting of June 2, 1999. At the completion of each phase, the accumulated analytical data were summarized and provided to the Department along with recommendations for additional sampling or no further action at The next phase of work was then that time, depending on the collected data. implemented following approval by the Department and implementing any requested changes. Deviations from the work plans, which were approved by the Department, included the elimination of selected borings at SWMUs 1 and 48 in response to health and safety concerns related to the potential presence of explosive devices.

In accordance with the work plan, the soil samples collected during the investigation are labeled with the SWMU number, the location number within that specific SWMU and the depth of the sample. In this manner, the sample collected at SWMU 39, sample location 9 and at a depth of 0 to 1 foot would be labeled 39-9-1.0. Deeper samples were expanded upon to indicate the actual depth interval of the sample. For example, 39-9 4-6 indicates that the sample was collected from the 4 to 6 foot interval below ground surface. Soil description logs for the vertical delineation borings are presented in Appendix B.

In addition to the soils work described above, the RFI work plan also called for the collection of shallow groundwater samples, and/or the installation and sampling of groundwater monitoring wells. Where applicable, groundwater results associated with a

given SWMU are also tabulated and discussed in the following sections. Site-wide groundwater trends and discussion, however, are discussed briefly in Section 4.0 and in greater detail within the Groundwater Investigation Report.

Each of the SWMUs and AOCs is discussed sequentially below. At each SWMU, AOC, or group thereof, the soils analytical data are presented in two tables. The first table summarizes the analytical results from the samples collected within that area. second table summarizes only those locations where the concentrations of the analyzed constituents were above the respective screening criteria as presented on each of the Inorganic data qualifiers for the soil samples are exceedance summary tables. summarized at the back of the tables presented in this section. summarizing the organic and inorganic constituents in groundwater are presented as applicable (i.e., if groundwater samples were collected associated with that SWMU or AOC). Laboratory analytical reports are provided in Appendix C, collated by SWMU number, soil results first, followed by groundwater results and QA/QC samples. The discussion associated with each area is also supplemented with a figure (included at the back of this section) illustrating the sample locations and the approximate area within which the analyzed constituents exceed the screening criteria. The location of the SWMUs and associated sampling locations in relation to the entire site is illustrated on Sheet 001 provided in the map pocket to this report. The figures referenced above are blowups of these respective areas and provide the greater detail necessary for the individual discussions.

# SWMU Nos. 1, 22 and 35

The RFI Work Plan originally called for SWMU No. 1 to be investigated independently of SWMU Nos. 22 and 35. However, subsequent sampling indicated that impacts from these three areas encroached upon one another and a recommendation was made to, and approved by, NYSDEC to combine the efforts associated with these three areas.

The soil/sediment sampling associated with these three areas consisted of 58 locations, as illustrated in Figure 6-1, and 92 analytical samples for inorganics. The analytical results are summarized in Table 6-1 and those samples exceeding the established screening criteria are presented in Table 6-2. The data indicate that much of the wetland area surrounding these three SWMUs contains concentrations of metals in excess of the screening criteria. The analytes found most frequently above the screening criteria, and those recorded at the highest concentrations, include copper, lead, and selenium. The data further indicate that the impacts from these SWMUs are found downstream a distance of approximately 1000 feet from SWMU 22 (the last recorded exceedance of the screening criteria was at location 22-33).

Vertical exceedances of the screening criteria are found predominantly within the vicinity of SWMU No. 1 and are noted to depths in excess of 12 feet below the ground or water surface (locations 1-2 and 1-2B which was a re-sample of the 1-2 location). With the singular exception of location 22-14, which is located between SWMU 22 and 35, borings completed around the perimeter of SWMU 22 and further downstream did not indicate the presence of constituents above the screening criteria at depths greater than 1.0 feet. The exception at 22-14 indicated an exceedance of copper (2600 mg/kg) at a depth of 4-6 feet.

The analytical results from shallow groundwater samples, collected immediately adjacent to the perimeter of SWMUs 22 and 35 are summarized in Tables 6-3 and 6-4. The volatile organic results indicate the presence of sporadic constituents at estimated concentrations just over the detection limits. There is no apparent consistency in either the detected parameters or the sampling locations, which suggest the reported constituents are associated with the immediate area from which they were collected. The inorganic results indicate the exceedance of drinking water standards for many of the tested metals. These results are typically consistent with the soil/sediment results, which indicate elevated concentrations of copper, lead, and selenium. The data further indicate that the source of the elevated concentrations is primarily related to SWMU 22 as

opposed to 35. This is evident by the significantly reduced concentrations reported at locations 22-10, 22-11, and 22-13 which are all adjacent to SWMU 35 and up and/or cross gradient to SWMU 22.

# SWMU No. 2 and AOC A

The soil samples associated with these two areas are illustrated in Figure 6-2 and consisted of 32 locations (four located around the former kerosene tank leak) and 40 analytical samples. Analytical parameters consisted of inorganics, TPH and at those locations exhibiting high TPH concentrations, Base Neutral compounds. The analytical results are summarized in Table 6-5 and those samples exceeding the established screening criteria are presented in Table 6-6. The analytes detected most frequently above their respective screening criteria were copper, lead and selenium. As illustrated in Figure 6-2, the data indicate elevated metals concentrations surrounding the former burning cage and kerosene tank (AOC A). Vertical delineation sampling indicates that elevated metals are present to depths of 6.0 feet in this area.

Base Neutral analyses were conducted on samples collected at locations 2-01, 2-02 and 2-07 as these locations represented a range of elevated TPH concentrations. The detected base neutral compounds are summarized in Table 6-7. As indicated, a variety of compounds were detected at location 2-01 while only a few compounds were detected at estimated concentrations at locations 2-02 and 2-07. In addition, base neutral analysis of samples collected at these three locations at deeper depths did not indicate the presence of any base neutral compounds. These data indicate that base neutral compounds are present in those areas containing elevated TPH concentrations and specifically at TPH concentrations in excess of 10,000. These impacts, however, are limited to the shallow surface soils.

# SWMU Nos. 3 and 5

SWMU Nos. 3 and 5 are also former burning areas and the sample locations associated with these areas are illustrated in Figure 6-2. A total of 22 samples was analyzed from 17 locations as summarized in Table 6-8. Those samples containing concentrations of inorganics above their respective screening criteria are summarized in Table 6-9 with the most frequent constituents represented by copper, cadmium, selenium, and lead. Vertical delineation sampling indicates that elevated metals are present to depths of 6.0 feet in this area. The approximate extent of the area containing inorganic constituents above the applicable screening criteria is illustrated in Figure 6-2.

Base neutral analysis was also conducted on soils collected from location 3-08, which contained the highest TPH concentration (810) of the samples analyzed from this SWMU. Four base neutral compounds were detected at estimated concentrations from the sample collected at a depth of 1.0 feet as summarized in Table 6-10. These results are consistent with the findings at SWMU No. 2 and again indicate that TPH concentrations below 1,000 are not indicative of the presence of elevated base neutral compounds.

## SWMU No. 4

The state of the s

SWMU No. 4 is also a former burning area located adjacent to SWMU No. 2 as illustrated in Figure 6-2. A total of 13 samples was analyzed from ten locations as summarized in Table 6-11. Those samples containing concentrations of inorganics above their respective screening criteria are summarized in Table 6-12 with the most frequent constituents represented by cadmium, copper, and selenium. Vertical delineation sampling at this SWMU indicates that the elevated metals concentrations are limited to the upper one to two feet of soil. Additionally, there were no elevated TPH concentrations detected within this SWMU. The approximate extent of the area containing inorganic constituents above the applicable screening criteria are illustrated in Figure 6-2, which abuts the area delineated for SWMU No. 2.

# AOC B (SWMU Nos. 6, 7, 8) and SWMU No 32

SWMU No. 32 is discussed along with AOC B because it is located adjacent to SWMU No. 6. Furthermore, the limited number of soil samples exceeding the screening criteria around SWMU No. 32 are all adjacent to SWMU No. 6 and are represented solely by selenium, which is the most frequently detected compound associated with AOCB. The sampling locations associated with these SWMUs are illustrated in Figure 6-3. A total of 49 samples was analyzed from 39 locations associated with AOC B and is summarized in Table 6-13. Nine samples were analyzed from SWMU No. 32 and are presented in Table 6-14. Tables 6-15 and 6-16 present those locations and constituents that exceed the screening criteria at AOC B (designated by SWMU, No. 6) and SWMU No. 32 respectively. These data indicate that the only constituent exceeding the criteria at SWMU No. 32 was selenium and that selenium was also the most prevalent compound detected above the screening criteria at AOC B, followed by lead and barium to a much lesser extent. Selenium was also detected at concentrations above the screening criteria at depths of 8 feet at location 6-08, 6 feet at location 6-36 and 4 feet at locations 6-10 and 6-19. As illustrated in Figure 6-3, the data indicate a rather large area around AOC B that contains concentrations of metals above the screening criteria.

Three locations within AOC B (6-7, 6-9 and 6-10) also indicated elevated TPH concentrations and were thus also tested for base neutral compounds. These results are summarized in Table 6-17 and indicate that only two compounds, 2-methyl naphthalene and naphthalene, were detected at estimated concentrations. These data indicate that base neutral compounds are not of significant concern in these areas.

Six very shallow test pits completed in the vicinity of SWMU 32 confirmed that the waste in the area is scattered over the surface of shallow soils consisting of brown silt overlying bedrock. There was no distinct waste boundary located and rock was typically within 1.5 feet of the ground surface. Given the shallow depth to rock, test pit logs were not completed. The test pit locations are illustrated on Sheet 001.

Water quality sampling at well MW-1 generally confirmed the previous analytical results as summarized in Table 6-18. The only difference was an estimated value of 1.8J ppb for trichloroethene in the 1997 results. This value is just over the detection limit of 1 ppb and is inconsistent with the previous round of sampling. The actual presence of this compound is thus suspect.

## SWMU No. 9

A total of 21 samples were analyzed from 19 locations around SWMU No. 9 as illustrated in Figure 6-4. The analytical results are summarized in Table 6-19. Table 6-20 indicates that the only parameter exceeding the screening criteria was mercury at five locations. Mercury was also detected above the screening criteria at a depth of 4 feet at location 9-7. The collected data indicate the presence of elevated levels of mercury immediately down slope of the tank house (Building 2037), as illustrated in Figure 6-4. The data further suggest that the mercury is attenuated in the soils such that the concentrations are reduced by approximately half within 4 feet of the ground surface.

## SWMU No. 10

A total of 31 samples was analyzed from 25 locations around SWMU No. 10 as illustrated in Figure 6-5. The analytical results are summarized in Table 6-21. Table 6-22 indicates that with the exception of aluminum at location 10-2, the only parameter exceeding the screening criteria was mercury. As illustrated in Figure 6-5, however, the surficial distribution of mercury at concentrations above the screening criteria extends upward of 300 feet downgrade of the mix house (Building 2048). Elevated concentrations of mercury were also noted at a depth of 4 feet at location 10-19. However, samples collected at this depth at locations 10-4 and 10-6 did not indicate elevated mercury concentrations at this depth even though the sample at 1.0 feet at location 10-6 had the highest reported concentration of mercury (600 mg/kg) at this SWMU. These data again indicate that the soils significantly attenuate the mercury concentrations, as would be anticipated.

## SWMU No. 11

A total of 16 samples were analyzed from 14 locations around SWMU No. 11 as illustrated in Figure 6-6. The analytical results are summarized in Table 6-23. Table 6-24 indicates that with the exception of potassium at location 11-6, the only parameter exceeding the screening criteria was mercury. Mercury was also detected between locations 11-3 and 11-4 at a concentration of 37 mg/kg at a depth of 2 to 4 feet, but was only 0.14 mg/kg in the 4- to 6-foot sample, again indicating that the soils are attenuating the concentrations. Of note is that this area had the highest reported surficial mercury concentration, by far, at 240 mg/kg. This would suggest that the impact to soils at depths of 2 to 4 feet is limited to a localized area around locations 11-3 and 11-4. The estimated extent of mercury impacted soils associated with the SWMU is illustrated in Figure 6-6.

#### SWMU No. 13

A total of 26 samples was analyzed from 23 locations around SWMU No. 13 as illustrated in Figure 6-7. The analytical parameters consisted of lead and mercury and are summarized in Table 6-25. Mercury was the only compound that exceeded the screening criteria as summarized in Table 6-26. The collected data indicates that the impacted soils are limited to the upper 1.0 foot of soils and are distributed downgrade of Building 3001 consistent with the surrounding drainage patterns as indicated in Figure 6-7.

# SWMU No. 15

A total of 8 samples was collected and analyzed for mercury at eight locations as illustrated in Figure 6-8 and summarized in Table 6-27. None of the samples exceeded the screening criteria for mercury of 10 mg/kg with highest concentration recorded at 1.3 mg/kg.

#### SWMU No. 21

A total of 30 samples was analyzed from 24 locations around SWMU No. 21 as illustrated in Figure 6-9. After the first phase of sampling for which the full list of metals was analyzed, the sampling parameters were reduced to antimony, barium, lead, and selenium as summarized in Table 6-28. As indicated in Table 6-29, the most frequent parameter detected above the screening criteria was selenium and to a much lesser extent lead. All of the exceedances were limited to the upper 1.0 foot of soil and the estimated area of soils containing concentrations of metals above the screening criteria is illustrated in Figure 6-9.

## SWMU No. 23

Eight shallow soils samples were collected downgrade of SWMU 23 as illustrated in Figure 6-10. The samples were analyzed for the full list of metals as summarized in Table 6-30. Three of the locations exceeded the screening criteria for aluminum and one location for potassium as presented in Table 6-31. These exceedances, however, are likely related to natural variation in the metals concentration of the clayey soils found throughout the facility and an estimated area of impacted soils has not been delineated.

In addition to the soil sampling, 14 shallow test pits were excavated to assist in identifying the edge of waste. The test pits confirmed that the edge of waste was consistent with the break in slope as visible in the field. The encountered waste consisted primarily of metal in various forms (parts of drums, sheet metal, etc.). The location of the edge of waste was staked in the field and logs were not completed.

As noted in the work plan, this area was investigated previously as part of the NYSDEC Phase II investigation, during which three monitoring wells were installed (MW-5, MW-6, and MW-7). Groundwater samples collected from these wells during the Groundwater Investigation did not indicate the presence of organic or inorganic (soluble fraction) constituents above drinking water standards. These wells were sampled again

as part of the RFI and the results, with the exception of upgradient well MW-5 which, has been damaged and was not able to be sampled, are summarized in Tables 6-32 and 6-33 along with the 1995 data. As indicated, there were no detected volatile organics during either sampling event. The unfiltered, (i.e., total) inorganic data collected in 1997 indicates an exceedance of barium in wells MW-6 and MW-7 and an exceedance for chromium, copper and lead in MW-6. The soluble fraction, however, indicates an exceedance for barium only, with all of the constituent concentrations significantly reduced as compared to the unfiltered samples. This is consistent with previous analytical data and is again reflective of the turbidity of the samples collected from these fine grained deposits.

## SWMU Nos. 24, 30, and 37

The RFI work at these SWMUs consisted of the installation of three well couplets at the locations illustrated in Figure 6-11. These wells were installed and sampled for volatile organics to determine if the volatile organic compounds, most notably trichloroethene confirmed in the Silt and Clay deposits underlying these SWMUs, had migrated to the underlying sand and gravel deposits and bedrock. As illustrated in Figure 4-1 and Sheets 002 and 003, the MW-22 cluster is downgradient of the source area whose downgradient extent is near wells MW-4A and MW-4B. In addition, the MW-22 cluster is also located between the source area and the site production well. The analytical data collected during the RFI, however, and summarized in Table 6-34, indicate that there were no volatile organic constituents detected in the samples. These data indicate that further migration of the TCE has been attenuated by the low permeability silt and clay deposits. In addition, HydroPunch sampling completed during the groundwater investigation indicates that the TCE has not migrated east of the railroad tracks. Given that activities in this area ceased around 1980, there is no longer a continuing source of volatile organics. The non-detectable levels of volatile organics in the surrounding area thus suggest that the degradation rate of TCE is, at a minimum, equal to the rate of groundwater movement in the silt and clay deposits, thereby limiting the further migration of TCE,

# SWMU No. 26D

Satellite Accumulation Area 26D is located in a congested area near Building 2075. As illustrated in Figure 6-12, 13 sample locations were investigated throughout this area. The analytical results are summarized in Table 6-35 and those locations and parameters exceeding the screening criteria are presented in Table 6-36. These data indicate that selenium is the most frequently detected compound at concentrations in excess of the screening criteria and that these impacts are limited to the upper 1.0-foot of soil. Much of this area is covered by paved walkways or landscaping gravel. The estimated area of impacted soils is illustrated in Figure 6-12 and is typically bounded by adjacent buildings.

## SWMU No. 26E

Six samples were collected and analyzed at the locations as illustrated in Figure 6-13 and summarized in Table 6-37. There were two locations at which the screening criteria for mercury and selenium were slightly exceeded, as presented in Table 6-38. These low concentrations suggest that the limited impacts are within the upper 1.0 foot of soil in the estimated area illustrated in Figure 6-13.

## SWMU No. 26F

A total of four samples were collected and analyzed for the full list of metals at four locations as illustrated in Figure 6-14 and summarized in Table 6-39. None of the samples exceeded the established screening criteria.

## AOC C and D (SWMU No. 26G)

SWMU No. 26G was initially investigated on its own but was subsequently consolidated within AOC C and D as soils exceeding the screening criteria for mercury and selenium were found throughout the area. A total of 16 samples was analyzed from 16 locations

associated with SWMU 26G and is summarized in Table 6-40. Twenty-four samples were analyzed from AOC C and D from 20 locations as presented in Table 6-41. Tables 6-42 and 6-43 present those locations and constituents that exceed the screening criteria at SWMU 26G and AOC C and D (identified as AOC C) respectively. The data indicate that selenium and mercury, and occasionally lead and copper, were the constituents identified at concentrations in excess of the screening criteria. The data further indicate that with the exception of location 26G-16, at which selenium slightly exceeded the screening criteria at a depth of 4.0 feet (6.3 mg/kg vs. 5 mg/kg), the impacted soils are limited to the upper 1.0 foot of soil. The approximate area of these impacts is illustrated in Figure 6-15.

#### SWMU No. 27

Four samples were collected and analyzed for the full list of metals at the locations illustrated in Figure 6-16. The analytical results are summarized in Tables 6-44 and 6-45 and indicate that the only constituent exceeding the screening criteria is aluminum at location 27-01. This is likely due to natural variations in the aluminum content of the clayey soils found throughout the site and an area of impacted soils has not been defined.

# SWMU No. 29

A total of seven samples was collected and analyzed from seven locations as illustrated in Figure 6-17. The analytical results are summarized in Tables 6-46 and 6-47 and indicate that there was one exceedance for mercury at location 29-01. The estimated area containing elevated mercury concentrations is illustrated in Figure 6-17.

In addition to the soil sampling, a shallow overburden groundwater monitoring well, MW-23S, was installed downgradient of the suspected area. This well was sampled and analyzed for TCL volatile organics and metals and the analytical results are presented in Tables 6-48 and 6-49 respectively. The data indicated that there were no detected volatile organics. Consistent with the other groundwater monitoring results from across

the site, there were exceedances of water quality standards associated with the total metals results for barium, chromium, cobalt, and selenium. However, the soluble results indicate exceedances only for barium and, marginally, selenium. As discussed previously, this difference between the soluble and total results is due to the high turbidity of the sample which was collected from a silt and clay water-bearing zone.

# SWMU No. 33

A total of 27 samples was collected and analyzed for lead, mercury, and silver from 18 locations as illustrated in Figure 6-18. The analytical results are summarized in Tables 6-50 and 6-51 and indicate that there was an exceedance of the screening criteria for mercury at nine locations. At location 33-13, which had the highest concentration of mercury within this SWMU (7400 mg/kg), a concentration of 18 mg/kg was detected at a depth of 4 to 6 feet below the ground surface. This further decreased to a concentration of 5.3 mg/kg at a depth of 6 to 8 feet. A vertical delineation boring to be completed in the vicinity of location 33-4 hit refusal within two feet of the ground surface and was not completed. In addition, a boring to be completed at location 33-8 was not completed due to a field error. Vertical delineation within this SWMU is thus incomplete. However, the data collected here and at other locations across the site indicate that the clayey soils attenuate the metals concentrations with depth. Accordingly, the depth of mercury concentrations in excess of the screening criteria is not anticipated to exceed 2 to 4 feet throughout the remainder of the area. The estimated area of impacted soils is illustrated in Figure 6-18.

## SWMU No. 34 and 38N

A total of 15 samples was collected and analyzed for the full list of metals from 15 locations as illustrated in Figure 6-19. The analytical results are summarized in Tables 6-52 and 6-53 and indicate that the only constituent exceeding the screening

criteria was aluminum. Given the relatively consistent concentrations, the exceedances are considered to be natural variations of aluminum in the clayey soils and an area of impacted soils has not been identified.

# SWMU No. 38S

A total of 12 samples was collected and analyzed for the full list of metals from 12 locations as illustrated in Figure 6-20. The analytical results are summarized in Tables 6-54 and 6-55 and indicate that the only constituent exceeding the screening criteria was aluminum. Given the relatively consistent concentrations, the exceedances are considered to be natural variations of aluminum in the clayey soils and an area of impacted soils has not been identified.

## SWMU No. 39

A total of 20 samples was analyzed from 15 locations as illustrated in Figure 6-21. The analytical data are summarized in Tables 6-56 and 6-57 and indicate sporadic exceedances of selenium and one exceedance of cobalt. The data also indicate that these exceedances are limited to the upper 1.0 foot of soil. The estimated area of soils containing the slightly elevated levels of selenium and/or cobalt is illustrated in Figure 6-21.

# SWMU No. 40

A total of 11 samples were analyzed from nine locations as illustrated in Figure 6-22. The analytical data are summarized in Tables 6-58 and 6-59 and indicate that there was one exceedance of the screening criteria for lead, 1.0 foot below the ground surface, at location 40-2. Deeper samples collected at this location, however, were well below the screening criteria suggesting that the elevated lead concentrations are limited to an isolated pocket of soils as illustrated in Figure 6-22.

# SWMU No. 41

Three samples were collected from the area of the three former condensate collection sumps as illustrated in Figure 6-23. The samples were analyzed for lead and the reported concentrations were 62, 23, and 38 mg/kg at locations 41-1, 41-2, and 41-3 respectively. These concentrations are well below the screening criteria of 400 mg/kg so there are no exceedances at this SWMU. Of note is that the work plan had called for the collection of five samples at five collection sumps. However, subsequent site visits indicated that there were only three sumps and that the text of the work plan was in error.

# SWMU No. 42

A total of 14 samples was analyzed from nine locations as illustrated in Figure 6-24. The analytical data are summarized in Tables 6-60 and 6-61 and indicate that there were two locations at which selenium exceeded the screening criteria and one location at which chromium exceeded the criteria. The exceedances were limited to the upper 1.0 foot of soil and the estimated area of impacted soils is illustrated in Figure 6-24. Of note is that location 42-1 falls within the area of impacted soils associated with SWMU 26G.

## SWMU No. 46

Three samples were collected from the former condensate collection sump locations as illustrated in Figure 6-25. The analytical results are summarized in Table 6-62 and indicate that there were no exceedances of the screening criteria at this SWMU.

# SWMU No. 47

A total of 12 samples was collected for analysis from ten locations as illustrated in Figure 6-26. The analytical results are summarized in Tables 6-63 and 6-64 and indicate that selenium exceeded the screening criteria at five locations. The selenium concentrations were also above the screening criteria in samples collected at 4 to 6 and 6

to 8 feet below the ground surface. These depths are inconsistent with data collected from other areas of the site, which have indicated that the elevated concentrations are typically attenuated within the shallow soils. The estimated area of soils containing concentrations above the screening criteria is illustrated in Figure 6-26.

## SWMU No. 48

A total of 11 samples was collected for analysis from 11 locations as illustrated in Figure 6-27. The analytical results are summarized in Tables 6-65 and 6-66 and indicate that the copper was the constituent that exceeded the screening criteria most frequently and by the greatest concentration. Vertical delineation borings at this SWMU were not completed due to health and safety concerns and with concurrence from the Department. The estimated area of soils containing concentrations above the screening criteria is illustrated in Figure 6-27.

TABLE 6-1
INORGANIC SAMPLING RESULTS
SWMU No. 1 and 22
(all values in MG/KG)

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SAMPLE         N         DATE         Aluminum         Antimony         Arsenic         Barium           6/11/98         9.2         N         10         750         *           6/11/98         14         N         9.5         830         *           6/11/98         27         N         11         260         *           6/11/98         3.2         N         11         260         *           6/11/98         3.2         N         10         260         *           6/11/98         3.2         N         11         260         *           6/11/98         3.3         N         11         260         *           6/11/98         3.2         N         11         260         *           6/11/98         3.2         N         13         400         *           6/11/98         3.2000         2.8         N         2.50														$\supset$		$\Box$			$\Box$	$\supset$	⊃		Z		!	¥;			Þ					岩	Z.	뛴
6/11/98         9.2         N         10           6/11/98         9.2         N         10           6/11/98         14         N         9.5           6/11/98         27         N         11           6/10/98         27         N         11           6/11/98         27         N         11           6/11/98         3.2         N         11           6/11/98         3.2         N         10           6/11/98         3.2         N         11           6/11/98         3.2         N         11           6/11/98         3.2         N         13           6/11/98         3.2         N         13           6/11/98         3.2         N         13           6/11/98         3.2         N         13           6/11/98         3.2         N <td>Cadmiun</td> <td>3.3 4.5</td> <td></td> <td>0</td> <td>88.0</td> <td>0.70</td> <td></td> <td>1.2</td> <td>0.82</td> <td></td> <td></td> <td></td> <td>4,1</td> <td>0,32</td> <td>0.92</td> <td>0.32</td> <td>-1</td> <td></td> <td>1.9</td> <td>0.3</td> <td>0.42</td> <td>9'1</td> <td>3.6</td> <td>1.6</td> <td>0.37</td> <td>0.59</td> <td>5 4</td> <td>0.47</td> <td>0.35</td> <td>0.31</td> <td>0.36</td> <td>0.44</td> <td>9.0</td> <td>2.1</td> <td>2.1</td> <td>1.5</td>	Cadmiun	3.3 4.5		0	88.0	0.70		1.2	0.82				4,1	0,32	0.92	0.32	-1		1.9	0.3	0.42	9'1	3.6	1.6	0.37	0.59	5 4	0.47	0.35	0.31	0.36	0.44	9.0	2.1	2.1	1.5
6/11/98         9.2         N         10           6/11/98         9.2         N         10           6/11/98         14         N         9.5           6/11/98         27         N         11           6/10/98         27         N         11           6/10/98         27         N         11           6/11/98         27         N         11           6/11/98         3.2         N         11           6/11/98         3.2         N         10           6/11/98         3.2         N         10           6/11/98         3.2         N         11           6/11/98         3.2         N         11           6/11/98         3.2         N         11           6/11/98         3.2         N         11           6/11/98         3.3         N         13           6/11/98         3.2         N         13           6/11/98         3.2         N         13           6/11/98         3.2         N         13           6/11/98         3.2         N         2.3           6/11/98         3.2         N <td></td> <td>* *</td> <td></td> <td>,</td> <td><b>F</b> %</td> <td></td> <td></td> <td>* .</td> <td>+</td> <td></td> <td></td> <td></td> <td>*</td> <td>*</td> <td>*</td> <td>*</td> <td></td>		* *		,	<b>F</b> %			* .	+				*	*	*	*																				
SAMPLE	3ari um	750 830		ì	700	2		260	270				740	110	260	83	4000	180	1900	\$2	250	1300	2000	240	170	200	190	200	8	77	64	80	130	700	360	8
SAMPLE																																		Þ	Þ	ᅱ
SAMPLE	Arsenio	10		;	V	0,7		2	Ξ				13	6,9	13	=	5.6		(3)	>		6.3	Ξ		. (	o,	3,9	5,9	4.5	8.3	10	6.3	23	2	Ξ.	8,8
6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 7/26/99 10/23/98 2/17/		zz	Z:	z;	Z 7	<u>.</u>		z	z	z	z	n	z	Þ	z	Þ	z	Þ	Z	Þ	⊃	z	z	Z:	);	) ;	ב כ	z	Þ	z	z	<u></u>	$\supset$	Z	Z	z
6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 6/11/98 7/26/99 10/23/98 2/17/	timons	9.2	23	27	4,0 ه	0,0		3.2	5,3	33	cu.	9.	57	9:1	4.2	9.1	2	3.2	28	3.		4.8	14	4	ຕຸ້	4.5	0.36		1.7	0.56	0.35	0.32	0.3	20	14	8.9
6/11/98 6/11/98	An																							,									•			
6/11/98 6/11/98	uminum							٠.											39000				22000			73000			18000					13000	18000	17000
	LE E AI	80 80 80 br>80 8	86	∞ s	20 S	0 0	2 80	86	80	86	œ	∞.	8	86	88	<b>%</b>	80			66	86	82	∞	86	<u>م</u>	<u>∞</u> 8	000	200	∞	86	8	8	8	∞	∞.	, ,
SAMPLE LOCATION 110-11-10 11-12-12-12-12-12-12-12-12-12-12-12-12-1	SAMP DAT	6/11/9	6/11/	6/13/	6/10/	20170	6/11/2	6/11/9	6/11/2	6/11/	/11/9	6/11/	6/10/	6/10/	6/11/9	6/11/	2/17/	7/26/	5/1/6	7/26/	10/23,	2/17/5	5/1/5	2/17/	7/27/	2/1/2	2/17/	2/17/8	5/7/9	2/17/8	2/17/	2/17/	2/17/	5/1/5	5/1/6	5/7/5
	SAMPLE LOCATION	01-01-40	01-01-8,5	01-01-10.0	01-02-4.0	01-02-0.0	01-02-12.0	01-02B-4.0	01-02B-6.0	01-02B-8.0	01-02B-10.0	01-02B-12.0	01-03-4.0.	01-03-6.0	01-04-4.0	01-04-6.0	01-05-1.1	01-05 2-4	01-05-3.5	01-05 4-6	01-05-5.0	01-06-1.1	01-06-3.5	01-07-1.0	01-07 2-4	01-07-3.5	01-08-10	01-09-1.0	01-09-3.5	01-10-1.0	01-11-1.0	01-12-1.0	01-13-1.0	01-14-1.0	01-15-1.0	01-16-1.0

TABLE 6-1
NORGANIC SAMPLING RESULTS
SWMU No. 1 and 22
(all values in MG/KG)

								<u>க</u> ய ஜ	*# !	* E														
Zinc	130		4000	230	9 8	910	780	170	120	62														
	25		*	* >	* *	* *	*	Þ	. ;	$\supset$				Ω			Ω	Þ	Þ					
Silver	0.28		0.48	0.12	0.067	3.2	65	0.06	0.16	-							0.3		_					
	, D	) )	$\supset$	$\supset$				<u>ұ</u> т		<b>*</b>	ž	<b>&gt;</b> :	⊃ * <u>*</u> .	ž	ž ⊃	$\supset$	ž	ž	$\supset$	) <u>:</u>	)			
Selenium	2.1	7 % 7 % ° %	7.7	8.1 0.63	31 4.8	37	49	0.93	14	0.65	2200	2.2	530	740	78	1.6	5.6	26	3.1	1.6	, <u>~</u>	; ;mi	33	12
			ធំ រំ	<b>រំ</b>	'n å	ů ů	ı Ž	*	4 -	*														
Potassium	1000		2400	26 26 26 26 26 26 26 26 26 26 26 26 26 2	2300 560	490	4600	940 2200	1400	1200														
δ.	zz						Þ		;	<b>-</b>	-				1	'n		₽	D	⇒≒	>			ļ
Mercury	9.1 0.12 0.39	0.093 1.2 0.57	⊇ <b>%</b> ;	\$ Ç(;	1,240	2.6	. 770.0	0.076 1.9	0.52	.063	4. 4. 1. 8.	7.7	5 ° 9	4.6	27.0	0.07	0.14	0.23	.063	20.058	22	101	17	22
Σ.		9	* *	* *	* *	* *	*	ம ப	ш,	* *	*	;	Z *	* +	· z		*	*	*	z				
Lead	370 67 19	2 62 28	g \$1	28 72	55 46 46	200	8	27 490 ·	,	91 00	302	27	97 009	1700	£ 5 €	9.3	21	310	90	2 :	550	28	440	210
hi		<b>zzz</b> ;					।प	•		*	» (°) *		*	* :			*	*	*			Z		. 1
Copper	420 36 30	17 26 310	34	5000.	36	1400 4800	00000	550 550	240	38	3000	2600	3700	2600	23	182	37	8000	41	24 5 5	5400	1300	2300	3460
Ö	田田			., .,		•		пп			•	•		•							·	•	•	
Cobalt	7.4. 1		8 9	%3 22	7:7	8 F 0 78		·															•	
	<b>*</b> *							Z	, Z ;	z	zz		Z	z	ź		z	*	*					
Chromium	16 1		29	50 50	\$ <del>1</del> 40	8: 25	80							33			22							
ਤੌ	מממ	: ממ	<b>&gt;</b>													Þ	⊃		<b>;</b>	<b>&gt;</b> =	)			٥
Sadmium	1 .28 .42	0.36 0.4 0.81	6.4 4.4	4. 1.	3,6 1,52	27	38	1.28 1.1	.83	777	36	65.0	55	10	0.7	31	0.3	5.7	.31	13.1	2.5	12	2	69
్ద		u · O,	* :	. * .	· *	* *	*	_	· ·	~		•	_						<u> </u>	_				
æ.			z;	, ,		Z Z		z . c	_			_			_						,,,,	_	_	
Barium	120 65 220	2 6 20	37,6	25.5	2,28	¥ 5	37	2 52	200			220	×		42(	49			1	20	27.	24(	20	38(
. 2	D		<b>%</b> ₃	* ** +	* *	* *	*																	
Arseníc	6.7 9.8		<u> </u>	20	عَلَوْكِ	Q, 00	29	0, ⊗ 4, €,	33.	ų G														
è	ממכ		o z:	. ⇔ :	) Þ	ZZ	Z	בכ	<b>⇒</b> ;	) Z	; Z	);	ΣC	Z:	) )	ר	n	$\supset$	<b>&gt;</b> ;	⊃≓	)   	Þ	Þ	미
Antimony	4.8 1.4 2.1	2.6	6.73	0.31	0.33		+4	0.69	0,46	0.52 2.4	, <u>∞</u>	4.3	3.2	35	3,1	3,1	1.5	5.7	9.1	 	, 4	. 5.7	5,4	3.1
								ž	*	٠ ۲.						•								
Aluminum	11000		28000	21000 21000	1000	4100 16000	22000	11000	00081	00061														
		80 80 80 50 60 60 60 50	_								a as	<u>6</u> . 4	<u>*</u> ∞	00 f	ø &	<u>6</u>	∞	çe ·	∞ '	ž č	. œ	86	96	88
SAMPLE DATE	5/7/98 5/7/98 10/23/98	10/23/98 10/23/98 10/23/98	9/8/9	76/8/6	9/8/9	5/8/6 5/8/6	.6/8/6	9/8/97	6/8/6	5/2/5										66/07//	10/23/98	10/23/9	10/23/98	10/23/6
SAMPLE	01-17-1.0 01-18-1.0 01-19-1.0	01-20-1.0 01-21-1.0 01-22-1.0	22-01-1.0	22-03-1.0	22-05-1.0 22-05-1.0	22-06-1.0 22-07-1.0	22-08-1.0	22-09-1.0 22-10-1.0	22-11-1.0	22-12-1.0	22-14-1.0	22-14 4-6	22-15-1.0	22-16-1.0	22-18-1.0	22-18 4-6	22-19-1.0	22-20-1.0	22-21-1.0	22-21 2-4	22-22-1.0	22-23-1.0	22-24-1.0	22-25-1.0

TABLE 6-1
INORGANIC SAMPLING RESULTS
SWMU No. 1 and 22
(all values in MG/KG)

SAMPLE	SAMPLE DATE Aluminum	Vluminum	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Potassium	Selenium	Silver	Zinc
	-		,						1.1						
22-26-1.0	10/23/98	-	3.57	Ω	220	2.3			0099	N 210	35		16		
22-26 2-4	7/20/99		3.1	Ω	82	0.31	•		25	12 N	1 0.067 1	***	1,6	þ	
22-26 4-6	7/15/99		3.1	D	170	0.3					1. 690'0		1.6	U	
22-27-1.0	10/23/98	,	5.4	Ω	320	4.2			16000	N 930 ··	19		\$3		
22-28-1.0	10/23/98			中	480	6.4			:		3.5		49		
22-28 2-4	7/22/99		3.1	מ	140	0.3	•		18	18 N	0.061		1,6	n .	
22-28 4-6	.7/22/99	٠	3.1.	n	62	0.3	-	٠		7.3	0.066	·	1.6	t D	
22-29-1.0	10/23/98		8.9	ח	089	12		g		N 620	5.3		120		
22-30-1.0	10/23/98		2.1	ב	190	0.73					1.9		Ś		
22-30 2-4	7/23/99		3.1	ם	290	0,41					0.058	•	1,6	Ω	
.22-30 4-6	7/23/99		3.6	Ä	210	0.4					1 0.07	-	1.9	ם	
22-31-1.0	4/29/99		4,7	n n	. 320	7.2			7000	400	48		43		
22-32-1.0	4/29/99		4.1	U	230	0.41	5		1000	23	0.31		61	Ω	
22-32 2-4	7/23/99		3.1	ם	230	0.5			11	15 N	0.063	1	1.6	ב	
22-33-1.0	4/29/99		3.6	ב	170	0.54			520	23	16		1.7	n	
22-34-1.0	4/29/99		ω (Ω)	Ω	230	0.38	5		170	47	96.0		1.8	Þ	
22-35-1:0	4/29/99		3.3	Ω	190	0.33	5		25	16	0.81		33.	n	
													***		

TABLE 6-2
INORGANIC PARAMETERS EXCEBDING SCREENING CRITERIA
SWMU No. 1 and 22
(all values in MG/RG)

Silver 34	-																					.'4	٠					
Selenium 5	1400	1200	* 0081	1600	340	190	140 *	140 *	340	370	* 055	* 82	* 65	760	21	200	066		45	1000		150		46				28
Potassium 1900																		2100										
Mercury 10																		150 N		24	N. 92	160	26 N					
Lead 400	8300	8300	12000 *	11000	1900	1100	* 1100 *	1100 *	1900	2300	3400 *	470 *	3400 *	5800		1300	8100	7100		5300	0089	1000	550		5400	5400	3900	
Copper 600	4400	5400	£200 *	9200	2800	6700	2200 *	2200 *	1200	1700	3800 *		* 3800 *	14000		1800	1300 N	8600	N 066	4200 N	9095	2000 N	970		1800	1000	930	
	*	*	*	*	*	*			*	*	*			*		*		ž							ž	ž	ž	
Chromium 38	130	160	240	230	71	71			19	61	72			250		72		83.							65	69	9/	
Cadmium Chromium 8 38																												
Barium 1600							-										4000	1900			2000							-
_	z	Z	Ķ	Z	Z					Z				Z			Z	Z			Z				Z	Z	Z	
Antimony 5	9.2	14	. 23	27	6.4				. 1	5.3				57			13	78			14				20	14	Ø.8	
Aluminum Antimony 19265 5																		39000			22000		23000					
AMPLE	6/11/98	6/11/98	6/11/98	6/11/98	6/10/98	86/101/9	6/11/98	6/11/98	86/11/9	6/11/98	6/11/98	86/11/9.	6/11/98	8/10/98	6/10/98	6/11/98	2/17/98		10/23/98	2/17/98		2/17/98		2/17/98	86/1//5	86/1/19	86/1/5	10/23/98
SAMPLE S LOCATION Screening Conc.	01-01-4.0	01-01-6.0	01-01-8.5	01-01-10.0	01-02-4.0	01-02-6.0	01-02-8.0	01-02-12.0	01-02B-4.0	01-02B- 6.0	01-02B-8.0	01-02B-10.0	01-02B-12.0	01-03-4.0	01-03-6.0	01-04-4.0	01-05-1:1	01-05-3.5	01-05-5.0	01-06-1.1	5.6-90-10	01-07-1.0	01-07-3.5	01-09-1.0	01-14-1.0	01-15-1.0	01-16-1.0	01-22-1.0

TABLE 6-2
INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 1 and 22
(all values in MG/KG)

<b>t</b> :								*																								
Silver								65																								
									,		*	*		* Z	ž	* Z	ž	ž.														
Selenium	oc :	8	,	31	į	37	280	64	19	寸	490	2200		530	740	78	5.6	26		18	13	33	12	16	82	49	120		43			
	<u></u>			<b>元</b> ]				Ħ *	*																							
Potassium	2400			2300				4600	2200				,					٠														
Mercury	58	68 .		240	14								٠							.22		12	. 12	35	67				48		16	
_	#			*			*	*	H		*	*		*	*					_		-0.			_		_					
Lead	440			590			2000	400	490		3500	370(		3600	470(					550		440			930	900	620					
• -								_			*	*		*	*	*		*		Z							Z					
Copper	21000	2400	2000	33000		1400	4800	10000			11000	8000	2600	3700	2600	1200		18000		5400	4300	2300	3460	0099	16000	4700	3900	7200	7000	1000		
											Z	Z				ž			ž													
Chromium				46			75	80			280	86				42			44													-
Barium Cadmium Chromium						27	8.7	38				36		55	10												12					
Barium														-																		
							Z	z				z		z	z																	
Antimony							8.4	=	٠.			82		4	35									, SF , SF								٠
Aluminum Antimony	28000		21000	36000				22000	23000 N*					,																-		
SAMPLE DATE	2/8/6	26/8/6	26/8/6	26/8/6	26/8/6	26/8/6	. 26/8/6	26/8/6	2/8/6	26/8/6	8/2/5	5/5/98	7/23/99	\$/2/8	5/5/98	8/2/8	5/5/98	8/2/5	86/2/5	10/23/98	10/23/98	10/23/98	10/23/98	10/23/98	10/23/98	10/23/98	10/23/98	10/23/98	4/29/99	4/29/99	4/29/99	
SAMPLE	22-01-1.0	22-02-1.0	22-03-1.0	22-04-1.0	22-05-1.0	22-06-1.0	22-07-1.0	22-08-1.0	22-10-1.0	22-11-1.0	22-13-1.0	22-14-1.0	22-14 4-6	22-15-1.0	22-16-1.0	22-18-1.0	22-19-1.0	22-20-1.0	22-21-1.0	22-22-1.0	22-23-1.0	22-24-1.0	22-25-1.0	22-26-1.0	22-27-1.0	22-28-1.0	22-29-1.0	22-30-1.0	22-31-1.0	22-32-1.0	22-33-1.0	

TABLE 6-3
SHALLOW GROUNDWATER
INORGANIC ANALYTICAL RESULTS
SWMU NO. 22

			Ì	- Approximation			SW	E E	SWMU NO. 22										
SAMPLE NAME SAMPLE DATE	-	GW-22-01 10/13/97	GW-22-01 GW-22-02 10/13/97 10/13/97	9 4	3W-22-03 10/13/97	G	3W-22-04 10/13/97	G 1	3W-22-05 10/13/97	GW-22-06 10/13/97		GW-22-07 10/13/97	GV 10	W-22-10 10/13/97	5 =	3W-22-11 10/13/97	Ð T	3W-22-12 10/13/97	
Aluminum (Total)		120000	20000		41000		2200		8500	4900	0	55000	***************************************	920		160		86	
Antimony (Total)		5.1	ις.	$\Box$		Ω	Ś	ņ	22	31		66		ν,	Þ	5	Þ	ς.	Þ
Arsenic (Total)	10	130	52		44		7	Þ	7.5	28		4		7	Ω	۲-	Ω	7	þ
Barium (Total)	20	2400	950		450		74		280	989	_	910		130		54		53	
Cadmium (Total)	Ś	18	6.3		s,		7.1		13	12		т	-	<b>-</b> -4	P		₽	+1	þ
Chromium (Total)	10	150	49		42		S	n	19	55		120		S	Þ	s,	þ	ĸ,	þ
Cobalt (Total)	50.	130	98		63		2.7		7.9	22	•	8,3		1.8		****	$\Box$	44	þ
Copper (Total)	20	70000	12000		0086		2700		1100	820	0	4200		46		6		4	$\supset$
Lead (Total)	S	1400	510		340		120		1200	640	0	5000		78		20		Ś	Þ
Mercury (Total)	0.5	9.1	8,4		5.9		2.8		0.99	9.6		8.1		0.2	ņ	0.2	Þ	0.2	$\supset$
Potassium (Total)		13	7.9		4.2		13		က်	4.2		2.8		<b>—</b>	D	1.3		1.6	
Selenium (Total)	S	98	70		8		36		220	2ec	_	1000		23		3	Þ	ĸ	þ
Silver (Total)	10	1.3	· Prof	Þ	<del></del>	n	· *****	þ	•	ם			Þ	<b>+</b>		<del>, -</del>	Þ		Þ
Zinc (Total)		15000	5500		3200		370		970	160	0	400		44		50	Þ	20	Þ

TABLE 6-4
SHALLOW GROUNDWATER
TCL VOLATILE ANALYTICAL RESULTS
SWMU NO. 22

1,1,1-Thichlocordinate	SAMPLE NAME SAMPLE DATE	GW-22-01 10/13/97		GW-22-02 10/13/97	B	GW-22-03 10/13/97		GW-22-04 10/13/97		GW-22-05 10/13/97		GW-22-06 10/13/97	Ö	GW-22-07 10/13/97	GW.	GW-22-10 10/13/97	GW-2	GW-22-11 10/13/97	GW-22-12 10/13/97	2-12 3/97	li
Christolytocothane	1,1,1-Trichloroethane	-	Ω		n	1	D	1	D	-	n	1	5	1	J.	1 1					l
the conclusion of the conclusi	1,1,2,2-Tetrachloroethane		D	-	⊃	****	Þ		Þ	<b>→</b> -1	$\supset$		ם		Þ	,,,	-		Ţ.,	<u>;</u>	_
Marchene   1   W   1   W   1   W   1   W   W   W	1,1,2-Trichloroethane		D	<b>p</b> mag	₽	<b></b>	Þ		Þ		Þ	-	D		כ	1 L			Ţ	ب	_
Octoordense	1,1-Dichloroethane	_	D	-	D.	<b>,</b> -	Þ	5.1	تـــر	guard	Þ		ם ב	_	D	<u></u>	-	_	J J	ريز	<b></b>
li U I U I U I U I U I U I U I U I U I U	i,1-Dichloroethene	_	⊃	_	D	,-	$\Box$		n	hund	Ω	yout	, D	-	57	<u>ب</u>	_	_	] ]	Ļ	<b></b>
loroperhene(total)  1	1,2-Dichloroethane	-	Þ	<b>.</b>	· D	₩-1	Þ	<b></b>	Þ		D	-	5	****	5	<u>بر</u>	_	<u>,</u>	] 1	زبيز	
loropropane 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1	1,2.Dichloroethene(total)	1	$\supset$	-	Þ	-	Þ	9.1	۲,	1.4	<b>د</b> ر		b	-	<b>5</b>	1	<b></b>	<b>,</b>	. 1	رسز	1
one 10 U 10	1,2-Dichloropropane	<b></b>	D	·	Þ		Ω		₽	-	Þ	_	$\Box$	-	D	,l	<b></b>	<u></u>	1	ربو	
Core 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2	2-Butanone	01	D	10	$\supset$	10	Þ	10	₽	10	n	10	$\supset$		D	10 U		. 0		<u>ລ</u>	
10-2-pentanone 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2	2-Hexanone	74		7	$\supset$	73	$\supset$	7	₽	7	∷	2	$\Box$		Þ					<u>, , , , , , , , , , , , , , , , , , , </u>	<b>-</b>
s         U         S	4-Methyl-2-pentanone	7	Þ	7	Þ	71	D	7	$\supset$	7	D		Þ		Þ						_
1    U   U	Acetone	٧v	Þ	S	ב	16	<del>,</del> 5	s	Þ	S	D		b	•	Þ						-
Control of the cont	Benzene		Þ	<b>,</b>	D	<b>,</b> ,,,,	n	_	Þ	_	Þ		b		þ	1 L			J 1	بسو	_
techane 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2	Bromodichloromethane	_	Þ		Þ		ח	<b>y-m</b> 4	D	****	D	y4	Þ		5	1 (	, ,		J	,	_
tethane 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2	Bromoform	<b>.</b>	Þ		D	<b>****</b> :	n	****	$\supset$	<b></b>	Þ	•	Ö		Þ	1 L	_	1	1	ليو	_
sizulfide         1         U	Bromomethane	N	Þ	7	$\supset$	7	n	. 2	Þ	7	Ω	7	D	7	D	2 t		7	3		,
tetrachlorido 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1	Carbon disulfide		$\supset$	<b>-</b>	Þ		n	pt	$\supset$	besset	⊃		b		Þ	1 .		1	1	لسو	$\overline{}$
thane 2 U 2 U 17 J 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2	Carbon tetrachloride		Þ		n	****	Þ		₽		D	*~~1	Þ		<b>-</b>	1	****			<u>,,</u>	_
thane 2 U 2 U 17 J 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2	Chlorobenzene	_	Þ		Þ	-	Þ	****	$\Rightarrow$		D		$\Box$		5	<b>™</b>		1	1	ليبو	_
ording the control of	Chloroethane	64	D	7	n	11	5	7	⊃	7	$\Box$		b		Þ	2 L	<b>.</b>	2	J 2	. نــ	
ethane         2         U <th>Chloroform</th> <td>-</td> <td>Þ</td> <td>-</td> <td>Þ</td> <td>_</td> <td>Ω</td> <td><b>,,,,,</b>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</td> <td><math>\supset</math></td> <td>~</td> <td>D</td> <td></td> <td>n</td> <td></td> <td>b</td> <td></td> <td></td> <td></td> <td></td> <td>ب.</td> <td>_</td>	Chloroform	-	Þ	-	Þ	_	Ω	<b>,,,,,</b> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	$\supset$	~	D		n		b					ب.	_
Ochloropropene         1         U         1	Chloromethane	63	Þ	C4	$\Box$	73	Þ	7	$\supset$	2	$\supset$		D	64	D	2			3	,_	<b>,</b>
Ochloromethane 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1	cis-1,3-Dichloropropene	-			; ;	-	D	*****	⊃		⊃	<b>,</b>	b		D	,	_		<u></u>	_	<b></b>
nechloride         1         U         1	Dibromochloromethane				$\supset$				⊃	,-	⊃	<b>p-v-d</b>	$\Box$		, D	<u></u>	_		J 1	,	•
Discharide 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1	Ethylbenzene	-	D	-	n		D	<b>_,</b>	D		Þ		<b>5</b>	,	b					,	
1         U         I	Methylene chloride		$\supset$	_	Þ	-	n		$\supset$	⊷	Þ	<b>,,,,</b> ,,,,	<b>=</b>		b		-	, mare		ب	
ne         1         U	Styrene	•	Þ	-	₽	-	n		Þ	-	$\supset$	<b>y4</b>	<b>=</b>	, m-d	b		<b></b>			ب	
1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U	Tetrachloroethene		;	-	Þ	_	Ω	_	D	****	$\supset$	punt	<b>5</b>	<b>,</b> ~~	Þ	7	-		]	ر	<b>,</b>
Incompose the control of the	Toluene		$\supset$	-	Þ		Ð	,	$\supset$	<b></b>	D		þ		D	, ,	-		1	ب	<b></b>
1 U 1 U 1 U 1. U 1 U 1 U 1 U 1 U 1 U 1 U	trans-1,3-Dichloropropene		Þ	_	⊃		Þ		Þ		<b>-</b>		$\Box$	-	Þ	1	_	_	_		****
2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U	Trichloroethene	<b>.</b>	D		₽		₽		۳-	_	⊃	<b>James</b>	<b>5</b>	r	Þ	1	-				
1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U 1 U	Vinyi chloride	~	n	7	⊃	7	$\Box$	2.4	<b>,</b>	7	$\supset$	7	₽	7	ב	2 L		2			<b></b>
	Xylene(total)	<b>,</b>	$\supset$	*****	$\supset$	-	Þ	-	D	-	⊃	<b>,</b>	D		ם	1	_				

TABLE 6-5
INORGANIC SAMPLING RESULTS
SWMU No, 2 and AOC A
(all values in MG/KG)

2	The second secon																					
8	4800	E*	0,54 N		* £'3	59	0.58	NE	1.1	E 5	tr	120	*	2600 B*		0.052 U	1100		.7 B*	* 0.28	10000	42
2	\$2		1.3 U	,			0.85					210	•			0.65			9			
			2.8 U	1			2.5		20			270		110				-		***		
	o.		2.8 U	٦.			0.29		14			25		11						_		
	7600	<u>*</u>	1.5 N		17 .	200	5.8	NE	48 E	E 6.4	<u>4</u>	440	*	460 E*		λ.	1100			E* 0.89	1100	220
	23		1.4 U	,			1.3	je.	17			64		* 09		0.81						
	12000	缸	0.31 N		7.2	35	7.8		18	12	٨.	170	Z	29	ó	24	150			0.24	74	
	15000	មា	0.29	.9	4.6	110	8.6		20	. 12	٠.	280	Z	46	0.	119	140		o, i	0.058 U	1 78	U 84
02-05-1.0 9/5/97	13000	ध्य	0.28 U	) ,		80	0.31		18	)(	_	35	Z	24	0.0	072	150		28 U	0.056		
02-06-1,0 9/5/97	12000	[T]	0.62 N		9,1	150	6.		20	50	er.	1200	z	210	0	.53	2000		7	96,0	190	270
02-07 4-6- 7/14/99			3	5			6.5		15			16001		100		٠			N 09			
02-07-1.0 9/5/97	14000	EZ)	6.1 N		10	320	9,6		18			54000	Z	006	***	, o	1200		06	7.	580	1400
02-07-1,0 · 4/29/98	∞		Z Z	יי				*	30			70001	,			Q.			04			
0.1-08-1.0	16000	ĬŢ)	U 16.0		* 9.4	140	0.34	NE			Ħ	370	*			063 U						
02-09-1.0 9/5/97	17000	) 第	0,42 N		* 9'6	110	3.5		24 E		iπ)	330	*			7	220				70	U 120
02-10-1.0 9/8/97	11000	<u>т</u>	0,46 N		7.3	100	en	NE	15 E	E 8.3		1,6001	*	270 E*		42	1200			E* 0.7	170	400
02-11-1.0 9/5/97	7 8800	mj *	8.E	7	7.6	150	5.8	NE	14 E		13 13	9100	*				100				7.	U 220
02-12-1.0 9/5/97	7 23000	#1 *	0.31 U		6,3 *	120	0.31	NE	24			740	•			0.065	130					26 D
02-13-1.0 4/29/98	∞		1.4 U	1-1			4		14			200		16	o	.16		(*1	4,			
			1.5 U	,			3,5		15			2700(		* 095	74	5.		•	23			
	60			Þ			0.44	*	20			110		\$ 02	0.	990	_	4	4			
	. &			<b>~</b>			1.8		28	-	_	310		<b>4</b> 4	0.0	390		4	çi			
	∞		1.5 U	<b>~</b>			0.3		24	z		260		20	Ģ	£.						
	•			Þ			0,33			ッ		770		30	O	.12		6		Hrs.		
	0		3.1	Þ			0.31		26			250		23				****		-		
			3.1	7			0.31		28			33		21					.6 U	•		
02-19-1.0 4/29/98	<b>∞</b>		97	⊃			0.46	z	28	<b>17</b> 1		65		89	Ö,	0,25		w.				
	so		1.6 U	ь,			0,31			*2		2200		89				-	۲.			
-	88		. 1.4 U	Ε,			0.53			*		230		790				_	ę,			
02-22-1.0 4/28/99	¢.		3 C	₩,			6,3		28			48		27				_	.4 U			
02-23-1.0 4/28/99	6			Ω			0.3		24			110		23				-		-		
02-24-1.0 . 4/28/99	ø		3,4				0.31		38			360		200				ET)	4			
02-25-1.0 4/28/99	Ġ.		3.3 U	5			0.33	Þ	21			88		32			٠	-	n · 9:			
02-26-1,0 4/28/99	6		3.1 U				0.31		21			37		20				-				
02-27-1.0 4/28/99	¢.		3 · U	-			12		36			900		73				N	2.4			
02-28-1.0. 4/28/99	۵		2.9 U				0.29	D.	92			16		58					4. D			
AOC-4-81-1 0 9/5/97	18000		0.4		0	130	4.2		4	00	α Ω	7.4		1.5 H		0.13	540		0.81	11 180 0	P**	v
					<u>}</u>	) i	?		-	;						ŧ	5				\$2	; D
٠.																				81		
																		9	00001			

TABLE 6-6
INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 2 and AOC A
(all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Aluminum 19265	Antimony 5	Antimony Cadmium Chromium 5 8 38	Chromium 38	Copper 600	Lead	Potassium 1900	Selenium 5	TPH 100
02-01 4-6	7/13/99								41 Z	
02:01-1.0	2/5/67							*		10000
02-01-1.0	4/29/98		- 2						Ý	)
02-02-1.0	2/5/67				48 E		460 臣*	*	24 E*	1100
02-04-1.0	2/5/67			8.6						
02-06-1.0	2/5/67							2000	12	190
02-07-1.0	26/5/6		6.1 N			54000 N	1900		190	580
02-07-1.0	4/29/98			*		70000	2300 *		340	
02-07 4-6	7/14/99					16000	1100		160 N	
02-08-1.0	16/5/6								10 E*	
02-09-1.0	2/2/6							2200		
02-10-1.0	16/5/6					16000. *				170
02-11-1.0	26/5/6					* 9100	620 E			
02-12-1.0	2/5/97	23000 E	*			740 *				
02-14-1.0	4/29/98					27000	* 095		43	
02-18-1.0	4/29/98		. •			770				
02-20-1.0	10/20/98			٠		2200				
02-21-1.0	10/20/98						790			
02-27-1,0	4/28/99			12		006				
AOC-A-04-1.0	26/6/6								18000	:
-										

TABLE 6-7
DETECTED BASE NEUTRAL COMPOUNDS
SWMU NO. 2

SAMP_ID		SAMP_DA 2-Methyl naphthalene	43	Acena- phthene	-4	Anthra- cene	eu.	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(a) Benzo(b) pyrene fluoranthene	Benzo(g,h,i) perylene	, .	Benzo(k) fluoranthene	bis(2-Chloroethyl) ether
02-01-1.0 02-02-1.0 02-07-1.0	10/20/98 10/20/98 10/20/98	87 200 120	بر بر بر بر بر بر	J 130	٠ .	480	)-G	1500	1600	2200 85 84	J 710	••••	1000	810

TABLE 6-7 DETECTED BASE NEUTRAL COMPOUNDS SWMU NO. 2

SAMP_ID	SAMP_DA	SAMP_ID SAMP_DA Bis(2-ethylhexyl) phthalate	Carbazole	zole	Chrysene	Dibenz(a,h) anthracene		Fluor- anthene	豆	Fluorene	Indeno(1,2,3-cd) pyrene	Naph- thalene	, a	Phen- anthrene
02-01-1.0 02-02-1.0 02-07-1.0	10/20/98 10/20/98 10/20/98	350	7	440 J	1900 99 100	300 J	J	2700	<b>h</b> 3	160	088	120 150 100	فسو قسو حسو	1900

TABLE 6-7 DETECTED BASE NEUTRAL COMPOUNDS SWMU NO. 2

SAMP\_ID SAMP\_DA Pyrene

	-	۳.
2100	94	100
10/20/98	10/20/98	10/20/98
02-01-1.0	02-02-1.0	02-07-1.0

TABLE 6-8 INORGANIC SAMPLING RESULTS SWMU No, 3 & 5 (311 values in MG/KG)

		<b>k</b>				٠,٠	. ~.			۰														
		Z	2			2	; <del>2</del>	Ž	Ž	Z	E				Z									
	Zinc	1							84	64	270	;			78									
		1				1-			ח						D									
	TPH	12	900	;		92	87	140	85	87	810				80									
		þ				<u></u>				ר					þ									
	Silver	0.054	<b>V</b>	:		0.059	0.065	0.56	0.063	0,065	8,7				0.06									
	EZ.	п	ξ¥	<b>=</b>	) <u> </u>	<b>1</b> 2	TT)	口	[1]	កា	<b>11</b> 3	)	Z	Z	þ	*	*	-	) <b>=</b>	; ;;;	=	) <u> </u>	) D	
	Seicnius	-	23	4	-	4.	Ξ	91	***	0.74	38	3.1	500	4.9	0.3	380	4.5	÷		~	4	4	<u> </u>	
	Mercury Potassium Seienium	1200	840	7		1400	630	1600	1600	620	960				1000									
		ž	ž			ž	ž.	ž	ž	Ž	ž				ž									
	Метситу	0.2													0.092									
		ш	ET)			(1)	[2]	m	(11)	四	Œ	*		z	炪	*	*	*		(x)	!			
	Lead	24	380	25											16		7.9	4	57	9	Ξ	=	: ::	
		z	z			'Z	z	z	Z	Z	z	*			z					z				
	Соррет	380	78000	190									3300	190		00081	290	25	1100			80	29	
																4								
	Cobalt	13	9			9,3	7.7	7	4	4.6	9.7				1									
	Chromium	18	53			21	14	21	21	15	15				17									
	Cadmium	4.9	860	2.2	9,5	2.4	1.9	730	2.1	0.38	069	7.2	<del>4</del> 3	0,43	4.2	710	6.9	8,1	2,9	1.6	91	0.29 U	2.2	
	Barium (	110	310			96	120	160	130-	011	220				64									
			*												*									
	mic	× ×	~	_		× 8	z		ż -	Z,		4	_,	<u>щ</u>	z		••	٧,	c)v	S				
	Arse	7.8	4.	Ξ					=			m	r⁄i	ä	10	∺	~	7,	4,	4	4	5.9	7.	
	ony	Z	Z						z						Þ		-							
	Antim	0.54	1.2			0.58	0.34	1,2	0.47	0,36	3.3				0.3						٠			
	Aluminum Antimony Arsenic	13000	9400			20000	18600	.14000	18000	19000	11000				13000									
MPLE	DATE	9/4/97	6/4/97	7/14/99	7/14/99	9/4/97	9/4/97	9/4/97	9/4/97	9/4/97	9/4/97	5/4/98	7/14/99	7/14/99	9/4/97	5/4/98	5/4/98	\$/4/98	10/20/98	4/28/99	4/28/99	4/28/99	4/28/99	
SAMPLE	~	03-01-1.0																						

TABLE 6-9
INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 3 & 5
(all values in MG/KG)

LOCATION	DATE	Aluminum	Arsenic		Cadmium	Copper	Lead		Seleniur	n	TPH
Screening Co	nc.	19265	29		8	600	400		5		100
03-02-1.0	9/4/97		49	N*	860	78000 N			23	E	
03-02 4-6	7/14/99	• • .			9.5						
3-03-1.0	9/4/97	20000				1000 N					
03-05-1.0	9/4/97	-			730	3,0000 N			16	E	140
03-08-1.0	9/4/97	•	54	N*	690	100000 N	680	E	38	~ <b>E</b> ·	810
3-08 4-6	7/14/99				43	3300	5200		500	N	÷
03-10-1.0	5/4/98				710	48000 *	2300	*	380	*	
)3-13-1.0	10/20/98				•	1100					
03-15-1.0	4/28/99				16						

TABLE 6-10
DETECTED BASE NEUTRAL COMPOUNDS
SWMU NO. 3 and 5

1	,	
Phenanthrene	160	
	7	
Naphthalene	170	
	<b>-</b>	
Chrysene	91	
	<b></b> 3	
2-Methylnaphthalene	260	
SAMP_DATE	10/20/98	
SAMP_ID	3-08-1.0	

TABLE 6-11
INORGANIC SAMPLING RESULTS
SWMU NO. 4
(all vlaugs in MG/KG)

SAMPLE	SAMPLE	٠.																								
	DATE	Aluminum		Antimony		Arsenic		Barium	Cadmium		Chromium		Cobalt	ပိ	Copper	Lead	ğ	Mercury	y Potassium	ım Se	Selenium	Silver	TPH	he4	Zinc	
14-01-1.0	9/5/97	15000	*	0,28	þ	9,1	*	8.1	į	EZ.	15	m			99	-	1	0.094			ľ	0.057	11 76	=		ļ u
14-02-1,0	16/5/6	12000	<u>ф</u>	0.33	Z	7.4	#	49		Ä	16	'n			4	. <u>~</u>		0.19				0.055		) <u>;</u>	3 6	) Ez
14-03-1.0	161516	17000	<b>ж</b> .	0,45	Z	00.7	*	24		ÄΖ	20	(z)	14	ш		19	<u>*</u>	0.057	1500-			E* 0.057 1	: % ::	)	, ,,	ដ
4-04-1.0	16/5/6	22000	<b>*</b>	0,52	Z	12	*	130		HIZ.	26	μı				i in		0.11	•			0.063		=		1 12
4-05-1.0	16/5/6	1400	*	0.54	Z,	32	+	220		E E	19	m			. 00			1.4					2 4		_	} £1
4-05 2-4	7/13/99			•		8.4	(L)			Þ					4	•		;					•		_	3
4-06-1.0	26/2/6	18000	m	0.26	Þ	11	*	130		BZ.	23	(x)	16	ш	8	2	* ¤	0.25					7	Ξ	GC GC	ξΙ
4-07-1.0	4/30/98					01				z					0				•				2		3	<b>?</b>
4-08-1.0	4/30/98			•	-	9.8				z	٠			, ∞	. 01						1 0					
4-08 2-4	7/13/99	-				5.5			6,1					4	202						5.5					
4-08 4-6	7/13/99					12			99.0						00						¥ 4	-				,
4-09-1.0	10/20/98					9.4			80					*1	08						3.6	)				
4-10-1.0	10/20/98					20			4.6					7	200						2.5					

# TABLE 6-12 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 4

(all values in MG/KG)

SAMPLE LOCATION Screening C		Aluminun 19265	1 .	Arsenic 29		Cadmium 8		Copper 600		Potassium 1900	Seleniun 5	n
04-04-1.0	9/5/97	22000	E*				·					
04-05-1.0	9/5/97			32	*			1600	*	•	14	$\mathbf{E}^*$
04-06-1.0	9/5/97					8.5	NE	1100	*	2000	12	E*
04-07-1.0	4/30/98					12	N				7.3	
04-08-1.0	4/30/98					16	N	810			6.2	
04-09-1.0	10/20/98					8.8				•		

TABLE 6-13
INORGANIC SAMPLING RESULTS
AOC B (SWMU'S 6,7 & B)
(all values in MG/RG)

		里里	2	里	罗克	9	NE		NB	ļ	S.		<b>2</b> 1	2																								
Zinc	88	ខុខ	- 60	\$9	2 2	o o	140		8		76		86 55 55 55 55 55 55 55 55 55 55 55 55 55		1																							
	Þ	ם ב	מ	<b>D</b>	<b>=</b>		n						<b>\$</b>																									
Hat.	9/	200	88	<b>8</b>	9.0	200	S S		670		1200		14																									
		)   			; ,,,		<b>5</b>		_				×																									
Silver	1	E 1.2			000	60.00 G	E 0.12	2	B 0,49		16'0 H		B 0.055	, ⇒	D			*			*									Þ	£	<b>:</b>	ב כ	<b>&gt;</b>	Þ		;	
Selenium	28	pg <u>v</u>	19	<b></b>	m 5	5 0	9 :			8 9	3 0				<b>~</b>	9	~. c	. 20	5 g	3 5	S S	m j	8 .	າ ຂ	رم:	۵	,	نه دا	<u>ج</u>	, A	•7	eri e	ŋ t	- wi	رض ر	<b>-</b> -	en i	1 14
1	ď		•	•	٠.	- 40	,	.,	. ×	≃ }	. v	9 64	- <sub>*</sub>	4 60		-		. •,	A :	2 =	, on	<b></b>	ĕ, ſ	٠	. ~	1	- (	, 10	~	_	_			- r	,	9		
Potassium	1200	878 05 E	1200	430	3300	200	1100		1000	*	3		2200	5																								
	Þ		ż	ž	2 2	. *	ž	>	ż	z;	ż =	)	ž	Þ														Þ			:	<b>:</b>	Э	Þ	·.	Þ	;	>
Mercury	0.057	0.38	<u>~</u>	- 7	9 5	0,094	0.086	760.0	0.51	0.37	0.10	0.33	9.0	0.065	13	0,31	7 6	0.98	νį. •	- 00	27	0.072	670	0.085	0,18	0.51	997	0.058	7.0	0.15	0.096	0.067	20.00	0.063	0.51	0,061	6.34	1,3
۾		nt tr	u)	002 S	i i	3	œ ;	2 2	<u>. pa</u>	ŧ	r)	z	m n	1				*	* 7	: *			<b>y</b> i	*				r			z	z						
Lead	=	9 5	00	22 5	9 5 9 5	96	36	× 7	90	0000	2 2	£	e S	5	33	2;	, 03 6	5	28 8	009	8	23	300	2 6	33	49	<b>5</b> 6	3 ₾	30	\$	<u></u>	ee c	• 6	ខ្ល	000	19	00 7	₹ £3
-1	1	z 2					z		z	<u> </u>	<del>-</del> z	•	z						6	4 -3	' च	,	Φ						_									
Copper	36	<del>\$</del> £	8	건 ;	5 4 5	;	21		200	ï	ñ		7. 4. C. 6.	?																								
													μ	į																								
Coball	6.6	2 2	23	<u> </u>	2 2	4	7		11		2													_	_													
E						Z	;	Z Z	;	z	2	2:		z	2	2 2	: 20	Ż	ž ×	ž	Ż	ź.	zż	ž	ž	ž:	žž	Ž	ž	ž	Z :	z 5	2 2	. 2	. 72.	z	Z. 2	Z Z
Сһготічт	13	× 4	82	22 5	77.	i ii	∞ ;	2 12	#	<b>∞</b> ₹	2 %	37	2 2	9	33	1 0	: 30	**	2 2	4	4	= :	<u> </u>	45	23	80 	∞ ç	3 2	4	91	7	: 13	2 2	20	22	<u>\$</u>	92 '	9 99
	į.																																					
				=																																		
Cadmium	0.11	0,84	0.27	0.063 U U	9 6	•	0.062		0.94	6	A A		 -				=										÷.											
Cadmium	0.11	0.88	0.27	0.063 U U	9.0	!   	0.062		0.94	Z	Z			z	Z	Z 2	zz										5						2	<b>.</b> 2	z		z 2	<b>Z</b> Z
Barjum Cadmium		. 250 0.84		•		z			4400 0.94	z	z							460	620	069	1600	110	7000	360	06	120	<u> </u>		150	130	42	49						2 5 2 2
Barnum	14.		140	92 5	3900	2700 N				z	330 %	22						460	620	069	1600	011	7600	360	06 ,	. 120	0 9	. 011	150	130	27 :	24.7						
	14.	N 360	N* 140	92 5	3900	2700 N	210			Z900 N	330 2	011	. 1800	68				460	620	069	1600	110	. 000/	360	06 . ,	. 120		. 011	150	130	27	49						
, Arsenio Barium	9.6	N 360	8,5 N* 140	4.1 N* 120	11 N* 3000	M 2700 M	7 N* 210			Z900 N	330 2	011	. 041 . 081	68				U 460	υ 620 γ	069 N	N 1600	n. 110	. 000/ 130	360	Ω , 90	n 120		011	U 150	130	U 42	11 49						
, Arsenio Barium	9.6	N 8,8 N 360 N 6,1 N 250	N 8.5 N* 140	4.1 N* 120	2000 12 22 2000	U 2700 N	N 7 N* 210		N 8.2 N* 4400	Z900 N	N 7:8 N 1/200	D 770	. 041 . 081	Ω 89		790 139	220	מ	1.5 U 620	: 2	z	Di S	7.9 N 7090	) D	n n	1.5 U . 120	<b>&gt;</b> =	011 0 51	្ជា	<b>5</b>	<b>D</b> :	o =	11		U 1300	Ω SS	1 87	
Antimony Arsenio Barium	U 9.6 41	N 8,8 N 360 N 6,1 N 250	N 8.5 N* 140	)	2000 12 22 2000	U 2700 N	N 7 N* 210	77 27 27	N 8.2 N* 4400	N. 2900 N.	N 7:8 N 1/200	D 770	11 61 Nº 140	Ω 89	U 100	790 139	220	מ	s a	; 2	z	Di S	z E	) D	n n	· : c	<b>&gt;</b> =	<b>:</b> = = = = = = = = = = = = = = = = = = =	្ជា	<b>5</b>	<b>D</b> :	o =	11	330 D	U 1300	Ω SS	1 87	
Antimony Arsenio Barium	E 0.28 U 9.6 41	N 8,8 N 360 N 6,1 N 250	0.038 N 8.5 N* 140	0.39 N 4.1 N* 120	000 *N 11 N 000	1.4. U . 2700 N	N 7 N* 210	77 27 27	N 8.2 N* 4400	8.5 N 2900 N 2900 N 2900 N 2900	N 7:8 N 1/200	2,9 U 770	11 61 Nº 140	1.6 U 89	U 100	790 139	220	מ	s a	; 2	z	Di S	z E	) D	n n	· : c	<b>&gt;</b> =	<b>:</b> = = = = = = = = = = = = = = = = = = =	្ជា	<b>5</b>	<b>D</b> :	o =	11	330 D	U 1300	Ω SS	1 87	
Aleminum Antimony Arsenic Barium	12000 E 0.28 U 9.6 41	12000 0,54 N 8,8 N* 360	22000 0.038 N 8.5 N* 140	15000 . 0.39 N 4.1 N* 120 .	17000 17 N 17 N 2000	1.4 U 2700 N	19000 0.72 N 7 N* 210	2.9 U 73	12000 3.7 N 8.2 N* 4400	2000 N. 2900 N. 2000 N	N 9:8 W 17000	2.9 U 770	13000 0.34 11 6.1 1800	1.6 U 89	1.5 U 190	1.5 U 200	1.5 U 2.20	U 2.1		2	3.6 N	D 51	5 - 2.	. D. D.	1,4 U ,	) : :::	⊃ = 5. ¥.	t.s u	n 971 ·	D :	2.9 U	2.9 U	17 11 650	1,6 U 330	1,6 U 1300	3 U SS	1,6 U 87	1,5 U 97
SAMPLE DATE Aluminum Antimony Arsenio Barjum	12000 E 0.28 U 9.6 41	0,54 N 8,8 N* 360	22000 0.038 N 8.5 N* 140	0.39 N 4.1 N* 120	17000 0.5 N 1.1 N 2000	1.4 U 2700 N	0.72 N 7 N* 210	2.9 U 73	12000 3.7 N 8.2 N* 4400	2000 N. 2900 N. 2000 N	N 9:8 W 17000	2.9 U 770	0.34 11 61 1800	1.6 U 89	1.5 U 190	790 139	1.5 U 2.20	U 2.1	s a	2	3.6 N	Di S	5 - 2.	. D. D.	1,4 U ,	) : :::	<b>&gt;</b> =	t.s u	n 971 ·	1.5 U	2.9 U	o =	17 11 650	1,6 U 330	1,6 U 1300	3 U SS	1 87	1,5 U 97
Aleminum Antimony Arsenic Barium	9/4/97 12000 E 0.28 U 9.6 41	12000 0,54 N 8,8 N* 360	9/4/97 22000 0.038 N 8.5 N* 140	9/4/97 (5000 0.39 N 4.1 N* 120 (	0/4/97 17000 0.55 N 12 X 2000	\$/1/98 1.4. U . 2700 N	19000 0.72 N 7 N* 210	7/15/99 2.9 U 73	9/4/97 12000 3.7 N 8.3 N* 4400	2000 N. 2900 N. 2000 N	N 956 N 571 N 978 N 978 N 978 N 978 N	7/14/99 U 2.9 U	13000 0.34 11 6.1 1800	S/1/98 U 89	5/1/98 1.5 U 100	1.5 U 200	5/1/98 1.5 U 220	3/4/98 I.6 U		5/4/98 2.1 N	5/4/98 3.6 N	D 51	5/4/98 1.5 11	5/4/98 1,4 U	10/20/98 1,4 U	10/20/98 1.5 U	⊃ = 5. ¥.	10/20/98 1.5 U	10/20/98 · 1.6 U	10/20/98 1.5 U	2.9 U	10/20/68	10,23,68	10/21/98 1,6 U 330	1300 1300	7/15/99 3 U SS	1,6 U 87	10/21/98 1.5 U 97

TABLE 6-14
INORGANIC SAMPLING RESULTS
SWMU No. 32
(All values in MG/RG)

																-											ľ
SAMPLE LOCATION	SAMPLE DATE	~~**		Antimony		Arsenic		Barium (	Cadmium	ີ້ວ	Chromium	රී	Cobalt	Copper	<b>L</b> .	Lead	M	Mercury	Po	Potassium S	Selenium	Silver	k.	TPH		Zino	
32-01-1.0	76/4/6	14000		0.29	Þ	7.7	*	190	0.48		17		1	35	z	1	İ	,25	*	000	3.2		7	15	=	99	<u> </u>
32-02-1.0	9/4/97		<b>*</b>	0.34	z	7.5	*	53		₽	15			16	*			750	; <b>=</b>	800	0.54			76	<b>=</b>	7 7	] #
32-03-1.0	9/4/97		<b>*</b>	0.33	z	4.5	*	72		E E	74	m	10	7	*	17	£*	790	) <u>=</u>	099	0.31	11 0.06		) (°	<b>;</b>	1 100	) (x
32-04-1.0	9/4/97		<b>*</b>	8.0	z	7.4	*	360		E E	1			17)	*			3.1	)	006	190			3 6	) <u>;</u>	4 4	3 tz
32-04-1.0	4/28/98																			<u>.</u>			,	2	)	2	3
32-05-1.0	9/4/97		<b>試</b>	0,39	z	6.3	*	63	0.23	Ξ	80)		tr)	20	*		•	.062	Ξ	020			11		F	74	£Ι
32-06-1.0	9/4/97		ţ,	0.63	Z	4.4	•	80		ΞŽ	4			100	*			3.3	<b>,</b>	200			) }		) <u>=</u>	7.	1 11
32-07-1.0	9/4/97		<b>以</b>	5,0	z	3.6	*	200		思	=	ш	9	25	*	20	, *	121		200			<u> </u>	3 %	) <u></u>	2 %	3 ta
32-08-1.0	9/4/97		ţī)	0,64	z	S.	*	290		E	5		9 H	<del>00</del>	*			0.38		500	23	U 0.45		130	, <b>5</b>	80	a T
						٠,٠																					

TABLE 6-15
INORGANIC PARAMETERS EXCEBDING SCREENING CRITERIA
AOC B (SWMU 6, 7 & 8)
(all values in MG/KG)

	1																											ı
TPH 100						680					670		1200															
	m	(T)	m	(pi	Ħ	(II)		(II)			m		口		z	Ħ	(T)				*	*		*	¥	*	*	
Selenium 5	88	26	46	7.1	63	120	640	16	34	17	3000	1900	7900	6'9	260	61/	260	45	5.1	20	55	240	1700	1000	950	3600	23	
Potassium 1900					•	2300										2200												
Mercury 10			18 *N			-			-																			
Lead 400							1700				7100 E	14000	14000 E		440 N	-	820 E					* 08/	N 0008	4600 *	4100 *	* 0089		
Chromium 38												٠	56	,												-		
Barium 1600						3900	2700 N				4400	. 2900 N	17000				1800						-			7000		
Antimony 5										•		8.5 N											Z			N 6.7		
Aluminum 19265			22000																		,	·						
SAMPLE DATE	9/4/97	9/4/97	9/4/97	9/4/97	9/4/97	9/4/97	5/1/98	9/4/97	7/15/99	7/15/99	9/4/97	2/1/98	9/4/97	2/1/98	7/14/99	9/4/97	6/3/67	5/1/98	5/1/98	5/1/98	5/4/98	86/4/8	7/15/99	5/4/98	5/4/98	5/4/98	5/4/98	
SAMPLE LOCATION Screening Cone.	06-02-1.0	06-03-1.0	06-04-1.0	06-05-1.0	06-06-1.0	06-07-1.0	06-07-1.0	06-08-1.0	06-08 4-6	8-9 80-90	06-09-1.0	06-09-1.0	06-10-1.0	06-10-1.0	06-10 2-4	06-11-1.0	06-12-1.0	06-15-1.0	06-16-1.0	06-17-1.0	06-18-1.0	06-19-1.0	06-19 2-4	06-20-1.0	06-21-1.0	06-23-1.0	06-24-1.0	

FIGURE 6-8 SWMU NO. 15

- i gun i e ga

BROWN AND CALDWELL

FIGURE 6-9 SWMU NO. 21

BROWN AND CALDWELL

W N AND D W E L L

C B

FIGURE 6-10 SWMU NO. 23

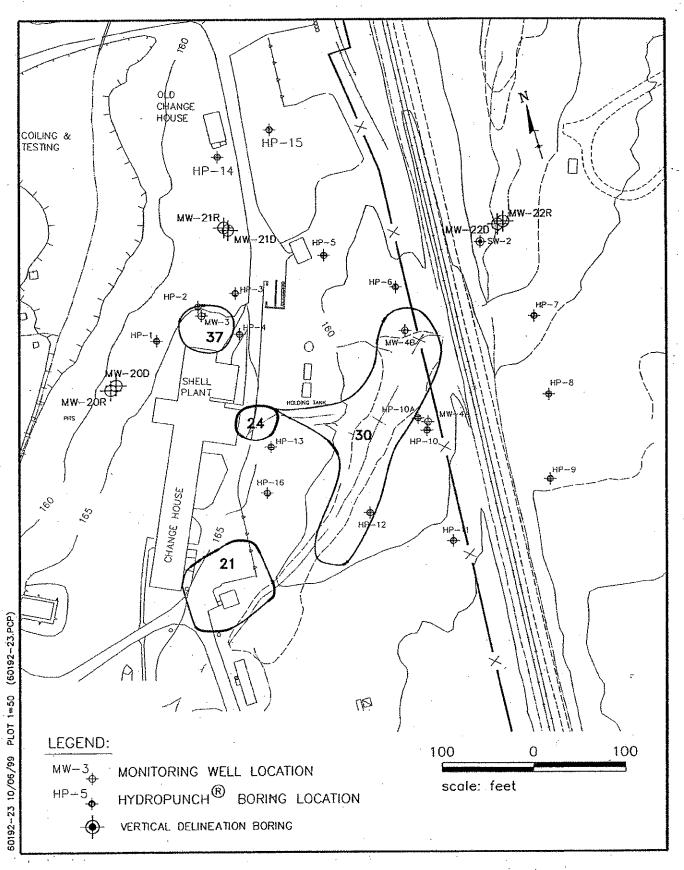


FIGURE 6-11 SWMU NOS. 24, 30 & 37

FIGURE 6-12 SWMU NO. 26D

BROWN AND CALDWELL

FIGURE 6-13 SWMU NO. 26E

BROWN AND CALDWELL

FIGURE 6-14 SWMU NO. 26F

BROWN AND CALDWELL

/ ...

...

AND E L L

BROWN CALDW]

FIGURE 6-15 AOC C&D, SWMU 26G

FIGURE 6-16 SWMU NO. 27

BROWN AND CALDWELL

FIGURE 6-17 SWMU NO. 29

BROWN AND CALDWELL

FIGURE 6-18 SWMU NO. 33

BROWN AND CALDWELL

FIGURE 6-19 SWMU 34 & 38N

BROWN AND CALDWELL

FIGURE 6-20 SWMU NO. 38S

BROWN AND CALDWELL

The following of the state of t

FIGURE 6-21 SWMU NO. 39

BROWN AND CALDWELL

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FIGURE 6-22 SWMU NO. 40

BROWN AND CALDWELL

FIGURE 6-23 SWMU NO. 41

BROWN AND CALDWELL

FIGURE 6-24 SWMU NO. 42

BROWN AND CALDWELL

FIGURE 6-25 SWMU NO. 46

BROWN AND CALDWELL

FIGURE 6-26 SWMU NO. 47

BROWN AND CALDWELL

FIGURE 6-27 SWMU NO.48

BROWN AND CALDWELL

### 7.0 SAMPLING AND ANALYTICAL QA/QC

In accordance with the work plan, sampling and analytical QA/QC included the collection of blind field duplicates and equipment/field blanks. These data are summarized in Table 7-1 and present the blind duplicate and its corresponding sample. As illustrated, the reported concentrations for the duplicate and its corresponding sample are generally in good agreement with variations accounted for by the inherent inhomogeneity of the collected soils and analytical variability. The field/equipment blanks indicate non-detectable levels of the analyzed constituents, which indicate that the sampling equipment decontamination procedures employed between samples were effective.

QA/QC measures in the laboratory during the first phase of soils sampling indicated matrix interference do to naturally occurring levels of yitrium, which is used as an internal standard. To avoid further matrix interference, many of the samples were analyzed at a 5X sample dilution. This reduced the yitrium levels to an insignificant level but maintained sufficiently low detection levels for the compounds of interest. This approach was approved by the department prior to the second phase of work.

TABLE 7-1 QA/QC ANALYTICAL RESULTS

TPH Zâno	U U			U 84	, ,			n	U 110 N							***************************************				# #/				D.	ŀ	4000	n	3 U 58 NE*	Ω	- 1	p:			6				
Silver	0.063				T 0,062			0,066	0,065										2	11	c c	5.7	*	0.32		E* 0.32	,	U 0.06	1	ŀ						Ω	4.3	5
Seleníum			1	- 1	0.62	0.65	0.61	0.84	0.89	69					5,4	7.3		ŗ	Ξ:	71	3.5	1600	1800	12	9'1	2 2 1 1	l	0.63	0.73	0.84	1,6	3.2	8.7	* t		1.6	Y	<del>*</del>
Potassium			570 .*	- 1	1000	1300	1300		,	ž,	0.7									Onc!						1600 2400 F		1100	2300	1400	1300	730	2051	1,00			,	
Mercury P	1.4		65	- 1	0.12 U	1		13 U	41				15	160					ì	0,36		2.4		063 U	-	. 23	2 8	<b></b>	.17	064 U	<b>4</b> ;	-	Z <del>*</del> •	7.	.1.5 058 U	140	200	53
Lead Mer	19 B 1 20 B 0.	55	ŧα	tzi		Ì					7.0	t ć		-					ţ	ri Fi			*		-	Œ •	12	ıщ		Ω	ដោ	,	al t	ņ	24 17 0. 0			14
Copper Le	1 2	\$		-	33			z	z		0	12 * 0			350	340	240 *	. 021		30			*			14000 3						1		l		32 2	,	Z (1
Cobalt			[22]	Ξ	0.0				ination and a second											7		5	9			31 31 31 31	ц	i izi		ш								•
			NE*	-															ż.			*	*	<b>6</b>	*		-a-mental de la constante de l	ž	***************************************	*9				21.	žž	z		z.
Chromium			14	1	U 24		56	25	18					:	*				27	20		210	240	U 22	-	3,6	2 2	. 12	U 29	27	25	1	U 22		U 18	U 25	1	<b>∴</b>
Cadmium			0.43		0.12	1	97.0	0,38	0.44		-			:	9.6	2			;	0.41		6.1				m +	23	0.098		0.19	∞ : 				67.79	0.32	1	0.27
Вапит			69	77	<b>2</b> (	960	140	56	80											95		* 096		* 58	83	270	1	. %	100	87	170	140		2 22	130	94 N		54
Arsenic			1		27	2 6	11	10	5.3						Z 9.6	10				2		6		5.7	11	14	7.7		2	-	Z :	ı	z :	-	9.0	9.3		8.2
			Ω	z	; כ	z	<b>&gt;</b> =	n	þ											7			z	D ·	D	ZZ	-	\$\pi\$	z		D.	z	>		⊃≂	P		5
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SAMPLE LOCATION	DUP 091197 33-11-1.0	DUP 091297	DUP 091597	26B-03-1.0	DUP 091697	746-02-1.0	48-09-1.0	DUP-021701	01-12-1.0	DUP-042898	32-04-1.0	DOP-042998	Th TP-042949	10-23-1.0	DUP-043098	04-07-1.0	DUP-050498	48-11-1.0	DUP-050698	42-07-1.0	29.15.1 0	DITP-061198	01-01-8.5	DUP-061198A	01-04-6.0	DUP-090897	DI ID-001007	26E-01-1.0	DUP-091697	21-03-1.0	DUP-091697	29-01-1:0 -	DUP-091897	26D-03-1.0	DUP-102098-1	DUP-102198	13-21-1.0	DUP-102298 33-17-1.0

# TABLE 7-1 QA/QC ANALYTICAL RESULTS

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SAMPLE	10/23/98	10/23/98	26/5/6	16/5/6	76/6/6	16/6/6	9/13/97	9/13/97	16/8/6	16/6/6	6/11/6	9/12/97	9/15/97	2/17/98	4/28/98	4/29/98	4/29/99	4/30/98	\$/1/5	5/4/98	\$/6/98	76/5/6	6/10/6	9/16/97	76/11/6	9/18/97	4/13/99	7/1/99	7/6/99	10/23/98	6/11/67	9/12/97	
SAMPLE	Dup-102398	22-22-1.0	DUP090597	02-04-1,0	DUP090997	23-08-1.0	DUP091397	39-10-1,0	EB 090897	EB 090997.	EB 091197	EB 091297	EB 091597	EB-021798	EB-042898	EB-042998	EB-042999	EB-043098	EB-050198	EB-050498	. BB-050698	EB-090597	EB-091097	EB-091697	EB-091797	EB-091897	EQ Blank 71299	EQ Blank 7199	EQ Blank 7699	EQ-102398	FB 091197	FB 091297	

Notes: See following page for definition of Qualiflers.

Duplicate analysis referenced on following page refers to internal laboratory duplicates not the field duplicates tabulated above.

## ANALYTICAL REPORT NOTES, TERMS AND QUALIFIERS (INORGANIC)

#### Notes:

The metals and cyanide reporting limits (RLs) have been statistically determined to be no less than three standard deviations as defined in 40 CFR 136, Appendix B, Revision 1.11. All other reporting limits are referenced from the specific analytical method.

#### Terms:

NA Not Applicable

NR Not Requested

U Below Reporting Limits

### Qualifiers:

- B The reported value is less than the practical quantitation limit (PQL, project defined) but greater than or equal to the RL.
- E The reported value is estimated due to the presence of matrix interference.
- N Predigested spike recovery not within control limits.
- W Post digestion spike recovery not within control limits.
- \* RPD or absolute difference for Duplicate analysis not within control limits.
- \*\* Reference Standard Methods 19th edition.
- (1) pH analyzed outside USEPA specified holding time. pH must be measured immediately after sample collection.
- (2) The sample pH did not meet the preservation guidelines. Therefore the pH was adjusted upon receipt.
- (3) The sample had to be diluted because of matrix interferences.
- (4) Reference Standard Methods 17th edition for the distillation method.
- (5) The sample was analyzed out of the USEPA holding time.
- (6) The sample was received in the laboratory out of the USEPA holding time.
- (7) The shipping cooler temperature exceeded 6°C upon receipt to Eckenfelder Laboratory, LLC.
- (8) When the concentration of the analyte is below the detection limit, the detection limit must be divided by the "Solids (in decimal form) in order to obtain the sample's true detection limit on a dry weight basis.
- (9) Analysis was subcontracted

## 8.0 SUMMARY AND CONCLUSIONS

The work completed to date, related to the RCRA program, consists of the Groundwater Investigation which addressed the site wide groundwater flow, groundwater quality, and hydrogeology, the Interim Corrective Measures for Explosives, which addressed potential explosive concerns at selected SWMUs, and most recently the RFI, reported herein. In addition, one aspect of the Groundwater Investigation Report was to identify groundwater and surface water use within a one-mile radius of the site. This information was used to identify potential impacts to human health associated with a release from the facility.

The Groundwater Investigation indicates that the active portions of the facility are underlain by a thick sequence of low permeability silt and clay. The only portions of the site where these silt and clay deposits are not present is in the undeveloped area on the western side of the property associated with step side slopes of Hussey Hill. Groundwater flow at the site is controlled by the large wetlands area, which represents a groundwater discharge point in the center of the topographic valley east of the facility. Therefore, groundwater beneath the site flows generally to the east before discharging to the wetlands, which represent the headwaters to an unnamed tributary of Plantasie Creek.

Water quality data collected from wells located throughout the facility indicate that there is a wide range in metals concentrations as determined from either filtered or unfiltered samples. This is a result of the collection of water samples from the low permeability silt and clay deposits and the resulting turbidity of the samples. As discussed in the Groundwater Investigation Report, the unfiltered samples were turbid even though low flow purging techniques were used to collect the samples. This turbidity resulted in metals concentrations that are not representative of surrounding groundwater. As a result, with the exception of mercury and silver, the total metals concentrations exceed groundwater standards throughout the facility. The filtered samples, however, indicate exceedances only for barium and selenium at a few selected locations immediately downgradient of individual SWMUs.

The organic analytical data confirm the presence of TCE and its related compounds in the vicinity of the Shell Plant (SWMUs 24, 30, and 37) at concentrations above MCLs. However, wells and HydroPunch sampling downgradient of these SWMUs did not detect the presence of volatile organics. Scattered volatile organic compounds were also noted at other wells located at a few locations across the facility. However, the reported values were estimates below both their respective PQLs and MCLs.

The cumulative data thus indicate that with the exception of SWMUs 24, 30, and 37 (i.e., the Shell Plant area) there are only minor exceedances of water quality standards for barium and selenium at a few selected SWMUs. These exceedances, however, are found in wells immediately downgradient of the specific SWMU and do not represent a site wide impact. The data also indicate that even where MCLs are exceeded adjacent to the Shell Plant, there are no detectable levels of organics downgradient of the SWMU or east of the Conrail tracks.

These data clearly indicate that the low permeability silt and clay deposits have attenuated potential releases throughout the facility such that there are no documented groundwater impacts any appreciable distance from the SWMUs or AOCs. This also indicates that any exceedances of water quality standards are within the facility property boundaries. Furthermore, the potential receptors evaluation presented in the Groundwater Investigation Report indicates that groundwater use around the site is upgradient of the facility. Given the above, there is little possibility and no evidence for groundwater related health concerns to neighboring residents.

The soils data indicate that there are exceedances of the inorganic screening criteria for soils associated with 28 individual SWMU or AOC locations, three SWMUs within one area with volatile organics in both soils and groundwater, eight areas at which there were no exceedances detected and three areas where no exceedances were detected but the areas contain former waste piles that will be evaluated further as part of the CMS. Those locations to be evaluated under the CMS are summarized in Table 8-1. The collected data further indicate that with some exceptions, metals concentrations exceeding the

screening criteria are limited to the upper one foot of soil. Metals concentrations below this depth are shown to typically decrease significantly as the metals are attenuated by the silt and clay soils. Concentrations above the screening criteria are however, noted at several locations. Most notably, these include SWMU 1, as well as the former burning areas (SWMUs 2 through 8, AOCs A and B). Concentrations in the center of the former detonation pond (SWMU No. 1) are documented above screening levels as deep as 12 feet below the water surface while concentrations above screening levels in the former burning areas is recorded to depths of 6 feet below the ground surface.

As noted in Section 1.0, exceedance of the screening criteria, which are based upon conservative assumptions, indicates that these areas warrant further evaluation as part of the CMS, not that corrective action is necessarily required. This is particularly true in that all of the SWMUs and AOCs located within the active portion of the facility are in areas that require employees, for safety reasons, to traverse the site only on designated walkways which are paved or consist of concrete sidewalks. Furthermore, the site has 24-hour security, is completely fenced, and any visitors must be accompanied by an employee. Given the above, and that potential explosive concerns were addressed by the Interim Corrective Measures, there is little if any risk of human exposure associated with these locations.

The site conditions would also suggest that a site specific risk analysis would be appropriate for SWMUs 1 and 22. These locations are located outside the active area of the facility. However, these areas consist of dense reeds and wetlands through which access is very difficult and is surrounded by undeveloped property. Given the above, and that the screening criteria are developed using conservative assumptions, a site specific risk analysis may also indicate that these areas do not pose a significant human health risk.

In summary, the work completed to date indicates the presence of SWMUs and/or AOCs that contain concentrations of inorganic or organic constituents above the established screening criteria. However, the collected data indicate that the exceedances of the

screening criteria are typically limited to the proximity of the individual locations and there is no evidence to suggest the presence of site wide impacts. Furthermore, the low permeability silt and clay deposits underlying the site, coupled with the discharge area represented by the wetlands in the center of the topographic valley, significantly limit the potential for contaminant migration beyond the facility boundaries. As also noted, the screening criteria represent values determined on the basis of very conservative assumptions. Therefore, the risk associated with these locations and the need for corrective actions is yet to be determined and will be addressed as part of the CMS.

#### 8.1 RECOMMENDATIONS

As noted above, the collected data indicates that exceedance of water and soil quality criteria are limited to the vicinity of the individual SWMUs and there are no exceedances beyond the property limits. In addition, the activities associated with the releases at the SWMUs have been discontinued, and the low permeability soils are acting to attenuate any further migration. Furthermore, those areas documented to contain soil or groundwater concentrations above applicable criteria will be evaluated as part of the CMS (Table 8-1). Never the less, it is recommended that an annual monitoring plan be implemented to document that conditions have stabilized and that there are no unexpected migration of contaminants occurring. To this end, we recommend the collection of semi-annual groundwater samples from the following locations:

Location	Analytes	Location	Analytes
MW-21D	TCL Volatile Organics	MW-2B	TCL Metals (Total and Filtered)
MW-21R	TCL Volatile Organics	MW-15S	TCL Metals (Total and Filtered)
MW-22D	TCL Volatile Organics	MW-15D	TCL Metals (Total and Filtered)
MW-22R	TCL Volatile Organics	MW-16S	TCL Metals (Total and Filtered)
Surface wat	er sampling point at propert	y boundary	TCL Metals (Total and Filtered)

The wells listed above are located at the downgradient boundary of SWMUs known to have at least a limited impact upon groundwater quality while the surface water sampling point will represent the water quality of surface water leaving the site. The selected analytical parameters are based upon the analytical results obtained at the individual SWMUs while the recommendation for semi-annual sampling is based upon the slow groundwater travel times related to the low permeability soils. Purging and sampling of the wells will be conducted using Low Flow sampling techniques previously approved for this site and samples collected for metals analysis will be both field filtered and total in order to obtain a representative sample. Upon approval by the Agency, the recommended semi-annual monitoring program will continue until changes are recommended as part of corrective measures.

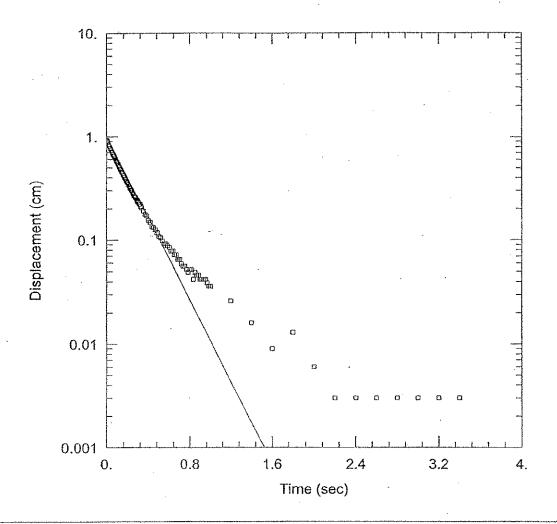
## TABLE 8-1

## SWMUs AND AOCs TO BE INVESTIGATED IN THE CMS

SWMU No.	SWMU Name
1	Shooting Pond
2	Burning Cage/Incinerator
3	Copper Wire Burning Area
4	Iron Wire Burning Area
5	Wire Burning Area III
6-7	Open Burning Pads
-8	Former Burning Area
9	Waste Powder Catch Basins - Building 2037
10	Waste Powder Catch Basins - Building 2048
11	Waste Powder Catch Basins - Building 2049
13	Former Waste Powder Catch Basins - Lead Azide Building
21	Lead Recycling Unit Area
22	Former Landfill
23	Former Dump
24	Former Wastewater Treatment Facility
26D, E, & G	Burnable Waste Satellite Accumulation Areas (3 locations)
29	Drainage ditch (Downgrade of Building 2049)
30	Drainage Ditch (Downgrade of Building 2036)
32	Old Dump (near water tower)
33	Mercury Fulminate Tanks Area
35	Stone Fence Dump
37	Shell Plant Drum Storage Area
39	Former Wash Water Discharge Area - Building 2009
40	Pilot Line Condensate Collection Sump
42	SAC Building Steam Collection Containers
47	Building 2058 Fuse Room
48	Mercury Fulminate Area
<u>AOC</u>	AOC Name
A	Kerosene Tank Leak
В	Open Burning Pads Area
C	Open Detonation Pit
D	Detonation Test Building

## APPENDIX A

## SLUG TEST RESULTS (WELLS COMPLETED DURING RFI)



## MW-20D

Data Set: P:\HYDRO\DYNO\SLUG\MW-20d.aqt

Date: 10/07/99

Time: 09:51:20

## PROJECT INFORMATION

Company: Brown & Cladwell

Client: Dyno Nobel

Project: 60192

Test Location: Port Ewen, NY

Test Well: MW-20d

## AQUIFER DATA

Saturated Thickness: 10, cm

Anisotropy Ratio (Kz/Kr): 1.

## WELL DATA (MW-20d)

Initial Displacement: 0.927 cm

Casing Radius: 5. cm

Screen Length: 335.3 cm

Water Column Height: 1339. cm

Wellbore Radius: 15. cm

## SOLUTION

Aquifer Model: Confined

K = 0.5244 cm/sec

Solution Method: Bouwer-Rice

y0 = 1. cm

TABLE 6-15
INORGANIC PARAMETERS EXCEBDING SCREENING CRITERIA
AOC B (SWMU 6, 7 & 8)
(all values in MG/KG)

SAMPLE	SAMPLE DATE	Aluminum	Antimony	Barium	Chromium	Lead	Mercury	Potassium	Selenium	TPH
06-25-1.0							•		* 011	
06-27-1,0									7.9	
06-28-1,0									-	
06-29-1.0									25	
06-31-1.0				÷					230	
06-34-1:0									100	
06-35-1.0									35	
06-36-1.0						1000	-		930	
06-36 4-6					•				\ \d	
06-37-1.0						-			13	
_		-							<b>;</b>	

## TABLE 6-16 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 32 (all values in MG/KG)

SAMPLE LOCATION Screening Con	SAMPLE DATE	Selenium 5	
32-01-1.0	9/4/97	32	E
32-04-1.0	9/4/97	160	E*
32-04-1.0	4/28/98	28	

## TABLE 6-17 DETECTED BASE NEUTRAL COMPOUNDS AOC B (SWMU 6, 7 8)

SAMP_ID	SAMP_DATE	2-Methylnaphthalene		Naphthalene	
06-07-1.0	10/20/98	130	J	100	J
06-09-1.0	10/20/98	79	J	88	J
06-10-1.0	10/20/98	160	J		

## TABLE 6-18 TCL VOLATILE ORGANICS ANALYTICAL SUMMARY FOR WELL MW-1 (All values in ppb)

SAMPLE NAME SAMPLE DATE	MW- 1 9/12/95	-	MW- 1 10/21/97	
1,1,1-Trichloroethane	1	U	1	U
1,1,2,2-Tetrachloroethane	1	U	. 1	U
1,1,2-Trichloroethane	1	U	1	U
1,1-Dichloroethane	1	U	1	U
1,1-Dichloroethene	1	U	1	U
1,2-Dichloroethane	1	U	1	U
1,2-Dichloropropane	1 .	U	1	U
2-Butanone	10	U	10	U
2-Hexanone	2	U	. 2 2	U
4-Methyl-2-pentanone	2	U		U
Acetone	- 5	U	5	U
Benzene	1	U	1	U
Bromodichloromethane	1	U	1	U
Bromoform	1	U	*	U
Bromomethane	2	U	2	U
Carbon disulfide	1	U	1	U
Carbon tetrachloride	1	U	1	U
Chlorobenzene	1	U	1	U
Chloroethane	2	U	2	U
Chloroform	1	U	1	U
Chloromethane	2	U	2	U
cis-1,3-Dichloropropene	1	U	1	U
Dibromochloromethane	1	U	1	U
Ethylbenzene	1	U	1	U
Methylene chloride	1	J	1	U
Styrene	1	U	1	U
Tetrachloroethene	1	$\mathbf{U}$	1	U
Toluene	1	U	1	U
trans-1,3-Dichloropropene	1	U	1	U
Trichloroethene	1	U	1.8	J
Vinyl chloride	2	U	. 2	U
Xylene (total)	1	U.	1	U

TABLE 6-19
INORGANIC SAMPLING RESULTS
SWMU NO. 9
(all values in MGKG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum Antimony	ı Antim		Arsenic	Barium	Cadmium	Cadmium Chromium Cobalt Copper Lead Mercury	Cobalt	Copper	Lead	Mercury	Pol	Potassium	Selenium	Silver	Zinc
09-01-1.0	9/12/97	13000	0.32	b	9	91	0.36	16	12	23	30	25		630	1.2	0.063	78
09-02-1:0	9/12/97	15000	0.28	Þ	8.4	59	0,35	20	12	35	15	0.75	•	1700	0.56	0.056	
09-03-1.0	9/12/97	10000	0.31	ם	7.4	47	0.24	14	9.2	25	12	0.84		1000	0.62	0.062	
09-04-1.0	9/12/97	14000	0.31	D	9.3	100	0.3	20	13	27	17	0.52		1200	0.62	0.062	
09-05-1.0	9/12/97	15000	0.3	Þ	8.1	93	0.27	20	15	25	<u>.</u>	1.4		900	9'0	U 0.06 U	
09-06-1.0	9/12/97	16000	0.3	Þ	6.1	98	0.17	21	18	25	18	14		1000	9.0	90.0	
09-07-1.0	9/12/97	19000	3.2	⊃	6.1	110	0.36	20	13	42	49	110		1100	1.7	0.065	
09-07 2-4	7/12/99		-	•								49					
09-07.4-6	7/12/99											0,063	Þ				
09-08-1.0	9/12/97	9100	0.32	D	4.2	50	0.18	-	7.6	4	14	2.8		480	0.63	U 0.063 U	
09-09-1.0	9/12/97	15000	0.31	<u>D</u> .	8.1	96	0.39	20	12	27	27	0.99		1400	0.84		
09-10-1.0	2/17/67	7600	0.28	Þ.	\$0	59	0.9	m 33		27	12	0.056	Ç	930	0.56	U 0.095	96
09-11-1.0	9/12/97	15000	0.3	D	7.6	66	0.54	20	133	27	44	7	٠	086	y4	-	92
09-12-1.0	9/12/97	14000	0.28	ņ	8.4	61	0.35	19	12	35	17	0.38	•	1200	0.56	U 0.056 U	78
09-13-1.0	9/12/97	17000	0.31	D	8.2	100	0.35	22	14	27	2	16		1100	0.63	-	.08
09-14-1.0	9/12/97	14000	0.29	בּ	6.9	82	0.31	20	2	30	17	0.7		1300	0.59		7,
09-15-1.0	9/12/97	17000	0.33	Þ	5,9	96	0.29	20	15	<u></u>	5	0.53		970	99'0		64
09-16-1.0	4/28/98							•.				3.6	* *				
09-17-1.0	4/28/98				-			,				0.51	*				
09-18-1.0	4/28/98											20	ž				
09-19-1.0	4/28/98											0.2	*				

TABLE 6-20
INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 9
(all values in MG/KG)

SAMPLE	SAMPLE		
LOCATION	DATE	Mercury	
Screening Conc.		10	
09-01-1.0	9/12/97	25	
09-06-1.0	9/12/97	14	
09-07-1.0	9/12/97	110	
09-07 2-4	7/12/99	49	
09-13-1.0	9/12/97	16	
09-18-1.0	4/28/98	50	N*

TABLE 6-21
INORGANIC SAMPLING RESULTS
SWMU NO, 10
(all values in MG/KG)

*	NE*	*#Z	* Z	* a Z			*# Z	ž Z			* 四:	* HZ	* 2	ШZ										-								1
Zinc	130			110			\$8				92	9	5	63	<b>.</b>																	
	Þ	Þ	$\Box$	⊃			<b>:</b>					$\supset$		₽																		
Silver	3	N 0.063					U 0,062				U 0.058																					
Selenium	99.0	69.0	0,72	0,64			0.62	0.65			0.58	0.63	0.65	0.64																		
o,		*	•	4			*	٠			*	4	*	*																		1
Potassium	1100	1500	0011	1300			1300	880			096	1200	006	800																		22222222222
															×																	
Метситу	330	51	16	120	0.16	0.091	34	009	1.2	0.4	ςς.	37	\$8	17	0.68	7.7	4.6	77	180	0.35	ر روب روب	750	200	99	0.54	5.1	540	580	160	20	0.21	
	В	Ħ	'n	凹			щ	trī			Ħ	tr)	ŢĽ	闰																	٠	
Lead	26	4	48	24			25	25			17	200	21	31																		2000
Copper Lead	32	28	32	36	-		<u>بر</u>	31			22	33	1.1	18						,												***************************************
<u></u>	ΙXÌ	m	03	Ħ			ш	Ħ			(II)	ш	ស	txi																		
Cobalt	16	17	9.1	16			36	17			8,6	17	17	130																		
	(B.	N. W.	* E	₹E			NE*	*87			XEX	* 四	<u>,</u>	*					٠													
Chromium				24			23						19									_										
Ç													Þ	Þ																		1
Cadmium	0.19	0.21	0.44	0,43			0.28	0,11			0.18	0.16	0.065	0.064																		
Barium	95	120	99	130			110	120			84	110	94	83																		
21114	* \(\Omega\)	Щ *	* (1)	ξτ} *			*	* El			<b>ж</b>	<b>т</b>	<b>性</b>	щ *																		
Arsenic	8.5	 3	5.5	4			6,6	6.1			6.3	9.6	5.7	6.7																-		***************************************
	z	z	Þ	Þ			Þ	D.			⊃	⊃	Þ	Þ																		
Antimony	0.42	0.38	0.29	0.32			0.31	0.32			0.29	0.31	0.32	0.32																	:	
	ţ13	m	(x)	ш			[2]	(t)			ΙΤĴ	[1]	pn -	m																		
Aluminum	17000	20000	0086	16000			18000	18000			9100	17000	17000	16000							-											
SAMPLE DATE	9/15/97	9/15/97	9/15/97	9/15/97	66/6/1	66/6/1	76/51/6	76/51/6	66/8/1	66/8/2	7615176	9/15/97	9/15/97	16/15/16	4/29/98	4/29/98	4/29/98	4/29/98	4/29/98	4/29/98	4/29/98	4/29/98	10/22/98	2/8/99	1/8/99	10/22/98	10/22/98	10/22/98	4/29/99	4/29/99	4/29/99	
SAMPLE LOCATION	10-01-1.0	10-02-1.0	10-03-1.0	10-04-1.0	10-04 2-4	10-04 4-6	10-05-1.0	10-06-1.0	10-06 2-4	10-06'4-6'	10-07-1.0	10-08-1.0	10-09-1.0	10-10-10	10-11-1.0	10-12-1.0	10-13-1.0	10-14-1.0	10-15-1.0	10-16-1.0	10-17-1.0	10-18-1.0	10-19-1.0	10-19 2-4	10-19 4-6	10-20-1.0	10-21-1.0	10-22-1.0	10-23-1.0	10-24-1.0	10-25-1.0	-

TABLE 6-22 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 10 (all values in MG/KG)

SAMPLE	SAMPLE		
LOCATION	DATE	Aluminum	Mercury
Screening Conc.	•	19265	10
10-01-1.0	9/15/97		330 、
10-02-1.0	9/15/97	20000 E	51
10-03-1.0	9/15/97		- 16
10-04-1.0	9/15/97		120
10-05-1.0	9/15/97		. 34
10-06-1.0	9/15/97		600
10-08-1.0	9/15/97	-	37
10-09-1.0	9/15/97		58
10-10-1.0	9/15/97		17
10-14-1.0	4/29/98		77
10-15-1.0	4/29/98		180
10-18-1.0	4/29/98		750
10-19-1.0	10/22/98		200
10-19 2-4	7/8/99	•	38
10-21-1.0	10/22/98		540
10-22-1.0	10/22/98		580
10-23-1.0	4/29/99		160
10-24-1.0	4/29/99		20

TABLE 6-23
INORGANIC SAMPLING RESULTS
SWMU NO. 11
(all values in MG/KG)

CATION	SAMPLE SAMPLE OCATION DATE	SAMPLE SAMPLE COCATION DATE Aluminum Antimony Arsenic	Antimony	~	Arsenic	Barium	Cadmium	Cadmium Chromium Cobalt Copper Lead Mercury	Cobalt	Copper	Lead	Mercury	-	Potassium Selenium	Selenium		Silver	Zinc	
01-01	9/11/07	7600	0.27	₽	4.3	34	0.11	9.3	6.3	12	8.1	0.71		999	0.54	D	0.054 U	38	
11-02-1.0	6/11/67	13000	0.32	כ	8	160	0.26	18	9.4	8	20	12		900	0.82	Z	0,063 U	89	
-1.0	9/11/97	7200	0.28	Þ	9.2	51	0.46	10	7.3	32	160	240		1000	0.56	Þ	0.056 U	99	
11-03 2-4	7/12/99											37							
4-6	7/12/99				٠.							0.14							
0,1-1	9/11/97	8400	0.28	<b>\</b>	. 11	51	0.27	17	8.9	21	50	20		740	0.56	Þ		28	
0.1-5	9/11/97	7800	0.29	<b>;</b>	5.1	32	0.11	13	6,4	12	5	0.83		860	0.58	D	0.058 U	41	
0	9/11/97	18000	0.31	₽	12	120	0.42	26	21	39	22	96'0		2200	0.63	⊃	0.063 U	94	
11-07-110	4/28/98											80 5	* Z						
2-1.0	4/28/98											41	* Z						
2-1.0	4/28/98											4.1	* Z						
11-10-1.0	4/28/98				٠							4.9	* Z						
1-1.0	4/28/98											₹.	ž						
0-1-7	10/22/98			٠								45							
3-1.0	10/22/98											5.7							
11-14-10	4/29/90			>0								<u>~</u>							

TABLE 6-24
PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 11
(all values in MG/KG)

SAMPLE LOCATION Screening Con	SAMPLE DATE nc.	Mercury 10	•	Potassium 1900
11-02-1.0	9/11/97	12		<del></del>
11-03-1.0	9/11/97	240		
11-03 2-4	7/12/99	37		
11-04-1.0	9/11/97	20		
11-06-1.0	9/11/97			2200
11-08-1.0	4/28/98	41	N*	
11-12-1.0	10/22/98	51		
11-14-1.0	4/29/99	13		

#### TABLE 6-25 INORGANIC SAMPLING RESULTS SWMU NO. 13 (all values in MG/KG)

SAMPLE	SAMPLE				
LOCATION	DATE	Lead		Mercury	
13-01-1.0	9/18/97	20	E	0.56	N
13-02-1.0	9/13/97	22	E	2.3	
13-03-1.0	9/13/97	190	E	5.2	
13-04-1.0	9/13/97	18	Ε	0.13	
13-05-1.0	9/13/97	26	$\mathbf{E}$	0.081	
13-06-1.0	9/13/97	29	E	1.2	
13-07-1.0	9/13/97	65	$\mathbf{E}$	0.99	
13-08-1.0	9/13/97	34	E	21	
13-09-1.0	9/13/97	190	$\mathbf{E}$	110	
13-09 2-4	6/29/99			0.23	
13-09 4-6	6/29/99			0.096	
13-10-1.0	9/13/97	31	E	16	
13-10 2-4	6/29/99			0.11	
13-10 4-6	6/29/99			0.063	U
13-11-1.0	9/13/97	33.	E	61	
13-12-1.0	9/13/97	35	E	14	
13-13-1.0	9/13/97	31	E	120	
13-14-1.0	4/30/98			0.59	N
13-15-1.0	4/30/98			0.1	N
13-16-1.0	4/30/98			0.21	N
13-17-1.0	4/30/98			20	N
13-18-1.0	4/30/98			5.2	N
13-19-1.0	4/30/98			22	N
13-19 2-4	6/30/99			0.13	
13-19 4-6	6/30/99			0.19	U
13-20-1.0	4/30/98			6.4	N
13-21-1.0	10/21/98			150	
13-22-1.0	4/29/99			0.078	
13-23-1.0	4/29/99			0.11	

TABLE 6-26
INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 13
(all values in MG/KG)

SAMPLE	SAMPLE			
LOCATION	DATE	Mercury		
Screening Conc	; <b>.</b>	10		
13-08-1.0	9/13/97	- 21		
13-09-1.0	9/13/97	110		200
13-10-1.0	9/13/97	16		
13-11-1.0	9/13/97	61		
13-12-1.0	9/13/97	14		
13-13-1.0	9/13/97	120		
13-17-1.0	4/30/98	20	N	
13-19-1.0	4/30/98	22	N	
13-21-1.0	10/21/98	150		

TABLE 6-27
INORGANIC SAMPLING RESULTS
SWMU NO. 15
(all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Mercury	Zinc
15-01-1.0	9/12/97	0.58	58
15-02-1.0	9/12/97	0.71	65
15-03-1.0	9/12/97	0.25	82
15-04-1.0	9/12/97	0.66	60
15-05-1.0	9/12/97	0.72	60
15-06-1.0	9/12/97	0.39	62
15-07-1.0	9/12/97	1.3	59
15-08-1.0	9/12/97	0.12	74

TABLE 6-28
INORGANIC SAMPLING RESULTS
SWMU NO. 21
(all values in MG/KG)

SAMPLE, OCATION	SAMPLE DATE	Aluminum		Antimony		Arsenic		Вапит	Cadmium Chromium	Chromium		Cobalt		Copper	Lead		Mercury	Pot	assium	Ø	Potassium Selenium	Silver	Zinc.		
1-01-1.0	76/91/6	12000	(E)	76	z	14	*	6200	0.63	18	×EX.	14	E	430	27000	ш	0.46		1190	*	1	N 1.2	130	· E	
1-01 2-4	7/11/99		ı	. 61	. 🗅			170							38						œ.				
1-01 4-6	66/1//	-		3.2	Þ			190							18						1.7				
1-02-1.0	9/16/97	19000	m	7.7	z	7	ů,	310	0.37	27	×8×	26	红).	50	680	βÚ	0.12	ב	1400	*	23		33	* E	
1-03-1.0	26/91/6	20000	įz)	0.32	ם	10	<b>#</b>	78	0.19	27	<b>数</b>	8.6	_EL	32	16	ini	0,064	D	1400	*	0,84		99	× EX	
1-04-1.0	6/16/97	17000	i IXI	0.31	· 🗅	12	<u>m</u>	100	0.41	22	ž Ž	7	(tr)	35	21	ш	0.079	-	1800	*	0.63	0,063	71	<b>岁</b>	
1-05-1.0	6/16/97	19000	ı	0.33	ם	5.6	Z	130	0.28	22		12		40	65		0.24		1300		8.1	N 0.067 U	87		
1-06-1.0	9/16/97	24000		0.34		12	Z	130	0.33	27		11		320	36		0,094	•	1700		2.9	0.068	%		
1-07-1.0	6/36/97	8200		0.31	Z	7.3	Z	62	0.53	12		7.4		. 39	83		0.36		1400		11	0.056	160		
0.1-80-1	26/91/6	11000		0.45	z	7.6	Z	93	0.14	4		10		240	150		1.6	-	1300		1.8	0.058	45		
1-09-1.0	2/16/97	24000		0.38	Þ	15	Z	220	0.21	27		14		140	120		0.44	-	1500		24	0.076	120		
1-10-1.0	4/29/98			80	þ			089							290	*					120				
1-102-4	2/1/99			m	<b>=</b>			. 81							50						1.6	Ω			
1-10 4-6	1/1/99			3.1	Ω	,		130							17						1,6	Ω			
1-11-1.0	4/29/98			1.7	n			94							51	*					3,5	ت ت			
1-12-1,0	4/29/98	-		1.7	Þ			180							200	*					27				
1-13-1.0	4/29/98	:		1.5	Þ			110							1200	*					(M	 ລ			
1-14-1.0	4/29/98			1.5	₽			100							<del>\$</del>	*					4. 4.				
1-15-1.0	4/29/98			9.1	Þ			270							99	<b>*</b>					18				
1-16-1.0	4/29/98			1.7	Þ			190							460	*	:				<b>8</b> 2				
1-162-4	7/1/99			3.1	₽			140							29						1.6	D			
1-164-6	46/1//			3.1	Þ			120							21						9'1	ם			
1-17-1.0	10/21/98			1.5	Þ			73	Z						31						1.5	C			
1-18-1.0	10/21/98			1.5	Ω			8	z						4						80				
1-19-1.0	10/21/98			1.5	Þ			98	z						210						50 50 50 50 50 50 50 50 50 50 50 50 50 5				
1-20-1.0	10/21/98			1.5	۵			100	z						200						<del>.</del> 8.				
1-21-1.0	10/21/98			1.5	₽			150	Z						25						7.5	D.			
1-22-1,0	10/21/98			9.1	Þ			120	z						41						4.2				
1-23-1,0	10/21/98			9.1	D			180	z						300						24				
1-24-1.0	10/21/98			1.7	Ü			120	z						47						1.7	n			
						٠.																			

TABLE 6-29
INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 21
(all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum		Antimo	ıy	Barium	Lead		Seleniun	n
Screening Co	nc.	19265		5		1600	400		5	
21-01-1.0	9/16/97			97	N	6200	27000	E	1300	N
21-02-1.0	9/16/97				•		680	E	23	N
21-03-1.0	9/16/97	20000	$\mathbf{E}$							
21-05-1.0	9/16/97								8.1	N
21-06-1.0	9/16/97	24000								
21-09-1.0	9/16/97	24000		•					24	N
21-10-1.0	4/29/98						760	水	120	
21-12-1.0	4/29/98								27	
21-13-1.0	4/29/98						1200	*		
21-14-1.0	4/29/98								5.4	
21-15-1.0	4/29/98								18	
21-16-1.0	4/29/98						460	*	18	
21-19-1.0	10/21/98								5.8	
21-23-1.0	10/21/98						•		24	

TABLE 6-30
MORGANIC SAMPLING RESULTS
SWMU NO. 23
(all values in MGKG)

SAMPLE	SAMPLE DATE	Aluminum	**	Antimony		Arsenic	Barium	Cadmium	Chromium		Cobalt	Co Go	Copper L	ead	Mercury	Potassium	Æ	Selenium	Silver	Zinc	
		. :											1	- 1	- 1						- 1
23-01-1.0	4/6/67	12000	ž	0.31	þ	3.9	93	0.14	16	Z	9.5				_	940	¥	0.63	U 0.063 L	9	
23-02-1 0	79/9/9	17000	* 2	0.29	Ģ	. ¥5	23	0.14	20	z	<u>∞</u>				E 0,059 U	950	*	0.59	U 0.059 L	. 62	
23-03-1.0	6/6/67	16000	<b>.</b> *2	03	-	\$	110	0.25	20	z	15				E 0.06 U	* 056	*	9.0	U 0.06 L	7	•
23-04-1-0	20/0/0	21000	; <b>*</b>	50	) <del>;</del>	· 5<	08	0.22	36	Z	61			61	3 0.066	1400	*	0.61	U 0.061 E	188	•
23-04-1.0	6/0/07	27000	. *	3	· <u>;</u>	3.5	130	0.46	36	z	13.	ш 4	42	25 E	E 0.28	2200	*	0.63	U 0.063 L	] 110	è NE
23-05-1.0	10/0/0	17000	: <b>*</b>	031	)	9 9	110	0.44	24	z	18			20.	3 0.062 U	1300	*	0.62	U 0.062 U	.28	
23-02-1.0	26/6/6	17000	. <b>*</b>	0.3	<b>=</b>	. 00	56	0.32	23	z	7	13		17 1	3 0.066	1100	*	9,0	U 0.06 U	35	
23-08-1.0	26/6/6	20000	. *	0.32	Þ	ŧΩ	140	0.27	22	z	71	田		23	3 0.082	1100	*	0.63	U 0.063 L	] 74	

### TABLE 6-31 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 23 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Aluminum 19265		Potassium 1900		
23-04-1.0	9/9/97	21000	N*			
23-05-1.0	9/9/97	27000	N*	2200	*	
23-08-1.0	9/9/97	20000	N*			

# TABLE 6-32 TCL VOLATILE ORGANICS ANALYTICAL RESULTS SUMMARY MONITORING WELLS MW-6 AND MW-7 (All values in ug/L)

SAMPLE NAME SAMPLE DATE	MW- 6 9/15/95		MW- 6 10/21/97		MW- 7 9/15/95		MW- 7 10/21/97	
1,1,1-Trichloroethane	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	1	U	1	U	1	U	1	U
1,1-Dichloroethane	1	U	1.	U	1	U	1	U
1,1-Dichloroethene	1	$\mathbf{U}$	1	U	1	U	1	U
1,2-Dichloroethane	1	U	1	U	1	U	1	U
1,2-Dichloropropane	1	U	1	U	1.	U	1	U
2-Butanone	10	U	10	U	10	U	10	U
2-Hexanone	2	U	2	U	2	U	2	U
4-Methyl-2-pentanone	2	U	2	U	2	U	2	U
Acetone	5	U	5	U	5	U	5	U
Benzene	. 1	U	1	·U	1	U	1	U
Bromodichloromethane	1	U	1	U	1	U	1	U
Bromoform	1	U	1	U	1	U	1	U
Bromomethane	2	U	2	U	2	U	2	U
Carbon disulfide	1	U	1	U	1	U	1	U
Carbon tetrachloride	1	U	1	U	1	U	1 🚓	U
Chlorobenzene	1	U	1	U	-1	U	1	U
Chloroethane	2	U	2	U	2	U	2	U.
Chloroform	1	$\mathbf{U}$	1	U	1	U	1	U
Chloromethane	2	U	2	U	2	U	2	U
cis-1,3-Dichloropropene	1	$\mathbf{U}$	1	U	1	U	1	U
Dibromochloromethane	1	U	1	U	1	$\cdot \mathbf{U}$	1	U
Ethylbenzene	1	U	1	U	1	U	1	U
Methylene chloride	. 1	U	. 1	U	1	U	1	U
Styrene	1	U	1	U	1	U	1	U
Tetrachloroethene	I	U	1	U	1	U	1	U
Toluene	1	Ü	1	U	1	U	1	U
trans-1,3-Dichloropropene	1.	U	1	U	1	·U	1.	U
Trichloroethene	1	U	1	U	1	U	1	U
Vinyl chloride	2	U	2 ·	U	2	U	2	U
Xylene (total)	1	U	1	U	1	U	1	U

#### TABLE 6-33 INORGANIC ANALYTICAL RESULTS SUMMARY MONITORING WELLS MW-6 AND MW-7 (All values in ug/L)

SAMPLE NAME SAMPLE DATE	Standard	MW- 6 9/15/95	-	MW-6 10/21/97		MW-7 9/15/95		MW- 7 10/21/97	,
-								040	
Aluminum		200000		10000	* *	120000		840	**
Aluminum soluble		86		50	U	53	**	50	U
Antimony	±-	5	U	5	U	5	U	5	U
Antimony soluble		5.7		5	U	5	U	5	U
Arsenic	10	88		7	U	100		7 .	U
Arsenic soluble	·	7 .	U	7	U	7	U	7	U
Barium	20	1500		270		1300		130	
Barium soluble		86		57		96		120	
Cadmium	5	2.6		1	U	2.4		1	U
Cadmium soluble		1	U	. 1	U	1	U	1	U
Chromium	10	300		65		190		8.8	
Chromium soluble		5	U	5	U	5	U	5	U
Cobalt	50	140		10		110		6.5	
Cobalt soluble		1	U	1	U	1	U	2	
Copper	20	470	-	47		330		4	U
Copper soluble		4	U	4	U	4	U	4	U
Lead	5	140		22		110		.5	U
Lead soluble		5	$\mathbf{U}$	5	U	5	U	5	U
Mercury	0.5	0.72		0.22		0.6		0.2	U
Mercury soluble		0.2	U	0.2	U	0.2	U	0.2	· U
Potassium		53		6.1		25		1.1	
Potassium, soluble		5		2.1		1	U	1	U
Selenium	5	5	U	5	U	- 5	$\mathbf{U}$	5	$\mathbf{U}$
Selenium, soluble		5	U	5	U	5	U	·5	U
Silver	. 10	1		1	U	1.2		1 .	U
Silver soluble		1	U	1	U	1	U	1	U
Zinc		810		70		640		28	
Zinc soluble		20	U	20	U	30		20	U

## TABLE 6-34 TCL VOLATILE ORGANICS ANALYTICAL RESULTS SUMMARY MONITORING WELL CLUSTER MW-20, MW-21 AND MW-22 (All values in ug/L)

SAMPLE NAME SAMPLE DATE	MW-20D 10/20/97		MW-20R 10/20/97		MW-21D 10/20/97	,	MW-21R 10/15/97		MW-22D 10/20/97		MW-22R 10/20/97	
1,1,1-Trichloroethane	1	U	1	U	1	U	1	Ü	1	U	1 -	
1,1,2,2-Tetrachloroethane	I	U	1	U	1	U	1	U	. 1	U	1	U
1,1,2-Trichloroethane	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethane	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloro ethene(total)	1	U	1	U	- 1	U	1	U	1	U	1	U
1,2-Dichloropropane	1	U	1	U	1	U	1	U	1	U	1	U
2-Butanone	10	U	10	U	10	U	10	U	10	U	-10	U
2-Hexanone	2	U	2	U	2	U	2	U	2	U	2	U
4-Methyl-2-pentanone	2	U	2	U	2	U	2	U	2	U	2	U
Acetone	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	1	U	1	U	1	U	1	U	1	U	1	U
Bromo dichloro methane	1	U	1	U	1	U	1	U	1	U	1	U
Bromoform	1	U	1	U	. 1	U	1	U	1	U	1	U
Bromo methane	2	U	2	U	2	U	2	U	2	U	2	U
Carbon disulfide	1	U	1	U	1	U	Ţ	U	1	U	1	U
Carbon tetra chloride	l	U	1	U	1	U	1	U	1	Ų	1	U
Chloro benzene	1	U	1	U		U	į	U	1	U	1	U
Chloroethane	2	Ü	2	U		U	2	U	2	U	2	U
Chloroform	1	U	1	U		U	1	U	1	U	1	U
Chloromethane	2	Ũ	2	U		U	2	U	2	U	2	U
cis-1,3-Dichloropropene	1	U	1	U		U		U	1	U	1	U
Dibromochloromethane	1	U	1	U		U		U	1	U	1	U
Ethylbenzene	1	U	1	U		U		U	1	U	1	U
Methylene chloride	1	U	1	U		U		U		U	1	U
Styrene	1	U	1	U		U		U		U	1	U
Tetrachloroethene	1	U	1.	U		U		U		U	1	U
Toluene	1	U		U		U		U		U	1	U
trans-1,3-Dichloropropene	1	U		U		U		U		U	1	U
Trichloroethene	1	U		U		U		U		U	1	U
Vinyl chloride	2	U	2	U		U		U		U,	2	U
Xylene(total)	1	U	1	U	1	U	1	U	1	U	1	U

TABLE 6-35
INORGANIC SAMPLING RESULTS
SWMU No. 26D
(all values in MG/KG)

#### TABLE 6-36 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 26D (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum 19265	Copper 600	Lead 400		Selenium 5	3.
Screening Con	c.	19205	000	400	_	J	
26D-04-1.0	9/18/97	20000	3400	······			
26D-05-1.0	9/18/97			600	E		
26D-06-1.0	9/18/97					21	N
26D-07-1.0	4/30/98					16	
26D-08-1.0	4/30/98		•	1800		140	
26D-09-1.0	4/30/98					140	
26D-10-1.0	10/21/98			1000		41	
26D-11-1.0	10/21/98					15	
26D-13-1.0	4/28/99					18	

TABLE 6-37 INORGANIC SAMPLING RESULTS SWMU No. 26E (all values in MG/KG)

	*****
Zine	84 84 91
	222
Silver	0.063 0.063 0.068 0.13
	DZZZ
Setenium	0.63 0,72 2.1 7
E	* * * *
Potassium	1100 820 780 1100
ż·	22
Mercury	1002
	шшшш
Lead	23 67 140 96
Copper	18 220 57 100
	61 62 63 63
Cobalt	0.80
	* * * * *
Chromium	21 19 16 12
•	þ
Cadmium	0.098 0.063 0.27 1.3
Barium	68 68 77 120
a	前首道道
Arsenic	7.6 7.3 8.7 11
	ppzz
Авитову	0.31 0.32 0.37 0.38
	mmmm
Aluminum	17000 14000 12000 6700
SAMPLE DATE A	9/15/97 9/15/97 9/15/97 9/15/97 4/30/98
SAMPLE LOCATION	26B-01-1,0 26B-02-1,0 26B-03-1,0 26B-04-1,0 26B-05-1,0

#### TABLE 6-38 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 26E (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Mercury 10	Selenium 5	i e
26E-03-1.0	9/15/97	17	·	
26E-04-1.0	9/15/97		7	N

TABLE 6-39
INORGANIC SAMPLING RESULTS
SWMU 26F
(All values in MG/KG)

SAMPLE	SAMPLE SAMPLE	Aluminum	Antimony		Arsenic	Barium	Cadmium (	Chromium	Cobalt	ວິ	Copper Lead	ead	ž	Метситу	Potassium	Selenium	S	Silver	Zinc	v
}				- 1						- 1				.						- 1
26F-01-1.0	. 9/10/97	18000	0.32	₽	5.9	69	0.13	21	15	<del>ш</del>		25	ш	1.57	930	0.65	⊝	065 U		Ľ
26F-02-1.0	76/01/6	18000	0.33	⊃	6.1	80	0.18	20	13	田	. 91	20	m	0.15	850	0.66	0	0,066 U	2	
26F-03-1.0	9/10/97	17000	0.32	⊃	5.6	62	0.15	19	16	u u		20	Э	97.0	770	0.63	C O	063 U		Ħ
26F-04-1.0	9/10/97	17000	0.34	n	7.5	51	0.19	22		<b>四</b>		•	E 0	.068 U	1100		Ö	068 U	55	tri

TABLE 6-40
INORGANIC SAMPLING RESULTS
SWMU No. 26G
(All values in MG/KG)

													•							
SAMPLE	SAMPLE DATE	Aluminum Antimony	Antimony		Arsenic	Barium	Cadmium	Cadmium Chromium Cobalt	Cobalt	Copper	per	Lead		Mercury	Potassium Selenium	Seleníum	<b>50</b> 2	Silver.	Zinc	
260-01-1.0	4/10/97	16000	0.31	z	6.8	79	0.17	2.1	13	1	0	36	B	2	780	25	i	0.06		m
266-02-1.0	6/10/97	16000	0.31	<b>:</b>	15	110	0,34	23	30		0	16	ជា	37	740	44		.063 U	92	ш
26G-03-1.0	6/10/97	14000	0.29	Þ		100	0.58	21		E 340	0	24	M)	130	1200	2.9	(II) *	0.14	92	(1)
26G-04-1.0	9/10/97	18000	0.33	Z	10	100	0.31	24	16		Ō	20	ΩĴ	5.6	1000	6.9		.062 U	79	ſΩ
26G-05-1.0	4/30/98	-												1500	z	16				
260-06-1.0	4/30/98													2.6	z	ю	⊃	,		
26G-07-1.0	4/30/98													1.6	z	1600				
260-08-1.0	4/30/98				ř									0,22	Z	77				
26G-09-1.0	4/30/98			÷ سر										0.34	z	11				
26G-10-1.0	4/30/98													3.8	Z	1400				
26G-11-1.0	4/30/98													17	z	23.				
26G-11 2-4	7/2/99									48	-	¥ 26	Z	0.062	n	4.3				
26G-11 4-6	7/2/99									2	Z O	11	-	0.062	Ω	1.6	n			
26G-12-1.0	4/30/98													19	z	24				
26G-16 2-4	1/6/99									00	86 EN	28 28	Z	1.8		6.3				
26G-16 4-6	66/9/L									7				0.079	ū.	1.6	ļ			

TABLE 6-41
INORGANIC SAMPLING RESULTS
AOC C, D & SWMU 26G
(All values in MG/KG)

																					-					
		ш	il)	缸	ப			ப			μì	ţΩ	ΙIJ	贸	鬥	Ħ	ഠ	印								
	Zinc	7.1	51	88	98			640			<del>\$</del>	72	63	27	62	74	71	72								
		$\supset$		ightharpoons	$\Box$						$\supset$	$\Box$	C	$\Box$	$\Box$	$\Box$	$\Box$	$\Box$								
	Silver	),13 U	90.0	0.068	0.14			0.54			0.059	0.3	0.063	0.061	0.061	0.063	0.063	0.068								
		z	Z	z	Z	D	Þ	Z		p	$\Box$	Þ	z	þ	Z	D	þ	z								
	Selenium	1.4	3.7	48	7.2	1.6	1.6	180	1.8	1.6	0.59	ιŋ	0.75	0.61	73	0.63	0.63	0.82	39	4.2	180	4.8	1.6	÷.5	2.7	
		z	Z	z	z			z		þ	<b>;</b>	Þ	Þ	Þ	₽	D	⊃	z						,		
	Mercury	0.17	0.35	19	1.7			20	0.099	0.063	0.12	0.12	0.13	0.12	0.12	0.13	0.13	0.35	16	0.12	310					
	,,	田田	Œ	山	缸			Ħ	z		ĒΩ	M	m	ப	叫	铽	tari	m								
	Lead	31	13	110	43			870	18	16	12	38	16	17	47	16	18	25	190	27	950	39	22	18	35.	
	Year-P.	,				Z E	z		EN	Z														•		
	Copper	21	22	170	57	23	29	8800	30	29	14	19	30	22	32	28	31	28	400	32	3400	100	19	23	490	,
		Ь	₽			ņ	$\supset$				$\supset$		Þ	$\supset$	$\supset$	;	$\supset$	$\supset$								
	Cadmium	990.0	90.0	0.14	0.29	0.31	0.31	0.5			0.059	0,31	0.063	0.061	0.061	0.063	0.063	0.068								
	Barium	120	50	150	220			300			70	180	49	11	52	76	78	75								
		z	Z	Z	Z			Z			Z	Z	Z	ž	ž	Z	z	Z								
	Arsenic	8.1	8.9	9.4	6.7	9,8	10	25			5,4	.17	10	7.9		8,3	. 12	7.2								
SAMPLE	DATE	9/17/97	9/17/97	9/17/97	9/17/97	7/2/99	.7/2/99	9/17/97	7/2/99	7/2/99	9/17/97	9/17/97	9/17/97	9/17/97	9/17/97	9/17/97	9/17/97	9/17/97	4/30/98	4/30/98	4/30/98	10/19/98	10/19/98	10/19/98	10/19/98	
SAMPLE	LOCATION	AOC-C-01-1.0	AOC-C-02-1.0	AOC-C-03-1.0	AOC-C-04-1.0	AOC-C-04 2-4	AOC-C-04 4-6	AOC-C-05-1.0	AOC:C-05 2-4	AOC-C-05 4-6	AOC-C-06-1.0	AOC-C-07-1.0	AOC-C-08-1.0	AOC-C-09-1.0	AOC-C-10-1.0	AOC-C-11-1.0	AOC-C-12-1.0	AOC-C-13-1.0	AOC-C-14-1.0	AOC-C-15-1.0	AOC-C-16-1.0	AOC-C-17-1.0	AOC-C-18-1.0	AOC-C-19-1.0	AOC-C-20-1.0	

TABLE 6-42
INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 26G
(all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Mercury		Selenium	
Screening Conc.		10		5	
26G-01-1.0	9/10/97			25	E*
26G-02-1.0	9/10/97	37		44	E*
26G-03-1.0	9/10/97	130			
26G-04-1.0	9/10/97			6.9	E*
26G-05-1.0	4/30/98	1500	N	16	
26G-07-1.0	4/30/98			1600	
26G-08-1.0	4/30/98			24	
26G-09-1.0	4/30/98			17	
26G-10-1.0	4/30/98			1400	
26G-11-1.0	4/30/98	17	N	23	
26G-12-1.0	4/30/98	16	N	24	
26G-16 2-4	7/6/99			6.3	

#### TABLE 6-43 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA AOC C, D & SWMU 26G (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Copper 600	Lead 400		Mercury 10	r	Selenium 5	1.
AOC-C-03-1.0	9/17/97			. <u></u>	19	N	48	N
AOC-C-04-1.0	9/17/97						7.2	N
AOC-C-05-1.0	9/17/97	8800	870	E	20	N	180	N
AOC-C-14-1.0	4/30/98				16		39	
AOC-C-16-1.0	4/30/98	3400	950		310		180	
AOC-C-20-1.0	10/19/98						9.7	

TABLE 6-44
INORGANIC SAMPLING RESULTS
SWMU No. 27
(All values in MG/KG)

Zinc	180	100	20	. 79
Silver		$\supset$	U 0.058 U	n
Selenium	6.0	0.64	0.58	0.61
Potassium	1400	920	840	940
		$\supset$		
Mercury	0.96	0.064	0.34	0,49
Lead	190	51	28	32
Copper	- 86	150	4	35
Cobalt	13	4	8.9	10
Chromium	25	61	14	91
Cadmium	0.61	0.31	0.22	0.22
Barium	160	64	29	80
Arsenic	6.7	3.9	10	12
	þ	Þ	Þ	, D
Aluminum Antimony	0.34	0.32	0.29	0.3
Aluminum	21000	17000	11000	14000
SAMPLE DATE	9/11/97	9/11/97	9/11/97	9/11/97
SAMPLE SAMPLE LOCATION DATE	27-01-1.5	27-02-1.5	27-03-1.5	27-04-1.5

#### TABLE 6-45 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 27 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Aluminum 19265
27-01-1.5	9/11/97	21000

TABLE 6-46
INORGANIC SAMPLING RESULTS
SWMU No. 29
(All values in MG/KG)

	Arsenic Barium Cadmium Chromium Cobalt Copper Lead Mercury Potassium Selenium	N 14 N 140 1.5 19 11 26 61 140 730	U 10 N 110 0,061 U 20 12 9.7 20 0,94 900 0.61 U	N 11 N 120 0.061 U 23 13 11 17 0.12 U 1300 0.61 U	U · 8.4 N 120 6.25 U 22 14 19 17 6.25 1100 6.62 U	N 6.8	N. 8.0	0.075 N
	um Antimony	0 0.36		0 0.42				
SAMPLE	N DATE Aluminum Antimony	9/17/97 14000	9/17/97 14000	00081 18000	_	8/2/8	8/2/8	\$/5/98
SAMPLE	LOCATION	29-01-1.0	29-02-1.0	29-03-1.0	29-04-1.0	29-05-1,0	29-06-1.0	29-07-1.0

### TABLE 6-47 FNORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 29 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Mercury 10
29-01-1,0	9/17/97	140

#### TABLE 6-48 TCL VOLATILE ORGANIC ANALYTICAL SUMMARY MONITORING WELL MW-23S (All values in ug/L)

SAMPLE NAME SAMPLE DATE	MW-23S 10/15/97	
1,1,1-Trichloroethane	1	U
1,1,2,2-Tetrachloroethane	1	U
1,1,2-Trichloroethane	1	U
1,1-Dichloroethane	1	U
1,1-Dichloroethene	1	U
1,2-Dichloroethane	. 1	U
1,2-Dichloroethene(total)	1	U
1,2-Dichloropropane	1	U
2-Butanone	10	U
2-Hexanone	2	U
4-Methyl-2-pentanone	2	U
Acetone	5	U
Benzene	1	U
Bromodichloromethane	1	Ü
Bromoferm	1	U
Bromomethane	2	U
Carbon disulfide	1	U
Carbon tetrachloride	1	U
Chlorobenzene	1	U
Chloroethane	2	U
Chloroform	1	U
Chloromethane	2	U
cis-1,3-Dichloropropene	1	U
Dibromochloromethane	1	U
Ethylbenzene	1	U
Methylene chloride	1	U
Styrene	1	U
Tetrachloroethene	1	U
Toluene	1.	U
trans-1,3-Dichloropropene	1	U
Trichloroethene	1	U
Vinyl chloride	2	U
Xylene(total)	1	U

TABLE 6-49
INORGANIC ANALYTICAL RESULTS SUMMARY
MONITORING WELL MW-23S
(All values in ug/L)

SAMPLE NAME		MW-23S	}
SAMPLE DATE		10/15/97	•
Aluminum		730	
Aluminum soluble		50	U
Antimony	.*	5	U
Antimony soluble		5	U
Arsenic	10	7	U
Arsenic soluble		7	U
Barium	20	110	
Barium soluble		87	
Cadmium	5	1	U
Cadmium soluble		1	U
Chromium	10	74	
Chromium soluble		5	U
Cobalt	50	120	
Cobalt soluble		6.8	
Copper	20	19	
Copper soluble		6.7	
Lead	5	5	U
Lead soluble		5.	U
Mercury	0.5	0.2	U
Mercury soluble		0.2	U
Potassium		2	
Potassium, soluble		1.4	
Selenium	5	6.4	
Selenium, soluble		8.2	
Silver	10	1	U
Silver soluble		1	U
Zinc		670 ·	
Zinc soluble		360	

TABLE 6-50
INORGANIC SAMPLING RESULTS
SWMU No. 33
(All values in MG/KG)

	,,,				•	
SAMPLE	SAMPLE					
LOCATION	DATE	Lead		Mercury		Silver
	,				· · · · · · · · · · · · · · · · · · ·	
33-01-1.0	9/11/97	- 30	E	130		0.12 U
33-01-1.0	4/28/98			74	N*	
33-02-1.0	9/11/97	22	E	13		0.063 U
33-02-1.0	4/28/98			82	$N_*$	
33-03-1.0	9/11/97	140	E	8.9		0.068 U
33-04-1.0	9/11/97	48	E	630		0.14 U
33-04-1.0	4/28/98			890	N*	
33-05-1.0	9/11/97	15	E	46		0.06 U
33-05-1.0	4/28/98			43	N*	
33-06-1.0	9/11/97	64	$\mathbf{E}$	6.5		0.062 U
33-07-1.0	9/11/97	27	E	38		0:065 U
33-07-1.0	4/28/98			28	$N^*$	
33-08-1.0	9/11/97	35	E	52		0.06 U
33-08-1.0	4/28/98			37	$N^*$	
33-09-1.0	9/11/97	48	E	6.1		0.05 U
33-10-1.0	9/11/97	11	E	4.9		0.062 U
33-11-1.0	9/11/97	20	E	0.11		0.062 U
33-12-1.0	9/11/97	22	E	0.15		0.064
33-13-1.0	4/28/98			7400	$N^*$	
33-13 4-6	7/12/99			18		
33-13 6-8	7/12/99			5.3		
33-13 10-12	7/12/99			1.2		
33-14-1.0	4/28/98			7.2	$N_*$	
33-15-1.0	4/28/98			22	$N^*$	
33-16-1.0	4/28/98			0.25	$N^*$	
33-17-1.0	10/22/98			63		
33-18-1.0	10/22/98			0.76		

TABLE 6-51
INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 33
(all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Mercury	
Screening Conc.		10	
33-0 <sub>1</sub> 1-1.0	9/11/97	130	
33-0 <sup>1</sup> -1.0	4/28/98	74-	$N^*$
33-02-1.0	9/11/97	13	
33-02-1.0	4/28/98	82	N*
33-04-1.0	9/11/97	630	
33-04-1:0	4/28/98	890	$N^*$
33-05-1.0	9/11/97	46	
33-05-1.0	4/28/98	43.	N*
33-07-1.0	9/11/97	38 .	
33-07-1.0	4/28/98	28	N*
33-08-1.0	9/11/97	52.	
33-08-1.0	4/28/98.	. 37	N*
33-13 4-6	7/12/99	18	
33-13-1.0	4/28/98	7400	N*
33-15-1.0.	4/28/98	22-	$N^*$
33-17-1.0	10/22/98	63	

TABLE 6-52
INORGANIC SAMPLING RESULTS
SWMU No. 34
(All values in MG/KG)

	*B	<u>"</u>	<u>*</u>													
2	Z		۲.	90	∞	r~	4	4	0		∞	4	<b></b> 1	۲	ω.	
Zinc	7	Þ	<u>د</u> .		<b>9</b>	J 7				9 1				5	9	
Silver	1.064	0.59	0.063 1	0.061	0.065	0.063 1								-	0:061	
	>			$\supset$		Þ		$\supset$			$\supset$			Þ	Þ	
Selenium	0.64	1.5	2.9	0.61	99.0	0.63	0.61	9.0	9.0	0.61	9,0	0.59	9.0	0.64	0.61	
<b>0</b> 7	*	*	*	* m	<b>数</b>	<b>*</b>	<b>*</b>	<b>选</b>	<b>т</b>	<u>#</u>	<b>ж</b>	<b>*</b>	<b>*</b>	<u> </u>	<b>*</b>	
Potassium	1200	710	1800	2000	1200	1800	1900	1500	1600	1200	1400	1200	1400	800	1400	
	Þ		Þ	Þ	₽	$\supset$	₽	Þ	Þ					ם	Þ	
Mercury	0.064		0.063	0.061	0.062	0.063	0.061	90.0	90.0	0.079	0.21	0.11	0.061	0.064	0.061	
-	(m)	m	M	*	*	*	*	*	*	*	*	*	*	*	*	
Lead	19	33	22	<u>.</u>	23	2	15	8	7	15	23	16	33	16	15	-
Copper	50	140	20	37	95	51	28	51	28	56	22	25	26	13	33	
	m	(II)	ΙΊ													
Cobalt	188	6.6	1	14	4	2	01	=	13	01	12	∞ ∞	17	91		
c	z	z	Z													
Zadmium Chromium	24	2	30	29	52	30	28	25	29	24	24	21	25	₩.	24	
Cadmium	0.18	7.2	0.45	0.39	0.64	0.78	0.27	0.23	0.28	0.32	0.3	0.2	0.23	0.12	0.22	
				ž	ž	ž	ž	ž	ž	ž	ž	ž	ž	* Z	ž	٠
Barium	63	36	8	79	75	69	71	61	62	52	26	47	62	59	74	
U				*	*	*	*	*	*	*	*	*	*	*	*	
Arsenic	6.8	7.2	9.4	11	8	00	8.7	9.3	-~	8.1	7.9	8.7	8	4.8	8.6	
	Þ	⊃	Þ	$\Box$	$\supset$	$\supset$	Þ	Þ	<b>₽</b>	Þ	₽	Þ	Þ	⊃	₽	
Antimony	0.32	0.29	0.31	0.3	0.31	0.31	0.3	0.3	0.31 N	0,3	0.32	0.29	0,3	0.32	0.3	
	ž	ž	*													
Aluminum	19000	7800	26000	22000	20000	23000	21000	18000	21000	19000	20000	16000	18000	16000	19000	
SAMPLE DATE	16/8/6	16/8/6	16/8/6	16/8/6	2/8/6	16/8/6	2/8/6	16/8/6	26/8/6	16/8/6	16/8/6	16/8/6	16/8/6	16/8/6	26/8/6	
SAMPLE :	4-01-1.0	4-02-1.0	4-03-1.0	14-04-1.0	14-05-1.0	14-06-1.0	14-07-1.0	14-08-1.0	34-09-1.0	14-10-1.0	34-11-1.0	34-12-1.0	34-13-1.0	34-14-1.0	34-15-1.0	

#### TABLE 6-53 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 34 (all values in MG/KG)

SAMPLE LOCATION Screening Conc	SAMPLE DATE	Aluminum 19265		Potassium 1900	
34-03-1.0	9/8/97	26000	N*		
34-04-1.0	9/8/97	22000		2000	E*
34-05-1.0	9/8/97	20000		•	
34-06-1.0	9/8/97	23000			(mark)
34-07-1.0	9/8/97	21000			
34-09-1.0	9/8/97	21000			
34-11-1.0	9/8/97	20000			

TABLE 6-54
INORGANIC SAMPLING RESULTS
SWMU No. 38S
(All values in MG/KG)

SAMPLE	SAMPLE					-																		
COCATION	DATE	Aluminum	·	Antimony		Arsenic 1	Barium	Cadmium	Сћготјит	ınım	Cobalt	Ŭ	Copper	Lead	g	Mercury		Potassium	Sele	Selenium	Silver	ķu.	Zinc	
88-01-10	76/6/6	1400	m	0.32	þ	2.9	54	0.064 U			1.8		1	7 160		0,81		540	0	99	0.18	1	3.4	
\$\$-02-1,0	26/6/6	22000	£12)	0,31	₽	13	200	0,44	31		23			N 2		0,069		1900	Ó		_	2 U	98	
3S-03-1.0	16/6/6	24000	ix)	0.3	₽	& 6,	170	0.27	32		28					0,066		2000	ø		0,0 U	1 U	96	
38-04-1.0	1.6/6/6	21000	(X)	0.3	=	13	130	0,29	29		24					90'0	ח	1800				;	95	
35-05-1.0	18/6/6	14000	យ	0.31	⇒	4.7	99	0.063	19		8,4				~	0,063	D	730	Ö		_	3 U	45	
35-06-1.0	26/6/6	17000	餌	0.3	₽	6.4	53	0.17	20		10					90.0	Þ	800	Û			<u>ت</u>	98	
35-07-1.0	16/6/6	21000	μq	0.3	Þ	9'6	7.1	0.24	7.8		10				_	0.061	Þ	1500	0		_		89	
38-08-1.0	16/6/6	17000	*	0.31	Þ	8.3	87	0.23	22		15	ĸ	230	2,2	m m	0.58		1300	*	0.62	U 0.062	2	22	NE*
3S-09-1.0	16/6/6	18000	* Z	0.3	Þ	₩.	25	0.15	23		10	ĖΪ	120	=		0.061	þ	910	÷	66	0.06		36	N E
88-10-1.0	16/6/6	16000	* Z	0.3	Þ	4:5	44	60'0	20	Z	10	ш	4		m	90.0	Þ	820	*		0,0 U		53	¥ H Z
3S-11-1.0	16/6/6	19000	ž.	0.3	₽	10	130	0.52	26		14	m	45		ET)	90.0	Þ	1500	*	9,	J 0.06		85	* # #   
88-12-1.0	26/6/6	18000	ž	0.3	₽	7,1	99	0.3	23		16	ļ±Ί	20	***	m m	90.0	D	1000	*	1.6	3 0.06		28	*AZ
					:	- :	!																	

## TABLE 6-55 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 38S (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Aluminum 19265		Potassium 1900
38S-02-1.0	9/9/97	22000	E	
38S-03-1.0	9/9/97	24000	E	-2000
38S-04-1.0	9/9/97	21000	E	
38S-07-1.0	9/9/97	21000	E	

TABLE 6-56
INORGANIC SAMPLING RESULTS
SWMU No. 39
(All values in MG/KG)

	ပ္					Щ.	(II)	7			V)	0	Į.	0	Ō			0						
	Zinc	9				7	80	87			i~			1 70	1 10			8						
	į.	5				¥	33 U	7.5			33	33	'¥ ⊃	بر 88	33			6						
	Silver	620.0	5			0.064	0.063	0.087			0.083	0.06	0,064	0.068	0.063			0.099						
				Þ	Þ		Þ	Z	Þ	n	₽	Z	Z	$\supset$	Z	$\Box$	Þ	D	₽	Þ	Þ	Þ	Þ	
	Selenium	3.	<b>3</b>	9	vo.	ο,	0.63	~	9	7	63	63	<u></u>	88	4.	1-	۲.	63	-	,	6			
	Seler	-		<del>, ,</del> ,		4	ö	-	, <u>.</u>		Ö	લ	O)	Ö	,		_	Ö	m	m	m	m	LL)	
		*				*	*							•										
	Potassium	۶	ž			2	2	8			00	2	0	0	0			2						
	otass	0041	3			9.	2300	12(					17	850	191	•		1600						
	<u>0.</u>						D				Þ					•								
	Ţ	1					m				m	_						m						
	Mercury	7 1 5	-			0.13	0.063	0,13			0.06	0.0	0.1	0.12	0.15			0.083						
	æ,	þ	4			Ш	щ	m			山	Щ	ш	(II)	田			ш						
	gad	20					20							27	45			19						
	;; [7	ľ				4	•	~					••	` '	•									
	obbe	5	77			40	37	32			51	27	32	21	42			35						
	Barium Cadmium Chromium Cobalt Copper Lead	ū	ŭ.			ш	Œ																	
	balt	1.5	3			9	17	4			4	۲.	47	15	4			15						
	ပိ		~				_				P	og.	<b>J4</b>	,	(*)			_						
	nium		_			~1	۰.	_			_	۱۵.	_		^			~						
	hron	ç	4			91	25	7			7		7	~	7			28						
	E	-																						
	dmiu	0.25	9			0.29	0.34	98.0			0.76	0.53	0.39	0.27	0.64			0.37						
	Š													_	_			_						
	rium	0.7	ñ			24	120	66		٠.	95	. 091	75	92	120			140						
	ä	2				z																		
	iic																							
	Arsenic	0	h			9.6		8			8	80	10	7.5	16			9.7						
		=	>			D	$\supset$	D			⊃	Þ	D	Þ	z			Þ				***		
	Aluminum Antimony	-	-4			7		4			_	Ŋ	17	4	4			0,31						
	.ntin	200	?			0.3	0.31	0.4			0.3	0.3	0.3	0,34	0.3			0,3						
	, mu		_			~		_			_	_	_	_	_		,	_						
-	ımim	1000	5			700(	9000	400(			4000	1000	500(	18000	1000			20000						
			-					,				•			• •									
PLE	DATE	0119100	7,7	66/	1/9/99	3/97	9/13/97	3/97	66/	66/	3/97	3/97	3/97	3/97	3/97	66/0	66/0	3/97	86/	86/	86/	86/	86/3	
SAMPLE	DA	Š	7	375	5/2	1/6	1/6	9/1	1/6	7/6	1/6	9/1	176	9/1	9/1	6/3	6/3	1/6	3/8	3/8	5/8	3/5	5/8	
	N O																					•		
SAMPLE	OCATION		7	1 2-4	14-6	2-1:0	39-03-1.0	4-1.0	4 2.4	44-6	5-1.0	5-1.0	7-1.0	8-1.0	9-1.0	92-4	94-6	0-1-0	1-1.0	2-1.0	3-1.0	9-14-1.0	39-15-1.0	
SA	ŏ	<	7	0-61	0.6	0-6	9-0.	0-6	9.6	0-61	0-6	9-0	9-0	0.6	9-0	0-6	0-69	9-1	9-1	9-1	16	39-1	39-1.	

## TABLE 6-57 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 39 (all values in MG/KG)

SAMPLE LOCATION Screening Co	SAMPLE DATE nc.	Aluminum 19265	Cobalt 30	Potassium 1900		Selenium 5	n
39-01-1.0	9/13/97		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			15	
39-03-1.0	9/13/97			2300	*		
39-04-1.0	9/13/97			-		7	N
39-07-1.0	9/13/97					9.1	N
39-09-1.0	9/13/97	21000	34				
39-10-1.0	9/13/97	20000					

TABLE 6-58
INORGANIC SAMPLING RESULTS
SWMU No. 40
(All values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum Antimony	Antimony		Arsenic		3arium	Barium Cadmium		Chromium Cobalt Copper Lead	Cobalt	Copper	Lead	Mercury	_	Potassium	Selenium		Silver	2	Zinc
40-01-1.0	6/16/97	7100	0.3	Þ	4.2	z	29	90.0	n	6	6.6	4	01	0.16		740	9.0	Þ	90.0	٦	44
40-02-1.0	6/16/97	7100	0.29	D	5.4	z	26	0.059	₽	<b></b>	9'9	18	2000	0.17		790	0.59	Þ	U 0.059 U 58	$\supset$	58
40-02 2-4	7/2/99												61								
40-02 4-6	7/2/99			•									17								
40-03-1.0	9/16/97	7700	0.37	z	5.5	z	24	90'0	Þ	9.5	8.9	16	27	0.12	Þ	700	9,0	Þ	90.0	<u></u>	45
40-04-1.0	9/16/97	12000	0.3	n	VΩ	z	62	90.0	Þ	£	9.6	36	18	0.12		590	9.0	$\supset$	90.0		44
40-05-1.0	9/16/97	2900	0.32	Þ	7,4	Z	47	0.41		12	4.7	49	42	0.25		440	5.8	Z	0.065	Þ	46
40-06-1.0	6/16/97	8000	4.0	Z	8.1	Z.	54	0.23		91	7.9	51	240	0.2		\$90	8'I	z	0.064		71
40-07-1.0	4/29/98												33	*							
40-08-1,0	4/29/98												21	*							
40-09-1.0	4/29/98												12	*							

# TABLE 6-59 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 40 (all values in MG/KG)

SAMPLE LOCATION Screening Con-	SAMPLE DATE c.	Lead 400
40-02-1.0	. 9/16/97	2000

TABLE 6-60
INORGANIC SAMPLING RESULTS
SWMU No. 42
(All values in MG/KG)

r)	E				M				ш					m
Zinc	87		49	9	54				74					79
₽.	∩ 8		¥ ∪	5 0	₩9		3		5 0				Þ	3 U
Silver	0.068		0.06	90.0	0.066	0.06	0.06		0.065 7				90.0	0.063
		ž			<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>			ž		₽	n	ž		
Selenium	9	m	98.0	60	99	83	~	o,	N	47	Ģ	~	 د	69
Sefer	7	4	0	_	õ	Ö	_	rrs.	_	-		_		ō
æ	*		*	*	*	*	*		*				*	*
Potassium	100		089	50	730	30	01		1500				000	1900
Pota	г		•	Ů,		•	Ų,		<b>Arres</b>				•	
					$\supset$				-					
Mercury	92.0		0.31	147	990	0.17	0:		0.36				0.11	0.084
	Ħ				) H				(II)				EI)	-
<del>p</del>	76				38				95					20 E
7	-		2	C.3		(4	4		ψı				64	20
Copper Lead	370		15	61	12	15	46		36				29	34
	щ		(X)	m	(x)	ir)	[X]		ш				<b>(11)</b>	(11)
Cobalt	14		14	13	13	13	9,3		14				9.1	4
O		*2						ž				ž		
æ								پشو				_		
≒ -	l													
romiur	23	20	17	50	13	17	94	32	20	27	56	25	15	24
ı Chromium	23	20	17	20	17	17	94	32	20	27	26	25	1.5	24
_		20						32		27	26	25		
Cadmium	0.33 23	20	0.13 17					32	0,41 20	27	26	25	0.22	
Cadmium		20	0.13	0.34		0.19	0.15	32		27	26	25		0.44
Barium Cadmium	4 100 0.33		76 0.13	84 0.34	80 0.19	89 0.19	180 0.15	32	0.41	27	56	25	0.22	0.44
Barium Cadmium	4 100 0.33		N 76 0.13	N 84 0.34	N 80 0.19	N 89 0.19	N 180 0,15	32	95 0.41	27	26	25	0.22	N 100 0.44
Barium Cadmium	4 100 0.33		76 0.13	N 84 0.34	N 80 0.19	N 89 0.19	N 180 0,15	32	95 0.41	27	26	25	0.22	0.44
Barium Cadmium	U 9.9 N 100 0.33		N 76 0.13	N 84 0.34	N 80 0.19	N 89 0.19	N 180 0,15	32	95 0.41	27	26	25	0.22	N 100 0.44
Barium Cadmium	U 9.9 N 100 0.33		U 6.5 N 76 0.13	U 5.8 N 84 0.34	U S N 80 0.19	U 5.8 N 89 0.19	U 7.2 N 180 0.15	. 32	U 9 N 95 0.41		26	. 25	0.22	U 9.4 N 100 0.44
Barium Cadmium	4 100 0.33		U 6.5 N 76 0.13	U 5.8 N 84 0.34	U S N 80 0.19	U 5.8 N 89 0.19	U 7.2 N 180 0.15		U 9 N 95 0.41		26	25	U 10 N 68 0.22	U 9.4 N 100 0.44
Barium Cadmium	0.34 U 9.9 N 100 0.33		0.32 U 6.5 N 76 0.13	0.32 U 5.8 N 84 0.34	0,33 U S N 80 0,19	0.33 U 5.8 N 89 0.19	0.31 U 7.2 N 180 0.15		0.32 U 9 N 95 0.41		56	25	0.3 U 10 N 68 0.22	0.31 U 9.4 N 100 0.44
Barium Cadmium	17000 0.34 U 9.9 N 100 0.33		13000 0.32 U 6.5 N 76 0.13	17000 0.32 U 5.8 N 84 0.34	16000 0.33 U. S. N. 80 0.19	15000 0.33 U 5.8 N 89 0.19	10000 0.31 U 7.2 N 180 0.15		16000 0.32 U 9 N 95 0.41		ser g	94.5	10000 0.3 U 10 N 68 0.22	17000 0.31 U 9.4 N 100 0.44
Barium Cadmium	17000 0.34 U 9.9 N 100 0.33		13000 0.32 U 6.5 N 76 0.13	17000 0.32 U 5.8 N 84 0.34	16000 0.33 U. S. N. 80 0.19	15000 0.33 U 5.8 N 89 0.19	10000 0.31 U 7.2 N 180 0.15		16000 0.32 U 9 N 95 0.41		ser g	94.5	10000 0.3 U 10 N 68 0.22	17000 0.31 U 9.4 N 100 0.44
Aluminum Antimony Arsenic Barium Cadmium	0.34 U 9.9 N 100 0.33		13000 0.32 U 6.5 N 76 0.13	17000 0.32 U 5.8 N 84 0.34	16000 0.33 U. S. N. 80 0.19	15000 0.33 U 5.8 N 89 0.19	10000 0.31 U 7.2 N 180 0.15		16000 0.32 U 9 N 95 0.41		ser g	94.5	10000 0.3 U 10 N 68 0.22	17000 0.31 U 9.4 N 100 0.44
3 SAMPLE N DATE Aluminum Antimony Arsenic Barium Cadmium	9/13/97 17000 0.34 U 9.9 N 100 0.33	5/6/98	9/13/97 13000 0.32 U 6.5 N 76 0.13	9/13/97 17000 0.32 U 5.8 N 84 0.34	9/13/97 16000 0.33 U. 'S N 80 0.19	9/13/97 15000 0.33 U 5.8 N 89 0.19	9/13/97 10000 0.31 U 7.2 N 180 0.15	3/6/98	9/13/97 16000 0.32 U 9 N 95 0.41	66/11/	66/1/1	\$/6/98	9/13/97 10000 0.3 U 10 N 68 0.22	9/13/97 17000 0.31 U 9.4 N 100 0.44
3 SAMPLE N DATE Aluminum Antimony Arsenic Barium Cadmium	17000 0.34 U 9.9 N 100 0.33	5/6/98	9/13/97 13000 0.32 U 6.5 N 76 0.13	9/13/97 17000 0.32 U 5.8 N 84 0.34	9/13/97 16000 0.33 U. 'S N 80 0.19	9/13/97 15000 0.33 U 5.8 N 89 0.19	9/13/97 10000 0.31 U 7.2 N 180 0.15	3/6/98	9/13/97 16000 0.32 U 9 N 95 0.41	66/11/	66/1/1	\$/6/98	9/13/97 10000 0.3 U 10 N 68 0.22	17000 0.31 U 9.4 N 100 0.44

## TABLE 6-61 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 42 (all values in MG/KG)

SAMPLE LOCATION Screening Cor	SAMPLE DATE	Chromium 38	Selenium 5	
42-01-1.0	9/13/97		7.6	
42-06-1.0	9/13/97	94	•	
42-07-1.0	9/13/97		12	
42-07-1.0	5/6/98		12	N*

TABLB 6-62
INORGANIC SAMPLING RESULTS
SWMU No. 46
(All values in MG/KG)

Arsenic         Barium Cadmium         Chromium Cobalt         Copper         Lead         Mercury         Potassium         Selenium         Silver           7         N         73         0.18         U         20         11         19         15         0.12         U         1100         0.661         U         0.061         U         0.061         U         0.061         U         0.061         U         0.063         U         0.063         U         0.063         U         0.062         U         0.062												
N 73 0.18 U 20 11 19 15 0.12 U 1100 0.61 U 0.061 U 0.061 U 0.061 U 0.061 U N 60 0.19 U 25 9 29 15 0.13 U 1400 0.63 U 0.063 U N 47 0.19 U 24 9.2 30 16 0.12 U 1300 0.62 U 0.062 U	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper		Метситу	Potassiu			Zinc
N 60 0.19 U 25 9 29 15 0.13 U 1400 0.63 U 0.063 U N 47 0.19 U 24 9.2 30 16 0.12 U 1300 0.62 U 0.062 U	0.3 U 7	N 73	0.18	7 20	=	61	15	0.12	U 1100	0.61	U 0.061	U 55
N 47 0.19 U 24 9.2 30 16 0.12 U 1300 0.62 11 0.062 11	9.4	09 Z	0.19	1 25	6	53	15	0,13	U 1400	0.63	U 0.063	. 19
	10	N 47	0.19 L	1 24	9.5	30	16	0.12	U 1300	0.62	U 0.062	19

TABLE 6-63
NORGANIC SAMPLING RESULTS
SWMU No.47
(All values in MG/KG)

	II	) μ	3				ជ្រ						
Silver Zinc	S	72 11 8900	2				5 8						
ra Fa	11		)			, , , , , , , , , , , , , , , , , , ,	) [	) ;	D D				
Silve	0.06					0.05	0,000		9 2 2 2				
Selenium	c				1	)	F	)	<u>.</u>		 	2	
Seler	7	è	` <del>-</del>	: <u>-</u>	· -	-		śr	ic	d h	7 %	ič	6.1
	æ	*				*	*	*	•				
Lead Mercury Potassium	1400	1400				770	0001	1100	3				
Mercury	0.082	E 0.56				1	0.33	3 4					
	щ	Œ	t			(4)	įμ	1 19	a				
Lead	110	100				25	,	1	<u>:</u>				
Copper	27	28	i			5	· 🕶		·				
	m	ш				П	l lt.	ц	1				
Cobalt	13	38				17	1.	<u> </u>	3				
Barium Cadmium Chromium Cobalt Copper	23	29				13	<u>«</u>	2.5	<u>.</u>				
Cadmium	0.22	0.36				0.12	0.25	. 0	<u>}</u>				
Barium	11	N 87				110	26	70	?				
	z	z				Z	Z	Z	:				
Arsenic	7.1					7.8	5.5	CC Ly	?				
	Þ	⊃				₽	þ		<b>)</b>				
Antimony	0.32	0.34				0.33	0.35	0.32	•				
Aluminum Antimony	18000	23000				17000	17000.	18000					
SAMPLE .DATE	9/13/97	9/13/97	7/1/99	7/1/99	66/1//	9/13/97	9/13/97	9/13/97	86/8/5	86/8/5	86/8/5	10/21/98	10/21/98
SAMPLE LOCATION	47-01-1.0	47-02-1.0	47-02 4-6	47-02 6-8	47-02 10-12	47-03-1.0	47-04-1.0	47-05-1.0	47-06-1.0	47-07-1.0	47-08-1.0	47-09-1.0	47-10-1.0

TABLE 6-64
INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA
SWMU No. 47
(all values in MG/KG)

SAMPLE LOCATION Screening Co	V DATE	Aluminum 19265	Selenium 5
47-01-1.0	9/13/97	· · · · · · · · · · · · · · · · · · ·	20
47-02-1.0	9/13/97	23000	32
47-02 4-6	7/1/99		12
47-02 6-8	7/1/99		15
47-07-1.0	5/8/98		. 22
47-09-1.0	10/21/98		99
47-10-1.0	10/21/98		6.1

TABLE 6-65
INORGANIC SAMPLING RESULTS
SWMU No. 48
(All values in MG/KG)

SAMPLE	SAMPLE	Aluminum Antimony	Antimony		Arsenic	Barium	Cadmium Chromium	Chromium	Cobalt		Copper	Lead		Mercury	Potassium	n Selenium	G	Silver	7	Zinc
48-01-1.0	6/10/67	22000	0.31	ח	8'6	120	0.45	29	18	Œ	200	32	ш	15	2300	0.63	=	0.063		1
48-02-1.0	9/10/97	21000	0.35	z	9.1	150	0.94	24	14	Ш	1300	50 00	ជា	7.4	1600	3,6	* 121	0.065	. U	260 E
48-03-1.0	9/10/97	00091	0.3	⊃.	9.6	19	0.31	22	21	(L)	36	27	Œ	0.079	1100	8,0	(T)	90.0		
48-04-1.0	9/10/97	19000	0.31	$\supset$	9'8 ·	140	0,46	23	15	щ	3900	140	Д	1:1	1400	3.4	* (II)	0.062		
48-05-1,0	2/10/67	18000	0.32	⊃	1'9	88	0.31	20	4	m	43	7	ы	0.32	066	0.64	Þ		Ω	
48-06-1.0	9/10/97	21000	0.3	<b>⊃</b>	===	130	4.0	28	19	ш	34	20	щ	0.062	1900	9.0	$\Rightarrow$			
48-07-1.0	9/10/97	18000	0.3	Þ	8.5	150	6.4	25	17	ΞΩ	30	18	ΙIJ	0.061	U 1400	0.63	≒			
48-08-1.0	9/10/97	18000	0.31	Þ	9.6	130	0.43	26	15		29	16		0.063	U 1400	0,63	$\supset$			
48-09-1.0	9/10/97	19000	0.3	₽	11	140	0.56	26	21		34	22		0.061	U 1300	0.61	=	0.061	£	(M)
48-10-1.0	5/4/98										* 96			-					,	
48-11-1.0	5/4/98	-									120 *									

### TABLE 6-66 INORGANIC PARAMETERS EXCEEDING SCREENING CRITERIA SWMU No. 48 (all values in MG/KG)

SAMPLE LOCATION Screening Co		Aluminum 19265	Copper 600	Mercury 10	Potassium 1900
48-01-1.0	9/10/97	22000		15	2300
48-02-1.0	9/10/97	21000	1300		Á
48-04-1.0	9/10/97		3900		
48-06-1.0	9/10/97	21000			

### ANALYTICAL REPORT NOTES, TERMS AND QUALIFIERS (INORGANIC)

#### Notes:

The metals and cyanide reporting limits (RLs) have been statistically determined to be no less than three standard deviations as defined in 40 CFR 136, Appendix B, Revision 1.11. All other reporting limits are referenced from the specific analytical method.

#### Terms:

NA Not Applicable

NR Not Requested

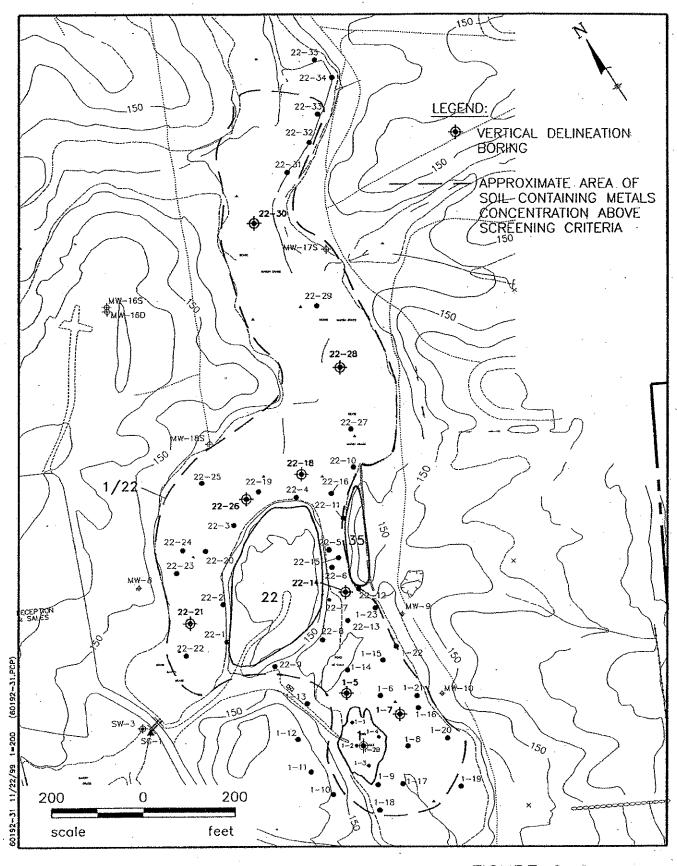
U Below Reporting Limits

#### Qualifiers:

- B The reported value is less than the practical quantitation limit (PQL, project defined) but greater than or equal to the RL.
- E The reported value is estimated due to the presence of matrix interference.
- N Predigested spike recovery not within control limits.
- W Post digestion spike recovery not within control limits.
- \* RPD or absolute difference for Duplicate analysis not within control limits.
- \*\* Reference Standard Methods 19th edition.
- pH analyzed outside USEPA specified holding time. pH must be-measured immediately after sample collection.
- (2) The sample pH did not meet the preservation guidelines. Therefore the pH was adjusted upon receipt.
- (3) The sample had to be diluted because of matrix interferences.
- (4) Reference Standard Methods 17th edition for the distillation method.
- (5) The sample was analyzed out of the USEPA holding time.
- (6) The sample was received in the laboratory out of the USEPA holding time.
- (7) The shipping cooler temperature exceeded 6°C upon receipt to Eckenfelder Laboratory, LLC.
- (8) When the concentration of the analyte is below the detection limit, the detection limit must be divided by the "Solids (in decimal form) in order to obtain the sample's true detection limit on a dry weight basis.
- (9) Analysis was subcontracted

### ANALYTICAL REPORT TERMS AND QUALIFIERS (GC/MS)

- MDL: The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The MDL is determined from analysis of a sample containing the analyte in a given matrix.
- EQL: The estimated quantitation limit (EQL) is defined as the estimated concentration above which quantitative results can be obtained with a specific degree of confidence. Eckenfelder Laboratory, LLC. defines the EQL to be ten times the MDL.
- U: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the MDL.
- B: The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero.
- D: When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".
- E: The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound.
- J: The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the EQL. One should feel confident that the result is greater than zero and less than the EQL.



BROWN AND CALDWELL

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FIGURE 6-1 SWMU NOS. 1 & 22

FIGURE 6-2 SWMU 2,3 & 4

BROWN AND CALDWELL

FIGURE 6-3 AOC B (SWMU 6,7,8) & 32

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FIGURE 6-4 SWMU NO. 9

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FIGURE 6-5 SWMU NO. 10

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FIGURE 6-6 SWMU NO. 11

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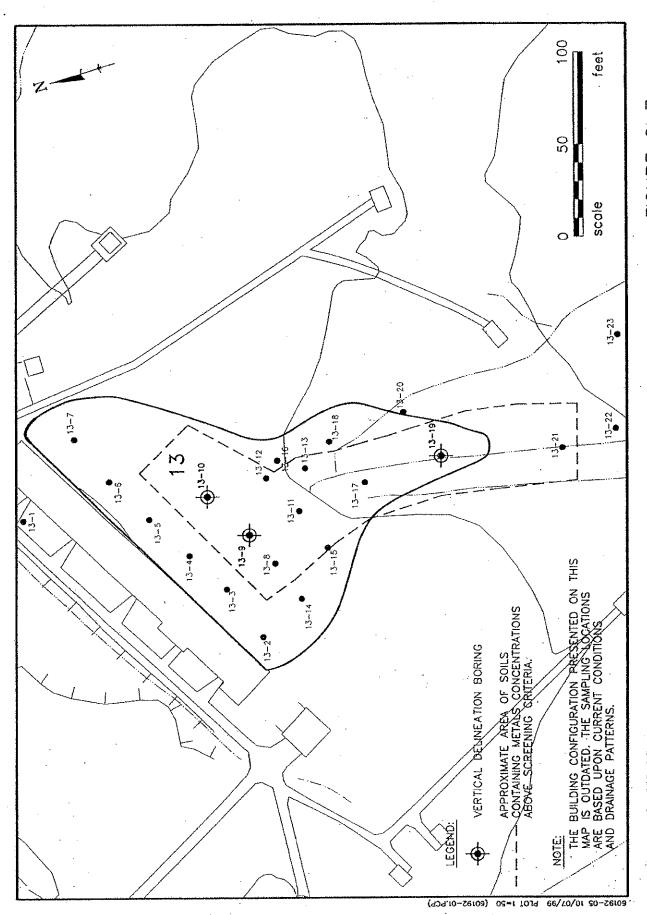


FIGURE 6-7 SWMU NO. 13.

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FIGURE 6-8 SWMU NO. 15

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FIGURE 6-9 SWMU NO. 21

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C B

FIGURE 6-10 SWMU NO. 23

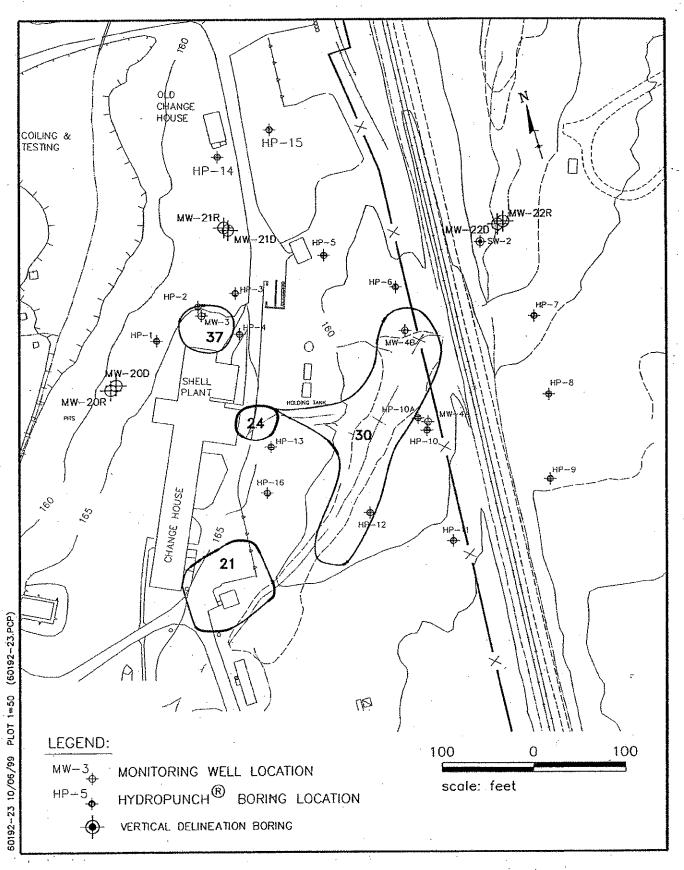


FIGURE 6-11 SWMU NOS. 24, 30 & 37

FIGURE 6-12 SWMU NO. 26D

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FIGURE 6-13 SWMU NO. 26E

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FIGURE 6-14 SWMU NO. 26F

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FIGURE 6-15 AOC C&D, SWMU 26G

FIGURE 6-16 SWMU NO. 27

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FIGURE 6-17 SWMU NO. 29

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FIGURE 6-18 SWMU NO. 33

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FIGURE 6-19 SWMU 34 & 38N

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FIGURE 6-20 SWMU NO. 38S

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FIGURE 6-21 SWMU NO. 39

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FIGURE 6-22 SWMU NO. 40

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FIGURE 6-23 SWMU NO. 41

BROWN AND CALDWELL

FIGURE 6-24 SWMU NO. 42

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FIGURE 6-25 SWMU NO. 46

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FIGURE 6-26 SWMU NO. 47

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FIGURE 6-27 SWMU NO.48

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#### 7.0 SAMPLING AND ANALYTICAL QA/QC

In accordance with the work plan, sampling and analytical QA/QC included the collection of blind field duplicates and equipment/field blanks. These data are summarized in Table 7-1 and present the blind duplicate and its corresponding sample. As illustrated, the reported concentrations for the duplicate and its corresponding sample are generally in good agreement with variations accounted for by the inherent inhomogeneity of the collected soils and analytical variability. The field/equipment blanks indicate non-detectable levels of the analyzed constituents, which indicate that the sampling equipment decontamination procedures employed between samples were effective.

QA/QC measures in the laboratory during the first phase of soils sampling indicated matrix interference do to naturally occurring levels of yitrium, which is used as an internal standard. To avoid further matrix interference, many of the samples were analyzed at a 5X sample dilution. This reduced the yitrium levels to an insignificant level but maintained sufficiently low detection levels for the compounds of interest. This approach was approved by the department prior to the second phase of work.

TABLE 7-1 QA/QC ANALYTICAL RESULTS

TPH Zano	U U			U %4	T 0	Ŭ		: :	N 011					***************************************		***************************************			5 U 74 E				1	N 86	4000	11		Ω	- 1	p:		27 11 67 12					
Silver	0.063				0.062 11 0.063			0.066	con'n										0.065	<b>&gt;</b> :	1	).	0.32		E* 0.32	,		1	ŀ			2000 X			Ω	n	
Seleníum			1	- }	7970	0.61	0.61	0.84	69						4, 6	, , , , , , , , , , , , , , , , , , ,		7.1	17		3.1	1800	12	1,6	0 2	l	0.63	0.73	0.84	1,6	3.7	4 4	5.5		1.6	1.4	
Potassium			570 .*	1	1000	1300	1300			28				-					1500						1600	l	001	2300	1400	1300	/30	200		•			
Mercury Po	1.4 0.11		. 66	-1	0.12	1	261 U		43				31	3					0.36			4.4	1	063 U	. 22	8		.17	064 U	<b>4</b> ;	1	z <u>* ^</u>	.13	058 U	140 150	30	ପ୍ର
Lead Mer	19 B 1 20 B 0.	\$5 \$2	μī	ш							8.4								95 E 0			*			380 15	ļ.	ı H		ĽΩ	ដោ	ţ	n n	1			14	
Copper Lu					31			z:	z			12 *			350	240	* 021		36			*			14000										32	15 N	,
Cobalt			7.8 E	- 1	0.0	17	21			:						,			14 田			-, -	-		E	1	i Ei		ш							-	
			×äZ															ż				* *					*B		ž					Ž		z	
Chromium			14	1	U 24		26	25	2						*			27	20			210		U 25	3,6	200	21	U 29	27	25	1	77 6	U 18		U 25	U 15	
Cadmium			0.43	0.27	0.12	0.34	0.56	0.38	0.44						9.6	2	•		0.41			Ġ.	0.32	0,32	e ,		0.098	0.13	0.19	<b>∞</b>	1.5	900	0.29		0.32	0.27	
Barium			ı		& &		140	56	80							***************************************			95			996	* 88	* 83	270	-		1	- 1		ł		130	01	94 N	43	
Arsenic			l		2 2	1	11	10	6.3					1	2 9.6	10			o.			эл Эл	9.7	Ξ	4 5	2 -		2 01	-		ŀ	2 %	1		6.3	8.2	
Antimony					0.31 U			0,33 U											0.32 U	•		7.8 7.8	1	·	0.55 N	ļ			1	.32 U		0.30		1.5	1,6 U	1,4 U	
			Ħ	щ				0	9																	-	123		ш								
8 Aluminum					18000									,	~ .			- Personal Property of the Personal Property o	16000			<b>~</b> ~		. ~		20007						15000		- 00	∞ a	000	89
SAMPLE DATE	76/11/9 76/11/9	9/12/97	9/15/97	9/15/97	9/16/97	9/10/97	9/10/97	2/17/98	2/17/98	4/28/98	4/29/98	4/29/98	4/29/99	4/67/4	4/30/98	4/30/98	5/4/98	86/9/5	9/13/97	86/8/5	5/8/98	6/11/98	6/11/98	6/11/98	76/8/6	70/01/0	76/21/6	9/16/97	9/16/97	16/11/67	9/17/97	79/81/6	10/20/98	10/20/98	10/21/98	10/22/98	10/22/98
SAMPLE LOCATION	DUP 091197 33-11-1.0	DUP 091297	DUP 091597	26E-03-1.0	DUP 091697	DUP-011097	48-09-1,0	DUP-021701	01-12-1.0	32-04-1,0	DUP-042998	40-09-1.0	DUP-042999	0.1-62-01	DUP-043098	04-07-10	DUP-050498 48-11-1-0	DUP-050698	42-07-1.0	DUP-050898	39-15-1.0	DUP-061198	DI IP-061 198A	01-04-6.0	DUP-090897	DI 19. A01 002	26E-01-1.0	DUP-091697	21-03-1.0	DUP-091697	29-01-1:0	DUP-691897	DUP-102098-1	06-30-1,0	DUP-102198	DUP-102298	. 33-17-1.0

# TABLE 7-1 QA/QC ANALYTICAL RESULTS

						割				<b>;</b>	<b>=</b>	₽	Þ								ລ	þ	⊃	₽						⊃	⊃		
Zinc				84		72			38	20	ನ	2	50								20	50	20	8	53	~			۰	2	20		
				∍																													
TPH				2	••••				-	<b></b>	-		_	_							_		-		•						_	_	
Silver				0,058 U		- 1	0.062 U		)   	<u>ب</u>	 			_			<u>-</u>				D	_		_	_						_	_	
8			Ö	3	;; ;;;	ł		-	Þ	n	⊃	₽	Þ	Þ	⊃	ຸລ	n	D	⊃	D	Þ	n	₽	Þ	Þ	D	₽	p	⊃	þ	n	Þ	
Selenium	14	-8	œ.			1		96	S	S	S	Š	ς,	10	10	01	s	0.	10	10	. 2	ŧn,	Ł۸	s.	Ś	s	ıc,	Ś	s,	ŧs.	v)	٠,	
Selv			•		*	۰	<i>ت</i>	1	Þ	•	_	_										5	Þ	<b>5</b>	5	Ð					Þ	5	
un			_			_	_		_	_												,	-	,		,							
Potassium			170	1400	1300	1100		0.099	-	-	-		***									-	-		-				,		-	-	
. >>								i																							₽		-
Meroury	12	ß	0.095	0.19	0.13	0.082	0.062	0.63	07	0.2	0.2	0.2	0.2	0.2	0.3	0,2	0,2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	70	3	0.7	9.7	0.7	0.2	0.2	0.2	
				1	111	1						Þ				<b>=</b>	Þ	Þ	Þ	Þ	$\supset$		Þ	⇔	Þ	)	)	D	=	<b>=</b>	ລ	₽	
Lead	260	550	m	46	~	23	19	1600	S	S	ψŊ	40	Ś	'n		<b>ሃ</b> ን	<b>W</b>	w	٧٦.	'n	v	'n	٠,	vs	₩,	50	*0	<b>5</b> 5	43	<b>V</b> A	ţ,	Ś	
rs.	z	- 1								₽	D	₽	₽	₽		Þ	₽	₽		Þ	⊃	₽	⊃	⊃	⊃	D	$\square$	$\supset$	₽	₽	₽	₽	
Copper	3300	5400	170	280	4	18	32	0.08	74	4	4	4	4	4		4	v	4		47	4	4	4	4	4	4	Ś	*	S	43.	4	4	
#				1	띠				ב	⊃	Þ	Þ	⊃									D	$\Box$	₽	⊃	⊃					⊃	<b>;</b>	
Cobalt			16	12	Ξ	12	15	5	-			-	-									_	-	-	-	_					-	_	
					z	Z		35	D	Þ	⊃	Þ	n	D		D	$\supset$		Ω	ח	∩	Þ	D	Þ	⊃		Ð	P	p		₽,	⊃	
Chromium			21	20	20	22	29		Š	Ş	s	Š	\$	s		v	5		<del>ረ</del> ጎ	ري د	Ś	ş	į,	'n	43	20	ۍ	ĸ,	\$		Ŋ	ιcη	
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Notes: See following page for definition of Qualiflers.

Duplicate analysis referenced on following page refers to internal laboratory duplicates not the field duplicates tabulated above.

## ANALYTICAL REPORT NOTES, TERMS AND QUALIFIERS (INORGANIC)

#### Notes:

The metals and cyanide reporting limits (RLs) have been statistically determined to be no less than three standard deviations as defined in 40 CFR 136, Appendix B, Revision 1.11. All other reporting limits are referenced from the specific analytical method.

#### Terms:

NA Not Applicable

NR Not Requested

U Below Reporting Limits

#### Qualifiers:

- B The reported value is less than the practical quantitation limit (PQL, project defined) but greater than or equal to the RL.
- E The reported value is estimated due to the presence of matrix interference.
- N Predigested spike recovery not within control limits.
- W Post digestion spike recovery not within control limits.
- \* RPD or absolute difference for Duplicate analysis not within control limits.
- \*\* Reference Standard Methods 19th edition.
- (1) pH analyzed outside USEPA specified holding time. pH must be measured immediately after sample collection.
- (2) The sample pH did not meet the preservation guidelines. Therefore the pH was adjusted upon receipt.
- (3) The sample had to be diluted because of matrix interferences.
- (4) Reference Standard Methods 17th edition for the distillation method.
- (5) The sample was analyzed out of the USEPA holding time.
- (6) The sample was received in the laboratory out of the USEPA holding time.
- (7) The shipping cooler temperature exceeded 6°C upon receipt to Eckenfelder Laboratory, LLC.
- (8) When the concentration of the analyte is below the detection limit, the detection limit must be divided by the "Solids (in decimal form) in order to obtain the sample's true detection limit on a dry weight basis.
- (9) Analysis was subcontracted

#### 8.0 SUMMARY AND CONCLUSIONS

The work completed to date, related to the RCRA program, consists of the Groundwater Investigation which addressed the site wide groundwater flow, groundwater quality, and hydrogeology, the Interim Corrective Measures for Explosives, which addressed potential explosive concerns at selected SWMUs, and most recently the RFI, reported herein. In addition, one aspect of the Groundwater Investigation Report was to identify groundwater and surface water use within a one-mile radius of the site. This information was used to identify potential impacts to human health associated with a release from the facility.

The Groundwater Investigation indicates that the active portions of the facility are underlain by a thick sequence of low permeability silt and clay. The only portions of the site where these silt and clay deposits are not present is in the undeveloped area on the western side of the property associated with step side slopes of Hussey Hill. Groundwater flow at the site is controlled by the large wetlands area, which represents a groundwater discharge point in the center of the topographic valley east of the facility. Therefore, groundwater beneath the site flows generally to the east before discharging to the wetlands, which represent the headwaters to an unnamed tributary of Plantasie Creek.

Water quality data collected from wells located throughout the facility indicate that there is a wide range in metals concentrations as determined from either filtered or unfiltered samples. This is a result of the collection of water samples from the low permeability silt and clay deposits and the resulting turbidity of the samples. As discussed in the Groundwater Investigation Report, the unfiltered samples were turbid even though low flow purging techniques were used to collect the samples. This turbidity resulted in metals concentrations that are not representative of surrounding groundwater. As a result, with the exception of mercury and silver, the total metals concentrations exceed groundwater standards throughout the facility. The filtered samples, however, indicate exceedances only for barium and selenium at a few selected locations immediately downgradient of individual SWMUs.

The organic analytical data confirm the presence of TCE and its related compounds in the vicinity of the Shell Plant (SWMUs 24, 30, and 37) at concentrations above MCLs. However, wells and HydroPunch sampling downgradient of these SWMUs did not detect the presence of volatile organics. Scattered volatile organic compounds were also noted at other wells located at a few locations across the facility. However, the reported values were estimates below both their respective PQLs and MCLs.

The cumulative data thus indicate that with the exception of SWMUs 24, 30, and 37 (i.e., the Shell Plant area) there are only minor exceedances of water quality standards for barium and selenium at a few selected SWMUs. These exceedances, however, are found in wells immediately downgradient of the specific SWMU and do not represent a site wide impact. The data also indicate that even where MCLs are exceeded adjacent to the Shell Plant, there are no detectable levels of organics downgradient of the SWMU or east of the Conrail tracks.

These data clearly indicate that the low permeability silt and clay deposits have attenuated potential releases throughout the facility such that there are no documented groundwater impacts any appreciable distance from the SWMUs or AOCs. This also indicates that any exceedances of water quality standards are within the facility property boundaries. Furthermore, the potential receptors evaluation presented in the Groundwater Investigation Report indicates that groundwater use around the site is upgradient of the facility. Given the above, there is little possibility and no evidence for groundwater related health concerns to neighboring residents.

The soils data indicate that there are exceedances of the inorganic screening criteria for soils associated with 28 individual SWMU or AOC locations, three SWMUs within one area with volatile organics in both soils and groundwater, eight areas at which there were no exceedances detected and three areas where no exceedances were detected but the areas contain former waste piles that will be evaluated further as part of the CMS. Those locations to be evaluated under the CMS are summarized in Table 8-1. The collected data further indicate that with some exceptions, metals concentrations exceeding the

screening criteria are limited to the upper one foot of soil. Metals concentrations below this depth are shown to typically decrease significantly as the metals are attenuated by the silt and clay soils. Concentrations above the screening criteria are however, noted at several locations. Most notably, these include SWMU 1, as well as the former burning areas (SWMUs 2 through 8, AOCs A and B). Concentrations in the center of the former detonation pond (SWMU No. 1) are documented above screening levels as deep as 12 feet below the water surface while concentrations above screening levels in the former burning areas is recorded to depths of 6 feet below the ground surface.

As noted in Section 1.0, exceedance of the screening criteria, which are based upon conservative assumptions, indicates that these areas warrant further evaluation as part of the CMS, not that corrective action is necessarily required. This is particularly true in that all of the SWMUs and AOCs located within the active portion of the facility are in areas that require employees, for safety reasons, to traverse the site only on designated walkways which are paved or consist of concrete sidewalks. Furthermore, the site has 24-hour security, is completely fenced, and any visitors must be accompanied by an employee. Given the above, and that potential explosive concerns were addressed by the Interim Corrective Measures, there is little if any risk of human exposure associated with these locations.

The site conditions would also suggest that a site specific risk analysis would be appropriate for SWMUs 1 and 22. These locations are located outside the active area of the facility. However, these areas consist of dense reeds and wetlands through which access is very difficult and is surrounded by undeveloped property. Given the above, and that the screening criteria are developed using conservative assumptions, a site specific risk analysis may also indicate that these areas do not pose a significant human health risk.

In summary, the work completed to date indicates the presence of SWMUs and/or AOCs that contain concentrations of inorganic or organic constituents above the established screening criteria. However, the collected data indicate that the exceedances of the

screening criteria are typically limited to the proximity of the individual locations and there is no evidence to suggest the presence of site wide impacts. Furthermore, the low permeability silt and clay deposits underlying the site, coupled with the discharge area represented by the wetlands in the center of the topographic valley, significantly limit the potential for contaminant migration beyond the facility boundaries. As also noted, the screening criteria represent values determined on the basis of very conservative assumptions. Therefore, the risk associated with these locations and the need for corrective actions is yet to be determined and will be addressed as part of the CMS.

#### 8.1 RECOMMENDATIONS

As noted above, the collected data indicates that exceedance of water and soil quality criteria are limited to the vicinity of the individual SWMUs and there are no exceedances beyond the property limits. In addition, the activities associated with the releases at the SWMUs have been discontinued, and the low permeability soils are acting to attenuate any further migration. Furthermore, those areas documented to contain soil or groundwater concentrations above applicable criteria will be evaluated as part of the CMS (Table 8-1). Never the less, it is recommended that an annual monitoring plan be implemented to document that conditions have stabilized and that there are no unexpected migration of contaminants occurring. To this end, we recommend the collection of semi-annual groundwater samples from the following locations:

Location	Analytes	Location	Analytes
MW-21D	TCL Volatile Organics	MW-2B	TCL Metals (Total and Filtered)
MW-21R	TCL Volatile Organics	MW-15S	TCL Metals (Total and Filtered)
MW-22D	TCL Volatile Organics	MW-15D	TCL Metals (Total and Filtered)
MW-22R	TCL Volatile Organics	MW-16S	TCL Metals (Total and Filtered)
Surface wat	er sampling point at propert	y boundary	TCL Metals (Total and Filtered)

The wells listed above are located at the downgradient boundary of SWMUs known to have at least a limited impact upon groundwater quality while the surface water sampling point will represent the water quality of surface water leaving the site. The selected analytical parameters are based upon the analytical results obtained at the individual SWMUs while the recommendation for semi-annual sampling is based upon the slow groundwater travel times related to the low permeability soils. Purging and sampling of the wells will be conducted using Low Flow sampling techniques previously approved for this site and samples collected for metals analysis will be both field filtered and total in order to obtain a representative sample. Upon approval by the Agency, the recommended semi-annual monitoring program will continue until changes are recommended as part of corrective measures.

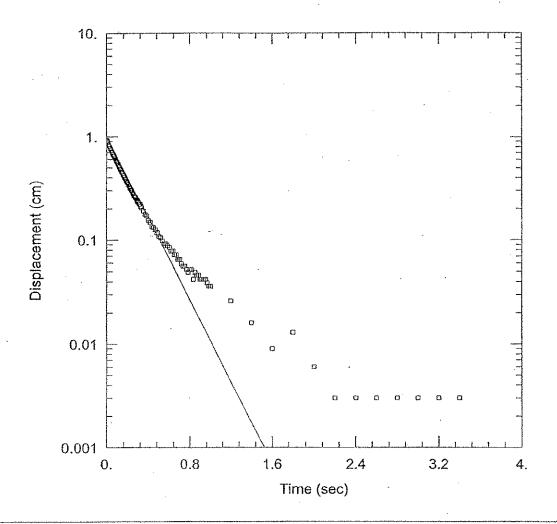
#### TABLE 8-1

#### SWMUs AND AOCs TO BE INVESTIGATED IN THE CMS

SWMU No.	SWMU Name
1	Shooting Pond
2	Burning Cage/Incinerator
3	Copper Wire Burning Area
4	Iron Wire Burning Area
5	Wire Burning Area III
6-7	Open Burning Pads
- 8	Former Burning Area
9	Waste Powder Catch Basins - Building 2037
10	Waste Powder Catch Basins - Building 2048
11	Waste Powder Catch Basins - Building 2049
13	Former Waste Powder Catch Basins - Lead Azide Building
21	Lead Recycling Unit Area
22	Former Landfill
23	Former Dump
24	Former Wastewater Treatment Facility
26D, E, & G	Burnable Waste Satellite Accumulation Areas (3 locations)
29	Drainage ditch (Downgrade of Building 2049)
30	Drainage Ditch (Downgrade of Building 2036)
32	Old Dump (near water tower)
33	Mercury Fulminate Tanks Area
35	Stone Fence Dump
37	Shell Plant Drum Storage Area
39	Former Wash Water Discharge Area - Building 2009
40	Pilot Line Condensate Collection Sump
42	SAC Building Steam Collection Containers
47	Building 2058 Fuse Room
48	Mercury Fulminate Area
<u>AOC</u>	AOC Name
A	Kerosene Tank Leak
В	Open Burning Pads Area
C	Open Detonation Pit
D	Detonation Test Building

## APPENDIX A

# SLUG TEST RESULTS (WELLS COMPLETED DURING RFI)



#### MW-20D

Data Set: P:\HYDRO\DYNO\SLUG\MW-20d.aqt

Date: 10/07/99

Time: 09:51:20

#### PROJECT INFORMATION

Company: Brown & Cladwell

Client: Dyno Nobel

Project: 60192

Test Location: Port Ewen, NY

Test Well: MW-20d

#### AQUIFER DATA

Saturated Thickness: 10, cm

Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-20d)

Initial Displacement: 0.927 cm

Casing Radius: 5. cm

Screen Length: 335.3 cm

Water Column Height: 1339. cm

Wellbore Radius: 15. cm

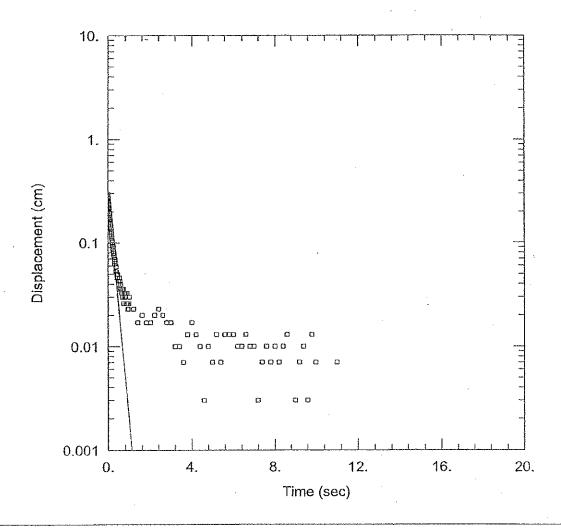
#### SOLUTION

Aquifer Model: Confined

K = 0.5244 cm/sec

Solution Method: Bouwer-Rice

y0 = 1. cm



#### MW-20R

Data Set: P:\HYDRO\DYNO\SLUG\MW-20r.aqt

Date: 10/07/99

Time: 11:16:55

#### PROJECT INFORMATION

Company: Brown & Caldwell

Client: Dyno Nobel Project: 60192

Test Location: Port Ewen, NY

Test Well: Mw-20r

#### **AQUIFER DATA**

Saturated Thickness: 304.8 cm Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-20r)

Initial Displacement: 0.297 cm

Casing Radius: <u>5.</u> cm Screen Length: <u>540.</u> cm Water Column Height: 1987.6 cm

Wellbore Radius: 5. cm

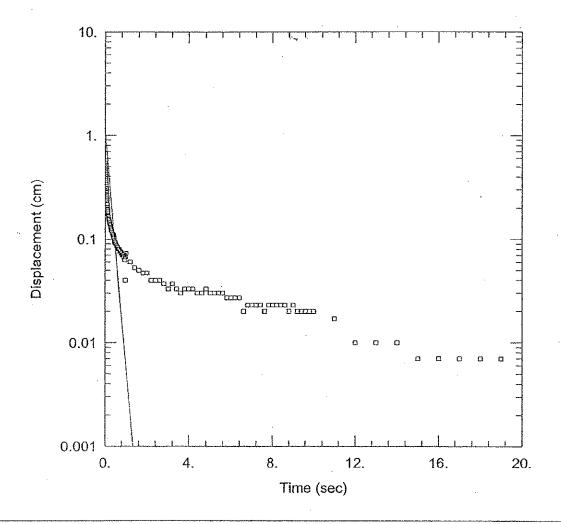
#### SOLUTION

Aquifer Model: Confined

K = 0.5062 cm/sec

Solution Method: Bouwer-Rice

y0 = 0.2712 cm



#### MW-21D

Data Set: P:\HYDRO\DYNO\SLUG\MW-21d.aqt

Date: 10/07/99 Time: 10:45:11

#### PROJECT INFORMATION

Company: Brown & Caldwell

Client: DynoNobel Project: 60192

Test Location: Port Ewen

Test Well: MW-21d

#### AQUIFER DATA

Saturated Thickness: 304.8 cm Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-21d)

Initial Displacement: 0.541 cm

Casing Radius: 5. cm Screen Length: 300. cm Water Column Height: 1271.3 cm

Wellbore Radius: 15. cm

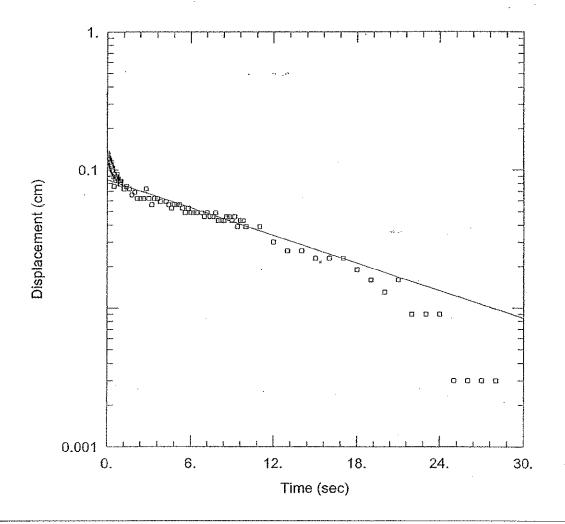
#### SOLUTION

Aquifer Model: Confined

K = 0.6585 cm/sec

Solution Method: Bouwer-Rice

y0 = 1.089 cm



#### MW-21R

Data Set: P:\HYDRO\DYNO\SLUG\MW-21r.aqt

Date: 10/07/99 Time: 10:47:32

#### PROJECT INFORMATION

Company: Brown & Cladwell

Client: Dyno Nobel Project: 60192

Test Location: Port Ewen, NY

Test Well: MW-21r

#### **AQUIFER DATA**

Saturated Thickness: 609.6 cm Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-21r)

Initial Displacement: 0.132 cm

Casing Radius: <u>5.</u> cm Screen Length: <u>600.</u> cm Water Column Height: 1271.6 cm

Wellbore Radius: 15. cm

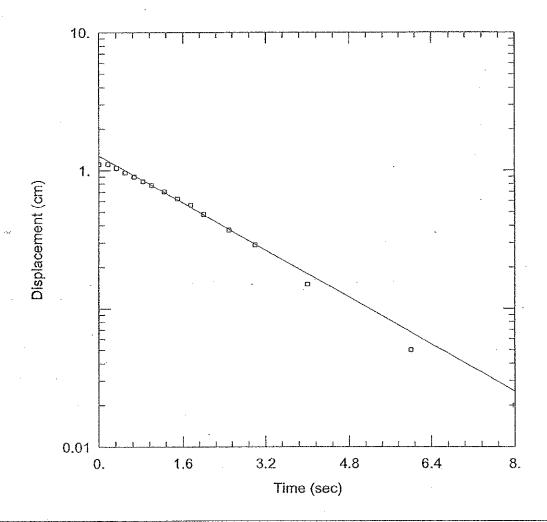
#### SOLUTION

Aquifer Model: Confined

K = 0.005258 cm/sec

Solution Method: Bouwer-Rice

y0 = 0.08468 cm



#### MW-22D

Data Set: P:\HYDRO\DYNO\SLUG\MW-22d.aqt

Date: 10/07/99

Time: 10:49:55

#### PROJECT INFORMATION

Company: Brown & Caldwell

Client: Dyno Nobel Project: 60192

Test Location: Port Ewen, NY

Test Well: MW-22d

#### **AQUIFER DATA**

Saturated Thickness: 579.1 cm

Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-22d)

Initial Displacement: 1.11 cm

Casing Radius: 5. cm

Screen Length: 150. cm

Water Column Height: 680.3 cm

Wellbore Radius: 15. cm

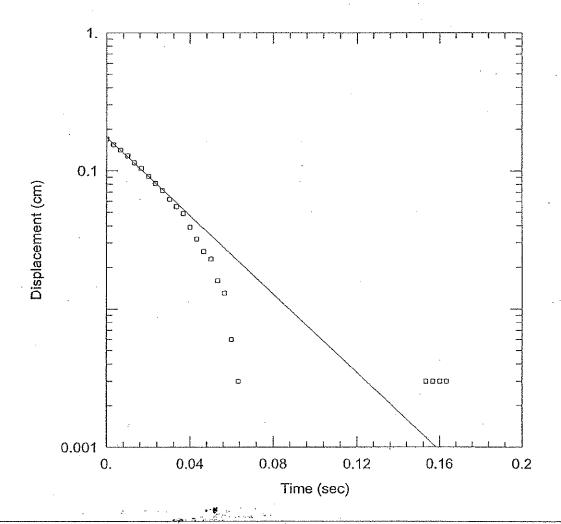
#### SOLUTION

Aquifer Model: Confined

K = 0.09814 cm/sec

Solution Method: Bouwer-Rice

y0 = 1.276 cm



#### MW-22R

Data Set: P:\HYDRO\DYNO\SLUG\MW-22r.aqt

Date: 10/07/99 Time: 11:15:38

PROJECT INFORMATION

Company: Brwon & Caldwell

Client: Dyno Nobel Project: 60192

Test Location: Port Ewen, NY

Test Well: MW-22r

#### AQUIFER DATA

Saturated Thickness: 609.6 cm Anisotropy Ratio (Kz/Kr): 1.

#### WELL DATA (MW-22r)

Initial Displacement: 0.17 cm

Casing Radius: <u>5.</u> cm Screen Length: 600. cm Water Column Height: 1380.1 cm

Wellbore Radius: 5. cm

#### SOLUTION

Aquifer Model: Confined

K = 2.869 cm/sec

Solution Method: Bouwer-Rice

y0 = 0.1744 cm

## APPENDIX B

## SOIL BORING AND MONITORING WELL LOGS

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(feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical L Comments:	og: yes	⊠no	
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10-		Cement Groul	5	4-5-8-7				Gray Silty Cla	ay, damp	Paring t	packfilled w/
-			8	2-4-5-6						Grout.	ACCUMING MA
-			7	3-5-6-9				- Gray Silty Cla saturated	ay, Pebbles, F SANI	),	·
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Bro	own ar	nd Caldwell		-				urface ng Log	Well Name/I   1-1	_ocation	:	Page 1 of 1
Proje	ct: <i>Vertica</i>	l Delineation			1			oject No.:	Start Date	: 7/26/	99	· · · · · · · · · · · · · · · · · · ·
Client	: Dyno-No	····					6	0192.001	Finish Dat	· · · · · · · · · · · · · · · · · · ·	~~~~~~	
		DRILLING DA	ATA		·				SAMPLIN			
	ctor: <i>Marc</i>								Sampler	Tub		Core
Contr	actor: <i>Max</i>	im Technologies						Type:	Split-Spoon	NA		NA
	ment: <i>Tripo</i>							Diameter:	2"	NA		NA
Metho	d: Direct F							Other:	NA	· NA		NA
		WELL CONSTRU	CTIC				<del></del>	nevel	IELL .OPMENT	:	SURVE	Y DATA M: NA
	1-1-	Riser			cree	en .			OI FILLE	Crada		
Mater	:	NA			NA			Method: NA Duration: NA		Grade: . TWC: NA		
Į.	ter (ID):	NA NA			NA NA			Gals. Purged:		TPC: NA		
Coupl	ing:	NA NA	soil			<del>,</del>		Siùg Test: NA		North: /		
	WELL	CONSTRUCTION	rock	SAI	1PLE	DAT	Α	(cm/sec)	1	East: N		
			1			<u> </u>	<u> </u>		<u></u>	1		
(feet)		•	Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical l Comments: Da	Log: L. yes etonation Pond	⊠ no		
Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD	·	١	VISUAL SIFICATION	١	RE	MARKS
0-			ı	1-1-1-1				- Gray CIAY, w wire, ash	/ Live Detonators,			
		Boring collapse	2	1-1-1-1				- War C, 6001	ng tagen		Live Det	onator, wire, ash
	K	4	<u> </u>					- End of Borin	g @ 4'			-
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Bro	own ar	nd Caldwell						ng Log	1-2		<u></u>	Page 1 of 1
Proje	ct: <i>Verfica</i>	l Delineation	<del></del>				P	roject No.:	Start Date			_
Client	: Dyno-No						6	0192.001	Finish Date		<del></del>	·
		DRILLING D	ATA_		-				SAMPLIN	<del>·</del>		
1	ctor: <i>Marc</i>							7"	Sampler	Tub	3	Core
1		im Technologies						Type: Diameter:	Split-Spoon 2"	NA NA		NA NA
	ment: Tripo d: Direct I	i						Other:	NA	NA NA		NA . NA
ric (iii	d. Direct i	WELL CONSTRU	CTIC	 N				i — — — — — — — — — — — — — — — — — — —	(ELL	T	HRVE	Y DATA
		Riser		·	cree	en		DEVEL	OPMENT		DATU	M: NA
Mater	ial:	NA			NA			Method: NA		Grade: /	VA	
i	eter (ID):	NA			NA			Duration: NA		TWC: NA		
Coupl	ing:	NA NA		1	NA			Gals. Purged:		TPC: NA		,
	WELL	CONSTRUCTION	soil rock	SAN	1PLE	DAT	Ά	Slug Test: NA (cm/sec)		North: A East: M		-
(feet)	٠		Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical t	Log:  yes	⊠ no		
O Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		١	VISUAL SIFICATION	1	RE	EMARKS
-		Boring	1	1-1-1-1			<u>.</u> .	Gray CIAY, 4 wire, ash	Live Detonators,		ina Dal	tonator, wire, ash
-		collapse	2	1-1-1-1				- End of Borin	g 18 4°	To the second se	rive Dei	ondroi, wie, dan
5-								_	<b>9</b> - ··	all property and the state of t		
				A THE PROPERTY OF THE PROPERTY				-		eintellenten nooren lasp	Dyno-N presenc	was Canceled by lobel due to the se of Live tors in split-spoon, IDLH
10-				***************************************								·
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Bro	wn ar	nd Caldwell	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					urface ng Log	Well Name/ 1-5	Locati	ion:	Page	1 of 1
Projec	t: <i>Vertica</i>	l Delineation						roject No.:	Start Date	e: 7/2	6/99	raye	, , 0, 1
Client:	Dyno-No				·····		6	0192.001	Finish Dat	e: 7/2	6/99		
		DRILLING DA	ATA		<del></del>				SAMPLIN			<del></del>	
, .	tor: <i>Marc</i>	<del>-</del>							Sampler		ube	Cor	
		im Technologies						Type:	Split-Spoon		NA · · ·	N/	
	ient: 550 <b>i:</b> Direct F	ATV Auger Rig						Diameter: Other:	2" NA		NA NA	N.	
MECHOC	ı. Direct r	WELL CONSTRU	CTIC	۱N				<del> </del>	ELL	T	NA CURRE	N/	4
		Riser	T		Scree	 en		DEVEL	CLL OPMENT			Y DATA M: NA	
Materia	al:	NA			NA		·	Method: NA		Grade	e: <i>NA</i>		
Diamet	er (ID):	, NA			NA			Duration: NA		TWC:	NA		
Couplin	ıg:	NA			NA			Gals. Purged:	NA.	TPC:	NA	-	
	WELL	CONSTRUCTION	soil rock	SAI	MPLE	DAT	Α	Slug Test: NA (cm/sec)		North East:			
(feet)	a annual na maga at an an an an an an an an an an an an an		Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical L Comments:	og: 🗌 yes	⊠ no	1		
Depth			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		V	ISUAL IFICATION	١	RE	MARK	S
0+			i	1-3-5-5				- Gray CIAY, w/	plant material			*	
			2	1-3-5-7				- Gray/Red Bro Clayey Silt	wn Silty Clay to		Dead pla	ants/root a 3' gap abov	naterial ve soil
5-			3	5-7-8-9				Red Brown F Silt, Varved &	Silty Clay to Claye Mottled	y	samples	were colle oil began	cted
4		BacKfilled w/	4	4-5-5-7				- Red Brown to Clayey Silt (- Saturated	Gray CLAY, (+) -) Silty Clay,				
10-		Cement Grout	5	1-2-3-4				í	astic, saturated				
			6	5-3-3-2				_			Boring b	ackfilled w	1
			7	1-1-2-2		,		<b>_</b>			Grout.		
15-			8	1-2-2-3				- End of Boring	@ 16°				
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Bro	own ar	nd Caldwell						ng Log	1-7			Page 1 of 0
Projec	ct: <i>Vertica</i>	l Delineation	· .					roject No.;	Start Date	: 7/26	/99	, age , or o
1	: Dyno-No							0192.001	Finish Date			
	· ,	DRILLING D	ATA						SAMPLING	S METH	lods	
Inspe	ctor: Marc	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		- · · · · · ·		<del></del>		Sampler	····	be	Core
1		im Technologies						Туре:	Split-Spoon	٨	IA	NA
Equip	ment: 550	ATV Auger Rig						Diameter:	2"	٨	IA	NA
1	d: Direct F							Other:	NA	٨	IA :	NA
		WELL CONSTRU	JCTIC	N				W	ELL		SURVE	Y DATA
		Riser		S	cree	en i	····	DEVEL	OPMENT		DATU	M: NA
Mater	ial:	NA			NA			Method: NA		Grade		
Diame	ter (ID):	NA			NA		•	Duration: NA		TWC: /	V.A	-
Coupl	ing:	NA NA			NA			Gals. Purged:		TPC: A		
	WFII	CONSTRUCTION	soil	SAN	<b>IPLE</b>	DAT	·A	Slug Test: NA	t	North:		
	71666		rock		7		··	(cm/sec)	· · · · · · · · · · · · · · · · · · ·	East:	NA	
(feet)		. • •	Sапр. No.	Blows/ 6 in.	Rec. (ft.)	USCS	HNU (ppm)	Geophysical I Comments:	_og: □_yes	⊠ no		
Depth (feet)			Run No.	Hydraul, Cond. cm/sec	Rec. (ft.)	RGD		١	VISUAL SIFICATION	7	RE	EMARKS
0-			1	1-1-1-1					/ wire, plant materio			
-			2	2-2-4-4			***************************************	- Gray/Blue Cl	_AY to Clayey Silt	***************************************	Dead pl	ants/root material
5-		Boring Collapse	3	5-10-12-10					,		samples	3' gap above soil, were collected oil began
			4.	6-4-3-4				- Gray CLAY, I	Plastic, saturated			
40		1	5	2-12-100/.4				End of Borin	g @ 9'		·	
10-								_			Boring (	collapse.
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			· · · · · · · · · · · · · · · · · · ·			•	SII	hs	urface	Well Name/	Locatio	on: ·	
Bro	own ar	d Cal	dwell						ng Log	2-01			Page 1 of 1
Projec	t: Vertica	Delineati	on					Pı	oject No.:	Start Date	: 7/12/	/99	t* .
Client:	: Dyno-Noi							6	0192.001	Finish Dat			· · · · · · · · · · · · · · · · · · ·
			ILLING DA	TA						SAMPLIN			·
	ctor: <i>Marc</i>								_	Sampler		be	Core
	actor: <i>Maxi</i>								Type:	Split-Spoon		fA (4	NA .
	ment: Acke		ig						Diameter:	2"		IA IA	NA NA
Metho	d: Direct F		CONSTRU		<u> </u>	<u></u>			Other:	NA NA	1 ^	/A	NA
<del></del>			Riser	C110		cree	n		DEVEL	ELL OPMENT		DATU	Y DATA IM: NA
Materi	ial•		NA			NA		*********	Method: NA		Grade	: NA	
	ter (ID):		NA			NA			Duration: NA		TWC:		
Coupli			NA			NA			Gals. Purged:	NA	TPC: /		
1				soil					Slug Test: NA		North:	: NA	
	WELL	CONSTRU	CTION	rock	SAM	1PLE	DAT	A	(cm/sec)		East:	NA	
(feet)	-			Samp. No.	Biows/ 6 in.	Rec. (ft.)	USCS	HNU (ppm)	Geophysical L Comments:	.og: 🗌 yes	⊠ no		
Depth				Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		١ ١	/ISUAL SIFICATIO	N	RE	EMARKS
0-				1	8-18-16-18				- Debris, Browl Silty Sand	n MF Sandy Silt to		',	
-				2	8-12-8-14				Γ	material @ 4'			,
5-			Backfilled w/ Cement	3	3-2-1-1				Fill, Wood, Br MF Sand, da	ick, Concrete, Oran mp	ge	Boring Groot	backfilled w/ Refusal @ 12.6°
			Grout	4	2-3-4-5					,	٠,		
10-				5	5-6-9-10	4			-			٠	
				6	12-16-17-12				- - -		:		
•	12		Split Spoon Refusal @ 12.6*		12-100/.4				Split Spoon I Boring @ 12.6	Refusal @ 12.6 End	of	*	
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Г					·	···	Su	hs	urface	Well Name/L	.ocation:	· · · · · · · · · · · · · · · · · · ·
Bro	own ar	id Ca	idwell						ng Log	2-7		Page 1 of 1
Projec	ct: Vertica	l Delineat	ion					Pr	roject No.:	Start Date	: '7/14/99	
Client	Dyno-No.	bel						8	0192.001	Finish Date	e: 7/14/99	
			RILLING DA	TA						SAMPLING	METHODS	3
Inspe	ctor: Marc	Conger								Sampler	Tube	Core
Contr	actor: Max	im Techno	ologies						Type:	Split-Spoon	NA	NA
Equip	ment: Acke	r Auger F	Rig						Diameter:	2"	NA	NA
Metho	d: Direct F	Push							Other:	NA	NA ·	NA NA
		WELL	CONSTRUC	CTIO	N	·			y	YELL	SUF	RVEY DATA
		1	Riser		S	cree	en			LOPMENT		ATUM: NA
Mater	ial:		NA	l		NA			Method: NA		Grade: NA	
Diame	ter (ID):		NA	1		NA			Duration: ŅA		TWC: NA	
Coupl	ing:		NA			NA			Gals. Purged:		TPC: NA	
	wett	CONSTRU	ICTION	soil	SAL	API E	DAT	'Δ	Slug Test: N	4	North: NA	
				rock	UAI	F: L.L.	- DA 1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(cm/sec)	•	East: NA	***************************************
(feet)			· ·	Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	HNU (ppm)	Geophysical Comments:	Log: 🗌 yes	⊠ no	
Depth (feet)		•		Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			VISUAL SIFICATION	1	REMARKS
0-				1	2-18-20-35				- Debri, fill, ro (green Cu S	ck, wood, ash, wire		
-			. *	2	35-12-10-9		***************************************					
5-			- BacKfilled w/ Cement	3	0-12-30-80		***************************************		Orange F Si	ity Sand w/ pebbles	Bor Gro	ring backfilled w/
_			Grout - Split Spoon Refusal @	4	30-100/.4				- Split Spoon Boring @ 6.9	Refusal @ 6.9 End o	,	fusal @ 6.9
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Bro	own ar	nd Caldwell	•		-			ng Log	2-18	2-18			
Projec	ct: Vertica	I Delineation	<del>,</del>		Ł			roject No.:	Start Date	Page 1 of 1			
	: Dyno-No.							0192.001	Finish Date: 7/13/99				
		DRILLING DA	ATA							S METHOD			
Inspe	ctor: Marc	Conger							Sampler	Tube		Core	
Contr	actor: <i>Max</i>	im Technologies						Type:	Split-Spoon	NA .		NA ,	
Equip	ment: Acke	er Auger Rig		•				Diameter:	2"	NA		NA	
Metho	d: Direct F				-			Other:	NA	NA NA		NA	
		WELL CONSTRU	CTIO					neve	YELL LOPMENT	SU	RVEY I	DATA NA	
	! ! .	Riser		5	cree NA	en		Method: NA		Grade: NA		****	
Mater	iai: ter (ID):	NA NA	1		NA NA			Duration: NA		TWC: NA			
Coupl		.NA			NA			Gals, Purged:	NΔ	TPC: NA			
Cogpi			soil	Γ				Siug Test: NA	North: NA				
	WELL	CONSTRUCTION	rock	SAN	1PLE	DAT	'A	(cm/sec)		East: NA			
eet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical Comments:	Log: 🗌 yes	⊠ no		-	
Oepth (feet)		Run No.	Hydraul. Cond.	Rec. (ft.)	RGD		. 1	VISUAL SIFICATION		REMARKS			
0-			1	cm/sec 4-6-7-9					Clayey Silt to Silt	`			
_			<u> </u>					-					
<u> </u>			2	6-19-20-20				- Ked Brown F	Clayey Silt to Silt				
5-			3	4-7-9-11									
-		Backfilled w/	4	13-13-15-16					F Silty Clay to damp, varved, mottle	ed			
10-		Cement Grout	5	4-6-7-9						Во	ring bac	kfilled w/	
-			6	2-4-4-6							out.		
_			7	5-5-3-4				Oark gray C	LAY, platic, moist				
15-			8	2-3-4-4				End of Borin	na 18 18'			٠	
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Annual Control of

Brow	vn an	d Caldwell						urface ng Log	Well Name/Location:   3-2			
		Delineation			<u>l</u>			roject No.:	Start Date	e: 7/14	1/99	Page 1 of 1
Client: D	lyno-Nol	· · · · · · · · · · · · · · · · · · ·					6	0192.001	Finish Dat			
		DRILLING DA	ATA						SAMPLIN			I
Inspecto		- ,						ļ	Sampler		ube	Core
		m Technologies r Auger Rig						Type:	Split-Spoon 2"	l	NA NA	NA NA
Equipment Method:		-						Diameter: Other:	2" NA		NA NA	NA NA
Methou.	Direct	WELL CONSTRU	CTIC	N.				<del>                                     </del>			NA	NA
		Riser			cree	en.		DEVEL	ELL OPMENT		DATU	Y DATA Im: Na
Material:		NA	7		NA			Method: NA			e: NA	
Diameter	(ID):	NA			NA			Duration: NA		TWC:	NA	
Coupling:		. NA			NA			Gals. Purged:	NA	TPC:	NA	
	WELL (	CONSTRUCTION	soil	SA	1PLE	DAT	Ά.	Slug Test: NA (cm/sec)		North East:		
(feet)	-		Samp. No.	<u> </u>	Rec.	uscs	HNU	Geophysical L	og: U yes	⊠ nc		
Depth (fe			Run	Hydraul.	Rec.	<del> </del>	(ppin)	Comments:	'ISUAL	water to the same of the same		
0	•		No.	Cond. cm/sec	(ft.)	RQD			SIFICATION	١	RE	EMARKS
			1	7-11-4-4			- Company	Debris fill, roo Sand & Silt	x, slag, ash, wire,			
			2	4-5-10-6								
5		BacKfilled w/ Cement	3	2-4-8-12				Orange MF Si	Ity Sand, mottled		Boring t	oackfilled w/
		Grout .	4	8-10-10-35				<u>-</u>			Grout.	
	IZ.	Split Spoon Refusal @ 8.1'		100/.3				Split Spoon R Boring @ 8.1'	efusal @ 8.1 End of	-	Refusal	Ø 8.ľ
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Bro	own ar	nd Caldwell		1				urface   Well Name/Location: ng Log   3-8					
<u></u>	·····					U)		roject No.:	Start Date	Page 1 of 1			
1 '	ct: vertica. : Dyno-No.	l Delineation bel						0192.001	Start Date: 7/14/99 Finish Date: 7/14/99				
CRCIII	· Dyno ivo.	DRILLING DA	TA					7.02.007	SAMPLIN	<del></del>			
Inspe	ctor: Marc					Sampler	Tut		Core				
Contractor: Maxim Technologies								Туре:	Split-Spoon	N,	A	NA NA	
1		er Auger Rig						Diameter:	. 2"	, N	4	N.A	
Metho	d: Direct F	Push					Other:	NA	N,	A	. NA		
		WELL CONSTRU	CTIO					<u> </u>	ELL			Y DATA	
	• .	Riser		S	cree	ะก		<b></b>	OPMENT	ļ		M: NA	
Mater		NA .			NA			Method: NA		Grade:			
1	ter (ID):	NA			NA			Duration: NA		TWC: A			
Coupl	ing:	NA		T	NA			Gals, Purged:		TPC: N	,		
	WELL	CONSTRUCTION	soil SAMPL			DAT	A	Slug Test: NA North: /					
		· · · · · · · · · · · · · · · · · · ·	rock	<u> </u>					East: NA				
Oepth (feet)		•	Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical ( Comments:	Log: U yes	⊠ no			
1		·	Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		•	VISUAL SIFICATION	١	REMARKS		
. 0-			1	7-5-4-3				- Debris fill, ro Sand & Silt	ock, wood, ash, wire,				
			2	1-2-2-1				-					
5-		BacKfilled w/ Cement Grout	3	1-1-1-1	1-1-1-1			– Pink Ash, Cla	ay, wires, Sand & Sil	t	Boring backfilled w/ Grout.		
-		GOOT	4	7-9-13-12			-	- F Orange SA	AND				
 10-		Gall Carre	5	9-14-14-22	-14-14-22			SAND	oly Conginerate, MF	1			
-		Split Spoon Refusal @ 10.7		45-100/.2				Boring @ 10.	Refusal © 10.7 End o 7		Refusal @ 10.7*		
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Rra	nwn ar	nd Caldwell	····					urface	Well Name/I   4-5	Location:			
						B		ng Log	Start Date	- 7 UA /AA	Page I of 0		
· ·		l Delineation			roject No.:	,							
Client	: Dyno-No	DRILLING DA	A T A				0	0192.001	92.001 Finish Date: 7/12/99 SAMPLING METHODS				
Inspe	ctor: Marc		114			Sampler	Tube	Core					
		im Technologies			Type:	Split-Spoon	NA	NA					
		er Auger Rig			Diameter:	2"	NA	NA					
	d: Direct P				Other:	NA	NA .	NA					
		WELL CONSTRU	CTIC					y	YELL	SURVE	Y DATA		
l		Riser		S	cree	en			LOPMENT	<u> </u>	JM: NA		
Mater		NA			NA			Method: NA		Grade: NA			
Coupli	ter (ID):	NA NA			NA NA			Duration: NA Gals, Purged:	۸/۸	TPC: NA	TWC: NA		
Coupi	uy.	IVA:	soil			······································		Slug Test: N		North: NA			
	WELL	CONSTRUCTION	rock	SAN	4PLE	DAT	A	(cm/sec)		East: NA			
(feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical Comments:	Log: 🗌 yes	⊠ no			
C Depth (feet)			Run No.	Hydraul, Cond. cm/sec	Rec. (ft.)	RQD			VISUAL SIFICATION	N R	REMARKS		
		1		  16-19-14-13				Orange to b	· rown MF Silty Sand				
-	. (							-					
~			2.2	4-40-30-4	þ			<b>.</b>					
_		1											
5-		BacKfilled w/ Cement	3 ,	5-60-60-4	D					Boring Grout.	backfilled w/		
-		Grout	4	20-10-100/.	•			-	0.4				
-		Split Spoon Refusal @						Split Spoon: Boring @ 7.6	Refusal @ 7,6 End of	Refusa	€ 7.6*		
		7.6'						-					
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Bro	O'W	n ar	nd Caldwe	ell					urface ng Log	Well Name/Location: 4-8			
			Delineation	***************************************					roject No.:	Start Date: 7/13/99			Page 1 of 0
ŀ		no-Nol							0192.001	192.001 Finish Date: 7.			
			DRILLING	DATA						SAMPLIN	G MET	HODS	
			Conger							Sampler	Т	ube	Core
			im Technologies	•					Type:	Split-Spoon	1	NA	NA
1			r Auger Rig						Diameter:	2"	1	NA	NA
Metho	)d: <i>L</i>	Direct P	<del></del>						Other:	NA	<u> </u>	NA	NA
	<del></del>	I	WELL CONST Riser	KOCII		Scree	~ ~		DEVEL	WELL DEVELOPMENT			EY DATA Im: NA
Mater	rial-	}	NA KISER			NA NA	311		Method: NA	AUI PERTE	Grad		Hill sales
Diame		(IU)-	NA NA			NA NA			Duration: NA		TWC:		
Coupl		(10).	NA NA		<u>.</u>	NA			Gals. Purged:	NA	TPC:		
000,	119.			soil	i T	~~~			Slug Test: N/		North		
		WELL (	CONSTRUCTION	rock	SAN	MPLE	DAT	Ά	(cm/sec)		East: NA		
(feet)			Name of the second seco	Sam No.	p. Blows/	Rec. (ft.)	uscs	HNU (ppm)	Geophysical I Comments:	Log: ☐ yes	⊠ no		-
Depth				Run No.		Rec. (ft.)	RQD			VISUAL SIFICATIO	N	RE	EMARKS
0-	-				1-5-2-1				- LT Brown F	SILT, roots, top soi	ı		
-				2	3-5-10-20				LT Brown F (	Clayey Silt to Silt			!
5-			Torrigory The Control of the Control	3	8-12-15-16				_				
			——— BacKfi#eo		36-34-36-2	7			- Red Brown M Clayey Silt, o	F Silty Clay to Jamp, varved, mottl	ed	Variable (district)	
			Cement Grout	5	5-6-9-10								
10-				6	3-6-6-7							Boring b Grout.	eckfilled w/
				7	10-10-9-8				-				:
				-									
15-				. 8	5-6-6-5				<ul> <li>Dark gray CL</li> <li>End of Boring</li> </ul>	.AY, platic, moist			
-		•							EIM OF DOING	A 6' to			
				re-ternam-vert-kreater									
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Bro	own a	an	d Cald	well.		· · · · · · · · · · · · · · · · · · ·				urface ng Log	Well Name/   9-7	Locatio	on:	
Projec	nt Vart	ic al	Delineation					، رب		oject No.:	Start Date	· 7/12	/00	Page 1 c
	: Dyno-									0192.001	Finish Dat			
CHCIIC	· Oyno	1400		ING DA	TΔ			····		0102.001	SAMPLIN	***************************************		
Inspe	ctor: Mā	arc (		******							Sampler		ibe	Core
•			n Technolog	ies						Туре:	Split-Spoon		VA	NA
			Auger Rig	-						Diameter:	2"		VA	NA
	d: Direc		-							Other:	NA		V.A	NA
			WELL CO	NSTRU	CTIO	N					ELL	Τ		Y DATA
····		T	Rise		T		cree	en .		DEVE	OPMENT		DATU	M: NA
Mater	ial:		NA		$\top$		NA			Method: NA		Grade	: NA	
Diame	ter (ID)	):	NA		-		NA			Duration: NA		TWC:	NA	
Coupli	ng:		NA		1		NA			Gals. Purged:	ÑΑ	TPC: /	VA	
	1.6		AMOTOMOT	<b>CM</b>	soil	041	4D1 C	P. 1. T	٠.	Slug Test: NA	i	North	: NA	
	WE	LLC	ONSTRUCTI	ON	rock	SAF	17LE	DAT	Α .	(cm/sec)		East:	NA	
(feet)					Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical I Comments:	Log: ☐ yes	⊠ no		
O Depth					Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			VISUAL SIFICATION	7	RE	EMARKS
1					1	11-8-8-8				- Top Soil, mf loose, dry	brown Silty Clay,			
-					2	12-12-15-17				- Gravel, MFS dry	and to F Silty Clay,			
5-					3	6-7-10-13				Red, F Silty to Silty Clay	Sand and Sandy Sil	ι,		
				(filled w/	4	20-15-19-15				- CMF Silty Cla	By and Gravel ·			
10-			Cen Grou		5	2-4-7-11				- CMF SAND to moist	o brown Silty Clay,		Boring t	packfilled w/
-					6	2-2-3-3				-			Grout.	
					7	3-7-4-5				_ Gravel	CLAY w/ Sand &			
15-					8	2-2-2-2		,		Gray Clay, w Sand (+) Gray End of Borin				
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Bro	own ar	nd Caldwell						ng Log	6-2			Page 1	n# #
Proje	ct: <i>Vertica</i>	I Delineation	····				******	roject No.:	Start Date	e: 7/14	/99	Page 1	01 1
ł	: Dyno-No							0192.001	Finish Dat				
		DRILLING DA	ATA						SAMPLIN	G METI	HODS		
Inspe	ctor: <i>Marc</i>	Conger							Sampler	Τι	ibe	Core	
i .		im Technologies						Type:	Split-Spoon	<i>\</i>	<b>√</b> A	NA	
		er Auger Rig						Diameter:	2"		VA	NA	
Metho	od; <i>Direct I</i>							Other:	NA .	T	√A	NA	
		WELL CONSTRU	CTIC		, , , , ,			nevel	VELL LOPMENT		SURVE	Y DATA M: NA	
Mater	ial·	Riser <i>NA</i>		- 3	cree <i>NA</i>	<b>∌∏</b>		Method: NA	LOFFERT	Grade		M. NA	
	ter (ID):	NA NA			NA			Duration: NA		TWC:			
Coupl		NA.			NA			Gals, Purged:	NA	TPC: /			
ооср.			soil	1	·········			Slug Test: NA		North:			
	WELL	CONSTRUCTION	rock	SAN	4PLE	DAT	`A	(cm/sec)		East:			
		**************************************	Samp.	Blows/	Rec.	T	LINIT	Geophysical		⊠ no		·····	<del></del>
Depth (feet)			No.	6 in.	(ft.)	USCS	(ppm)	Comments:	Log: Li yes	IC∃ NO			
			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		١	VISUAL SIFICATION	١	RE	MARKS	
0-			1	4-20-100/.4			<del>                                     </del>					-	
-		Refusal @ 1.6*	<u> </u>	20 1001.							Refusal	e 1.6 '	
		2.2						-					
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Bro	own ar	nd Caldwell		-	1			urface ng Log	Well Name/	Location:		Page 1 o	f 1
Proje	ct: <i>Vertic</i> a	l Delineation					Pi	roject No.:	Start Date			-	
Client	: Dyno-No						6	0192.001	Finish Dat				_
	····	DRILLING DA	ATA						SAMPLIN				
1	ctor: Marc								Sampler	Tube		Core	
		im Technologies						Type:	Split-Spoon	NA		NA	
		er Auger Rig						Diameter:	2"	NA		NA	
Metho	d: Direct F							Other:	NA	NA		NA	
		WELL CONSTRU	CIIO		cree			DEVEL	IELL .OPMENT	S	URVE	Y DATA M: NA	
Mater	ial•	Riser NA			NA	284		Method: NA		Grade: N			
1	ter (ID):	NA NA			NA			Duration: NA	·	TWC: NA	~		
Coupl		NA NA			NA			Gals. Purged:	NA.	TPC: NA		•	
оодр.		I	soil					Slug Test: NA		North: M	4		
	WELL	CONSTRUCTION	rock	SAN	<b>IPLE</b>	DAT	Α	(cm/sec)		East: NA			
et)			Samp.		Rec.	USCS	HNU	Geophysical I	og: Dyes	⊠ no			
Dépth (feet)			No.	6 in.	(ft.)		(ppin)	Comments:	, , , , , , , , , , , , , , , , , , , ,				
O Dept			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			VISUAL SIFICATION	~	RE	MARKS	
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						SI	ihe	urface	Well Name/	Location:	
Bro	own ar	nd Caldwell						ng Log	6-10	<b>**</b> • • • • • • • • • • • • • • • • • •	Donn End A
Proje	ct: Vertica	l Delineation						roject No.:	Start Date	o 7/14/00	Page 1 of 0
i	: Dyno-No.							0192.001	1	e: 7/14/99	•
		DRILLING D	ATA							G METHODS	
Inspe	ctor: <i>Marc</i>	Conger	***						Sampler	Tube	Core
Contr	actor: <i>Max</i>	im Technologies						Туре:	Split~Spoon	NA	NA
Equip	ment: Acke	er Auger Rig						Diameter:	2"	NÄ	NA.
Metho	od: Direct F	ush						Other:	NA	NA	NA NA
<u> </u>	•	WELL CONSTRU	JCTIC						/ELL		Y DATA
		Riser		S	cree	en		1	OPMENT	-	JM: NA
Mater		NA	1		NA			Method: NA		Grade: NA	
	ter (ID):	NA			NA			Duration: NA		TWC: NA	•
Coupl	ing: I	NA NA		<u> </u>	NA			Gals. Purged:		TPC: NA	
	WELL	CONSTRUCTION	soil rock	SAN	4PLE	DAT	Ά	Slug Test: NA (cm/sec)		North: NA -	
					Γ,	Ī				.1	
Depth (feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical I Comments:	Log: LI yes	⊠ no	
1			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD	l	١	VISUAL SIFICATION	RE	EMARKS -
0-			1	3-3-5-4				- Ash, Rock De	ebris, Caps, wire,	-	
				-4-20-100/	1			Sulfer odor Ash, Bedrock			
-	<u> </u>	Refusal @							•		
5-	•	4.0'	-							Refusal	@ 4.O °
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					•	Su	ibs	urface	Well Name/	ocatio	on:	
Bro	own ar	nd Caldwell		•				ng Log	6-19			Page 1 of 1
Proje	ct: <i>Vertica</i>	l Delineation					P	roject No.:	Start Date	: 7/15,	/99	
Client	: Dyno-No	bel					6	0192.001	Finish Date	e: <i>7/15</i>	/99	
		DRILLING DA	ATA						SAMPLIN	S METH	HODS	
Inspe	ctor: <i>Marc</i>	Conger		•					Sampler	Tu	be	Core
Contr	actor: <i>Max</i>	im Technologies						Туре:	Split-Spoon	٨	LA	NA
1 .		er Auger Rig						Diameter:	2"		IA	NA
Metho	d: Direct I							Other:	NA	^	IA .	NA
		WELL CONSTRU	CTIC					never	YELL LOPMENT			Y DATA Im: Na
		Riser			cree	en -		ļ	LOFFIERE	0		IN INA
Mater		NA			NA			Method: NA	÷	Grade		
i	ter (ID):	NA			NA			Duration: NA		TWC: /		
Coupl	ing:	NA NA		T .	NA			Gals. Purged: Slug Test: M		North:		
	WELL	CONSTRUCTION	soil rock	SA	<b>IPLE</b>	DAT	'A	(cm/sec)	-1	East:		
	-		TOUR	<u> </u>	I	1	1		· · · · · · · · · · · · · · · · · · ·	· F · · · · ·		
Depth (feet)			Samp No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical Comments:	Log: LJ yes	⊠ no		
1			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD	der de la constante de la cons	1	VISUAL SIFICATION	1	RE	EMARKS
0-			1	4-18-5-6				- brown Silty	Sand w/slag materia	ı	······································	
-		BacKfilled w/	2	4-8-7-11				-			Boring I	oackfilled w/
		Cement Grout	-			1		-			Grout.	
5-	1.2	Split Spoon Refusal @ 5'	3	20-100/.4			-	Split Spoon Boring @ 5'	Refusal @ 5' End of		Refusal	<b>8</b> 5'
J								-				
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Bro	own ar	nd Caldwell						urface	Well Name/I 6-25	Location:	
		·, ·, · · · · · · · · · · · · · · · · ·				D		ng Log	Chart Date	. 7/14/00	Page 1 of 1
i i		l Delineation						roject No.: 0192.001	Start Date	e: 7/14/99 e: 7/14/99	
Chem	: Дупо-No	DRILLING D	ATA				0	0192.001		G METHODS	
Inspe	ctor: Marc		MIN						Sampler	Tube	Core
1		im Technologies						Туре:	Split-Spoon	NA.	NA
i		er Auger Rig						Diameter:	2"	NA	NA
•	d: Direct F							Other:	NA	NA	NA.
		WELL CONSTRU	CTIO	N .					IELL	SURVE	Y DATA
		Riser	T	S	cree	en	·····	DEVEL	OPMENT	DATE	JM: NA
Mater	ial:	NA NA			NA			Method: NA		Grade: NA	
Diame	ter (ID):	NA	. ]		NA			Duration: NA		TWC: NA	
Coupli	ing:	NA NA			NA			Gals. Purged:	NA	TPC: NA	
	MELL	CONSTRUCTION	soil	SAN	∦DI F	DAT	Δ	Slug Test: NA	1	North: NA	
	771	CONSTROCTION	rock	JA!	'il L-L	<i></i>		(cm/sec)		East: NA	
feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical I Comments:	Log: U yes	⊠ no	
Oepth (feet)			Run	Hydraul. Cond.	Rec.	<del>                                     </del>		,	VISUAL	RI	EMARKS
0-	1/	<u> </u>	No.	cm/sec	(ft.)	l light		CLASS	SIFICATION	<u> </u>	
		Refusal @		12-13-9-9				<del>-</del> 			
-		2.3'		20-100/.4				-		Refusa	l @ 2.3 °
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1	Bro	own ar	id Caldwel						ng Log	6-30			Page 1 of 1
	Projec	rt Vertica	i Delineation	- 1-					oject No.:	Start Date	: 7/15/	'99	rage (VIII
	ı	: Dyna-Nai							0192.001	Finish Date			
۱,	0.70		DRILLING	DATA						SAMPLING			
1 "	Inspe	ctor: <i>Marc</i>								Sampler	Tut		Core
.,			im Technologies		•				Туре:	Split-Spoon	N/	4	NA
	Equip	ment: Acke	er Auger Rig						Diameter:	2" ·	N	4	NA
	Metho	<mark>d:</mark> Direct F	Push						Other:	NA NA	, N	4	NA
			WELL CONSTI	RUCTIO					h	ELL		SURVE	Y DATA
; ,			Riser		S	cree	n			OPMENT			M: NA
	Mater		NA			NA			Method: NA		Grade:		
	1	ter (ID):	NA			NA			Duration: NA		TWC: N		
	Coupli	ng:	NA		<u></u>	NA			Gals, Purged:		TPC: N North:		
		WELL	CONSTRUCTION	soil rock	SAN	<b>IPLE</b>	DAT	A	Slug Test: NA (cm/sec)		East: /		-
÷.				TOCK						ft	1	VAI	
	et)	•		Samp. No.	Blows/ 6 in.	Rec.	USCS	HNU (nnm)	Geophysical I Comments:	_og: ∐ yes	⊠ no		
	(fe			NO.	0 114	10.07		(ppin)	Comments:				
į ·	Depth (feet)			Run	Hydraul. Cond.	Rec. (ft.)	RQD			/ISUAL		BE	MARKS
	1			No.	cm/sec	(ft.)	1100		CLASS	SIFICATION	1	1 1 1	PARICO
	0-	$\mathbb{Z}$	Refusal @	c						-			
, .			nervadre	'					_			Refusal	តរ
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Transcriptory and

Bro	own ar	nd Caldwell		. •				urface ng Log	Well Name/I 6-32	Locatio	n: ·	
Proje	ot: Vartios	al Delineation				٠٠.		roject No.:	Start Date	· 7/16/	/00	Page 1 of 1
1	: Dyno-No							0192.001	Finish Date			,
Oncire	· Dyna No	DRILLING DA	ΔΤΔ	· · · · · · · · · · · · · · · · · · ·				0.02.001	SAMPLING			
Inspe	ctor: Marc		316						Sampler	Tul		Core
		im Technologies						Type:	Split-Spoon	N		NA
1		er Auger Rig			•			Diameter:	2"	Ν		NA
	d: Direct i							Other:	NA	N	Α .	NA ·
		WELL CONSTRU	CTIC	N				·	/ELL		SURVE	Y DATA
		Riser		S	cree	en		DEVEL	OPMENT		DATU	M: NA
Mater	ial:	NA NA			NA			Method: NA		Grade:	: NA	-
Diame	ter (ID):	NA NA			NA			Duration: NA	*	TWC: A	IA	
Coupl	ing:	NA			NA	-		Gals. Purged:	NA	TPC: N	IA	
	WELL	CONSTRUCTION	soil rock	SAN	1PLE	DAT	Α	Slug Test: NA (cm/sec)		North: East: /		
(feet)			Sampi No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical t Comments:	Log: Yes	⊠ no		
) Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		,	VISUAL SIFICATION	1	RE	MARKS
0-			1	4-9-11-13				Brown/Orang	je MF SAND (+) Silt		dud 111	
		BacKfilled w/	2	0-10-34-39							Boring b	ackfilled w/
5-		Grout	3	16-18-16-19						and the second s	Grout.	
-			4 :	3-32-46-5	3			- Brown w/ Bla	ack Ash/Peat, F SIL	т		
				5-88-100/ <i>.</i>	2			(+) Sand				
10-	<u> </u>	Split Spoon Refusal @ 9,6*						Boring @ 9.6'	Refusal @ 9.6' End o	t	Refusal	<b>@ 9.6</b>
								_				
15 <i>-</i> -												
								-				
		•	-						•			
20-								_				
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25-								-		Mary Company of the C	,	
								-		Selection of the sele	•	•
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Bro	wn ar	nd Caldwell		-				urface ng Log	Well Name/L   6-36	.ocatio	n:	0
						٠,٠		oject No.:	Start Date	- 7/10	100	Page f of f
	et: vertica: : Dyno-Noi	l Delineation bel						0192.001	Finish Date			
CHETT	. Dyrio-ivoi	DRILLING DA	ΔT					5,02.001	SAMPLING			
Inspe	ctor: <i>Marc</i>		.,,,,						Sampler	Tu		Core
		im Technologies						Type:	Split-Spoon		/A	NA
1		er Auger Rig						Diameter:	2"	٨		NA
	d: <i>Direct F</i>							Other:	NA		/A	NA
		WELL CONSTRU	CTIC	N					KELL		SURVE	Y DATA
		Riser			cree	n		DEVE	LOPMENT		DATU	M: NA
Materi	ial:	NA		-	NA			Method: NA	-	Grade	: NA	
Diame	ter (ID):	NA			NA			Duration: NA		TWC: /	V.A	
Coupli	ng:	, NA			NA			Gals. Purged:	NA	TPC: A	√A	
	WELL	CONSTRUCTION	soil	CAL	101 E	DAT	A	Slug Test: M	4	North:	NA	
	MELL	COMPTROCTION	rock	SAF	"IF L.E.	DA:	A 	(cm/sec)		East:	NA	
(feet)		-	Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical Comments:	Log: 🗌 yes	⊠ no	•	
o Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQQ		1	VISUAL SIFICATION	1	RE	MARKS
0 <del>-</del>			1	4-6-16-16				- Dark Brown	SILT (+) Sand, roots	,		
-		BacKfilled w/ Cement Grout	2	6-18-28-28				- Brown MF Si	andy Silt, damp		Boring t Grout	oackfilled w/
5-		Glout	3	10-12-18-28								
	2ے	Split Spoon Refusal @ T		24-100/.4				- Split Spoon Boring @ 7'	Refusal @ 7' End of		Refusal	@ 7.0'
10-											-	
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The second secon

					$\neg \neg$	Sι	ıbs	urface	Well Name/	ocatio	n:	
Br	own ar	nd Caldwell						ng Log	10-04			Page 1 of Q
Proje	ct: Vertica	l Delineation		· · · · · · · · · · · · · · · · · · ·	<u> </u>			roject No.:	Start Date	: 7/9/	99	. 495 , 67 0
Client	:: Dyno-No	bel .					6	0192.001	Finish Dat	e: 7/9/	/99	
		DRILLING D	ATA						SAMPLIN	G METH	10DS	•
Inspe	ector: <i>Marc</i>	Conger	-						Sampler	Tu	be	Core
Contr	actor: Max	im Technologies ·						Туре:	Split-Spoon	٨	/A	NA
1		er Auger Rig						Diameter:	2"	٨	/A	NA
Metho	od: Direct I	<del></del>						Other:	NA	۸	/A	. NA
<u> </u>		WELL CONSTRU	CTIC			······································		neve	IELL .OPMENT		SURVE	Y DATA
<b>.</b>		Riser			cre	en			Ormeix I			M: NA
Mate		NA NA			NA			Method: NA		Grade		
•	eter (ID);	NA NA	l		NA			Duration: NA		TWC: /		
Coupl	ing:	NA NA	T	1	NA	<del></del>		Gals. Purged:		TPC: A		•
	WELL	CONSTRUCTION	soil rock	SAN	<b>IPLE</b>	DAT	Ά	Slug Test: NA (cm/sec)		North: East:		
			TOCK			Γ.	<u> </u>				IVA	
Depth (feet)			Samp. No.	. Blows/ 6 in.	Rec. (ft.)	USCS	(ppm)	Geophysical ( Comments:	og: Ll yes	⊠ no		
1			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			VISUAL SIFICATION	1	RE	MARKS
0-			1	5-6-11-14				– Top Soil, gra SILT, dry	iss, roots, loose F			
-			2	14-19-15-17					own Silty Clay to varyed			
5-			3	5-7-10-11		-	and the second s		Gray CLSY and Silt,			
_			4	6-12-16-16			ARP-7-401-18-4-18-4	- (3") MF FLo Sand, satura	wing Sand, MF Silty ted			
10-		BacKfilled w/ Cement Grout	5	4-4-6-6			, title		Silty Clay, varved	***************************************		
10-			6	4-4-2-5				- Red Brown C damp	LAY, varved, mottle	đ,	Boring to Grout.	oackfilled w/
_			7	4-5-5-4				**				
15-			8	5-4-4-4				<ul><li>Dark gray CL</li><li>End of Boring</li></ul>	AY, platic, moist			
									g e io			•
20-								-				
25-				-							-	
								-		-		
30						1		•				• .

t Contraction

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Bro	own ar	nd Caldwell						urface ng Log	10-06	_ocatio	n: ^	
		l Delineation				١٠١		oject No.:	Start Date	7/8/	2.9	Page 1 of 0
	: Dyno-No							0192.001	Finish Date			·
	<u></u> ,,,,	DRILLING DA	ATA			···			SAMPLING			A-10-10-10-10-10-10-10-10-10-10-10-10-10-
Inspe	ctor: Marc	······	,						Sampler	Tut		Core
,		im Technologies					÷	Туре:	Split-Spoon	N,	4	NA
Equip	ment: Acke	er Auger Rig						Diameter:	2"	M	4	NA
Metho	od: <i>Direct F</i>	Push						Other:	NA	N	4	NA
		WELL CONSTRU	CTIO	N				in	ELL		SURVEY	
,	-	Riser		S	cree	n		DEVEL	OPMENT		DATUN	1: NA
Mater	ial:	. NA			NA			Method: NA		Grade:		
i i	eter (ID):	NA			NA			Duration: NA	_	TWC: A		
Coupl	ing:	NA NA	$\perp$	·	NA			Gals. Purged:		TPC: N		
	WELL	CONSTRUCTION	soil rock	SAN	(PLE	DAT	Α .	Slug Test: NA (cm/sec)		North: East: /		ļ
Depth (feet)	•		Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical t Comments:	Log: yes	⊠ no		
-O Depth			Run No.	Hydraul. Cond, cm/sec	Rec. (ft.)	RQD		١	VISUAL SIFICATION	1	RE	MARKS
-			1	1-6-8-9				- Top Soil, gra SILT, dry	ss, roots, loose F			
_			2	9-10-11-12					own Silty Clay to			. •
5-			3	4-6-8-10			,	ŗ	Gray CLSY and Silt,			
-			4	8-12-12-12					and Silly Sand ,	-		
		Backfilled w/ Cement Grout	5	4-6-7-8				- Red Brown F				
10-			6	2-3-4-4				Red Brown C damp	LAY, varved, mottle	d,	Boring ba Grout,	ackfilled w/
_		<b>1</b>	7	4-4-4-4				- cramh				
15-			8	3-3-4-4				i .	_AY, platic, moist			
20-		<del>.</del>			4			End of Borin	Å α ιο		·	
-		· ;	-								•	•
30	en en en en en en en en en en en en en e	-		,							• •	

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		-1 O-1-1-1-1			1	Su	bs	urface	Well Name/L	ocation:	,
IBLO	own ar	nd Caldwell		•		В	orir	ng Logi	10-19		Page 1 of 0
Projec	t: <i>Vertica</i>	l Delineation		-			Pr	oject No.:	Start Date	: 7/8/99	•
Client	: Dyno-No	bel					6	0192.001	Finish Date	e: 7/8/99	
		DRILLING DA	ATA						SAMPLING	METHOD	S
Inspe	ctor: <i>Marc</i>	Conger							Sampler	Tube	Core
Contra	actor: <i>Max</i> .	im Technologies						Type:	Split-Spoon	NA	NA
		r Auger Rig						Diameter:	2"	NA	NA
Metho	<b>d:</b> Direct F							Other:	NA	NA NA	NA NA
ļ	<del></del>	WELL CONSTRU	CTIO					never W	IELL OPMENT		RVEY DATA ATUM: NA
<b>.</b>		Riser		S	cree	n			OFFILIA	ļ	
Mater	Ì	NA NA			NA			Method: NA		Grade: NA TMC: NA	
1	ter (ID):	NA MA			NA NA			Duration: <i>NA</i> Gals. Purged:	A/A	TPC; NA	
Coupli	ng.	NA	soil		IVA			Slug Test: NA		North: NA	
	WELL	CONSTRUCTION	rock	SAM	1PLE	DAT	Ά	(cm/sec)		East: NA	
Ŧ	· · · · · · · · · · · · · · · · · · ·		Samp.		Rec.	USCS	HNU	Geophysical I	Log: U yes	⊠ no .	
Depth (feet)			No.	6 in.	(ft.)	0000	(ppm)	Comments.			
Depti		•	Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			VISUAL SIFICATION	J	REMARKS
0-				5-6-11-14					ess, roots, loose F		
_			<u> </u>					SILT, dry			
-			2	0-19-20-20				- If Gray to Br Clayey Silt	rown Silty Clay to		
5-			3	7-7-9-11				FBrown to 0 moist	Gray CLSY and Silt,		
		Dank 6 Nord CV	4	8-12-12-18				- F Silty Clay varved, mois	and Silty Sand , t		
		Backfilled w/ Cement Grout	5	5-7-10-9				- Red Brown F	Silty Clay		
10-			6	3-4-4-5		Walter 19 10 10 10 10 10 10 10 10 10 10 10 10 10		- Red Brown C damp	CLAY, varved, mottle		ring backfilled w/ out.
-			7	5-7-6-5				- Odiap			
15-			8	4-4-4-4				Dark gray C	LAY, platic, slight fu	el	
'		4	ļ					odor, moist			
	·							End of Borin	ig 6 16.		,.,
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20-		-						_			•
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n	- 4 4 4 4			-		Su	ıb.s	urface	Well Name/	_ocatio	n:	
Bro	own ar	nd Caldwell		·				ng Log	11-03			Page 1 of C
Proje	ct: Vertica	l Delineation	<del></del>		<u>l.</u>			roject No.:	Start Date	: 7/12/	99	
Í	: Dyno-No							0192.001	Finish Date	e: <i>7/12/</i>	/99	
<u> </u>		DRILLING D.	ATA						SAMPLING	3 METH	ODS	
Inspe	ctor: Marc	Conger					·······		Sampler	Tut	эе	Core
Contr	actor: <i>Max</i>	im Technologies						Туре:	Split-Spaan	N.	4	NA
Equip	ment: Acke	er Auger Rig						Diameter:	2"	· N	4	NA
Metho	d: Direct I	Push						Other:	NA	N	4	NA
		WELL CONSTRU	ICTIC	N				<b>W</b>	IELL		SURVE	Y DATA
		Riser		Ė	cree	en		DEVEL	OPMENT		DATU	M: NA
Mater	ial:	NA			NA			Method: NA		Grade:	NA	
Diame	ter (ID):	NA			NA			Duration: NA		TWC: A	IA	
Coupli	ing:	NA NA			NA			Gals. Purged:	NA	TPC: N	'A	
	WELL	CONSTRUCTION	soil	SAN	YOI E	DAT	۸.	Slug Test: NA	1	North:	NA	
	NCLL	CONSTRUCTION	rock	JAN	'AT L.L.	DAI	<i>Α</i>	(cm/sec)		East: /	VA	
(feet)	,		Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical I Comments:	Log: U yes	⊠ no		
Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			VISUAL SIFICATION	1	RE	MARKS
0-			1	4-35-55-11				- Orange to be and F Grave	rown CMF Sand, Silt,			
_			2	5-14-30-2		en en en en en en en en en en en en en e			-	,		e e
5-		BacKfilled w/	3	20-12-19-18		-		F Brown to 0	Gray CLAY and Silt		Boring b	oackfilled w/ Refusal © 8°
-		Grout	4	3-19-27-32				Call Care			Olout.	iciusai e o
10-		Split Spoon Refusal @ 8'		100/.2				Boring @ 8*	Refusal @ 8° End of			
-												
4.7"												
15-		•	,			-						
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20-							and an annual section of the section	-				
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Section 19

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Bro	wn a	and	Cal	dwell		-				urface ng Log	Well Name/1	Locati	on:	
	······································		elineatio					٠٠٠		roject No.:	Start Date	: 6/29	7/99	Page 1 of 0
	Дупо−.									0192.001	Finish Dat			
	••••		DRI	ILLING DA	ATA						SAMPLIN	G METI	HODS	
•	ctor: <i>Ma</i>		_					,			Sampler	Τι	be ·	Core
			Technol	-						Туре:	Split-Spoon		VA.	NA
			luger Ri	ig						Diameter:	2"		√A	NA
Method	d: <i>Direc</i>	t Pusi				······································				Other:	NA NA	·1	√A	NA
····		1		CONSTRU	CTIC			· -		DEVE	ELL OPMENT			Y DATA IM: NA
Materia	~1·	-		liser NA		-	Cree NA	<u></u>		Method: NA	OF PILIT I	Grade	·	MI NA
	aı: :er (ID)	.		NA NA			NA NA			Duration: NA		TWC:		
Couplir		•		NA NA			NA NA			Gals. Purged:	A/A	TPC: /		•
Conbin				· · · · · · · · · · · · · · · · · · ·	soil	<del>                                     </del>				Slug Test: NA		North:		
	WEL	L COI	NSTRUC	CTION	rock	SAN	<b>IPLE</b>	DAT	Ά.	(cm/sec)	•	East:		
<b>a</b>			<del></del>	<del></del>	Samp.		Rec.	uscs	HNU	Geophysical I	na: 🗌 yes	⊠ no		
(feet)					No.	6 in.	(ft.)	noro	(ppm)	Comments:			••••••	·····
Depth					Run	Hydraul. Cond.	Rec.	RQD			/ISUAL	-	RF	EMARKS
0+	<del></del>	<del>-7</del>			No.	cm/sec	(ft.)			CLASS	SIFICATION	4	4 12-	71,11.23 II 7P
					1	12-8-9-10			mercennes de la company de la	light brown C	layey Silt and top			
-					2	12-8-12-10				brown to gra	y Clayey Silt, varve	d		
5-					3	5-26-23-18				dark brown S moist	ILT to Clayey Silt,			
-				BacKfilled w/	4	18-17-19-20				Gray to Brow Clay, varved,	n Clayey Silt to Sill moist	.y.		
10-				Cement Grout	5	4-6-7-10		real designation of the second second second second second second second second second second second second se		_			Berina b	oackfilled w/
1					6	7-6-10-8				red to brown mottled, vervi	CLAY to Silty Clay, ed		Grout.	
, 1					7	4-5-7-7				- Brown to gra varved, moist	y plastic CLAY,			
15-					8	7-12-14-8				<ul> <li>Dark gray CL</li> <li>End of Boring</li> </ul>	AY, platic, wet g @ 16'			-
-										_				
20-										-				a.
										<b>h</b>				
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						Su	bs	urface	Well Name/	Locatio	n:	
Bro	own ar	nd Caldwell						ng Log	13-10	•		Page 1 of 0
Proje	ct: Vertica	I Delineation					Pi	roject No.:	Start Date	: 6/29/	/99	
Client	: Dyno-No	bel					6	0192.001	Finish Date	e: <i>6/29</i>	/99	
		DRILLING DA	ATA						SAMPLING	3 METH	ODS	
1 .	ctor: <i>Marc</i>	=							Sampler	Tub	oe .	Core
Contr	actor: <i>Max</i>	im Technologies						Type:	Split-Spoon	NA	4	NA
Equip	ment: Acke	er Auger Rig						Diameter:	2"	N/	4	NA '
Metho	o <mark>d:</mark> Direct I	<del></del>						Other:	NA	N/	4	NA
		WELL CONSTRU	CTIC					W	ELL Opment		SURVE	Y DATA
ļ		Riser		S	cree	en	-		UPMENI	<u> </u>		M: NA
Mater		NA			NA			Method: NA		Grade:		
1	ter (ID):	NA A/A			NA			Duration: NA		TWC: N		
Coupl	ing.	NA NA	l soil	1	NA			Gals. Purged: Slug Test: NA	NA	TPC: N.		
	WELL	CONSTRUCTION	soil rock	SAM	1PLE	DAT	A	(cm/sec)		East: A		
		<u> </u>	<u> </u>		1				• •	<u>'</u>	v/-1	
Depth (feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	(ppm)	Geophysical L Comments:	og: LJ yes	⊠ no		
1			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		V	'ISUAL SIFICATION	1	RE	MARKS
0-			1	5-8-8-8				light brown Cl soil, dry	ayey Silt and top		1	**************************************
_			2	25-28-18-12				brown to gray	y Clayey Silt			
5-			3	8-9-11-12				dark brown S	ILT to Clayey Silt,			
_		Designation of	4	11-18-14-12				red, brown to varved, moist	gray Silly Clay,			
10-		Backfilled w/ Cement Grout	5	4-4-8-10								
10-			6	9-20-18-14				- red to brown mottled, varve	CLAY to Silty Clay, ed	,	Boring b Grout.	ackfilled w/
			7	3-4-7-8				brown to gray varved, moist	y plastic CLAY,			
15-			8	7-6-7-8				End of Boring	ı @ 16'			
-											•	
- 20-		•						- :	•			
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25-	,								·		**.	
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Br	own ar	nd Caldwell						urface	Well Name/ 13-19	Location:	
L				·				ng Log		0/22/00	Page 1 of 0
	e <b>c</b> t: veruca t: Dyno-No	al Delineation						roject No.: :0192.001		e: 6/30/99 e: 6/30/99	٠
CHEIL	LIYIIU IVO	DRILLING DA	A T A				U	0192.001		G METHODS	
Inspi	ector: Marc	<del></del>	4114						Sampler	Tube	Core
		cim Technologies						Type:	Split-Spoon	NA NA	NA
1		er Auger Rig						Diameter:	2"·	NA NA	NA NA
1	od: <i>Direct F</i>							Other:	NA	NA NA	NA NA
		WELL CONSTRU	CTIC	N.	·			<del> </del>	(ELL	Ч	L
	***************************************	Riser			Scree	÷IJ		DEVE	OPMENT		Y DATA JM: NA
Mater	rial:	NA NA			NA		<del></del>	Method: NA	······································	Grade: NA	<u></u>
ı	eter (ID):	NA	İ		NA			Duration: NA		TWC: NA	,
Coupl		NA			NA			Gals. Purged:	NA	TPC: NA	
l	l	<u> </u>	soil	Τ			- 1	Slug Test: NA		North: NA	
	WELL	CONSTRUCTION	rock	SAM	4PLE	DAT	Ά	(cm/sec)		East: NA	
Depth (feet)			Sапр. No.	Blows/ 6 in.	Rec. (ft.)	USCS	(ppm)	Geophysical ( Comments:	Log: 🗌 yes	⊠ no	
O Depth			Run No.	Hydraul, Cond. cm/sec	Rec. (ft.)	RQD		١	VISUAL SIFICATION	N RE	EMARKS
			1	3-4-9-11		************		loose, mf SII	.T to Silty Clay, dry		
			2	8-10-14-13				- F Clayey Sill	to Siity Clay, damp		
5- -		1	3	5-8-15-14		M-recorning and a second		F Clayey Sill varved	t w/ Silty Clay,		
-		Backfilled w/	Į.	6-14-20-22				- Brown to Gra moist	y CLAY, varved,		
10 <i>-</i> -		Cement Grout	5	5-6-8-11				- F Gray to Br _ damp, varved	own Clay (-silt) J	Boring t	oackfilled w/
_			-	8-10-10-10				- Gray CLAY, n		Grout.	
			7	10-8-9-15				- Gray plastic	CLAY, varved, moist		•
15-		1	8	2-2-5-4				End of Boring	g @ 16'		
-					'			-			
-								-			
20-								-			
20-		•						<del></del>			
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25-	-								•		
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pr	) W I	ı di	d Caldwell				В	orir	ng Log	21-01			Page 1 of 0
Projec	ct: V	ertical	Delineation					P	roject No.:	Start Date	e: <i>7/1/9</i>	9 <i>9</i>	-
Client	: Dyi	no-Nol	pel					6	0192.001	Finish Dat	e: 7/1/	99	
			DRILLING D	ATA						SAMPLIN	G METH	HODS	•
Inspe	ctor	Marc	Conger						1	Sampler	Tu	be	Core
Contr	acto	r: Maxi	m Technologies						Туре:	Split-Spoon	٨	IA	NA
			r Auger Rig						Diameter:	2"	٨	IA	NA
Metho	d: <i>D</i>	irect P							Other:	· NA	Λ	/A	NA .
		······	WELL CONSTRU	CTIC		···········	<del></del>		DEVEL W	ELL OPMENT			Y DATA
			Riser		-	cree	en			OFMENT	ļ		IM: NA
Mater		(TD).	NA ***	1		NA			Method: NA		Grade		
Diame		(ID):	NA A/A	1		NA			Ouration: NA		TWC: A		estinger)
Coupli	ng.	1	NA NA	lion	1	NA			Gals. Purged: Slug Test: NA		TPC: A		
		WELL (	CONSTRUCTION	soil rock	SAI	4PLE	DAT	A	(cm/sec)		North: East:		
Depth (feet)				Samp No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical t Comments:	og: yes	⊠ no		
O Depth				Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD	,		/ISUAL SIFICATION	1	RE	EMARKS
Ų-				ŧ	4-10-7-5				- Light Brown,	MF Clayey Silt, dry			
_	-			2	2-3-4-6				- F Brown Sifty	r Clay, ReDox staini	ng		
5-				3	5-6-7-11				Red to brown gray CLAY la	Clayey Silt with th lyers, moist	in in		
			Backfilled w/	4	11-12-19-15					,			
10-			Cement Grout	5	4-6-10-12		-		Red to Brown mottled, vary	o, gray Silty Clay, ed			
,0				6	2-3-5-4				-			Grout.	packfilled w/
T				7	12-13-12-11				Red to gray varved, satur	CLAY, moist mottled ated	Ι,		
15-				.8	2-2-2-2				structure, sa			•	
-		Ç.							End of Boring	J 6 16.		٠	
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20-									-		-		
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Bro	own ar	nd Caldwell						urface ng Log	Well Name/L 21-10	_ocatio	n: ·	Boan ( +f )
f) 7	. ( . ) ( (	10-1				<u> </u>		oject No.:	Start Date	• 7/1/0	00	Page 1 of C
•		l Delineation						oject No.: 0192.001	Finish Date			
Cilent:	: Dyno-No.	DRILLING D	A T A				Üŧ	1192.001	SAMPLING			
Innan	otor: Mara		AIA			~			Sampler	Tul		Core
	ctor: <i>Marc</i>	im Technologies						Туре:	Split-Spoon	N.		NA.
		er Auger Rig						Diameter:	2"	N.		NA
	d: Direct F							Other:	NA	N.		NA.
101110	d, Direct i	WELL CONSTRU	CTIO	N					VELL	1		Y DATA
		Riser	1		cree	en		DEVE	LOPMENT			M: NA
Materi	ial:	NA			NA		<del></del>	Method: NA		Grade:	: NA	
	ter (ID):	· NA ·	ł		NA		٠	Duration: NA		TWC: A	<i>IA</i>	-
Coupli		NA	***************************************		NA			Gals, Purged:	NA .	TPC: A	IA	
1			soil					Slug Test: N		North:	NA	
I	WELL	CONSTRUCTION	rock	SAN	11LE	DAT	A	(cm/sec)		East:	NA	
(feet)	······································		Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical Comments:	Log: Uyes	По		
Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		,	VISUAL SIFICATION	V	RE	EMARKS
0 <del>- </del>			1	3-4-4-7				– Light Brown,	, MF Clayey Silt, dry			
			2	7-7-10-11				– F Brown Silt	y Clay, ReDox staini	ng		
5-			3	4-6-10-11				- Red to brow gray CLAY I	m Clayey Silt with th ayers, moist	in		
-		Backfilled w/	1	12-14-16-18				<u></u>	•	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
10-		Cement Grout	5	9-9-13-13				- Red to Brow mottled, var	ın, gray Silty Clay, ved		Boring I Grout.	backfilled w/
			6	3-8-12-12				- Red to gray	CLAY, moist mottled	1.	Drout.	
15-			8	1-2-1-3				varved, sate  — Dark Gray C	urated LAY, platic, no	•		
-	<u>K</u> :	⊿						structure, sa End of Boria		·		
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Bro	own ar	nd Caldwell					orir	urface ng Log	Well Name/L 21-16			Page 1 of 0
		l Delineation						oject No.:	Start Date			•
Client	: Dyno-No	· · · · · · · · · · · · · · · · · · ·					6	0192.001 I	Finish Date			
Ţ		DRILLING DA	HA						SAMPLING Sampler	o MEIN Tul	<del></del>	Coro
1	ctor: <i>Marc</i>							Type:	Split-Spoon	N.		Core NA
1		im Technologies er Auger Rig						Diameter:	2" .	. N	1	NA NA
	d: Direct I	<del>-</del>						Other:	NA NA	N.	ŀ	NA NA
210 (110	Q. Dr. Co. 1	WELL CONSTRU	CTIO	N			~		ELL '			Y DATA
		Riser	1		cree	ะก		DEVEL	OPMENT			M: NA
Mater	ial:	NA			NA			Method: NA	·	Grade:	: NA	
Diame	ter (ID):	NA			NA			Duration: NA		TWC: A		
Coupli	ng:	NA NA			NA			Gals. Purged:		TPC: N		
	WELL	CONSTRUCTION	soil	SAM	<b>IPLE</b>	DAT	Ά.	Slug Test: NA (cm/sec)		North: East: /		
			rock		I	1	ı				IVA	
Oepth (feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical I Comments:	_og:	⊠ no	<del> </del>	
1 1			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	1 :		١ ١	/ISUAL SIFICATION	4	RE	MARKS
0-			1	2-7-8-10				Light Brown,	MF Clayey Silt, dry			
_			2	5-10-15-12				F Brown Clay	ey Silt, loose		•	
5-			3	6-10-16-19				Red to brown	n Clayey Silt with th oyers, moist	iin		
		Backfilled w/	4	17-17-19-16				- - - -	. •			
10-		Cement Grout	5	3-6-8-9				Red to Brown	n, gray Silty Clay, ved	And the state of t	Boring h	packfilled w/
			6	2-3-5-4							Grout.	densited by
			7	3-4-4-4				Red to gray varved, satu	CLAY, moist mottled rated	<b>3</b> ,		
15-			8	1-1-1-1				Dark Gray Cl structure, sa End of Borin		-		÷ ,
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30			-					<u></u>	•			•
<u> </u>	1			4		<del></del> -	<del></del>					

						•	Su	bs	urface	Well Name/	_ocati	on:	
Br	OW	n an	d Caldwell			1			ng Log	22-14			Page I of f
Proje	ect: ۱	/ertical	Delineation						roject No.:	Start Date	: 7/23	3/99	
Clien	t: <i>Dy</i>	no-Not	pel					6	0192.001	Finish Date	e: 7/2.	3/99	
			DRILLING DA	ATA						SAMPLIN	MET	HODS	
Inspe	ector	: Marc	Conger							Sampler	Τι	ıbe ·	Core
ļ			m Technologies						Type:	Split-Spoon	/	VA	NA NA
, ,			ATV Auger Rig						Diameter:	2"		VA	NA.
Meth	od: [	Direct P							Other:	NA	<u> </u>	VA	NA .
			WELL CONSTRU	CTIC	····	· · · · · ·			DEVEL	ELL OPMENT		SURVE	Y DATA JM: NA
	-1-1-		Riser NA	$\dashv$	-	oree NA	en		Method: NA	Of PICITI	Grade		
Mate Diame		(10)-	NA NA			NA NA			Buration: NA		TWC:		
Coup		(113).	NA NA			NA			Gals. Purged:	NA:	TPC:		-
Coup	T	1	WI	soil				<u>·</u>	Slug Test: NA		North		
	1	WELL (	CONSTRUCTION	rock	- SAN	4PLE	DAT	Ά	(cm/sec)		East:		
Depth (feet)				Samp No.	Blows/ 6 in.	Rec. (ft.)	USCS	HNU (ppm)	Geophysical L Comments:	og: 🗌 yes	⊠ no		
O Depth				Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD	,	V	ISUAL IFICATION	1	RE	EMARKS
	1			1	1-1-1-1				Plant Material Brown Silty Cl	, wire, metal, Red ay		Dead of	lants/root material
			Backfilled w/ Cement Grout	2	1-1-2-1				- Red Brown Sil	ty Clay		create samples	2' gap above soil, were collected soil began
5-				3	H-1-H-1				— Gray to Red E Clay	Brown Silty Clay (4	•)	H= Wieh Hammer	igt of (140lbs), no blows
	1		·	4	1-2-3-4				- Gray CLAY, Pi	lastic, saturated			backfilled w/
10-				5	1-2-2-4							Grout.	
10				6	3-7-4-17								
			Split Spoon	7	17-100/.4				End of Boring	@ 13.5°			
15-	_		refusal @ I3.5						••••				
	-		13.5					1,22.4	-				
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					-	Su	bs	urface	Well Name/I	ocati	on:	
Bro	own ar	d Caldwell	•					ng Log	22-18			Page 1 of 0
Proje	ct: <i>Vertica</i>	l Delineation		<u> </u>			Pi	oject No.:	Start Date	: 7/20	0/99	
Client	: Dyno-No	bel					6	0192.001	Finish Date	e: 7/2	0/99	
		DRILLING DA	ΛTΑ						SAMPLIN	G MET	HODS	3*
ł	ctor: <i>Marc</i>	<del>-</del>							Sampler		ıbe	Core
1		im Technologies						Type:	Split-Spoon		VA .	NA .
1		ATV Auger Rig		-				Diameter:	2"		VA .	NA
Metho	od: <i>Direct F</i>							Other:	NA	/	VA ]	NA .
		WELL CONSTRU	CTIC					nevel	KELL Lopment			Y DATA M: NA
Mala	dat.	Riser		>	cree NA	n .		Method: NA		Grade		
Mater	iai: eter (ID):	NA NA			NA NA			Duration: NA		TWC:		
Coupl		NA ·			NA NA			Gals. Purged:	MA	TPC:		
Cogbi	ing.	777	soil					Slug Test: N		North		
]	WELL	CONSTRUCTION	rock	SAN	1PLE	DAT	Ά	(cm/sec)	,	East:		
									. []	$\square$		-
Depth (feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	(ppm)	Geophysical Comments:	Log: Lyes	⊠ <sub>,</sub> no		
O Depth			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		,	VISUAL SIFICATION	4	RE	MARKS
			1	3-4-5-6				- Red/Gray Mi Clay	F Sandy Silt to Silty	,		
_			2.	5-5-5-5				Gray/Brown	Silty Clay			
5-			3	2-3-3-4				Gray/Brown	Clayey Silt	,	create samples	ants/root material 4' gap above soil, were collected
-		BacKfilled w/	4	1-1-4-2				- Gray/Black SAND (+) S	(salt & pepper) F ilt		Mileles	oil began
- 10-		Cement Grout	5	3-2-2-2				- Gray Clay, P	lastic			<u>.</u>
-			6	1-1-1-1		**************************************					O a win a h	- of filled - /
_			7	3-7-10-12				Layered F 6	oravel (clean) w/F	•	Grout.	oackfilled w/
15-			8	22-22-20-2				Clay, satura	SAND (+) Silt (-)		· .	
								End of Borir	ng @ 16"			
		•					1	<u>_</u>				
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Bro	own ar	nd Caldwell			.		· .	ng Log	22-21			Page 1 of 0
Proie	ct: <i>Vertica</i>	l Delineation			<u>, l </u>			roject No.:	Start Date	e: 7/19,	/99 ·	
1	: Dyno-No						. 6	0192.001	Finish Date	e: <i>7/19</i>	/99	
		DRILLING DA	TA						SAMPLIN			
Inspe	ctor: Marc	Conger							Sampler	Tu	be	Core
1		im Technologies						Type:	Split-Spoon		IA .	NA
i '		ATV Auger Rig						Diameter:	2"	٨	ÍA	NA
Metho	d: Direct I							Other:	NA	٨	IA	NA
ļ	·	WELL CONSTRU	CTIO					DEVE	YELL LOPMENT		SURVE	Y DATA M: NA
		Riser		5	cree	en			LOI PILICE	Grade		W. W.
Mater		NA NA			NA NA			Method: NA Duration: NA		TWC: /		•
1	ter (ID):	NA NA		3	NA			Gals. Purged:	A/A	TPC: /	10 miles	
Coupi	ing.	I WA	\$cil	1	1474			Slug Test: N		North:		
	WELL	CONSTRUCTION	rock	SAN	(PLE	DAT	`A	(cm/sec)		East:		·
						T	T		. []	<u> </u>		· · · · · · · · · · · · · · · · · · ·
Depth (feet)	-		Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical Comments:	Log: Li yes	⊠ no		
1 1			Run No.	Hydraul. Cond. cm/sec	Rec. (fi.)	RQD			VISUAL SIFICATIO	N	RE	EMARKS
0-			1	1-2-3-5				- Gray CIAY, v (Diesel Odo	// plant material r)	100		
-			2	5-15-12-7		-		- Gray CLAY t	to brown Silty Clay			•
5-			3	4-6-4-3		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					create samples	ants/root material 4' gap above soil, were collected
		Backfilled w/	4	1-2-1-1				_			where s	oil began
10-		Cement Grout	5	1-1-1-1				<u></u>				
-			6	1-1-1-2							Qorina I	backfilled w/
_			7	7-8-5-4				- Layered F G SAND, Gray	Gravel (clean) w/F to Black		Grout.	DOCATHICO HY
15-			8	5-4-4-4				Clay, satura			,	
-						1		End of Borin	ıg @ 16'			
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					•	Su	bs	urface	Well Name/L	ocatio	n: ·	
Bro	own ar	nd Caldwell						ng Log	22-26			Page 1 of 1
Proje	ct: <i>Vertica</i>	l Delineation		······································				oject No.:	Start Date	: 7/20.	/99	
	: Dyno-No						6	0192.001	Finish Date	e: 7/20	/99	
		DRILLING DA	ATA	······································					SAMPLING	METH	IODS	
Inspe	ctor: Marc	Conger							Sampler	Tul	be	Core
Contr	actor: <i>Max</i>	im Technologies						Type:	Split-Spoon	N	А	NA
Equip	ment: 550	ATV Auger Rig						Diameter:	2"	N	'A	NA
Metho	d: Direct F	Push						Other:	NA	N	A	NA NA
		WELL CONSTRU	CTIC				·	<b>J</b>	VELL.		SURVE	Y DATA
		Riser		S	cree	en .			LOPMENT			M: NA
Mater		NA.		-	NA			Method: NA		Grade:		
1	ter (ID):	NA NA	1		NA			Duration: NA	-41	TWC: A		
Coupi	ing:	NA NA		T	NA			Gals. Purged:		TPC: A		
	WELL	CONSTRUCTION	soil	SAN	<b>IPLE</b>	DAT	Α	Slug Test: M (cm/sec)	4	North:		
			rock		·	1		ļ ·		East:	IVA	
(feet)		÷	Samp. No.	. Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical Comments:	Log: Yes	⊠ no		
Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		'	VISUAL SIFICATION	1	RE	EMARKS
0-				2-3-5-7				Red/Gray/b	rown MF Siity Clay,		····	
-			2	6-5-6-6				Γ	'' Silty Sand to Silty			
5-			3	3-2-1-1							create	ants/root material 4' gap above soil, were collected
			4	2-5-10-7				<u>-</u>			where s	oil began
-		BacKfilled w/ Cement Grout	5	6-7-13-7				- Layered F ( SAND, Gray	Gravel (clean) w/ F			
10-		Split Spoon refusal @ 10.6'	6	20-100/.3				End of Bori			Boring t Grout.	packfilled w/
-		10.6'						-				
15-								-				
-				And the second s			-	- Landerson - Land				
20-								_				
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							Su	bs	urface	Well Name/		n:	
Broi	wn ai	nd Calo	dwell						ng Log	22-28	8	•	Page 1
Project:	: Vertica	al Delineatio	ก		····	<del></del>		Pr	oject No.:	Start Date	e: <i>7/22/</i>	/99	
Client: L	Ογηο-Νο	bel						6	0192.001	Finish Dat	e: 7/22	/99	
		DRI	LLING DA	TA						SAMPLIN	G METH	IODS	
Inspect	or: Marc	: Conger								Sampler	Tul	be	Core
		im Technolo	_						Туре:	Split-Spoon	Ν.		NA.
		ATV Auger	Rig						Diameter:	2"	N.		NA
Method:	Direct								Other:	NA	<u>N.</u>	A	NA NA
		- <del></del>	CONSTRU	CTIC					never	IELL OPMENT		SURVE	Y DATA IM: NA
			ser		<u> </u>	cree	<u>n</u>		<u> </u>	OFMEN	-		10° 14W
Materia		1	VA			NA			Method: NA		Grade:		
	er (ID):		VA	1		NA			Duration: NA	***	TWC: A		
Coupling	g:		VA	<u>, L</u>	<del>                                     </del>	NA			Gals. Purged:		TPC: N		
	WELL	CONSTRUC	TION	soil	SAN	<b>1PLE</b>	DAT	Ά	Slug Test: NA (cm/sec)	•	North: East: /		
ļ				rock			1				_ <u></u>	VA	
(feet)				Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical   Comments:	Log: yes	⊠ no		
Depth (feet)				Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		١	VISUAL SIFICATIO	N	RE	EMARKS
0+	K		·	1	2-4-7-3				- Blue/Gray Si	ity Clay to Clay,			
_				2	2-2-7-12				mottled				
5-				3	2-7-12-7			Marian Parkana da Marian da Parkana Persona Pe	- Gray Silty Cl	ay to Clayey Silt		create samples	lants/root ma 4' gap above were collec
. 1				4	3-5-5-6						,	,	soil began
-			BacKfilled w/ Cement	F.10	22-45-100							Boring t Grout.	backfilled w/
10-	Ę	<u> </u>	Grout Oplit Spoon efusal @ 10'	513	-22-45-100	.2			End of Borin	g 6 10'			
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Bro	own ar	nd Caldwell		-				urface ng Log	Well Name/ 22-30	Locati	on:	
						יט		roject No.:	Start Date	o. 7/0	3/00	Page I of 1
1	ct: veruca :: Dyno-No	al Delineation						0192.001	Finish Dat			•
Cileria	Dyno ivo	DRILLING DA	ΔTΔ			<del></del>	0	0182.001	SAMPLIN			
Inspe	ector: Marc		****	<del>.</del>					Sampler		ube	Core
1		im-Technologies						Туре:	Split-Spoon		NA	NA
		ATV Auger Rig						Diameter:	2"	' /	NA	NA
	od: Direct i	-						Other:	NA	,	NA	NA
		WELL CONSTRU	CTIC	N				H	ELL		SURVE	Y DATA
		Riser		S	cree	en		DEVEL	OPMENT		DATU	M: NA
Mater		NA.			NA			Method: NA		Grade	e: NA	
	ter (ID):	NA			NA			Duration: NA		TWC:		
Coupl	ing:	NA NA			NA			Gals. Purged:		TPC:		
	WELL	CONSTRUCTION	soil	SAN	IPLE	DAT	`A	Slug Test: NA (cm/sec)		North		
			rock				1	(CM/SEC)		East:	NA .	
(feet)	, •		Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	(ppm)	Geophysical L Comments:	.og: 🗌 yes	⊠ no	•	
> Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RGD		\	/ISUAL SIFICATION	V	RE	MARKS
0-				1-1-3-4				Gray/8lue Gr Clay, Roots	ay, CLAY to Silty	·		
_		,	2	2-4-3-3			777					
5-			3	1-2-7-8				Gray CLAY, N	fottles, plastic		create samples	ants/root material 4' gap above soil, were collected oil began
-		Backfilled w/	4	4-9-7-9				Gray F Silty	Clay to Clayey Silt		Micro 5	on segan
10-		Cement Grout	5	1-1-1-2				Gray Clay, M	ottled, Plastic			
-			6	1-1-1-1				- ·		. :		ackfilled w/
-			7	1-1-1-1				<b>-</b>			Grout.	
15-			8	1-3-8-7				End of Boring	J 6 16'			
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20-												
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Bro	own ar	nd Caldwell		•				urface ng Log	Well Name/I 22-32	Locati	on:	
	····	nl Delineation	- W			١٠		roject No.:	Start Date	· 7/9:	2/00	Page 1 of 1
•	: Dyno-No							0192.001	Finish Date			
Oligine	. Dyno Ivo	DRILLING DA	ATA					1	SAMPLIN			····
Inspe	ctor: Marc								Sampler	~~~~~	be	Core
		rim Technologies						Type:	Split-Spoon	/	VA	, NA
Equip	ment: 550	ATV Auger Rig						Diameter:	2"	1	VĄ	NA
Metho	d: Direct I	Push						Other:	NA	/	<b>V</b> A	NA
		WELL CONSTRU	CTIO					h	ELL			Y DATA
		Riser	-	S	cree	<u>en</u>	· · · · · · · · · · · · · · · · · · ·		OPMENT	ļ		IM: NA
Mater		NA	1		NA			Method: NA		Grade		
ł	ter (ID):	NA NA			NA			Duration: NA	214	TWC:	•	
Coupl	ing:	NA	soil	I	NA.			Gals. Purged: Slug Test: NA		TPC:		
	WELL	CONSTRUCTION	rock	SAN	IPLE	DAT	Ά	(cm/sec)		East:		,
			<del> </del>			T	Ι		[-]	.t	······································	
Depth (feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	(ppm)	Geophysical Comments:	Log: L_l yes	⊠ no		
1 1			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			VISUAL SIFICATION	-	RE	EMARKS
0-			1	1-1-2-4				- Gray/Brown Mottled	CLAY to Silty Clay,			useanine annie serven annie annie annie annie annie annie annie annie annie annie annie annie annie annie anni
-		BacKfilled w/	2	9-5-5-6				- riottied			create :	ants/root material 2' gap above soil,
5-		Cement Grout	3	2-100/.2				_ End of Borin	g <b>@</b> 16'		where s	were collected coil began
5-				2-1007.2				_			Boring t Grout.	oackfilled w/
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0,	nun ar	nd Caldwell						urface	Well Name/    26D-4		
Di	ום וושכ	ia Calawell				Bo		ng Log			Page 1 of 0
1		1 Delineation						oject No.:	Start Date		•
Client	: Dyno-No	<del></del>					6	0192.001	Finish Dat		
<u> </u>	<u></u>	DRILLING DA	ATA							S METHODS	1 6
1	ctor: <i>Marc</i>							T	Sampler	Tube	Core
i i		im Technologies						Type: Diameter:	Split-Spoon 2''	NA NA	NA NA
1 ' '		er Auger Rig						Other:	NA NA	NA NA	NA NA
metric	od: Direct I	WELL CONSTRU	CTIC	)AI	<del></del>					1	<u> </u>
		Riser		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	cree	n.		DEVEL	IELL LOPMENT		EY DATA Um: Na
Mater	ial:	NA NA	一十		NA			Method: NA		Grade: NA	
1	ter (ID):	NA.			NA			Duration: NA		TWC: NA	
Coupl		NA.	-		NA		•	Gals, Purged:	NA	TPC: NA	
			soil	T	451 2			Slug Test: NA	l	North: NA	
	WELL	CONSTRUCTION	rock	SAM	1 <b>PL</b> E	DAT	A	(cm/sec)		East: NA	
(feet)	-		Samp No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical t Comments:	og: yes	⊠ no	
Depth (feet)	·		Run No.	Hydraul, Cond. cm/sec	Rec. (ft.)	RQD		. 1	VISUAL SIFICATION	R	EMARKS
0-		·	1	18-15-12-15				- brown to Bla Clayey Silt	kc MF SILT to		····
-			2	12-12-18-19					yey Silt, loose		
.5-			3	4-6-11-22				Red to browl gray CLAY la	n Clayey Silt with th ayers, moist	in	
-		Backfilled w/	4	4-6-12-13				-			
10-		Cement Grout	5	4-7-11-11				- Red to Brown mottled, vary	n, gray Silly Clay, ved	Boring	backfilled w/
_			6	3-5-9-10						Grout.	
-			7	8-4-6-10			refer forms and the second	- Red to gray varved	CLAY, moist mottled	<b>1</b> ,	
15-			.8	1-1-3-3				<ul><li>Dark gray Cl</li><li>End of Borin</li></ul>	_AY, platic, wet g @ 16°		-
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30	Lygography							-			

					· T	Su	bs	urface	Well Name/	_ocation:	
Bro	own ar	nd Caldwell						ng Log	26D-8		Page 1 of 0
Projec	ot: Vertica	l Delineation			L			roject No.:	Start Date	: 6/30/99	. age . o. o
	: Dyno-No							0192.001	Finish Date	e: <i>6/30/99</i>	
		DRILLING DA	TA						SAMPLIN	METHODS	
Inspe	ctor: Marc								Sampler	Tube	Core
Contr	actor: <i>Max</i>	im Technologies					* .	Type:	Split-Spoon	NA	NA
Equip	ment: Acke	er Auger Rig						Diameter:	2"	MA ,	NA
Metho	d: Direct F	Push						Other:	NA	NA	NA
		WELL CONSTRU	CTIC	N				W	IELL	SURV	EY DATA
	•	Riser		.S	cree	en		<b></b>	OPMENT		UM; NA
Mater		NA			NA			Method: NA		Grade: NA	
1	ter (ID):	NA NA			NA			Duration: NA		TWC: NA	
Coupl	ng:	NA NA		1	NA			Gals, Purged:	*	TPC: NA	
	WELL	CONSTRUCTION	soil	SAN	4PLE	DAT	Ά	Slug Test: NA (cm/sec)	1	North: NA	
	• • • • • • • • • • • • • • • • • • • •		rock		·		r—–	(0117 350)		East: NA	
(feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical l Comments:	Log:  yes	⊠ no	
Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RGD		١ ٠ ١	VISUAL SIFICATION	N R	EMARKS
0-			1	3-5-5-5				- Asphault, Fi	orown Clayey Silt,		
			2	6-6-10-11				***	yey Silt, loose		
5-			3	4-6-9-10				Red to brown gray CLAY la	n Clayey Silt with theyers, moist	ត់	
-		Backfilled w/	4	7-9-12-15		-					
10-		Cement Grout	5	3-6-9-11				- Red to Brow mottled, vary	n, gray Silty Clay, ved	Continu	haddan f
			6	8-9-12-13				_		Grout	g backfilled w/
			7	9-9-13-18				- Red to gray varved	CLAY, moist mottled	1,	
15-			8	1-2-3-5				Dark gray Cl     End of Borin	LAY, platic, wet		• •.
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6	own ar	nd Caldwell						urface	Well Name/I 26G-11	Location:	
Di	ום וואכ	id Cajdwell				В		ng Log			Page 1 of 0
Proje	ct: <i>Vertica</i>	l Delineation	·				Pi	roject No.:	1	e: 7/2/99 🕟	•
Client	:: Dyno-No						6	0192.001	Finish Date	<del>.</del>	
	······································	DRILLING DA	ATA							G METHODS	
1 '	ector: <i>Marc</i>	<del>-</del> .						ļ	Sampler	Tube	Core
		im Technologies						Type:	Split-Spoon	NA	NA ***
		er Auger Rig						Diameter: Other:	2"	NA NA	NA NA
Metho	od: <i>Direct i</i>	WELL CONSTRU	OT 70	NI NI			<del></del>	<del> </del>	,NA	1	1
<u> </u>	<u> </u>	Riser			cree			DEVEL	ELL OPMENT	DATU	Y DATA Im: Na
Mate	ial·	NA NA			NA			Method: NA		Grade: NA.	
1	eter (ID):	NA NA			NA			Duration: NA		TWC: NA	
Coupl		NA.			NA			Gals. Purged:	NA	TPC: NA	
	<u> </u>	<u></u>	soil					Slug Test: NA		North: NA	
	WELL	CONSTRUCTION	rock	SAN	MPLE	DAT	Α	(cm/sec)		East: NA	
(teet)			Samp No.	Blows/ 6 in.	Rec. (ft.)	USCS	(ppm)	Geophysical L Comments:	og: 🗌 yes	⊠ no	
Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	ROD			ISUAL SIFICATION	N RE	EMARKS
0-			1	4-3-3-3				- Fill, Brown Cla	ayey Silt	-	
-			2	5-5-8-8				- Brown F Clay	ey Silt, damp		
5-			3	5-2-9-11							
-			4	11-11-14-15				- Lt. Brown to moist	red Clayey Silt,		
40		Backfilled w/ Cement Grout	5	5-7-10-12				- Lt. Brown to Clay	red Clay and Silty		
10-			6	3-4-7-7						Boring I Grout,	backfilled w/
-			7	4-8-9-8					• .		
15-			8	3-5-7-9				Brown to Gray     End of Boring	y CLAY, saturated		
-	-								, - •		
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Br	OW	n an	d Caldwell	·					urface ng Log	Well Name/I 26G-16		on:	Page 1 of 0
Proj	ect:	Vertical	Delineation			l	_ <b>`</b>	Pr	oject No.:	Start Date			
Clier	nt: Dy	no-Not						6	0192.001	Finish Dat			
Ţ	. ;.	** ***	DRILLING DA	A I A			·-··			SAMPLIN Sampler		ibe	Core
1		r: <i>Marc</i> or: Mayl	n Technologies						Туре:	Split-Spoon	·····	VA	NA NA
1			r Auger Rig						Diameter:	2"		va	NA
•	-	Direct P	5						Other:	- NA	·	VA	NA
11100	104.	311 606 7	WELL CONSTRU	CTIC	N					ELL	T		Y DATA
			Riser	<del>-                                    </del>		cree	en		DEVE	OPMENT		DATU	M: NA
Mate	erial:	<u> </u>	NA		<del></del>	NA		L-H	Method: NA	······································	Grade	e: NA	
1		(ID):	NA			NA			Duration: <i>NA</i>		TWC:	NA	
Cou	pling:		NA			NA			Gals, Purged:	NA	TPC:	NA	
			CONSTRUCTION	soil rock	SAN	(PLE	DAT	Ά	Slug Test: NA (cm/sec)	i ,	North East:		
(feet)				Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	HNU (ppm)	Geophysical t Comments:	.og: ☐ yes	⊠ no	•	
Depth (feet)	1		·	Run No.	Hydraul, Cond. cm/sec	Rec. (ft.)	RQD	·	١	/ISUAL SIFICATIO	N ·	RE	EMARKS
	+			1	4-4-3-4				- Fill, gravel, w	ire, brown Silty Cla	у		
	1			2	4-5-9-9				- Brown to rec	l Clayey Silt, damp			
5				3	4-5-7-10								
	1		Backfilled w/	4	10-12-13-14				Lt. Brown to trace Sand	red Clayey Silt w/			
10			Cement Grout	5	3-4-6-7				- Lt. Brown to Clay	red Clay and Silty		Defe	h a a h-Chaoda a f
10				6	2-5-5-5		***************************************		- Brown to Gra	ay Silty Clay, moist		Boring Grout.	backfilled w/
				7	5-9-10-10					•			
15				8	6-9-9-9				,	nd Silty Clay	in accompanie	managa da militar da se sona no se se se se se se se se se se se se se	and the second second second second
a Vinder See				\$ <del>1072313</del>		*********	***	a agraciat	End of Bonn	g <u>e</u> 16************************************	ering general desires in	**************************************	is an estimate proportion of the second
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Brow	ın an	d Caldwell						urface	Well Name/L   33-04		n:	
			, 			B		ng Log				Page 1 o
		Delineation						oject No.:	Start Date			•
Client: D	yno-Not						6	0192,001	Finish Date			
		DRILLING D	)ATA						SAMPLING			<u> </u>
•	or: <i>Marc</i>								Sampler	Tul		Core
		m Technologies						Type:	Split-Spoon	N.	1	NA
		r Auger Rig						Diameter:	2"	N.		NA
Method:	Direct P	····	LIOTIO	<u> </u>				Other:	NA I	<u> </u>		NA NA
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1	WELL CONSTR	00110					neve	VELL LOPMENT		SURVE	Y DATA M: NA
14-1	-	Riser		<u> </u>	oree NA			Method: NA		Grade:		
Material:	1	NA NA	-		NA			Duration: NA		TWC: A		
Diamete	1	NA NA			NA			Gals. Purged:	N/A	TPC: A		
Coupling	·	, NA	soil		1474			Slug Test: N		North:		
-	WELL (	CONSTRUCTION	rock	SAN	1PLE	DAT	Ά,	(cm/sec)		East:		
(feet)			Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	HNU (ppm)	Geophysical	Log: 🗌 yes	⊠ no		
Depth (feet)		•	Run	Hydraul.	Rec.				VISUAL			
1			No.	Cond. cm/sec	(ft.)	RQD			SIFICATION	۱ <i>ا</i>	KE	EMARKS
0									-			<del></del>
		Refusal @						_				
		2.0'		,				_			Refusal	@ 2.0 '
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Bros	un ar	nd Caldwell		,				urface	Well Name/   33-13	Locatio	n:	
						В		ng Log				Page
-		f Delineation						oject No.:	Start Date			-
Client: L	Jyno-No						6	0192.001	Finish Dat			
		DRILLING DA	TA						SAMPLIN		~~~~~	
-	or: Marc							Tunn	Sampler Split-Spoon	Tul M		Cor NA
		im Technologies						Type: Diameter:	<i>2</i> "	. N		N/-
	ent: Acke : Direct I	er Auger Rig						Other:	NA	N.		N.A
Method.	. Direct i	WELL CONSTRU		NI					IELL	1	~	Y DATA
<del></del>		Riser			cree	en e		DEVEL	OPMENT		DATU	M: NA
Material	l <del>.</del>	NA			NA			Method: NA	<u></u>	Grade:	NA	<del>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</del>
Diamete		NA			NA			Duration: NA		TWC: A	14	
Coupling		NA			NA			Gals. Purged:	NA	TPC: N	Α	
		CONCTRUCTION	soil	CAL	4DLE	DAT	, Y	Slug Test: NA	1	North:	NA	
	WELL	CONSTRUCTION	rock	DAI	1rlc	DAT	A	(cm/sec)		East: /	VA.	
(feet)	,		Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	HNU (ppm)	Geophysical t Comments:	Log: yes	⊠ no		
S Depth (feet)			Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		\	VISUAL SIFICATIO	N	RE	EMARK
0			1	4-7-8-24				- Red F Sand, Gravel	Rock Frags, & F			
-			2	34-10-18-2		-		- Orange F Sa Clay	and, trace Sitt (-)	-		
5-			3	5-4-4-3		under med de la constitución de la constitución de la constitución de la constitución de la constitución de la		- Red-Brown f Clay	F Sand, trace Silt	(-)		
_		BacKfilled w/ Cement	4	6-5-10-8		enmont to the party.				-		
10-		Grout	5	4-6-11-12							Boring I Grout.	backfilled
-			6					NE Dance Cit	the Charles Charles	waterspiele grane to a fifty	Orout.	
15-			1	3-4-4-5 8-5-5-6				Silt, Moist	Ity Clay to Clayey  If trace Silt, some	44-254-24-24-24-24-24-24-24-24-24-24-24-24-24		
107			8	0-3-0-0	الميونة	de ingr		Sand (+) Gr	avel		or and the same	and the second second
	was some address,	i for the state of a manufacture of the material and a managed outside for	7					End of Borin	ng @ 16'	1		
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Bro	own a	nd C	aldwell	,					urface ng Log	Well Name/I 39-09	_ocation	•	Page 1 of (
Projec	t: Vertic	al Delin	eation	***************************************					oject No.:	Start Date	: 6/30/	99	
Client:	. Dyno-A	lobel.						6	0192.001	Finish Date	e: <i>6/30/</i>	99	
		•	DRILLING D	ATA						SAMPLIN	METHO	DS	•
Inspec	ctor: <i>Mai</i>	rc Conge	er .							Sampler	Tub	9	Core
Contra	actor: Ma	axim Tec	hnologies						Type:	Split-Spoon	NA		. NA
Equipa	ment: Ac	ker Augu	er Rig						Diameter:	2"	NA		NA
Metho	d: Direct	Push		·					Other:	NA	NA		NA
		WE	ELL CONSTRU	CTIC	<del>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</del>		······································	·····	W	ELL	5	URVE	Y DATA
			Riser		S	cree	n			OPMENT			M: NA
Materi			NA .			NA			Method: NA		Grade: /		
	ter (ID):		NA	l		NA			Duration: NA		TWC: NA		
Coupli	ng:		NA		<del> </del>	NA			Gals. Purged:	NA • ·	TPC: NA		
	WEL	L CONST	TRUCTION	soil rock	SAN	1PLE	DAT	`A	Siug Test: NA (cm/sec)		North: A East: M		
(feet)				Samp. No.	. Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical L Comments:	og: 🗌 yes	⊠ no		
O Depth				Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			ISUAL IFICATION	١	RE	MARKS
				1	6-5-10-12				Lt. to Dark M and Silt, dry	F Silty Clay to Cla	y		
				2	10-10-19-13				– Dark brown F	Clayey Silt			
5				3	9-9-11-12				— Red to brown Clay, moist, vi	Clayey Sill to Silty greed	<i>'</i>		
			Backfilled w/ Cement	1	10-9-12-8					·			
10-			grout	5	2-2-3-4						- 1	Boring b Grout,	ackfilled w/
4				7	2-4-1-2				- Red to gray (	ZAY, moist mottlec			
15-				8	1-1-1-1				varved	AY, platic, wet			
4	Ł		andaring and a first	S 94555	Se official	SERVEY.	<b>电视器</b> 3	378/763	End of Boring	0.16°			
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					T	Su	bs	urface	Well Name/	ocation:		1,1,
Bro	own ar	d Caldwell	,	-				ng Log	42-07			Page 1 of 0
Projec	ct: <i>Vertica</i>	l Delineation					. Pr	oject No.:	Start Date	: 7/7/99		. ,
Client	: Dyno-No	bel					6	0192.001	Finish Date	e: <i>7/8/99</i>	)	
		DRILLING DA	\TA						SAMPLING	METHO	os	
Inspe	ctor: <i>Marc</i>	Conger							Sampler	Tube		Core
Contr	actor: <i>Maxi</i>	im Technologies						Type:	Split-Spoon	NA		NA
Equip	ment: Acke	r Auger Rig						Dlameter:	2"	NA		NA
Metho	d: Direct f	Push ·						Other:	NA ·	NA		NA
		WELL CONSTRU	CTIC	N				¥	YELL	SI	URVEY	DATA
	·	Riser		S	cree	en		DEVE	OPMENT	<u> </u>	DATUM	: NA
Mater	ial:	NA			NA			Method: NA		Grade: N	'A'	
Diame	ter (ID):	NA			NA			Duration: NA		TWC: NA		
Coupli	ng:	NA		4	NA			Gals. Purged:		TPC: NA		
	WELL	CONSTRUCTION	soil rock	SAN	(PLE	DAT	A	Slug Test: N/ (cm/sec)	4	North: NA East: NA		
æ		· · · · · · · · · · · · · · · · · · ·	Samp.		Rec.	USCS	HNU	Geophysical	Log: yes	⊠ no		
Depth (feet)			No.	6 in.	(ft.)		(ppm)	Comments:	, <u>, , , , , , , , , , , , , , , , , , </u>	·		
O Depti			Run No,	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			VISUAL SIFICATIO	٧	REN	MARKS
-			1	9-10-12-17				- CMF Top So	ll, roots, Silt, dry			
_			2	2532383	6			- M Clayey Sil	t, w/ some Sandy Si	ıt	•	
5-			3	8-38-38-2	8			- MF Sandy S	ilt to Silty Clay			
-			4	11-19-28-25				Red Brown F	Silty Clay, moist			
		Backfilled w/ Cement Grout	5	25-26-32-3	8			-				
10-			6	26 <b>-</b> 28-34-3	<b>)</b>			-			loring ba Frout.	ckfilled w/
			7	8-36-28-2				- Red to Brow Silt, varved	n Silty Clay to Clay	еу		
15-			8	14-14-12-14				OIR, YOUYEU				•
-		<b>1</b> 	25,5	- 1202-21 Co. 11	مورق بان	48 m 2844	uper.	- End of Borin	1 <b>g &amp; 16</b> '	asia ana ana	er er er er	· (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
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Dr.	0140 0	nd Caldwa	.11			Sι	ıbs	urface	Well Name/		on:	
יום	OMII G	nd Caldwe	111			В	orir	ng Log	47-02			Page 1 of 0
		al <b>Del</b> ineation		mil pide an				oject No.:	Start Date			•
Client	: Dyno-N						6	0192.001	Finish Dat			
Tnanc		DRILLING	UAIA			_			SAMPLIN			
		c Conger ixim Technologies					-	Type:	Sampler Split-Spoon		ube NA	Core NA
		ker Auger Rig						Diameter:	2"		NA	NA NA
	od: Direct							Other:	NA NA		NA	NA
		WELL CONST	RUCTI	ON				· · · · · · · · · · · · · · · · · · ·	IELL	T	SURVE	Y DATA
		Riser		S	Scre	en		DEVEL	OPMENT			JM: NA
Mater		NA			NA			Method: NA		Grade		
+	eter (ID):	İ			NA			Duration: NA		TWC:		
Coupl	ing: I	NA NA		1	NA			Gals, Purged:		TPC:		
	WELI	CONSTRUCTION	soi rocl	- SAI	MPLE	DAT	Ά .	Slug Test: NA (cm/sec)	i	North East:		
	·				000	1	1,441			-1		-
Depth (feet)	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s		Sam No.		Rec.	uscs	(ppm)	Geophysical t Comments:	log: L_1 yes	⊠ no	1	
apth			Rur	Hydraul. Cond.	Rec.	RQD			/ISUAL		DE	
0-			No.	cm/sec	(ft.)	חשח		CLASS	SIFICATION	١	ΠC	EMARKS
-			1	1-1-2-2		-		- Dark Brown t SILT, moist	o Black top soil, MF			
_			2	3-7-11-12				- Red to Gray, Clay to Claye	and Brown, MF Silt	у		f Selenium, fuse
5-			3	5-8-12-16				Red to brown	n Clayey Silt to Silt	<b>y</b>	powder	·
-			4	8-10-20-22				Clay, moist, v	/arved			
-		Backfilled Cement	w/	4-8-11-13				_				•
10-		Grout	,	70113							Boring	backfilled w/
			6	4-5-6-8							Grout.	
_			7	1-4-8-10					CLAY, moist mottled	<b>!</b> ,		,
45			<u> </u>		1			varved				•
15-			. 8	I-3-3-3				i '	.AY, platic, wet			
		Section 1						– , End of Boring	g 16 16	* 14		e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya del companya de la companya del companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la co
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CO	175 8 11		- 1			-	•	Su	bs	urface	Well Name/L		on: ·	
EC	KEN	FE	L	DER INC.				В	orir	ng Log	MW-195	Ó		Page 1 of 1
Proje	ct: RFI	***********				<del></del>			Pı	roject No.:	Start Date	: 09/1	6/97	
Client	: DYNO	Not	el,	Port Ewen, NY					0	192.02	Finish Date	e: 09/i	16/97	
				DRILLING DA	ATA						SAMPLING	METH	HODS	
Inspe	ctor: E.	R.Li	mbi	rick							Sampler	Tu	be	Core
Contr	actor: A	1axii	m 7	echnologies, Ind	c., C.	Dinovo				Type:	Split Spoon	٨	<i>iA</i>	NA
Equip	ment: A	cke	r S	oil Max						Diameter:	2 inch	٧	JA	NA
Metho	d: 41/4	4" H	AS							Other:	140 lb/30 inch	Λ	<i>IA</i>	NA
				WELL CONSTRU	CTIC	****				, j	ELL	-		Y DATA
		ļ		Riser	_		cree				OPMENT	<u> </u>	DAT	UM:
Mater		.		Schd. 40 PVC	3	Schd. 40	•	.010	slot	I		Grade		
1	ter (ID	):		2"	-		2"			Duration:		TWC:	156.2	
Coupl	ing:			Flush-threaded	1	Flush	-thr	<u>eade</u>	<u>d</u>	Gals. Purged:		TPC:		
	WE	LL (	CON	NSTRUCTION	soil	SAN	4PLE	DAT	Ά	Slug Test: (cm/sec)		ŀ	: 686911.	
					rock		r	Т	ı	(CIII) SEC)		East:	594141.4	76
(feet)					Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical I Comments:	_og: ☐ yes	⊠ no		
Depth (feet)		¥		4" Locking Protective Casing	Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	ł		' '	VISUAL SIFICATION	J	RE	MARKS
-0		1	D		S-1		1,4'			LACUSTRINE				
_			1	Cement/	S-2	7-10- 13-22	1,2'			CLAY Dry Light-br	rown Silty CLAY, trac trace (-) to no c	e		
5-				Bentonite Grout	S-3	8-12-	1.4'			- Sand		-		
-				Bentonite	S-4	21-20-	1,8'			Slightly mois to no cf San	t Silty CLAY tace (- id	-)		
-	Ŷ			Pellets	S-5	20-24	2.0'			-				
10-			•	No. 00 Morie Sand		0-12		-		Moist browni	sh-gray Silty CLAY			
-			* *-	2" PVC	S-6	5-5-6-6	1.2		***************************************					
-		Ē	6.	No. 0 Morie	S-7	6-6-7-6	2.0'				iity CLAY with brown	1		
15-		E	• • •	Sand	S-8	2-2-3-3	1.7'	ļ	- Attended to the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the	mottling	स्त्र अने संदर्भ । प्रदेशका स्वर्थ स्वर्थ स्वर्थ स्वर	يورد المرادية	and the same of the same	alkanista area (h. 1701). esta esta esta esta esta esta esta esta
-			· ·		S-9	5-5-3-5	1.5'			- Wet Gray Sil			Water to	able @ 18'
20-		E	· · · · · · · · · · · · · · · · · · ·	2" 0.10" Slot,	S-10	3-1-2-3	1.7'						nutoi d	unc e 10
-				Schedule 40 PVC Screen	S-II	1-2-2-3	1.3'					-		
-				·	S-12	1-2-1-1	1.8					24,0		
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EC	KENH	ΞL	DER INC.	•					ng Log	MW-20	D	Page 1 of 2
Proje	ct: RFI			<del></del>					roject No.:	Start Date	: 09/12/97	Faye FUIL
1		bel,	Port Ewen, NY						192.02	t	e: <i>09/15/97</i>	
			DRILLING DA	ATA						<del> </del>	METHODS	
Insp∈	ector: E.R.L	imb	rick	the desired transmission for the same						Sampler	Tube	Core
Contr	actor: Max	im 7	Technologies, Ind	c., C.	Dinovo				Type:	Split Spoon	NA	NA
Equip	ment: Acke	er S	oil Max						Diameter:	2 inch	NA	NA
Metho	od; <i>4 1/4" I</i>	HAS	)						Other:	140 lb/30 inch	NA	NA
			WELL CONSTRU	JCTIO	N				,	IELL	SURVE	Y DATA
			Riser		5	Scree	∋n		DEVE	OPMENT	DAT	
Mater	ial:		· type 304 S.S	t	ype 304	4 S.S	3010	) slo	Method:		Grade:	
Diame	eter (ID):		2 inch ID	1		2"		•	Duration:		TWC: 161.40	
Coupl	ing:	<u> </u>	Flush-threaded	1	Flush	-thr	eade	d	Gats. Purged:		TPC:	
	WELL	CO	NSTRUCTION	şoil	SAL	MPLE	. DAT	· A	Slug Test:		North: 68536	<i>5.27</i>
.:	11444		4211/0011/014	rock	- Oni	7566	. UA :	A	(cm/sec)		East: 594189.	.91
<b>-</b>				Samp.	. Blows/	Rec.	1,000	HNU	Geophysical I	Log: yes	⊠ no	
Depth (feet)			Mid P	No:	6 in.	(ft.)	uscs	(ppm)	Comments:	109, 22, 100	Ex no	-
듔		5	4" Locking Protective	Run	Hydraul.	Rec.	200		1	/ISUAL	- mr	
0-			Casing	No.	Cond, cm/sec	(ft.)	RQD			SIFICATION	1 HE	EMARKS
U-		N										
_		M							For soil desi	ription between the		
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		N	Bentonite	1					log MW-20R.			
5-		N	Grout	1								
J _			2" SS Riser									
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ECK	KENFELDER INC.			·			urface ng Log	Well Name/Location MW-20D	Page 2 of 2
Project	t: RFI DYNO Nobel, Port Ewen, NY						roject No.: 192.02	Start Date: 09/1 Finish Date: 09/1	•
	WELL CONSTRUCTION	soil rock	SAN	IPLE	DAT			1	
(feet)		Samp. No.	Blows/ 6 in.	Rec. (fL)	USCS	HNU (ppm		(CONTINUAT	TION)
30 Depth (feet)		Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD			ISUAL IFICATION	REMARKS
-									
35-							-		
	Bentonite Slurry		~				-		
40-	No. 00 Morie Sand						-		
45-	No. O Morie Sand	S-1	3-4-	0.0,			SAND & GRAV	44 EL	
45			15-18 14-5-				Gray cm SANE CLAY, little (4	), some (+) Silty +) Gravel	
		S-2 S-3	17-16	L.I' 0.5'			c GRAVEL, len	ns of brown Silty	
50-	2" SS 10 Slot	ł	18-22 58-24- 29-32	0.9			- cm SAND and trace (+) Silt	to trace c GRAVEL, y CLAY	
		S-5	28-37- 38-41	1.8*			c GRAVEL, soi trace silty CL	ne (+) cm SAND,	
55-		S-6	76- 100/4"	0.7'			Weathered Sh 54.0'	ale BEDROCK @ 54.9	
							. chd or boring	acous leet.	and the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second o
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1	ot: <i>RFI</i> • AVNO No	hal	Port Ewen, NY		•.				-	Finish Date			•
Chent	. DIIAO MO	wei,	DRILLING DA			······································			192.02 	SAMPLIN	~~~~		
Inspe	ctor: E.R.L	imb		<u> </u>			········			Sampler	Tube		Core
			ren Technologies, Ind	2 6	Dinovo				Туре:	Split Spoon	NA.	<del>.</del>	NA
i	ment: Ack			, w	2011.010				Diameter:	2"	NA.		NA
	d: 4 1/4"								Other:	NA	NA		NA
			WELL CONSTRU	CTIC	N				l	KELL.	1	IRVE	Y DATA
	440000000000000000000000000000000000000		Riser		~~~~~~~	cree	n		DEVE	OPMENT		DAT	UM:
Mater	ial:		Type 304 S.S.	7	ype 304	1 S.S	.010	" slo	Method:		Grade:		
Diame	ter (ID):		2 inch ID			2"			Duration:		TWC: 164	4.10	
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	WELL	CON	STRUCTION	soil	CAN	4PLE	DAT	· A	Slug Test:		North: 6	85492	2.08
	ncll		49 ( HOC 1 TOM	rock	SAI	77	UAI		(cm/sec)		East: 59	14355,	78
feet)	٠.			Samp. No.	Blows/ 6 in.	Bec.	uscs	HNU (ppm)	Geophysical Comments:	Log: 🗌 yes	⊠ no		
Depth (feet)			4" Locking Protective Casing	Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RGD		,	VISUAL SIFICATION	<b>y</b>	RE	MARKS
0-	N	N							OVERBURDE	N/LACUSTRINE			
		N			-				DEPOSIT	ULTION TOTAL			
	N	Ŋ	Cement/										
	N	N	Bentonite		ļ								•
5-		N	Grout										
	N	M	2" Type 304										
		N	Stainless		[				-				
<u> </u>	N	N	Steel Riser						-				
] -	N	N							~				
10-	N	N							<ul> <li>Refer to the</li> </ul>	MW-21R log for soil			
-	N	N							descriptions.	•	1		
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Table 1		et: RFI : DYNO Nobel, Port Ewen, NY						roject No.; 192.02	Start Date: 09/ Finish Date: 09/	08/97	
1		WELL CONSTRUCTION	soil rock	SAN	1PLE	DAT	Α.		(CONTINUA	TIONI	
	(feet)		Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)		(CONTINUA	11011)	
· · · · · · · · · · · · · · · · · · ·	ර Depth (feet)		Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD		V CLASS	ISUAL IFICATION	REMARKS	
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e e e e e e e e e e e e e e e e e e e	50- -	No, 0 Morie Sand						SAND & GRAVE	<u>.</u>		
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Client.	DINO NO		ILLING DA	\ T A			····	<i>U</i>	192,02	<del></del>	G METHOD:		
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		im Techno	ologies Toi	o 6.	Πίρονο				Туре:	Split Spoon	NA NA	_	NA
		er Soil Max	-	J., O.,	5,,,0,,0				Diameter:	2 inch	· NA		NA "
1 1	l: 4 1/4"			•					Other:	140 lb/30 inch			NA
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Materia	ıl:	stainl	less steel		stain	iless	stee	1	Method: na		Grade: na	-	<del></del>
Diamete	er (ID):	2 ii	nch ID			2 1/8	3		Duration: na		TWC: 151.9	,	
Couplin	g:		npt :			npt			Gals. Purged:	na	TPC:		
	t.//=1 1	CONOTOLE	OTTON	soil		101 F			Slug Test: na	7	North: 685	412.14	
	nell	CONSTRU	C I TOIA	rock	5AI	MPLE	UAI	Α	(cm/sec)		East: 594	639.41	
(feet)				Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	Geophysical Comments:	Log: Lyes	⊠ no		
Depth			4" Locking Cap	Run No.	Hydraul, Cond. cm/sec	Rec. (ft.)	RQD		,	VISUAL SIFICATIO	v	REMAI	RKS
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	N		Cement/										
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5	N	N	Grout						- For soil des	criptions above and			,
- 4	N	N							below the 2	7.5°-32.2° interval MW-22R log.			
4									16161 10 116	###=22n log.			
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25-	[:]		No. 0								***************************************		•
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4	1:1=	<u> </u>	2" Stainless		0 4 0 0				Gray f GRAV and cmf san	EL, little silty clay of			٠
30 +			steel .010 slot screen	S-I	2-1-2-3				L				;
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EC	KENFELDER INC.		-	,			urface ng Log	Well Name/Location:  MW-22D  Page 2 of 2			
	ct: RFI : DYNO Nobel, Port Ewen, NY		-			Pi	roject No.:" 192.02	Start Date: 09/ Finish Date: 09/	24/97		
Onche	WELL CONSTRUCTION	soil rock	SAI	MPLE	DAT			***************************************			
eet)		Samp.	Blows/ 6 in.	Rec.	USCS	HNU (ppm)		(CONTINUA	TION)		
Depth (feet)		Run No.	Hydraul. Cond. cm/sec	Rec.	<del> </del>		٧	ISUAL IFICATION	REMARKS		
30-		S-2	ı				Grav ce SANC	), trace silty clay.			
-		<u>S-3</u>	6-9-9-10				Refusal @ 32.2	باجد			
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• •		r Soil Max						Diameter:	2 inch		VA	٨
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	WELL	CONSTRUCTION	soil	SAI	4PLE	ראת	-Δ	Slug Test:		North:	: 686048	9.27
	F T then does have '		rock	J	41 See See			(cm/sec)		East:	593751.8	35
(feet)			Samp.	Blows/ 6 in.	Rec.	USCS	HNU	Geophysical	Log: 🗌 yes	⊠ no		
		4" Locking		""	11		thbia.	Comments:				
Depth		Protective	Run	Hydraul.	Rec.	RGD		•	VISUAL		DE	SAA DE
,		Casing	No.	Cond.	(ft.)	BOD		CLAS	SIFICATION	<b>V</b>	L) E	MARK
0	N	h						Slightly mois	t Medium brown Silty	,	· · · · · · · · · · · · · · · · · · ·	
1			S-1	5-6-7-10	U.4		0	CLAY, some	roots present			
1	N				<b></b>							
1	N	Cement/ Bentonite	S-2	5-8-5-7	1,1"		0	<u></u>				
_1	N	Grout						Moist Brown mottling	Silty CLAY with broa	MU I		
5-		N	S-3	3-4-5-8	1.2'		0					
1	N			8-11-	<b></b>			- Wet Brown S mottling	ilty CLAY with brown	)		
1	N	2" Schedule 40 PVC Riser	S-4	14-15	0.8		0	Γ				
1							Ħ.	Reddish-bro	wn Silty CLAY with			
10 1		Bentonite Pellets	S-5	5-5-6-8	2.0'		0	L (MII) ICHOCO (	a Ordy Ozer			
10-		T Calots					<b> </b>	Wal Cray to	Crooninh grow Cilly	.		
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1	-	Sand						-				-
1	1.1	<b> </b>	S-7	3-4-4-4	1.7'		0	-				
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1		<b>!</b>		1	<u> </u>			Saturated G	ray and y Silty CLAY			
-	1:4=		S-9	3-2-1-3	2.0'		0	F	· . ·			
1	. ≡	<b>!</b> -		พกอนกอ	<b> </b>			Saturated G	ray Silty CLAY	Ī		
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Inspe	ector:	E.R.L	imbi	rick							Sampler	Tub	е	Core
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				oil Max						Diameter:	2 inch	N,A	i l	3 inch
Metho	od: 6	1/4" F	IAS.	/5 7/8 Roller i	·····					Other:	140 lb/30 inch	NA	\ <u> </u>	NA
				WELL CONST	RUCTIO					W	ELL			Y DATA
l				Riser			Scre				OPMENT		DATI	JM:
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Diame		(ID):		4 inch ID			2 1/8	ਲ -		Duration:	• •	TWC: 15	1.6	
Coupl	itig.			NPT	lical	T				Gals. Purged:		TPC:	005412	4.4
		WELL	CON	ISTRUCTION	rack	SA	MPLE	DAT	Ά	Slug Test: (cm/sec)		North: 6		
Depth (feet)				W. Lankin	Samp No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU {ppm}	Geophysical L Comments:	og: yes	⊠ no		
•	de la communicación de communicación de communicación de communicación de communicación de communicación de co	Ÿ		4" Locking Cap	Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	200		V	'ISUAL SIFICATION	1	RE	MARKS
0- -		1			S-1	2-1-2-3	1.5'			OVERBURDEN DEPOSITS	VLACUSTRINE			
-		1	-	Cement/	S-2	5-7-11-13	1.2'			Brown SILT/ trace roots.	SILT and CLAY,			
5-		'		Bentonite Grout	S-3	6-9-9-10	1.7'			Brown SILT a	ind CLAY, mottled.			
-		1			-	<u> </u>	-	-		_				
-					S-4	7-8-8-8	0.0			- Brown Silty C	LAY			
10-					S-5	4-2-3-2	1.5*							
_		1			S-6	2-3-3-4	0.0			<b></b>				
~			ĺ		S-7	3-2-3-3	1,7:			@ 12.7° chango CLAY. Satura	e to gray Silty ated		Saturate	ed @ 12.7 feet.
15-				4" Steel Casing	S-8	woh-woh 2-2	1.2							
-		1		9339	S-8	3-2-2-2	1.0'			<del>-</del>	¥			
		1			S~10	woh-woh	1.3'			- -	•		•	·
20-					S-II		1.2'			· -			•	
, -		1			S-12	1-1-2-1	1.4'			<b></b>				•
- 25-						11021 12011				-	<del></del>			
20-					S-13	1-1	2.0'			CLAY, some m	ID and gray Silty f Gravel grading to			
-					S-14	22-t2	2.0			cmf SAND. © 28.5 brown GRAVEL, some	Silty CLAY and c		٠	
30 <sup>-</sup>		ł	-		S-15	9-7-8-8	2.0'			,	·• ··-• ·		•	-

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EC	KENFELDER INC.	•		Ì			urface ng Log	Well Name/Locat MW-22R	ion: Page 2 of 2
1	ct: RFI : DYNO Nobel, Port Ewen, NY				<del></del>	Pi	roject No.: 192.02	Start Date: 09/ Finish Date: 09/	<sup>'</sup> 22/97 ·
	WELL CONSTRUCTION	soil rock	SA	<b>APLE</b>	DAŢ				
feet)		Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	,	(CONTINUA	110N)
ය ට Depth (feet) I		Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RGD		V CLASS	ISUAL IFICATION	REMARKS
30-		S-16	13-32 15-10	0.6'			Gray cmf GRAV rock), some cm clay.	/Et. (weathered f Sand, some silty	
		S-17	58-100/4	1.1'			BEDROCK-GRA	Y SHALE:	
35- -		S-18	100/4	0.1			_		
1					NA				2
40-							_		
-					55%		_		
45-			. ,						
					74%		-		
50-									
-	NX Coré hole				33%				
55-									
							<b>.</b> -		
60-					***************************************	-			
-			-				- -		
65-	·						<del></del> -		
-	· ·		,				~		
70	•						_	÷	

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Projec	t: RFI		the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Manual Works of the Ma						roject No.:	Start Date	: 09/	04/97	rag
-		lobel,	Port Ewen, NY						192.02	Finish Date			
			DRILLING D	ATA						SAMPLING			***************************************
Inspe	ctor: E.R	?.Limbr	rick							Sampler	Ti	ıbe	С
Contra	actor: Ma	axim T	echnologies, In	c., C.	Dinova.				Type: Split S	poon/NX Core	Barrell	VA	
Equipr	nent: Ac	ker S	oil Max				•		Diameter:	2 inch	1	VA	3
Metho	d: 6 1/4'	" HAS	/5 7/8 Roller Bi	it/NX	Core		***************************************		Other:	140 lb/30 inch		VA	
		<del></del>	WELL CONSTRU	JCTIC	N				<u>, y</u>	IELL		SURVE	Y DAT
			Riser			Scree	en		<u> </u>	OPMENT		DAT	UM:
Materi			black steel			NA			Method:	•	Grade		
	ter (IO):		4 inch ID			2 1/8	3		Duration:		1	162.80	
Couplin	ng:		NPT	<u>,L</u>	γ				Gals. Purged:		TPC:		
	WEL	L CON	ISTRUCTION	soil	SAN	4PLE	DAT	Ά	Slug Test: (cm/sec)		1	: 685486	
1	<u> </u>			rock	<u> </u>	7	1	· ·	(0117860)		East:	594352.	10 .
(feet)	-			Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm	Geophysical Comments:	og: yes	⊠ no		
=	[	¥ ]	4" Locking		Lhidroid			-					
Depth			Сар	Run No.	Hydraul, Cond.	Rec. (ft.)	RGD		E .	/ISUAL		RE	MAR
$0 \rightarrow$				140.	cm/sec	(11.)			<u> </u>	SIFICATION	١.		
	21		<b>&gt;</b> 1	S-I	7-7-9-13	1,7'			OVERBURDE DEPOSITS	N/LACUSTRINE .			
4							ļ			run 46 .			
4	4		Cement/	S-2	14-23- 21-23	1.6'			Brown SILT,	litue i Sand EBrown SILT & CLA	v		
4			Bentonite Grout	-	21 23	<del> </del>			- Ongital mora	CONTROLL GOLA	•		
5-				S-3	4-10- 11-18	1:5'				-			
4			4" Steel	<del> </del>	<del> </del>	<del> </del>			-				
-	1		Casing	S-4	10-11- 11-12	1.2'		İ	}				
	1				1.5				- Moist Brown	SILT & CLAY, some			
	1			S-5	4-5- 6-9	1.5'			F	i, trace Gravel			
10-		i							Moist Brown	ing more moist, SILT & CLAY, some			
1				S-6	4-4-8-8	1.4			- gray mottling				
1				C 7	9-8-	10,			- Moist Brown CLAY & SILT	to Reddish-brown			
1		l		S-7	11-11	1.5'							
15-	1			S-8	3-5-5-6	1.7'							
	1			3~0	3-3-3-6	1.1			Moiet Regum	to Reddish-brown			
]				5-9	6-8-6-5	2.0'			CLAY & SILT	, few lens of f SANE	)		
4						2.0				ŧ			
			1	S-10	1-1-1-3	1.3'			@ 18.5 Satura	ited AY & SILT to Silty		Saturate	ed @ 18.
20-		ļ						ŀ	CLAY with br	own mottling		•	
	11		7	S-II	1-1-3-4	1.2'			Gray Silty Cl	ay .			
4	1	İ							_				
4	[]	l	Ŋ	S-12	4-4-5-5	0.0			-				
-		l											
25-			[]	S-13	WOH-WOH- 3-4	1.2'			-				
4					V 1				-				
	ł]	l	7	S-14	3-4-4-5	2.0°					.	•	
	1	I			11611							٠.	•
		1	L I	S-15	WOH-I- 1-2	0.8			1		l l		-

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ECI	KENFELDER INC						urface ng Log	Well Name/Locat   MW-21R	Page 2 d
	et: RFI DYNO Nobel, Port Ewen, NY		· · · · · · · · · · · · · · · · · · ·		·		roject No.: 192.02	Start Date: 09/ Finish Date: 09/	04/97
AIGHT.	WELL CONSTRUCTION	soil	SA	4PLE	DAT		102.02	1 HHOIT DALE. US/	00/8/
et)		Samp.	Blows/ 8 in.	Rec.	ÚSCS	HNU (ppm)		(CONTINUA	TION)
Depth (feet)		Run No.	Hydraul. Cond. cm/sec	Rec.		(D)Sitt	V	ISUAL IFICATION	REMARKS
30 <del>-</del>		S- <b>1</b> 6	2-3-2-2	0.9			-		
-		S-17	WOR-WOR- WOH-2	1.6			_		
35-		S-18		1.4'					
-		S-19		2.0'					
1		S-20	2-1-3-2	1.8			- - -		
-01		S-21	WOR-1- 3-4	2.0'			Gray Şilty Clay	y, trace (-) f Sand	
4		S-22	3-4-3-4	2.0'			<b>-</b>		
15-		S-23	WOR-WOR- 2-3	2.0	and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th		- Gray Silty Clay	<b>y</b>	
-		S-24	NO.	2.0			- Gray Silty Clay	y, little (-) f Sand	
		S-25	1-4-9-6	2.0'			SAND & GRAVE	48.75 EL	
60-		S-26	4-5-7-8	0.8'			Gravel	ility CLAY, little	
m-ndokerenson dares		S-27	4-4-7-7	1.3'		-	cmf GRAVEL ( Shale), some c Clay	chips of weathered Sand, some Silty	
55-		S- <b>2</b> 8	7-8- 17-24	1.6'	-		- Gray f SAND.	race (+) Gravel	
		S-29	8-18 15-18	2.0			<ul> <li>of weathered.</li> </ul>	omf Gravel (chips Shale), little c	
4		S-30	18-14- 24-58	1.4			all c Gravel	y Clay, grading to	
-01					100%		BEDROCK- GR No core collect	AY SHALE sted from 60.0' to	No core collected fro 60.0' to 66.0'
35-						ē	-		
) T					-	ı	- Gray Shale, fe	w small fractures g, dipping at a	
	NX Core hole	R-1		5.0	83%		steep angle, fi	om 67.3° to 69.5°.	
0			,						

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EC	KENFELDER INC	•					urface ng Log	Well Name/Locat	ion: Page 3 of 3
	ct: RFI : DYNO Nobel, Port Ewen, NY						roject No.: 192.02	Start Date: 09/ Finish Date: 09/	/04/97 ·
Onom	WELL CONSTRUCTION	soil rock	SAN	MPLE	DAT		192.02	Timan Date. 00,	, , , , , , , , , , , , , , , , , , , ,
eet)		Samp.	Blows/ 6 in.	Rec.	uscs	(ppm)		(CONTINUA	TION)
Depth (feet)		Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)		(ppai)	V	ISUAL IFICATION	REMARKS
70-		R-I	·	5.0'			- Grav Shale, fe	w small fractures,	
75-		R-2		5.0'	83%		some with calc staining, dippir	cite and brown ng at steep angle Calcite vein trom Smaller Calcite	
80-		R-3		5.0'	87%		Horizontal frac some clay Fractures from staining	e, steep angle, some ization cture, in-filled with n 77.3' to 79.5' no Calcite from 79.0'	
85-		R-4		5.0'		-	Badly fracture mineralization Slightly angled and 86.5' no si	I fractues at 85.2'	
90-					96%		End of Boring		
95-				-			-		. •
100-				belde geben bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester bester best					
105-					т (сер. 19) беріні (адара (18) адара (18) адара (19) адара (19) адара (19) адара (19) адара (19) адара (19) ад		- - -		
110							-		• •

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Project: RFI Client: BYNO Nobel, Port Ewen, NY									roject No.:	l .	2: 09/09/97	• .	
Client	DRILLING DATA									192.02 Finish Date: 09/12/97 SAMPLING METHODS			
Inche	Inspector: E.R.Limbrick									Sampler	Tube	l oi	
Contractor: Maxim Technologies, Inc., C.Dinovo									Type: S5	:/NX Core Bar		Core NX	
Equipment: Acker Soil Max									Diameter:	2 inch	NA NA	3 inch	
Method: 6 1/4" HAS/5 7/8 Roller Bit/NX Core									1	140 lb/30 inch	NA.	NA NA	
			WELL CONSTRU	CTIC	N		*		{ <del>-</del>	ELL	SURVEY DATA		
			Riser		Screen				DEVEL	OPMENT	DATUM:		
Mater	ial:	ŀ	black steel		NA				Method:		Grade:		
Diame	ter (ID):		4 inch ID		2 1/8				Duration:		TWC: 161.00		
Coupl	ing:		NPT						Gals. Purged:		TPC:		
	WELL	CON	NSTRUCTION	soil	- SAMPLE DATA			Ά	Slug Test:		North: 68536.		
				rock		1	1		(cm/sec)	·	East: 594182.	84 .	
Depth (feet)			T 4" Locking	Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	(ppm)	Geophysical L Comments:	og: 🗌 yes	⊠ no		
1 - 1		<i>i</i> .	Cap	Run No.	Hydraut. Cond, cm/sec	Rec. (ft.)	RQD		V	ISUAL IFICATION	RE	EMARKS	
0-				S-I	5-7-9-10	1.7'			_				
-		:	Cement/	S-2	11-11- 12-13	1.5'							
5-			Bentonite Brout	S-3	7-11- 12-13	2.0'			Brown SILT &	Brown SILT to CLAY, few thin len me red staining	5		
 			4" Steel Casing	S-4	11-12- 12-16	2.0'			Moist Brown C red mottling	layey SILT, some			
- -				S-5	7-7- 8-11	2.0'			SAND	SILT & CLAY, Iens	occupant designation of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control		
10- -				S-6	3-5-6-8	1.6*			staining Reddish-brow	n with Gray mottling , seams of f Gray	<b>9.</b>	•	
-	1			S-7	8-8-9-8	1.7'			- Sand	, soums or I oray			
- 15				S-8	3-3-4-4	1.4'							
- -				S-9	5-5-5-8	1.8'			Ø 18.4 change	to Gray Silty CLA	1		
20-				S-10	1-1-2-3	1.1'			<ul> <li>@ 18.3 Saturat</li> <li>Wet, Gray Silty mottling</li> </ul>	ed / CLAY with brown	Saturat	ed @ 18.3 feet.	
20-			: .	S-II	WOR-WOH- 2-2	0.6			••••••••••••••••••••••••••••••••••••••				
				S-12	2-2-2-2	1.6'			-A	·			
25-				S-13	WOH-2- 1-2	1.1	-	-	- Croy Catu Ca-				
				S-14	2-2-3-2	2.0'			- Gray Silty Clay -	,			
30				S-15	WOR-WOH- 1-2	1.2'			<del>.</del>				

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EC	KENFELDER INC.		-	Subsurface Boring Log			Well Name/Locat MW-20R	on: Page 2 of 3	
1	ct: RFI : DYNO Nobel, Port Ewen, NY	<del> </del>	<del></del>	Project No.: 0192.02			Start Date: 09/09/97 Finish Date: 09/12/97		
Oil Crit	WELL CONSTRUCTION   SOIL   SAMPLE						702.02	Filish Date. 09/12/9/	
(feet)		Samp.	Blows/ 6 in.	Rec.	uscs	HNU (ppm		(CONTINUA	TION)
Depth (fe	÷	Run No.	Hydraul. Cond. cm/sec	Rec.	RQD		V	ISUAL IFICATION	REMARKS
30-		S-16	WOR-WOH-	1.0'			- 04,00	II IUATION	·
			1-3 2-3-1-4	2.0'			-	•	
3.5			WOR-WOR-				_		
35-		S-18	WOR-WOR	1,9'			Gray Silty CLAY and Orange-brown SILT		
-		S-19	2-3	2.0'			- Gray Silty CLA	: <b>\Y</b>	
40-		L	1-2-2-3	2.0					
-		S-21	WOR-WOH- WOH-2	2.0'			- Gray with Orange and Olive		
-		S-22	1-2-2-4	2.0'			streaking and	mottling, Silty CLAY	
45-		S-23	2 <del>-5</del> 8- 24 <b>-</b> 43	1.4'			SAND & GRAVI  c GRAVEL and mothing Silty (	EL I Gray with olive CLAY, little cmf	
		S-24	13-15 25-28	1.6'	,		-√ Sand	f SAND and CLAY	
		S-25	79-64- 32-5!	2.0'			1 \ \	GRAVEL, some silty f SAND	
50-		S-26	13-15- 24-26	2.0			C GRAVEL, little	ectocmf Sand, otrace (+) Siity	
		S-27	10-13- 27-28	1.6*			-	54.0	
55-		S-28	50/0" ^	0.0'			BEDROCK - GI No core collect	<del></del>	No core collected from 54.0' to 59.1'
			• '				- -		and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s
60-		R-1	-	1.8'	78%		no staining, di	me fractures with oping from vertical, orizontal from 60.0	
65-	NX Core hole	R-2		4.8'	56%		d=61.7 Few fra 62.4', no stain Few horizontal clay in-filling, mineralization Large horizont heay calcite m	fractures some and some calcite al fracture @ 64.7°, increlization	Formation taking a lot of water from 62.5' to 66.5'
70		R-3		4.8'	63%	. '	to 65.8', trace Fractures @ 6 calcite mineral	d zone from 68.7'	

L	KENFELDER INC	<b>*</b>			Subsurface Boring Log Pröject No.: 0192.02			Well Name/Location:  MW-20R  Page 3 of Start Date: 09/09/97  Finish Date: 09/12/97		
	ct: RFI : DYNO Nobel, Port Ewen, NY			<del></del>						
	WELL CONSTRUCTION	soil rock	- SΔMPI		E DATA		102.02			
(feet)		Samp. No.	Blows/ 6 in.	Rec. (ft.)	uscs	HNU (ppm)	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	(CONTINUATION)		
-0.0 Depth (feet)	·	Run No.	Hydraul. Re Cond. (f		RQD		V. CLASS	ISUAL IFICATION	REMARKS	
]		R-3		4.8'	63%		_			
75-		R-4		4.5'	79%		-			
							End of Boring	at 77.0 feet.		
80-	,						<del>-</del>	. •		
1								· · · · · · · · · · · · · · · · · · ·		
85-				٠						
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90-								•		
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95-	,								. •	
100-							- - <del>-</del>			
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105-		,	٠				- -	·		
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110				.		-		THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS O		