Approved 11/8/00

HERCULES

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Hercules Plaza
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June 27, 2000

VIA OVERNIGHT MAIL

Chief, Bureau of Hazardous Waste Facilities (3 copies)
Division of Solid and Hazardous Materials
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7252

Re: Ciba Site, Glens Falls, New York, EPA ID No. NYD002069748
HWM Permit Number 5-5234-00008/00096 (Expires 1/6/2002)

Dear Sir:

Please find enclosed the "Groundwater Investigation Report, Area Southeast of Pretreatment Plant SWMU," for the above site.

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

If you have any questions in this matter, please contact me by telephone at (302) 5946581, by facsimile at (302) 594-7255, or by postal service at the above address.

Sincerely

Glen H. Schmiesing, P. E.
Glens Falls Project Manager
for Hercules Incorporated

GHS: Enclosure (3 sets) 0054-ltr

cc: w/enclosure
Regional Solid & Hazardous Materials Engineer, NYSDEC, Region 5, Ray Brook, NY
Chief, RCRA Programs Branch, U.S. EPA Region II, NY, NY
J. H. Tucker - Ciba Specialty Chemicals Corporation, Toms River, NJ (2 copies)
Hercules Incorporated, Glens Falls, NY

GROUNDWATER INVESTIGATION REPORT
AREA SOUTHEAST OF PRETREATMENT PLANT SWMU
CIBA SITE, GLENS FALLS, NEW YORK

Prepared for:

Hercules Incorporated
Hercules Plaza
Wilmington, Delaware 19894

Prepared by:

Brown and Caldwell
440 Franklin Turnpike
Mahwah, New Jersey 07430

June 2000

18924.001

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1.0 INTRODUCTION

The "CMI Groundwater Monitoring Plan Technical Approach" (Eckenfelder Engineering, P.C., April 1999) was submitted as Attachment E of the Final Corrective Measures (CM) Design for the Ciba Site near Glens Falls, New York. In a letter to Hercules Incorporated (Hercules) and Ciba Specialty Chemicals Corporation (Ciba), dated September 9, 1999, the New York State Department of Environmental Conservation (NYSDEC) provided comments on that document and additional requirements with respect to groundwater monitoring at the site. In that letter, the NYSDEC required an additional investigation of groundwater conditions in the overburden water-bearing zone in the area downgradient of the Pretreatment Plant Solid Waste Management Unit (SWMU). On January 28, 2000 a work plan for the additional investigation, entitled "Groundwater Investigation Work Plan, Area Southeast of Pretreatment Plant SWMU, Ciba Site, Glens Falls, New York" (Brown and Caldwell, January 2000) (referred to hereafter as the "Work Plan") was submitted by Hercules and Ciba to the NYSDEC. On March 6, 2000 Hercules and Ciba received conditional approval of the Work Plan from the NYSDEC in a letter dated February 22, 2000 (see Appendix A).

The objective of the investigation is to evaluate the extent and discharge area of the cyanide plume in the groundwater that originates from the Pretreatment Plant SWMU.

Section 2.0 provides general background information with regard to existing information and site conditions for the area of investigation. Section 3.0 describes the investigative methods and procedures. Section 4.0 discusses the findings of the investigation. Section 5.0 presents the conclusions and recommendations based on the investigative findings.

2.0 BACKGROUND AND AREA OF INVESTIGATION

Several investigations have been conducted at the Pretreatment Plant SWMU as part of the RCRA Facility Assessment (RFA) and RCRA Facility Investigation (RFI) pursuant to the Hazardous Waste Management (HWM) Permit for the site. The findings of these studies are provided in the following documents:

- "RFA Sampling Visit, Pretreatment Plant, CIBA -GEIGY Site, Glens Falls, New York" (Eckenfelder Engineering, P.C., July 1992)

- "Pretreatment Plant Addendum to RFI Task I Report, CIBA-GEIGY Site, Glens Falls, New York" (Eckenfelder Inc., December 1992)

- "Groundwater Addendum to RFA Report for Pretreatment Plant SWMU, CIBA-GEIGY Site, Glens Falls, New York" (Eckenfelder Engineering, P.C., September 1993)

- "RFI Report for the Pretreatment Plant SWMU, CIBA-GEIGY Site, Glens Falls, New York" (Eckenfelder Inc., October 1994).

Presented in the following paragraphs is a brief description of the Pretreatment Plant SWMU and surrounding area, and background information pertinent to the investigation described herein. For more information and detail, please refer to the above-listed documents.

The Pretreatment Plant SWMU is part of the Ciba Site, which is located in the Town of Queensbury, New York, just east of the City of Glens Falls. It occupies approximately four acres and is situated north of the Glens Falls Feeder Canal and River Street, and east of Quaker Road (see Figure 2-1).

693000 E

693500 E

694000 E

N

BOULEVARD

BRUSH

PRETREATMENT PLANT SWMU

TANK

GLENS FALLS FEEDER CANAL

RIVER STREET

1207500 N

1207000 N

SG-1 SG-2 SG-6 SG-7 SG-8 SG-11 SG-12 SG-13 SG-14 SG-15

IS-1

P-1 P-2 P-3 P-4 P-5 P-6 P-7 P-8 P-9 P-10 P-11 P-12 P-13 P-14 P-15 P-16

PT-2 PT-4 PT-5 PT-9 PT-13 PT-15 PT-29 PT-30 PT-31 PT-32 PT-33 PT-34 PT-35

MW-OB17 MW-OB18 MW-OB19 MW-OB20 MW-OB21 MW-OB22 MW-OB23

IG-1 IG-2 IG-3 IG-4

NEL-1 NEL-2 NEL-3 NEL-4 NEL-5 NEL-6 NEL-7 NEL-8 NEL-9 NEL-10 NEL-11 NEL-12 NEL-13 NEL-14 NEL-15 NEL-16 NEL-17 NEL-18 NEL-19 NEL-20 NEL-21 NEL-22 NEL-23 NEL-24 NEL-25

NEL-WP-1 NEL-WP-2 NEL-WP-3

290 280 270 260 250

LEGEND:

- NEL-1 — SOIL BORING LOCATION
- NEL-WP-1 — WELL POINT LOCATION
- MW-OB23 — MONITORING WELL LOCATION
- P-7 — PIEZOMETER LOCATION
- SG-7 — STAFF GAUGE LOCATION
- 270 — TOPOGRAPHIC CONTOUR (FEET, NGVD). CONTOUR INTERVAL=2 FT.
- CIBA PROPERTY BOUNDARY
- MARSH NOTED ON 11/91 AERIAL PHOTOGRAPHIC SURVEY

SOURCE:

BASE MAP WAS CONSTRUCTED BY STEREO PHOTOGRAMMETRIC METHODS USING AERIAL PHOTOGRAPHY FLOWN NOVEMBER 3, 1991 BASE MAP WAS PREPARED BY ROBINSON AERIAL SURVEY INC.

100 0 100 200

scale feet

FIGURE 2-1

LOCATION MAP
AREA SOUTHEAST
OF PRETREATMENT PLANT SWMU

HERCULES INCORPORATED
CIBA SITE GLENS FALLS, N.Y.

BROWN AND CALDWELL Mahwah,New Jersey

18924-01 05/30/2000 (18479-M1) PLOT 1=100 (18924-01.PCP)

indicate that the cyanide concentrations decrease to levels below or near the Groundwater Protection Concentration (GWPC) of 100 μg/L in all downgradient directions except to the southeast. Sampling of monitoring well MW-OB21, located to the southeast and downgradient of the Pretreatment Plant SWMU, indicates that cyanide concentrations several times greater than the GWPC have migrated from the Pretreatment Plant SWMU, beneath the Feeder Canal.

The land surface of the Pretreatment Plant SWMU is generally flat-lying, and contains paved and unpaved surfaces, remnant foundations, and open vegetated fields. Several structures exist in the eastern portion of the site, including a treatment building and an above-ground wastewater storage tank. Directly to the north and east are vegetated and marshy areas that grade away from the SWMU. A small stream flows near the northern boundary of the SWMU and into a marsh area to the east. This marsh area drains to the Feeder Canal through an open section in the northern canal wall. The Feeder Canal is situated adjacent to the Pretreatment Plant SWMU and comprises much of its southern boundary.

During the first half of 2000, shallow soils in the eastern portion of the Pretreatment Plant SWMU were removed and replaced with clean fill as part of the approved Corrective Measures for the site. The removed soils were placed in the Corrective Action Management Unit (CAMU) at the Main Plant Site.

The area southeast of the Pretreatment Plant and south of the Feeder Canal is the area of primary focus for this investigation. With the exception of the path adjacent to the Feeder Canal, this property is owned by Ciba. In this area, the land surface slopes steeply (40 to 50 percent) to the south-southeast for approximately 30 feet. Further south, the slope is more gentle. A marsh area is located within the gently sloping area. Within the marsh area, a small stream flows from west to east. At the western end of the marsh area, a tile pipe protrudes from a shallow embankment. Flow from this pipe contributes water to the marsh and stream. The source of the water in the pipe is unknown, but is suspected to originate from the Feeder Canal.

Beneath the eastern portion of the Pretreatment Plant SWMU, total cyanide concentrations of over 7,000 μg/l have been measured in the groundwater within the overburden water-bearing zone. Monitoring of locations surrounding this area

3.0 INVESTIGATIVE METHODS AND PROCEDURES

3.1 SOIL BORINGS

Twenty-two soil borings (NEL-1 through NEL-22) were drilled to evaluate the soil types and degree of saturation in the area south of the Feeder Canal and north (upgradient) of the stream within the marsh area. Most of the borings were drilled on an approximately 50-foot by 50-foot grid pattern, although in general, the northernmost borings on the grid were shifted to positions adjacent to the base of the steep slope. Three shallow soil borings (NEL-23 through NEL-25) were drilled south of the stream. Due to physical limitations on access, particularly in the area north of the stream, the soil borings were drilled manually with a stainless steel soil corer. Typically, the borings were sampled and described from ground surface to the top of a deposit referred to as the lacustrine clay unit (see Section 4.1). However, at some locations the top of the clay unit was not encountered because of operational limitations of the soil corer associated with depth, soil type and degree of soil saturation. The soil samples were described in accordance with the Burmister Soil Classification and the Unified Soils Classification (USCS). Logs of the soil borings are provided in Appendix B. The position of each boring was spotted on a map based on measurements from nearby landmarks and ground surface features.

After the soil borings were completed they were abandoned. Some degree of caving of the borehole walls occurred in each of the borings prior to abandonment, as determined by depth soundings. The remainder of the hole was filled with soil cuttings from the boring. Each boring location was then marked with a stake labeled with the boring designation.

3.2 WELL POINT INSTALLATION

Three well point locations were selected based on the information obtained from the soil borings. The well points were installed downgradient and cross-gradient of MW-OB21 at locations where the saturated thickness of relatively permeable deposits above the lacustrine clay unit is sufficient to allow for sampling of groundwater from a well point. The well points, designated NEL-WP-1, NEL-WP-2, and NEL-WP-3 were installed adjacent to soil borings NEL-1, NEL-10 and NEL-19, respectively. The boreholes for the construction of the three well points were drilled manually with a four-inch diameter stainless steel hand auger. The hand augers could not be advanced past three to four feet below grade due to saturated soils running into the borehole. The hand augers were decontaminated between the drilling of the boreholes for each well point with an Alconox® scrub and clean water rinse, followed by a distilled water rinse.

The well points are constructed of one-inch diameter, flush-threaded PVC, with a 2½-foot long slotted well screen at the base (0.010-inch slot). Teflon® tape was wrapped onto the male threaded joints prior to coupling the joints. The base of the well screen was positioned at a depth below the groundwater table as indicated by observations from the adjacent boring and the boring for the well point. Filter pack sand was placed in the annulus between the borehole and the PVC from the base of the borehole, across the screen interval, to a point approximately a ½-foot to one-foot below ground surface. Soil cuttings from the drilling of the borehole for the well point were backfilled and tamped into the remainder of the hole. A vented PVC cap was then placed on the top of the PVC casing.

The well points were developed using disposable bailers until the degree of turbidity in the produced water remained consistent based on visual observation, or until the well

point was evacuated. The volume of water produced during the development, and the duration of the development, are provided in the well point construction logs in Appendix C.

3.3 STAFF GAUGE INSTALLATION

Staff gauges were installed at four locations within the marsh area. Three of these staff gauges, SG-12, SG-13, and SG-14, were installed along the small stream that flows within the marsh. The fourth, SG-15, was installed in a small area of standing water in the northern part of the marsh. These staff gauges were established by placing stakes adjacent to, or within, the stream or open water such that the top of the stake can be used as a reference point for measuring surface water elevations with a water level meter. An additional staff gauge, SG-11, was established to allow water level measurements of the flow from the tile pipe in the western portion of the marsh. This staff gauge consists of a painted mark on the crown of the tile pipe.

3.4 LOCATION AND ELEVATION SURVEY

The location and ground surface elevation of the soil borings, staff gauges, and well points were surveyed. The top of the PVC casing on each well point and the top of each staff gauge were surveyed for elevation to provide a water level measurement reference point. The survey was conducted by New York State licensed surveyors from Van Dusen and Steves, L.L.C. The survey data are provided in Appendix D.

3.5 WATER LEVEL MEASUREMENTS

On April 5, 2000, water levels were measured at the following locations:

Wells	Staff Gauges
NEL-WP-1	SG-2 (Feeder Canal)
NEL-WP-2	SG-11 (Tile pipe)
NEL-WP-3	SG-12 (Stream in marsh area)
MW-OB21	SG-13 (Stream in marsh area)
MW-OB22	SG-14 (Stream in marsh area)
	SG-15 (Marsh)

The water levels in the well points were recovered to static conditions following the well development/purging conducted on the previous day based on field observations of the recovery rates during the well development. The water level data are provided in Appendix E.

The water levels were measured using an electronic water level indicator. The indicator probe was lowered into the well or from the top of the staff gauge until the indicator signaled that water was encountered. The probe was then raised above the water level and then slowly lowered again until water was encountered. The indicator tape was held against the inside of the well casing, or against the staff gauge, at the reference point designated for water level measurements and a depth to water reading recorded. This procedure was repeated three times or until a consistent value was obtained. The value was recorded to the nearest 0.01 feet. The probe was then raised to the surface. The probe and the wetted portion of the cable was then decontaminated with a non-phosphate detergent (Alconox®) wash and a distilled water rinse.

3.6 SAMPLING AND ANALYSIS OF GROUNDWATER AND SURFACE WATER

On April 4 and 5, 2000, groundwater samples were collected from the following wells:

NEL-WP-1	MW-OB21
NEL-WP-2	MW-OB22
NEL-WP-3	

Prior to groundwater sampling, the depth to the bottom of the well and the depth to static water level was measured in each monitoring well. These measurements were used to calculate the volume of water in the well. Water levels were measured as described in Section 3.5. The depth to the bottom of the well was measured by lowering the water level probe to the bottom of the well. The tape was then raised until the tension indicated the probe tip was positioned at the bottom of the well. A measurement from the water level reference point on the top of the well casing was then recorded. This measurement was adjusted for the length of the probe below the zero point, if necessary.

Wells were purged of three well volumes of water, or completely evacuated, depending on the recharge rates, prior to sampling. For the newly installed well points, the wells were purged directly following their initial development. The well points were purged using disposable polyethylene bailers, with new bailers being used for each well point. The monitoring wells (MW-OB21 and MW-OB22) were purged using dedicated PVC bailers. The purged groundwater was collected in buckets to allow for measuring the volumes, and following sampling was poured on the ground near the well and allowed to infiltrate.

Groundwater samples were collected from the wells and well points using the bailers with which they were purged. Pursuant to the groundwater monitoring plan for the site ("Groundwater Monitoring Plan, CIBA-GEIGY Site, Glens Falls, New York, [Eckenfelder Inc., March 1997]), the samples were collected within 24 hours of completion of purging. The samples for total cyanide analysis were poured from the bailer into 1,000 mL plastic bottles supplied by the laboratory, and preserved with sodium hydroxide to maintain a pH greater than 12. The bottles were then placed in a cooler containing ice in a sealed plastic bag. After the collection of the sample for cyanide analysis, additional sample was collected and pH, specific conductivity, and temperature (i.e., field parameters) were measured on the sample in the field. The pH was measured using an Oakton pHTestr 2 meter. The specific conductivity and temperature were measured using a Yellow Springs Instruments (YSI) Model 3000 meter. Both meters were calibrated prior to the measurements. The field data sheets for the groundwater samples are provided in Appendix F.

On April 5, 2000, surface water samples were collected at the following locations for total cyanide analysis:

SG-11	SG-14
SG-12	SG-15
SG-13	

The samples were collected from the surface water body using clean glass jars. The samples were then transferred into 1000 mL plastic bottles supplied by the laboratory, and preserved with sodium hydroxide to maintain a pH greater than 12. The bottles were then placed in a cooler containing ice in a sealed plastic bag.

After the collection of the sample for cyanide analysis, additional sample was collected and pH, specific conductivity, and temperature (i.e., field parameters) were measured

on the sample in the field using the same equipment as described previously for the groundwater samples. Field parameters were also measured on a sample from the Feeder Canal, which was collected from directly north of well MW-OB21. The field data sheets for the surface water samples are provided in Appendix F.

As a field quality assurance/quality control (QA/QC) measure, a duplicate sample and an equipment blank were collected and submitted for total cyanide analysis. The duplicate sample was collected from location SG-14. The equipment blank was prepared by pouring analyte-free water, which was supplied by the laboratory, into a new disposable polyethylene bailer (as used for groundwater sampling), then into a clean glass jar (as used for surface water sampling), and finally into a sample bottle. The duplicate and equipment blank were preserved in the same fashion as the other samples described above.

After sample collection, the sample bottles were labeled and placed in a cooler containing ice in sealed plastic bags. The samples were shipped in the cooler to the laboratory via overnight courier, Federal Express. The custody of the samples was documented using chain-of-custody forms. The forms were filled-out by the samplers and placed in the cooler prior to relinquishing the cooler to the courier. A signed custody seal was also placed across the closed juncture between the lid and the main body of the cooler prior to relinquishing the cooler to the courier.

The total cyanide analyses were conducted using USEPA Method 9012A. The analyses were performed by Eckenfelder Laboratory, LLC, which is certified by the New York State Department of Health. The analyses were conducted in accordance with the Quality Assurance Project Plan (QAPjP) for the site. The laboratory data package is provided in Appendix G.

The analytical data were internally validated by the laboratory and reviewed by the Brown and Caldwell project manager. The results of the Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses indicated that the spike recovery was greater than the control limits (see "Case Narrative" in Appendix G). Thus, the data associated with these MS/MSD samples were qualified with an "N". The higher recovery may be due to sample matrix interference or a slight over-addition of the spike solution to the MS/MSD. If due to matrix interference, the sample results would be biased toward greater than actual cyanide concentrations. The data are considered usable.

4.0 INVESTIGATIVE FINDINGS

4.1 OVERBURDEN STRATIGRAPHY

The nature of the overburden deposits in and near the area of this investigation is described below. The characterization of these deposits is based on the findings of this investigation and previous investigations described in the documents listed in Section 2.0.

The lower portion of the overburden consists of a relatively thick accumulation of predominantly silty clay deposited within a former lake bed during the Pleistocene Epoch. This silty clay is referred to as the lacustrine clay unit. Based on nearby borings that were drilled to bedrock, this unit directly overlies bedrock. The lacustrine clay unit is typically varved, exhibiting very thin layers that are more silt-rich or sand-rich. Figures 4-1 and 4-2 present a structural contour map the surface of the lacustrine clay unit, and a hydrogeologic cross-section through the area of the investigation, respectively. Beneath most of the Pretreatment Plant SWMU, the clay surface undulates between relatively high and low areas (see Figure 4-1). In the eastern portion of the SWMU, the clay surface dips to the southeast. The general southeasterly dip continues under, and to the south of, the Feeder Canal, into the area of this investigation. Directly south of the Pretreatment Plant SWMU, the clay was apparently partially excavated to construct the Feeder Canal, as its surface is above the approximate base of the canal (see Figure 4-1). To the east, in the vicinity of well MW-OB21, the clay surface is below the base of the canal.

The thickness of the deposits overlying the lacustrine clay unit have been measured between approximately 8 and 24 feet directly south of the Feeder Canal. South of the steep slope adjacent to the canal, these deposits are much thinner, with the surface of the lacustrine clay lying fairly close to the ground surface in many areas (see

693000 E

693500 E

694000 E

1207500 N

1207000 N

N

BOULEVARD

RIVER STREET

GLENS FALLS FEEDER CANAL

APPROXIMATE LIMIT OF LACUSTRINE CLAY UNIT

PRETREATMENT PLANT SWMU

TANK FARM

BRUSH

EXCAVATION FOR FEEDER CANAL TO 272 FT., NGVD

LEGEND:

- NEL-1 — SOIL BORING LOCATION
- NEL-WP-1 — WELL POINT LOCATION
- MW-OB23 — MONITORING WELL LOCATION
- P-7 — PIEZOMETER LOCATION
- SG-7 — STAFF GAUGE LOCATION
- 280 — STRUCTURAL CONTOUR, TOP OF LACUSTRINE CLAY UNIT (DASHED WHERE INFERRED). CONTOUR INTERVAL=2 FT.
- (273.5) — ELEVATION OF TOP OF LACUSTRINE CLAY UNIT (ft., NGVD)
- NP — LACUSTRINE CLAY UNIT NOT PRESENT
- A — A' — LINE OF CROSS-SECTION IN FIGURE 4-3
- CIBA PROPERTY BOUNDARY
- MARSH NOTED ON 11/91 AERIAL PHOTOGRAPHIC SURVEY

SOURCE:

BASE MAP WAS CONSTRUCTED BY STEREO PHOTOGRAMMETRIC METHODS USING AERIAL PHOTOGRAPHY FLOWN NOVEMBER 3, 1991 BASE MAP WAS PREPARED BY ROBINSON AERIAL SURVEY INC.

100 0 100 200

scale feet

FIGURE 4-1

GENEREALIZED STRUCTURAL CONTOUR MAP TOP OF LACUSTRINE CLAY UNIT

HERCULES INCORPORATED
CIBA SITE GLENS FALLS, N.Y.

BROWN AND CALDWELL Mahwah, New Jersey

18924-02 06/20/2000 (18924-M1) PLOT 1=100 (18924-02.PCP)

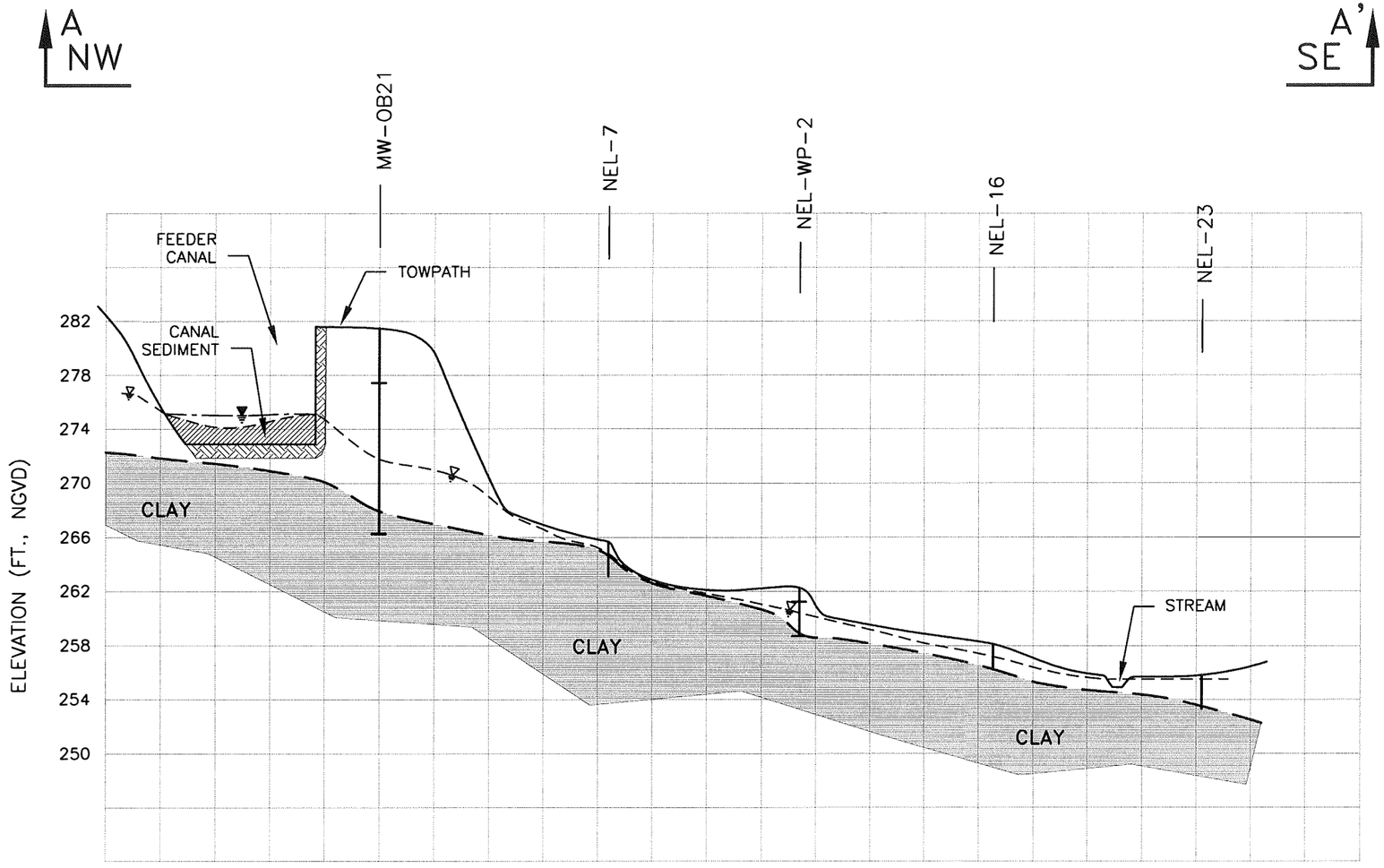
Figure 4-2). The thicker deposits directly south of the canal are predominantly sand, with some silt and clay components and layers. The thinner deposits to the south contain varying proportions of sand, silt and clay. These deposits are a combination of lacustrine sediments associated with later stages of the former lake in which the underlying clay unit was formed, and local fill that may have be associated with the construction of the canal and associated features, and/or subsequent utility installations.

4.2 GROUNDWATER FLOW

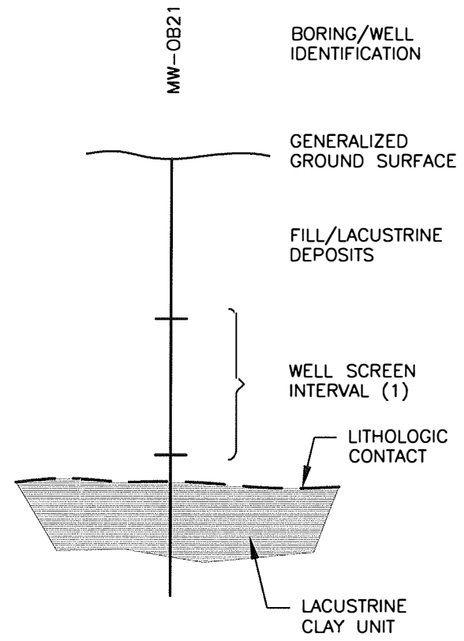
Groundwater in the overburden water-bearing zone in the vicinity of the Pretreatment Plant SWMU flows laterally through the relatively permeable fill and lacustrine deposits above the lacustrine clay unit. The lacustrine clay unit, situated at the base of the overburden, has a relatively low hydraulic conductivity and retards the vertical migration of groundwater. Thus, the clay unit forms the lower boundary of the overburden water-bearing zone. Due to the thinness of the saturation above the clay unit throughout most of the area in the vicinity of the Pretreatment Plant SWMU, the configuration of the surface of the clay unit likely influences horizontal groundwater flow directions in the more permeable material above.

A groundwater potentiometric surface map (i.e., groundwater table map) of the overburden water-bearing zone in the area of investigation was prepared based on the water levels measured on April 5, 2000 and is provided in Figure 4-3. The hydrogeologic cross-section in Figure 4-2 also depicts this same potentiometric surface.

The potentiometric surface map indicates that groundwater flows to the south and southeast from the vicinity of the Feeder Canal, near wells MW-OB21 and MW-OB22, toward the marsh area and stream to the south, where it discharges. As discussed in the "RFI Report for the Pretreatment Plant SWMU, CIBA-GEIGY Site, Glens Falls,



LEGEND:



GENERALIZED POTENTIOMETRIC SURFACE (APRIL 5, 2000)

APPROXIMATE WATER LEVEL IN FEEDER CANAL (APRIL 5, 2000)

(1) ONLY INDICATED IF A WELL WAS INSTALLED AT A BORING LOCATION

SCALE

0 50

HORIZONTAL

0 10

VERTICAL

NOTE: SEE FIGURE 4-1 FOR CROSS-SECTION ORIENTATION.

FIGURE 4-2

HYDROGEOLOGIC CROSS-SECTION

HERCULES INCORPORATED
CIBA SITE GLENS FALLS, N.Y.

BROWN AND CALDWELL Mahwah, New Jersey

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New York" (Eckenfelder Inc., October 1994), and previously in this document, because the surface of the clay unit is above the base of the Feeder Canal to the west of MW-OB21, groundwater apparently does not flow directly southward from the Pretreatment Plant SWMU beneath the canal. Rather, it apparently migrates to the east, parallel to the canal, to where the clay unit dips below the base of the canal, and then flows to the south.

4.3 GROUNDWATER QUALITY

The results of the total cyanide analyses and field parameter measurements on the groundwater and surface water samples are provided in Table 4-1. Figure 4-4 presents an isoconcentration map of the total cyanide concentrations using a logarithmic contour interval beginning at 10 μg/l. The GWPC for total cyanide is 100 μg/l.

The cyanide concentrations are highest at MW-OB21, and decrease substantially in both the downgradient and cross-gradient directions. With the exception of MW-OB21, the cyanide concentrations measured in the area southeast of the Pretreatment Plant SWMU are below the GWPC. MW-OB21 is the sample location to which groundwater from the area of high cyanide concentrations at the Pretreatment Plant SWMU apparently has the shortest, most direct flow path.

Wells MW-OB21 and MW-OB22 are sampled and analyzed for total cyanide as part of the semi-annual groundwater monitoring for the Ciba Site (see "Groundwater Monitoring Plan, CIBA-GEIGY Site, Glens Falls, New York, [Eckenfelder Inc., March 1997]). The concentrations measured in the samples from these wells for this investigation are generally consistent with those measured during preceding monitoring events.

693000 E
693500 E
694000 E
1207500 N
1207000 N
N
BOULEVARD
BRUSH
PRETREATMENT PLANT SWMU
TANK
GLENS FALLS FEEDER CANAL
RIVER STREET
EXCAVATION FOR FEEDER CANAL TO ±272 FT., NGVD
P-1
P-2
P-3
P-4
P-5
P-6
P-7
P-8
P-9
P-10
P-11
P-12
P-13
P-14
P-15
P-16
SG-1
SG-2
SG-6
SG-7
SG-8
SG-11
SG-12
SG-13
SG-14
SG-15
IG-1
IG-2
IG-3
IG-4
IS-1
PT-2
PT-4
PT-5
PT-9
PT-13
PT-15
PT-29
PT-30
PT-31
PT-32
PT-33
PT-34
PT-35
MW-OB17
MW-OB18
MW-OB19
MW-OB20
MW-OB21
MW-OB22
MW-OB23
(274.81)
(271.94)
(<275.90)
(270.03)
(263.19)
(260.65)
(259.48)
(258.29)
(254.14)
(252.37)
NEL-WP-1
NEL-WP-2 (260.65)
NEL-WP-3 (261.58)
NEL-1
NEL-2
NEL-3
NEL-4
NEL-5
NEL-6
NEL-7
NEL-8
NEL-9
NEL-10
NEL-11
NEL-12
NEL-13
NEL-14
NEL-15
NEL-16
NEL-17
NEL-18
NEL-19
NEL-20
NEL-21
NEL-22
NEL-23
NEL-24
NEL-25
274
272
270
268
266
264
262
260
258
256
254

LEGEND:

- NEL-1 — SOIL BORING LOCATION
- NEL-WP-1 — WELL POINT LOCATION
- MW-OB23 — MONITORING WELL LOCATION
- P-7 — PIEZOMETER LOCATION
- SG-7 — STAFF GAUGE LOCATION
- 260 — POTENTIOMETRIC SURFACE CONTOUR CONTOUR INTERVAL=2 FT.
- (260.63) — POTENTIOMETER SURFACE ELEVATION (ft., NGVD)
- CIBA PROPERTY BOUNDARY
- MARSH NOTED ON 11/91 AERIAL PHOTOGRAPHIC SURVEY

SOURCE:

BASE MAP WAS CONSTRUCTED BY STEREO PHOTOGRAMMETRIC METHODS USING AERIAL PHOTOGRAPHY FLOWN NOVEMBER 3, 1991 BASE MAP WAS PREPARED BY ROBINSON AERIAL SURVEY INC.

100 0 100 200
scale feet

FIGURE 4-3

GENERALIZED POTENTIONMETRIC SURFACE MAP
OVERBURDEN WATER-BEARING ZONE
(APRIL 5, 2000)
HERCULES INCORPORATED
CIBA SITE GLENS FALLS, N.Y.

BROWN AND CALDWELL Mahwah, New Jersey

18924-03 05/30/2000 (18924-M1) PLOT 1=100 (18924-02.PCP)

693000 E

693500 E

694000 E

BOULEVARD

N

1207500 N

1207000 N

BRUSH

PRETREATMENT PLANT SWMU

TANK

GLENS FALLS FEEDER CANAL

RIVER STREET

TILE PIPE

SG-1 SG-2 SG-6 SG-7 SG-8 SG-11 (8.5) SG-12 (10) SG-13(8.9) SG-14 (9.1) SG-15 (ND)

P-1 P-2 P-3 P-6 P-7 P-8 P-10 P-11 P-12 P-14 P-15 P-16

PT-2 PT-4 PT-5 PT-9 PT-13 PT-15 PT-29 PT-30 PT-31 PT-32 PT-33 PT-34 PT-35

MW-OB17 MW-OB18 MW-OB19 MW-OB20 MW-OB21(500) MW-OB22 (52) MW-OB23

IG-1 IG-2 IG-3 IG-4 IS-1

NEL-1 (25) NEL-2 NEL-3 NEL-4 NEL-5 NEL-6 NEL-7 NEL-8 NEL-9 NEL-10 NEL-11 NEL-12 NEL-13 NEL-14 NEL-15 NEL-16 NEL-17 NEL-18 NEL-19 NEL-20 NEL-21 NEL-22 NEL-23 NEL-24 NEL-25

NEL-WP-1 NEL-WP-2 (16) NEL-WP-3 (ND)

10 100

100 0 100 200

scale feet

LEGEND:

NEL-1 ●	SOIL BORING LOCATION
NEL-WP-1 ◆	WELL POINT LOCATION
MW-OB23 ⊕	MONITORING WELL LOCATION
○ P-7	PIEZOMETER LOCATION
△ SG-7	STAFF GAUGE LOCATION
— 10 —	TOTAL CYANIDE ISOCONCENTRATION CONTOUR (ug/L). DASHED WHERE INFERRED
	LOGARITHMIC CONTOUR INTERVAL
(10)	TOTAL CYANIDE CONCENTRATION IN GROUNDWATER OR SURFACE WATER (ug/L) APRIL 2000.
— — — —	CIBA PROPERTY BOUNDARY
	MARSH NOTED ON 11/91 AERIAL PHOTOGRAPHIC SURVEY

SOURCE:

BASE MAP WAS CONSTRUCTED BY STEREO PHOTOGRAMMETRIC METHODS USING AERIAL PHOTOGRAPHY FLOWN NOVEMBER 3, 1991 BASE MAP WAS PREPARED BY ROBINSON AERIAL SURVEY INC.

FIGURE 4-4

TOTAL CYANIDE IN GROUNDWATER AND SURFACE WATER APRIL 2000

HERCULES INCORPORATED
CIBA SITE GLENS FALLS, N.Y.

BROWN AND CALDWELL Mahwah, New Jersey

18924-05 06/13/2000 (18924-M1) PLOT 1=100 (18924-02.PCP)

TABLE 4-1

SUMMARY OF
GROUNDWATER AND SURFACE WATER QUALITY DATA

Location	Date Sampled	Total Cyanide (µg/l)	pH	Conductivity (mS/cm)	Temperature (°C)
Feeder Canal	4/4/00	NA (a)	8.1	0.632	10.2
SG - 11 (Tile Pipe)	4/5/00	8.5	7.6	0.628	6.4
SG - 12	4/5/00	10	7.8	0.631	6.2
SG - 13	4/5/00	8.9	7.6	0.626	5.2
SG - 14	4/5/00	9.1	7.7	0.607	5.7
DUP-040500 (SG-14)	4/5/00	11	NA	NA	NA
SG - 15	4/5/00	5.0 U(b)	7.2	0.396	4.4
MW - OB21	4/4/00	500	7.1	1.256	10.1
MW - OB22	4/4/00	52	8.6	0.578	7.4
NEL - WP - 1	4/5/00	25	7.4	0.590	4.3
NEL - WP - 2	4/5/00	16	7.2	0.389	5.4
NEL - WP - 3	4/5/00	5.0 U	6.9	0.493	5.0

(a) NA - Data not available.

(b) U - Constituent not detected above reporting limit.
Value to left of U is reporting limit.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The following conclusions are made based on the findings of this investigation, and previous investigations:

- Groundwater flows to the south and southeast from the vicinity of the Feeder Canal, near wells MW-OB21 and MW-OB22, toward the marsh area and stream to the south, where it discharges. Because the surface of the lacustrine clay unit is above the base of the Feeder Canal to the west of MW-OB21, groundwater apparently does not flow directly southward from the Pretreatment Plant SWMU beneath the canal. Rather, it apparently migrates to the east, parallel to the canal, to where the clay unit dips below the base of the canal, and then flows to the south.

- The total cyanide concentrations in groundwater south of the Feeder Canal are highest at well MW-OB21. MW-OB21 is the sample location to which groundwater from the area of high cyanide concentrations at the Pretreatment Plant SWMU apparently has the shortest, most direct flow path. Cyanide concentrations decrease substantially in both the downgradient and cross-gradient directions from MW-OB21.

- Total cyanide concentrations in groundwater southeast and downgradient of the Pretreatment Plant SWMU are below the GWPC, with the exception of those measured at MW-OB21.

5.2 RECOMMENDATIONS

The extent to which total cyanide concentrations originating from the Pretreatment Plant SWMU are above the GWPC was determined by this investigation. Thus, the objective of the investigation was met. No further investigative action is recommended.

REFERENCES

Brown and Caldwell, January 2000. "Groundwater Investigation Work Plan, Area Southeast of Pretreatment Plant SWMU, Ciba Site, Glens Falls, New York".

Eckenfelder Engineering, P.C., July 1992. "RFA Sampling Visit, Pretreatment Plant, CIBA-GEIGY Site, Glens Falls, New York".

Eckenfelder Engineering, P.C., September 1993. "Groundwater Addendum to RFA Report for Pretreatment Plant SWMU, CIBA-GEIGY Site, Glens Falls, New York".

Eckenfelder Engineering, P.C., April 1999. "CMI Groundwater Monitoring Plan Technical Approach," Appendix E of Final Corrective Measures Design, Ciba, Site, Glens Falls, New York.

Eckenfelder Inc., December 1992. "Pretreatment Plant Addendum to RFI Task I Report, CIBA-GEIGY Site, Glens Falls, New York".

Eckenfelder Inc., July 1993. "Quality Assurance Project Plan for the RCRA Facility Investigation and Groundwater Monitoring at the CIBA-GEIGY Site, Glens Falls, New York".

Eckenfelder Inc., October 1994. "RFI Report for the Pretreatment Plant SWMU, CIBA-GEIGY Site, Glens Falls, New York".

Eckenfelder Inc., March 1997. "Groundwater Monitoring Plan, CIBA-GEIGY Site, Glens Falls, New York".

New York State Department of Environmental Conservation (NYSDEC), September 1999. Letter from G. Casper (NYSDEC) to G. Schmiesing (Hercules), September 9, 1999.

New York State Department of Environmental Conservation (NYSDEC), February 2000. Letter from G. Casper (NYSDEC) to G. Schmiesing (Hercules), February 22, 2000.

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
Bureau of Radiation & Hazardous Site Management, Room 460
50 Wolf Road, Albany, New York 12233-7252
Phone: (518) 457-9253 • FAX: (518) 457-9240
Website: www.dec.state.ny.us

DAY BOOK COPY

John P. Cahill
Commissioner

February 22, 2000

Mr. Glen Schmiesing
Hercules, Incorporated
Hercules Plaza
Wilmington, Delaware 19894

Post-it® Fax Note 7671	Date 3/6/00	# of pages ▶ 2
To Rob O'Neil	From Gary Casper	
Co./Dept. Fichtelder	Co. NYSDEC	
Phone #	Phone #	
Fax (201) 818-6057	Fax #	

Dear Mr. Schmiesing:

Re: Ciba-Geigy
Approval- PTP and Area West of Main Plant Work Plans

The Department has reviewed your Work Plans for additional investigative work at the Glens Falls site. The Work Plans are conditionally approved in accordance with the respective additional requirements, comments, and clarifications outlined below.

A. PRE-TREATMENT PLANT

1. Based on the assumptions made in the work plan, the depth to the top-of-clay is expected to be within reach of hand auguring equipment. This will likely be the case. However, a contingency plan must be in place to complete the work if the clay surface is deeper than hand auguring can reach. It is assumed that Geoprobe equipment will be able to complete the work, if needed. Please indicate if this is not your intention.

2. The work plan implies that no further investigations will be performed in this area if the results of this study define the extent of the groundwater contamination exceeding the groundwater protection concentrations. To clarify, this would be true only if it is demonstrated that there will not be any further spread of the plume beyond its defined extent.

B. AREA WEST OF MAIN PLANT SITE

1. In order to better define the top-of-clay surface in the areas north and west of the planned removal area, additional borings are needed. There appear to be saturated conditions in the overburden near Well AW-B1. However, conditions are not known elsewhere. Please add one more boring near AW-B1 and two more borings near sampling point CC-6 in order to establish three data points at each location. This will provide more precise interpretation of the top-of-clay surface at these locations and allow better placement of the groundwater monitoring points. The additional data will also aid in finding saturated conditions if the initial borings are dry.

2. Data from the proposed borings along the top of the slope at the river need to be interpreted beyond the direct boring-to-boring comparison, to determine if there are potential low spots in the top-of-clay surface between the borings. All available data, including the actual boring locations, must be considered in the analysis to determine if additional intermediate borings are justified.

APPENDIX A

LETTER OF APPROVAL FOR WORK PLAN FROM NYSDEC

3. The top paragraph on page 3-3 states that the well points may be driven to depth. Since the proposal specifies PVC well pipes and screens, this method seems inappropriate. It is assumed that they will be installed in pre-drilled boreholes using the Geoprobe equipment. If other procedures are to be used, further clarification is needed.

4. At the bottom of page 3-3 to page 3-4, it is stated that there will be no investigation within the planned soil removal area directly west of MW-OB9. This was discussed and approved in a telephone conversation with your consultant. However, it was also understood that this was only for the immediate investigation, since there was some likelihood that the wastes in this area could be contributing to the observed groundwater contamination at MW-OB9. It was also agreed that the removal operations would likely disturb or destroy any well points that were installed. For these reasons, investigation of this immediate area was deferred. It was only deferred, and not eliminated as a requirement. The need for and exact nature of any further groundwater investigation needed in this area will be reevaluated based on data collected under the scope of this work plan and likely after the waste removal operations have been completed.

5. We have interpreted section 3.2.4 to require only one groundwater sample per monitoring point. If water is available, each well must be sampled at least twice during the proposed six-month data collection period, to cover high and low groundwater conditions. If a large number of well points are installed, we might consider a reduced number for sampling, if warranted by the data existing at the time. This will require further discussion.

6. Relative to the second paragraph of Section 3.3, and the entire work plan in general, it is necessary to clarify that all determinations and decisions will continue to be based on <u>all available data and site interpretations</u> rather than any particular set of data. I think we are in agreement on this. However, Section 3.3 reads that the need for additional investigations will be based on "the data collected". This could imply only data collected under this work plan.

If you are in agreement with the conditions of this approval, please schedule the field work in accordance with the schedules in the respective work plans. I intend to be present during some phases of the field work and would appreciate at least five business days advance notice before the start of work. If you have any questions, please call me at (518) 457-9253.

Sincerely,

Gary D. Casper

Gary D. Casper
Senior Engineering Geologist

cc: J. Reidy, EPA Region II
G. Stahler, Region 5, Raybrook

APPENDIX B

SOIL BORING LOGS

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-1

Project: GWI- SE of PT Plant SWMU | Project No.: 18924.001

Client: Hercules/CIBA Site, Glens Falls, NY

Start Date: 3-21-00

Finish Date: 3-21-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA

DATUM: NA

Grade: 271.54

TWC: NA

TPC: NA

North: 1207337.3854

East: 693682.5053

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	OVA (ppm)	VISUAL CLASSIFICATION	REMARKS
0								Dark brown/black f to vf SAND, some Silt to Clayey Silt. Organic material, slightly damp.	
0.5								Dark-brown to black fmc SAND, Organic material.	
1.0								Brown to light brownish gray vf,f to c SAND, little to no Silt, local rust stains from 1.5' to 2.5'. Damp to moist.	
3.5								End of boring at 3.5'.	
6	Borehole backfilled with cuttings.								

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-2

Project: GWI- SE of PT Plant SWMU
Client: Hercules: CIBA Site, Glens Falls, NY
Project No.: 18824.001
Start Date: 3-21-00
Finish Date: 3-21-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 263.47
TWC: NA
TPC: NA
North: 1207284.1845
East: 693681.2211

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	 Borehole backfilled with cuttings.							Brown to dark-brown Clayey SILT. Some roots. Damp. 0.4	
								LACUSTRINE CLAY Gray brown, locally mottled and rust-stained CLAY, slightly damp. 1.5	
								End of Boring at 1.5'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-3

Project: GWI - SE of PT Plant SWMU
Project No.: 1892.4.001
Client: Hercules: CIBA Site, Glens Falls, NY
Start Date: 3-21-00
Finish Date: 3-21-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 261.86
TWC: NA
TPC: NA
North: 1207285.8201
East: 693729.2947

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	 Borehole backfilled with cuttings.							Brown to dark-brown Clayey SILT. Some organic matter. Damp. 0.5	
								LACUSTRINE CLAY Gray mottled CLAY, trace vf Sand. Slightly damp. Some organic material. 1.0	
								End of Boring at 1.0'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-4

Project: GWI - SE of PT Plant SWMU

Project No.: 18924.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-21-00

Finish Date: 3-21-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 267.21

TWC: NA

TPC: NA

North: 1207333.1160

East: 693732.4936

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Black SILT. Organic material. Slightly damp.	
0.5								Gold/light-brown f SAND, little Silt to Clayey Silt. Little organic material. Slightly damp to damp.	
1.3								LACUSTRINE CLAY Gold to light brown Silty CLAY. Some mottling. Slightly damp to saturated.	
2.0								End of Boring at 2.0'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-5

Project: GWI - SE of PT Plant SWMU
Client: Hercules: CIBA Site, Glens Falls, NY
Project No.: 1892.1.001
Start Date: 3-21-00
Finish Date: 3-21-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 270.16
TWC: NA
TPC: NA
North: 1207360.3867
East: 693735.6626

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Black to dark-brown SILT, little Sand. Some organic material. Slightly damp. 0.5 Brown to dark-brown mc SAND. Slightly damp to damp. 1.0 No recovery. 1.5 Brown c SAND and f GRAVEL, saturated. 1.8 Gray f SAND, little Silt to Clayey Silt. Saturated. 2.0 No recovery. 2.5 End of Boring at 2.5'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-6

Project: GMI - SE of PT Plant SWMU
Client: Hercules: CIBA Site, Glens Falls, NY
Project No.: 1892.001
Start Date: 3-22-00
Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 267.22
TWC: NA
TPC: NA
North: 1207361.7035
East: 693783.7735

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0								Black SILT, some vf Sand. Little organic material.	
0.5								@ .5' brown fc SAND, trace Silt, trace f Gravel. Saturated.	
1.4								LACUSTRINE CLAY Gold, brown, light brown CLAY, trace vf Sand.	
2.0								End of Boring at 2.0'.	
6	Borehole backfilled with cuttings.								

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-7

Project: GWI - SE of PT Plant SWMU
Project No.: 1824.001
Client: Hercules: CIBA Site, Glens Falls, NY
Start Date: 3-22-00
Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA

DATUM: NA
Grade: 265.73
TWC: NA
TPC: NA
North: 1207334.8982
East: 693781.7797

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Brown SILT & CLAY, trace vf Sand. Some organic material. Damp to moist. 0.7	
								LACUSTRINE CLAY Gray, light brown, gold mottled CLAY, trace to some vf to c Sand. Little organic material. Damp to 1.5'. Moist to saturated from 1.5' to 2.5'. 2.5	
								End of Boring at 2.5'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-8

Project: GWI - SE of PT Plant SWMU
Client: Hercules: CIBA Site, Glens Falls, NY
Project No.: 16924.001
Start Date: 3-21-00
Finish Date: 3-21-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 261.84
TWC: NA
TPC: NA
North: 1207286.3511
East: 693779.2385

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	 Borehole backfilled with cuttings.							Black Clayey SILT. Some organic material. Damp. 0.5	
								Dark brown Clayey SILT, some c Sand, some f Gravel, little organic material. Slightly damp to damp. 1.0	
								LACUSTRINE CLAY Gold, brown CLAY, some c Sand. Slightly damp. 1.5	
								End of Boring at 1.5'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-9

Project: GWI- SE of PT Plant SWMU | Project No.: 1892.4.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-22-00

Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 258.16

TWC: NA

TPC: NA

North: 1207234.5594

East: 693825.6505

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Black CLAY & SILT, trace f Sand, some organic material, saturated.	
0.5								Black to dark gray f SAND, little Clay & Silt. Saturated.	
1.0								Refusal/ End of Boring at 1.0'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-10

Project: GWI - SE of PT Plant SWMU | Project No.: 18924.001

Client: Hercules; CIBA Site, Glens Falls, NY

Start Date: 3-22-00

Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 262.30

TWC: NA

TPC: NA

North: 207283.3680

East: 693830.3001

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Black, brown CLAY & SILT, some f to vf Sand, some organic material. Slightly damp. (0.5) Gold, brown vf, f, (c) SAND, little to no silt. Slightly damp to damp. (3.5) End of Boring at 3.5'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-11

Project: GNI - SE of PT Plant SWMU
Project No.: 1892-4.001
Client: Hercules/CIBA Site, Glens Falls, NY
Start Date: 3-22-00
Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 263.88
TWC: NA
TPC: NA
North: 1207332.3542
East: 693831.2407

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0								Brown to dark brown CLAY & SILT, some c to m Sand. Rootlets. Damp. 0.5	
								LACUSTRINE CLAY Brown to light brown CLAY, little Sand. Moist. 1.0	
								No recovery. 1.5	
	Borehole backfilled with cuttings.							End of Boring at 1.5'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-12

Project: GWI- SE of PT Plant SWMU | Project No.: 189241.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-22-00

Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 265.74

TWC: NA

TPC: NA

North: 1207364.3230

East: 693832.9578

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Brown, dark brown and black f SAND, little Silt. Slightly damp to damp. 1.0	
								LACUSTRINE CLAY Gray and brown CLAY, trace to little Gravel. 1.5	
								No recovery. 2.0	
								End of Boring at 2.0'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-13

Project: GWI - SE of PT Plant SVMU

Project No.: 1804.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-[illegible]-00

Finish Date: 3-[illegible]-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 268.65

TWC: NA

TPC: NA

North: 1207366.8240

East: 693885.4368

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	 Borehole backfilled with cuttings.							Dark gray, gray, black f SAND, little Silt, trace Gravel. Some organic material. Moist to wet.	
1.1								LACUSTRINE CLAY Blue gray CLAY. Little rootlets. Damp to moist.	
1.5								End of Boring at 1.5'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-14

Project: GWI - SE of PT Plant SWMU

Project No.: 18824.001

Client: Hercules; CIBA Site, Glens Falls, NY

Start Date: 3-22-00

Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 263.16

TWC: NA

TPC: NA

North: 1207331.0152

East: 693879.7723

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0								Light to dark gray SILT, little Sand. Some organic material. Damp to moist. 0.5	
								Gold, light brown f SAND. Moist to wet. 1.0	
								Gold, brown, rust stained SILT. Moist to wet. 1.5	
	Borehole backfilled with cuttings.							LACUSTRINE CLAY Gold, light brown CLAY and vf to f SAND. Wet. 2.0	
								End of boring at 2.0'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-15

Project: GWI - SE of PT Plant SWMU | Project No.: 18824.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-22-00

Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 260.78

TWC: NA

TPC: NA

North: 1207280.9395

East: 693880.0240

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Dark brown, black, gray CLAY & SILT. Organic material and some roots. 1.0	
								LACUSTRINE CLAY Gray to brown CLAY. Moist to damp. 2.0	
								End of boring at 2.0'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-16

Project: GNI - SE of PT Plant SWMU | Project No.: 18024.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-22-00

Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 257.96

TWC: NA

TPC: NA

North: 1207231.4443

East: 693878.4016

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Dark brown SILT & CLAY. Organic material. Damp to moist. 0.5	
								Gold, brown rust stained, SILT. Damp. 1.0	
								Gold, light brown f SAND, Damp. 1.5	
								LACUSTRINE CLAY Gold, gray CLAY. Slightly damp. 2.0	
								End of boring at 2.0'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-17

Project: GMI - SE of PT Plant SWMU | Project No.: 18924.001

Client: Hercules/CIBA Site, Glens Falls, NY

Start Date: 3-23-00

Finish Date: 3-23-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 257.61

TWC: NA

TPC: NA

North: 1207227.1855

East: 693930.6894

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0								Black to brown SILT & CLAY, some vf to f Sand. Rootlets. Damp.	
0.5								Brown, dark brown f to vf SAND, little Silt. Rootlets. Damp.	
1.0								Brown to dark brown SILT and vf to f SAND. Damp.	
1.5								Brown vf to f SAND, little to no Silt. Saturated.	
3.5	Borehole backfilled with cuttings.							End of boring at 3.5'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-18

Project: GWI - SE of PT Plant SWMU | Project No.: 18824.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-23-00

Finish Date: 3-23-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA

DATUM: NA

Grade: 259.42

TWC: NA

TPC: NA

North: 1207279.4937

East: 693928.7617

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Black to dark brown SILT, little Sand. Rootlets. Saturated.	
0.5								No recovery.	
1.0								Brown f SAND. Saturated.	
1.5								No recovery.	
2.5								End of boring at 2.5'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-19

Project: GWI - SE of PT Plant SWMU | Project No.: 1892.4.001

Client: Hercules/CIBA Site, Glens Falls, NY

Start Date: 3-23-00

Finish Date: 3-23-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA

DATUM: NA

Grade: 261.31

TWC: NA

TPC: NA

North: 1207327.0965

East: 693930.5594

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Black SILT. Organic material. Saturated. — 0.3 Gray f SAND, little Clay. Saturated. — 0.5 No recovery. — 1.0 Brown to dark brown mf SAND. Saturated. — 1.5 Gray f SAND, little Clay. Saturated. — 2.0 No recovery. — 2.5 End of boring at 2.5'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-20

Project: GWI- SE of PT Plant SWMU | Project No.: 189241.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-23-00

Finish Date: 3-23-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 268.04

TWC: NA

TPC: NA

North: 207384.5472

East: 693924.7463

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	 Borehole backfilled with cuttings.							PEAT 0.4 Black SILT. Organic material. Saturated. 0.8 LACUSTRINE CLAY Blue- gray CLAY. Slightly damp to damp. 1.5 End of boring at 1.5'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-21

Project: GM - SE of PT Plant SWMU
Project No.: 18824.001
Client: Hercules/CIBA Site, Glens Falls, NY
Start Date: 3-22-00
Finish Date: 3-22-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA

DATUM: NA
Grade: 264.71
TWC: NA
TPC: NA
North: 1207349.1049
East: 693882.1044

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Black f SAND, little Silt. Organic material/ Peat. Wet to saturated. 1.3	
								LACUSTRINE CLAY Gray-blue CLAY intermixed with f SAND, little Silt and Peat/organics. Wet to saturated. 2.0	
								End of boring at 2.0'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-22

Project: GMI - SE of PT Plant SWMU | Project No.: 18924.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-23-00

Finish Date: 3-23-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 271.53

TWC: NA

TPC: NA

North: 1207402.1486

East: 693893.8613

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Black PEAT above gray f SAND, little SILT. Saturated.	
								0.5 No recovery.	
								1.0 End of boring at 1.0'.	

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-23

Project: GWI - SE of PT Plant SWMU
Project No.: 189241.001
Client: Hercules: CIBA Site, Glens Falls, NY
Start Date: 3-23-00
Finish Date: 3-23-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA

DATUM: NA
Grade: 255.69
TWC: NA
TPC: NA
North: 1207175.5782
East: 693929.8947

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Black, gray c SAND, little Silt, trace Gravel. Organic-rich. Saturated. Fill material.	
								0.8 Peat/Organic-rich soil. 1.0	
								Black SILT & CLAY, little Sand. Organic material. Saturated.	
								1.5 Black Clayey SILT, little Sand. Organic material decreases with depth. Saturated.	
								2.3 LACUSTRINE CLAY Gray CLAY, little Sand. Saturated. 2.5	
								End of boring at 2.5'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-24

Project: GWI- SE of PT Plant SWMU | Project No.: 18824.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 3-23-00

Finish Date: 3-23-00

DRILLING DATA

Inspector: John Fox/Roger Gray

Contractor: NA

Equipment: Soil Corer (Manual)

Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	SS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA

Duration: NA

Gals. Purged: NA

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 257.94

TWC: NA

TPC: NA

North: 120791.6592

East: 693825.7523

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.) / Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0								Black to dark brown CLAY & SILT, some vf to f Sand. Fill material. Damp.	
								0.8 Peat/organic-rich soil. Wet.	
	Borehole backfilled with cuttings.							1.4 LACUSTRINE CLAY Gray, blue, black CLAY, little Sand. Saturated. 1.5	
								End of boring at 1.5'.	
6									

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-25

Project: GWI - SE of PT Plant SWMU
Client: Hercules: CIBA Site, Glens Falls, NY

Project No.: 18824.001

Start Date: 3-23-00
Finish Date: 3-23-00

DRILLING DATA

Inspector: John Fox/Roger Gray
Contractor: NA
Equipment: Soil Corer (Manual)
Method: NA

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	GS Soil Corer	NA
Diameter:	NA	2 inch	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	NA	NA
Diameter (ID):	NA	NA
Coupling:	NA	NA

WELL DEVELOPMENT

Method: NA
Duration: NA
Gals. Purged: NA
Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 260.88
TWC: NA
TPC: NA
North: 1207206.8700
East: 693737.2680

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Borehole backfilled with cuttings.							Brown f to c SAND, little Silt. Little organics. Fill material. Damp. 0.5	
								No recovery. 2.0	
								LACUSTRINE CLAY Brown and gray CLAY, little Sand. Saturated. 2.5	
								End of boring at 2.5'.	
6									

APPENDIX C

WELL CONSTRUCTION LOGS

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-WP-1

Project: GNI- SE of PT Plant SWMU

Project No.: 18924.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 4-4-00

Finish Date: 4-4-00

DRILLING DATA

Inspector: Bob O'Neill, Dennis Young

Contractor: NA

Equipment: Stainless Steel Hand Auger

Method: Manual

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	NA	NA
Diameter:	NA	NA	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	PVC	PVC
Diameter (ID):	1 in.	1 in.
Coupling:	flush	flush

WELL DEVELOPMENT

Method: Bailer

Duration: 1 hr.

Gals. Purged: approx. 4

Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 271.64

TWC: 273.54

TPC: NA

North: 1207337.4084

East: 693680.8068

Geophysical Log: ☐ yes ☒ no

Comments:

Depth (feet)	WELL CONSTRUCTION	soil / rock	Samp. No. / Run No.	Blows/ 6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	Backfilled with cuttings. Filter Pack 1 inch PVC riser. 1 inch PVC .010 slot screen. 4 inch diameter borehole.								For soil descriptions see log for boring NEL-1. Screen interval: 1.4'-3.4'.

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-WP-2

Project: GWI - SE of PT Plant SWMU

Project No.: 18924.001

Client: Hercules: CIBA Site, Glens Falls, NY

Start Date: 4-4-00

Finish Date: 4-4-00

DRILLING DATA

Inspector: Bob O'Neill, Dennis Young

Contractor: NA

Equipment: Stainless Steel Hand Auger

Method: Manual

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	NA	NA
Diameter:	NA	NA	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	PVC	PVC
Diameter (ID):	1 in.	1 in.
Coupling:	flush	flush

WELL DEVELOPMENT

Method: Bailer

Duration: 1 hr.

Gals. Purged: approx. 5

Slug Test: NA (cm/sec)

SURVEY DATA

DATUM: NA

Grade: 262.31

TWC: 264.37

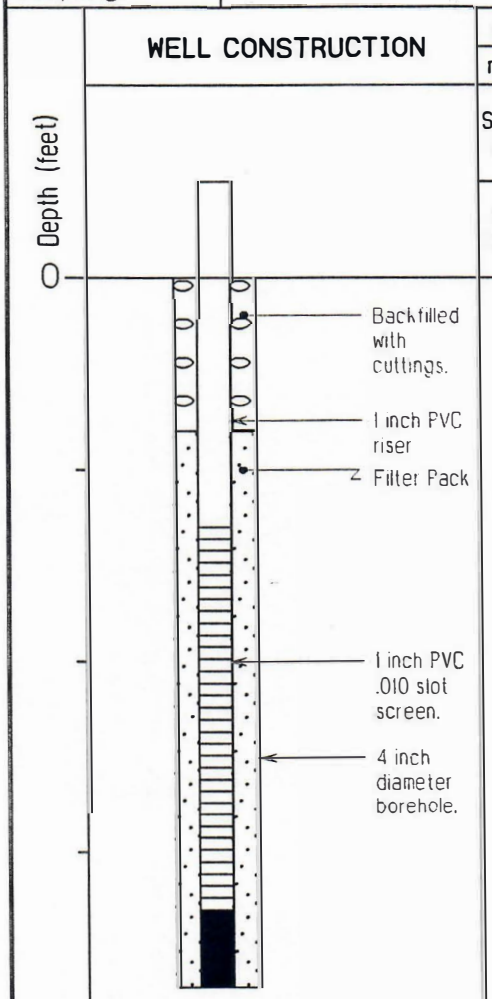
TPC: NA

North: 1207283.2668

East: 693831.5141

Geophysical Log: ☐ yes ☒ no

Comments:



WELL CONSTRUCTION	soil / rock	SAMPLE DATA					VISUAL CLASSIFICATION	REMARKS
	Samp. No.	Blows/ 6 in.	Rec. (ft.)	USCS	HNU (ppm)			
	Run No.	Hydraul. Cond. cm/sec	Rec. (ft.)	RQD				
								For soil descriptions see log for boring NEL-10. Screen interval: 1.3'-3.3'.

WATER LEVEL DATA
SOUTHEAST OF PRETREATMENT PLANT SWMU
APRIL 5, 2000 (a)

Location	Reference Elevation (ft., NGVD)	Depth to Water (ft.)	Water Elevation (ft., NGVD)
MW-OB21	284.03	12.09	271.94
MW-OB22	283.99	9.18	274.81
NEL-WP-1	273.54	3.51	270.03
NEL-WP-2	264.37	3.72	260.65
NEL-WP-3	264.21	2.63	261.58
SG- 2	281.10	> 5.20	< 275.90
SG-11	264.20	1.01	263.19
SG-12	260.27	1.98	258.29
SG-13	255.82	1.68	254.14
SG-14	254.37	2.00	252.37
SG-15	261.99	2.51	259.48

(a) Water levels measured between 8:11 and 8:32

APPENDIX F

FIELD DATA SHEETS

BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-0821
Sample I.D.: _____ (if different from well no.)

Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-4-00 Time: 16:30
Weather Conditions: Raining
Air Temperature: 55-60°F

WELL DATA:

Casing Diameter: 2 in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2 in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 12.21 ft Bottom of Well: 16.7 ft
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Top of Well Wizard
CONDITION: Is Well clearly labeled? ☒ Yes ☐ No Is well clean to bottom? ☒ Yes ☐ No
Is Prot. Casing/Surface Mount in Good Cond.? (not bent or corroded) ☒ Yes ☐ No
Does Weep Hole adequately drain well head? ☒ Yes ☐ No
Is Concrete Pad Intact? (not cracked or frst heaved) ☒ Yes ☐ No
Is Padlock Functional? ☒ Yes ☐ No ☐ NA Is Inner Casing Intact? ☒ Yes ☐ No
Is Inner Casing Properly Capped and Vented? ☒ Yes ☐ No
Staging In Well 0.7 gal To Be Purged 2.2 gal

Casing ID	gals/ft
2"	.16
3"	.37
4"	.65
5"	1.02
6"	1.47

PURGE DATA:

METHOD: ☒ Bailer, Size: ___ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Waterra:HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☒ PVC ☐ Other:
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☒ Polypropylene ☐ Other:

Pumping Rate: ~~0.26~~ 0.26 gpm Elapsed Time: 9 min Volume Pumped: ≈2.3 gal (purged dry)
Was well purged to dryness? ☒ Yes ☐ No Number of Well Volumes Removed: 3

TIME SERIES DATA:	Well Volumes:	3					
	Temp.:	10.1°C					
	pH:	7.1					
	Spec. Cond.:	1.256 mU/cm					
	DO:						
	ORP:						

PURGING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

SAMPLING DATA:

METHOD: ☒ Bailer, Size: ___ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Syringe Sampler ☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Waterra: HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☒ PVC ☐ Other:
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☒ Polypropylene ☐ Other: _____

SAMPLING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☐ Yes ☐ No Method:
APPEARANCE: ☒ Clear ☐ Turbid ☐ Color: _____ ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: ☒ No Other:

FIELD DETERMINATIONS OF RECORD:
pH: 7.1 Temperature: 10.1°C Spec. Cond.: 1.256 mU/cm Meter Model & S/N: Oakton pHTestr 2/YSI 3000
Hach Kit Results: Fe: _____ Mn: _____ DO: _____ CO_2: _____ S: _____
NO. OF CONTAINERS: 3 Field Blank I.D.: EB040500 Trip Blank I.D.: Duplicate I.D.:
REMARKS: Filled 2 extra bottles for MS/MSD. Total Cyanide analysis

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert L. O'Neill Date: 4-17-00

BROWN AND CALDWELL

Subsurface Boring Log

Well Name/Location: NEL-WP-3

Project: GWI - SE of PT Plant SWMU
Project No.: 18824.001
Client: Hercules: CIBA Site, Glens Falls, NY
Start Date: 1-1-00
Finish Date: 1-1-00

DRILLING DATA

Inspector: Bob O'Neill, Dennis Young
Contractor: NA
Equipment: Stainless Steel Hand Auger
Method: Manual

SAMPLING METHODS

	Sampler	Tube	Core
Type:	NA	NA	NA
Diameter:	NA	NA	NA
Other:	NA	NA	NA

WELL CONSTRUCTION

	Riser	Screen
Material:	PVC	PVC
Diameter (ID):	1 in.	1 in.
Coupling:	flush	flush

WELL DEVELOPMENT

Method: Bailer
Duration: 1/2 hr.
Gals. Purged: approx. 1
Slug Test: NA (cm/sec)

SURVEY DATA DATUM: NA

Grade: 261.30
TWC: 264.21
TPC: NA
North: 1207326.5695
East: 693931.2712

Geophysical Log: ☐ yes ☒ no
Comments:

Depth (feet)	WELL CONSTRUCTION	soil/rock	Samp. No. / Run No.	Blows/6 in. / Hydraul. Cond. cm/sec	Rec. (ft.)	USCS / RQD	HNU (ppm)	VISUAL CLASSIFICATION	REMARKS
0	1 inch PVC riser. Backfilled with cuttings. Filter Pack 1 inch PVC .010 slot screen. 4 inch diameter borehole.								For soil descriptions see log for boring NEL-19. Screen interval 0.5'-2.5'.

APPENDIX D

SURVEY DATA

Project: 97114 Fri Apr 14 13:58:54 2000
Point statistics:
Starting point number: 1
Current point number: 465 ('L' indicates locked point)

Current Coordinate Listing by Point Range

Point	Northing	Easting	Elevation	Description
2172	1207175.5782	693929.8947	255.69	NEL 23
2173	1207174.0143	693879.4645	256.19	HYD 479
2174	1207191.6592	693825.7523	257.94	NEL 24
2175	1207206.8700	693737.2680	260.88	NEL 25
2176	1207337.3854	693682.5053	271.54	NEL 1
2177	1207337.4084	693680.8068	271.64	AEL WP1
2178	1207337.2503	693680.8646	273.54	TOP WELL
2179	1207294.4795	693680.3786	264.20	SG 11
2180	1207284.1845	693681.2211	263.47	NEL 2
2181	1207285.8201	693729.2947	261.86	NEL 3
2182	1207333.1160	693732.4936	267.21	NEL 4
2183	1207360.3867	693735.6626	270.16	NEL 5
2184	1207361.7035	693783.7735	267.22	NEL 6
2185	1207334.8982	693781.7797	265.73	NEL 7
2186	1207286.3511	693779.2385	261.84	NEL 8
2187	1207223.7251	693808.5791	260.27	SG 12
2188	1207284.5594	693825.6505	258.16	NEL 9
2189	1207283.3680	693830.3001	262.30	NEL 10
2190	1207283.2668	693831.5141	262.31	NEL WP 2
2191	1207283.3706	693931.8200	264.37	NEL WP 2 TOP
2192	1207332.3542	693831.2407	263.88	NEL 11
2193	1207364.3230	693832.9576	265.74	NEL 12
2194	1207366.8240	693885.4368	268.65	NEL 13
2195	1207349.1049	693882.1044	264.71	NEL 21
2196	1207331.0152	693879.7723	263.16	NEL 14
2197	1207280.9395	693880.0240	260.78	NEL 15
2198	1207231.4443	693878.4016	257.96	NEL 16
2199	1207227.1855	693930.6994	257.61	NEL 17
2200	1207279.4937	693928.7617	259.42	NEL 18
2201	1207327.0965	693930.5594	261.31	NEL 19
2202	1207326.5695	693931.2712	261.30	NEL WP 3
2203	1207326.4794	693931.2676	264.21	NEL WP 3 TOP
2204	1207384.5472	693924.7463	268.04	NEL 20
2205	1207402.1486	693893.8613	271.53	NEL 22
2206	1207304.4522	693956.4774	261.99	SG 15 TOP STK
2207	1207187.0913	694051.9098	255.82	SG 13 TOP STK
2208	1207212.0659	694168.8040	254.37	SG 14 TOP STK

APPENDIX E

WATER LEVEL DATA

BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: MW-0822
Sample I.D.: _____ (if different from well no.)

Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-4-00 Time: 1605
Weather Conditions: Raining
Air Temperature: 55-60°F

WELL DATA:

Casing Diameter: 2 in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 2 in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 9.37 ft Bottom of Well: 16.6 ft
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Top of Well Wizard
CONDITION: Is Well clearly labeled? ☒ Yes ☐ No Is well clean to bottom? ☐ Yes ☐ No
Is Prot. Casing/Surface Mount in Good Cond.? (not bent or corroded) ☒ Yes ☐ No
Does Weep Hole adequately drain well head? ☒ Yes ☐ No
Is Concrete Pad Intact? (not cracked or frst heaved) ☒ Yes ☐ No
Is Padlock Functional? ☒ Yes ☐ No ☐ NA Is Inner Casing Intact? ☒ Yes ☐ No
Is Inner Casing Properly Capped and Vented? ☐ Yes ☐ No
Staging In Well 1.2 gal To Be Purged 3.6 gal

Casing ID	gals/ft
2"	.16
3"	.37
4"	.65
5"	1.02
6"	1.47

PURGE DATA:

METHOD: ☒ Bailer, Size: ___ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Waterra:HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☒ PVC ☐ Other:
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☒ Polypropylene ☐ Other:

Pumping Rate: _____ Elapsed Time: 9 min Volume Pumped: 4 gal
Was well purged to dryness? ☐ Yes ☒ No Number of Well Volumes Removed: 3+

TIME SERIES DATA:

Well Volumes:	3+					
Temp.:	7.4°C					
pH:	8.6					
Spec. Cond.:	0.578 mU/cm					
DO:						
ORP:						

PURGING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

SAMPLING DATA:

METHOD: ☒ Bailer, Size: ___ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Syringe Sampler ☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Waterra: HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☒ PVC ☐ Other:
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☒ Polypropylene ☐ Other: _____

SAMPLING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☐ Yes ☐ No Method:
APPEARANCE: ☒ Clear ☐ Turbid ☐ Color: _____ ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: ☒ No Other:

FIELD DETERMINATIONS OF RECORD:
pH: 8.6 Temperature: 7.4°C Spec. Cond.: 0.578 mU/cm Meter Model & S/N: Oakton pH Tester 2/YSI 3000
Hach Kit Results: Fe: _____ Mn: _____ DO: _____ CO_2: _____ S: _____
NO. OF CONTAINERS: 1 Field Blank I.D.: EB040500 Trip Blank I.D.: Duplicate I.D.:
REMARKS: Total Cyanide Analysis

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert F. O'Neill Date: 4-17-00

BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: NEL-WP-1
Sample I.D.: _____ (if different from well no.)

Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-5-00 Time: 0839
Weather Conditions: ~~[illegible]~~ Cloudy, Snow Flurries
Air Temperature: ~~[illegible]~~ 40°F

WELL DATA:

Casing ID	gals/ft
2"	.16
3"	.37
4"	.65
5"	1.02
6"	1.47

Casing Diameter: 1in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Other: _____
Intake Diameter: 1in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 3.51 ft Bottom of Well: 5.6 ft.
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Top of Well Wizard
CONDITION: Is Well clearly labeled? ☒ Yes ☐ No Is well clean to bottom? ☒ Yes ☐ No
Is Prot. Casing/Surface Mount in Good Cond.? (not bent or corroded) ☐ Yes ☐ No NA
Does Weep Hole adequately drain well head? ☐ Yes ☐ No NA
Is Concrete Pad Intact? (not cracked or frst heaved) ☐ Yes ☐ No NA
Is Padlock Functional? ☐ Yes ☐ No ☒ NA Is Inner Casing Intact? ☒ Yes ☐ No
Is Inner Casing Properly Capped and Vented? ☐ Yes ☐ No
Staging In Well 0.06gal To Be Purged 0.18

PURGE DATA:

METHOD: ☒ Bailer, Size: ___ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Waterra:HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☐ PVC ☒ Other: Polyethylene
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☒ Other: Nylon

Pumping Rate: ~0.07gpm Elapsed Time: 56min Volume Pumped: ~4 gal (Developed, then purged)
Was well purged to dryness? ☐ Yes ☒ No Number of Well Volumes Removed: ~22

TIME SERIES DATA:

	Well Volumes:					
Temp.:						
pH:						
Spec. Cond.:						
DO:						
ORP:						

PURGING EQUIPMENT: ☒ Dedicated (Disposable) ☐ Prepared Off-Site ☐ Field Cleaned

SAMPLING DATA:

METHOD: ☒ Bailer, Size: ___ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Syringe Sampler ☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Waterra: HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☐ PVC ☒ Other: Polyethylene
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☒ Other: Nylon

SAMPLING EQUIPMENT: ☒ Dedicated (Disposable) ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☐ Yes ☐ No Method:
APPEARANCE: ☐ Clear ☒ Turbid ☒ Color: light brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: ☒ No Other: Sample slightly turbid brown - lt. brown

FIELD DETERMINATIONS OF RECORD:
pH: 7.4 Temperature: 4.3°C Spec. Cond.: 0.590 mS/cm Meter Model & S/N: Oakton pH Tester 2 / YSI 3000
Hach Kit Results: Fe: _____ Mn: _____ DO: _____ CO_2: _____ S: _____
NO. OF CONTAINERS: 1 Field Blank I.D.: ~~EB04500~~ Trip Blank I.D.: Duplicate I.D.:
REMARKS: Total cyanide analysis

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert L. O'Neill Date: 4-17-00

BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: NEL-WP-2
Sample I.D.: _____ (if different from well no.)

Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-5-00 Time: 0853
Weather Conditions: Cloudy, snowflurries
Air Temperature: ±40°F

WELL DATA:

Casing Diameter: 1in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Other: ____
Intake Diameter: 1in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 3.72 ft Bottom of Well: 5.6 ft
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Top of Well Wizard
CONDITION: Is Well clearly labeled? ☒ Yes ☐ No Is well clean to bottom? ☐ Yes ☐ No
Is Prot. Casing/Surface Mount in Good Cond.? (not bent or corroded) ☐ Yes ☐ No N.A
Does Weep Hole adequately drain well head? ☐ Yes ☐ No NA
Is Concrete Pad Intact? (not cracked or frst heaved) ☐ Yes ☐ No NA
Is Padlock Functional? ☐ Yes ☐ No ☒ NA Is Inner Casing Intact? ☒ Yes ☐ No
Is Inner Casing Properly Capped and Vented? ☐ Yes ☐ No
Staging In Well 0.09 To Be Purged 0.24

Casing ID	gals/ft
2"	.16
3"	.37
4"	.65
5"	1.02
6"	1.47

PURGE DATA:

METHOD: ☒ Bailer, Size: ____ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Waterra:HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☐ PVC ☒ Other: Polyethylene
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☒ Other: Nylon

Pumping Rate: 0.09gpm Elapsed Time: 56min Volume Pumped: ±5gal (Developed, then purged)
Was well purged to dryness? ☐ Yes ☒ No Number of Well Volumes Removed: ±21

TIME SERIES DATA:

	Well Volumes:					
Temp.:						
pH:						
Spec. Cond.:						
DO:						
ORP:						

PURGING EQUIPMENT: ☒ Dedicated (Disposable) ☐ Prepared Off-Site ☐ Field Cleaned

SAMPLING DATA:

METHOD: ☒ Bailer, Size: ____ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Syringe Sampler ☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Waterra: HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☐ PVC ☒ Other: Polyethylene
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☒ Other: Nylon

SAMPLING EQUIPMENT: ☒ Dedicated (Disposable) ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☐ Yes ☐ No Method:
APPEARANCE: ☐ Clear ☒ Turbid ☒ Color: light brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: ☐ No Other: Sample was slightly turbid brown to H. blue

FIELD DETERMINATIONS OF RECORD:
pH: 7.2 Temperature: 5.4°C Spec. Cond.: 0.389 mS/cm Meter Model & S/N: Oakton pH Tester 2 / YSI 3000
Hach Kit Results: Fe: _____ Mn: _____ DO: _____ CO_2: _____ S: _____
NO. OF CONTAINERS: 1 Field Blank I.D.: EB-0500 Trip Blank I.D.: Duplicate I.D.:
REMARKS: Total cyanide analysis

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert L. O'Neill Date: 4-17-00

BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

GROUNDWATER SAMPLING FIELD DATA SHEET

Well Number: NEL-WP-3
Sample I.D.: _____ (if different from well no.)

Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-5-00 Time: 0900
Weather Conditions: Cloudy, snow flurries
Air Temperature: ±40°F

WELL DATA:

Casing Diameter: 1in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Other: ____
Intake Diameter: 1in ☐ Stainless Steel ☐ Galv. Steel ☒ PVC ☐ Teflon® ☐ Open rock
DEPTH TO : Static Water Level: 2.63 ft Bottom of Well: 5.6 ft
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Top of Well Wizard
CONDITION: Is Well clearly labeled? ☒ Yes ☐ No Is well clean to bottom? ☐ Yes ☐ No
Is Prot. Casing/Surface Mount in Good Cond.? (not bent or corroded) ☐ Yes ☐ No NA
Does Weep Hole adequately drain well head? ☐ Yes ☐ No NA
Is Concrete Pad Intact? (not cracked or frst heaved) ☐ Yes ☐ No NA
Is Padlock Functional? ☐ Yes ☐ No ☒ NA Is Inner Casing Intact? ☒ Yes ☐ No
Is Inner Casing Properly Capped and Vented? ☐ Yes ☐ No ~~FT~~ NLO
Staging In Well 0.12gal To Be Purged 0.36gal

Casing ID	gals/ft
2"	.16
3"	.37
4"	.65
5"	1.02
6"	1.47

PURGE DATA:

METHOD: ☒ Bailer, Size: ___ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Inertial Lift Pump ☐ Waterra:HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☐ PVC ☒ Other: Polyethylene
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☒ Other: Nylon

Pumping Rate: 0.04gpm Elapsed Time: 25min Volume Pumped: ±1gal (Developed well, then purged ~2 wks later during development)
Was well purged to dryness? ☒ Yes ☐ No Number of Well Volumes Removed: ±8

TIME SERIES DATA:

Well Volumes:						
Temp.:						
pH:						
Spec. Cond.:						
DO:						
ORP:						

PURGING EQUIPMENT: ☒ Dedicated (Disposable) ☐ Prepared Off-Site ☐ Field Cleaned

SAMPLING DATA:

METHOD: ☒ Bailer, Size: ___ ☐ Bladder Pump ☐ 2" Submersible Pump ☐ 4" Submersible Pump
☐ Syringe Sampler ☐ Inertial Lift Pump ☐ Peristaltic Pump ☐ Waterra: HydroLift II

MATERIALS: Pump/Bailer: ☐ Teflon® ☐ Stainless Steel ☐ PVC ☒ Other: Polyethylene
Tubing/Rope: ☐ Teflon® ☐ Polyethylene ☐ Polypropylene ☒ Other: Nylon

SAMPLING EQUIPMENT: ☒ Dedicated (Disposable) ☐ Prepared Off-Site ☐ Field Cleaned
Metals samples field filtered? ☐ Yes ☐ No Method:
APPEARANCE: ☐ Clear ☒ Turbid ☒ Color: H.brown ☐ Contains LNAPL ☐ Contains DNAPL
Odor: ☐ Yes: ☐ No Other: Sample was slightly turbid light brown

FIELD DETERMINATIONS OF RECORD:
pH: 6.9 Temperature: 5.0°C Spec. Cond.: 0.493 mS/cm Meter Model & S/N: Oakton pH Test 2/YSI 3000
Hach Kit Results: Fe: _____ Mn: _____ DO: _____ CO_2: _____ S: _____
NO. OF CONTAINERS: 1 Field Blank I.D.: EB040500 Trip Blank I.D.: Duplicate I.D.:
REMARKS: Total Cyanide Analysis

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert O'Neill Date: 4-17-00

BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

ENVIRONMENTAL SAMPLING FIELD DATA SHEET

Sample Number: Feeder Canal
Sample I.D.: _____ (if different from samp no.)

Project: GW Investigation, SE of PT Plant SWMU
Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-4-00 Time: 1641
Weather Conditions: Raining
Air Temperature: 55-60 °F

SAMPLE MEDIUM:

- ☐ SURFICIAL SOIL: Depth Interval: _____
- ☐ DEEP SOIL: Depth Interval: _____
- ☒ SURFACE WATER: Depth Interval: Surface
- ☐ BOTTOM SEDIMENT
- ☐ OTHER: Describe: _____

SAMPLING DATA:

SAMPLE COLLECTION EQUIPMENT:

☐ Scoop ☐ Shovel ☐ Direct into sample container ☐ Split-spoon sampler ☐ Hand auger
☐ Hand Corer ☐ Petite Ponar Dredge ☐ Eckman Dredge ☐ Bottle Sampler
☐ Peristaltic Pump ☐ Automated Interval Sampler ☒ Other: Jar

SAMPLER CONSTRUCTION: (Check as many as apply)

☐ Teflon®	☐ PVC
☐ Stainless Steel	☐ Polyethylene
☐ Carbon Steel	☐ Polypropylene
☒ Glass	☐ Other:

SAMPLE TYPE: ☒ Grab ☐ Composite ☐ Other: _____
SAMPLING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

FIELD MEASUREMENT DATA:

APPEARANCE (describe):
☐ Oily ☒ "Clean" ☒ Clear ☐ Turbid ☐ Color: _____ ☐ Contains Immiscible Liquid
ODOR?: ☐ Yes ☐ No , Description: _____
GRAIN SIZE DESCRIPTION: (Use for soils only)

FIELD DETERMINATIONS: pH: 8.1 Meter Model: Oakton pHTestr 2 Meter S/N: _____
Temperature: 10.2°C Spec. Cond.: 0.632 mS/cm Meter Model: YSI 3000 Meter S/N: _____
Other: _____
LABORATORY ANALYSIS: None

NO. OF CONTAINERS: ____ Field Blank I.D.: _____ Trip Blank I.D.: _____ Replicate I.D.: _____
REMARKS:
Sampled from location directly north of well MW-082I

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert F. O'Neill Date: 4-17-00

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BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

ENVIRONMENTAL SAMPLING FIELD DATA SHEET

Sample Number: SG-11
Sample I.D.: _____ (if different from samp no.)

Project: GW Investigation, SE of PT Plant SWMU
Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-5-00 Time: ~~9:53~~ Pre/10:52
Weather Conditions: Cloudy, Snow Flurries
Air Temperature: ±40°F

SAMPLE MEDIUM:

- ☐ SURFICIAL SOIL: Depth Interval: _____
- ☐ DEEP SOIL: Depth Interval: _____
- ☒ SURFACE WATER: Depth Interval: Surface
- ☐ BOTTOM SEDIMENT
- ☐ OTHER: Describe: _____

SAMPLING DATA:

SAMPLE COLLECTION EQUIPMENT:

☐ Scoop ☐ Shovel ☐ Direct into sample container ☐ Split-spoon sampler ☐ Hand auger
☐ Hand Corer ☐ Petite Ponar Dredge ☐ Eckman Dredge ☐ Bottle Sampler
☐ Peristaltic Pump ☐ Automated Interval Sampler ☒ Other: Jar

SAMPLER CONSTRUCTION: (Check as many as apply)

☐ Teflon®	☐ PVC
☐ Stainless Steel	☐ Polyethylene
☐ Carbon Steel	☐ Polypropylene
☒ Glass	☐ Other:

SAMPLE TYPE: ☒ Grab ☐ Composite ☐ Other: _____
SAMPLING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

FIELD MEASUREMENT DATA:

APPEARANCE (describe):
☐ Oily ☒ "Clean" ☒ Clear ☐ Turbid ☒ Color: slight brown tint ☐ Contains Immiscible Liquid
ODOR?: ☐ Yes ☒ No, Description: Slight brown tint. Few suspended solids
GRAIN SIZE DESCRIPTION: (Use for soils only)

FIELD DETERMINATIONS: pH: 7.6 Meter Model: Oakton pH Tester 2 Meter S/N: _____
Temperature: 6.4°C Spec. Cond.: 0.628 mU/cm Meter Model: YSI 3000 Meter S/N: _____
Other: _____
LABORATORY ANALYSIS: Total Cyanide

NO. OF CONTAINERS: 1 Field Blank I.D.: EB040500 Trip Blank I.D.: _____ Replicate I.D.: _____
REMARKS: Sample from tile pipe.

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: [signature] Date: 4-17-00

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BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

ENVIRONMENTAL SAMPLING FIELD DATA SHEET

Sample Number: SG-12
Sample I.D.: _____ (if different from samp no.)

Project: GW Investigation, SE of PT Plant SWMU
Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-5-00 Time: 0953
Weather Conditions: Cloudy, snow flurries
Air Temperature: ± 40°F

SAMPLE MEDIUM:

- ☐ SURFICIAL SOIL: Depth Interval: _____
- ☐ DEEP SOIL: Depth Interval: _____
- ☒ SURFACE WATER: Depth Interval: Surface
- ☐ BOTTOM SEDIMENT
- ☐ OTHER: Describe: _____

SAMPLING DATA:

SAMPLE COLLECTION EQUIPMENT:

☐ Scoop ☐ Shovel ☐ Direct into sample container ☐ Split-spoon sampler ☐ Hand auger
☐ Hand Corer ☐ Petite Ponar Dredge ☐ Eckman Dredge ☐ Bottle Sampler
☐ Peristaltic Pump ☐ Automated Interval Sampler ☒ Other: Jar

SAMPLER CONSTRUCTION: (Check as many as apply)

☐ Teflon®	☐ PVC
☐ Stainless Steel	☐ Polyethylene
☐ Carbon Steel	☐ Polypropylene
☒ Glass	☐ Other:

SAMPLE TYPE: ☒ Grab ☐ Composite ☐ Other: _____
SAMPLING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

FIELD MEASUREMENT DATA:

APPEARANCE (describe):
☐ Oily ☒ "Clean" ☒ Clear ☐ Turbid ☐ Color: _____ ☐ Contains Immiscible Liquid
ODOR?: ☐ Yes ☒ No , Description: Little suspended material
GRAIN SIZE DESCRIPTION: (Use for soils only)

FIELD DETERMINATIONS: pH: 7.8 Meter Model: Oakton pH Tstr 2 Meter S/N: _____
Temperature: 6.2°C Spec. Cond.: 0.631 mS/cm Meter Model: YSI 3000 Meter S/N: _____
Other: _____
LABORATORY ANALYSIS: Total Cyanide

NO. OF CONTAINERS: 1 Field Blank I.D.: EB040500 Trip Blank I.D.: _____ Replicate I.D.: _____
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert L. O'Neill Date: 4-17-00

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BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

ENVIRONMENTAL SAMPLING FIELD DATA SHEET

Sample Number: SG-13
Sample I.D.: _____ (if different from samp no.)

Project: GW Investigation, SE of PT Plant SWMU
Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-5-00 Time: 0943
Weather Conditions: cloudy, snow flurries
Air Temperature: ±40°F

SAMPLE MEDIUM:

- ☐ SURFICIAL SOIL: Depth Interval: _____
- ☐ DEEP SOIL: Depth Interval: _____
- ☒ SURFACE WATER: Depth Interval: surface
- ☐ BOTTOM SEDIMENT
- ☐ OTHER: Describe: _____

SAMPLING DATA:

SAMPLE COLLECTION EQUIPMENT:

☐ Scoop ☐ Shovel ☐ Direct into sample container ☐ Split-spoon sampler ☐ Hand auger
☐ Hand Corer ☐ Petite Ponar Dredge ☐ Eckman Dredge ☐ Bottle Sampler
☐ Peristaltic Pump ☐ Automated Interval Sampler ☒ Other: Jar

SAMPLER CONSTRUCTION: (Check as many as apply)

☐ Teflon®	☐ PVC
☐ Stainless Steel	☐ Polyethylene
☐ Carbon Steel	☐ Polypropylene
☒ Glass	☐ Other:

SAMPLE TYPE: ☒ Grab ☐ Composite ☐ Other: _____
SAMPLING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

FIELD MEASUREMENT DATA:

APPEARANCE (describe):
☐ Oily ☒ "Clean" ☒ Clear ☐ Turbid ☐ Color: _____ ☐ Contains Immiscible Liquid
ODOR?: ☐ Yes ☒ No , Description: Little suspended material
GRAIN SIZE DESCRIPTION: (Use for soils only)

FIELD DETERMINATIONS: pH: 7.6 Meter Model: Oakton pHTestr2 Meter S/N: _____
Temperature: 5.2°C Spec. Cond.: 0.626 mV/cm Meter Model: YSI Model 13CCO Meter S/N: _____
Other: _____
LABORATORY ANALYSIS: Total Cyanide
NO. OF CONTAINERS: 1 Field Blank I.D.: EB040500 Trip Blank I.D.: _____ Replicate I.D.: _____
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert L. O'Neill Date: 4-17-00

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BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

ENVIRONMENTAL SAMPLING FIELD DATA SHEET

Sample Number: SG-14
Sample I.D.: _____ (if different from samp no.)

Project: GW Investigation, SE of PT Plant SWMU
Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-5-00 Time: 0932
Weather Conditions: Cloudy, snow flurries
Air Temperature: 340°F

SAMPLE MEDIUM:

- ☐ SURFICIAL SOIL: Depth Interval: _____
- ☐ DEEP SOIL: Depth Interval: _____
- ☒ SURFACE WATER: Depth Interval: Surface
- ☐ BOTTOM SEDIMENT
- ☐ OTHER: Describe: _____

SAMPLING DATA:

SAMPLE COLLECTION EQUIPMENT:

☐ Scoop ☐ Shovel ☐ Direct into sample container ☐ Split-spoon sampler ☐ Hand auger
☐ Hand Corer ☐ Petite Ponar Dredge ☐ Eckman Dredge ☐ Bottle Sampler
☐ Peristaltic Pump ☐ Automated Interval Sampler ☒ Other: Jar

SAMPLER CONSTRUCTION: (Check as many as apply)

☐ Teflon®	☐ PVC
☐ Stainless Steel	☐ Polyethylene
☐ Carbon Steel	☐ Polypropylene
☒ Glass	☐ Other:

SAMPLE TYPE: ☒ Grab ☐ Composite ☐ Other: _____
SAMPLING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

FIELD MEASUREMENT DATA:

APPEARANCE (describe):
☐ Oily ☒ "Clean" ☒ Clear ☐ Turbid ☐ Color: _____ ☐ Contains Immiscible Liquid
ODOR?: ☐ Yes ☒ No , Description: Little suspended material
GRAIN SIZE DESCRIPTION: (Use for soils only)

FIELD DETERMINATIONS: pH: 7.7 Meter Model: Oakton pH Tester 2 Meter S/N: _____
Temperature: 5.7°C Spec. Cond.: 0.607 mU/cm Meter Model: YSI 3000 Meter S/N: _____
Other: _____
LABORATORY ANALYSIS: Total Cyanide
NO. OF CONTAINERS: 2 Field Blank I.D.: EB040500 Trip Blank I.D.: _____ Replicate I.D.: DUP040500
REMARKS: Collected duplicate sample from this location

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert L O'Neill Date: 4-17-00

BROWN AND CALDWELL

Hercules Incorporated
Ciba Site
Glens Falls, NY

ENVIRONMENTAL SAMPLING FIELD DATA SHEET

Sample Number: SG-15
Sample I.D.: _____ (if different from samp no.)

Project: GW Investigation, SE of PT Plant & WMU
Client: Hercules Job No.: 18924.001
Personnel: R. O'Neill, D. Young

Date: 4-5-00 Time: 0921
Weather Conditions: Cloudy, snow flurries
Air Temperature: 40°F

SAMPLE MEDIUM:

- ☐ SURFICIAL SOIL: Depth Interval: _____
- ☐ DEEP SOIL: Depth Interval: _____
- ☒ SURFACE WATER: Depth Interval: surface
- ☐ BOTTOM SEDIMENT
- ☐ OTHER: Describe: _____

SAMPLING DATA:

SAMPLE COLLECTION EQUIPMENT:

☐ Scoop ☐ Shovel ☐ Direct into sample container ☐ Split-spoon sampler ☐ Hand auger
☐ Hand Corer ☐ Petite Ponar Dredge ☐ Eckman Dredge ☐ Bottle Sampler
☐ Peristaltic Pump ☐ Automated Interval Sampler ☒ Other: Jar

SAMPLER CONSTRUCTION: (Check as many as apply)

☐ Teflon®	☐ PVC
☐ Stainless Steel	☐ Polyethylene
☐ Carbon Steel	☐ Polypropylene
☒ Glass	☐ Other:

SAMPLE TYPE: ☒ Grab ☐ Composite ☐ Other: _____
SAMPLING EQUIPMENT: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

FIELD MEASUREMENT DATA:

APPEARANCE (describe):
☐ Oily ☒ "Clean" ☒ Clear ☐ Turbid ☐ Color: _____ ☐ Contains Immiscible Liquid
ODOR?: ☐ Yes ☒ No, Description: Little suspended matter
GRAIN SIZE DESCRIPTION: (Use for soils only)

FIELD DETERMINATIONS: pH: 7.2 Meter Model: Oakton pH Tester 2 Meter S/N: _____
Temperature: 4.4 °C Spec. Cond.: 0.396 mS/cm Meter Model: YSI 3200 Meter S/N: _____
Other: _____
LABORATORY ANALYSIS: Total Cyanide

NO. OF CONTAINERS: 1 Field Blank I.D.: EBC40500 Trip Blank I.D.: _____ Replicate I.D.: _____
REMARKS:

I certify that this sample was collected and handled in accordance with applicable regulatory and project protocols.
Signature: Robert A O'Neill Date: 4-17-00

APPENDIX G

LABORATORY DATA PACKAGE

INORGANIC DATA PACKAGE

PREPARED FOR
HERCULES INCORPORATED

MAY 18, 2000

Authorized for Release by:

1. _____
D. Rick Davis, Vice President

2. Betty L. DeVille
Betty L. DeVille, Inorganic Lab Manager

INORGANIC DATA PACKAGE

G.W.I. SE-PT PLANT

Prepared for:

Hercules Incorporated
Hercules Plaza
Wilmington, Delaware 19894

Prepared by:

Eckenfelder Laboratory, LLC
227 French Landing Drive
Nashville, Tennessee 37228

May 18, 2000

TABLE OF CONTENTS

INORGANIC CASE NARRATIVE
Hercules (G.W.I. SE-PT Plant)
18924.001
April, 2000

Eckenfelder ID	Client ID
0004037-01	MW-OB22
0004037-02	MW-OB21
0004037-03	NEL-WP-1
0004037-04	NEL-WP-2
0004037-05	NEL-WP-3
0004037-06	SG-15
0004037-07	SG-14
0004037-08	SG-13
0004037-09	SG-12
0004037-10	SG-11
0004037-11	DUP 040500
0004037-12	EB-040500

Methods:

The samples were analyzed for total cyanide by SW846 method 9012A.

General Comments:

1) **Instrument Detection Limit (IDL):**
   a) The reporting limit (RL) was used in place of the IDL. See "Form X - IN". The RL is defined as no less than the method detection limit (MDL) defined in 40 CFR 136, Appendix B, Revision 1.11.

Specific Comments:

All analyses performed by the Inorganic section were completed meeting satisfactorily the corresponding specifications for Quality Control with the following exceptions:

I) Matrix Spike/Matrix Spike Duplicate (MS/MSD)
% Recovery Specification Limits are 75-125%

A) Cyanide
BATCH: 00H02

1) The MSD percent recovery for sample 0004037-02 (MW-OB21) was outside specification limits for cyanide at 155%. **The associated samples are qualified with an "N".**

Batching Information

SDG No.: 00H02
Contract: Hercules

Batch Number: 00H02 - Cyanide

PBW 040700A	PBW 040700A	SAM	WATER
PBW 040700B	PBW	MB	WATER
LCSW 040700A	LCSW	LCS	WATER
0004037-01	MW-OB22	SAM	WATER
0004037-03	NEL-WP-1	SAM	WATER
0004037-04	NEL-WP-2	SAM	WATER
0004037-05	NEL-WP-3	SAM	WATER
0004037-06	SG-15	SAM	WATER
0004037-07	SG-14	SAM	WATER
0004037-08	SG-13	SAM	WATER
0004037-09	SG-12	SAM	WATER
0004037-10	SG-11	SAM	WATER
0004037-11	DUP 040500	SAM	WATER
0004037-12	EB-040500	SAM	WATER
0004037-02	MW-OB21	SAM	WATER
0004037-02S	MW-OB21S	MS	WATER
0004037-02SD	MW-OB21SD	MSD	WATER

Hercules

GWI SE-PT Plant

Parameters Requested

Lab Sample ID	Field ID	Matrix	Date_Time Sampled	Parameters requested
0004037-01	MW-OB22	Groundwater	4/4/2000 4:05:00 PM	Cyanide
0004037-02	MW-OB21	Groundwater	4/4/2000 4:30:00 PM	Cyanide
0004037-03	NEL-WP-1	Groundwater	4/5/2000 8:39:00 AM	Cyanide
0004037-04	NEL-WP-2	Groundwater	4/5/2000 8:53:00 AM	Cyanide
0004037-05	NEL-WP-3	Groundwater	4/5/2000 9:08:00 AM	Cyanide
0004037-06	SG-15	Groundwater	4/5/2000 9:21:00 AM	Cyanide
0004037-07	SG-14	Groundwater	4/5/2000 9:30:00 AM	Cyanide
0004037-08	SG-13	Groundwater	4/5/2000 9:43:00 AM	Cyanide
0004037-09	SG-12	Groundwater	4/5/2000 9:53:00 AM	Cyanide
0004037-10	SG-11	Groundwater	4/5/2000 10:02:00 AM	Cyanide
0004037-11	DUP 040500	Groundwater	4/5/2000	Cyanide
0004037-12	EB-040500	Groundwater	4/5/2000 11:05:00 AM	Cyanide

Sample Information Summary for Hercules

FIELD ID	Eckenfelder Lab ID	Date and Time Sampled	Matrix
MW-OB22	0004037-01	4/4/00 4:05:00 PM	Groundwater
MW-OB21	0004037-02	4/4/00 4:30:00 PM	Groundwater
NEL-WP-1	0004037-03	4/5/00 8:39:00 AM	Groundwater
NEL-WP-2	0004037-04	4/5/00 8:53:00 AM	Groundwater
NEL-WP-3	0004037-05	4/5/00 9:08:00 AM	Groundwater
SG-15	0004037-06	4/5/00 9:21:00 AM	Groundwater
SG-14	0004037-07	4/5/00 9:30:00 AM	Groundwater
SG-13	0004037-08	4/5/00 9:43:00 AM	Groundwater
SG-12	0004037-09	4/5/00 9:53:00 AM	Groundwater
SG-11	0004037-10	4/5/00 10:02:00 AM	Groundwater
DUP 040500	0004037-11	4/5/00	Groundwater
EB-040500	0004037-12	4/5/00 11:05:00 AM	Groundwater

Eckenfelder Laboratory, LLC Chain of Custody Record

№ 21169

Ship to:
Eckenfelder Laboratory LLC
227 French Landing Drive
Nashville, TN 37228
Attn: Analytical Laboratory
(615) 255-2288 (phone)
(615) 256-8332 (fax)
(615) 400-0253 (mobile)

Send Results to:
Name: Bob O'Neill
Company: Brown & Caldwell
Address: 440 Franklin Tpke
City & State: Mahwah, NJ 07430
Phone: 201 818 6055
Fax: 201 818 6057

Send Invoice To:
Name: Glen Schwiesinger
Company: Hercules Inc.
Address:
City & State: Wilmington, DE
Phone: (302) 594-6581
Purchase Order:

Details:
Page 1 of 2
Cooler No. 1 of 1
Date Shipped: 4/5/00
Shipped By: Fed Ex
Turnaround: Std.
(Std. turn unless noted otherwise/There may be a surcharge for RUSH-contact Lab)

Project No./Name: 18924.001 / G.W.I. SE-PT PLANT
Samplers (Signature)*: Dennis Young — Robert L. O'Neill

Lab Use Only Lab #	Date Sampled	Time	Comp./Grab	Sample Location/Description	Sample Matrix	Field pH/Temp	Field Cond.	Analysis Required	No. of Bottles	Lab Use Only Containers/Pres.
4037-01	4/4/00	1605	G	MW-OB22	GW	8.6 / 7.4	0.578	Cyanide	1	1A-NaOH pH>12
02	4/4/00	1630	G	MW-OB21	GW	7.1 / 10.1	1.256	Cyanide	1	
↓	4/4/00	1630	G	MW-OB21 MS/MSD	GW	—	—	Cyanide	2 2x	
03	4/5/00	0839	G	NEL-WP-1	GW	7.4 / 4.3	0.590	Cyanide	1	
04	4/5/00	0853	G	NEL-WP-2	GW	7.2 / 5.4	0.389	Cyanide	1	
05	4/5/00	0908	G	NEL-WP-3	GW	6.9 / 5.0	0.493	Cyanide	1	
06	4/5/00	0921	G	SG-15	SW	7.2 / 4.4	0.396	Cyanide	1	
07	4/5/00	0930	G	SG-14	SW	7.7 / 5.7	0.607	Cyanide	1	
08	4/5/00	0943	G	SG-13	SW	7.6 / 5.2	0.626	Cyanide	1	
09	4/5/00	0953	G	SG-12	SW	7.8 / 6.2	0.631	Cyanide	1	

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[signature]	3-31-00 1300	Dennis Young 4/4/00 0730
Relinquished by: (Signature) Dennis Young	4/5/00 1400	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature) [signature]	4-6-00 0930	Work Order No./Temp (°C) 1.0°C

REMARKS
* Signature required to ensure validity
Temp = °C
S Cond. = mU/cm

Lab Use Only
VOA Headspace Y N (NA)
Field Filtered Y (N) NA
Correct Containers (Y) N NA
Discrepancies Y (N) NA
Cust. Seals intact Y N (NA)
Containers Intact (Y) N NA
Airbill # FX
CAR #

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers

000005

Eckenfelder Laboratory, LLC Chain of Custody Record

№ 21168

Ship to:
Eckenfelder Laboratory LLC
227 French Landing Drive
Nashville, TN 37228
Attn: Analytical Laboratory
(615) 255-2288 (phone)
(615) 256-8332 (fax)
(615) 400-0253 (mobile)

Send Results to:
Name: Bob O'Neill
Company: B+C
Address: 410 FRANKLIN TPKE
City & State: MAHWAH, NJ 07430
Phone: 201-818-6055
Fax: 201-818-6057

Send Invoice To:
Name:
Company: See page #1
Address:
City & State:
Phone:
Purchase Order:

Details:
Page 2 of 2
Cooler No. 1 of 1
Date Shipped: 4/5/00
Shipped By: FedEx
Turnaround: Std.
(Std. turn unless noted otherwise/There may be a surcharge for RUSH-contact Lab)

Project No./Name: 18924.001 / G.W.I. SEPT PLANT

Samplers (Signature)*: Robert J. O'Neill, Dennis Young

Lab Use Only Lab #	Date Sampled	Time	Comp./Grab	Sample Location/Description	Sample Matrix	Field pH/Temp	Field Cond.	ANALYSIS REQUIRED	No. of Bottles	Lab Use Only Containers/Pres.
4037-10	4/5/00	1002	G	SG-11	SW	7.6/6.4	0.628	Cyanide	1	1A-NaOH pH 12
11	4/5/00	0000	G	DUP 040500	W	—	—	Cyanide	1	
12	4/5/00	1105	G	EB-040500	W	—	—	Cyanide	1	

Signature	Date/Time	Received By: (Signature)
Sample Kit Prep'd by: (Signature) [signature]	3-31-00 1:30	Dennis Young 4/4/00 0730
Relinquished by: (Signature) Dennis Young	4/5/00 1400	
Relinquished by: (Signature)		
Received for Laboratory by: (Signature) [signature]	4-6-00 0930	Work Order No./Temp (°C): 1.0 °C

REMARKS
* Signature required to ensure validity
Temp = °C
SCond = mU/cm

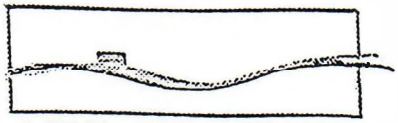
Lab Use Only

VOA Headspace	Y	N	NA (circled)
Field Filtered	Y	N (circled)	NA
Correct Containers	Y (circled)	N	NA
Discrepancies	Y	N (circled)	NA
Cust. Seals intact	Y	N	NA (circled)
Containers Intact	Y (circled)	N	NA

Airbill #: FX
CAR #:

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers

9000006



ECKENFELDER INC.®

COOLER RECEIPT FORM

PROJECT: Hercules (BC-NJ) - GWTSE PT Plant LIMS# C004037-01 → -12

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS AND/OR COMPLETE A CORRECTIVE ACTION CONCERNING CHECK-IN PROBLEMS.

A. PRELIMINARY EXAMINATION PHASE: DATE COOLER OPENED: 4-6-00 C-of-C Number 21168-21169

by (print)_____ (sign)_____

1. Did cooler come with a shipping slip (air bill, etc.)? _____ (YES) NO
   If YES, enter carrier Name & air bill number here: Fed-Ex #819629467831
2. Were custody seals on outside of cooler? _____ (YES) NO
   How many & where: 2-lid, seal date 4-5-00, seal name D. Young
3. Were custody seals unbroken and intact at the date and time of arrival? _____ (YES) NO
4. Did you screen samples for radioactivity using the Geiger Counter? _____ YES (NO)
5. Were custody papers sealed in a plastic bag & taped inside to the lid? _____ (YES) NO
6. Were custody papers filled out properly (ink, signed, etc.)? _____ (YES) NO
7. Did you sign custody papers in the appropriate place? _____ (YES) NO
8. Was project identifiable from custody papers? If yes, enter project name at the top of this form (YES) NO
9. If required, was enough ice used? _____ Type of Ice: bagged cubes Temp 1.0 °C _____ (YES) NO
10. Have designated person initial here to acknowledge receipt of cooler: BR (date) 4-6-00

B. LOG-IN PHASE: Date samples were logged in: 4-7-00

by (print) B. Richard (sign) B Richard

11. Describe type of packing in cooler: Bubble wrap, Plastic bags, Ice
12. Were all bottles sealed in separate plastic bags? _____ YES (NO)
13. Did all bottles arrive unbroken & were labels in good condition? _____ (YES) NO
14. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? _____ (YES) NO
15. Did all bottle labels agree with custody papers? _____ (YES) NO
16. Were correct containers used for the tests indicated? _____ (YES) NO
17. Were correct preservatives added to samples? _____ (YES) NO
18. Was a sufficient amount of sample sent for tests indicated _____ (YES) NO
19. Were bubbles absent in volatile samples? If NO, list by Sample # N/A _____ YES NO
20. Was the project manager called and status discussed? If yes, give details on the back of this form YES (NO)
21. Who was called? _____ By whom? _____ (date) _____

Eckenfelder
Laboratory, LLC

CLIENT: Hercules #18924.001; NY State ID# 10925
DATE RECEIVED: 04/06/00
DATE REPORTED: 04/20/00
DATE REVISED: 05/16/00 (A')

ECKENFELDER SAMPLE NUMBER				0004037-01
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				MW-OB22 4/4/2000 4:05:00 PM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Cyanide	0.0050	9012A	mg/L	0.052 N

See attached page for definitions of terms and qualifiers.

(A') = Revised to correct the result for MW-OB21and to remove the "*" qualifier.

227 French Landing Drive Nashville, Tennessee 37228 615-345-1115 FAX 615-846-5426

CLIENT: Hercules #18924.001; NY State ID# 10925

DATE RECEIVED: 04/06/00

DATE REPORTED: 04/20/00

DATE REVISED: 05/16/00 (A')

ECKENFELDER SAMPLE NUMBER				0004037-02
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				MW-OB21 4/4/2000 4:30:00 PM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Cyanide	0.025	9012A	mg/L	0.50 N

See attached page for definitions of terms and qualifiers.

(A') = Revised to correct the result for MW-OB21and to remove the "*" qualifier.

Eckenfelder Laboratory, LLC

CLIENT: Hercules #18924.001; NY State ID# 10925
DATE RECEIVED: 04/06/00
DATE REPORTED: 04/20/00
DATE REVISED: 05/16/00 (A')

ECKENFELDER SAMPLE NUMBER				0004037-03	0004037-04	0004037-05
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				NEL-WP-1 4/5/2000 8:39:00 AM	NEL-WP-2 4/5/2000 8:53:00 AM	NEL-WP-3 4/5/2000 9:08:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC	CONC	CONC
Cyanide	0.0050	9012A	mg/L	0.025 N	0.016 N	<0.0050 N

See attached page for definitions of terms and qualifiers.

(A') = Revised to correct the result for MW-OB21and to remove the "*" qualifier.

Eckenfelder Laboratory, LLC

CLIENT: Hercules #18924.001; NY State ID# 10925

DATE RECEIVED: 04/06/00

DATE REPORTED: 04/20/00

DATE REVISED: 05/16/00 (A')

ECKENFELDER SAMPLE NUMBER				0004037-06	0004037-07	0004037-08
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				SG-15 4/5/2000 9:21:00 AM	SG-14 4/5/2000 9:30:00 AM	SG-13 4/5/2000 9:43:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC	CONC	CONC
Cyanide	0.0050	9012A	mg/L	<0.0050 N	0.0091 N	0.0089 N

See attached page for definitions of terms and qualifiers.

(A') = Revised to correct the result for MW-OB21and to remove the "*" qualifier.

Eckenfelder Laboratory, LLC

CLIENT: Hercules #18924.001; NY State ID# 10925
ATE RECEIVED: 04/06/00
DATE REPORTED: 04/20/00
DATE REVISED: 05/16/00 (A')

CKENFELDER SAMPLE NUMBER				0004037-09	0004037-10	0004037-11	0004037-12
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				SG-12 4/5/2000 9:53:00 AM	SG-11 4/5/2000 10:02:00 AM	DUP 040500 4/5/2000	EB-040500 4/5/2000 11:05:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC	CONC	CONC	CONC
Cyanide	0.0050	9012A	mg/L	0.010 N	0.0085 N	0.011 N	<0.0050 N

See attached page for definitions of terms and qualifiers.

(A') = Revised to correct the result for MW-OB21and to remove the "*" qualifier.

Eckenfelder Laboratory, LLC

R. Rick Davis
ice President

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

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

0000014

TOTAL METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Initial Calibration Source: Fisher

Continuing Calibration Source: Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Cyanide	517.0	470.00	90.9	517.0	521.00	100.8	524.00	101.4	AS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

TOTAL METALS

-2A-
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Initial Calibration Source:

Continuing Calibration Source: Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Cyanide				517.0	544.00	105.2			AS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

TOTAL METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Initial Calibration Source: Fisher

Continuing Calibration Source: Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Cyanide	517.0	520.00	100.6	517.0	515.00	99.6			AS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

TOTAL METALS

-3-

BLANKS

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C		M
Cyanide	5.0	U	5.0	U					5.000	U		AS

TOTAL METALS

-3-

BLANKS

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Cyanide									5.000	U	AS

TOTAL METALS

-3-

BLANKS

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Cyanide	5.0	U	5.0	U							AS

TOTAL METALS
-5A-
SPIKE SAMPLE RECOVERY

SAMPLE NO.

MW-OB21S

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Matrix (soil/water): WATER Level (low/med): LOW

Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): µG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Cyanide	75 - 125	702.6000		504.8000		207.00	95.6		AS

Comments:

TOTAL METALS

-5A-

SPIKE SAMPLE RECOVERY

SAMPLE NO.

MW-OB21SD

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Matrix (soil/water): WATER Level (low/med): LOW

Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): µG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Cyanide	75 - 125	825.8000		504.8000		207.00	155.1	N	AS

Comments:

TOTAL METALS

-6-

DUPLICATES

SAMPLE NO.

MW-OB21SD

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): µG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Cyanide		702.6000		825.8000		16.1		AS

TOTAL METALS
-7-
LABORATORY CONTROL SAMPLE

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Solid LCS Source:

Aqueous LCS Source: JTBaker

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits	%R
Cyanide	500.0	492.20	98.4					

TOTAL METALS
-13-
PREPARATION LOG

Contract: Hercules

Lab Code: Case No.: SAS No.: SDG NO.: 00H02

Method: AS

Sample No.	Preparation Date	Initial Volume	Volume (mL)
DUP 040500	4/7/00	500.00	250
EB-040500	4/7/00	500.00	250
LCSW	4/7/00	100.00	250
MW-OB21	4/7/00	500.00	250
MW-OB21S	4/7/00	500.00	250
MW-OB21SD	4/7/00	500.00	250
MW-OB22	4/7/00	500.00	250
NEL-WP-1	4/7/00	500.00	250
NEL-WP-2	4/7/00	500.00	250
NEL-WP-3	4/7/00	500.00	250
PBW	4/7/00	500.00	250
PBW 040700A	4/7/00	500.00	250
SG-11	4/7/00	500.00	250
SG-12	4/7/00	500.00	250
SG-13	4/7/00	500.00	250
SG-14	4/7/00	500.00	250
SG-15	4/7/00	500.00	250

TOTAL METALS

-14-

ANALYSIS RUN LOG

Contract: Hercules

ab Code Case No.: SAS No.: SDG No.: 00H02

Instrument ID Number: Cyanide Method: AS

tart Date: 4/11/00 End Date: 4/11/00

Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	AL	TL	V	ZN	CN
ICV1	1.00	12:34:																									X
ICB1	1.00	12:35:																									X
PBW 040700A	1.00	12:36:																									X
BLANK SPK	1.00	12:37:																									X
ZZZZZZ	250.00	12:38:																									
MW-OB22	1.00	12:39:																									X
ZZZZZZ	1.00	12:40:																									
ZZZZZZ	1.00	12:41:																									
ZZZZZZ	1.00	12:42:																									
NEL-WP-1	1.00	12:43:																									X
CCV1	1.00	12:44:																									X
NEL-WP-2	1.00	12:46:																									X
PBW	1.00	12:47:																									X
LCSW	2.00	12:48:																									X
NEL-WP-3	1.00	12:49:																									X
SG-15	1.00	12:50:																									X
SG-14	1.00	12:51:																									X
SG-13	1.00	12:52:																									X
SG-12	1.00	12:53:																									X
SG-11	1.00	12:54:																									X
DUP 040500	1.00	12:55:																									X
CCV2	1.00	12:56:																									X
EB-040500	1.00	12:58:																									X
ZZZZZZ	1.00	12:59:																									
ZZZZZZ	1.00	13:00:																									
ZZZZZZ	250.00	13:01:																									
ZZZZZZ	1.00	13:02:																									
ZZZZZZ	1.00	13:03:																									
ZZZZZZ	1.00	13:04:																									
ZZZZZZ	1.00	13:05:																									
ZZZZZZ	1.00	13:06:																									
ZZZZZZ	1.00	13:07:																									
CCV3	1.00	13:08:																									X
CCB2	1.00	13:10:																									X

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

TOTAL METALS

-14-

ANALYSIS RUN LOG

Contract: Hercules

Lab Code Case No.: SAS No.: SDG No.: 00H02

Instrument ID Number: Cyanide Method: AS

Start Date: 4/11/00 End Date: 4/11/00

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ICV2	1.00	14:19:																								X
ICB2	1.00	14:20:																								X
MW-OB21S	5.00	14:21:																								X
MW-OB21	5.00	14:22:																								X
MW-OB21SD	5.00	14:23:																								X
ZZZZZZ	1.00	14:24:																								
CCV1	1.00	14:25:																								X
CCB1	1.00	14:27:																								X

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

Blank Spike Recovery
Hercules Inc.
Job #18924.001

ANALYTE	BATCH	SPIKE RESULT	SPIKE ADDED	%REC	UNITS	METHOD
Cyanide, Total	00H02	0.216	0.207	104	mg/L	Lachat