01.06-10/01/98-02336

**FINAL**

# BRINSON CREEK
# ADMINISTRATIVE ORDER ON CONSENT
# SITE CHARACTERIZATION REPORT

**MARINE CORPS BASE, CAMP LEJEUNE**
**NORTH CAROLINA**

**CONTRACT TASK ORDER 0375**

**OCTOBER 1, 1998**

*Prepared for:*

**DEPARTMENT OF THE NAVY**
**ATLANTIC DIVISION**
**NAVAL FACILITIES**
**ENGINEERING COMMAND**
*Norfolk, Virginia*

*Under the:*

**LANTDIV CLEAN Program**
**Contract N62470-89-D-4814**

*Prepared by:*

**BAKER ENVIRONMENTAL, INC.**
*Coraopolis, Pennsylvania*

## TABLE OF CONTENTS


| | Page |
|---|---|
| **INTRODUCTION** | **1** |
| **BACKGROUND** | **1** |
| Site Description | 1 |
| Site History | 2 |
| **FIELD PROGRAM** | **3** |
| Description of Sample Locations | 4 |
| Sample Collection Activities | 5 |
| Analytical Program | 6 |
| Surveying | 6 |
| IDW Handling | 6 |
| **PHYSICAL CHARACTERISTICS OF THE STUDY AREA** | **7** |
| Surface Features | 7 |
| Subsurface Features | 7 |
| **ANALYTICAL RESULTS** | **7** |
| **CONCLUSIONS** | **8** |


## LIST OF TABLES


1 Sample Summary


## LIST OF FIGURES


1 Location Map
2 Aerial Photograph, March 6, 1993
3 Site Plan
4 Soil Boring Locations


## LIST OF APPENDICES


A Administrative Order on Consent
B Photographs
C As-Built Drawing of Brinson Creek Trunk Main
D Chains of Custody Records
E Data Validation Report

## INTRODUCTION

This Site Characterization Report was prepared by Baker Environmental, Inc. (Baker) to meet the requirements of an Administrative Order on Consent, provided in Appendix A, issued by the North Carolina Department of Environment and Natural Resources (NC DENR) Division of Waste Management. The order was issued to resolve issues concerning potentially hazardous sandblast grit used as fill material at a City of Jacksonville, North Carolina wastewater treatment construction site, located along Brinson Creek. Refer to Figures 1 and 2 for location of the site. The Administrative Order on Consent requires that Marine Corp Base (MCB), Camp Lejeune submit a report that verifies the extent and characterization of soil contamination at the Brinson Creek Site (refer to Order Item 3). The objective of this Site Characterization report is to meet the requirements stipulated in the Administrative Order on Consent.

As stipulated, this report provides NC DENR, Division of Waste Management with the following:

- Description of sample collection procedures
- Sample locations and depths
- Analytical methods
- Analytical results

## BACKGROUND

This section presents a brief site description and history of waste management activities that have occurred at the Brinson Creek Site. This information was obtained from the Environmental Management Department (EMD) of MCB, Camp Lejeune and the City of Jacksonville, Department of Public Works.

### Site Description

The Brinson Creek Site consists of a fill area that is approximately 300 feet long by 17 feet wide, and extends to a depth of 12 feet. The site is located on the north side of Brinson Creek and is northeast of the Camp Geiger wastewater treatment plant located on the south side of Brinson Creek. (Refer to Figures 1 and 2).

The Brinson Creek Site is situated on City of Jacksonville right-of-way (ROW), where the 18-inch Brinson Creek trunk main was constructed. Photographs of the fill area and surrounding area are provided in Attachment B. The Site is located in an area of ponded water between manhole # 22 and manhole # 24 along the alignment of the 18-inch Brinson Creek trunk main (refer to Figure 2).The exact location and dimensions of the site were based upon the following information:

- City of Jacksonville, NC, Department of Public Works, Construction Contract Progress Payment Request Summary for the 1990 Annexation Contract #3 Brinson Creek Trunk Main Project.

- City of Jacksonville, NC, Department of Public Works, Daily Inspection Sheets for the 1990 the Annexation Contract #3 Brinson Creek Trunk Main Project.

- City of Jacksonville, NC, Department of Public Works, As Built Drawing (Sheet 7) for the 1990 the Annexation Contract #3 Brinson Creek Trunk Main Project (Provided in Attachment C). The profile view of the sheet 7 as built drawing shows a depression between manhole # 22 and manhole #24 that is approximately 300 feet long.

- Discussions with MCB Camp Lejeune's Environmental Management Department (EMD).

- A Baker and EMD site visit conducted on January 27, 1998.

**Site History**

During August 1992, a contractor hired by Marine Corps Systems Command (MARCORSYSCOM) for the Enhanced Applique Armor Kit (EAAK) conversion project, improperly transferred drums of contaminated residual sandblast grit which was subsequently used as fill material for an unrelated non-federal construction project.

The contractor was hired to sandblast paint and other protective coatings from Assault Amphibious Vehicles as part of the EAAK conversion project. As specified by terms of the contract, the grit residue was to be tested and disposed of as hazardous waste. On the basis of inadequate testing, in June 1992 the contractor informed MARCORSYSCOM that the residuum was not hazardous and sought to dispose of the grit by other means. MARCORSYSCOM informed the contractor to submit a proposal to transport the material to an appropriate disposal facility. The contractor failed to do so and instead contracted with a local firm to remove the grit from site. This grit, mixed with other fill, was used as fill material in an off-base project for the City of Jacksonville. The fill was placed in a trench approximately 17 feet wide, 12 feet deep, and 300 feet long in order to buttress a sewer pipeline adjacent to a local waterway, Brinson Creek.

The contractor reported that they tested the sandblast grit prior to disposal and found it to be below the North Carolina requirement for disposal as hazardous materials. Investigation disclosed that the contractor's test was for only lead and that a Toxicity Characteristics Leaching Procedure (TCLP) analysis would have surfaced the chromium. Camp Lejeune's EMD reported the results of a later test of debris similar to that which was dumped in Brinson Creek and those results revealed the paint debris was contaminated at a level of 1.09 milligram per liter (mg/L) of chromium and 0.6 mg/L lead.

As a result of these disposal activities an Administrative Order on Consent was issued by the NC DENR Division of Waste Management (effective March 31, 1998) with the consent of MCB Camp Lejeune to resolve issues concerning the sandblast grit disposal area. In response to the AOC, a Sample Strategy Plan (SSP) was prepared and submitted on May 18, 1998 to the NC DENR Division of Waste Management. The SSP was subsequently reviewed and approved by the NC DENR.

## FIELD PROGRAM

The field work was performed in accordance with the SSP in order to characterize and assess the extent of the sandblast grit disposed of at the Brinson Creek Site as required by Order Items 2 and 3 of the Administrative Order on Consent. Field operations at the Brinson Creek Site commenced on July 13, 1998 and concluded on July 20, 1998. This section provides a description of sample locations, sample depths, sample collection methods, analytical methods, and Investigation Derived Waste (IDW) disposal procedures.

## Description of Sample Locations

According to the Administrative Order on Consent, the sandblast grit was mixed with sand and deposited as backfill in a trench 17 feet wide by 300 feet long and extended to a depth of 12 feet below ground surface (bgs). The trench had been excavated during construction of the Brinson Creek Trunk Main, an 18" diameter sanitary sewer line. For the purpose of this investigation, it was assumed the sanitary sewer line had been placed in the middle of the trench. Therefore, half the disposal area was assumed to be on the north side of the sewer line and half on the south side of the sanitary sewer line.

To adequately sample the disposal area, six grid blocks were identified in the field along the alignment of the sewer main (Refer to Figure 4). The alignment of the sewer line was determined by running a guide string between the center of manhole # 22 and the center of manhole # 24. Three grid blocks were marked on the north side of the sanitary sewer main (grid blocks 1, 2 and 3) and three grid blocks were staked on the south side of the sanitary sewer main (grid blocks 4, 5 and 6). Each grid block was 100 feet long in the direction parallel to the sewer main by 10 feet in a direction perpendicular to the alignment. Soil boring locations were placed within the limits of the disposal area. The alignment of the sanitary sewer line was used as a baseline for marking the grid blocks and soil boring locations.

Within each grid block a total of five uniformly spaced soil borings were advanced and an aliquot of soil was collected at a pre-determined depth from each of the five borings. Upon collecting the last aliquot from a grid block, the five aliquots were homogenized in a decontaminated stainless steel bowl. A sample was then collected from this homogenized material and shipped to the analytical laboratory.

This process was repeated for all six of the grid blocks. One homogenized sample was collected from each grid block. A total of seven samples, six samples and one duplicate, were shipped to the analytical laboratory.

The depths from which the aliquots were collected is summarized in Table 1. Locations of the soil borings from which the aliquots were collected is shown in Figure 4.

## Sample Collection Activities

The fill area is located beneath an area of shallow ponded water and soils at the bottom of the pond are to soft to support the weight of a truck or track-mounted drill rig. As an alternative, a manually operated discrete interval sampling tool was mounted on a boat and used to advance soil borings and collect soil aliquots at the prescribed depths. The bottom of the boat was outfitted with a sampling portal that prevented the boat from sinking but allowed the insertion of sampling tools. Two people were required to advance a borehole using this method. One person was required to maneuver and stabilize the boat during borehole advancement. The second person was needed to advance the borehole to depth and collect the soil aliquot.

The discreet interval sampling tool consists of a 35 pound slide hammer assembly, probe rods, and a Geoprobe Macro-Core™ soil sampler. The hammer would strike an anvil, located at the bottom of the slide bar, that was secured to the probe rods by way of a threaded connection. The impact of the weight striking the anvil advanced the probe rods to depth. To recover the rods and soil aliquot the slide bar and anvil were inverted. The hammer was repetitively pushed upward against the anvil which pulled the probe rods out of the ground.

The Geoprobe Macro-Core™ sampling device consisted of a 1.375 inch outer diameter stainless steel sampling tube that was fitted with a two foot acetate liner. At the end of the sampling tube was a retractable drive point. When the desired interval was reached, the drive point was retracted into the top of the sampling tube. As the tube was advanced with the drive point retracted, soil was forced into the acetate liner of the sampling tube. Upon collection of the aliquot the sampling tube and probe rods were retrieved, and the plastic liner containing the aliquot was removed from the sampling spoon and capped. A single aliquot was collected from each borehole in a grid block. All five aliquots from a grid block were then homogenized in a stainless steel mixing bowl. A new acetate liner was used for the collection of each aliquot.

It should be noted that the sampling tube is not equipped with a plastic basket that prevents sample material from slipping out of the sampling tube during retrieval. When very soft, saturated soils were encountered, such as in the seven to nine foot depth interval, sample recovery was zero percent. Although some sample volume was usually lost during tool retrieval, recoveries typically were between 25% to 50%.

Upon collection, all samples were cooled to four degrees centigrade and shipped to Quanterra Environmental Services, Inc. of Knoxville, Tennessee. Upon completion of the laboratory analyses, analytical results were validated by Heartland Environmental, Inc. of St. Charles, Missouri.

## Analytical Program

Due to the nature of the fill material and to characterize the sandblast grit at the Brison Creek Site as either hazardous or nonhazardous, TCLP Metals (SW1311//SW 6010B) were performed on each of the seven soil samples (six samples and one duplicate). Rinseates were collected from a clean acetate liner and a decontaminated sampling spoon and analyzed for Contract Lab Protocol (CLP) metals.

## Surveying

A preliminary survey was performed at the site using a Trimble Global Positioning System (GPS) unit. In addition to gathering coordinates for soil boring locations, survey data was collected on the major attributes of the site that included the limits of the pond, sanitary sewer line alignment, manholes, access roads, livestock pen and debris piles.

## IDW Handling

Field activities at the Brinson Creek AOC Site resulted in the generation of a limited volume of soil cuttings. During field operations this material was temporarily stored in a 5-gallon high-density polyethylene bucket with a lid. Following the conclusion of sampling activities a sample of the cuttings were collected and sent to Quanterra Environmental Services, Inc. for characterization. The entire volume of IDW was required for laboratory characterization.

The results of the IDW laboratory analysis indicated the cuttings were not hazardous.

## PHYSICAL CHARACTERISTICS OF THE STUDY AREA

### Surface Features

The Brinson Creek Site is located between manhole # 22 and manhole #24 of the Brinson Creek Trunk Main. Approximately 75 % of the site is submerged under a small pond that is approximately two feet deep. The area of ponded water is surrounded by thick wetland vegetation. Although a topographic survey was not performed, it appears the pond is fed by storm water runoff from the surrounding property and seasonally from Brinson Creek, which is located on the south side of the site. The level of water in the pond appears to fluctuate by as much as two feet during wet and dry seasons. Photographs of the pond are included in Attachment B.

To the north of the Brinson Creek Site, there are there are three debris piles and an active livestock pen (refer Figure 3). Surface runoff from this area appears to flow into the pond. Photographs of the debris piles and livestock pen are included in Attachment B.

### Subsurface Features

In general, in the western half of the Brinson Creek Site, soils between the bottom of the pond and 12 feet bgs consisted of sand interspersed with discontinuous layers of sandy clay and clayey sand. However, at the seven to nine foot interval of grid blocks 2 and 5 gravel bedding material was encountered. Soils in the eastern half of the Brinson Creek between the bottom of the pond and 12 feet below ground surface ( bgs) consist of peat and peat with some sand. No sand blast grit material or paint chips were observed in any of aliquots that were collected. A brief description of each aliquot is provided in Table 3-1.

## ANALYTICAL RESULTS

A total of seven subsurface soil samples, six samples and one duplicate, were collected. Each of the seven samples consisted of five aliquots of soil, collected from a grid block, that were homogenized into a single sample. One homogenized sample was collected from each grid block and shipped to a fixed-base lab for TCLP metals analysis. No metals were detected in any of the soil samples or rinseates submitted for analysis. None of the data reviewed by the validator was rejected. These results are consistent with field observations. No paint chips or sandblast grit were encountered in any of the aliquots.

## CONCLUSIONS

The following conclusions can be drawn from field observations and analytical data:

- No sand blast grit material or paint chips were observed in any of the aliquots collected during Baker's investigation which was performed in the area that this material was reportedly disposed. Based on Baker's field observations, it does not appear that sand blast grit was disposed at this site.

- Baker observed sandy material in the samples obtained during the investigation. The quantity of sandy material encountered was not sufficient to confirm the disposition of sand blast grit in this area. Nevertheless multiple samples of the subsurface material were collected and analyzed. The results of the analysis indicated that the subsurface material located at this site is not hazardous as defined by 40 CFR 261.20 and 261.24.

# TABLES

TA. .E 1

**SAMPLE SUMMARY**
**BRINSON CREEK AOC SITE**
**CHARACTERIZATION SAMPLING, CTO - 0375**
**MARINE CORP BASE, CAMP LEJEUNE, NORTH CAROLINA**

| Sample ID | Grid Block | Boring/Aliquot Identification | Sample Interval (feet bgs) | Percent Recovery | Depth of Ponded Water (feet) | Sample Description |
|---|---|---|---|---|---|---|
| SD01-98C | Grid Block 1 | GD1SB01 | 0 - 2 | 50 | - | Light brown fine grain sand with some silt. |
| | | GD1SB02 | 2.5 - 4.5 | 10 | .5 | Gray clay with some sand. |
| | | GD1SB03 | 5 - 7 | 100 | .5 | Gray fine grain sand. |
| | | GD1SB04 | 7.5 - 9.5 | 50 | - | Gray clay with trace silt/sand. |
| | | GD1SB05 | 9.5 - 11.5 | 100 | .5 | Brown fine grain sand. |
| SD02-98C | Grid Block 2 | GD2SB01 | 0 - 2 | 25 | 1.5 | Peat |
| | | GD2SB02 | 2 - 4 | 0 | 1.5 | |
| | | GD2SB03 | 5 - 7 | 25 | 1.5 | Brown fine grain sand. |
| | | GD2SB04 | 7 - 9 | 25 | 1.5 | Gravel bedding material. |
| | | GD2SB05 | 10 - 12 | 50 | 1.5 | Brown fine grain sand. |
| SD03-98C | Grid Block 3 | GD3SB01 | 0 - 2 | 25 | 1.5 | Peat. |
| | | GD3SB02 | 2 - 4 | 25 | 1.5 | Peat. |
| | | GD3SB03 | 5 - 7 | 10 | 1.5 | Peat. |
| | | GD3SB04 | 7 - 9 | 0 | 1.5 | |
| | | GD3SB05 | 10 - 12 | 25 | 1.5 | Peat. |
| SD04-98C | Grid Block 4 | GD4SB01 | 0 - 2 | 100 | - | Gray clay with some sand. |
| | | GD4SB02 | 2.5 - 4.5 | 75 | 0.5 | Gray fine grain sand with some silt and clay. |
| | | GD4SB03 | 5 - 7 | 10 | 0.5 | Peat with some sand. |
| | | GD4SB04 | 7.5 - 9.5 | 0 | - | |
| | | GD4SB05 | 10 - 12 | 50 | 0.5 | Gray fine grain sand. |
| SD05-98C | Grid Block 5 | GD5SB01 | 0 -2 | 25 | 2 | Brown fine grain sand and some peat. |
| | | GD5SB02 | 2 - 4 | 25 | 2 | Brown fine grain sand and some peat. |
| | | GD5SB03 | 5 - 7 | 25 | 2 | Brown fine grain sand and some peat. |
| | | GD5SB04 | 7 - 9 | 25 | 2 | Brown fine grain sand, some peat and trace bedding material. |
| | | GD5SB05 | 10 - 12 | 25 | 2 | Brown fine grain sand and some peat. |
| SD06-98C | Grid Block 6 | GD6SB01 | 0 -2 | 25 | 2 | Fine sand with some peat. |
| | | GD6SB02 | 2 - 4 | 25 | 2 | Peat. |
| | | GD6SB03 | 5 - 7 | 25 | 2 | Peat. |
| | | GD6SB04 | 7 - 9 | 0 | 2 | |
| | | GD6SB05 | 10 - 12 | 0 | 2 | |

bgs = below ground surface
Percent Recovery = Amount of sampling spoon that was filled with sample.

# FIGURES

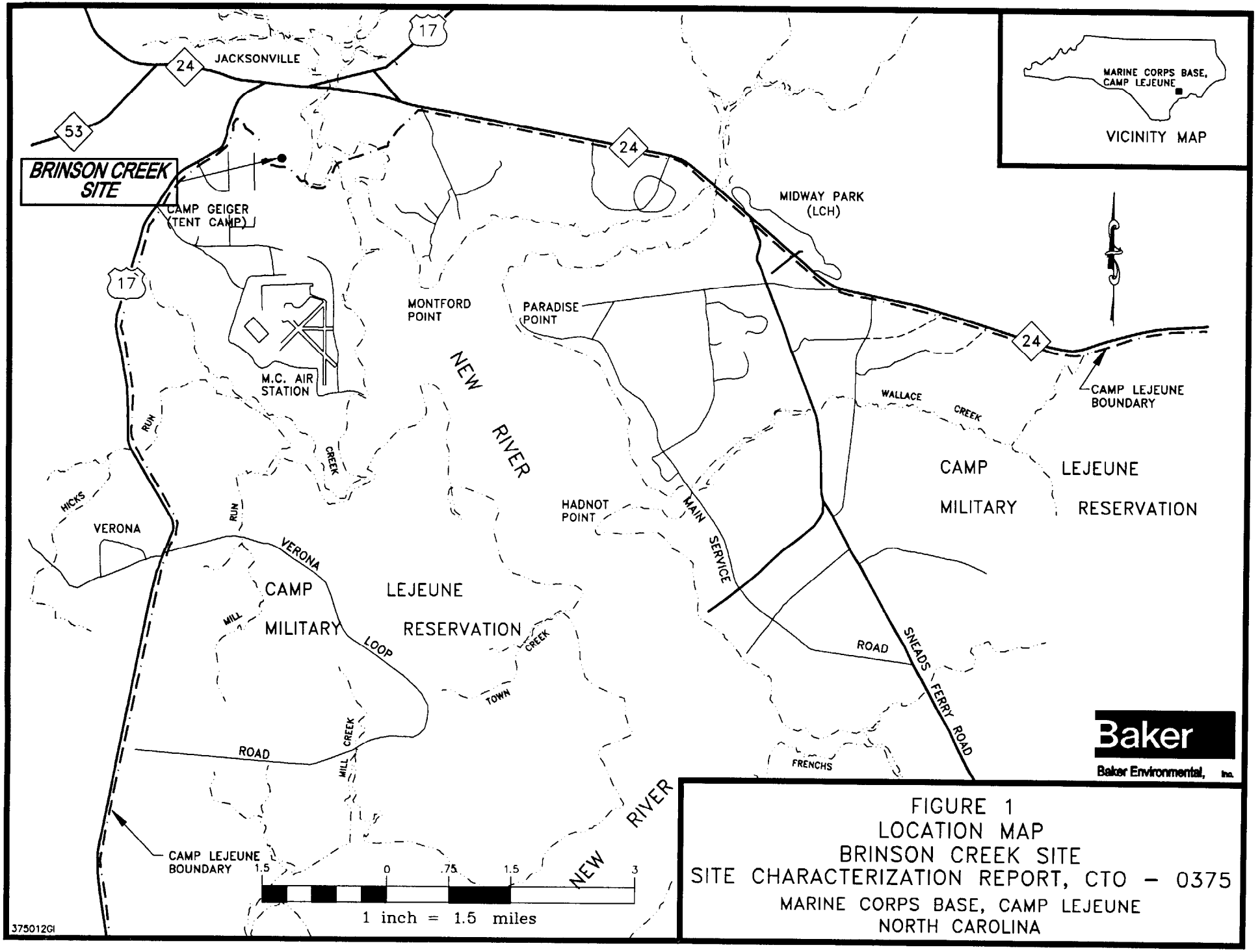
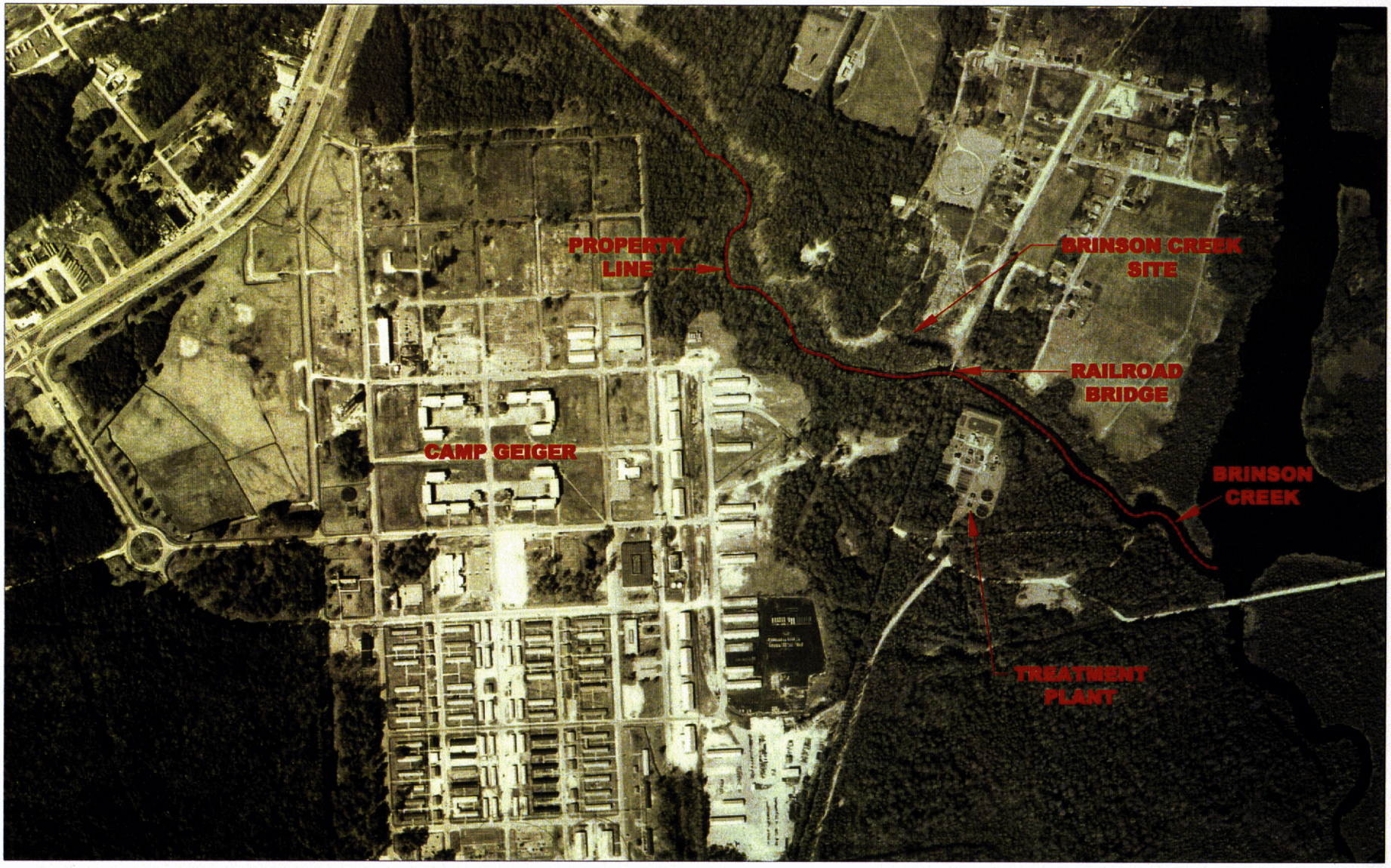



FIGURE 1
LOCATION MAP
BRINSON CREEK SITE
SITE CHARACTERIZATION REPORT, CTO – 0375
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

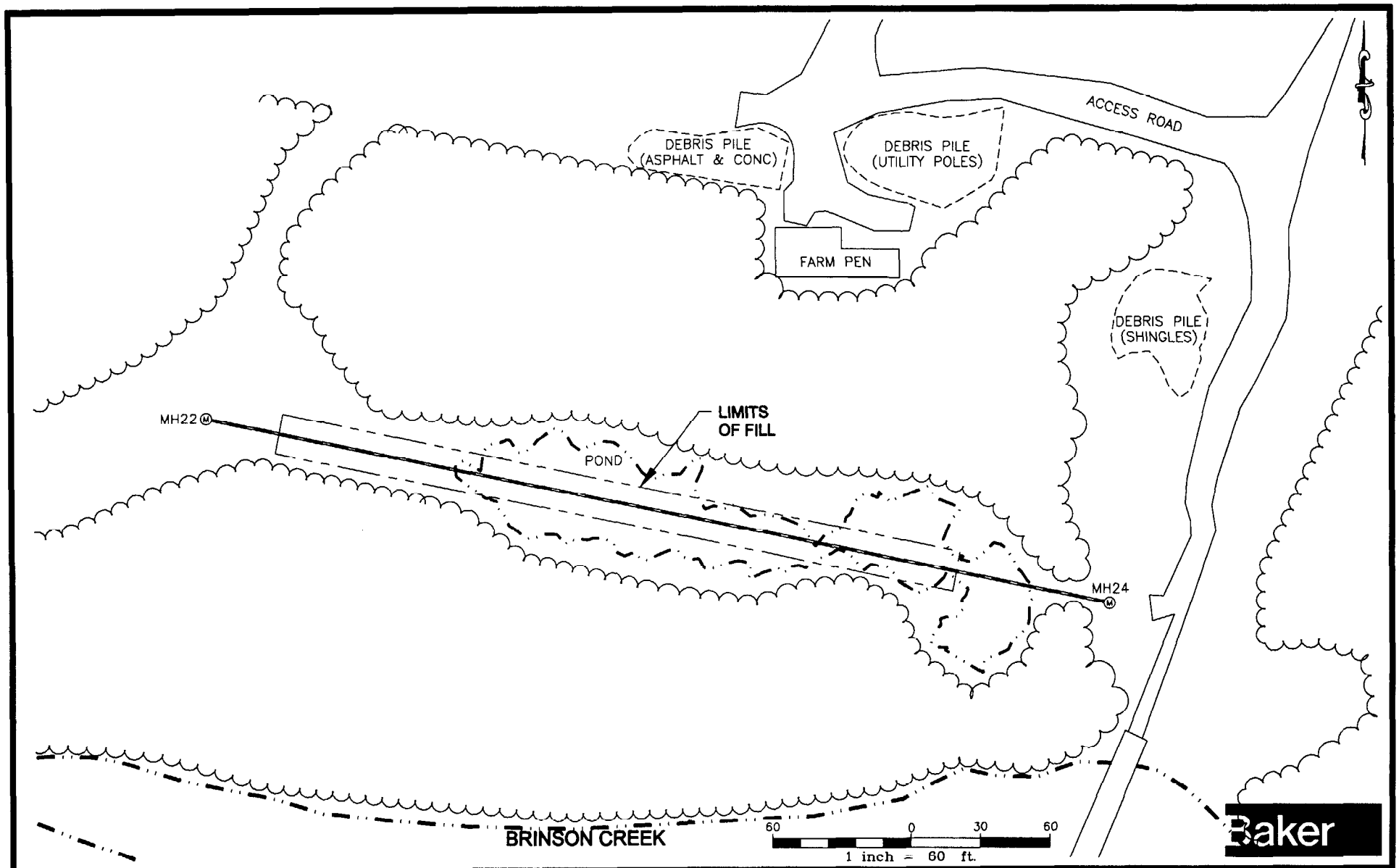



Baker

FIGURE 2
AERIAL PHOTOGRAPH, MARCH 6, 1993
BRINSON CREEK SITE
SITE CHARACTERIZATION REPORT, CTO-0375
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

375013GI

02336B01Y



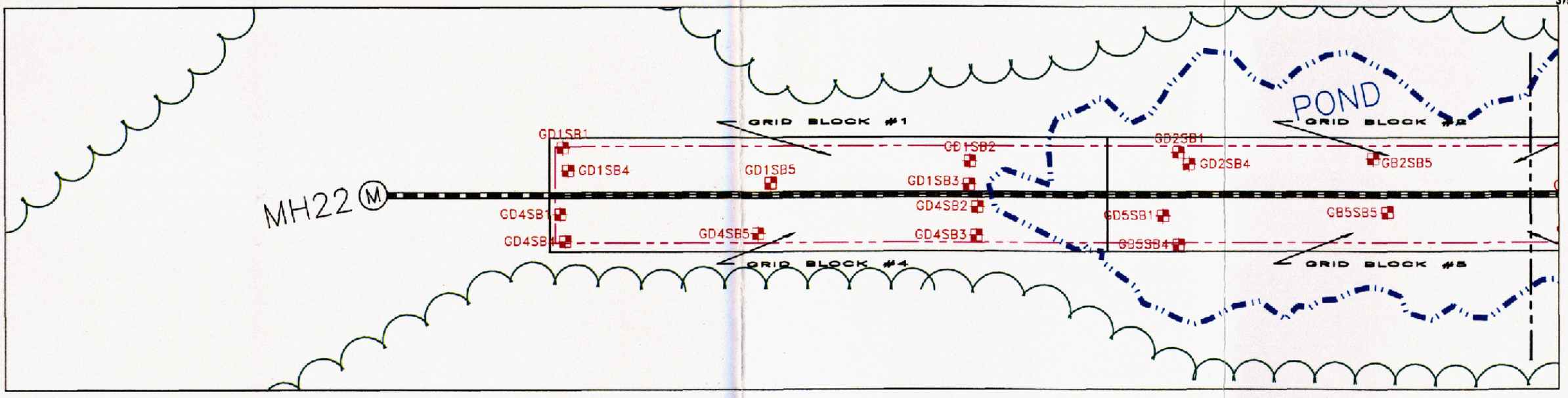

LEGEND

- POND
- TREELINE
- DEBRIS PILE
- MANHOLE
- 18" SANITARY SEWER
- LIMITS OF BRINSON CREEK SITE (FILL AREA)

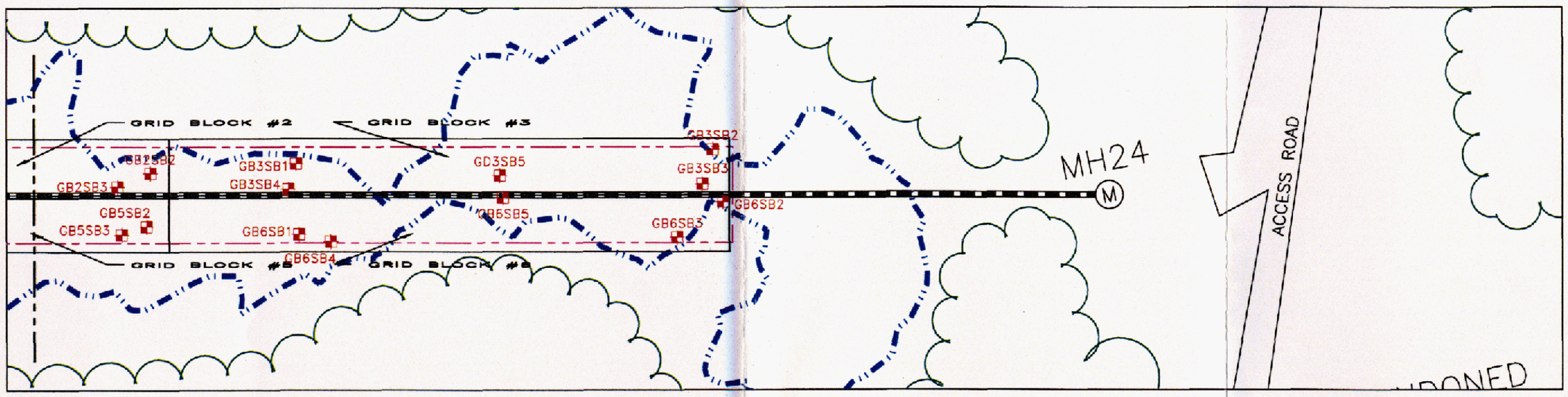
3750110I

FIGURE 3
SITE PLAN
BRINSON CREEK SITE
SITE CHARACTERIZATION REPORT, CTO – 0375
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

3750149




LEFT HALF




RIGHT HALF

LEGEND

POND
TREELINE
MANHOLE
18" SANITARY SEWER
LIMITS OF BRINSON CREEK SITE (FILL AREA)
6B6SB4 ACTUAL BORING LOCATION
LIMITS OF GRID BLOCK

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20 0 10 20
1 inch = 20 ft.

FIGURE 4
SOIL BORING LOCATIONS
BRINSON CREEK SITE
SITE CHARACTERIZATION REPORT, CTO-0375
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

02336B02Y

# ATTACHMENTS

**ATTACHMENT A**
**ADMINISTRATIVE ORDER OF CONSENT**

NCDENR

JAMES B. HUNT JR.
GOVERNOR

JAMES McDEVITT
SECRETARY

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT

March 31, 1998

OPTIONAL FORM 99 (7-90)

**FAX TRANSMITTAL** # of pages ▶ 7

| | |
|---|---|
| To | From MICK SENUS |
| Dept./Agency | Phone # 910/451-5068 |
| Fax # 912/269-2002 | Fax # |

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

CERTIFIED MAIL
Return Receipt Request

Commanding General
AC/S EMD (Attn: Mr. Neal Paul)
Marine Corps Base
PSC Box 20004
Camp LeJeune, North Carolina 28542-0004

RE: Administrative Order on Consent
United States Marine Corps Camp LeJeune
NC6 170 022 580

Dear Mr. Paul:

Enclosed is the United States Marine Corps Camp LeJeune's signed Administrative Order on Consent (Order). Please note that the docket number is 98-052. The Order outlines the specific concerns to be addressed.

Thank you for your assistance in this matter. If you have any questions, please contact Harold McCarty, Acting Head of the Programs Branch at 919-733-2178 extension 247.

Sincerely,

William L. Meyer, Director
North Carolina Division of Waste Management

Enclosure: Administrative Order on Consent

c: Doug Holyfield
Larry Perry
Dick Denton
Kathleen Waylette
Central Files

rc: Helen Cotton
Doug Roberts
Shelia Askew

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North Carolina Department of Environment
and Natural Resources
Division of Waste Management
Hazardous Waste Section

| | | |
|---|---|---|
| In Re: United States Marine Corps<br>Camp LeJeune<br><br>NC6 170 022 580 | )<br>)<br>) | ADMINISTRATIVE ORDER<br>ON CONSENT<br>Docket # 98-052 |

---

## PRELIMINARY STATEMENT

With the consent of the United States Marine Corps (USMC Camp LeJeune), owners of property in Onslow County, North Carolina, upon which is or was located certain hazardous wastes, the North Carolina Department of Environment and Natural Resources, through its Division of Waste Management, issues this Administrative Order on Consent (AOC) to amicably resolve issues concerning those hazardous wastes.

## BACKGROUND

1. On December 18, 1980, the United States Environmental Protection Agency (EPA) authorized North Carolina to operate a state hazardous waste program in accordance with the provisions of the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.), the North Carolina Solid Waste Management Act (NC General Statutes 130A), and the rules promulgated thereunder in the North Carolina Administrative Code at Title 15A, subchapter 13A.

2. Pursuant to the Resource Conservation and Recovery Act (RCRA), the North Carolina Solid Waste Management Act (herein referred to as the "Act"), and rules promulgated thereunder (herein referred to as the "Rules"), the Secretary of the North Carolina Department of Environment and Natural Resources (DENR) is authorized to enforce standards for generation, transportation, treatment, storage, and disposal of hazardous wastes. The Director of the Division of Waste Management, William L. Meyer, is delegated that authority by the Secretary.

## RELEVANT STATUTES AND REGULATIONS

1. Wastes which are subject to regulation as hazardous wastes under title 40 Code of Federal Regulations (CFR) part 262 through 265, 268, and part 270, 271 and 124 are identified in title 40 CFR 261.1(a) which is adopted by reference in 15A NCAC 13A .0106. The hazardous wastes so identified are subject to the notification requirements of section 3010 of RCRA.

2. Pursuant to title 40 CFR 261.2(b), as adopted by reference in 15A NCAC 13A .0106, materials are a solid waste if they are abandoned by being (1) disposed of; (2) burned or incinerated; or (3) accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated.

3. Pursuant to title 40 CFR 261.3(a), as adopted by reference in 15A NCAC 13A .0106, a solid waste is hazardous if:
   - (a). It is not excluded from regulation as a hazardous waste under section 261.4(b); and
   - (b). It meets any of the following criteria:
     - (i). It exhibits the characteristics of hazardous waste identified in Subpart C.
     - (ii). It is listed in Subpart D and has not been excluded from the lists in Subpart D under Sections 260.20 and 260.22.
     - (iii). It is a mixture of a solid waste and a hazardous waste that is listed in Subpart D solely because it exhibits one or more of the characteristics of hazardous waste identified in Subpart C, unless the resultant mixture no longer exhibits any characteristics of hazardous waste identified in Subpart C.
     - (iv). It is a mixture of solid waste and one or more hazardous wastes listed in Subpart D and has not been excluded from this paragraph under Sections 260.20 and 260.22.

4. Pursuant to GS 130A-290(6), "Disposal" is the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste into or on any land or water so that the solid waste or any constituent part of the solid waste may enter the environment or be emitted into the air or discharged into any waters, including groundwater.

## STIPULATIONS OF FACT

1. The City of Jacksonville owns property located at Brinson Creek, in Jacksonville, Onslow County, North Carolina (herein referred to as the "Site").

2. USMC Camp LeJeune is a person as defined in NCGS 130A-290(22) and 15A NCAC 13A.0102.~~and generated the hazardous waste disposed of at the Site.~~

3. In a letter to Flint Worrell, Waste Management Specialist for the Division, Mr. N. R. Robins, Special Agent in Charge with the Department of the Navy's Criminal Investigation Service (NCIS) Field Office at Camp LeJeune advised the state of the Navy's investigation of the management of sandblast material at the Site. Tito Contractors, Inc. was contracted by the Navy to sandblast and remove hazardous paint materials from approximately 150 assault vehicles. Sand and grit generated by this process is or was contaminated with lead and/or chromium. As stated in the correspondence, sometime between May and August 1992, R&W Construction

transported the sand and grit generated by this action from Camp LeJeune to a City of Jacksonville wastewater treatment project. Investigations revealed that R&W spread the material in an area approximately 17 feet wide by 12 feet deep that extended over a distance of about ~~300 yards~~ along Brinson Creek. Tito had apparently tested the material only for lead content and did not test for chromium. Later tests of similar debris performed by Camp LeJeune indicated the paint debris had a lead content of 0.6 mg/l and a chromium content of 1.09 mg/l under the Toxicity Characteristic Leaching Procedure. Tito is said to be unable or unwilling to account for the filtering devices used during Phase I of the two phase project. The investigation indicated that the filtering devices should have been heavily contaminated with lead and chromium as well.

Replace w/ 300 feet

4. Following a Comprehensive Environmental Response, Compensation, and Liability Act investigation, USMC Camp LeJeune notified the Division on March 10, 1997 of a potential human health risk that may be present in the Brinson Creek - Camp Geiger area. Concentrations of mercury and arsenic were detected in fish tissue. Arsenic and lead were found in crab tissue. ~~The investigation identified as a potential source the sand blasting grit improperly transported and disposed of in the Brinson Creek area.~~

5. Hazardous wastes involved at the Site include sand blasting debris potentially containing hazardous waste including hazardous waste codes D007 and D008.

~~6. USMC Camp LeJeune is the generator of the above hazardous wastes and is responsible for the proper treatment, storage and disposal of the hazardous waste.~~

7. The Division has jurisdiction under RCRA, the Act, and the Rules to require remediation of the Site.

## ORDER

The Division hereby issues to, and with the consent of, USMC Camp LeJeune the following AOC:

1. The provision of this AOC shall henceforth govern the remedial actions of USMC Camp LeJeune with regard to this Site.

2. USMC Camp LeJeune shall comply with 40 CFR 262.11, as adopted by reference in 15A NCAC 13A .0107. An immediate determination and analysis of all solid wastes generated and disposed of at the Site shall be completed to ensure proper characterization and disposition of the wastes.

3. Within thirty (30) days of the effective date of this AOC, USMC Camp LeJeune shall submit to the Hazardous Waste Section (Section) a comprehensive sampling and analysis work plan for investigating the potential lead, chromium and any other applicable hazardous waste contamination at the Site due to the disposal of sand blasting debris.

Within sixty (60) days of receipt of the sampling and analysis work plan approval, USMC Camp LeJeune shall submit the sampling and analysis report which verifies the extent and characterization of the soil contamination (inorganic and organic) at the Site; specifically, the 17 feet wide by 12 feet deep area extending a distance of ~~300 yards~~ along Brinson Creek that was impacted by the improper disposal of the sandblasting debris. This report shall specify the sampling and analysis procedures used, sampling locations, and the depths used to assess the horizontal and vertical extent of contamination as well as sampling and analysis results.

Replaced w/ 300 ft.

4. Within forty-five (45) days of submitting the comprehensive sampling and analysis report in item 3, USMC Camp LeJeune shall submit a remediation plan. The remediation plan shall describe the remediation of the Site including any necessary soil removal, storage and transportation to an off-site disposal facility, and sampling to evaluate the adequacy of the clean-up. If USMC Camp LeJeune cannot effectively achieve remediation target levels at the site within one hundred-eighty (180) days after receiving the Division's approval of the remediation plan, USMC Camp LeJeune shall submit to the Division: 1) a justification for additional time to remediate the Site including a new proposed remediation schedule, or 2) shall submit a closure plan in accordance with 40 CFR 265.112, codified at 15A NCAC 13A .0110, a post-closure plan in accordance with 40 CFR 265.118, codified at 15A NCAC 13A .0110, and begin performing groundwater monitoring in accordance with 40 CFR 265.90-94, codified at 15A NCAC 13A .0110. If a revised schedule is proposed and the Division does not agree that compliance with the schedule will effectively remediate the Site within a timely manner, USMC Camp LeJeune shall immediately submit the closure and post-closure plans and begin performing groundwater monitoring as described above.

5. USMC Camp LeJeune shall comply with 15A NCAC 13A .0109(a). USMC Camp LeJeune shall no longer store or dispose of any more hazardous waste at the site. USMC Camp LeJeune shall manage all hazardous waste previously on the site in accordance with the approved remediation plan or USMC Camp LeJeune shall comply with the closure, post-closure, and groundwater monitoring provisions stated in item 4.

6. During the interim, pending shipment of the hazardous waste, USMC Camp LeJeune shall comply with 40 CFR 262.34(a), as adopted by reference in 15A NCAC 13A .0107.

   (a). If hazardous waste is placed in containers, USMC Camp LeJeune shall comply with Subpart I of 40 CFR Part 265 or if hazardous waste is placed in tanks, USMC Camp LeJeune shall comply with Subpart J of 40 CFR Part 265 with the exception of 265.197(c) and 265.200.

   (b). USMC Camp LeJeune shall mark clearly, so as to be visible for inspection on each container of hazardous waste, the date upon which each period of accumulation begins.

   (c). While being accumulated on-site, USMC Camp LeJeune shall label or mark clearly with the words "Hazardous Waste" each hazardous waste container and tank.

OPTIONAL FORM 99 (7-90)

**FAX TRANSMITTAL** # of pages ▸ 7

| | |
|---|---|
| To | From MICK SENUS |
| Dept./Agency | Phone # 910/451-5068 |
| Fax # 412/269-2002 | Fax # |

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

## DESIGNATED PROJECT COORDINATORS

Documents including reports, approvals, disapprovals, and other correspondence which must be submitted under this AOC shall be sent to the following addresses and to any other addresses which USMC Camp LeJeune and the Division designate in writing:

(1). Submittals to the Division or the Section shall be addressed to:

James A. Carter, Chief
Hazardous Waste Section (Attn: Larry Perry)
P.O. Box 29603
Raleigh, NC 27611-9603

(2) Submittals to USMC Camp LeJeune will be addressed to:

Commanding General
AC/S EMD (Attn: Mr. Neal Paul)
Marine Corps Base
PSC Box 20004
Camp LeJeune, North Carolina 28542-0004

## DELAY IN PERFORMANCE

If any event occurs which causes delay in the achievement of the requirements of this AOC, USMC Camp LeJeune shall have the burden of demonstrating that the delay was caused by circumstances beyond the reasonable control of USMC Camp LeJeune which could not be overcome by its due diligence. USMC Camp LeJeune shall promptly notify the Division orally and shall, within seven (7) calendar days of oral notification to the Division, advise the Division in writing of the anticipated length and cause of the delay and the timetable by which USMC Camp LeJeune intends to obtain compliance. If the Division agrees that the delay has been or will be caused by circumstances beyond the reasonable control of USMC Camp LeJeune, the time for performance will be extended for a period equal to the delay resulting from such circumstances. Neither increased costs of performance of the terms of this AOC nor changed economic circumstances shall be considered as circumstances beyond the control of USMC Camp LeJeune.

DISPUTE RESOLUTION

If USMC Camp LeJeune objects to any disapproval or other decision made by the Division pursuant to this AOC, USMC Camp LeJeune may notify the Division in writing of its objections within fourteen (14) calendar days of receipt of the decision and request reconsideration, amendment or other modification. If, within fourteen (14) days following receipt of the request, the Division and USMC Camp LeJeune have not reached mutual agreement regarding the objections raised, the Division will provide a written response to USMC Camp LeJeune's request.

The above AOC is effective on this the 31 day of March, 1998.

DIVISION OF WASTE MANAGEMENT

For William L. Meyer, Division Director — 31 March 1998 Date

USMC CAMP LEJEUNE

Scott A. Brewer — 2/6/98 Date

Scott A. Brewer
Deputy Assistant Chief of Staff
Environmental Management Department
Marine Corps Base, Camp Lejeune

and solely for the purposes of Site access,

CITY OF JACKSONVILLE, NORTH CAROLINA

3-18-98 Date

C:\ORDER\USMC2.BIL

# ATTACHMENT B
# PHOTOGRAPHS

375501PH

PHTOGRAPH OF MANHOLE #22. THE GUIDELINE SHOWING THE SEWERLINE ALIGNMENT IS IN THE CENTER OF THE PHOTOGRAPH. JOHN BOAT IS TO THE RIGHT.

LOOKING EAST ACROSS THE SITE. PHOTO WAS TAKEN WHILE STANDING ON MANHOLE #22.

02336B03Y

375500PH

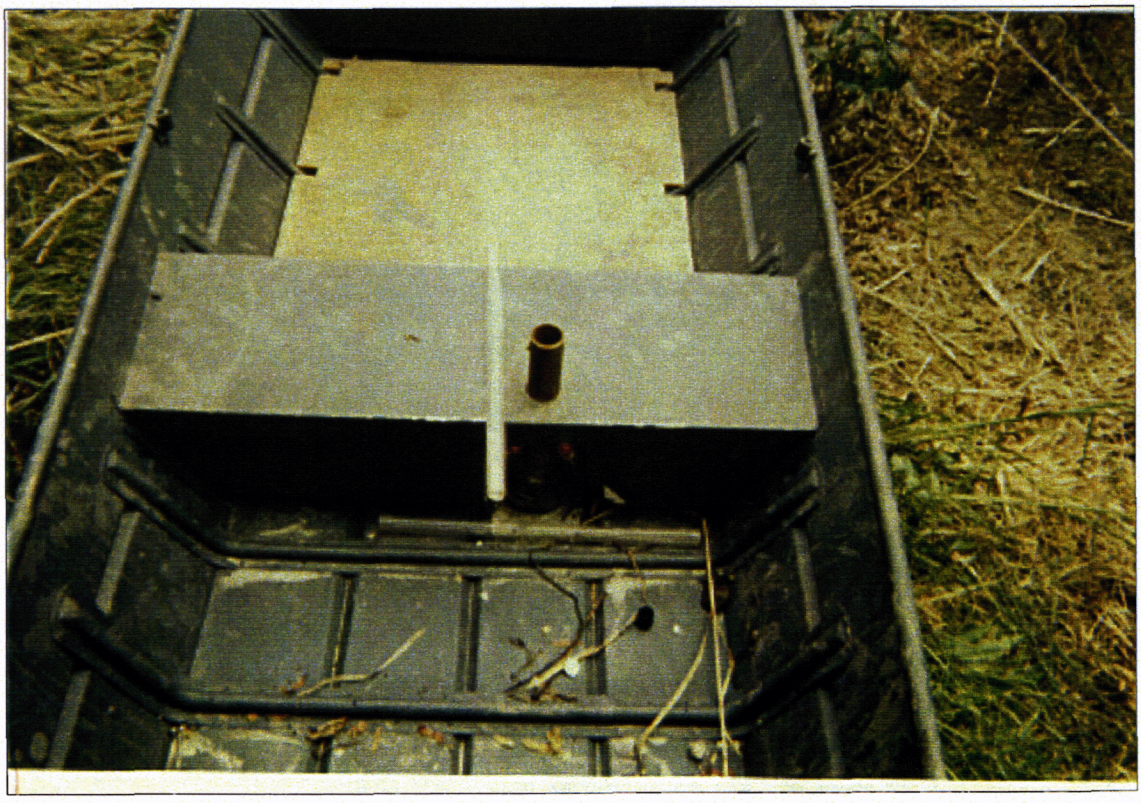
LOOKING WEST ACROSS THE SITE FROM MANHOLE #24 TOWARD MANHOLE #22. MANHOLE #24 IS SHOWN IN THE CENTER OF THE PHOTO.

LOOKING WEST ACROSS THE SITE FROM THE PONDS EDGE. POINTS GB6SB02, GB3SB02 AND GB3SB2 ARE SHOWN IN THE CENTER OF THE PHOTO. MANHOLE #24 IS BEHIND PHOTOGRAPHER.

02336B04Y

375502PH

LOOKING EAST ACROSS THE SITE FROM THE POND EDGE.
POINTS 6D1SB2, 6D1SB3, 6D4SB2 AND 6D4SB3.
MANHOLE #22 IS BEHIND THE PHOTOGRAPHER.



PHOTOGRAPH OF JOHN BOAT. NOTE SAMPLING PORTAL IN THE CENTER OF THE BOAT.

02336B05Y

375503PH

CONCRETE AND ASPHALT DEBRIS PILE.

UTILITY POLE DEBRIS PILE.

02336B06Y

375504PH

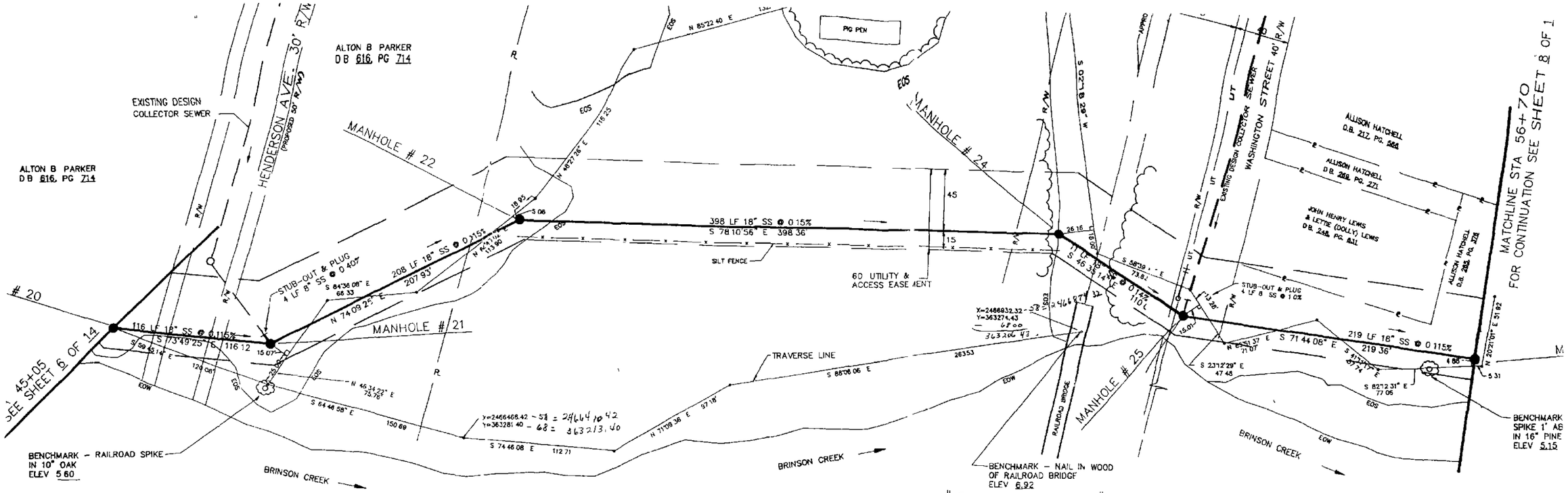
DEBRIS PILE CONTAINING ROOFING SHINGLES.

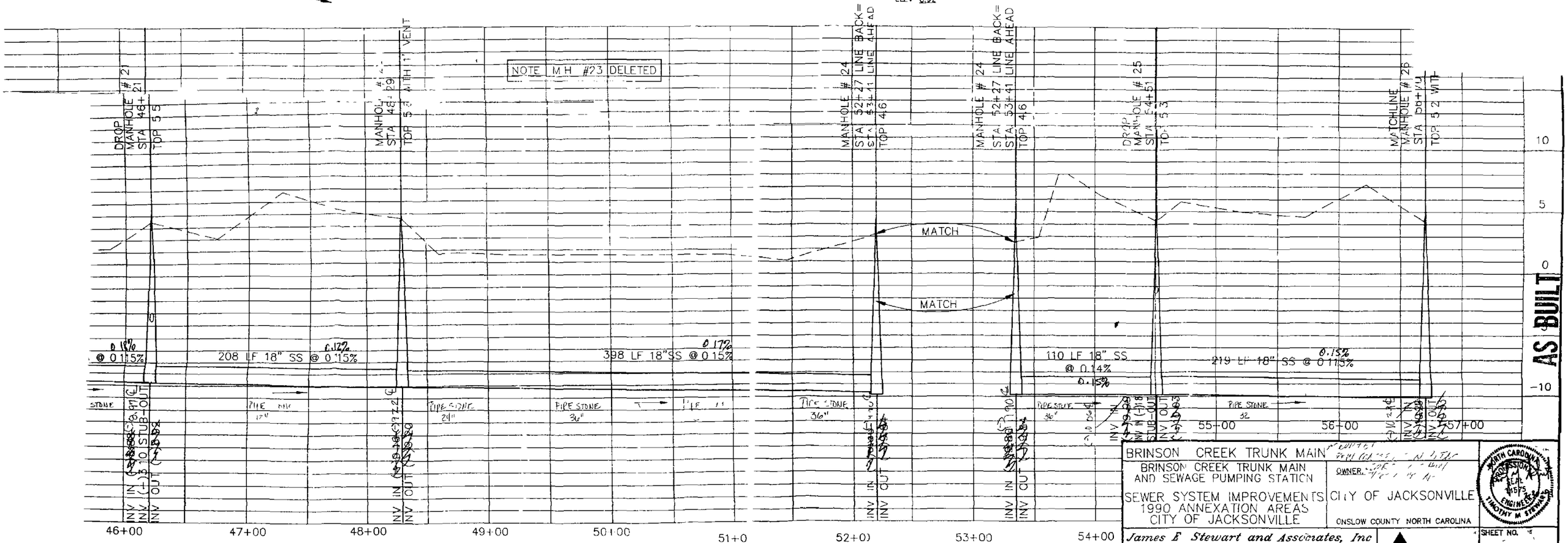
THE LIVESTOCK PEN IS SHOWN IN THE CENTER OF THE PHOTOGRAPH. THE UTILITY POLE DEBRIS PILE IS TO THE LEFT. SURVEYOR WITH GPS UNIT IS SHOWN IN FRONT OF THE PIG PEN.

02336B07Y

**ATTACHMENT C**

**AS-BUILT DRAWING OF BRINSON CREEK TRUNK MAIN**




BRINSON CREEK TRUNK MAIN

BRINSON CREEK TRUNK MAIN
AND SEWAGE PUMPING STATION

SEWER SYSTEM IMPROVEMENTS
1990 ANNEXATION AREAS
CITY OF JACKSONVILLE

OWNER:
CITY OF JACKSONVILLE
ONSLOW COUNTY NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 14575 ENGINEER TIMOTHY M. STEWART

*James E Stewart and Associates, Inc*
ENGINEERING – SURVEYING – PLANNING
P.O. DRAWER 576
JACKSONVILLE, NORTH CAROLINA 28541-0075
919-455-2414

SHEET NO. 7 OF 14

FILE NO. BOPPS

SCALE HORIZONTAL 1"=40' DRAWN DESIGNED TMS

APPROVED

C2336E082

# ATTACHMENT D
# CHAIN OF CUSTODY RECORDS

Quanterra
Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(423) 588-6401

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*



Project Name/No. [1] BRINSON CREEK SANDBLAST GRITE AREA
Sample Team Members [2] MDSMITH
Profit Center No. [3] KNOXVILLE, TN
Project Manager [4] JAMIE McKINNEY
Purchase Order No. [6] CTO 375
Required Report Date [11] 7 DAYS FROM RECEIPT

Samples Shipment Date [7] 7-16-98
Lab Destination [8] KNOXVILLE, TN
Lab Contact [9] TOM YODER / J. McKINNEY
Project Contact/Phone [12] MSMITH or 910-347-8230 412-264-2024
Carrier/Waybill No. [13]

Bill to: [5] MDSMITH
420 ROUSER ROAD
AIRPORT OFFICE PARK
BLDG 3
CORAOPOLIS, PA 15108

Report to: [10] SAME

**ONE CONTAINER PER LINE**

| Sample Number [14] | Sample Description/Type [15] | Date/Time Collected [16] | Container Type [17] | Sample Volume [18] | Pre-servative [19] | Requested Testing Program [20] | Condition on Receipt [21] | Disposal Record No. [22] |
|---|---|---|---|---|---|---|---|---|
| SD01-98C | Sediment | 7-14-98 1715 | WM Glass | 250ml | — | TCLP METALS | | |
| SD02-98C | | 7-15-98 0930 | | | — | | FOR LAB USE ONLY | |
| SD03-98C | | 7-15-98 1453 | | | — | | | |
| SD04-98C | | 7-14-98 1915 | | | — | | | |
| SD02-98C (DUPLICATE) | | 7-15-98 0930 | | 150ml | — | | | |
| SD05-98C | | 7-16-98 1600 | | 250ml | — | | FOR LAB USE ONLY | |
| SD06-98C | | 7-15-98 1725 | | | — | | | |
| SD04A-98C | | 7-15-98 1747 | | | — | MS/MSD QUANTITY | | |

Special Instructions: [23] SEVEN DAY TURNAROUND TIME

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required: [26]
Normal ☐ Rush ☒ 7 DAY

QC Level: [27]
I. ☐ II. ☐ III. ☒ Project Specific (specify):

| | |
|---|---|
| 1. Relinquished by [28] (Signature/Affiliation) MDSMITH — Date: 5-18-98 Time: 1745 | 1. Received by [28] (Signature/Affiliation) — Date: Time: |
| 2. Relinquished by (Signature/Affiliation) — Date: Time: | 2. Received by (Signature/Affiliation) — Date: Time: |
| 3. Relinquished by (Signature/Affiliation) — Date: Time: | 3. Received by (Signature/Affiliation) — Date: Time: |

Comments: [29]
MOST LIKELY THESE ARE NONHAZARDOUS.

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 2/15/91

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(423) 588-6401

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 4377
Page 2 of 2

Project Name BRINSON CREEK SANDBLAST GRIT AREA

Project No. C70375

Samples Shipment Date 7-16-98

**ONE CONTAINER PER LINE**

| Sample[14] Number | Sample[15] Description/Type | Date/Time[16] Collected | Container[17] Type | Sample[18] Volume | Pre-[19] servative | Requested Testing[20] Program | Condition on[21] Receipt | Disposal[22] Record No. |
|---|---|---|---|---|---|---|---|---|
| IDW01-98C | SEDIMENT | 7/16/98 1030 | 2, 250ml / 1, 150ml | WM GLASS | — | FULL TCLP VOA | | |
| RB01-98C | WATER | 7/16/98 0930 | AMBER | 1, 1L | — | TCLP METALS | FOR LAB USE ONLY | |
| RB02-98C | WATER | 7/16/98 0945 | AMBER | 1, 1L | — | TCLP METALS | | |
| TB01-98C | WATER | — LAB | VIALS | 3, 40ml | — | CLP VOA | FOR LAB USE ONLY | |
| FB01-98C | WATER | 7/16/98 1130 | AMBER | 1, 1L | — | TCLP METALS | | |
| IDW01-98C | SEDIMENT | 7/16/98 1030 | 1/2 WM Glass | 2, 250ml | — | RCRA CHARACTERISTICS IGNITABILITY, CN & S REACTIVITY CORROSIVITY | FOR LAB USE ONLY | |
| 1ST61-SB04-03 | SOIL | 7/16/98 1550 | 2, 250ml | WM GLASS | — | ~~SVOA~~ 8270 | | |
| | | | | | | | FOR LAB USE ONLY | |
| | | | | | | | | |
| | | | | | | | FOR LAB USE ONLY | |
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| | | | | | | | | |

White: To accompany samples
Yellow: Field copy

*See back of form for special instructions.

MCA 2/15/91

# ATTACHMENT E
# DATA VALIDATION REPORT

**HEARTLAND**
**ENVIRONMENTAL SERVICES, INC.**

# Data Validation Report

| | |
|---|---|
| SDG#: | H8G170111 |
| Date: | August 12, 1998 |
| Client Name: | Baker Environmental |
| Project/Site Name: | Camp Lejeune |
| Date Sampled: | July 14-16, 1998 |
| Number of Samples: | 3 Aqueous Sample(s) with 0 MS/MSD(s)<br>8 Non-aqueous Sample(s) with 1 MS/MSD(s) |
| Laboratory: | Quanterra, Inc. |
| Validation Guidance: | National Functional Guidelines for Organic and Inorganic Data, February, 1994 |
| QA/QC Level: | NEESA Level C |
| Method(s) Utilized: | SW846 Third Edition |
| Analytical Fractions: | TCLP Metals |

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Craig G. Scarson

Eugene M. Watson, Vice President

8/12/98.

Date

4127 Plaza 94 South • St. Charles, MO 63304
(314) 936-1332 • Fax (314) 936-1335

**SDG# H8G170111**

## Samples and Fractions Reviewed

*Sample Identifications* Analytical Fractions

| BAKER ID | MATRIX | T-MET | |
|---|---|---|---|
| SD01-98C | SOIL | | X |
| SD02-98C | SOIL | | X |
| SD03-98C | SOIL | | X |
| SD04-98C | SOIL | | X |
| SD02-98C DUP | SOIL | | X |
| SD05-98C | SOIL | | X |
| SD06-98C | SOIL | | X |
| SD04A-98C | SOIL | | X |
| SD04A-98C MS | SOIL | | X |
| SD04A-98C MSD | SOIL | | X |
| RB01-98C | WATER | X | |
| RB02-98C | WATER | X | |
| FB01-98C | WATER | X | |
| Total Billable Samples (Water/Soil) | | 3 | 10 |

T-MET= TCLP Metals

# DATA ASSESSMENT NARRATIVE
# TCLP METALS

General

The inorganic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, matrix spike and LCS recoveries, matrix duplicates and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW 846 Methods; the Functional Guidelines for Inorganic Data Validation, February 1994, and NEESA C requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

## SDGs # H8G170111

A validation was performed on the TCLP Metals Data from SDG H8G170111. The data was evaluated based on the following parameters.

| | | |
|---|---|---|
| * | • | Data Completeness |
| * | • | Holding Times |
| * | • | Calibrations |
| * | • | Blanks |
| * | • | Interferences |
| * | • | Matrix Spike Recovery |
| * | • | Matrix Duplicates |
| * | • | Field Duplicates |
| * | • | Laboratory Control Samples |
| * | • | Serial Dilutions |

* - All criteria were met for this parameter.

# SUMMARY OF DATA QUALIFICATIONS

| Sample ID | Analyte | DL | QL |
|---|---|---|---|

Data stands as reported without qualification.

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD01-98C

TCLP Metals

Lot-Sample #...: H8G170111-001 Matrix.....: SOLID
Date Sampled...: 07/14/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| Prep Batch #...: 8202304 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJVCD108 |
| | | Dilution Factor: 1 | | | | |
| Prep Batch #...: 8203144 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCD101 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22/98 | CJVCD102 |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22/98 | CJVCD103 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCD104 |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCD105 |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22/98 | CJVCD106 |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCD107 |
| | | Dilution Factor: 1 | | | | |

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBH 8/12/98

**BAKER ENVIRONMENTAL, INC.**

**Client Sample ID: SD02-98C**

**TCLP Metals**

**Lot-Sample #...:** H8G170111-002 **Matrix.....:** SOLID
**Date Sampled...:** 07/15/98 **Date Received..:** 07/17/98
**Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 8202304 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJVCF108 |
| | | Dilution Factor: 1 | | | | |
| **Prep Batch #...:** 8203144 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCF101 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22/98 | CJVCF102 |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22/98 | CJVCF103 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCF104 |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCF105 |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22/98 | CJVCF106 |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCF107 |
| | | Dilution Factor: 1 | | | | |

**NOTE(S):**

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBH 8/28/99

**BAKER ENVIRONMENTAL, INC.**

**Client Sample ID: SD03-98C**

**TCLP Metals**

**Lot-Sample #...:** H8G170111-003 **Matrix.....:** SOLID
**Date Sampled...:** 07/15/98 **Date Received..:** 07/17/98
**Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 8202304 | | | | | | |
| Mercury | ND | 0.0020<br>Dilution Factor: 1 | mg/L | SW846 7470A | 07/22/98 | CJVCG108 |
| **Prep Batch #...:** 8203144 | | | | | | |
| Arsenic | ND | 0.50<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22/98 | CJVCG101 |
| Barium | ND | 10.0<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22/98 | CJVCG102 |
| Cadmium | ND | 0.10<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22/98 | CJVCG103 |
| Chromium | ND | 0.50<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22/98 | CJVCG104 |
| Lead | ND | 0.50<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22/98 | CJVCG105 |
| Selenium | ND | 0.25<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22/98 | CJVCG106 |
| Silver | ND | 0.50<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22/98 | CJVCG107 |

**NOTE(S):**

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

1 pll
9/28/

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD04-98C

TCLP Metals

Lot-Sample #...: H8G170111-004
Date Sampled...: 07/14/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102
Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...: 8202304** | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJVCJ108 |
| | | Dilution Factor: 1 | | | | |
| **Prep Batch #...: 8203144** | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCJ101 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22/98 | CJVCJ102 |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22/98 | CJVCJ103 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCJ104 |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCJ105 |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22/98 | CJVCJ106 |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCJ107 |
| | | Dilution Factor: 1 | | | | |

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PDA 8/25/98

**BAKER ENVIRONMENTAL, INC.**

**Client Sample ID: SD02-98C(DUP)**

**TCLP Metals**

**Lot-Sample #...:** H8G170111-005 **Matrix.....:** SOLID
**Date Sampled...:** 07/15/98 **Date Received..:** 07/17/98
**Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 8202304 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJVCP108 |
| | | Dilution Factor: 1 | | | | |
| **Prep Batch #...:** 8203144 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCP101 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22/98 | CJVCP102 |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22/98 | CJVCP103 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCP104 |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCP105 |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22/98 | CJVCP106 |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCP107 |
| | | Dilution Factor: 1 | | | | |

**NOTE(S):**

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBA 01/29/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD05-98C

TCLP Metals

Lot-Sample #...: H8G170111-006
Date Sampled...: 07/15/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102
Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| Prep Batch #...: 8202304 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJVCW108 |
| | | Dilution Factor: 1 | | | | |
| Prep Batch #...: 8203144 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCW101 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22/98 | CJVCW102 |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22/98 | CJVCW103 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCW104 |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCW105 |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22/98 | CJVCW106 |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVCW107 |
| | | Dilution Factor: 1 | | | | |

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBH 8/12/98

**BAKER ENVIRONMENTAL, INC.**

**Client Sample ID: SD06-98C**

**TCLP Metals**

**Lot-Sample #...:** H8G170111-007 **Matrix.....:** SOLID
**Date Sampled...:** 07/15/98 **Date Received..:** 07/17/98
**Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 8202304 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJVD5108 |
| | | Dilution Factor: 1 | | | | |
| **Prep Batch #...:** 8203144 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVD5101 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22/98 | CJVD5102 |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22/98 | CJVD5103 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVD5104 |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVD5105 |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22/98 | CJVD5106 |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVD5107 |
| | | Dilution Factor: 1 | | | | |

**NOTE(S):**

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PPH 8/13/98

BAKER ENVIRONMENTAL, INC.

Client Sample ID: SD04A-98C

TCLP Metals

Lot-Sample #...: H8G170111-008 Matrix.....: SOLID
Date Sampled...: 07/15/98 Date Received..: 07/17/98
Leach Date.....: 07/20/98 Leach Batch #..: P820102

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| Prep Batch #...: 8202304 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJVD610P |
| | | Dilution Factor: 1 | | | | |
| Prep Batch #...: 8203144 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVD6101 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22/98 | CJVD6104 |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22/98 | CJVD6107 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVD610A |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVD610E |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22/98 | CJVD610H |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJVD610L |
| | | Dilution Factor: 1 | | | | |

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

Pat 8/29/98

**BAKER ENVIRONMENTAL, INC.**

**Client Sample ID: RB01-98C**

**TCLP Metals**

**Lot-Sample #...:** H8G170111-010 **Matrix.....:** WATER
**Date Sampled...:** 07/16/98 **Date Received..:** 07/17/98
**Leach Date.....:** 07/20/98 **Leach Batch #..:** P820103

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 8202311 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJVDA101 |
| | | Dilution Factor: 1 | | | | |
| **Prep Batch #...:** 8203143 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDA102 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDA103 |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDA104 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDA105 |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDA106 |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDA107 |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDA108 |
| | | Dilution Factor: 1 | | | | |

**NOTE(S):**

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBt 8/29/98

**BAKER ENVIRONMENTAL, INC.**

**Client Sample ID: RB02-98C**

**TCLP Metals**

**Lot-Sample #...:** H8G170111-011 **Matrix.....:** WATER
**Date Sampled...:** 07/16/98 **Date Received..:** 07/17/98
**Leach Date.....:** 07/20/98 **Leach Batch #..:** P820103

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 8202311 | | | | | | |
| Mercury | ND | 0.0020<br>Dilution Factor: 1 | mg/L | SW846 7470A | 07/22/98 | CJVDE101 |
| **Prep Batch #...:** 8203143 | | | | | | |
| Arsenic | ND | 0.50<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDE102 |
| Barium | ND | 10.0<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDE103 |
| Cadmium | ND | 0.10<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDE104 |
| Chromium | ND | 0.50<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDE105 |
| Lead | ND | 0.50<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDE106 |
| Selenium | ND | 0.25<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDE107 |
| Silver | ND | 0.50<br>Dilution Factor: 1 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDE108 |

**NOTE(S):**

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBH 3/25/98

**BAKER ENVIRONMENTAL, INC.**

**Client Sample ID: FB01-98C**

**TCLP Metals**

**Lot-Sample #...:** H8G170111-013 **Matrix.....:** WATER
**Date Sampled...:** 07/16/98 **Date Received..:** 07/17/98
**Leach Date.....:** 07/20/98 **Leach Batch #..:** P820103

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 8202311 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJVDJ101 |
| | | Dilution Factor: 1 | | | | |
| **Prep Batch #...:** 8203143 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDJ102 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDJ103 |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDJ104 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDJ105 |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDJ106 |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDJ107 |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJVDJ108 |
| | | Dilution Factor: 1 | | | | |

**NOTE(S):**

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PBK 8/12/98

# Quanterra, Inc. - Knoxville Laboratory

## ICP Data Reporting Form

**Initial Calibration Verification**

**Units:** ug/L (ppb)

**Standard Source:** ULTRA

**Instrument ID:** TJA 61-E ICP

**Standard ID:** 1398-28

**Data File Name:** AB01283.ARC

| | | PICV 7/23/98 10:40 AM | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Elem | True Conc | Found | % Rec | Found | % Rec | Found | % Rec | Found | % Rec | Found | % Rec | Found | % Rec |
| Ag | 500.0 | 512.56 | 102.5 | | | | | | | | | | |
| As | 1000.0 | 967.80 | 96.8 | | | | | | | | | | |
| Ba | 1000.0 | 976.74 | 97.7 | | | | | | | | | | |
| Cd | 1000.0 | 961.95 | 96.2 | | | | | | | | | | |
| Cr | 1000.0 | 1006.64 | 100.7 | | | | | | | | | | |
| Pb | 1000.0 | 986.23 | 98.6 | | | | | | | | | | |
| Se | 1000.0 | 966.31 | 96.6 | | | | | | | | | | |

# Quanterra, Inc. - Knoxville Laboratory

## ICP Data Reporting Form

**Continuing Calibration Verification** **Units:** ug/L (ppb)

**Standard Source:** ULTRA **Instrument ID:** TJA 61-E ICP

**Standard ID:** 1397-28 **Data File Name:** AB01283.ARC

| | | PCCV1 7/23/98 11:09 AM | | PCCV2 7/23/98 12:09 PM | | PCCV3 7/23/98 1:13 PM | | PCCV4 7/23/98 2:14 PM | | PCCV5 7/23/98 3:14 PM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Elem | True Conc | Found | % Rec | Found | % Rec | Found | % Rec | Found | % Rec | Found | % Rec | Found | % Rec |
| Ag | 1000.0 | 1023.93 | 102.4 | 1023.27 | 102.3 | 1018.11 | 101.8 | 1034.95 | 103.5 | 1032.89 | 103.3 | | |
| As | 5000.0 | 4885.20 | 97.7 | 4964.61 | 99.3 | 4887.35 | 97.7 | 4985.97 | 99.7 | 4971.30 | 99.4 | | |
| Ba | 5000.0 | 4984.65 | 99.7 | 5017.47 | 100.3 | 4951.91 | 99.0 | 4947.90 | 99.0 | 4944.82 | 98.9 | | |
| Cd | 5000.0 | 4934.13 | 98.7 | 4975.09 | 99.5 | 4940.57 | 98.8 | 5044.25 | 100.9 | 5063.03 | 101.3 | | |
| Cr | 5000.0 | 5014.96 | 100.3 | 5050.11 | 101.0 | 5003.84 | 100.1 | 5118.48 | 102.4 | 5091.62 | 101.8 | | |
| Pb | 5000.0 | 4984.14 | 99.7 | 4978.82 | 99.6 | 4949.24 | 99.0 | 5077.58 | 101.6 | 5074.59 | 101.5 | | |
| Se | 5000.0 | 4948.58 | 99.0 | 5170.23 | 103.4 | 4960.33 | 99.2 | 5008.54 | 100.2 | 4995.31 | 99.9 | | |

# Quanterra, Inc. - Knoxville Laboratory

## ICP Data Reporting Form

**Contract Required Detection Limit Standard(s)** **Units:** ug/L (ppb)

**Standard Source:** ULTRA **Instrument ID:** TJA 61-E ICP

**Standard ID:** 1555-6-22 **Data File Name:** AB01283.ARC

| | | CRI1 7/23/98 10:49 AM | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Elem | True Conc | Found | % Rec | Found | % Rec | Found | % Rec | Found | % Rec | Found | % Rec | Found | % Rec |
| Ag | 20.0 | 23.58 | 117.9 | | | | | | | | | | |
| As | 600.0 | 603.34 | 100.6 | | | | | | | | | | |
| Ba | 400.0 | 430.20 | 107.6 | | | | | | | | | | |
| Cd | 10.0 | 10.99 | 109.9 | | | | | | | | | | |
| Cr | 20.0 | 20.97 | 104.9 | | | | | | | | | | |
| Pb | 200.0 | 207.18 | 103.6 | | | | | | | | | | |
| Se | 500.0 | 531.23 | 106.2 | | | | | | | | | | |

# Quanterra, Inc. - Knoxville Laboratory

## ICP Data Reporting Form

**Initial Calibration Blank(s)**

**Units:** ug/L (ppb)

**Instrument ID:** TJA 61-E ICP

**Data File Name:** AB01283.ARC

| Elem | Reporting Limit | ICB 7/23/98 10:45 AM | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Found | Flag | Found | Flag | Found | Flag | Found | Flag | Found | Flag | Found | Flag |
| Ag | 500.0 | 3.7 | B | | | | | | | | | | |
| As | 500.0 | 23.6 | U | | | | | | | | | | |
| Ba | 10000.0 | 0.5 | U | | | | | | | | | | |
| Cd | 100.0 | 1.7 | U | | | | | | | | | | |
| Cr | 500.0 | 3.3 | B | | | | | | | | | | |
| Pb | 500.0 | 24.9 | B | | | | | | | | | | |
| Se | 250.0 | 34.6 | U | | | | | | | | | | |

ICP Report Generator Version 2.0

B - Analyte concentration is between IDL and Reporting Limit
U - Analyte concentration is less than IDL

*Form 3 Equivalent*

# Quanterra, Inc. - Knoxville Laboratory

## ICP Data Reporting Form

**Continuing Calibration Blank(s)**

**Units:** ug/L (ppb)

**Instrument ID:** TJA 61-E ICP

**Data File Name:** AB01283.ARC

| Elem | Reporting Limit | CCB1 7/23/98 11:14 AM | | CCB2 7/23/98 12:13 PM | | CCB3 7/23/98 1:18 PM | | CCB4 7/23/98 2:19 PM | | CCB5 7/23/98 3:19 PM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Found | Flag | Found | Flag | Found | Flag | Found | Flag | Found | Flag | Found | Flag |
| Ag | 500.0 | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | 3.4 | U | | |
| As | 500.0 | 23.6 | U | 23.6 | U | 23.6 | U | 23.6 | U | 23.6 | U | | |
| Ba | 10000.0 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | | |
| Cd | 100.0 | 1.8 | B | 1.7 | U | 1.7 | U | 1.7 | U | 1.7 | U | | |
| Cr | 500.0 | 3.0 | U | 3.0 | U | 3.0 | U | 3.0 | U | 3.0 | U | | |
| Pb | 500.0 | 19.1 | U | 23.2 | B | 19.1 | U | 19.1 | U | 19.1 | U | | |
| Se | 250.0 | 34.6 | U | 34.6 | U | 34.6 | U | 34.6 | U | 34.6 | U | | |



B - Analyte concentration is between IDL and Reporting Limit
U - Analyte concentration is less than IDL

*Form 3 Equivalent*

# METHOD BLANK REPORT

## TCLP Metals

**Client Lot #...:** H8G170111 **Matrix.....:** SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **MB Lot-Sample #:** H8G200000-143 **Prep Batch #...:** 8203144 | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJWQD10D |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22/98 | CJWQD10E |
| | | Dilution Factor: 1 | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22/98 | CJWQD10F |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJWQD10G |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJWQD10H |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22/98 | CJWQD10J |
| | | Dilution Factor: 1 | | | | |
| **MB Lot-Sample #:** H8G200000-143 **Prep Batch #...:** 8202304 | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJWQD104 |
| | | Dilution Factor: 1 | | | | |
| **MB Lot-Sample #:** H8G200000-143 **Prep Batch #...:** 8203144 | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102 | | | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22/98 | CJWQD10K |
| | | Dilution Factor: 1 | | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

# METHOD BLANK REPORT

## TCLP Metals

**Client Lot #...:** H8G170111 **Matrix.....:** WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **MB Lot-Sample #:** H8G200000-146 **Prep Batch #...:** 8203143 | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820103 | | | | | | |
| Arsenic | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJWQJ102 |
| | | Dilution Factor: 1 | | | | |
| Barium | ND | 10.0 | mg/L | SW846 6010B | 07/22-07/23/98 | CJWQJ103 |
| | | Dilution Factor: 1 | | | | |
| **MB Lot-Sample #:** H8G200000-146 **Prep Batch #...:** 8202311 | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820103 | | | | | | |
| Mercury | ND | 0.0020 | mg/L | SW846 7470A | 07/22/98 | CJWQJ101 |
| | | Dilution Factor: 1 | | | | |
| **MB Lot-Sample #:** H8G200000-146 **Prep Batch #...:** 8203143 | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820103 | | | | | | |
| Cadmium | ND | 0.10 | mg/L | SW846 6010B | 07/22-07/23/98 | CJWQJ104 |
| | | Dilution Factor: 1 | | | | |
| Chromium | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJWQJ105 |
| | | Dilution Factor: 1 | | | | |
| Lead | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJWQJ106 |
| | | Dilution Factor: 1 | | | | |
| Selenium | ND | 0.25 | mg/L | SW846 6010B | 07/22-07/23/98 | CJWQJ107 |
| | | Dilution Factor: 1 | | | | |
| Silver | ND | 0.50 | mg/L | SW846 6010B | 07/22-07/23/98 | CJWQJ108 |
| | | Dilution Factor: 1 | | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

# MATRIX SPIKE SAMPLE DATA REPORT

## TCLP Metals

**Client Lot #...:** H8G170111 **Matrix.....:** SOLID
**Date Sampled...:** 07/15/98 **Date Received..:** 07/17/98

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASURED AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** H8G170111-008 **Prep Batch #...:** 8202304 | | | | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102 | | | | | | | | | |
| **Mercury** | | | | | | | | | |
| | ND | 0.005 | 0.00528 | mg/L | 106 | | SW846 7470A | 07/22/98 | CJVD610( |
| | ND | 0.005 | 0.00529 | mg/L | 106 | 0.18 | SW846 7470A | 07/22/98 | CJVD610I |
| | | | Dilution Factor: 1 | | | | | | |
| **MS Lot-Sample #:** H8G170111-008 **Prep Batch #...:** 8203144 | | | | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102 | | | | | | | | | |
| **Arsenic** | | | | | | | | | |
| | ND | 5.00 | 5.45 | mg/L | 109 | | SW846 6010B | 07/22/98 | CJVD610: |
| | ND | 5.00 | 5.39 | mg/L | 108 | 1.0 | SW846 6010B | 07/22/98 | CJVD610: |
| | | | Dilution Factor: 1 | | | | | | |
| **Barium** | | | | | | | | | |
| | ND | 50.0 | 53.0 | mg/L | 103 | | SW846 6010B | 07/22/98 | CJVD610: |
| | ND | 50.0 | 52.0 | mg/L | 101 | 1.8 | SW846 6010B | 07/22/98 | CJVD610( |
| | | | Dilution Factor: 1 | | | | | | |
| **Cadmium** | | | | | | | | | |
| | ND | 1.00 | 1.05 | mg/L | 105 | | SW846 6010B | 07/22/98 | CJVD610: |
| | ND | 1.00 | 1.03 | mg/L | 103 | 1.9 | SW846 6010B | 07/22/98 | CJVD610: |
| | | | Dilution Factor: 1 | | | | | | |
| **Chromium** | | | | | | | | | |
| | ND | 5.00 | 5.18 | mg/L | 104 | | SW846 6010B | 07/22/98 | CJVD610( |
| | ND | 5.00 | 5.10 | mg/L | 102 | 1.5 | SW846 6010B | 07/22/98 | CJVD610I |
| | | | Dilution Factor: 1 | | | | | | |
| **Lead** | | | | | | | | | |
| | ND | 5.00 | 5.17 | mg/L | 103 | | SW846 6010B | 07/22/98 | CJVD610I |
| | ND | 5.00 | 5.09 | mg/L | 101 | 1.5 | SW846 6010B | 07/22/98 | CJVD610( |
| | | | Dilution Factor: 1 | | | | | | |
| **Selenium** | | | | | | | | | |
| | ND | 1.00 | 1.17 | mg/L | 117 | | SW846 6010B | 07/22/98 | CJVD610. |
| | ND | 1.00 | 1.19 | mg/L | 119 | 1.6 | SW846 6010B | 07/22/98 | CJVD610I |
| | | | Dilution Factor: 1 | | | | | | |
| **Silver** | | | | | | | | | |
| | ND | 1.00 | 1.08 | mg/L | 108 | | SW846 6010B | 07/22/98 | CJVD610I |
| | ND | 1.00 | 1.06 | mg/L | 106 | 2.4 | SW846 6010B | 07/22/98 | CJVD610I |
| | | | Dilution Factor: 1 | | | | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

# MATRIX SPIKE SAMPLE EVALUATION REPORT

## TCLP Metals

**Client Lot #...:** H8G170111 **Matrix.....:** SOLID
**Date Sampled...:** 07/15/98 **Date Received..:** 07/17/98

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** H8G170111-008 **Prep Batch #...:** 8202304 | | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102 | | | | | | | |
| Mercury | 106 | (78 - 122) | | | SW846 7470A | 07/22/98 | CJVD610Q |
| | 106 | (78 - 122) | 0.18 | (0-20) | SW846 7470A | 07/22/98 | CJVD610R |
| | | Dilution Factor: 1 | | | | | |
| **MS Lot-Sample #:** H8G170111-008 **Prep Batch #...:** 8203144 | | | | | | | |
| **Leach Date.....:** 07/20/98 **Leach Batch #..:** P820102 | | | | | | | |
| Arsenic | 109 | (75 - 125) | | | SW846 6010B | 07/22/98 | CJVD6102 |
| | 108 | (75 - 125) | 1.0 | (0-20) | SW846 6010B | 07/22/98 | CJVD6103 |
| | | Dilution Factor: 1 | | | | | |
| Barium | 103 | (75 - 125) | | | SW846 6010B | 07/22/98 | CJVD6105 |
| | 101 | (75 - 125) | 1.8 | (0-20) | SW846 6010B | 07/22/98 | CJVD6106 |
| | | Dilution Factor: 1 | | | | | |
| Cadmium | 105 | (75 - 125) | | | SW846 6010B | 07/22/98 | CJVD6108 |
| | 103 | (75 - 125) | 1.9 | (0-20) | SW846 6010B | 07/22/98 | CJVD6109 |
| | | Dilution Factor: 1 | | | | | |
| Chromium | 104 | (75 - 125) | | | SW846 6010B | 07/22/98 | CJVD610C |
| | 102 | (75 - 125) | 1.5 | (0-20) | SW846 6010B | 07/22/98 | CJVD610D |
| | | Dilution Factor: 1 | | | | | |
| Lead | 103 | (75 - 125) | | | SW846 6010B | 07/22/98 | CJVD610F |
| | 101 | (75 - 125) | 1.5 | (0-20) | SW846 6010B | 07/22/98 | CJVD610G |
| | | Dilution Factor: 1 | | | | | |
| Selenium | 117 | (75 - 125) | | | SW846 6010B | 07/22/98 | CJVD610J |
| | 119 | (75 - 125) | 1.6 | (0-20) | SW846 6010B | 07/22/98 | CJVD610K |
| | | Dilution Factor: 1 | | | | | |
| Silver | 108 | (75 - 125) | | | SW846 6010B | 07/22/98 | CJVD610M |
| | 106 | (75 - 125) | 2.4 | (0-20) | SW846 6010B | 07/22/98 | CJVD610N |
| | | Dilution Factor: 1 | | | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

# LABORATORY CONTROL SAMPLE DATA REPORT

## TCLP Metals

**Client Lot #...:** H8G170111 **Matrix.....:** SOLID

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCNT RECVRY | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **LCS Lot-Sample#:** H8G210000-304 **Prep Batch #...:** 8202304 | | | | | | | |
| Mercury | 0.00500 | 0.00495 | mg/L | 99 | SW846 7470A | 07/22/98 | CK02A101 |
| | | Dilution Factor: 1 | | | | | |
| **LCS Lot-Sample#:** H8G220000-144 **Prep Batch #...:** 8203144 | | | | | | | |
| Chromium | 5.00 | 5.06 | mg/L | 101 | SW846 6010B | 07/22/98 | CK08Q101 |
| | | Dilution Factor: 1 | | | | | |
| Lead | 5.00 | 5.04 | mg/L | 101 | SW846 6010B | 07/22/98 | CK08Q102 |
| | | Dilution Factor: 1 | | | | | |
| Selenium | 1.00 | 1.14 | mg/L | 114 | SW846 6010B | 07/22/98 | CK08Q103 |
| | | Dilution Factor: 1 | | | | | |
| Silver | 1.00 | 1.05 | mg/L | 105 | SW846 6010B | 07/22/98 | CK08Q104 |
| | | Dilution Factor: 1 | | | | | |
| Arsenic | 5.00 | 5.31 | mg/L | 106 | SW846 6010B | 07/22/98 | CK08Q105 |
| | | Dilution Factor: 1 | | | | | |
| Barium | 50.0 | 49.7 | mg/L | 99 | SW846 6010B | 07/22/98 | CK08Q106 |
| | | Dilution Factor: 1 | | | | | |
| Cadmium | 1.00 | 1.02 | mg/L | 102 | SW846 6010B | 07/22/98 | CK08Q107 |
| | | Dilution Factor: 1 | | | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

# LABORATORY CONTROL SAMPLE DATA REPORT

## TCLP Metals

**Client Lot #...:** H8G170111 **Matrix.....:** WATER

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCNT RECVRY | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **LCS Lot-Sample#:** H8G210000-311 **Prep Batch #...:** 8202311 | | | | | | | |
| Mercury | 0.00500 | 0.00497 | mg/L | 99 | SW846 7470A | 07/22/98 | CK02W101 |
| | | Dilution Factor: 1 | | | | | |
| **LCS Lot-Sample#:** H8G220000-143 **Prep Batch #...:** 8203143 | | | | | | | |
| Arsenic | 5.00 | 5.50 | mg/L | 110 | SW846 6010B | 07/22-07/23/98 | CK08P101 |
| | | Dilution Factor: 1 | | | | | |
| Barium | 50.0 | 52.7 | mg/L | 105 | SW846 6010B | 07/22-07/23/98 | CK08P102 |
| | | Dilution Factor: 1 | | | | | |
| Cadmium | 1.00 | 1.04 | mg/L | 104 | SW846 6010B | 07/22-07/23/98 | CK08P103 |
| | | Dilution Factor: 1 | | | | | |
| Chromium | 5.00 | 5.32 | mg/L | 106 | SW846 6010B | 07/22-07/23/98 | CK08P104 |
| | | Dilution Factor: 1 | | | | | |
| Lead | 5.00 | 5.23 | mg/L | 105 | SW846 6010B | 07/22-07/23/98 | CK08P105 |
| | | Dilution Factor: 1 | | | | | |
| Selenium | 1.00 | 1.21 N | mg/L | 121 | SW846 6010B | 07/22-07/23/98 | CK08P106 |
| | | Dilution Factor: 1 | | | | | |
| Silver | 1.00 | 1.08 | mg/L | 108 | SW846 6010B | 07/22-07/23/98 | CK08P107 |
| | | Dilution Factor: 1 | | | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

# LABORATORY CONTROL SAMPLE EVALUATION REPORT

## TCLP Metals

**Client Lot #...:** H8G170111 **Matrix.....:** SOLID

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|
| **LCS Lot-Sample#:** H8G210000-304 **Prep Batch #...:** 8202304 | | | | | |
| Mercury | 99 | (80 - 120) | SW846 7470A | 07/22/98 | CK02A101 |
| | | Dilution Factor: 1 | | | |
| **LCS Lot-Sample#:** H8G220000-144 **Prep Batch #...:** 8203144 | | | | | |
| Chromium | 101 | (80 - 120) | SW846 6010B | 07/22/98 | CK08Q101 |
| | | Dilution Factor: 1 | | | |
| Lead | 101 | (80 - 120) | SW846 6010B | 07/22/98 | CK08Q102 |
| | | Dilution Factor: 1 | | | |
| Selenium | 114 | (80 - 120) | SW846 6010B | 07/22/98 | CK08Q103 |
| | | Dilution Factor: 1 | | | |
| Silver | 105 | (80 - 120) | SW846 6010B | 07/22/98 | CK08Q104 |
| | | Dilution Factor: 1 | | | |
| Arsenic | 106 | (80 - 120) | SW846 6010B | 07/22/98 | CK08Q105 |
| | | Dilution Factor: 1 | | | |
| Barium | 99 | (80 - 120) | SW846 6010B | 07/22/98 | CK08Q106 |
| | | Dilution Factor: 1 | | | |
| Cadmium | 102 | (80 - 120) | SW846 6010B | 07/22/98 | CK08Q107 |
| | | Dilution Factor: 1 | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

# LABORATORY CONTROL SAMPLE EVALUATION REPORT

## TCLP Metals

**Client Lot #...:** H8G170111 **Matrix.....:** WATER

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|
| **LCS Lot-Sample#:** H8G210000-311 **Prep Batch #...:** 8202311 | | | | | |
| Mercury | 99 | (80 - 120) | SW846 7470A | 07/22/98 | CK02W101 |
| | | Dilution Factor: 1 | | | |
| **LCS Lot-Sample#:** H8G220000-143 **Prep Batch #...:** 8203143 | | | | | |
| Arsenic | 110 | (80 - 120) | SW846 6010B | 07/22-07/23/98 | CK08P101 |
| | | Dilution Factor: 1 | | | |
| Barium | 105 | (80 - 120) | SW846 6010B | 07/22-07/23/98 | CK08P102 |
| | | Dilution Factor: 1 | | | |
| Cadmium | 104 | (80 - 120) | SW846 6010B | 07/22-07/23/98 | CK08P103 |
| | | Dilution Factor: 1 | | | |
| Chromium | 106 | (80 - 120) | SW846 6010B | 07/22-07/23/98 | CK08P104 |
| | | Dilution Factor: 1 | | | |
| Lead | 105 | (80 - 120) | SW846 6010B | 07/22-07/23/98 | CK08P105 |
| | | Dilution Factor: 1 | | | |
| Selenium | 121 N | (80 - 120) | SW846 6010B | 07/22-07/23/98 | CK08P106 |
| | | Dilution Factor: 1 | | | |
| Silver | 108 | (80 - 120) | SW846 6010B | 07/22-07/23/98 | CK08P107 |
| | | Dilution Factor: 1 | | | |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

# Quanterra, Inc. - Knoxville Laboratory

## ICP Data Reporting Form

**Serial Dilution(s)**

**Units:** ug/L (ppb)

**Instrument ID:** TJA 61-E ICP

**Data File Name:** AB01283.ARC

| Element | CJVDJ | CJVDJP | Percent Difference |
|---|---|---|---|
| Ag | 3.38 U | 16.90 U | |
| As | 23.56 U | 117.80 U | |
| Ba | 420.45 B | 420.10 B | 0.1 |
| Cd | 1.65 U | 8.25 U | |
| Cr | 2.95 U | 14.75 U | |
| Pb | 20.35 B | 95.55 U | 100.0 |
| Se | 34.63 U | 173.15 U | |

B - Analyte concentration is between IDL and Reporting Limit
U - Analyte concentration is less than IDL
E - Percent Difference is greater than 10 and [OS]>50 times IDL