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NSWC CRANE
5090.3a

Interim Measures Report

Removal and Disposal of Contaminated Soil at the Mine Fill A Battery Site

NSWC Crane
Crane, Indiana

Revision 1

December 2002

Prepared for

Southern Division
Naval Facilities Engineering Command
North Charleston, South Carolina
29419-9010

TOLTEST, INC.

DEPARTMENT OF THE NAVY
CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
300 HIGHWAY 361
CRANE INDIANA 47522-5001

IN REPLY REFER TO:

5090
Ser 095/2400

16 DEC 2002

U.S. Environmental Protection Agency, Region V
Waste, Pesticides, & Toxics Division
Waste Management Branch
Corrective Action Section
Attn: Mr. Peter Ramanauskas (DW-8J)
77 West Jackson Blvd.
Chicago, IL 60604

Dear Mr. Ramanauskas:

Crane Division, Naval Surface Warfare Center (NSWC Crane) submits, for your review and approval, the response to comments and replacement pages for the Final Interim Measures Report (IMR) for Mine Fill A (MFA) Battery Revision 1 dated December 2002. One copy of the response to comments and two copies of the replacement pages are provided as enclosure (1). Enclosure (2) is the required certification statement.

NSWC Crane point of contact is Ms. Christine D. Freeman, Code 09511, telephone 812-854-4423.

Sincerely,

James M. Hunsicker

JAMES M. HUNSICKER
Director Environmental Protection Department
By direction of the Commander

Encls:
(1) Final IMR for MFA Battery Rev. 1
(2) Certification Statement

Copy to:
Administrative Record
IDEM (Griffin)
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Mine Fill A Battery Site Interim Measures Report Revision 0 September 2002
Naval Surface Warfare Center, Crane, Indiana
Response to Comments from EPA Region IV dated November 27, 2002

Comment 1:

Where are the results for disposal characterization from the soil and battery areas? Table 3-4 seems to have only TCLP results for the battery area.

Response 1:

There were no disposal characterization samples from the soil area since this soil was treated at the Biofacility. Section 3.3.3 has been revised and Table 3-4 has been updated to include the total metals results from the battery area.

Comment 2:

Referring to Table 3-2 Soil Area Sample 001 metals and VOC results, why is "NST" listed when Sample PES-001 in Appendix D has metals and VOC results?

Response 2:

Sample PES-001 was analyzed for metals but it was included as part of the Appendix IX list, not the MFA constituent list identified in Table 3-2. Table 3-2 has been revised to include the results from PES-001 for those analytes listed in Table 3-2. The reader is also referred to Appendix D for a complete list of Appendix IX results for sample PES-001.

Comment 3:

Referring to Section 9.0, how was Pennsylvanian soil determined to be the soil type at these areas for comparison to the basewide background soils. Also, referring to the first sentence of the 4th paragraph, it is stated that contaminated soil *not associated with the Battery Area* was unearthed on the far west side of the Battery Area excavation. What is the rationale for making the statement that this contamination is not associated with the Battery Area?

Response 3:

The Pennsylvanian soil type determination was based on Figure 2-4 Surficial Geology, Depositional Environments, and Solid Waste Management Unit Location Map of the Base Wide background Report. This figure shows the Pennsylvanian soil type for Mine Fill A area and the location of the Mine Fill A Battery Site. A reference to this figure and the Statistical summary table 4-4, which includes the Pennsylvanian surface soil results, will be included in the text of section 9.0.

Further explanation of the discovery of the discolored soil is provided in the last paragraph of section 4.2.2, which has been revised. This explanation supports the conclusion in Section 9.0.

ERRATA

Mine Fill A Battery Site Interim Measures Report Revision 0 September 2002
Naval Surface Warfare Center, Crane, Indiana

Remove and replace Revision 0 September 2002 pages with Revision 1 December 2002 pages as follows:

- Binder cover page
- Signature page
- Page 3-3 / 3-4
- Page 3-5
- Page 4-1 / 4-2
- Page 9-1

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.

James M. Henricher

SIGNATURE

DIRECTOR, ENVIRONMENTAL PROTECTION DEPARTMENT
BY DIRECTION OF THE COMMANDER

TITLE

12/16/02

DATE

INTERIM MEASURES REPORT
REMOVAL AND DISPOSAL OF CONTAMINATED SOIL
FROM THE
MINE FILL A BATTERY SITE

NSWC CRANE
CRANE, INDIANA

Revision 1

December 2002

ENVIRONMENTAL JOB ORDER CONTRACT
N68950-96-D-0052
DELIVERY ORDER #FC04
TolTest Job No. 37826.01

Prepared for

SOUTHERN DIVISION
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12/12/02
Peter J. Chevalier — Date
Project Manager/Environmental Specialist

APPROVED BY:

12/12/02
Lance Parsons — Date
Regional Manager

EXECUTIVE SUMMARY

This interim measures report has been prepared by TolTest Inc. (TolTest) for Southern Division, Naval Facilities Engineering Command. This report documents the actions completed for the identification, removal, and treatment and/or disposal of contaminated soil from the Mine Fill A (MFA) Battery Site, Naval Surface Warfare Center (NSWC) Crane in Crane, Indiana. The report summarizes the work actions performed pursuant to the requirements of the approved *Final Interim Measures Work Plan, Mine Fill A Battery Site [TolTest 2001a]*. TolTest obtained pre-excavation soil samples in February 2001. Excavation of contaminated soil and post-excavation confirmatory sampling was accomplished in October 2001 and again in June 2002.

The scope of work included the following:

- Collection and analysis of 11 pre-excavation site characterization samples: five from the Soil Area and six from the Battery Area.
- Excavation of 18.01 tons of explosives contaminated soil from the Soil Area and 298.88 tons of metals contaminated soil from the Battery Area.
- Collection and analysis of 21 post-excavation confirmatory samples: two from the Soil Area and 19 from the Battery Area.
- Transportation of explosives contaminated soil from the Soil Area to the on-site Bioremediation Facility for treatment in windrow N-214 and subsequent backfill of the compost.
- Transportation and disposal of the metals contaminated soil from the Battery Area to the Waste Management Outer Loop Landfill in Louisville, Kentucky.

Pre-excavation sampling and analysis of soil samples obtained from the Soil Area and Battery Area indicated that contamination was present in each area above industrial cleanup goals. Explosives contamination was present in the Soil Area and metals contamination was present in the Battery Area.

Remedial activities in the Soil Area included excavating the explosives contaminated soil, treating it in compost windrow N-214 at the NSWC Crane Bioremediation Facility to less than Residential cleanup levels, and backfilling the treated soil at Mine Fill B. Post-excavation sampling and analysis of the Soil Area indicate that remaining contamination is below Industrial cleanup goals. Based on the post-excavation analytical results, no further action is recommended for the Soil Area.

Remedial activities in the Battery Area included excavating the metals contaminated soil and disposing of it at the Waste Management Outer Loop Landfill in Louisville, Kentucky. Post-excavation sampling and analysis indicate that arsenic contamination remaining in the area of excavation is above industrial cleanup goals in 15 sample locations. However, when comparing the levels detected by the *Basewide Background Soil Investigation Report* [TtNUS, 2001] to the remaining arsenic levels, only sample CFS-013 (16.7 mg/kg) is above the maximum detection of 10.2 mg/kg. The average of the 19 Battery Area post excavation samples (5.6 mg/kg) is below the average of all results and average of all positive detections (6.11 mg/kg) from the *Basewide Background Soil Investigation Report*. No further action is recommended with respect to the levels of arsenic in the post-excavation samples.

Post-excavation sampling in the Battery Area indicated that the level of cadmium in sample CFS-021 was detected above residential cleanup goals but below industrial cleanup goals, and that lead was detected above industrial cleanup goals. Analysis for these two metals performed on a leached extract indicated that cadmium did not exceed the TCLP regulatory level but that lead did exceed the TCLP regulatory limit.

To further investigate the lead contamination, the MFA investigative area will be increased to include the MFA Battery Area. Additional ground water, surface, and subsurface soil sampling for lead will be conducted during a RCRA Facility Investigation.

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ACRONYMS

2A4,6DT	2-amino-4,6-dintrotoluene
2,4DNT	2,4-dinitrotoluene
2,6DNT	2,6-dintrotoluene
2NT	2-nitrotoluene
3NT	3-nitrotoluene
4NT	4-nitrotoluene
4A2,6DT	4-amino-2,6-dintrotoluene
AHA	Activity Hazard Analysis
Biofacility	Bioremediation Facility
CAAA	Crane Army Ammunition Activity
CFR	Code of Federal Regulations
CFS	Confirmatory Soil
CLP	Contract Laboratory Program
DNB	1,3-dinitrobenzene
DOT	U.S. Department of Transportation
EPD	Environmental Protection Department
ECOTR	Environmental Contracting Technical Representative
Guidance Document	Verification of Soil Remediation Guidance Document
HMX	cycloteremethylenetetranitramine
IMR	Interim Measures Report
LCS	laboratory control spike
LCSD	laboratory control spike duplicate
MFA	Mine Fill A
MFB	Mine Fill B
Mg/kg	mili-grams per kilo-gram
MK	Morrison Knudsen Corporation
MS	matrix spike
MSD	matrix spike duplicate
MSDS	material safety data sheet
NB	nitrobenzene
NSWC	Naval Surface Warfare Center
OSHA	Occupational Safety and Health Administration
PETN	Pentaerylthritol tetranitrate
PES	post excavation samples
PCB	polychlorinated biphenyl
PRG	preliminary remedial goal
QAPP	Quality Assurance Project Plan
QC	quality control
RDX	cyclotrimethylene trinitramine
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation

ACRONYMS (con't)

SAP	Sampling and Analysis Plan
SVOC	semi-volatile organic compound
SSHP	Site Safety and Health Plan
Tetryl	methyl-2,4,6-trinitro phenylnitramine
TCLP	toxicity characteristic leaching procedure
TNT	2,4,6-trinitrotoluene
TNB	trinitrobenzene
TolTest	TolTest, Inc.
TtNUS	TetraTech, NUS
U.S. EPA	United States Environmental Protection Agency
VOC	volatile organic compound
WP	Work Plan

1.0 INTRODUCTION

This Mine Fill A (MFA) Battery Site Cleanup Interim Measures Report (IMR) has been prepared by TolTest, Inc. (TolTest) for the Naval Surface Warfare Center (NSWC) Crane, Indiana. This report documents characterization of the area via soil analysis, removal of battery fragments and contaminated soil from the impacted areas, proper disposal of contaminated soil, completion of post-excavation confirmatory sampling and analysis, site restoration, and completion of documentation and reporting. This IMR summarizes the work actions performed pursuant to the requirements of the approved *Interim Measures Work Plan (WP)* [TolTest, 2001a], which includes the *Site Safety and Health Plan* (SSHP), *Sampling and Analysis Plan* (*SAP*), and *Quality Assurance Project Plan* (*QAPP*). TolTest performed the fieldwork from February 12 to October 3, 2001 and from June 18 to June 25, 2001.

NSWC Crane, located in southwestern Indiana (Figure 1-1), provides support for equipment shipboard weapons systems and ordnance. This site also supports Crane Army Ammunition Activity (CAAA) which includes production and renovation, storage, shipment, and demilitarization and disposal of conventional ammunition. The location of MFA within NSWC Crane is depicted on Figure 1-2.

The Battery Site is located on the south end of MFA approximately 140 feet outside the perimeter fence and is accessed through a gate (Figure 1-3). The site consists of two areas: 1) Battery Area - where batteries were dumped on the ground surface; and 2) Soil Area - an adjacent area where soil and construction debris was dumped in small mounds. The origin of the debris or the dates it was placed is unknown. A reasonable assumption was made by personnel from the NSWC Crane Environmental Protection Department (EPD) that the mounded soil in the Soil Area originated from within MFA, possibly from the installation of road culverts.

1.1 SITE BACKGROUND

MFA is located in the west-central portion of NSWC Crane situated along Highway H-17, as shown on Figure 1-2. MFA consists of 29 buildings that have been used to assemble mines, depth charges, rocket heads, aerial bombs, and projectiles. MFA began operation in 1942 with the loading of depth charge bombs. The area was also used during the Korean and Vietnam wars. Production rates were not available for other periods, but over six million bombs were manufactured at MFA and Mine Fill B (MFB) during the Vietnam War [Halliburton, 1992]. MFA continued to produce ordnance until 1975, when production was suspended.

Demilitarization activities that included ordnance disassembly and decommissioning were also performed in this area. Prior to 1980, a variety of liquid wastes were disposed of on-site without treatment. Explosive-contaminated wastewater was discharged into unlined ponds or into storm drains and ditches. Wastewater generated from cleaning operations was discharged into an unlined pond. Oily waters, battery acids, paint thinner, acetone, boiler blowdown, and solvents were dumped behind buildings or into ravines. Waste hydraulic oil was spread on dirt roads.

Since the early 1980's, treatment plants have been built, wastewater streams have been connected to the sanitary sewer, and oils and solvents have been collected, segregated, and either recycled, sold, or disposed of properly [Halliburton, 1992]. As a result, the major sources of contamination were from wash-down operations prior to 1980 and the exhaust ventilation system.

FIGURE 1-1 NSWC CRANE VICINITY MAP MFA BATTERY SITE INTERIM MEASURES REPORT NAVAL SURFACE WARFARE CENTER CRANE, INDIANA	DRAWN MRC/9-16-02	CHECKED
	REVISED	APPROVED
	JOB NO. 37826.01	TOLTEST, INC.
	DRAWING NUMBER 378265a	

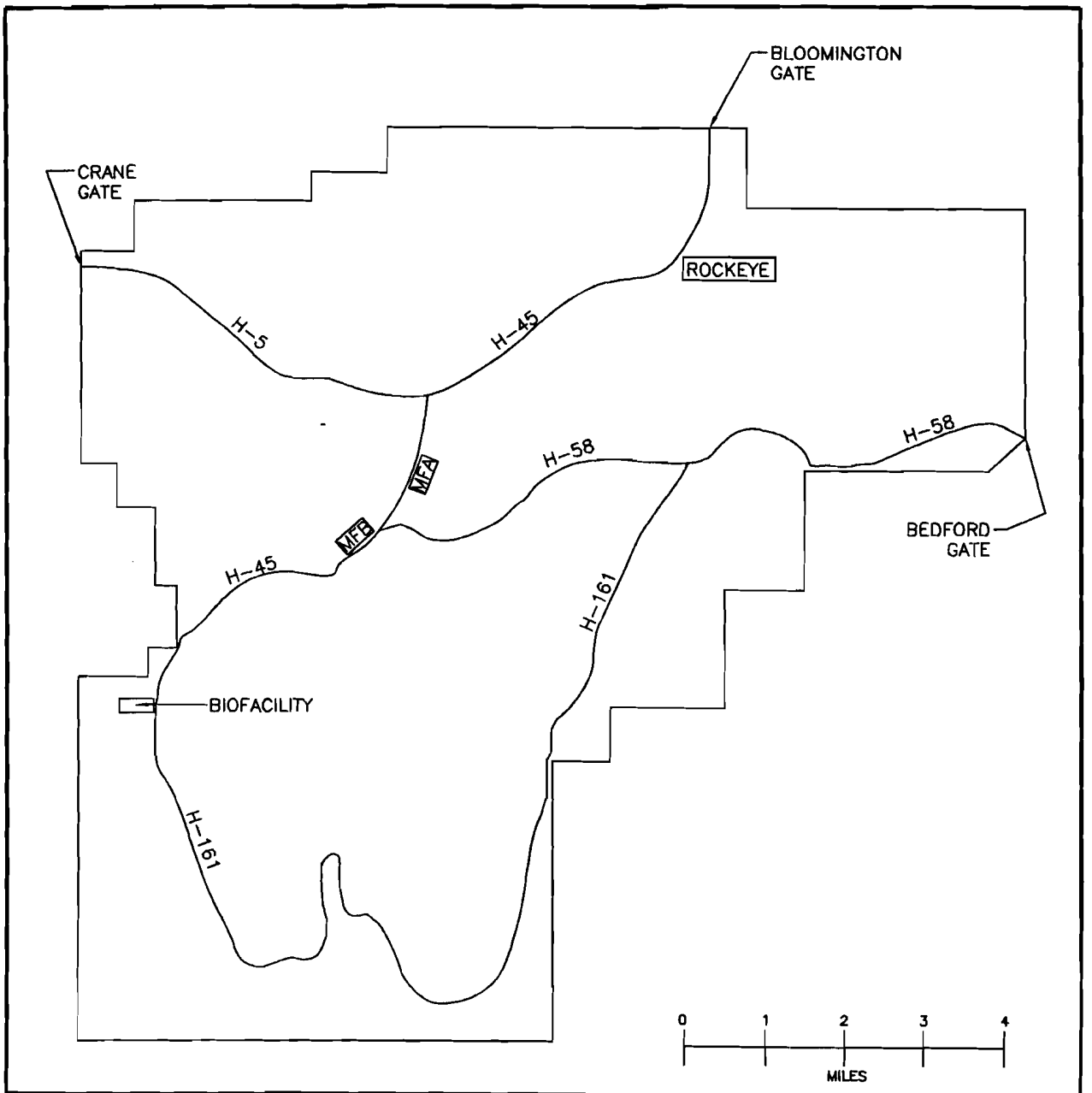

FIGURE 1-2

NSWC CRANE AREA MAP

MFA BATTERY SITE INTERIM MEASURES REPORT
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DRAWN MRC/9-16-02	CHECKED
REVISED	APPROVED
JOB NO. 37826.01	TOLTEST, INC.
DRAWING NUMBER 378266	

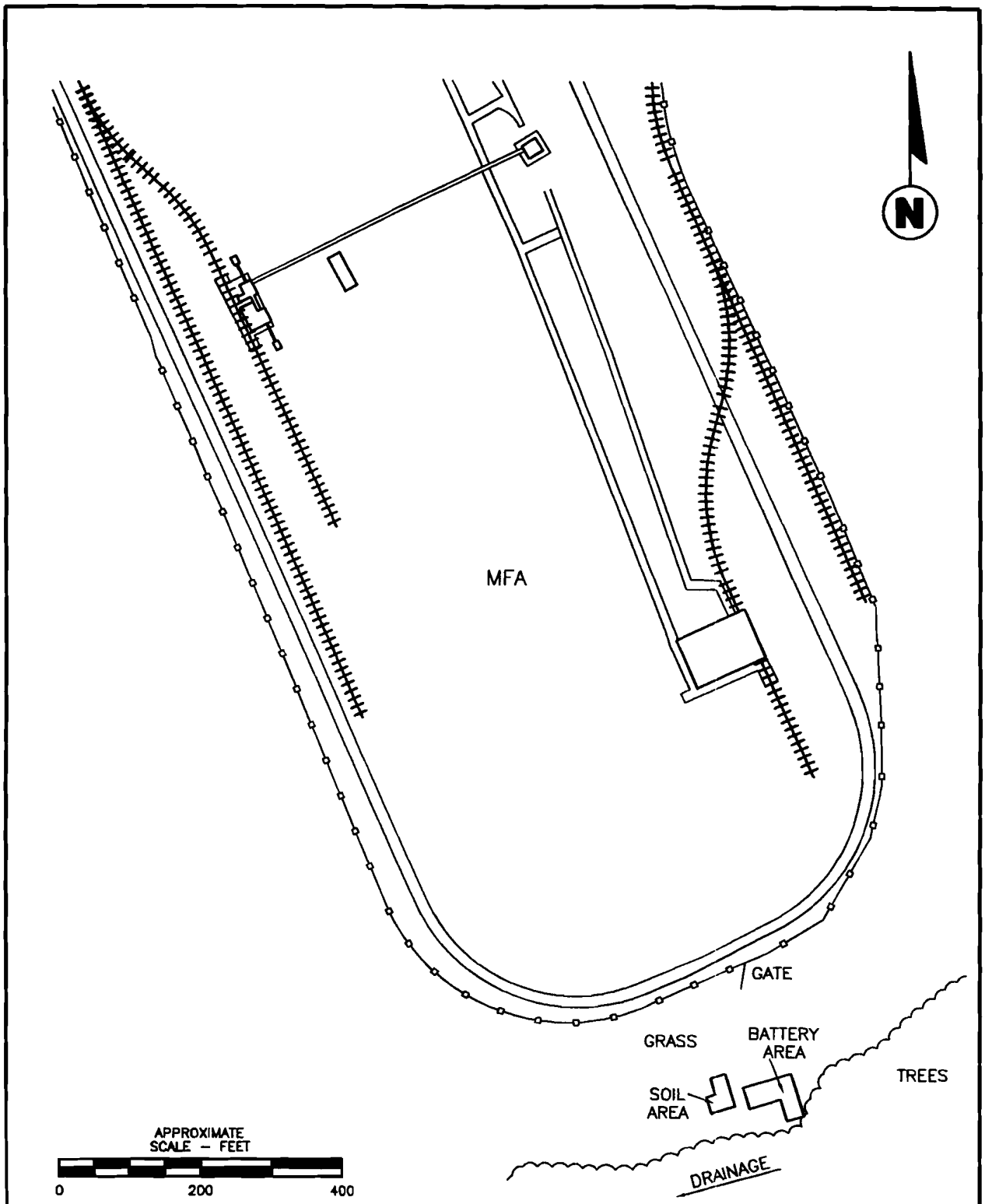

FIGURE 1-3

MINE FILL A AREA MAP

MFA BATTERY SITE INTERIM MEASURES REPORT
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DRAWN MRC/9-16-02	CHECKED
REVISED	APPROVED
JOB NO.: 37826.01	TOLTEST, INC.
DRAWING NUMBER 378263a	

The constituents of concern for MFA included compounds that were identified in the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Phase I Environmental Monitoring Report for MFA [Halliburton, 1992]. Additional compounds were added to those identified in the RFI based on generator knowledge and process operations at MFA. The MFA constituents of concern are listed in Table 1-1 and include explosives, metals, and volatile organic compounds (VOCs).

TABLE 1-1
MINE FILL A CONSTITUENTS OF CONCERN

Explosive Compounds (method 8330)	
• Pentaerylthritol tetranitrate (PETN)	• 4-amino-2,6-dintrotoluene (4A2,6DT)
• 2,4,6-trinitrotoluene (TNT);	• 2-amino-4,6-dintrotoluene (2A4,6DT)
• cyclotrimethylene trinitramine (RDX)	• 2,4-dinitrotoluene (2,4DNT)
• cycloteremethylenetetranitramine (HMX)	• 2,6-dintrotoluene (2,6DNT)
• tetryl; trinitrobenzene (TNB)	• 2-nitrotoluene (2NT)
• 1,3-dinitrobenzene (DNB)	• 3-nitrotoluene (3NT)
• nitrobenzene (NB)	• 4-nitrotoluene (4NT)
Metals (method 6010 & 7471)	
• Aluminum	• Lead
• Arsenic	• Mercury
• Barium	• Selenium
• Cadmium	• Silver
• Chromium	
Volatile Organic Compounds (method 8260)	
• methylene chloride	• methyl ethyl ketone
• toluene	• xylene
• acetone	• methyl isobutyl ketone

The Battery Site was discovered early in the 1990s when a representative of EPD noticed the gate and trail area leading away from the site and became suspicious. Further investigation revealed the presence of the battery disposal area. At that time, the batteries were recognizable as AA household type and their numbers were estimated to be in the thousands. Just prior to MFA Battery Site cleanup operations, the batteries were all but unrecognizable and only their inner cores were visible on the ground surface. The size of the Battery Area was approximately 3,500 square feet.

The Soil Area had no apparent unusual characteristics: no staining was present and no odor was detectable. The size of the Soil Area was approximately 2,355 square feet consisting of several soil mounds, none exceeding four feet in height. The potential for the waste from either of these areas to be a listed or characteristic waste was unknown.

The NSWC Crane Environmental Contracting Officer Technical Representative (ECOTR) made the reasonable assumption that the mounded soil in the Soil Area originated from within MFA. Soil samples obtained from the Soil Area were therefore analyzed for MFA constituents list generated for Bioremediation activities. Given the unknown origins of the soil mounds, the U.S. Environmental Protection Agency, Region V (U.S. EPA) requested that at least one soil sample from the Soil Area be analyzed for Appendix IX constituents (Appendix A). According to the ECOTR, there was no history of dioxin/furan contamination at NSWC Crane, therefore no analysis for dioxins/furans was completed.

Soil samples from the Battery Area were analyzed for toxic characteristics and metals, as listed in Table 1-2. The additional metals chosen for analysis (over and above the 8 RCRA metals) were based on constituents listed in several Material Safety Data Sheets (MSDSs) for batteries, as well as Appendix IX metals. Analysis for disposal characterization was to be completed if total metals analysis indicated that the contamination, if present, exceeded established cleanup goals.

TABLE 1-2 BATTERY AREA CONSTITUENT LIST	
CONSTITUENT	**METHOD**
Ignitability	1010
Corrosivity	U.S. EPA 150.1
Reactivity	Cpt. 7, SW 846
RCRA Metals	6010 & 7471
Cobalt	6010
Lithium	6010
Manganese	6010
Nickel	6010
Zinc	6010

1.2 SCOPE OF WORK

The scope of work for this IM included:

- Initial site characterization by sampling and analysis of potentially contaminated in-situ soil to determine the levels of contamination and to delineate the extent of contamination;
- Excavation of contaminated soil identified in the site characterization;
- Transportation of explosives contaminated, non-hazardous, screened soil from the Soil Area to the Biofacility for treatment through composting;
- Transportation and disposal of the contaminated soil from the Battery Area at an approved landfill;
- Confirmatory sampling following excavation to document site conditions;
- Confirmation sampling of the treated soil compost to ensure that cleanup goals had been met;
- Transportation and backfill of the compost at MFB
- Site restoration

1.3 REPORT ORGANIZATION

This report is organized into nine sections and includes seven appendices. Section 1.0 provides a brief introduction of the site and identifies the scope of work covered by this report. Section 2.0 identifies and discusses regulatory compliance. Section 3.0 provides a summary of pre-excavation site characterization sampling. Excavation and disposal is discussed in Section 4.0, Section 5.0 discusses post-excavation confirmatory sampling, Section 6.0 details field and laboratory quality control inspections, Section 7.0 briefly discusses safety, Section 8.0 provides conclusions, and Section 9.0 provides a list of reference documents.

Pertinent information is provided in the following appendices:

A APPENDIX IX CONSTITUENT LIST
B GENERATOR'S WASTE PROFILE SHEET
C SPECIAL WASTE TRACKING DOCUMENTS
D PRE-EXCAVATION SAMPLE RESULTS
E WINDROW N-214 INFORMATION
F SURVEYED DRAWINGS
G POST-EXCAVATION SAMPLE RESULTS

2.0 REGULATORY COMPLIANCE

Various regulatory and site compliance issues were involved in the operations at the MFA Battery Site. The following sections discuss the site and regulatory requirements associated with soil and treated media classification, waste management operations, and excavation permitting.

2.1 CONTAMINATED MEDIA CLASSIFICATION

2.1.1 Soil Area

Data obtained from in-situ soil samples indicated that the contaminated soil did not contain Title 40 Code of Federal Regulations (CFR) 261 Appendix VIII hazardous constituents above the characteristic reactivity threshold as determined in 40 CFR 261.23. Contaminated soil containing reactive nitrated aromatics has been evaluated and it was determined that reactivity is not observable if the reactive constituents are present below concentrations of 10% (100,000 mg/kg) [Kristoff et al, 1987]. The site soil concentrations of nitrated aromatic compounds were below this concentration.

The Biofacility and buildings were designed and built to meet, or exceed, all applicable codes, standards, and regulations. Based on the classification of the soils to be treated as non-hazardous waste, the Biofacility was approved as a solid waste and contaminated media treatment facility for soil excavated from the Soil Area.

2.1.2 Battery Area

Review of in-situ soil analyses indicated that all soil at the Battery Site was non-reactive and non-characteristic and therefore were classified as non-hazardous waste. A copy of the Generator's Waste Profile Sheet submitted to Waste Management of Kentucky for disposal is provided in Appendix B.

2.2 WASTE MANAGEMENT

The ECOTR approved all waste management and disposal and the contractors complied with all EPD requirements for management of all generated wastes.

2.2.1 Soil Area

Contaminated soil excavated from the Soil Area was classified as explosives contaminated and was transported by dump truck to the Biofacility for eventual processing in compost Windrow N-214.

2.2.2 Battery Area

Contaminated soil excavated from the Battery Area was approved for disposal at the Waste Management Outer Loop Landfill in Louisville, Kentucky.

Before leaving NSWC Crane, each truck was weighed at the truck scale adjacent to the Biofacility. The bed of the truck was covered with a tarp before being shipped to prevent spillage from the truck and infiltration of precipitation.

A Special Waste Tracking Document (i.e. a shipping manifest) for each load was completed by TolTest and signed by the ECOTR as the generator. The ECOTR and TolTest retained original copies of the manifests. Copies of the manifests completed by Waste Management are provided in Appendix C.

2.3 SPECIFICATIONS, CODES, AND STANDARDS

Compliance in the material, examination, testing, inspection, and documentation included the applicable portions of the specifications, codes, and standards listed below.

- U.S. Navy and NSWC Crane guidance
  - OPNAVINST 5090.1B
  - NSWC Hazardous Waste Management Plan
  - NSWC Background Soils Study
  - NSWC Biofacility Work Plan and QAPP
- U.S. Occupational Safety and Health Administration (OSHA)
  - 29 CFR 1910 (including but not limited to 20 CFR 1910.120, "Hazardous Waste Site Activities"), "Occupational Safety and Health Standards"
  - 29 CFR 1926, "Safety and Health Regulations for Construction"
  - 29 CFR 1920, "Procedure for Variations Under Longshoremen's Act"
- U.S. EPA
  - RCRA
  - 40 CFR 262, "Standards Applicable to Generators of Hazardous Waste"
  - 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste"
  - 40 CFR 264, Subpart S, "Corrective Action"
  - 40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities"
  - Test Methods for Evaluating Solid Waste
  - Region 5 Model QAPP App. C, "Ecological Data Quality Levels for Soil"
  - Region 5 Model QAPP App. D, "Risk Based Soil Screening Levels" (Soil Screening Guidance: Technical Background Document)
  - Region 5 Site-Specific Risk Assessment Memorandum for NSWC Crane
  - Region 5 or Region 9 Preliminary Remediation Goals (PRGs)
- U.S. Department of Transportation (DOT)
  - 49 CFR 172.700, Subpart H, "Training"
  - 49 CFR 178, "Specifications for Packaging"
- Indiana Department of Environmental Management
- Naval Energy and Environmental Support Activity
  - Section 7, 20.2-047B, "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program"
  - Level C
- Verification of Soil Remediation Guidance Document (Guidance Document)
- Contract Laboratory Program (CLP) Level IV Criteria
- CLP Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analysis
- Federal Acquisition Regulation (FAR) clause 52.236-13, "Accident Prevention"
- National Institute of Occupational Safety and Health, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities
- Other applicable Federal, State, and local safety and health requirements

2.4 PERMITTING/NOTIFICATION

The NSWC Crane facility required issuance of permits prior to initiation of excavation activities. TolTest obtained an Excavation and Trenching Permit through the Officer In Charge of Construction, Public Works Department, Code 094, Building 2516. A Safety Permit was also required and was secured from the CAAA, located in Building 13.

2.5 TRAINING REQUIREMENTS

Personnel responsible for collecting field samples were required to read the *SAP* and be familiar with all required methods and procedures. Personnel in charge of reducing, evaluating, and reviewing the laboratory field data had a working knowledge of the analytical methods employed.

All field personnel were trained as described in the *SSHP*. Required training included the following:

- OSHA 40-hour Hazardous Waste and Emergency Response Training per 29 CFR 1910.120, updated by annual 8-hour refresher training.
- OSHA 8-hour supervisor's training course in Hazardous Waste Site Safety per 29 CFR 1910.120(e) (field management personnel only).
- Site-specific training.
- Respiratory training.
- Two on-site personnel had First Aid and CPR training.
- The individual responsible for the safe package, labeling and shipping of hazardous environmental samples met the training requirements specified in U. S. DOT 49 CFR 172.700, Subpart H.

2.6 ENVIRONMENTAL PROTECTION

All work was conducted in a way that minimized pollution of the air, water, and land. Noise and the disposal of solid waste materials were controlled to protect human health and the environment.

All excavations, access roads, and other work areas were maintained free from obstruction to avoid causing a hazard. Dust control at the excavation site was not necessary due to the limited amount of equipment used and small size of the site.

Temporary erosion control measures were not implemented since excavation was completed in one day and backfill operations were completed the next day. No precipitation events occurred during excavation or backfill operations. The amount of bare soil exposed at any one time did not exceed one half acre.

3.0 PRE-EXCAVATION SITE CHARACTERIZATION SAMPLING

Pre-excavation soil (PES) samples were obtained from the Battery Area and the Soil Area prior to excavation to determine the boundaries of soil contamination and delineate the area of excavation. The boundaries of contamination at the Battery Area were roughly based on visual evidence of surface contamination. This contamination consisted of degraded battery parts and other debris associated with the area of contamination (primarily broken glass and nails). The suspected area of contamination in the Soil Area was identified by the mounded soil mixed with construction debris (primarily concrete).

3.1 SAMPLING LOCATIONS

To determine the number of sample points relative to the size of the area that was to be sampled, the *Verification of Soil Remediation Guidance Document [1994]* (Guidance Document) was referenced. This document can be found as Attachment A to the SAP.

The size of the Soil Area was approximately 2,355 square feet, consisting of several soil mounds, none exceeding four feet in height. The size of the Battery Area was approximately 3,500 square feet. Following the Guidance Document guidelines, a total of 11 pre-excavation grab samples were obtained from the site: five from the Soil Area and six from the Battery Area. The location of sample points was biased to areas of suspected contamination, as discussed in the Guidance Document.

The five samples from the Soil Area were obtained at varying depths from the surface to deep within the mounds. Table 3-1 lists the sample identification number and the depth the samples were obtained. Samples from the Soil Area were mixed sand, gravel and clay.

TABLE 3-1
SOIL AREA SAMPLE NUMBERS AND DEPTHS

Sample ID	Depth
PES-001	0 – 1'
PES-002	1 – 2'
PES-003	2 – 3'
PES-004	0 – 1'
PES-005	3 – 4'

Samples from the Battery Area were obtained from the surface to a depth of 12 inches. Samples were mostly clay, except for the top few inches, which contained sand, organic matter, battery parts and mixed refuse (primarily broken glass and nails). Samples from the Battery Area were identified as PES-006 through 011.

All 11 samples were grab samples and were obtained with a hand auger. The entire core from the auger was placed in a stainless steel bowl and thoroughly mixed before filling the sample jars. Samples for VOC analysis were obtained with an EnCore Sampler. In addition to the 11 grab samples, a Rinse Blank was collected following PES-004, and one duplicate was collected from each of the two areas.

Sample points were identified in the field with pin flags with the sample identifier written on the flag in indelible ink. The Pre-Excavation Sample Location Map is depicted as Figure 3-1.

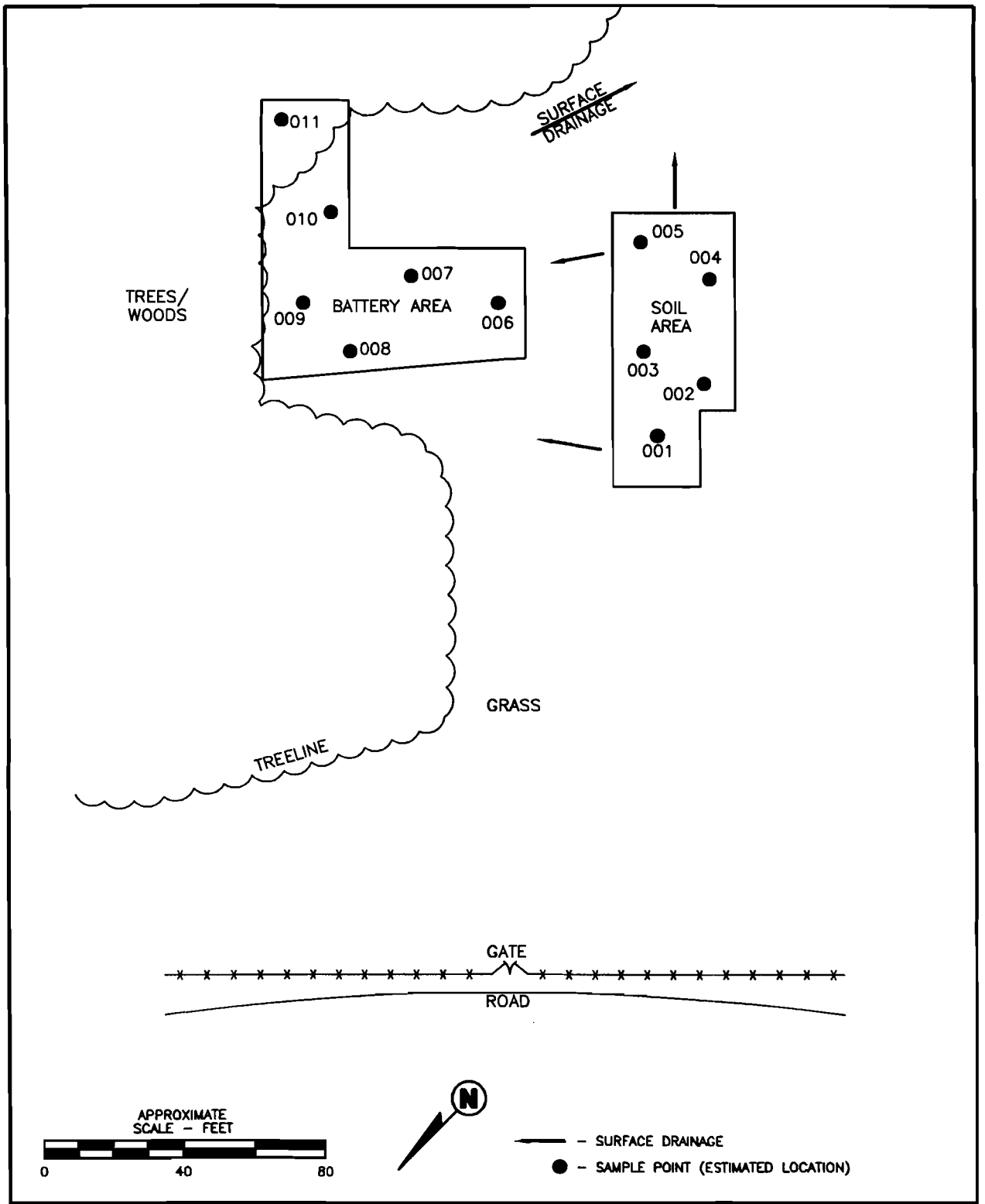

FIGURE 3-1
PRE-EXCAVATION SAMPLE LOCATION MAP

MINE FILL A BATTERY SITE
INTERIM MEASURES REPORT
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DRAWN MRC/9-18-02	CHECKED
REVISED	APPROVED
JOB NO. 37826.01	TOLTEST, INC.
DRAWING NUMBER 378267	

3.2 ANALYTICAL REQUIREMENTS

3.2.1 Soil Area

One sample, PES-001, from the Soil Area was analyzed for explosives by U.S. EPA Method 8330, and Appendix IX constituents consisting of metals, cyanide, sulfide, VOCs, Semi-volatile Organic Compounds (SVOCs), herbicides, pesticides, and Poly-chlorinated Biphenlys (PCBs). The full Appendix IX list is included in Appendix A. Analysis for VOCs conformed to SW-846, method 8260/5035 for EnCore samplers. The remaining four samples from the Soil Area were analyzed for MFA constituents (based on the Biofacility QAPP requirements) of explosives, metals, and VOCs as listed in Table 1-1. These constituents were chosen based on the reasonable assumption that the soil in this area originated from within MFA.

3.2.2 Battery Area

Pre-excavation samples from the Battery Area were analyzed for toxic characteristics and metals as listed in Table 1-2. The additional metals chosen (over and above the 8 RCRA metals) were based on Appendix IX metals, as well as constituents listed in several MSDSs for batteries.

3.2.3 Disposal Characterization

Analysis for disposal characterization, to include Toxicity Characteristic Leaching Procedure (TCLP) analysis on a leached extract was completed because total metals analysis indicated that the contamination exceeded established cleanup levels.

3.2.4 Background

No background samples were required or obtained. The background levels for inorganic compounds, as established in the NSWC Crane *Basewide Background Soil Investigation Report* [TtNUS, 2001], were referenced. Background levels for organic compounds were assumed to be zero.

3.3 ANALYTICAL RESULTS

Analytical results of site characterization samples from the Battery Area and Soil Area are discussed below. All pre-excavation analytical results are provided in Appendix D.

3.3.1 Soil Area

No Appendix IX constituent was detected in PES-001 above Residential cleanup goals except arsenic, which was below Industrial cleanup goals. Samples PES-003 and PES-004 were contaminated with RDX above Industrial cleanup goals. No other contaminants were detected above industrial cleanup goals in any other sample from the Soil Area. Table 3-2 provides the results of pre-excavation analytical results for MFA constituents only. Refer to Appendix D for the complete Appendix IX constituent list results for sample PES-001.

TABLE 3-2
SOIL AREA PRE-EXCAVATION SAMPLE RESULTS
MFA CONSTITUENTS

All results in mg/kg	Soil Screening Level EPA R9 PRGs		SOIL AREA SAMPLES				
Constituent	**Residential**	**Industrial**					
Explosives			**001***	**002**	**003**	**004**	**005**
PETN	NA	**	ND	ND	ND	ND	ND
TNT	16	82	ND	ND	2.2	1.4	ND
RDX	4.4	22	ND	ND	250	22	1.6
HMX	3100	44,000	ND	ND	40	15	0.92
Tetryl	610	8,800	ND	ND	ND	ND	ND
Trinitrobenzene	3.3	34	ND	ND	ND	ND	ND
1,3-dintrobenzene	6.1	88	ND	ND	ND	ND	ND
4-amino 2,6-dinitrotoluene	65	680	ND	ND	ND	ND	ND
2-amino 4,6-Dinitrotoluene	130	1,400	ND	ND	ND	0.14J	ND
2,4-DNT	120	1,800	ND	ND	ND	ND	ND
2,6-DNT	61	880	ND	ND	ND	ND	ND
2-nitrotoluene	370	1,000	ND	ND	ND	ND	ND
3NT	370	1,000	ND	ND	ND	ND	ND
4NT	370	1,000	ND	ND	ND	ND	ND
Metals							
Aluminum	76000	100,000	NAZ	7120	8820	12700	9540
Barium	5400	100,000	33	61.6	94.8	69	53.7
Cadmium	37	810	0.14	ND	0.8	ND	ND
Chromium (total)	210	450	13	17.2	17	16.5	20.4
Lead	400	750	8.8	32.7	68.7	14.3	13
Mercury	23	610	0.011J	ND	0.02J	0.017J	ND
Volatile Organics							
Dichloromethane (methylene chloride)	8.9	21	ND	ND	ND	ND	ND
Acetone	1600	6200	0.011J,B	0.012B	0.051B	0.023B	0.075B
Methyl ethyl ketone	7300	28000	ND	ND	ND	ND	ND
Methyl isobutyl ketone	790	2900	ND	ND	ND	ND	ND
Toluene	520	520	0.0035J	0.0023J	ND	0.0029J	ND
Xylene (total)	210	210	ND	ND	ND	0.0016J	ND

EPA Region 9 PRGs updated 1/24/01
* refer to Appendix D for the complete Appendix IX constituent list results for this sample
** to be determined
NA not applicable to this constituent or not available
ND not detectable
NAZ not analyzed
J estimated result, result is less than Reporting Limit
B Method Blank contamination

3.3.2 Battery Area

Of the 11 metals analyzed, five were detected above residential levels but below industrial levels (manganese, zinc, cadmium, chromium, and lead) and three were detected above industrial levels (arsenic, manganese and lead). The levels of cadmium, chromium, lead, and mercury were considered to be potentially toxic. None of the samples exhibited toxic characteristics for reactivity, corrosivity, or ignitability. All six battery area PES (PES-006 through -011) contained metals levels above Industrial cleanup goals. Sample results are listed in Table 3-3.

TABLE 3-3
BATTERY AREA PRE-EXCAVATION SAMPLE RESULTS

All results in mg/kg	Soil Screening Levels EPA R9 PRGS		TCLP	BATTERY AREA SAMPLES					
Paramenter	Residential	Industrial	Value*	006	007	008	009	010	011
Ignitability	NA	NA	NA	NI	NI	NI	NI	NI	NI
Corrosivity	NA	NA	NA	NC	NC	NC	NC	NC	NC
Reactivity	NA	NA	NA	NR	NR	NR	NR	NR	NR
Cobalt	4700	100,000	NA	13.5	25.7	15	13.5	14	17
Lithium	1600	41000	NA	6.6	7.2	5.8J	5.8	7.2	7.1
Manganese	1,800	32,000	NA	14900[1]	34700[2]	23200[1]	17800[1]	3470[1]	7380[1]
Nickel	1600	41,000	NA	30.7	40	35.6	31.9	30.6	35
Zinc	23000	100,000	NA	27800[1]	65400[1]	42700[1]	67000[1]	8020	19400
Arsenic[2]	0.39	2.7	100	18	34.4	29.7	21.8	5.5	9.4
Barium	5400	100000	2000	176	651	141	484	165	277
Cadmium	37	810	20	47.2	82.1[1]	51.8[1]	59.1[1]	8.5	31.4
Chromium	210	450	100	51.4	239[1]	31.7	83.5	25.1	40.3
Lead	400	750	100	3720[2]	2180[2]	1560[2]	5920[2]	461[1]	704[1]
Mercury	23	510	4	0.92	0.88	7.3	0.42	0.77	0.69
Selenium	390	10,000	20	6	12.9	8	7	1.7	2.7
Silver	390	10,000	100	2.1	6.8	1.6	16.1	1.7	3.2

NA = not applicable
NI = not ignitable
NC = not corrosive
NR = not reactive
EPA Region 9 PRGs updated 1.24.01
* TCLP Values are the RCRA regulatory limits multiplied by 20. If the totals results listed exceed the TCLP Values, the sample could potentially exhibit toxic characteristics.
[1] = above Residential cleanup goals but below Industrial cleanup goals
[2] = above Industrial cleanup goals

3.3.3 Disposal Characterization

One composite sample was obtained from the Battery Area for waste characterization disposal purposes. The composite sample, identified as PES-012, was obtained by combining a grab sample from each of the six site characterization sample locations into one composite sample.

Since the total metals analysis for the six site characterization samples indicated that the levels of cadmium, chromium, lead, and mercury were potentially toxic, metals analysis was performed on a leached extract (in addition to totals analysis). Analytical results indicated that the sample did not exhibit toxic characteristics for metals. The totals and TCLP analytical results for the composite sample are listed in Table 3-4.

The analytical results from both the composite sample (PES-012) and PES-006 through 011 were submitted to Waste Management for disposal characterization approval.

TABLE 3-4
PES-012 TCLP SAMPLE RESULTS

Parameter	Total Results	TCLP Results
Arsenic	7.3	ND
Barium	1.6	1.6
Cadmium	0.39	0.39
Chromium	ND	ND
Lead	1.3	1.3
Selenium	0.022	0.022
Silver	ND	ND
Mercury	ND	ND

All results in ppm
ND not detectable

4.0 EXCAVATION AND DISPOSAL

4.1 SOIL AREA

The mounds identified by pre-excavation samples 003 and 004 were handled and processed according to requirements set forth in the *Full-Scale Operational Plan for Soil Bioremediation Facility [MK 1998a]* and *QAPP [MK 1998b]*. The two soil mounds were excavated to 18" below grade on September 28, 2001 and hauled in a dump truck to the Biofacility. A total of 18.01 tons of soil was excavated from this area. This soil was placed in the North compost building where it was segregated from the other soils in the building. This soil was eventually mixed into Windrow N-214 and processed to residential cleanup levels. Information regarding Windrow N-214, including the windrow recipe, field monitoring results, and Day Last sample results are included in Appendix E. Subsequent to processing at the Biofacility, Windrow N-214 was taken to MFB and used as backfill in the Permanent Placement Area. A windrow placement map showing the disposal location of Windrow N-214 is included in Appendix E.

4.2 BATTERY AREA

The boundaries of soil excavation in the Battery Area were based on the results of the PES and visual surface contamination. The area of contamination was narrow enough so that most of the soil could be excavated with the excavator remaining outside the limits of contamination. Where necessary, the excavator tracked across a layer of thick felt to isolate it from the contaminated soil. In this manner, only the bucket of the excavator was in contact with the contaminated soil. The dump trucks were placed adjacent to the excavation so that the soil could be loaded directly into the trucks.

The excavated soil was classified as non-hazardous/non-regulated special waste material. The Generator's Waste Profile Sheet can be found in Appendix B and the Special Waste Tracking Documents can be found in Appendix C. The areas of excavation are depicted on Figure 4-1. Table 4-1 lists the amounts excavated from the Battery Area.

4.2.1 September 27, 2001 Excavation Activities

Most of the area was excavated to a depth of 18 inches in accordance with the WP. However, in the area around post-excavation confirmatory soil sample (CFS) -008 (discussed in section 5-2), only the surface contamination was scraped off, and in two other areas surface contamination was left untouched. This was because the amount of soil to be excavated from the Battery Area was set by contract at 226 tons. As excavation activities proceeded, it became apparent that the entire area of contamination could not be excavated to a depth of 18 inches as to not exceed the 226 ton contractual limit. Therefore, the area near sample CFS-008 was only scraped and two other areas of contamination were left untouched.

A total of 236.91 tons of contaminated soil in 12 loads were excavated from the Battery Area and delivered as non-hazardous special waste to the Waste Management Outer Loop Landfill in Louisville, Kentucky.

4.2.2 June 18, 2002 Excavation Activities

Excavation of the remaining contaminated soil from the Battery Area was completed on June 18, 2002. Excavation boundaries were based on visual evidence of surface contamination in the areas not excavated on September 27, 2001. A total of 58.97 tons of contaminated soil in four loads were excavated and delivered as non-hazardous special waste to the Waste Management Outer Loop Landfill in Louisville, Kentucky.

TABLE 4-1
BATTERY AREA SOIL EXCAVATION AMOUNTS

Date Excavated	Truck #	Weight (tons)
September 27, 2001	130	19.65
September 27, 2001	136	19.29
September 27, 2001	137	19.96
September 27, 2001	134	20.50
September 27, 2001	133	19.53
September 27, 2001	132	19.72
September 27, 2001	130	20.98
September 27, 2001	136	21.44
September 27, 2001	137	22.33
September 27, 2001	134	20.01
September 27, 2001	133	19.72
September 27, 2001	132	16.78
June 18, 2002	112	16.5
June 18, 2002	96	14.68
June 18, 2002	95	12.79
June 18, 2002	110	15.0
	Total Tonnage:	**298.88**

All surface contamination associated with the battery parts had been removed when dark brown to black soil was encountered on the west side of the excavation. The western boundary of the Battery Area is adjacent to an area of rubble consisting of large pieces of concrete, asphalt, and rock. The presence of the discolored soil was revealed when several large stones and concrete pieces were moved. This soil was not previously visible, did not contain any battery parts, and was not previously known to exist; thus the ECOTR determined this soil was not associated with the Battery Area soil. Suspecting that this soil was contaminated, the ECOTR directed that excavation activities stop and confirmatory soil samples be taken.

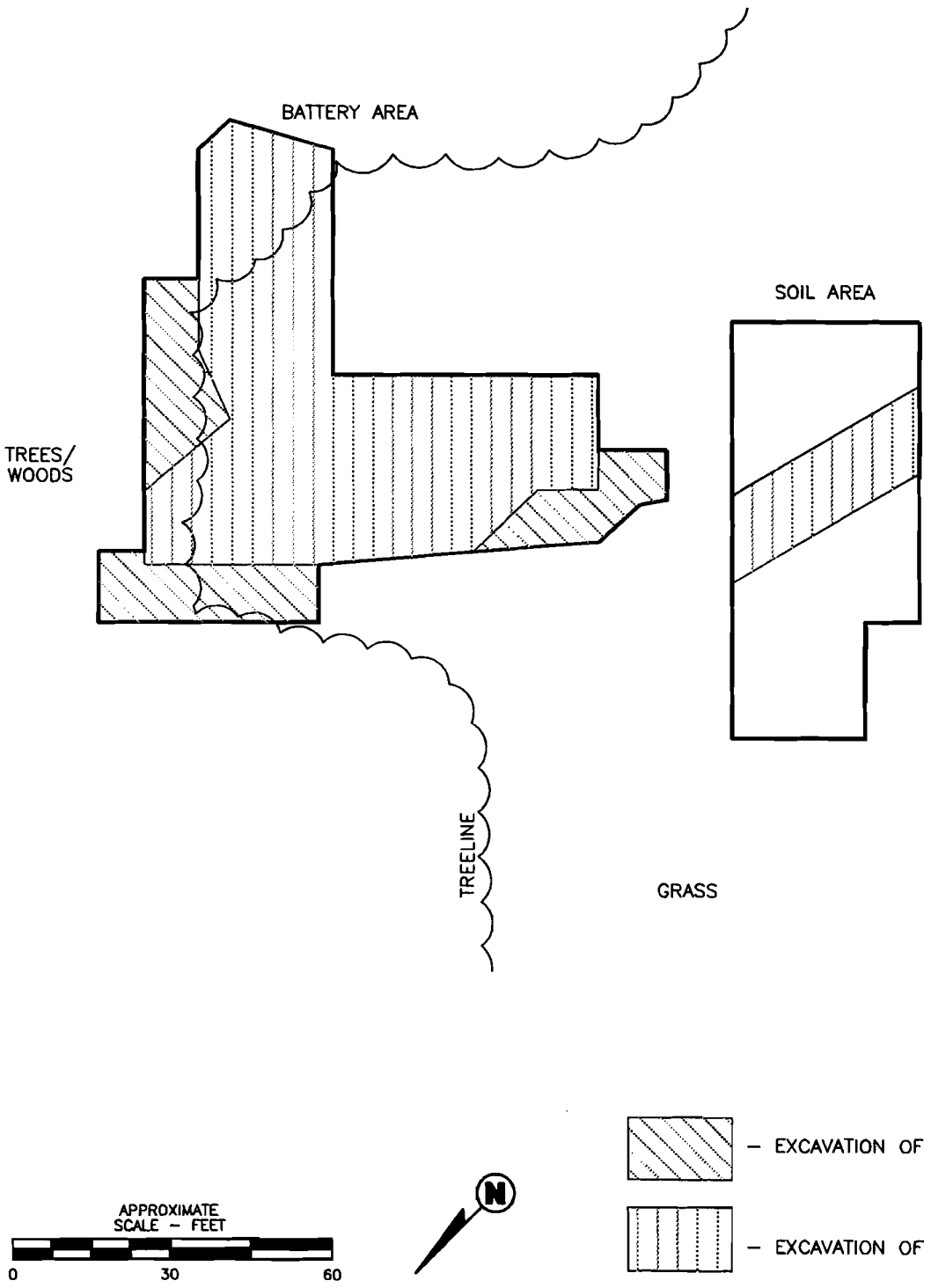

FIGURE 4–1

EXCAVATION AREA MAP

MINE FILL A BATTERY SITE
INTERIM MEASURES REPORT
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DRAWN MRC/9-18-02	CHECKED
REVISED	APPROVED
JOB NO. 37826.01	TOLTEST, INC.
DRAWING NUMBER 378268	

5.0 POST-EXCAVATION CONFIRMATORY SAMPLING & ANALYSIS

Post-excavation confirmatory soil samples (CFS) were obtained from the area of excavation in accordance with the WP to document removal of contamination. All samples were grab samples obtained from the surface to six inches deep. Sample points were identified in the field with pin flags that included the sample identifier written on the flag in indelible ink. The boundaries of the excavation and sample points were surveyed and mapped at the conclusion of the project. Surveyed drawings are provided in Appendix F. Post-excavation sample results are included in Appendix G.

5.1 SOIL AREA

Two samples were obtained from the Soil Area (CFS-001 and CFS-002) as shown on Figure 5-1. These samples corresponded to PES-003 and PES-004, respectively. Analysis included explosives only since no other constituent was detected in PES samples above industrial cleanup goals. The explosive compounds TNT and HMX were detected in samples CFS-001 and CFS-002 below Residential cleanup goals. RDX was detected in samples CFS-001 and CFS-002 above Residential cleanup goals but below Industrial cleanup goals. A summary of these results is provided in Table 5-1.

TABLE 5-1
SOIL AREA POST-EXCAVATION SAMPLE RESULTS

All results in mg/kg	SOIL SCREENING LEVEL U.S. EPA R9 PRGS		SOIL AREA SAMPLES (CFS)	
CONSTITUENT	**Residential**	**Industrial**		
Explosives			**001**	**002**
TNT	16	82	1.62	0.31
RDX	4.4	22	4.42	14.6
HMX	3100	44,000	6.22	3.09
Tetryl	610	8,800	ND	ND
Trinitrobenzene	3.3	34	ND	ND
1,3-dintrobenzene	6.1	88	ND	ND
4-amino 2,6-dinitrotoluene	65	680	ND	ND
2-amino 4,6-Dinitrotoluene	130	1,400	ND	ND
2,4-DNT	120	1,800	ND	ND
2,6-DNT	61	880	ND	ND
2-nitrotoluene	370	1,000	ND	ND
3 NT	370	1,000	ND	ND
4NT	370	1,000	ND	ND

ND not detectable

5.2 BATTERY AREA

5.2.1 Soil Sampling

The number of samples to be obtained from the Battery Area excavation was determined by the size of the excavation using the *Guidance Document* as a reference. Sidewall samples were obtained since the excavation was one foot deep or deeper. The number of sidewall samples to be obtained was based on a minimum of one sample per every 20 lineal feet of sidewall. All samples were analyzed for the constituents of concern listed in Table 1-2.

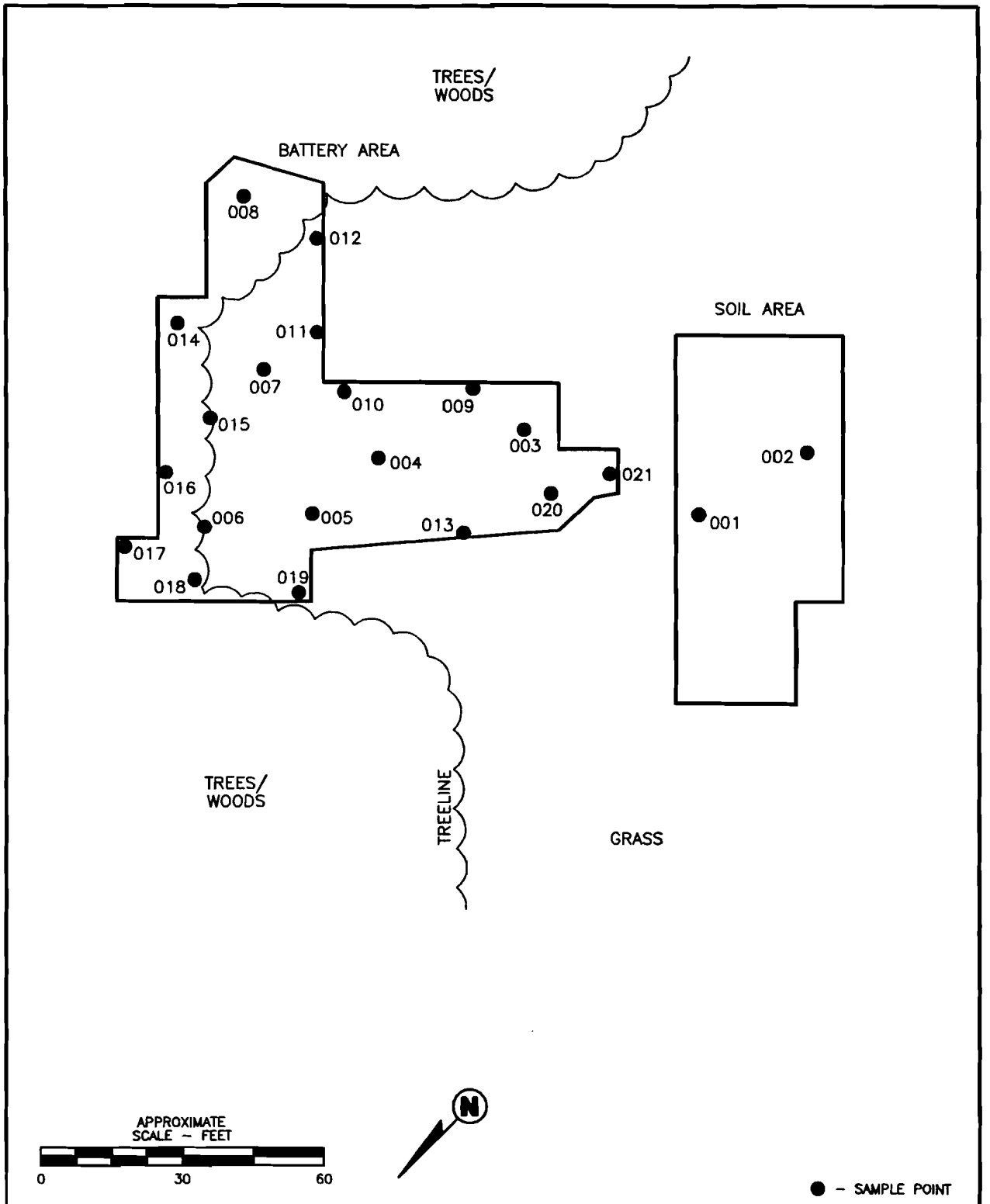

FIGURE 5-1
POST-EXCAVATION SAMPLE LOCATION MAP

MINE FILL A BATTERY SITE
INTERIM MEASURES REPORT
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

DRAWN MRC/9-18-02	CHECKED
REVISED	APPROVED
JOB NO. 37826.01	TOLTEST, INC.
DRAWING NUMBER 378269	

Eleven samples were obtained from the excavation on September 28, 2001: six excavation bottom samples (CFS-003 through CFS-008), and five sidewall samples (CFS-009 through CFS-013). The bottom samples were obtained in approximately the same position as PES-006 through PES-011, respectively. No sidewall sample was taken in the area of CFS-008 since the soil had only been scraped away, not dug out, and no sidewall existed. No sidewall sample was taken under areas where visible surface contamination remained.

Eight samples were obtained from the excavation on June 18, 2002: four excavation bottom samples (CFS-014, 016, 018, & 020), and four sidewall samples (CFS-015, 017, 019, & 021). Sample CFS-021 was the dark brown to black soil encountered on the far west side of the excavation area.

Sample locations are shown on Figure 5-1.

5.2.2 Analytical Results

Arsenic was found to be above Residential cleanup goals but below Industrial cleanup goals in samples CFS-003, CFS-005, CFS-009, and CFS-015. Arsenic was above Industrial cleanup goals in samples CFS-004, CFS-006, CFS-007, CFS-008, CFS-010 through CFS-014, and CFS-016 through CFS-021.

The analytical results of CFS-021 indicated that the level of lead and cadmium could potentially exceed the TCLP regulatory limit. The laboratory was therefore directed to perform analysis for these two metals on a leached extract from this sample. Results of this analysis indicate that cadmium, detected at 0.281 mg/kg, was below the TCLP regulatory level of 1.0 mg/kg, but lead, detected at 58.8 mg/kg, was above the TCLP regulatory limit of 5.0 mg/kg.

Analytical results are presented in Table 5-2.

TABLE 5-2
BATTERY AREA POST-EXCAVATION SAMPLE RESULTS

All results in mg/kg	SOIL SCREENING LEVEL		CONFIRMATORY SOIL SAMPLES (9/28/01)										
	EPA R9 PRGs												
CONSTITUENT	Residential	Industrial	003	004	005	006	007	008	009	010	011	012	013
Cobalt	4700	100,000	31	22	15	3	14.8	13.9	11.6	13.5	63.7	3.6	47.1
Lithium	1600	41000	9.9	12	5.5B	9.2	12.8	11.6	9.8	9.4	16.7	11.7	6.3
Manganese	1,800	32,000	880	390	630	239	163	1030	159	297	324	31.3	827
Nickel	1600	41,000	34	54	26	6.7	20.8	16	13.7	50.8	27	14.1	78.3
Zinc	23000	100,000	142	82	955	397	88.7	89.3	11.6	101	72	28	159
Arsenic	0.39	2.7	2.1	5.2	1.5	5.5	7.2	8	2.4	5.5	4.5	5.2	16.7
Barium	5400	100000	97.3	31.6	34.6	53	77.9	103	20.3	57.9	59	34.8	32.2
Cadmium	37	810	ND	ND	1.6	1.2	0.84	0.17B	ND	ND	ND	ND	ND
Chromium	210	450	17.8J	15.6J	15.5J	19.1J	25.8J	17.5	11J	20.1J	17.2J	18.5J	25.5J
Lead	400	750	34	11	47	18.8	14.3	21.2	4.8	13.4	11.9	9.7	23.4
Mercury	23	510	0.0092B	0.0091B	0.045	0.0074B	0.024B	0.042B	0.0077B	0.0086	ND	0.0065B	0.031B
Selenium	390	10,000	1	1	1	0.51B	0.65	0.6	ND	0.72	ND	ND	ND
Silver	390	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

All results in mg/kg	SOIL SCREENING LEVEL		CONFIRMATORY SOIL SAMPLES (6/18/02)								
	EPA R9 PRGs										
CONSTITUENT	Residential	Industrial	014	015	016	017	018	019	020	021	021 TCLP
Cobalt	4700	100,000	2.8	1.9	10.8	5.8	2.4	10	22.7	7.9	
Lithium	1600	41000	3.4 B	1.8 B	5.2 B	7.6	3.6 B	1.4 B	3.8 B	5.2 B	
Manganese	1,800	32,000	98.6	60.9	655	244	24.9	317	556	698	
Nickel	1600	41,000	7.6	4.9	8.9	10.6	23.5	24.6	26.1	23.2	
Zinc	23000	100,000	29.3	10.4	38.1	44	36.5	206	45.4	3150	
Arsenic	0.39	2.7	5.1	2	4.7	7.5	3.1	9.3	2.8	7.8	
Barium	5400	100000	32.8	25.7	87.5	51	157	22.8	11.4	664	
Cadmium	37	810	ND	ND	ND	ND	ND	ND	ND	42.8	0.281
Chromium	210	450	13.4	9.4	9.4	13	11.8	11.8	11.3	49.1	
Lead	400	750	10.5	6.7	12	11.7	10.3	17.6	13	4990	58.8
Mercury	23	510	ND	ND	0.02 B	0.02 B	ND	ND	ND	0.03 B	
Selenium	390	10,000	0.53 B	0.36 B	0.4 B	0.54 B	0.55 B	1.4	0.87 B	1.7	
Silver	390	10,000	ND	ND	ND	ND	ND	ND	ND	1.5	

J - Indicates an estimated value. The mass spectral data indicate the presence of the compound that meets the identification critera.
However, the result is less than the sample quantitation limit but greater than zero.
B - Indicates that the compound is found in the associated blank as well as in the sample, a possible/probable indication of blank contamination.
ND = non detect
EPA Region 9 PRGs updated 1/24/01

6.0 QUALITY CONTROL

6.1 QUALITY CONTROL FIELD INSPECTIONS

TolTest implemented quality control (QC) measures in the field and ensured that the procedures for sample collection, equipment decontamination, sample labeling, sample shipping, and chain of custody documentation were performed according to plan requirements. TolTest ensured that quality control samples (i.e. blanks and duplicates) were obtained at the required intervals.

6.2 DATA QUALITY CONTROL

Various data QC methods were utilized to verify the usability of samples collected and submitted for laboratory analysis (PES and CFS). Samples were analyzed by Southwest Laboratory of Oklahoma, Inc. and Severn Trent Laboratories, Inc. All data submitted for laboratory analysis were verified by reviewing chain-of-custody records, sample extraction records, analytical holding times, requested turnaround times, sample data in comparison to QC data and reporting requirements. Additionally, 10% of the data were validated. The data were compared with field and laboratory QC sample data to assess its usability. Sections 6.2.1 and 6.2.2 below summarize the field and laboratory QC methods employed, respectively. Sections 6.2.3 through 6.2.4 summarize the findings of the field and laboratory QC for the various types of project laboratory data.

6.2.1 Field Quality Control

Field QC included field duplicates, trip blanks, and equipment rinseates. Analytical results for these samples (discussed in sections 6.2.3 and 6.2.4) were evaluated to identify potential sources of error introduced during sampling, transportation and storage. Field duplicates were collected at a frequency of one in ten samples specified in Section 4.1 in the WP. Field duplicates are samples collected at the same time and in the same location as the corresponding field sample in order to qualitatively assess field precision. There are no quantitative precision criteria specified in the *QAPP*.

Trip blanks were submitted with coolers containing samples to be analyzed for volatile organic compounds in order to evaluate the potential for cross-contamination during shipment to the laboratory. The trip blanks were received from the laboratory in a sealed container containing organic-free water, held intact at the site, and shipped back to the laboratory with the samples.

Equipment rinse blanks were collected by rinsing decontaminated sampling equipment with deionized water, collecting the rinse water in appropriate sample containers, adding any sample preservative required by the analytical method, and then submitting the rinse water for analysis. Results are used to evaluate the effectiveness of decontamination procedures in preventing sample cross-contamination.

6.2.2 Laboratory Quality Control

The laboratory performed method blank, surrogate, laboratory control sample (LCS), laboratory control sample duplicate (LCSD), sample matrix spike (MS), and sample matrix spike duplicate (MSD) analyses to evaluate laboratory accuracy and precision according to the established U.S. EPA procedures.

Laboratory method blanks were prepared and analyzed with the samples in order to evaluate potential target compounds or interferences from laboratory glassware, reagents and/or solvents used in the preparation and analysis of samples.

Surrogate spikes are known amounts of non-target organic compounds, which are spiked into all samples prior to sample preparation, in order to evaluate the efficiency of the organic sample preparation and analysis.

LCS and LCSD are samples prepared in the laboratory, consisting of clean soil or water spiked with known amounts of target analytes which are processed through the same preparation as field samples. Evaluation of the spike recoveries, and the variability between the LCS and LCSD, gives an indication of analysis accuracy and precision in a clean matrix.

MS and MSD are field samples that have been spiked with a known amount of target analytes and processed through the preparation and analysis with the field samples. Evaluation of the spike recoveries, and the variability between the MS and MSD, gives an indication of analysis accuracy and precision in the sample matrix. MS/MSD accuracy and precision can be affected by concentrations of both target and non-target compounds present in the original field sample, as well as the matrix of the sample itself.

6.2.3 Pre-Excavation Soil Samples (PES)

A total of 13 soil samples (including two field duplicates) were collected to identify areas requiring excavation. One of the 13 composite soil samples was obtained from the Battery Area for waste characterization purposes. One rinse blank was collected along with these samples for QC purposes. All samples were received by the laboratory in acceptable condition, with custody seals, correctly preserved, and with containers intact. The samples were received at a recorded temperature of 4°C ± 2°C.

Field QC

Field QC samples collected with the PES included duplicates and equipment rinse blanks.
The duplicate analysis for total metals, explosives, and volatiles showed acceptable precision between the sample results. In all instances samples had concentrations that were either both above or both below ("J" values) the reporting limit.

One rinse blank was collected for these samples. The rinse blank results for explosives indicated that 1,3,5-trinitrobenzene, RDX, and nitrobenzene were detected below the reporting limit. 1,3,5-trinitirobenzene and nitrobenzene were not detected in the soil samples. The RDX levels detected in the field samples were significantly greater than the Battery Area Industrial Cleanup objectives for most samples, therefore any cross contamination that may have occurred during sampling would not have changed the interpretation of the sample results. The LCS/LCSD and method blank samples were acceptable. The rinse blank sample results were non-detect for the target metal analytes. The method blank was non-detect for all target metal analytes. The total metals LCS/LCSD and MS/MSD sample percent recoveries were acceptable.

Laboratory QC

Method blanks, surrogates, LCS/LCSD and MS/MSD samples were used for laboratory quality control for the PES. Laboratory method blanks were generally acceptable. The method blank results for explosives, pesticides, PCBs, herbicides, semivolatiles, mercury, insoluble sulfide, total cyanide, ignitability, total metals for MFABATPES012 and reactive sulfide met the method requirements and were free from contamination. The volatile method blank results showed that acetone was detected, but was below the reporting limit. Acetone was detected in the samples, but was significantly less than the Battery Area Industrial Cleanup Goals and would not change the interpretation of the data. Aluminum was detected below the reporting limit in the method blank for total metals corresponding to samples MFABATPES002-MFABATOES005. The sample results were significantly less than the Battery Area Industrial Cleanup Goals and would not have changed the interpretation of the data. The method blank results corresponding to samples MFABATPES006-MFABATPES011 for total metals indicated that chromium, lithium, manganese, nickel and zinc were detected below the reporting limit. The sample results were significantly less than the cleanup objectives. The method blank results corresponding to sample MFABATPES001 for total metals showed low level concentrations, (values between the method detection

limit and the reporting limit or slightly above the reporting limit), of arsenic, copper, lead, tin, nickel and zinc. For all of these analytes, field sample levels were significantly less than the cleanup objectives. The method blank result for reactive cyanide indicated that reactive cyanide was detected below the reporting limit in the method blank. The sample results were less than the reporting limit. Cleanup objectives are not available for reactive cyanide and if cleanup objectives were available the sample results were well below the reporting limit and should not affect remedial goals. Based upon these results, it is concluded that method blank contamination has not adversely affected the interpretation of the data based upon field sample concentrations relative to the Battery Area Industrial Cleanup Goal objectives.

Surrogate recoveries were generally acceptable for organic analyses. The explosive, volatile, semivolatile, herbicide and PCB analyses had acceptable surrogate recoveries. The surrogate recoveries for the pesticide analysis showed problems with the recoveries in all of the samples. However, two surrogates were used for the analysis and only one surrogate is required. The laboratory did not reanalyze the samples since one surrogate was within the quality control limits in each sample and would not impact the sample results.

The LCS/LCSD sets were generally acceptable. The LCS/LCSD sets showed laboratory control spike precision and accuracy results for the spiked target analytes to be acceptable for explosive, PCB, herbicides, insoluble sulfide, total cyanide, corrosivity, ignitability, SVOC, and metal analyses.

The LCS showed acceptable recovery results for the target pesticide analytes reported. The LCSD for pesticide analysis had recovery results outside the quality control limits for heptachlor, endrin and 4,4-DDT. The sample results were non-detect for these analytes.

The LCS/LCSD samples were generally within the given criteria for the volatile analysis. The analyte recovery results in the LCS/LCSD samples were within the established limits for the analytes that were detected in the submitted field samples except for acetone and vinyl acetate. The recovery result for acetone in the LCS sample was outside the quality control limits, but the recovery result was within quality control limits in the LCSD sample. The recovery results for vinyl acetate in the LCS and LCSD samples were below the minimum quality control recovery limit. Vinyl acetate was a reportable constituent for sample MFABATPES001 and the data result was non-detect. The low recoveries in the LCS/LCSD samples reflect an "out-of-control" sequence for vinyl acetate only, and could have resulted in a low bias detection of vinyl acetate in sample MFABATPES001 only. The MS/MSD samples were analyzed outside of the tune time requirements and were not usable. Since the remediation level for vinyl acetate is significantly higher than the method detection level (ppm compared to ppb), a false negative or low bias result would have no impact on remediation goals. If the analyte was present but not detected, the concentration level would still be below project screening levels. The sample result was non-detect, for vinyl acetate. Other analytes reported for sample MFABATPES001 were either non-detect or detected below the method detection level ("J" values) indicating that resampling and reanalysis for vinyl acetate would not be required. The data results for the other volatile organic analytes reported using this method are valid and the data meets the quality control requirements outlined for Level C data validation.

The MS/MSD sets were generally acceptable. The MS/MSD sets showed sample matrix spike precision and accuracy results for the spiked target analytes to be acceptable for mercury, insoluble sulfide and total cyanide. The MS/MSD samples for volatiles were analyzed 1-2 hours outside of the 12-hour tune time and there was insufficient sample volume to repeat the analysis of these samples. Since the LCS/LCSD samples were analyzed within tune requirements and the recovery results were within the quality control limits for the analytes detected in the field sample, except vinyl acetate as noted above, the data was accepted.

The MS sample for explosive analysis showed acceptable recovery results for the target analytes reported. The MSD sample showed acceptable recovery results for all of the target analytes except for 4-Amino-2, 6-DNT. Since the MS, LCS and LCSD recoveries were within the quality control limits for this analyte, the data is usable and there should be little impact on remediation goals.

The total metal MS and MSD samples corresponding to samples MFABATPES002-MFABATPES005 showed acceptable recovery results for all analytes except chromium in the MS sample and aluminum in

both the MS and MSD samples. The percent recovery and percent difference were not calculated for aluminum because the laboratory report states that the "sample amount was greater than four times the spike amount". The MS sample recovery for chromium was outside quality control limits. The MSD sample recovery for chromium was within the quality control limits. The LCS showed acceptable recoveries for all of these analytes.

The total metal MS and MSD samples corresponding to samples MFABATPES006-MFABATPES011 showed acceptable recovery results for all analytes except cadmium, chromium, lead, manganese, and zinc. The percent recovery and percent difference were not calculated for these analytes because the laboratory report states that the "sample amount was greater than four times the spike amount". The percent recovery and percent difference for barium were outside quality control limits. The LCS showed acceptable recoveries for all of these analytes.

The total metal MS and MSD samples corresponding to sample MFABATPES001 showed acceptable recovery results for all analytes except antimony, barium, chromium, silver, and vanadium. The LCS showed acceptable recoveries for all of these analytes.

The total metal MS and MSD samples corresponding to sample MFABATPES012 showed acceptable recovery results for all analytes except barium, lead, chromium and selenium. The percent recoveries were not calculated for barium and lead because the laboratory report stated that the "sample amount was greater than four times the spike amount." The MS sample showed a low recovery for selenium and the MSD sample showed a low recovery for chromium. The TCLP metal MS/MSD samples showed acceptable percent recoveries for all of the target metal analytes. The LCS samples for both the total metals and TCLP metals showed acceptable percent recoveries for the target analytes.

Conclusion

The QC data demonstrate acceptable accuracy and precision when compared to the intended use of the data. The data meets the project objectives and are, therefore, considered usable for characterization analysis.

6.2.4 Confirmatory Soil Samples (CFS)

Confirmatory soil samples were collected following excavation and collection of in-process excavation samples to determine the levels of constituents of concern remaining in the soil. A total of 23 confirmatory soil samples (including two field duplicates) were collected for laboratory analysis. One rinse blank was collected along with these samples for QC purposes. All samples were received by the laboratory in acceptable condition, with custody seals, correctly preserved, and with containers intact. Most of the samples were received at temperatures of 4°C ± 2°C and two samples were received at 0.5°C to 2°C. Because none of the samples were frozen, these temperatures below 2°C did not impact the sample results.

Field QC

Field QC samples collected included duplicates and equipment rinse blanks.

The duplicate analysis for total metals showed acceptable precision between the sample results.

One rinse blank was collected for these samples. The rinse blank results for total metals indicated that chromium, lithium, manganese and mercury were detected below the reporting limit. Zinc was also detected in the rinse blank slightly above the reporting limit. Chromium, lithium, manganese, mercury and zinc levels reported in the field samples were considerably less than the Battery Area Industrial Cleanup Goals, therefore any cross contamination that may have occurred during sampling would not have changed the interpretation of the sample results. The total metals LCS/LCSD and MS/MSD sample percent recoveries were acceptable. The method blank results showed that lithium and mercury were detected both below the respective reporting limits.

Laboratory QC

Method blanks, surrogates, LCS/LCSD and MS/MSD samples were used for laboratory quality control for the post excavation samples collected.

Laboratory method blank results for total metals indicated that chromium was detected below the respective reporting limit for samples MFABATCFS003-MFABATCFS013. The corresponding samples had levels significantly less than the target cleanup levels. The method blank results for explosives met the method requirements and were free from contamination above the reporting limits.

Lead was detected in the method blank, associated with MFABATCFS021 reanalysis, above the PQL. However, the method blank concentration was less than ten times the actual sample concentration, and should not impact the sample results.

Based upon these results, it is determined that method blank contamination did not adversely affect the interpretation of the data based upon field sample concentrations relative to the Battery Area Industrial Cleanup Goal objectives.

Surrogate recoveries were acceptable for all explosive analyses for samples MFABATCFS001-MFABATCFS002.

The LCS/LCSD sets were acceptable for explosive and total metals analyses.

The MS/MSD sets were generally acceptable for the explosive and total metal analyses. In all instances where the MS or MSD results did not meet laboratory QC limits, the corresponding LCS/LCSD results did meet QC limits, thus indicating a matrix effect and not a problem with instrumentation or analytical technique. Therefore, any MS/MSD results outside laboratory QC limits did not adversely affect the interpretation of the sample data.

The lead percent recovery in the matrix spike and matrix spike duplicate samples associated with MFABATCFS021 reanalysis were outside the laboratory quality control limits. The sample concentration was considerably greater than the spike amount and the recovery problems were likely attributed to matrix effects. The sample results should not be affected since the LCS and LCSD percent recoveries were acceptable, which demonstrated acceptable precision and accuracy for the sample analysis.

Conclusion

All QC data relating to the CFS samples, except those noted above are within laboratory control limits. The QC data satisfy the project objectives and the data are found usable for the confirmation of accuracy for the stated analyses. The QC data demonstrate acceptable accuracy and precision when compared to the intended use of the data. The data meets the project objectives and are, therefore, considered useable for post-excavation analysis.

7.0 SITE RESTORATION AND EQUIPMENT DECON

7.1 SITE RESTORATION

The remaining soil mounds from the Soil Area, where samples PES-001, -002, and -05 were taken, were used to backfill the excavation in the Battery Area. No other backfill material was used at the site. The Battery Area excavation was graded to allow drainage and the site was seeded and covered with straw. The use of topsoil or backfill was not necessary due to the location and future use of the site along with the existence of available soil from the site. Once the site restoration was complete, TolTest demobilized from the site.

7.2 EQUIPMENT DECONTAMINATION

Decontamination of the excavator bucket (which was the only part of the excavator to come into contact with contaminated soil) was initiated by scraping off the gross contamination with shovels. The dirt that was scraped off was put into the last truck to leave the site for the landfill.

Since excavation activities on September 27, 2001 were not completed until it was nearly dark, the excavator could be fully decontaminated at the site. Consequently, the bucket of the excavator was wrapped in six mil plastic and the excavator was transported to the truck wash facility at the Biofacility where a high pressure, low volume sprayer was used to clean the bucket. Decontamination water (estimated at less than five gallons) was collected in the truck wash sump along with other decontamination water from Biofacility operations and eventually used as moisture addition on compost windrows.

Decontamination of the bucket following excavation on June 18, 2002 was completed in a similar manner: gross contamination was scraped off and put into the last truck to leave the site and decontamination was completed at the Biofacility. Decontamination water in this instance was not used on a windrow but was allowed to evaporate on the floor of the Middle compost building during decontamination procedures at the Biofacility.

8.0 SAFETY

8.1 GENERAL SAFETY

TolTest was responsible for the safety, health, and emergency response provisions for the soil and debris removal, and disposal and site restoration at the MFA Battery Site. These provisions were provided through the development and implementation of TolTest's *Health and Safety Procedures Manual [TolTest 2001b]*, the WP and the SSHP. All personnel on site were informed of this plan and any potential health and safety hazards of the operation. All personnel scheduled to work on this site completed the "Declaration of Understanding" before commencing cleanup operations.

8.2 ACTIVITY HAZARD ANALYSIS

Activity Hazard Analyses (AHAs) were prepared for each definable feature of work. The Site Safety and Health Officer was responsible for reviewing the AHA with all the field personnel involved in a specific task. The following describes each task/operation in terms of the definable features associated with each major phase of work. AHAs were prepared for each major phase of work and are presented in Appendix D of the WP. Definable features of work included the following:

- Site delineation and pre-excavation sampling
- Soil excavation and removal
- Disposal activities
- Post-excavation or confirmatory soil sampling
- Equipment decontamination
- Site restoration

9.0 CONCLUSIONS AND RECOMMENDATIONS

Pre-excavation sampling and analysis of soil samples obtained from the Soil Area and Battery Area indicated that contamination was present in each area above industrial cleanup goals. Explosive's contamination was present in the Soil Area and metals contamination was present in the Battery Area.

Remedial activities in the Soil Area included excavating the explosive's contaminated soil, treating it to less than Residential cleanup levels in a compost windrow at the NSWC Crane Bioremediation Facility, and backfilling the treated soil compost at Mine Fill B. Post-excavation soil sampling and analysis of the Soil Area indicates that remaining explosives contamination is below Industrial cleanup goals. Based on the post-excavation analytical results, no further action is recommended for the Soil Area.

Remedial activities in the Battery Area included excavating the metals-contaminated soil and disposing of it at the Waste Management Outer Loop Landfill in Louisville, Kentucky. Post-excavation soil sampling and analysis indicates that arsenic is above industrial cleanup goals in 15 sample locations. However, when comparing the levels detected by the *Basewide Background Soil Investigation Report* [TtNUS, 2001] for Pennsylvanian surface soil to the remaining arsenic levels, only sample CFS013 (16.7 mg/kg) is above the maximum detection of 10.2 mg/kg. The average of the 19 Battery Area post-excavation samples (5.6 mg/kg) is below the average of all results and average of all positive detections (6.11 mg/kg) from the *Basewide Background Soil Investigation Report*. The Pennsylvanian soil type determination was based on Figure 2-4 and the statistical summary in Table 4-4 of the *Basewide Background Soil Investigation Report*. No further action is recommended with respect to the levels of arsenic in the post-excavation samples.

Contaminated soil not associated with the Battery Area was unearthed on the far west side of the Battery Area excavation. Analysis of this soil (CFS-021) indicated that the level of cadmium was above residential cleanup goals but below industrial cleanup goals. The levels of lead and arsenic in this sample were detected above industrial cleanup goals. Discussion of the arsenic levels is explained above. Both cadmium and lead were detected at a level that could potentially be considered toxic. Analysis for these two metals on a leached extract indicated that cadmium did not exceed the TCLP regulatory limit but the level of lead did exceed the TCLP regulatory limit.

To further investigate the lead contamination, the MFA investigative area will be increased to include the MFA Battery Area. Additional ground water, surface, and subsurface soil sampling for lead will be conducted during the RCRA Facility Investigation to be performed at MFA, MFB, Cast High Explosives/B-146 Incinerator, and Pyrotechnic Test Area (TtNUS, 2002).

10.0 REFERENCE DOCUMENTS

[Kristoff et al 1987] Testing to Determine Relationship Between Explosive Contaminated Sludge Components and Reactivity. U.S. Army Toxic and Hazardous Materials Agency, Aberdeen, MD. Kristoff, F.T., Ewing, T.W., and Johnson, D.E., January 1987.

[Halliburton 1992] Final RCRA Facility Investigation Phase 1, Environmental Monitoring Reports; Solid Waste Management Units # 19/00, #08/17, #12/14, #13/14, Naval Surface Warfare Center, Crane Division, Crane, Indiana. Halliburton NUS Environmental Corporation. August 1992.

[MK 1998a] Full-Scale Operational Plan for Soils Bioremediation Facility, NSWC Crane, Crane, Indiana. Morrison Knudsen Corporation. Revision 2, March 12, 1998.

[MK 1998b] Quality Assurance Project Plan for Full-Scale Operations, Soils Bioremediation Facility, NSWC Crane, Crane, Indiana. Morrison Knudsen Corporation. Revision 2, March 12, 1998.

[TolTest 2001a] Final Interim Measures Work Plan, Mine Fill A Battery Site Cleanup at the Naval Surface Warfare Center Crane, Indiana. January 2001.

[TolTest 2001b] Health and Safety Program Manual, TolTest Inc. July 2001.

[TtNUS, 2001] Basewide Background Soil Investigation Report, Tetra Tech NUS, Inc. January 2001.

[TtNUS, 2002] Quality Assurance Project Plan for Mine Fill A, Mine Fill B, Cast High Explosives Fill/B-146 Incinerator, and Pyrotechnic Test Area RCRA Facility Investigation, NSWC Crane, Crane, Indiana. Contract Task Order Number 0166, Contract Number N62467-94-D-0888. Prepared by Tetra Tech, NUS, July 2002 (or revised).

APPENDIX A

APPENDIX IX CONSTITUENT LIST

APPENDIX IX TO PART 264—GROUND-WATER MONITORING LIST[1]

GROUND-WATER MONITORING LIST[1]

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100	200
			8270	10
Acenaphthylene	208-96-8	Acenaphthylene	8100	200
			8270	10
Acetone	67-64-1	2-Propanone	8240	100
Acetophenone	98-86-2	Ethenone, 1-phenyl-	8270	10
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100
2-Acetylaminofluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	10
Acrolein	107-02-8	2-Propenal	8030	5
			8240	5
Acrylonitrile	107-13-1	2-Propenenitrile	8030	5
			8240	5
Aldrin	309-00-2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro- (1α,4α, 4aβ, 5α,8α,8aβ)-	8080	0.05
			8270	10
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8010	5
			8240	100
4-Aminobiphenyl	92-67-1	[1,1'-Biphenyl]- 4-amine	8270	10
Aniline	62-53-3	Benzenamine	8270	10
Anthracene	120-12-7	Anthracene	8100	200
			8270	10
Antimony	(Total)	Antimony	6010	300
			7040	2,000
			7041	30
Aramite	140-57-8	Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester.	8270	10
Arsenic	(Total)	Arsenic	6010	500
			7060	10
			7061	20
Barium	(Total)	Barium	6010	20
			7080	1,000
Benzene	71-43-2	Benzene	8020	2
			8240	5
Benzo[a]anthracene; Benzanthracene.	56-55-3	Benz[a]anthracene	8100	200
			8270	10
Benzo[b]fluoranthene	205-99-2	Benz[e]acephenanthrylene	8100	200
			8270	10
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100	200
			8270	10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100	200
			8270	10
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100	200
			8270	10
Benzyl alcohol	100-51-8	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010	3
			7090	50
			7091	2
alpha-BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α, 2α,3β, 4α,5β,6β)-	8080	0.05
			8250	10
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2β, 3α,4β, 5α,6β)-	8080	0.05
			8250	40
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2α, 3α, 4β,5α,6β)-	8080	0.1
			8250	30
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α, 2α, 3β, 4α,5α,6β)-	8080	0.05
			8250	10
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1'-[methylenebis (oxy)]bis [2-chloro-	8270	10
Bis(2-chloroethyl)ether	111-44-4	Ethane, 1,1'-oxybis[2-chloro-	8270	10
Bis(2-chloro-1-methylethyl) ether; 2,2'-Dichlorodiisopropyl ether.	108-60-1	Propane, 2,2'-oxybis[1-chloro-	8010	100
			8270	10
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester	8060	20
			8270	10
Bromodichloromethane	75-27-4	Methane, bromodichloro-	8010	1
			8240	5

GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	8010	2
			8240	5
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	8270	10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester.	8060	5
			8270	10
Cadmium	(Total)	Cadmium	6010	40
			7130	50
			7131	1
Carbon disulfide	75-15-0	Carbon disulfide	8240	5
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010	1
			8240	5
Chlordane	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a- hexahydro-.	8080	0.1
			8250	10
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8270	20
Chlorobenzene	108-90-7	Benzene, chloro-	8010	2
			8020	2
			8240	5
Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro-α-(4-chlorophenyl)-α-hydroxy-, ethyl ester.	8270	10
p-Chloro-m-cresol	59-50-7	Phenol, 4-chloro-3-methyl-	8040	5
			8270	20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010	5
			8240	10
Chloroform	67-66-3	Methane, trichloro-	8010	0.5
			8240	5
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro-	8120	10
			8270	10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040	5
			8270	10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	8270	10
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro-	8010	50
			8240	5
Chromium	(Total)	Chromium	6010	70
			7190	500
			7191	10
Chrysene	218-01-9	Chrysene	8100	200
			8270	10
Cobalt	(Total)	Cobalt	6010	70
			7200	500
			7201	10
Copper	(Total)	Copper	6010	60
			7210	200
m-Cresol	108-39-4	Phenol, 3-methyl-	8270	10
o-Cresol	95-48-7	Phenol, 2-methyl-	8270	10
p-Cresol	106-44-5	Phenol, 4-methyl-	8270	10
Cyanide	57-12-5	Cyanide	9010	40
2,4-D; 2,4-Dichlorophenoxyacetic acid.	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-	8150	10
4,4'-DDD	72-54-8	Benzene 1,1'-(2,2-dichloroethylidene) bis[4-chloro-	8080	0.1
			8270	10
4,4'-DDE	72-55-9	Benzene, 1,1'-(dichloroethenylidene) bis[4-chloro-	8080	0.05
			8270	10
4,4'-DDT	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene) bis[4-chloro-	8080	0.1
			8270	10
Diallate	2303-16-4	Carbamothioic acid, bis(1-methylethyl)- , S- (2,3-dichloro-2-propenyl) ester.	8270	10
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene	8100	200
			8270	10
Dibenzofuran	132-64-9	Dibenzofuran	8270	10
Dibromochloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-	8010	1
			8240	5
1,2-Dibromo-3-chloropropane; DBCP.	96-12-8	Propane, 1,2-dibromo-3-chloro-	8010	100
			8240	5
			8270	10
1,2-Dibromoethane; Ethylene dibromide.	106-93-4	Ethane, 1,2-dibromo-	8010	10
			8240	5
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester	8060	5
			8270	10
o-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	8010	2
			8020	5

GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
			8120	10
			8270	10
m-Dichlorobenzene	541-73-1	Benzene, 1,3-dichloro-	8010	5
			8020	5
			8120	10
			8270	10
p-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-	8010	2
			8020	5
			8120	15
			8270	10
3,3'-Dichlorobenzidine	91-94-1	[1,1'-Biphenyl]- 4,4'- diamine, 3,3'-dichloro-	8270	20
trans-1,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8240	5
Dichlorodifluoromethane	75-71-8	Methane, dichlorodifluoro-	8010	10
			8240	5
1,1-Dichloroethane	75-34-3	Ethane, 1,1-dichloro-	8010	1
			8240	5
1,2-Dichloroethane; Ethylene dichloride.	107-06-2	Ethane, 1,2-dichloro-	8010	0.5
			8240	5
1,1-Dichloroethylene; Vinylidene chloride.	75-35-4	Ethene, 1,1-dichloro-	8010	1
			8240	5
trans-1,2-Dichloroethylene	156-60-5	Ethene, 1,2-dichloro-, (E)-	8010	1
			8240	5
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	8040	5
			8270	10
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane	78-87-5	Propane, 1,2-dichloro-	8010	0.5
			8240	5
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	8010	20
			8240	5
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010	5
			8240	5
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth [2,3-b]oxirene, 3,4,5,6,9,9-hexachloro- 1a,2,2a,3,6,6a,7,7a- octahydro-, (1aα,2β, 2aα, 3β,6β,6aα,7β,7aα)-	8080	0.05
			8270	10
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester	8060	5
			8270	10
O,O-Diethyl O-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	8270	10
Dimethoate	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] estnr.	8270	10
p-(Dimethylamino)azobenzene	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12-dimethyl-	8270	10
3,3'-Dimethylbenzidine	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	8270	10
alpha, alpha-Dimethylphenethylamine.	122-09-8	Benzeneethanamine, α,α-dimethyl-	8270	10
2,4-Dimethylphenol	105-67-9	Phenol, 2,4-dimethyl-	8040	5
			8270	10
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060	5
			8270	10
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-	8270	10
4,6-Dinitro-o-cresol	534-52-1	Phenol, 2-methyl-4,6-dinitro-	8040	150
			8270	50
2,4-Dinitrophenol	51-28-5	Phenol, 2,4-dinitro-	8040	150
			8270	50
2,4-Dinitrotoluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-	8090	0.2
			8270	10
2,6-Dinitrotoluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-	8090	0.1
			8270	10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	8150	1
			8270	10
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester	8060	30
			8270	10
1,4-Dioxane	123-91-1	1,4-Dioxane	8015	150
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester	8140	2
			8270	10
Endosulfan I	959-98-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aβ,6α,9α,9aβ)-.	8080	0.1
			8250	10

GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
Endosulfan II	33213–65–9	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aα, 6β,9β, 9aα)-	8080	0.05
Endosulfan sulfate	1031–07–8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3,3-dioxide.	8080 8270	0.5 10
Endrin	72–20–8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro- 1a,2,2a,3,6,6a,7,7a- octahydro-, (1aα, 2β,2aβ, 3α,6α, 6aβ,7β, 7aα)-	8080 8250	0.1 10
Endrin aldehyde	7421–93–4	1,2,4-Methenocyclopenta[cd]pentalene- 5-carboxaldehyde, 2,2a,3,3,4,7-hexachlorodecahydro-, (1α,2β, 2aβ,4β, 4aβ,5β,6aβ,6bβ,7R*)-	8080 8270	0.2 10
Ethylbenzene	100–41–4	Benzene, ethyl-	8020 8240	2 5
Ethyl methacrylate	97–63–2	2-Propenoic acid, 2-methyl-, ethyl ester	8015 8240 8270	10 5 10
Ethyl methanesulfonate	62–50–0	Methanesulfonic acid, ethyl ester	8270	10
Famphur	52–85–7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl]-O,O-dimethyl ester.	8270	10
Fluoranthene	206–44–0	Fluoranthene	8100 8270	200 10
Fluorene	86–73–7	9H-Fluorene	8100 8270	200 10
Heptachlor	76–44–8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	8080 8270	0.05 10
Heptachlor epoxide	1024–57–3	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a,-hexahydro-, (1aα,1bβ,2α,5α,5aβ,6β,6aα)	8080 8270	1 10
Hexachlorobenzene	118–74–1	Benzene, hexachloro-	8120 8270	0.5 10
Hexachlorobutadiene	87–68–3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8120 8270	5 10
Hexachlorocyclopentadiene	77–47–4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8120 8270	5 10
Hexachloroethane	67–72–1	Ethane, hexachloro-	8120 8270	0.5 10
Hexachlorophene	70–30–4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-	8270	10
Hexachloropropene	1888–71–7	1–Propene, 1,1,2,3,3,3-hexachloro-	8270	10
2-Hexanone	591–78–6	2-Hexanone	8240	50
Indeno[1,2,3-cd]pyrene	193–39–5	Indeno[1,2,3-cd]pyrene	8100 8270	200 10
Isobutyl alcohol	78–83–1	1-Propanol, 2-methyl-	8015	50
Isodrin	465–73–6	1,4,5,6-Dimethanonaphthalene,1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a hexahydro-(1α, 4α, 4aβ, 5β, 8β,8aβ)-.	8270	10
Isophorone	78–59–1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	8090 8270	60 10
Isosafrole	120–58–1	1,3-Benzodioxole, 5-(1-propenyl)-	8270	10
Kepone	143–50–0	1,3,4-Metheno-2H-cyclobuta- [cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6- decachlorooctahydro-	8270	10
Lead	(Total)	Lead	6010 7420 7421	40 1,000 10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126–98–7	2-Propenenitrile, 2-methyl-	8015 8240	5 5
Methapyrilene	91–80–5	1,2,Ethanediamine, N,N-dimethyl-N'-2- pyridinyl- N'-(2-thienylmethyl)-.	8270	10
Methoxychlor	72–43–5	Benzene, 1,1'-(2,2,2,trichloroethylidene)bis[4-methoxy-.	8080 8270	2 10
Methyl bromide; Bromomethane	74–83–9	Methane, bromo-	8010 8240	20 10
Methyl chloride; Chloromethane	74–87–3	Methane, chloro-	8010 8240	1 10
3-Methylcholanthrene	56–49–5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	8270	10
Methylene bromide; Dibromomethane.	74–95–3	Methane, dibromo-	8010 8240	15 5

GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
Methylene chloride; Dichloromethane.	75-09-2	Methane, dichloro-	8010	5
			8240	5
Methyl ethyl ketone; MEK	78-93-3	2-Butanone	8015	10
			8240	100
Methyl iodide; Iodomethane	74-88-4	Methane, iodo-	8010	40
			8240	5
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	8015	2
			8240	5
Methyl methanesulfonate	68-27-3	Methanesulfonic acid, methyl ester	8270	10
2-Methylnaphthalene	91-57-6	Naphthalene, 2-methyl-	8270	10
Methyl parathion; Parathion methyl.	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester.	8140	0.5
			8270	10
4-Methyl-2-pentanone; Methyl isobutyl ketone.	108-10-1	2-Pentanone, 4-methyl-	8015	5
			8240	50
Naphthalene	91-20-3	Naphthalene	8100	200
			8270	10
1,4-Naphthoquinone	130-15-4	1,4-Naphthalenedione	8270	10
1-Naphthylamine	134-32-7	1-Naphthalenamine	8270	10
2-Naphthylamine	91-59-8	2-Naphthalenamine	8270	10
Nickel	(Total)	Nickel	6010	50
			7520	400
o-Nitroaniline	88-74-4	Benzenamine, 2-nitro-	8270	50
m-Nitroaniline	99-09-2	Benzenamine, 3-nitro-	8270	50
p-Nitroaniline	100-01-6	Benzenamine, 4-nitro-	8270	50
Nitrobenzene	98-95-3	Benzene, nitro-	8090	40
			8270	10
o-Nitrophenol	88-75-5	Phenol, 2-nitro-	8040	5
			8270	10
p-Nitrophenol	100-02-7	Phenol, 4-nitro-	8040	10
			8270	50
4-Nitroquinoline 1-oxide	56-57-5	Quinoline, 4-nitro-, 1-oxide	8270	10
N-Nitrosodi-n-butylamine	924-16-3	1-Butanamine, N-butyl-N-nitroso-	8270	10
N-Nitrosodiethylamine	55-18-5	Ethanamine, N-ethyl-N-nitroso-	8270	10
N-Nitrosodimethylamine	62-75-9	Methanamine, N-methyl-N-nitroso-	8270	10
N-Nitrosodiphenylamine	86-30-6	Benzenamine, N-nitroso-N-phenyl-	8270	10
N-Nitrosodipropylamine; Di-n-propylnitrosamine.	621-64-7	1-Propanamine, N-nitroso-N-propyl-	8270	10
N-Nitrosomethylethylamine	10595-95-6	Ethanamine, N-methyl-N-nitroso-	8270	10
N-Nitrosomorpholine	59-89-2	Morpholine, 4-nitroso-	8270	10
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitroso-	8270	10
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitroso-	8270	10
5-Nitro-o-toluidine	99-55-8	Benzenamine, 2-methyl-5-nitro-	8270	10
Parathion	56-38-2	Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester	8270	10
Polychlorinated biphenyls; PCBs	See Note 7	1,1'-Biphenyl, chloro derivatives	8080	50
			8250	100
Polychlorinated dibenzo-p-dioxins; PCDDs.	See Note 8	Dibenzo[b,e][1,4]dioxin, chloro derivatives	8280	0.01
Polychlorinated dibenzofurans; PCDFs.	See Note 9	Dibenzofuran, chloro derivatives	8280	0.01
Pentachlorobenzene	608-93-5	Benzene, pentachloro-	8270	10
Pentachloroethane	76-01-7	Ethane, pentachloro-	8240	5
			8270	10
Pentachloronitrobenzene	82-68-8	Benzene, pentachloronitro-	8270	10
Pentachlorophenol	87-86-5	Phenol, pentachloro-	8040	5
			8270	50
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenyl)	8270	10
Phenanthrene	85-01-8	Phenanthrene	8100	200
			8270	10
Phenol	108-95-2	Phenol	8040	1
			8270	10
p-Phenylenediamine	106-50-3	1,4-Benzenediamine	8270	10
Phorate	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	8140	2
			8270	10
2-Picoline	109-06-8	Pyridine, 2-methyl-	8240	5
			8270	10
Pronamide	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	8270	10
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015	60
			8240	5
Pyrene	129-00-0	Pyrene	8100	200

GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
			8270	10
Pyridine	110–86–1	Pyridinn	8240	5
			8270	10
Safrole	94–59–7	1,3-Benzodioxole, 5-(2-propenyl)-	8270	10
Selenium	(Total)	Selenium	6010	750
			7740	20
			7741	20
Silver	(Total)	Silver	6010	70
			7760	100
Silvex; 2,4,5-TP	93–72–1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100–42–5	Benzene, ethenyl-	8020	1
			8240	5
Sulfide	18496–25–8	Sulfide	9030	10,000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid.	93–76–5	Acetic acid, (2,4,5- trichlorophenoxy)-	8150	2
2,3,7,8-TCDD; 2,3,7,8-Tetrachlorodibenzo-p- dioxin	1746–01–6	Dibenzo[b,e][1,4]dioxin, 2,3,7,8-tetrachloro-	8280	0.005
1,2,4,5-Tetrachlorobenzene	95–94–3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630–20–6	Ethane, 1,1,1,2-tetrachloro-	8010	5
			8240	5
1,1,2,2-Tetrachloroethane	79–34–5	Ethane, 1,1,2,2-tetrachloro-	8010	0.5
			8240	5
Tetrachloroethylene; Perchloroethylene; Tetrachloroethene.	127–18–4	Ethene, tetrachloro-	8010	0.5
			8240	5
2,3,4,6-Tetrachlorophenol	58–90–2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Tetraethyl dithiopyrophosphate; Sulfotepp.	3689–24–5	Thiodiphosphoric acid ([(HO)$_2$ P(S)]$_2$ O), tetraethyl ester	8270	10
Thallium	(Total)	Thallium	6010	400
			7840	1,000
			7841	10
Tin	(Total)	Tin	7870	8,000
Toluene	108–88–3	Benzene, methyl-	8020	2
			8240	5
o-Toluidine	95–53–4	Benzenamine, 2-methyl-	8270	10
Toxaphene	8001–35–2	Toxaphene	8080	2
			8250	10
1,2,4-Trichlorobenzene	120–82–1	Benzene, 1,2,4-trichloro-	8270	10
1,1,1-Trichloroethane; Methylchloroform.	71–55–6	Ethane, 1,1,1-trichloro-	8240	5
1,1,2-Trichloroethane	79–00–5	Ethane, 1,1,2-trichloro-	8010	0.2
			8240	5
Trichloroethylene; Trichloroethene.	79–01–6	Ethene, trichloro-	8010	1
			8240	5
Trichlorofluoromethane	75–69–4	Methane, trichlorofluoro-	8010	10
			8240	5
2,4,5-Trichlorophenol	95–95–4	Phenol, 2,4,5-trichloro-	8270	10
2,4,6-Trichlorophenol	88–06–2	Phenol, 2,4,6-trichloro-	8040	5
			8270	10
1,2,3-Trichloropropane	96–18–4	Propane, 1,2,3-trichloro-	8010	10
			8240	5
O,O,O-Triethyl phosphorothioate	126–68–1	Phosphorothioic acid, O,O,O-triethyl ester	8270	10
sym-Trinitrobenzene	99–35–4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Total)	Vanadium	6010	80
			7910	2,000
			7911	40
Vinyl acetate	108–05–4	Acetic acid, ethenyl ester	8240	5
Vinyl chloride	75–01–4	Ethene, chloro-	8010	2
			8240	10

GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
Xylene (total)	1330-20-7	Benzene, dimethyl-	8020	5
			8240	5
Zinc	(Total)	Zinc	6010	20
			7950	50

[1] The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6.

[2] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

[3] Chemical Abstracts Service registry number. Where "Total" is entered, all species in the ground water that contain this element are included.

[4] CAS index names are those used in the 9th Cumulative Index.

[5] Suggested methods refer to analytical procedure numbers used in the EPA publication, SW-846, "Test Methods for Evaluating Solid Waste", Third Edition. Analytical details can be found in SW-846 and in documentation on file at the Agency. The packed column gas chromatography methods 8010, 8020, 8030, 8040, 8060, 8080, 8090, 8110, 8120, 8140, 8150, 8240, and 8250 were promulgated methods through Update IIB of SW-846 and, as of Update III, the Agency has replaced these methods with "capillary column GC methods", as the suggested methods.

[6] Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in ground waters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

[7] Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor-1016 (CAS RN 12674-11-2), Aroclor-1221 (CAS RN 11104-26-2), Aroclor-1232 (CAS RN 11141-16-5), Aroclor-1242 (CAS RN 53469-21-9), Aroclor-1248 (CAS RN 12672-29-6), Aroclor-1254 (CAS RN 11097-69-1), and Aroclor-1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.

[8] This category contains congener chemicals, including tetrachlorodibenzo-p-dioxins (see also 2,3,7,8-TCDD), pentachlorodibenzo-p-dioxins, and hexachlorodibenzo-p-dioxins. The PQL shown is an average value for PCDD congeners.

[9] This category contains congener chemicals, including tetrachlorodibenzofurans, pentachlorodibenzofurans, and hexachlorodibenzofurans. The PQL shown is an average value for PCDF congeners.

[52 FR 25947, July 9, 1987, as amended at 62 FR 32462, June 13, 1997]

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

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265.1 Purpose, scope, and applicability.
265.2—265.3 [Reserved]
265.4 Imminent hazard action.

Subpart B—General Facility Standards

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265.12 Required notices.
265.13 General waste analysis.
265.14 Security.
265.15 General inspection requirements.
265.16 Personnel training.
265.17 General requirements for ignitable, reactive, or incompatible wastes.
265.18 Location standards.
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Subpart C—Preparedness and Prevention

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265.31 Maintenance and operation of facility.
265.32 Required equipment.
265.33 Testing and maintenance of equipment.
265.34 Access to communications or alarm system.
265.35 Required aisle space.
265.36 [Reserved]
265.37 Arrangements with local authorities.

Subpart D—Contingency Plan and Emergency Procedures

265.50 Applicability.
265.51 Purpose and implementation of contingency plan.
265.52 Content of contingency plan.
265.53 Copies of contingency plan.
265.54 Amendment of contingency plan.
265.55 Emergency coordinator.
265.56 Emergency procedures.

Subpart E—Manifest System, Recordkeeping, and Reporting

265.70 Applicability.
265.71 Use of manifest system.
265.72 Manifest discrepancies.
265.73 Operating record.
265.74 Availability, retention, and disposition of records.
265.75 Biennial report.
265.76 Unmanifested waste report.
265.77 Additional reports.

APPENDIX B

GENERATOR'S WASTE PROFILE SHEET

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☐YES ☐NO

Profile Number: WMI 601150

Renewal Date: 08/07/2002

08/07/2002

A. Waste Generator Information

1. Generator Name: NSWC CRANE IN.
2. SIC Code:
3. Facility Street Address: BLDG. C-0871 300 HWY 361
4. Phone: (812) 854-4423
5. Facility City: Crane.
6. State/Province: Indiana
7. Zip/Postal Code: 47522
8. Generator USEPA/Federal ID #: IN5170023493
9. County: MARTIN
10. State/Province ID #:
11. Customer Name: [illegible]
12. Customer Phone: [illegible]
13. Customer Contact: [illegible]
14. Customer Fax: [illegible]

B. Waste Stream Information

1. Name of Waste: METAL IMPACTED SOIL
2. State Waste Code:
3. Process Generating Waste: EXCAVATION OF A BATTERY DISPOSAL AREA
4. Estimated Annual Volume: 200-400 ☒Tons ☐Yards ☐Other (specify)
5. Personal Protective Equipment Requirements: LEVEL D
6. Transporter/Transfer Station: SANG CORP.
7. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip 8, 9, & 10)..... ☐YES ☒NO
8. Reportable Quantity (lbs.; kgs.):
9. Hazard Class/ID #:
10. USDOT Shipping Name: NON HAZ / NON REGULATED SPECIAL WASTE

☐Check if additional information is attached. Indicate the number of attached pages:

C. Generator's Certification

1. Is the waste represented by this waste profile sheet a "Hazardous Waste," as defined by USEPA, Canadian, Mexican and/or state/province regulation, in the location where generated or ultimately managed?..... ☐YES ☒NO
2. Does the waste represented by this waste profile sheet contain regulated radioactive material or regulated concentrations of Polychlorinated Biphenyls (PCBs)?..... ☐YES ☒NO
3. Does this waste profile sheet and all attachments contain true and accurate descriptions of the waste material?..... ☒YES ☐NO
4. Has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor?..... ☒YES ☐NO
5. Is the analytical data attached hereto derived from testing a representative sample in accordance with 40 CFR 261.20 (c) or equivalent rules?..... ☐NA ☒YES ☐NO
6. Will all changes that occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor?..... ☒YES ☐NO

Waste Destination: Arlington

Certification Signature: Christine D. Freeman Title: Env. Protection Specialist

Name (Type or Print): Christine D. Freeman Company Name: NSWC Crane Date: 8/14/01

D. WMI Management Decision — FOR WMI USE ONLY

1. Management Method: ☒Landfill ☐Solidify ☐Store/Mediation ☐Other (Specify)
2. Proposed Ultimate Management Facility: Arlington
3. Hours of acceptance: ☐NA
4. Supplemental Information:
5. Precautions, Special Handling Procedures, or Limitations on Approval:

APPROVED

Special Waste Decision: ☒Approved ☐Disapproved

Salesperson's Signature: MHFaus Date: 8-17-01

Division Approval Signature (Optional): Date: 8/17/01

Special Waste Approvals Person Signature: Cathy Hardy Date: 8-17-01

Form NAM-4152

APPENDIX C

SPECIAL WASTE TRACKING DOCUMENT

Waste Management of Kentucky, LLC

C 12

☒ LANDFILL ☐ BIOREMEDIATION
☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX. DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE Christine D Freeman

TRANSPORTER SANG CORP. TRUCK # 132

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE Donald Edmonds

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 32 5/20

DATE RECEIVED 9-28-01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE N Butterworth

Waste Management of Kentucky, LLC

C 11

☒ LANDFILL ☐ BIOREMEDIATION

☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE Marsha D Freeman

TRANSPORTER SANG CORP. TRUCK # 133

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE X G.M.

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 39440

DATE RECEIVED 9 28 01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE

Waste Management of Kentucky, LLC

C10

☒ LANDFILL ☐ BIOREMEDIATION
☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX. DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE Christine D Noonan

TRANSPORTER SANG CORP. TRUCK # 134

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE KS

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 15 NET WEIGHT 40020

DATE RECEIVED 9 28 01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE

Waste Management of Kentucky, LLC

C9

☒ LANDFILL ☐ BIOREMEDIATION

☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX. DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE X Christian D Kaczmarek

TRANSPORTER SANG CORP. TRUCK # 137

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE X [illegible]

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 44660

DATE RECEIVED 9-28-01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE [illegible]

Waste Management of Kentucky, LLC

C 8

☒ LANDFILL ☐ BIOREMEDIATION

☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE X Christine D. Bowman

TRANSPORTER SANG CORP. TRUCK # 136

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE X Jim Farmer

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 42850

DATE RECEIVED 9 28 01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE

Waste Management of Kentucky, LLC

C 7

☒ LANDFILL ☐ BIOREMEDIATION

☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX. DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE X Christine D Freeman

TRANSPORTER SANG CORP. TRUCK # 130

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE X [illegible]

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 15 NET WEIGHT 41960

DATE RECEIVED 9 28 01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE [illegible]

Waste Management of Kentucky, LLC

C-6

☒ LANDFILL ☐ BIOREMEDIATION

☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE [illegible]

TRANSPORTER SANG CORP TRUCK # 132

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE [illegible]

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 39440

DATE RECEIVED 9-27-01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE [illegible]

Waste Management of Kentucky, LLC

C-5

☒ LANDFILL ☐ BIOREMEDIATION

☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

NSWC - CRANE INDIANA 601150

GENERATOR ~~300 HIGHWAY 361 CO9511~~ PROFILE # _____

FACILITY STREET ADDRESS ~~CRANE, MARTIN CTY., INDIANA 47522~~

CITY, COUNTY, STATE ~~CHRIS WARD~~ ~~502-609-2630~~

TECHNICAL CONTACT _____ PHONE _____

QUANTITY SHIPPED 21 TON APPROX. DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE X [illegible]

TRANSPORTER SANG CORP. TRUCK # 133

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE X [illegible]

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 39060

DATE RECEIVED 9-27-01 COMMENTS _____

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE [illegible]

Waste Management of Kentucky, LLC

C-4

☒ LANDFILL
☐ SOLIDIFICATION

☐ BIOREMEDIATION
☐ SBR

SPECIAL WASTE TRACKING DOCUMENT

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX. DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE Christian D Freeman

TRANSPORTER SANG CORP TRUCK # 134

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE X KS

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☐ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 15 NET WEIGHT 41000

DATE RECEIVED 9 27 01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE

Waste Management of Kentucky, LLC

C-3

☒ LANDFILL ☐ BIOREMEDIATION

☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX. DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE X Christine D Freeman

TRANSPORTER SANG CORP TRUCK # 137

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE X [illegible]

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D CS NET WEIGHT 39920

DATE RECEIVED 9 27 01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE [illegible]

Waste Management of Kentucky, LLC

C-2

☑ LANDFILL ☐ BIOREMEDIATION

☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE ~~502-609-2630~~

QUANTITY SHIPPED 21 TON APPROX. DATE SHIPPED 9/27/01

WASTE DESCRIPTION ~~METAL IMPACTED SOIL~~

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE X Martin D Freeman

TRANSPORTER SANG CORP. TRUCK # 136

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE X Jim Farmer

BILL TO ~~CHASE ENVIRONMENTAL CUST # 0007412~~

CONTACT ~~CHRIS WARD~~ PHONE ~~502-609-2630~~

☑ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 32 580

DATE RECEIVED 9-27-01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE N Butting

Waste Management of Kentucky, LLC

C-1

☒ LANDFILL ☐ BIOREMEDIATION
☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC - CRANE INDIANA PROFILE # 601150

FACILITY STREET ADDRESS 300 HIGHWAY 361 C09511

CITY, COUNTY, STATE CRANE, MARTIN CTY., INDIANA 47522

TECHNICAL CONTACT CHRIS WARD PHONE 502-609-2630

QUANTITY SHIPPED 21 TON APPROX. DATE SHIPPED 9/27/01

WASTE DESCRIPTION METAL IMPACTED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE X Christine D. Freeman

TRANSPORTER SANG CORP. TRUCK # 130

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE X [illegible]

BILL TO CHASE ENVIRONMENTAL CUST # 0007412

CONTACT CHRIS WARD PHONE 502-609-2630

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 39 300

DATE RECEIVED 9 27 01 COMMENTS

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE [illegible]

Waste Management of Kentucky, LLC

☒ LANDFILL ☐ BIOREMEDIATION
☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC-CRANE IND. PROFILE # 601150

FACILITY STREET ADDRESS 300 HWY 361

CITY, COUNTY, STATE CRANE MARTIN CTY INDIANA

TECHNICAL CONTACT PETER CHEVALIER PHONE 812-636-8501

QUANTITY SHIPPED _____ DATE SHIPPED 6/18/02

WASTE DESCRIPTION CONTAMINATED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE Christine D. Freeman

TRANSPORTER Kentuckiana Trucking TRUCK # K-112

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE Kevin Hilton

BILL TO TDL Test - Cust # 0020222

CONTACT PETER CHEVALIER PHONE 812-636 8501

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 33,000

DATE RECEIVED 6-18-02 COMMENTS _____

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE R Butterworth

Waste Management of Kentucky, LLC

☒ LANDFILL ☐ BIOREMEDIATION
☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC-CRANE IND. PROFILE # 601150

FACILITY STREET ADDRESS 300 HWY 361

CITY, COUNTY, STATE CRANE, MARTIN CTY INDIANA

TECHNICAL CONTACT PETER CHEVALIER PHONE 812-636-8501

QUANTITY SHIPPED _____ DATE SHIPPED 6/18/02

WASTE DESCRIPTION CONTAMINATED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE Christine D Reeman

TRANSPORTER KENTUCKIANA TRUCKING TRUCK # K-96

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE Joseph D Blair

BILL TO TOLTEST - Cust # 0020222

CONTACT PETER CHEVALIER PHONE 812-636 8501

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 29,360

DATE RECEIVED 6-18-02 COMMENTS _____

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE R Buttery

Waste Management of Kentucky, LLC

☒ LANDFILL ☐ BIOREMEDIATION
☐ SOLIDIFICATION **SPECIAL WASTE TRACKING DOCUMENT** ☐ SBR

GENERATOR NSWC-CRANE IND. PROFILE # 601150
FACILITY STREET ADDRESS 300 HWY 361
CITY, COUNTY, STATE CRANE MARTIN CTY INDIANA
TECHNICAL CONTACT PETER CHEVALIER PHONE 812-636-8501
QUANTITY SHIPPED _____ DATE SHIPPED 6/18/02
WASTE DESCRIPTION CONTAMINATED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE Christine D. Freeman

TRANSPORTER Kentuckiana Trucking TRUCK # K-95

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE S. Mellow

BILL TO TDL test - Cust # 0020222
CONTACT PETER CHEVALIER PHONE 812-636 8501

☒ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 25580
DATE RECEIVED 6-18-02 COMMENTS _____

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE [illegible]

Waste Management of Kentucky, LLC

X LANDFILL
☐ SOLIDIFICATION

SPECIAL WASTE TRACKING DOCUMENT

☐ BIOREMEDIATION
☐ SBR

GENERATOR NSWC-CRANE IND. PROFILE # 601150

FACILITY STREET ADDRESS 300 HWY 361

CITY, COUNTY, STATE CRANE MARTIN CTY INDIANA

TECHNICAL CONTACT PETER CHEVALIER PHONE 812-636-8501

QUANTITY SHIPPED _____ DATE SHIPPED 6/18/02

WASTE DESCRIPTION CONTAMINATED SOIL

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

AUTHORIZED SIGNATURE Christine D. Freeman

TRANSPORTER KENTUCKIANA TRUCKING TRUCK # 110

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

DRIVER' SIGNATURE [illegible]

BILL TO TOLTEST - Cust # 0020222

CONTACT PETER CHEVALIER PHONE 812-636 8501

☑ LANDFILL ☐ BIOREMEDIATION ☐ SOLIDIFICATION ☐ SBR

OUTER LOOP RDF
2673 OUTER LOOP
LOUISVILLE, KY 40219

QUANTITY REC'D 18 NET WEIGHT 30 00

DATE RECEIVED 6 18 02 COMMENTS _____

I CERTIFY THAT WHILE THE WASTE WAS IN MY CUSTODY OR CONTROL, NO WASTE REGULATED BY THE CABINET AS HAZARDOUS WASTE OR INFECTIOUS WASTE WAS KNOWINGLY INTRODUCED INTO THE WASTE.

SIGNATURE [illegible]

APPENDIX D

PRE-EXCAVATION SAMPLE RESULTS

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

HPLC

Lot-Sample #...: G1B130221-001
Date Sampled...: 02/12/01
Prep Date.....: 02/15/01
Prep Batch #...: 1046402
Dilution Factor: 1

Work Order #...: DV2491AC
Date Received..: 02/13/01
Analysis Date..: 02/27/01
Analysis Time..: 18:27

Matrix.....: SOLID

Method.....: SW846 8330

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,3,5-Trinitrobenzene	ND	0.25	mg/kg
1,3-Dinitrobenzene	ND	0.25	mg/kg
2,4,6-Trinitrotoluene	ND	0.25	mg/kg
2,4-Dinitrotoluene	ND	0.25	mg/kg
2,6-Dinitrotoluene	ND	0.25	mg/kg
2-Amino-4,6-dinitrotoluene	ND	0.25	mg/kg
2-Nitrotoluene	ND	0.25	mg/kg
3-Nitrotoluene	ND	0.25	mg/kg
4-Amino-2,6-dinitrotoluene	ND	0.25	mg/kg
4-Nitrotoluene	ND	0.25	mg/kg
HMX	ND	0.25	mg/kg
Nitrobenzene	ND	0.25	mg/kg
PETN	ND	0.50	mg/kg
RDX	ND	0.25	mg/kg
Tetryl	ND	0.25	mg/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dinitrofluorobenzene	103	(61 - 135)
3,4-Dinitrotoluene	101	(58 - 113)

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

TOTAL Metals

Lot-Sample #...: G1B130221-001 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1050412						
Antimony	ND	0.24	mg/kg	SW846 6020	02/19-02/21/01	DV2491AJ
Arsenic	1.6	0.24	mg/kg	SW846 6020	02/19-02/21/01	DV2491AK
Barium	33.0	0.12	mg/kg	SW846 6020	02/19-02/21/01	DV2491AL
Beryllium	0.28	0.12	mg/kg	SW846 6020	02/19-02/21/01	DV2491AM
Cadmium	0.14	0.12	mg/kg	SW846 6020	02/19-02/21/01	DV2491AN
Chromium	13.0	0.24	mg/kg	SW846 6020	02/19-02/21/01	DV2491AP
Cobalt	4.4	0.12	mg/kg	SW846 6020	02/19-02/21/01	DV2491AQ
Copper	3.3	0.24	mg/kg	SW846 6020	02/19-02/21/01	DV2491AR
Lead	8.8	0.12	mg/kg	SW846 6020	02/19-02/21/01	DV2491AT
Nickel	8.8	0.24	mg/kg	SW846 6020	02/19-02/21/01	DV2491AU
Selenium	0.11 B	0.24	mg/kg	SW846 6020	02/19-02/21/01	DV2491AV
Silver	0.054 B	0.12	mg/kg	SW846 6020	02/19-02/21/01	DV2491AW
Thallium	0.16	0.12	mg/kg	SW846 6020	02/19-02/21/01	DV2491AX
Tin	1.6	1.2	mg/kg	SW846 6020	02/19-02/21/01	DV2491A0
Vanadium	14.8	1.2	mg/kg	SW846 6020	02/19-02/21/01	DV2491A[illegible]
Zinc	21.4	0.59	mg/kg	SW846 6020	02/19-02/21/01	DV2491A[illegible]
Prep Batch #...: 1053394						
Mercury	0.011 B	0.047	mg/kg	SW846 7471A	02/22/01	DV2491A6

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

General Chemistry

Lot-Sample #...: G1B130221-001 Work Order #...: DV249 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Acid-insoluble Sulfide	37.6 B	58.8	mg/kg	SW846 9030A	02/19/01	1050584
	Dilution Factor: 1					
Cyanide, Total	ND	0.59	mg/kg	SW846 9012A	02/21-02/22/01	1059317
	Dilution Factor: 1					
Percent Moisture	15.0	0.10	%	ASTM D 2216-90	02/15-02/16/01	1046266
	Dilution Factor: 1					

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MPA-BAT-PES-001

GC/MS Semivolatiles

Lot-Sample #...: G1B130221-001 Work Order #...: DV2491AD Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/19/01
Prep Batch #...: 1047294
Dilution Factor: 1 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
bis(2-Chloroisopropyl) ether	ND	390	ug/kg
Acenaphthene	ND	390	ug/kg
Acenaphthylene	ND	390	ug/kg
Acetophenone	ND	390	ug/kg
2-Acetylaminofluorene	ND	3900	ug/kg
4-Aminobiphenyl	ND	1900	ug/kg
Aniline	ND	390	ug/kg
Anthracene	ND	390	ug/kg
Aramite	ND	780	ug/kg
Benzo(a)anthracene	ND	390	ug/kg
Benzo(a)pyrene	ND	390	ug/kg
Benzo(b)fluoranthene	ND	390	ug/kg
Benzo(ghi)perylene	ND	390	ug/kg
Benzo(k)fluoranthene	ND	390	ug/kg
Benzyl alcohol	ND	390	ug/kg
4-Bromophenyl phenyl ether	ND	390	ug/kg
Butyl benzyl phthalate	ND	390	ug/kg
4-Chloroaniline	ND	390	ug/kg
Chlorobenzilate	ND	390	ug/kg
bis(2-Chloroethoxy) methane	ND	390	ug/kg
bis(2-Chloroethyl)- ether	ND	390	ug/kg
bis(2-Ethylhexyl) phthalate	ND	390	ug/kg
4-Chloro-3-methylphenol	ND	390	ug/kg
2-Chloronaphthalene	ND	390	ug/kg
2-Chlorophenol	ND	390	ug/kg
4-Chlorophenyl phenyl ether	ND	390	ug/kg
Chrysene	ND	390	ug/kg
Diallate	ND	780	ug/kg
Dibenz(a,h)anthracene	ND	390	ug/kg
Dibenzofuran	ND	390	ug/kg
Di-n-butyl phthalate	ND	390	ug/kg
3,3'-Dichlorobenzidine	ND	1900	ug/kg
2,4-Dichlorophenol	ND	390	ug/kg

(Continued on next page)

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

GC/MS Semivolatiles

Lot-Sample #...: G1B130221-001 Work Order #...: DV2491AD Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,6-Dichlorophenol	ND	390	ug/kg
Diethyl phthalate	ND	390	ug/kg
Dimethoate	ND	780	ug/kg
p-Dimethylaminoazobenzene	ND	780	ug/kg
7,12-Dimethylbenz(a)-anthracene	ND	780	ug/kg
3,3'-Dimethylbenzidine	ND	1900	ug/kg
a,a-Dimethylphenethylamine	ND	1900	ug/kg
2,4-Dimethylphenol	ND	390	ug/kg
Dimethyl phthalate	ND	390	ug/kg
Dinoseb	ND	780	ug/kg
1,3-Dinitrobenzene	ND	390	ug/kg
4,6-Dinitro-2-methylphenol	ND	1900	ug/kg
2,4-Dinitrophenol	ND	1900	ug/kg
2,4-Dinitrotoluene	ND	390	ug/kg
2,6-Dinitrotoluene	ND	390	ug/kg
Di-n-octyl phthalate	ND	390	ug/kg
Disulfoton	ND	1900	ug/kg
Ethyl methanesulfonate	ND	390	ug/kg
Famphur	ND	3900	ug/kg
Fluoranthene	ND	390	ug/kg
Fluorene	ND	390	ug/kg
Hexachlorobenzene	ND	390	ug/kg
Hexachlorobutadiene	ND	390	ug/kg
Hexachlorocyclopentadiene	ND	1900	ug/kg
Hexachloroethane	ND	390	ug/kg
Hexachloropropene	ND	3900	ug/kg
Indeno(1,2,3-cd)pyrene	ND	390	ug/kg
Isodrin	ND	390	ug/kg
Isophorone	ND	390	ug/kg
Isosafrole	ND	780	ug/kg
Kepone	ND	3900	ug/kg
Methapyrilene	ND	1900	ug/kg
3-Methylcholanthrene	ND	780	ug/kg
Methyl methanesulfonate	ND	390	ug/kg
2-Methylnaphthalene	ND	390	ug/kg
Methyl parathion	ND	1900	ug/kg
2-Methylphenol	ND	390	ug/kg
3-Methylphenol	ND	390	ug/kg
4-Methylphenol	ND	390	ug/kg

(Continued on next page)

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

GC/MS Semivolatiles

Lot-Sample #...: G1B130221-001 Work Order #...: DV2491AD Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Naphthalene	ND	390	ug/kg
1,4-Naphthoquinone	ND	1900	ug/kg
1-Naphthylamine	ND	390	ug/kg
2-Naphthylamine	ND	390	ug/kg
2-Nitroaniline	ND	1900	ug/kg
3-Nitroaniline	ND	1900	ug/kg
4-Nitroaniline	ND	1900	ug/kg
Nitrobenzene	ND	390	ug/kg
2-Nitrophenol	ND	390	ug/kg
4-Nitrophenol	ND	1900	ug/kg
4-Nitroquinoline-1-oxide	ND	3900	ug/kg
N-Nitrosodi-n-butylamine	ND	390	ug/kg
N-Nitrosodiethylamine	ND	390	ug/kg
N-Nitrosodimethylamine	ND	390	ug/kg
N-Nitrosodiphenylamine	ND	390	ug/kg
N-Nitrosodi-n-propylamine	ND	390	ug/kg
N-Nitrosomethylethylamine	ND	390	ug/kg
N-Nitrosomorpholine	ND	390	ug/kg
N-Nitrosopiperidine	ND	390	ug/kg
N-Nitrosopyrrolidine	ND	390	ug/kg
5-Nitro-o-toluidine	ND	780	ug/kg
Parathion	ND	1900	ug/kg
Pentachlorobenzene	ND	390	ug/kg
Pentachloroethane	ND	1900	ug/kg
Pentachloronitrobenzene	ND	1900	ug/kg
Pentachlorophenol	ND	1900	ug/kg
Phenacetin	ND	780	ug/kg
Phenanthrene	ND	390	ug/kg
Phenol	ND	390	ug/kg
1,4-Phenylenediamine	ND	3900	ug/kg
Phorate	ND	1900	ug/kg
2-Picoline	ND	780	ug/kg
Pronamide	ND	780	ug/kg
Pyrene	ND	390	ug/kg
Pyridine	ND	780	ug/kg
Safrole	ND	780	ug/kg
Sulfotepp	ND	1900	ug/kg
1,2,4,5-Tetrachlorobenzene	ND	390	ug/kg
2,3,4,6-Tetrachlorophenol	ND	1900	ug/kg
Thionazin	ND	1900	ug/kg

(Continued on next page)

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

GC/MS Semivolatiles

Lot-Sample #...: G1B130221-001 Work Order #...: DV2491AD Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS
o-Toluidine	ND	780	ug/kg
2,4,5-Trichloro-phenol	ND	390	ug/kg
2,4,6-Trichloro-phenol	ND	390	ug/kg
O,O,O-Triethylphosphoro-thioate	ND	1900	ug/kg
1,3,5-Trinitrobenzene	ND	1900	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Chlorophenol-d4	76	(20 - 130)
1,2-Dichlorobenzene-d4	66	(20 - 130)
2-Fluorobiphenyl	75	(46 - 124)
2-Fluorophenol	76	(45 - 115)
Nitrobenzene-d5	72	(40 - 118)
Phenol-d5	73	(44 - 117)
Terphenyl-d14	83	(44 - 120)
2,4,6-Tribromophenol	67	(41 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

GC Semivolatiles

Lot-Sample #...: G1B130221-001 Work Order #...: DV2491AG Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/17/01 Analysis Date..: 02/25/01
Prep Batch #...: 1048134
Dilution Factor: 1 Method.....: SW846 8081A

PARAMETER	RESULT	REPORTING LIMIT	UNITS
alpha-BHC	ND	2.0	ug/kg
gamma-BHC (Lindane)	ND	2.0	ug/kg
Heptachlor	ND	2.0	ug/kg
Aldrin	ND	2.0	ug/kg
beta-BHC	ND	2.0	ug/kg
delta-BHC	ND	2.0	ug/kg
Heptachlor epoxide	ND	2.0	ug/kg
Endosulfan I	ND	2.0	ug/kg
gamma-Chlordane	ND	2.0	ug/kg
alpha-Chlordane	ND	2.0	ug/kg
4,4'-DDE	ND	4.0	ug/kg
Dieldrin	ND	4.0	ug/kg
Endrin	ND	4.0	ug/kg
4,4'-DDD	ND	4.0	ug/kg
Endosulfan II	ND	4.0	ug/kg
4,4'-DDT	ND	2.0	ug/kg
Endrin aldehyde	ND	4.0	ug/kg
Methoxychlor	ND	20	ug/kg
Endosulfan sulfate	ND	4.0	ug/kg
Endrin ketone	ND	4.0	ug/kg
Toxaphene	ND	79	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	58 *	(73 - 135)
Tetrachloro-m-xylene	60	(55 - 117)

NOTE(S):

* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

GC Semivolatiles

Lot-Sample #...: G1B130221-001 Work Order #...: DV2492AG Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/27/01 Analysis Date..: 03/03/01
Prep Batch #...: 1058238
Dilution Factor: 1 Method.....: SW846 8081A

PARAMETER	RESULT	REPORTING LIMIT	UNITS
alpha-BHC	ND	2.0	ug/kg
gamma-BHC (Lindane)	ND	2.0	ug/kg
Heptachlor	ND	2.0	ug/kg
Aldrin	ND	2.0	ug/kg
beta-BHC	ND	2.0	ug/kg
delta-BHC	ND	2.0	ug/kg
Heptachlor epoxide	ND	2.0	ug/kg
Endosulfan I	ND	2.0	ug/kg
gamma-Chlordane	ND	2.0	ug/kg
alpha-Chlordane	ND	2.0	ug/kg
4,4'-DDE	ND	4.0	ug/kg
Dieldrin	ND	4.0	ug/kg
Endrin	ND	4.0	ug/kg
4,4'-DDD	ND	4.0	ug/kg
Endosulfan II	ND	4.0	ug/kg
4,4'-DDT	ND	2.0	ug/kg
Endrin aldehyde	ND	4.0	ug/kg
Methoxychlor	ND	20	ug/kg
Endosulfan sulfate	ND	4.0	ug/kg
Endrin ketone	ND	4.0	ug/kg
Toxaphene	ND	79	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	37 *	(73 - 135)
Tetrachloro-m-xylene	59	(55 - 117)

NOTE(S):

* Surrogate recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

GC Semivolatiles

Lot-Sample #...:	G1B130221-001	Work Order #...:	DV2492AH	Matrix.....:	SOLID
Date Sampled...:	02/12/01	Date Received..:	02/13/01		
Prep Date.....:	02/26/01	Analysis Date..:	03/01/01		
Prep Batch #...:	1057316				
Dilution Factor:	1	Method.....:	SW846 8082		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Aroclor 1016	ND	39	ug/kg
Aroclor 1221	ND	39	ug/kg
Aroclor 1232	ND	39	ug/kg
Aroclor 1242	ND	39	ug/kg
Aroclor 1248	ND	39	ug/kg
Aroclor 1254	ND	39	ug/kg
Aroclor 1260	ND	39	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Decachlorobiphenyl	106	(22 - 163)
Tetrachloro-m-xylene	64	(39 - 125)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

GC Semivolatiles

Lot-Sample #...: G1B130221-001 Work Order #...: DV2491A4 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/19/01 Analysis Date..: 02/21/01
Prep Batch #...: 1050101
Dilution Factor: 1 Method.....: SW846 8151A

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,4-D	ND	94	ug/kg
2,4,5-TP (Silvex)	ND	24	ug/kg
2,4,5-T	ND	24	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dichlorophenylacetic acid	81	(10 - 115)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

GC/MS Volatiles

Lot-Sample #...: G1B130221-001 Work Order #...: DV2491AE Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/15/01
Prep Batch #...: 1050528
Dilution Factor: 1 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,2-Dibromo-3-chloro-propane	ND	12	ug/kg	8.5
Allyl chloride	ND	5.9	ug/kg	2.9
Xylenes (total)	ND	5.9	ug/kg	0.95
Dichlorodifluoromethane (Freon 12)	ND	5.9	ug/kg	1.0
Trichlorofluoromethane (Freon 11)	ND	5.9	ug/kg	0.94
Chloromethane	ND	5.9	ug/kg	1.8
Vinyl chloride	ND	5.9	ug/kg	1.9
Bromomethane	ND	5.9	ug/kg	1.0
Chloroethane	ND	5.9	ug/kg	3.1
1,1-Dichloroethene	ND	5.9	ug/kg	1.4
Methylene chloride	ND	12	ug/kg	0.99
trans-1,2-Dichloroethene	ND	5.9	ug/kg	1.1
1,1-Dichloroethane	ND	5.9	ug/kg	0.89
Chloroform	ND	5.9	ug/kg	0.88
1,1,1-Trichloroethane	ND	5.9	ug/kg	0.94
Carbon tetrachloride	ND	5.9	ug/kg	0.62
Benzene	ND	5.9	ug/kg	0.86
1,2-Dichloroethane	ND	5.9	ug/kg	0.86
Trichloroethene	ND	5.9	ug/kg	0.71
1,2-Dichloropropane	ND	5.9	ug/kg	0.71
Dibromomethane	ND	5.9	ug/kg	0.68
Bromodichloromethane	ND	5.9	ug/kg	0.62
cis-1,3-Dichloropropene	ND	5.9	ug/kg	0.75
Toluene	**3.5 J**	**5.9**	**ug/kg**	**0.72**
trans-1,3-Dichloropropene	ND	5.9	ug/kg	0.88
1,1,2-Trichloroethane	ND	5.9	ug/kg	3.4
Tetrachloroethene	ND	5.9	ug/kg	0.72
Dibromochloromethane	ND	5.9	ug/kg	3.2
1,2-Dibromoethane (EDB)	ND	12	ug/kg	0.93
Chlorobenzene	ND	5.9	ug/kg	0.93
1,1,1,2-Tetrachloroethane	ND	5.9	ug/kg	3.5
Ethylbenzene	**1.6 J**	**5.9**	**ug/kg**	**1.0**
Styrene	ND	5.9	ug/kg	0.89
Bromoform	ND	5.9	ug/kg	4.8
1,1,2,2-Tetrachloroethane	ND	5.9	ug/kg	0.80
1,2,3-Trichloropropane	ND	5.9	ug/kg	0.89

(Continued on next page)

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-001

GC/MS Volatiles

Lot-Sample #...: G1B130221-001 Work Order #...: DV2491AE Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
1,3-Dichlorobenzene	ND	5.9	ug/kg	0.88
1,4-Dichlorobenzene	ND	5.9	ug/kg	0.92
1,2-Dichlorobenzene	ND	5.9	ug/kg	0.75
1,2,4-Trichloro-benzene	ND	5.9	ug/kg	0.88
Acetone	11 J,B	12	ug/kg	5.9
Acetonitrile	ND	12	ug/kg	5.9
Acrolein	ND	120	ug/kg	59
Acrylonitrile	ND	120	ug/kg	59
2-Butanone (MEK)	ND	12	ug/kg	5.9
Carbon disulfide	ND	12	ug/kg	5.9
Chloroprene	ND	12	ug/kg	5.9
trans-1,4-Dichloro-2-butene	ND	12	ug/kg	5.9
1,4-Dioxane	ND	290	ug/kg	150
Ethyl methacrylate	ND	12	ug/kg	5.9
2-Hexanone	ND	12	ug/kg	5.9
Iodomethane	ND	12	ug/kg	5.9
Isobutyl alcohol	ND	120	ug/kg	59
Methacrylonitrile	ND	12	ug/kg	5.9
Methyl methacrylate	ND	12	ug/kg	5.9
4-Methyl-2-pentanone (MIBK)	ND	12	ug/kg	5.9
Propionitrile	ND	12	ug/kg	5.9
Vinyl acetate	ND	12	ug/kg	5.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	100	(62 - 120)
1,2-Dichloroethane-d4	101	(77 - 135)
Toluene-d8	102	(79 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-002

HPLC

Lot-Sample #...: G1B130221-002 Work Order #...: DV25Q1AC Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/27/01
Prep Batch #...: 1046402 Analysis Time..: 19:10
Dilution Factor: 1

Method.....: SW846 8330

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,3,5-Trinitrobenzene	ND	0.25	mg/kg
1,3-Dinitrobenzene	ND	0.25	mg/kg
2,4,6-Trinitrotoluene	ND	0.25	mg/kg
2,4-Dinitrotoluene	ND	0.25	mg/kg
2,6-Dinitrotoluene	ND	0.25	mg/kg
2-Amino-4,6-dinitrotoluene	ND	0.25	mg/kg
2-Nitrotoluene	ND	0.25	mg/kg
3-Nitrotoluene	ND	0.25	mg/kg
4-Amino-2,6-dinitrotoluene	ND	0.25	mg/kg
4-Nitrotoluene	ND	0.25	mg/kg
HMX	ND	0.25	mg/kg
Nitrobenzene	ND	0.25	mg/kg
PETN	ND	0.50	mg/kg
RDX	ND	0.25	mg/kg
Tetryl	ND	0.25	mg/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dinitrofluorobenzene	103	(61 - 135)
3,4-Dinitrotoluene	101	(58 - 113)

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-002

TOTAL Metals

Lot-Sample #...: G1B130221-002 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051385						
Lead	32.7	10.9	mg/kg	SW846 6010B	02/20-02/23/01	DV25Q1AE
Aluminum	7120	21.8	mg/kg	SW846 6010B	02/20-02/23/01	DV25Q1AF
Barium	61.6	21.8	mg/kg	SW846 6010B	02/20-02/23/01	DV25Q1AG
Cadmium	ND	0.54	mg/kg	SW846 6010B	02/20-02/23/01	DV25Q1AH
Chromium	17.2	1.1	mg/kg	SW846 6010B	02/20-02/23/01	DV25Q1AJ
Prep Batch #...: 1053394						
Mercury	ND	0.044	mg/kg	SW846 7471A	02/22/01	DV25Q1AK

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PBS-002

GC/MS Volatiles

Lot-Sample #...: G1B130221-002 Work Order #...: DV25Q1AD Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/15/01
Prep Batch #...: 1050528
Dilution Factor: 1 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Xylenes (total)	ND	5.4	ug/kg	0.88
Methylene chloride	ND	11	ug/kg	0.91
Toluene	**2.3 J**	**5.4**	**ug/kg**	**0.66**
Acetone	**12 B**	**11**	**ug/kg**	**5.4**
2-Butanone (MEK)	ND	11	ug/kg	5.4
4-Methyl-2-pentanone (MIBK)	ND	11	ug/kg	5.4

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	93	(62 - 120)
1,2-Dichloroethane-d4	97	(77 - 135)
Toluene-d8	101	(79 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PBS-003

HPLC

Lot-Sample #...: G1B130221-003 Work Order #...: DV25W1AC Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/27/01
Prep Batch #...: 1046402 Analysis Time..: 19:53
Dilution Factor: 1

Method.....: SW846 8330

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,3,5-Trinitrobenzene	ND	0.25	mg/kg
1,3-Dinitrobenzene	ND	0.25	mg/kg
2,4,6-Trinitrotoluene	**2.2**	**0.25**	**mg/kg**
2,4-Dinitrotoluene	ND	0.25	mg/kg
2,6-Dinitrotoluene	ND	0.25	mg/kg
2-Amino-4,6-dinitrotoluene	ND	0.25	mg/kg
2-Nitrotoluene	ND	0.25	mg/kg
3-Nitrotoluene	ND	0.25	mg/kg
4-Amino-2,6-dinitrotoluene	ND	0.25	mg/kg
4-Nitrotoluene	ND	0.25	mg/kg
HMX	**40 AA**	**5.0**	**mg/kg**
Nitrobenzene	ND	0.25	mg/kg
PETN	ND	0.50	mg/kg
RDX	**250 AA**	**5.0**	**mg/kg**
Tetryl	ND	0.25	mg/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dinitrofluorobenzene	99	(61 - 135)
3,4-Dinitrotoluene	99	(58 - 113)

NOTE(S):

AA = The result were taken from a 20x dilution on the cyano column on 3/1/2001 at 2:50.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-003

TOTAL Metals

Lot-Sample #...: G1B130221-003 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051385						
Lead	68.7	11.9	mg/kg	SW846 6010B	02/20-02/23/01	DV25W1AE
Aluminum	8820	23.8	mg/kg	SW846 6010B	02/20-02/23/01	DV25W1AF
Barium	94.8	23.8	mg/kg	SW846 6010B	02/20-02/23/01	DV25W1AG
Cadmium	0.80	0.59	mg/kg	SW846 6010B	02/20-02/23/01	DV25W1AH
Chromium	17.0	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV25W1AJ
Prep Batch #...: 1053394						
Mercury	0.020 B	0.048	mg/kg	SW846 7471A	02/22/01	DV25W1AK

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-003

GC/MS Volatiles

Lot-Sample #...: G1B130221-003 Work Order #...: DV25W1AD Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/15/01
Prep Batch #...: 1050528
Dilution Factor: 1.24 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Xylenes (total)	ND	7.4	ug/kg	1.2
Methylene chloride	ND	15	ug/kg	1.2
Toluene	ND	7.4	ug/kg	0.90
Acetone	**51 B**	**15**	**ug/kg**	**7.4**
2-Butanone (MEK)	ND	15	ug/kg	7.4
4-Methyl-2-pentanone (MIBK)	ND	15	ug/kg	7.4

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	92	(62 - 120)
1,2-Dichloroethane-d4	97	(77 - 135)
Toluene-d8	101	(79 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-003-FD

HPLC

Lot-Sample #...: G1B130221-004
Date Sampled...: 02/12/01
Prep Date.....: 02/15/01
Prep Batch #...: 1046402
Dilution Factor: 1

Work Order #...: DV2501AC
Date Received..: 02/13/01
Analysis Date..: 02/27/01
Analysis Time..: 20:36

Matrix.....: SOLID

Method.....: SW846 8330

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,3,5-Trinitrobenzene	ND	0.25	mg/kg
1,3-Dinitrobenzene	ND	0.25	mg/kg
2,4,6-Trinitrotoluene	**2.0**	**0.25**	**mg/kg**
2,4-Dinitrotoluene	ND	0.25	mg/kg
2,6-Dinitrotoluene	ND	0.25	mg/kg
2-Amino-4,6-dinitrotoluene	ND	0.25	mg/kg
2-Nitrotoluene	ND	0.25	mg/kg
3-Nitrotoluene	ND	0.25	mg/kg
4-Amino-2,6-dinitrotoluene	ND	0.25	mg/kg
4-Nitrotoluene	ND	0.25	mg/kg
HMX	**29 AA**	**5.0**	**mg/kg**
Nitrobenzene	ND	0.25	mg/kg
PETN	ND	0.50	mg/kg
RDX	**190 AA**	**5.0**	**mg/kg**
Tetryl	ND	0.25	mg/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dinitrofluorobenzene	98	(61 - 135)
3,4-Dinitrotoluene	98	(58 - 113)

NOTE(S):

AA = The result was taken from a 20x dilution on the cyano column on 3/1/2001 at 3:48.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-003-FD

TOTAL Metals

Lot-Sample #...: G1B130221-004 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051385						
Lead	70.0	11.8	mg/kg	SW846 6010B	02/20-02/23/01	DV2501AE
Aluminum	11600	23.7	mg/kg	SW846 6010B	02/20-02/23/01	DV2501AF
Barium	92.5	23.7	mg/kg	SW846 6010B	02/20-02/23/01	DV2501AG
Cadmium	0.65	0.59	mg/kg	SW846 6010B	02/20-02/23/01	DV2501AH
Chromium	19.8	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV2501AJ
Prep Batch #...: 1053394						
Mercury	0.023 B	0.047	mg/kg	SW846 7471A	02/22/01	DV2501AK

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-003-FD

GC/MS Volatiles

Lot-Sample #...: G1B130221-004 Work Order #...: DV2501AD Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/15/01
Prep Batch #...: 1050528
Dilution Factor: 1.44 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Xylenes (total)	3.2 J	8.5	ug/kg	1.4
Methylene chloride	ND	17	ug/kg	1.4
Toluene	5.1 J	8.5	ug/kg	1.0
Acetone	150 B	17	ug/kg	8.5
2-Butanone (MEK)	ND	17	ug/kg	8.5
4-Methyl-2-pentanone (MIBK)	ND	17	ug/kg	8.5

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	94	(62 - 120)
1,2-Dichloroethane-d4	100	(77 - 135)
Toluene-d8	100	(79 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-004

HPLC

Lot-Sample #...: G1B130221-005 Work Order #...: DV2511AC Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/27/01
Prep Batch #...: 1046402 Analysis Time..: 21:19
Dilution Factor: 1

Method.....: SW846 8330

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,3,5-Trinitrobenzene	ND	0.25	mg/kg
1,3-Dinitrobenzene	ND	0.25	mg/kg
2,4,6-Trinitrotoluene	**1.4**	**0.25**	**mg/kg**
2,4-Dinitrotoluene	ND	0.25	mg/kg
2,6-Dinitrotoluene	ND	0.25	mg/kg
2-Amino-4,6-dinitrotoluene	**0.14 J**	**0.25**	**mg/kg**
2-Nitrotoluene	ND	0.25	mg/kg
3-Nitrotoluene	ND	0.25	mg/kg
4-Amino-2,6-dinitrotoluene	**0.26 AB**	**0.25**	**mg/kg**
4-Nitrotoluene	ND	0.25	mg/kg
HMX	**15**	**0.25**	**mg/kg**
Nitrobenzene	ND	0.25	mg/kg
PETN	ND	0.50	mg/kg
RDX	**22 AA**	**1.2**	**mg/kg**
Tetryl	ND	0.25	mg/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dinitrofluorobenzene	99	(61 - 135)
3,4-Dinitrotoluene	95	(58 - 113)

NOTE(S):

J Estimated result. Result is less than RL.

AA=The result was taken from a 5x dilution on the cyano column on 3/1/2001 at 4:46.

AB=Unable to confirm at 5x dilution on the cyano column.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-004

TOTAL Metals

Lot-Sample #...: G1B130221-005 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051385						
Lead	14.3	11.9	mg/kg	SW846 6010B	02/20-02/23/01	DV2511AE
Aluminum	12700	23.8	mg/kg	SW846 6010B	02/20-02/23/01	DV2511AF
Barium	69.0	23.8	mg/kg	SW846 6010B	02/20-02/23/01	DV2511AG
Cadmium	ND	0.59	mg/kg	SW846 6010B	02/20-02/23/01	DV2511AH
Chromium	16.5	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV2511AJ
Prep Batch #...: 1053394						
Mercury	0.017 B	0.048	mg/kg	SW846 7471A	02/22/01	DV2511AK

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PBS-004

GC/MS Volatiles

Lot-Sample #...: G1B130221-005 Work Order #...: DV2511AD Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/15/01
Prep Batch #...: 1050528
Dilution Factor: 1 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Xylenes (total)	1.6 J	5.9	ug/kg	0.96
Methylene chloride	ND	12	ug/kg	1.0
Toluene	2.9 J	5.9	ug/kg	0.73
Acetone	23 B	12	ug/kg	5.9
2-Butanone (MEK)	ND	12	ug/kg	5.9
4-Methyl-2-pentanone (MIBK)	ND	12	ug/kg	5.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	92	(62 - 120)
1,2-Dichloroethane-d4	99	(77 - 135)
Toluene-d8	101	(79 - 122)

NOTE(S):

J Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-005

HPLC

Lot-Sample #...: G1B130221-006 Work Order #...: DV2521AC Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/27/01
Prep Batch #...: 1046402 Analysis Time..: 22:02
Dilution Factor: 1

Method.....: SW846 8330

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,3,5-Trinitrobenzene	ND	0.25	mg/kg
1,3-Dinitrobenzene	ND	0.25	mg/kg
2,4,6-Trinitrotoluene	ND	0.25	mg/kg
2,4-Dinitrotoluene	ND	0.25	mg/kg
2,6-Dinitrotoluene	ND	0.25	mg/kg
2-Amino-4,6-dinitrotoluene	ND	0.25	mg/kg
2-Nitrotoluene	ND	0.25	mg/kg
3-Nitrotoluene	ND	0.25	mg/kg
4-Amino-2,6-dinitrotoluene	ND	0.25	mg/kg
4-Nitrotoluene	ND	0.25	mg/kg
HMX	**0.92**	**0.25**	**mg/kg**
Nitrobenzene	ND	0.25	mg/kg
PETN	ND	0.50	mg/kg
RDX	**1.6**	**0.25**	**mg/kg**
Tetryl	ND	0.25	mg/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dinitrofluorobenzene	102	(61 - 135)
3,4-Dinitrotoluene	99	(58 - 113)

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-005

TOTAL Metals

Lot-Sample #...: G1B130221-006 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051385						
Lead	13.0	11.7	mg/kg	SW846 6010B	02/20-02/23/01	DV2521AE
Aluminum	9540	23.4	mg/kg	SW846 6010B	02/20-02/23/01	DV2521AF
Barium	53.7	23.4	mg/kg	SW846 6010B	02/20-02/23/01	DV2521AG
Cadmium	ND	0.59	mg/kg	SW846 6010B	02/20-02/23/01	DV2521AH
Chromium	20.4	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV2521AJ
Prep Batch #...: 1053394						
Mercury	ND	0.047	mg/kg	SW846 7471A	02/22/01	DV2521A3

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-005

GC/MS Volatiles

Lot-Sample #...: G1B130221-006 Work Order #...: DV2522AD Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/16/01 Analysis Date..: 02/16/01
Prep Batch #...: 1054461
Dilution Factor: 1 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Xylenes (total)	ND	5.9	ug/kg	0.95
2-Butanone (MEK)	ND	12	ug/kg	5.9
4-Methyl-2-pentanone (MIBK)	ND	12	ug/kg	5.9
Acetone	75 B	12	ug/kg	5.9
Methylene chloride	ND	12	ug/kg	0.98
Toluene	ND	5.9	ug/kg	0.72

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	93	(62 - 120)
1,2-Dichloroethane-d4	102	(77 - 135)
Toluene-d8	98	(79 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-005

GC/MS Volatiles

Lot-Sample #...: G1B130221-006 Work Order #...: DV2521AD Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01
Prep Date.....: 02/15/01 Analysis Date..: 02/15/01
Prep Batch #...: 1050528
Dilution Factor: 1 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Xylenes (total)	ND	5.9	ug/kg	0.95
Methylene chloride	ND	12	ug/kg	0.98
Toluene	**2.4 J**	**5.9**	**ug/kg**	**0.72**
Acetone	**130 B**	**12**	**ug/kg**	**5.9**
2-Butanone (MEK)	ND	12	ug/kg	5.9
4-Methyl-2-pentanone (MIBK)	ND	12	ug/kg	5.9

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	94	(62 - 120)
1,2-Dichloroethane-d4	101	(77 - 135)
Toluene-d8	102	(79 - 122)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST, INC.

Client Sample ID: MFA-BAT-RB021201

HPLC

Lot-Sample #...: G1B130221-007 Work Order #...: DV2531AA Matrix.....: WATER
Date Sampled...: 02/12/01 14:27 Date Received..: 02/13/01 09:30
Prep Date.....: 02/14/01 Analysis Date..: 02/27/01
Prep Batch #...: 1045317 Analysis Time..: 09:49
Dilution Factor: 1

Method.....: SW846 8330

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1,3,5-Trinitrobenzene	**0.11 J**	**0.30**	**ug/L**
1,3-Dinitrobenzene	ND	0.10	ug/L
2,4,6-Trinitrotoluene	ND	0.10	ug/L
2,4-Dinitrotoluene	ND	0.10	ug/L
2,6-Dinitrotoluene	ND	0.30	ug/L
2-Amino-4,6-dinitrotoluene	ND	0.10	ug/L
2-Nitrotoluene	ND	1.0	ug/L
3-Nitrotoluene	ND	1.0	ug/L
4-Amino-2,6-dinitrotoluene	ND	0.10	ug/L
4-Nitrotoluene	ND	1.0	ug/L
HMX	ND	1.0	ug/L
Nitrobenzene	**0.13 J**	**1.0**	**ug/L**
PETN	ND	1.0	ug/L
RDX	**0.14 J**	**0.80**	**ug/L**
Tetryl	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4-Dinitrofluorobenzene	95	(55 - 144)
3,4-Dinitrotoluene	95	(49 - 129)

NOTE(S):

J Estimated result. Result is less than RL.

TOLTEST, INC.

Client Sample ID: MFA-BAT-RB021201

TOTAL Metals

Lot-Sample #...: G1B130221-007 Matrix.....: WATER
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051302						
Lead	ND	0.10	mg/L	SW846 6010B	02/20-02/21/01	DV2531AC
Aluminum	ND	0.20	mg/L	SW846 6010B	02/20-02/21/01	DV2531AD
Barium	ND	0.20	mg/L	SW846 6010B	02/20-02/21/01	DV2531AE
Cadmium	ND	0.0050	mg/L	SW846 6010B	02/20-02/21/01	DV2531AF
Chromium	ND	0.010	mg/L	SW846 6010B	02/20-02/21/01	DV2531AG
Prep Batch #...: 1054312						
Mercury	ND	0.00020	mg/L	SW846 7470A	02/23/01	DV2531AH

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-006

TOTAL Metals

Lot-Sample #...: G1B130221-008 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051388						
Arsenic	18.0	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AG
Barium	176	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AH
Cadmium	47.2	0.26	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AJ
Chromium	51.4	0.65	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AK
Cobalt	13.5	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AL
Lead	3720	0.39	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AM
Lithium	6.6	6.5	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AN
Manganese	14900 RLA	3.2	mg/kg	SW846 6010B	02/20-02/27/01	DV2561AP
Nickel	30.7	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AQ
Selenium	6.0	0.65	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AR
Silver	2.1	0.65	mg/kg	SW846 6010B	02/20-02/23/01	DV2561AT
Zinc	27800 RLA	6.5	mg/kg	SW846 6010B	02/20-02/27/01	DV2561AU
Prep Batch #...: 1053394						
Mercury	0.92	0.052	mg/kg	SW846 7471A	02/22/01	DV2561A

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

RLA The reporting limit for this analyte is elevated due to sample dilution.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-006

General Chemistry

Lot-Sample #...: G1B130221-008 Work Order #...: DV256 Matrix.....: SOLID
Date Sampled...: 02/12/01 10:20 Date Received..: 02/13/01 09:30
% Moisture.....: 23

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH	7.2	0.10	--	SW846 9045C	02/23/01	1057256
		Dilution Factor: 1		Analysis Time..: 12:00	MDL.....: 0.10	
Ignitability	ND	140	deg F	SW846 1020A	02/23/01	1057363
		Dilution Factor: 1		Analysis Time..: 10:30	MDL.....: 0.0	
Percent Moisture	22.7	0.10	%	ASTM D 2216-90	02/15-02/16/01	1046266
		Dilution Factor: 1		Analysis Time..: 13:18	MDL.....: 0.10	
Reactive Cyanide	4.0 B	259	mg/kg	SW846 7.3.3	02/22/01	1053534
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	
Reactive Sulfide	33.7 B	259	mg/kg	SW846 7.3.4	02/22/01	1053533
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-007

TOTAL Metals

Lot-Sample #...: G1B130221-009 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051388						
Arsenic	34.4	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1A1
Barium	651	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1A2
Cadmium	82.1	0.27	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1A3
Chromium	239	0.66	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1A4
Cobalt	25.7	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1A5
Lead	2180	0.40	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1A6
Lithium	7.2	6.6	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1A7
Manganese	34700 RLA	3.3	mg/kg	SW846 6010B	02/20-02/27/01	DV26M1A8
Nickel	40.0	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1A9
Selenium	12.9	0.66	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1CA
Silver	6.8	0.66	mg/kg	SW846 6010B	02/20-02/23/01	DV26M1CC
Zinc	65400 RLA	6.6	mg/kg	SW846 6010B	02/20-02/27/01	DV26M1CD
Prep Batch #...: 1053394						
Mercury	0.88 RLA	0.11	mg/kg	SW846 7471A	02/22/01	DV26M1C

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

RLA The reporting limit for this analyte is elevated due to sample dilution.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-007

General Chemistry

Lot-Sample #...: G1B130221-009 Work Order #...: DV26M Matrix.....: SOLID
Date Sampled...: 02/12/01 10:42 Date Received..: 02/13/01 09:30
% Moisture.....: 25

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH	7.4	0.10	--	SW846 9045C	02/23/01	1057256
		Dilution Factor: 1		Analysis Time..: 12:00	MDL.....: 0.10	
Ignitability	ND	140	deg F	SW846 1020A	02/23/01	1057363
		Dilution Factor: 1		Analysis Time..: 10:30	MDL.....: 0.0	
Percent Moisture	24.7	0.10	%	ASTM D 2216-90	02/15-02/16/01	1046266
		Dilution Factor: 1		Analysis Time..: 13:18	MDL.....: 0.10	
Reactive Cyanide	4.1 B	265	mg/kg	SW846 7.3.3	02/22/01	1053534
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	
Reactive Sulfide	74.3 B	265	mg/kg	SW846 7.3.4	02/22/01	1053533
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-008

TOTAL Metals

Lot-Sample #...: G1B130221-010 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051388						
Arsenic	29.7	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AG
Barium	141	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AH
Cadmium	51.8	0.26	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AJ
Chromium	31.7	0.66	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AK
Cobalt	15.0	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AL
Lead	1560	0.40	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AM
Lithium	5.8 B	6.6	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AN
Manganese	23200 RLA	3.3	mg/kg	SW846 6010B	02/20-02/27/01	DV26N1AP
Nickel	35.6	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AQ
Selenium	8.0	0.66	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AR
Silver	1.6	0.66	mg/kg	SW846 6010B	02/20-02/23/01	DV26N1AT
Zinc	42700 RLA	6.6	mg/kg	SW846 6010B	02/20-02/27/01	DV26N1AU
Prep Batch #...: 1053394						
Mercury	7.3 RLA	0.53	mg/kg	SW846 7471A	02/22/01	DV26N1

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

RLA The reporting limit for this analyte is elevated due to sample dilution.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-008

General Chemistry

Lot-Sample #...: G1B130221-010 Work Order #...: DV26N Matrix.....: SOLID
Date Sampled...: 02/12/01 10:50 Date Received..: 02/13/01 09:30
% Moisture.....: 24

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH	7.0	0.10	--	SW846 9045C	02/23/01	1057256
		Dilution Factor: 1		Analysis Time..: 12:00	MDL.....: 0.10	
Ignitability	ND	140	deg F	SW846 1020A	02/23/01	1057363
		Dilution Factor: 1		Analysis Time..: 10:30	MDL.....: 0.0	
Percent Moisture	24.2	0.10	%	ASTM D 2216-90	02/15-02/16/01	1046266
		Dilution Factor: 1		Analysis Time..: 13:18	MDL.....: 0.10	
Reactive Cyanide	4.1 B	264	mg/kg	SW846 7.3.3	02/22/01	1053534
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	
Reactive Sulfide	63.3 B	264	mg/kg	SW846 7.3.4	02/22/01	1053533
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-009

TOTAL Metals

Lot-Sample #...: G1B130221-011 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051388						
Arsenic	21.8	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AG
Barium	484	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AH
Cadmium	59.1	0.24	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AJ
Chromium	83.5	0.60	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AK
Cobalt	13.5	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AL
Lead	5920	0.36	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AM
Lithium	5.8 B	6.0	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AN
Manganese	17800 RLA	6.0	mg/kg	SW846 6010B	02/20-02/27/01	DV2651AP
Nickel	31.9	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AQ
Selenium	7.0	0.60	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AR
Silver	16.1	0.60	mg/kg	SW846 6010B	02/20-02/23/01	DV2651AT
Zinc	67000 RLA	12.1	mg/kg	SW846 6010B	02/20-02/27/01	DV2651AU
Prep Batch #...: 1053394						
Mercury	0.42	0.048	mg/kg	SW846 7471A	02/22/01	DV2651[illegible]

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

RLA The reporting limit for this analyte is elevated due to sample dilution.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-009

General Chemistry

Lot-Sample #...: G1B130221-011 Work Order #...: DV265 Matrix.....: SOLID
Date Sampled...: 02/12/01 11:02 Date Received..: 02/13/01 09:30
% Moisture.....: 17

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH	7.6	0.10	--	SW846 9045C	02/23/01	1057256
		Dilution Factor: 1		Analysis Time..: 12:00	MDL.....: 0.10	
Ignitability	ND	140	deg F	SW846 1020A	02/23/01	1057363
		Dilution Factor: 1		Analysis Time..: 10:30	MDL.....: 0.0	
Percent Moisture	17.2	0.10	%	ASTM D 2216-90	02/15-02/16/01	1046266
		Dilution Factor: 1		Analysis Time..: 13:18	MDL.....: 0.10	
Reactive Cyanide	3.8 B	242	mg/kg	SW846 7.3.3	02/22/01	1053534
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	
Reactive Sulfide	79.7 B	242	mg/kg	SW846 7.3.4	02/22/01	1053533
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-009-FD

TOTAL Metals

Lot-Sample #...: G1B130221-012 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051388						
Arsenic	22.3	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AG
Barium	470	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AH
Cadmium	42.9	0.25	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AJ
Chromium	85.7	0.63	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AK
Cobalt	12.5	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AL
Lead	1200	0.38	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AM
Lithium	7.5	6.3	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AN
Manganese	19300 RLA	3.1	mg/kg	SW846 6010B	02/20-02/27/01	DV27F1AP
Nickel	28.7	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AQ
Selenium	7.4	0.63	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AR
Silver	2.6	0.63	mg/kg	SW846 6010B	02/20-02/23/01	DV27F1AT
Zinc	31300 RLA	6.3	mg/kg	SW846 6010B	02/20-02/27/01	DV27F1AU
Prep Batch #...: 1053394						
Mercury	0.50	0.050	mg/kg	SW846 7471A	02/22/01	DV27F1A

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

RLA The reporting limit for this analyte is elevated due to sample dilution.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-009-FD

General Chemistry

Lot-Sample #...: G1B130221-012 Work Order #...: DV27F Matrix.....: SOLID
Date Sampled...: 02/12/01 11:02 Date Received..: 02/13/01 09:30
% Moisture.....: 20

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH	7.7	0.10	--	SW846 9045C	02/23/01	1057256
		Dilution Factor: 1		Analysis Time..: 12:00	MDL.....: 0.10	
Ignitability	ND	140	deg F	SW846 1020A	02/23/01	1057363
		Dilution Factor: 1		Analysis Time..: 10:30	MDL.....: 0.0	
Percent Moisture	20.0	0.10	%	ASTM D 2216-90	02/15-02/16/01	1046266
		Dilution Factor: 1		Analysis Time..: 13:18	MDL.....: 0.10	
Reactive Cyanide	3.9 B	250	mg/kg	SW846 7.3.3	02/22/01	1053534
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	
Reactive Sulfide	42.5 B	250	mg/kg	SW846 7.3.4	02/22/01	1053533
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-010

TOTAL Metals

Lot-Sample #...: G1B130221-013 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051388						
Arsenic	5.5	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AG
Barium	165	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AH
Cadmium	8.5	0.26	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AJ
Chromium	25.1	0.64	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AK
Cobalt	14.0	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AL
Lead	461	0.38	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AM
Lithium	7.2	6.4	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AN
Manganese	3470	0.64	mg/kg	SW846 6010B	02/20-02/27/01	DV27H1AP
Nickel	30.6	1.3	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AQ
Selenium	1.7	0.64	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AR
Silver	1.7	0.64	mg/kg	SW846 6010B	02/20-02/23/01	DV27H1AT
Zinc	8020	1.3	mg/kg	SW846 6010B	02/20-02/27/01	DV27H1AU
Prep Batch #...: 1053394						
Mercury	0.77	0.051	mg/kg	SW846 7471A	02/22/01	DV27H1A

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PBS-010

General Chemistry

Lot-Sample #...: G1B130221-013 Work Order #...: DV27H Matrix.....: SOLID
Date Sampled...: 02/12/01 11:23 Date Received..: 02/13/01 09:30
% Moisture.....: 22

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH	7.3	0.10	--	SW846 9045C	02/23/01	1057256
		Dilution Factor: 1		Analysis Time..: 12:00	MDL.....: 0.10	
Ignitability	ND	140	deg F	SW846 1020A	02/23/01	1057363
		Dilution Factor: 1		Analysis Time..: 10:30	MDL.....: 0.0	
Percent Moisture	21.9	0.10	%	ASTM D 2216-90	02/15-02/16/01	1046266
		Dilution Factor: 1		Analysis Time..: 13:18	MDL.....: 0.10	
Reactive Cyanide	4.0 B	256	mg/kg	SW846 7.3.3	02/22/01	1053534
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	
Reactive Sulfide	149 B	256	mg/kg	SW846 7.3.4	02/22/01	1053533
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-011

TOTAL Metals

Lot-Sample #...: G1B130221-014 Matrix.....: SOLID
Date Sampled...: 02/12/01 Date Received..: 02/13/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1051388						
Arsenic	9.4	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AG
Barium	277	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AH
Cadmium	31.4	0.25	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AJ
Chromium	40.3	0.62	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AK
Cobalt	17.0	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AL
Lead	704	0.37	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AM
Lithium	7.1	6.2	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AN
Manganese	7380 RLA	3.1	mg/kg	SW846 6010B	02/20-02/27/01	DV27M1AP
Nickel	35.0	1.2	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AQ
Selenium	2.7	0.62	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AR
Silver	3.2	0.62	mg/kg	SW846 6010B	02/20-02/23/01	DV27M1AT
Zinc	19400 RLA	6.2	mg/kg	SW846 6010B	02/20-02/27/01	DV27M1AU
Prep Batch #...: 1053394						
Mercury	0.69	0.050	mg/kg	SW846 7471A	02/22/01	DV27M1

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

RLA The reporting limit for this analyte is elevated due to sample dilution.

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-011

General Chemistry

Lot-Sample #...: G1B130221-014 Work Order #...: DV27M Matrix.....: SOLID
Date Sampled...: 02/12/01 11:40 Date Received..: 02/13/01 09:30
% Moisture.....: 20

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH	7.6	0.10	--	SW846 9045C	02/23/01	1057256
		Dilution Factor: 1		Analysis Time..: 12:00	MDL.....: 0.10	
Ignitability	ND	140	deg F	SW846 1020A	02/23/01	1057363
		Dilution Factor: 1		Analysis Time..: 10:30	MDL.....: 0.0	
Percent Moisture	19.7	0.10	%	ASTM D 2216-90	02/15-02/16/01	1046266
		Dilution Factor: 1		Analysis Time..: 13:18	MDL.....: 0.10	
Reactive Cyanide	3.9 B	249	mg/kg	SW846 7.3.3	02/22/01	1053534
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	
Reactive Sulfide	69.7 B	249	mg/kg	SW846 7.3.4	02/22/01	1053533
		Dilution Factor: 1		Analysis Time..: 00:00	MDL.....:	

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

TOLTEST INC. FedEX 825325645823

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Sent From: ☐ Corporate ☐ Plymouth ☐ Pittsburgh ☐ Other

STL

MFA-BAT-001

Chain of Custody Record

36604 Page 1 of 2

Project No.: 37826
Client:
P.O. No.:
Project/Location: NSWC Crane MFA Battery Site
Project Mgr.:
Sampler's Name: Peter Chevalier
Phone No.:
Sampler's Signature: [signature]

Item No.	Sample I.D.	Date Sampled	Time Sampled	Type	Matrix	Sample Location	Total No. of Containers	Soil area list	Battery area list						Preserved Yes/No	LAB USE ONLY Lab #
1	MFA-BAT-PES 001	2/12/01	1251	G	Soil	Soil area sample #1 0-1'	4	✓							GC	
2	MFA-BAT-PES 002		1315	G		Soil area sample #2 1-2'	3	✓	(inc. 1 pouch w/3 Encores)							
3	MFA-BAT-PES-003		1345	G		Soil area sample #3 2-3'	3	—			"					
4	MFA-BAT-PES-003FD		1345	G		Soil area sample #3 2-3'	3	—			"					
5	MFA BAT-PES-004		1434	G		Soil area sample #4 0-1'	3	—			"					
6	MFA-BAT-PES-005		1440	G	—	Soil area sample #5 3-4'	4	—	(inc. 1 pouch w/5 Encores)							MS/MSD
7	MFA-BAT-RB02120 1		1427	G	liquid	rinse blank	4	✓	(8330 + metals only)							
8	MFA-BAT-PES-006		1020	G	Soil	battery area sample #6 0-1'	2		✓							
9	MFA-BAT-PES-007		1042	G	Soil	battery area sample #7 0-1'	4		✓		MS/MSD					
10	MFA-BAT-PES-008		1050	G	Soil	battery area sample #8 0-1'	2		✓							

Item No.	Relinquished By:	Date	Time	Received By:	Date	Time
	[signature]	2/12/01	1530	[signature]	2/13/01	1025
Item No.	Relinquished By:	Date	Time	Received By:	Date	Time
Item No.	Relinquished By:	Date	Time	Received By:	Date	Time
Item No.	Relinquished By:	Date	Time	Received By:	Date	Time

LAB USE ONLY

Were samples delivered ☐ in person ☑ by courier
Were samples preserved ☑ in field ☑ in lab ☐ N/A
Temp of samples 3 °C
Did samples arrive intact and sealed? ☑ yes ☐ no ☐ N/A
Were proper containers used? ☑ yes ☐ no
Was container labeled properly for contents? ☑ yes ☐ no
Were samples packaged properly for type of material? ☑ yes ☐ no
Was shipping label completed properly per regulations? (49 CFR 170, etc.) ☑ yes ☐ no

Comments:

TAT

Distribution: Original plus one accompanies shipment (white and yellow); copy to coordinator field files (pink)

Rev. 4/99

TOLTEST, INC.

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MFA-BAT-OCL

Sent From: ☐ Corporate ☐ Plymouth ☐ Pittsburgh ☐ Other

Chain of Custody Record

36603 Page 2 of 2

Project No.: 37826
P.O. No.:
Project Mgr.:
Phone No.:
Client:
Project/Location: NSWC Crane MFA Battery Site
Sampler's Name: Peter J. Chevalier
Sampler's Signature: [signature]

Item No.	Sample I.D.	Date Sampled	Time Sampled	Type	Matrix	Sample Location	Total No. of Containers	Battery area list	Parameters	Preserved Yes/No	LAB USE ONLY Lab #
1	MFA-BAT-PES-009	2/12/01	1102	G	soil	battery area sample #9 0-1'	2	✓			
2	MFA-BAT-PES-009-FD		1102			battery area sample #9 0-1'	2	✓			
3	MFA-BAT-PES-010		1123			battery area sample #10 0-1'	2	✓			
4	MFA-BAT-PES-011		1140			battery area sample #11 0-1'	2	✓			
5											
6						See attached sheet for					
7						soil & battery area			✓		
8						analyte lists					
9											
10											

Item No.	Relinquished By:	Date	Time	Received By:	Date	Time
	[signature]	2/12/01 ~~1103~~	1530	[signature]	2/13/01	1025
Item No.	Relinquished By:	Date	Time	Received By:	Date	Time
Item No.	Relinquished By:	Date	Time	Received By:	Date	Time
Item No.	Relinquished By:	Date	Time	Received By:	Date	Time

LAB USE ONLY

Were samples delivered ☐ in person ☑ by courier
Were samples preserved ☑ in field ☑ in lab ☐ N/A
Temp of samples 3 °C
Did samples arrive intact and sealed? ☑ yes ☐ no ☐ N/A
Were proper containers used? ☑ yes ☐ no
Was container labeled properly for contents? ☑ yes ☐ no
Were samples packaged properly for type of material? ☑ yes ☐ no
Was shipping label completed properly per regulations? (49 CFR 170, etc.) ☑ yes ☐ no
Comments:

TAT

Distribution: Original plus one accompanies shipment (white and yellow); copy to coordinator field files (pink)

Rev. 4/99

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-012

TCLP Metals

Lot-Sample #...: G1G260188-001 Matrix.....: SOLID
Date Sampled...: 07/25/01 Date Received..: 07/26/01
Leach Date.....: 07/27/01 Leach Batch #..: P120808

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1208334						
Arsenic	ND	0.020	mg/L	SW846 6020	07/31/01	EG0PA1AM
Barium	1.6	0.010	mg/L	SW846 6020	07/31/01	EG0PA1AN
Cadmium	0.39	0.010	mg/L	SW846 6020	07/31/01	EG0PA1AP
Chromium	ND	0.020	mg/L	SW846 6020	07/31/01	EG0PA1AQ
Lead	1.3	0.010	mg/L	SW846 6020	07/31/01	EG0PA1AR
Selenium	0.022	0.020	mg/L	SW846 6020	07/31/01	EG0PA1AT
Silver	ND	0.010	mg/L	SW846 6020	07/31/01	EG0PA1AU
Prep Batch #...: 1212234						
Mercury	ND	0.0020	mg/L	SW846 7471A	07/30/01	EG0PA1AL

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311

TOLTEST, INC.

Client Sample ID: MFA-BAT-PES-012

TOTAL Metals

Lot-Sample #...: G1G260188-001 Matrix.....: SOLID
Date Sampled...: 07/25/01 Date Received..: 07/26/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1208306						
Arsenic	7.3	0.25	mg/kg	SW846 6020	07/27/01	EG0PA1AD
Barium	147	0.12	mg/kg	SW846 6020	07/27/01	EG0PA1AE
Cadmium	18.9	0.12	mg/kg	SW846 6020	07/27/01	EG0PA1AF
Chromium	39.1	0.25	mg/kg	SW846 6020	07/27/01	EG0PA1AG
Lead	552	0.12	mg/kg	SW846 6020	07/27/01	EG0PA1AH
Selenium	ND G	0.37	mg/kg	SW846 6020	07/27/01	EG0PA1AJ
Silver	1.7	0.12	mg/kg	SW846 6020	07/27/01	EG0PA1AK
Prep Batch #...: 1212290						
Mercury	0.49	0.050	mg/kg	SW846 7471A	07/30-07/31/01	EG0PA1AC

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

G Elevated reporting limit. The reporting limit is elevated due to matrix interference.

TOLTEST, INC.

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MFA-BAT-002

Sent From: ☐ Corporate ☐ Plymouth ☐ Pittsburgh ☐ Other

Chain of Custody Record

27775

Page 1 of 1

Project No.: 378876
Client:
P.O. No.:
Project/Location: NSWC Crane MFA Battery Site
Project Mgr.:
Sampler's Name: Peter J. Charalia
Phone No.:
Sampler's Signature:

Item No.	Sample I.D.	Date Sampled	Time Sampled	Type	Matrix	Sample Location	Total No. of Containers	Metals	TCLP*							Preserved Yes/No	LAB USE ONLY Lab #
1	MFA-BAT-PES-012	7/25/01	1355	C	Soil	Battery area composite	2	-	*								
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

*Perform total RCRA metals, if total levels indicate possible haz material, (20x regulatory limit) Perform TCLP on those specific metals

RECEIVED IN GOOD CONDITION UNDER COC
JUL 26 2001

Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
		7/26/01 1530		7-26-01 1060
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time

LAB USE ONLY

Were samples delivered ☐ in person ☐ by courier
Were samples preserved ☐ in field ☐ in lab ☐ N/A
Temp of samples ____ °C
Did samples arrive intact and sealed? ☐ yes ☐ no ☐ N/A
Were proper containers used? ☐ yes ☐ no
Was container labeled properly for contents? ☐ yes ☐ no
Were samples packaged properly for type of material? ☐ yes ☐ no
Was shipping label completed properly per regulations? (49 CFR 170, etc.) ☐ yes ☐ no
Comments:
TAT

Distribution: Original plus one accompanies shipment (white and yellow); copy to coordinator field files (pink)

Rev. 4/99

APPENDIX E

WINDROW N-214 INFORMATION

TOLTEST, INC.

Record of Recipe Worksheet

Windrow # N-214 Day 0: 10/9/01

	Chicken		Straw		Soil		Total	
Batch #	cy	pounds	cy	pounds	cy	pounds	cy	pounds
1	3	5700	12.1	2450	5.275	11605	20.375	19755
2	3.1	5730	12	2400	5.275	11605	20.375	19735
3	3.1	5730	12.1	2420	5.275	11605	20.475	19755
4	3.1	5760	12.1	2440	5.275	11605	20.475	19805
5	3.1	5720	12.1	2460	5.275	11605	20.475	19785
6	3.1	5780	12.1	2450	5.275	11605	20.475	19835
7	3.1	5740	12.1	2420	5.275	11605	20.475	19765
8	3.25	5800	12.25	2500	5.275	11605	20.775	19905
9	3.75	6000	13	2850	5.275	11605	22.025	20455
10	3.25	5820	12.25	2540	5.275	11605	20.775	19965
11	3.1	5760	12.1	2490	5.275	11605	20.475	19855
12	3.1	5710	12	2400	5.275	11605	20.375	19715
13	3.25	5820	12.1	2460	5.275	11605	20.625	19885
14	3.1	5770	12.25	2510	5.275	11605	20.625	19885
15	3	5700	12.1	2470	5.275	11605	20.375	19775
16	3.1	5790	12	2400	5.275	11605	20.375	19795
17	3.1	5750	12.1	2440	5.275	11605	20.475	19795
18	3.1	5790	12.1	2460	5.275	11605	20.475	19855
19	3.25	5810	12.25	2640	5.275	11605	20.775	20055
20	3.1	5750	12	2400	5.275	11605	20.375	19755
21	3	5700	12.1	2470	5.275	11605	20.375	19775
22	3.1	5770	12.1	2450	5.275	11605	20.475	19825
23	3.2	5810	12.1	2420	5.275	11605	20.575	19835
24	3.1	5760	12.25	2540	5.275	11605	20.625	19905
25	3	5700	12	2400	5.275	11605	20.275	19705
26	3.1	5750	12.1	2450	5.275	11605	20.475	19805
27	3.25	5810	12	2400	5.275	11605	20.525	19815
28	3	5700	12.1	2470	5.275	11605	20.375	19775
29	3.15	5800	12.1	2490	5.275	11605	20.525	19895
30	3	5700	12.1	2460	5.275	11605	20.375	19765
31	3.25	5800	12.5	2600	5.275	11605	21.025	20005
32	3	5700	12	2400	5.275	11605	20.275	19705
33	3.25	5800	12	2400	5.275	11605	20.525	19805
34	3	5700	12.25	2500	5.275	11605	20.525	19805
35	3	5700	12.5	2600	5.275	11605	20.775	19905
36	3.5	5900	12.25	2500	5.275	11605	21.025	20005
37	3.25	5800	13	2800	5.275	11605	21.525	20205
38	3.5	5900	12.75	2700	5.275	11605	21.525	20205
39	3.25	5800	12.25	2500	5.275	11605	20.775	19905
40	3	5700	12.5	2600	5.275	11605	20.775	19905
41								
42								
43								
Total	125.95	230730	488.05	99750	211.00	464200	825	794680

RECORD OF RECIPE (MIX NO. 7B)

Building # N Windrow # 214 PERFORMED BY: _____

DATE: 101 101 INSPECTED BY: _____

Design Quantity: Chicken Manure 3 CY 5700 Pounds
Straw 12 CY 2400 Pounds
Soil _____ CY _____ Pounds

Batch Number	CHICKEN MANURE Supplier: _____		STRAW Supplier: _____		SOIL Location: _____		TOTAL ACTUAL QUANTITY	
	cubic yards	pounds	cubic yards	pounds	cubic yards	pounds	cubic yards	pounds
1	3	5700	12.10	2450				
2	3.10	5750	12	2400				
3	3.10	5730	12.10	2420				
4	3.10	5760	12.10	2440				
5	3.10	5720	12.10	2460				
6	3.10	5780	12.10	2450				
7	3.10	5740	12.10	2420				
8	3.25	5800	12.25	2500				
9	3.25	6000	13.00	2850				
10	3.25	5820	12.25	2540				
11	3.10	5780	12.10	2490				
12	3.10	5710	12	2400				
13	3.25	5820	12.10	2460				
14	3.10	5770	12.25	2510				
15	3	5700	12.10	2470				
16	3.10	5790	12	2400				
17	3.10	5780	12.10	2440				
18	3.10	5790	12.10	2460				
19	3.25	5810	12.25	2640				
Total								

Comments:

RECORD OF RECIPE (MIX NO. 7B)

Building # N Windrow # 214 PERFORMED BY: _____

DATE: 1 / 01 INSPECTED BY: _____

Design Quantity: Chicken Manure 3 CY 5700 Pounds
Straw 12 CY 2400 Pounds
Soil _____ CY _____ Pounds

Batch Number	CHICKEN MANURE Supplier: _____		STRAW Supplier: _____		SOIL Location: _____		TOTAL ACTUAL QUANTITY	
	cubic yards	pounds	cubic yards	pounds	cubic yards	pounds	cubic yards	pounds
20	3.10	5750	12	2400				
21	3	5700	12.10	2470				
22	3.10	5770	12.10	2450				
23	3.20	5810	12.10	2420				
24	3.10	5760	12.25	2540				
25	3	5700	12	2400				
26	3.10	5750	12.10	2450				
27	3.25	5810	12	2400				
28	3	5700	12.10	2470				
29	3.15	5800	12.10	2490				
30	3	5700	12.10	2460				
31								
32								
Total								

Comments:

Day 0 10/9/01

SOP 3.0 FIGURE 2a

Revised 02/25/98

RECORD OF RECIPE (MIX NO. 7B)

Building # N Windrow # A214 PERFORMED BY: _____

DATE: 10/8/01 INSPECTED BY: _____

Design Quantity: Chicken Manure 3 CY 5700 Pounds
Straw 12 CY 2400 Pounds
Soil _____ CY _____ Pounds

Batch Number	CHICKEN MANURE Supplier: _____		STRAW Supplier: _____		SOIL Location: _____		TOTAL ACTUAL QUANTITY	
	cubic yards	pounds	cubic yards	pounds	cubic yards	pounds	cubic yards	pounds
			12.50	2600				
1	3.25	5800	~~[illegible]~~					
2	3	5700	12	2400				
3	3.25	5800	12	2400				
4	3	5700	12.25	2500				
5	3	5700	12.50	2600				
6	3.50	5900	12.25	2500				
7	3.25	5800	13.00	2800				
8	3.50	5900	12.75	2700				
9	3.25	5800	12.25	2500				
10	3.00	5700	12.50	2600				
Total								

Comments:

Average Daily Windrow Temperature Summary Report

Windrow Number	Construction Date	Date Monitored	Age (Days)	PRE-Turn (Deg C)	POST-Turn (Deg C)
N214	10/9/01	10/9/01	0		35.10
		10/10/01	1	60.13	59.17
		10/11/01	2	62.70	48.50
		10/12/01	3	59.90	52.37
		10/13/01	4	65.73	60.43
		10/15/01	6	67.93	63.47
		10/16/01	7	68.43	65.07
		10/17/01	8	63.43	55.87
		10/18/01	9	69.27	63.37
		10/19/01	10	69.03	62.23
		10/20/01	11	68.47	61.70
		10/22/01	13	63.30	63.77
		10/23/01	14	64.70	61.40
		10/24/01	15	65.07	60.77
		10/26/01	17	63.70	63.90
		10/27/01	18	66.83	57.70
		10/29/01	20	60.47	60.17
		10/31/01	22	61.27	56.07

All average temperatures are in degrees centigrade

Friday, June 28, 2002

Average Daily Windrow Oxygen Summary Report

Windrow Number	*Construction Date*	*Date Monitored*	*Age (Days)*	*PRE-Turn (%)*	*POST-Turn (%)*
N214	10/9/01	10/9/01	0		6.87
		10/10/01	1	8.20	13.13
		10/11/01	2	6.47	13.33
		10/12/01	3	11.90	12.17
		10/13/01	4	10.47	6.97
		10/15/01	6	7.93	10.53
		10/16/01	7	6.63	8.43
		10/17/01	8	9.77	15.23
		10/18/01	9	7.40	8.40
		10/19/01	10	7.80	8.83
		10/20/01	11	5.47	11.33
		10/22/01	13	12.00	13.03
		10/23/01	14	6.67	12.93
		10/24/01	15	11.57	12.80
		10/26/01	17	10.23	9.60
		10/27/01	18	9.43	13.07
		10/29/01	20	11.37	9.30
		10/31/01	22	7.87	10.23

All average Oxygen values are expressed as a percent

Average Daily Windrow WHC Summary Report

Windrow Number	*Construction Date*	*Date Monitored*	*Age (Days)*	*PRE-Turn (%)*	*POST-Turn (%)*
N214	10/9/01	10/10/01	1		44.32
		10/11/01	2		50.04
		10/15/01	6		41.14
		10/22/01	13		48.72
		10/23/01	14		30.80
		10/29/01	20		37.86

All average MWHC values are expressed in percent

Average Daily Windrow PH Summary Report

Windrow Number	*Construction Date*	*Date Monitored*	*Age (Days)*	*PRE-Turn*	*PRE-Turn*
N214	10/9/01	10/15/01	6	8.60	
		10/22/01	13	8.58	
		10/29/01	20	8.54	

All average PH values are expressed in standard units

Friday, June 28, 2002

Windrow Number: N214 *1,3,5-TRINITROBENZENE Results*

Compound	Construction Date	Date Sampled	DaysOld	CrossSection	Location	Concentration	UGKG
135TNB	10/09/01	11/01/01	23	03	1	LT 500	
					2	LT 500	
					3	LT 500	
				Average Concentration for Cross Section 03 :			*500*
135TNB	10/09/01	11/01/01	23	05	1	LT 500	
					2	LT 500	
					3	LT 500	
				Average Concentration for Cross Section 05 :			*500*
135TNB	10/09/01	11/01/01	23	07	1	LT 500	
					2	LT 500	
					3	LT 500	
				Average Concentration for Cross Section 07 :			*500*
135TNB	10/09/01	11/01/01	23	09	1	LT 476	
					2	LT 500	
					3	LT 500	
				Average Concentration for Cross Section 09 :			*492*
135TNB	10/09/01	11/01/01	23	11	1	LT 500	
					2	LT 476	
					3	LT 476	
				Average Concentration for Cross Section 11 :			*484*

Average Concentration for Windrow on Day 23 : 495

Standard Deviation: 10

Percent Reduction of 135TNB: Not Applicable; Only one Sample Date

Windrow Number: N214 *1,3-DINITROBENZENE Results*

Compound	Construction Date	Date Sampled	DaysOld	CrossSection	Location	Concentration		UGKG
13DNB	10/09/01	11/01/01	23	03	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 03 :				*500*
13DNB	10/09/01	11/01/01	23	05	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 05 :				*500*
13DNB	10/09/01	11/01/01	23	07	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 07 :				*500*
13DNB	10/09/01	11/01/01	23	09	1	LT	476	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 09 :				*492*
13DNB	10/09/01	11/01/01	23	11	1	LT	500	
					2	LT	476	
					3	LT	476	
				Average Concentration for Cross Section 11 :				*484*

Average Concentration for Windrow on Day 23 : ***495***

Standard Deviation: ***10***

Percent Reduction of 13DNB: Not Applicable; Only one Sample Date

Windrow Number: N214 *2,4,6-TRINITROTOLUENE Results*

Compound	Construction Date	Date Sampled	DaysOld	CrossSection	Location	Concentration	UGKG
246TNT	10/09/01	11/01/01	23	03	1	LT	500
					2	LT	500
					3	LT	500
				Average Concentration for Cross Section 03 :			*500*
246TNT	10/09/01	11/01/01	23	05	1	LT	500
					2	LT	500
					3	LT	500
				Average Concentration for Cross Section 05 :			*500*
246TNT	10/09/01	11/01/01	23	07	1	LT	500
					2		158 J
					3	LT	500
				Average Concentration for Cross Section 07 :			*386*
246TNT	10/09/01	11/01/01	23	09	1	LT	476
					2	LT	500
					3	LT	500
				Average Concentration for Cross Section 09 :			*492*
246TNT	10/09/01	11/01/01	23	11	1	LT	500
					2	LT	476
					3	LT	476
				Average Concentration for Cross Section 11 :			*484*

Average Concentration for Windrow on Day 23 : 472

Standard Deviation: 88

Percent Reduction of 246TNT: Not Applicable; Only one Sample Date

Windrow Number: N214 *2,4-DINITROTOLUENE Results*

Compound	Construction Date	Date Sampled	DaysOld	CrossSection	Location	Concentration		UGKG
24DNT	10/09/01	11/01/01	23	03	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 03 :				*500*
24DNT	10/09/01	11/01/01	23	05	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 05 :				*500*
24DNT	10/09/01	11/01/01	23	07	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 07 :				*500*
24DNT	10/09/01	11/01/01	23	09	1	LT	476	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 09 :				*492*
24DNT	10/09/01	11/01/01	23	11	1	LT	500	
					2	LT	476	
					3	LT	476	
				Average Concentration for Cross Section 11 :				*484*

Average Concentration for Windrow on Day 23 : 495

Standard Deviation: 10

Percent Reduction of 24DNT: Not Applicable; Only one Sample Date

Windrow Number: N214 *2-NITROTOLUENE Results*

Compound	Construction Date	Date Sampled	DaysOld	CrossSection	Location	Concentration		UGKG
2NT	10/09/01	11/01/01	23	03	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 03 :				*500*
2NT	10/09/01	11/01/01	23	05	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 05 :				*500*
2NT	10/09/01	11/01/01	23	07	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 07 :				*500*
2NT	10/09/01	11/01/01	23	09	1	LT	476	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 09 :				*492*
2NT	10/09/01	11/01/01	23	11	1	LT	500	
					2	LT	476	
					3	LT	476	
				Average Concentration for Cross Section 11 :				*484*

Average Concentration for Windrow on Day 23 : 495

Standard Deviation: 10

Percent Reduction of 2NT: Not Applicable; Only one Sample Date

Windrow Number: N214 *3-NITROTOLUENE Results*

Compound	Construction Date	Date Sampled	DaysOld	CrossSection	Location	Concentration		UGKG
3NT	10/09/01	11/01/01	23	03	1	LT	500	
					2	LT	500	
					3	LT	500	
					Average Concentration for Cross Section 03 :			*500*
3NT	10/09/01	11/01/01	23	05	1	LT	500	
					2	LT	500	
					3	LT	500	
					Average Concentration for Cross Section 05 :			*500*
3NT	10/09/01	11/01/01	23	07	1	LT	500	
					2	LT	500	
					3	LT	500	
					Average Concentration for Cross Section 07 :			*500*
3NT	10/09/01	11/01/01	23	09	1	LT	476	
					2	LT	500	
					3	LT	500	
					Average Concentration for Cross Section 09 :			*492*
3NT	10/09/01	11/01/01	23	11	1	LT	500	
					2	LT	476	
					3	LT	476	
					Average Concentration for Cross Section 11 :			*484*

Average Concentration for Windrow on Day 23 : ***495***

Standard Deviation: ***10***

Percent Reduction of 3NT: Not Applicable; Only one Sample Date

Windrow Number: N214 *RDX Results*

Compound	*Construction Date*	*Date Sampled*	*DaysOld*	*CrossSection*	*Location*	*Concentration*		UGKG
RDX	10/09/01	11/01/01	23	03	1	LT	500	
					2		254 J	
					3		526	
					Average Concentration for Cross Section 03 :			*427*
RDX	10/09/01	11/01/01	23	05	1	LT	500	
					2		1420	
					3		646	
					Average Concentration for Cross Section 05 :			*855*
RDX	10/09/01	11/01/01	23	07	1	LT	500	
					2	LT	500	
					3	LT	500	
					Average Concentration for Cross Section 07 :			*500*
RDX	10/09/01	11/01/01	23	09	1	LT	476	
					2	LT	500	
					3		564	
					Average Concentration for Cross Section 09 :			*513*
RDX	10/09/01	11/01/01	23	11	1		2570	
					2		5120	
					3		2760	
					Average Concentration for Cross Section 11 :			*3483*

Average Concentration for Windrow on Day 23 : 1156

Standard Deviation: 1342

Percent Reduction of RDX: Not Applicable; Only one Sample Date

Windrow Number: N214 *TETRYL Results*

Compound	Construction Date	Date Sampled	DaysOld	CrossSection	Location	Concentration		UGKG
TETRYL	10/09/01	11/01/01	23	03	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 03 :				*500*
TETRYL	10/09/01	11/01/01	23	05	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 05 :				*500*
TETRYL	10/09/01	11/01/01	23	07	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 07 :				*500*
TETRYL	10/09/01	11/01/01	23	09	1	LT	476	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 09 :				*492*
TETRYL	10/09/01	11/01/01	23	11	1	LT	500	
					2	LT	476	
					3	LT	476	
				Average Concentration for Cross Section 11 :				*484*

Average Concentration for Windrow on Day 23 : ***495***

Standard Deviation: ***10***

Percent Reduction of TETRYL: Not Applicable; Only one Sample Date

Windrow Number: N214 *HMX Results*

Compound	Construction Date	Date Sampled	DaysOld	CrossSection	Location	Concentration	UGKG
HMX	10/09/01	11/01/01	23	03	1	LT 500	
					2	643	
					3	888	
				Average Concentration for Cross Section 03 :			*677*
HMX	10/09/01	11/01/01	23	05	1	425 J	
					2	630	
					3	4620	
				Average Concentration for Cross Section 05 :			*1892*
HMX	10/09/01	11/01/01	23	07	1	336 J	
					2	425 J	
					3	452 J	
				Average Concentration for Cross Section 07 :			*404*
HMX	10/09/01	11/01/01	23	09	1	211 J	
					2	3010	
					3	3230	
				Average Concentration for Cross Section 09 :			*2150*
HMX	10/09/01	11/01/01	23	11	1	1050	
					2	277 J	
					3	3680	
				Average Concentration for Cross Section 11 :			*1669*

Average Concentration for Windrow on Day 23 : 1358

Standard Deviation: 1475

Percent Reduction of HMX: Not Applicable; Only one Sample Date

Windrow Number: N214 *NITROBENZENE Results*

Compound	Construction Date	Date Sampled	DaysOld	CrossSection	Location	Concentration		UGKG
NB	10/09/01	11/01/01	23	03	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 03 :				*500*
NB	10/09/01	11/01/01	23	05	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 05 :				*500*
NB	10/09/01	11/01/01	23	07	1	LT	500	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 07 :				*500*
NB	10/09/01	11/01/01	23	09	1	LT	476	
					2	LT	500	
					3	LT	500	
				Average Concentration for Cross Section 09 :				*492*
NB	10/09/01	11/01/01	23	11	1	LT	500	
					2	LT	476	
					3	LT	476	
				Average Concentration for Cross Section 11 :				*484*

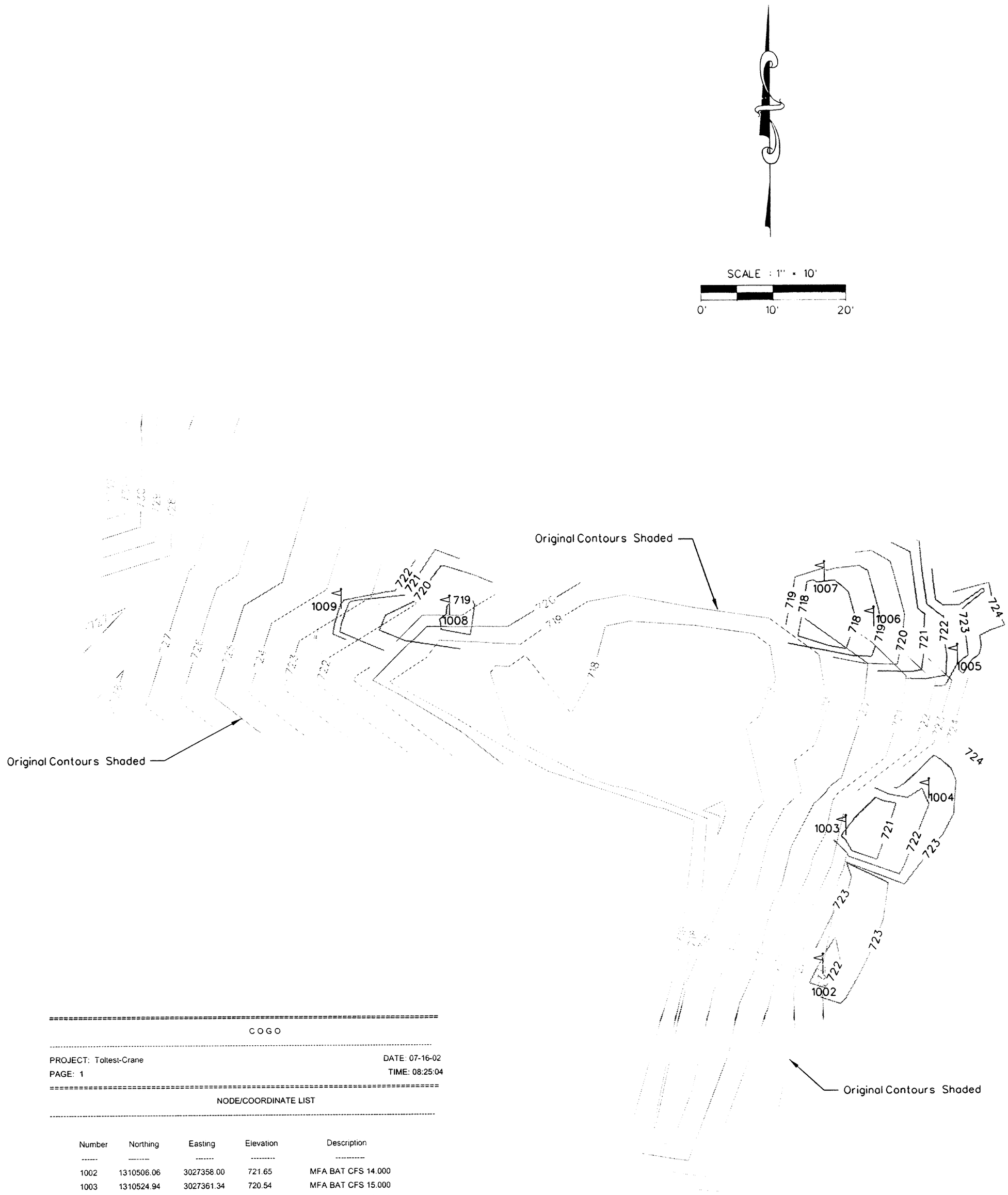
Average Concentration for Windrow on Day 23 : 495

Standard Deviation: 10

Percent Reduction of NB: Not Applicable; Only one Sample Date

APPENDIX F

SURVEYED DRAWINGS



COGO

PROJECT: Toltest-Crane
DATE: 07-16-02
PAGE: 1
TIME: 08:25:04

NODE/COORDINATE LIST

Number	Northing	Easting	Elevation	Description
1002	1310506.06	3027358.00	721.65	MFA BAT CFS 14.000
1003	1310524.94	3027361.34	720.54	MFA BAT CFS 15.000
1004	1310529.88	3027372.73	722.07	MFA BAT CFS 16.000
1005	1310548.23	3027376.81	723.05	MFA BAT CFS 17.000
1006	1310553.43	3027365.41	718.67	MFA BAT CFS 18.000
1007	1310559.70	3027358.69	718.36	MFA BAT CFS 19.000
1008	1310555.31	3027306.86	718.90	MFA BAT CFS 20.000
1009	1310556.27	3027291.93	721.45	MFA BAT CFS 21.000

Mid-States ENGINEERING
350 E. New York St., Suite 300
Indianapolis, IN 46204
(317) 634-6434 Phone
(317) 634-3576 Fax

REVISIONS AND DATES

DESIGNED BY:
DRAWN BY: GSB
CHECKED BY: TJ/DQ
APPROVED BY:

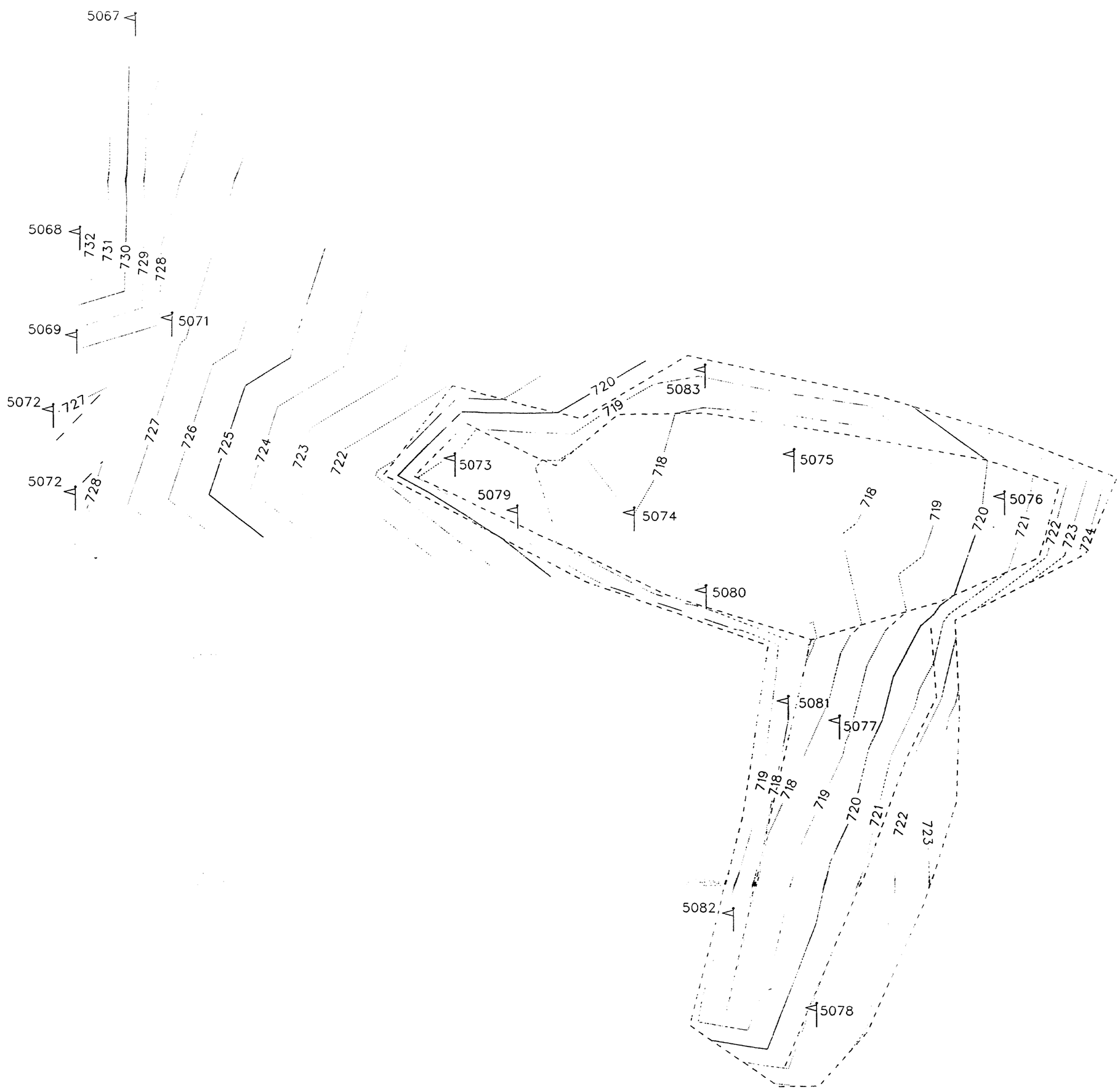
DATE: July 1, 2002

Mine Fill A
Battery Site

Topo & Sample Locations Done June 26, 2002

SCALE: 1" = 10' JOB No.: 121-4359 SHEET No.: 1 of

mfa_20.dgn



Mid-States ENGINEERING
350 E. New York St., Suite 300
Indianapolis, IN 46204
(317) 634-6434 Phone
(317) 634-3576 Fax

REVISIONS AND DATES

DESIGNED BY:

DRAWN BY: GSB

CHECKED BY: TJ/DQ

APPROVED BY:

DATE: October 5, 2001

Mine Fill A

Battery Site

Topo & Sample Locations Done October 2, 2001

SCALE: 1" = 20' JOB No.: 121-4359 SHEET No.: 1 of

mfa_19.dgn

Mid-States ENGINEERING

350 E. New York St., Suite 300
Indianapolis, IN 46204
(317) 634-6434 Phone
(317) 634-3576 Fax

REVISIONS AND DATES

DESIGNED BY:

DRAWN BY: GSB

CHECKED BY: TJ/DQ

APPROVED BY:

DATE: October 5, 2001

Mine Fill A

Original Locations Battery Site

Locations Done October 2, 2001

SCALE: 1" = 20' JOB No.: 121-4359 SHEET No.: 1 of 1

mfa_18.dgn

COGO

PROJECT: Toltest-Crane
PAGE: 1

DATE: 11-18-01
TIME: 11:49:11

NODE/COORDINATE LIST

Number	Northing	Easting	Elevation	Description
5067	1310596.90	3027265.63	729.67	MFA BAT PES 1.000
5068	1310572.16	3027259.17	732.53	MFA BAT PES 2.000
5069	1310560.34	3027258.91	727.81	MFA BAT PES 4.000
5070	1310542.32	3027258.74	728.29	MFA BAT PES 5.000
5071	1310562.34	3027270.07	727.28	MFA BAT CFS 1.000
5072	1310551.86	3027256.21	726.78	MFA BAT CFS 2.000
5073	1310546.32	3027302.90	718.83	MFA BAT CFS 3.000
5074	1310540.12	3027323.82	717.95	MFA BAT CFS 4.000
5075	1310546.96	3027342.14	717.52	MFA BAT CFS 5.000
5076	1310542.07	3027366.52	720.50	MFA BAT CFS 6.000
5077	1310516.29	3027347.52	718.71	MFA BAT CFS 7.000
5078	1310483.10	3027344.93	721.35	MFA BAT CFS 8.000
5079	1310540.38	3027310.32	718.49	MFA BAT CFS 9.000
5080	1310531.13	3027332.00	718.10	MFA BAT CFS 10.000
5081	1310518.50	3027341.51	718.01	MFA BAT CFS 11.000
5082	1310493.96	3027335.25	718.22	MFA BAT CFS 12.000
5083	1310556.63	3027331.86	718.65	MFA BAT CFS 13.000

APPENDIX G

POST-EXCAVATION SAMPLE RESULTS

EXPLOSIVES ANALYSIS DATA SHEET

MFABATCFS001

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: TOLTEST SDG No.: 47689

Matrix: (soil/water) SOIL Lab Sample ID: 47689.01

Sample Amt: 2.0 G % Moisture: 11.6 Date Received: 09/29/01

Extraction Volume: 20 ML Date Extracted: 10/01/01

Extraction Method: SONC Date Analyzed: 10/09/01

GPC Cleanup: (Y/N) N Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
2691-41-0	HMX	6220	
121-82-4	RDX	4420	
99-35-4	TNB	44.8	J
99-65-0	DNB	500	U
479-45-8	TETRYL	500	U
98-95-3	NB	500	U
118-96-7	TNT	1620	
1946-51-0	4ADNT	293	J
35572-78-2	2ADNT	275	J
606-20-2	26DNT	500	U
121-14-2	24DNT	500	U
88-72-2	2NT	500	U
99-99-0	4NT	500	U
99-08-1	3NT	500	U
3,4-DNT surrogate spiked		8000.00	

EXPLOSIVES ANALYSIS DATA SHEET

MFABATCFS002

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: TOLTEST SDG No.: 47689

Matrix: (soil/water) SOIL Lab Sample ID: 47689.02

Sample Amt: 2.1 G % Moisture: 14 Date Received: 09/29/01

Extraction Volume: 20 ML Date Extracted: 10/01/01

Extraction Method: SONC Date Analyzed: 10/09/01

GPC Cleanup: (Y/N) N Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
2691-41-0	HMX	3090	
121-82-4	RDX	14600	
99-35-4	TNB	476	U
99-65-0	DNB	476	U
479-45-8	TETRYL	476	U
98-95-3	NB	476	U
118-96-7	TNT	305	J
1946-51-0	4ADNT	107	PJ
35572-78-2	2ADNT	119	PJ
606-20-2	26DNT	476	U
121-14-2	24DNT	476	U
88-72-2	2NT	476	U
99-99-0	4NT	476	U
99-08-1	3NT	476	U
3,4-DNT surrogate spiked		7619.05	

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-003

TOTAL Metals

Lot-Sample #...: G1I290166-001 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	2.1	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AC
		Dilution Factor: 1		MDL.....: 0.46		
Barium	97.3	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AD
		Dilution Factor: 1		MDL.....: 0.11		
Cadmium	ND	0.22	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AE
		Dilution Factor: 1		MDL.....: 0.041		
Chromium	17.8 J	0.55	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AF
		Dilution Factor: 1		MDL.....: 0.056		
Cobalt	30.6	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AG
		Dilution Factor: 1		MDL.....: 0.097		
Lead	33.7	0.33	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AH
		Dilution Factor: 1		MDL.....: 0.20		
Lithium	9.9	5.5	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AJ
		Dilution Factor: 1		MDL.....: 0.15		
Manganese	880	0.55	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AK
		Dilution Factor: 1		MDL.....: 0.072		
Nickel	33.5	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AL
		Dilution Factor: 1		MDL.....: 0.13		
Selenium	0.67	0.55	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AM
		Dilution Factor: 1		MDL.....: 0.40		
Silver	ND	0.55	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AN
		Dilution Factor: 1		MDL.....: 0.11		
Zinc	142	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2E1AP
		Dilution Factor: 1		MDL.....: 0.36		
Prep Batch #...: 1275482						
Mercury	0.0092 B	0.044	mg/kg	SW846 7471A	10/01-10/02/01	ELC2E1AQ
		Dilution Factor: 1		MDL.....: 0.0055		

(Continued on next page)

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-003

TOTAL Metals

Lot-Sample #...: G1I290166-001 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-004

TOTAL Metals

Lot-Sample #...: G1I290166-002 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	5.2	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AC
		Dilution Factor: 1		MDL.....: 0.48		
Barium	31.6	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AD
		Dilution Factor: 1		MDL.....: 0.11		
Cadmium	ND	0.23	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AE
		Dilution Factor: 1		MDL.....: 0.042		
Chromium	15.6 J	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AF
		Dilution Factor: 1		MDL.....: 0.058		
Cobalt	21.7	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AG
		Dilution Factor: 1		MDL.....: 0.10		
Lead	11.3	0.34	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AH
		Dilution Factor: 1		MDL.....: 0.20		
Lithium	12.0	5.7	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AJ
		Dilution Factor: 1		MDL.....: 0.15		
Manganese	390	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AK
		Dilution Factor: 1		MDL.....: 0.074		
Nickel	54.1	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AL
		Dilution Factor: 1		MDL.....: 0.14		
Selenium	0.71	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AM
		Dilution Factor: 1		MDL.....: 0.42		
Silver	ND	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AN
		Dilution Factor: 1		MDL.....: 0.11		
Zinc	81.9	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2F1AP
		Dilution Factor: 1		MDL.....: 0.37		
Prep Batch #...: 1275482						
Mercury	0.0091 B	0.046	mg/kg	SW846 7471A	10/01-10/02/01	ELC2F1AQ
		Dilution Factor: 1		MDL.....: 0.0057		

(Continued on next page)

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-004

TOTAL Metals

Lot-Sample #...: G1I290166-002 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-004-FD

TOTAL Metals

Lot-Sample #...: G1I290166-003 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	7.3	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AC
		Dilution Factor: 1		MDL.....: 0.48		
Barium	41.4	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AD
		Dilution Factor: 1		MDL.....: 0.11		
Cadmium	ND	0.23	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AE
		Dilution Factor: 1		MDL.....: 0.042		
Chromium	16.7 J	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AF
		Dilution Factor: 1		MDL.....: 0.058		
Cobalt	19.1	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AG
		Dilution Factor: 1		MDL.....: 0.10		
Lead	12.1	0.34	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AH
		Dilution Factor: 1		MDL.....: 0.21		
Lithium	11.8	5.7	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AJ
		Dilution Factor: 1		MDL.....: 0.15		
Manganese	402	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AK
		Dilution Factor: 1		MDL.....: 0.074		
Nickel	52.8	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AL
		Dilution Factor: 1		MDL.....: 0.14		
Selenium	1.2	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AM
		Dilution Factor: 1		MDL.....: 0.42		
Silver	ND	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AN
		Dilution Factor: 1		MDL.....: 0.11		
Zinc	81.0	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2G1AP
		Dilution Factor: 1		MDL.....: 0.37		
Prep Batch #...: 1275482						
Mercury	0.0067 B	0.046	mg/kg	SW846 7471A	10/01-10/02/01	ELC2G1AQ
		Dilution Factor: 1		MDL.....: 0.0057		

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TOLTEST INC

Client Sample ID: MFA-BAT-CFS-004-FD

TOTAL Metals

Lot-Sample #...: G1I290166-003 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-005

TOTAL Metals

Lot-Sample #...: G1I290166-004 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	1.5	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AC
		Dilution Factor: 1		MDL.....: 0.48		
Barium	34.6	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AD
		Dilution Factor: 1		MDL.....: 0.11		
Cadmium	1.6	0.23	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AE
		Dilution Factor: 1		MDL.....: 0.042		
Chromium	15.5 J	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AF
		Dilution Factor: 1		MDL.....: 0.058		
Cobalt	15.3	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AG
		Dilution Factor: 1		MDL.....: 0.10		
Lead	47.0	0.34	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AH
		Dilution Factor: 1		MDL.....: 0.20		
Lithium	5.5 B	5.7	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AJ
		Dilution Factor: 1		MDL.....: 0.15		
Manganese	630	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AK
		Dilution Factor: 1		MDL.....: 0.074		
Nickel	25.5	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AL
		Dilution Factor: 1		MDL.....: 0.14		
Selenium	1.2	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AM
		Dilution Factor: 1		MDL.....: 0.41		
Silver	ND	0.57	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AN
		Dilution Factor: 1		MDL.....: 0.11		
Zinc	955	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2H1AP
		Dilution Factor: 1		MDL.....: 0.37		
Prep Batch #...: 1275482						
Mercury	0.024 B	0.045	mg/kg	SW846 7471A	10/01-10/02/01	ELC2H1AQ
		Dilution Factor: 1		MDL.....: 0.0057		

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TOLTEST INC

Client Sample ID: MFA-BAT-CFS-005

TOTAL Metals

Lot-Sample #...: G1I290166-004 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-006

TOTAL Metals

Lot-Sample #...: G1I290166-005 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	5.5	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AC
		Dilution Factor: 1		MDL.....: 0.46		
Barium	53.0	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AD
		Dilution Factor: 1		MDL.....: 0.11		
Cadmium	1.2	0.22	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AE
		Dilution Factor: 1		MDL.....: 0.040		
Chromium	19.1 J	0.54	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AF
		Dilution Factor: 1		MDL.....: 0.056		
Cobalt	3.0	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AG
		Dilution Factor: 1		MDL.....: 0.096		
Lead	18.8	0.33	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AH
		Dilution Factor: 1		MDL.....: 0.20		
Lithium	9.2	5.4	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AJ
		Dilution Factor: 1		MDL.....: 0.15		
Manganese	239	0.54	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AK
		Dilution Factor: 1		MDL.....: 0.071		
Nickel	6.7	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AL
		Dilution Factor: 1		MDL.....: 0.13		
Selenium	0.51 B	0.54	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AM
		Dilution Factor: 1		MDL.....: 0.40		
Silver	ND	0.54	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AN
		Dilution Factor: 1		MDL.....: 0.11		
Zinc	397	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2J1AP
		Dilution Factor: 1		MDL.....: 0.36		
Prep Batch #...: 1275482						
Mercury	0.0074 B	0.044	mg/kg	SW846 7471A	10/01-10/02/01	ELC2J1AQ
		Dilution Factor: 1		MDL.....: 0.0054		

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TOLTEST INC

Client Sample ID: MFA-BAT-CFS-006

TOTAL Metals

Lot-Sample #...: G1I290166-005 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-007

TOTAL Metals

Lot-Sample #...: G1I290166-006 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	7.2	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AC
		Dilution Factor: 1		MDL.....: 0.49		
Barium	77.9	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AD
		Dilution Factor: 1		MDL.....: 0.12		
Cadmium	0.84	0.23	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AE
		Dilution Factor: 1		MDL.....: 0.043		
Chromium	25.8 J	0.59	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AF
		Dilution Factor: 1		MDL.....: 0.060		
Cobalt	14.8	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AG
		Dilution Factor: 1		MDL.....: 0.10		
Lead	14.3	0.35	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AH
		Dilution Factor: 1		MDL.....: 0.21		
Lithium	12.8	5.9	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AJ
		Dilution Factor: 1		MDL.....: 0.16		
Manganese	163	0.59	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AK
		Dilution Factor: 1		MDL.....: 0.076		
Nickel	20.8	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AL
		Dilution Factor: 1		MDL.....: 0.14		
Selenium	0.65	0.59	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AM
		Dilution Factor: 1		MDL.....: 0.43		
Silver	ND	0.59	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AN
		Dilution Factor: 1		MDL.....: 0.12		
Zinc	88.7	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2K1AP
		Dilution Factor: 1		MDL.....: 0.38		
Prep Batch #...: 1275482						
Mercury	0.024 B	0.047	mg/kg	SW846 7471A	10/01-10/02/01	ELC2K1AQ
		Dilution Factor: 1		MDL.....: 0.0059		

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TOLTEST INC

Client Sample ID: MFA-BAT-CFS-007

TOTAL Metals

Lot-Sample #...: G1I290166-006 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-008

TOTAL Metals

Lot-Sample #...: G1I290166-007 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	8.0	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AC
		Dilution Factor: 1		MDL.....: 0.46		
Barium	103	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AD
		Dilution Factor: 1		MDL.....: 0.11		
Cadmium	0.17 B	0.22	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AE
		Dilution Factor: 1		MDL.....: 0.041		
Chromium	17.5 J	0.55	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AF
		Dilution Factor: 1		MDL.....: 0.056		
Cobalt	13.9	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AG
		Dilution Factor: 1		MDL.....: 0.097		
Lead	21.2	0.33	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AH
		Dilution Factor: 1		MDL.....: 0.20		
Lithium	11.6	5.5	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AJ
		Dilution Factor: 1		MDL.....: 0.15		
Manganese	1030	0.55	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AK
		Dilution Factor: 1		MDL.....: 0.072		
Nickel	16.0	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AL
		Dilution Factor: 1		MDL.....: 0.13		
Selenium	0.60	0.55	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AM
		Dilution Factor: 1		MDL.....: 0.40		
Silver	ND	0.55	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AN
		Dilution Factor: 1		MDL.....: 0.11		
Zinc	89.3	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2L1AP
		Dilution Factor: 1		MDL.....: 0.36		
Prep Batch #...: 1275482						
Mercury	0.042 B	0.044	mg/kg	SW846 7471A	10/01-10/02/01	ELC2L1AQ
		Dilution Factor: 1		MDL.....: 0.0055		

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TOLTEST INC

Client Sample ID: MFA-BAT-CFS-008

TOTAL Metals

Lot-Sample #...: G1I290166-007 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-009

TOTAL Metals

Lot-Sample #...: G1I290166-008 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	2.4	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AC
		Dilution Factor: 1		MDL.....: 0.47		
Barium	20.3	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AD
		Dilution Factor: 1		MDL.....: 0.11		
Cadmium	ND	0.22	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AE
		Dilution Factor: 1		MDL.....: 0.042		
Chromium	11.0 J	0.56	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AF
		Dilution Factor: 1		MDL.....: 0.057		
Cobalt	11.6	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AG
		Dilution Factor: 1		MDL.....: 0.099		
Lead	4.8	0.34	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AH
		Dilution Factor: 1		MDL.....: 0.20		
Lithium	9.8	5.6	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AJ
		Dilution Factor: 1		MDL.....: 0.15		
Manganese	159	0.56	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AK
		Dilution Factor: 1		MDL.....: 0.073		
Nickel	13.7	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AL
		Dilution Factor: 1		MDL.....: 0.13		
Selenium	ND	0.56	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AM
		Dilution Factor: 1		MDL.....: 0.41		
Silver	ND	0.56	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AN
		Dilution Factor: 1		MDL.....: 0.11		
Zinc	11.6	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2M1AP
		Dilution Factor: 1		MDL.....: 0.37		
Prep Batch #...: 1275482						
Mercury	0.0077 B	0.045	mg/kg	SW846 7471A	10/01-10/02/01	ELC2M1AQ
		Dilution Factor: 1		MDL.....: 0.0056		

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TOLTEST INC

Client Sample ID: MFA-BAT-CFS-009

TOTAL Metals

Lot-Sample #...: G1I290166-008 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-010

TOTAL Metals

Lot-Sample #...: G1I290166-009 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	5.5	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AC
		Dilution Factor: 1		MDL.....: 0.47		
Barium	57.9	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AD
		Dilution Factor: 1		MDL.....: 0.11		
Cadmium	ND	0.23	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AE
		Dilution Factor: 1		MDL.....: 0.042		
Chromium	20.1 J	0.56	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AF
		Dilution Factor: 1		MDL.....: 0.058		
Cobalt	13.5	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AG
		Dilution Factor: 1		MDL.....: 0.099		
Lead	13.4	0.34	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AH
		Dilution Factor: 1		MDL.....: 0.20		
Lithium	9.4	5.6	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AJ
		Dilution Factor: 1		MDL.....: 0.15		
Manganese	297	0.56	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AK
		Dilution Factor: 1		MDL.....: 0.073		
Nickel	50.8	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AL
		Dilution Factor: 1		MDL.....: 0.14		
Selenium	0.72	0.56	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AM
		Dilution Factor: 1		MDL.....: 0.41		
Silver	ND	0.56	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AN
		Dilution Factor: 1		MDL.....: 0.11		
Zinc	101	1.1	mg/kg	SW846 6010B	10/01-10/02/01	ELC2N1AP
		Dilution Factor: 1		MDL.....: 0.37		
Prep Batch #...: 1275482						
Mercury	0.0086 B	0.045	mg/kg	SW846 7471A	10/01-10/02/01	ELC2N1AQ
		Dilution Factor: 1		MDL.....: 0.0056		

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TOLTEST INC

Client Sample ID: MFA-BAT-CFS-010

TOTAL Metals

Lot-Sample #...: G1I290166-009 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-011

TOTAL Metals

Lot-Sample #...: G1I290166-010 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	4.5	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AC
		Dilution Factor: 1		MDL.....: 0.50		
Barium	59.0	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AD
		Dilution Factor: 1		MDL.....: 0.12		
Cadmium	ND	0.24	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AE
		Dilution Factor: 1		MDL.....: 0.044		
Chromium	17.2 J	0.59	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AF
		Dilution Factor: 1		MDL.....: 0.060		
Cobalt	63.7	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AG
		Dilution Factor: 1		MDL.....: 0.10		
Lead	11.9	0.36	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AH
		Dilution Factor: 1		MDL.....: 0.21		
Lithium	16.7	5.9	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AJ
		Dilution Factor: 1		MDL.....: 0.16		
Manganese	324	0.59	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AK
		Dilution Factor: 1		MDL.....: 0.077		
Nickel	27.0	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AL
		Dilution Factor: 1		MDL.....: 0.14		
Selenium	ND	0.59	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AM
		Dilution Factor: 1		MDL.....: 0.43		
Silver	ND	0.59	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1A[illegible]
		Dilution Factor: 1		MDL.....: 0.12		
Zinc	72.0	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2P1AP
		Dilution Factor: 1		MDL.....: 0.39		
Prep Batch #...: 1275482						
Mercury	ND	0.047	mg/kg	SW846 7471A	10/01-10/02/01	ELC2P1AQ
		Dilution Factor: 1		MDL.....: 0.0059		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-012

TOTAL Metals

Lot-Sample #...: G1I290166-011 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	5.2	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AC
		Dilution Factor: 1		MDL.....: 0.49		
Barium	34.8	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AD
		Dilution Factor: 1		MDL.....: 0.12		
Cadmium	ND	0.23	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AE
		Dilution Factor: 1		MDL.....: 0.043		
Chromium	18.5 J	0.58	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AF
		Dilution Factor: 1		MDL.....: 0.060		
Cobalt	3.6	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AG
		Dilution Factor: 1		MDL.....: 0.10		
Lead	9.7	0.35	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q
		Dilution Factor: 1		MDL.....: 0.21		
Lithium	11.7	5.8	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AJ
		Dilution Factor: 1		MDL.....: 0.16		
Manganese	31.3	0.58	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AK
		Dilution Factor: 1		MDL.....: 0.076		
Nickel	14.1	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AL
		Dilution Factor: 1		MDL.....: 0.14		
Selenium	ND	0.58	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AM
		Dilution Factor: 1		MDL.....: 0.43		
Silver	ND	0.58	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AN
		Dilution Factor: 1		MDL.....: 0.12		
Zinc	28.0	1.2	mg/kg	SW846 6010B	10/01-10/02/01	ELC2Q1AP
		Dilution Factor: 1		MDL.....: 0.38		
Prep Batch #...: 1275482						
Mercury	0.0065 B	0.047	mg/kg	SW846 7471A	10/01-10/02/01	ELC2Q1AQ
		Dilution Factor: 1		MDL.....: 0.0058		

(Continued on next page)

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-012

TOTAL Metals

Lot-Sample #...: G1I290166-011 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-013

TOTAL Metals

Lot-Sample #...: G1I290166-012 Matrix.....: SOLID
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1274496						
Arsenic	16.7	1.2	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AC
		Dilution Factor: 1		MDL.....: 0.50		
Barium	32.2	1.2	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AD
		Dilution Factor: 1		MDL.....: 0.12		
Cadmium	ND	0.24	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AE
		Dilution Factor: 1		MDL.....: 0.044		
Chromium	25.5 J	0.59	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AF
		Dilution Factor: 1		MDL.....: 0.060		
Cobalt	47.1	1.2	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AG
		Dilution Factor: 1		MDL.....: 0.10		
Lead	23.4	0.36	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R
		Dilution Factor: 1		MDL.....: 0.21		
Lithium	6.3	5.9	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AJ
		Dilution Factor: 1		MDL.....: 0.16		
Manganese	827	0.59	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AK
		Dilution Factor: 1		MDL.....: 0.077		
Nickel	78.3	1.2	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AL
		Dilution Factor: 1		MDL.....: 0.14		
Selenium	ND	0.59	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AM
		Dilution Factor: 1		MDL.....: 0.43		
Silver	ND	0.59	mg/kg	SW846 6010B	10/01-10/04/01	ELC2R1AN
		Dilution Factor: 1		MDL.....: 0.12		
Zinc	159	1.2	mg/kg	SW846 6010B	10/01-10/03/01	ELC2R1AP
		Dilution Factor: 1		MDL.....: 0.39		
Prep Batch #...: 1275482						
Mercury	0.031 B	0.047	mg/kg	SW846 7471A	10/01-10/02/01	ELC2R1AQ
		Dilution Factor: 1		MDL.....: 0.0059		

(Continued on next page)

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-013

TOTAL Metals

Lot-Sample #...: G1I290166-012 Matrix.....: SOLID

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

TOLTEST INC

Client Sample ID: MFA-BAT-CFS-092801

TOTAL Metals

Lot-Sample #...: G1I290166-013 Matrix.....: WATER
Date Sampled...: 09/28/01 Date Received..: 09/29/01

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1275438						
Arsenic	ND	0.010	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AC
		Dilution Factor: 1		MDL.....: 0.0042		
Barium	ND	0.010	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AD
		Dilution Factor: 1		MDL.....: 0.0010		
Cadmium	ND	0.0020	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AE
		Dilution Factor: 1		MDL.....: 0.00037		
Chromium	0.0024 B	0.0050	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AF
		Dilution Factor: 1		MDL.....: 0.00051		
Cobalt	ND	0.010	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AG
		Dilution Factor: 1		MDL.....: 0.00088		
Lead	ND	0.0030	mg/L	SW846 6010B	10/02-10/03/01	ELC2T
		Dilution Factor: 1		MDL.....: 0.0018		
Lithium	0.0015 B,J	0.050	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AJ
		Dilution Factor: 1		MDL.....: 0.0014		
Manganese	0.0022 B	0.0050	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AK
		Dilution Factor: 1		MDL.....: 0.00065		
Nickel	ND	0.010	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AL
		Dilution Factor: 1		MDL.....: 0.0012		
Selenium	ND	0.0050	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AM
		Dilution Factor: 1		MDL.....: 0.0036		
Silver	ND	0.0050	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AN
		Dilution Factor: 1		MDL.....: 0.00099		
Zinc	0.023	0.010	mg/L	SW846 6010B	10/02-10/03/01	ELC2T1AP
		Dilution Factor: 1		MDL.....: 0.0033		
Prep Batch #...: 1276391						
Mercury	0.000085 B,J	0.00020	mg/L	SW846 7470A	10/03/01	ELC2T1AA
		Dilution Factor: 1		MDL.....: 0.000049		

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

TOLTEST INC. 1915 N. 12th St., P.O. Box 2186, Toledo, OH 43603-2186; Voice (419) 241-7175, Fax (419) 321-6259

Ship To Address: ATTN: RECEIVING LAB, 1810 N. 12th St., Toledo, OH 43624-1304; Voice (419) 241-7175, Fax (419) 241-1808

Sent From: ☐ Corporate ☐ Plymouth ☐ Pittsburgh ☐ Other _____

SWL

MFA - BAT - CO3

Chain of Custody Record

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Project No.: 37826

Client:

P.O. No.:

Project/Location: NSWC Crane MFA Battery Site

Project Mgr.:

Sampler's Name: Peter J. Chevalier

Phone No.

Sampler's Signature: [signature]

Item No.	Sample I.D.	Date Sampled	Time Sampled	Type	Matrix	Sample Location	Total No. of Containers	8330							Preserved Yes/No	LAB USE ONLY Lab #
1	MFA-BAT-CFS-001	9/28/01	1413	G	Soil	Soil area	1	✓								
2	MFA-BAT-CFS-002	9/28/01	1414	G	Soil	Soil area	1	✓								
3																
4																
5						15 Day TAT										
6						PETN not required										
7																
8																
9																
10																

Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
	[signature]	9/28/01 1530		
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time

LAB USE ONLY

Were samples delivered ☐ in person ☐ by courier

Were samples preserved ☐ in field ☐ in lab ☐ N/A

Temp of samples _____ °C

Did samples arrive intact and sealed? ☐ yes ☐ no ☐ N/A

Were proper containers used? ☐ yes ☐ no

Was container labeled properly for contents? ☐ yes ☐ no

Were samples packaged properly for type of material? ☐ yes ☐ no

Was shipping label completed properly per regulations? (49 CFR 170, etc.) ☐ yes ☐ no

Comments: _____

TAT _____

Distribution: Original plus one accompanies shipment (white and yellow); copy to coordinator field files (pink)

Rev. 4/99

TOLTEST, INC. 1915 N. 12th St., P.O. Box 2186, Toledo, OH 43603-2186; Voice (419) 241-7175, Fax (419) 321-6259 MFA-BAT-004

Ship To Address: ATTN: RECEIVING LAB, 1810 N. 12th St., Toledo, OH 43624-1304; Voice (419) 241-7175, Fax (419) 241-1808

Sent From: ☐ Corporate ☐ Plymouth ☐ Pittsburgh ☐ Other _____

STL

Chain of Custody Record

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Project No.: 378226	Client:
P.O. No.:	Project/Location: NSWC Crane MFA Battery Site
Project Mgr.:	Sampler's Name: Peter J. Chevalier
Phone No.	Sampler's Signature: [signature]

Item No.	Sample I.D.	Date Sampled	Time Sampled	Type	Matrix	Sample Location	Total No. of Containers	Parameters: 6010/7471							Preserved Yes/No	LAB USE ONLY Lab #
1	MFA-BAT-CFS-003	9/28/01	1017	G	Soil	Battery area	1									
2	MFA-BAT-CFS-004		1035				1									
3	MFA-BAT-CFS-004-FD		1035				1									
4	MFA-BAT-CFS-005		1022				1									
5	MFA-BAT-CFS-006		1029				1									
6	MFA-BAT-CFS-007		1041				1									
7	MFA-BAT-CFS-008		1044				1									
8	MFA-BAT-CFS-009		1046				1									
9	MFA-BAT-CFS-010		1051				1									
10	MFA-BAT-CFS-011		1055				1									

Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
	[signature]	9/28/01 1530		

LAB USE ONLY

Were samples delivered ☐ in person ☐ by courier

Were samples preserved ☐ in field ☐ in lab ☐ N/A

Temp of samples _____°C

Did samples arrive intact and sealed? ☐ yes ☐ no ☐ N/A

Were proper containers used? ☐ yes ☐ no

Was container labeled properly for contents? ☐ yes ☐ no

Were samples packaged properly for type of material? ☐ yes ☐ no

Was shipping label completed properly per regulations? (49 CFR 170, etc.) ☐ yes ☐ no

Comments: _____

TAT _____

Distribution: Original plus one accompanies shipment (white and yellow); copy to coordinator field files (pink)

Rev. 4/99

TOLTEST INC. 1915 N. 12th St., P.O. Box 2186, Toledo, OH 43603-2186; Voice (419) 241-[illegible], Fax (419) 321-6259 MFA-BAT-004

Ship To Address: ATTN: RECEIVING LAB, 1810 N. 12th St., Toledo, OH 43624-1304; Voice (419) 241-7175, Fax (419) 241-1808

Sent From: ☐ Corporate ☐ Plymouth ☐ Pittsburgh ☐ Other _____

SIL

Chain of Cu[illegible] Record

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Project No.: 37826	Client:		
P.O. No.:	Project/Location: NSWC Crane MFA Battery Site		
Project Mgr.:		Sampler's Name: Peter J. Chevalier	
Phone No.		Sampler's Signature: [signature]	

Item No.	Sample I.D.	Date Sampled	Time Sampled	Type	Matrix	Sample Location	Total No. of Containers	6010, 7471							Preserved Yes/No	LAB USE ONLY Lab #
1	MFA-BAT-CFS-012	9/28/01	1058	G	Soil	Battery area	1									
2	MFA-BAT-CFS-013		1101		Soil	Battery area	1									
3	~~MFA-BAT-CFS~~															
4	MFA-BAT-CFS092801		1345		liquid	rinse blank	1									
5																
6						see attached										
7						constituent list										
8																
9																
10																

Parameters

Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
	[signature]	9/28/01 1530		
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time

LAB USE ONLY

Were samples delivered ☐ in person ☐ by courier

Were samples preserved ☐ in field ☐ in lab ☐ N/A

Temp of samples _____ °C

Did samples arrive intact and sealed? ☐ yes ☐ no ☐ N/A

Were proper containers used? ☐ yes ☐ no

Was container labeled properly for contents? ☐ yes ☐ no

Were samples packaged properly for type of material? ☐ yes ☐ no

Was shipping label completed properly per regulations? (49 CFR 170, etc.) ☐ yes ☐ no

Comments: _____

TAT _____

Distribution: Original plus one accompanies shipment (white and yellow); copy to coordinator field files (pink)

Rev. 4/99

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INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

CFS-014

Lab Name: SOUTHWEST_LABORATORIES___ Contract:TOLTEST___
Lab Code: SWOK___ Case No.: 50056 SAS No.: _____ SDG No.: 50056_
Matrix (soil/water): SOIL_ Lab Sample ID: 50056.01
Level (low/med): LOW__ Date Received: 06/19/02
% Solids: _85.2

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	5.1			P
7440-39-3	Barium	32.8			P
7440-43-9	Cadmium	0.09	U		P
7440-47-3	Chromium	13.4			P
7440-48-4	Cobalt	2.8			P
7439-92-1	Lead	10.5			P
7439-93-2	Lithium	3.4	B		P
7439-96-5	Manganese	98.6			P
7439-97-6	Mercury	0.02	U		AV
7440-02-0	Nickel	7.6			P
7782-49-2	Selenium	0.53	B		P
7440-22-4	Silver	0.10	U		P
7440-66-6	Zinc	29.3			P

Color Before: BROWN___ Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

Comments:
MFA-BAT-CFS-014

FORM I - IN

1
INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

CFS-015

Lab Name: SOUTHWEST_LABORATORIES___ Contract:TOLTEST___
Lab Code: SWOK__ Case No.: 50056 SAS No.: _____ SDG No.: 50056_
Matrix (soil/water): SOIL_ Lab Sample ID: 50056.02
Level (low/med): LOW__ Date Received: 06/19/02
% Solids: _86.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic__	2.0			P
7440-39-3	Barium___	25.7			P
7440-43-9	Cadmium__	0.09	U		P
7440-47-3	Chromium_	9.4			P
7440-48-4	Cobalt___	1.9			P
7439-92-1	Lead____	6.7			P
7439-93-2	Lithium__	1.8	B		P
7439-96-5	Manganese	60.9			P
7439-97-6	Mercury__	0.02	U		AV
7440-02-0	Nickel___	4.9			P
7782-49-2	Selenium_	0.36	B		P
7440-22-4	Silver___	0.10	U		P
7440-66-6	Zinc_____	10.4			P

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

Comments:
MFA-BAT-CFS-015

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1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

CFS-016

Lab Name: SOUTHWEST_LABORATORIES___ Contract:TOLTEST___
Lab Code: SWOK___ Case No.: 50056 SAS No.: _____ SDG No.: 50056_
Matrix (soil/water): SOIL_ Lab Sample ID: 50056.03
Level (low/med): LOW__ Date Received: 06/19/02
% Solids: _81.4

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.7			P
7440-39-3	Barium	87.5			P
7440-43-9	Cadmium	0.10	U		P
7440-47-3	Chromium	9.4			P
7440-48-4	Cobalt	10.8			P
7439-92-1	Lead	12.0			P
7439-93-2	Lithium	5.2	B		P
7439-96-5	Manganese	655			P
7439-97-6	Mercury	0.02	B		AV
7440-02-0	Nickel	8.9			P
7782-49-2	Selenium	0.40	B		P
7440-22-4	Silver	0.11	U		P
7440-66-6	Zinc	38.1			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:
MFA-BAT-CFS-016

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1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

CFS-017

Lab Name: SOUTHWEST_LABORATORIES Contract: TOLTEST
Lab Code: SWOK Case No.: 50056 SAS No.: SDG No.: 50056
Matrix (soil/water): SOIL Lab Sample ID: 50056.04
Level (low/med): LOW Date Received: 06/19/02
% Solids: 82.6

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.5			P
7440-39-3	Barium	51.0			P
7440-43-9	Cadmium	0.10	U		P
7440-47-3	Chromium	13.0			P
7440-48-4	Cobalt	5.8			P
7439-92-1	Lead	11.7			P
7439-93-2	Lithium	7.6			P
7439-96-5	Manganese	244			P
7439-97-6	Mercury	0.02	B		AV
7440-02-0	Nickel	10.6			P
7782-49-2	Selenium	0.54	B		P
7440-22-4	Silver	0.11	U		P
7440-66-6	Zinc	44.0			P

Color Before: BROWN Clarity Before: Texture: MEDIUM
Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:
MFA-BAT-CFS-017

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INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

CFS-018

Lab Name: SOUTHWEST_LABORATORIES Contract:TOLTEST
Lab Code: SWOK Case No.: 50056 SAS No.: SDG No.: 50056
Matrix (soil/water): SOIL Lab Sample ID: 50056.05
Level (low/med): LOW Date Received: 06/19/02
% Solids: 82.6

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.1			P
7440-39-3	Barium	157			P
7440-43-9	Cadmium	0.10	U		P
7440-47-3	Chromium	11.8			P
7440-48-4	Cobalt	2.4			P
7439-92-1	Lead	10.3			P
7439-93-2	Lithium	3.6	B		P
7439-96-5	Manganese	24.9			P
7439-97-6	Mercury	0.02	U		AV
7440-02-0	Nickel	23.5			P
7782-49-2	Selenium	0.55	B		P
7440-22-4	Silver	0.11	U		P
7440-66-6	Zinc	36.5			P

Color Before: BROWN Clarity Before: Texture: MEDIUM
Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:
MFA-BAT-CFS-018

FORM I - IN

1
INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

CFS-019

Lab Name: SOUTHWEST_LABORATORIES___ Contract:TOLTEST___
Lab Code: SWOK__ Case No.: 50056 SAS No.: _____ SDG No.: 50056_
Matrix (soil/water): SOIL_ Lab Sample ID: 50056.06
Level (low/med): LOW__ Date Received: 06/19/02
% Solids: _85.1

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	9.3			P
7440-39-3	Barium	22.8			P
7440-43-9	Cadmium	0.09	U		P
7440-47-3	Chromium	11.8			P
7440-48-4	Cobalt	10.0			P
7439-92-1	Lead	17.6			P
7439-93-2	Lithium	1.4	B		P
7439-96-5	Manganese	317			P
7439-97-6	Mercury	0.02	U		AV
7440-02-0	Nickel	24.6			P
7782-49-2	Selenium	1.4			P
7440-22-4	Silver	0.11	U		P
7440-66-6	Zinc	206			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:
MFA-BAT-CFS-019

FORM I - IN

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

CFS-020

Lab Name: SOUTHWEST_LABORATORIES___ Contract:TOLTEST___
Lab Code: SWOK__ Case No.: 50056 SAS No.: _____ SDG No.: 50056_
Matrix (soil/water): SOIL_ Lab Sample ID: 50056.07
Level (low/med): LOW__ Date Received: 06/19/02
% Solids: _89.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.8			P
7440-39-3	Barium	11.4			P
7440-43-9	Cadmium	0.09	U		P
7440-47-3	Chromium	11.3			P
7440-48-4	Cobalt	22.7			P
7439-92-1	Lead	13.0			P
7439-93-2	Lithium	3.8	B		P
7439-96-5	Manganese	556			P
7439-97-6	Mercury	0.02	U		AV
7440-02-0	Nickel	26.1			P
7782-49-2	Selenium	0.87	B		P
7440-22-4	Silver	0.10	U		P
7440-66-6	Zinc	45.4			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:
MFA-BAT-CFS-020

FORM I - IN

1
INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

CFS-021

Lab Name: SOUTHWEST_LABORATORIES___ Contract:TOLTEST___
Lab Code: SWOK__ Case No.: 50056 SAS No.: _____ SDG No.: 50056_
Matrix (soil/water): SOIL_ Lab Sample ID: 50056.08
Level (low/med): LOW__ Date Received: 06/19/02
% Solids: _71.2

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.8			P
7440-39-3	Barium	664			P
7440-43-9	Cadmium	42.8			P
7440-47-3	Chromium	49.1			P
7440-48-4	Cobalt	7.9			P
7439-92-1	Lead	4990			P
7439-93-2	Lithium	5.2	B		P
7439-96-5	Manganese	698			P
7439-97-6	Mercury	0.03	B		AV
7440-02-0	Nickel	23.2			P
7782-49-2	Selenium	1.7			P
7440-22-4	Silver	1.5			P
7440-66-6	Zinc	3150			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:
MFA-BAT-CFS-021

FORM I - IN

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

CFS-FD

Lab Name: SOUTHWEST_LABORATORIES___ Contract: TOLTEST___
Lab Code: SWOK__ Case No.: 50056 SAS No.: _____ SDG No.: 50056_
Matrix (soil/water): SOIL_ Lab Sample ID: 50056.09
Level (low/med): LOW_ Date Received: 06/19/02
% Solids: _68.8

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.7			P
7440-39-3	Barium	691			P
7440-43-9	Cadmium	47.4			P
7440-47-3	Chromium	47.2			P
7440-48-4	Cobalt	10			P
7439-92-1	Lead	6550			P
7439-93-2	Lithium	3.8	B		P
7439-96-5	Manganese	784			P
7439-97-6	Mercury	0.03	B		AV
7440-02-0	Nickel	21.3			P
7782-49-2	Selenium	0.90	B		P
7440-22-4	Silver	2.0			P
7440-66-6	Zinc	3320			P

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:
MFA-BAT-CFS-FD

FORM I - IN

TOLTC INC.

1915 N. 12th St., P.O. Box 2186, Toledo, OH 43603-2186; Voice (419) 241-. , Fax (419) 321-6259
Ship To Address: ATTN: RECEIVING LAB, 1810 N. 12th St., Toledo, OH 43624-1304; Voice (419) 241-7175, Fax (419) 241-1808
Sent From: ☐ Corporate ☐ Plymouth ☐ Pittsburgh ☐ Other _____

Chain of Cus y Record

37133 Page 1 of ____

Project No.:	Client:
P.O. No.:	Project/Location:
Project Mgr.:	Sampler's Name
Phone No.	Sampler's Signature

Item No.	Sample I.D.	Date Sampled	Time Sampled	Type	Matrix	Sample Location	Total No. of Containers		Parameters							Preserved Yes/No	LAB USE ONLY Lab #
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1		-	-	-	-	-	-			
2	[illegible]		[illegible]			[illegible]	1		-	-	-	-	-	-			
3	[illegible]		[illegible]			[illegible]	1		-	-	-	-	-	-			
4	[illegible]		[illegible]			[illegible]	1		-	-	-	-	-	-			
5	[illegible]		[illegible]			[illegible]	1		-	-	-	-	-	-			
6	[illegible]		[illegible]			[illegible]	1		-	-	-	-	-	-			
7	[illegible]		[illegible]			[illegible]	1		-		-	-	-	-			
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1		-	-	-	-	-	-			
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1		-	-	-	-	-	-			
10																	

Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
	[signature]	6/1/02 / 1205		
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
Item No.	Relinquished By:	Date / Time	Received By:	Date / Time

LAB USE ONLY

Were samples delivered ☐ in person ☐ by courier
Were samples preserved ☐ in field ☐ in lab ☐ N/A
Temp of samples _____°C
Did samples arrive intact and sealed? ☐ yes ☐ no ☐ N/A
Were proper containers used? ☐ yes ☐ no
Was container labeled properly for contents? ☐ yes ☐ no
Were samples packaged properly for type of material? ☐ yes ☐ no
Was shipping label completed properly per regulations? (49 CFR 170, etc.) ☐ yes ☐ no

Comments: _____

TAT _____

Distribution: Original plus one accompanies shipment (white and yellow); copy to coordinator field files (pink)

Rev. 4/99

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INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

BAT-CFS-021

Lab Name: SOUTHWEST_LABORATORIES___ Contract:TOLTEST___
Lab Code: SWOK__ Case No.: 50713 SAS No.: _____ SDG No.: 50713_
Matrix (soil/water): WATER Lab Sample ID: 50713.01
Level (low/med): LOW__ Date Received: 09/05/02
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-43-9	Cadmium__	281			P_
7439-92-1	Lead_____	58800			P_

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
MFA-BAT-CFS-021
TCLP_EXTRACT

FORM I - IN

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.

James M. Hunsicker

SIGNATURE

DIRECTOR, ENVIRONMENTAL PROTECTION DEPARTMENT
BY DIRECTION OF THE COMMANDER

TITLE

9/25/02

DATE

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.

James M. Hunsicker

SIGNATURE

DIRECTOR, ENVIRONMENTAL PROTECTION DEPARTMENT
BY DIRECTION OF THE COMMANDER

TITLE

12/16/02

DATE