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VERIFICATION OF TREATMENT REPORT

for

Treatment of Elevated Lead Concentrations

in

Area 1 Phase II (Trap Range)

Document No. 00FC001118-002, Revision 0

Prepared For:

Fluor Fernald, Inc.

Cincinnati, Ohio

Prepared By:

Sevenson Environmental Services, Inc.

Midwest Division

June 2000

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1.0 INTRODUCTION

Sevenson Environmental Services, Inc. (Sevenson) presents a Verification of Treatment Report for Treatment of Elevated Lead Concentrations in Area 1 Phase II (Trap Range) at the Fernald Environmental Management Project (FEMP) site in Fernald, Ohio. Sevenson's scope of work included the in-situ stabilization of approximately 20 cubic yards of lead-impacted soils.

As part of its scope of work, Sevenson collected and analyzed stabilized soil samples to verify that the treatment objectives were achieved. The treated soils were to meet or exceed the requirements of the Toxicity Characteristic Leaching Procedure (TCLP) test for lead (maximum concentration of 5.0 mg/L). This plan presents a summary of the results of the verification sampling for treated soils at the project site.

1.1 Background

The Area 1 Phase II Trap Range site is located in the southeast quadrant of the FEMP and southwest of the former Sewage Treatment Plant. FEMP employees used the range for recreational purposes from the mid-1950's until 1988. This activity resulted in the surface deposition of lead shot and clay fragments.

In July and August 1999, Sevenson stabilized approximately 3,650 cubic yards of lead- and arsenic-impacted soils at the Area 1 Phase II Trap Range site. A summary of the results of verification sampling for treated soils at the project site were presented in a Verification of Treatment Report (Sevenson, August 1999).

Since that time some additional soils containing levels of lead exceeding the RCRA standard of 5.0 mg/L by the TCLP were identified in Area 1 Phase II. It was estimated that up to 20 cubic yards of lead-impacted soils were identified for stabilization.

1.2 Stabilization Methods

Sevenson used its patented MAECTITE® process to stabilize the soils in-situ. The process has previously been described in a Full Scale Stabilization Work Plan (Sevenson, June 1999). Given the relatively limited scope of the current effort, the process application was simplified.

Based on previous treatability studies and full-scale stabilization activities at the site, a 3% MAECTITE® wet weight application was sufficient to meet the treatment criterion of 5.0 mg/L for TCLP lead. The results of the original Trap Range treatability study were presented in a Treatability Study Report (Sevenson, April 1999).

Because the soils to be treated consist of a relatively impermeable clay, the upper 3 inches of the ground surface were agitated with a tiller prior to application of the MAECTITE® liquid reagent.

MAECTITE® liquid reagent was delivered to the site in two 30-gallon drums. The calculated amount of liquid reagent was applied to the treatment area via two-inch-diameter chemical hosing directly from the drums. The reagent was gravity fed from the drums, which were positioned in the back of a pickup truck. The reagent was evenly distributed across the area to be treated.

Water was utilized as a carrier medium to enhance the dispersion of the liquid reagent into the lead-impacted soils. The quantity of water used was approximately 250 gallons.

2.0 SOIL SAMPLING AND ANALYSIS

2.1 Verification of Treatment Sampling

Sampling and analysis was required for the treated soils at the Area 1 Phase II Trap Range to provide confirmation of stabilization to below specified clean-up levels. As part of its scope of work, Sevenson collected and analyzed one stabilized soil sample to verify that the treatment objectives have been achieved. The treated soils were to meet the following criterion:

- Meet or exceed the requirements of the TCLP test for lead (5.0 mg/L).

The soil sample was collected and analyzed as described in the Verification of Treatment Sampling Plan (Sevenson, May 1999). One random sample was obtained from the treatment area. The sample was given a unique identification number, sealed, packaged and shipped by Fluor Fernald, Inc. (Fluor Fernald) for off-site analysis. Fluor Fernald also obtained a split sample, which was analyzed for total and TCLP lead at their on-site laboratory.

Sevenson collected approximately 350 grams of treated soil for each sample. The samples were homogenized in the field, using a disposable plastic spoon and lined mixing basin, prior to being labeled, packaged, cooled to 4°C, and shipped to an offsite laboratory for analysis.

The sample homogenization technique was as follows:

1. Divide sample into quarters and thoroughly mix each quarter.
2. Combine two opposite quarters into halves and thoroughly mix each half.
3. Combine halves into one and thoroughly mix.
4. Return to Step 1 until sample has been mixed twice.
5. Place sample into applicable sample container for shipment to lab.

2.2 Analytical Results

The verification sample was shipped to Waste Stream Technology, Inc. in Buffalo, New York for offsite analysis by U.S. EPA SW-846 Method 6000/7000. The analytical results for the verification sample are presented in Table 1.

Table 1
Verification of Treatment
Area 1 Phase II Trap Range

Sample Date	Sample Number	Total Lead (mg/Kg)	TCLP Lead (mg/L)
05-22-00	A1P2-TR-73	139	0.211

The results of the verification of treatment sampling and analysis show that the treated Trap Range soils meet the requirements of the TCLP test for lead (5.0 mg/L). The analytical laboratory report may be found in Appendix A.

3.0 REFERENCES

The following references have been used in this plan:

1) Verification of Treatment Report, Sevenson, August 1999 (Document No. 629-SES-02211-005).

2) Full Scale Stabilization Work Plan, Sevenson, June 1999 (Document No. 629-SES-02211-004).

3) Treatability Study Report, Sevenson, April 1999 (Document No. 629-SES-02211-002).

4) Verification of Treatment Sampling Plan, Sevenson, May 1999 (Document No. 629-SES-02211-003).

Appendix A

Analytical Results

Sample A1P2-TR-73

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WASTE STREAM TECHNOLOGY, INC.

302 Grote Street
Buffalo, NY 14207
(716) 876-5290

Analytical Data Report

Report Date : 06/02/00
Group Number : 2002-098

Prepared For :
Mr. Steve Sharp
Sevenson Environmental Services, Inc.
8270 Whitcomb Avenue
Merrillville, IN 46410

Site : A1P2 Excav. Precert. & Monitoring

Field and Laboratory Information

Client Id	WST Lab #	Matrix	Date Sampled	Date Received	Time
A1P2-TR-73	WS65432	Soil	05/22/00	05/26/00	11:00
Sample Status Upon Receipt : No Irregularities.					

Analytical Services

Analytical Parameters	Number of Samples	Turnaround Time
TCLP Lead	1	5 Business Days
Total Lead	1	5 Business Days

Post-it® Fax Note 7671 Date 6/2/00 # of pages ▸ 5
To Steve Sharp From
Co./Dept. Co.
Phone # Phone #
Fax # Fax #

FAXED

Report Released By : B Schepart
Dr. Brian Schepart, Laboratory Director

ENVIRONMENTAL LABORATORY ACCREDITATION CERTIFICATION NUMBERS
NYSDOH ELAP #11179 NJDEPE #73977

WASTE STREAM TECHNOLOGY

METHODOLOGIES

The specific methodologies employed in obtaining the analytical data reported are indicated on each of the result forms. The method numbers shown refer to the following U.S. Environmental Protection Agency Reference:

Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020, March 1979, Revised 1983, U.S. Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Federal Register, 40 CFR Part 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. Revised July 1992.

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. Third Edition, Revised December 1996, U.S. EPA SW-846.

Annual Book of ASTM Standards, Volume II. ASTM, 100 Harbor Drive, West Conshohocken, PA 19428-2959.

Standard Methods for the Examination of Water and Wastewater. (20th Edition). American Public Health Association, 1105 18th Street, NW, Washington, D.C. 20036.

Waste Stream Technology, Inc.

Metals Analysis Result Report

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Site: A1P2 Excav. Precert. & Monitoring
Date Sampled: 05/22/00
Date Received: 05/26/00

Group Number: 2002-098
Units: mg/Kg
Matrix: Soil

WST ID: WS65432
Client ID: A1P2-TR-73
Digestion Date: 06/01/00

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Lead by ICP	4.10	139	06/01/00	SW-846 6010

WASTE STREAM TECHNOLOGY

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Waste Stream Technology, Inc.
TCLP Metals Analysis Result Report

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Site: A1P2 Excav. Precert. & Monitoring
Date Sampled: 05/22/00
Date Received: 05/26/00

Group Number: 2002-098
Units: mg/L
Matrix: TCLP Extract
TCLP Extraction Date: 05/31/00

WST ID: WS65432
Client ID: A1P2-TR-73
Digestion Date: 06/01/00

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Lead by ICP	0.075	0.211	06/01/00	SW-846 6010

WASTE STREAM TECHNOLOGY

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Waste Stream Technology, Inc.
Metals Method Blank Analysis

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Site: A1P2 Excav. Precert. & Monitoring
Date Sampled: NA
Date Received: NA

Group Number: 2002-098
Units: mg/Kg

WST ID: MB060100 S1
Client ID: NA
Digestion Date: 05/01/00

Analyte	Detection Limit	Result	Date Analyzed	Analysis Method
Pb soil Method Blank	4.10	Not detected	06/01/00	SW-846 6010

MB denotes Method Blank
NA denotes Not Applicable

WASTE STREAM

2002-098

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS RECORD

REFERENCE DOCUMENT NO.: CSR-00-0694

FLUOR DANIEL FERNALD — P.O. BOX 538704, CINCINNATI, OH 45253-8704

ORIGINAL MEP NO.: N/A — CORRESPONDING REFERENCE DOCUMENT NO.: — PAGE 1 OF 1

[redacted] PROJECT NO.: 20710-07 — FOR SAMPLE RELATED PROBLEMS, ACS CONTACT / PHONE: [redacted] 4994 — CONTRACT NO. / CHARGE CODE / PARS ORDER NO.: [redacted]

PROJECT NAME: 20710-07 AIP2 Excav. Precert & Monitoring

PROJECT CONTACT / PHONE: Jenny Vance x5267

CHARGE NO.: 5CJ12 — LOT MARKING NO.: N/A

SAMPLING TEAM (Print) & GROUP NAME / PHONE: [redacted] / SMO / x4943

SAMPLING TEAM (Signature & Badge No.): [redacted] / 714

ITEM NO.	SAMPLE NUMBER: FACTS ID	SAMPLE NUMBER: CUSTOMER ID / SAMPLE POINT	SAMPLE MATRIX	COMP	GRAB	COLLECTION DATE	COLLECTION TIME	CONTAINER TYPE	CONTAINER VOL.	NO. CONTRS	PRESERVATION	A S L	ANALYSES REQUESTED (if more space is required, use the SPECIAL INSTRUCTIONS block)
1	N/A 200378782	AIP2 - TR - 73	* S	X	N/A	05/22	1525	PL	500	1	Cool 4°C	B	TCLP Lead, Total Lead
2													WS65432
3													
4													
5													
6													
7													
8													
9													
10													

No Ext 05/24/00

SPECIAL INSTRUCTIONS: * S = Soil — 1-16473

Sample is being shipped by Fluor Fernald for Sevenson, No data will be reported back to Fluor Fernald.

RELINQUISHED: ITEM / REASON	RELINQUISHED BY (Signature) / AFFILIATION	BADGE NO.	DATE	TIME	RECEIVED BY (Signature) / AFFILIATION	BADGE NO.	DATE	TIME
#1 / Ship for Sevenson to Waste Stream Technologies	[redacted] / SMO	714	05/24/00	0950	Yvonne Vance SPL	70135	5/24/00	0950
	RH	9-25-00						
# 1 TO SHIP	[redacted] SPL	76718	5-25-00	1300				
Shipping Tag	Fedex				Sandra Stokes		5/26/00	11:00

WHITE — ON-SITE - RELEASE FILE / OFF-SITE ANALYTICAL LAB - RETURN TO FERP — YELLOW — ON-SITE - DISTRIBUTE AS NEEDED / OFF-SITE ANALYTICAL LAB - RETURN TO FERP — BLUE — SAMPLING TECH / PROJECT FILE

DISTRIBUTION OF COPIES

FS-F-3351 (09-21-95) [redacted]

* IF "N", THEN COMPLETE APPLICABLE NON-CONFORMANCE PROCEDURE.

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FROM: WASTE STREAM TECH. FAX: 716 876 2412 Jun-07-00 Wed 11:14 PAGE: 06