TETRA TECH

November 20, 2015

Ms. Jamie Bernard-Drakey
Site Assessment Manager
U.S. Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

Subject: **Preliminary Assessment Trip Report regarding Lead Screening of Soil and Interior Dust**
Kansas City Smelting & Refining on Guinotte Site, Kansas City, Missouri
U.S. EPA Region 7 START, Contract No. EP-S7-13-06, Task Order No. 0104.002
Task Monitor: Jamie Bernard-Drakey, Site Assessment Manager

Dear Ms. Bernard-Drakey:

Tetra Tech, Inc. (Tetra Tech) is submitting the attached Preliminary Assessment Trip Report regarding the Kansas City Smelting & Refining (KCS&R) on Guinotte site. If you have any questions or comments, please contact the Tetra Tech START Project Manager at (816) 412-1759.

Sincerely,

for Dave Gray
START Project Manager

Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Debra Dorsey, START Project Officer (cover letter only)

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Preliminary Assessment Trip Report regarding
Lead Screening of Soil and Interior Dust at the
Kansas City Smelting and Refining on Guinotte Site, Kansas City, Missouri

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to conduct a preliminary assessment (PA) at the Kansas City Smelting & Refining on Guinotte site (site) (see Figure 1). The purpose of the field screening was to assess lead concentrations of soil and interior dust at the site. START member Dave Gray performed the field screening activities. The EPA Task Monitor is Jamie Bernard-Drakey, Site Assessment Manager.

Background

The Kansas City Smelting and Refining Company began operations in 1880 in Argentine, Kansas. Its business was refining ores: zinc, pig lead, and gold and silver bullions. The ores originated in Mexico and Colorado.

By the 1890s, the company had smelting and refining works in Kansas City, Missouri (see Figure 1); Leadville, Colorado; and El Paso, Texas. In 1899, the Consolidated Kansas City Smelting and Refining Company, along with some other smaller companies (including Omaha and Grant Smelting, Philadelphia Smelting and Refining, and National United Colorado), merged to form the American Smelting and Refining Company. Smelting and refining operations ceased at the site around 1920 when it became cheaper to ship Mexican ore to the east by water, and new smelters were built closer to the mines in Colorado.

Historical site documents regarding the smelter in Kansas City, Missouri provided by EPA indicate presence of a furnace to process ore and lead-pipe casting operations in the northern portion of the site (see Figure 2).

Current Property Use

At the time of screening activities, the main building (2223 Guinotte Avenue) was used as a cross-fit training facility. Another building on the site located immediately south of the cross-fit training building (410 N. Park Avenue) was used as offices for the property owner's roofing tile company. Since screening activities, the cross-fit training facility has relocated. Future use of the main building is undetermined.

Site Activities

Tetra Tech START screened surface soils and interior dust at the site for lead contamination on June 1, 2015. Upon arrival, START measured site features to produce a to-scale property drawing. The site was divided into 11 areas: 3 cells, 2 drip zones, 2 gravel areas, 2 piles, and 2 road easements (see Figure 3). A sample consisting of seven to nine aliquots was collected from each area. Each sample was dried, passed through a number 10 (2-millimeter) sieve, and homogenized before undergoing x-ray fluorescence (XRF) screening for lead. All soil samples were submitted to the EPA Region 7 laboratory for analyses for arsenic, cadmium, chromium, lead, and zinc.

Field screening data indicated that 7 of the 11 areas contained average XRF-lead concentrations exceeding the EPA action level for industrial soil of 800 milligrams per kilogram (mg/kg) or parts per million (ppm). XRF-lead concentrations found within the seven areas were as follows: Cell 1 – 1,694 ppm, Cell 2 – 2,541 ppm, Drip Zone 1 – 1,531 ppm, Drip Zone 2 – 1,748 ppm, Gravel Area 1 – 3,248 ppm, Gravel Area 2 – 902 ppm, and Road Easement 1 – 1,464 ppm. Laboratory analytical results indicated detections of lead concentrations in nine soil samples ranging from 34.5 to 8,850 mg/kg. The EPA RSL for lead in industrial soil (800 mg/kg) was exceeded in six of these nine samples. While field screening data for Gravel Area 2 exceeded 800 ppm, the analytical result for lead in this sample was 634 mg/kg. Table 1 compares field screening data and analytical results for lead in each soil sample.

Analytical results indicated that 7 of the 11 soil samples contained arsenic at concentrations ranging from 7.6 mg/kg (Gravel Area 2) to 38.1 mg/kg (Cell 2). The EPA regional screening level (RSL) for arsenic in industrial soil is 3 mg/kg. Cadmium was detected in six soil samples at concentrations ranging from 1.1 to 6.3 mg/kg, well below the EPA RSL of 980 mg/kg. Chromium was also detected in six samples at levels ranging from 2.3 to 18.7 mg/kg. Zinc was detected in all samples at concentrations ranging from 5.1 to 1,420 mg/kg, well below the EPA RSL of 350,000 mg/kg. Analytical results are listed in Table 2.

START collected a wipe sample of flooring at three locations inside the main building (cross-fit training facility). These locations represented common areas and areas where children tended to stay while their parent(s) worked out. At each location, a clean template measuring 1 square foot was placed on the cushioned, rubber matting present on the floor throughout the facility.

Wipe sample #1 was collected from a child play area in the northeast portion of the building (see Photo # 3). Wipe sample #2 was collected from the workout area near kettle bells at the northwest corner of the building (see Photo #4). Wipe sample #3 was collected in the southwest portion of the building inside the entryway from the loading dock along the south side of the building (see Photo #5). Concentration of lead in each wipe sample was reported in micrograms per square foot ($\mu g/ft^2$) to represent concentration of lead per unit area (lead loading) at each sampling location. Analytical results from these samples were as follows: Wipe sample #1 – 81.94 $\mu g/ft^2$, Wipe sample #2 – 14.03 $\mu g/ft^2$, and Wipe sample #3 – 150.50 $\mu g/ft^2$. The EPA action level for lead dust in flooring is 40 $\mu g/ft^2$.

FIGURES

N

0 1,000 2,000

Feet

Source: USGS Kansas City, MO 7.5 Minute Topo Quad, 1996;
USGS North Kansas City, MO 7.5 Minute Topo Quad, 1997

Kansas City Smelting & Refining on Guinotte Site
2223 Guinotte
Kansas City, Missouri

Figure 1
Site Location Map

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Date: 11/10/2015 Drawn By: Nick Wiederholt Project No: 103X9025.16.0104.002

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Legend

Approx. Locations of Former Lead Operations

N

0 25 50

Feet

Source: ESRI, World Imagery Basemap, 2014

Kansas City Smelting & Refining on Guinotte Site
2223 Guinotte
Kansas City, Missouri

Figure 2
Former Lead Operations Map

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Date: 11/20/2015 Drawn By: Gustavo Orozco Project No: 103X9025.16.0104.002

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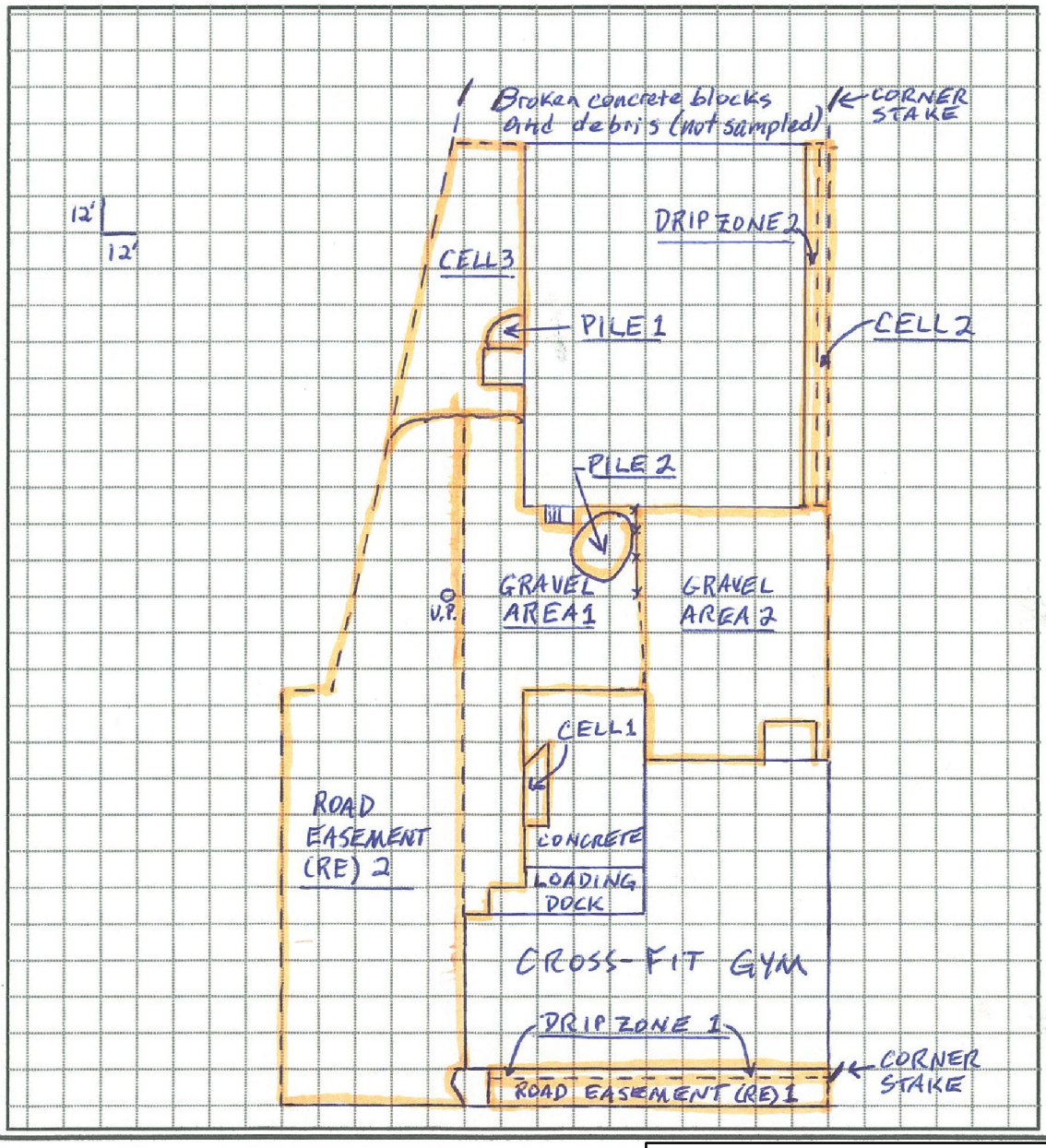
Kansas City Smelting & Refining on Guinotte Site

EPA Site #: **KCSR-** _____ Date of Access: _____ Date of Screening: 6-1-15

Screening Results: XRF I.D.: 1540 Date: 6-4-15 Operator: DG

Average XRF Pb Screening Results (ppm)

Cell 1:	1694	Cell 5:		DZ 1:	1531	RE 1:	1464
Cell 2:	2541	Cell 6:		DZ 2:	1748	RE 2:	49
Cell 3:	173	Cell 7:		Pile 1:	16	Gravel Area 1:	3248
Cell 4:	~~1531~~ DG	DW 1:		Pile 2:	11	Gravel Area 2:	902



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Kansas City Smelting & Refining on Guinotte Site
2223 Guinotte
Kansas City, Missouri

Figure 3
Property Field Sheet

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Date: 11/18/2015 Drawn By: Gustavo Orozco Project No: 103X9025.16.0104.002

Source: Tetra Tech, Inc., 2015

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TABLES

TABLE 1

FIELD AND LABORATORY RESULTS FOR LEAD IN SOIL
Kansas City Smelting & Refining on Guinotte Site
Kansas City, Missouri

EPA Laboratory Sample ID Number	Field Sample ID Number	Average XRF-Pb (ppm)	Laboratory Result (mg/kg)
6817-1	Cell 1	**1,694**	**1,130**
6817-2	Cell 2	**2,541**	**2,440**
6817-3	Cell 3	173	228
6817-4	Drip Zone 1	**1,531**	**1,300**
6817-5	Drip Zone 2	**1,748**	**1,790**
6817-6	Gravel Area 1	**3,248**	**8,850**
6817-7	Gravel Area 2	**902**	634
6817-8	Pile 1	16	4.9 U
6817-9	Pile 2	11	4.9 U
6817-10	Road Easement 1	**1,464**	**1,050**
6817-11	Road Easement 2	49	34.5 J

Notes:

The EPA action level for lead in industrial soil is 800 mg/kg or ppm. Field and laboratory results exceeding this level are shown in boldface.

EPA	U.S. Environmental Protection Agency
ID	Identification
J	Although lead was identified in the sample, the result is an estimate (biased low) due to low recovery of lead in the laboratory matrix spike.
mg/kg	Milligrams per kilogram
Pb	Lead
ppm	Parts per million
U	Lead was not detected at or above the reporting limit shown.
XRF	X-ray fluorescence spectrum analyzer

TABLE 2

LABORATORY RESULTS FROM SOIL SAMPLES
Kansas City Smelting & Refining on Guinotte Site
Kansas City, Missouri

Total Metals (mg/kg)	Cell 1	Cell 2	Cell 3	Drip Zone 1	Drip Zone 2	Gravel Area 1	Gravel Area 2	Pile 1	Pile 2	Road Easement 1	Road Easement 2
Arsenic	**9**	**38**	4.9 U	**11**	**20**	**11**	**8**	4.9 U	4.9 U	**8**	4.9 U
Cadmium	1	6	1.0 U	2	3	1	1.0 U	1.0 U	1.0 U	2	1.0 UJ
Chromium	1.9 U	18	6	10	16	1.9 U	2.0 U	2	2.0 U	19	1.9 UJ
Lead	**1,130**	**2,440**	228	**1,300**	**1,790**	**8,850**	634	4.9 U	4.9 U	**1,050**	34.5 J
Zinc	206	1,420	95	321	703	107	262	29	5	332	35

Notes:

Analytical results exceeding their respective EPA regional screening levels for industrial soil are shown in boldface.
The EPA regional screening level for arsenic in industrial soil is 3 mg/kg.
The EPA regional screening level for lead in industrial soil is 800 mg/kg.

EPA	U.S. Environmental Protection Agency
J	Although lead was identified in the sample, the result is an estimate (biased low) due to low recovery of lead in the laboratory matrix spike.
mg/kg	Milligrams per kilogram
U	The analyte was not detected at or above the reporting limit shown.
UJ	Cadmium and chromium were not found in the sample at or above their respective reporting limits; however, the reporting limits are estimates due to the low recovery of these analytes in the laboratory matrix spike.

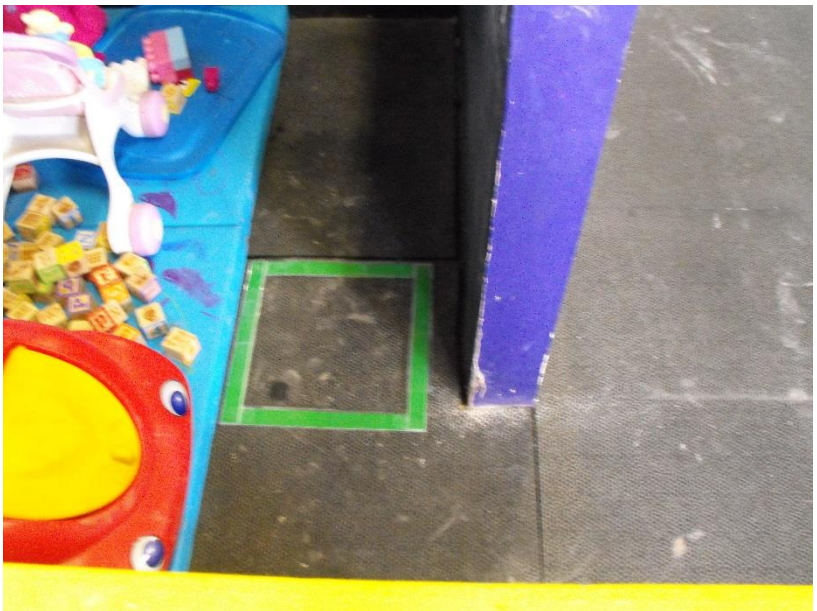
PHOTOGRAPHIC LOG

Preliminary Assessment of the Kansas City Smelting & Refining on Guinotte Site
Kansas City, Missouri

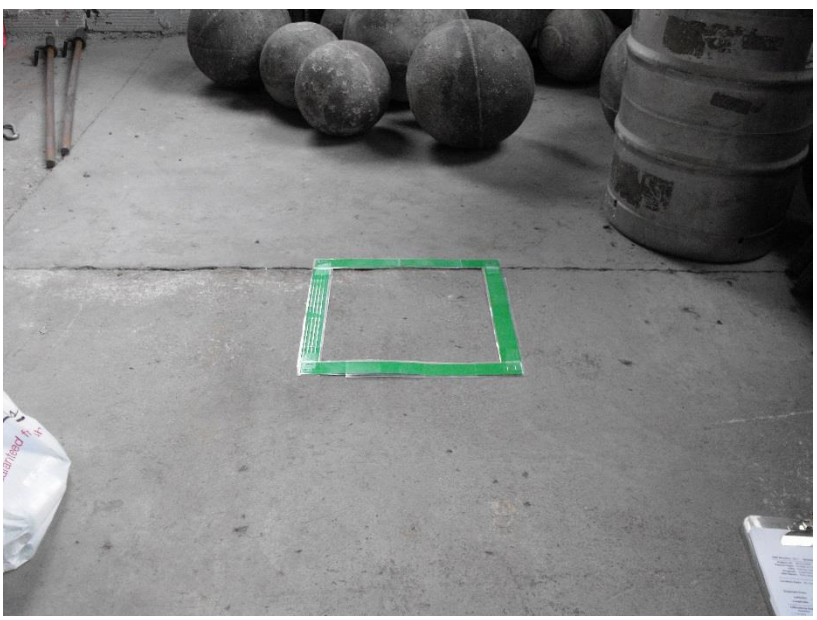
TETRA TECH PROJECT NO. X9025.16.0104.002	DESCRIPTION	This photograph shows Pile 1. This pile is composed of waste grout used for the property owner's roofing tile business.	1
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
Direction: East	PHOTOGRAPHER	Dave Gray	6/1/2015

TETRA TECH PROJECT NO. X9025.16.0104.002	DESCRIPTION	This photograph shows a child playing in the mud behind the main building. The grassy area (Cell 1) had an average lead reading of 1,694 parts per million	2
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
Direction: Northwest	PHOTOGRAPHER	Dave Gray	6/1/2015

Preliminary Assessment of the Kansas City Smelting & Refining on Guinotte Site
Kansas City, Missouri



TETRA TECH PROJECT NO. X9025.16.0104.002	DESCRIPTION	This photograph shows the location of wipe sample #1 in the child play area inside the main building.	3
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
Direction: N/A	PHOTOGRAPHER	Dave Gray	6/1/2015



TETRA TECH PROJECT NO. X9025.16.0104.002	DESCRIPTION	This photograph shows the location of wipe sample #2 near the northwest corner of the main building.	4
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
Direction: N/A	PHOTOGRAPHER	Dave Gray	6/1/2015

Preliminary Assessment of the Kansas City Smelting & Refining on Guinotte Site
Kansas City, Missouri

TETRA TECH PROJECT NO. X9025.16.0104.002	DESCRIPTION	This photograph shows the location of wipe sample #3 inside the entry way from the loading dock behind the main building.	5
	CLIENT	U.S. Environmental Protection Agency Region 7	Date
Direction: N/A	PHOTOGRAPHER	Dave Gray	6/1/2015