



**STATE COOPERATIVE AGENCY DECISION STATEMENT**  
**Kansas Department of Health and Environment**  
**Bureau of Environmental Remediation**

**Site Name:** East La Harpe Smelter Site (C3-001-03005)

**City/County:** La Harpe, Allen County

**Date:** November 2015

**Media Impacted:** Soil, groundwater

**Land Use (Current):** Vacant, Non-Residential

**Site Background:** The 22 acre East La Harpe Smelter Site is located 0.6 miles east of the city of La Harpe, Allen County, Kansas. The smelter was built in 1902 and processed ore that contained lead, zinc, and cadmium until 1917. It was owned and operated by various entities throughout that time. In 1918 the smelter was dismantled. From 1992 to 2012, a portion of the site was used as a scrap metal salvage yard with the remaining area left undeveloped. Debris from the salvage operations remains at the site.

A 1993 Preliminary Assessment identified soil and stormwater contamination at the site. A Screening Site Inspection conducted later that year indicated the presence of lead, cadmium, zinc, and arsenic in soil. This investigation found no surface water bodies on site.

A Focused Former Smelter Assessment (FFSA) was conducted in 2005. Phase II of the FFSA indicated that cadmium, lead, and zinc were identified in soil at concentrations above respective KDHE Tier 2 Levels for the Soil Pathway for residential use as specified in KDHE's Risk-Based Standards for Kansas Manual.

A Removal Site Evaluation (RSE) was conducted in 2013, with an additional Off-Site Sampling Investigation conducted in July 2014. The RSE and Off-Site Sampling Reports indicated lead and arsenic in soil exceeded respective Tier 2 Levels for the Soil Pathway for non-residential use, while cadmium and zinc in soil exceeded respective Tier 2 residential criteria. Surface water samples were collected from three locations. Two of the three samples were reported to contain cadmium at concentrations slightly exceeding the Kansas Surface Water Quality Standard for Agricultural Use (SWQS). These samples were collected from an area of low-standing water in the southeast corner of the site and from an ephemeral stream on the east side. These locations were observed to be dry during previous investigations. The man-made stormwater retention pond in the southwest corner of the site indicated no exceedances of Kansas SWQS. Of three groundwater samples collected from on-site monitoring wells, one indicated the presence of cadmium slightly above its Tier 2 Level of 0.005 mg/L. Shallow groundwater in the vicinity has low well yields (<150 gallons/day) and is not used for potable drinking water supplies.

An Evaluation of Remedial Alternatives was conducted as part of the RSE to identify the most effective way to address contamination. Each remedial alternative was evaluated using the following criteria: 1) overall protectiveness of human health and

the environment; 2) compliance with Federal and State applicable or relevant and appropriate requirements (ARARs); 3) long-term effectiveness and permanence; 4) reduction of toxicity, mobility, or volume through treatment; 5) short-term effectiveness; 6) implementability; and 7) cost.

The following remedial alternatives were evaluated:

- Alternative 1: No Action (\$0)
- Alternative 2: On-Site Consolidation and Cover (\$1,500,000 to \$1,700,000)
- Alternative 3: Excavation and Off-Site Disposal (\$5,800,000 to \$6,200,000)

The selected remedy was Alternative 2: on-site consolidation and cover with access controls and institutional controls. Based on the RSE and Off-Site Sampling Reports, KDHE has determined that Alternative 2 meets the selection criteria as follows:

1) Alternative 2 meets the overall protectiveness criteria because it meets all of the Remedial Action Objectives (RAOs) by eliminating migration of and human and ecological exposures to impacted soil and smelter waste;

2) Alternative 2 meets the criteria for compliance with ARARs because it complies with existing applicable Federal, State and local requirements.

3) Alternative 2 meets long-term effectiveness and permanence criteria through the institutional controls, long-term care agreement, and operations and maintenance plan;

4) Alternative 2 meets the criteria for the reduction of toxicity, mobility, or volume by reducing the lateral extent of impacted soils; eliminating potential exposure through direct contact, inhalation, and ingestion; and reducing the mobility of metals in impacted soil and smelter waste through the use of a soil cap feature;

5) Alternative 2 meets the criteria for short-term effectiveness because the potential for exposure to metal-impacted materials or airborne contaminants by site workers and surrounding residents during implementation of the constructed remedy will be minimized through best management practices and engineering controls;

6) Alternative 2 meets the criteria for implementability because the remedy will be constructed using known means and methods in the construction industry; and

7) Alternative 2 meets the criteria cost because the remedy estimates have been determined to be reasonable.

**Remedial Plan:**

The primary Contaminants of Concern (COCs) at the site are lead, arsenic, cadmium, and zinc found in smelter wastes and soils and cadmium in groundwater. RAOs include: 1) preventing human exposure through direct contact with and/or ingestion of contaminated soil or smelter waste with COCs in excess of KDHE's Tier 2 Levels for non-residential use on site; 2) preventing human exposure through direct contact with and/or ingestion of groundwater with COC's in excess of KDHE's Tier 2 Levels for residential use on site property, although groundwater on the property is not being

used and is not likely to be used because of low yield; 3) preventing human exposure through direct contact with and/or ingestion of contaminated soil and smelter waste with COCs in excess of KDHE's Tier 2 Levels for residential use off-site property; and 4) preventing migration of soil and smelter waste that contain COCs in excess of applicable standards that could result in degradation of surface water, soils, and the adjacent environment.

The corrective action selected to achieve the RAOs includes excavation, consolidation, and capping of on-site contaminated soil and smelter waste in excess of Tier 2 Level non-residential criteria and off-site soil and smelter waste in excess of Tier 2 Level residential criteria. The approximately 500-foot by 700-foot on-site consolidation cell will be placed over an existing fill area, adjacent to the northern boundary of the site. The consolidated materials will be covered with a vegetated soil cover. An Environmental Use Control (EUC) will be established to ensure the site remains non-residential, restrict groundwater use on-site, and prohibit development or non-conforming uses within the area of the consolidation cell. A long term maintenance and operation plan (O&M) will be developed which will include routine inspections and repairs as necessary. The total cost for this remedy is estimated to be between \$1,500,000 and \$1,700,000. The estimate includes direct costs and long-term O&M for a period of up to 30 years.

Specific requirements for this remedial plan include the following:

- (1) Approximately 27,000 cubic yards of on-site contaminated soil and smelter waste above the cleanup levels specified above will be consolidated, graded, compacted and covered with an engineer designed cap. The encapsulation cell will be seeded and mulched to create a vegetative cap. Fencing will be installed around the cell to prevent unauthorized access and to protect the structural integrity of the cell. The approximate location of the consolidation cell is shown on Exhibit 2.
- (2) An EUC and Long-Term Care Agreement will be established to restrict future use of the site to non-residential, restrict groundwater use, and prevent development or non-conforming uses within the consolidation cell area.
- (3) A long-term O&M plan will be developed which will include mowing and routine inspections with repairs conducted as needed to ensure the long-term effectiveness of this remedy.

**Selection:**

On the basis of the information provided above and in the available Administrative Record, KDHE selects the proposed remedial plan as the final remedy for the Site.

**Community  
Involvement:**

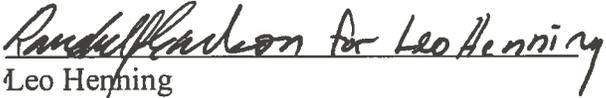
Public notice of the availability of the Draft Agency Decision Statement (ADS) was published in the *Iola Register* on October 17, 2015, and the Draft ADS was available for review at La Harpe City Hall from October 17, 2015, through October 31, 2015, during the 15-day comment period held to solicit written comments from the public. KDHE has also established a webpage dedicated to the East La Harpe site which

made available the Draft ADS and other site documents. No comments were received during the comment period.

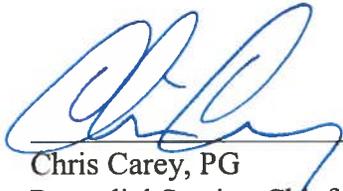
**Tables:** Table 1- Contaminant Concentrations in Soil and Waste  
Table 2 - Contaminant Concentrations in Groundwater

**Figures:** Exhibit 1: Facility Location Map  
Exhibit 2: Facility Layout

**Final Agency Approval**

  
Leo Henning  
Director, Bureau of Environmental Remediation

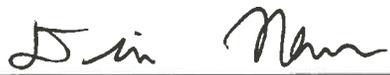
11/5/2015  
Date

  
Chris Carey, PG  
Remedial Section Chief

11/5/2015  
Date

  
Maura O'Halloran, PG  
Site Restoration Unit Chief

11/4/2015  
Date

  
Daniel Newman  
Site Project Manager

11/4/2015  
Date

**Table 1: Contaminant Concentrations in Soil and Waste**

Contaminants of Concern	Residential Tier 2 Level Soil Pathway* (mg/kg)	Non-Residential Tier 2 Level Soil Pathway* (mg/kg)	Maximum Concentration Detected (mg/kg)
Arsenic	18.9	63.2	<b>2,800</b>
Cadmium	39	965	<b>120</b>
Lead	400	1,000	<b>46,000</b>
Zinc	23,500	613,000	<b>39,000</b>

\*KDHE's Risk Based Standards for Kansas Manual, October, 2010, amended September 2015.

mg/kg = milligrams per kilogram

**Red Bold Font** indicates concentration exceeds both Residential and Non-residential Tier 2 Levels, laboratory analysis only

**Black Bold Font** indicates concentration exceeds Residential Tier 2 Level, laboratory analysis only

**Table 2: Contaminant Concentrations in Groundwater**

Contaminants of Concern	Residential Tier 2 Groundwater Pathway* (mg/l)	Non-Residential Tier 2 Level Groundwater Pathway* (mg/l)	Maximum Concentration Detected (mg/l)
Arsenic	0.01	0.01	ND
Cadmium	0.005	0.005	<b>0.008</b>
Lead	0.015	0.015	0.009
Zinc	4.67	30.5	0.81

\*KDHE's Risk Based Standards for Kansas Manual, October, 2010, amended September 2015.

mg/l = milligrams per liter

ND = not detected

**Red Bold Font** indicates concentration exceeds both Residential and Non-residential Tier 2 Level



**LEGEND**

-  La Harpe City Limits
-  Site Boundary

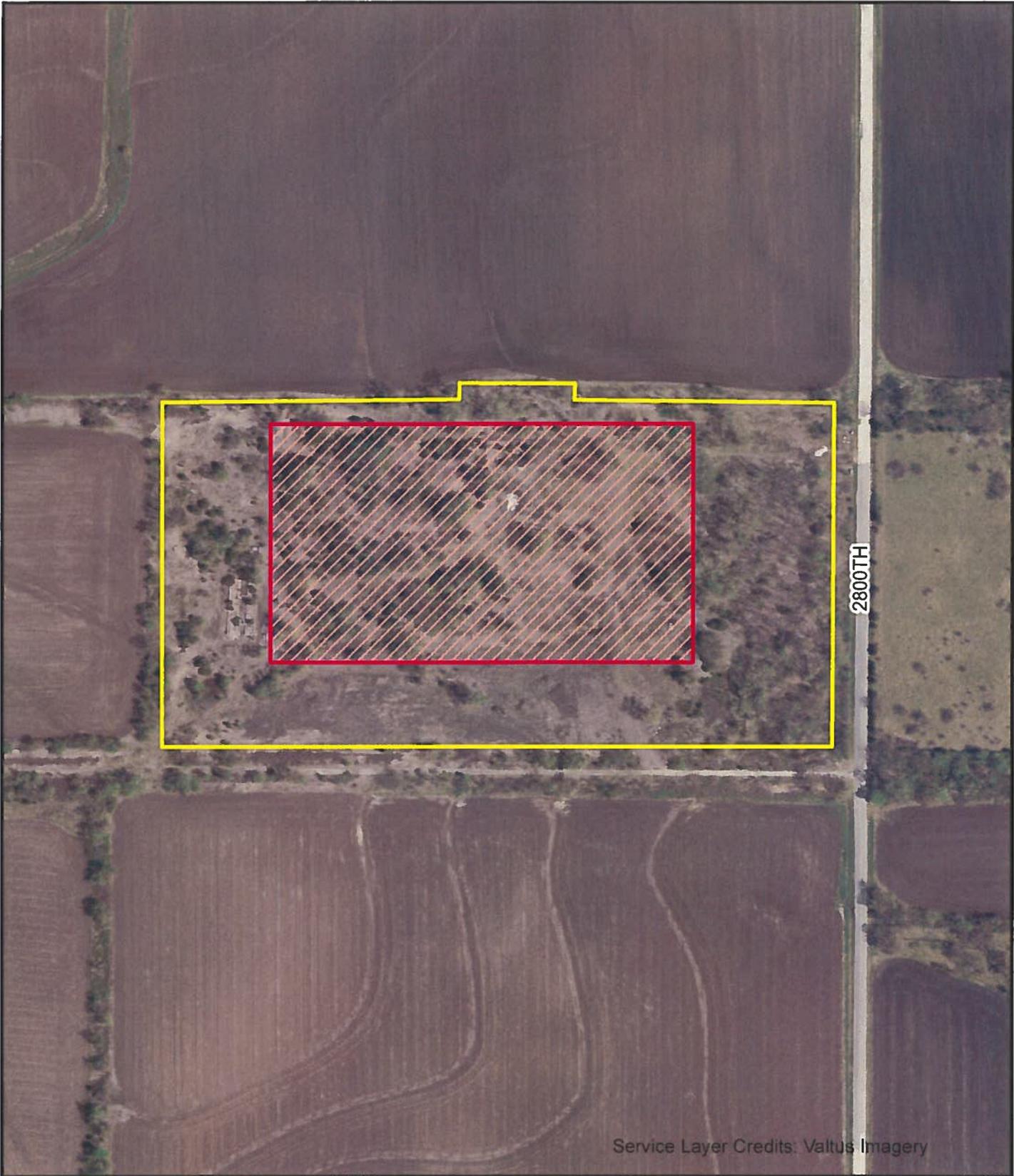


**SITE: East La Harpe Smelter Property  
La Harpe, Kansas**

**TITLE: Facility Location**

**PROJECT PHASE: Consent Agreement Final Order**

<b>DRAWN BY:</b>	MS	08/11/15	<b>BASEMAP DATE:</b>	2014
<b>CHECKED BY:</b>	MO	08/11/15	<b>Exhibit 1</b>	



Service Layer Credits: Valtus Imagery

**Legend**

-  Clay Repository
-  Property Boundary



SITE: East La Harpe Smelter Site	
TITLE: Facility Layout	
PROJECT PHASE:	Consent Agreement Final Order
DRAWN BY: DN	9/16/15
CHECKED BY: MO	9/16/15
BASEMAP DATE:	2014
Exhibit 2	