

**EPA Superfund
Explanation of Significant Differences:**

**DAVENPORT AND FLAGSTAFF SMELTERS
EPA ID: UTD988075719
OU 01
SANDY, UT
11/15/2005**

**DAVENPORT AND FLAGSTAFF SMELTERS SUPERFUND SITE
RESIDENTIAL OPERABLE UNIT
EXPLANATION OF SIGNIFICANT DIFFERENCES
November 2005**

I. INTRODUCTION

This Explanation of Significant Differences (ESD) is being issued by the U.S. Environmental Protection Agency (EPA) to recognize impending development of undeveloped land into residential properties within the Davenport and Flagstaff Smelters Superfund Site (Site) since the Record of Decision (ROD) for the Residential Operable Unit (ROU) (EPA, 2002) was signed by EPA on September 30, 2002. At the time of the ROD, the Site had been divided into two operable units: A residential operable unit (ROU) that covered residential properties with lead and arsenic contamination from the historic smelting operations and a non-residential operable unit (NROU) that covers non-residential properties that have been impacted by the smelters. This ESD extends the remedy selected for the ROU to those areas that were considered non-residential at the release of the ROD and are now going to be developed into residential properties (OU3). The ROU shall be referred to as OU1 or ROU; the NROU shall be referred to as OU2 or NROU, and the area addressed by this ESD shall be referred to as OU3.

The changes to the ROD result from new information received by EPA subsequent to issuing the ROD. These changes do not fundamentally alter the remedy presented in the ROD. The remedy for the Davenport and Flagstaff Smelters Superfund Site remains protective of human health and the environment. This ESD is issued by EPA, after consultation with the Utah Department of Environmental Quality (UDEQ).

The modifications to the remedy described in this ESD do not alter the selected remedy in any fundamental aspect regarding primary treatment method and changes in remedy from containment to treatment. In accordance with Sections 117(c) and 121 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund), as amended, 42 U. S.C. Section 9601, et seq. (CERCLA), and the regulations at 40 C.F.R. Section 300.435(c)(2) (I), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), this ESD has been prepared for the following reasons:

- To provide the public with an explanation of the nature of the changes to the remedy;
- To summarize the circumstances that led to the changes to the remedy; and
- To affirm that the revised remedy complies with all statutory requirements.

This document presents a summary of the changes to the selected remedy and a synopsis of information on the Site. The Administrative Record, which contains this ESD and documentation supporting this significant difference, is available for public review at the locations indicated at the end of this report.

II. SITE HISTORY AND BACKGROUND

A. Location

Operable Unit 3 (OU3) for the Davenport and Flagstaff Smelters Superfund Site (UTD988075719) is located approximately 15 miles southeast of Salt Lake City, Utah, near the mouth of Little Cottonwood Canyon and within the northwest quarter of Section 12, Township 3 South, Range 1 East, Salt Lake Base and Meridian (see figure 1-1 from the *Focused Feasibility Study (FFS)*(URSGWC, 2001)). Three major roads are located in the vicinity of the Site (see figure 1-2 of FFS). These roads include Little Cottonwood Canyon Road (Utah 209) at the south end of the Site, North Fork Little Cottonwood Canyon Road (Utah 210) along the north margin of the Site, and Wasatch Boulevard on the west end of the Site. All three roads are major thoroughfares used for commuting by local residents, and for recreational access to Little Cottonwood Canyon. The Davenport Smelter was located on the southern side of the canyon, near Little Cottonwood Canyon Road. The Flagstaff Smelter was located north of Little Cottonwood Creek.

The Site lies within the foothills of the Wasatch Mountains which rise abruptly to the east of the Site with peak elevations greater than 11,000 feet less than 4 miles from the Site. Elevations range from approximately 5,150 to 5,230 feet across the Site.

The area surrounding the Site consists of affluent single-family homes, one of Salt Lake County's premier restaurants, and nonresidential property. As stated in the ROD, "Due to its proximity to the canyon and the extensive natural vegetation, the area is prime for growth and residential development." *The Davenport and Flagstaff Smelter Sites Remedial Investigation Report* (URSGWC, 2001a) provides a more detailed description of the Site.

B. Site History

The Davenport and Flagstaff Smelters, active during the early-to-mid 1870's, processed lead and silver ores derived from mines in the Alta, Utah area. Ore was delivered to the smelters using wagons and possibly rail cars. The ore was stockpiled near the smelters until it was processed. The smelting process involved the crushing and melting of sulfide ore in order to concentrate the desired metals. This crushing process likely released arsenic, lead, and other metals from the rock matrix in the form of dust, in addition, flue ash from the smelting process likely contained concentrated levels of these metals, which would have settled across the Site and vicinity. Both smelters were decommissioned and dismantled by 1879.

The 1991 discovery of ladle casts in Little Cottonwood Creek, near the historic Flagstaff Smelter, prompted an environmental study of the Site. During investigations performed by EPA in 1992, and by UDEQ in 1994, elevated concentrations of arsenic and lead were detected in the soils at both smelter locations. Little physical evidence of the smelters remains; however, slag piles and soil contaminated with lead and arsenic remain in the area.

C. History of Site Investigations

The EPA Region VIII, Emergency Response Branch Technical Assistance Team (TAT) in April of 1992, conducted a Phase I Site assessment of the Flagstaff Smelter. Detections of elevated levels of arsenic and lead in surface and subsurface soils led to "a Phase II Site Assessment. During the Phase II investigation, the Davenport Smelter was discovered south of the Flagstaff Smelter. The area around the Davenport Smelter was investigated as Phase III in July of 1992 and the results are presented in the *Site Assessment, Little Cottonwood Creek Smelter Sites - Phase III, Davenport Smelter* (TAT, 1993). As stated in the Record of Decision (EPA, 2002), "... [these investigations] revealed high levels and widespread distribution of arsenic and lead contaminated soils surrounding the former smelters."

A Preliminary Assessment (PA) was performed in August 1992; Focused Site Inspection in 1994; and additional sampling in 1994. The data demonstrates the distribution of soil contaminants dispersed from the source area via air, surface water, or groundwater pathways and is available in *Analytical Results Report - Davenport Smelter (UDEQ, 1995)*, and *Analytical Results Report - Flagstaff Smelter (UDEQ, 1995a)*.

The Site was further characterized in 1998 with data collected primarily from residential areas although sampling was performed in non-residential areas. The scope of this investigation was described in detail in a document entitled *Final Quality Assurance Project Plan for Davenport and Flagstaff Smelter Site Characterization Study* (SAIC, 1998) and represents the majority of the data collected to characterize the Site. Site characterization results were reported in the *Final Site Characterization Study for Davenport and Flagstaff Smelters Residential Area* (SAIC, 2000). As stated in the *Remedial Investigation Report* (URSGWC, 2001a), "UDEQ also performed an investigation of undeveloped areas with emphasis on the area around the former Flagstaff Smelter as described in a document entitled *Addendum to the Final Quality Assurance Project Plan For Davenport and Flagstaff Smelter, Sampling of Undeveloped Lands* (UDEQ, 2000a). The results of this investigation were reported in a document entitled *Addendum to the Final Quality Assurance Project Plan for Davenport and Flagstaff Smelter, Sampling of Undeveloped Lands, Sampling Results Report* (UDEQ, 2000b). Lead levels greater than 200,000 mg/kg were detected in the investigation area (UDEQ, 2000b)."

As part of the Remedial Investigation (RI), URSGWC collected soil samples in March 2001, at 3 residential properties that had not been sampled during previous investigations, and 1 property that had been sampled previously. URSGWC expanded collection of soil samples in July 2001, to further characterize the extent of contamination at 6 residences. Two surface water springs within the residential area were also sampled in July 2001. The RI states, "In addition to the residential areas, it was proposed to collect samples in an undeveloped area (Salt Lake City property) west of the residential lots located on Quail Ridge Road. Sampling in this area better defined the residential/nonresidential boundary and more fully defined the concentration contours along the edge of the ROU."

The *Baseline Human Health Risk Assessment* (ISSI, 1999) was performed for the Davenport and Flagstaff Smelter sites by EPA as part of the *Final Site Characterization Study* (SAIC, 2000). As stated in the *Remedial Investigation Report* (URSGWC, 2001a), "A risk management decision by the UDEQ and USEPA established action levels of 600 mg/kg for lead and 126 mg/kg for arsenic in residential surface soils for these sites."

The *Focused Feasibility Study Report* (URSGWC, 2001) for the ROU was completed December 2001. Three alternatives were evaluated against seven of the nine criteria described in the National Contingency Plan (NCP). The remaining two criteria, State acceptance and community acceptance were evaluated through the public process associated with the release of the Proposed Plan and receipt of comments from the State and public. Utilizing the studies cited above, within the Administrative Record, and the public process, EPA, with concurrence of UDEQ, selected a remedy for residential properties and issued the Record of Decision (EPA, 2002) on September 30, 2002.

In preparation for implementation of the ROU remedy, URS Corporation (URS) collected field sampling and X-ray fluorescence (XRF) analyses to characterize lead and arsenic concentrations in soil to provide additional soil data for the accurate estimate of soil volumes exceeding the removal action levels of 600 mg/kg for lead and 126 mg/kg for arsenic. The pre-design sampling locations complement previously recorded lead and arsenic concentrations within the ROU and are delineated in the *Report of Findings for Pre-Remedial Design Sampling Residential Operable Unit* (URS, 2003).

A Time-Critical Removal Action (TCRA) (EPA, 2004a) was initiated April 22, 2004 to address a minimum of four of the 20 contaminated residential properties within the area situated at the location of the former Davenport Smelter, within the Davenport and Flagstaff Smelters Superfund Site Residential Operable Unit (ROU). The removal action was time-critical "[b]ecause there are residential properties which lie on top of the former Davenport smelter and contain concentrations of lead and arsenic far exceeding the action level." The TCRA states, "The proposed Removal Action will address most critical immediate threats identified during the Environmental Protection Agency's (EPA) and Utah Department of Environmental Quality's (UDEQ) sampling events which occurred from 1992 to present. Six properties within the Davenport Smelter area of the Davenport and Flagstaff Smelters Superfund Site ROU were cleaned-up under this TCRA.

A Non-Time Critical Removal Action (NTCRA) (EPA, 2005) was initiated May 26, 2005 to address the remaining residential properties within OU1 not cleaned up under the 2004 TCRA.

III. DESCRIPTION OF THE ROU ROD REMEDY AND THIS ESD

A. Description of the ROU ROD Remedy

Four Remedial Action Objectives (RAOs) were derived from the risk quantified in the BLRA:

- Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead level of 10 micrograms of lead per deciliter of blood.
- Reducing risks from exposure to arsenic-contaminated soil such that no person has greater than a 1 in 10,000 (10^{-4}) increased risk of contracting cancer from contaminated soil.
- Remediating soils to levels that allow continued residential use.
- Preventing the occurrence and spread of windblown contamination.

The clean-up levels were arrived at through the use of health-based goals. The established action level of 600 mg/kg for lead was based upon preventing exposure to a child such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead concentration of 10 micrograms of lead per deciliter of blood. The arsenic action level of 126 mg/kg was derived from a target cancer risk level of

The selected remedy achieves the RAOs through the following key components:

- Excavation and off-site treatment and disposal of principal-threat wastes;
- Excavation of contaminated soil to a depth of 18" from all properties recommended for remediation that have total soil-lead levels exceeding 600 mg/kg and total arsenic levels exceeding 126 mg/kg. Properties with principal-threat wastes may be excavated to depths greater than 18";
- Hand excavation around affected areas of native vegetation;
- Transportation and disposal of all excavated soils with less than 5 mg/L extractable lead (using TCLP) at a suitable class I or Subtitle C landfill;
- Transportation, off-site treatment (to meet land disposal requirements) and disposal of characteristically hazardous soil at a suitable Subtitle C landfill;
- Placing clean, imported soil, backfill and a 6-inch topsoil layer over all excavated soil surfaces;
- Removal and replanting of affected non-native vegetation;
- Cleaning of the interiors of all buildings located on remediated properties to remove interior dust; and
- Development and implementation of institutional controls for any contamination left in place on properties recommended for remediation.

B. Description of this ESD

This ESD addresses the area, within the Davenport and Flagstaff Smelters Superfund Site, targeted by L.C. Canyon Partners, LLC (LCP) for development of residential properties. The remedy components identified in the ROD for ROU shall be applied to residential developments in OU3 as these components were presumptively developed to address unacceptable health risks to residential communities exposed to contaminants from smelting activities of the historic Davenport and Flagstaff Smelters. LCP plans to develop approximately 36 acres with 32 acres for residential use and 4 acres as open space. LCP intends to purchase approximately 36 acres

west of State Highway 210 and approximately 14 acres east of State Highway 210. The 14 acres east of 210 are not contaminated above cleanup action levels and, therefore, are not included in OU3. The 36 acres west of 210, which comprise OU3, include approximately 26 acres of land currently known to be contaminated above OU3 cleanup levels.

Also, this ESD modifies the remedy to allow on-site treatment of soil exhibiting a characteristic of hazardous waste. This treatment involves mixing a chemical stabilizing agent with the contaminated soil either in-situ or in staging piles. Treated wastes can be transported to an off-site solid waste landfill for disposal if the material no longer exhibits a characteristic and it complies with land disposal restrictions found within 40 CFR 268 and UAC R315-13. Any hazardous remediation wastes transported off-site for disposal will be taken to a RCRA Subtitle C facility as required by the ROD.

IV. SIGNIFICANT DIFFERENCES TO THE REMEDY

This ESD recognizes the impending development of 36 acres within the Davenport and Flagstaff Smelters Superfund Site into residential properties. Existing residential areas are specifically addressed in the *ROU ROD* (EPA, 2002). Although this area was zoned for residential use, the ROU did not include this area because it was undeveloped, there were no interested developers at the time of the ROD, and there were no currently exposed populations. There is one home, with its surrounding five acres, located within the 36 acres that was identified as part of the ROU and is identified as the property located at 3529 North Little Cottonwood Road.

This ESD allows on-site treatment of hazardous remediation waste rather than requiring that all waste be transported off-site for treatment and disposal. This modification does not alter the scope or performance of the remedy, but is expected to reduce the overall waste treatment, transportation and disposal costs. On-site treatment will allow waste to be disposed at a nearby solid waste landfill rather than at a more distant hazardous waste landfill.

V. DETAILED DESCRIPTION OF EVENTS LEADING TO THIS ESD

A. New Information

Since the issuance of the *ROU ROD* (EPA, 2002), LCP, a group of developers, initiated an effort to rezone 118 acres located within the Davenport and Flagstaff Smelters Superfund Site to meet their redevelopment plans. LCP discussed their plans to develop the area with numerous community groups including the Granite Community Council representing Davenport subdivision residents in May, 2004, and on June 2, 2004; the Cottonwood Heights Township Planning Commission on June 9, 2004, and July 14, 2004; and the Cottonwood Heights Township in August of 2004. Their extensive communications with the public led to no objections to the rezoning that was unanimously approved by the Salt Lake County Council on September 7, 2004.

LCP met with EPA and UDEQ in the fall of 2004 to discuss the potential development and submitted a report that further characterized the acreage through collection of additional data used to confirm the results of UDEQ data (UDEQ, 2000a). The additional data also served to define the extent of contamination, and to estimate the volume of impacted material. Resource Management Consultants, on behalf of LCP, collected the additional data that is described in a report titled *Site Characterization Report -Little Cottonwood Canyon Property* (RMC, 2004).

LCP submitted a *Removal Action Work Plan for Little Cottonwood Canyon Partners* (REMC, 2005) that describes how the components of the ROU remedy will be implemented by LCP during the remediation of the 36 acres.

During the Time-Critical Removal Action conducted at the Site in 2004, excavated hazardous remediation waste was successfully treated on-site and then transported to a local solid waste landfill for disposal. This ESD authorizes chemical stabilization treatment of characteristic soils until the principal threat waste is no longer leachable under TCLP criteria and can meet the waste acceptance criteria for permitted solid waste landfill facilities.

B. Discussions

This ESD requires the application of the ROU remedy components to the acreage that will be developed for residential use. It also allows on-site treatment of excavated hazardous remediation waste. Acreage outside the residential development falls under the jurisdiction of OU2. Consideration of the public health and environmental risk from any contamination found during the remedial investigation of these areas by UDEQ will be the subject of the future OU2 record of decision.

Data collected by UDEQ (UDEQ, 2000a) during the RI and subsequently confirmed by the data collected by RMC (RMC, 2004) clearly identifies contamination at concentrations within the 36 acres that pose a health risk to potential residents. The components of the ROU ROD are appropriate for OU3 to mitigate the risks posed to potential residents because these components address similar exposure scenarios, similar contaminants, and similar concentrations of the contaminants coming from the same source.

VI. SUMMARY OF PUBLIC PARTICIPATION, OPPORTUNITY FOR STATE COMMENTS, AND AVAILABILITY OF ADMINISTRATIVE RECORD

All of the public participation requirements have been met. UDEQ has been provided with the opportunity to review and comment on this ESD and the documents that serve as the basis for this ESD. UDEQ commented to EPA on this document, and supports the changes. UDEQ's comments can be found in the Administrative Record for the Site.

Documents referenced within this ESD are part of the Administrative Record for the Davenport and Flagstaff Smelters Superfund Site. The complete administrative record for the Site is available for public review at the following locations:

EPA Superfund Records Center
999 18th Street, Fifth Floor
Denver, Colorado 80202
Hours: Monday-Friday, 8:00am -4:30 pm
Telephone: (303) 312-6473

Sandy City Library
10100 South Petunia Way
Sandy, Utah 84092
Hours: Mon-Sat, 10:00am-6:00pm
Phone: 801-944-7574

VII. STATUTORY DETERMINATIONS

Considering the new information that has been developed and the changes that have been made to the selected remedy, EPA, in consultation with UDEQ, believes that the remedy remains protective of human health and the environment, and complies with Federal and State requirements that are both applicable or relevant and appropriate to this remedial action. In addition, applying this residential remedy to the area that is being newly developed into residential properties is cost-effective and utilizes permanent solutions and treatment technologies to the maximum extent.

VIII. APPROVAL

IX. REFERENCES

EPA, 2002. Record of Decision, Residential Operable Unit, Davenport and Flagstaff Smelters Superfund Site, Salt Lake County, Utah.

EPA, 2004a. Time-Critical Removal Action Memorandum, Davenport and Flagstaff Smelters NPL Site Residential Operable Unit, Salt Lake County, Utah.

EPA, 2004b. 40 CFR Part 300 Federal Register, Volume 69, Number 161, Page 51583-51586, August 20, 2004.

EPA, 2005. Non-Time-Critical Removal Action Memorandum, Davenport and Flagstaff Smelters NPL Site Residential Operable Unit, Salt Lake County, Utah.

ISSI Consulting Group, 1999 (July). Baseline Human Health Risk Assessment Davenport and Flagstaff Smelters, Salt Lake Valley, Utah.

Resource Environmental Management Consultants, 2004 (December). Removal Action Work Plan for Little Cottonwood Canyon Partners, Midvale, Utah.

Resource Management Consultants, 2004 (September). Site Characterization Report - Little Cottonwood Canyon Property, Midvale, Utah.

SAIC, 1998. Final Quality Assurance Project Plan for Davenport and Flagstaff Smelter Site Characterization Study, Salt Lake City, Utah.

SAIC, 2000 (February). Final Site Characterization Study for Davenport and Flagstaff Smelters Residential Area.

Technical Assistance Team (TAT), 1993. Site Assessment, Little Cottonwood Creek Smelter Sites - Phase III, Davenport Smelter, Salt Lake Valley, Utah.

UDEQ, 1995. Analytical Results Report, Flagstaff Smelter, Salt Lake County, Utah.

UDEQ, 1995a. Analytical Results Report, Davenport Smelter, Salt Lake County, Utah.

UDEQ, 2000a (May). Addendum to the Final Quality Assurance Project Plan for Davenport and Flagstaff Smelter, Sampling of Undeveloped Lands, Salt Lake County, Utah.

UDEQ, 2000b (August). Addendum to the Final Quality Assurance Project Plan For Davenport and Flagstaff Smelter, Sampling of Undeveloped Lands, Sampling Results Report, Salt Lake County, Utah.

URS Greiner Woodward Clyde, 2001 (December). Focused Feasibility Study Report, Davenport and Flagstaff Smelter Sites, Salt Lake County, Utah.

URS Greiner Woodward Clyde, 2001a (October). Remedial Investigation Report, Davenport and Flagstaff Smelter Sites, Salt Lake County, Utah.

URS Corporation, 2003 (November). Report of Findings For Pre-Remedial Design Sampling Residential Operable Unit, Davenport and Flagstaff Superfund Site, Salt Lake County, Utah.