FIVE-YEAR REVIEW REPORT
SECOND FIVE-YEAR REVIEW REPORT

FOR

JACOBS SMELTER SUPERFUND SITE
STOCKTON, UTAH

September 2010

Prepared by:

Utah Department of Environmental Quality
Division of Environmental Response and Remediation
CERCLA Branch

For:

United States Environmental Protection Agency
Region 8
Environmental Protection and Remediation
Superfund Remedial Program

Denver, Colorado 80202

Approved by: **Date:**

Carol L. Campbell 9/22/10

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Assistant Regional Administrator
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ATTACHMENTS

LIST OF ACRONYMNS

AOC	Administrative Order on Consent
ATV	All Terrain Vehicle
bgs	Below ground surface
BLM	United States Bureau of Land Management
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CFR	Code of Federal Regulations
CSS	Contaminant Screening Survey
DERR	Division of Environmental Response and Remediation
ECC	Environmental Chemical Corporation
EECA	Engineer Evaluation and Cost Assessment
EPA	Environmental Protection Agency
FWS	Fish and Wildlife Service
HDPE	High Density Polyethylene
KUC	Kennecott Utah Copper
NCP	National Contingency Plan
NPL	National Priorities List
OU1	Operable Unit One
OU2	Operable Unit Two
OU3	Operable Unit Three
OU4	Operable Unit Four
OU5	Operable Unit Five
PA/SI	Preliminary Assessment/Site Inspection
PRGs	Preliminary Remediation Goals
RAOs	Remedial Action Objectives
RFS	Revised Feasibility Study
RI	Remedial Investigation
RI/FFS	Remedial Investigation/Focused Feasibility Study
ROD	Record of Decision
SHPO	State Historic Preservation Office
Site	Jacobs Smelter Superfund Site
TCLP	Toxicity Characteristic Leaching Procedure
UDEQ	Utah Department of Environmental Quality
UPRR	Union Pacific Railroad
USDOT	United States Department of Transportation

EXECUTIVE SUMMARY

The Utah Department of Environmental Quality, Division of Environmental Response and Remediation, in cooperation with the U.S. Environmental Protection Agency, Region 8, has conducted the second five-year review of the remedial actions implemented at the Jacobs Smelter Superfund Site located in Stockton, Utah.

The Jacobs Smelter Superfund Site is divided into five operable units. The contaminants of concern for all operable units are lead and arsenic in soil. Operable Unit 1 (OU1) consists of residential properties within the Town of Stockton that had contamination attributable to the former Jacobs Smelter. Operable Unit 2 (OU2) consists of lead and arsenic contaminated soil located to the west and to the south of the Town of Stockton, (attributable to the Waterman, Chicago and Carson Buzzo Smelters), ground water and ecological impacts. Operable Unit 3 (OU3) consists of contaminated soil located on the Stockton Rail Yard, owned by Union Pacific. Operable Unit 4 (OU4) consists of a parcel of land that lies between the Rawhide Ranchettes Subdivision and OU3, owned by O&M enterprises, a division of Kennecott Copper Corporation. Operable Unit 5 (OU5) consists of land located to the northeast of the Town of Stockton and near Waterman Smelter that is owned by the U.S. Bureau of Land Management (BLM). In addition to the five Operable Units, a clean up was conducted at the Rawhide Ranchettes subdivision west of the Town of Stockton (part of OU2) by the property developer under an Administrative Order on Consent (AOC).

The remedy performed on OU1 is protective of human health and the environment. The immediate threats posed by the contamination associated with OU1 have been addressed. The excavation and off-Site disposal of the top 18 inches of contaminated soil performed during the Emergency Removal and State-lead Remedial Action construction activities for OU1 have effectively eliminated the majority of the risk associated with the Jacobs Smelter. The risk associated with the contaminated soil remaining after excavation is effectively reduced by the 18 inches of clean fill and topsoil and the landscaping placed on each property.

The remedy performed on the Rawhide Ranchettes Subdivision within OU2 is not protective of human health and the environment. Recently sampling has show that lead contamination above the clean up level remains on several properties.

The remedy performed on OU3 is protective of human health and the environment. The immediate threats posed by the contamination associated with OU3 have been addressed. The cap, vegetative cover and fence installed on the Stockton Rail Yard provide an adequate barrier to exposure to contaminated soil in OU3.

The remedy performed on OU4 is protective of human health and the environment. The immediate threats posed by the contamination associated with OU4 have been addressed. The excavation, stabilization and off-site disposal of soils with lead concentrations exceeding 500 mg/kg have effectively reduced the risk of exposure to contaminated soil. The contaminated soil remaining within OU4 lies underneath a large gravel hill and is not easily accessible. An

Environmental Covenant has been placed upon the property and has been recorded with the Tooele County Recorders Office. The Environmental Covenant describes what additional sampling and clean up work is needed for the remaining contaminated material if the land use changes.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Jacobs Smelter		
EPA ID *(from WasteLAN)*: UT0002391472		
Region: 8	**State:** UT	**City/County:** Stockton/Tooele
SITE STATUS		
NPL status: x Final ☐ Deleted		
Remediation status (choose all that apply): x Under Construction ☐ Operating ☐ Complete		
Multiple OUs? x YES ☐ NO	**Construction completion date:**	
Has Site been put into reuse? x YES ☐ NO		
REVIEW STATUS		
Reviewing agency: ☐ EPA State x ☐ Tribe ☐ Other		
Author name: Thomas D. Daniels		
Author title: Environmental Engineer	**Author affiliation:** UDEQ/DERR	
Review period: April through September 2010		
Date(s) of Site inspection:		
Type of review: X Statutory ☐ Policy (☐ Post-SARA ☐ Pre-Sara ☐ NPL-Removal only Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion)		
Review number: 1(first) X☐ 2 (second) ☐ 3 (third) ☐ Other (specify)		
Triggering action: Actual RA OnSite Construction at OU 1 ☐ Actual RA Start at OU# ___ ☐ Construction Completion X☐ Previous Five-Year Review Report ☐ Other (specify)		
Triggering action date *(from WasteLAN)*: 9/30/2005		
Due date *(five-years after triggering action date)*: 9/30/2010		

Five-Year Review Summary Form

Issues:

- The Town of Stockton's ordinance governing excavation and development within the Jacobs Smelter clean up area is difficult to understand and enforce and does not accurately reflect the post clean up status of OU1. Contamination remains above residential clean up levels in the Rawhides Ranchettes Subdivision in OU2.

Recommendations and Follow-up Actions:

In consultation with the EPA the following actions are recommended:

Evaluate and rewrite the Stockton Ordinance to more accurately reflect post remedial conditions and to be more workable and easier to understand. Implement a county-based institutional control (Ordinance), if needed after the OU2 clean up is completed, to address any areas outside of the Town of Stockton where contamination above unlimited use levels remains.

Protectiveness Statement(s):

The remedy performed on OU1 is protective of human health and the environment. The immediate threats posed by the contamination associated with OU1 has been addressed. The excavation and off-Site disposal of the top 18 inches of contaminated soil performed during the Emergency Removal and State lead Remedial Action construction activities for OU1 have effectively eliminated the majority of the risk associated with the Jacobs Smelter. The risk associated with the contaminated soil remaining after excavation is effectively reduced by the 18 inches of clean fill and topsoil and the landscaping placed on each property.

The remedy performed on OU3 is protective of human health and the environment. The immediate threats posed by the contamination associated with OU3 has been addressed. The cap, vegetative cover and fence installed on the Stockton Rail Yard provide an adequate barrier to exposure to contaminated soil in OU3.

The remedy performed on OU4 is protective of human health and the environment. The immediate threats posed by the contamination associated with OU4 has been addressed. The excavation, stabilization and off-site disposal of soils with lead concentrations exceeding 500 mg/kg has effectively reduced the risk of exposure to contaminated soil. The contaminated soil remaining within OU4 lies underneath a large gravel hill and is not easily accessible.

The remedy performed on the Rawhide Ranchettes Subdivision within OU2 is not protective of human health and the environment.

JACOBS SMELTER SUPERFUND SITE
SECOND FIVE-YEAR REVIEW REPORT

I. INTRODUCTION

The Utah Department of Environmental Quality (UDEQ), Division of Environmental Response and Remediation (DERR) has been tasked by the U.S Environmental Protection Agency, Region 8 (EPA) to conduct a five-year review of the remedial and removal actions implemented at the Jacobs Smelter Superfund Site (Site) located in and around the Town of Stockton in Tooele County, Utah. This review was conducted from April 2010 to September 2010. This report documents the results of the review.

This five-year review is being prepared pursuant to the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) CERCLA Section 121(c) as amended, states:

If the President selects a remedial action that results in any hazardous substance, pollutants, or contaminants remaining at the Site, the President shall review such remedial action no less often than every five-years after the initiation of such remedial action being implemented.

The Agency interpreted this requirement further in the NCP, Part 300.430(f)(4)(ii) which states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the Site about levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less than every five-years after the initiation of the selected remedial action.

This is the second five-year review for the Jacobs Smelter Site. The triggering action for this review is the completion of the first five-year review completed in September of 2005. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unrestricted use and unlimited exposure.

II. SITE CHRONOLOGY

Table 1 – Chronology of Site Events

Event	Date
Volunteer soldiers discovered silver ore east of the Town of Stockton and organized the first mining district. The area around the military reservation became the base for small-scale milling and smelting activities. The Town of Stockton was laid out in 1864 and contained over 400 residents by 1866.	April 1864
Several small smelting furnaces were built in the area, operated for a short time with marginal results and then shut down. The exact location of most of these smelters is unknown.	1866-1868
The Waterman Smelting works was constructed on the north shore of Rush Lake about ½ mile west of Stockton and operated continuously until 1886. The smelter reportedly produced a total of approximately 3,300 tons of flue dust and nearly 15,000 tons of smelter slag.	1871-1886
The Jacobs Smelter began operation within the town limits of Stockton. The smelter processed ore from the Ophir Mining District, located 10 miles south of Stockton, in three vertical blast furnaces. By 1880, each of these furnaces could reduce 25 tons of ore per day, producing 19.5 tons of smelter slag and flue dust per day.	1871
The Chicago smelter opened in 1873 on the eastern shore of Rush Lake two miles south of Stockton. It was built by the Chicago Silver Mining Company, a British firm that also operated two nearby mines. The smelter operated sporadically through 1880. The Carson & Buzzo smelter was located about a ½ mile south of the Chicago smelter, also on the shore of Rush Lake. The production rate of these smelters is unknown.	1873-1880
At least nine smelting/milling operations are reported to have existed in the Stockton area, over the ensuing century. Nearly all traces of these operations have vanished. Buried timbers, stained soils, and some foundations are virtually all of the physical evidence that remains. Homes were built upon a portion of the former Jacobs Smelter location. Much of the slag produced was likely reprocessed in other smelters located in the Tooele Valley or the Salt Lake Valley. Through historical research and direct observation, the exact locations of the Jacobs, Waterman, Chicago and Carson & Buzzo Smelters have been found. The locations of other unnamed operations can only be speculated based upon sampling of soils to test for the presence of heavy metals.	1880-1995
The Stockton Area was added to the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) under the name of "Stockton Smelters."	1995

A Preliminary Assessment and Site Investigation (PA/SI) was completed and the name of the entire Site was changed to Jacobs Smelter.	1998
A Time-Critical emergency response action was initiated to address soil contamination of residential properties located in Stockton.	March 1999
Remedial Investigation/Focused Feasibility Study (RI/FFS) for OU1 was completed. The RI/FFS identified approximately 125 residential properties within the Town of Stockton that required clean up.	June 1999
EPA notified Union Pacific of contamination on their right-of-way and requested a time critical removal be performed to address the contamination (OU3).	April 1999
Contaminated soils in OU3 were remediated by Union Pacific. Soil cover was selected as the remedy.	Summer 1999
A Record of Decision (ROD) was issued for OU1.	July 29,1999
The entire Site is listed on the National Priorities List (NPL).	Feb 4 2000
Lead and arsenic contamination identified in the Rawhide Ranchettes subdivision located within OU2	May 2000
Remedial Action for OU1 started.	May 5 2000
A Contaminant Screening Study was performed for OU2.	July 2000
Physical construction completed for OU1 Remedial Action.	October 2000
A Pre-Remedial Investigation was performed for OU2.	July 2001
A PRP Non-Time-Critical-Removal-Action for five contaminated lots in the Rawhide Ranchettes subdivision was completed.	August 2001
EPA conducted a land re-use assessment.	Sep 2001
Partial Deletion of OU1 from NPL.	2001
A Remedial Investigation (RI) was conducted and finalized for OU2.	July 2003
Partial Deletion of OU3 from NPL.	2003
A Revised Feasibility Study was conducted and finalized for OU2.	July 2004
A Proposed Plan was published for OU2.	August 2004
Creation of Operable Unit 4 (OU4) and a Non-Time Critical Removal Action for OU4 completed.	July – November 2008
Sampling of Rawhide Ranchettes Lot # 3 at property owners request discovers lead concentrations above clean up levels.	September 2008
Addendum to the OU2 Revised Feasibility Study (RFS) to investigate lead and arsenic concentrations in two subdivisions located within OU2, the B&B and Rawhide Ranchettes Subdivisions, and to revisit the alternatives and associated cost estimates.	September 2009 to present

III. BACKGROUND

Physical Characteristics

The Jacobs Smelter Site is located in and around the Town of Stockton, Utah, approximately 25 miles southwest of Salt Lake City, Utah and five miles south of Tooele, Utah. Approximate Site boundaries as depicted in the August 2004 Proposed Plan are shown in Figure 1. The entire Site is referred to as "Jacobs Smelter," after the name of a large smelting operation that was located within the Town of Stockton, Utah. Reports of up to nine former smelters with milling operations within the Site boundaries have been documented. The Jacobs Smelter was one of these historic smelters. The entire Superfund Site was named Jacobs Smelter as a matter of convenience.

The risks posed by the Site derive from smelting and mining activity, which occurred primarily in the 1860's and 1870's. Wastes in the form of heavy metal contaminated soil, mill tailings, and smelter wastes exist at several locations within the Site boundaries. The primary contaminants are lead and arsenic. Little visible evidence exists of the former smelting operations.

In 1998, the Site was divided into three operable units:

- Operable Unit One (OU1) addresses residential soil contamination within the Town of Stockton, attributable primarily to the Jacobs Smelter;

- Operable Unit Two (OU2) addresses soil contamination outside of the Town of Stockton (attributable to the Waterman, Chicago and Carson Buzzo smelter operations), ground water and ecological impacts; and

- Operable Unit Three (OU3) addresses soil contamination on Union Pacific Property.

The 2001 Site and OU boundaries are shown on Figure 1.

Since the 2005 Five-Year Review, Operable Unit Four (OU4) and Operable Unit Five (OU5) have been created. OU4 addresses lead and arsenic contamination on property owned by Kennecott Utah Copper LLC (KUC). OU5 addresses lead and arsenic contamination on property owned by the United States Bureau of Land Management (BLM).

The Site boundaries have also changed since the 2005 Five-Year Review Report and are shown on Figure 2.

Land and Resource Use

The area around Stockton is generally open grassland and used primarily for grazing. The topography of the area is gently sloping from east to west towards Rush Lake.

Several single-family dwellings and farms exist in the area. The Town of Stockton is mostly residential, with only a few small businesses. Approximately 500 people reside within a four-mile radius around Stockton. Due to its location near the City of Tooele, the area is prime for growth and residential development.

Rush Lake is the dominant surface water feature in the area. The lake is recharged primarily through ground water flow and several springs, which empty into the lake. Water levels in the lake have fluctuated greatly over the years, with the lake size changing drastically. In the Fall of 2009, there was virtually no standing water observed in Rush Lake.

Ground water at the Site consists of a shallow aquifer that feeds into Rush Lake, perennial springs and a deep aquifer. The shallow aquifer in Rush Valley is of poor quality and is not anticipated to be used as a drinking water source. The deep aquifer lies at a depth of 200 feet below ground surface (bgs) and is used as a drinking water source for private residences. There is no evidence that suggests the shallow and deep aquifers are hydraulically connected.

History of Contamination

In April 1864, volunteer soldiers discovered silver ore east of Stockton and organized the first mining district in the area. The area around the military reservation became the base for small-scale milling and smelting activities. The Town of Stockton was established in 1864. By 1866, the town contained over 400 inhabitants. Several smelting furnaces were built in the area, operated for a short time with marginal results, and then were shut down. The exact locations of most of these smelters remain unknown.

By 1870, mining in the area had expanded and smelting technology had improved to the point that metals extraction was profitable. The largest smelter in the Stockton area was the Waterman Smelting Works, which opened in 1871 on the northern shore of Rush Lake, about ½ mile west of Stockton. The Smelter operated through 1886 and produced approximately 3,300 tons of flue dust and nearly 15,000 tons of smelter slag.

In 1872, the Jacobs Smelter, owned by Lilly, Liesenring & Company, began operation within the town limits of Stockton. The smelter processed ore from the Ophir Mining District, located 10 miles south of Stockton in three vertical blast furnaces. By 1880, each of these furnaces could reduce 25 tons of ore per day. In 1879, the great Basin concentrator was constructed adjacent to the Jacobs Smelter and by 1880 was milling 100 tons of ore per day with approximately 80 tons of mill tailings produced as waste.

The Chicago Smelter opened in 1873 on the eastern shore of Rush Lake two miles south of Stockton, within the boundary of the former military camp. It was owned and operated by the Chicago Silver Mining Company, a British firm that also operated two nearby mines. The smelter operated sporadically through 1880. The Carson & Buzzo Smelter was located about ½ mile south of the Chicago Smelter, also on the eastern shore of Rush Lake. The production rate of these smelters is unknown.

A total of at least nine smelting/milling operations are reported to have been in operation in the Stockton area, including the four mentioned here. Nearly all traces of these smelting operations have vanished. Buried timbers, stained soils, and some foundations are virtually all of the physical evidence that remain. Homes were built upon a portion of the former Jacobs Smelter location. Much of the slag produced was likely reprocessed at other smelters located in Tooele Valley or the Salt Lake Valley.

Initial Response

In 1995, the Site was added to the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) under the name Stockton Smelters. A Preliminary Assessment and Site Investigation (PA/SI) detected lead and arsenic in Site soils in December 1998, and the name of the entire Site was changed to Jacobs Smelter. Based upon a removal assessment conducted in late 1998 that discovered lead and arsenic at concentrations that represented a significant risk to human health and the environment, a Time Critical Removal Action was initiated in March 1999 that cleaned up 29 of the most contaminated residential properties in Stockton. A Record of Decision (ROD) for OU1 was signed on July 29, 1999. The Jacobs Smelter Superfund Site was listed on the National Priorities List on February 4, 2000. In 2000, an additional 126 residential properties were cleaned up as a Remedial Action. The residential properties cleaned up during the Removal Action and the Remedial Actions for OU1 were partially deleted from the National Priorities List (NPL) in 2001.

In 1999, the Union Pacific Railroad (UPPR), under agreement with EPA, addressed the contamination on OU3 by placing a 16-inch soil cover over the contaminated soils in the railroad right-of-way through Stockton. OU3 was partially deleted from the NPL on November 29, 2005.

Remedial Investigations for OU2 began in 1999. Due to the large geographic extent of OU2 and the relatively small amount of data available, a Contaminant Screening Study (CSS) was conducted to identify the general areas of contamination in OU2 and to establish a geographic boundary for future study. During the CSS, elevated concentrations of heavy metals were found in the soils of a proposed subdivision within OU2, known as the Rawhide Ranchettes Subdivision.

A focused investigation of the Rawhide Ranchettes Subdivision in May 2000 indicated that five of the 30 lots within the subdivision exceeded residential lead-screening levels. A Non-Time-Critical Removal Action for the five contaminated lots was completed by the developer in 2001. The Removal Action consisted of excavating six to 18 inches of contaminated soil from the identified lots and placing the contaminated soil within the roadbed and in a covered "repository" located within the subdivision that remains deeded to the subdivision's developer.

In order to address data gaps identified by the CSS and the Rawhide Ranchettes subdivision investigation and to focus Remedial Investigation activities for OU2, a Pre-Remedial Investigation study was conducted in early 2001.

In 2001, a Human Health Risk Assessment (HHRA) along with ecological clean up goals were developed for OU2.

A land reuse assessment was finalized in 2001. The land reuse assessment looked at current land use and habitat types as well as reasonably anticipated future land use for the area encompassed by OU2.

A Remedial Investigation (RI) that characterized lead and arsenic contaminated soil was performed for OU2 in 2002. Based on the data collected during the RI and the results of the HHRA The ecological risk assessment performed in 2003, clean up levels were established for OU2.

A Feasibility Study was prepared in December 2003. A Revised Feasibility Study (RFS) was developed in 2004. The RFS identified and evaluated several different alternatives for cleaning up contaminated soil.

In July 2004, Kennecott Utah Copper LLC (KUC) conducted a soil characterization investigation of a Parcel within OU2, owned by KUC subsidiary OM Enterprises located to the immediate northeast of the Town of Stockton. The purpose of the investigation was to better define the nature and extent of lead and arsenic contamination on the parcel. The results of KUC's investigation suggested that the lead and arsenic contamination came from up-gradient waste rock piles that are actively eroding and depositing waste rock on the Kennecott Stockton Northeast Parcel. In December 2007, EPA Region 8 requested that KUC collect additional soil samples from the parcel to further characterize the parcel and more definitively assess the source of the contamination. Based on the results of these two sampling events, EPA Region 8 along with the Utah Division of Environmental Response and Remediation concurred that the elevated concentrations of lead and arsenic were from up-gradient mining waste rock piles and were not associated with smelter wastes from the Jacobs Smelter Superfund Site. Thus, in 2009 an Administrative Order on Consent was signed that requires KUC to address the Kennecott Northeast Parcel through a removal action as a non-NPL site. The Order documents that this parcel is not longer part of the Jacobs Smelter NPL site.

In July 2008 EPA issued an Administrative Order on Consent and Action Memorandum to KUC that required KUC to clean up a parcel located near the Stockton Railyard. The parcel was designated as Operable Unit 4 (OU4). The documents specified a clean up level of 500 mg/kg lead in residential areas and also required covering soil contaminated with lead at concentrations between 3,000 mg/kg and 10,000 mg/kg lead for non-residential areas, and removal of all soil containing more than 10,000 mg/kg lead.

KUC conducted a Removal Action consistent with the terms of the AOC and Action Memorandum between mid-September and mid-November, 2008. Soil with lead

concentrations greater than 500 mg/kg was removed from OU4 except for where contaminated soil was located underneath a large gravel hill. An Environmental Covenant was put in place for the contamination located underneath the large gravel hill.

In 2009 additional soil sampling, performed by UDEQ, at the request of residents in the Rawhide Ranchettes subdivision, showed contamination levels in excess of clean up standards established for the Removal Action conducted in 2001. In order to address community concerns regarding lead and arsenic contaminated soil within the Rawhide Ranchettes and B&B Subdivisions, now both within the Town of Stockton boundaries; and to revisit the remedial alternatives and associated cost estimates in the RFS for OU2, an addendum to the RFS was commissioned. The addendum focused on collecting and analyzing soil samples from within the two subdivisions and around the location of the Waterman Smelter. Data utilized in the RI and the RFS was also re-evaluated and compared to the data generated for the addendum.

Basis for Taking Action

Hazardous substances that have been released at the site include lead and arsenic in surface and subsurface soils.

A HHRA based on sampling results from the RI/FS was performed for the site. The purpose of the HHRA was to characterize risks related to residential, industrial/commercial and recreational exposures to the contaminants of concern in the environment.

The HHRA concluded that there is a risk to both adults and children from lead and arsenic-contaminated soils. The most likely ways for contaminated soils to enter the body are eating and breathing. Children, particularly those under the age of seven, are the most vulnerable group because of their size and the fact that their bodies are still developing. In addition, because children play outside, they are more likely to ingest contaminated soils when they put fingers and toys that have been in contact with the ground into their mouths.

An Ecological Risk Assessment (ERA) conducted to evaluate the potential threats to ecological receptors (plants and animals) in and around Rush Lake, and the surrounding area, from exposure to site contaminants concluded that terrestrial animals are at risk from the contaminants of concern at the non-residential portion of the Site. The primary threat to ecological receptors is from exposure to lead.

IV. REMEDIAL ACTIONS

Remedy Selection

OU1

Initially, an Action Memorandum requesting a Time-Critical Removal action at the Jacobs Smelter Site was approved on February 2, 1999. The action, as described in the Action Memorandum, included:

- Excavation to a depth of 18 inches of all properties with average surface soil concentrations exceeding 3000 mg/kg for lead;
- Off-site disposal of contaminated soils; and
- Replacement of contaminated soil with 12 inches of clean soil and 6 inches of topsoil.

Following the Time Critical Removal, performed by the EPA Removal Branch, the ROD for the remainder of OU1 was signed on July 29, 1999. The ROD identified Excavation and Off-site disposal as the selected remedy for OU1. The selected remedy involved the excavation of approximately 150,000 tons of lead and arsenic contaminated soil from identified properties and the disposal of excavated soil in a suitable landfill based on the classification of the soil as hazardous or non-hazardous in accordance with Subtitle C of the Resource Conservation and Recovery Act (RCRA). The following are the major components of the OU1 remedy as described in the ROD:

- Excavation of soils within the Town of Stockton exhibiting mean surface lead concentrations greater than 500 ppm, mean subsurface lead concentrations greater than 800 ppm, or mean surface arsenic concentrations greater than 100 ppm to a depth of 18 inches or to a depth at which mean concentrations are below 500 ppm lead and 100 ppm arsenic.
- The testing of excavated material for hazardous waste characteristics with off-Site treatment and disposal of characteristic hazardous material in a Subtitle C landfill, and off-Site disposal of non-hazardous material in a Subtitle D landfill.
- Replacement of excavated soil with up to twelve inches of clean backfill and six inches of clean topsoil and the re-landscaping of affected properties.
- Interior cleaning of affected properties to remove contaminated indoor dust.
- The development and implementation of institutional controls to restrict exposure to residual contamination below eighteen inches and below existing structures.

OU2

An AOC was issued for the Rawhide Ranchettes Subdivision located within OU2. The AOC with the developer of the area was signed on August 2, 2001. The Order identified the following minimum actions:

- Removal of contaminated soils and other material from the areas designated as future residential Sites.
- Relocation of contaminated material to other areas of the property based upon whether the material meets the criteria for a hazardous waste.
- Construction and maintenance of an on-site repository for contaminated material.

In 2004, a Proposed Plan for OU2 was issued. The Proposed Plan for OU2 follows much the same outline as the OU1 ROD. The Proposed Plan identified: (1) excavation and off-site disposal of all surface soils with a surface lead concentration greater than 500 ppm and all subsurface soils in excess of 800 ppm lead as the preferred remedy for residential properties within OU2; and (2) excavation and off-site disposal of soils with lead concentrations over 10,000 ppm to a maximum depth of 18 inches and soil cover over lead concentrations between 3,000 and 10,000 ppm lead as the preferred remedy for non-residential areas. Based on comments received during the public review, Operable Units 4 and 5 were created and an area northeast of Stockton has been removed from the Site boundaries.

Additional investigation in the Rawhide Ranchettes Subdivision prompted the agencies to re-examine assumptions made regarding the confirmation sampling program utilized for that area. This resulted in launching an investigation into the contamination at both the Rawhide Ranchettes and B&B Subdivisions. The results are to be captured in an addendum to the RFS. In addition, the addendum to the RFS will re-evaluate the alternatives and associated costs examined in the RFS.

A remedy has not been selected for OU2 at this time.

OU3

An AOC and an Action Memorandum for OU3 were signed on August 2, 1999. The Order approved of a workplan that identified the following minimum actions:

- Construction of a soil cover consisting of a minimum of 12 inches of clean fill and 4 inches of topsoil.
- Seeding of the covered area with native vegetation.
- Construction of an access road within the capped area.

- Construction of a six-foot high chain link fence along the east side of the Site.

OU4

An Administrative Settlement Agreement and Order on Consent for Removal Action (AOC) was issued in September 2008. The work to be performed described in the AOC consisted of:

- Soil sampling;
- Qualified analysis of soil sample for metals, including lead and arsenic;
- Mapping of sampling locations to determine specific on-site sources and general off-site sources of contamination;
- The removal of hazardous substance on the OU4 property and disposal of impacted (contaminated) soils at a repository; and
- Complying with institutional controls as applicable (ie. an Environmental Covenant governing the use of any areas where contamination remained after construction activities were concluded).

OU5

The Bureau of Land Management (BLM) prepared a draft Engineering Evaluation and Cost Assessment (EECA) for property within the Site under their jurisdiction in 2009. A remedy has not been selected for OU5 at this time. A revised draft EECA is expected in late FY2010.

Remedy Implementation

OU1

Removal Activities

During the summer of 1999, removal activities were completed on 29 properties in the Town of Stockton, where there was evidence of high concentrations of lead in the soil (Figure 3), Removal activities were completed by Environmental Chemical Corporation (ECC) as contracted by the Department of Transportation (USDOT) in conjunction with EPA. Field operations were generally conducted on a property-by-property basis with the exception of the properties J127, J132, J134, J135, J136 and J137, which were located where the Jacobs Smelter had been. Properties J117 and J118 were also cleaned up as one property. Before clean up activities commenced, the property design map was reviewed by each property owner.

Once the design was approved by the property owner, EPA's contractor cleared and removed specified shrubs, trees and debris from the property. Upon completion of all clearing work, approximately 18 inches of contaminated soil was removed from each property and stockpiled at a staging area north of Stockton. After excavation, confirmation samples were taken from the base of each excavation. Post excavation results for each of the properties cleaned up can be found in Appendix D of the START Removal Summary Report for Jacobs Smelter, Stockton, Utah.

Following excavation, 12 inches of clean fill and 6 inches of topsoil were placed on each property. After placement of topsoil, sod, plants, trees, sprinkler systems and fences that were removed in order to perform the clean up were replaced.

A total of 52,000 tons of material was excavated during this clean up. Clean up activities generated 25,470 tons of contaminated non-hazardous material, 14,001 tons of hazardous material that was treated and stabilized on-site prior to off-site disposal, and 1,180 tons of hazardous material requiring off-site treatment and disposal. The treated and untreated hazardous material was disposed at the Grassy Mountain Disposal Facility.

Remedial Action Activities

During the summer of 2000, the remaining contaminated properties in OU1 were cleaned up per the ROD as part of a State lead Superfund Remedial Action.

Individual properties were excavated to depths of 6, 12, or 18 inches depending on lead and arsenic concentrations. Excavation activities were performed using a variety of equipment; including bobcats, small backhoes and large track hoes. Approximately 60,000 cubic yards of contaminated soil were excavated from residential yards, vacant lots, rights of way and unpaved streets and sidewalks within the Town of Stockton.

Excavated material was characterized to determine if it exhibited a characteristic of hazardous waste prior to disposal. Non-hazardous contaminated soil was disposed at a specially constructed disposal cell at the Toole County landfill, located approximately three miles south of the Site. Approximately 58,670 cubic yards of contaminated soil were disposed at the Tooele County facility. Hazardous contaminated soil was disposed at the Envirosafe, RCRA Subtitle C hazardous waste landfill located in Grandview, Idaho. Approximately 1,974 tons of hazardous contaminated soil were transported and disposed.

After excavation, indicator sampling was performed on all properties that were excavated to a depth of 18 inches to determine the concentrations of lead and arsenic remaining on each property. Post excavation results can be found in Table 3-1 of the Final OU1 Remedial Action Completion Report.

The excavated soil on each lot was replaced with up to 12 inches of common backfill and six inches of topsoil. The source of common backfill was the northern and central portions of the Tooele County Landfill property. Envirocon performed tests on the

borrow sources and certified that it did not contain hazardous waste or substances defined in 40 CFR Part 261, Subpart D and CERCLA Section 101(4), as amended.

The topsoil for each lot was developed from the topsoil present at the borrow source. The topsoil was screened to remove particles greater than ¾ inch and was amended with organic material to meet specification requirements. Topsoil was placed on the top six inches of each of the lots cleaned up.

After placement of topsoil, sod, plants, trees, sprinkler systems and fences that were removed in order to perform the clean up were restored.

OU2

Rawhide Ranchettes

The Closure Report – Contamination Remediation, Rawhide Ranchettes, Stockton, Utah prepared by GEO Company states that the top six inches of surface soils were excavated from Lots 2 and 3 (see Figure 6) and placed in a repository located directly south of Lot 18 of the Rawhide Ranchettes Subdivision. Approximately 1,250 cubic yards of hazardous materials (Failed TCLP) were removed from these three lots and placed in the repository.

The hazardous materials in the repository were capped with a 60-millimeter HDPE flexible membrane liner. The cap was inspected by a DERR representative to ensure that the liner was installed according to the manufacturer's recommendations. The HDPE liner was then covered with 24 inches of uncontaminated soil followed by topsoil that has been seeded with native grasses and wildflowers. The entire repository has been enclosed with a 4-foot high chain link fence. The developer has retained ownership and responsibility for operation and maintenance.

Non-hazardous contaminated soil (passed TCLP) that had elevated concentrations of lead was removed from lots 1, 2, 21 and 22. The contaminated soil was placed underneath a section of roadway within the subdivision. The roadway excavation was approximately 5 feet deep and approximately 15 feet wide. Excavation was interrupted for water line laterals and utility lines for each lot. Approximately 3,650 cubic yards of contaminated, non-hazardous material was placed within the subdivision roadway. The contaminated, non-hazardous material was covered with 1.5 feet of uncontaminated soil, 8 inches of road base and 2.5 inches of asphalt.

Confirmation sampling of remediated lots was performed by DERR using a portable XRF. The confirmation sampling demonstrated that the contaminated materials had been removed from the targeted lots.

Additional screening sampling performed at the request of property owners in 2009 found concentrations of lead greater than the clean up level specified in the AOC. In order to address community concerns regarding lead and arsenic contaminated soil within the

Rawhide Ranchettes and B&B Subdivisions, now both within the Town of Stockton boundaries, and to revisit the remedial alternatives and associated cost estimates in the RFS, an addendum to the RFS was commissioned. The addendum focused on collecting and analyzing soil samples from within the two subdivisions and around the location of the Waterman Smelter. Data utilized in the RI and the RFS were also re-evaluated and compared to the data generated for the addendum.

OU3

The Remedial Actions Report for the Union Pacific Railroad right-of-way, dated January 28, 2000, describes the remedial actions performed by Union Pacific on OU3. According to this report, soil for construction of the soil cap was obtained from England Construction's Borrow Pit located in Bauer, Utah. The soil cap was sloped at the sides to provide a gentle, even slope to the natural grade. Twelve-inches of clean soil and an additional 4 inches of topsoil were placed over sections of the Site that contained lead concentrations greater than 1,200 ppm. The areas of the Site that were capped are shown on Figure 3. A 16-foot wide gravel access road was constructed along the length of the east and west sides of the railroad track within the capped area. The road was constructed using a 4-in. layer of crushed rock with a maximum size of 2-in. The road extends from the railroad ballast on the west side of the Site and joins the soil cap on the east. A 6-foot-high chain link fence was also erected on the west side of the Site.

OU4

The Removal Action Final Report, dated May 29, 2009, describes the removal action performed by KUC on OU4. According to this report an estimated 10,760 cubic yards of contaminated soil was removed from OU4 and placed in the Arthur Stepback Repository. All contaminated soil with concentrations of lead greater than 10,000 mg/kg was treated by mixing it with a proprietary product to reduce the leachabilty characteristics of the soil prior to disposal. Approximately 2,000 cubic yards were stabilized.

Wastes placed in the Arthur Stepback Repository were placed in twelve inch lifts and compacted. The final lift was graded, ripped and seeded as an interim closure for the working area where the contaminated soil was deposited. Final closure of the repository will occur in the future when the repository reaches design capacity.

Following removal of the contaminated soil the property was reclaimed. Reclamation work included the grading and scarifying of the excavated areas. The entire Removal area was seeded with a soil mix as specified in the workplan. KUC will continue to monitor the revegetation success of the seeded area and repair as determined necessary. Figure 5 shows the excavation location and depths for the OU4 removal.

Operation and Maintenance

OU1

There are no active systems that require operation at OU1. The removal of contaminated material to a depth of 18 inches left very little contaminated material in the clean up areas. The Town of Stockton passed an ordinance covering excavation and development within the Town in may of 2000. The recent installation of a sanitary sewer system brought to light several deficiencies in the excavation and development ordinance which the Town has worked with UDEQ and EPA to address.

OU2

Rawhide Ranchettes

There are no active systems that require operation at the Rawhide Ranchettes Subdivision. An inspection of the repository was conducted by the developer on September 19, 2002. The results of the inspection were submitted to EPA. A notification of completion was sent to the developer on September 19, 2005. The status of the repository was investigated as part of this five-year review and will continue to be investigated for subsequent five-year reviews.

OU3

There are no active systems that require operation at OU3 and the AOC does not specify any operation or maintenance activities. A notification of completion was sent to UPRR September 14,2005. The status of the cap and fence were investigated as part of this five-year review and will continue to be investigated for subsequent five-year reviews.

OU4

There are no active systems that require operation at OU4. Soils containing elevated lead and arsenic concentrations that remain at OU4 (underneath the gravel hill) will be managed using the institutional control. After construction, the area under the gravel hill was surveyed to document the aerial extent of the area to be managed by the environmental covenant. The environmental covenant was signed by KUC, EPA Region 8 and UDEQ in 2008 and was recorded at the Tooele County recorders office on June 4, 2009.

The grade of the OU is such that erosion of the gravel hill is not expected to be a concern once vegetation is established. The remediated area is to be inspected several times and re-seeded as necessary to assure that a viable vegetative cover is established by KUC. Active erosion of the gravel hill was not noted prior to construction and is not expected to occur once vegetation is established.

V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

Protectiveness Statements from September 2005 Review:

"The risk assessments for OU1, OU3 and the Rawhide Ranchettes are still valid and thus the remedies performed on OU1, OU3 and the Rawhide Ranchettes subdivision are expected to be protective of human health and the environment. The immediate threats posed by the contamination associated with these operable units have been addressed. The excavation and off-site disposal of the top 18 inches of contaminated soil performed during the Emergency Removal and Remedial Action construction activities have effectively eliminated the majority of the risk associated with OU1. The risk associated with the contaminated soil remaining after the excavation is effectively reduced by the 18 inches of clean fill and top soil and the landscaping placed on each property. The cap, vegetative cover and fence installed on the Stockton Railyard provide and adequate barrier to exposure to contaminated soil in OU3. The clean up activities performed at the Rawhide Ranchettes subdivision is like wise protective of human health and the environment. The threats to human health and the environment posed by OU2 have yet to be addressed."

Two issues were noted in the First Five-Year Review Report:

- Institutional Controls: The Town of Stockton's ordinance governing excavation and development within the Jacobs Smelter clean up area is difficult to understand and enforce nor does it accurately reflect the post-clean up status of OU1. These deficiencies are not sufficient to warrant a finding of non-protective.

- OU2: OU2 has not been cleaned up at this time and the lead and arsenic contamination associated with the Waterman, Chicago, and Carson-Buzzo Smelters as well as lead and arsenic contamination on other surrounding properties poses a significant threat to human health and the environment.

In light of these issues, two recommendations were made in the First Five-Year Review Report:

- Institutional Controls: The Stockton Ordinance should be evaluated and rewritten to more accurately reflect post remedial conditions and to be more workable and easier to understand.

- OU2: The Remedial Action for OU2 should be performed to alleviate the threat to human health and the environment posed by the remaining lead and arsenic contamination.

Status of Recommendations from Last Review

Institutional Controls: DERR and EPA have participated in several meetings with the town of Stockton discussing the construction and installation of a sanitary sewer system.

During the design of the sewer project, the deficiencies with the town ordinance were discussed and studied. In response to these studies, a soil management plan was prepared that described how contamination left in place would be handled during the excavation and installation of the sanitary sewer system. EPA and DERR provided direction and assistance to the Stockton Town Council in the preparation of the soil management plan, which was adopted by the Town Council. As part of the sewer project, Stockton designed and received a permit for a repository to accept contaminated material excavated during on-going construction activities and to satisfy one of the outstanding requirements listed in the Town Ordinance.

Since the last Five-Year Review, the Rawhide Ranchettes and B&B Subdivisions have been incorporated within the Town of Stockton's Boundaries and are now covered under the Excavation and Development Ordinance.

OU2: The ROD and implementation of remedial action have not been completed. A number of issues came to light about the time of the last review and halted the ROD. Work done to address these issues and others that came to light during the course of events is summarized in the next section.

Summary of Activities since last Five-Year Review

Cultural Resources – A cultural resource inventory was conducted by EPA. The inventory identified three areas within OU2 that are potentially eligible for listing on the National Register of Historic Places and may be negatively impacted by the proposed clean up. The State Historic Preservation Officer (SHPO) has been notified and concurred with EPA's findings. The Advisory Council of Historic Preservation was notified and they determined was no need to participate in the consultation process. Numerous Native American tribes have also been notified of the findings. The next step is to continue the process by notifying required consulting parties (as defined by Code of Federal Regulations § 800.2) and begin formulating possible mitigating measures.

Endangered Species – An endangered species assessment was conducted by the U.S. Fish and Wildlife Service (FWS) for EPA. No endangered species (plants or animals) were found. Several recommendations and sensitive species were noted in their report. The assessment needs to be finalized by EPA through requesting an informal consultation with FWS for the implementation of the remedy.

OU4 Clean Up – The area owned by KUC that was part of OU2 was designated as OU4 and a removal was completed. An Environmental Covenant was also placed on the property. Thus, no further work on this parcel needs to be completed and it can move towards partial deletion from the NPL.

OU2 – Further sampling was conducted in 2010 for two residential areas (Rawhide Ranchettes and B & B Subdivsion) and the Waterman Smelter area. This sampling was needed to assure that parcels with soil contamination above residential clean up levels are clearly identified. Additionally, the sampling has helped identify areas of recreational

use and the contamination associated with those areas (see Figure 7). Based on the sampling results, a Non-time Critical Removal is being explored for the residential areas, particularly the Rawhide Ranchettes area that was thought to be cleaned up adequately about 10 years ago under a PRP-lead removal action.

In addition, information obtained during the sampling prompted a re-evaluation of the exposure assumptions used to derive the human health risks associated with recreational use Preliminary Remediation Goals (PRGs) developed in 2001. The PRGs developed in 2001 evaluated risks associated with occasional recreational All Terrain Vehicle (ATV) use of the area around Stockton. Based on increased and concentrated ATV use around contaminated areas surrounding the Waterman Smelter, as well as information regarding frequency and duration of use obtained from residents, it was determined that the exposure assumptions used to develop the 2001 PRGs were no longer representative of the actual exposure and were no longer protective of human health. Adjustments were made to the exposure assumptions, resulting in a range of PRGs for recreational exposure to lead in the soil of 2,408 – 3,792 mg/kg. A risk management decision was made to propose 3,000 mg/kg as the clean up level for recreational use of the area impacted by contamination associated with the Waterman Smelter.

The sampling results, the proposed recreational clean up level, as well as an updated alternative cost analysis, will be incorporated into a new Proposed Plan for the OU2 area.

OU5 – Although discussions between BLM and EPA have proceeded slowly, BLM conducted additional sampling on their properties and issued a draft EECA. Based on comments, BLM is revising the EECA. EPA and BLM are also looking at reopening discussions on how BLM should proceed with clean up on their parcels.

VI. FIVE-YEAR REVIEW PROCESS

Administrative Components

Activities related to the Jacobs Smelter Superfund Site, Five-Year Review were led by Thomas Daniels, UDEQ Project Manager of the Site. The following team members assisted in the review:

Dave Allison, UDEQ Community Affairs Specialist
Scott Everett, UDEQ Toxicologist
Lisa Lloyd, USEPA Region 8 Remedial Project Manager
Karen Edison, USEPA Community Involvement Coordinator

From May 1 to August 31, 2010, the review team established the review schedule whose components included:

- Community Involvement
- Document Review
- Data Review

- Site Inspection
- Community Interviews
- Review of Institutional Controls and
- Five-Year Review Report Development and Review

Community Involvement

EPA's comprehensive Five-Year Review Guidance states that at a minimum the community should be notified that a five-year review will be completed and again notified when the review is completed.

The five-year review public notice was advertised in the Tooele Transcript Bulletin newspaper on August 3, 2010. Neither EPA nor UDEQ received any comments or concerns from the public regarding the five-year review. A copy of the public notice is included in Attachment A.

Document Review

The Five-Year review included a review of relevant documents including the OU1 ROD, the OU2 Proposed Plan (2004), The Rawhide Ranchettes AOC, the OU4 Removal Action Final Report as well as several other site related documents (see Attachment B)

Data Review

Results from sampling activities conducted in the Rawhide Ranchettes and B&B subdivision as well as the properties associated with the Waterman smelter were evaluated and incorporated into this five-year review.

Site Inspection

An inspection of the Site was conducted June 22, 2010, by Thomas Daniels of UDEQ and Lisa Lloyd of EPA. The purpose of the inspection was to assess the protectiveness of the remedy for OU1, OU3, OU4 and the Rawhide Ranchettes Subdivsion.

Inspection of the properties within OU1 showed that the clean fill and landscaping remained intact throughout the site. (See Site Photos)

Inspection of OU3 showed that the 16-inch cap is still intact and its integrity has not been breached. The vegetated cover on both the northern and southern portions of OU3 is well established and the fencing on OU3 is in place and intact.

The Site Inspection Checklist can be found in Attachment C

Inspection of OU4 showed that portions of the cover over the excavated area are more heavily vegetated than others but on a whole is well established. The gravel mound over the contaminated soil left in place is still intact.

Inspection of the Rawhide Ranchettes subdivision showed that the fencing surrounding the repository as well as the soil cap appear to be intact.

Inspection of properties within OU2 showed that the fence erected by BLM in 2005 is still intact. The remainder of OU2 remains uncovered and unfenced, and is easily accessible.

Community Interviews

During the Five-Year Review, The Utah Department of Environmental Quality (UDEQ) conducted a number of interviews with local officials and property owners to obtain their opinion and concerns at the Jacobs Smelter Superfund Site. Community interviews were conducted by UDEQ from June 15, through June 30, 2010. Any health or environmental clean up concerns expressed from the community centered upon recent sampling activities last winter (2009) at Operable Unit Two (OU2) and the implementation of a city-wide sewer project which will impact areas of clean up. Community members or elected officials interviewed did not mention any health or environmental concerns for the other OUs.

The sampling of properties by UDEQ and EPA was the first opportunity many property owners had to learn of the clean up and found that somewhat of a surprise. Property Owners new to the area said they were not informed of the Stockton Area's Superfund History or their inclusion in Superfund boundaries from their realtors. No documentation was ever disclosed to them at the time of purchase as recent as 2010 and one property owner discovered a repository was located adjacent to their backyard after they had purchased the property.

UDEQ and EPA sampled approximately 40 properties within the Rawhide Ranchettes and B&B subdivisions. Eight properties were recommended for remediation of lead and arsenic contaminated soils. Property owners recommended for clean up expressed frustration over the slow pace and lack of progress of the OU2 clean up. One property owner wants to sell their house because of the contamination risks to their family. Property owners said UDEQ and EPA are developing clean up options for the properties involved in OU2 and their understanding is properties with occupants will be cleaned up first with the undeveloped areas later as funding is available.

The Mayor of Stockton also wants the eight properties within the two subdivisions cleaned up as soon as possible. The Mayor's other primary health concern for Stockton is they are in the middle of implementing a town-wide sewer system. The Mayor said his contractors will need continual communication and coordination with UDEQ and EPA to keep from impacting remediated areas. Property Owners said they were concerned the placement of connection lines to the sewer could stir-up capped soils and put them at risk if not handled properly.

The Mayor also said there are more questions than answers regarding the Town's financial resources to maintain Repository and Operations/Maintenance obligations in the future. The Mayor would like EPA to have funding contingencies available for communities to afford the burden of keeping clean ups protective.

The community interviews are included in Attachment D.

Review of Institutional Controls

In order to inform current and future property owners about the contamination remaining below 18 inches on properties cleaned up as part of OU1 and within roadways and alleys, Institutional Controls (ICs) were developed by UDEQ and submitted to the Town of Stockton for approval and implementation. The ICs were designed to protect property owners from exposure to contaminated soil and allow them to manage contaminated soils disturbed during household gardening and landscaping activities, and to protect workers and residents during construction activities on residential and public property within OU1.

The Town of Stockton adopted Ordinance #2000-4 to address excavation and development within OU1 of the Jacobs Smelter Superfund site on May 8, 2001. The ordinance requires permit applications for all construction work that requires excavation below 18 inches, to ensure excavated material is tested and handled according to appropriate state and federal regulations.

In 2004 the Town of Stockton started investigating the feasibility of installing a municipal sanitary sewer system and requested UDEQ's and EPA's assistance in evaluating the effectiveness of Ordinance #2000-4 and its impact on the installation of the sewer. This evaluation found that while the remedy remains protective, several items and actions described in the Ordinance, namely the construction of a repository for contaminated material excavated within the Town, had not been implemented.

Due to funding issues and lack of community support the sewer project was postponed until Spring 2010. Recently DERR and EPA have assisted in the development of a soil management plan that describes how contaminated soils will be handled during the excavation and installation of the sanitary sewer system. As part of the sewer project, Stockton designed and received a permit for a repository to accept contaminated material excavated during construction activities and to satisfy one of the outstanding requirements listed in the Town Ordinance.

The Town boundaries have been extended to include the Rawhide Ranchettes and B&B Subdivisions.

The developer of the Rawhide Ranchettes was required to record a certified copy of the Administrative Order on Consent with the Tooele County Recorder's Office for any property that contained lead and arsenic levels in excess of the established action levels, including the repository. The Order also required that the developer conduct monthly

Removal Action and yearly inspections thereafter. Despite discovering lead concentrations on several of the lots within the Rawhide Ranchettes subdivision the only property for which recording a copy of the AOC was required was the repository itself which remains in the possession of the developer.

KUC recorded a Memorandum of Environmental Covenant on OU4 on May 26, 2009, with Tooele County.

VII. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, risk assumptions and the results of the Site inspections indicates that the remedies are functioning as intended by the ROD and Action Memorandum for OU1 and the Action Memoranda for OU3 and OU4.

The excavation of the lead and arsenic contaminated soil associated with the Emergency Removal Action and the Remedial Action associated with OU1 and the subsequent backfilling and landscaping has achieved the remedial objectives necessary to minimize direct contact with or ingestion of contaminants in soil. The fill and landscaping on the cleaned properties appear to be in good condition.

The soil cap, vegetative cover, and fencing installed at OU3 have achieved the objectives described in the action memorandum and remain protective of human health and the environment. The soil cap appears to be in good condition. The vegetative cover appears to be well established. The fencing is in good condition and effectively controls access.

The excavation and off-site disposal of contaminated soil at OU4 has effectively minimized direct contact with or ingestion of the contaminants in the soil. The gravel hill that remains over the contaminated waste in place provides an adequate barrier to the remaining contamination.

While the fill and landscaping on the majority of the properties within the Rawhide Ranchettes are in good condition and the asphalt paving placed over the non-hazardous contaminated soil remains in place and is in good condition and the fencing around the repository as well as the soil cap appear to be in good condition, additional sampling of the subdivision has shown that several properties contain lead concentrations above the clean up levels specified in the AOC.

The remedies for OU1, OU3 and OU4 are functioning as intended by the decision documents. The remedy for the Rawhide Ranchettes Subdivision within OU2 is not functioning as intended by the AOC

Question B: Are the exposure assumptions, toxicity data, clean up levels, and remedial action objectives (RAOs) used at the time of the remedy still valid?

The review of exposure assumptions, toxicity data, clean up levels and remedial action objectives (RAOSs) used at the time of the remedy are still valid for OU1, OU3 and OU4.

A remedy has not been selected and documented in a ROD for OU2. The exposure assumptions for recreational exposure at the Waterman Smelter area utilized to calculate PRGs in 2001 are no longer valid. The PRGs that were developed in 2001 evaluated risks associated with occasional ATV use of the area surrounding Stockton. Based on observed increased ATV use of the Waterman Smelter as well as information regarding frequency and duration of ATV use from area residents, the PRGs have been recalculated.

In addition the size of the exposure units has been redefined to reflect concentrated use around the Waterman Smelter.

The observed use pattern surrounding the Chicago and Carson Buzzo areas has been redefined as agricultural rather than recreational as well. PRGs for an agricultural use exposure have not been calculated at this time.

The exposure assumptions, toxicity data, clean up levels and RAOs listed in the 2004 Proposed Plan for OU2 are no longer valid.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Yes – see answer to question A above.

Summary of Technical Assessment

According to the data reviewed, the site inspection, and the community interviews, the remedies are functioning as intended by the ROD and associated AOCs for OU1, OU3 and OU4. There have been no changes in the physical conditions of OU1, OU3 and OU4 that would affect the protectiveness of the remedy. There have been no changes in the toxicity factors for the contaminants of concern nor has there been a change to the standardized risk assessment methodology that could affect the protectiveness of the remedy for OU1, OU3 or OU4.

Sampling and analysis of the Rawhide Ranchettes Subdivision has shown that the subdivision contains properties with lead concentrations above the residential clean up levels specified in the AOC.

VIII. ISSUES

Table 2 – Issues

#	OU#	Issues	Affects Protectiveness (Y/N)	
			Current	Future
1	1	ICs have not been fully implemented	N	Y
2	2	There is no final decision document. The assumptions listed in the Proposed Plan are no longer valid	Y	Y
3		Additional clean up is needed at Rawhide Ranchetes	Y	Y
4		Clean up is needed at Waterman, Chicago and Carson-Buzzo Smelters.	Y	Y
5	5	MOU needed with BLM to facilitate clean up	Y	Y

IX. RECOMMENDATIONS AND FOLLOW UP ACTIONS

Table 3 - Reccomendation and Follow Up Actions

#	OU	Issue	Reccomendations/Follow-up Actions	Party Responsible	Milestone Date
1	1	ICs have not been fully implemented	Revise ordinance	UDEQ/Town of Stockton	
2	2	No final decision document	Complete Record of Decision	UDEQ	3/30/2012
3		Assumptions listed in the Proposed Plan are no longer valid	Revise Proposed Plan	UDEQ	12/31/2011
4		Additional clean up needed at Rawhides Ranchettes	Perform non-time critical removal action	EPA	10/31/2010
5		Clean up needed at Waterman, Chicago and Carson Buzzo Smelters and B&B Subdivision	Post signs Perform Remedial Design and Remedial Action	UDEQ and EPA	6/30/2013
6	5	MOU needed with BLM to enable clean up	Establish MOU with BLM	EPA	

X. PROTECTIVENESS STATEMENTS

The remedy performed on OU1 is protective of human health and the environment. The immediate threats posed by the contamination associated with OU1 has been addressed. The excavation and off-Site disposal of the top 18 inches of contaminated soil performed during the Emergency Removal and State lead Remedial Action construction activities for OU1 have effectively eliminated the majority of the risk associated with the Jacobs Smelter. The risk associated with the contaminated soil remaining after excavation is effectively reduced by the 18 inches of clean fill and topsoil and the landscaping placed on each property.

The remedy performed on the Rawhide Ranchettes Subdivision within OU2 is not protective of human health and the environment.

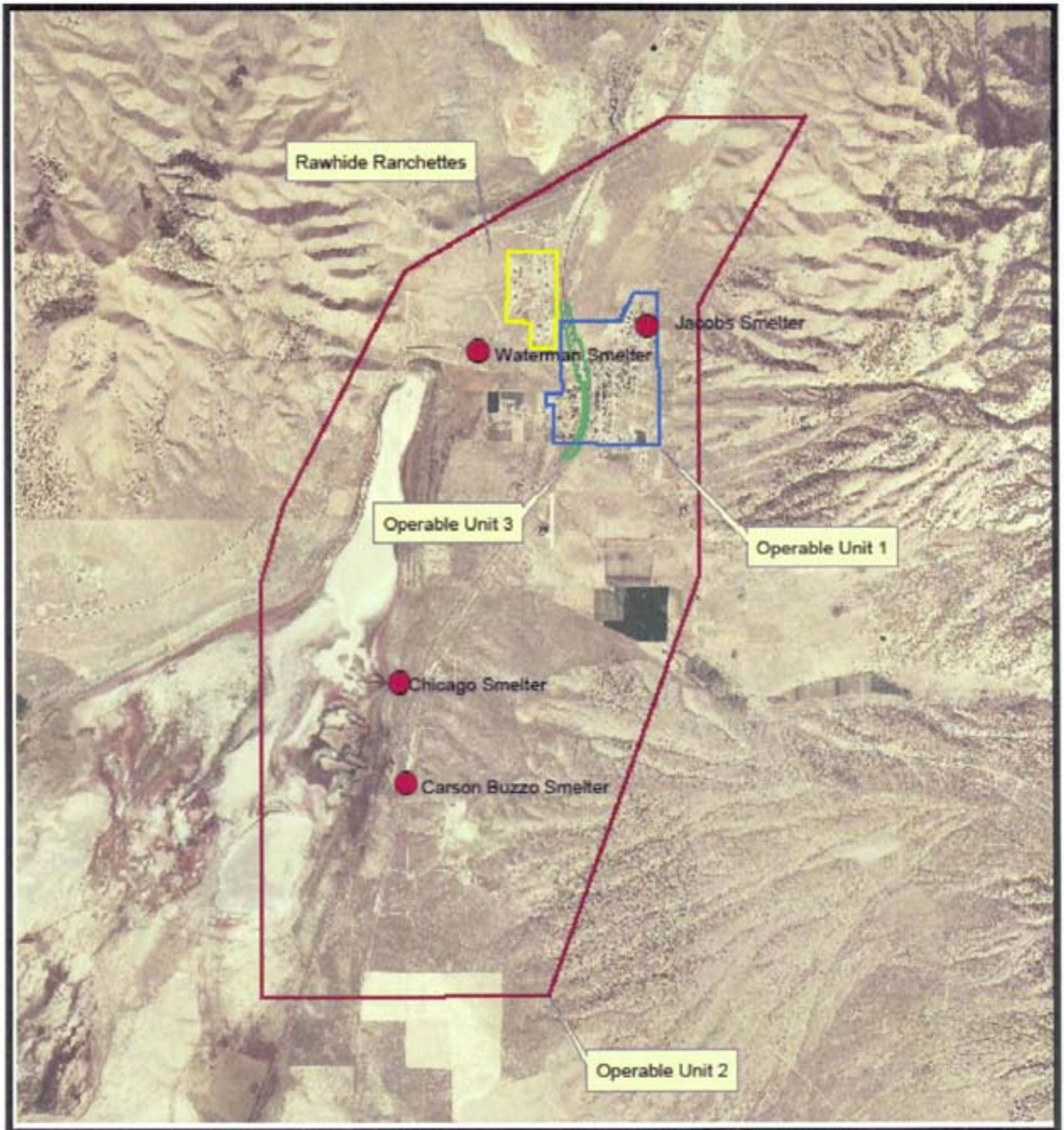
The remedy performed on OU3 is protective of human health and the environment. The immediate threats posed by the contamination associated with OU3 has been addressed. The cap, vegetative cover and fence installed on the Stockton Rail Yard provide an adequate barrier to exposure to contaminated soil in OU3.

The remedy performed on OU4 is protective of human health and the environment. The immediate threats posed by the contamination associated with OU4 has been addressed. The excavation, stabilization and off-site disposal of soils with lead concentrations exceeding 500 mg/kg has effectively reduced the risk of exposure to contaminated soil. The contaminated soil remaining within OU4 lies underneath a large gravel hill and is not easily accessible. An Environmental Covenenant that describes what additional sampling and clean up work is needed on the contaminated material remaining has been placed upon the property and has been recorded with the Tooele County Recorders Office.

XI NEXT REVIEW

The next review is to be conducted within five years of the completion of this five-year report. The completion date is the date of the signature shown on the signature cover sheet attached to the front of this report.

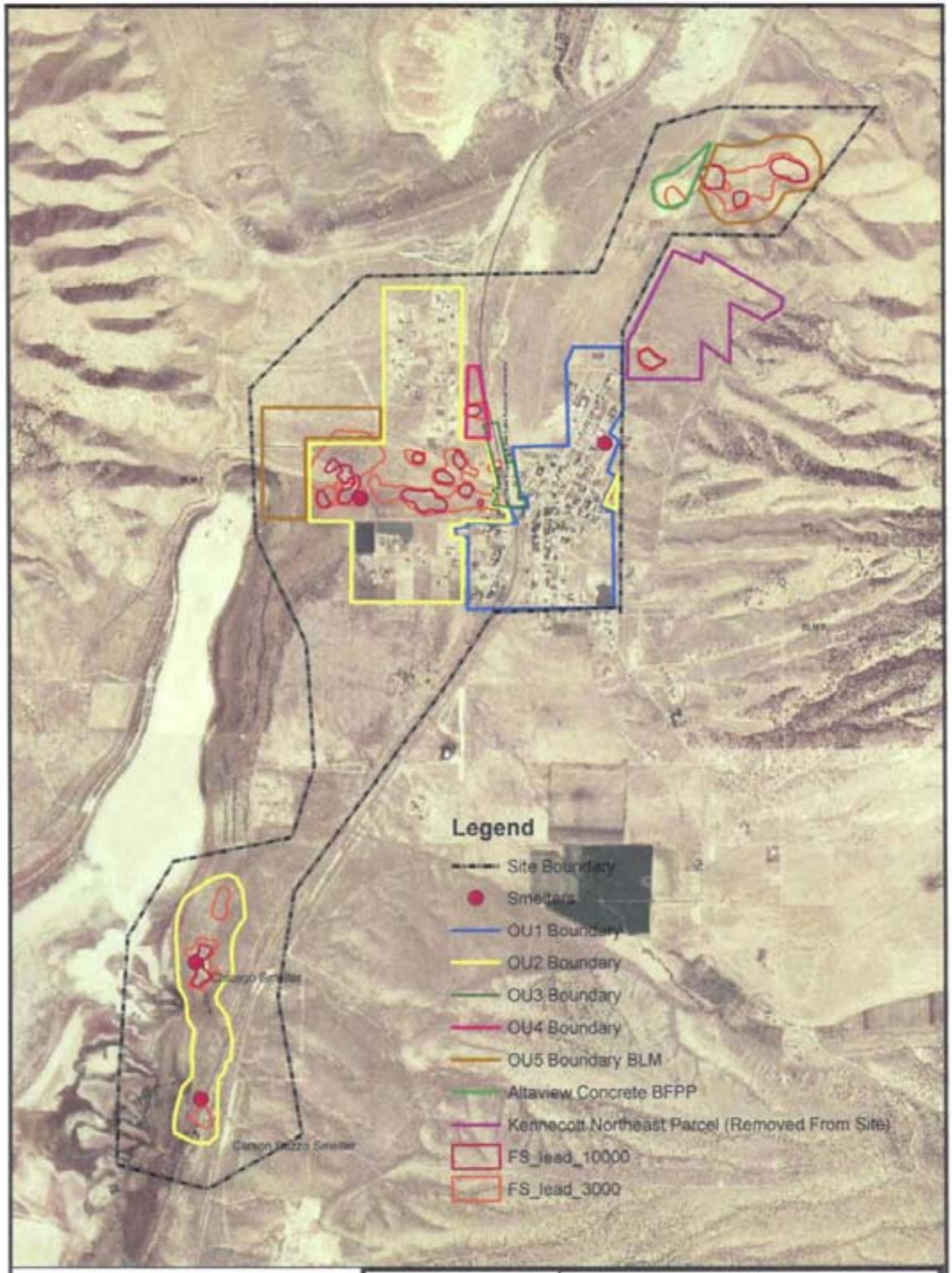
FIGURES



Division
Of Environmental Response
And Remediation

Jacobs Smelter Superfund Site
2010 Five-Year Review
Figure 1
2004 Proposed Plan Boundaries

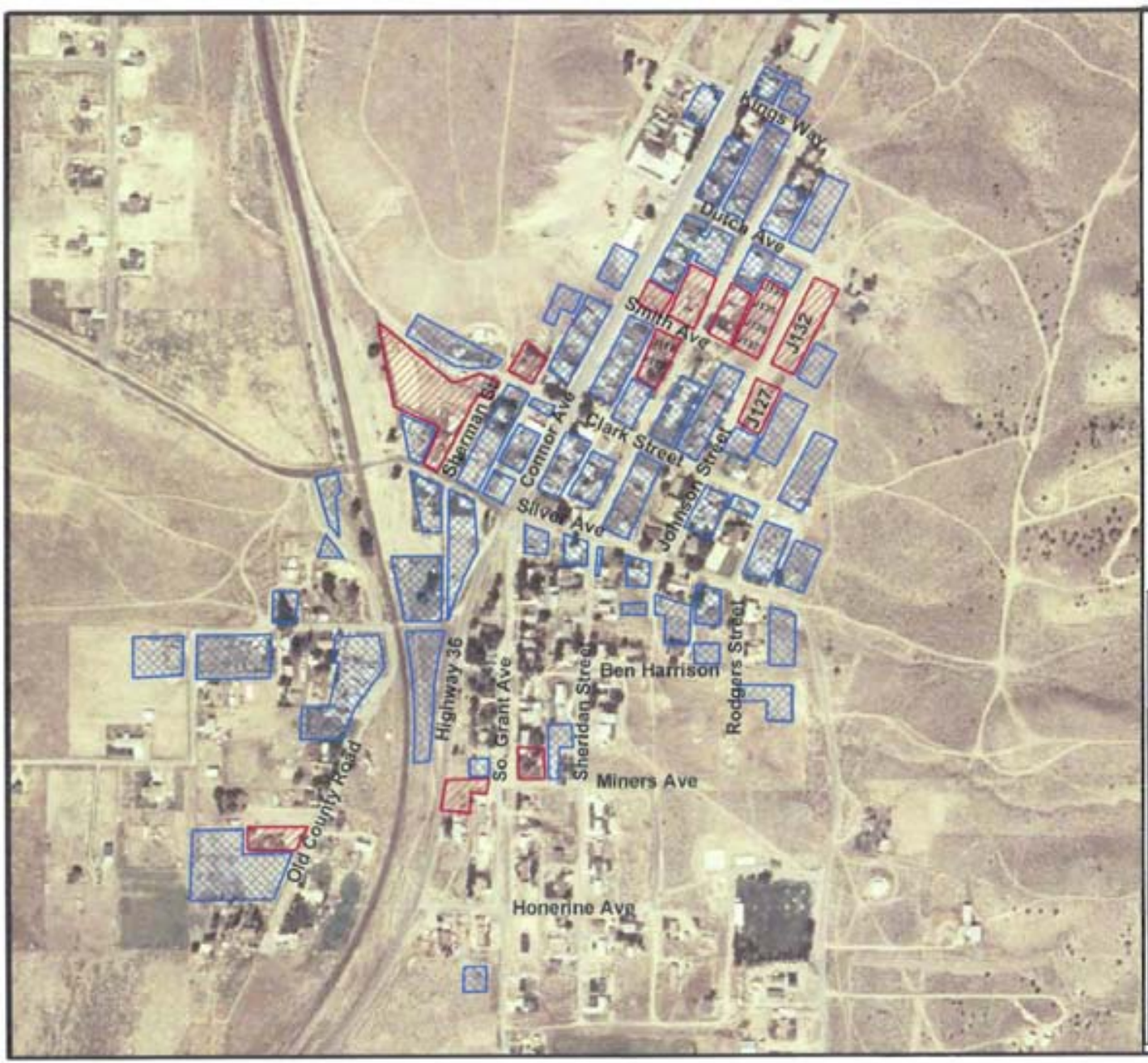
By: Thomas D. Daniels 6/28/2010



Division of Environmental Response and Remediation

Jacobs Smelter Superfund Site
2010 Five-Year Review
Figure 2
2010 Site and Operable Unit Boundaries

By: Thomas D. Daniels 6/28/2010



Legend

- Emergency Removal Cleanup
- Remedial Action Cleanup

N
W E
S

0 55 110 220 330 440 Meters

Division of Environmental Response and Remediation

Jacobs Smelter Superfund Site
2010 Five-Year Review
Figure 3
Removal and Remedial Action Cleanup Areas

By: Thomas D. Daniels Date: 6/30/2010

Legend

- Capped Areas
- Access Road
- Cross Section
- Fence

N
W E
S

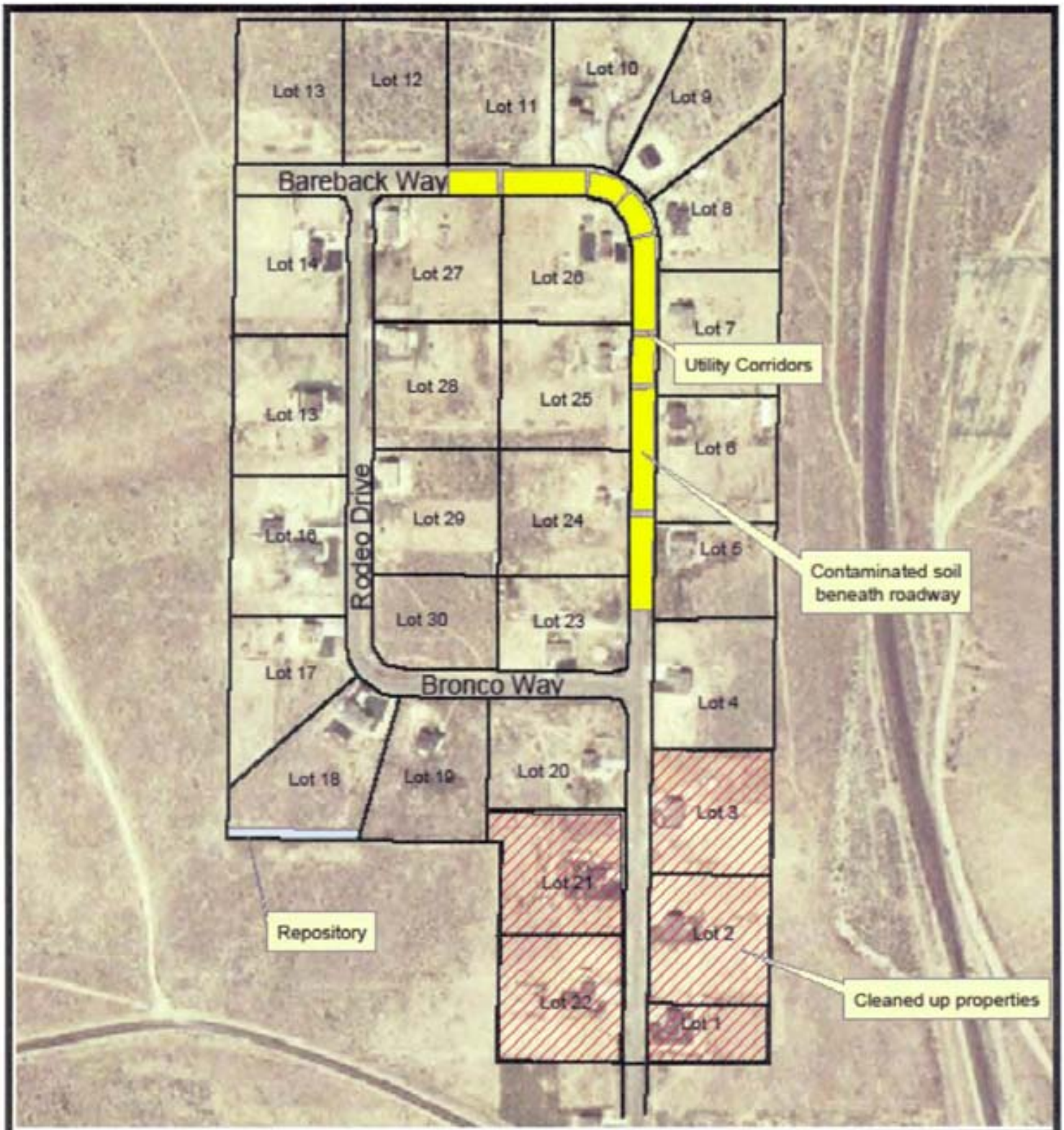
Meters
0 15 30 60 90 120

Division of Environmental Response and Remediation

Jacobs Smelter Superfund Site
2010 Five-Year Review
Figure 4
Operable Unit Three

By: Thomas D. Daniels Date: 06/30/2010


REMOVAL AREA
REMOVAL DEPTHS >500 mg/kg LEAD
0-2" REMOVAL
0-6" REMOVAL
6"-12" REMOVAL
12"-18" REMOVAL
18"-24" REMOVAL
N
0
125
250
Feet
1 Inch = 250 feet
Division of Environmental Response and Remediation
Jacobs Smelter Superfund Site
2010 Five-Year Review
Figure 5
Operable Unit 4



N

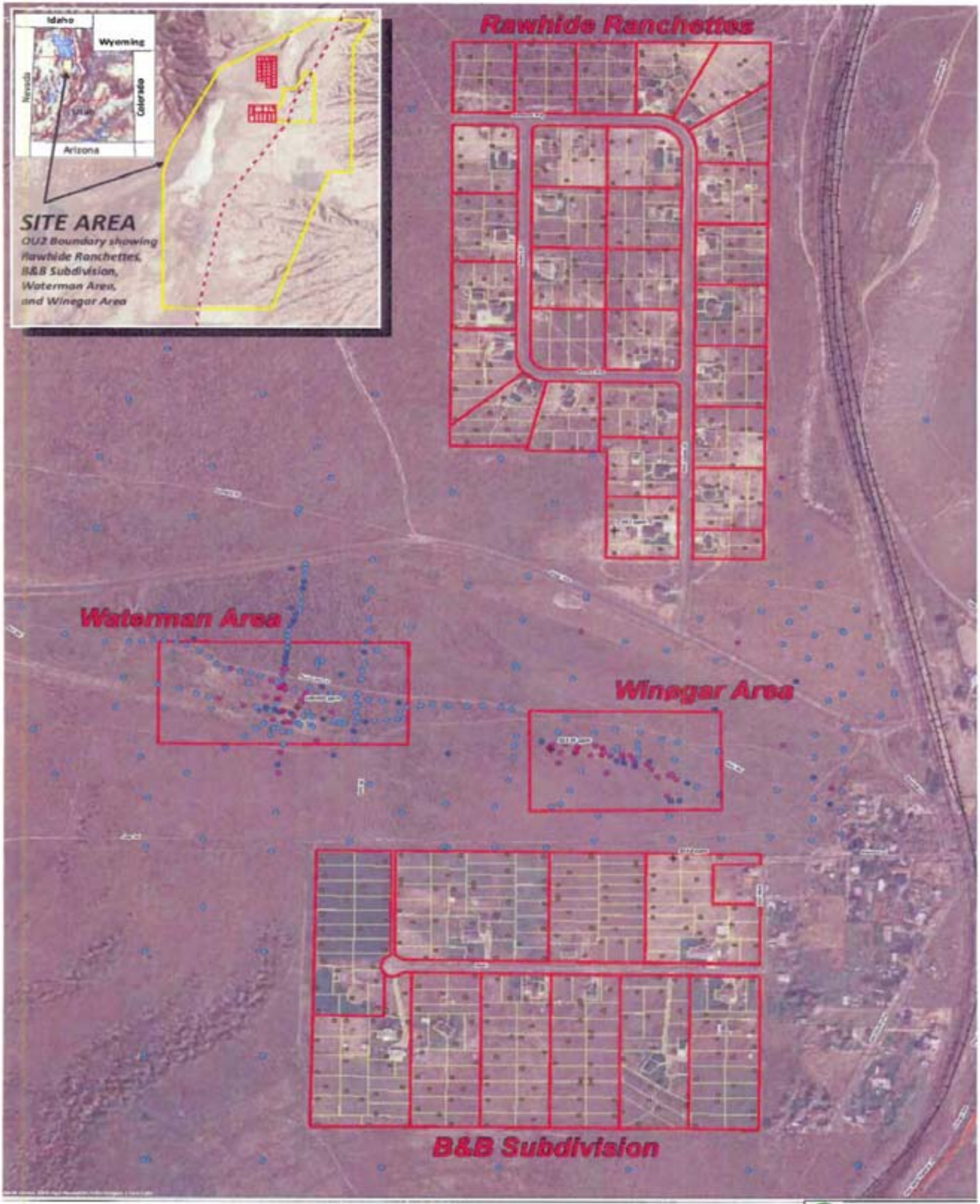
W E

S

Division of Environmental Response and Remediation

Jacobs Smelter Superfund Site
2010 Five-Year Review
Figure 6
Rawhide Ranchettes Cleanup, 2000

By: Thomas D. Daniels 06/30/2010


Rawhide Ranchettes
Waterman Area
Winegar Area
B&B Subdivision
Idaho
Wyoming
Nevada
Utah
Colorado
Arizona
SITE AREA
OU2 Boundary showing Rawhide Ranchettes, B&B Subdivision, Waterman Area, and Winegar Area
LEGEND
Highway36
Railroads
Roads
OU2 Boundary
Subdivisions
Parcels
Lead (Pb) Results:
0 - 3,000
3,001 - 5,000
5,001 - 10,000
10,001 - 30,000
> 30,000
N
W
E
S
0 25 50 100 150 200
Meters
Division of Environmental Response and Remediation
Iscode Smelter Superfund Site
2010 Five-Year Review
Figure 7
Rawhide Ranchettes and B&B Subdivisions

ATTACHMENT A

Public Notice

UDEQ

PUBLIC NOTICE

Five-Year Review of Jacobs Smelter Superfund Site

Tooele County, UT

U.S. EPA

The Utah Department of Environmental Quality (UDEQ) in cooperation with the U.S. Environmental Protection Agency (EPA) is conducting a Five-Year Review of the Jacobs Smelter Superfund Site. The site is located in Tooele County, approximately five miles south of the City of Tooele and includes the Town of Stockton and surrounding areas. The purpose of a Five-Year Review is to determine whether or not cleanup and other actions taken at the site are protective of human health and the environment.

The Five-Year Review will include community interviews, a review of site documents and data, and a site inspection to evaluate all remedy components. The Review will be completed by the fall of 2010. UDEQ will prepare a report for EPA summarizing the results.

The Stockton area was the center of a silver and base-metal mining, milling and smelting district from the 1860's until 1970's. Historical smelting operations left behind tailings, slag and other waste products with elevated concentrations of lead and other heavy metals. EPA placed Jacobs Smelter on the National Priorities List in 2000.

If you would like more information about the review or would like to participate in an interview, please contact:

Thomas Daniels

UDEQ Project Manager
Phone: (801) 536-4090
Email: tdaniels@utah.gov

Dave Allison

UDEQ Community Involvement
Phone: (801) 536-4479
Email: dallison@utah.gov

PUBLIC NOTICE

Five-Year Review of Jacobs Smelter Superfund Site

Tooele County, UT

The Utah Department of Environmental Quality (UDEQ) in cooperation with the U.S. Environmental Protection Agency (EPA) is conducting a Five-Year Review of the Jacobs Smelter Superfund Site. The site is located in Tooele County, approximately five miles south of the City of Tooele and includes the Town of Stockton and surrounding areas. The purpose of a Five-Year Review is to determine whether or not cleanup and other actions taken at the site are protective of human health and the environment.

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If you would like more information about the review or would like to participate in an interview, please contact:

Thomas Daniels
UDEQ Project Manager
***Phone:* (801) 536-4090**
Email: tdaniels@utah.gov

Dave Allison
UDEQ Community Involvement
Phone: (801) 536-4479
Email: dallison@utah.gov

Published in the Tooele Transcript Bulletin August 3, 2010

ATTACHMENT B

Document Review

Documents Reviewed:

HRS Listing Package, Jacobs Smelter Superfund Site

Record of Decision
Jacobs Smelter Superfund Site
Operable Unit One

Final Remedial Investigation Report
Jacobs Smelter–Operable Unit Two
July 2003

Final Feasibility Study Report
Jacobs Smelter Operable Unit Two
December 2003

Final Revised Feasibility Study Report
Jacobs Smelter Operable Unit Two
July 2004

Proposed Plan
Jacobs Smelter Operable Unit Two
September 2004

Jacobs Smelter NPL Site
Stockton, Utah
Operable Unit 4 – Kennecott Waterman Area Parcel
Removal Action Final Report
May 2009

Characterization and Soil Assessment of Lead and Arsenic Contamination
Kennecott, Stockton, Northeast Parcel
December 2008

Remedial Actions Report
Union Pacific Railroad Right-of-way
Stockton, Utah
January 28, 2003

Environmental Testing and Evaluation
Proposed Rawhide Ranchettes Subdivision
New Saddle Drive north of County Road off Main Street
Stockton, Utah
January 10, 2000

Five-Year Review Report
First Five-Year Review Report

Jacobs Smelter Superfund Site
Stockton, Utah
September 2005

ATTACHMENT C

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Jacobs Smelter Super fund Site	**Date of inspection:**
Location and Region: Stockton Tooele	**EPA ID: UT0002391472**
Agency, office, or company leading the five-year review: UDEQ DERR	**Weather/temperature: Warm, Windy App 80 degrees**

Remedy Includes: (Check all that apply)

X Landfill cover/containment
X Access controls
X Institutional controls
_ Groundwater pump and treatment
_ Surface water collection and treatment
_ Other _____

_ Monitored natural attenuation
_ Groundwater containment
_ Vertical barrier walls

Attachments: _ Inspection team roster attached _ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** _____ _____ _____
   Name Title Date
   Interviewed _ at site _ at office _ by phone Phone no. _____
   Problems, suggestions; _ Report attached _____

2. **O&M staff** _____ _____ _____
   Name Title Date
   Interviewed _ at site _ at office _ by phone Phone no. _____
   Problems, suggestions; _ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Tooele County Health Department
Contact Vern Loveless Engineer 6/16/2010 _____
Name Title Date Phone no.
Problems; suggestions; _ Report attached _____

Agency Town of Stockton
Contact Mark Whitney Mayor 6/22/2010 _____
Name Title Date Phone no.
Problems; suggestions; _ Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; _ Report attached _____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; _ Report attached _____

4. **Other interviews** (optional) _ Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - _ O&M manual — _ Readily available — _ Up to date — X N/A
   - _ As-built drawings — _ Readily available — _ Up to date — X N/A
   - _ Maintenance logs — _ Readily available — _ Up to date — X N/A

   Remarks

2. **Site-Specific Health and Safety Plan** — _ Readily available — _ Up to date — X_ N/A
   - _ Contingency plan/emergency response plan — _ Readily available — _ Up to date — X_ N/A

   Remarks

3. **O&M and OSHA Training Records** — _ Readily available — _ Up to date — X_ N/A

   Remarks

4. **Permits and Service Agreements**
   - _ Air discharge permit — _ Readily available — _ Up to date — X_ N/A
   - _ Effluent discharge — _ Readily available — _ Up to date — X_ N/A
   - _ Waste disposal, POTW — _ Readily available — _ Up to date — X_ N/A
   - _ Other permits_____ — _ Readily available — _ Up to date — X_ N/A

   Remarks

5. **Gas Generation Records** — _ Readily available — _ Up to date — X_ N/A

   Remarks

6. **Settlement Monument Records** — _ Readily available — _ Up to date — X_ N/A

   Remarks

7. **Groundwater Monitoring Records** — _ Readily available — _ Up to date — X_ N/A

   Remarks

8. **Leachate Extraction Records** — _ Readily available — _ Up to date — X_ N/A

   Remarks

9. **Discharge Compliance Records**
   - _ Air — _ Readily available — _ Up to date — X_ N/A
   - _ Water (effluent) — _ Readily available — _ Up to date — X_ N/A

   Remarks

10. **Daily Access/Security Logs** — _ Readily available — _ Up to date — X_ N/A

    Remarks

IV. O&M COSTS

1. **O&M Organization**

_ State in-house _ Contractor for State
_ PRP in-house _ Contractor for PRP
_ Federal Facility in-house _ Contractor for Federal Facility
_ Other O&M not Specified in decision documents

2. **O&M Cost Records**

_ Readily available _ Up to date
_ Funding mechanism/agreement in place
Original O&M cost estimate_____ _ Breakdown attached

Total annual cost by year for review period if available

From_____ To_____ _____ _ Breakdown attached
Date Date Total cost
From_____ To_____ _____ _ Breakdown attached
Date Date Total cost
From_____ To_____ _____ _ Breakdown attached
Date Date Total cost
From_____ To_____ _____ _ Breakdown attached
Date Date Total cost
From_____ To_____ _____ _ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS X_ Applicable _ N/A

A. Fencing

1. **Fencing damaged** _ Location shown on site map X_ Gates secured _ N/A

Remarks_____

B. Other Access Restrictions

1. **Signs and other security measures** _ Location shown on site map X_ N/A

Remarks_____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented X_ Yes _ No _ N/A
Site conditions imply ICs not being fully enforced X_ Yes _ No _ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _Self Reporting
Frequency _____
Responsible party/agency _UDEQ/Town of Stockton_____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date _ Yes _ No X_ N/A
Reports are verified by the lead agency _ Yes _ No X_ N/A

Specific requirements in deed or decision documents have been met _ Yes X_ No _ N/A
Violations have been reported X_ Yes _ No _ N/A
Other problems or suggestions: _ Report attached

_____
_____
_____
_____

2. **Adequacy** _ ICs are adequate X_ ICs are inadequate _ N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** _ Location shown on site map X_ No vandalism evident
Remarks_____
_____

2. **Land use changes on site** X_ N/A
Remarks_____
_____

3. **Land use changes off site** X_ N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads _ Applicable X_ N/A

1. **Roads damaged** _ Location shown on site map _ Roads adequateG N/A
Remarks_____
_____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS X_ Applicable _ N/A

A. Landfill Surface

1. **Settlement** (Low spots) _ Location shown on site map X_ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** _ Location shown on site map _X Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** _ Location shown on site map X_ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** _ Location shown on site map X_ Holes not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

5. **Vegetative Cover** X_ Grass X_ Cover properly established _ No signs of stress
   _ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** **X**_ N/A
   Remarks_____
   _____

7. **Bulges** _ Location shown on site map X_ Bulges not evident
   Areal extent_____ Height_____
   Remarks_____
   _____

8. **Wet Areas/Water Damage** **X**_ Wet areas/water damage not evident
   _ Wet areas _ Location shown on site map Areal extent_____
   _ Ponding _ Location shown on site map Areal extent_____
   _ Seeps _ Location shown on site map Areal extent_____
   _ Soft subgrade _ Location shown on site map Areal extent_____
   Remarks_____
   _____

9.	**Slope Instability** _ Slides _ Location shown on site map X_ No evidence of slope instability Areal extent_____ Remarks_____
B. Benches	_ Applicable _X N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)
1.	**Flows Bypass Bench** _ Location shown on site map X_ N/A or okay Remarks_____
2.	**Bench Breached** _ Location shown on site map X_ N/A or okay Remarks_____
3.	**Bench Overtopped** _ Location shown on site map X_ N/A or okay Remarks_____
C. Letdown Channels	_ Applicable X_ N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)
1.	**Settlement** _ Location shown on site map X_ No evidence of settlement Areal extent_____ Depth_____ Remarks_____
2.	**Material Degradation** _ Location shown on site map X_ No evidence of degradation Material type_____ Areal extent_____ Remarks_____
3.	**Erosion** _ Location shown on site map X_ No evidence of erosion Areal extent_____ Depth_____ Remarks_____

4. **Undercutting** _ Location shown on site map X_ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ X_ No obstructions
_ Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
X_ No evidence of excessive growth
_ Vegetation in channels does not obstruct flow
_ Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations _ Applicable X_ N/A

1. **Gas Vents** _ Active _ Passive
_ Properly secured/locked _ Functioning _ Routinely sampled _ Good condition
_ Evidence of leakage at penetration _ Needs Maintenance
_ N/A
Remarks_____

2. **Gas Monitoring Probes**
_ Properly secured/locked _ Functioning _ Routinely sampled _ Good condition
_ Evidence of leakage at penetration _ Needs Maintenance _ N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
_ Properly secured/locked _ Functioning _ Routinely sampled _ Good condition
_ Evidence of leakage at penetration _ Needs Maintenance _ N/A
Remarks_____

4. **Leachate Extraction Wells**
_ Properly secured/locked _ Functioning _ Routinely sampled _ Good condition
_ Evidence of leakage at penetration _ Needs Maintenance _ N/A
Remarks_____

5. **Settlement Monuments** G Located _ Routinely surveyed _ N/A
Remarks_____

E. Gas Collection and Treatment _ Applicable X_ N/A

1. **Gas Treatment Facilities**
   _ Flaring _ Thermal destruction _ Collection for reuse
   _ Good condition _ Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   _ Good condition _ Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   _ Good condition _ Needs Maintenance _ N/A
   Remarks_____

F. Cover Drainage Layer _ Applicable X_ N/A

1. **Outlet Pipes Inspected** _ Functioning _ N/A
   Remarks_____

2. **Outlet Rock Inspected** _ Functioning _ N/A
   Remarks_____

G. Detention/Sedimentation Ponds _ Applicable _X N/A

1. **Siltation** Areal extent_____ Depth_____ _ N/A
   _ Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   _ Erosion not evident
   Remarks_____

3. **Outlet Works** _ Functioning _ N/A
   Remarks_____

4. **Dam** _ Functioning _ N/A
   Remarks_____

H. Retaining Walls _ Applicable X_ N/A

1. **Deformations** _ Location shown on site map _ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** _ Location shown on site map _ Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge _ Applicable _ N/A

1. **Siltation** _ Location shown on site map _ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** _ Location shown on site map _ N/A
   _ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** _ Location shown on site map _ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** _ Functioning _ N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS _ Applicable X_ N/A

1. **Settlement** _ Location shown on site map _ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   _ Performance not monitored
   Frequency_____ Evidence of breaching
   Head differential_____
   Remarks_____

C. Treatment System _ Applicable X_ N/A

1. **Treatment Train** (Check components that apply)
   _ Metals removal _ Oil/water separation _ Bioremediation
   _ Air stripping _ Carbon adsorbers
   _ Filters_____
   _ Additive (*e.g.*, chelation agent, flocculent)_____
   _ Others_____
   _ Good condition _ Needs Maintenance
   _ Sampling ports properly marked and functional
   _ Sampling/maintenance log displayed and up to date
   _ Equipment properly identified
   _ Quantity of groundwater treated annually_____
   _ Quantity of surface water treated annually_____
   Remarks_____
   _____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   _ N/A _ Good condition _ Needs Maintenance
   Remarks_____
   _____

3. **Tanks, Vaults, Storage Vessels**
   _ N/A _ Good condition _ Proper secondary containment _ Needs Maintenance
   Remarks_____
   _____

4. **Discharge Structure and Appurtenances**
   _ N/A _ Good condition _ Needs Maintenance
   Remarks_____
   _____

5. **Treatment Building(s)**
   _ N/A _ Good condition (esp. roof and doorways) _ Needs repair
   _ Chemicals and equipment properly stored
   Remarks_____
   _____

6. **Monitoring Wells** (pump and treatment remedy)
   _ Properly secured/locked _ Functioning _ Routinely sampled _ Good condition
   _ All required wells located _ Needs Maintenance _ N/A
   Remarks_____
   _____

D. Monitoring Data X NA

1. Monitoring Data
   _ Is routinely submitted on time _ Is of acceptable quality

2. Monitoring data suggests:
   _ Groundwater plume is effectively contained _ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

_ Properly secured/locked _ Functioning _ Routinely sampled _ Good condition
_ All required wells located _ Needs Maintenance _ N/A
Remarks_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Summarized in Five-Year Review Report

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Summarized in Five-Year Review Report

C.	Early Indicators of Potential Remedy Problems
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. Summarized in Five-Year Review Report

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

ATTACHMENT D

Community Interviews

Contact: 16 June 2010

Vern Loveless, Tooele County Engineer
Kerry Beutler, Senior Planner, Tooele County
Tooele County Offices
47 South Main
Tooele, UT 84074

JACOBS SMELTER SUPERFUND SITE FIVE-YEAR REVIEW QUESTIONS

What do you know and how long have you been involved with the Jacobs Smelter Superfund Site?
Vern Loveless is the Tooele County Engineer responsible for long and short range planning, development, building inspection, road maintenance, code enforcement and infrastructure improvements in Tooele County. Kerry Beutler, Division Manager/Tooele County Planner, said the Planning and Zoning Division handle short and long range planning efforts of the county. Planning and Zoning maintain and enforce the zoning and subdivision ordinances and also the criminal code investigation and enforcement element. Loveless and Beutler were not around when the initial remediation work occurred however, are aware of the Stockton area's smelting history.

Do you have any *personal* concerns regarding the clean up? Are you aware of any *community* concerns?
Loveless and Beutler did not have any health or environmental concerns for the Jacobs Smelter Superfund Site. The County's primary interest is keeping track of roads, land use, utility corridors, or pipeline projects going through the Jacobs Smelter areas.

In 2009, coordination was necessary with the Bureau of Land Management (BLM) on a Utah/Nevada oil pipeline running through the Stockton Area. The Jacobs Smelter Site was a sensitive area Holly and Sinclair Oil officials did not want to disturb. The pipeline concerns were planned to alleviate any issues working in contamination zones with alternative route splits. To Loveles's and Beutler's knowledge no other such projects to date have compromised the remedy at the Jacobs Smelter site.

Loveless did say they heard rumors from the Stockton community where concerns of lead and arsenic soils not completely cleaned-up in the Rawhide Ranchettes Subdivision. UDEQ said they were sampling the area last fall which may have lead to residents talking and UDEQ and EPA were addressing community concerns. Loveless and Beutler said unrelated to Jacobs Smelter areas, there is more concern of development of a potential gravel pit in the Stockton Bar area located to the north of town.

Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy?
To Loveless' and Beutler's knowledge, other than the Utah/Nevada pipeline project, no other such construction activities projects to date have compromised the remedy at the Jacobs Smelter site. Any future development of the Stockton area will depend upon the availability of water (which there is not a lot of) and do not expect tremendous growth in Tooele County in the near future. Also, Loveless and Beutler mentioned, any of the recently sampled properties slated for cleanup are in town and under Stockton's authority.

Do you have any additional comments, suggestions or questions regarding the clean up?
No one had additional contacts to suggest.

Interviewed By: Dave Allison, Utah Department of Environmental Quality

Contact: 30 June 2010
Mark and Jill McAffee
Property Owner

JACOBS SMELTER SUPERFUND SITE FIVE-YEAR REVIEW QUESTIONS

What do you know about the Jacobs Smelter clean up?
The McAffee's were unaware of any lead or arsenic contaminated soils in the Stockton area prior to moving into a subdivision Rawhide Ranchettes in December 2009. The McAffee's property is in front of a soil repository located behind and adjacent to their home of which they were not told by the previous owner. The McAffees said a vague description in their disclosure statement alluded to a completed cleanup having occurred in the subdivision with no specific mention of the adjacent repository. The McAffee's were even unsure the repository was on their property and they are interested in documenting their property boundary.

Do you have any *personal* concerns regarding the clean up? Are you aware of any *community* concerns?
The McAffees personal concern is the lack of disclosure and not knowing if the contamination in the repository is protectively contained? With the repository close by, the McAffee's wonder if the lead and arsenic could migrate onto their or neighbors property through the groundwater or through wind. As for the community having concerns, after attending meetings, they're more aware of the lead and arsenic soil contamination issues in the area. A friend's yard is targeted for cleanup and the McAffees want to see the subdivision cleaned up as soon as possible.

Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy?
The McAffees said nothing noticeable has disturbed the cap on the repository. However a gate is not securely closed and anyone or animals could have access to the repository. They would like EPA or UDEQ to take a look at the gate.

Do you have any additional comments, suggestions or questions regarding the clean up?
The McAffee's feel surprised by some of the unknown environmental issues in the area and hope others moving into the area are dealt with more openly and honestly. The McAffee's want to see the residential cleanup completed soon and understand it may take some time to finish the smelter areas. There are other issues as well with the Stockton Sand Bar under consideration for a gravel company and dust associated with such an operation to the north of the subdivision.

Interview by Dave Allison, Utah Department of Environmental Quality.

Contact: 16 June 2010
Chris and Mindy Willes

JACOBS SMELTER SUPERFUND SITE FIVE-YEAR REVIEW QUESTIONS

What do you know and how long have you been involved with the Jacobs Smelter Superfund Site?
The Willes' purchased their home in the Rawhide Ranchettes subdivision in 2007 and no information was disclosed regarding Arsenic/Lead contaminated soil or knowledge of the Jacobs Smelter Superfund designation. The Willes' received a letter from Kennecott in September 2008 stating they had a clean-up project scheduled on a parcel located to the east of the Rawhide Ranchettes and west of the Union Pacific railroad tracks in Stockton, Utah. The Willes' contacted Kennecott to discuss concerns of Arsenic/Lead in the area. Kennecott referred the Willes' to Tom Daniels at the Utah Department of Environmental Quality to further address their concerns. UDEQ and EPA had cleaned up the area in 2004 and were unaware elevated soils for lead or arsenic existed other than smelter areas under investigation for future cleanup.

Do you have any *personal* concerns regarding the clean up? Are you aware of any *community* concerns?
The Willes' are very worried for their family health with their property. UDEQ met with the Willes' to take some soil samples and address any concerns. Soil sample tests indicated areas on their property above 500 ppm for lead, higher than what is allowed in residential property for the area and needs additional remediation. In August 2009, the Willes' took their three year old son for a yearly check up and results came back indicating a high level of arsenic in a urine sample. Lead was not found in these tests, however, the Willes' believe most likely their child's test results are related to the contamination in their yard. EPA and UDEQ have assured the Willes' they are the top priority for cleanup and hope to secure funding and cleanup in the Summer of 2010. The Willes' said cleanup can not occur fast enough as far they are concerned will believe it only when it happens. The Willes' said no dates for cleanup are determined at this time.

Since contamination was found on their property, the Willes' feel like prisoners in their own home. Their kids are not allowed to play in the backyard and they do not let their horses out in the pasture areas for exercise or play. They have put off landscaping, requested tax relief from Tooele County, and put the house up for sale due to the circumstances of living in a Superfund site. The Willes' know of others too, recent property owners, unaware of the area cleanup history and said they were not told at the time of purchase. The Willes are one of eight properties UDEQ and EPA recommend for cleanup of 40 properties sampled in the Rawhide Ranchettes and B& B Subdivisions.

Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy?

Stockton is implementing a town-wide sewer system project. The Willes' feel some of the lead and arsenic capped material in the roads in front of their home are susceptible as connections are installed from their home. The Willes' are also worried about

contaminated dust blowing from the Waterman Smelter areas and want the smelter areas cleaned up as soon as possible as well.

Do you have any additional comments, suggestions or questions regarding the clean up?
The Willes' said UDEQ and EPA was great to work and has spent numerous hours explaining and assuring everything is being done to address their concerns. However, until a cleanup date is set they will not be at ease. The Willes' suggested UDEQ speak to a couple of other property owners and provided contacts in the Rawhide Ranchettes subdivision.

Interview by Dave Allison, Utah Department of Environmental Quality

Contact: 22 JUNE 2010

Mark Whitney, Mayor
Town of Stockton

JACOBS SMELTER SUPERFUND SITE FIVE-YEAR REVIEW QUESTIONS

What do you know and how long have you been involved with the Jacobs Smelter Superfund Site?
Mayor Whitney has lived in Stockton, UT for three years and had become aware of the Superfund cleanup from relatives occasionally discussing the Town's smelting history. Mayor Whitney is in his first term and was briefed last fall on recent sampling activities at the Jacobs Smelter Site by the Utah Department of Environmental Quality (UDEQ) the Environmental Protection Agency (EPA).

Do you have any *personal* concerns regarding the clean up? Are you aware of any *community* concerns?
Mayor Whitney wants residential properties cleaned-up as soon as possible in Operable Unit 2. It was discovered last fall eight properties needed additional soil remediation for lead and arsenic from the 2004 cleanup. Mayor Whitney understands EPA's funding constraints and is concerned people are at risk until the soil is removed. Mayor Whitney is optimistic the properties will be cleaned up this summer and is offering any town assistance to expedite a cleanup.

Stockton is also in the process of implementing a town-wide sewer installation project. Mayor Whitney wants all parties, Superfund and Sewer teams, coordinating to ensure the remediated areas are handled properly and without compromise. Mayor Whitney's main criticism of the Superfund process is a lack of funds provided for the Town's Operation and Maintenance (O&M) responsibilities in the future. Once EPA and UDEQ are gone the Town has no choice to fund O & M whether or not the Town financially capable. Mayor Whitney would like EPA to establish an account to handle contingencies. The Mayor also said questions remain unanswered until the smelter areas are addressed regarding size and creation of another repository Stockton will responsible for.

Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy?
Mayor Whitney feels Stockton's Soils Ordinance work as intended. Permits are triggered with construction projects, and although everyone can't be watched said he hasn't had any problems with people digging into cleanup zones. Getting after an occasional fence without a permit is about all he could think of and only hears an occasional complaint about landscaping not growing back. No one mentioned any Superfund issues at all until this year.

Do you have any additional comments, suggestions or questions regarding the clean up?
No one had additional contacts to suggest.

Interview by Dave Allison, Utah Department of Environmental Quality

Contact: 28 June 2010

Cheryl Prawl
Resident, B & B Subdivision

JACOBS SMELTER SUPERFUND SITE FIVE-YEAR REVIEW QUESTIONS

What do you know and how long have you been involved with the Jacobs Smelter Superfund Site?
Prawl is resident in the recently sampled B& B subdivision. Prawl's property was clean and not recommended for remediation. After meeting with UDEQ regarding her property results, Prawl learned of four potential properties within the B & B subdivision which may require additional cleanup.

Do you have any *personal* concerns regarding the clean up? Are you aware of any *community* concerns?
Prawl said any health concerns in Stockton are related to dust associated with the former mining areas. Prawl said the wind blows dust is everywhere and would like to see a conscious effort to cleanup areas quickly and the Town's Sewer Project finished soon. Prawl is concerned about the gardens, vegetables and fruits, as well as any liability regarding property contamination. The wind is constant and Prawl feels any micro-burst would be able to spread any unclean soils in the area very easily. Although water has dried up, Prawl said the nearby Rush Lake area is also an important ecosystem and would like to see the wildlife protected from any contamination.

Prawl also said she holds a position on the Tooele County Board of Health and none of the Superfund issues or projects were ever discussed at any of the Board Meetings.

Have you noticed anything going on in the area that you believe might have damaged or compromised the remedy? Other than the dust issues Prawl couldn't think of any issues of concern.

Do you have any additional comments, suggestions or questions regarding the clean up?
Prawl said the Government public meetings were beneficial but would recommend other ways to inform the community regularly as local attendance is not very good for meetings. Letter mailings would be best, the newspaper and even postings at the local post office would be good ways to inform the community.

Interview by Dave Allison, Utah Department of Environmental Quality