Libby Asbestos Superfund Site
The Former Screening Plant and Surrounding Properties,
Operable Unit 2
Lincoln County, Montana

Final Remedial Action Report

USACE Contract No. W9128F-11-D-0023

Task Order No.: 0002
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Abbreviations and Acronyms

ARARs	applicable or relevant and appropriate requirements
bgs	below ground surface
BNSF	Burlington Northern Santa Fe
CDM Smith	CDM Federal Programs Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHASP	Comprehensive Site Health and Safety Plan
CM	construction management
COC	contaminant of concern
CUA	common-use area
EPA	US Environmental Protection Agency
ERS	Environmental Resource Specialist
FS	Feasibility Study
ft^2	square foot
GPI	General Property Investigation
GPS	global positioning system
Grace	W.R. Grace Company
HASP	Health and Safety Plan
IC	institutional controls
ICIAP	Institutional Control Implementation and Assurance Plan
KDC	Kootenai Development Corporation
LA	Libby amphibole asbestos
LUA	limited-use area
MCL	maximum contaminant level
MDEQ	Montana Department of Environmental Quality
MDT	Montana Department of Transportation
ND	non-detect
NPL	National Priorities List
O&F	operational and functional
O&M	Operations and Maintenance
OU	Operable Unit
OU2 site	Libby Asbestos Superfund Site, Operable Unit 2
PCC	Property Closeout Checklist
PRI	Project Resources, Inc
QA	quality assurance
QAAP	Quality Assurance Project Plan
QAR	Quality Assurance Report
QC	quality control
RA	Remedial Action
RAO	Remedial Action Objective
RAWP	Response Action Work Plan
RC	removal contractor
RG	remedial goal

RI	Remedial Investigation
ROD	Record of Decision
ROW	right-of-way
SAP	Sampling and Analysis Plan
Site	Libby Asbestos Superfund Site
TQA	Third Party Quality Assurance
TR	Trace
USACE	US Army Corps of Engineers

Section 1

Introduction

1.1 Site Name and Location

The Libby Asbestos Superfund Site (Site) (CERCLIS # MT0009083840) is located in and around the Town of Libby, Montana. Libby is the county seat of Lincoln County and lies in the northwest corner of Montana, about 35 miles east of Idaho and 65 miles south of Canada.

Operable Unit 2 (OU2 site) is also known as the former Screening Plant. It is located near the intersection of Montana Highway 37 (Highway 37) and Rainy Creek Road, approximately 5 miles north of town. Figure 1-1 shows the location of OU2 as it relates to the seven other operable units.

1.2 Key Features of the Libby Asbestos Superfund Site and OU2

1.2.1 Site OUs

To facilitate a multi-phase approach to remediation of the Site, eight separate OUs have been established. These OUs are shown in Figure 1-2 and include:

- **OU1**. The former Export Plant is situated on the south side of the Kootenai River, just north of the downtown area of the City of Libby, Montana. OU1 includes the embankments of Highway 37, the former Export Plant, and Riverside Park. The property is bounded by the Kootenai River on the north, Highway 37 on the east, the Burlington Northern Santa Fe (BNSF) railroad thoroughfare on the south, and State of Montana property on the west.

- **OU2**. OU2 is the subject of this RA Report and includes areas impacted by contamination released from the former Screening Plant. These areas include the former Screening Plant (Subarea 1), the Flyway property (Subarea 2), a privately-owned property (Subarea 3), and the Rainy Creek Road Frontages (Subarea 4). The Highway 37 right-of-way (ROW) adjacent to OU2 was included due to the proximity to OU2 and the known contamination in the ROW. For the purposes of this report, the contaminated portion of the Highway 37 ROW is considered part of Subareas 2 and 3 within OU2.

- **OU3**. The mine OU includes the former vermiculite mine and the geographic area (including ponds) surrounding the former vermiculite mine that has been impacted by releases from the mine, including Rainy Creek and the Kootenai River. Rainy Creek Road is also included in OU3. The geographic area of OU3 is based primarily upon the extent of contamination associated with releases from the former vermiculite mine.

- **OU4**. OU4 is defined as residential, commercial, industrial (not associated with former Grace operations), and public properties, including schools and parks, in and around the City of Libby, or those that have received material from the mine not associated with Grace operations. OU4 includes only those properties not included in other OUs.

- **OU5**. OU5 includes all properties that were part of the former Stimson Lumber Mill and that are now owned and managed by the Kootenai Business Park Industrial Authority.
- **OU6**. The rail yard owned and operated by BNSF is defined geographically by the BNSF property boundaries and extent of contamination associated with BNSF rail operations. Railroad transportation corridors are also included in this OU and have not been geographically defined.
- **OU7**. The Troy OU includes all residential, commercial, and public properties in and around the Town of Troy, approximately 20 miles west of downtown Libby.
- **OU8**. OU8 is comprised of the US and Montana State Highways and secondary highways that lie within the boundaries of OU4 and OU7.

1.2.2 Site Contamination

This section provides information about the contamination in OU2 that existed at the time of the ROD. All areas that were subject to previous investigation and removal actions but no longer pose a threat to human health and the environment will be monitored as part of the Selected Remedy. However, no further remediation was required at these removal action locations (EPA 2010). At the time of the ROD, only two small areas within OU2 still required remediation. These areas are an isolated portion of the Highway 37 ROW and the area surrounding sample location 1-03000 in Subarea 2.

OU2 was historically owned and used by Grace for stockpiling, staging, and distributing vermiculite and vermiculite concentrate to vermiculite processing areas and insulation distributors outside of Libby. The vermiculite deposit that was mined by Grace contains a distinct form of naturally-occurring amphibole asbestos that is comprised of a range of mineral types and morphologies. In various past reports, this form of amphibole asbestos has been termed interchangeably by the EPA as Libby amphibole asbestos or Libby asbestos (LA). The term LA refers generally to amphibole materials that originated in the Libby vermiculite deposit, have the ability to form durable, long, and thin structures that are generally respirable, can reasonably be expected to cause disease, and hence are considered the contaminant of concern (COC) at the site.

Because vermiculite mined from Libby has been found to be contaminated with LA, known to cause human health effects, the EPA initiated an emergency response action in November 1999 to address questions and concerns raised by citizens of Libby regarding possible ongoing exposures to asbestos fibers as a result of historical mining, processing, and exportation of asbestos-containing vermiculite.

Vermiculite and LA are present in subsurface soil. Exposure to the residual contamination had largely been mitigated by removal and disposal of surface soils at OU3 and the extensive cap placed across the OU during pre-ROD removal activities, with the exception of an isolated portion of the Highway 37 ROW and in the area surrounding sample location 1-03000. Both of these locations are within the Flyway (Subarea 2) and contamination in these areas was addressed during the remedial action that is the subject of this report. See Section 3 for details on the remedial action that occurred after the ROD. Contamination at depth is present in each of the subareas at the site as described below:

- **Former Screening Plant (Subarea 1)**. The majority of residual contamination is present at depths greater than or equal to (≥) 4 feet below ground surface (bgs) and in several isolated areas at depths less than 4 feet bgs beneath constructed covers within the former Screening Plant area north of Rainy Creek. In general, removal activities in this subarea were pre-established to 4 feet bgs and contamination was encountered at this depth.
- **The Flyway (Subarea 2)**. The majority of excavated areas in the Flyway met the EPA's removal clearance criteria of less than (<) 1 percent (%) LA at the floor of the excavation, at depths varying from less than 1 foot bgs to greater than 4 feet bgs. However, LA concentrations ≥1% have been detected in confirmation soil samples collected at the eastern boundary of the Flyway within the Highway 37 ROW at depths up to 2 feet bgs. Within the Highway 37 ROW is an isolated area with concentrations of LA of greater than (>) 1% at less than 1 foot bgs. LA was also observed in surface soils in one area (area surrounding sample 1-03000) not previously remediated at concentrations of <1%. The last two areas discussed had contamination remaining at less than 1 foot bgs prior to the ROD; they have since been remediated as part of this RA.
- **Private Property (Subarea 3)**. The majority of this subarea does not contain residual contamination; however, one confirmation soil sample collected along the northern portion of the property contained <1% LA at a depth of 1 foot bgs.
- **Rainy Creek Road Frontages (Subarea 4)**. Residual contamination is present along these frontages at a depth between 1 and 2 feet bgs beneath constructed covers. The majority of confirmation soil samples contained detectable concentrations of LA ranging from <1% to 3%.

The details regarding data that support the above conclusions are provided in the remedial investigation (RI) report (EPA 2009b) and are briefly discussed in Section 2.

1.3 Site Background

Numerous hard rock mines have operated in the Libby area since the 1880s, but the dominant impact to human health and the environment in Libby has been from vermiculite mining and processing. Prospectors first located vermiculite deposits in the early 1900s on Rainy Creek northeast of Libby. Edward Alley, a local rancher, was also a prospector and explored the old gold mining tunnels and digs in the area. Reportedly, while exploring tunnels in the area, he stuck his miner's candle into the wall to chip away some ore samples. When he retrieved his candle, he noticed that the vermiculite around the candle had expanded, or "popped," and turned golden in color.

In 1919, Alley bought the Rainy Creek claims and started the vermiculite mining operation called the "Zonolite Company." While others thought the material was useless, he experimented with it and discovered it had good insulating qualities. Over time, vermiculite became a product used in insulation, feed additives, fertilizer/soil amendments, construction materials, absorbents, and packing materials. Many people used vermiculite products for insulation in their houses in and around the Site and soil additives in their gardens. In 1963, W.R. Grace Company (Grace) bought the mine and associated processing facilities and operated them until 1990.

Operations at the mine included blast and drag-line mining and milling of the ore. Dry milling was done through 1973, and wet milling was done from 1973 until closure in 1990. After milling, concentrated ore was transported down Rainy Creek Road by truck to a screening facility (known today as the former Screening Plant) adjacent to Highway 37, at the confluence of Rainy Creek and the

Kootenai River. Here the ore was size-sorted and transported by rail or truck to processing facilities in Libby and nationwide. At the processing plants, the ore was expanded or "exfoliated" by rapid heating, then exported to market via truck or rail. Historic maps show the location of the "Zonolite Company" processing operation at the edge of the lumber mill, near present day Libby City Hall. This older processing plant was taken off line and demolished sometime in the early 1950s. The other processing plant (known today as the former Export Plant – OU1), was located near downtown Libby near the Kootenai River and Highway 37. Expansion operations at the site ceased sometime prior to 1981, although existing site buildings were still used to bag and export milled ore until 1990.

After operations ceased, Grace completed reclamation of the vermiculite mine. Reclamation included demolition of existing facilities and standard land re-contouring and re-vegetation. The former Screening Plant was sold and converted into a nursery and was used for that purpose until 2000. Over the course of Grace's operation in Libby, invoices indicate shipment of nearly 10 billion pounds of vermiculite from Libby to processing centers and other locations. Most of this was shipped and used within the United States. Nearly all of this material ended up in a variety of commercial products that were marketed and sold to millions of consumers. The following subsections describe the historic, current, and anticipated future use of each subarea of OU2.

1.3.1 Former Screening Plant (Subarea 1)

The former Screening Plant is located approximately 5 miles northeast of Libby on the east side of the Kootenai River (Figure 1-2). The area is approximately 21 acres in size, and is bordered by Highway 37 to the northeast, the privately owned property to the southeast, Flyway property to the south, and the Kootenai River to the west. Subareas 1 and 4 are currently owned by the same private party and are jointly referred to as the Parker Property. The MT Highway 37 ROW adjacent to Subarea 1 is referred to as Montana Land Property.

From 1975 to 1990, the Screening Plant was used by Grace to screen mined vermiculite by size and grade. The vermiculite was transported from the mine to the site by truck, sorted, and bulk stored in two sheds at the facility. The vermiculite was then loaded onto a conveyor system and transported across the Kootenai River to a conveyor unloading station. Once the vermiculite was transported across the river, it was either trucked to the local export plant (OU1) for processing and shipping or loaded onto rail cars for transportation and distribution to expansion plants outside of Libby.

From 1993 to 1999, the former Screening Plant was used as a fully-operational retail nursery (Raintree Nursery) business where plants, flowers, and trees were grown, stored, and sold. Related plant-care items were also stored and sold at the nursery. The owners of the property lived on the site in a one-story structure that served both as an office and a residence. The largest structure on the property was referred to as the long shed. Approximately one-third of the long shed was used to store nursery supplies, tools, and equipment for the nursery business; the remaining two-thirds were leased to outside parties for storing recreational vehicles, trailers, boats, automobiles, and other items. Five greenhouses were used for growing plants, flowers, and shrubs, and a number of smaller buildings and support structures were used in the nursery operation. Two reinforced concrete tunnels were used to grow mushrooms that were shipped to the Far East for use as medical treatments. A number of steel tanks, hoppers, silos, and other remnants of the former mining operations at the former Screening Plant were stored at the site.

Due to the LA contamination associated with vermiculite from the Libby mine, the former Screening Plant has undergone extensive investigation and removal actions since the US Environmental Protection Agency (EPA) began emergency response activities in Libby in 1999. Details of investigation and removal activities from 1999 through the signing of the ROD (May 2010) are provided in Section 2.1. The property is currently privately owned and is being used for residential purposes. It is anticipated that the property will continue to be used for residential and/or commercial purposes.

1.3.2 Flyway (Subarea 2)

Currently owned by Kootenai Development Corporation (KDC) (a subsidiary of Grace), the area commonly referred to as the Flyway is comprised of approximately 19 acres northeast of Libby, immediately south of the former Screening Plant and the privately-owned parcel (Figure 1-2). The MT Highway 37 ROW adjacent to Subarea 2 is referred to as Montana Land Property. The Flyway is bounded by Highway 37 to the northeast, a residential subdivision (*River Runs through It*) to the south, the Kootenai River to the southwest, and the former Screening Plant and private property to the north. The Flyway is accessed through a gated entrance to the adjacent private property off Highway 37. For the purpose of this report, the Flyway subarea includes the Highway 37 ROW, which is adjacent to the west side of Highway 37. The ROW is used and maintained by the Montana Department of Transportation (MDT).

The Flyway housed a pump that was used during vermiculite mining operations to convey water from the Kootenai River to the mine site. The pump house, located close to the Kootenai River, has since been abandoned and the pump is no longer functional. The interior insulation of this metal structure was removed and all parts of the building were washed. The empty structure was left on site for possible future use.

In 1999, when the EPA first visited the property, the Flyway was found to contain several vermiculite piles. One portion of the property had been covered with imported fill and it was suspected that vermiculite-containing material had been moved from the former Screening Plant and used as fill to level parts of the Flyway where drainages existed. Details of investigation and removal activities conducted at the Flyway are provided in Section 2.1. The Flyway is currently vacant, undeveloped land. Although the owners currently have no plans to develop this property, it is assumed that the land may eventually be utilized for residential and/or commercial purposes.

1.3.3 Private Property (Subarea 3)

The private property of Subarea 3, a small section of the Wise Property, consists of an approximate 1-acre parcel situated between the former Screening Plant and the Flyway, and bordered by Highway 37 to the northeast (Figure 1-2). The MT Highway 37 ROW adjacent to Subarea 3 is referred to as Montana Land Property. A continuation of the ROW in the Flyway subarea, this ROW is used and maintained by the MDT.

Under Grace's ownership, the property was likely used for vermiculite mining-related activities, such as the storage or staging of equipment and materials. In recent history, portions of the property were used for equipment decontamination during remediation work at the former Screening Plant and the Flyway (the property was vacant and not in use at the time of cleanup activities). The property underwent EPA investigation and remediation as discussed in Section 2.1. The private property is currently vacant, undeveloped land. At this time, the owners have no plans to develop this property.

1.3.4 Rainy Creek Road Frontages (Subarea 4)

The Rainy Creek Road Frontages are currently privately owned and lie immediately north and south of Rainy Creek Road on the east (i.e., mine) side of Highway 37 (Figure 1-2). Subareas 1 and 4 are currently owned by the same private party and are jointly referred to as the Parker Property. The MT Highway 37 ROW adjacent to Subarea 4 is referred to as Montana Land Property. Approximately 45,000 square feet (ft^2) of land comprises the north frontage; approximately 39,000 ft^2 comprises the south frontage. For a short period, numerous trees were stored at the south frontage for use during restoration at the former Screening Plant. Details of investigation and removal activities conducted at the Rainy Creek Road Frontages are provided in Section 2.1. The Rainy Creek Road Frontages are currently vacant, undeveloped land. It is anticipated that the property will remain as such.

1.4 Report Organization

In accordance with the EPA guidance for National Priorities List (NPL) site close-out procedures (EPA 2000), this report is organized into the following ten sections and two appendices. Minor rearrangement of the section contents recommended by the guidance was made to the report for clarity.

- **Section 1 - Introduction**: provides a description and history of the site.
- **Section 2 - Operable Unit 2 Background**: provides a summary of the pre-ROD investigation and removal actions, the ROD requirements and remediation goals for OU2, and a summary of the remedial design.
- **Section 3 - Construction Activities**: provides a summary of the RA construction activities conducted and a summary of soil sample results.
- **Section 4 - Chronology of Events**: provides a chronology of major events for OU2, starting with the signing of the ROD.
- **Section 5 - Performance Standards and Construction Quality Control**: provides a comparison of current site conditions to the Remedial Action Objectives (RAOs), a description of construction quality assurance and control, and brief overview of quality assurance/quality control (QA/QC) procedures employed.
- **Section 6 - Final Inspections and Certifications**: provides a summary of site inspections, adherence to health and safety requirements during the RA, and the approach for institutional controls (ICs).
- **Section 7 - Operation and Maintenance Activities**: provides a description of the monitoring and maintenance programs that will be in place to ensure that the selected remedy continues to provide protection of human health and the environment.
- **Section 8 - Summary of Project Costs**: provides a summary of project costs associated with the RA to present, including projected O&M costs, and a comparison of actual costs to the cost estimates in the ROD.
- **Section 9 - Observations and Lessons Learned**: provides a description of successes, problems encountered, and solutions related to the RA implementation.

- **Section 10 - Operable Unit 2 Contact Information**: provides a list of contact information for personnel involved in the OU2 RA and O&M, including EPA personnel, Montana Department of Environmental Quality (MDEQ) personnel, and RA contractor personnel.
- **Appendix A - Cost Summary**: provides a more detailed breakout of incurred costs reported in Section 8.
- **Appendix B - RA Construction Documents**: provides documentation of RA construction including Quality Assurance Reports (QARs), red-line (or post-construction) drawings, and confirmation soil sample field data sheets and results.

Section 2

Operable Unit 2 Background

Investigation and removal activities have been ongoing on the Site in general, and OU2 in specific, since the EPA began its emergency response in 1999. As a result, much of OU2 had already undergone significant remediation by the time the RI/FS was completed. It was determined that the actions consisting of excavation, offsite disposal and engineered cover were adequate to protect human health and the environment and that no further remediation would be required in the ROD at these removal action locations. The following sections summarize pre-ROD investigation and removal activities and outline the ROD requirements. For more details on pre-ROD events, refer to the OU2 RI Report (EPA 2009b). Figure 2-1 shows depths at which residual contamination may be encountered across all of OU2.

2.1 OU2 Historical Investigations and Response Activities

Multiple investigation, pre-removal, and removal events occurred from 1999 up to the signing of the ROD in 2010. The following is a summary of those events by Subarea. For detailed accounts of any of these events, refer to the OU2 RI report (EPA 2009b). Confirmation soil sample depths are measured from the bottom of the excavation (i.e., excavation floor is 0 inches bgs). All other soil sample depths are measured from existing ground surface at the time of sampling. As mentioned in Section 1.3, there are four different property owners in OU2. Figures 2-2, 2-3, 2-4, and 2-5 show the depth at which residual contamination may be encountered on the Parker Property, the W.R. Grace Property, the Wise Property, and the Montana Land Property, respectively.

2.1.1 Former Screening Plant (Subarea 1)

- **Investigation Soil Sampling – December 1999**. Site characterization began with sampling at two depths (surface soil at 0 to 2 inches bgs and subsurface soil at 2 to 12 inches bgs) along a grid. Widespread vermiculite-containing soil was observed. Most of the 85 samples contained LA (<1 to 4%).

- **Investigation Soil Sampling – March 2000**. Nineteen surface (0 to 2 inches bgs) and subsurface (2 to 12 inches bgs) samples were collected from stockpiled vermiculite and other areas not investigated in 1999. Most samples contained detectable LA ranging from <1 to 5%.

- **Investigation Dust Sampling – March 2000**. Five samples were collected from items stored in the long shed. LA ranged from 16,984 to 670,852 structures per square centimeter. Due to the high dust concentrations of LA, sampled items were disposed at the former vermiculite mine.

- **Investigation Soil Sampling – July 2000**. Thirty-six samples were collected as part of a site-wide soil sampling effort along the eastern portion of OU2 (mostly from the eastern boundary of the site or along the east bank of the Kootenai River) and 20 contained LA (<1 to 2%).

- **Investigation Personal Air Samples – July 2000**. Two samples were collected during a sweeping activity in and around the long shed to determine resulting LA concentrations (0.2678 to 4.9986 structures per cubic centimeter (s/cc)).

- **Investigation Soil Sampling – August 2000**. Sampling and test pit excavation determined the vertical extent of contamination (74 soil samples and 16 test pit locations up to 13 feet bgs). Thirty-three samples contained LA (<1 to 5%).
- **Removal Activities – August to October 2000**. Contaminated soil was removed from the northern portion following the removal, disposal, and/or relocation of all stored items and demolition of all buildings (except long shed). Soil was excavated to 4 feet bgs to mitigate exposure risk. The remaining contaminated soil was covered with geotextile and fill. Most confirmation samples contained LA (<1 to 8%), indicating that contamination remains at depth. Vermiculite-containing soil may be found at shallow depths below the as-built site elevations in 2006 near utility poles and guy wire anchors (typically at a 1:1 slope away from the pole or anchor). Excavated soil was stockpiled in and around the long shed until soil samples of the stockpiles showed no contaminants other than LA. As a result, access to the vermiculite mine for use as a disposal site was granted by Grace in 2001 and stockpiled soils were then hauled to the mine.
- **Investigation Soil Sampling – March 2001**. Investigation characterized areas not previously sampled. Four samples were collected from an undetermined area north of OU2 (6 to 30 inches bgs) and all contained <1% LA.
- **Investigation Soil Sampling –April and May 2001**. A total of 50 samples were collected from the banks of the Kootenai River and the lower reach of Rainy Creek (0 to 6 inches bgs) and 44 contained LA ranging from trace (defined as 0.2 to 0.8%) to 20%.
- **Removal Activities – August to November 2001**. Stockpiled soils were removed and disposed at the mine, the long shed was demolished, and the concrete slab was abandoned and covered. Additional excavation was conducted along the northern portion of the area adjacent to the river and covered with rip-rap and geotextile. Thirty-three of the 52 confirmation soil samples contained LA (<1 to 2%), indicating that contaminated soil remains at varying depths. Samples were also collected from soil slated for transport to the mine to ensure that no contaminants other than LA were present. Restoration included placement, compaction, and grading of fill to provide adequate drainage.
- **Removal Activities – August to October 2002**. The focus was on the bank of the lower reach of Rainy Creek and the decontamination pad area. All trees and vegetation were removed along with 18 inches of contaminated soil from the side of the creek. Of 12 confirmation samples (0 to 2 inches bgs), two contained LA (<1%). The pad was removed and 2 inches of soil were excavated from around the pad area and the area was confirmed as clean (after one small additional removal).
- **Site Restoration Activities – 2002**. Approximately 36 inches of agricultural fill was placed and compacted above the existing common and structural fill placed in 2000 and 2001. Six inches of topsoil was also added. Restoration of roadways was completed using structural fill. Topsoil was placed along the excavated banks of Rainy Creek, followed by re-vegetation for bank stability and erosion control.

- **Potable Water Well Installation – October 2002 and March and April 2003**. During removals, the original potable water well was damaged and was obstructed at a depth of 41 feet bgs. LA was detected at concentrations above the Federal Maximum Contaminant Level (MCL) of 7 million structures per liter. An attempt was made to drill a replacement well (PW-01) in March 2003. LA was detected in the aquifer materials and in water produced from the alluvial aquifer in which the original well was completed. Sampling results and drilling difficulties resulted in abandonment of the PW-01 borehole and a second borehole (PW-02). Well PW-01 was eventually completed in the bedrock aquifer to avoid LA; however, the EPA determined that this well was not suitable as a potable water source due to elevated fluoride concentrations.

- **Tree Storage Area Sampling – March 2003**. Samples were collected to determine if soil in the root balls of removed trees was contaminated. Samples were collected from the root balls, under the trees (6 to 12 inches bgs), and from burlap wrapped around the roots. No LA was detected.

- **Highway 37 Right-of-Way Removal Activities – September 2003 and August 2004**. Removal activities were performed in 2003 along the west ROW, 350 feet south to 270 feet north of the former Screening Plant entrance. Of the 10 confirmation soil samples (0 to 6 inches bgs), two samples (between about 70 and 270 feet north of the entrance) contained LA (<1%). In 2004, removal activities were performed along a west portion of the ROW adjacent to the north portion of the former Screening Plant. Of the seven confirmation soil samples (0 to 2 inches bgs), five contained LA (<1 to 3%).

- **Potable Water Well Installation – July 2005 and May 2006**. Because of elevated fluoride concentrations in PW-01, an additional well (New Well) was completed in the alluvial aquifer. Two of three soil samples collected during the well installation contained LA (1%). Note that the OU2 RI Report and ROD incorrectly reported these sample results as <1% LA. Eight water samples collected during well development and pumping tests indicated that development was successful in removing asbestos from the formation adjacent to the well. Results from soil cuttings were non-detect (ND) for LA.

2.1.2 Flyway (Subarea 2)

- **Investigation Sampling – March 2000**. Soil samples were collected (various depths from 0 to 32 inches bgs) from the main dirt road, known piles of vermiculite, imported fill material piles, and beneath several imported fill material piles. Of the 45 samples collected, 30 contained LA (<1 to 8%).

- **Investigation Sampling – September 2000**. As part of the archeological investigation, test pits were excavated in the northern portion of the Flyway, and soil samples were taken to document possible exposure to the archaeological crew. Only two of the 17 samples (various depths from 10 to 64 inches bgs) contained LA (<1%).

- **Investigation Sampling – March 2001**. Exploratory trenching determined the vertical extent of contamination in soil not previously investigated. Of six soil samples collected from the six trenches in the southern portion of the Flyway (16 to 33 inches bgs), four contained LA (<1 to 2%).

- **Investigation Sampling – May and July 2001**. Of the 43 soil samples collected from the Kootenai River banks in the Flyway (4 to 6 inches bgs), 25 contained LA (<1 to 2%). Of the nine soil samples collected along the southern portion of the eastern Flyway boundary (0 to 4 inches bgs), six contained LA (<1%).

- **Removal Activity – September 2001**. Grace's contractor conducted removal under EPA oversight. Soil was excavated from a grid (18 inches bgs). If visible vermiculite or analytical results ≥1% LA were present at the floor of the excavation, an additional 6 inches were excavated to a maximum depth of 4 feet bgs. Of 23 confirmation soil samples (0 to 2 inches bgs), two samples contained LA (<1%). Following excavation and soil clearance, the area was restored by backfilling to grade, compacting, and adding 6 inches of topsoil and hydroseeding, as required.

- **Removal Planning – 2002**. The original work plan called for removal of soil with LA ≥1%. However, the EPA determined that until the risk assessment was completed, surface soils having visible vermiculite should be removed to prevent a second mobilization for characterization and removal. Cleanup criteria for subsurface soils remained at 1% LA. All existing sampling data was reevaluated and several grids needed additional characterization to make removal decisions.

- **Investigation Sampling – July 2003**. Additional soil samples were collected along the eastern boundary of the Flyway and the Highway 37 ROW from areas not previously investigated. None of the 14 samples collected (0 to 6 inches bgs) contained detectable LA.

- **Removal Activity – July to November 2004**. Contaminated soil was excavated from the northern portion of the Flyway and the Kootenai riverbank along the southern portion of the Flyway. Iterative removals in lifts were conducted, with a maximum depth of 4 feet bgs. Grids in the river bank slope were excavated to water. Confirmation soil samples were collected from excavation bottoms (0 to 2 inches bgs), and removal was continued until results were acceptable. The excavation was backfilled to grade and hydroseeded.

- **Pre-Removal Investigation Sampling – June 2005**. Because of highway structural integrity and slope stability issues along a portion of a steep bank at the private property and along the Flyway ROW, samples were collected to determine if the quantity of soil to be removed could be reduced to protect the roadway. Of 12 soil samples collected (0 to 1 inch bgs), eight contained LA (<1%).

- **Removal Activity – June 2005**. Contaminated soils in the ROW were excavated to 12 inches bgs. A stockpile of contaminated soil was removed. Two confirmation samples had elevated results that could not be addressed through further excavation. Sample 1R-30927 (2% LA) was on a steep embankment of the ROW. Due to the slope, the area could not be excavated to a depth greater than 4 inches bgs. Sample 1R-30960 (3% LA) was in the footprint of the stockpile that had been removed and was very near the highway. This area was not excavated further than 12 inches bgs due to concerns about impacting the highway's integrity. All excavated areas were restored by backfilling to grade and hydroseeding as required.

2.1.3 Private Property (Subarea 3)

- **Investigation Sampling – April 2000**. Twelve soil samples were collected from suspected vermiculite piles and from native-looking soil (0 to 2 inches, 0 to 6 inches, or 0 to 12 inches bgs). The eight samples from the stockpiles contained 2 to 5% LA and the remaining samples contained <1% LA.

- **Removal Activity – June 2005**. The EPA determined that soil in this subarea required removal to a depth of 12 inches throughout. Confirmation soil samples were collected from the excavation bottom to depths between 2 and 14 inches bgs. Of 17 confirmation soil samples, one sample contained LA (<1%). Following excavation and confirmation soil sampling, the area was restored in accordance with the work plan by backfilling to grade using materials from a local EPA-approved fill source and hydroseeding as required.

2.1.4 Rainy Creek Road Frontages (Subarea 4)

- **Investigation Soil Sampling – May 2003**. Sixteen soil samples (0 to 6 inches bgs) were collected from the Rainy Creek Road Frontages – 10 were outside of the defined boundary of the north and south frontage. Fourteen samples contained LA (trace to <1%).

- **Investigation – November 2003**. A confirmation soil sample was collected from the ditch on the north side of the mine road to provide evidence that decontamination run-off water was not re-contaminating the frontages. The sample contained LA at <1%).

- **Removal Activity – August to October 2004**. Removal activities consisted of approximately a 2-foot excavation on residential property. The excavation was backfilled using 18 inches of common fill and 6 inches of topsoil. Twenty-eight confirmation soil samples (0 to 2 inches bgs) were collected after excavation of contaminated soil from the north and south frontages. Twenty-five of the samples contained LA (<1 to 3%). All disturbed areas were hydroseeded.

- **Quick Response – August 2006**. While excavating to repair a damaged water line at the north frontage, a contractor observed vermiculite. The contaminated soil (40 cubic yards) was excavated, and the damaged water line was repaired. A sample was collected of stockpiled material, and it contained 1% LA. The repaired water line was surrounded with sand, and the disturbed area was filled using common fill and topsoil.

2.2 ROD Requirements

This section describes the Remedial Action Objectives and Selected Remedy for the OU2 site.

2.2.1 Remedial Action Objectives

RAOs are goals developed by the EPA to protect human health and the environment at the Site. These are the overarching goals that the cleanup activities selected for OU2 strived to meet. The EPA considered current and future use of the site when RAOs were determined for OU2.

The current and anticipated future land uses for the site were an important consideration for the development of RAOs to ensure remedial alternatives are protective of human health and the environment. Of the four subareas identified at OU2, only the former Screening Plant (Subarea 1) is currently used, all other subareas are undeveloped land with no current plans for future development. Subarea 1 is privately owned and used for residential purposes and it is assumed that this use will continue. The remaining subareas are vacant and undeveloped, and future land use is assumed to be

residential and/or commercial. All subareas include Highway 37 embankments maintained by the MDT. Steep terrain on many areas of the site and restrictions placed by MDT are likely to limit recreational and commercial use of the ROWs.

RAOs are media- and source-specific goals to be achieved through completion of a remedy that are protective of human health and the environment. These objectives are typically expressed in terms of the contaminant, the concentration of the contaminant, and the exposure route and receptor. RAOs are typically developed by evaluating several sources of information, including results of the risk assessments and identified applicable or relevant and appropriate requirements (ARARs). These inputs provide the basis for determination of whether protection of human health and the environment is achieved for the selected remedy.

Based on determinations of human health risks, LA in vermiculite and/or soil was likely to pose a current exposure risk to human receptors through inhalation of fibers released during active soil disturbance activities and inhalation of fibers in outdoor (ambient) air. It was expected that any risk from potential future disturbances that would expose subsurface, LA-containing soil might be substantially higher than under the current conditions prior to the RA. Site conditions are such that surface soils have either been capped or else removed and backfilled with clean soil as per the established removal clearance criteria for the remedial action.

The RAOs for the site presented below were based on anticipated future residential and/or commercial use of the site:

1. Mitigate the potential for inhalation exposures to asbestos fibers that would result in risks that exceed the target cancer risk range specified by the EPA of 1E-06 to 1E-04.

2. Control erosion of contaminated soil by wind and water from source locations to prevent exposures and the spread of contamination to unimpacted locations.

3. Implement controls to prevent uses of the site that could pose unacceptable risks to human health or the environment or compromise the remedy.

At a typical site, remedial action is required when contamination poses cancer risks that exceed 1 in 10,000 (or 1E-04). The RAOs for OU2 addressed LA contamination that poses cancer risks in the ranges between 1 in 10,000 and 1 in 1,000,000 (1E-06). Remedial goals (RGs) are typically used to guide such remedial action. RGs are defined as the average concentration of a chemical or a contaminant in an exposure unit associated with a target risk level such that concentrations at or below the RG do not pose an unacceptable risk. However, RGs were not developed for OU2, or the remainder of the Site.

RGs would normally be developed by computing the concentration of asbestos in soil that corresponds to an excess cancer risk of 1E-04. However, such a computation is not possible at present because of the high variability in the relationship between asbestos in soil and asbestos in air. Even if the computations were possible, the ability to measure asbestos in surface and subsurface soil is presently limited by the available technologies and methods. Additionally, noncancer risks from inhalation of asbestos fibers have also been recognized, but there is no current methodology to quantify noncancer risks for asbestos.

For these reasons, RGs for asbestos were not established for site soils. If the RAOs for asbestos contamination are achieved through implementation of the Selected Remedy, then risks to humans from inhalation exposures to asbestos are expected to be acceptable.

2.2.2 Selected Remedy

As presented in the ROD for OU2 (EPA 2010), the Selected Remedy for remediation of asbestos contaminated soil is Alternative 3b. This removal and containment remedy will achieve all RAOs by eliminating current exposure pathways and monitoring to ensure that the remedy continues to protect human health and the environment. A summary of the Selected Remedy, as detailed in the ROD, is as follows:

- Excavate contaminated soil in the area of sample 1-03000 and dispose offsite at the vermiculite mine.
- Use in-place containment along the Highway 37 ROW, unless determined that excavation is possible and not cost-prohibitive.
- Place protective cover over excavated areas.
- Employ ICs to minimize risks posed to human receptors from remaining LA in subsurface soil by limiting uses that will damage the remedy.
- If needed, install engineered controls to warn the public and limit access to the site.
- Maintain the integrity of the selected remedy and monitor the remedy to ensure that the controls are effective.

Points of clarifications presented in Section 14 of the ROD are regarded as subcriteria for determining whether the remedy put in-place at OU2 meets the criteria for determination of "O&F." The following is a summary of the points of clarification and the manner in which the EPA will address or waive them:

- **Risk Assessment**. As presented in the ROD Section 14, the EPA will conduct a quantitative, OU2 post-construction risk assessment, to include ABS, at OU2 following the completion of construction (once toxicity values are available) to confirm effectiveness of the remedy (EPA 2010b). It is anticipated that risk assessment sampling activities will be conducted in summer 2012.
- **New Information**. Once the OU2 post-construction risk assessment is complete, the agencies will re-evaluate the remedy and the EPA will take action, as necessary, to ensure that the soil-to-air pathway is broken. Actions may include additional excavation, improving covers, and/or strengthening institutional controls (ICs) (EPA 2010b). The post-construction risk assessment report will be completed once results from the sampling activities become available.
- **Removal of Contamination at Depth in Excavations**. Section 14 of the ROD describes the potential use of a visible barrier marking the extent of excavation if contamination and excavation continues below the prescribed 3 feet bgs (EPA 2010b). The EPA determined that this layer was not required. See Section 3.3 for more detail.

- **Engineered Controls**. The selected remedy as described in the ROD includes a potential need for fencing and or warning signs, to prevent access to the seasonally flooded portion of the Flyway Subarea 2, which had not been previously investigated (EPA 2010b). Additional investigation activities were conducted in Subarea 2 at the direction of the EPA and, as a result, no engineered controls were required. See Section 3.6 for more details.
- **ROW Excavation**. As presented in ROD Section 14, "The possibility of excavating rather than covering the contamination on the Highway 37 ROW will be evaluated during the remedial design process to determine if highway stability impacts will make excavation impossible or cost-prohibitive" (EPA 2010b). The Highway 37 ROW was excavated after MDT determined that shallow excavation would not compromise the structural integrity of the highway. See Section 3.2.1 for details.

The implementation of the Selected Remedy is detailed in Sections 3 and 6.3 of this report. An evaluation of the performance of the Selected Remedy in terms of satisfying the RAOs is presented in Section 5.1.

2.3 Remedial Design

A remedial action work plan was not prepared for this remedial action. All construction activities at the Site are conducted in accordance with the Response Action Work Plan (RAWP) (USACE 2010a). OU2 remediation plans were prepared to supplement the RAWP and address OU2 site-specific remediation. The remediation plans for the MT Highway 37 ROW and the KDC Flyway are provided as Figures 3-1 and 3-2 in this report. During construction, some modifications were made to these remediation plans as documented in Section 3 and the red-line drawings provided in Appendix B.

Section 3

Construction Activities

All RA construction activities were conducted in accordance with the Response Action Work Plan (RAWP) (USACE 2010). The following is a brief description of all RA construction activities from mobilization through demobilization. RA construction-related documents are provided in Appendix B.

3.1 Mobilization and Site Preparation

The mobilization and site preparation for this remedial action commenced on September 27, 2010 and followed the same progression as previous removal activities at the Site. The necessary equipment including, but not limited to, a decontamination trailer, excavator, and potable and non-potable water tanks were mobilized to the site. The removal contractor (RC) delineated the removal areas with orange fencing or yellow caution tape. Due to the large scale of the removal drawings, the corners of excavation areas were verified by Third Party Quality Assurance (TQA) personnel using a global positioning system (GPS) unit. U-Dig, the utility locate service, was contacted and had marked utilities within the work zone prior to excavation. Any hazards existing within the work zone were isolated or removed. RC and TQA personnel walked through the site during this set-up to ensure that each contractor had current copies of remediation designs (Figures 3-1 and 3-2) and that nothing was missed during site preparation. Following this inspection, asbestos tape was added to the orange construction fencing to establish the removal area as an exclusion zone. Construction management (CM) personnel from Project Resources, Inc. (PRI) collected pre-excavation photos to document current site conditions when the RC took control of the site.

3.2 Removal Activities

One of the main construction components of the remedial action is the excavation and offsite disposal of contaminated soil. These construction activities are described in the following subsections.

3.2.1 Excavation of Contaminated Soil

Following mobilization and site preparation, excavation began in the area surrounding sample 1-03000. This area, labeled Area F on Figure 3-2, was excavated to the design depth of 12 inches bgs. Excavation began on September 27 and was completed on September 29, 2010.

During excavation activities in Area F, representatives from USACE, MDT, PRI, and CDM Smith met on site to discuss the potential excavation on the west slope of the Highway 37 ROW. MDT had specific concerns about the timetable for excavation and restoration and the slope stability, compaction and erosion control. The construction management firm, PRI, agreed to restore the ROW with a less severe slope by adding additional clean fill (termed overfill) and install erosion control matting. As a result of this meeting, MDT gave permission for excavation to begin in the ROW. The excavation depth was limited to 6 inches bgs in the ROW due to concerns about the structural integrity of the highway. Excavation in the ROW, labeled Areas A through E in Figure 3-1, began on September 29 and ended September 30, 2010.

3.2.2 Offsite Disposal of Contaminated Soil

As specified in the Selected Remedy, the contaminated soils were excavated and hauled to the former vermiculite mine for offsite disposal. All haul trucks and trailers working on the Libby project must have water-tight beds. These sealed beds allow saturated soil to be placed in the bed of the dump truck without leaking contamination. In addition, all trucks and trailers must have tarps secured over the top of the bed to ensure that no dust can escape. To prevent contamination of the interior of the truck, a negative air system keeps the cab of the truck pressurized while in excavation areas and traveling on the mine road. These trucks and trailers deliver material to an area along the mine road called the amphitheater and then go through a thorough decontamination before leaving the mine. Soil is taken from the amphitheater by mine-designated vehicles to areas farther up the mine road for disposal.

3.2.3 Confirmation Soil Sampling

Confirmation soil samples were collected from the bottom of each excavation area. These samples were collected, handled and analyzed in accordance with Revision 5 of the Response Action Sampling and Analysis Plan (EPA 2009a). The sample depths for confirmation soil samples are now measured from the ground surface as opposed to the floor of the excavation as had been the case in previous removal actions in OU2.

Four confirmation soil samples were collected from the bottom of excavation Area F. All of these samples (12 to 14 inches bgs) were ND for LA.

One confirmation soil sample (6 to 8 inches bgs) was collected from each of the areas in the ROW for a total of five soil samples. Samples from Areas D and E contained <1% LA: meaning that residual contamination will remain in these areas. All other ROW areas were ND for LA. Sample data sheets and results are provided in Appendix B.

3.3 Placement of Cover

All backfill materials are sourced from borrow pits outside of the Libby valley and are tested prior to placement. As detailed in the RAWP (USACE 2010a), backfill materials are tested to ensure that they are both within specifications for the respective fill type and that they are not contaminated with LA.

A visible marker layer was not placed at the bottom of the excavation prior to backfill. The marker layer was not necessary in Area F because all confirmation soil samples were ND for LA and no visible vermiculite was observed at the bottom of the excavation. The EPA determined that the marker layer was not necessary in Areas A through E because confirmation soil samples contained low concentrations of LA and minor amounts of visible vermiculite.

Area F was backfilled with 9 inches of common fill, placed and compacted in 3- to 6-inch lifts, followed by an additional 3 inches of topsoil. Restoration of Area F began on September 29 and was completed on October 4, 2010. It should be noted that the dates on the Property Closeout Checklists (PCCs) reflect both the ROW and Flyway excavation and restoration. The more specific dates provided in this section are taken from QARs.

With excavation depth limited to 6 inches bgs, an over-build was constructed along the ROW to provide adequate cover and decrease the severity of the slope. Areas A through E were backfilled with 18 to 22 inches of common fill, placed and compacted in 6-inch lifts, followed by 2 to 3 inches of topsoil. This over-build means that contamination remains at a depth of 20 to 25 inches bgs in Areas D and E (confirmation sample results <1% LA). Restoration of Areas A through E began on October 4 and was completed on October 11, 2010.

3.4 Erosion Prevention Measures

As discussed during the onsite meeting on September 28, 2010, the ROW was restored at a less severe slope. This was accomplished by over filling the 6-inch excavation with 20 to 25 inches of common fill and topsoil. According to the TQA, the angle of the steepest slope before excavation was 37 to 39 degrees and after restoration it was 25 to 27 degrees. A field mark-up provided in Appendix B shows the before and after slope for each of the areas in the ROW. In addition to lessening the severity of the slope, the cover material was seeded and then topped with erosion control matting.

All excavated areas were also hydroseeded by a landscape contractor on November 3, 2010 (CDM 2010c). All of these erosion prevention measures will help to ensure that the Selected Remedy remains protective of human health and the environment.

3.5 Demobilization

Equipment used during construction activities is decontaminated (if necessary) and demobilized from the site as soon as that particular piece of equipment is no longer needed. As a result, demobilization from OU2 occurred throughout construction activities. The final demobilization date was October 11, 2010, as documented in the QAR for that date provided in Appendix B.

3.6 Installation of Engineered Controls

The Selected Remedy discusses evaluating engineered controls, such as fencing and warning signs, during remedial design to prevent access to potentially contaminated areas such as the seasonally flooded portion of the Flyway (Subarea 2) which had not been previously investigated. The EPA decided to conduct an investigation in July 2010 to determine whether contamination was present in this area. A Technical Memorandum to EPA RPM Rebecca Thomas dated July 23, 2010 (CDM 2010b) provides a detailed description of investigation activities that were to be conducted in the seasonally flooded portion of the Flyway as well as some embankment areas above the seasonal high water mark that may have been previously investigated using historic protocols. A summary of the findings of this investigation is provided in this subsection.

Prior to the start of the investigation, the EPA determined that some of the area of interest was so heavily vegetated that it could be considered a non-use area and would not be inspected as part of this investigation.

The area of interest consists of Areas 1, 2, and 3, as shown on Figure 3-3. First, each of these areas was visually inspected. Within Area 1, one of the 145 inspection points contained a low amount of vermiculite. Within Area 2, two of the 87 inspection points contained a low amount of vermiculite. And, in Area 3, four of the 583 inspection points contained a low amount of vermiculite. Semi-quantitative visual vermiculite estimation was conducted in accordance with CDM-LIBBY-06, Revision 1 (CDM 2007c).

Due to the low amount and sparseness of vermiculite observed in Areas 1 through 3, soil samples were collected from the entire area of interest. In accordance with the General Property Investigation Sampling and Analysis Plan (GPI SAP) (CDM 2010a), Area 1 was divided into subsections of less than 15,000 ft^2 and Areas 2 and 3 were divided into subsections of less than 3,000 ft^2. The current use of an area determines how large the sample areas may be. Area 1 is considered a limited-use area (LUA), while Areas 2 and 3 are considered common-use areas (CUAs). Differences in use areas are discussed in CDM-LIBBY-05, Revision 2 (CDM 2007b).

All samples for this investigation were surface soil samples collected from 0 to 3 inches bgs. A total of 28 soil samples and two duplicate soil samples were collected on July 29 and 30, 2010. All five of the samples collected in Area 1 were ND for LA, however, one additional inspection point with low concentrations of vermiculite was observed during sampling. All three of the samples collected in Area 2 were ND for LA. One of the 20 samples collected in Area 3 contained a trace (TR) concentration of LA; the remaining 19 samples were ND for LA. Sample and visual inspection results are provided in Table 3-1. The location of these results is shown on Figure 3-3.

The EPA determined that the low amounts of vermiculite observed and the one subarea with a detectable concentration of LA (TR) do not pose unacceptable risk to human health and as such no engineered controls are required in the Flyway subarea. This determination will be re-evaluated upon completion of the OU2 post-construction risk assessment, which is anticipated to begin in the summer of 2012.

Section 4

Chronology of Events

This section presents a tabular summary that lists the major events for the Site OU2 RA project and associated dates of these events beginning with the ROD signature. See Section 2.1 for a summary of all investigation and removal activities that occurred prior to the ROD.

Date	Event
May 10, 2010	ROD for OU2 Signed
July 28-30, 2010	Flyway Investigation
September, 2010	Remedial Design
September 27, 2010	Mobilization, Site Preparation and Start of Excavation
September 30, 2010	Remedial Excavation Complete
October 11, 2010	Remedial Restoration Complete
October 11, 2010	Final Restoration Inspection/Final Demobilization
November 3, 2010	Joint Site Inspection/Start of O&F Period
November 10-11, 2010	Soil Sampling to Address Action Items Identified During Joint Site Inspection
November 30, 2010	Operable Unit 2 Joint Site Inspection Memorandum
February 4, 2011	Draft Operations & Maintenance Plan
TBD (estimated Summer 2012)	OU2 Post-Construction Risk Assessment Sampling
TBD	Institutional Control Implementation and Assurance Plan (ICIAP)
TBD	OU2 Post-Construction Risk Assessment Report
TBD	Operational and Functional Determination/Start of Operations and Maintenance Phase
TBD	First Annual O&M Site Inspection
TBD	First Annual O&M Report
TBD	First 5-Year Review

Section 5

Performance Standards and Construction Quality Control

This section describes the overall performance of the removal and containment remedy in terms of comparison to the OU2 site remedial action objectives. In addition, this section discusses the remedy performance monitoring strategy and QA/QC procedures followed.

5.1 Comparison to Cleanup Goals

The cleanup goals (RAOs) for the OU2 site are presented in Section 2.2.1. This section presents a brief summary of the current conditions as compared to the cleanup goals. Upon completion of the OU2 post-construction risk assessment, the EPA will verify that all RAOs are still met.

As detailed in Section 2.1, much of the OU2 site had undergone significant remediation before the issuance of the ROD. The majority of the site has contamination remaining at depths of greater than 4 feet beneath constructed covers. The two areas that were addressed by this RA were the only areas still requiring remediation per the ROD. As a result of the RA, those areas now contain residual contamination at depths of 12 and 20 to 25 inches beneath constructed covers. Figure 2-1 shows the concentrations and depths of LA remaining across all of OU2. In the areas with residual contamination, the cover in place is sufficient to break the exposure pathway. This accomplishes the remedial objective of mitigating the potential for inhalation exposure to asbestos fibers that would result in risks that exceed the target cancer risk range of 1E-06 to 1E-04.

Restoration activities after each removal at the OU2 site have included at least placement of cover and seeding or re-vegetation, and in some cases, placement of rip-rap and/or erosion control matting. These measures address the second RAO to control erosion of contaminated soil by wind and water from source locations to prevent the spread of contamination to unimpacted locations.

The final RAO to implement controls to prevent uses of the site that could pose unacceptable risks to human health or the environment or compromise the remedy will be addressed by the implementation of ICs for OU2. An Institutional Control Implementation and Assurance Plan (ICIAP) will be developed to address implementation and periodic review of the specific IC instruments for OU2. This is discussed further in Section 6.3.

5.2 Remedy Performance Monitoring Strategy

The ROD included monitoring as a component of the Selected Remedy to ensure long-term effectiveness and permanence. The remedy performance monitoring strategy includes inspections and reviews (EPA 2011). During the site inspections, current site conditions — including drainage, signs of erosion and integrity of the cover — will be observed and documented. Monitoring of the ICs will include evaluations of the effectiveness of the ICs implemented by the ICIAP. Section 7 provides a brief description of OU2 O&M measures in place to ensure that the Selected Remedy remains protective of human health and the environment.

Five-year site reviews will be conducted by the EPA (as required by the NCP) to ensure that the remedy as implemented and maintained continues to be protective of human health and the environment.

5.3 Construction QA/QC

During RA construction, TQA personnel were tasked with documenting whether all construction activities were performed in accordance with the RAWP (USACE 2010a). No significant deviations from the guidance document were reported. Upon completion of construction activities, the Restoration Final Inspection was conducted. The TQA and RC walked through the site on October 11, 2010 to determine if all of the scope had been completed in a satisfactory manner. This inspection, which did not identify any deficiencies, was noted in the QAR provided in Appendix B.

A Joint Site Inspection (JSI) by the EPA, MDEQ, and CDM Smith representatives also occurred on November 23, 2010. A few action items were identified during this inspection. A detailed account of these QA/QC assessments is presented in Section 6.1.

5.4 QA/QC Procedures

QA/QC measures for this remedial action included, but were not limited to, appropriate training of sampling personnel, the collection of QC samples (such as duplicate soil samples and field blanks), implementation of a laboratory QA program (implemented for the entire Site), review of this report by an approved CDM Smith QA staff member, and audits to evaluate adherence to guidance documents. All remedial action activities were conducted in accordance with the Draft Quality Assurance Project Plan (QAPP) (CDM 2007a). For a detailed discussion of all QA/QC procedures, refer to the QAPP.

Section 6

Final Inspections and Certifications

6.1 Remedial Action Contract Inspections

This section provides a description of all contract inspections, including field audits, the Restoration Final Inspection and the Joint Site Inspection.

6.1.1 Field Audits

Daily field audits, or Follow-on Inspections, were performed by the TQA. The RAWP (USACE 2010a) requires that these inspections be conducted at least once per day at each work site for each phase of work. Work practices, compliance with plans and specifications, compliance with safety, and efficiency are all reviewed and recorded on the daily QAR. Any deficiencies noted are immediately communicated to the task foreman for resolution.

All RA construction activities were conducted in accordance with all ARARs and project-specific guidance documents. No major deficiencies were identified during the daily audits. All QARs for the remedial action are provided in Appendix B.

6.1.2 Restoration Final Inspection

The Restoration Final Inspection was conducted on October 11, 2010 following the completion of restoration activities (with the exception of hydroseeding which was performed by a separate contractor). This inspection provided an opportunity for the RC and TQA to meet on site and identify any non-conformance with the work plan. In this case, no deficiencies were identified by the RC or TQA. This RA was completed in accordance with the RAWP and the Remediation Design (Figures 3-1 and 3-2).

6.1.3 Joint Site Inspection

Representatives from the EPA, MDEQ, and CDM Smith met at the site on November 3, 2010 to conduct a Joint Site Inspection. The results of this inspection were reported in the Operable Unit 2 Joint Site Inspection Memorandum (CDM 2010c). This type of inspection is typically conducted at the conclusion of construction at a given site and is required before an operational and functional determination can be made. Due to the presence of minor amounts of vermiculite and/or LA at the surface in Subareas 1 and 2 and the current lack of toxicity data for LA, an operational and functional determination was not made and, as agreed by JSI attendees, will be deferred until the OU2 post-construction risk assessment is completed.

During the Joint Site Inspection, attendees observed current site conditions, reviewed previous remediation/restoration activities, and reviewed site figures indicating residual LA contamination that remains below existing grade. Attendees agreed that construction activities were completed in accordance with the Selected Remedy outlined in the OU2 ROD. However, several items required further attention. CDM Smith was tasked with addressing the following action items:

- The Final RI Report (EPA 2009b) indicates that residual contamination may be found at shallow depths, specifically within the vicinity of utility poles, guy wires, the edges of roadways, property boundary markers, state highway boundary markers, and National Forest property bounds. The EPA directed CDM Smith to produce a new figure for this report based on RI Figure 2-3 that shows areas where LA contamination may be found at shallow depths.
- Figure 2-3 of the Final RI Report (EPA 2009b) indicates that residual LA contamination may be found at depths greater than 4 feet bgs over a large portion of the former Screening Plant (Subarea 1). Some of this area was excavated and restored with clean fill to a depth greater than 5 feet. Note that in the memorandum the clean fill depth was incorrectly reported as 4 feet. The EPA directed CDM Smith to produce a new figure based on RI Figure 2-3 that identifies areas where residual LA contamination may be found at depths greater than 5 feet below existing grade.
- Figure 2-3 of the Final RI Report (EPA 2009b) identifies four areas within the former Screening Plant (Subarea 1) where residual contamination may be found at less than 1 foot bgs. To confirm that a minimum of 12 inches of clean fill exists over any potential residual LA contamination, the EPA and MDEQ agreed that each of these areas should be sampled as soon as possible.

While shallow contamination may remain around all utilities, markers and roadway edges, the utility poles carrying high-tension power lines were specifically identified as an area of concern on the 2006 Site Record for Subarea 1. Figure 2-1 of this report is based on RI Figure 2-3 and shows the location of these utility poles in Subarea 1. A note has also been included on this figure indicating that shallow contamination may remain around all utility poles and guy wire anchors (typically at a one-to-one slope away from poles and anchors).

CDM Smith made extensive efforts to produce a figure similar to RI Figure 2-3 that would show contamination remaining at a depth greater than 5 feet bgs. Although changes in the topography of the OU2 site and documentation of fill depths indicate that some portions of the OU2 site are covered with more than 5 feet of clean fill, the boundaries of these areas are ill defined. At the EPA's direction, Figure 2-1 of this report does not attempt to identify areas with greater than 5 feet of clean fill.

To address the third action item, CDM Smith conducted a soil sampling event at the former Screening Plant on November 10 and 11, 2010. Two 30-point composite soil samples were collected from each of the four areas of interest. Using a soil probe sampler, a core of soil was taken from 0 to 12 inches bgs. This core was cut in half and the 0 to 6 inch bgs portion was put in a separate sample bowl than the 6 to 12 inch bgs portion. This procedure was repeated at 30 discrete locations within each sample area to give one 30-point composite of surface soil (0 to 6 inch bgs) and one 30-point composite of co-located subsurface soil (6 to 12 inches bgs).

A total of four surface and four subsurface soil samples were collected. One surface and one subsurface soil sample contained trace concentrations of LA. All other samples were ND for LA. See Figure 6-1 for sample locations and results. No further remedial action is required in these areas because soil sample results are below the current EPA removal criteria. These areas will be evaluated as part of the post-construction OU2 risk assessment.

6.2 Health and Safety

All activities conducted at the Site are subject to conformance with the Comprehensive Site Health and Safety Plan (CHASP) (CDM 2009). Included below is a brief description of significant health and safety measures implemented during the RA. For details, reference the CHASP.

During construction, water-based dust suppression was used to prevent asbestos fibers from becoming airborne. This alleviates cross-contamination concerns by preventing offsite migration of fibers. Also, dust suppression provides additional respiratory protection for laborers working within the contaminated areas. To prevent migration of fibers during transport, containerized truck beds and trailers are used.

During the RA, all personnel on site used proper PPE, as documented in the QARs. A minimum of modified level D was worn on the site at all times, including safety shoes, safety glasses, and hardhats. Personnel entering the exclusion zone wore modified level C, including safety shoes, safety glasses, disposable coveralls, hardhats, and half or full face respirators (depending on intrusiveness of activity). Personnel exiting the exclusion zone went through a thorough decontamination process in the shower trailer located in the contamination reduction zone.

Perimeter air samples were collected from the downwind side of excavation areas during all removal activities to monitor for offsite migration of LA. All of these air samples were ND for LA. The CHASP also requires bi-annual personal air monitoring for operators and laborers performing removal activities; however, this is a site-wide requirement that was satisfied at other locations on the Site.

6.3 Institutional Controls

ICs are non-engineering measures designed to prevent or limit exposure to hazardous substances left in place at a site, or assure effectiveness of the chosen remedy. ICs currently in-place at OU2 include:

1) One Call Locate Center – Any excavation requires a call to UDig to identify the potential for buried facilities. For an excavation within the Superfund Site boundary, a call to UDig also prompts the Environmental Resource Specialist (ERS) program to identify the potential for residual asbestos contamination on the property.
2) Permit - Any excavation within the MDT right of way requires a permit from MDT. That permit includes information about the potential to encounter asbestos contaminated soil.

The EPA is also evaluating further proprietary/legal controls for each portion of the OU. All final ICs for OU2 will be compiled in an ICIAP.

Once established, the ICs will be evaluated and updated on an annual basis by MDEQ. The evaluation will assess whether the selected IC instruments remain in place and whether the ICs are enforced such that they meet the stated objectives and performance goals and provide protection required by the response. Five-year site reviews performed by the EPA will also periodically evaluate the effectiveness of the ICs as they are implemented and maintained.

The following are potential IC categories. For more information on these potential ICs, refer to the Draft O&M Plan (EPA 2011). The ICIAP will definitively identify the specific IC instruments implemented for the Selected Remedy.

- **Proprietary Controls** - Proprietary controls have their basis in real property law and generally create legal property interests (EPA 2000b). Potential IC instruments considered for this remedial action in the OU2 ROD include an environmental covenant, easement, or deed notice.
- **Governmental Controls** – Government controls impose restrictions on land use or resource use, using the authority of a government entity (EPA 2000b). All future land use is anticipated to be residential and/or commercial.
- **Informational Devices** – Informational devices could provide information or notification to local communities that residual or contained contamination remains on site (EPA 2000b). The EPA anticipates that an important component of the informational devices will be an agreement with the utility-locate service, U-Dig, to add areas of subsurface contamination to their database of underground hazards.
- **Enforcement and Permit Tools** – Enforcement and permit tools are legal tools, such as administrative orders, permits, Federal Facility Agreements (FFAs) and Consent Decrees (CDs), that limit certain site activities or require the performance of specific activities (EPA 2000b). The establishment of enforcement and permit tools is not anticipated at the time of the development of this report.

Section 7

Operation and Maintenance Activities

This section summarizes the general activities for post-construction operation and maintenance. This section also summarizes re-evaluations that will ensure that the Selected Remedy remains protective taking into account future risk assessment data. Detailed information regarding operation and maintenance for the OU2 site is provided in the Draft Operations and Maintenance Plan (EPA 2011).

7.1 Long-Term O&M Activities

Long-term O&M will be performed to maintain the integrity of the remedy components, including protective covers and ICs. MDEQ is responsible for long-term O&M of the remedy and repairs, as described in the O&M Plan. The following subsections summarize what will be considered routine O&M activities.

7.1.1 Routine Site Inspections

Routine non-intrusive visual site inspections will be conducted to ensure integrity of the covers and backfilled areas. OU2 site inspections are assumed to be performed at least annually as well as concurrently with the 5-year site review.

7.1.2 Cover Maintenance

The main concern during the O&M period will be future encounters with contaminated soil resulting from damage to the remedy. Damage to covers and backfilled areas identified during routine OU2 site inspections will be repaired to eliminate exposure of underlying contamination. Issues that may arise with the covers during long-term O&M and contingency plans for such occurrences are detailed in the O&M Plan.

7.1.3 IC Evaluation and Updates

ICs will be evaluated on at least an annual basis and updated if necessary to ensure protectiveness. Evaluation and updates for different types of ICs are discussed in the O&M Plan.

7.1.4 Reporting

Routine reports summarizing O&M activities will be prepared by the MDEQ and submitted to the EPA on an annual basis. Routine reporting also involves regular review and updates as necessary to the O&M Health and Safety Plan (HASP). Reporting requirements are discussed in the O&M Plan.

7.2 Five-Year Reviews

Five-year site reviews of the OU2 site will be performed since contaminated subsurface soil is left in place below the protective covers and backfilled excavations, preventing unrestricted use of the OU2 site. The EPA is responsible for performing and funding the 5-year reviews as long as they are required.

The 5-year review process consists of six components: 1) community involvement and notification; 2) document review; 3) data review and analysis; 4) site inspection; 5) interviews; and 6) protectiveness determination (EPA 2003).

- Community involvement activities will notify the public that the 5-year review will be conducted, that it has been completed, and that results are available for review at the EPA Information Center in Libby.
- Document review involves a review of all relevant documents and data to obtain information to assess the performance of the remedial action.
- Data review and analysis will involve a review of sampling and monitoring plans and results from monitoring activities.
- Site inspections will be conducted to gather information about the site's current status and to visually confirm and document the conditions of the remedy, the site and the surrounding area.
- Interviews may be conducted as necessary with the site manager, site personnel and people who live or work near the site to gather additional information about the site's status or to identify remedy issues.
- The protectiveness determination should include a technical assessment of the following questions:
  - Is the remedy functioning as intended by the decision documents?
  - Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?
  - Has any other information come to light that could call into question the protectiveness of the remedy?

7.3 OU2 Post-Construction Risk Assessment Re-Evaluation

When the OU2 post-construction risk assessment is complete, the EPA will re-evaluate the remedy to confirm its effectiveness. If unacceptable exposures are identified, the EPA will take action as necessary to ensure that the soil-to-air pathway is broken. Actions may include additional excavation (to a maximum of 3 feet), improving covers, and/or strengthening ICs. If contamination continues below 3 feet, a visible barrier marking the extent of excavation will be placed before backfilling.

Section 8

Summary of Project Costs

Consistent with EPA guidance (EPA 2000a), a summary of project costs is provided within this RA Report. According to the guidance, the total project costs are to be compared to the estimates presented within the ROD. It should be noted that this section provides project costs for the 2010 remedial action only. The costs associated with previous removal actions are not considered because those removal actions were conducted under CERCLA removal authority rather than remedial authority.

All capital costs in the comparison table below are reported in the same dollar basis as the actual project costs (i.e., 2010 dollars). The capital costs projected in the ROD were escalated to 2010 dollars using the USACE Civil Works Construction Cost Index System (USACE 2010b). Because O&M costs have not been incurred and will not be compared, the ROD projections for annual O&M costs and periodic costs remain in 2009 dollars. Appendix A provides a summary of actual capital costs associated with construction activities (earthwork).

	Projections in ROD	Actual Costs
Capital Cost (ICs and Engineered Controls)*	$196,000	Not yet incurred
Capital Cost (Earthwork)*	$150,000	$62,328
Annual O&M Cost and Periodic Cost (Five-Year Reviews)	$357,000	Not yet incurred

*ROD projections escalated to 2010 base year

The primary driver for capital cost differences was the duration of construction activities. ROD projections were based on a 17-day schedule. Actual duration of construction activities was approximately 9 days. This significant shortening of the construction schedule resulted in substantial cost decreases. Other potential contributing reasons for decreases in cost from the ROD are listed below:

- While the ROD assumed 6 inches of common fill and 6 inches of topsoil in backfilled excavations, a modification to restoration protocols in 2010 required only the top 3 inches of fill to be topsoil, the remainder was common fill. Topsoil is substantially more expensive than common fill, so the decrease in topsoil depth reduced costs.
- Purchase and placement of a visible marker layer was included in the ROD projections. This marker layer was not placed, so those costs were not incurred.
- The ROD projections included pre- and post-remedial action surveying. Previously existing surveys were sufficient and no new surveys were conducted.
- As part of equipment decontamination projections, the ROD included purchase of a 5,300 gallon poly tank. Previously purchased tanks were used during the construction activities, so no new tanks were purchased.

Although the total incurred capital cost (earthwork) was significantly less than the ROD projected, there were some increases in cost due to scope changes. These include, but are not limited to, purchase and placement of erosion control matting in the MT Highway 37 ROW, and excavation and 2 to 7 inches of additional backfill (over the projected 18 inches) placed in the ROW. These costs were more than offset by cost decreases discussed above.

Also note that although included in ROD projections, borrow material sampling costs were not directly incurred during this remedial action. Fill materials used for this remedial action were sourced from borrow pits that had been previously sampled and cleared for use across all Site properties.

Section 9

Observations and Lessons Learned

This section provides observations and lessons learned from implementation of the Libby OU2 RA construction activities including successes, problems encountered, and resolutions.

9.1 Successes

The Selected Remedy stated that contaminated soils in the MT Highway 37 ROW should be excavated if possible. MDT determined that shallow excavation along the ROW would not compromise the structural integrity of the highway. As a result, contaminated soils were excavated to a depth of 6 inches bgs and a protective cover was installed at a depth of 20 to 25 inches. This over-build allowed more contamination to be removed, which lessens the potential for future exposure to receptors. As an additional benefit, the over-build significantly reduced the severity of the slope of the ROW, improving the support for the highway, and lessening the potential for erosion.

Efficiency during the construction activities was improved by allowing backfill to begin prior to receipt of confirmation soil samples. This is the first year that this process has been employed on the Site. Very few properties have had soil sample results with a high enough concentration of LA (>1%) to warrant further excavation. In these limited cases, the backfilled areas were re-excavated. The time savings not waiting for sample results more than compensates for the re-excavation costs.

9.2 Problems Encountered and Resolutions

The ROD required that the seasonally flooded portion of the Flyway be fenced to prevent access to the uncharacterized portion of the site. The EPA decided to characterize this area prior to the remedial action to determine whether fencing would be necessary. The results of the July investigation show low amounts of vermiculite in several discrete locations. Only 1 of the 30 surface soil samples and field duplicates collected contained a detectable concentration of LA (TR). Due to the seasonal use restriction and minor amounts of vermiculite observed, this portion of the site does not require fencing. ICs will be established for this area in the ICIAP.

During the Joint Site Inspection, the EPA and MDEQ agreed that the areas at the former Screening Plant where contamination may have remained at less than 1 foot bgs should be sampled to determine if at least 1 foot of clean fill was present. The results from this sampling event showed TR concentrations of LA in the surface soil of one area and in the subsurface soil of a second area. The EPA determined that no remedial action or engineered control is required in this area because the concentration of LA is below the current EPA removal criteria. These areas will be evaluated as part of the post-construction risk assessment at OU2.

The ROD required that excavation continue until source material was removed (to a maximum depth of 3 feet) and if contamination continued below 3 feet, that a visible marker layer be placed prior to backfill. Excavation in the Highway 37 ROW was limited to a depth of 6 inches due to highway structural integrity concerns, so contamination could not be removed beyond this depth. The EPA determined that the marker layer was not necessary in the ROW because confirmation soil samples contained low concentrations of LA and minor amounts of visible vermiculite were observed on the floor of the excavation.

Section 10

Libby OU2 Contact Information

Contact information for the key OU2 RA project personnel is presented below.

Name	Title	Organization	Contact Information
Rebecca Thomas	RPM	EPA Region VIII	1595 Wynkoop Street, 8EPR-SR Denver, CO 80202 (303) 312-6552 thomas.rebecca@epamail.epa.gov
Carolyn Rutland, Ph.D.	Project Manager	MDEQ	P.O. Box 200901 Helena, MT 59620 (406) 841-5036 crutland@mt.gov
Mary Darling, PMP	Project Manager	USACE	Building 525, Room 324 P.O. Box 13287 Offutt AFB, NE 68113 (402) 995-2116 mary.n.darling@usace.army.mil
Rob Burton	Project Manager	PRI-ER	1786 Platte Street Denver, CO 80202 (801) 913-6595 rburton@priworld.com
Paul Lammers	Project Manager	CDM Smith	60 Port Boulevard, Suite 201 Libby, MT 59923 (406) 293-8595 lammersmp@cdmsmith.com
	ERS		(406) 291-5335

Section 11

References

CDM 2007a, Draft Quality Assurance Project Plan, Libby Asbestos Site, Libby, Montana. January.

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_____2009, Comprehensive Site Health and Safety Program, Libby Asbestos Project, Revision 6. March.

_____2010a, General Property Investigation Sampling and Analysis Plan. Libby Asbestos Project, Libby, Montana. May.

_____2010b, 2010 Flyway Investigation, Technical Memorandum. July 23.

_____2010c, Operable Unit 2 Joint Site Inspection, Memorandum. November 30.

EPA 2000a, Close Out Procedures for National Priorities List Sites. EPA/540/R-98/016. OSWER Directive 9320.2-09A-P. January.

_____2000b. *Institutional Controls: A Site Managers Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Clean-ups.* EPA/540-F-00-005. OSWER Directive 9355.0-74FS-P. September.

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_____2009b, Final Remedial Investigation Report, Operable Unit 2 - Former Screening Plant and Surrounding Properties, Libby Asbestos Site, Libby, Montana, prepared for the EPA by the John A. Volpe Center Transportation Systems Center and CDM Federal Programs Corporation with technical assistance from Syracuse Research Corporation. August.

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_____2010, Record of Decision for Libby Asbestos Superfund Site, The Former Screening Plant and Surrounding Properties, Operable Unit 2, Lincoln County, Montana. May.

_____2011, Draft Operations and Maintenance Plan, Libby Asbestos Superfund Site, The Former Screening Plant and Surrounding Properties, Operable Unit 2, Lincoln County, Montana, prepared for the EPA by the USACE and CDM Federal Programs Corporation. February.

USACE 2010a, Response Action Work Plan, Libby Asbestos Site, Libby, MT, prepared for the USACE by PRI. May.

_____2010b, U.S. Army Corps of Engineers Civil Works Construction Cost Index System (CWCCIS), EM 1110-2-1304, March 31, 2000. Revised as of September 30.

Appendix A

Cost Summary

Appendix B

RA Construction Documents

CDM Smith

Tables

Figures

Appendix A

Cost Summary

Summary of Actual Capital Costs Associated with Construction Activities

The table below presents additional detail related to actual capital cost associated with construction activities completed during the 2010 remedial action. The sum of these costs is reported as Capital Cost (Earthwork) in Section 8.

Construction costs were provided by Project Resources, Inc. These costs include, but are not limited to:

- remedial design
- construction management
- labor, equipment, and materials for construction activities

The support cost is an estimate provided by CDM Federal Programs Corporation. Due to Libby site-wide financial tracking requirements, this cost is provided as an estimate and includes, but is not limited to:

- remedial design support
- health and safety monitoring
- third party quality assurance
- construction-related sample collection
- sample coordination

Summary of Actual Capital Costs Associated with Construction Activities

Construction	
Labor	$17,312
Equipment	$3,980
Other Field Costs	$27,636
Support	
Technical Support	$13,400
Total Capital Cost (earthwork)	**$62,328**

As discussed in Section 8 of this RA Report, the incurred capital costs associated with construction activities were significantly less than projected in the ROD. In large part the reduction in cost is due to an expedited schedule. The ROD estimated that construction activities would occur over 17 days. As documented in the QARs (with one additional day added for set-up without TQA present), the construction activities were completed in approximately 9 days. While changes in scope from the ROD to the remedial design contributed to minor cost increases and decreases, these effects are negligible when compared to cost savings associated with completing construction in just over half the projected time.

Appendix B

RA Construction Documents

CDM Smith

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	9/27/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01
REMOVAL CONTRACTOR: Project Resources, Inc.	Weather AM:	Cloudy, 40 F
	Weather PM:	Cloudy, 60 F

GUIDANCE DOCUMENT GOVERNING REMOVAL:

ACTIVITY	PERCENT COMPLETE AT END OF DAY	SAMPLES COLLECTED
Staging and Pre-Construction Set-Up	90	Interior Clearance (BD#)
Exterior Removal	25	
Expansion of Removal Area		Exterior Clearance
Exterior Clearance		
Exterior Backfill		Personnel Air Monitoring
Exterior Restoration	50	
Interior Design-Build (BD#:)	0	Perimeter Air Monitoring 1
Interior Containment (BD#:)		
Interior Bulk Removal (BD#	0	Clean Room Sampling (0)
Interior Detail Cleaning (BD#	0	
Interior Encapsulation (BD#:)	0	
Interior Blocking (BD#:)	0	
Interior Spot Cleaning (BD#:)	0	
Interior Clearance (BD#:)	0	
Interior Restoration (BD#:)	0	
Interior Capping (BD#:)	0	(CONCRETE / POLY?)

SAFETY: (Include Observances and any Infractions of Approved Safety Plan (i.e., PPE), Safety Manual or Instructions from Government Personnel. Specify Corrective Action Taken.)

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES

Note Times With Each Comment

(Results of QA Inspections / Tests / Deficiencies Observed / Actions Taken / Corrective Actions Taken by the Contractor / Disagreements with Contractor / Verbal Instructions to Contractors (Include Personnel) / Direction from Government Personnel)

Interior Activities

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	9/27/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES CONT.

Excavation/Restoration Activities

Arrive at 0820 after a phone call from K. Benke (ER) saying they are getting started. First haul truck is just arriving. Decon trailer is on site. Traffic signs are not up yet. Non potable water tank is being filled, workers are suiting up to begin work, potable water tank is being delivered. Area F, which is where excavation is set to begin is not fenced and asbestos tape is not up yet. 0835, asbestos tape is placed around the perimeter of the dig area. Scale on the drawing is 1" = 150', so verifying the layout is "best guess" work. Pacing off of a fence to the east and another to the south shows the excavation to be approximately where shown on the drawing. 0845, first truck backs into loading position as K. Anderson (CDM) sets up perimeter air sampling. 0850, excavation starts. 0905, first truck leaves, properly tarped, and the second truck backs in. Leave at 0910. Return at 0930. Excavation is continuing with one machine and two laborers. Traffic signs have been placed. Dust control is good. 0945, N. Raines (CDM) and R. Burton (PRI) arrive to verify the dig location using GPS. 1010, leave site. Return at 1325. Excavation continues in area F. Trucks are leaving clean and properly tarped. Dust control is good. proper PPE is worn by all workers. There is potable water on site. Leave at 1355.

Are Correct Wetting and Tarping Procedures Being Utilized? YES (X) NO ( )

Have Situations Developed at the Site Which Might Lead to Significant Deviations from the Removal Design?

Change Order Form Signed by Property's Owner? **YES ( ) NO (x)**

Information on Causes for Delay and Extent of Delays (i.e. Weather, Equipment Inoperability, etc.)

ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES: (Photo Document and Include any Corrective Actions Taken.)

DELIVERABLES SUBMITTED TO PRI? YES ( ) NO ( )	**LIST DELIVERABLES:**

REMARKS: (Include Visitors to Project Site and any Other Miscellaneous Comments)

INSPECTOR'S SIGNATURE	**PRINTED NAME Steve McNally**	**DATE 09/27/10**

A

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	9/28/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01
REMOVAL CONTRACTOR: Project Resources, Inc.	Weather AM:	Cloudy, 40 F
	Weather PM:	PC, 60 F

GUIDANCE DOCUMENT GOVERNING REMOVAL:

ACTIVITY	PERCENT COMPLETE AT END OF DAY	SAMPLES COLLECTED
Staging and Pre-Construction Set-Up	90	Interior Clearance (BD#)
Exterior Removal	45	
Expansion of Removal Area		Exterior Clearance
Exterior Clearance		
Exterior Backfill		Personnel Air Monitoring
Exterior Restoration		
Interior Design-Build (BD#:)	0	Perimeter Air Monitoring 1
Interior Containment (BD#:)		
Interior Bulk Removal (BD#	0	Clean Room Sampling (0)
Interior Detail Cleaning (BD#	0	
Interior Encapsulation (BD#:)	0	
Interior Blocking (BD#:)	0	
Interior Spot Cleaning (BD#:)	0	
Interior Clearance (BD#:)	0	
Interior Restoration (BD#:)	0	
Interior Capping (BD#:)	0	(CONCRETE / POLY?)

SAFETY: (Include Observances and any Infractions of Approved Safety Plan (i.e., PPE), Safety Manual or Instructions from Government Personnel. Specify Corrective Action Taken.)

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES

Note Times With Each Comment

(Results of QA Inspections / Tests / Deficiencies Observed / Actions Taken / Corrective Actions Taken by the Contractor / Disagreements with Contractor / Verbal Instructions to Contractors (Include Personnel) / Direction from Government Personnel)

Interior Activities

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	9/28/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES CONT.

Excavation/Restoration Activities

Arrive at 0820, with the first haul truck. Traffic signs are in place, containment is intact, dust control measures are in place and all workers are wearing proper PPE. 0825, water truck arrives and fills the tank. 0830, first truck leaves, clean and properly tarped. Leave at 0830. Return at 1000. One truck is being tarped and leaves clean as the next truck arrives. Dust control is good. 1110, water truck arrives and fills the non potable tank. 1115, leave as a truck is being tarped for departure. Return at 1400. A mechanic is on site working on a small hydraulic leak on the machine. The mechanic is out of containment in level D PPE. The machine is in containment, with the bucket raised to the asbestos tape. The portion of the machine being worked on is decontaminated. A water truck is on site filling the non potable tank. Haul truck arrives at 1410, backs into containment and excavation resumes. Dust control is good. 1420, one truck leaves, properly tarped and clean, while another arrives. 1425, R. Burton (PRI) and T. Heubener (USACE) arrive. They are here to meet with a representative from MDOT to discuss excavation of areas in the right of way. MDOT arrives at 1435 and we all go to the area for discussion. MDOT is concerned about restoration and specifically compaction/errosion control and the completion time table. T. Burton stated that restoration would include errosion control matting, that the job would take two or three days and that the slope would be less severe when work is complete. We are given the ok to proceed. Leave at 1505.

Are Correct Wetting and Tarping Procedures Being Utilized? YES (X) NO ( )

Have Situations Developed at the Site Which Might Lead to Significant Deviations from the Removal Design?

Change Order Form Signed by Property's Owner? **YES ( ) NO (x)**

Information on Causes for Delay and Extent of Delays (i.e. Weather, Equipment Inoperability, etc.)

ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES: (Photo Document and Include any Corrective Actions Taken.)

DELIVERABLES SUBMITTED TO PRI? YES ( ) NO ( )	**LIST DELIVERABLES:**

REMARKS: (Include Visitors to Project Site and any Other Miscellaneous Comments)

INSPECTOR'S SIGNATURE	**PRINTED NAME Steve McNally**	**DATE 09/28/10**

A

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	9/29/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01
REMOVAL CONTRACTOR: Project Resources, Inc.	Weather AM:	Clear, 40 F
	Weather PM:	Clear, 60 F

GUIDANCE DOCUMENT GOVERNING REMOVAL:

ACTIVITY	PERCENT COMPLETE AT END OF DAY	SAMPLES COLLECTED
Staging and Pre-Construction Set-Up	100	Interior Clearance (BD#)
Exterior Removal	60	
Expansion of Removal Area		Exterior Clearance 4
Exterior Clearance	45	
Exterior Backfill		Personnel Air Monitoring
Exterior Restoration		
Interior Design-Build (BD#:)	0	Perimeter Air Monitoring 1
Interior Containment (BD#:)		
Interior Bulk Removal (BD#	0	Clean Room Sampling (0)
Interior Detail Cleaning (BD#	0	
Interior Encapsulation (BD#:)	0	
Interior Blocking (BD#:)	0	
Interior Spot Cleaning (BD#:)	0	
Interior Clearance (BD#:)	0	
Interior Restoration (BD#:)	0	
Interior Capping (BD#:)	0	(CONCRETE / POLY?)

SAFETY: (Include Observances and any Infractions of Approved Safety Plan (i.e., PPE), Safety Manual or Instructions from Government Personnel. Specify Corrective Action Taken.)

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES

Note Times With Each Comment

(Results of QA Inspections / Tests / Deficiencies Observed / Actions Taken / Corrective Actions Taken by the Contractor / Disagreements with Contractor / Verbal Instructions to Contractors (Include Personnel) / Direction from Government Personnel)

Interior Activities

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	9/29/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES CONT.

Excavation/Restoration Activities

Arrive at 0740. No Workers are on site. 0745, crew of one operator, two laborers and the QC arrives, starts the generator and starts getting suited up in level C PPE. 0800, crew enters containment in area F to start work. 0825, first haul truck arrives, backs into loading position and excavation begins at 0830 Traffic signs are in place, containment is intact and the non potable water tank is full. 0840, first truck leaves, clean and properly tarped. 0842 Second truck arrives and K. Anderson (CDM) arrives to set up perimeter air sampling. Leave at 0850. Return at 0925. One truck is being loaded and the second is standing by. 0940, one truck leaves and the other backs into position for what will be the last load out of area F. 0955, truck leaves, area F is complete and the machine is being deconned. 1020, the machine is moved to the easment to start excavating areas A through E. Leave at 1025. Return at 1110 with K. Anderson (CDM) who enters containment in area F at 1115, collects four soil samples, exits at 1125 and decons out. Leave at 1145 as crew is leaving containment to decon out for lunch. Return at 1315. Excavation is in progress in area E. Dust control is good. N. Raines (CDM) at 1325. M. Cirian (EPA) at 1330. 1335, N. Raines and I pot hole an area outside of the excavation limits, looking for contamination which records show was left at 12" BGS from 2005. We pot hole to 18 " in three locations and find no visible contamination. Leave at 1355. 1530, receive a call from E. Anderson (ER) saying that he was starting to backfill in area F with common fill material.

Are Correct Wetting and Tarping Procedures Being Utilized? YES (X) NO ( )

Have Situations Developed at the Site Which Might Lead to Significant Deviations from the Removal Design?

Change Order Form Signed by Property's Owner? **YES ( ) NO (x)**

Information on Causes for Delay and Extent of Delays (i.e. Weather, Equipment Inoperability, etc.)

ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES: (Photo Document and Include any Corrective Actions Taken.)

DELIVERABLES SUBMITTED TO PRI? YES ( ) NO ( )	**LIST DELIVERABLES:**

REMARKS: (Include Visitors to Project Site and any Other Miscellaneous Comments)

INSPECTOR'S SIGNATURE	**PRINTED NAME Steve McNally**	**DATE 09/29/10**

A

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	9/30/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01
REMOVAL CONTRACTOR: Project Resources, Inc.	Weather AM:	Clear, 40 F
	Weather PM:	Clear, 60 F

GUIDANCE DOCUMENT GOVERNING REMOVAL:

ACTIVITY	PERCENT COMPLETE AT END OF DAY	SAMPLES COLLECTED
Staging and Pre-Construction Set-Up	100	Interior Clearance (BD#)
Exterior Removal	95	
Expansion of Removal Area		Exterior Clearance 3
Exterior Clearance	80	
Exterior Backfill		Personnel Air Monitoring
Exterior Restoration		
Interior Design-Build (BD#:)	0	Perimeter Air Monitoring 1
Interior Containment (BD#:)		
Interior Bulk Removal (BD#	0	Clean Room Sampling (0)
Interior Detail Cleaning (BD#	0	
Interior Encapsulation (BD#:)	0	
Interior Blocking (BD#:)	0	
Interior Spot Cleaning (BD#:)	0	
Interior Clearance (BD#:)	0	
Interior Restoration (BD#:)	0	
Interior Capping (BD#:)	0	(CONCRETE / POLY?)

SAFETY: (Include Observances and any Infractions of Approved Safety Plan (i.e., PPE), Safety Manual or Instructions from Government Personnel. Specify Corrective Action Taken.)

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES

Note Times With Each Comment

(Results of QA Inspections / Tests / Deficiencies Observed / Actions Taken / Corrective Actions Taken by the Contractor / Disagreements with Contractor / Verbal Instructions to Contractors (Include Personnel) / Direction from Government Personnel)

Interior Activities

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	9/30/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES CONT.

Excavation/Restoration Activities

Arrive at the site at 0815. Gate is locked and there are no workers at the property. Leave. Return at 0900. Restoration crew of one is on site but no material has been delivered. Talked about sampling and back filling the right of way. Excavation is in progress in areas C and D. Dust control is good, containment is intact, traffic signs are in place and workers are wearing proper PPE. Leave at 0925. Return at 1040 with K. Anderson (CDM). Common fill material is being placed in area F with one machine. Excavation is proceeding in area B and C. 1120, K. Anderson enters containment, collects three soil samples, exits at 1140 and decons out. Inform the restoration operator that areas C, D and E are ready for back fill. Leave at 1155. Return at 1425. H. Fowler (PRI) is on site. A water truck is watering the access road. Excavation has moved to the edge of area B and into A. Restoration continues in area F. Containment is intact and dust control inside of containment is good. Leave at 1440.

Are Correct Wetting and Tarping Procedures Being Utilized? YES (X) NO ( )

Have Situations Developed at the Site Which Might Lead to Significant Deviations from the Removal Design?

Change Order Form Signed by Property's Owner? **YES ( ) NO (x)**

Information on Causes for Delay and Extent of Delays (i.e. Weather, Equipment Inoperability, etc.)

ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES: (Photo Document and Include any Corrective Actions Taken.)

DELIVERABLES SUBMITTED TO PRI? YES ( ) NO ( )	**LIST DELIVERABLES:**

REMARKS: (Include Visitors to Project Site and any Other Miscellaneous Comments)

INSPECTOR'S SIGNATURE	**PRINTED NAME Steve McNally**	**DATE 09/30/10**

A

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/1/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01
REMOVAL CONTRACTOR: Project Resources, Inc.	Weather AM:	Clear, 40 F
	Weather PM:	Clear, 60 F

GUIDANCE DOCUMENT GOVERNING REMOVAL:

ACTIVITY	PERCENT COMPLETE AT END OF DAY	SAMPLES COLLECTED
Staging and Pre-Construction Set-Up	100	Interior Clearance (BD#)
Exterior Removal	100	
Expansion of Removal Area		Exterior Clearance 1
Exterior Clearance	100	
Exterior Backfill	45	Personnel Air Monitoring
Exterior Restoration		
Interior Design-Build (BD#:)	0	Perimeter Air Monitoring
Interior Containment (BD#:)		
Interior Bulk Removal (BD#	0	Clean Room Sampling (0)
Interior Detail Cleaning (BD#	0	
Interior Encapsulation (BD#:)	0	
Interior Blocking (BD#:)	0	
Interior Spot Cleaning (BD#:)	0	
Interior Clearance (BD#:)	0	
Interior Restoration (BD#:)	0	
Interior Capping (BD#:)	0	(CONCRETE / POLY?)

SAFETY: (Include Observances and any Infractions of Approved Safety Plan (i.e., PPE), Safety Manual or Instructions from Government Personnel. Specify Corrective Action Taken.)

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES

Note Times With Each Comment

(Results of QA Inspections / Tests / Deficiencies Observed / Actions Taken / Corrective Actions Taken by the Contractor / Disagreements with Contractor / Verbal Instructions to Contractors (Include Personnel) / Direction from Government Personnel)

Interior Activities

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/1/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES CONT.

Excavation/Restoration Activities

Received a phone call from K. Benke (ER) at 1700 on 9/30/10 saying excavation is complete. Arrive at 0930 with J. Thomas (CDM), who enters containment at 0935, collects two soil samples, exits at 0945 and decons out. Leave at 0950.

Are Correct Wetting and Tarping Procedures Being Utilized? YES (X) NO ( )

Have Situations Developed at the Site Which Might Lead to Significant Deviations from the Removal Design?

Change Order Form Signed by Property's Owner? **YES ( ) NO (x)**

Information on Causes for Delay and Extent of Delays (i.e. Weather, Equipment Inoperability, etc.)

ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES: (Photo Document and Include any Corrective Actions Taken.)

DELIVERABLES SUBMITTED TO PRI? YES ( ) NO ( )	**LIST DELIVERABLES:**

REMARKS: (Include Visitors to Project Site and any Other Miscellaneous Comments)

INSPECTOR'S SIGNATURE	**PRINTED NAME Steve McNally**	**DATE 10/01/10**

A

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/4/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01
REMOVAL CONTRACTOR: Project Resources, Inc.	Weather AM:	Cloudy, 50 F
	Weather PM:	Cloudy, 60 F

GUIDANCE DOCUMENT GOVERNING REMOVAL:

ACTIVITY	PERCENT COMPLETE AT END OF DAY	SAMPLES COLLECTED
Staging and Pre-Construction Set-Up	100	Interior Clearance (BD#)
Exterior Removal	100	
Expansion of Removal Area		Exterior Clearance
Exterior Clearance	100	
Exterior Backfill	60	Personnel Air Monitoring
Exterior Restoration		
Interior Design-Build (BD#:)	0	Perimeter Air Monitoring
Interior Containment (BD#:)		
Interior Bulk Removal (BD#	0	Clean Room Sampling (0)
Interior Detail Cleaning (BD#	0	
Interior Encapsulation (BD#:)	0	
Interior Blocking (BD#:)	0	
Interior Spot Cleaning (BD#:)	0	
Interior Clearance (BD#:)	0	
Interior Restoration (BD#:)	0	
Interior Capping (BD#:)	0	(CONCRETE / POLY?)

SAFETY: (Include Observances and any Infractions of Approved Safety Plan (i.e., PPE), Safety Manual or Instructions from Government Personnel. Specify Corrective Action Taken.)

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES

Note Times With Each Comment

(Results of QA Inspections / Tests / Deficiencies Observed / Actions Taken / Corrective Actions Taken by the Contractor / Disagreements with Contractor / Verbal Instructions to Contractors (Include Personnel) / Direction from Government Personnel)

Interior Activities

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/4/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES CONT.

Excavation/Restoration Activities

Arrive at 0830. Start placing common fill material in areas A through E. Sub grade material is soggy. Import material has good moisture. Asbestos tape is still up around the perimiter and two bags of ACM were left on site over the weekend. Talk with the operator about slopes, grades and compaction. Leave at 0945. Return at 1025. Restoration is in progress in areas C, D and E with one machine and hand raking in area F. So far, no material has been placed on the slope of the easement. Leave at 1035. Return at 1410. Starting to place material on the slope in area E. The operator is making several passes over each lift. Moisture in the material looks good and compaction appears to be achieved. Leave at 1425.

Are Correct Wetting and Tarping Procedures Being Utilized? YES (X) NO ( )

Have Situations Developed at the Site Which Might Lead to Significant Deviations from the Removal Design?

Change Order Form Signed by Property's Owner? **YES ( ) NO (x)**

Information on Causes for Delay and Extent of Delays (i.e. Weather, Equipment Inoperability, etc.)

ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES: (Photo Document and Include any Corrective Actions Taken.)

DELIVERABLES SUBMITTED TO PRI? YES ( ) NO ( )	**LIST DELIVERABLES:**

REMARKS: (Include Visitors to Project Site and any Other Miscellaneous Comments)

INSPECTOR'S SIGNATURE	**PRINTED NAME Steve McNally**	**DATE 10/04/10**

A

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/5/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01
REMOVAL CONTRACTOR: Project Resources, Inc.	Weather AM:	Cloudy, 50 F
	Weather PM:	Clear, 60 F

GUIDANCE DOCUMENT GOVERNING REMOVAL:

ACTIVITY	PERCENT COMPLETE AT END OF DAY	SAMPLES COLLECTED
Staging and Pre-Construction Set-Up	100	Interior Clearance (BD#)
Exterior Removal	100	
Expansion of Removal Area		Exterior Clearance
Exterior Clearance	100	
Exterior Backfill	90	Personnel Air Monitoring
Exterior Restoration		
Interior Design-Build (BD#:)	0	Perimeter Air Monitoring
Interior Containment (BD#:)		
Interior Bulk Removal (BD#	0	Clean Room Sampling (0)
Interior Detail Cleaning (BD#	0	
Interior Encapsulation (BD#:)	0	
Interior Blocking (BD#:)	0	
Interior Spot Cleaning (BD#:)	0	
Interior Clearance (BD#:)	0	
Interior Restoration (BD#:)	0	
Interior Capping (BD#:)	0	(CONCRETE / POLY?)

SAFETY: (Include Observances and any Infractions of Approved Safety Plan (i.e., PPE), Safety Manual or Instructions from Government Personnel. Specify Corrective Action Taken.)

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES

Note Times With Each Comment

(Results of QA Inspections / Tests / Deficiencies Observed / Actions Taken / Corrective Actions Taken by the Contractor / Disagreements with Contractor / Verbal Instructions to Contractors (Include Personnel) / Direction from Government Personnel)

Interior Activities

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/5/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES CONT.

Excavation/Restoration Activities

Arrive at 0820. Placing common fill material in the easement area with one machine and one laborer. With about 90% of the common fill placed, check slopes and find them to average 10% to 15% flatter than they were prior to excavation. Traffic signs are in place. Dust control is good. Leave at 0830. Return at 1430. Backfill continues in areas A through E with top soil being placed. The steepest angle on the easement, prior to excavation was 37 to 39 degrees. After backfill the angle in this area is 25 to 27 degrees. Moisture in the top soil looks good. Leave at 1440.

Are Correct Wetting and Tarping Procedures Being Utilized? YES (X) NO ( )

Have Situations Developed at the Site Which Might Lead to Significant Deviations from the Removal Design?

Change Order Form Signed by Property's Owner? **YES ( ) NO (x)**

Information on Causes for Delay and Extent of Delays (i.e. Weather, Equipment Inoperability, etc.)

ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES: (Photo Document and Include any Corrective Actions Taken.)

DELIVERABLES SUBMITTED TO PRI? YES ( ) NO ( )	**LIST DELIVERABLES:**

REMARKS: (Include Visitors to Project Site and any Other Miscellaneous Comments)

INSPECTOR'S SIGNATURE	**PRINTED NAME Steve McNally**	**DATE 10/05/10**

A

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/7/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01
REMOVAL CONTRACTOR: Project Resources, Inc.	Weather AM:	Cloudy, 50 F
	Weather PM:	Cloudy, rain, 60 F

GUIDANCE DOCUMENT GOVERNING REMOVAL:

ACTIVITY	PERCENT COMPLETE AT END OF DAY	SAMPLES COLLECTED
Staging and Pre-Construction Set-Up	100	Interior Clearance (BD#)
Exterior Removal	100	
Expansion of Removal Area		Exterior Clearance
Exterior Clearance	100	
Exterior Backfill	100	Personnel Air Monitoring
Exterior Restoration	80	
Interior Design-Build (BD#:)	0	Perimeter Air Monitoring
Interior Containment (BD#:)		
Interior Bulk Removal (BD#	0	Clean Room Sampling (0)
Interior Detail Cleaning (BD#	0	
Interior Encapsulation (BD#:)	0	
Interior Blocking (BD#:)	0	
Interior Spot Cleaning (BD#:)	0	
Interior Clearance (BD#:)	0	
Interior Restoration (BD#:)	0	
Interior Capping (BD#:)	0	(CONCRETE / POLY?)

SAFETY: (Include Observances and any Infractions of Approved Safety Plan (i.e., PPE), Safety Manual or Instructions from Government Personnel. Specify Corrective Action Taken.)

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES

Note Times With Each Comment

(Results of QA Inspections / Tests / Deficiencies Observed / Actions Taken / Corrective Actions Taken by the Contractor / Disagreements with Contractor / Verbal Instructions to Contractors (Include Personnel) / Direction from Government Personnel)

Interior Activities

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/7/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES CONT.

Excavation/Restoration Activities

Arrive at 1020. Back fill is complete. Slopes and grade look good. Seen is spread over the slopes in areas A through E. The fence has not been restored and the errosion control matting has not been placed. I am told by the restoration operator that matting will be placed this afternoon. Return at 1420. A three man crew is placing the errosion control matting. The matting is secured at the top and along the seams with six inch, "U" shaped anchoring pins. Top soil is placed over the matting at the top of the slope for additional support. Leave at 1430.

Are Correct Wetting and Tarping Procedures Being Utilized? YES (X) NO ( )

Have Situations Developed at the Site Which Might Lead to Significant Deviations from the Removal Design?

Change Order Form Signed by Property's Owner? **YES ( ) NO (x)**

Information on Causes for Delay and Extent of Delays (i.e. Weather, Equipment Inoperability, etc.)

ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES: (Photo Document and Include any Corrective Actions Taken.)

DELIVERABLES SUBMITTED TO PRI? YES ( ) NO ( )	**LIST DELIVERABLES:**

REMARKS: (Include Visitors to Project Site and any Other Miscellaneous Comments)

INSPECTOR'S SIGNATURE	**PRINTED NAME Steve McNally**	**DATE 10/07/10**

A

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/11/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01
REMOVAL CONTRACTOR: Project Resources, Inc.	Weather AM:	Cloudy, 50 F
	Weather PM:	Cloudy, 60 F

GUIDANCE DOCUMENT GOVERNING REMOVAL:

ACTIVITY	PERCENT COMPLETE AT END OF DAY	SAMPLES COLLECTED
Staging and Pre-Construction Set-Up	100	Interior Clearance (BD#)
Exterior Removal	100	
Expansion of Removal Area		Exterior Clearance
Exterior Clearance	100	
Exterior Backfill	100	Personnel Air Monitoring
Exterior Restoration	100	
Interior Design-Build (BD#:)	0	Perimeter Air Monitoring
Interior Containment (BD#:)		
Interior Bulk Removal (BD#	0	Clean Room Sampling (0)
Interior Detail Cleaning (BD#	0	
Interior Encapsulation (BD#:)	0	
Interior Blocking (BD#:)	0	
Interior Spot Cleaning (BD#:)	0	
Interior Clearance (BD#:)	0	
Interior Restoration (BD#:)	0	
Interior Capping (BD#:)	0	(CONCRETE / POLY?)

SAFETY: (Include Observances and any Infractions of Approved Safety Plan (i.e., PPE), Safety Manual or Instructions from Government Personnel. Specify Corrective Action Taken.)

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES

Note Times With Each Comment

(Results of QA Inspections / Tests / Deficiencies Observed / Actions Taken / Corrective Actions Taken by the Contractor / Disagreements with Contractor / Verbal Instructions to Contractors (Include Personnel) / Direction from Government Personnel)

Interior Activities

THIRD PARTY QUALITY ASSURANCE REPORT (QAR) DAILY LOG OF CONSTRUCTION ACTIVITIES	TO BE SUBMITTED PRIOR TO THE COMMENCEMENT OF THE NEXT DAY'S WORK	
	PROPERTY ADDRESS:	KDC Flyway MT Highway 37
	GEOUNIT	8695
	PROPERTY ID:	AD-005404
PROJECT: Libby Asbestos Site, Libby, MT	REPORT DATE:	10/11/2010
	CONTRACT NUMBER:	W912DQ-08-D-0018 DK01 USACE Task Order No. DK01

COMMENTS PERTAINING TO CONTRACTOR'S ACTIVITIES CONT.

Excavation/Restoration Activities

Arrive at 0915. Placement of errosion control matting is complete on the slopes. Two workers are restoring the chain link fence. Leave at 0920. Return at 1400 with M. Vinson (ER) to perform a restoration final inspection. Grades and slope look good. The fence is restored. Errosion matting is complete. Restoration is finished. Leave at 1410.

Are Correct Wetting and Tarping Procedures Being Utilized? YES (X) NO ( )

Have Situations Developed at the Site Which Might Lead to Significant Deviations from the Removal Design?

Change Order Form Signed by Property's Owner? **YES ( ) NO (x)**

Information on Causes for Delay and Extent of Delays (i.e. Weather, Equipment Inoperability, etc.)

ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES: (Photo Document and Include any Corrective Actions Taken.)

DELIVERABLES SUBMITTED TO PRI? **YES ( ) NO ( )**	**LIST DELIVERABLES:**

REMARKS: (Include Visitors to Project Site and any Other Miscellaneous Comments)

INSPECTOR'S SIGNATURE	**PRINTED NAME Steve McNally**	**DATE 10/11/10**

A

Draft Red-line

EXTERIOR REMEDIATION NOTES:

(REFER TO CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION)

1. THE REMOVAL CONTRACTOR WILL PROVIDE THE WATER SOURCE FOR PERSONNEL AND EQUIPMENT DECONTAMINATION. DECONTAMINATION WATER WILL BE CAPTURED AND DISPOSED OF PROPERLY.
2. THE REMOVAL CONTRACTOR IS TO EXCAVATE AREA F TO 12" BGS
3. EXCAVATED AREAS ASSOCIATED WITH SLOPES ARE TO BE RESTORED USING JUTE OR COCONUT HUSK MATTING. HYDROSEED MATERIAL, IF APPLICABLE IS TO BE PLACED ON THE SLOPE AFTER THE INSTALLATION OF MATTING MATERIAL.
4. REMOVAL AREAS A–E ARE TO CAPPED IN PLACE WITH COMMON FILL MATERIAL TO 3" BELOW FINAL GRADE.
5. CONTRACTOR IS TO PLACE APPROXIMATELY 3" OF UNIFORMLY GRADED TOPSOIL OVER EXCAVATED AREAS TO PROVIDE POSITIVE RUN–OFF AWAY FROM STRUCTURES AS NEEDED.
6. RESTORATION CONTRACTOR IS TO REPLACE AREAS A, B, C, D, E, AND F WITH HYDRO–SEED.
7. MISCELLANEOUS ITEMS NOT REFERRED TO IN THE RESTORATION AGREEMENT ARE TO BE CLEANED, AND PLACED IN KIND.
8. SEE ADDITIONAL NOTES IN RESTORATION AGREEMENT

EXCAVATION QUANTITIES

AREA DESIGNATION	AREA (ft^2)	DEPTH (in.)	IN–PLACE VOLUME (cuyd)
F	10000	12	370
TOTAL	10000	TOTAL	370

12" BGS EXCAVATION DEPTH BASED ON ANALYTICAL DATA

9" OF COMMON FILL MATERIAL
3" OF TOPSOIL AND HYDROSEED PLACEMENT

SCALE IN FEET

75 0 150

PROPERTY GEOUNIT # 8695 RIGHT OF WAY GEOUNIT # 8672

PRI

US ARMY CORPS OF ENGINEERS OMAHA DISTRICT RAPID RESPONSE PROGRAM

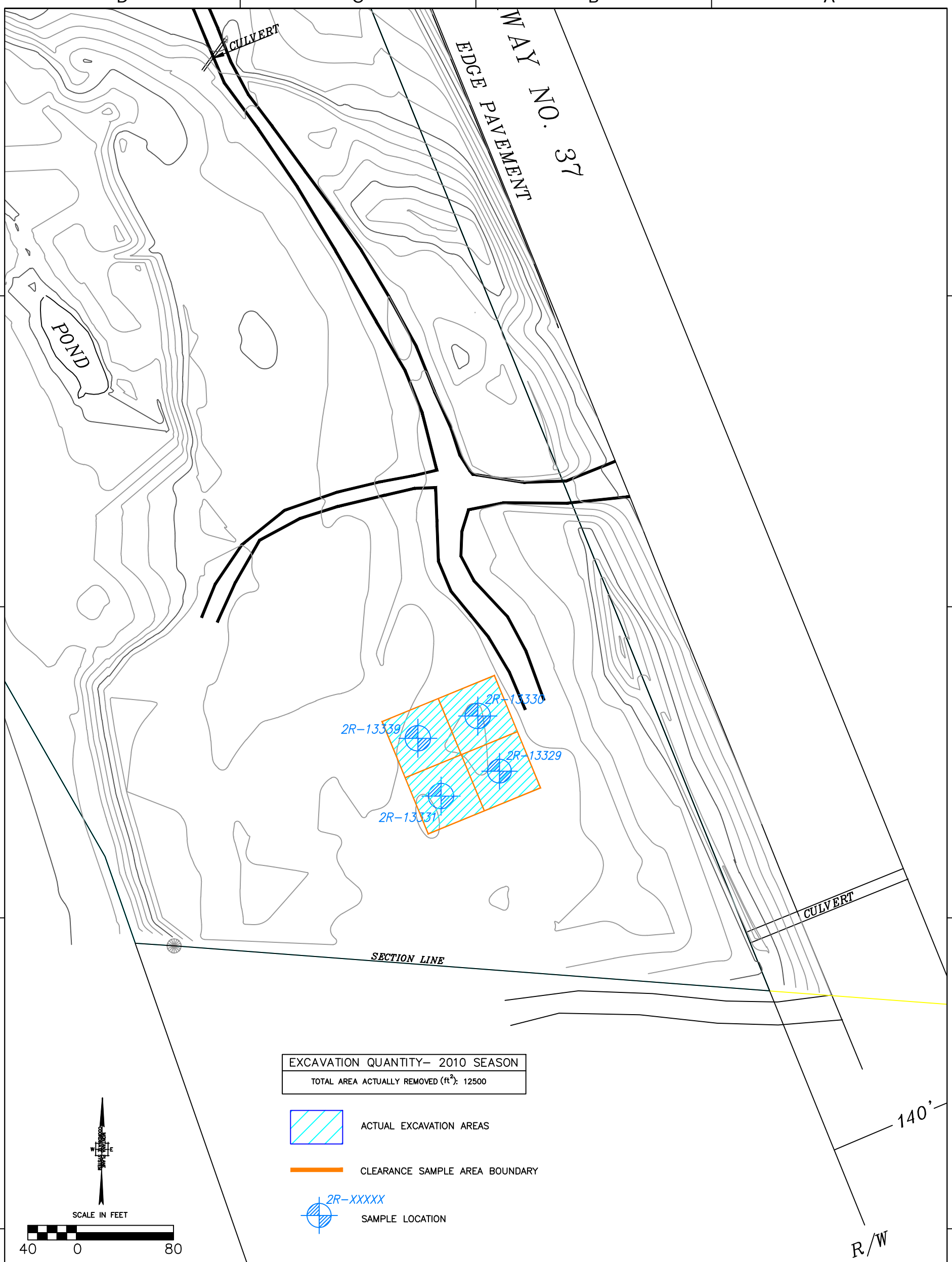
US EPA Region VIII Denver, Colorado

LIBBY ASBESTOS SITE
LIBBY, MONTANA

KDC FLYWAY
MT HIGHWAY 37 RIGHT OF WAY
REMEDIATION PLAN

Designed by: E. ROMERO
Drawn by: E. ROMERO
CHECKED BY:
SUBMITTED BY:

SCALE: AS NOTED
DATE: 09/22/10
DWG:
Sheet number: – –
PLOT SCALE: 1 : 1
DESIGN FILE:
FILE:



CLEARANCE SAMPLE LOCATION TABLE

SAMPLE ID	SAMPLE LOC. ID	SAMPLE EXC. DEPTH	VIS. VERMICULITE EST.*	NORTHING	EASTING	SAMPLE RESULT
2R-13329	SP-144769	12"-14"	NV	1570358.55	524114.73	ND
2R-13330	SP-144770	12"-14"	NV	1570399.18	524096.88	ND
2R-13331	SP-144771	12"-14"	NV	1570336.99	524068.63	ND
2R-13339	SP-144779	12"-14"	NV	1570381.34	524051.26	ND

*VISIBLE VERMICULITE ESTIMATION BASED ON POST EXCAVATION OBSERVATIONS BY PROJECT QUALITY

BEARINGS ARE BASED ON MONTANA STATE PLANE COORDINATE SYSTEM/LAMBERT CONFORMAL

PROJECT DATUM NAD 1983 IFT

VERTICAL DATUM NAVD88

PROPERTY GEOUNIT # 8624 RIGHT OF WAY GEOUNIT # 8672
AD # 000593
BD # N/A
ASSOCIATED BD #S N/A

PRI

US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

US EPA Region VIII Denver, Colorado

LIBBY ASBESTOS SITE
LIBBY, MONTANA

OU2 KDC FLYWAY
EXCAVATION PLAN-REDLINE

Designed by: E. ROMERO	SCALE: AS NOTED	Sheet number: 1 OF 1	PLOT SCALE: 1 : 1
Drawn by: E. ROMERO	DATE: 12-06-10		DESIGN FILE: N/A
CHECKED BY: M. VASQUEZ	DWG: N/A		FILE N/A
SUBMITTED BY:: J. TALLMADGE			

Charge No.: 6402.DK1.003.LONTR
(write in or place label here)

Sheet No.: S- **009110**

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Address: ICDC Flyway ~~CAT Highway 37~~ KJR 10/12/10

Sampling Date: 9-29-10

Field Logbook No: 101197

Page No: 35

Sampling Team: (CDM) Other _____ Names: K. Anderson, S. Morsly

Data Item	Sample 1	Sample 2	Sample 3
Index ID	**2R- 13329**	**2R- 13330**	**2R- 13331** KJ 9-29-10
Location ID	**SP- 144769**	**SP- 144770**	**SP- 144771** KJ 9-29-10
Sample Group	Property	Property	Property
Location Description (circle)	Back yard Front yard F-1 Side yard Driveway (Other) Field	Back yard Front yard F-2 Side yard Driveway (Other) Field	Back yard Front yard F-3 Side yard Driveway (Other) Field
Category (circle)	(FS) FD of _____ EB LB	(FS) FD of _____ EB LB	(FS) FD of _____ EB LB
Matrix Type (Surface soil unless other wise noted)	(Surface Soil) Other _____	(Surface Soil) Other _____	(Surface Soil) Other _____
Type (circle)	Grab # subsamples = 0 (Comp. # subsamples 30	Grab # subsamples = 0 (Comp. # subsamples 30	Grab # subsamples = 0 (Comp. # subsamples 30
Sample Time	~~1015~~ KJR 9-29-10 1115	~~1018~~ KJR 9-29-10 1118	~~1022~~ KJR 9-29-10 1122
Top Depth (inches below ground surface)	12	12	12
Bottom Depth (inches below ground surface)	14	14	14
Field Comments (Note if vermiculite was not observed in sample. For 30-point composites, note total # of visual inspection points of low (L), intermediate (M), or high (H) levels of vermiculite observed)	☒ no vermiculite observed L: ____ M: ____ H: ____	☒ no vermiculite observed L: ____ M: ____ H: ____	☒ no vermiculite observed L: ____ M: ____ H: ____
GPS File (fill in or circle)	Filename: _____ (NA)	Filename: _____ (NA)	Filename: _____ (NA)

v 100721

For Field Team Completion (Initials)	Completed by: KJ QC by: KA	For Data Entry	Entered by: PJK QC by: KMC
For eFSDS validation	Validated _____	Validated _____	Validated _____

Charge No.: H02.DK1.DD3.ONTR
(write in or place label here)

Sheet No.: S- **009118**

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Address: KDC Flowery ~~MT Highway 37~~ 7/202 10/12/10

Sampling Date: 9-29-10

Field Logbook No: 101197

Page No: 35

Sampling Team: (CDM) Other _____ Names: K. Anderson, S. McNally

Data Item	Sample 1	Sample 2	Sample 3
Index ID	**2R- 13339** KA 9.29.10		
Location ID	**SP- 144779** KA 9.29.10		
Sample Group	Property		
Location Description (circle)	Back yard Front yard Side yard F-4 Driveway (Other) Field	Back yard Front yard Side yard Driveway Other _____	Back yard Front yard Side yard Driveway Other _____
Category (circle)	(FS) FD of _____ EB LB	FS FD of _____ EB LB	FS FD of _____ EB LB
Matrix Type (Surface soil unless other wise noted)	(Surface Soil) Other _____	Surface Soil Other _____	Surface Soil Other _____
Type (circle)	Grab # subsamples = 0 (Comp. # subsamples 30	Grab # subsamples = 0 Comp. # subsamples _____	Grab # subsamples = 0 Comp. # subsamples _____
Sample Time	~~1025~~ 1125		
Top Depth (inches below ground surface)	12		
Bottom Depth (inches below ground surface)	14		
Field Comments (Note if vermiculite was not observed in sample. For 30-point composites, note total # of visual inspection points of low (L), intermediate (M), or high (H) levels of vermiculite observed)	☑ no vermiculite observed L: ____ M: ____ H: ____	☐ no vermiculite observed L: ____ M: ____ H: ____	☐ no vermiculite observed L: ____ M: ____ H: ____
GPS File (fill in or circle)	Filename: _____ (NA)	Filename: _____ NA	Filename: _____ NA

v 100721

For Field Team Completion (Initials)	Completed by: ____ QC by: ____	For Data Entry	Entered by: ____ QC by: ____
For eFSDS validation	Validated ____	Validated ____	Validated ____

KDC Flyway

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9066 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Doug Kent**
TechLaw, Inc.
ESAT Region 8
16194 W. 45th Drive
Golden, CO 80403

Fax: Phone: (303) 312-7725
Project: L17413
Samples collected 9/29/2010

Customer ID: TECH25
Customer PO:
Received: 09/29/10 12:48 PM
EMSL Order: 271001319

EMSL Proj: Libby
Analysis Date: 10/4/2010

Test Report: Polarized Light Microscopy (PLM) Performed on Soil Samples by NIOSH Method 9002, Issue 2

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
2R-13329 271001319-0001	B Property	Tan Non-Fibrous Homogeneous	<1% Cellulose TechLaw QC Type: Not QC TechLaw Lab: EMSL27	100% Non-fibrous (other) Field F-1	None Detected
2R-13330 271001319-0002	B	Tan Non-Fibrous Homogeneous	<1% Cellulose TechLaw QC Type: Not QC TechLaw Lab: EMSL27	100% Non-fibrous (other) F-2	None Detected
2R-13331 271001319-0003	B	Tan Non-Fibrous Homogeneous	<1% Cellulose TechLaw QC Type: Not QC TechLaw Lab: EMSL27	100% Non-fibrous (other) F-3	None Detected
2R-13339 271001319-0004	B	Tan Non-Fibrous Homogeneous	<1% Cellulose TechLaw QC Type: Not QC TechLaw Lab: EMSL27	100% Non-fibrous (other) F-4	None Detected

pjh 10/4/10

K. Anderson
S. McNally
Rob B
Mike V

Initial report from 10/04/2010 11:02:47

Analyst(s)
Kelly Colberg (4)

R.K. Mahoney
R. K. Mahoney, Laboratory Manager
or other approved signatory

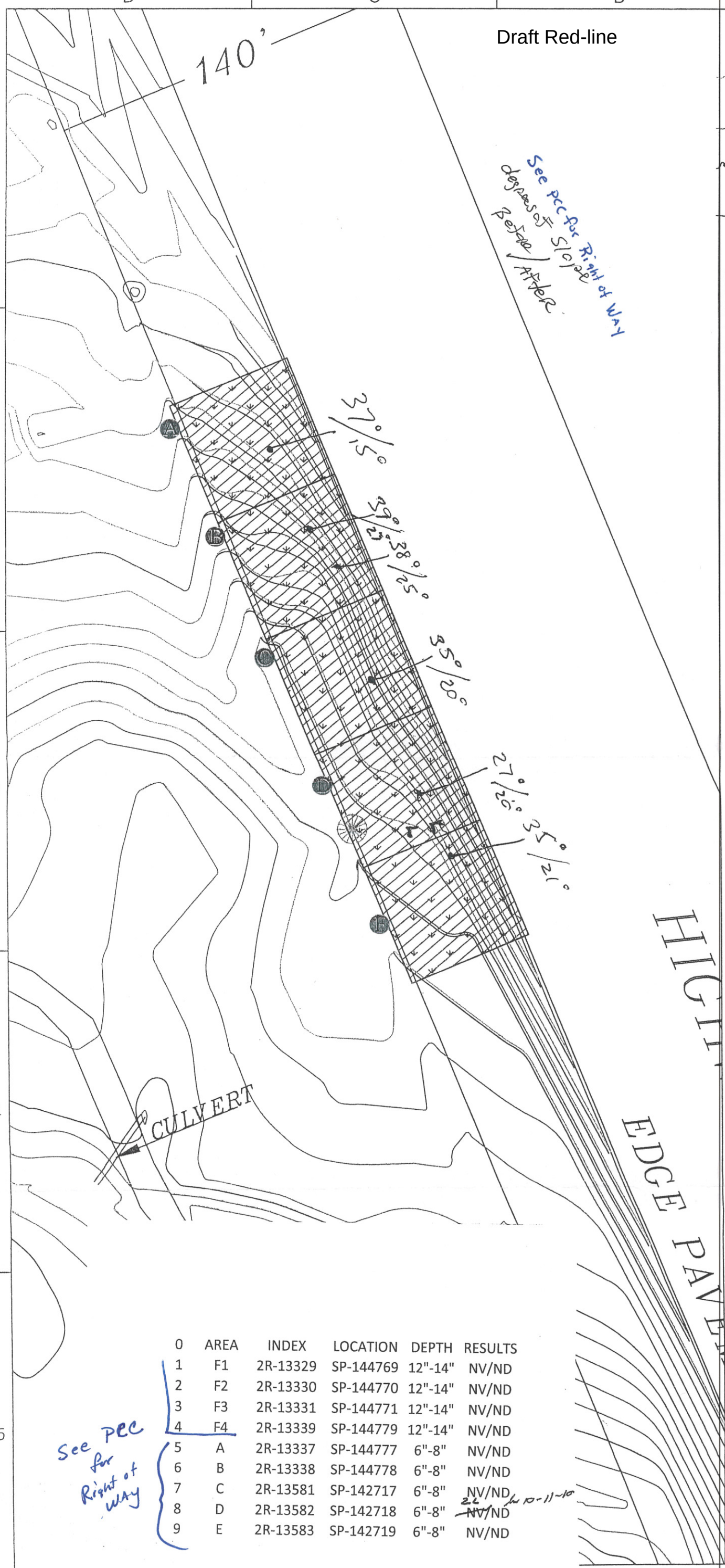
Disclaimers: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. Unless otherwise noted, the results in this report have not been blank corrected. Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc. 107 West 4th Street, Libby MT

Libby Asbestos Project
Libby Property Closeout Checklist v6

Property ID: AD-000593	
Form Date (same as earliest removal start date): 9-27-10	
Address: KDC Flyway	
Surveyor(s): S. McNally	
Response Information	
Removal Contractor: ER	
Restoration Contractor: ER	
Location ID(s) of structures with response activity: N/A	
Type of response:	
Planned Removal	Y (N)
ERS Quick Response	Y (N)
Partial Planned Removal	(Y) N
Type of response activity:	
Attic insulation	Y (N)
Interior cleaning	Y (N)
Interior soil	Y (N)
Exterior soil	(Y) N
VCBM	Y (N)
Interior demolition	Y (N)
Structural demolition	Y (N)
Estimated quantity of vermiculite insulation removed:	N/A cubic yards
Removal/Restoration Dates (MM/DD/YY)	
Interior removal start date	n/a
Interior removal finish date	N/A
Interior restoration start date	N/A
Interior restoration finish date	N/A
Exterior removal start date	9-27-10
Exterior removal finish date	9-30-10
Exterior restoration start date	9-29-10
Exterior restoration finish date	10-11-10
Contamination Remaining	
Does soil containing LA remain at depth?	(Y) N Unknown
Does soil containing LA remain at the surface?	(Y) ~~(N)~~ TC 10/18/10 Unknown
Does soil containing visible vermiculite remain at depth?	(Y) N Unknown
Does soil containing visible vermiculite remain at the surface?	(Y) N Unknown
Does vermiculite insulation remain in any indoor areas?	Y (N) Unknown
Detailed location description of remaining vermiculite insulation and/or remaining indoor soil contamination (e.g., crawlspaces): N/A	

Attach Redline Drawing indicating all areas sampled and any contaminated soil remaining.

Draft Red-line



0	AREA	INDEX	LOCATION	DEPTH	RESULTS
1	F1	2R-13329	SP-144769	12"-14"	NV/ND
2	F2	2R-13330	SP-144770	12"-14"	NV/ND
3	F3	2R-13331	SP-144771	12"-14"	NV/ND
4	F4	2R-13339	SP-144779	12"-14"	NV/ND
5	A	2R-13337	SP-144777	6"-8"	NV/ND
6	B	2R-13338	SP-144778	6"-8"	NV/ND
7	C	2R-13581	SP-142717	6"-8"	NV/ND
8	D	2R-13582	SP-142718	6"-8"	~~NV~~/ND
9	E	2R-13583	SP-142719	6"-8"	NV/ND

See PCC for Right of WAY

22 10-11-10

LEGEND

- EXISTING MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS

EXTERIOR REMEDIATION AND RESTORATION NOTES:

(REFER TO CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION)

1. THE REMOVAL CONTRACTOR WILL EXCAVATE AREAS A–E 3" BELOW EXISTING GRADE, REMOVING ALL VEGETATION FROM THESE AREAS.

2. UPON COMPLETION OF SCRAPE THE REMOVAL CONTRACTOR WILL PLACE COMMON FILL MATERIAL IN AREAS A–E COMMENCING AT THE TOP OF THE SLOPE, FILLING THESE AREAS TO PRODUCE A GRADUAL CONTOUR AND PLACE A MINIMUM OF 18" OF FILL MATERIAL AT THE TOE SLOPE AS SHOWN IN THE PROPOSED CONTOURS.

3. EXCAVATED AREAS ASSOCIATED WITH SLOPES ARE TO BE RESTORED USING JUTE OR COCONUT HUSK MATTING. HYDROSEED MATERIAL, IF APPLICABLE IS TO BE PLACED ON THE SLOPE AFTER THE INSTALLATION OF MATTING MATERIAL.

4. REMOVAL AREAS A–E ARE TO CAPPED IN PLACE WITH COMMON FILL MATERIAL TO 3" BELOW FINAL GRADE.

5. CONTRACTOR IS TO PLACE APPROXIMATELY 3" OF UNIFORMLY GRADED TOPSOIL OVER EXCAVATED AREAS TO PROVIDE POSITIVE RUN–OFF AWAY FROM STRUCTURES AS NEEDED.

6. RESTORATION CONTRACTOR IS TO REPLACE AREAS A, B, C, D, E, AND F WITH HYDRO–SEED.

EXCAVATION QUANTITIES			
AREA DESIGNATION	AREA (ft^2)	DEPTH (in.)	IN–PLACE VOLUME (cuyd)
A	2500	3	23
B	2500	3	23
C	2500	3	23
D	2500	3	23
E	2500	3	23
TOTAL	12500	TOTAL	115

3" SCRAPE BELOW EXISTING GRADE

9" OF COMMON FILL MATERIAL
3" OF TOPSOIL AND HYDROSEED PLACEMENT

TOTAL FILL VOLUME:

863 CU. YDS.

SCALE IN FEET

20 0 40

PROPERTY GEOUNIT # 8695 RIGHT OF WAY GEOUNIT # 8672

PRI

US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

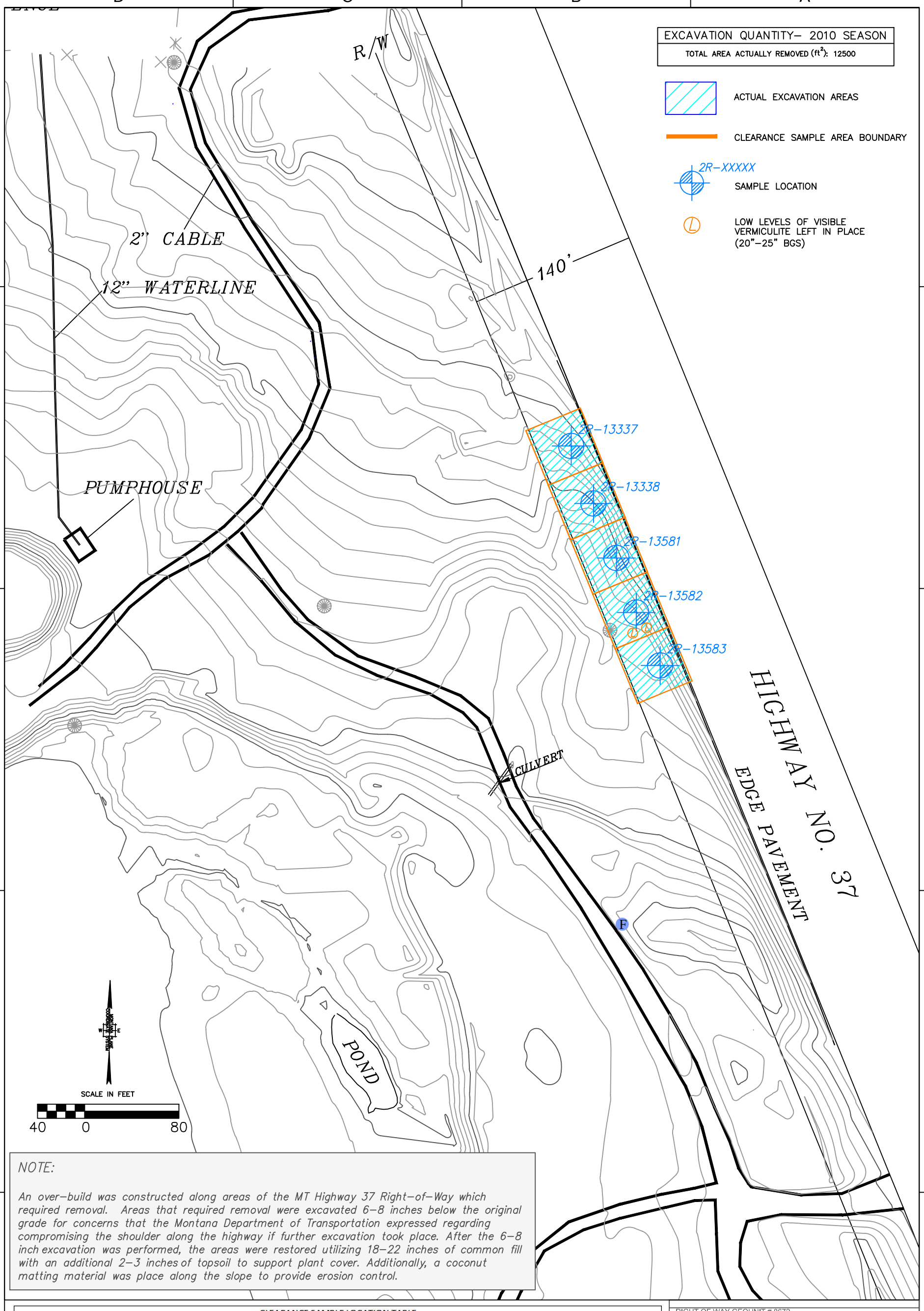
Designed by: E. ROMERO
Drawn by: E. ROMERO
CHECKED BY
SUBMITTED BY

US EPA Region VIII Denver, Colorado

LIBBY ASBESTOS SITE
LIBBY, MONTANA

KDC FLYWAY
MT HIGHWAY 37 RIGHT OF WAY
REMEDIATION PLAN

SCALE: AS NOTED
DATE: 09/22/10
DWG:
Sheet number: – –
PLOT SCALE: 1 : 1
DESIGN FILE:
TRI



NOTE:

An over–build was constructed along areas of the MT Highway 37 Right–of–Way which required removal. Areas that required removal were excavated 6–8 inches below the original grade for concerns that the Montana Department of Transportation expressed regarding compromising the shoulder along the highway if further excavation took place. After the 6–8 inch excavation was performed, the areas were restored utilizing 18–22 inches of common fill with an additional 2–3 inches of topsoil to support plant cover. Additionally, a coconut matting material was place along the slope to provide erosion control.

CLEARANCE SAMPLE LOCATION TABLE

SAMPLE ID	SAMPLE LOC. ID	SAMPLE EXC. DEPTH	VIS. VERMICULITE EST.*	NORTHING	EASTING	SAMPLE RESULT
2R-13337	SP-144777	6"-8"	NV	1571242.86	523951.62	ND
2R-13338	SP-144778	6"-8"	NV	1571194.08	523970.41	ND
2R-13581	SP-142717	6"-8"	NV	1571147.92	523989.96	ND
2R-13582	SP-142718	6"-8"	2L	1571101.79	524006.70	<1%
2R-13583	SP-142719	6"-8"	NV	1571056.85	524026.80	<1%

*VISIBLE VERMICULITE ESTIMATION BASED ON POST EXCAVATION OBSERVATIONS BY PROJECT QUALITY ASSURANCE PERSONNEL
BEARINGS ARE BASED ON MONTANA STATE PLANE COORDINATE SYSTEM/LAMBERT CONFORMAL
PROJECT DATUM NAD 1983 IFT
VERTICAL DATUM NAVD88

RIGHT OF WAY GEOUNIT # 8672
AD # 001089
BD # N/A
ASSOCIATED BD #S N/A

PRI

US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

Designed by: E. ROMERO
Drawn by: E. ROMERO
CHECKED BY: M. VASQUEZ
SUBMITTED BY:: J. TALLMADGE

US EPA Region VIII Denver, Colorado

LIBBY ASBESTOS SITE
LIBBY, MONTANA

OU8 – STATE OF MONTANA
MT HIGHWAY 37 RIGHT OF WAY
EXCAVATION PLAN–REDLINE

SCALE: AS NOTED
DATE: 12–06–10
DWG: N/A
Sheet number: 1 OF 1
PLOT SCALE: 1 : 1
DESIGN FILE: N/A
FILE N/A

Charge No.: 6402.DK1.003.CONTR
(write in or place label here)

Sheet No.: S-009117

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

10-1-10

Address: KDC Flyway ~~MT Highway 37~~ 10-1-10

Sampling Date: ~~9-30~~ 10-1-10

Field Logbook No: 101205

Page No: 20

Sampling Team: (CDM) Other _____ Names: J. Thomas, S. McNally

Data Item	Sample 1	Sample 2	Sample 3
Index ID	2R- 13337	2R- 13338	9-29-10
Location ID	SP- 144777	SP- 144778	9-29-10
Sample Group	Property	Property	
Location Description (circle)	Back yard Front yard Side yard Driveway (Other) Right-of-way A	Back yard Front yard Side yard Driveway (Other) Right-of-way B	Back yard Front yard Side yard Driveway Other _____
Category (circle)	(FS) FD of _____ EB LB ND	(FS) FD of _____ EB LB ND	FS FD of _____ EB LB 9-29-10
Matrix Type (Surface soil unless other wise noted)	(Surface Soil) Other _____	(Surface Soil) Other _____	Surface Soil Other _____
Type (circle)	Grab # subsamples = 0 (Comp. # subsamples 30	Grab # subsamples = 0 (Comp. # subsamples 30	Grab # subsamples = 0 Comp. # subsamples _____
Sample Time	0935	0940	
Top Depth (inches below ground surface)	6	6	
Bottom Depth (inches below ground surface)	8	8	
Field Comments (Note if vermiculite was not observed in sample. For 30-point composites, note total # of visual inspection points of low (L), intermediate (M), or high (H) levels of vermiculite observed)	☒ no vermiculite observed L: ____ M: ____ H: ____	☒ no vermiculite observed L: ____ M: ____ H: ____	☐ no vermiculite observed L: ____ M: ____ H: ____
GPS File (fill in or circle)	Filename: _____ (NA)	Filename: _____ (NA)	Filename: _____ NA

v 100721

For Field Team Completion (Initials)	Completed by: _____ QC by: _____	For Data Entry	Entered by: _____ QC by: _____
For eFSDS validation	Validated _____	Validated _____	Validated _____

Charge No.: 6402.DK1.003.CONTR
(write in or place label here)

Sheet No.: S- 009113

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

ddress: KDC Flyway ~~Hwy~~ 9-30-10

Sampling Date: 9-30-10
Field Logbook No: 101197
Page No: 36

Sampling Team: CDM Other _____ Names: K. Anderson, S. McNally

Data Item	Sample 1	Sample 2	Sample 3
Index ID	2R- 13581	2R- 13582	2R- 13583
Location ID	SP- 142717	SP- 142718	SP- 142719
Sample Group	Property	Property	Property
Location Description (circle)	Back yard Front yard Side yard C Driveway Other Right-of-way	Back yard Front yard Side yard D Driveway Other Right-of-way	Back yard Front yard Side yard E Driveway Other Right-of-way
Category (circle)	FS FD of EB LB ND	FS FD of EB LB <1%	FS FD of EB LB <1%
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other	Surface Soil Other	Surface Soil Other
Type (circle)	Grab # subsamples = 0 Comp. # subsamples 30	Grab # subsamples = 0 Comp. # subsamples 30	Grab # subsamples = 0 Comp. # subsamples 30
Sample Time	1133	1126	~~1120~~ 1120
Top Depth (inches below ground surface)	6	6	6
Bottom Depth (inches below ground surface)	8	8	8
Field Comments (Note if vermiculite was not observed in sample. For 30-point composites, note total # of visual inspection points of low (L), intermediate (M), or high (H) levels of vermiculite observed)	☒ no vermiculite observed L: ____ M: ____ H: ____	☐ no vermiculite observed L: 2 M: ____ H: ____	☒ no vermiculite observed L: ____ M: ____ H: ____
GPS File (fill in or circle)	Filename: _____ NA	Filename: _____ NA	Filename: _____ NA

v 100721

For Field Team Completion (Initials)	Completed by: ____ QC by: ____	For Data Entry	Entered by: ____ QC by: ____
For eFSDS validation	Validated	Validated	Validated ____

Libby Asbestos Project
Libby Property Closeout Checklist v6

Property ID: AD- 001089	
Form Date (same as earliest removal start date): 9-27-10	
Address: MT Highway 37 Right of WAY	
Surveyor(s): S. McDally	
Response Information	
Removal Contractor: ER	
Restoration Contractor: ER	
Location ID(s) of structures with response activity: N/A	
Type of response:	
~~Planned Removal~~	Y (N)
ERS Quick Response	Y (N)
Partial Planned Removal	(Y) N
Type of response activity:	
Attic insulation	Y (N)
Interior cleaning	Y (N)
Interior soil	Y (N)
Exterior soil	(Y) N
VCBM	Y (N)
Interior demolition	Y (N)
Structural demolition	Y (N)
Estimated quantity of vermiculite insulation removed:	N/A cubic yards
Removal/Restoration Dates (MM/DD/YY)	
Interior removal start date	N/A
Interior removal finish date	N/A
Interior restoration start date	N/A
Interior restoration finish date	N/A
Exterior removal start date	9-27-10
Exterior removal finish date	9-30-10
Exterior restoration start date	9-29-10
Exterior restoration finish date	10-11-10
Contamination Remaining	
Does soil containing LA remain at depth?	(Y) N Unknown
Does soil containing LA remain at the surface?	(Y) N Unknown
Does soil containing visible vermiculite remain at depth?	(Y) N Unknown
Does soil containing visible vermiculite remain at the surface?	(Y) N Unknown
Does vermiculite insulation remain in any indoor areas?	Y (N) Unknown
Detailed location description of remaining vermiculite insulation and/or remaining indoor soil contamination (e.g., crawlspaces): N/A	

Attach Redline Drawing indicating all areas sampled and any contaminated soil remaining.

Tables

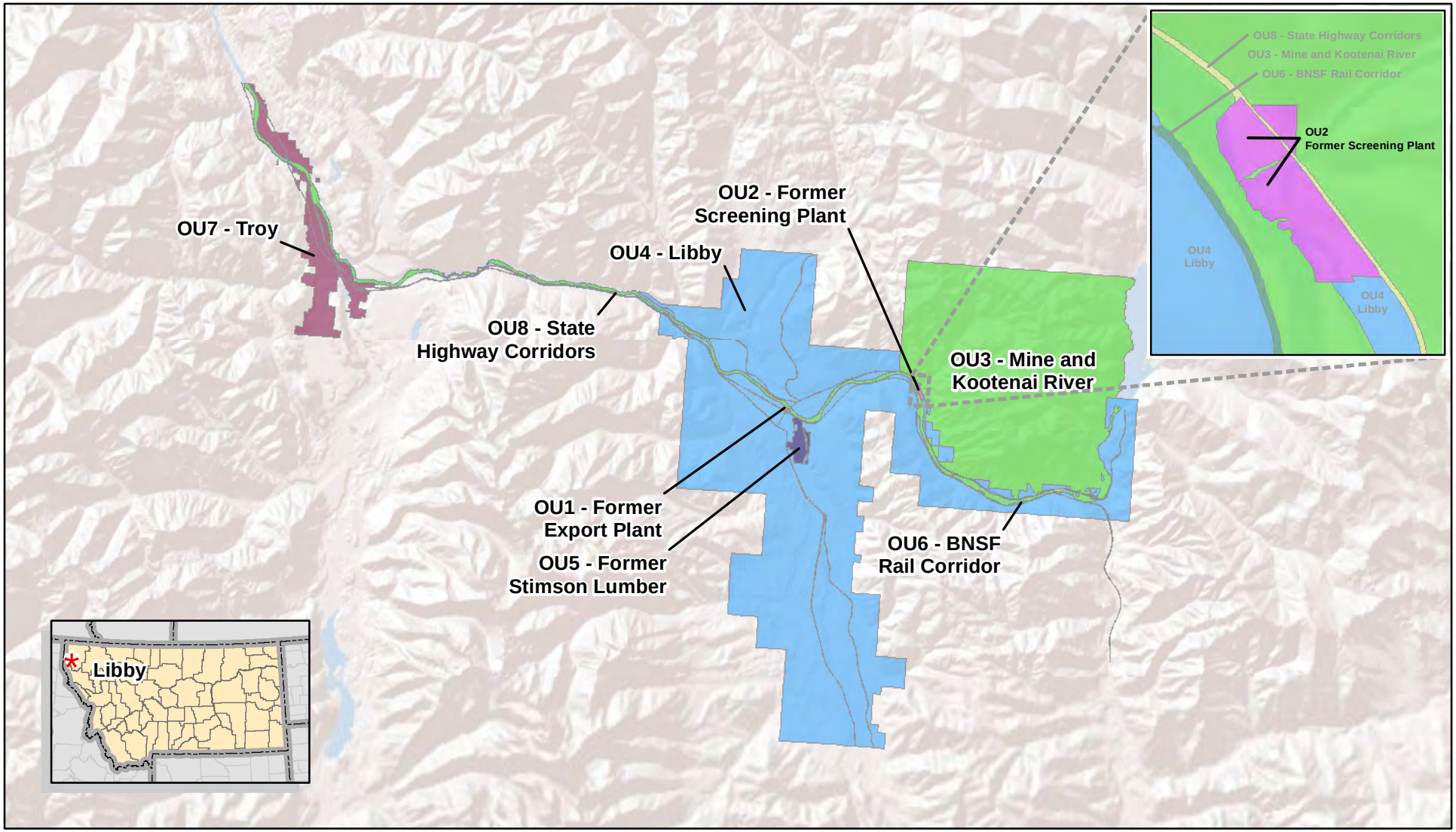
Table 3-1: 2010 Flyway Investigation Vermiculite Observations and Soil Sample Results for Asbestos

Zone ID*	Use Type	Area (ft^2)	Vermiculite Observation	Sample ID	Location ID	LA Sample Result		OA Sample Result		CHY Sample Result	
						PLM-VE Qualifier	PLM-Grav Qualifier	PLM-VE Qualifier	PLM-Grav Qualifier	PLM-VE Qualifier	PLM-Grav Qualifier
Visual Inspection											
1	LUA	83051	144X, 1L	n/a	XX-003202	n/a		n/a		n/a	
Soil Sampling											
1A	LUA	14915	30X	2D-01584	XX-003206	ND	ND	ND	ND	ND	ND
1A Dup	LUA	14915	30X	2D-01585	XX-003206	ND	ND	ND	ND	ND	ND
1B	LUA	14965	30X	2D-01586	XX-003208	ND	ND	ND	ND	ND	ND
1C	LUA	14977	29X, 1L	2D-01587	XX-003209	ND	ND	ND	ND	ND	ND
1D	LUA	14990	30X	2D-01588	XX-003210	ND	---	ND	---	ND	---
1E	LUA	8289	30X	2D-01589	XX-003211	ND	---	ND	---	ND	---
Visual Inspection											
2	CUA	8527	85X, 2L	n/a	XX-003201	n/a		n/a		n/a	
Soil Sampling											
2A	CUA	2995	30X	2D-01581	XX-003203	ND	---	ND	---	ND	---
2B	CUA	2966	30X	2D-01582	XX-003204	ND	---	ND	---	ND	---
2C	CUA	2566	30X	2D-01583	XX-003205	ND	---	ND	---	ND	---
Visual Inspection											
3	CUA	61277	579X, 4L	n/a	XX-003232	n/a		n/a		n/a	
Soil Sampling											
3A	CUA	3000	30X	2D-01590	XX-003212	ND	ND	ND	ND	ND	ND
3B	CUA	2997	30X	2D-01591	XX-003213	Tr	ND	ND	ND	ND	ND
3C	CUA	3000	30X	2D-01592	XX-003214	ND	ND	ND	ND	ND	ND
3D	CUA	3000	30X	2D-01593	XX-003215	ND	ND	ND	ND	ND	ND
3E	CUA	2428	30X	2D-01594	XX-003216	ND	ND	ND	ND	ND	ND
3F	CUA	2993	30X	2D-01595	XX-003217	ND	ND	ND	ND	ND	ND
3F Dup	CUA	2993	30X	2D-01596	XX-003217	ND	ND	ND	ND	ND	ND
3G	CUA	2993	30X	2D-01597	XX-003218	ND	ND	ND	ND	ND	ND
3H	CUA	2993	30X	2D-01598	XX-003219	ND	ND	ND	ND	ND	ND
3I	CUA	2993	30X	2D-01610	XX-003220	ND	---	ND	---	ND	---
3J	CUA	2999	30X	2D-01600	XX-003221	ND	ND	ND	ND	ND	ND
3K	CUA	2997	30X	2D-01601	XX-003222	ND	ND	ND	ND	ND	ND
3L	CUA	2995	30X	2D-01602	XX-003223	ND	ND	ND	ND	ND	ND
3M	CUA	3000	30X	2D-01603	XX-003224	ND	ND	ND	ND	ND	ND
3N	CUA	2999	30X	2D-01604	XX-003225	ND	ND	ND	ND	ND	ND
3O	CUA	2996	30X	2D-01605	XX-003226	ND	ND	ND	ND	ND	ND
3P	CUA	3000	30X	2D-01606	XX-003227	ND	ND	ND	ND	ND	ND
3Q	CUA	2992	30X	2D-01607	XX-003228	ND	---	ND	---	ND	---
3R	CUA	2992	30X	2D-01608	XX-003229	ND	---	ND	---	ND	---
3S	CUA	2997	30X	2D-01609	XX-003230	ND	---	ND	---	ND	---
3T	CUA	1920	30X	2D-01599	XX-003231	ND	ND	ND	ND	ND	ND

Notes and Definitions:

* Areas 1,2, and 3 shown on Figure 3-3 were sub-divided into smaller zones for soil sampling
ID - identifier
Dup - field duplicate sample
LUA - limited-use area
CUA - common-use area
ft^2 - square feet
X vermiculite observation - no vermiculite observed
L vermiculite observation - low amount of vermiculite observed
n/a - not applicable
LA - Libby amphibole asbestos
OA - other amphibole asbestos
CHY - chrysotile asbestos
PLM-VE - polarized light microscopy visual area estimation method
PLM-Grav - polarized light microscopy gravimetric method
ND - nondetect
Tr - trace
--- - no coarse fraction of sample exists for PLM-Grav analysis

Figures



N

0 12,500 25,000 50,000

Feet

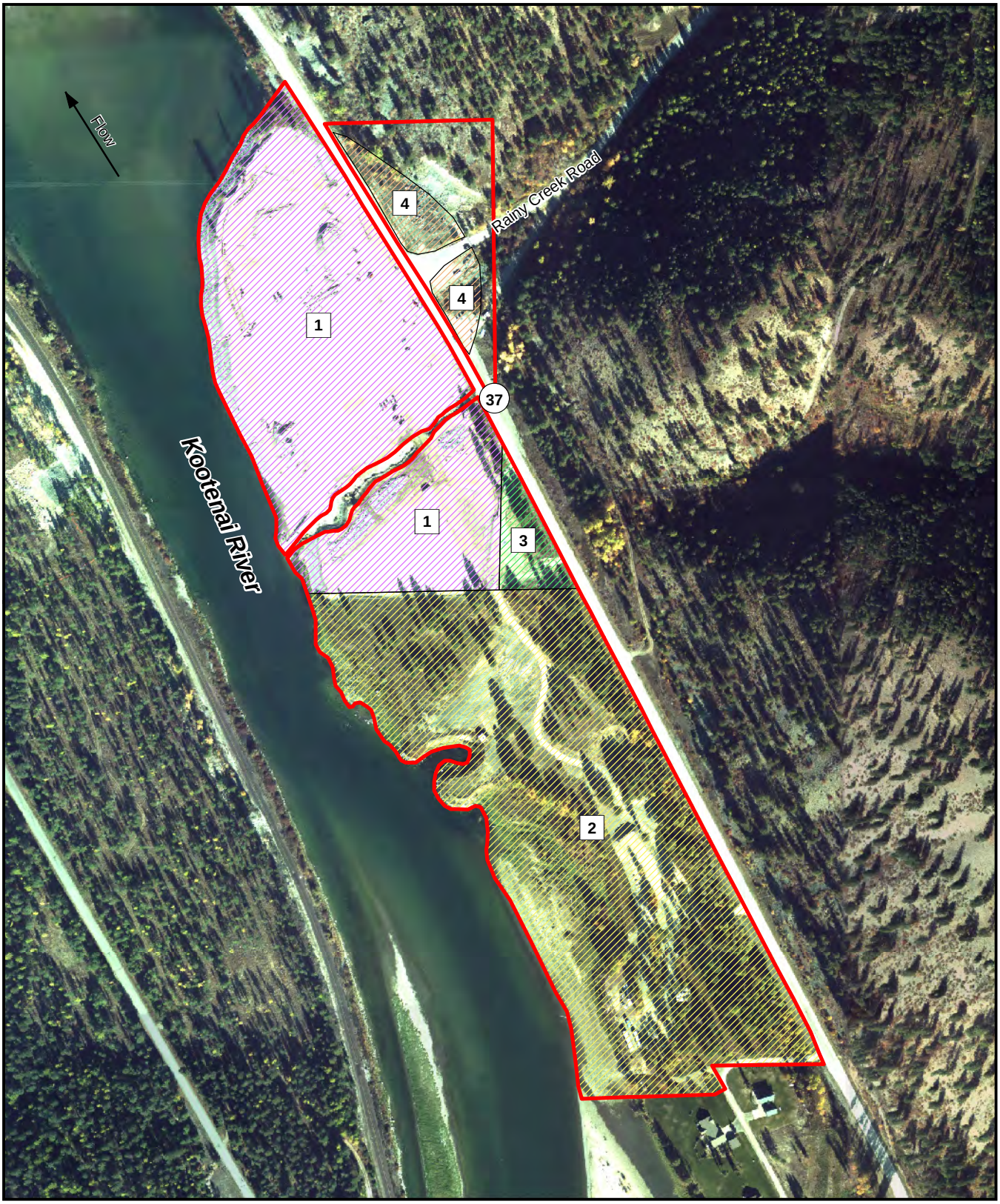
1 inch = 25,000 feet

Legend

- OU1 - Former Export Plant
- OU2 - Former Screening Plant
- OU3 - (Study Area) Mine and Kootenai River
- OU4 - Libby
- OU5 - Former Stimson Lumber
- OU6 - BNSF Rail Corridor
- OU7 - Troy
- OU8 - State Highway Corridors

Figure 1-1
Operable Units
Libby Asbestos Superfund Site
Lincoln County, Montana

CDM Smith



Legend

- OU2 Boundary
- Subarea 1 - Former Screening Plant
- Subarea 2 - Flyway
- Subarea 3 - Private Property
- Subarea 4 - Rainy Creek Road Frontages

N

0 200 400 800
Feet

1 inch = 400 feet

Figure 1-2
OU2 Site Layout
Libby Asbestos Superfund Site
Lincoln County, Montana

CDM Smith

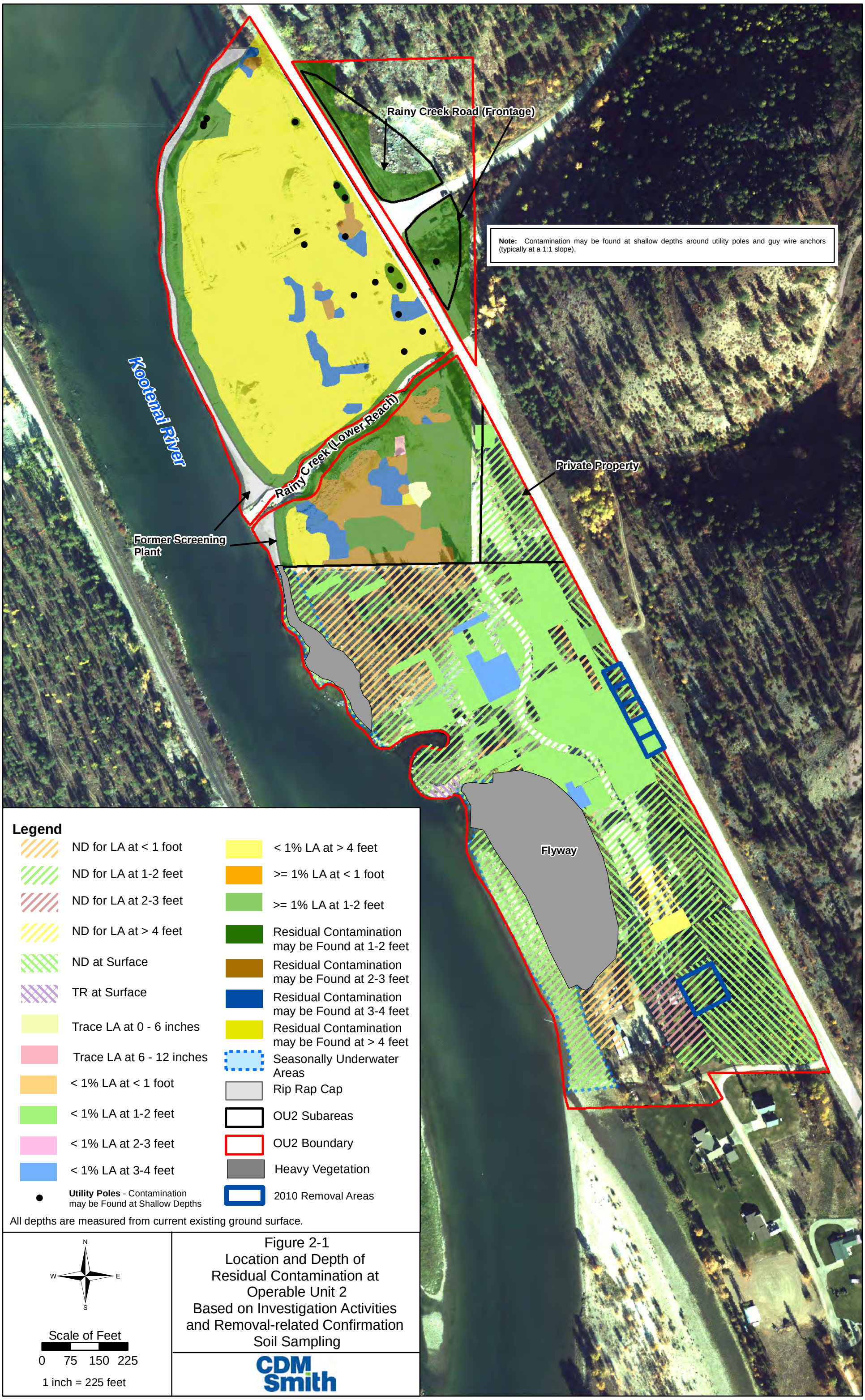
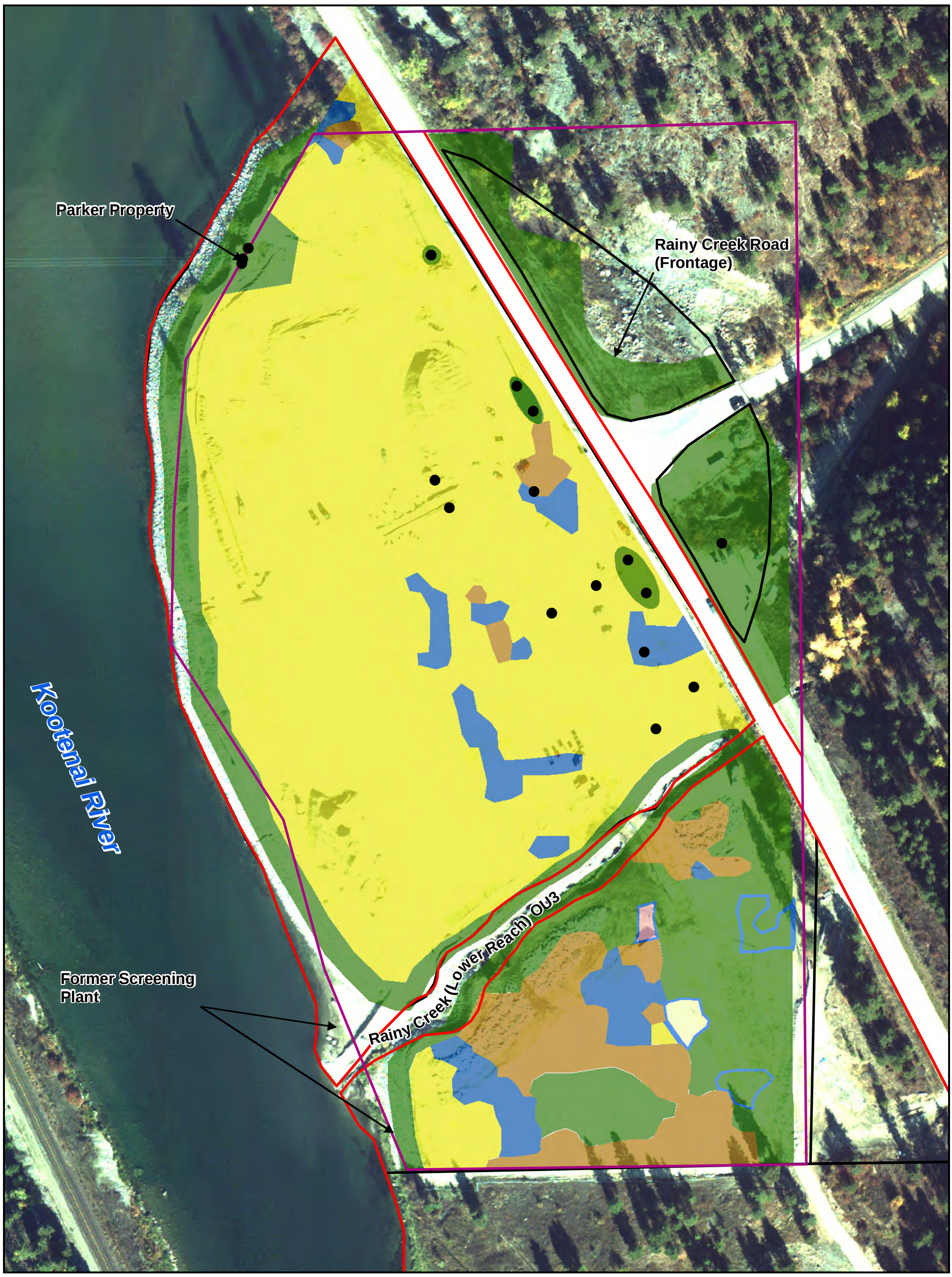


Figure 2-1
Location and Depth of Residual Contamination at Operable Unit 2 Based on Investigation Activities and Removal-related Confirmation Soil Sampling



N

0 60 120 240
Feet

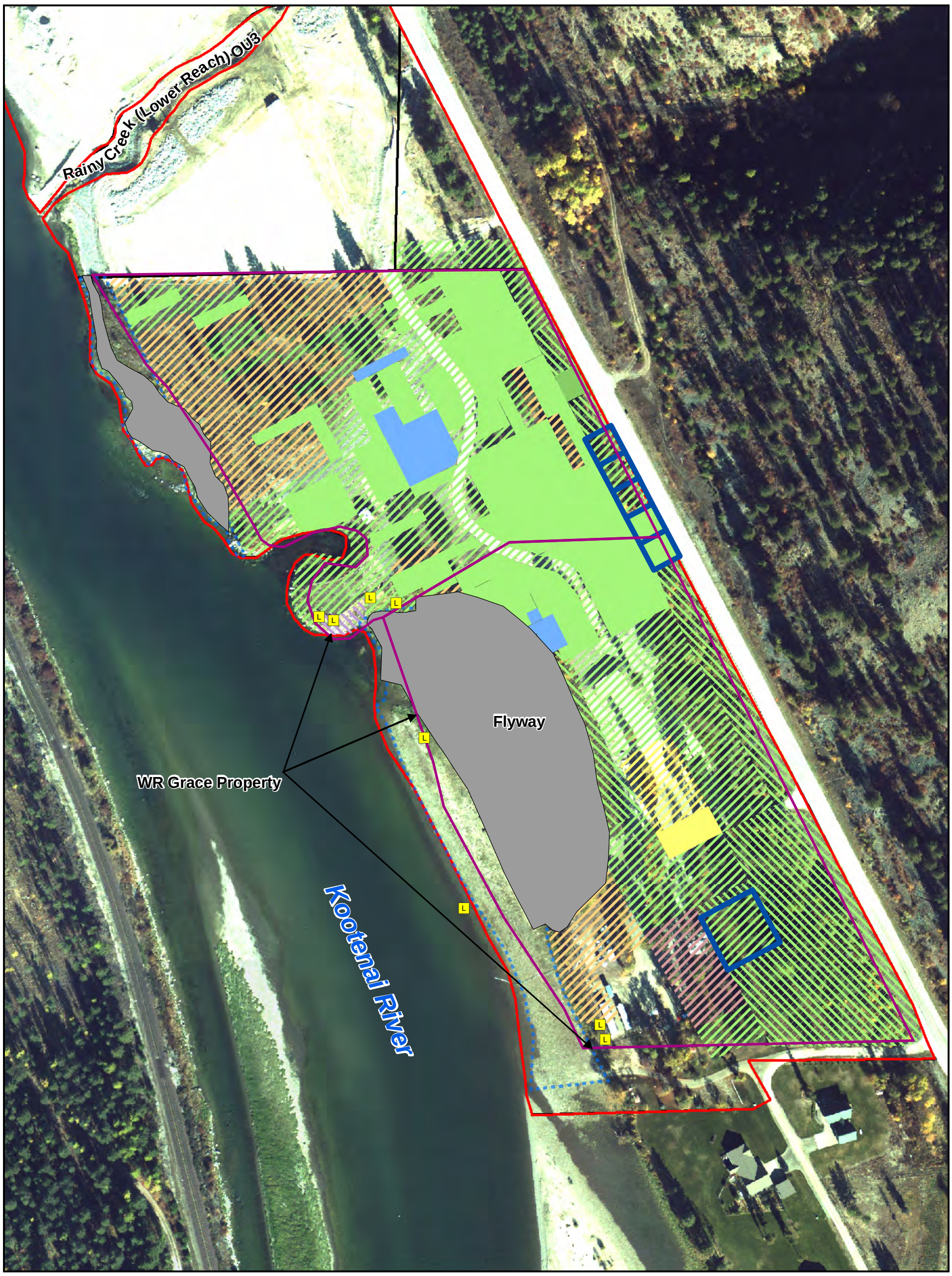
1 inch = 120 feet

Residual Contamination may be Found at 1-2 feet
Residual Contamination may be Found at 2-3 feet
Residual Contamination may be Found at 3-4 feet
Residual Contamination may be Found at > 4 feet
TR LA at 0-6 inches
TR LA at 6-12 inches

Utility Pole
Rip Rap Cap
OU2 Subareas
OU2 Boundary
Parker Property
November 2010 Investigation Area

Figure 2-2
Location and Depth of Residual Contamination at OU2 - Parker Property Based on Investigation Activities and Removal-related Confirmation Soil Sampling
Libby Asbestos Superfund Site
Lincoln County, Montana

CDM Smith



N

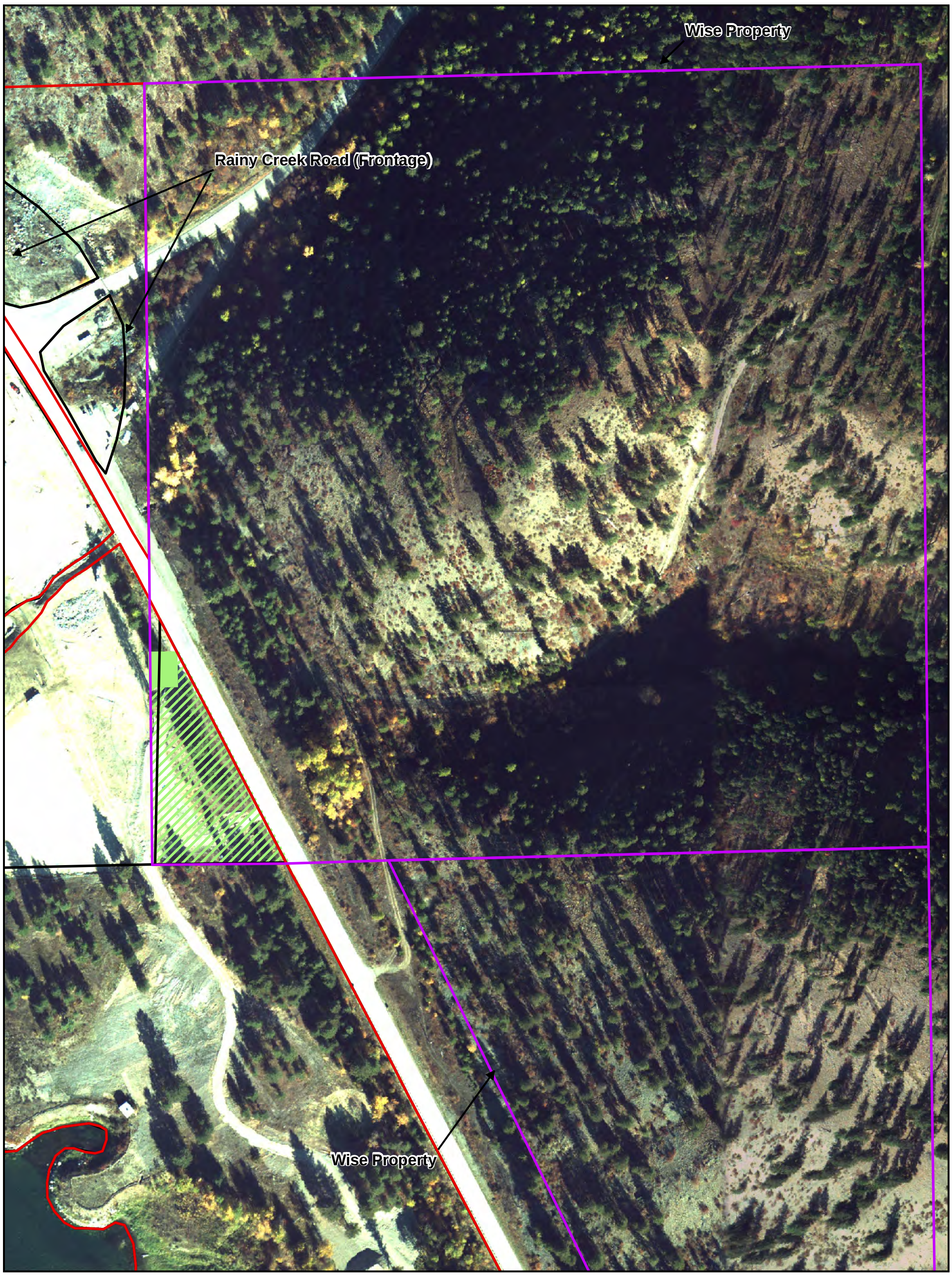
0 80 160 320
Feet

1 inch = 160 feet

ND for LA at < 1 foot
ND for LA at 1-2 feet
ND for LA at 2-3 feet
ND for LA at > 4 feet
ND at Surface
TR at Surface
< 1% LA at 1-2 feet
< 1% LA at 3-4 feet
< 1% LA at > 4 feet
WR Grace Property
OU2 Subareas
OU2 Boundary
Seasonally Underwater Areas
2010 Removal Areas
L Low Levels of Visual Vermiculite
Heavy Vegetation

Figure 2-3
Location and Depth of Residual Contamination at OU2 - WR Grace Property Based on Investigation Activities and Removal-related Confirmation Soil Sampling
Libby Asbestos Superfund Site
Lincoln County, Montana

CDM Smith



N

0 80 160 320
Feet

1 inch = 160 feet

Legend

- ND for LA at 1-2 feet
- < 1% LA at 1-2 feet
- Wise Property
- OU2 Subareas
- OU2 Boundary

Figure 2-4
Location and Depth of Residual Contamination at OU2 - Wise Property Based on Investigation Activities and Removal-related Confirmation Soil Sampling
Libby Asbestos Superfund Site
Lincoln County, Montana

CDM Smith

N

0 80 160 320
Feet

1 inch = 160 feet

2010 Removal Areas
Montana Land Property
OU2 Boundary
OU2 Subareas

ND at Surface
ND for LA at 1-2 feet
<1% LA at 1-2 feet

Figure 2-5
Location and Depth of Residual Contamination at OU2 - Montana Land Property Based on Investigation Activities and Removal-related Confirmation Soil Sampling
Libby Asbestos Superfund Site
Lincoln County, Montana

CDM Smith

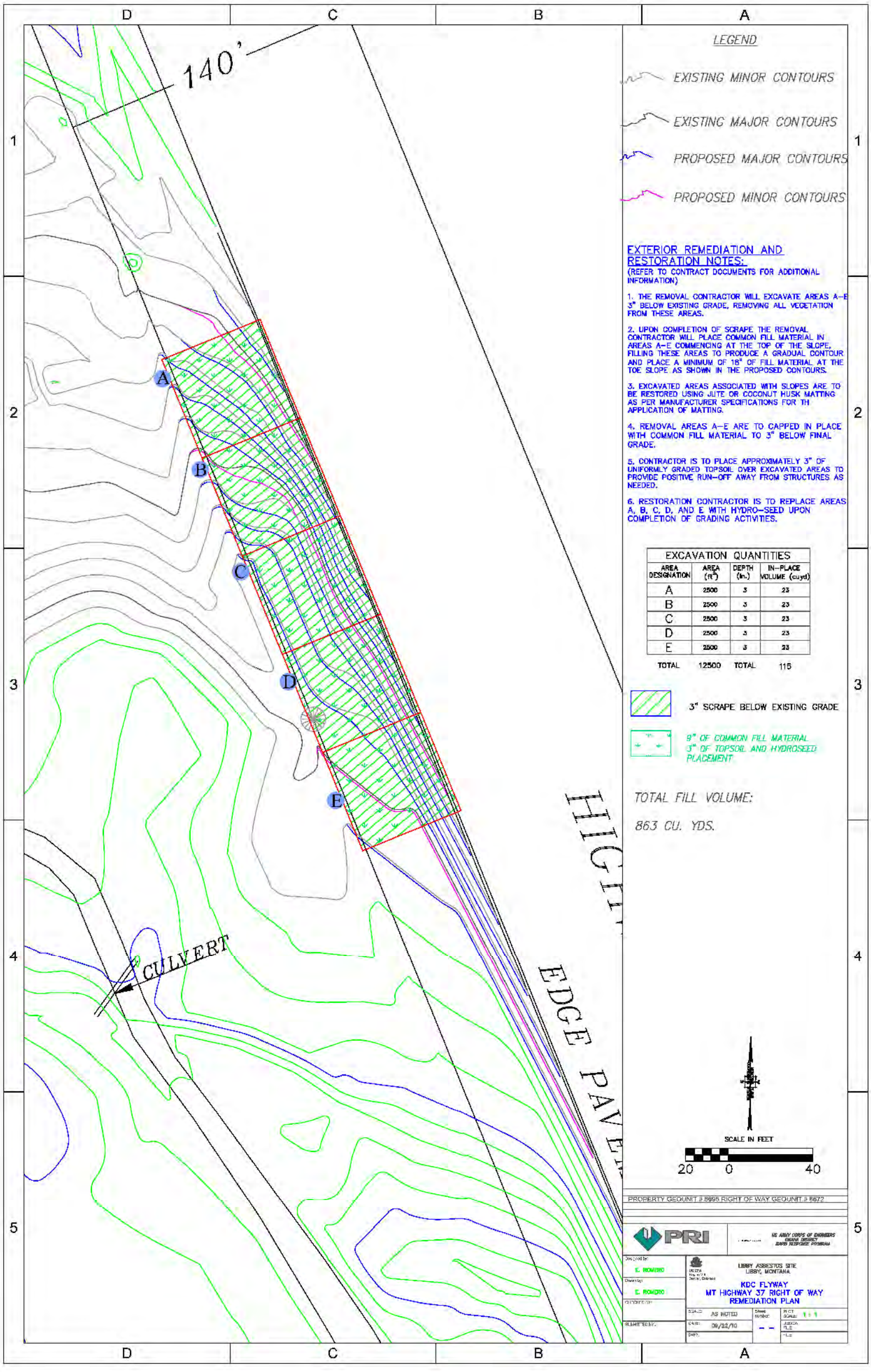
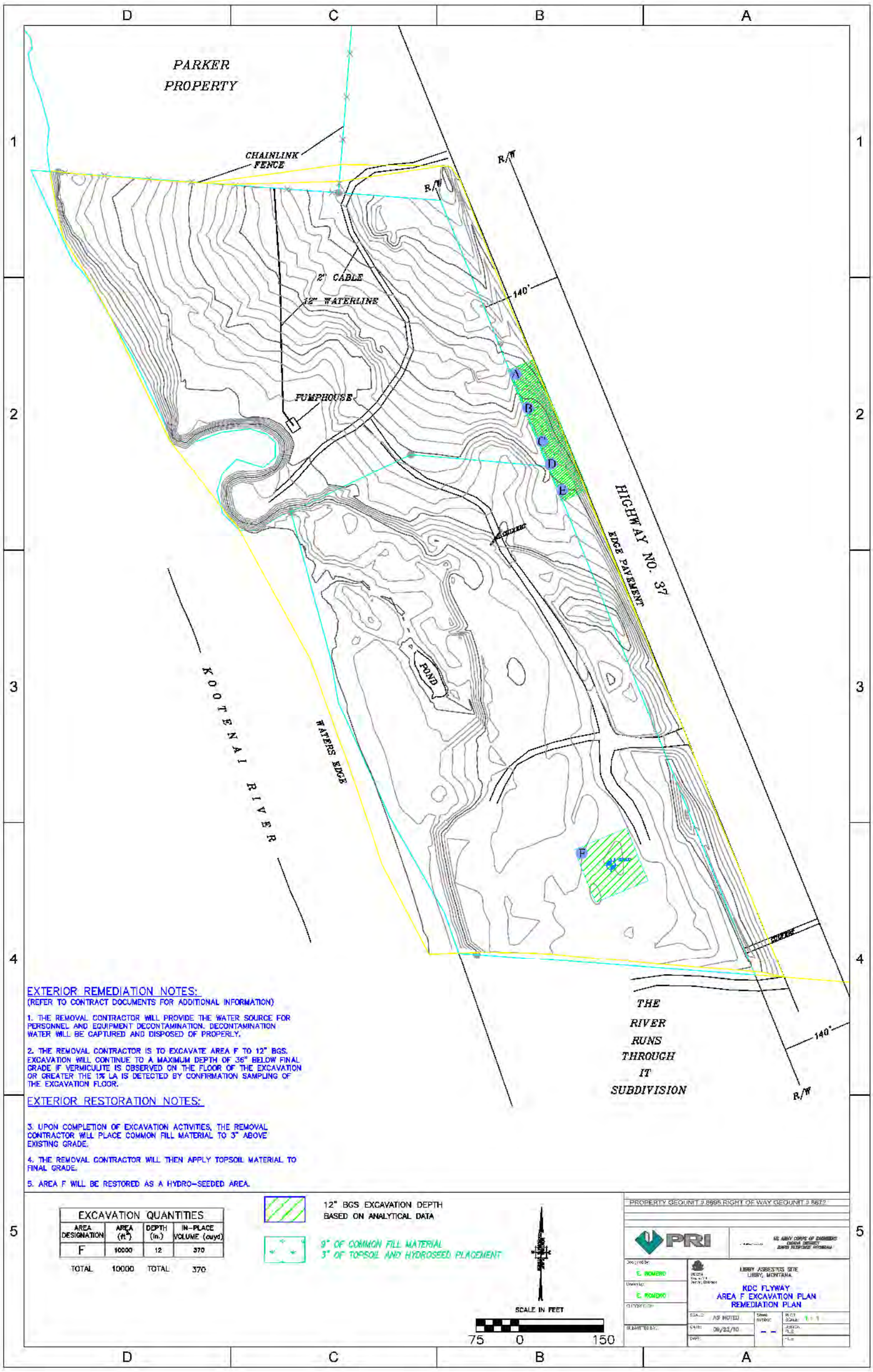


Figure 3-1
Remediation Design
KDC Flyway: MT Highway 37 Right of Way
Libby Asbestos Superfund Site
Lincoln County, Montana

NOT TO SCALE

Figure provided by Project Resources, Inc.

CDM Smith

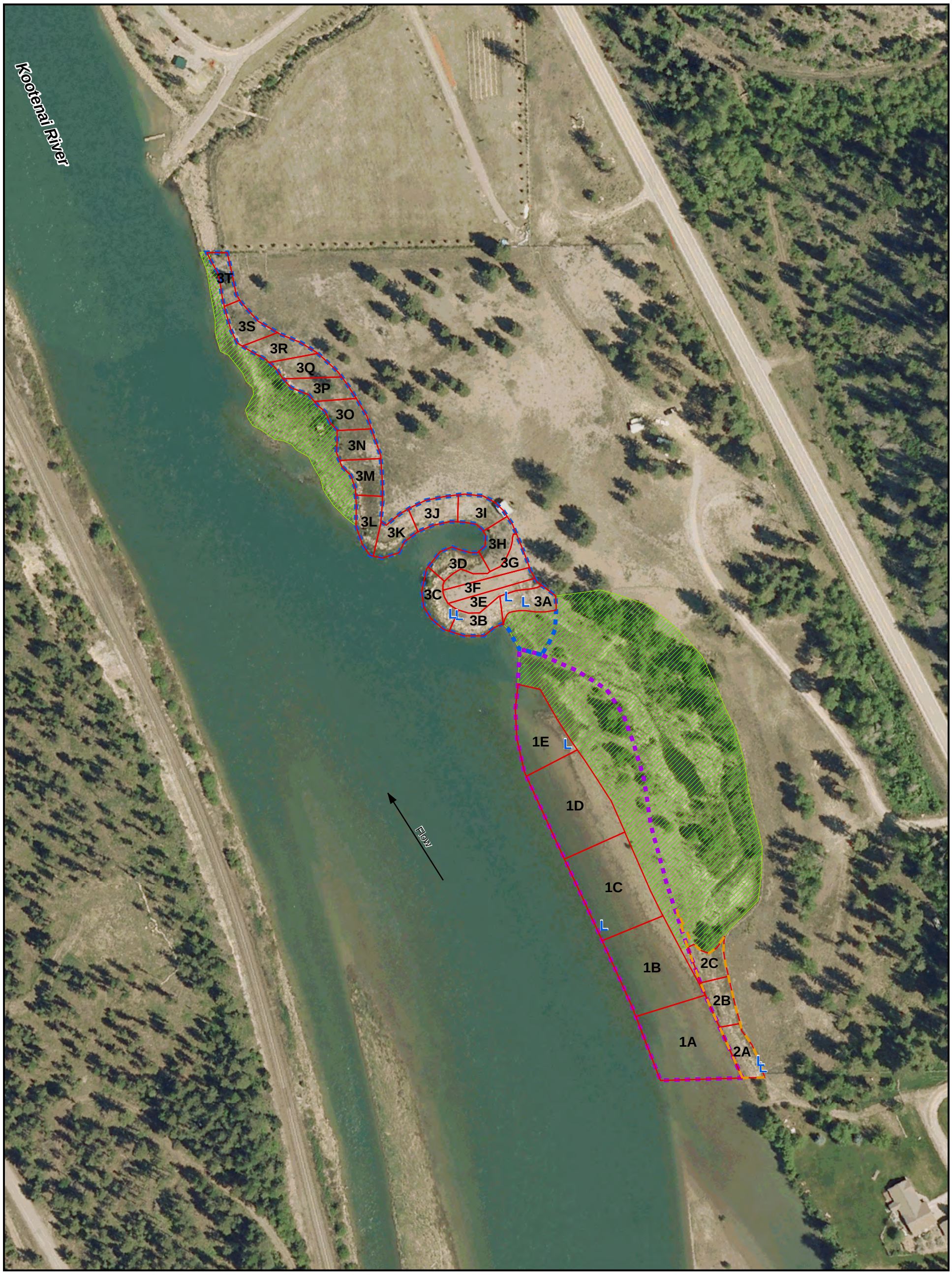


NOT TO SCALE

Figured provided by Project Resources, Inc.

Figure 3-2
Remediation Design
KDC Flyway: Area F
Libby Asbestos Superfund Site
Lincoln County, Montana

CDM Smith



N

0 75 150 300

Feet

1 inch = 150 feet

Image Source:
The imagery was acquired in May 2009 with a Microsoft/Vexcel UltraCamX digital aerial camera equipped with airborne GPS and inertial measurement unit.

The orthoimagery has been generated to meet a horizontal accuracy of 60 cm RMSE according to ASPRS class I accuracy standards for 1:2,400 scale maps or 1.04 m at the 95 percent confidence level according to NSSDA standards. These specs have been verified by measuring the ground control points in the orthophotos with 52 cm RMSE. No independent check points were available.

Legend

- Zone
- Area 3
- Area 2
- Area 1
- Heavy Vegetation

Figure 3-3
July 2010 Investigation
KDC Flyway
Libby Asbestos Superfund Site
Lincoln County, Montana

CDM Smith