RECORD OF DECISION

ANNAPOLIS LEAD MINE SUPERFUND SITE
OPERABLE UNIT 3
EPA ID MO0000958611

IRON COUNTY, MISSOURI

Prepared by

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RECORD OF DECISION

DECLARATION

SITE NAME AND LOCATION

Town of Annapolis, Operable Unit #3 (OU-3)
Annapolis Lead Mine Superfund Site (Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] ID #: MO0000958611)
Annapolis, Iron County, Missouri

STATEMENT OF BASIS AND PURPOSE

This document presents the selected remedial alternative for addressing mine wastes at the Annapolis Lead Mine Site, OU-3. This decision was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, the National Contingency Plan. This decision is based on the Administrative Record for the Site. The Administrative Record File is located in the following information repositories:

Annapolis City Hall
204 School Street
Annapolis, Missouri

EPA Region 7
Records Center
901 North 5th Street
Kansas City, Kansas

The EPA has coordinated selection of this remedial action with the Missouri Department of Natural Resources (MDNR). The state of Missouri concurs with the selected remedy.

DESCRIPTION OF THE SELECTED REMEDY

The Environmental Protection Agency (EPA) has determined that the CERCLA action necessary for OU-3 of the Annapolis Lead Mine Site is to remove lead contamination from the driveway of a residence. The property with the contaminated driveway exceeded 400 ppm, the EPA screening level for lead. The driveway will be removed and taken by dump truck to the existing lead contaminated material repository at OU-1. The contaminated driveway will be replaced with uncontaminated gravel. No additional remedial response action is necessary.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, is expected to comply with the chemical-, location-, and action-specific federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions to the maximum extent practicable. EPA has determined that the removal action is necessary to ensure protection of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary of this Record of Decision. Additional information can be found in the Administrative Record for this site.

- Chemicals of concern and their respective concentrations
- Baseline risk represented by the chemicals of concern
- Cleanup levels established for chemicals of concern and the basis for
- these levels
- How source materials constituting principal threats are addressed
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD
- Potential land and groundwater use that will be available at the site as a result of the Selected Remedy
- Key factor(s) that led to selecting the remedy (i.e., describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria key to the decision).

AUTHORIZING SIGNATURE

Cecilia Tapia, Director
Superfund Division

6/29/07
Date

RECORD OF DECISION (ROD)

DECISION SUMMARY

A. SITE NAME, LOCATION, AND BRIEF DESCRIPTION

The Annapolis Lead Mine Superfund Site (Site) (CERCLIS ID # MO0000958611) Operable Unit (OU)-3 is located in Southern Iron County in the Old Lead Belt of Southeast Missouri. OU-3 covers the town of Annapolis. Lead mining occurred near the town from approximately 1919 to 1940. Over one million tons of mining waste was generated during this time. Heavy metal contamination in the mining area (OU-1) above acceptable levels has been identified in mining waste, soil, surface water, and sediments. The Site is arranged into three operable units for administrative efficiency in conducting environmental cleanups: OU-1, Sutton Branch Creek Flood Plain and Mine Area; OU-2, Big Creek; and OU-3, the town of Annapolis. OU-3 is the focus area of this ROD. The Site is depicted on Figure 1.

The Environmental Protection Agency (EPA) is the lead agency and the Missouri Department of Natural Resources (MDNR) is the support agency for this remedy selection.

B. SITE HISTORY AND ENFORCEMENT ACTIVITIES

Site (Source) History

- 1919 - 1940 — Operation period of the mine.
- 1982 — St. Joseph Lead Company sold the surface rights of the property to private individuals but retained the mineral rights.
- 1987 — Doe Run acquired the mineral rights through a buy out or ownership transfer.
- 1992 — MDNR collected water and sediment samples along Sutton Branch Creek, the receiving stream of runoff from the Site.
- 1993 — MDNR referred the Site to EPA as a potential hazardous waste site.
- 1996 — EPA completed a Screening Site Inspection (SSI) at the Site.
- 1997 — EPA conducted emergency response activities at the Site in response to elevated blood-lead levels found to exist in two children.

- 1999 — EPA completed an Expanded Site Inspection and Removal Assessment (ESI/RA). The ESI/RA focused on documenting, for the purpose of listing the Site on the National Priorities List (NPL) and/or initiating a removal action, the extent of metals contamination across the Site and in the receiving stream.

- 2004 — EPA listed the Site on the NPL. EPA initiated and completed a removal action on the northern portion of the Site. The waste piles were consolidated and covered.

- 2005 — EPA completed a Remedial Investigation/Feasibility Study (RI/FS), Proposed Plan, and ROD for OU-1.

- 2006-2007 — EPA completed an RI/FS for OU-2.

Previous Investigations of the Entire Site

- **1992 Preliminary Assessment**

In September 1992, MDNR collected water and sediment samples downstream of the ravine that drains the tailings pile. Analysis of the samples demonstrated that elevated levels of lead, arsenic, cadmium, zinc, nickel, and copper exist in the sediments of the receiving stream, Sutton Branch Creek. The state conducted no source area sampling of sediment, soil, surface water, or groundwater. The Site was subsequently forwarded to EPA as a potential hazardous waste site.

- **1996 Screening Site Inspection**

In June 1996, EPA completed an SSI at the Site. The SSI focused primarily on evaluating the Site in accordance with the national Hazardous Ranking System. Analysis of soil samples taken during the SSI revealed lead concentrations in the tailings pile as high as 2,570 parts per million (ppm) and lead concentrations around the on-site residence as high as 27,500 ppm. Around the former mine operation's areas, lead was found in soil as high as 28,300 ppm. Eight soil samples (plus one duplicate) were collected for laboratory analysis to confirm the X-ray fluorescence (XRF) readings and to provide data for the soil exposure pathway. Three sediment and surface water samples also were collected from Sutton Branch Creek. Soil samples from the Site and sediment samples collected from Sutton Branch Creek contained elevated levels of six metals. Surface water samples from Sutton Branch Creek displayed elevated levels of lead, with concentrations up to 11.6 micrograms per liter (μg/L). Arsenic, cadmium, and thallium were also found to exist at elevated levels at the Site. The SSI recommended that an ESI be performed due to an observed release of hazardous materials to the surface water and soil at the Site.

- **Fish and Wildlife Service studies**

Two U.S. Fish and Wildlife Service (USFWS) studies conducted on aquatic life in Big Creek have shown evidence of heavy metal contamination in fish species. Both studies involved the enzyme o-aminolevulinic acid dehydratase (ALA-D), which catalyzes the formation of a hemoglobin precursor (porphobilinogen [PBG]) from aminolevulinic acid. ALA-D is highly sensitive to lead and relatively easy to measure. The inhibition of ALA-D activity is used as a biomarker for lead exposure in humans, waterfowl, and more recently in fish. The objective of the first study (conducted in 1989 and 1990) was to verify and calibrate the biomarker of lead exposure for use in a statewide assessment of metals pollution from lead and zinc mining, and to determine whether metals other than lead and zinc affect ALA-D activity. Big Creek was chosen as a sampling site because it is near the Site. The studies indicated that lead concentrations in fish blood at sampling locations downstream of the confluence of Big Creek and Sutton Branch Creek were elevated significantly higher than at upstream locations along Big Creek. Cadmium concentrations were greatest downstream of Annapolis and Sutton Branch Creek. Study authors cited the Site as a probable source and suggested continued monitoring.

- **1997 Emergency Response**

In March 1997, EPA collected additional dust and wipe samples from the on-site residence. Soil and groundwater samples were also taken at this time. An XRF was used to screen surface soils at the site, and the 10 sample locations subsequently were selected from those screened points to provide a wide range of concentrations for a site-specific XRF-calibration model that might be required. The samples were collected in response to detection of high lead levels in the blood of the children. The wipe samples were analyzed for the eight Resource Conservation and Recovery Act metals, and the soil and groundwater samples were analyzed for 24 metals by the EPA Region 7 laboratory in Kansas City, Kansas (E&E 1997). Results from these samples, along with the results from blood-lead samples taken from the children, were used in making a determination that individuals living on-site were being adversely impacted. In May 1997, EPA performed a removal action which resulted in the relocation of the children and their immediate family from the Site

- **1999 Expanded Site Inspection and Removal Assessment**

An ESI/RA of the northern segment was completed by EPA in February 1999. The ESI/RA focused on documenting the extent of metals contamination across the Site and in the stream receiving Site runoff. Nineteen groundwater, 11 surface water, 19 surface and subsurface soil, and 13 sediment samples were collected during the sampling activities, including background and quality control samples. The samples were analyzed for total metals. Water samples also were analyzed for dissolved metals.

Over 100 in situ readings were collected with an XRF during the ESI/RA. Soil profiling samples also were collected with a Geoprobe® in waste source areas—including portions of the chat and tailings pile—to determine approximate depths of mining wastes across the Site. The chat and tailings pile was found to contain mining waste to a depth of 21 feet. Concentrations of on-site lead were found to be as high as 20,000 ppm during the ESI/RA. Off-site, in the sediments of Sutton Branch Creek, lead was found as high as 2,900 ppm. The off-site surface waters of Sutton Branch Creek exhibited lead at concentrations of 17.4 ppm. The ESI/RA also estimated the amount of lead-contaminated tailings, chat, and soil (above 500 ppm) at 51,677 cubic yards. Much of this volume is located in the tailings pile which is estimated to contain approximately 39,000 cubic yards of mining waste.

Approximately ten percent of the screening locations were sampled for laboratory confirmation analysis. Analytical results indicated lead as high as 7,000 mg/kg in sample number -309, and 7 of the 12 samples collected were above the EPA removal action level (RAL) of 400 mg/kg. Arsenic also was found at levels exceeding three times above background concentrations and above the residential RAL screening level in four of the six confirmation samples. Cadmium and zinc were detected at levels exceeding three times above background but not exceeding health-based screening levels.

The soil sample with the highest lead concentration (7,000 mg/kg) was collected 300 feet north of the chat and tailings pile from the mill slime pond. This area consistently produced the highest XRF screening values (six surface screening values ranged from 5,700 to 9,290 mg/kg). Areas of lead contamination above 500 mg/kg also were detected around the one residence and other structures associated with the former mining operations. XRF screening results in other locations of the former mining area ranged from 105 mg/kg to 3,362 mg/kg for lead in soil. Although several other metals were detected during the sampling event, only arsenic was found above a health-based benchmark (cancer risk of 0.43 mg/kg); however, background concentrations also were found above the same benchmark.

Laboratory analyses substantiated visual observations of mining waste in Sutton Branch Creek. Elevated levels of arsenic, cadmium, lead, and zinc were reported in the ESI/RA in surface water samples collected from Sutton Branch Creek. Heavy metals were also found above designated background concentrations and ecological threshold values in sediment samples collected along the surface water pathway. Lead was found as high as 2,600 mg/kg in sediment samples collected from the chat and tailings pile outfall, and as high as 1,700 mg/kg at the confluence of Sutton Branch Creek and Big Creek (designated wetland area) located 0.75 mile downstream of the Site. Other contaminants—including arsenic, cadmium, and zinc—also were found in sediment samples collected along Sutton Branch Creek, at levels above background and ecological-based screening levels.

Elevated concentrations of contaminants possibly attributable to the Site also were found in surface water collected from the furthest downstream sampling location in Big Creek—approximately 1,300 feet downstream of the confluence with Sutton Branch Creek. In addition, total and dissolved lead were found in surface water samples collected from Sutton Branch Creek at levels above background screening levels and Ambient Water Quality Criteria (AWQC) standards. Cadmium was identified above background levels and the AWQC standard in one surface water sample from Big Creek, collected 100 feet downstream of the confluence with Sutton Branch Creek.

Data collected during the ESI/RA indicated that the Site has had an impact on the environment, primarily through the surface water pathway. Tailings from the Site were migrating to Sutton Branch Creek. Evidence of elevated levels of lead and cadmium in Big Creek fish has been found and the threat to human health through the consumption of contaminated fish is considered high. Further, elevated metals have been found at a known wetland area (the confluence of Sutton Branch Creek and Big Creek). This contamination may be affecting the ecological system of this sensitive environment and other wetland systems further downstream of the confluence.

None of the domestic wells sampled within a one-mile radius had contaminant concentrations exceeding maximum contamination levels (MCL). However, arsenic was reported in at least one private well at a concentration exceeding the EPA Reference Dose (RfD) or EPA Cancer Risk level. An on-site irrigation well was found to be contaminated with total lead and cadmium. This shallow groundwater contamination is most likely attributable to the source(s) on-site. However, poor construction of the well (the lack of a surface seal) may have resulted in elevated concentrations that are not necessarily representative of the local groundwater. Lead and cadmium were identified in several wells on and adjacent to the Site during the EPA SI in November 1997.

Tetra Tech START (an EPA contractor) and EPA have estimated the volume of lead-contaminated soils that may require excavation and/or stabilization. Quantity calculations were derived from integrating visual inspection information, screening and analytical data, and mapping techniques. Based on this information and historical documentation, four lead-contaminated source areas were delineated for removal assessment purposes: the heavily eroded chat and tailings waste pile, the outwash area of the chat and tailings waste pile, the former mining operations area, and the mill slime pond. An estimated 51,677 cubic yards of lead-contaminated tailings, chat, and soil (above 500 mg/kg) were calculated for these four areas.

- **2003 Time-Critical Removal Action**

In September 2003, EPA proposed a time-critical removal action for the tailings pile. The goal of the removal action was to identify, consolidate, and stabilize the lead-contaminated mine tailings on-site. The time-critical removal action work began at the Site in May 2004. When the removal action began at the Site, settling basins were constructed to manage storm water runoff. Earth moving equipment was used to form the tailings and contaminated soil into a mound in the middle of the ravine where the pile was originally located. All areas in the tailings pile vicinity that had a mean lead surface concentration greater than 1,000 ppm were delineated and excavated. Excavations proceeded to the lesser of a depth of 18 inches or until a lead level below 400 ppm was achieved. All excavated areas were backfilled with clean material (<240 ppm lead) and excavated soil was consolidated into the on-site tailings pile. The tailings pile was graded and compacted with an engineered protective cover installed over the tailings. The protective cover consists of uncontaminated clay and topsoil, allowing for the establishment of vegetative cover. The time-critical removal action minimized both the potential for human exposure to lead through contact with the soil and the potential for transport of the tailings by surface runoff, wind, or human activity. Monitoring and Site control measures were conducted during the removal action work to ensure removal activities did not expose nearby populations and Site workers to harmful levels of contaminants.

- **2005 Remedial Investigation/Feasibility Study for OU-1**

A RI/FS for OU-1 was completed in August 2005. The RI/FS combined the information about the nature and extent of contamination in and around the Site. The FS developed alternatives for remedial action for OU-1. Additional studies conducted by EPA, MDNR, USFWS, and others assisted in developing and supporting the alternatives in the FS.

- **2006-2007 Remedial Investigation/Feasibility Study for OU-2**

An RI/FS was completed for OU-2 in March 2007. The RI/FS consisted of collecting 49 overbank and deep-pool samples in Big Creek. Samples were taken from the mouth of Sutton Branch Creek downstream to the confluence with the St. Francis River. Sampling locations are shown in Figures 1-5 of Appendix A. One sample taken at the mouth of Sutton Branch Creek was above levels of concern. All other samples were below levels of concern. Sampling results are shown in Table 1 included in Appendix B.

- **2006-2007 Remedial Investigation/Feasibility Study for OU-3**

The RI report for OU-3 was completed in February 2007. The purpose of the RI was to determine the nature and extent of contamination in the town of Annapolis. Eighty-five properties were sampled for soil contamination. Results are presented in Table 1, Appendix B. Based on the results of field investigations, the following conclusions are appropriate concerning risks and hazards associated with mine waste in OU-3:

- 83 out of 85 properties screened were below the screening level for lead in residential surface soils of 400 ppm. The soil lead screening level is the concentration of lead, if found in samples of residential surface soils, which would trigger further investigation.

- Lead contamination above the screening level was found in one driveway of one property.

- Lead contamination above the screening level was found in one Soil Sampling Unit of one property. This Soil Sampling Unit will not be addressed. EPA has determined that a soil cleanup action is not necessary at this time. The primary factors contributing to this decision include:

    - The lead soil concentration found in the southwest area of the property was only slightly above EPA's screening level of 400 ppm;

    - The area with the slightly elevated concentration was small and not currently a play area or likely to become a play area in the future;

    - There was no pattern to the contamination in the community that would connect the property to the mine waste that is the subject of EPA's actions at the Site; and

    - The mean concentration of the lead across the property is well below the screening level.

- Lead was the only Contaminant of Potential Concern that was assessed for OU-3; however, Target Analyte List Metals (TALs) were measured in the laboratory confirmation samples and the concentrations of the TALs were below levels of concern.

- Lead exposure in the town of Annapolis is below levels of concern for all potential receptors.

An FS for OU-3 was completed in February 2007. The FS combined the information about the nature and extent of contamination in and around the Site described in the RI. The FS was designed to develop and screen alternatives for remedial action for the entire Site. However, since OU-3 was found to have no significant contamination, no remedial action alternatives were developed other than removal of the lead-contaminated media from the contaminated residential driveway.

C. COMMUNITY PARTICIPATION

The EPA issued the Proposed Plan for OU-3 on March 28, 2007, and provided a 30-day review and comment period opening on March 28, 2007, and closing on April 28, 2007. A public meeting to present the plan and receive comments was held April 5, 2007, at the South Iron County Community Center, from 7:00 to 9:00 p.m. Included in this ROD is a responsiveness summary that addresses, in writing, the significant comments EPA received from the public during the comment period.

D. SCOPE AND ROLE OF OPERABLE UNIT

The Site is arranged into the following three OUs for administrative efficiency in conducting environmental cleanups: OU-1, Sutton Branch Creek Flood Plain and Mine Area; OU-2, Big Creek; and OU-3, the town of Annapolis. A brief overview of the status of each OU is provided below:

- OU-1: Sutton Branch Creek Flood Plain & Mine Area – Addressed in the ROD for OU-1.
- OU-2: Big Creek – Addressed in the ROD for OU-2.
- OU-3: Town of Annapolis – Addressed in this ROD.

This ROD addresses OU-3, which includes the nature and extent of soil contamination in the town of Annapolis. These soils included church yards, residential yards, school yards, and any other areas deemed attractive to children.

This ROD is necessary to mitigate the principal threat for OU-3, which is the residual risk to human health and the environment from exposures to hazardous substances in soils. The RI/FS has shown that the only action necessary is the removal of the lead-contaminated media from the contaminated residential driveway.

E. SITE CHARACTERISTICS

The former mine and impacted area is located approximately one mile east-northeast of Annapolis, Missouri. Runoff from the former mine operation entered Sutton Branch Creek which flows downstream into Big Creek. The area affected by the mining wastes is considered

rural/residential. OU 1 is defined as the Sutton Branch Creek floodplain from the PPE to the confluence with Big Creek, as well as the historic tailings pile and mine area, and is approximately 200 acres in size. OU-2 is defined as Big Creek from the mouth of Sutton Branch Creek downstream to the confluence with the St. Francis River, which is a total of approximately 20 miles of stream. OU-3 is defined as the town of Annapolis.

Suspected lead contamination of the surface soil was the primary focus of this investigation. Most of the properties sampled were private residences as well as church yards and the school yard. Specific surface features were not noted. All areas were sampled following the guidance in the Superfund Lead-Contaminated Residential Sites Handbook (OSWER 9285.7-50, 2003).

- **Demography**

The population for Annapolis was 310 residents as of the year 2000. There are approximately 136 occupied houses in town (city-data.com, 2007).

- **Groundwater Investigations**

No groundwater investigations were conducted. It was determined that investigation of groundwater would not be necessary based on the results from the investigations of groundwater in the mining area prior to the time-critical removal action. Prior investigations showed slightly elevated lead concentrations in groundwater that were limited to the source area (OU-1).

- **Surface Water and/or Sediment Investigations**

No surface water investigations were conducted for OU-3.

- **Physical Characteristics of the Study Area**

The physical setting of the study area was the town of Annapolis (Figure 1, Appendix A) Soil in the town of Annapolis included the following:

- Residential Soil
- School Soil
- Church Soil
- Other soils that were deemed attractive to young children.

- **Results of Field Activity**

The results of field activity showed that soil contamination in the town of Annapolis, based on XRF analyses, was found at two residences (see Table 1, Appendix B). One driveway had a mean lead concentration of 1,180 ppm and one Sampling Unit (SU) separate property had a mean lead concentration of 429 ppm. The elevated SU was the only elevated Soil SU in the town. EPA divided this property into four SUs. Each SU was composed of five point composite samples. The initial screening of this yard

resulted in an elevated lead level of 609 parts per million in SU #1. Based on the results of the other three SUs in the yard, the results of other properties in town, and the advice of EPA's Human Health Risk Assessor, EPA resampled the elevated sampling unit (SU #1) on this property, using a more thorough technique. The resample of SU #1 was composed of a 15-point composite sample. The results of this sampling indicated that SU #1 contained a mean of 429 ppm, which is just above the screening level of 400 ppm. The mean concentration of the entire property was 277 ppm, which was below the screening level for lead in residential surface soils of 400 ppm.

F. CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

The Site is located within the city of Annapolis, which has a population of 310. The population living within a four-mile radius of the Site, as of 1996, is estimated to be 1,325, with 180 people living within a one-mile radius. A school attended by 489 students is located within the Site.

Current and potential future Site and resource uses were not evaluated for OU-3. These were evaluated for OU-1 and OU-2, and are included in the Administrative Record. The entire area evaluated was within the town of Annapolis, which can be considered residential.

G. SUMMARY OF SITE RISKS

OU-3 was found to have no significant contamination other than the lead-contaminated media from the contaminated residential driveway.

- **Ecological Risk Assessment**

It has been determined by the sampling results that there is little or no ecological risk from lead-contaminated mine waste in OU-3 of the Site.

- **Human Health**

It has been determined by the sampling results that there is little or no human health risk associated with lead-contaminated mine waste in OU-3 of the Site except at the affected property.

H. REMEDIAL ACTION OBJECTIVES

The objective is to remove the contaminated media from the contaminated residential driveway.

I. DESCRIPTION OF ALTERNATIVES

Under 40 CFR 300.430(e)(3), the lead agency is required to develop a range of alternatives for source control actions. OU-3 is not a source area and was found to have

minimal lead contamination related to mine waste. The action that will occur at OU-3 is a removal of the contaminated driveway. Excluding the contaminated driveway, little or no improvement would be seen if additional remedial-action alternatives were analyzed or implemented.

J. COMPARATIVE ANALYSIS OF ALTERNATIVES

Under 40 CFR 300.430(e)(3), the lead agency is required to develop a range of alternatives for source-control actions. OU-3 is not a source area and was found to have minimal lead contamination related to mine waste. The action that will occur at OU-3 is removal of the contaminated driveway. Excluding the contaminated driveway, little or no improvement would be seen if other remedial action alternatives were analyzed or implemented. Since there was no significant contamination found at the Site, and the removal will address all the contamination, no other remedial alternatives were evaluated, and thus no comparative analysis of remedial alternatives was prepared.

K. PRINCIPAL THREAT WASTE

Principal threat wastes are source materials that require remediation based on toxicity, mobility, and the potential to create unacceptable human health or ecological risks. The NCP establishes a preference that treatment will be used to address principal threat wastes when practical.

The principal threat wastes at the Site consist of mining-impacted soils. The wastes and their characteristics are discussed in detail in the RI/FS. It is not feasible to treat the principal threat waste. A removal of the lead-contaminated driveway materials will reduce the toxicity, mobility, and volume of contamination and is the preferred approach.

L. SELECTED REMEDY

The selected alternative for addressing OU-3 is removal of the property with the contaminated driveway. The property with the contaminated driveway exceeded 400 ppm (the EPA screening level for lead). Other than this action, no additional remedial response action is necessary.

This alternative is appropriate because the screening level investigation showed no additional significant mine-waste contamination in the town of Annapolis, therefore no other response actions are required or needed.

The no-action alternative was considered but it did not meet the threshold criteria because the lead-contaminated media in the residential driveway would have been left in place. To prevent human exposure, action is necessary to address the lead-contaminated driveway.

The lead-contaminated media will be removed from the residential driveway to prevent exposure to the household residents to the lead-contaminated driveway media. This material will be removed and transported by dump truck to the existing lead-contaminated material repository at OU 1. The contaminated driveway will be replaced with uncontaminated gravel. No additional remedial action alternatives were developed because the removal will address the contamination.

EPA as the lead agency, and MDNR as the supporting agency, believe the selected alternative meets the threshold criteria. EPA expects the selected alternative to satisfy the following statutory requirements of CERCLA section 121(b): (1) be protective of human health and the environment, (2) comply with applicable or relevant and appropriate requirements (ARARs), (3) be cost effective, and (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

The support agency, MDNR, has been consulted in the preparation of this ROD, and has provided concurrence for the selected alternative in this ROD.

M. STATUTORY DETERMINATIONS

EPA's primary legal authority and responsibility at Superfund sites is to conduct response actions that achieve adequate protection of human health and the environment. Section 121 of CERCLA also establishes other statutory requirements and preferences that include the need for federal and state ARARs compliance for selected remedial actions in addition to cost effectiveness and the use of permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable. Additionally, the statute includes a preference for remedies that reduce the mobility, toxicity, and volume of contaminants and include treatment. The selected alternative will reduce the mobility, toxicity, and volume of contaminants but will not include treatment.

Five-Year Review Requirements

The selected remedy is not subject to five-year reviews. The selected remedy will remove the contamination from the Site.

N. DOCUMENTATION OF SIGNIFICANT CHANGES

There were no comments on the document from the state or the public; therefore, there are no significant changes.

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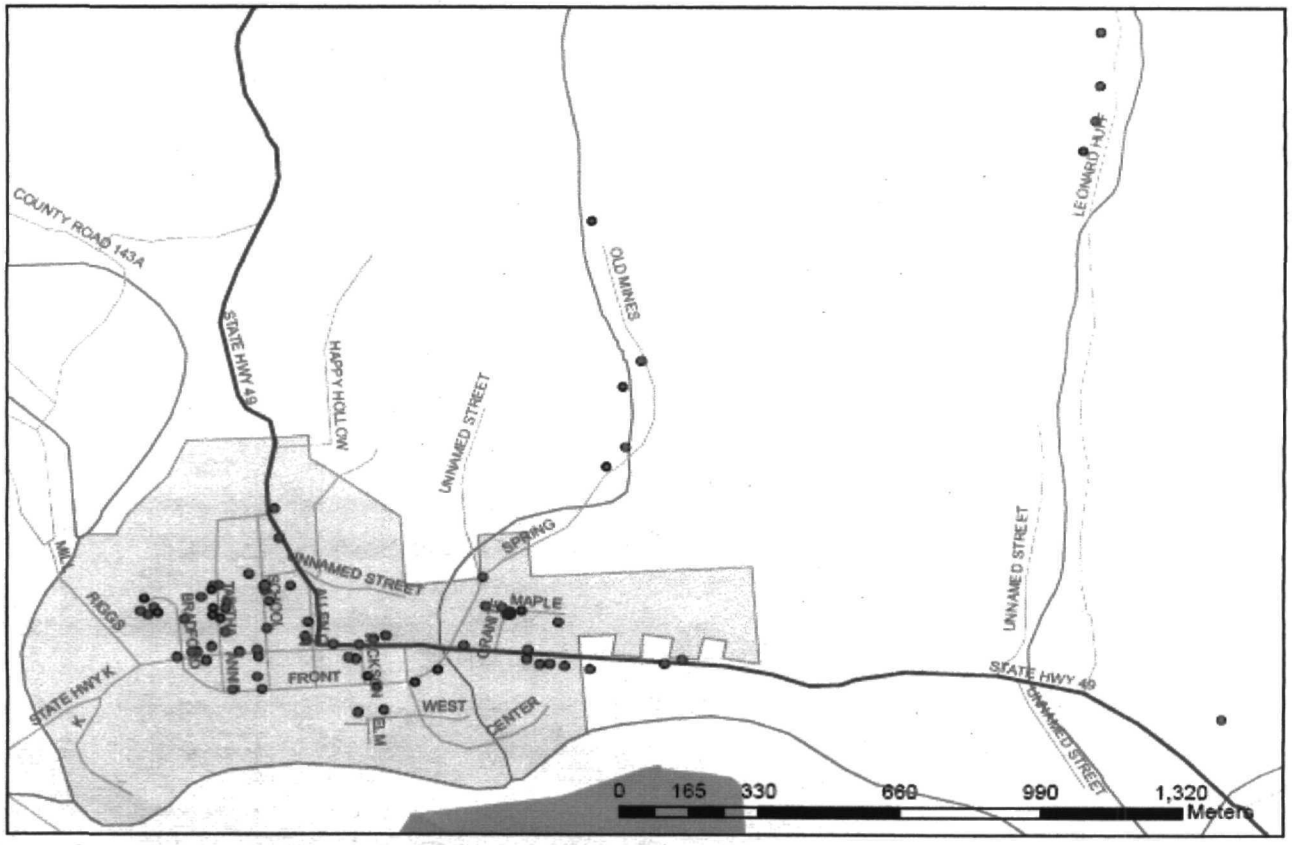
APPENDIX A

FIGURES

FIGURE 1. TOWN OF ANNAPOLIS

Annapolis, MO



N

Sampling

SYMBOL

- Sample Sites
- Removal Property
- Property w/ slight exceedence
- State Highways
- Streets
- Streams
- Annapolis City Limits
- Water Body

NOTE: The Environmental Protection Agency does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any injury or loss resulting from reliance upon the information shown.

3/21/00 vad

APPENDIX B

TABLES

TABLE 1 PROPERTY RESULTS

Yard	Sampling Units ≥ 400	Overall Yard Concentration (mean)	Contaminated Driveway
1	0	114	No
2	0	117	No
3	0	126	No
4	0	144	No
5	0	111	No
6	0	113	No
7	0	108	No
8	0	94	No
9	0	112	No
10	0	203	No
11	0	124	No
12	0	99	No
13	0	122	No
14	0	104	No
15	0	146	No
16	0	264	No
17	0	123	No
18	1=429	277	No
19	0	131	No
20	0	123	No
21	0	141	No
22	0	136	No
23	0	143	No
24	0	146	No
25	0	200	No
26	0	129	No
27	0	218	No
28	0	107	No
29	0	152	No
30	0	104	No
31	0	159	No
32	0	247	No
33	0	165	No
34	0	107	No
35	0	90	No
36	0	107	No
37	0	99	No
38	0	106	No
39	0	125	No
40	0	109	No
41	0	106	No
42	0	222	No
43	0	138	No
44	0	118	No
45	0	144	No
46	0	120	No
47	0	262	No
48	0	229	No

Yard	Sampling Units ≥ 400	Overall Yard Concentration (mean)	Contaminated Driveway
49	0	83	No
50	0	114	No
51	0	125	No
52	0	115	No
53	0	87	No
54	0	117	No
55	0	80	No
56	0	114	No
57	0	126	No
58	0	96	No
59	0	194	No
60	0	106	No
61	0	80	No
62	0	121	No
63	0	152	No
64	0	201	No
65	0	93	No
66	0	150	No
67	0	115	No
68	0	Below Detection Limit	No
69	0	149	No
70	0	182	No
71	0	Below Detection Limit	No
72	0	74	No
73	0	80	No
74	0	84	No
75	0	91	No
76	0	107	No
77	0	145	No
78	0	233	No
79	0	122	No
80	0	179	No
81	0	106	No
82	0	135	No
83	0	82	No
84	0	219	No
85	0	94	Elevated driveway of 1,180 ppm*

*will be addressed as a Removal Action

APPENDIX C

RESPONSIVENESS SUMMARY

Annapolis Lead Mine Site OU-3

Responsiveness Summary

This Responsiveness Summary addresses all comments pertaining to the Proposed Plan received during the public comment period. The Responsiveness Summary consists of the following sections: Comments/Questions received during the public hearing on April 5, 2007; comments received from the Missouri Department of Natural Resources (MDNR); comments received from the general public; comments received from political subdivisions of the state of Missouri; and comments received from business and industry.

A. Comments/Questions Received During Public Hearing on April 5, 2007

The following questions/comments concerning the proposed remedy were raised during the public meeting held at the South Iron County Community Center on April 5, 2007. Other questions and comments raised during that public meeting which did not directly concern the proposed plan for OU-3 are not included in this responsiveness summary. There appeared to be acceptance of the Proposed Plan by those in attendance.

QUESTION: From Ms. Joan Hill, Annapolis Resident. When you said you put the samples together and mixed them up, how did you know which sample was in the driveway?

EPA RESPONSE: We took the driveway as a sample by itself. It was considered one sampling unit. The actual soil in the yard was well below the screening level for lead, but the driveway was contaminated.

QUESTION: From Ms. Joan Hill, Annapolis Resident. Did it look like the driveway gravel had been brought in?

EPA RESPONSE: It looked like mine waste. After we discovered this, we thought we would find more contaminated driveways in town, but we checked every driveway of every property sampled and we did not find additional contamination. A lot of the driveways were creek gravel or paved.

QUESTION: From Ms. Joan Hill, Annapolis Resident. Did you sample the corner of Jackson Street, close to where the ambulance building is? We're going to make it a playground.

EPA RESPONSE: Yes.

QUESTION: From Ms. Joan Hill, Annapolis Resident. What are you going to do with the driveway?

EPA RESPONSE: The driveway will be removed and the material will be taken to the repository. We will replace the contaminated material with clean gravel.

QUESTION From Ms Joan Hill Annapolis Resident Will the owner have to pay for that?

EPA RESPONSE No That's part of our remedy and there will be no charge to the owner

B Comments/Questions Received from MDNR

No comments or questions were received from MDNR

C Comments/Questions Received from the General Public

No comments or questions were received from the general public other than those listed in Section A above

D Comments/Questions Received from Political Subdivisions of the State of Missouri

No comments or questions were received from the political subdivisions of the state of Missouri

E Comments/Questions Received from Business and Industry

No comments or questions were received from business and industry