




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

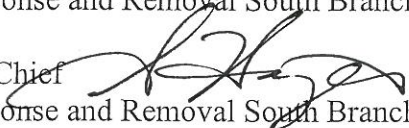
REGION 7
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

DEC 06 2010

ACTION MEMORANDUM

SUBJECT: Request for Time-Critical Removal Action (Removal #4) and Exemption from the 12-Month and \$2 Million Statutory Limit at the Big River Mine Tailings/St. Joe Minerals Corp. Site, Operable Unit 1, St. Francois County, Missouri

FROM: J. Heath Smith, On-Scene Coordinator 
Emergency Response and Removal South Branch

THRU: Scott D. Hayes, Chief 
Emergency Response and Removal South Branch

TO: Cecilia Tapia, Director
Superfund Division

Site ID: 07CR

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed removal action and exemption from the 12-month and \$2 million statutory limit at the Big River Mine Tailings/St. Joe Minerals Corp. (the Site), Operable Unit 1 (OU-1), located in St. Francois County, Missouri. Soils at 11 schools, 16 child day care facilities, and 49 residential properties have been found to exceed the removal action levels proposed in this document. A combined total of approximately 93,715 cubic yards of lead-contaminated soil will require excavation at these properties. Lead is a heavy metal and has been listed as a hazardous substance pursuant to section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. § 9602, the applicable regulations at 40 CFR § 302.4, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 CFR part 300. The primary objective of this removal action is to eliminate or reduce potential ingestion exposure due to the presence of lead and other heavy metals in the soil at the Site. The U. S. Environmental Protection Agency (EPA) will excavate and remove all soils and/or waste where a composite sample exceeds the response criteria established for this action (Section VI[A][1]).

II. EXEMPTION FROM STATUTORY LIMITS

This removal action meets the consistency exemption criteria.

Continued response actions are otherwise appropriate and consistent with the remedial action to be taken at the Site. The removal of contaminated soils from schools, child day care facilities, and residential properties found to meet the removal action criteria is consistent with future remedial action plans at the Site, but will not negate the need for the remedial action. The response action described in this Action Memorandum will eliminate the immediate risk posed by soil contamination at the highly contaminated schools, child day care facilities, and residences. Following completion of the described response action, Site contaminants will be removed from the soil, eliminating the potential for exposure and migration of the lead in soils. Future remedial actions will provide a comprehensive plan to address the lead-contaminated soils in schools, child day care facilities, and residential properties at the Site that are not addressed by this removal action.

An exemption from the statutory limits is necessary for this action in accordance with CERCLA § 104(c)(1), 42 U.S.C. § 9604(c)(1).

III. SITE CONDITIONS AND BACKGROUND

A. Site Description

Site Name: Big River Mine Tailings/St. Joe Minerals Corp. Site, OU-1

Superfund Site ID: 07CR

NRC Case Number: N/A

CERCLIS Number: MOD981126899

Site Location: St. Francois County, Missouri

Latitude: 37.847166, Longitude: -90.495812

Removal Category: Time-Critical

Nationally Significant: No

Potentially Responsible Party (PRP): To Be Determined

NPL Status: Listed on October 14, 1992

1. Removal site evaluation

On October 4, 2010, EPA initiated a limited Removal Site Evaluation at the Site to assess a limited number of residential properties located near the Columbia Lead Mine, schools, and child day care facilities located in St. Francois County, Missouri. Field screening results of composite samples collected from areas of exposed soil document that a release of a hazardous substance (lead) has occurred across the Site. The investigation focused on outdoor soils at each location which include exposed soils in which children play. Lead was identified by field portable X-Ray Fluorescence Spectroscopy at levels above the residential screening level of 400 milligrams per kilogram (mg/kg) lead in 11 of 11 school properties, 16 of 17 child day care facilities, and 19 of 19 residential properties.

In addition, previous actions at the Site have identified additional properties with elevated lead concentrations that have not been remediated to date. Approximately 34 residential properties have previously been identified with lead concentrations exceeding 1,200 mg/kg. Approximately 729 residential properties are known to exist at the Site with lead concentrations in the 400 to 1,199 mg/kg range.

The greatest areas of concern at the Site that require removal action are the exposed lead-contaminated soils in areas where children 84 months of age or less or other sensitive populations could be exposed.

2. Physical location

The Site is located in southeastern Missouri in St. Francois County. This response action is limited to schools, child day care facilities, and residential properties where a composite sample exceeds the response criteria established for this action (Section VI[A][1]). This response action does not include work being considered at Lake Timberline or the Central Middle School Sub-Site. Attached is an aerial map of the Site (Attachment I).

3. Site characteristics

The Site exists within an area of approximately 436 square miles and includes all of St. Francois County with the exception of the former Mine La Motte tract that extends into St. Francois County's southern border just north of the community of Mine La Motte, Missouri.

St. Francois County is the location of a former mining region known as the "Old Lead Belt." The area is still referred to as the "Mineral Area." The population center of the area is located approximately 70 miles south of St. Louis, Missouri. Six large areas of mine waste covering an area of approximately 110 square miles are present within the Site. The areas included are the Bonne Terre Mine Tailings Site, Leadwood Mine Tailings Site, Elvins Mine Tailings Site, Federal Tailings Pile Site, Desloge Mine Tailings Site, National Mine Tailings Site, and Doe Run Mine Tailings Site. Also included are the surrounding residential and recreational areas.

An individual drawing has been created for each school, child day care facility, and residential property that has been assessed. The drawing will be included in the Administrative Record for the Site.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

The primary contaminants of concern at the Site are lead and lead compounds. Lead and lead compounds are hazardous substances as defined by section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and listed at 40 CFR § 302.4. Lead and lead compounds have been detected in the soils at the Site. EPA has documented total lead concentrations in soil at the Site at levels exceeding the residential soil screening level of 400 mg/kg. Lead is

classified by EPA as a probable human carcinogen and is a cumulative toxicant. A significant amount of lead that enters the body is stored in the bone for many years and can cause irreversible health effects.

5. National Priority List (NPL) status

The Site was listed on the NPL on October 14, 1992.

6. Maps, pictures, and other graphic representations

A map depicting the Site is attached (Attachment I).

B. Other Actions to Date

EPA began a time-critical removal action at the Central Middle School Sub-Site on August 4, 2010, that is still ongoing. On November 22, 2010, EPA initiated an emergency removal action to place temporary cover material on known exposed contaminated soil where children play. This action was performed as a temporary measure until the actions herein can be implemented. The purpose of this action was to remove lead-contaminated soils identified on the school campus.

Halo Removal Action (2004-Present) – A sampling and removal action by the Doe Run Resources Corporation, pursuant to an Administrative Order on Consent (AOC), Docket Number CERCLA-7-2004-0167 (referred to as the “Halo AOC”). This removal action was primarily conducted at residential properties within specified distances from mine waste piles, mine sites, and mines (Halo Areas). Removal actions were required for properties located within the defined Halo Areas with composite sample results greater than 400 mg/kg. In addition, the Halo AOC requires removal actions at properties with children exhibiting elevated blood lead levels (lead concentrations greater than 10 micrograms per deciliter).

Interim Action (2000-2004) – A sampling and removal action by the Doe Run Resources Corporation pursuant to an AOC, Docket Number CERCLA-7-2000-0015, that required characterization of yard soil and blood lead concentrations in St. Francois County, Missouri. The yard soil sampling results collected pursuant to this removal provided the basis for soil concentrations used in the Halo removal action and the Site feasibility study.

At the end of the interim action (March 30, 2004), 1,955 yards had been sampled. There were 563 property owners that refused sampling. The interim action was designed to identify residences where soil removal or other actions may be required. Yards and areas within yards with soil lead concentrations greater than 2,000 mg/kg lead were removed. These actions were referred to as “interim actions” since they were taken prior to EPA’s issuance of long-term remedies to address elevated blood lead levels in St. Francois County.

C. State and Local Authorities' Roles

EPA is coordinating closely with the Missouri Department of Natural Resources (MDNR), local officials, Missouri Department of Health and Senior Services, and the Agency for Toxic Substances and Disease Registry. EPA will continue to coordinate with these agencies and local officials as the removal action progresses.

IV. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

When the lead agency makes the determination, based on factors listed in 40 CFR § 300.415(b)(2), that there is a threat to public health, welfare, or the environment, the lead agency may take any appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or threat of release. The factors in 40 CFR § 300.415(b)(2) that apply to the Site are:

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants.

Lead has been detected in surface soils that meet the criteria for removal under this action. Lead-contaminated soils may migrate via airborne dusts, surface run-off, percolation into groundwater, construction activity, or by children and adults transporting soil or dust into schools, child day care facilities, or residential properties.

High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

Elevated concentrations of lead have been found throughout various parts of the Site. Children and other sensitive populations playing in and around the contaminated areas have the highest potential to be negatively impacted by exposure.

Weather conditions that may cause hazardous substances or pollutants to migrate or to be released

Exposed soil and mine waste may migrate off the Site during wet weather, or during periods of dry weather. Dust and mud could enter structures via environmental or mechanical transportation, and create a higher exposure risk for children and other sensitive populations.

The availability of other appropriate federal or state response mechanisms to respond to the release.

No other state or federal authorities are available to respond to the release of hazardous substances at the Site.

V. ENDANGERMENT DETERMINATION

The actual or threat of release of a hazardous substance at the Site, if not addressed by implementing the response action selected in this Action Memorandum, presents an imminent and substantial endangerment to the health of individuals who come in contact with the Site and to public welfare and the environment.

VI. PROPOSED ACTIONS AND ESTIMATED COST

A. Proposed Actions

1. Proposed action description

Installation of temporary barriers in high-use areas

An interim action will be undertaken to protect children 84 months of age or less and sensitive populations from impacts from exposed lead-contaminated soils. A temporary barrier, such as mulch, may be installed over exposed soil in sample areas where concentrations exceed 400 mg/kg lead and where children routinely come in contact with the exposed soil. Temporary barriers will only be installed where children are expected to come in contact with exposed soil that has been determined to be contaminated with lead, such as in designated play areas at schools and child day care facilities, and when more permanent actions, such as excavation, cannot be undertaken quickly enough.

Soil/waste excavation, removal, and replacement

EPA will not intentionally address naturally occurring lead ores in their undisturbed state as part of this action. Section 104(a)(3)(A) of CERCLA, 42 U.S.C. § 9604(a)(3)(A), states that removal or remedial actions shall not be provided in response to a release or threat of release of a naturally occurring substance in its unaltered form or altered solely through natural processes in a location where it is naturally found.

Response criteria for schools hosting classes between prekindergarten through 4th grade: EPA will respond to schools with classes up to 4th grade when a composite sample result is found to be equal to or greater than 400 mg/kg lead. Including schools with grades through the 4th grade will allow EPA to respond to schools that may not have children under 84 months currently but may in the future if the school district changes what grades attend which facilities. Currently, this includes the North County Parkside Elementary and Central R-3 West Elementary Schools where high-use areas are known to be contaminated with lead greater than 400 mg/kg and children attending these schools have been observed playing in the soil.

Response criteria for schools hosting classes between 5th grade and 12th grade: For schools with children in 5th through 12th grade, EPA will respond where a composite sample exceeds a concentration of 1,200 mg/kg anywhere on the school campus. EPA will respond where a composite sample exceeds a concentration of 400 mg/kg where the sample area is within 100 feet of the school, the area is heavily used, or existing cover is determined to be inadequate for the use of the area.

Response criteria for child day care facilities and residential homes with children less than 84 months of age or where other sensitive populations exist: EPA will excavate and remove all soils and/or waste where a composite sample exceeds a concentration of 400 mg/kg lead from sample areas within 100 feet of the residential structure or in areas determined to be high-use areas greater than 100 feet from the primary structure.

Response criteria for residential homes with children greater than 84 months of age and no sensitive population: EPA will respond to residential properties in this category when a sample area exceeds 1,200 mg/kg and the area is within 100 feet of the residential structure. All sample areas at an individual residence exceeding 400 mg/kg lead will be addressed if one sample area is found that exceeds 1,200 mg/kg lead.

Any sample area with soils and or waste exceeding the response criteria described above will be excavated in predetermined lifts until levels are below 400 mg/kg or until 12 inches of soil have been excavated. If lead levels are not below 1,200 mg/kg at an excavation depth of 12 inches and EPA determines that lead levels less than 1,200 mg/kg are achievable at an excavation depth of approximately 24 inches, the excavation will continue and no warning barrier will be required at the base of excavation. Should it be determined that lead levels below 1,200 mg/kg cannot be reached at an excavation depth of 24 inches, excavation will cease and a warning barrier will be placed to alert the property owner of the existence of high levels of lead.

Garden areas determined to have lead concentrations of 400 mg/kg lead or greater will be excavated in one 24-inch lift. The base of the excavation will be evaluated in the same manner described above.

Should EPA determine that an area has been filled with lead-contaminated mine waste which may contain higher concentrations of unprocessed galena (lead sulfide), that area may be excavated up to 24 inches in depth.

Restoration: After removing the soils from the affected areas and placing the warning barriers where required, the excavated soils will be replaced with clean soils. Clean soils are soils that have been analyzed for lead and other heavy metals, and results indicate that the lead concentration are consistent with background levels and are below 100 mg/kg, and all other hazardous substances, pollutants, or contaminants are below residential soil screening levels.

Typically sites will be revegetated by hydroseeding (spraying a mixture of seed, mulch, and fertilizers). Under special circumstances, sod may be required.

Soil treatment and disposal: EPA will collect samples of the excavated soils for Toxicity Characteristic Leaching Procedure (TCLP) analysis according to the requirements of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," also known as SW-846-Chapter 9 (representative sampling for waste piles). Soils that exceed the TCLP limits for lead or other metals must be properly treated with an appropriate lead-stabilization chemical and resampled until the levels are below the respective TCLP limits. If treatment of soils is required, it will be done at the on-site repository.

Transportation, treatment, storage, and disposal of the excavated material shall be in accordance with all applicable local, state, or federal requirements. Excavated soils will be placed in the on-site repository.

2. Contribution to remedial performance

The fund-lead actions proposed in this Action Memorandum should not impede any future remedial plans or other response. This is consistent with the long-term remedy in that it fully addresses the direct-contact threat posed by lead contamination at this Site.

3. Applicable relevant and appropriate requirements (ARARs)

Section 300.415(j) of the NCP provides that fund-financed removal actions under section 104 and removal actions pursuant to CERCLA section 106 shall, to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental facility siting laws. The following ARARs have been identified for this action:

Federal ARARs:

- Subtitle D of the Resource Conservation and Recovery Act (RCRA), section 1008, section 4001, et seq.; 42 U.S.C. § 6941, et seq.; state or regional solid waste plans; and implementing federal and state regulations.
- Occupational Safety and Health Act, 29 CFR part 1910 will be applicable to all actions.
- Subtitle C of RCRA, 42 U.S.C., section 6901, et seq.; 40 CFR part 260, et seq.; and implementing federal and state regulations for contaminated soils that exhibit the characteristic of toxicity and are considered RCRA hazardous waste.

State ARARs:

EPA has requested that MDNR identify requirements that the state of Missouri would like considered as potential state ARARs for this removal action. To qualify as state ARARs, these requirements must be (1) promulgated, (2) identified by the state within the time period specified in the letter, and (3) more stringent than federal requirements.

4. Project schedule

Response activities are anticipated to begin following the authorization provided by this Action Memorandum. It is expected that this removal action will take greater than 12 months to complete.

B. Estimated Costs

The estimated costs associated with this removal action are as follows:

Extramural Costs:

Removal Costs	\$6,750,295
Contingency (20 percent)	<u>1,350,059</u>
Total Removal Project Ceiling	\$8,100,354

The EPA direct and indirect costs, although cost recoverable, do not count toward the total removal project ceiling for this removal action. Refer to the enforcement section for a breakout of these costs.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will result in unnecessary exposure of children less than 84 months of age or other sensitive populations to lead-contaminated soils at schools, child day care facilities, and residential properties where children less than 84 months of age or other sensitive populations are routinely present. In addition, delayed action could result in the spread of contamination.

VIII. OUTSTANDING POLICY ISSUES

None.

IX. ENFORCEMENT

See attached Confidential Enforcement Addendum for this Site (Attachment II). For NCP consistency purposes, it is not a part of this Action Memorandum.

The total EPA costs for this removal action, based on full cost-accounting practices, are estimated to be:

Direct Extramural Costs	\$ 8,100,354
Direct Intramural Costs	202,500
EPA Indirect (39.77 percent of all costs)	<u>3,302,045</u>
Total Project Costs	\$11,604,899

Direct costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include prejudgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

X. RECOMMENDATION

This decision document represents the selected removal action for the contaminated soils at the Site. The removal action was developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based on the Administrative Record for the Site. If approved, the removal project ceiling of \$8,100,354 will be funded from the Site's Special Account.

Conditions at the Site meet the NCP § 300.415(b) criteria for a removal action and exemption of both the 12-month and \$2 million statutory limits to allow the removal response to be completed. Through this document, it is my recommendation that you approve the selected removal action.

Approved:



Cecilia Tapia, Director
Superfund Division

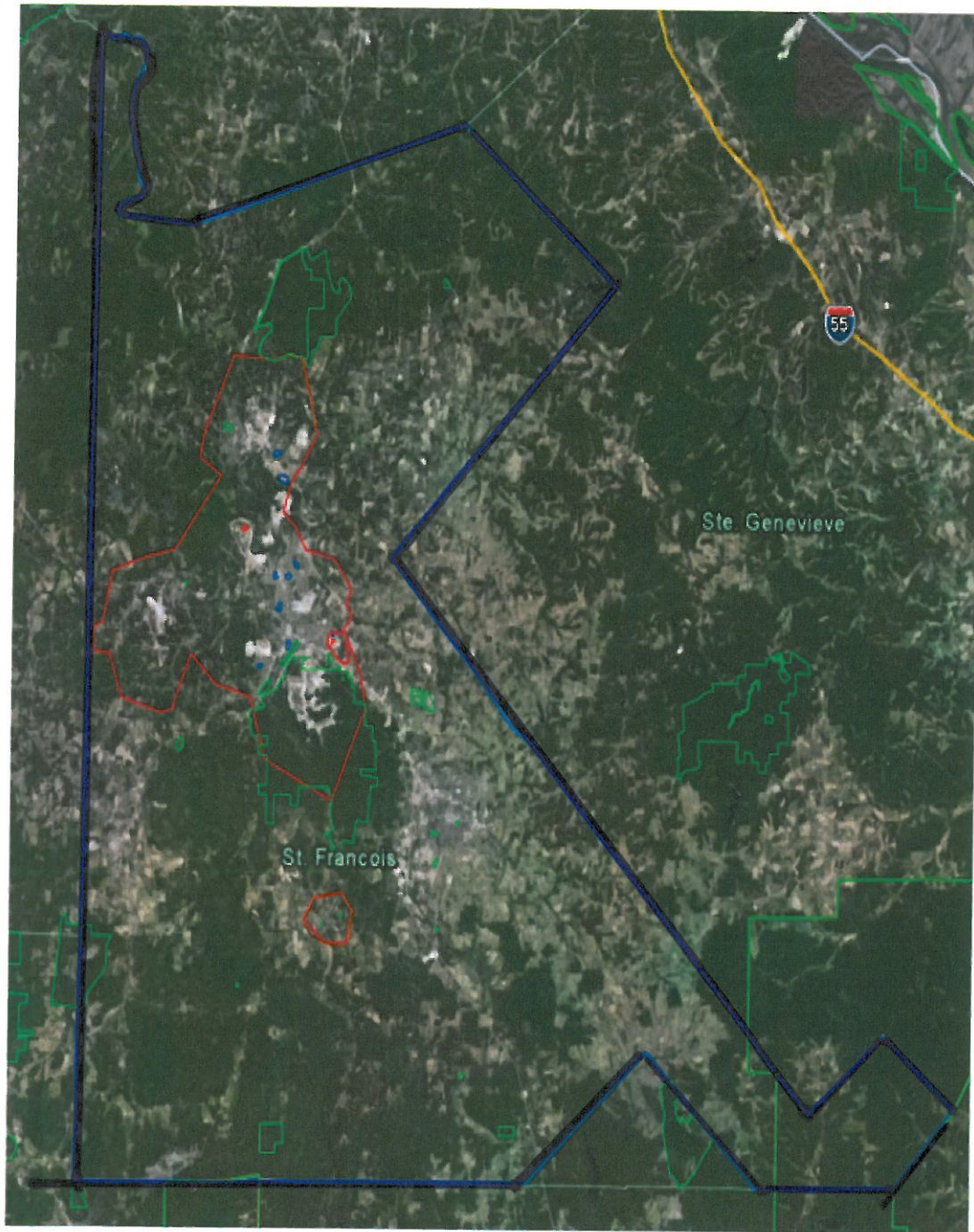
12/6/10
Date

Attachments:

1. Site Location Map
2. Confidential Enforcement Addendum

Attachment I

Site Location Map



Blue lines represent the border of the St. Francois County area with the exception of the Mine La Motte domain on the southern boundary. The red lines depict the area of contamination within St. Francois County