

US EPA ARCHIVE DOCUMENT

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
KANSAS CITY, KANSAS 66101

IN THE MATTER OF:)	
)	
THE DOE RUN RESOURCES)	Docket No. RCRA-07-2010-0031
CORPORATION)	
881 Main Street)	
Herculaneum, Missouri)	
)	
Respondent.)	ADMINISTRATIVE ORDER
)	ON CONSENT
)	
Proceedings under Section 7003 of the)	
Resource Conservation and Recovery)	
Act as amended, 42 U.S.C. Section 6973.)	
)	

I. JURISDICTION AND PRELIMINARY STATEMENT

1. This Administrative Order on Consent ("Order" or "AOC") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and Respondent, the Doe Run Resources Corporation, ("Respondent" or "Doe Run"). Respondent is a New York corporation in good standing doing business in Missouri. The mutual objectives of EPA and Respondent are to identify and remedy endangerment to health or the environment resulting from Respondent's activities associated with the Herculaneum smelter and to insure the Work ordered and agreed to be designed and implemented to protect human health and the environment. This AOC is issued pursuant to the authority vested in the Administrator of the EPA by Section 7003(a) of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6973(a), and delegated to the

Regional Administrators by EPA Delegation No. 8-22-A and further delegated to the Region 7, Air, RCRA, and Toxics Division Director, by R7-8-022-A.

2. The EPA has determined that Respondent has contributed or is contributing to the past or present handling, storage, treatment, transportation or disposal of solid waste, or constituents of such waste, that may present an imminent and substantial endangerment to health or the environment.

3. Respondent shall finance and perform the Work in accordance with this AOC, plans, standards, specifications, and schedules set forth in this AOC or developed by Respondent and approved by EPA pursuant to this AOC.

4. Respondent's participation in this AOC shall not constitute or be construed as an admission of liability. Respondent neither admits nor denies the factual allegations and legal conclusions set forth in this AOC.

5. EPA and Respondent acknowledge that this AOC has been negotiated by the parties in good faith and that this AOC is fair, reasonable, and in the public interest.

6. Respondent agrees to undertake and complete all actions required by the terms and conditions of this AOC. In any action by EPA or the United States to enforce the terms of this AOC, Respondent consents to and agrees not to contest the authority or jurisdiction of Region 7's Air, RCRA, and Toxics Division Director to issue or enforce this AOC, and agrees not to contest the validity of this AOC or its terms or conditions.

II. STATEMENT OF PURPOSE

7. This AOC pertains to areas in the vicinity of the Doe Run owned and operated Herculaneum lead smelter at 881 Main Street in Herculaneum, Jefferson County, Missouri (the

“Facility”) that have been or potentially are impacted by releases of lead as a result of the smelter operation and/or transport of lead bearing materials to and from the smelter (“Site”). The AOC provides for Respondent to conduct certain response actions as detailed in the attached Statement of Work (“SOW”), attached hereto as Appendix A, which in general consist of sampling of residential properties, churches, high child impact, and vacant lots areas and clean up of residential properties, churches, high child impact areas, and vacant lots in and around Herculaneum, Missouri, with lead concentrations above 400 parts per million (ppm) (residential cleanup standard).

III. PARTIES BOUND

8. This AOC applies to and is binding upon Respondent and its officers, directors, employees, agents, successors, assigns, heirs, trustees, receivers, and upon all persons, including, but not limited to, contractors and consultants, acting on behalf of Respondent, as well as subsequent purchasers. Respondent is jointly and severally responsible for carrying out all actions required of it by this AOC. Any change in the ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter Respondent’s responsibilities under this AOC.

9. Respondent shall provide a copy of this AOC to any subsequent owners or successors before a controlling interest in ownership rights, stock, assets, of any portion of the Site owned or operated by Doe Run is transferred. Respondent shall be responsible for and liable for completing all of the activities required pursuant to this AOC, regardless of whether there has been a transfer of ownership or control of the Site or whether said activities are to be performed by employees, agents, contractors, subcontractors, laboratories, or consultants of Respondent.

Respondent shall provide a copy of this AOC within fifteen (15) days of the Effective Date of this AOC, or within seven (7) days of the date that such services are retained, to all contractors, subcontractors, laboratories and consultants that are retained to conduct or monitor any portion of the Work performed pursuant to this AOC. Respondent shall ensure that its contractors, subcontractors, laboratories and consultants comply with this AOC.

10. Not later than sixty (60) days prior to any voluntary transfer by Respondent of any interest in any portion of the Site owned or operated by Respondent, Respondent shall notify EPA of the proposed transfer. In the case of a voluntary transfer through a bankruptcy, Respondent shall notify EPA within five (5) Working Days of the decision to transfer property. Respondent shall notify EPA of any involuntary transfers immediately upon Respondent's initial receipt of notice of any involuntary transfer. Not later than seven (7) Working Days after any transfer, Respondent shall submit copies of the transfer documents to EPA.

IV. DEFINITIONS

11. Unless otherwise expressly provided herein, terms used in this AOC that are defined in the RCRA statute shall have the meaning assigned to them in that statute. Whenever the terms listed below are used in this AOC the following definitions apply:

"AOC" or "Order" shall mean this Administrative Order on Consent, any amendments thereto, and any documents incorporated by reference into this AOC.

"ATSDR" shall mean the Agency for Toxic Substances and Disease Registry.

"Concentrate" or "lead concentrate" shall mean a lead production intermediary product, derived from the physical concentration of lead sulfide ore that is comprised of approximately 70 to 80 percent (700,000 to 800,000 parts per million) lead sulfide, otherwise known as galena, which is produced at concentrator or mill facilities. Other metal concentrates, including, but not limited to, copper and zinc concentrates, are also produced.

“Day” shall mean a calendar day unless expressly stated to be a working day.

“Working Day” shall mean a day other than a Saturday, Sunday, or federal holiday. In computing any period of time under this AOC, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the end of the next working day.

“Doe Run facility” shall mean the primary lead smelter located at 881 Main Street in Herculaneum, Missouri.

“Effective Date” shall be the date on which EPA signs this AOC and provides a copy to Respondent, following the public comment period specified in Section XXXI (Effective Date).

“EPA” shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

“Facility” shall mean the Doe Run primary lead smelter as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

“High child impact area” shall mean areas where children spend significant amounts of time including schools, child-care centers, parks and playgrounds.

“Lead-bearing material” shall mean all granular or semi-granular product or waste material, which contains more than 400 milligrams per kilogram (mg/kg) of lead.

“Lead concentration” shall mean the proportion of lead in a given material, and is usually measured in parts per million (ppm) or milligrams per kilogram (mg/kg). A measurement in ppm is equal to a measurement in mg/kg.

“Lead loading” shall mean the amount of lead collected from a given area, and is usually measured in milligrams per square foot (mg/ft²).

“MDHSS” shall mean the Missouri Department of Health and Senior Services.

“MDNR” shall mean the Missouri Department of Natural Resources.

“Ore” shall mean the geologic formation rock which is mined and processed in mills, concentrators, and/or smelters to produce lead and other heavy metal concentrates.

“Paragraph” shall mean a portion of this AOC identified by an Arabic numeral.

"RCRA" shall mean the Resource Conservation and Recovery Act (also known as the Solid Waste Disposal Act), as amended, 42 U.S.C. § 6901, *et seq.*

"Respondent" shall mean The Doe Run Resources Corporation.

"Section" shall mean a portion of this AOC identified by a roman numeral, and it may include one or more paragraphs.

"Site" shall mean the residential yards churches, high child impact areas, and vacant lots in the vicinity of the Facility that have been or potentially are impacted by releases of lead as a result of the smelter operation and/or transport of lead bearing materials to and from the Facility and are the subject of the Work to be performed under this AOC.

"State" shall mean the State of Missouri.

"Vacant lot" shall mean unimproved real property that allows for access and play by children and is located in a residential zoning district. Factors that may indicate that a property is not accessible for play by children include, but are not limited to, heavy vegetation, wooded areas, steep terrain, fencing, and distance to occupied residences. If there is any question about whether a property is a vacant lot, representatives of each party shall meet at the property and EPA will make a determination of whether the property is a vacant lot and should be addressed as described in this Order. If Respondent disagrees with EPA's determination that a property constitutes a vacant lot, it may invoke the procedures set forth in Section XIX (Dispute Resolution) of this AOC.

"Voluntary Property Purchase area" shall mean an area located within approximately 3/8 of a mile of the Doe Run facility which included approximately 160 homes that Doe Run agreed to voluntarily purchase under a settlement with the Missouri Department of Natural Resources in 2002.

"Work" shall mean all the activities and requirements specified in this AOC.

V. EPA'S FINDINGS OF FACT

12. Respondent owns and operates a primary lead smelter in Herculanum, Missouri.

The smelter is approximately 57 acres in size and is located at 881 Main Street, Herculanum, Jefferson County, Missouri. It has been operating for over 100 years and is the largest smelter of its kind in the United States.

13. Respondent is a New York Corporation in good standing and doing business in Missouri.

14. Respondent is engaged in the production of lead and other metals from what is commonly known as the New Lead Belt, or the Viburnum Trend, which began producing lead in southeastern Missouri in the mid-1960s and continues production to this day. Ore from the mines is crushed, milled, and processed in order to form lead and other metal concentrates. Lead concentrate commonly contains lead at concentrations greater than 70 percent (700,000 parts per million). This lead concentrate is transported by truck over public roadways approximately 110 miles to the Doe Run facility for smelting and refining or to a Southeast Missouri barge loading facility located in Scott City, Missouri for barge transport.

15. Respondent, or its predecessors, owned and/or operated mining, milling and concentrating facilities in the New Lead Belt since production began there. As of August 1998, all of the current ore and concentrate mined and hauled in the New Lead Belt is from Respondent's operations.

16. EPA's enforcement-related involvement with the Doe Run facility began over concerns with air emissions, children's elevated blood leads, and elevated lead levels in residential yard soils and home interior dust in Herculaneum.

17. Pursuant to Section 108 of the Clean Air Act, the EPA promulgated a National Ambient Air Quality Standard (NAAQS) for lead on October 5, 1978. The standard was 1.5 micrograms of lead per cubic meter of air ($\mu\text{g}/\text{m}^3$) averaged over a calendar quarter. The area in the vicinity of the Doe Run facility is designated as nonattainment with respect to lead.

18. As required by Section 110 of the Clean Air Act, the State of Missouri developed and submitted for EPA approval State Implementation Plans (SIPs) for lead attempting to attain and maintain the NAAQS and thus control the amount of lead emitted into the air. However, the area continued to fail to attain the standard. By 2000, the Broad Street air monitor in Herculaneum had recorded violations of the lead standard in every calendar quarter since that monitor was established in 1992.

19. Doe Run achieved attainment of the NAAQS for lead from the third quarter of 2002 through the fourth quarter of 2004, however, for the first through third quarters of 2005, the Broad Street air monitor in Herculaneum again recorded exceedances of the NAAQS for lead. In addition, the NAAQS for lead was exceeded at this monitor for three quarters in 2006, two quarters in 2007 and 1 quarter in 2008. Doe Run and MDNR conducted discussions regarding proposed control strategies to include in a revised SIP. MDNR revised the Missouri SIP for lead in order to attain the lead NAAQS in Herculaneum. All monitors have monitored attainment with the 1.5 ug/m^3 NAAQS standard since the second quarter in 2008.

20. The 2002 Missouri SIP for lead requires Respondent to implement a Work Practice Manual to address fugitive lead emissions from the Doe Run facility. The Work Practice Manual approved under the 2002 SIP states that "Temporary sources of dust on paved surfaces outside the plant due to spillage of materials will be addressed so as to limit the reentrainment of those materials. Clean up to consist of those materials being loaded into transfer vehicles.... Final cleanup will incorporate the use of floor sweep compound which will should [sic] adhere to the smaller particles, making them easier to remove." Despite this requirement, dust high in lead was found on the public streets outside the Doe Run facility.

21. In a 1992 Study by the Jefferson County Health Department the blood lead levels of 73 children within 1.5 miles of the Doe Run facility were assessed. Forty (40) of the children showed blood lead levels greater than 10 micrograms per deciliter ($\mu\text{g}/\text{dl}$), the level of health concern; 8 children showed blood lead levels greater than 20 $\mu\text{g}/\text{dl}$; and 2 children showed blood lead levels greater than 30 $\mu\text{g}/\text{dl}$. From June 1992 to May 1999, documented blood lead levels of 52 children in the vicinity of the Doe Run facility showed blood lead levels greater than 10 $\mu\text{g}/\text{dl}$ in 15 children and greater than 20 $\mu\text{g}/\text{dl}$ in 3 children. Of the children tested within the Herculaneum zip code there have been no reported blood lead levels by the Jefferson County Health Department greater than 10 $\mu\text{g}/\text{dl}$ since 2003.

22. The Agency for Toxic Substances and Disease Registry ("ATSDR") and Missouri Department of Health and Senior Services ("MDHSS") conducted blood lead screenings in Herculaneum in 2001 that concluded that the blood lead concentrations of 56% of children screened within $\frac{1}{4}$ mile of the Doe Run facility were elevated above the level of health concern, 52% of children screened within $\frac{1}{4}$ and $\frac{1}{2}$ miles of the Doe Run facility were elevated, and 35% of children screened within $\frac{1}{2}$ and $\frac{3}{4}$ miles of the Doe Run facility were elevated. Also in 2001 ATSDR conducted an Exposure Investigation that concluded that lead in paint and water did not appear to be significant sources of lead exposure in the children studied.

23. Prior to 2000, various soil sampling and analysis projects conducted by Doe Run, its contractors, and the Missouri Department of Health showed lead levels in surface soils of homes surrounding the Doe Run facility as high as 12,800 ppm. According to Doe Run's data, the average concentration of lead in the residential soils within $\frac{1}{4}$ mile from the Doe Run facility was 3,014 ppm. Natural background levels of lead in agricultural soils in this area (outside the

influence of the Doe Run facility) are in the range of 25 to 40 ppm, and EPA's level of concern for residential yards at this Site is 400 ppm.

24. In 2001, in response to the exceedances of the NAAQS for lead, elevated blood lead levels in children, and elevated lead levels in residential yards, EPA, MDNR, and Doe Run entered into an Administrative Order on Consent, Docket No. RCRA-7-2000-0018 and CERCLA-7-2000-0029, which required Doe Run to, among other things, install air controls, sample and clean up contaminated residential properties, and perform investigations of the nature and extent of lead, cadmium, and zinc contamination in soil, sediment, surface water, and groundwater.

25. Pursuant to that administrative order, Docket No. RCRA-7-2000-0018 and CERCLA-7-2000-0029, and subsequent additional work and modifications, Doe Run continues to, among other things, sample and replace lead contaminated residential yard soils above 400 parts per million lead in Herculaneum. Currently, approximately 565 yards with quadrants above 400 ppm have had contaminated soil replaced with clean soil.

26. In addition, in April 2002, MDNR entered into a Settlement Agreement with Doe Run which, among other things, established the Herculaneum Voluntary Property Purchase Plan. It required Doe Run to make purchase offers to approximately 160 homeowners living within the designated Voluntary Property Purchase area, comprised of a specified area within approximately 3/8 of a mile of the Doe Run facility. As of January 2006, twenty-nine homeowners chose not to accept purchase offers for their properties, and those properties remain occupied by those residents.

27. For the last several years, the primary mode of transporting concentrate, and/or lead bearing materials from Doe Run's mines and mills to the Doe Run facility has been by trucks using public roads and streets. The primary haul route through the City of Herculaneum used by trucks traveling to and from the Doe Run facility goes through residential areas and includes portions of Station Street, Brown Street, and Joachim Avenue. A secondary haul route is also used, which includes portions of Main Street and Joachim Avenue. Numerous residences are located along or in the vicinity of the hauling routes.

28. In August 2001, MDNR personnel responded to citizens' complaints about dust coming off trucks on their way to and from the Doe Run facility and dust in long, narrow piles along the haul route streets in Herculaneum. Samples taken by MDNR from the primary haul route along Station Street were as high as 300,000 ppm of lead. EPA sampling and analysis confirmed the existence of high levels of lead on the streets in Herculaneum used by Doe Run as haul routes, and also showed that many residential yards and parks along the haul routes contained higher levels of lead than those located in the same general area but not along a haul route. A number of residences along the haul routes had levels of lead in soil greater than 10,000 ppm. Sampling and analysis of road shoulders adjacent to residential yards along the haul route revealed lead concentrations in several samples in the 20,000 to 40,000 ppm range, with two as high as 74,500 ppm and 96,800 ppm.

29. In response to the high levels of lead on and along the hauling routes in Herculaneum, on September 25, 2001, MDNR issued an Order to Abate and Cease and Desist Violations ("Cease and Desist Order") to Doe Run, requiring that Doe Run, among other things, ensure that all trucks and other vehicles leaving the facility are clean and free of lead concentrate and slag

dust, take all steps necessary to ensure that every vehicle is free of material which could cause fugitive emissions or contaminate roads, and clean haul routes in Herculanum. After an appeal by Doe Run, the Cease and Desist Order was resolved through an April 2002 Settlement Agreement, between MDNR and Doe Run, which required, among other things, modifications to, and implementation of, a Transportation and Materials Handling Plan addressing the above actions.

30. In December 2001, in response to the high levels of lead in the Herculanum streets used as haul routes, high levels of lead in residential yards along the haul routes, and high levels of lead in residential interior dust, EPA and Doe Run entered into an Administrative Order on Consent, Docket No. CERCLA-07-2002-0038 for the Herculanum Lead Smelter Site, which required Doe Run to, among other things, expedite residential soil cleanups for yards with very high levels of lead and where children reside, conduct interior dust cleanups, and develop and implement a Smelter Transportation and Materials Handling Plan to minimize, using best management practices, the release of lead to the community as a result of Doe Run's activities.

31. "The Doe Run Herculanum Smelter Transportation Plan and Materials Handling Plan" was approved by EPA in July 2003, and sets forth, among other things, traffic zones and flow within the smelter to reduce track-out of lead contamination, operation of an automated undercarriage truck wash for vehicles to use prior to leaving the smelter, operation of dry street sweepers within Herculanum, and a spill response policy.

32. Pursuant to the EPA administrative order, Docket No. CERCLA-07-2002-0038, Doe Run continues to, among other things, implement the EPA-approved Transportation Plan and

Materials Handling Plan, including operation of the automated undercarriage truck wash and street sweeping.

33. In 2003 and 2004, street sampling and analysis at locations in Herculaneum at Station and Main Streets in the inbound traffic lanes (toward the Doe Run facility) indicated lead concentrations of 2,582 ppm and lead loadings of 0.854 mg/ft². Sampling and analysis at locations at Station and Main Streets in the outbound traffic lanes (away from the Doe Run facility) indicated lead concentrations of 9,261 ppm and lead loadings of 1.92 mg/ft² in 2003 and 2004.

34. In 2004, the Joachim Avenue bridge was closed to truck traffic, meaning that truck traffic was using the Main Street haul route as the primary haul route to and from the Doe Run facility. The Main Street haul route passes through occupied residential neighborhoods outside the scope of MDNR's Voluntary Property Purchase area.

35. A road edge soil sample collected on March 22, 2004, from a residence along the haul route in Herculaneum approximately 875 feet from the Doe Run facility, revealed a lead concentration of 2,003 ppm. The road shoulder soil was previously excavated and replaced in January 2002. Replacement soil is required by EPA to be below 240 ppm lead, but was generally below 100 ppm lead in all locations.

36. On November 16, 2004, MDNR disapproved Doe Run's Transportation and Materials Handling Plan due to ongoing lead deposition along haul routes in Herculaneum, and Doe Run's failure to address MDNR's comments on the Plan.

37. Street sampling and analysis results from samples collected by EPA on November 7, 2005, from the exit road of the vehicle wash station at the Doe Run facility revealed a lead

concentration of 233,000 mg/kg and a lead loading of 20.5 mg/ft². Street sampling and analysis on the same date from the outbound traffic lane from the Doe Run facility at Main Street and Curved Street revealed a lead concentration of 185,000 mg/kg and a lead loading of 12 mg/ft².

38. All of the street samples collected in the outbound lane (from the Doe Run facility) at Main and Station Streets in 2005, were above 55,000 ppm lead concentration and 3.00 mg/ft² lead loading, with the highest sample showing a lead concentration of 174,000 ppm and a lead loading of 9.92 mg/ft².

39. Outside the immediate area of the Doe Run facility, three out of four of the street samples collected in the outbound lane in front of 543 Main Street in 2005, were above 22,300 ppm lead concentration and all the samples were above 2.9 mg/ft² lead loading.

40. Respondent's concentrate, and lead bearing materials on and along the publicly traveled streets used to haul those materials in Herculanum is available for direct human exposure and may migrate and be tracked into nearby residents' yard and homes.

41. Analysis of the potential hazard to humans from ingestion of lead depends on accurate information on a number of key parameters, including lead concentration in environmental media, intake rates of each medium, and the rate and extent of lead absorption by the body from an ingested medium, or "bioavailability". Knowledge of lead bioavailability is important because the amount of lead that actually enters the body from an ingested medium depends on the physical-chemical properties of the lead and of the medium.

42. Bioavailability is typically measured as the fraction or percentage of lead that is absorbed by the body following an exposure of some specified amount, duration, and route, usually oral. Bioavailability of lead may be expressed as absolute bioavailability or relative

bioavailability. Absolute bioavailability (ABA) is the ratio of the amount of lead absorbed compared to the amount ingested. Relative bioavailability (RBA) is the ratio of the ABA of lead present in some test material compared to the ABA of lead in a reference material, usually lead acetate, which is expected to completely dissolve when ingested.

43. When reliable site-specific data are lacking, EPA typically employs a default RBA value of 60% for lead in soil or dust compared to soluble lead in water, for both children and adults, in evaluating potential risks to human health from ingestion of the soil or dust and computing risk-based cleanup levels. If site-specific data reveals that the RBA for lead in soil or dust is higher than 60%, this indicates that absorption of, and hazards from, lead in that soil or dust is higher, and site-specific cleanup levels may need to be adjusted downward.

44. In May 2002, Doe Run released results of its "Haul Road Risk Assessment" for Herculaneum. The Risk Assessment was prepared by Doe Run to evaluate the human health risks from exposure to lead in street dust along the haul roads used by the trucks hauling concentrate to the Doe Run facility. The Risk Assessment concluded that the RBA of concentrate was 1%, street dust lead concentrations of 95,000 ppm were protective of human health, and street dust lead concentrations did not pose a significant health risk for adult or child pedestrians along the haul routes in Herculaneum.

45. EPA and MDHSS expressed a number of concerns with the validity of Doe Run's Risk Assessment, including flaws in the methodology, incomplete documentation, calculation errors, and inappropriate sample inputs for modeling. Both agencies expressed concern with the fact that the assessment was restricted to a single exposure pathway, that is, direct exposure to

concentrate in the road, without considering the cumulative risk associated with exposure to other media such as lead-contaminated yard soil and house dust.

46. Beginning in September 2004, EPA conducted a bioavailability analysis of lead from a composite of interior house dust samples collected from several Herculaneum residents' vacuum bags, and a composite of soil samples collected from several Herculaneum residential yards. The bioavailability study, finalized in May 2005, revealed that the house dust had a RBA of 52%, and the soil had a RBA of 97%.

47. EPA conducted a second bioavailability study to further examine whether lead concentrate transforms in the soil environment to a more bioavailable form. In this study, fill dirt used in the remediation of residential properties in Herculaneum was mixed with concentrate delivered to the Doe Run facility, and the concentrate-soil mixture was allowed to weather in nearby off-site soil plots. Bioavailability results conclude that the concentrate-soil mixture had a RBA of 82% after one year of exposure to the environment.

48. In conjunction with the 2005 bioavailability analysis, EPA conducted a lead characterization study, or "speciation" study, on the Herculaneum community and Doe Run facility media in order to determine the sources of lead in residential contaminated soils and interior house dusts surrounding the Doe Run facility. Samples were collected from residential yards, residents' vacuum bags (which were also used for the 2005 bioavailability analysis), and roadsides, and compared with samples from inside the Doe Run facility, slag piles, and haul routes.

49. Speciation results from smelter operation samples, including concentrate, slag, and baghouse dust, revealed a predominance of galena (PbS), cerussite (PbCO_3), anglesite (PbSO_4), anglesite+ ($\text{Pb}_{1-x}\text{SO}_4\text{-OH}$), native lead (Pb), and lead oxide (PbO).

50. Roadside and residential interior dust sample lead masses were dominated by galena, cerussite, and anglesite. Residential soil sample lead masses were dominated by galena, cerussite, manganese hydroxide, and phosphates. The residential soils contain source-traceable lead forms similar to those observed in interior dust samples, however, the “soil interacting” forms, manganese oxide, iron oxide, and phosphate, are more prevalent as is typical in developed soil environments. These compounds are the result of soluble lead sorbing onto manganese, iron, and/or phosphorus minerals in soils.

51. The speciation study report concludes that the roadside, residential interior dust, and residential soil samples all contain source-traceable lead forms from activities associated with smelter operations, including smelter-stack emissions, fugitive emissions from hauling and storage, and waste and concentrate spillage.

52. The speciation study report also concludes that neither paint nor gasoline is a significant lead contributor in Herculaneum. The report explains that speciation analyses cannot rule out leaded gasoline as a possible lead source, since the forms of lead emitted from leaded fuels are generally very soluble and would have released their lead to be sorbed onto the “soil interacting” forms. However, a number of factors suggest that this is unlikely to be a significant lead source: (1) numerous studies have shown that soil-lead concentrations from gasoline diminish rapidly to background levels within a few meters distance from a major road; (2) some studies have further shown that unless traffic volumes are large, greater than 5000 vehicles per

day, lead concentrations above background are not found; (3) traceable forms of lead that are found in residential soils are related to the Doe Run facility; and (4) residential lead concentrations are significantly greater than similar-size communities that have no mining/milling/smelting activities.

53. The ATSDR has concluded that exposure to lead can have adverse health effects on multiple human organ systems. Exposure to lead can affect adults, but children less than six years old, and unborn children whose mothers are exposed to lead, are especially vulnerable to the effects of lead poisoning. In children, the ATSDR has concluded that lead can cause adverse health effects on the central nervous system. Medical literature has reported an association between lead exposure and reduced intelligence quotient scores. Humans may be exposed to lead through ingestion of contaminated soils and dust or by inhalation of lead particles in the air. Lead has many toxic effects on human health and is a cumulative toxicant. A significant amount of lead that enters the body is stored in the bone for many years and can be considered an irreversible health effect.

54. In May 2007, in response to many of the transportation issues, EPA and Doe Run entered into an Administrative Order on Consent, Docket No. RCRA-07-2007-0008, for the Transportation and Haul Routes, Southeastern Missouri, which required Doe Run to, among other things, construct vehicle wash stations at all Doe Run facilities where concentrate, ore or lead-bearing materials are transferred on or off vehicles, perform roadway and street washing around these facilities, perform sampling and analysis at certain residential properties and along roadways where the lead-bearing materials are being transported and report the results of these activities to EPA.

55. On October 15, 2008, a revised standard of 0.15 microgram of lead in total suspended particles per cubic meter of air on a rolling three month average was promulgated. Doe Run has consistently monitored and currently monitors concentrations above the new 0.15 ug/m³ standard at Herculaneum.

56. On June 30, 2009, Doe Run provided to EPA a draft Community Risk Assessment ("CRA") for Herculaneum, Missouri based on data collected in 2001 and 2002. EPA provided final comments on this Risk Assessment in a letter dated September 16, 2009. The CRA assessed the risks from exposure to contaminants of concern associated with the Doe Run facility. The primary contaminant of concern was lead. The conclusions of this Risk Assessment are that children and adults are being exposed to unacceptable levels of lead in the Herculaneum community and in particular in the areas closer to the Doe Run facility. The CRA supports the EPA action level of 400 ppm.

57. EPA and MDNR have continued to monitor soil lead levels in previously excavated residential yards and road shoulders, lead levels in streets, residential interior dust, and air monitoring data within Herculaneum. EPA has been performing trend analysis on soil data collected from soil in residential yards near the Doe Run facility for several years. The most recent trend analysis of the soil data monitored by EPA, completed in July 2009, for 13 properties up to 0.75 miles from the Doe Run facility, shows a statistically significant upward trend in lead levels in residential surface soils for all of the properties analyzed. Indications from this trend analysis are that recontamination is occurring beyond MDNR's Voluntary Property Purchase area.

58. In June 2009, Doe Run provided to EPA the results of the residential yard sampling and analysis and road edge sampling and analysis conducted by Doe Run on properties in the area of the Doe Run facility. Of the 37 residential properties sampled in 2008 and 2009, 25 properties had lead concentrations in at least one sample above EPA's level of concern of 400 ppm, and 20 of these properties had already been cleaned up at least one time. Of the 134 road edge samples, 118 had lead concentrations above 400 ppm, with a high soil lead concentration of 31,333 ppm. These June 2009 data results confirmed the upward trend in soil lead levels in residential yards in Herculaneum.

59. In a letter dated, September 29, 2008, in response to continuing upward trends in soil lead levels in residential yards in Herculaneum, EPA recommended that Respondent sample all residential properties within one mile of the Doe Run facility on a regular basis. This recommendation was not implemented.

60. EPA issued an Order to Respondent on July 9, 2009, Docket No. RCRA-07-2009-0005, CERCLA-07-2009-0010, requiring Respondent to perform sampling and analysis at all residential properties within one mile of the Doe Run facility in Herculaneum, Missouri. Respondent provided the sampling results for 372 residential properties in Herculaneum to EPA on October 8, 2009. These sampling results indicate that 129 residential properties within 1 mile of the Doe Run facility had lead soil concentrations in at least one sample greater than EPA's level of concern of 400 ppm. One hundred four of the properties with these high lead soil concentrations have been cleaned up pursuant to EPA Orders at least one time since 2001 and the residential yard soil has become recontaminated. These data results confirm the upward trend in soil lead levels in residential yards in Herculaneum.

61. In January 2010, Doe Run collected street samples outside the immediate area of the Doe Run facility. Two out of six of the street samples collected in the outbound lane in front of 303 Station Street and on Joachim Street (west side of the bridge) were 3.2 mg/ft² and 5.2 mg/ft², respectively.

62. The Respondent has agreed to cease smelting operations of the Herculanum Lead Smelter by ceasing operation of the sintering machine and sulfuric acid plant by no later than December 31, 2013, and ceasing operation of the blast furnaces by no later than April 30, 2014 as part of a civil settlement. In addition, the Respondent has agreed to modifications of the Administrative Order on Consent, Docket No. RCRA-07-2007-0008, for the Transportation and Haul Routes, Southeastern Missouri in order to better prevent releases of lead-bearing materials from transportation vehicles.

VI. CONCLUSIONS OF LAW AND DETERMINATIONS

63. Based on the Findings of Fact set forth above, and an administrative record supporting this AOC, EPA has determined that:

a. Respondent is a "person" as defined in Section 1004(15) of RCRA, 42 U.S.C. § 6903(15).

b. The Lead concentrate, and other lead-bearing materials in residential yards, schools, churches, parks and other high child impact areas and on the public roads and road-sides surrounding the Doe Run facility in areas of the City of Herculanum is discarded material, and thus a "solid waste" as defined in Section 1004(27) of RCRA, 42 U.S.C. § 6903(27).

c. The presence of solid wastes in the residential yards, churches, parks and along the

roads and in other high child impact areas resulted from Respondent's past or present handling, storage, treatment, transportation, and/or disposal of solid wastes.

d. Imminent and Substantial Endangerment. The past and present handling, transportation, and disposal of concentrate, and other lead-bearing materials at the Site may present an imminent and substantial endangerment to human health and/or the environment within the meaning of Section 7003(a) of RCRA, 42 U.S.C. § 6973(a).

e. Respondent has contributed or is contributing to the handling, transportation, or disposal of solid wastes at the Site within the meaning of RCRA and its implementing regulations.

f. The actions required by this AOC are necessary to protect human health because Respondent's handling, transportation, and disposal of the concentrate, and lead-bearing materials is continuing to release lead onto residential properties, schools, churches, parks, public roads, road-sides, and other high child impact areas making the lead accessible to nearby residents, and causing elevated lead concentrations in residential yard soils which pose an unacceptable health risk.

VII. NOTICE TO STATE AND LOCAL AUTHORITIES

64. The State of Missouri and appropriate local authorities have been notified of the issuance of this AOC pursuant to Section 7003(c) of RCRA, 42 U.S.C. § 6973(c).

VIII. ORDER

65. Based upon the foregoing, Respondent is hereby ORDERED to perform the activities described in Section IX of this AOC and all other activities required by this AOC.

IX. WORK TO BE PERFORMED

66. Project Coordinators. The Project Coordinators for EPA and Respondent are as follows:

For EPA: Jim Aycock
Waste Enforcement and Materials Management
U.S. EPA, Region 7
901 N. 5th Street
Kansas City, Kansas 66101
(913) 551-7887

For the Respondent: Calvin R. Keller
Environmental Manager Primary Smelting
The Doe Run Company
881 Main Street
Herculaneum, Missouri 63048
(636) 933-3143

Respondent shall direct all submissions required by this AOC to EPA's Project Coordinator. Copies of all submissions required by this AOC shall be sent to Mr. Tom Judge, Missouri Department of Natural Resources, Hazardous Waste Program, P.O. Box 176, Jefferson City, Missouri 65102-0176. Each Project Coordinator shall be responsible for overseeing the implementation of this AOC. EPA and Respondent have the right to change their respective Project Coordinators. The other party must be notified in writing at least 10 days prior to the change. EPA retains the right to disapprove of any future Project Coordinator named by Respondent. If EPA disapproves of a selected Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify EPA of that person's name and qualifications within fifteen (15) Working Days following EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this AOC shall constitute receipt by Respondent.

67. Contractors. Respondent shall perform the Work itself, or retain one or more contractors to perform the Work. Should the Respondent elect to conduct the Work itself, it shall notify EPA of its qualifications to perform the Work within fourteen (14) days of the Effective Date of this AOC. Should Respondent retain a contractor to conduct the Work, Respondent shall notify EPA of the name and qualifications of each contractor within fourteen (14) days of the Effective Date of this AOC. Respondent shall also notify EPA of the name and qualifications of any other contractor or subcontractor retained to conduct any portion of the Work under this AOC at least two (2) days prior to commencement of such portion of the Work. EPA retains the right to disapprove of any party Respondent selects to conduct the Work. If EPA disapproves of Respondent's selection, Respondent shall propose a different party to perform the Work and shall notify EPA of the name and qualifications of that party within fifteen (15) Working Days of EPA's disapproval.

68. Voluntary Cleanup. Respondent shall offer to clean up each residential yard, high child impact area or vacant lot where the lead concentration in soil equals or exceeds 400 ppm in any soil or driveway sample collected from the property, pursuant to this AOC. The cleanup of each property shall be performed in accordance with the attached SOW (Appendix A). In addition, as properties are discovered through the required sampling described in the next paragraph, with soil lead concentration equaling or exceeding EPA's residential level of concern of 400 ppm, Doe Run shall offer to clean up these newly discovered properties in accordance with the attached SOW. If a property owner agrees to allow clean up of a residential property, high child impact area, or vacant lot, Respondent shall perform the clean up of the property.

69. Sampling and Reporting. Respondent shall perform the following sampling and reporting activities. All sampling and analysis shall be conducted consistent with the approved Quality Assurance Project Plan (QAPP) attached as Appendix B.

a. Respondent shall conduct soil sampling at all residential properties, churches, high child impact areas, and vacant lots within the radius of 1 mile to 1.5 miles from the Doe Run facility in Herculaneum, Missouri in accordance with the attached SOW (Appendix A). In addition, the Respondent shall ensure that all high child impact areas and vacant lots within a 1.5 mile radius of the Doe Run facility in Herculaneum have been sampled within the preceding 12 months of the Effective Date of the AOC and if they have not Respondent shall conduct soil sampling at those high child impact areas and vacant lots pursuant to the attached SOW. The Respondent shall complete this sampling within 180 days of the Effective Date of this AOC. Respondent shall provide the results of the sampling and analysis in a report to EPA within 60 days of completion of sample collection.

b. Respondent shall annually collect and analyze samples for lead in the surface soil and gravel driveways from all occupied residential properties, churches, high child impact areas, and vacant lots in Herculaneum, Missouri above 200 ppm that are located within a 1.5 mile radius of the Doe Run facility in Herculaneum, Missouri in accordance with the attached SOW. Respondent shall provide the results of the sampling and analysis in a report to EPA within 60 days after completion of all annual sample collection. If Respondent discovers, after performing the initial sampling and analysis pursuant to Paragraph 69.a that a different schedule or radius of influence from the Doe Run facility is appropriate, Respondent shall present that information to EPA for a determination on the appropriate schedule or radius of influence. Finally, Respondent

shall conduct a final sample event that includes all residential properties, churches, high child impact areas, and vacant lots within a 1.5 mile radius of the Doe Run Facility in Herculaneum, Missouri, within one year of completion of clean up actions at the Doe Run Facility after cessation of operation of the sinter machine, sulfuric acid plant, blast furnace and processing of lead concentrate.

c. Respondent shall provide to EPA for review, within 120 days after the final sampling results and access agreements for residential properties, churches, high child impact areas, and vacant lots in the sampling area identified by this AOC have been provided to the property owners for properties with lead soil concentrations at or above 400 ppm, a complete list of those properties that have refused access to allow cleanup of their contaminated soils. After EPA has reviewed the list of properties that have refused access for cleanup, EPA and Respondent shall meet to finalize the next steps to address the contaminated properties. In addition Respondent will provide a cost estimate and secure and maintain Financial Assurance pursuant to Appendix C of this AOC. Respondent's inability to secure and/or maintain adequate Financial Assurance shall in no way excuse performance of the Work or any other requirement of this AOC.

70. Respondent shall undertake and complete all of the Work in accordance with this AOC, pursuant to RCRA § 7003, 42 U.S.C. § 6973. All of the Work performed under this AOC shall be under the direction and supervision of Respondent's Project Coordinator.

71. The Work undertaken pursuant to this AOC shall be conducted in compliance with all applicable federal and state requirements, EPA guidances, policies and procedures, and with this AOC, and is subject to EPA approval.

72. Health and Safety Plan. Respondent shall develop a Health and Safety Plan for review by EPA. It shall be implemented during the Work performed under this AOC. The Health and Safety Plan shall comply with applicable Occupational Safety and Health Administration (OSHA) regulations.

73. In addition to the actions described above, Respondent shall continue to implement the actions required by Administrative Order on Consent, Docket No. CERCLA-07-2002-0038, Administrative Order on Consent, Docket No. RCRA-7-2000-0018, and CERCLA-7-2000-0029, and Administrative Order on Consent, Docket No. RCRA-07-2007-0008. If there is a conflict between these prior Orders and this AOC, this AOC shall take precedence. The soil sampling and clean up requirements of this Order for Herculaneum properties supersede any similar residential soil sampling and clean up requirements of any prior Orders.

X. EPA APPROVAL OF DELIVERABLES

74. EPA will review Respondent's plans, reports, and any other documents submitted pursuant to this AOC ("deliverables"), and will notify Respondent in writing of EPA's approval or disapproval of each such deliverable. Deliverables required by this AOC must be received by EPA by the due date specified in this AOC or by schedules developed pursuant to this AOC. After review of any deliverable required by the AOC EPA will: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that Respondent modify the submission; or (e) any combination of the above. However, EPA will not modify a submission without first providing Respondent at least one notice of deficiency and an opportunity to cure within 21 days, except where EPA determines that to do so would cause

serious disruption to the Work or where EPA has disapproved within the previous 6 months related submissions(s) due to material defects and EPA determines that the deficiencies in the submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

75. In the event of approval, approval upon conditions, or modification by EPA, pursuant to this section, Respondent shall proceed to take any action required by the deliverable, as approved or modified by EPA subject only to Respondent's right to invoke the Dispute Resolution procedures set forth in Section XIX (Dispute Resolution) with respect to the modifications or conditions made by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to Paragraph 74(c) and EPA determines the submission has a material defect, EPA retains its right to seek stipulated penalties, as provided Section XX (Penalties).

76. Resubmission of Deliverable. Upon receipt of a notice of disapproval, in whole or in part, pursuant to this Section, Respondent shall, within twenty-one (21) days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. Any stipulated penalties applicable to the submission, as provided in Section XX (Penalties), shall accrue during the 21-day opportunity to cure period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in this Section.

77. Notwithstanding the receipt of a notice of disapproval pursuant to Paragraph 74(d), Respondent shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission. Implementation of any non-deficient portion of a submission

shall not relieve Respondent of any liability for stipulated penalties for the deficient portion of the deliverable under Section XX (Penalties).

78. In the event that a resubmitted deliverable, or portion thereof, is disapproved by EPA, EPA may again require Respondent to correct the deficiencies, in accordance with the preceding Paragraphs. Subject to Paragraph 74, EPA also retains the right to modify the plan, report or other item. Respondent shall implement any action as required in a deliverable which has been modified or developed by EPA, subject only to Respondent's right to invoke dispute resolution procedures set forth in Section XIX (Dispute Resolution).

79. If upon resubmission, a deliverable is disapproved or modified by EPA due to a material defect, Respondent shall be deemed to have failed to submit such deliverable timely and adequately unless Respondent invokes the dispute resolution procedures set forth in Section XIX (Dispute Resolution) and EPA's action to disapprove or modify a deliverable is overturned pursuant to that Section. The provisions of Section XIX (Dispute Resolution) and Section XX (Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is upheld, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XX (Penalties).

80. All deliverables required to be submitted to EPA under this AOC, shall, upon approval or modification by EPA, be incorporated into and be enforceable under this AOC. In the event EPA approves or modifies a portion of a deliverable required to be submitted to EPA under this AOC, the approved or modified portion shall be enforceable under this AOC.

XI. QUALITY ASSURANCE

81. Doe Run shall perform the Work consistent with the QAPP attached to this AOC as Appendix B. This QAPP was developed for work at the Doe Run facility at Herculaneum, Missouri. The original document was prepared in 2001 and has been updated on several occasions, most recently in December 2009.

82. All sampling and analyses performed pursuant to this AOC shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (“QA/QC”), data validation, and chain of custody procedures in accordance with the appropriate EPA guidances, including “EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations” (EPA QA/R5. EPA/240/B-01/003 (March 2001)) and “Guidance for Quality Assurance Plans” (EPA QA/G5. EPA/240/R-02/009 (December 2002)), as well as any other such applicable guidance identified by EPA.

83. Split Samples. Upon request by EPA, Respondent shall allow EPA or its authorized representatives to take split or duplicate samples of any samples collected by Respondent while performing Work pursuant to this AOC. EPA shall have the right to take any additional samples that it deems necessary.

84. Respondent shall ensure that all laboratories it uses for analyses participate in a QA/QC program equivalent to the program that EPA follows. EPA may make arrangements for EPA to conduct a performance and QA/QC audit of the laboratories chosen by Respondent, whether before, during, or after sample analyses. Upon EPA's request, Respondent shall have its laboratories perform analyses of samples provided by EPA to demonstrate laboratory QA/QC and performance. If the audit reveals deficiencies in a laboratory's performance or QA/QC,

Respondent shall submit a plan to address the deficiencies and EPA may require resampling and additional analysis.

XII. ADMINISTRATIVE DOCUMENTATION

85. EPA retains the responsibility for the issuance of any decision documents related to the Site. EPA will provide Respondent with copies of all decision documents for the Site.

86. Submission of Documentation. EPA will determine the contents of the administrative record file in accordance with applicable EPA regulations and guidance. EPA will maintain an administrative record file. The administrative record supporting this AOC and the Work to be performed shall be available for public review at the EPA, Region 7 office, 901 N. 5th Street, Kansas City, Kansas and Herculaneum City Hall, 1 Parkwood Court, Herculaneum, Missouri.

XIII. DOCUMENT CERTIFICATION

87. Any report or other document submitted by Respondent pursuant to this AOC which makes recommendations as to whether or not further actions are necessary, or makes any representations concerning Respondent's compliance or noncompliance with any requirement of this AOC shall be certified by a responsible corporate officer of Respondent. A responsible corporate officer means: a president, secretary, treasurer, or vice-president in charge of a principal business function, or any other person who performs similar policy or decision-making functions.

88. The certification required by Paragraph 87 above, shall be in the following form:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that personnel properly gather and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge

and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Name: _____

Title: _____

Date: _____

XIV. SAMPLING, ACCESS AND DATA AVAILABILITY

89. All results of sampling, testing or other data generated (including raw data if requested) by Respondent, or on Respondent's behalf, pursuant to this AOC shall be validated by Respondent and submitted to EPA with the next required monthly report submitted pursuant to the Administrative Order on Consent, Docket No. RCRA-07-2007-0008, for the Transportation and Haul Routes, Southeastern Missouri. EPA will make available to Respondent data generated by EPA for the purposes of oversight of the Work unless it is exempt from disclosure by any federal or state law or regulation.

90. Respondent shall orally notify EPA at least twenty (20) days prior to conducting field sampling. At EPA's request, Respondent shall allow split or duplicate samples to be taken by EPA or EPA's representative.

91. Site Access. Pursuant to Section 3007(a) of RCRA, 42 U.S.C. § 6927(a), Respondent shall provide access to the Site at reasonable times to EPA, MDNR, EPA's contractors and oversight officials. Respondent shall also provide access at reasonable times to EPA, MDNR, EPA's contractors and oversight officials to all records and documentation in its possession or control including those records and documents in the possession or control of Respondent's contractors and employees, related to the conditions at the Site and the actions conducted

pursuant to this AOC. Respondent shall use its best efforts to gain access to areas owned by or in the possession of someone other than Respondent, as necessary to implement this AOC, as described in Paragraph 93. Such access shall be provided to EPA, its contractors and oversight officials and MDNR. These individuals shall be permitted to move freely about the Site and appropriate off-site areas in order to conduct actions, including, but not limited to, sampling and analysis, that EPA determines to be necessary. EPA, its contractors and oversight officials shall notify Respondent of their presence on the Site by presenting their credentials. All parties with access to the Site under this paragraph shall comply with all health and safety plans and regulations.

92. Pursuant to this Section, any denial of access by Respondent at reasonable times to any portion of the Site property where a request for access was made and for which Respondent has access for the purposes of enforcing the requirements of RCRA or this AOC shall be construed as a violation of the terms of this AOC subject to the penalty provisions outlined in Section XX of this AOC.

93. Access Agreements. Where action under this AOC is to be performed in areas owned by, or in possession of, someone other than Respondent, Respondent shall use its best efforts to obtain all necessary access agreements prior to performing any Work for which access is necessary or as otherwise specified, in writing, by the EPA Project Coordinator. Any such access agreement shall provide for access by EPA, its representatives and MDNR to move freely in order to conduct actions that EPA determines to be necessary. The access agreement shall specify that Respondent is not EPA's or MDNR's representative with respect to any liabilities associated with activities to be performed. Respondent shall provide EPA's Project Coordinator

with a copy of any access agreement. If Respondent, after using its best efforts is unable to obtain such access agreement within the time required, Respondent shall notify EPA in writing in the following monthly written progress reporting obligation pursuant to Section 82.D of the Administrative Order on Consent, Docket No. RCRA-7-2000-0018/CERCLA-7-2000-0029, and Section 54 of the Administrative Order on Consent, Docket No. CERCLA-07-2002-0038. This notification will include a description of Respondent's efforts to obtain access. Best efforts as used in this paragraph shall include, at a minimum, a certified letter from Respondent to the present owner of such property, a phone call and personal contact requesting access agreements to allow Respondent, EPA, MDNR, and EPA's authorized representatives to enter such property. Best efforts does not include a personal contact if the property is not occupied. Best efforts may also include, but does not require as a minimum, the offer of payment of reasonable sums of money in consideration of granting access. EPA may, at its discretion, assist Respondent in obtaining access. In the event EPA obtains access, Respondent shall undertake the Work on such property. In the event EPA chooses not to obtain access, no stipulated penalties will accrue pursuant to Section XX for failure to conduct Work on such property.

94. Confidential Business Information. Respondent may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this AOC under 40 CFR § 2.203 in the manner described at 40 CFR § 2.203(b) and substantiated with the information described at 40 CFR § 2.204(e)(4). Information EPA determines is confidential will be given the protection specified in 40 CFR Part 2. If no such claim or substantiation accompanies the information when it is submitted to EPA, it may be made available to the public by EPA or the State without further notice to Respondent. Respondent

may not assert confidentiality claims with respect to any data related to Site conditions, sampling, monitoring or the Work performed pursuant to this AOC.

95. Privileged Documents. Documents, reports or other information prepared pursuant to the requirements of this AOC shall not be entitled to attorney-client or other privilege. However, Respondent may assert that other documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege in lieu of providing documents, Respondent shall provide EPA with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the author's name and title; (4) the name and title of each addressee and recipient; (5) a description of the contents; and (6) the privilege asserted by Respondent.

96. All data, information and records created or maintained relating to any solid or hazardous waste found at the Site shall be made available to EPA upon request unless Respondent asserts a claim that such documents are legally privileged from disclosure. Respondent shall have the burden of demonstrating to EPA by clear and convincing evidence that such privilege exists.

97. No claim of confidentiality shall be made with respect to any information required to be collected or prepared pursuant to this AOC, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

98. Nothing in this AOC shall be construed to limit EPA's right of access, entry, inspection and information gathering pursuant to applicable law, including, but not limited to, RCRA and CERCLA

XV. COMPLIANCE WITH OTHER LAWS

99. Respondent shall perform all actions required pursuant to this AOC in accordance with all applicable local, state, and federal laws and regulations. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations in a timely manner so as not to delay the Work required by this AOC.

XVI. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

100. In the event of any action or occurrence during the performance of the Work which causes or threatens a release of hazardous waste or solid wastes from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action to minimize such emergency or threat in accordance with all applicable provisions of this AOC, and shall immediately notify the EPA's Project Coordinator and the EPA Regional Spill Line at (913) 281-0991. Respondent shall take such immediate and appropriate actions in consultation with EPA's Project Coordinator. Respondent shall submit a written report to EPA within seven (7) days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. In the event that Respondent fails to take appropriate response action as required by this paragraph, and EPA takes such action instead, EPA reserves the right to pursue cost recovery.

101. This reporting requirement is in addition to, not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c) and Section 304 of the Emergency Planning and Community Right-to-know Act of 1986, 42 U.S.C. § 11004 *et seq.*

XVII. RECORD RETENTION

102. Respondent shall preserve all documents and information, including raw data relating to the Work performed under this AOC, or relating to any solid waste or hazardous waste found at the Site, for 10 years following completion of the Work required by this AOC.

103. Respondent shall acquire and retain copies of all documents that relate to the Work performed under this AOC, at the Site that are in the possession of its employees, agents, accountants, contractors, or attorneys.

104. Respondent shall make available to EPA, Doe Run employees and persons, including contractors, who engage in activities under this AOC and ensure their cooperation with EPA with respect to this AOC.

105. After the 10 year retention period and 90 days before any document or information is destroyed, Respondent shall notify EPA that such document and information are available to EPA for inspection, and upon request, shall provide the originals or copies (at no extra cost) of such documents and information to EPA. Notification shall be in writing and shall reference the effective date, caption, and docket number of this AOC and shall be addressed to the Director, Air, RCRA, and Toxics Division. In addition, Respondent shall provide documents and information retained under this Section at any time before expiration of the 10 year retention period at the written request of EPA.

106. All documents pertaining to the Work performed under this AOC shall be stored by Respondent in a centralized location at the Site, or an alternative location mutually approved by Respondent and EPA, to promote easy access by EPA or its representatives.

XVIII. REIMBURSEMENT OF OVERSIGHT COSTS

107. EPA reserves the right to bring an action against Respondent under any applicable law for recovery of all future response costs, including oversight costs that have not been reimbursed by Respondent. Subject to the rights of Respondent in Paragraph 133, EPA reserves the right to bring an action against Respondent for past costs incurred by EPA with respect to the Site that have not been reimbursed by Respondent and any costs incurred by EPA in connection with any other response activities conducted at this Site. Oversight costs shall mean costs associated with time and travel costs of EPA personnel in conjunction with Work performed; contractor costs related to Work performed; compliance monitoring, including the collection and analysis of split samples related to the Work performed; inspection of Work required by this AOC; discussions regarding dispute resolution that may arise as a result of this AOC; and review of plans, reports and other documents submitted pursuant to this AOC; that EPA incurs after the effective date of this AOC in monitoring and supervising Respondent's performance of the Work to determine whether such performance is consistent with the requirements of this AOC. Respondent shall pay oversight costs incurred after the effective date of this AOC, not to exceed one hundred thousand dollars (\$100,000) the first year and seventy-five thousand dollars (\$75,000) per year thereafter.

108. Respondent agrees to pay EPA for oversight costs associated with the implementation and execution of this AOC, in the following manner:

- a. Upon EPA's written request, Respondent shall pay such costs. On a periodic basis, EPA will send Respondent a bill requiring payment that includes an itemized cost summary.

- b. Payments for all EPA oversight costs shall be made by money order, certified check, company check, wire transfer, or cashier's check payable to the Treasurer of the United States within thirty (30) days of Respondent's receipt of EPA's request, and shall be submitted to the following address:

U.S. Environmental Protection Agency
Cincinnati Finance Center
PO Box 979077
St. Louis, MO 63197-9000

- c. The Docket No. of this AOC shall be clearly typed on the check to ensure proper credit. Respondent shall send simultaneous notices of such payments, including copies of the money order, certified check, company check, wire transfer, or cashier's check to the EPA's Project Coordinator and the Regional Hearing Clerk, U.S. EPA, Region 7, 901 N. 5th Street, Kansas City, Kansas 66101.
- d. If EPA does not receive payment within thirty (30) days of Respondent's receipt of EPA's request for oversight costs, interest shall accrue at the Current Value of Funds Rate established by the Secretary of the Treasurer. An additional penalty of six percent (6%) per annum on any unpaid principal shall be assessed for any oversight cost payment which is overdue for ninety (90) days or more pursuant to 31 U.S.C. § 3717.
- e. Respondent may dispute all or part of a bill for oversight costs submitted pursuant to the AOC pursuant to Section XIX (Dispute Resolution). If any dispute over costs is resolved before payment is due, the amount will be adjusted as necessary. If the dispute is not resolved before payment is due, Respondent shall pay the full amount of the uncontested costs to EPA as specified in Paragraph 108.b on or before the due

date. Within the same time period, Respondent shall pay the full amount of the contested costs into an interest-bearing escrow account and transmit a copy of the check(s) to the persons listed in Paragraphs 108.b and c above. Respondent shall ensure that the prevailing party or parties in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within ten (10) days after the dispute is resolved.

XIX. DISPUTE RESOLUTION

109. Respondent shall raise any disputes concerning the Work or Additional work required under this AOC to EPA (excluding any decision document(s) issued by EPA), in writing, within fifteen (15) Working Days after receiving written notice from EPA regarding any aspect of the Work required under this AOC that Respondent disputes. EPA and Respondent shall expeditiously and informally attempt to resolve any disagreements. EPA and Respondent Project Coordinators shall first confer in an effort to resolve the dispute. If the Project Coordinators are unable to informally resolve the dispute within three (3) Working Days of the first conference, Respondent shall notify EPA, within five (5) Working Days, in writing of its objections. Written objections shall identify Respondent's objections, state the basis for those objections, and provide all data, analysis and information relied upon by Respondent. EPA and Respondent then have an additional fourteen (14) Working Days from EPA's receipt of the objections to reach agreement. If an agreement is not reached within the fourteen (14) Working Days, Respondent may request in writing, within five (5) Working Days, a determination resolving the dispute by EPA Region 7's Regional Judicial Officer ("RJO"). The request should provide all information that Respondent believes is relevant to the dispute. If such request is

submitted within five (5) Working Days, the RJO shall issue a determination in writing which will be EPA's final decision. EPA's final decision shall be incorporated into and become an enforceable part of this AOC and shall no longer be subject to dispute pursuant to this AOC. Respondent shall proceed in accordance with the RJO's decision regarding the matter in dispute, regardless of whether Respondent agrees with the decision. If Respondent does not agree to perform or does not actually perform the Work in accordance with EPA's decision, EPA reserves the right in its sole discretion to conduct the Work itself, seek reimbursement from Respondent, seek enforcement of this AOC, seek stipulated penalties, and/or any other appropriate relief. Any disputes arising under this AOC are not subject to judicial review until such time as EPA seeks to enforce this AOC, including an action for penalties or an action to compel Respondent's compliance with the terms and conditions of the AOC.

110. If EPA and Respondent reach agreement on the dispute at any state, the agreement shall be set forth in writing and shall, upon signature of both parties, be incorporated into and become an enforceable part of this AOC.

111. The existence of a dispute and EPA's consideration of matters placed in dispute shall not excuse, toll, or suspend any compliance obligation or deadline required pursuant to this AOC during the pendency of the dispute resolution process except as agreed by EPA in writing. The invocation of dispute resolution does not stay the accrual of stipulated penalties under this AOC.

XX. PENALTIES

112. Any time Respondent fails to comply with any requirement of this AOC, Respondent shall be liable for stipulated penalties in the amounts set forth in this Section,

provided, however, that EPA may elect to bring an action for civil penalties for violations of this AOC in lieu of seeking stipulated penalties, and unless a Force Majeure event has occurred as defined in Section XXI (Force Majeure) and EPA has approved the extension of a deadline as required by Section XXI (Force Majeure). Compliance with this AOC by Respondent shall include completion of an activity or any matter under this AOC in accordance with this AOC, and within the specified time schedules approved under this AOC.

113. Stipulated Penalty Amounts.

- a. A stipulated penalty of \$2,500 per violation per day shall accrue for any noncompliance identified below:
 - i. Failure or refusal to cleanup any property in a timely manner that requires cleanup under this AOC and access to the property for cleanup has been granted.
- b. A stipulated penalty of \$1,000 per violation per day shall accrue for any noncompliance identified below:
 - i. Failure to submit any deliverables required by this AOC in a timely or adequate manner.
 - ii. Failure to perform any sampling as required by this AOC in a timely or adequate manner.
 - iii. Failure to provide and maintain the financial assurance as required by Paragraph 69.c.
- c. A stipulated penalty of \$750 per violation per day shall accrue for any noncompliance identified below:
 - i. Any other violation of this AOC not identified in Paragraphs 113.a or 113.b.

114. Penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of correction of the violation or completion of the activity. Payment shall be due within thirty (30) days of receipt of a demand letter from EPA. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this AOC, even where those violations concern the same event (e.g., submission of a deliverable that is late and is of unacceptable quality).

115. If payment is not made within thirty (30) days of the date of Respondent's receipt from EPA of a written demand for payment of the penalties or of the date of agreement or decision resolving the dispute, interest shall begin to accrue on any unpaid stipulated penalty balance beginning on the first day after Respondent's receipt of EPA's demand letter, or the date of the agreement or decision resolving the dispute, and will accrue until such penalties and interest have been paid in full. Interest shall accrue at the Current Value of Funds Rate established by the Secretary of the Treasury. An additional penalty of six percent (6%) per annum on any unpaid principal shall be assessed for any stipulated penalty payment which is overdue for ninety (90) days or more. The applicable rate of interest shall be the rate in effect at the time the interest accrues pursuant to 31 U.S.C. § 3717.

116. Respondent shall make payments by money order, certified check, company check, wire transfer, or cashier's check payable to the Treasurer of the United States within thirty (30) days of Respondent's receipt of EPA's request, and shall be submitted to the following address:

U.S. Environmental Protection Agency
Fines and Penalties - CFC
PO Box 979077
St. Louis, MO 63197-9000.

117. The Docket No. of this AOC shall be clearly typed on the check to ensure proper credit. Respondent shall send simultaneous notices of such payments, including copies of the money order, certified check, company check, wire transfer, or cashier's check to the EPA's Project Coordinator and the Regional Hearing Clerk, U.S. EPA, Region 7, 901 N. 5th Street, Kansas City, Kansas 66101.

118. Respondent may dispute an EPA determination that it failed to comply with this AOC by invoking the dispute resolution procedures under Section XIX (Dispute Resolution) unless the matter has already been in or is the subject of dispute resolution. Penalties shall accrue but need not be paid during the dispute resolution period. If Respondent does not prevail upon resolution, all penalties shall be due to EPA within thirty (30) days of resolution of the dispute. If Respondent prevails upon resolution, no penalties shall be paid. In the event that Respondent prevails in part, penalties shall be due on those matters in which Respondent did not prevail.

119. Neither the invocation of dispute resolution nor the payment of penalties shall alter in any way Respondent's obligation to comply with the terms and conditions of this AOC. The stipulated penalties set forth in this Section do not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with any of the terms and conditions of this AOC.

120. No payments under this Section shall be deducted for federal tax purposes.

121. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this AOC.

122. Violation of any provision of this AOC may subject Respondent to civil penalties of at least seven thousand five hundred dollars (\$7,500) per violation per day. The assessment of penalties are provided for in Section 7003(b) of RCRA, 42 U.S.C. § 6973(b), as adjusted pursuant to 40 CFR, Part 19, Adjustment of Civil Monetary Penalties for Inflation.

XXI. FORCE MAJEURE

123. Respondent agrees to perform all requirements under this AOC within the time limits established under this AOC unless the performance is delayed by a force majeure. For purposes of this AOC, a force majeure is defined as any event arising from causes beyond the control of Respondent, or any entity controlled by Respondent, or Respondent's contractors, which delays or prevents performance of any obligation under this AOC despite Respondent's best efforts to fulfill the obligation. The requirement that the Respondent exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event: (1) as it is occurring, and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. Force majeure does not include financial inability to complete the Work, increased cost of performance, changes in Respondent's business or economic circumstances, or inability to attain the cleanup standards.

124. If any event occurs or has occurred that may delay the performance of any obligation under this AOC, whether or not caused by a force majeure event, Respondent shall

orally notify EPA within five (5) days of when Respondent knew or should have known that the event might cause a delay. Such notice shall: (1) identify the event causing the delay, or anticipated to cause delay, and the anticipated duration of the delay; (2) provide Respondent's rationale for attributing such delay to a force majeure event; (3) state the measures taken or to be taken to prevent or minimize the delay; (4) estimate the timetable for implementation of those measures; and (5) state whether, in the opinion of the Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Respondent shall undertake best efforts to avoid and minimize the delay. Within seven (7) Working Days thereafter, Respondent shall provide the notice requirements as outlined in this Paragraph in writing to EPA. Failure to comply with the notice provisions of this Paragraph and to undertake best efforts to avoid and minimize the delay shall preclude Respondent from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Respondent shall be deemed to know of any circumstance of which Respondent, any entity controlled by Respondent, or Respondent's contractors knew or should have known.

125. If EPA determines that a delay in performance or anticipated delay in fulfilling a requirement of this AOC is or was attributable to a force majeure, then the time period for performance of the requirement will be extended as deemed necessary by EPA. If EPA determines that the delay or anticipated delay has been or will be caused by a force majeure, then EPA will notify Respondent, in writing, of the length of the extension, if any, for performance of such obligations affected by the force majeure. Any such extensions shall not alter Respondent's

obligation to perform or complete other tasks required by this AOC which are not directly affected by the force majeure.

126. If EPA disagrees with Respondent's assertion of a force majeure, then Respondent may elect to invoke the dispute resolution provision, and shall follow the procedures set forth in Section XIX (Dispute Resolution). In any such proceeding, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that Respondent's best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of this Section. If Respondent satisfies this burden, then EPA will extend the time for performance as EPA determines is necessary.

XXII. RESERVATION OF RIGHTS

127. Notwithstanding any other provisions of this AOC, the United States retains all of its authority to take, direct, or order any and all actions necessary to protect public health or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants, or contaminants, or hazardous or solid waste or constituents of such wastes, on, at or from the Site, including but not limited to the right to bring enforcement actions under RCRA, CERCLA, and any other applicable statutes or regulations.

128. EPA reserves all of its statutory and regulatory powers, authorities, rights, and remedies, both legal and equitable, which may pertain to Respondent's failure to comply with any of the requirements of this AOC, including without limitation the assessment of penalties under Section 7003 of RCRA, 42 U.S.C. § 6973.

129. This AOC shall not be construed as a covenant not to sue, release, waiver, or limitation of any rights, remedies, powers, claims and/or authorities, civil, or criminal, which EPA has under RCRA, CERCLA, or any other statutory, regulatory, or common law authority of the United States.

130. This AOC is not intended to be nor shall it be construed to be a permit. Respondent acknowledges that EPA's approval of the Work does not constitute a warranty or representation that the Work will achieve the required cleanup or performance standards. Compliance by Respondent with the terms of this AOC shall not relieve Respondent of its obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.

131. Notwithstanding any other provision of this AOC, no action or decision by EPA pursuant to this AOC, including without limitation, decisions of the Regional Administrator, the Director of the Air, RCRA and Toxics Division, or any authorized representative of EPA, shall constitute final agency action giving rise to any right of judicial review prior to EPA's initiation of a judicial action to enforce this AOC, including an action for penalties or an action to compel Respondent's compliance with the terms and conditions of this AOC.

132. By entry of this AOC, Respondent neither admits or denies any of the Findings of Fact, Conclusions of Law, or terms hereof, and agrees only to perform the commitments of this AOC and not to contest the jurisdiction of EPA to enter into and enforce the performance of this AOC. Respondent specifically does not intend and objects to the use of this AOC or performance by Respondent of the terms hereof as an indication of any fault, liability or damages in any proceeding by any third party.

133. Except as provided in this AOC, Respondent expressly reserves all rights of defense, review and appeal, including but not limited to the judicial review of any final agency action by EPA; defense of any enforcement by EPA of the terms of this AOC following completion of the Dispute Resolution provisions of this AOC; or any defense, review, or claims which Respondent may have against any party or entity including the United States which are not barred by Federal law or this AOC.

XXIII. OTHER CLAIMS

134. By issuance of this AOC, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or EPA will not be deemed a party to any contract, agreement or other arrangement entered into by Respondent or their officers, directors, employees, agents, successors, assigns, heirs, trustees, receivers, contractors, or consultants in carrying out actions pursuant to this AOC.

135. Respondent waives all claims against the United States relating to or arising out of conduct of this AOC, including, but not limited to, contribution and counterclaims.

136. Respondent shall bear its own litigation costs and attorney fees.

XXIV. INSURANCE

137. Prior to commencing the on-site Work under this AOC, Respondent shall secure, and shall maintain in force for the duration of this AOC and for two (2) years after the completion of all activities required by this AOC, comprehensive general liability insurance and automobile insurance with limits of \$2 million, combined single limit. Upon request by EPA, Respondent shall provide EPA with certificates of such insurance and a copy of each insurance

policy. If Respondent demonstrates by evidence satisfactory to EPA that its contractors and subcontractors maintain insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need provide only that portion of the insurance described above which is not maintained by the contractors and subcontractors.

XXV. INDEMNIFICATION

138. Respondent agrees to indemnify, save and hold harmless the United States, its officials, agents, contractors, employees, and representatives from any and all claims or causes of action: (a) arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, Respondent's directors, officers, employees, agents, successors, assigns, heirs, trustees, receivers, contractors, or consultants in carrying out actions pursuant to this AOC; and (b) for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any persons for performance of the Work on or relating to the Site, including claims on account of construction delays. In addition, Respondent agrees to pay the United States all costs incurred by the United States, including litigation costs arising from or on account of claims made against the United States based on any of the acts or omissions referred to in the preceding sentence.

XXVI. MODIFICATION OF THIS AOC

139. If at any time during the implementation of the Work, Respondent identifies a need for a compliance date or schedule modification, Respondent shall submit a memorandum documenting the need for the modification to the EPA Project Coordinator. EPA in its discretion will determine if the modification or revision is warranted and may provide written approval or

disapproval. Any approved modified compliance date or schedule modification is incorporated by reference into this AOC.

140. Except for modification of any compliance date or schedule as provided for in Paragraph 139, this AOC may only be modified by the mutual agreement of EPA and Respondent. The agreed modifications shall be in writing and signed by both parties. The effective date of any modification shall be the date on which it is signed by EPA. Any such written modification shall be incorporated into this AOC.

141. No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of its obligation to obtain such formal approval as may be required by this AOC, and to comply with all requirements of this AOC unless it is modified in accordance with this Section. Any deliverables, plans, technical memoranda, reports, specifications, schedules and attachments required by this AOC are, upon approval by EPA, incorporated into and enforceable under this AOC.

XXVII. ADDITIONAL WORK

142. EPA may determine or Respondent may propose that additional work is necessary in addition to or in lieu of the tasks included in Section IX (Work to Be Performed) to meet the objectives set forth in Section I (Jurisdiction and Preliminary Statement). Additional work shall be limited to modifications for additional sampling, additional cleanup of properties or a change in the frequency of sampling. EPA will notify Respondent or Respondent will notify EPA, in writing, of that determination and will specify the basis for the determination. Within fifteen (15) days after the receipt of such determination, Respondent shall have the opportunity to meet

or confer with EPA to discuss any additional work. Within thirty (30) days of receipt of the determination, Respondent shall submit for EPA approval a Work Plan for such additional work. Upon approval of a Work Plan for any additional work, Respondent shall implement the Work Plan for any additional work in accordance with the schedule and provisions contained therein. The Work Plan for any additional work shall be incorporated by reference into this AOC.

XXVIII. TERMINATION AND SATISFACTION

143. The provisions of this AOC shall be deemed terminated and satisfied by Respondent upon written notice from EPA that Respondent has demonstrated that all of the terms of this AOC, including any additional work as may be performed pursuant to Section XXVII (Additional Work) and payment of any stipulated penalties demanded by EPA under Section XX (Penalties), have been addressed to the satisfaction of EPA. Termination of this AOC shall not terminate Respondent's obligation to comply with: Sections XIV (Sampling, Access and Data Availability); XVII (Record Retention); XXII (Reservation of Rights); and XXV (Indemnification) of this AOC.

XXIX. SEVERABILITY

144. If a court issues an order that invalidates any provision of this AOC or finds that Respondent has sufficient cause not to comply with one or more provisions of this AOC, Respondent shall remain bound to comply with all provisions of this AOC not invalidated or determined to be subject to a sufficient cause defense by the court's order.

XXX. PUBLIC COMMENT

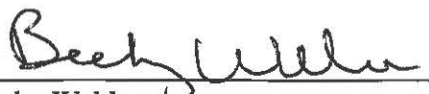
145. EPA shall provide public notice and a reasonable opportunity for public comment on the proposed settlement. After consideration of any comments submitted during a public

comment period of not less than thirty (30) days (which EPA may extend), EPA may withhold consent or seek to amend all or part of this AOC if EPA determines that comments received disclose facts or considerations which indicate that this AOC is inappropriate, improper or inadequate.

XXXI. EFFECTIVE DATE

146. The effective date of this AOC shall be the date on which EPA signs this AOC and provides a copy to Respondent, following the public comment period specified in Section XXX. The undersigned representative of Respondent certifies that s/he is fully authorized to enter into the terms and conditions of this AOC and to bind the Respondent to this document. Respondent agrees not to contest the validity or terms of this AOC, or the procedures underlying or relating to it in any action brought by the United States, including EPA, to enforce its terms or seek penalties for its violations. Respondent retains its rights to assert claims against any third parties with respect to this site.

IT IS SO ORDERED AND AGREED.



Becky Webber
Director
Air, RCRA and Toxics Division
United States Environmental Protection Agency
Region 7

1-4-12
Date

For The Doe Run Resources Corporation:



Name: LOUIS J. MARCHEAU
Title: VICE PRESIDENT LAW

1 SEP 10
Date

APPENDIX A

STATEMENT OF WORK

I. Residential Sampling

A. Within 180 days of the effective date of the AOC, the Respondent shall complete the sampling and analysis for lead in surface soils of all residential properties, churches, high child impact areas, and vacant lots within the radius of 1 mile to 1.5 miles of the main stack of the Doe Run-Herculaneum Smelter. In addition, all high child impact areas and vacant lots within 1.5 miles of the main stack of the Doe Run-Herculaneum Smelter that have not been sampled within the preceding twelve months of the Effective Date of the AOC shall be sampled. All sampling and analysis shall be performed in accordance with the Quality Assurance Project Plan (QAPP) attached as Appendix B of this AOC.

B. Annual residential sampling for lead in surface soil shall be continued each year for properties sampled the prior year with lead concentrations above 200 ppm until one year after ceasing operation of the sinter machine, sulfuric acid plant, blast furnace and processing of lead concentrate at the Herculaneum Smelter or until EPA approves of discontinuation or alteration of the sampling frequency or sample radius. One year after completion of clean up actions at the Doe Run Facility following the cessation of operation of the sinter machine, sulfuric acid plant, blast furnace and processing of lead concentrate at the Herculaneum Smelter all residential properties, churches, high child impact areas, and vacant lots within 1.5 miles will be sampled a final time.

C. Within 90 days of sampling a property, the Respondent shall provide soil sampling results to each property owner where the Respondent collected and analyzed soil. Within 30 days of the Effective Date of the AOC, Respondent shall provide a draft letter transmitting sample results to a property owner to EPA for review and approval. Sampling results shall be provided to EPA within 60 days of sample collection.

D. The Respondent shall provide EPA a copy of a Project Site Health and Safety Plan for review. The Plan shall address all sampling and remediation activity required in this AOC.

II. Residential Property Remediation

A. All surface soil at residential properties, churches, high child impact areas, and vacant lots determined to have a lead concentration equal to or exceeding 400 milligrams per kilogram (mg/kg) and for which access has been granted, shall be excavated and replaced with clean soil. Excavation shall be to a depth of one foot. If at one foot excavation the soil lead level exceeds 400 mg/kg a barrier shall be installed prior to backfilling with clean soil.

B. The replacement of soils referenced above in paragraph II.A that were sampled pursuant to the EPA issued Order, Docket No. RCRA-07-2009-005, CERCLA-07-2009-0010 shall be completed at each property within fourteen (14) months of the sampling event that determined that the property equaled or exceeded a lead soil concentration of 400 mg/kg. All surface soil at residential properties, churches, high child impact areas, and vacant lots determined to have a lead concentration exceeding 400 mg/kg as determined by sampling conducted under this AOC shall be remediated within one year of the completion of the sampling event. If there are more properties requiring cleanup than can be completed within the time frames set forth herein, or problems with access, Respondent shall submit a schedule to EPA for approval for completion of the cleanup at the contaminated properties. Soil replacement shall be performed in accordance with an EPA approved Soil Cleanup Plan. A revised Soil Cleanup Plan, similar to the January 4, 2002 Community Soil Cleanup Plan, shall be submitted for EPA approval within 90 days of the Effective Date of the AOC. Properties where there is soil lead contamination greater than or equal to 400 mg/kg with children under the age of 72 months or an expectant mother should be remediated first.

C. For any surface soil areas that are primarily gravel (e.g., driveways) at residential properties, churches, high child impact areas, and vacant lots determined to have a lead concentration exceeding 400 mg/kg as determined by sampling conducted under this AOC after the Effective Date of the AOC, Doe Run may submit information to EPA to support the conclusion that such contamination is not a result of Doe Run operations. If the information submitted supports the conclusion that Doe Run operations were not the cause of elevated lead levels in the soil then, upon approval by EPA in its sole discretion and not subject to dispute resolution, Doe Run will not be required to remediate those soils.

D. Clean backfill material used for property restoration shall contain less than 150 mg/kg average lead; 22 mg/kg average arsenic; and 25 mg/kg average cadmium.

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN REVISION 01

FOR

ASSESSMENT AND REMOVAL ACTIVITIES AT THE HERCULANEUM LEAD SMELTER SITE

HERCULANEUM, MISSOURI
CERCLIS ID NO.: MOD006266373

Superfund Technical Assessment and Response Team (START) 3 Contract
Contract No. EP-S7-06-01, Task Order 0021

Prepared For:

U.S. Environmental Protection Agency
Region 7
Superfund Division
901 N. 5th Street
Kansas City, Kansas 66101

December 11, 2009

Prepared By:
Tetra Tech EM Inc.
415 Oak Street
Kansas City, Missouri 64106-1120
(816) 412-1741

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APPENDICES

Appendix

- A SITE-SPECIFIC INFORMATION FOR ASSESSMENT AND REMOVAL ACTIVITIES AT THE HERCULANEUM LEAD SMELTER SITE
- B FIGURE

**Region 7 Superfund Program
Quality Assurance Project Plan Form
for the Herculeaneum Lead Smelter Site**

Project Information:

Site Name: Herculeaneum Lead Smelter Site		City: Herculeaneum	State: Missouri
EPA Project Manager: Bruce Morrison		START Project Manager: Ann Marie Pohlman	
Approved By: <i>[Signature]</i>	Title: <i>[Signature]</i> START Project Manager	Date: 12/11/09	Prepared For: EPA Region 7 Superfund Division
Approved By: <i>[Signature]</i>	Title: START Program Manager	Date: 12-11-09	
Approved By: <i>[Signature]</i>	Title: START QA Manager	Date: 12-11-09	Prepared By: Ann Marie Pohlman Date: December 2009
Approved By: <i>[Signature]</i>	Title: EPA Project Manager	Date: 12-15-09	
Approved By: <i>[Signature]</i>	Title: EPA Regional QA Manager	Date: 01/22/2010	Tetra Tech START Project Number: X9004.06.0021.000

1.0 Project Management:

1.1 Distribution List

EPA—Region 7: Bruce Morrison, Project Manager
Diane Harris, Regional QA Manager

Tetra Tech START: Ann Marie Pohlman, Project Manager

1.2 Project/Task Organization

Bruce Morrison, of the EPA Region 7 Superfund Division, will serve as the EPA project manager for the activities described in this QAPP. Ann Marie Pohlman, of Tetra Tech EM Inc., (Tetra Tech), will serve as the START project manager for field activities.

1.3 Problem Definition/Background:

Description: This site-specific Quality Assurance Project Plan form is prepared as an addendum to the Generic Quality Assurance Project Plan for Superfund Lead Contaminated Sites (June 2007), and contains site-specific data quality objectives for the sampling activities described herein.

☒ Description attached.

☐ Description in referenced report: _____

Title

Date

1.4 Project/Task Description:

☐ CERCLA PA

☐ CERCLA SI

☐ Brownfields Assessment

☒ Other (Removal Action)

☐ Pre-CERCLIS Site Screening

☒ Removal Assessment

Other Description:

Schedule: Fieldwork for activities described in this QAPP form is anticipated to begin in January 2010.

☐ Description in referenced report: _____

1.5 Quality Objectives and Criteria for Measurement Data:

a. Accuracy:	<input checked="" type="checkbox"/> Identified in attached table.
b. Precision:	<input checked="" type="checkbox"/> Identified in attached table.
c. Representativeness:	<input checked="" type="checkbox"/> Identified in attached table.
d. Completeness*:	<input checked="" type="checkbox"/> Identified in attached table.
e. Comparability:	<input checked="" type="checkbox"/> Identified in attached table.

Other Description:

*A completeness goal of 100 percent has been established for this project. However, if the completeness goal is not met, EPA may still be able to make site decisions based on any or all of the remaining validated data. Samples collected from residential properties will be considered "critical samples" because the results are crucial to accurately assess the overall threat(s) posed by the site.

1.6 Special Training/Certification Requirements:

☒ OSHA 1910

☒ Special Equipment/Instrument Operator (describe below):

☐ Other (describe below):

Along with the training listed above, familiarization with a Niton™ x-ray fluorescence spectrometer (XRF) and its operating procedures will be necessary for the Tetra Tech START team.

RECEIVED

**Region 7 Superfund Program
Quality Assurance Project Plan Form
for the Herculaneum Lead Smelter Site**

1.7 Documentation and Records:

☒ Field Sheets ☒ Site Log ☒ Site Maps ☒ Health and Safety Plan ☒ Video
☒ Chain of Custody ☒ Letter Report ☒ Photos

☒ Sample documentation will follow EPA Region 7 SOP 2420.05.
☒ Other: Analytical information will be handled according to procedures identified in Table 2.

2.0 Measurement and Data Acquisition:

2.1 Sampling Process Design:

☐ Random Sampling ☐ Transect Sampling ☒ Biased/Judgmental Sampling ☐ Stratified Random Sampling
☐ Search Sampling ☐ Systematic Grid ☐ Systematic Random Sampling ☒ Definitive Sampling
☒ Screening w/o Definitive Confirmation ☒ Screening w/ Definitive Confirmation
☐ Sample Map Attached

☒ Other (Provide rationale behind each sample): See Appendix A for additional sampling information.

The proposed sampling scheme will be biased/judgmental, with definitive laboratory sampling, in accordance with the *Guidance for Performing Site Inspections Under CERCLA*, OSWER Directive #9345.1-05, September 1992, and *Removal Program Representative Sampling Guidance, Volume 1: Soil*, OSWER Directive 9360.4-10, November 1991. Judgmental sampling is the subjective (biased) selection of sampling locations based on historical information, visual inspection, and the best professional judgment of the sampler(s). See Appendices A and B for additional site-specific information and site maps.

Soil screening and sampling activities will be conducted in accordance with *Superfund Lead-Contaminated Residential Sites Handbook*, OSWER 9285.7-50, August 2003. Exact sample locations will be determined during reconnaissance activities performed in the field. Approximately 5 to 10 percent of field-screened soil and street dust samples will be submitted for definitive laboratory confirmation analysis. All interior dust samples will be submitted for definitive laboratory analysis only. The number of samples will be a balance between cost and coverage, and represents a reasonable attempt to meet the study objectives while staying within the budget constraints of a typical site investigation.

Sample Summary Location	Matrix	# of Samples	Analysis
Residential yards, parks, school yards, daycare centers	Soil	TBD	Lead
Interiors of private residences and automobiles	Indoor Dust	TBD	Lead
Haul routes used for the smelter	Street Dust	TBD	Lead

2.2 Sample Methods Requirements:

Matrix	Sampling Method	EPA SOP(s)
Soil	Surface soil samples will be collected with disposable stainless steel spoons. All samples will be field-screened with a XRF analyzer, with a portion submitted for laboratory confirmation analysis.	4231.1.707, 4231.2012, 4230.19
Indoor Dust	Wipe samples may be collected from non-porous surfaces in residences. Also, dust samples may be collected using a vacuum fitted with a high-efficiency particulate air (HEPA) filter.	4230.18
Street Dust	Street dust samples will be collected with a hand-held HEPA vacuum sweeper using dedicated sock filters.	4231.2011

2.3 Sample Handling and Custody Requirements:

☒ Samples will be packaged and preserved in accordance with procedures defined in Region 7 EPA SOP 2420.6.
☒ COC will be maintained as directed by Region 7 EPA SOP 2420.4.
☒ Samples will be accepted according to Region 7 EPA SOP 2420.1.

☐ Other (Describe):

2.4 Analytical Methods Requirements:

☒ Identified in attached table.
☒ Rationale: The requested analyses have been selected based on historic information about the site and program experience with similar types of sites.
☐ Other (Describe):

**Region 7 Superfund Program
Quality Assurance Project Plan Form
for the Herculaneum Lead Smelter Site**

2.5 Quality Control Requirements:☐ Not Applicable☒ Identified in attached table

☒ Field QC Samples: For this investigation, field QC samples will include field duplicates that will be collected to evaluate total method precision. These QC samples will be submitted for the analyses listed in the attached tables. Relative percent differences among field and duplicate samples will be calculated to determine the total method precision for the various matrices.

☐ Other (Describe):

2.6 Instrument/Equipment Testing, Inspection, and Maintenance Requirements:

☒ Testing, inspection, and maintenance of analytical instrumentation will proceed in accordance with the previously referenced SOPs and/or manufacturers' recommendations.

☒ Other (Describe): Testing, inspection, and maintenance of field instruments (GPS units, Niton™ XRF, etc.) will proceed in accordance with manufacturers' recommendations.

2.7 Instrument Calibration and Frequency:

☐ Not Applicable

☒ In accordance with the EPA Region 7 Quality Assurance Plan for Superfund Lead Contaminated Sites (June 2007).

☒ Calibration of laboratory equipment will proceed as described in the previously referenced SOPs and/or manufacturers' recommendations.

☒ Other (Describe): Calibration of the Niton™ XRF will be verified daily, as described in the manufacturers' recommendations. These measurements will be documented in calibration logs.

2.8 Inspection/Acceptance Requirements for Supplies and Consumables:

☐ Not Applicable

☒ In accordance with the EPA Region 7 Quality Assurance Plan for Superfund Lead Contaminated Sites (June 2007).

☒ All sample containers will meet EPA criteria for cleaning procedures for low-level chemical analysis. Sample containers will have Level II certifications provided by the manufacturer in accordance with pre-cleaning criteria established by EPA in *Specifications and Guidelines for Obtaining Contaminant-Free Containers*.

☐ Other (Describe):

2.9 Data Acquisition Requirements:

☐ Not Applicable

☒ In accordance with the EPA Region 7 Quality Assurance Plan for Superfund Lead Contaminated Sites (June 2007).

☒ Previous data or information pertaining to the site (including other analytical data, reports, photos, maps, etc., that are referenced in this QAPP) has been compiled by EPA and/or its contractor(s) from other sources. Some of that data have not been verified by EPA and/or its contractor(s); however, that unverified information will not be used for decision-making purposes by EPA without verification by an independent professional qualified to verify such data or information.

☐ Other (Describe):

2.10 Data Management:

☒ All laboratory data acquired will be managed in accordance with Region 7 EPA SOP 2410.01.

☒ Tetra Tech START will manage field data using EPA-approved software, such as SCRIBE.

☐ Other (Describe):

3.0 Assessment and Oversight:**3.1 Assessment and Response Actions:**

☒ Peer Review

☒ Management Review

☐ Field Audit

☐ Lab Audit

☒ Assessment and response actions pertaining to analytical phases of the project are addressed in Region 7 EPA SOPs 2430.06 and 2430.12.

☒ Other (Describe): The EPA Project Manager will oversee all field operations and initiate response actions as warranted by site conditions or an assessment of site data accuracy. The accuracy of property owner contact information will be assessed based on the quantity of returned letters regarding soil results. The accuracy of XRF readings will be assessed by calculating the regression coefficient between XRF data and laboratory confirmation results.

3.2 Corrective Action:

☒ Corrective actions will be at the discretion of the EPA project manager whenever problems appear that could adversely affect data quality and/or resulting decisions affecting future response actions pertaining to the site.

☐ Other (Describe):

**Region 7 Superfund Program
Quality Assurance Project Plan Form
for the Herculaneum Lead Smelter Site**

3.3 Reports to Management:

- ☐ Audit Report ☐ Data Validation Report ☐ Project Status Report ☐ None Required
- ☒ A removal assessment report describing the sampling techniques, locations, problems encountered (with resolutions to those problems), and interpretation of analytical results will be prepared by START and submitted to the EPA.
- ☐ Other (Describe):

4.0 Data Validation and Usability:

4.1 Data Review, Validation, and Verification Requirements:

- ☐ Identified in attached table.
- ☒ Data review and verification will be performed by a qualified analyst and the laboratory's section manager as described in Region 7 EPA SOPs 2430.06 and 2430.12.
- ☒ Data reviewed and verification will be performed in accordance with the EPA Region 7 Quality Assurance Project Plan for Superfund Lead Contaminated Sites (June 2007).
- ☐ Other (Describe):

4.2 Validation and Verification Methods:

- ☐ Identified in attached table.
- ☒ The data will be validated in accordance with Region 7 EPA SOPs 2430.06 and 2430.12.
- ☒ The EPA project manager will inspect the data to provide a final review. The EPA project manager will review the data, if applicable, for laboratory spikes and duplicates, and laboratory blanks to ensure the data are acceptable. The EPA project manager will also compare the sample descriptions with the field sheets for consistency, and will ensure appropriate documentation of any anomalies in the data.
- ☒ Other (Describe):

4.3 Reconciliation with User Requirements:

- ☐ Identified in attached table.
- ☒ If data quality indicators do not meet the project's requirements as outlined in this QAPP, the data may be discarded and re-sampling or re-analysis of the subject samples may be required by the EPA project manager.
- ☐ Other (Describe):

**Region 7 Superfund Program
Quality Assurance Project Plan Form
for the Herculeaneum Lead Smelter Site**

Table 1: Sample Summary

Site Name: Herculeaneum Lead Smelter Site				Location: Herculeaneum, Jefferson County, Missouri			
START Project Manager: Ann Marie Pohlman				Activity/ASR #: To be determined		Date: December 2009	
No. of Samples	Matrix	Location	Purpose	Depth or other Descriptor	Requested Analysis	Sampling Methods	Analytical Method
TBD	Soil	Residential yards, parks, school yards, daycare centers	To confirm XRF readings obtained in the field	0-1 inch (See Note)	Lead	EPA SOPs 4231.1707, 4231.2012, & 4230.19	EPA SOP 3122.03
TBD	Indoor Dust	Interiors of private residences	To determine whether a release within home and automobile interiors has occurred	NA	Lead	EPA SOP 4230.18	EPA SOP 3123.01
TBD	Street Dust	Haul routes for the smelter	To determine whether street cleaning operations are acceptable	NA	Lead	EPA SOP 4231.2011	EPA SOP 3122.03
QC Samples							
TBD	Soil	Field duplicates	To assess the precision of analytical and sampling methods	0-1 inch (See Note)	Lead	EPA SOPs 4231.1707, 4231.2012, & 4230.19	EPA SOP 3122.03
TBD	Indoor Dust	Field duplicates	To assess the precision of analytical and sampling methods	NA	Lead	EPA SOP 4230.18	EPA SOP 3123.01
TBD	Street Dust	Field duplicates	To assess the precision of analytical and sampling methods	NA	Lead	EPA SOP 4231.2011	EPA SOP 3122.03

Note: Soil sample collected from the upper portion of the 1 inch soil horizon so as to ensure that a depth of 1 inch is not exceeded.

**Region 7 Superfund Program
Quality Assurance Project Plan Form
for the Herculeaneum Lead Smelter Site**

Table 2: Data Quality Objective Summary

Site Name: Herculeaneum Lead Smelter Site				Location: Herculeaneum , Jefferson County, Missouri;					
START Project Manager: Ann Marie Pohlman				Activity/ASR #: To be determined				Date: December 2009	
Analysis	Analytical Method	Data Quality Measurements					Sample Handling Procedures	Data Management Procedures	
		Accuracy	Precision	Representativeness	Completeness	Comparability			
Soil, Interior Dust, Street Dust									
Lead	see Table 1	per analytical method	per analytical method	judgmental sampling based on professional judgment of the sampling team	100%; samples from residential properties are critical samples	Standardized procedures for sample collection and analysis will be used.	See Section 2.3 of QAPP form.	See Section 2.10 of QAPP form.	

APPENDIX A

**SITE-SPECIFIC INFORMATION FOR ASSESSMENT AND REMOVAL ACTIVITIES
AT THE HERCULANEUM LEAD SMELTER SITE**

INTRODUCTION

The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) has been tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to provide oversight and collect environmental samples during an ongoing potentially responsible party (PRP)-funded removal action (RA) at the Herculaneum Lead Smelter (HLS) site in Herculaneum, Missouri. This Quality Assurance Project Plan (QAPP) replaces the *QAPP for a Site Characterization at the Herculaneum Lead Smelter Site*, dated September 10, 2001, and addresses initial assessment, post-excavation assessment, and recontamination assessment of properties associated with this site.

Field activities will include collection of surface soil samples from residential yards, parks, schoolyards, and daycare centers; and indoor dust samples. In addition, dust sampling/screening will be conducted along roadways used by trucks driving to and from the smelter, following cleaning activities (i.e., sweeping, washing, etc.) conducted in those areas. The number of samples to be collected from each medium is unpredictable due to ongoing uncertainties regarding enforcement activities, releases, and available monitoring data related to the site. Analytical Data Requests (ASR) will be submitted to the EPA Region 7 laboratory as sample needs arise.

SITE LOCATION/DESCRIPTION

The HLS site is located at 881 Main Street in Herculaneum, Missouri, about 25 miles south of the St. Louis metropolitan area (Figure 1, Appendix B). The site property encompasses approximately 52 acres. A slag disposal pile is located south of the smelter in a horseshoe bend of Joachim Creek. The slag pile is located in the floodplain of Joachim Creek, in an area classified as a wetland. The smelter site is bordered on the east by the Mississippi River and on the north and west by residential areas. South of the smelter is the slag pile and wetland area. The slag pile is bordered to the north by residential areas and the smelter facility, and to the east, west, and south by Joachim Creek. The slag pile and most of the smelter facility are located in Section 29, Township 41 North, Range 6 East, although the northern portion of the facility extends into Section 20. Geographic coordinates of the approximate center of the site are 38° 15' 19.0" north latitude and 90° 22' 56.7" west longitude.

The site is an active lead smelter, the largest of its kind in the United States. HLS began operations in 1892 as part of the St. Joseph Lead Company. In 1986, it became part of the newly formed Doe Run Company (Doe Run), a joint venture of the Fluor Corporation and the Homestake Mining Company. In 1990, the Fluor Corporation became the sole owner of Doe Run. The site consists of three main areas:

(1) the smelter plant, located on the east side of Main Street; (2) the slag storage pile; and (3) office buildings on the west side of Main Street.

The following major processes occur at the HLS site: (1) sintering, smelting, and refining of lead ore; (2) sulfuric acid production from waste sulfur-containing gases generated by the sintering operation; and (3) wastewater treatment. The smelting operation generates a molten slag, 20 percent of which is sent to the slag storage pile as waste. The slag pile occupies approximately 24 acres in the floodplain of Joachim Creek, and is up to 40 feet tall in some sections. In 1993, during a major flood event, water reached several feet up the sides of the slag pile. The site also generates stack air emissions from the smelter and fugitive air emissions from various operations (Missouri Department of Natural Resources [MDNR] 1999).

Several investigations have been conducted at the site, including a Preliminary Assessment/Screening Site Inspection (PA/SSI) by EPA in 1980, a multimedia compliance inspection by the EPA in 1995, a Preliminary Ecological Risk Assessment for Fish and Wildlife Habitats by the U.S. Fish and Wildlife Service (USFWS) in 1998, and a PA by MDNR in 1998 and 1999. In addition to these state and federal investigations, the facility has acquired and submitted to the State a large quantity of environmental data pursuant to Missouri's site-specific State Implementation Plan (SIP) established under the Clean Air Act (CAA), the facility's National Pollutant Discharge Elimination System (NPDES) permit and Metallic Minerals Waste Management Act permit, and data obtained during voluntary soil cleanup efforts in the surrounding Herculaneum community.

Based on previous investigations, primary metal contaminants in the slag pile include arsenic, cadmium, copper, lead, nickel, and zinc. The slag pile has been partially inundated by floodwaters in the past. The USFWS has identified significant concentrations of lead, cadmium, and zinc in floodplain soils; significant concentrations of lead and zinc in river sediments; and significant zinc concentrations in surface water samples collected from drainage ditches on the Joachim Creek floodplain.

Stack and fugitive emissions from the site, and fallout from these emissions, have resulted in releases of lead, cadmium, and sulfur dioxide to the air and soil. Since 1980, the smelter's emissions have been regulated under general and site-specific regulations established in the SIP. Lead emissions at one air monitoring station near the site have consistently been above the 1.5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) National Ambient Air Quality Standard (NAAQS) since it was installed in 1992. Due to the continued noncompliance with the NAAQS standard, new SIP regulations are being developed for the site by MDNR.

Soil sampling has shown lead levels as high as 12,800 parts per million (ppm) in surface soils at residences surrounding the smelter. A 1992 Jefferson County Health Department study identified 13 homes near the site where children had blood lead levels greater than 15 micrograms per deciliter ($\mu\text{g/dl}$). At 12 of these 13 homes, lead levels in soil ranged from 1,000 to 3,500 ppm, and lead at the other residence was detected at up to 999 ppm. Thirteen out of 21 birds tested as part of the USFWS study showed clinical or subclinical lead poisoning based on liver analysis. Fish tissue samples collected during this study had lead concentrations up to 7.5 ppm. Under a groundwater monitoring program conducted at the site since 1980, lead and cadmium concentrations in groundwater periodically have been found above their respective Maximum Contaminant Levels (MCL) established under the Safe Drinking Water Act. The MCLs for lead and cadmium are 15 parts per billion (ppb) (action level) and 5 ppb, respectively.

SAMPLING STRATEGY AND METHODOLOGY

In support of EPA, under this task order, Tetra Tech START will conduct sampling of environmental media at the HLS site. The extent of contamination and re-contamination will be further defined as additional screening and analytical data become available. The proposed sampling scheme for this project is judgmental (based on the best professional judgment of the sampling team), in accordance with EPA guidance (EPA 1991).

Sampling procedures will follow standard operating procedures (SOP) outlined in the QAPP. Most sampling activities will generally require one to two START personnel.

INITIAL ASSESSMENT ACTIVITIES

Descriptions of sampling strategies and procedures for initial assessment activities follow. Goals of this sampling are to determine or detect:

1. The extent of soil contamination in residential yards, daycare facilities, areas in schoolyards frequented by children, parks, and other high-use areas affected by the HLS operations beyond a 0.4-mile radius of the smelter, but within a 1.5-mile radius of the smelter on non-company-owned properties on the Missouri side of the Mississippi River.
2. Indoor dust contamination at residential homes within 1.5 miles of the smelter stack that have surface soil concentrations of lead above 400 ppm, or at any residence within 1.5 miles of the smelter for which the owner/occupant requests annual interior dust monitoring for lead.

Soil Screening/Sampling – For soil screening activities, the START field crew will make every effort to obtain access to all residential and public properties, school yards, parks, and daycare centers within

1.5 miles of the smelter. After receiving verbal consent from the property owner, START will sketch the property and divide each property into distinct areas or cells for sampling and ex-situ analysis. While the maximum size of a cell will be 100 by 100 feet, the actual size of cell will be determined based on site features. A cell will extend from the drip zone around a building or house in all directions 100 feet or to the property line, whichever distance is shorter. Additional areas to be screened include the drip zone; fine-grained material if used for driveways, sidewalks, or under carports; vegetable gardens; and children's play areas at least 25 by 25 feet.

A composite sample consisting of nine aliquots, each collected from the upper portion of the 1 inch soil horizon so as to ensure that a depth of 1 inch is not exceeded, will be collected in each cell and placed in a labeled, sealed plastic bag. All samples will be transported to a sample preparation facility, where they will be transferred to a clean, disposable aluminum pie pan. The samples will be allowed to completely air dry or be placed in ovens to heat and dry. If used, ovens will not be operated above a temperature of 350 degrees Fahrenheit (°F). Because the melting point of lead is approximately 620 °F, the drying process should not affect the concentrations of lead in the samples. Once dried, the samples will be homogenized and passed through a number 10 (2 millimeter) sieve. Approximately 3 grams of the homogenized soil will be placed in a plastic sample cup, covered with Mylar film, and then screened for lead using a Niton™ XRF spectrometer. Three separate XRF readings will be taken from each sample and recorded for the appropriate cell. The average of these three readings will be calculated and recorded on the field sheet for that property. Approximately 5 percent of the sample cups will be submitted to the EPA Region 7 laboratory for confirmation analysis for lead by EPA Region 7 SOP 3122.03. The XRF data will be considered valid if a comparison between the XRF values and the corresponding laboratory results yields a regression coefficient (r^2) of at least 0.7. Soil screening activities will be conducted in accordance with the guidelines established in the *Superfund Lead-Contaminated Residential Sites Handbook* (EPA 2003).

If analytical results indicate that surface soil contamination exists beyond the 1.5-mile radius of the smelter, further sampling on residential properties located beyond the specified limits may be required, using the same sampling design.

Indoor Dust Sampling – Indoor dust samples (wipe and bulk dust samples) will be collected at residential homes within 1.5 miles of the smelter stack that have surface soil concentrations of lead above 400 ppm, or at any residence within 1.5 miles of the smelter for which the owner/occupant requests annual interior dust monitoring for lead. Bulk dust sampling will be conducted in accordance with EPA Region 7 SOP 4230.18, with a minor modification to include the use of a hand-held electric vacuum

sweeper. A dedicated sock filter will be used for each sample. Each bulk dust sample will be collected from an adequate area to provide a minimum of 5 grams of sample weight. The sampling area will include high-traffic areas, children's bedrooms, and/or undisturbed areas. Pertinent sampling information will be documented on field sheets. The bulk dust samples will be transferred directly to dedicated ziplock bags and labeled for laboratory analysis. The contaminant levels will be expressed in micrograms per kilogram ($\mu\text{g}/\text{kg}$), which will represent the total concentration of lead, and micrograms per square foot ($\mu\text{g}/\text{ft}^2$), which will represent the contaminant loading at each sampling location. The sampling procedure for wipe samples will follow the guidelines set forth in the EPA *Residential Sampling for Lead: Protocols for Dust and Soil Sampling - Final Report* (EPA 1999). Dust samples will be submitted to the EPA Region 7 laboratory for analysis of lead by EPA Region 7 SOP 3123.01. Descriptions of the indoor dust sampling strategies and procedures are as follows:

Wipe Samples

Wipe samples will be collected from non-porous surfaces in each residence during each sampling event. The sampling locations will typically include three floors and two window sills within the home. If young children are present in the home, every effort will be made to collect samples from common areas used by the children and from the children's bedroom(s). Templates of known area (1 square foot [sq ft] for floors and 0.25 sq ft for window sills) will be used during sampling to assure the representativeness of the data collected.

Dust Samples

One dust sample will be collected and submitted for analysis from a carpeted floor in each residence during each sampling event. A vacuum cleaner equipped with a high-efficiency particulate air (HEPA) filter will be used to collect a dust sample from a high-traffic area in each residence. A template (1 sq ft) will be used at each sampling location to assure the representativeness of the data collected. If sufficient sample volume is not collected from the sampling area, additional material will be collected from an adjacent area of the same size.

POST-REMOVAL AND RECONTAMINATION ASSESSMENT ACTIVITIES

Removal activities are currently proceeding at residential properties within the City of Herculaneum. Removal activities outside each home involve excavating lead-contaminated soil, placing clean backfill into the excavation, and re-seeding grass at the property. Following these outdoor activities, abatement of

lead-contaminated dust inside the home occurs at properties where access for such activities has been granted.

Soil Screening/Sampling – Tetra Tech START will collect soil samples immediately following excavation of contaminated cells to ensure removal action levels have been achieved. Soil samples will also be collected periodically from selected residences following excavation to assess whether recontamination is occurring. Those procedures are described as follows:

Post-Excavation Samples

Initial removal activities in each contaminated cell will involve the excavation of approximately 6 inches of soil from the surface layer. This will be conducted with excavating machinery, such as skid loaders, dozers, excavators, backhoes, and hand tools. START will then collect in situ XRF readings from the excavated area. If XRF readings are consistently below 400 milligrams per kilogram (mg/kg), excavation will be considered complete for that cell. If XRF readings remain above 400 mg/kg, then excavation will continue to a 1-foot depth.

After removal of soils from the affected areas, the excavated soils will be replaced with clean backfill. Clean backfill will consist of soils with lead concentrations below 240 mg/kg, and with concentrations of all other hazardous substances, pollutants, or contaminants below residential soil screening levels determined by EPA.

When the maximum depth of excavation is reached within a cell, START will collect a 9-aliquot composite sample from the upper 1 inch of soil at the bottom of the excavation, process the sample as previously described for initial assessment activities, and screen it for lead with a XRF. Samples from 5 to 10 percent of the excavated cells will be submitted for laboratory confirmation analysis of lead.

Recontamination Samples

Backfill soil used at selected residences where removal activities have been completed (to be determined by EPA) will be screened/sampled to assess the potential for recontamination due to ongoing smelter operations at the HLS site. The initial (baseline) sampling event will occur within 1 week of completion of removal activities. The screening/sampling will be conducted as previously described, with the property sketch and cells remaining as originally drawn during the initial assessment. After the baseline sampling, screening/sampling will be conducted on a monthly basis to evaluate the extent of recontamination of those properties. At this time, the duration of this sampling program has not been determined.

Indoor Dust Sampling – Sampling of home interiors where removal activities have taken place will be conducted to assess the potential for recontamination due to ongoing smelter operations at the HLS site. The data generated during this sampling program will also be used by EPA to evaluate the need for additional measures/procedures during abatement of lead-contaminated dust inside the homes. The initial (baseline) sampling event will occur within 1 week of the completion of removal activities. The indoor dust sampling procedures are as described previously in this QAPP. Following the baseline sampling, followup sampling will be conducted on a monthly basis to evaluate the extent of recontamination of those properties. All interior dust samples will be submitted for laboratory analysis of lead. At this time, the duration of this sampling program has not been determined.

Street Dust Sampling – Screening/sampling may be required to assess lead concentrations in residual dust along roadways at the site used by trucks going to and from the smelter, following cleaning activities (i.e., sweeping, washing, etc.) conducted in those areas. The screening/sampling activities will determine whether cleaning operations in those areas have reduced residual lead concentrations to below the accepted removal action level. Dust samples will be collected from each side of the cleaned roadways for field screening of lead using a field-portable XRF spectrometer. The samples will be collected approximately 200 feet apart, from both sides of the roadway. Each sample will be collected with a hand-held HEPA vacuum sweeper using a disposable sock filter, according to general procedures described in Region 7 SOP 4231.2011 (modified to incorporate the use of the vacuum sweeper). Additional samples will be collected from non-haul route roads in Herculaneum as background samples for comparison. Approximately 10 percent of all samples collected will also be submitted for laboratory confirmation analysis of lead. Laboratory analysis will be conducted according to EPA Region 7 SOP 3122.03.

QUALITY CONTROL SAMPLES

Field duplicates of each matrix will be collected at a frequency of approximately 2 to 5 percent. Data from these duplicate pairs will be evaluated to determine total method precision of field and laboratory procedures.

INVESTIGATION-DERIVED WASTES

Disposal of investigation-derived wastes (IDW) and procedures for equipment and personal decontamination will be addressed in a site-specific health and safety plan prepared by Tetra Tech START. IDW is expected to consist of disposable sampling supplies (gloves, paper towels, pie pans, etc.) that will be disposed of off site as uncontaminated solid waste.

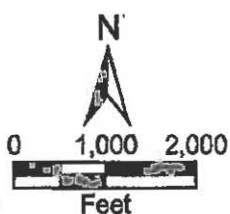
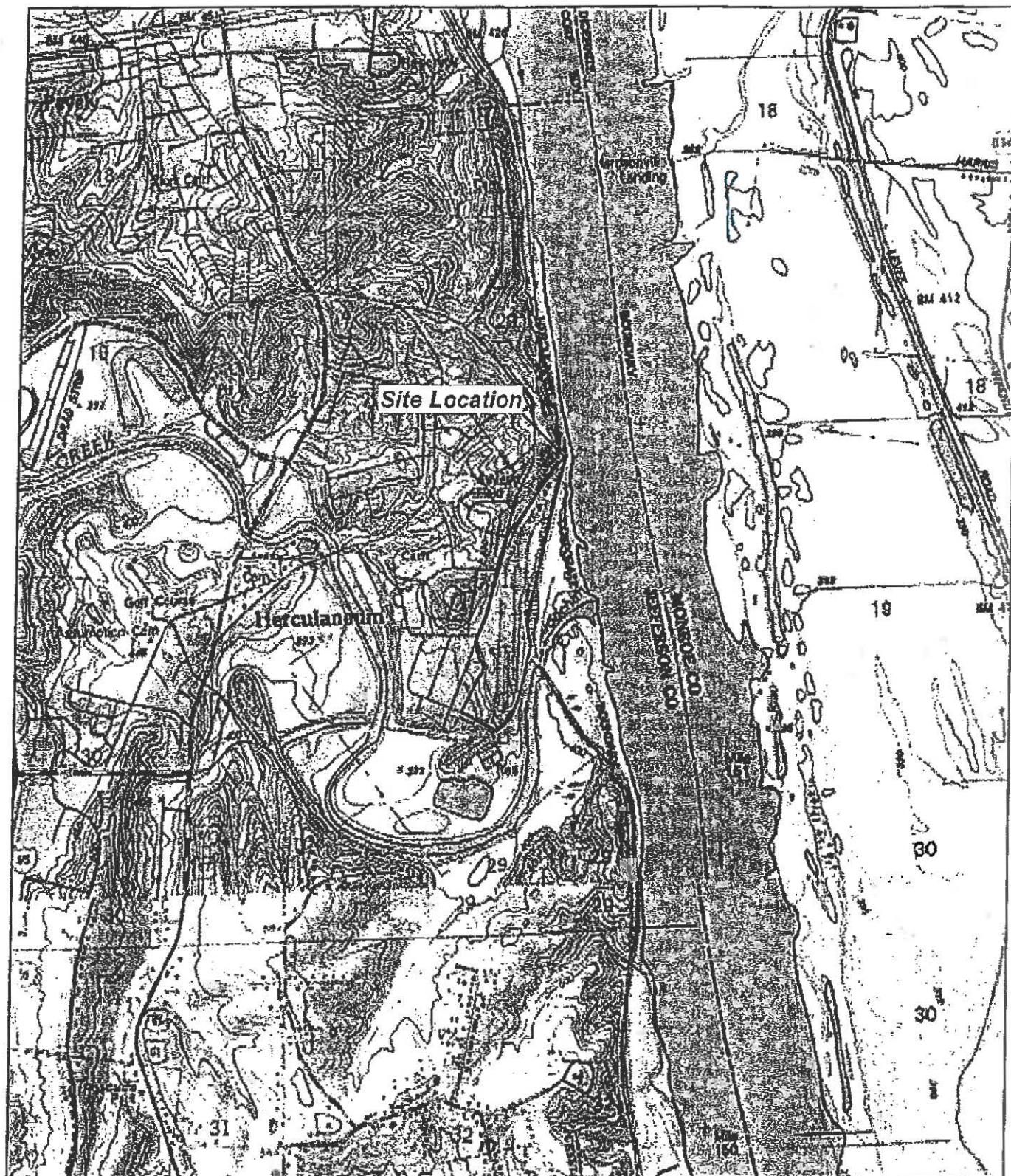
ANALYTICAL METHODS

An Analytical Services Request (ASR) form will be completed by EPA or START and submitted to the EPA Region 7 laboratory prior to field activities. Appropriate containers and physical and chemical preservation techniques will be employed during the field activities to help verify acquisition of representative analytical results. All samples will be submitted to the EPA Region 7 laboratory in Kansas City, Kansas, or to a START-contracted laboratory for analysis, according to the SOPs and methods referenced or described in the QAPP. Standard detection limits and turnaround times are anticipated to be adequate for this activity.

REFERENCES

- Missouri Department of Natural Resources (MDNR). 1999. Preliminary Assessment Report: Herculaneum Lead Smelter Site. March 30.
- United States Environmental Protection Agency (EPA). 1991. *Removal Program Representative Sampling Guidance. Volume 1 - Soil*. Office of Emergency and Remedial Response. OSWER Directive 9360.4-10. November.
- EPA. 2003. *Superfund Lead-Contaminated Residential Sites Handbook*. Office of Emergency and Remedial Response. OSWER 9285.7-50. August.
- EPA. 1999. Residential Sampling for Lead: Protocols for Dust and Soil Sampling - Final Report. March 20.

APPENDIX B
FIGURE



Herculaneum Lead Smelter
Herculaneum, Missouri

Figure 1
Site Location Map

TETRA TECH EM INC.

Sources: USGS 7.5 Minute Topo Quads, MO: Herculaneum 1993, Festus 1982;
USGS 7.5 Minute Topo Quads, IL-MO: Valmeyer 1998, Selma 1993.

Date: 12/09/09

Drawn By: Ingrid Tobler

Project No: 30004.L08.001.600



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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

JAN 25 2010

MEMORANDUM

SUBJECT: Quality Assurance Project Plan for Assessment and Removal Activities at the Herculaneum Lead Smelter Site – Approved with conditions

FROM: Diane Harris *Diane Harris*
Regional Quality Assurance Manager
ENSV/IO

TO: Bruce Morrison
EPA Project Manager
SUPR/SPEB

The review of the subject document prepared by SUPR/SPEB, dated 11/2009, has been completed according to "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations," EPA QA/R-5 March 2001. This document is a site-specific addendum to the Generic QAPP for Superfund Lead Contaminated Sites (R7 QAO Document Number: 2007197).

Based on the comments below, the document is approved with conditions. The document was found to be incomplete in addressing some key areas to the extent of potentially jeopardizing the quality of the data. These areas are fully described in this review memorandum as critical comments and can be adequately addressed by incorporation into the document but without resubmission. The document would not be approved without addressing these issues.

Critical Comments

1. Appendix A, page 1, 3. Sampling
 - a) What will trigger the collection of samples? How do enforcement activities, releases and available monitoring data impact the collection of samples?
 - b) The proposed sampling scheme is stated as judgmental. How will this be applied to sampling? What will trigger the collection of samples?

c) The initial assessment activities include assessing the soil contamination and indoor dust contamination of residential homes, day care facilities and school yards within 1.5 mile radius of the smelter site. Is the maximum number of sampling areas known? Will more be added outside of this radius?

2. Appendix A, page 4. What precision, if any, is required for the XRF readings?
3. Appendix A, page 4. Is the composite sample collected one per 100 X 100 feet cell? What sampling methodology is used to collect the nine aliquots in each composite sample?
4. Appendix A, page 4. Paragraph three states "if analytical results indicate that surface soil contamination exists beyond 1.5 mile radius of the smelter, further sampling on residential properties located beyond the specified limits may be required." How will this be determined?
5. Appendix A, page 6. How will it be determined that the backfill soil is clean?

If you have any questions, please contact me at x7258 or the lead reviewer Jenn Boggess at x7185.

R7QAO Document Number: 2010078

MEMORANDM

February 26, 2010

SUBJECT: Response to QA Comments on the December 11, 2009 Revised Quality Assurance Project Plan (QAPP) for the Herculaneum Lead Smelter Superfund Site

FROM: Bruce A. Morrison, RPM
SUPR/SPEB

TO: Superfund Records

Initial assessment sampling has previously been performed at the site. Future sampling can be determined by various parameters. These include negotiated settlements with Potentially Responsible Parties (PRPs), suspected lead releases due to operational procedures at the smelter, field observations of material suspected of being lead-bearing material, or a report of residents with elevated blood lead levels.

It is not likely sampling for lead contamination associated with this site will be performed outside the 1.5 mile radius of the facility due to historical lead levels observed at the site. References in the QAPP to sampling beyond this distance should be disregarded.

The sampling methodology to be performed for residential soil sampling will be in accordance with the 2003, *Superfund Lead-Contaminated Residential Sites Handbook*, with the exception that 9 aliquots will be collected for each composite sample.

Random discrete soil samples will be collected from backfill source areas at a rate of approximately one per 10,000 cubic yards to ensure that soil lead levels are below 150 mg/kg.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
KANSAS CITY, KANSAS 66101

IN THE MATTER OF:)
)
THE DOE RUN RESOURCES) Docket No. RCRA-07-2010-0031
CORPORATION)
881 Main Street)
Herculaneum, Missouri)
)
Respondent.) ADMINISTRATIVE ORDER
) ON CONSENT
)
Proceedings under Section 7003 of the)
Resource Conservation and Recovery)
Act as amended, 42 U.S.C. Section 6973.)

APPENDIX C
FINANCIAL ASSURANCE FOR RESIDENTIAL PROPERTIES
IN HERCULANEUM, MISSOURI

I. Introduction

1. This Appendix sets forth the obligations of The Doe Run Resources Corporation and The Doe Run Resources Corporation d/b/a The Doe Run Company ("Doe Run") to secure and maintain Financial Assurance as required under Paragraph 69.c of the Administrative Order on Consent, Docket No. RCRA-07-2010-0031 ("AOC" or "Order") including schedules and notice requirements. Submittals requiring U.S. Environmental Protection Agency ("EPA") approval shall be submitted to the EPA project coordinator for the AOC. "EPA approval" or "determination" as used in this Appendix shall not be subject to judicial review, but shall be subject to dispute resolution pursuant to Section XIX (Dispute Resolution) of the AOC, unless specified otherwise in this Appendix. Any time period specified by this Appendix may be changed by written agreement of the Parties and is not a material modification to the AOC. All proposed material modification to this Appendix will be agreed to in writing by the Parties and made pursuant to Section XXVI (Modification of this AOC) of the AOC.

2. The Respondent operates a primary lead smelter in Herculaneum, Jefferson County, Missouri ("Herculaneum Lead Smelter"). Residential Properties in the vicinity of the Herculaneum Lead Smelter have soils with lead concentrations at or above 400 parts per million ("ppm"), EPA's recognized action level for Residential Properties at this Site. Respondent has

agreed to implement and complete a sampling and cleanup process to address the lead soil contamination at the Residential Properties in the vicinity of the Herculanum Lead Smelter, and those obligations are described in the AOC and attached Statement of Work ("SOW"). Some of these Residential Property owners have refused to provide access to the Respondent to allow the cleanup of lead contaminated soils at or above 400 ppm on their property. Respondent has agreed to provide Financial Assurance for the cleanup of the Residential Properties that have refused to provide access to allow cleanup for a maximum period of five (5) years from the date it is established. This Appendix will explain how the Respondent will provide the Financial Assurance.

II. Definitions

3. Whenever the terms set forth below are used in this Appendix, the definitions set forth below shall apply. However, the definitions below only apply to matters relating to Financial Assurance for the Residential Properties in Herculanum, Missouri under the AOC.

"Estimated Cost of Work" shall mean the EPA-approved cost estimate for addressing all contaminated Residential Properties in Herculanum, Missouri that have lead concentrations at or above 400 ppm and that have refused access to allow cleanup to proceed.

"Current Dollars" shall mean U.S. dollars in the year actually received or paid, unadjusted for price changes or inflation.

"Respondent" shall mean the Doe Run Resources Corporation.

"Financial Assurance" shall mean a written demonstration of financial capability, in compliance with the terms of this Appendix, to implement the cleanup of Residential Properties in Herculanum, Missouri that have refused to allow access to complete cleanup activities in an amount at least equal to the approved Estimated Cost of Work.

"Financial Mechanism" shall mean the mechanism or instrument specified in this Appendix used to secure funding for the Financial Assurance obligation under the AOC.

"GAAP" shall mean U.S. Generally Accepted Accounting Principles.

"Residential Property" or "Residential Properties" shall mean those residential properties, churches or high child impact areas within a 1.5 mile radius of the Herculanum Lead Smelter Facility that have lead concentrations in the soil at or above 400 ppm.

“Residential Property Cleanup Action” or “Residential Property Cleanup Activities” shall mean those actions or activities required by the AOC, SOW and Quality Assurance Project Plan to address contaminated soil at Residential Properties.

III. Cost Estimates

4. Respondent shall provide to EPA for approval within 120 days after the sampling results and access agreement have been provided to Residential Properties following the final sampling activities required by the AOC, a written estimate, in current dollars, of the cost of hiring a qualified third party to perform all of the Residential Property Cleanup Activities to address the contamination at each Residential Property where lead soil concentrations are at or above 400 ppm and the property owner has refused to allow access for the cleanup (hereafter “Estimated Cost of Work”). A third party is a party who (i) is neither a parent nor a subsidiary of Respondent and (ii) does not share a common parent or subsidiary with Respondent.

5. The Estimated Cost of Work shall be calculated based on the point in time when the Residential Property Cleanup Action would be the most expensive based on what it would cost to hire a Third Party to complete the Residential Property Cleanup Action.

6. Respondent shall not include in the Estimated Cost of Work any credit for salvage Value that may be realized with the sale of hazardous wastes or non-hazardous wastes, facility structures or equipment, land or other assets associated with the Residential Properties. Nor shall the Respondent incorporate a zero cost for handling hazardous waste with potential future value.

7. Respondent shall submit annually to EPA for approval, a revised written Estimated Cost of Work, together with supporting documentation, reflecting inflationary adjustments, significant cost adjustments and/or changes to the Residential Property Cleanup Action. The submissions shall be due sixty (60) days before the anniversary of the establishment of the trust fund. In preparing the revised Estimated Cost of Work, the Respondent shall use the most recently published annual Implicit Price Deflator for the Gross Domestic Product.

8. Notwithstanding any provisions of the AOC, Respondent shall maintain the latest approved Estimated Cost of Work prepared in accordance with this Appendix for the duration of this AOC.

IV. Financial Assurance for Residential Properties

9. Within 30 days of the approval of the Estimated Cost of Work for the Residential Properties where access has been refused, the Respondent shall provide to EPA an originally signed certification by Respondent’s Chief Financial Officer (“CFO”), together with supporting documentation, including a complete executed trust fund agreement, confirming that it has secured Financial Assurance for 100% of the Estimated Cost of Work.

10. The Financial Assurance shall be in the form of a trust fund established for the benefit of EPA, administered by a trustee who has the authority to act as a trustee under federal or State law, whose trust operations are regulated and examined by a federal or State agency, and that is acceptable in all respects to the EPA.

11. Respondent shall fund the Trust Fund, as specified in Paragraph 12. The trust agreement shall provide that the trustee shall make payments from the fund as directed by the EPA Superfund Special Emphasis and Remedial Branch Chief in writing (1) to reimburse Respondent from the fund for expenditures made by Respondent for Residential Property Cleanup Activities performed in accordance with the AOC and this Appendix, or (2) to pay any other person whom the EPA Superfund Special Emphasis and Remedial Branch Chief determines has performed or will perform the Residential Property Cleanup Activities in accordance with the AOC and this Appendix. The trust agreement shall further provide that after completion of all Residential Property Cleanup Activities and money remains in the trust, the trustee shall not refund to the Respondent any amounts from the fund unless and until EPA has advised the trustee that the Residential Property Cleanup Activities under the AOC and this Appendix have been successfully completed. The trust shall be maintained for a maximum of five (5) years from the date of establishment.

12. Respondent shall fully fund the trust established pursuant to Paragraph 10 within thirty (30) days of the approval of the Estimated Cost of Work and draft trust fund. Respondent shall ensure that the amount of funds in the trust cover any increases in the Estimated Cost of Work, including inflationary adjustments.

13. After beginning implementation of the Residential Property Cleanup Activities for those properties where the property owners have refused to allow access for cleanup pursuant to Paragraph 2 of this Appendix, the Respondent or other person authorized to implement the Residential Property Cleanup Activities may request reimbursements for Residential Property Cleanup Activities expenditures by submitting itemized bills to the trustee and the EPA Superfund Special Emphasis and Remedial Branch Chief. The Respondent may request reimbursement for Residential Property Cleanup Activities only if sufficient funds are remaining in the trust fund to cover the maximum costs of the remaining Residential Property Cleanup Activities. Within thirty (30) days after receiving bills for Residential Property Cleanup Activities the EPA Superfund Special Emphasis and Remedial Branch Chief will instruct the trustee to make reimbursements in those amounts as the EPA Superfund Special Emphasis and Remedial Branch Chief specifies in writing and/or shall file an Objection Notice pursuant to the trust agreement.

14. Respondent shall use the exact wording, specified in Attachment A-1 to this Appendix for the trust agreement. The trust agreement must be accompanied by a formal certification of acknowledgment¹. Respondent shall update the trust fund amount within sixty (60) days after a change in the amount of the Estimated Cost of Work. Respondent shall ensure that the trustee provides to EPA an annual accounting of the costs in the trust fund.

15. Respondent shall pay all expenses incurred by the Trustee in connection with the

¹ For an example see 40 CFR § 264.151(a)(2).

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administration of the trust fund, including fees for legal services rendered to the Trustee and compensation of the Trustee.

16. For the Financial Assurance provided under this Section, Respondent shall submit a draft trust fund agreement and related documents to the EPA for review and approval. Within thirty (30) days of approval of the Estimated Cost of Work and draft trust fund agreement, Respondent shall execute or otherwise finalize the trust fund agreement in order to make the selected financial assurance legally binding in a form substantially identical to the trust fund agreement reviewed and approved by EPA. Respondent shall submit the executed and/or otherwise finalized trust fund agreement to EPA within thirty (30) days after EPA's approval of the draft trust fund agreement and Estimated Cost of Work.

17. Respondent shall submit all trust fund and related required documents by mail to the EPA Region 7 Financial Management Officer at the addresses listed below. Copies shall also be sent to the EPA and State Project Officers.

For the EPA:

John Phillips
Region 7 Financial Management Officer
U.S. Environmental Protection Agency
901 North 5th Street
Kansas City, Kansas 66101.

18. Respondent shall provide adequate Financial Assurance, in the form of a trust fund that conforms to the requirements of this Appendix. Doe Run shall make changes to the Financial Assurance if the following occurs:

a. If at any time EPA determines that the trust fund provided pursuant to this Section is inadequate, or no longer satisfies the requirements set forth or incorporated by reference in this Appendix, whether due to an increase in the Estimated Cost of Work or for any other reason, EPA shall so notify Respondent in writing. Within thirty (30) days of receipt of notice of EPA's determination, Respondent shall obtain and present to EPA for approval an alternate or updated trust fund that satisfies all requirements set forth or incorporated by reference in this Appendix. If Respondent needs additional time to provide the alternate or updated trust fund, Respondent shall request an extension, in writing, within ten (10) days of EPA's determination. Respondent's request shall include an explanation for the additional time and specify when the alternate or updated trust fund will be in place. Respondent shall not rely upon the alternate or updated trust fund, nor shall Respondent terminate the original trust fund, until EPA has approved the alternate or updated trust fund.

b. If at any time Respondent becomes aware of information indicating that the trust fund provided pursuant to this Section is inadequate or no longer satisfies the requirements set forth or incorporated by reference in this Appendix, whether due to an increase in the Estimated Cost of Work or for any other reason, then Respondent shall notify EPA in writing of such information within ten (10) days. Within thirty (30) days of Respondent becoming aware of

such information, Respondent shall obtain and present to EPA for approval an alternate or updated trust fund that satisfies all requirements set forth or incorporated by reference in this Appendix. If Respondent needs additional time to provide the alternate or updated trust fund, Respondent shall request an extension, in writing, within ten (10) days of Respondent becoming aware of such information. Respondent's request shall include an explanation for the additional time and specify when the alternate or updated trust fund will be in place. Respondent shall not rely upon the alternate or updated trust fund, nor shall Respondent terminate the original trust fund, until EPA has approved the alternate or updated trust fund.

19. Respondent's inability or failure to establish or maintain financial assurance for completion of the Residential Property Cleanup Activities shall in no way excuse performance of any other requirements of this AOC, including, without limitation, the obligation of Respondent to complete the Residential Property Cleanup Activities in strict accordance with the terms of the AOC.

20. Modification of Amount and Form of Financial Assurance.

- a. Reduction of Amount of Financial Assurance. If Respondent believes that the Estimated Cost to complete the remaining Residential Property Cleanup Activities has diminished below the amount covered by the existing Financial Assurance provided under this AOC, Respondent may, at the same time that Respondent submits the annual cost adjustment, pursuant to Paragraph 7, or at any other time agreed to by EPA submit a written proposal to EPA to reduce the amount of the Financial Assurance provided so that the amount of the Financial Assurance is equal to the estimated cost of the remaining Residential Property Cleanup Activities to be performed. The written proposal shall specify, at a minimum, the cost of the remaining Residential Property Cleanup Activities to be performed and the basis upon which such cost was calculated. In seeking approval of a revised Financial Assurance amount, Respondent shall follow the procedures set forth in Paragraph 20.c of this Section. If EPA decides to accept such a proposal, EPA shall notify Respondent of its decision in writing. After receiving EPA's written decision, Respondent may reduce the amount of the Financial Assurance only in accordance with and to the extent permitted by such written decision. In the event of a dispute, Respondent may reduce the amount of the Financial Assurance required hereunder only in accordance with the final EPA dispute decision resolving such dispute pursuant to Paragraph 1 of this Appendix and Section XIX (Dispute Resolution) of the AOC. Changes to the form or terms of any Financial Assurance provided under this Section, other than a reduction in amount, are authorized only in accordance with Paragraph 20.c of this Section.
- b. Release of Financial Assurance. Respondent may submit a written request to the EPA Superfund Special Emphasis and Remedial Branch Chief that EPA release Respondent from the requirement to maintain Financial Assurance under this Section at such time as EPA agrees that all Residential Property Cleanup Activities are complete pursuant to Section XXVIII (Termination and Satisfaction) of the AOC, or that five (5) years have passed

since the establishment of the Financial Assurance, whichever is sooner. The EPA Superfund Special Emphasis and Remedial Branch Chief shall notify both the Respondent and the provider(s) of the Financial Assurance that Respondent is released from all Financial Assurance obligations under this AOC. In the event of a dispute, Respondent may release, cancel, or terminate the Financial Assurance required hereunder only in accordance with the final EPA dispute decision.

- c. Change of Form of Financial Assurance.
 - i. If Respondent desires to change the form or terms of Financial Assurance, Respondent may, at the same time that Respondent submits the annual revised Estimated Cost of Work, pursuant to Paragraph 7 of this Appendix, or at any other time agreed to by EPA, submit a written proposal to EPA to change the form of Financial Assurance. The submission of such proposed revised or alternative form of Financial Assurance shall be as provided in Paragraph 20.c(ii) below. The decision whether to approve a proposal submitted under this Paragraph 20.c shall be made in EPA's sole and unreviewable discretion and such decision shall not be subject to challenge by Respondent pursuant to the dispute resolution provisions of this AOC or in any other form.
 - ii. A written proposal for a revised or alternative form of Financial Assurance shall specify, at a minimum, the cost of the remaining Residential Property Cleanup Activities, the basis upon which such cost was calculated and the proposed revised form of Financial Assurance, including all proposed instruments or other documents required in order to make the proposed Financial Assurance legally binding. The proposed revised or alternative form of Financial Assurance shall satisfy all requirements of this AOC. Any proposed alternative Financial Assurance other than a trust fund shall comply with the requirements set forth in 40 C.F.R. Section 264.143. EPA shall notify Respondent in writing of its decision to accept or reject a revised or alternative form of Financial Assurance submitted pursuant to this paragraph. Within ten (10) days after receiving a written decision approving the proposed revised or alternative Financial Assurance, Respondent shall execute and/or otherwise finalize all instruments or other documents required in order to make the selected Financial Assurance legally binding in a form substantially identical to the documents submitted to EPA as part of the proposal, and such Financial Assurance, shall be fully effective. Respondent shall submit all executed and/or otherwise finalized instruments or other documents required in order to make the selected Financial Assurance legally binding to EPA Region 7 Financial Management Officer within thirty (30) days of receiving a written decision approving the proposed revised or alternative Financial Assurance, with a copy to the EPA Project Officer. EPA shall release, cancel, or terminate the prior existing Financial Assurance instruments

only after Respondent has submitted all executed and/or otherwise finalized new Financial Assurance instruments or other required documents to EPA.

21. Incapacity of Owners or Operators, or Financial Institutions (40 C.F.R. § 264.148).

The Respondent shall notify the EPA Superfund Special Emphasis and Remedial Branch Chief by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the Respondent as debtor, within ten (10) days after commencement of the proceeding, in accordance with 40 C.F.R. § 264.148. Respondent will be deemed to be without the required Financial Assurance or liability coverage in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee. The Respondent shall establish other financial assurance within sixty (60) days after such an event.

CERTIFICATE OF SERVICE

I certify that a true and correct copy of the foregoing Order was sent this day in the following manner to the addressees:


Copy hand delivered to
Attorney for Complainant:

Steven Sanders
Assistant Regional Counsel
Region 7
United States Environmental Protection Agency
901 N. 5th Street
Kansas City, Kansas 66101

Copy by Certified Mail Return Receipt to:

Calvin R. Keller
Environmental Manager Primary Smelting
The Doe Run Company
881 Main Street
Herculaneum, Missouri 63048

Dated: 1/9/12


Kathy Robinson
Hearing Clerk, Region 7

