APPENDIX V

SELECTED SITE RECONNAISSANCE PHOTOGRAPHS

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #1 Taken By: D. Nowack Date: 9/8/14	
View looking east at the residence (Building 1) in the northwest portion of the subject property.	

Photograph #2 Taken By: D. Nowack Date: 9/8/14	
View looking northeast at Building 2 in the northwest portion of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #3 Taken By: D. Nowack Date: 9/8/14	
Solid waste inside of Building 2.	

Photograph #4 Taken By: D. Nowack Date: 9/8/14	
View looking southeast at Building 3 in the northwest portion of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #5 Taken By: D. Nowack Date: 9/8/14	
View looking northeast at areas where solid waste has been burned to the east of the buildings in the northeast portion of the subject property.	

Photograph #6 Taken By: D. Nowack Date: 9/8/14	
Solid waste dump east of the buildings in the northeast portion of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #7 Taken By: D. Nowack Date: 9/8/14	
Solid waste dump to the east of the buildings in the northwest portion of the subject property.	

Photograph #8 Taken By: D. Nowack Date: 9/8/14	
Solid waste dump to the east of the buildings in the northwest portion of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #9 Taken By: D. Nowack Date: 9/8/14	
Solid waste dump to the east of the buildings in the northwest portion of the subject property.	

Photograph #10 Taken By: D. Nowack Date: 9/8/14	
Electrical transformer in the right-of-way on the west border of the subject property. This transformer serves the residence in the northwest portion of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #11 Taken By: D. Nowack Date: 9/8/14	
View from the northwest corner of the subject property looking northwest at Prigmore Road and adjacent residential property.	

Photograph #12 Taken By: D. Nowack Date: 9/8/14	
View from the northwest corner of the subject property looking west at Prigmore Road and adjacent residential property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #13 Taken By: D. Nowack Date: 9/8/14	
View from the northwest corner of the subject property looking southwest at Prigmore Road and adjacent vacant properties.	

Photograph #14 Taken By: D. Nowack Date: 9/8/14	
View looking east at the woodland to the east of the residence in the northwest portion of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #15 Taken By: D. Nowack Date: 10/3/14	
View looking south at the building on the adjacent property to the south of the residence in the northwest portion of the subject property.	

Photograph #16 Taken By: D. Nowack Date: 10/3/14	
Typical woodland in the northwest portion of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #17 Taken By: D. Nowack Date: 10/3/14	
Possible mine tailings located in the northwest portion of the subject property.	

Photograph #18 Taken By: D. Nowack Date: 10/3/14	
View looking east at the residential property to the north of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #19 Taken By: D. Nowack Date: 10/3/14	
View looking east at the northeast adjacent property.	

Photograph #20 Taken By: D. Nowack Date: 10/3/14	
View looking west at a cleared area in the northwest portion of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #21 Taken By: D. Nowack Date: 9/8/14	
View looking south at the southwest portion of the subject property.	

Photograph #22 Taken By: D. Nowack Date: 9/8/14	
View looking north at the northeast adjacent property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #23 Taken By: D. Nowack Date: 9/8/14	
View looking west at the southwest portion of the subject property.	

Photograph #24 Taken By: D. Nowack Date: 9/8/14	
View looking south at the soil piles at the southwest corner of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #25 Taken By: D. Nowack Date: 9/8/14	
View looking northwest at east adjacent properties.	

Photograph #26 Taken By: D. Nowack Date: 9/8/14	
View looking west at west adjacent property: Coke-a-Cola bottling.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #27 Taken By: D. Nowack Date: 9/8/14	
View looking south at the pet food factory to the southwest of the subject property.	

Photograph #28 Taken By: D. Nowack Date: 9/8/14	
View looking east at temporary AST located in the southwest corner of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #29 Taken By: D. Nowack Date: 9/8/14	
Empty totes formerly containing concrete curing compound located in the southwest corner of the subject property.	

Photograph #30 Taken By: D. Nowack Date: 9/8/14	
View looking southwest at southwest adjacent properties.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #31 Taken By: D. Nowack Date: 9/8/14	
View looking west at west adjacent property.	

Photograph #32 Taken By: D. Nowack Date: 9/8/14	
View looking north at west adjacent property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #33 Taken By: D. Nowack Date: 9/8/14	
View looking east at west adjacent residential property.	

Photograph #34 Taken By: D. Nowack Date: 9/8/14	
View looking northeast at west adjacent properties.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #35 Taken By: D. Nowack Date: 9/8/14	
View looking south at ASTs on the west adjacent PMI property.	

Photograph #36 Taken By: D. Nowack Date: 9/8/14	
View looking east at the east pond in the borrow area.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #37 Taken By: D. Nowack Date: 9/8/14	
View looking west at the west pond in the borrow area.	

Photograph #38 Taken By: D. Nowack Date: 9/8/14	
Solid waste next to the west pond in the borrow area.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #39 Taken By: D. Nowack Date: 9/8/14	
View looking southwest at road on the east end of the borrow pit area.	

Photograph #40 Taken By: D. Nowack Date: 9/8/14	
View looking north at the group of farm buildings at the south end of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #41 Taken By: D. Nowack Date: 9/8/14	
View looking northeast at Building 5.	

Photograph #42 Taken By: D. Nowack Date: 9/8/14	
View looking east at Building 6.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #43 Taken By: D. Nowack Date: 9/8/14	
View looking northeast at Building 7: well house.	

Photograph #44 Taken By: D. Nowack Date: 9/8/14	
View looking north at Building 8: barn.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #45 Taken By: D. Nowack Date: 9/8/14	
View looking east at Building 9: barn.	

Photograph #46 Taken By: D. Nowack Date: 9/8/14	
View looking southeast at the commercial property to the south of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #47 Taken By: D. Nowack Date: 9/8/14	
View looking south at one of the residential properties to the south of the subject property.	

Photograph #48 Taken By: D. Nowack Date: 9/8/14	
View looking southwest at residential properties to the south of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #49 Taken By: D. Nowack Date: 9/8/14	
View looking west at grain silos north of the farm buildings at the south end of the subject property.	

Photograph #50 Taken By: D. Nowack Date: 9/8/14	
View looking south at concrete pads to the north of the farm buildings at the south end of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #51 Taken By: D. Nowack Date: 9/8/14	
View looking south at pond and possible mine related feature at the south end of the subject property.	

Photograph #52 Taken By: D. Nowack Date: 9/8/14	
View looking northwest at typical grassland at the south end of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #53 Taken By: D. Nowack Date: 9/8/14	
View looking north at Building 10.	

Photograph #54 Taken By: D. Nowack Date: 9/8/14	
View inside of Building 10.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #55 Taken By: D. Nowack Date: 9/8/14	
View looking north at pond in the southeast portion of the subject property.	

Photograph #56 Taken By: D. Nowack Date: 9/8/14	
View looking north at Turkey Creek.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #57 Taken By: D. Nowack Date: 9/8/14	
View looking south at typical grassland and light woodland in the southeast portion of the subject property.	

Photograph #58 Taken By: D. Nowack Date: 9/8/14	
View looking southeast at the gravel covered area at the east end of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #59 Taken By: D. Nowack Date: 10/3/14	
View looking south at the pond in the southeast portion of the subject property.	

Photograph #60 Taken By: D. Nowack Date: 10/3/14	
Wood and solid waste to the south of the pond in the southeast portion of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #61 Taken By: D. Nowack Date: 10/3/14	
View looking northwest at the vacant property to the southeast of the subject property.	

Photograph #62 Taken By: D. Nowack Date: 10/3/14	
View looking north at the residential property to the southeast of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #63 Taken By: D. Nowack Date: 10/3/14	
View looking east at grassland and farmland to the east of the subject property.	

Photograph #64 Taken By: D. Nowack Date: 10/3/14	
View looking northeast at residential properties to the east of the subject property.	

Proposed Crossroads Industrial Park, Jasper County, Missouri

Photograph #65 Taken By: D. Nowack Date: 10/3/14	
View looking northwest at farmland to the northeast of the subject property.	

APPENDIX VI

ORONOGO-DUENWEG MINING BELT NPL FACT SHEET

ORONOGO-DUENWEG MINING BELT

MISSOURI

EPA ID# MOD980686281

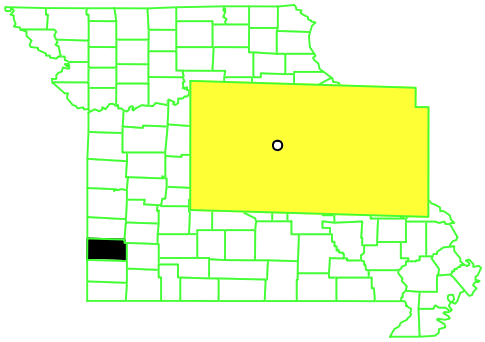
EPA Region 7

City: Joplin, MO and vicinity

County: Jasper County

Other Names: Jasper County, Tri-State Mining Area

05/21/2012



SITE DESCRIPTION

The Oronogo-Duenweg Mining Belt Site (Site) is an inactive lead and zinc mining and smelting area in the southwestern portion of Jasper County, Missouri. Operations began in the mid 1800s, and included hundreds of mines and 17 smelters. One smelter in the city of Joplin operated until the 1970s, which resulted in air emissions and fugitive dust contaminating soil in a large area. In addition, about 7,000 acres are contaminated with over 10 million tons of surface mining wastes. These waste piles are uncovered and unstable. Leachate and run-off from the piles enter ground water and surface streams. Sample results show that soil, ground water, and surface water are contaminated with lead, zinc, and cadmium (hazardous substances) from the mining and smelting activities. Risks include ingestion of contaminated ground water, soil, or mine wastes. About 2,600 residential homes located within the smelter and mining waste areas had yard soil above the established site action level for lead. EPA identified approximately 200 homes that were supplied bottled water due to contaminated private wells. A 1994 human health exposure study by the Missouri Department of Health (MDOH - and now known as MDHSS) showed that 14 percent of the children under seven years old had blood-lead concentrations exceeding the health-based standard of ten micrograms per deciliter. The risk assessment for the residual mine waste areas identified a current risk for people living on or near mine wastes and a future risk for people building new homes on mining waste areas where surface soil or the mining wastes contain contaminants that exceed the action levels. Contaminant concentrations in surface water exceed the Federal Ambient Water Quality Criteria, and the concentrations in some stream sediments exceed severe effect sediment toxicity criteria, indicating significant aquatic risk at the Site. Risks to terrestrial vertebrate populations and communities were evaluated by comparing the average daily dose to selected toxicity reference values and concluded that terrestrial vertebrates that consume earthworms in soils with elevated contaminant of concern concentrations may experience adverse chronic effects.

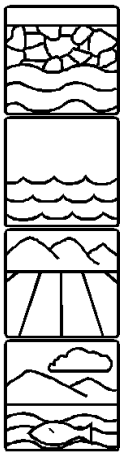
Site Responsibility:

This site is being addressed through Federal and potentially responsible parties' (PRPs) actions.

NPL LISTING HISTORY

Proposed Date:	06/24/88
Final Date:	08/30/90
Deleted Date:	

THREATS AND CONTAMINANTS



The wastes from the mining, milling, and smelting of the ore has resulted in the significant contamination of ground water, surface water, and surface soil with cadmium, lead and zinc. Approximately 500 homes at the Site rely on private shallow ground water wells. EPA has identified at least 200 of these wells that exceed action levels for lead and cadmium. At least 2,300 residential yards have been contaminated with lead above acceptable levels from smelting activities at the Eagle-Picher facility in northeast Joplin. Additionally, EPA has identified approximately 300 homes built on or near milling waste piles where the yard soils exceed acceptable levels of lead.

CLEANUP APPROACH

Response Action Status

Initial Actions: The EPA and the PRPs provided bottled water to residences affected by contaminated ground water. In addition, six day-care centers and 300 contaminated residential yards were cleaned up in the smelter areas under a time-critical removal action.

Mine and Mill Wastes: Investigations into the nature and extent of contamination of the mining wastes were completed in 1995. EPA completed human health and ecological risk assessments for the Site. A Record of Decision, which identifies sub-aqueous disposal as the primary approach for cleanup of mine wastes, was completed in September 2004. The EPA completed the cleanup of the mine waste piles and mine waste contaminated lands on 75 acres in Carterville in 2008. Remediation activities has been ongoing since 2008. To date, approximately 1,500 acres of mining wastes has been remediated. Cleanup of the entire 7,000 acre area is expected to take 10 years.

Residential Yards: Investigations of homes in the smelter area showed several thousand yards had high lead levels. EPA signed a Record of Decision on August 1, 1996 for remediation of residential yards. Remedial action of the yard soil was initiated in November 1996 and was completed in September of 2001. Approximately 2,300 residential yards were cleaned up in addition to those cleaned in the initial action.

Permanent Water Supply: EPA signed a Record of Decision on July 29, 1998 to supply approximately 350 homes with public water supplies. EPA provided funding to the Public Water Supply District #3, Missouri American Water Company, Webb City, and the City of Duenweg to install public water supply lines into the contaminated area. Public water lines throughout the site were completed in 2006.

Cleanup Ongoing:

Site Facts: In 1991, the EPA signed an Administrative Order on Consent (AOC) with the PRPs to investigate the mining wastes. A Unilateral Administrative Order was issued to the PRPs to provide bottled water to residents in 1994. A second Unilateral Administrative Order was issued to the PRPs in 1994 to conduct additional private water well sampling and provide bottled water where exceedances of action levels were found. EPA signed an AOC with the PRPs in 1995 to sample residential yard soil and prioritize areas for a time-critical removal. EPA expanded the yard sampling activities, and completed the cleanup at 2,600 properties. A Consent Decree was completed in 1999 for the PRPs to install public water supply systems. The systems were completed in 2006. Three Consent Decrees were signed with three individual PRPs in 2009. Combined, these CDs will result in the cleanup of approximately 3,000 acres.

ENVIRONMENTAL PROGRESS



Installation of public water supplies is complete. Approximately 500 homes have been connected to public water supplies, and no longer rely on contaminated private water wells. Residential yards soils contaminated with lead have been cleaned up. The yard soil cleanup activities have resulted in a 78 percent reduction in the number of children with elevated blood-lead levels. A decision on cleanup of the mining wastes was made in 2004. Remedial action for cleanup of the mining wastes in high priority areas is underway on the first 1,000 acres and is expected to be completed in 2011. A County building ordinance has been implemented to prevent improper construction of residences in contaminated areas until the cleanup is completed and a state ground water well drilling rule has been passed to prevent the use of shallow ground water in contaminated areas of Jasper and Newton counties.

COMMUNITY INVOLVEMENT

Efforts to involve the community at this Site have been extensive and have resulted in improved community relations and decision making. EPA has worked with two separate citizens groups at the Site: the Environmental Task Force of Jasper and Newton Counties, which was originally formed by the Joplin City Council as a Community Advisory Group (CAG), and the Jasper County Superfund Site Coalition, to which EPA provided a Technical Assistance Grant (TAG). Through the CAG and TAG, the EPA seeks to achieve direct, regular, and meaningful consultation with citizens throughout all stages of Site activities. The citizens groups' membership consists of local citizens, bankers, realtors, business owners, county commissioners, county and city health department employees, local health care providers, state legislative representatives, city council members, school district representatives, and a planning and zoning board member. In general, the EPA provides documents generated from Site activities including the remedial investigation report, risk assessments and feasibility study, to name a few, for review and comment by the groups. EPA, as well as the Missouri Department of Natural Resources, the Missouri Department of Health and Human Services, and the Agency for Toxic Substances and Disease Registry have met over the years with the groups in public forums to update the members on Site activities and discuss Site issues.

A County building ordinance has been implemented to prevent improper construction of residences in contaminated areas until the cleanup is completed.

EPA conducts five-year reviews at this site to ensure that past actions and decisions made at the site continue to be protective of human health and the environment. The third five-year review document (scheduled for 2012) been finalized and is in the concurrence process now.

The Project Manager (Mark Doolan) has been an integral part of the success achieved at this site. After coordinating site activities in Jasper County for more than 15 years, Mr. Doolan continues to spend approximately two weeks out of each month at the site. His presence provides an added measure of comfort and open dialogue to community members, elected officials, and contractors,

who have direct access to him on a consistent basis..

SITE REPOSITORY



Webb City Public Library
101 S. Liberty, Webb City, MO 64870

Joplin Public Library
300 Main Street, Joplin, MO 64801

Carl Junction City Hall
105 N. Main Street, Carl Junction,
MO 64834

Superfund Records Center
901 N. 5th St.
Kansas City, KS 66101
Mail Stop SUPR
(913)551-7166

REGIONAL CONTACTS

SITE MANAGER:	Mark Doolan/SUPR/R7/USEPA/US
E-MAIL ADDRESS:	doolan.mark@epa.gov
PHONE NUMBER:	(913) 551-7169
COMMUNITY INVOLVEMENT COORDINATOR:	Debbie Kring
PHONE NUMBER:	(913) 551-7725
E-MAIL ADDRESS:	kring.debbie@epa.gov
STATE CONTACT:	Don Van Dyke
PHONE NUMBER:	(573) 522-3351

MISCELLANEOUS INFORMATION

STATE:	MO
	0736
CONGRESSIONAL DISTRICT:	07
EPA ORGANIZATION:	SFD-SUPR/FFSE

MODIFICATIONS

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