



STATEMENT OF BASIS

TRC ENVIRONMENTAL CORPORATION

Formerly
KAISER ALUMINUM & CHEMICAL CORPORATION
RAVENSWOOD, WEST VIRGINIA

August 2011

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I. INTRODUCTION

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for a 2.7 acre parcel (the SPP Facility or Facility) which was once part of the former Kaiser Aluminum & Chemical Corporation (Kaiser) Plant (Former Kaiser Plant) located at County Road 2/20 in Ravenswood, West Virginia. The SPP Facility is completely surrounded by the Ravenswood Facility, a parcel of which is currently owned by Century Aluminum and a parcel of which is currently owned by Alcan Rolled Products. The SPP Facility consists entirely of a spent potliner pile which contains approximately 50,000 cubic yards of spent potliner material and is covered by a rubber membrane liner. EPA's proposed remedy for the SPP Facility consists of the following components: 1) leaving the spent potliner material in place; 2) repairing and maintaining the existing rubber membrane liner until such time that the liner will be replaced, and 3) compliance with and maintenance of institutional controls. This SB highlights key information relied upon by EPA in proposing its remedy for the SPP Facility.

The SPP Facility is subject to EPA's Corrective Action program under the Solid Waste Disposal Act, as amended, commonly referred to as the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Sections 6901 *et seq.* The Corrective Action program requires that facilities subject to certain provisions of RCRA investigate and address releases of hazardous waste and hazardous constituents, usually in the form of soil or groundwater contamination, that have occurred at or from their property.

EPA is providing a 30-day public comment period on this SB. EPA may modify its proposed remedy based on comments received during this period. EPA will announce its selection of a final remedy for the Facility in a Final Decision and Response to Comments (Final Decision) after the public comment period has ended. Among other options, EPA may require that the final remedy through an enforceable order issued to TRC Environmental Corporation, the current owner of the SPP Facility.

Concurrently with this SB, EPA is soliciting comments on its proposed remedy for the Ravenswood Facility in a separate Statement of Basis which is also subject to 30-day public comment period. The Ravenswood Facility consists of the Former Kaiser Plant property except for two separate parcels, known as the Spent Potliner Pile and Spent Potliner Vault, respectively. The Spent Potliner Pile, referred to herein as the SPP Facility or Facility, is addressed in this SB. The Spent Potliner Vault is a RCRA permitted landfill and is being monitored and maintained by the West Virginia Department of the Environment (DEP) under EPA ID No. WVD998900512. EPA's proposed remedy for the Ravenswood Facility addresses, among other things, area-wide groundwater contamination, including groundwater contamination under the SPP Facility.

Information on the Corrective Action program as well as a fact sheet for the SPP Facility can be found by navigating <http://www.epa.gov/reg3wcmd/correctiveaction.htm>.

II. SPP FACILITY OWNERSHIP AND HISTORY

Kaiser began aluminum reduction and fabrication operations at the Former Kaiser Plant in 1957. Aluminum reduction produces prime aluminum from alumina ore and aluminum fabrication produces plate and coil aluminum alloy.

As part of its aluminum reduction process, Kaiser recovered spent potliner, the corroded material that is removed from steel shells or "pots" that hold molten aluminum. Beginning in 1972, Kaiser began discarding spent potliner material in a pile situated on top of a concrete and clay base. The spent potliner material contained cyanide and fluoride, among other things. In approximately 1979, Kaiser closed the SPP Facility and covered it with asphalt, and in 1982 covered it with a ethylene propylene diene monomer (EPDM) liner. EPDM is a rubber membrane which is resistant to weather and ultraviolet exposure. Currently, the SPP Facility is currently covered with a EPDM liner and is surrounded by a chain linked fence topped with barbed wire.

The Former Kaiser Plant consists of approximately 2600 acres. It is adjacent to the Ohio River, in Jackson County, West Virginia. Of the approximate 2600 acres, only about 860 acres ("Industrial Property") have been used for industrial purposes, while the remaining property is mostly forested. The aluminum plant covers approximately 350 acres of the Industrial Property and the remaining approximate 510 acres include the SPP Facility property, an old landfill, a sprayfield, a Spent Potliner Vault, oil ponds, former potliner storage areas and aluminum storage space.

In 1989, Ravenswood Aluminum Corporation (Ravenswood Aluminum or Ravenswood) purchased the Former Kaiser Facility, except for two separate parcels, the SPP Facility and the Spent Potliner Vault, which were retained by Kaiser. In 1997, Ravenswood Aluminum changed its name to Century Aluminum. In 1999, Century Aluminum sold its cast house and fabrication plant consisting of approximately 500 acres (Alcan Parcel) to Pechiney Rolled Products (Pechiney). In 2004, Kaiser divested itself of the SPP Facility and the Spent Potliner Vault as part of bankruptcy proceedings. At that time, TRC Environmental Corporation (TRC) took over responsibility for Kaiser's obligations related to the SPP Facility and the Spent Potliner Vault. TRC currently owns the SPP Facility.

III. SUMMARY OF CORRECTIVE ACTION

A. INVESTIGATIONS

In 1976, Kaiser discovered cyanide in production wells located on the Industrial Property. After voluntarily conducting studies, Kaiser determined that cyanide compounds from the SPP Facility had and were leaching into the groundwater. The uppermost aquifer beneath the SPP Facility is an alluvial aquifer which is present beneath the entire Industrial Property. Deposits within this aquifer consist primarily of sand and gravel outwash. Groundwater within the alluvial aquifer beneath much of the Industrial Property ranges at depth from about 40 to 70 feet below ground surface.

In September 1994, pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), EPA had entered into a Consent Order, U.S. EPA Docket Number RCRA-III-071 CA, (1994 Consent Order) with Ravenswood Aluminum requiring Ravenswood to determine the nature and extent of any release of hazardous waste and/or hazardous constituents at or from their facility.

In April 1995, EPA and Kaiser entered into a Final Administrative Order on Consent, U.S. EPA Docket Number RCRA-III-008-TH, (1995 Consent Order) pursuant to RCRA Section 7003 under which Kaiser is required, among other things, to conduct a RCRA Facility Investigation (RFI) at the SPP Facility. In September 1997, EPA approved Kaiser's RFI Report which summarized soil and groundwater sampling results and provided an engineering assessment of the SPP Facility. Soil sample results in the RFI Report showed that the maximum concentration of cyanide in the surface soil at soil boring SB-315 was 36 milligrams per kilogram (mg/kg), and the maximum concentration of cyanide at depth of 13 feet at soil boring SB-309 was 270 mg/kg. Both sample results are well below the soil screening level value for cyanide based on EPA Region III's Risk-based Concentration (RBC) Table for residential soil ingestion which is 1,600 mg/kg.

Kaiser took three rounds of groundwater samples in May 1996, August 1996 and September 1996, respectively. The samples were analyzed for selected contaminants including cyanide and fluoride. Groundwater sampling results were compared to the respective federal Maximum Contaminant Level (MCL) at 40 C.F.R. Part 141 pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. Section 300g-1 or the West Virginia Groundwater Protection Standards (GWPS), whichever standard was more stringent. If no MCL and no GWPS existed for a contaminant, the EPA Region III RBC tap water value for that contaminant was used for screening. The MCL and GWPS for cyanide are both 0.2 mg/l. The MCL and GWPS for fluoride are both 4.0 mg/l. In the sampling results from the three rounds of sampling, cyanide concentrations ranged from 0.09 mg/l to 0.3 mg/l and fluoride concentrations ranged from 2.9 mg/l to 5.5 mg/l.

In addition to the soil and groundwater sampling results, the EPA-approved RFI Report included an engineering assessment to determine whether the EPDM liner was effectively containing the spent potliner material. The engineering assessment included reconnaissance to examine the nature and condition of the structure, review of engineering drawings, and modeling of infiltration through the EPDM liner. Results of the reconnaissance of the spent potliner pile found the EPDM liner to be in good condition.

In November 1997, pursuant to the terms of the 1995 Consent Order, EPA required that Kaiser conduct additional testing of the EPDM liner as part of a Corrective Measures Study (CMS) so that EPA could consider that information when it evaluated corrective measure alternatives. In February 1989, EPA approved a CMS Report which found that while the physical properties of the EPDM liner were in good condition, the bonding adhesive used to adhere two sections of liner together was found to likely loosen over time.

In 2005, Century Aluminum (formerly Ravenswood Aluminum) collected additional groundwater samples to update the RFI Report. Results from Century Aluminum's 2005 sampling event showed that groundwater from well SPL-1 contained cyanide concentrations of

0.248 mg/l and groundwater from well SPL-3 contained cyanide concentrations below the MCL of 0.2 mg/l. For fluoride, groundwater samples were taken from wells SPL-1, SPL-2 and SPL-3, which surround the SPP Facility at or near the fence line. Sample results from those wells were all below the MCL for fluoride of 4.0 mg/l.

B. INTERIM MEASURES

In the 1970s, to prevent cyanides from migrating to the Ohio River, Kaiser developed a "blocking well" system by converting two of its production wells into blocking wells. Under natural conditions, groundwater beneath the Industrial Property, including the SPP Facility, flows towards the Ohio River. By pumping groundwater from the blocking wells, Kaiser altered the flow of groundwater from the Ohio River toward the blocking wells. Kaiser expanded the blocking well system over time.

With EPA approval, Ravenswood Aluminum began operating the blocking well system as a requirement under the Interim Measures provision of the 1994 Consent Order. Prior to that time, Ravenswood Aluminum had been operating the blocking well system on a voluntary basis in coordination with Kaiser. The blocking well system continues to operate today. It currently consists of six wells pumping at a combined average rate of 1,200 to 1,300 gallons per minute (gpm) or about 1.7 to 1.8 million gallons per day. The extracted groundwater is discharged to the Ohio River in accordance with a West Virginia National Pollutant Discharge Elimination System Permit, No. WV 0077551 (NPDES) issued to Century Aluminum, the current owner of the property on which the NPDES outfall is located. Due to the blocking well system, the cyanide and fluoride concentrations in groundwater beneath the SPP Facility have decreased significantly and have dropped to below their respective MCL in most of the monitoring wells.

C. BLOCKING WELL SHUTDOWN EVALUATION

In May 200, EPA approved a Blocking Well Shutdown in order for TRC to evaluate, among other things, whether under non-pumping conditions, groundwater contamination was migrating to the Ohio River. TRC conducted the Blocking Well Shutdown Evaluation (Shutdown Evaluation) for six months starting in July 2007 with a baseline sampling event occurring in June 2007. During the Shutdown Evaluation, TRC monitored water table elevations and groundwater quality to assess the rate of water elevation change, the anticipated final water table configuration, and changes in constituent concentrations. EPA approved TRC's Shutdown Evaluation Report in August 2008. The Shutdown Evaluation Report found that cyanide concentrations in groundwater exceeded the MCL only in those wells surrounding the SPP Facility.

As a follow up to the Shutdown Evaluation Report, TRC evaluated the potential for cyanide and fluoride to migrate to the Ohio River when the blocking wells were turned off. To do so, TRC developed a groundwater flow model for the Industrial Property along with a fate and transport model. Based on the modeling results, TRC concluded that neither cyanide nor fluoride will reach the Ohio River at concentrations above its respective MCL.

IV. SUMMARY OF HUMAN HEALTH RISK ASSESSMENT

As part of the RFI, Kaiser performed a site-specific human health risk assessment including identification of constituents of concern, exposure assessment, toxicity assessment, and risk characterization for the Former Kaiser Property. The results are presented in their entirety in Section 4.4 of the RFI Report and are summarized in Section 4.4.6 of the RFI Report.

A. Soil Exposure Pathways at the SPP Facility

Cyanide is the constituent of concern (COC) in soil at the SPP Facility. Cyanide concentrations in soil directly around the SPP Facility were below EPA's RBC of 1,600 mg/kg for residential soil ingestion.

A risk calculation was not performed for current exposures at the SPP Facility because there is no current exposure pathway for soils. The SPP Facility is not accessible by a trespasser. It is surrounded by a security fence topped by barbed wire and is covered by a EPDM liner. TRC will be required to maintain both the security fence and the EPDM liner. Moreover, the SPP Facility is completely surrounded by the Ravenswood Facility, a parcel of which is currently owned by Century Aluminum and a parcel of which is currently owned by Alcan Rolled Products. Both the Century Aluminum and Alcan parcels are fenced with restricted access through gated security entrances.

B. Groundwater Exposure Pathways at the SPP Facility

Cyanide and fluoride are the COCs in groundwater at the SPP Facility. A risk calculation was not performed for current exposures at the SPP Facility because there is no current exposure pathway for groundwater. Groundwater contamination related to the SPP Facility was prevented from migrating to the Ohio River by the blocking well system, currently required pursuant to the Interim Measures that are part of the 1994 Consent Order. Operation of the blocking well system is anticipated to cease upon implementation of the proposed remedy set out in the Statement of Basis for Century Aluminum of West Virginia and Alcan Rolled Products – Ravenswood LLC facilities. Furthermore, the concentrations of cyanide in the wells surrounding the SPP Facility, SPL1, SPL-2 and SPL 3, are either below or slightly above the MCL for cyanide. While there is no current use or planned future use of the impacted groundwater at the SPP Facility, EPA's long-term cleanup objective is to restore groundwater at the SPP Facility to drinking water standards (MCLs). Until the groundwater is restored to drinking water standards, EPA proposes require institutional controls be implemented at the SPP Facility to prohibit groundwater uses that could result in human exposure.

V. SUMMARY OF PROPOSED REMEDY

EPA's proposed remedy for the SPP Facility consists of the following components: 1) leaving the spent potliner material in place and repairing and maintaining the existing EPDM liner, and 2) compliance with and maintenance of institutional controls.

A. Spent Potliner Material

EPA's proposes to leave the potliner material in place and to repair and maintain the EPDM liner, including all field seams and patches, as necessary to preserve its integrity and protectiveness. In the EPA-approved CMS, this proposed remedy is Alternative "SC2". As part of this proposed remedy, EPA will require quarterly inspections of the EPDM liner to ensure that the liner's integrity is maintained. EPA will also require the maintenance of the existing fence around the SPP Facility to prevent trespassing on or disturbance of the EPDM liner. EPA proposes to require TRC to submit to EPA at least every three years, for review and approval, a report assessing the effectiveness of the liner in preventing human exposure to the contaminants remaining in the place at the SPP Facility. In addition, given that the EPDM liner will eventually deteriorate, EPA also proposes to require that the entire pile be covered with a new material as necessary to maintain the protectiveness and integrity of the EPDM liner.

B. Institutional Controls

Because contamination will remain in the soil at and in groundwater below the SPP Facility, EPA's proposed final remedy includes Institutional Controls (ICs). ICs are non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use. The ICs are necessary to ensure that contaminated groundwater at the SPP Facility is not used for consumptive purposes; the integrity and protectiveness of the EPDM liner or any subsequent liner installed is maintained; and subsequent purchasers of the Facility property are informed of the environmental conditions at the SPP Facility and of EPA's final remedy for the SPP Facility.

Institutional controls may include, but may not be limited to, an environmental covenant to be entered pursuant to the West Virginia Uniform Environmental Covenants Act, WV. Code, § 22-22B-1, *et seq.* and to be recorded with the deed for the SPP Facility property. The Environmental Covenant may be required to include any or all of the following:

- i. a restriction on the use of groundwater beneath the SPP Facility for potable purposes or any other use that could result in human exposure, unless such use is required by the Final Remedy or until groundwater is restored to drinking water standards,
- ii. a restriction on well drilling at the SPP Facility without prior written EPA approval, to prevent inadvertent exposure to the contaminated groundwater and adverse affects to the Final Remedy,
- iii. a restriction that the SPP Facility not be used for any purpose other than industrial unless it is demonstrated to EPA that another use will not pose a threat to human health or the environment and EPA provides prior written approval for such use, and
- iv. a restriction that earth moving activities, including drilling, and construction activities are prohibited on the SPP Facility unless it is demonstrated to EPA that such activity use will not pose a threat to human health or the environment and EPA provides prior written approval for such activity.

- v. Quarterly Inspections of the liner to ensure liner integrity; repair of any field seams and patches.

EPA proposes to require TRC to submit to EPA at least every three years, for review and approval, a report assessing the effectiveness of the institutional controls in preventing human exposure to the soil and groundwater contaminants remaining in the place at the SPP Facility.

C. Groundwater

EPA is addressing the groundwater contamination under the Industrial Property, including the SPP Facility, in its proposed remedy for the Ravenswood Facility.

VI. EVALUATION OF PROPOSED REMEDY

This section provides a description of the criteria EPA uses to evaluate proposed remedies under the Corrective Action Program. The criteria are applied in two phases. In the first phase, EPA evaluates three Threshold Criteria as general goals. In the second phase, if there is more than one remedy which meets the Threshold Criteria, EPA evaluates seven Balancing Criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

The CMS evaluated three alternatives for the spent potliner material. The three alternatives considered were:

- 1) Alternative SC1 - No Action
- 2) Alternative SC2 - Containment (continued maintenance of the EDPM Cover)
- 3) Alternative SC3 – Treatment (Excavation and Offsite Disposal)

EPA is proposing Alternative SC2 as a component of the final remedy for the SPP Facility.

A. Threshold Criteria

1. Overall Protection of Human Health and the Environment

Alternative SC1, the No Action Alternative, would not provide adequate protection of human health and the environment. The No Action Alternative was developed as a baseline for comparison against the other alternatives. The No Action Alternative would not require repair and maintenance of the EPDM liner. Therefore, it would not eliminate or control the current and future risks to residents and trespassers from exposure to contaminated soils. Because this alternative would not provide adequate protection of human health and the environment, EPA does not consider it a feasible remedial option and will not evaluate it with respect to the remaining Threshold Criteria.

Alternative SC2, Containment, offers the best overall protection of human health and the environment among the alternatives. By requiring that the integrity and protectiveness of the EPDM liner be maintained and that the liner be replaced, as necessary, Alternative SC2 eliminates potential exposures to soil contamination. The EPDM liner has covered the SPP Facility since 1982 and has proven to be protective of human health and the environment. It has prevented human and environmental contact to spent potliner material and has prevented cyanide and fluoride from leaching from the soil to the groundwater. Since access to the SPP Facility is restricted by fencing, the pile location is inherently protective because unfettered human access is not possible. The SPP Facility will only be accessed by TRC personnel or contractors who are responsible for repairing, maintaining and/or inspecting the EPDM liner and who will be following EPA-approved health and safety requirements.

Alternative SC3, Treatment, is not a feasible alternative. Only one facility in Canada currently accepts spent potliner material. That facility does not treat the material, but rather stores it in a hazardous waste landfill. Therefore, EPA will not evaluate this alternative with respect to the remaining Threshold Criteria.

2. Ability to Attain Media Clean-up Objectives

Alternative SC2 meets the appropriate cleanup objectives based on assumptions regarding current and reasonably anticipated land and water resource uses. The current and intended use of the SPP Facility is industrial use. Maintenance and replacement, as necessary, of the EPDM liner and fencing will limit access to the SPP Facility and implementation of institutional controls will further eliminate the potential for disturbance of the spent potliner material.

3. Source Control

Alternative SC2 eliminates or reduces further releases of hazardous wastes or hazardous constituents from the SPP Facility that may pose a threat to human health and the environment. The SPP Facility was the main source of cyanide contamination in the groundwater. When rain came in contact with the spent potliner material, cyanide was formed and leached into the soils. In 1982, the spent potliner material was covered with the EPDM liner which eliminated the leaching of cyanide. Alternative SC2 requires repair and maintenance and replacement, as necessary, of the EPDM liner which will continue to control the source of the cyanide contamination. As stated above, the groundwater contamination under the SPP Facility is being addressed in EPA's proposed remedy for the Ravenswood Facility.

B. Balancing Criteria

Since Alternative SC2, Containment, is the only alternative that meets the three Threshold Criteria above, EPA did not conduct a further evaluation.

VII. PUBLIC COMMENT

Interested persons are invited to comment on EPA's proposed decision. The public comment period will last thirty (30) calendar days from the date that notice is published in the Jackson Star News. Comments may be submitted by mail, fax, e-mail, or phone to Michael Jacobi at the address listed below.

A public meeting will be held upon request. Requests for a public meeting should be made to Michael Jacobi at the address listed below. A meeting will not be scheduled unless one is requested.

The Administrative Record contains all the information considered by EPA for the proposed decision at this Facility. The Administrative Record is available at the following location:

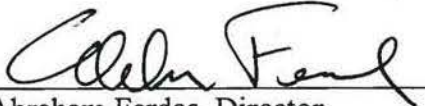
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103
Attn: Mr. Michael Jacobi (3LC20)

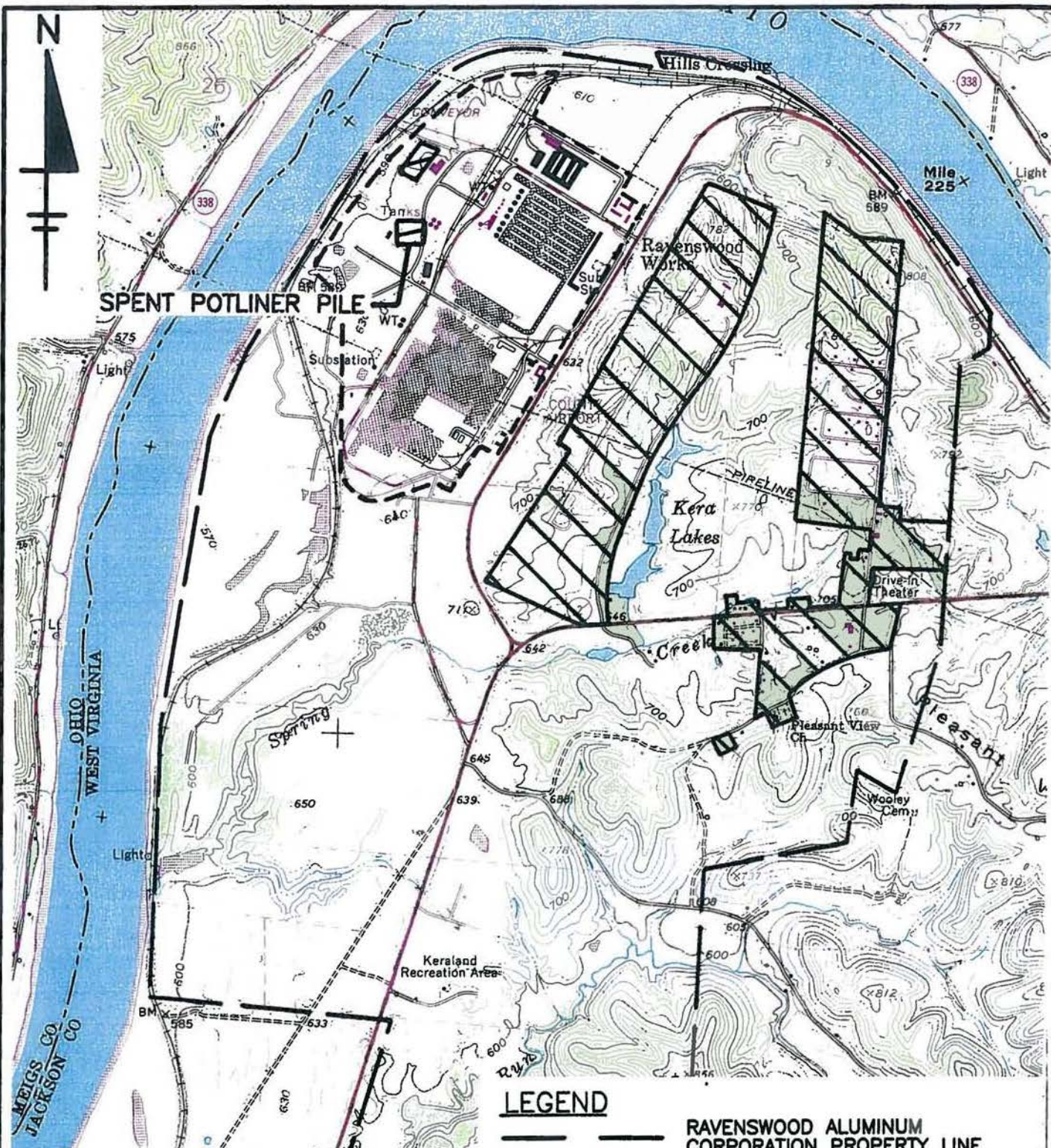
Phone: (215) 814-3435
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Email: jacobi.mike@epa.gov

Following the 30-day public comment period, EPA will evaluate the public's comments and prepare a Final Decision and Response to Comments (FDRTC) that identifies the final selected remedy. The FDRTC will also address all significant written comments and any significant oral comments generated at the public meeting, if held. The FDRTC will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are proposed to the corrective measures identified by EPA in this Statement of Basis, EPA may seek additional public comments.

EPA anticipates that the final remedy will be implemented using available legal authorities possibly including, but not necessarily limited to, RCRA Section 7003, 42 U.S.C. 6973.




DATE: 8/17/11


Abraham Ferdas, Director
Land and Chemicals Division
US EPA, Region III



SPENT POTLINER PILE

LEGEND

-  RAVENSWOOD ALUMINUM CORPORATION PROPERTY LINE
-  INDUSTRIAL FACILITY FENCE LINE
-  PROPERTY NOT OWNED BY RAC

REFERENCE:

U.S.G.S. 7.5' TOPOGRAPHIC MAP, RAVENSWOOD, WEST VIRGINIA - OHIO QUADRANGLE, DATED: 1960, PHOTOREVISED: 1987, SCALE: 1"=2000'



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SITE LOCATION
KAISER ALUMINUM & CHEMICAL CORP.
RAVENSWOOD, WEST VIRGINIA

DWN. BY: S.M.M.	ACAD FILE: FIG1-1/SMM	SCALE: 1"=2000'	DATE: 5/23/95	95174	FIGURE 1-1
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