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INVESTIGATION-DERIVED WASTE MANAGEMENT PLAN

Prepared for

COLUMBIA FALLS ALUMINUM COMPANY
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1. Types of Investigation-Derived Wastes Expected at the CFAC Site

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LIST OF ACRONYMS

AOC	Administrative Order on Consent
CFAC	Columbia Falls Aluminum Company
HASP	Health and Safety Plan
IDW	Investigation-Derived Waste
MP	Management Plan
MDEQ	Montana Department of Environmental Quality
PAHs	Polycyclic Aromatic Hydrocarbons
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation / Feasibility Study
SAP	Sampling and Analysis Plan
SHSO	Site Health and Safety Officer
SPL	Spent Potliner
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TCL	Target Compound List
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

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1.0 INTRODUCTION

This Investigation-Derived Waste (IDW) Management Plan (MP) identifies the approach to manage the various types of waste anticipated to be generated at the Columbia Falls Aluminum Company (CFAC) Site during investigation activities described in the Remedial Investigation/Feasibility Study (RI/FS) Work Plan and the Phase 1 Sampling and Analysis Plan (SAP), both dated November 23, 2015, as well as wastes that may be generated during any subsequent phases of investigation to be defined in future SAPs. Waste management will be conducted to comply with regulatory requirements and ensure protection of human health and the environment. All personnel (including all subcontractors) who handle, transport, store, and/or dispose of IDWs will be trained to comply with requirements set forth in this document.

The objective of this IDW MP is to establish consistent methods to handle and manage all Investigation-Derived Waste, including:

- Impacted environmental media, and solid waste, both hazardous and non-hazardous (e.g., soil cuttings, contaminated debris or equipment, etc.)
- Liquid waste, both hazardous and non-hazardous (e.g., purge water, rinse water from decontamination, etc.)
- Sludge/sediment waste, both hazardous and non-hazardous (e.g., sludge from test pits, drywells, unknown waste sources, etc.)
- Personal Protective Equipment (e.g., gloves, chemical-resistant coveralls, etc.)

The remainder of this IDW Work Plan describes the various procedures that will be followed during the investigations and outlines the responsibilities for those managing the investigations and IDW.

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2.0 WASTE MANAGEMENT APPROACH

The waste management guidelines described in this plan were developed to provide protection of human health and the environment. The following steps summarize the overall approach that will be taken when managing IDW at the CFAC Site:

1. When possible, aim to minimize the creation of waste
2. Preliminary segregation and preliminary categorization of waste based on location of generation, process knowledge, and visual characteristics of the waste
3. Containerize the waste (if necessary)
4. Sample and analyze (if necessary) to determine waste characteristics based on analytical results
5. On-site disposal of waste or transportation and off-site disposal
6. Documentation of waste determination, transportation, and disposal

The remainder of this document summarizes the steps that will be taken to ensure each step of the waste management approach is handled and documented correctly during field operations.

2.1 Responsibilities

Personnel who are conducting field operations will be accountable for the comprehension and implementation of this Plan during all field activities. Field personnel include personnel from CFAC, Roux Associates (consultant), subcontractors (e.g., drillers, surveyors, etc.), and the USEPA when conducting field operations at the Site. Field personnel are required to obtain the appropriate procedures, logbooks, forms, labels, and equipment needed to complete the field activities in accordance with the procedures outlined in this IDW MP.

The RI Manager will have the responsibility to oversee and ensure that the IDWs are properly handled and managed in accordance with this IDW MP. Field personnel may contact the RI Manager if additional materials and/or equipment are required and not readily available at the Site. The RI Manager is responsible for reporting to the RI/FS Manager regarding the implementation of the plan. The RI/FS Manager is responsible for the overall implementation of the RI/FS activities, which includes the implementation of this plan and communication with the

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Site Coordinator and USEPA Remedial Project Manager regarding the implementation of the plan.

The on-site, day-to-day management of waste for the RI/FS activities is the responsibility of the Site Health and Safety Officer (SHSO). Roux Associates field personnel will be present for the duration of the field work and one of the Roux personnel will be designated as the SHSO. The SHSO's responsibilities will include ensuring waste is properly characterized, containerized, labeled and handled in accordance with this IDW MP. The SHSO will communicate daily with the RI Manager regarding the generation of IDW.

The specific individuals and contact information for the aforementioned individuals is provided below.

Title	Company	Name	Phone Number
Site Coordinator	CFAC	Steve Wright	(406) 892-8211
RI/FS Project Manager	Roux Associates	Andrew Baris	(631) 630-2404 (631) 921-1805 (cell)
RI Manager	Roux Associates	Michael Ritorto	(631) 630-2370 (631) 445-4576 (cell)
Site Health and Safety Officer	Roux Associates	Amy Hoffmann	(781) 569-4061 (847) 217-7425 (cell)
Remedial Project Manager	USEPA	Mike Cirian	(406) 293-6194

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3.0 TYPES OF INVESTIGATION DERIVED WASTE

IDW is expected to be generated during implementation of the field work activities described in the RI/FS Work Plan and SAP. A description of the types of IDW expected at the CFAC Site and the associated field activity is provided below:

Pre-Intrusive Activities (Site Recon / Geophysical Surveying / Soil Vapor Screening)

- PPE which potentially comes into contact with waste materials or contaminated media

Drilling / Test Pitting / Soil Sampling / Sediment Sampling / Well Installation

- Soil cuttings that are brought to the surface during drilling / test pitting
- Water generated during drilling and development of monitoring wells
- Water generated by decontamination of drilling / sampling equipment
- PPE which potentially come into contact with contaminated media
- Sediment / sludge that may collect at bottom of liquid waste containers

Groundwater Sampling / Aquifer Testing

- Purge water generated during sampling and/or aquifer testing
- Water generated by decontamination of sampling equipment
- PPE which potentially comes into contact with contaminated media

Other

- Impacted sampling disposables (i.e., bailers, filters, tubing, bladders, etc.)
- Ordinary trash (e.g., office and packaging materials, food and beverage containers, etc.)

Materials generated at the CFAC Site will be segregated based on the type of media (i.e., solid, liquid, and sludge) and then characterized as hazardous or non-hazardous. A waste is a RCRA hazardous waste if it meets the definition of hazardous waste in 40 CFR 261.3. Preliminary segregation and preliminary categorization of materials will be based on location of generation, process knowledge, and visual characteristics of the material. PPE, disposable sampling equipment, and ordinary trash generated during the RI/FS will be containerized separately and

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handled/disposed of as non-hazardous waste. Section 5.0 describes the procedures for handling each type of IDW and Table 1 provides a summary table of the disposal management options.

Spent potliner (SPL) is known to have been disposed of on-site prior to being listed as a RCRA hazardous waste. The SPL was disposed of in the on-site landfills and waste from within the landfills will not be generated or sampled. Soil and water investigation derived waste generated during the RI/FS will be classified based on waste characteristics and hazardous substances determined to be present through sampling. The waste will be handled in accordance with the procedures as described in Section 5.0 below.

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4.0 REQUIRED MATERIALS

The equipment and supplies that may be required for implementation of the procedures outlined in this Work Plan include the following:

- Containers for storage and shipment of IDW
  - 55-gallon open and closed top drums
  - Above ground storage tanks of varying sizes
- Material to cover/protect stockpiled/stored waste from exposure to weather conditions (e.g., poly sheeting)
- Equipment typically utilized during sampling (i.e., pumps, generators, water level indicators, safety monitoring equipment, etc.)
- Waterproof labels for hazardous /non-hazardous waste
- Permanent marking pens
- Plastic garbage bags, zip lock storage bags, rolls of plastic sheeting
- PPE to protect against contact with IDW as required in the Site-specific HASP, including, but not limited to, steel-toed boots, chemical resistant gloves, and safety glasses

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5.0 PROCEDURES FOR MANAGING INVESTIGATION DERIVED WASTE

This section describes the procedures that will be implemented when managing IDW at the CFAC Site. The procedures are summarized in Table 1.

5.1 Labeling

All containers used to store IDW, regardless of the type of IDW, must be properly labeled. Two general labeling conditions could exist during the work:

1. Previous studies or data generated during the investigation provide information about waste characteristics; specifically if waste are known to be either hazardous or non-hazardous
2. Waste characteristics are unknown until additional data are obtained

For situations where the waste characteristics are known, the waste containers will be labeled in accordance with all state and federal regulations that may govern the labeling of waste. The following information shall be placed on all non-hazardous waste labels:

- Location of generation (i.e., Site feature name, boring / well ID, etc.)
- Description of waste (e.g., Purge water, soil cuttings, PPE, etc.)
- Contact information (i.e., Project name, address and telephone number)
- Date when the waste was first accumulated

The following information shall be placed on all hazardous waste labels:

- Location of generation (i.e., Site feature name, boring / well ID, etc.)
- Description of waste (e.g., Purge water, soil cuttings, etc.)
- Generator information (i.e., Project name, address, telephone number)
- USEPA identification number (supplied by on-site client representative)
- Date when the waste was first accumulated

When the final characterization of a waste is unknown, a notification label will be placed on the container with the words "waste characterization pending analysis" and the following information included on the label:

- Description of waste (i.e., purge water, soil cuttings, etc.)

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- Contact information (i.e., contact name and telephone number);
- Date when the waste was first accumulated.

Once the waste has been characterized, the label will be changed as appropriate for a non-hazardous or hazardous waste.

Waste labels will be constructed of a weatherproof material and filled out with a permanent marker to prevent being washed off or becoming faded by sunlight. It is recommended that waste labels be placed on the side of the container, since the top is more subject to weathering. However, when multiple containers are accumulated together, it also may be helpful to include labels on the top of the containers to facilitate organization and disposal. Appropriate signage shall also be established with the above information for each stockpile.

5.2 Soil Waste Handling

Soil cuttings generated during drilling will be containerized and transported to a temporary, central soil stockpile location to be established at the Site. The selected soil stockpile location will be a secure location that is accessible with heavy equipment. Separate soil stockpiles will be established as deemed appropriate by CFAC and Roux Associates in an effort to segregate soils that are visibly contaminated or are suspect from those soils that have a lower potential for being contaminated. Once creation of each stockpile is complete, a representative five point composite soil sample will be collected at a minimum frequency of one per every 100 cubic yards of material and a minimum of one sample per stockpile requiring separate characterization. The waste characterization samples will be analyzed for the parameters listed below at a minimum; and may be analyzed for additional parameters if warranted based on the analytical soil results from the soil borings that make up each stockpile:

- Polycyclic aromatic hydrocarbons (PAHs) via USEPA Method 8270;
- USEPA Priority Pollutant Metals via USEPA Method 6010;
- TCL PCBs via USEPA Method 8082;
- Total Cyanide via USEPA Method 9012; and
- Fluoride via USEPA method 300.

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- TCLP VOCs;
- TCLP SVOCs;
- TCLP metals;
- TCLP pesticides; and
- Other hazardous waste characteristic parameters including ignitability and corrosivity. Note that there is no established method or criteria for determination of reactive cyanide. Any soil containing concentrations of total cyanide above 590 mg/kg will be managed as if it is subject to the current land disposal restrictions.

The analytical results will be evaluated to determine if the waste is hazardous or non-hazardous; and, if a Contained-In determination may potentially be needed from MDEQ. RCRA waste characteristics will also be used in determining the necessary requirements and facility for off-site disposal. The soil stockpile(s) will remain covered at all times prior to removal of the soil off-site for disposal. This can be done by placing the soil within one of the existing warehouse buildings, if available, or utilizing poly-sheeting if the stockpile is outdoors.

At soil boring locations where no monitoring well is installed, the top three feet of the boring may be filled with soil cuttings. The remaining soil from the soil borings will be containerized and placed in the appropriate stockpile for characterization and disposal.

Soil removed during test pitting will be placed back into the test pit where the soil originated from. If all of the soil does not fit back into the open pit, the soil will be handled similar to the soil cuttings and placed in the appropriate soil stockpile for characterization and disposal.

5.3 Liquid Waste Handling

Groundwater and/or wastewater generated during drilling activities, monitoring well development, and purging of monitoring wells during groundwater sampling, shall be collected in truck-mounted containers and/or other transportable containers (i.e., 55-gallon drums or above ground storage tanks). Lids or bungs on drums must be secured at all times and only open during filling or pumping activities. The containers shall be labeled in accordance with the labeling section of this plan. Water collected in the temporary storage containers will be transported to a larger, central storage container(s) that will be established onsite. The water

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containerized in each central storage container will be sampled and analyzed when the container is full, or upon completion of the sampling activities. The waste characterization samples will be analyzed for:

- TCL VOCs via USEPA Method 8260;
- TCL SVOCs via USEPA Method 8270;
- Total TAL metals via USEPA Methods 200.7 / 200.8/ 245.2 / 6010C / 6020A / 7470A;
- Total cyanide via USEPA Method 335.4; and
- General chemistry including Fluoride via USEPA method 300, alkalinity via method SM2023B, and hardness via USEPA method 200.7.

The analytical results will be compared to TCLP to determine if the water can be disposed of onsite or offsite; or, if a "Contained-In" determination may potentially be needed from MDEQ.

The water will be evaluated to determine if it is acceptable to be disposed of in the North-East Percolation Pond. The evaluation will include a review of the analytical results to confirm that the water does not contain any substances at concentrations exceeding the effluent limits for Outfall 007 as specified in the 2014 MPDES Permit (MT0030066). In addition, if other substances are detected (i.e. substances without permit limits) the results will be reviewed with MDEQ and USEPA prior to discharging the water to the North-East Percolation Pond. If the sampling results suggest the water exceeds the permit discharge limits, or that the water is a hazardous waste, the water will be disposed of at an applicable off-site facility.

Monitoring wells that have demonstrated to contain groundwater that is uncontaminated or otherwise in compliance with applicable screening criteria for two consecutive groundwater sampling rounds may be considered for disposal to the ground adjacent to the monitoring well. Any wells being considered for such disposal options, shall be identified in advance to USEPA along with relevant supporting documentation.

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Water generated from decontamination of drilling equipment and other field equipment will be containerized in 55-gallon drums or other containers and transported to the central storage container(s). Decontamination water will be sampled and will be handled in accordance with the same procedures outlined above for groundwater.

Excess surface water that may be generated during sampling activities can be returned to the surface water feature it was taken from.

5.4 Sludge Waste Handling

Sludge generated during investigation activities will be containerized. Covers will be included on the containers and must be secured at all times and only open during filling activities. The containers shall be labeled in accordance with this IDW MP. Containers will be stored in a central storage area at the Site. Sludge will be sampled and will be handled in accordance with the same procedures outlined above for soils.

5.5 Used PPE and Disposables Handling

A container for PPE and disposable sampling materials shall be established at the Site. These materials will be discarded in the designated container and handled as non-hazardous industrial waste.

5.6 Documenting and Storing Investigation-Derived Waste On-Site

Each container of IDW waste generated and each soil stockpile created shall be noted in the field notebook used by the person responsible for labeling and/or handling the waste. An inventory of all IDW generated at the Site, containing the source, estimated volume and description of material put in the containers shall be kept in the project file for the duration of the work.

IDW generated during investigation activities that are classified as non-hazardous or "characterization pending analysis" will be disposed of periodically. Until disposal, such containers will be stored as securely as possible in a central location, and inspected regularly, as a general good practice.

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IDW waste generated during investigation activities that are classified as hazardous shall not be accumulated on-site longer than 90 days. All hazardous waste containers shall be stored in a secured storage area. The following requirements for the hazardous waste storage area must be implemented:

- Proper hazardous waste signs shall be posted as required by any state or federal statutes that may govern the labeling of waste
- Secondary containment to contain potential spills
- Spill containment equipment must be available
- Fire extinguisher must be available
- Adequate aisle space for unobstructed movement of personnel between waste containers

Hazardous waste storage areas will be inspected regularly as a general good practice.

5.7 Off-Site Waste Disposal

The RI Manager will provide coordination with the off-site IDW disposal facilities. Facilities receiving waste have specific requirements that vary depending on the media and contaminant being sent for disposal. Additionally, facilities must comply with federal, state and local regulations that may vary between locations.

Waste characterization will be conducted prior to shipment of waste to the facility to support facility requirements. All wastes classified as hazardous require disposal at a licensed treatment storage and disposal facility. Any waste that is required to be disposed at an off-site facility will be done in accordance with all applicable state, federal, and local regulations and in accordance with paragraph 43 of the Administrative Order on Consent (AOC) between CFAC and USEPA dated November 30, 2015.

Waste shipping requirements vary depending on the facility receiving the waste. Prior to shipment of the waste, the RI Manager will communicate with the selected facility and discuss the necessary procedures. The field personnel that are overseeing the shipment of waste shall understand all shipment procedures prior to allowing the waste to leave the Site. All waste being sent for off-site disposal will be sent with a waste manifest or a bill-of-lading allowing for

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documentation of the waste shipment. Each shipping document that accompanies a load of waste for disposal off-site will have a unique identification number. The number will be documented in the waste log in the project file.

A state-certified hazardous waste hauler shall transport all wastes classified as hazardous. Typically, the facility receiving any waste can coordinate a hauler to transport the waste. Shipped hazardous waste shall be disposed of in accordance with all RCRA/USEPA requirements. All waste manifests or bills of lading will be signed either by CFAC or CFAC's designee.

5.8 Regulatory Requirements

The following federal and state regulations shall be used as resources for determining waste characteristics and requirements for waste storage, transportation, and disposal:

- Code of Federal Regulations (CFR), Title 40, Part 260 – 268
- Guide to Management of Investigative-Derived Waste Publication (USEPA, 1992)
- Management of Remediation Waste Under RCRA (USEPA, 1998)
- Montana Department of Environmental Quality (MDEQ) Guidance for Applying EPA's Contained-in Policy to Environmental Media, dated June 27, 2013

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6.0 REFERENCES

Code of Federal Regulations, Title 40, Sections 260 - 268. Hazardous Waste Management System

Montana Department of Environmental Quality (DEQ), 2013. Guidance for Applying EPA's Contained-in Policy to Environmental Media, Montana Department of Environmental Quality (DEQ) Permitting and Compliance Division/Hazardous Waste Program Remediation Division/Site Response Section

U.S. EPA, 1992. Guide to Management of Investigative-Derived Waste, Publication: 9345.3-03FS, April 1992.

U.S. EPA, 1998. Management of Remediation Waste Under RCRA. EPA530-F-98-026, October 1998.

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1. Types of Investigation-Derived Wastes Expected at the CFAC Site

Table 1. Types of Investigation Derived Waste Expected at the CFAC Site
Columbia Falls Aluminum Company, Columbia Falls, Montana

Type of IDW	Generation Processes	Management Procedure
Soil	Soil boring with well or excess soil generated during drilling / sampling	Containerize and transport soil to stockpile area, sample for off-site disposal
	Soil Boring w/ no well	Top three feet of boring can be filled with soil cuttings, remaining waste should be containerized and transported to stockpile area, sample for off-site disposal
	Test Pit	Return soil to test pit or source immediately after completion of test pit
Sludges/Sediment	Sediment sampling	Containerize and transport soil to stockpile area, sample for off-site disposal. If material is very wet, keep containerized separately.
Aqueous liquids (Ground water, Surface Water, drilling fluids, decon fluids)	Well installation/development	Containerize and sample. If sample results are below permit limits, dispose in North-East Percolation Pond. If above permit limits, dispose off-site.
	Well purging during sampling	Containerize and sample. If sample results are below permit limits, dispose in North-East Percolation Pond. If above permit limits, dispose off-site.
	Ground water discharge during pump tests	Containerize and sample. If sample results are below permit limits, dispose in North-East Percolation Pond. If above permit limits, dispose off-site.
	Decontamination of PPE and equipment	Containerize and sample. If sample results are below permit limits, dispose in North-East Percolation Pond. If above permit limits, dispose off-site.
	Surface water sampling	Return excess water to surface water feature.
PPE and Disposable Sampling Materials (Tubing, bailers, bladders, etc)	Sampling procedures or other on-site activities	Place in designated container for off-site disposal.