United States Environmental Protection Agency (USEPA), has reviewed the Phase I Site Characterization Sampling and Analysis Plan Addendum (SAP Addendum), prepared by Roux Associates, Inc. (Roux) on behalf of the Columbia Falls Aluminum Company LLC (CFAC) for the Former Primary Aluminum Reduction Facility (Site), located in Columbia Falls, Montana. Please note that comments on the SAP Addendum were received from the Montana Department of Environmental Quality (DEQ). This memorandum represents the combined comments of CDM Smith, USEPA, and DEQ. Comments are organized into General and Specific Comments. Specific Comments are organized by corresponding section of the document.

General Comments

1) Due to the presence of animal feces observed at many locations during the reconnaissance, please ensure that terrestrial receptors are evaluated in the ecological risk assessment.

2) In multiple locations in Section 2.0 it is noted that noxious weeds were observed. Although the site is only in the remedial investigation phase, control of noxious weeds will be identified as an ARAR during the feasibility study FS and carried forward through to ROD. It is recommended that CFAC consider adopting a robust weed management program to reduce efforts to eliminate noxious weeds as part of future site operation and maintenance.

3) When the SAP was approved, Roux had not selected a contract laboratory for analysis of samples. Test America Laboratories (TAL) has since been selected as the primary laboratory for sample analysis. Please include a discussion of the selection of Test America Laboratories as the primary laboratory in Section 2.0 and include TAL's Quality Assurance Plan as an appendix to the SAP addendum.

4) After this draft SAP addendum was submitted, Roux and the Agencies agreed to use a field modification form. Please include language on the use of the field modification form written specifically for the CFAC Site somewhere in Section 3.0 and include the field modification form as an appendix to this SAP addendum.

Specific Comments

5) Page 5, Section 2.2.1 - During a May 26, 2016 site visit, DEQ noted an un-named stream channel (see attached photo). Please include collection of surface water as well as sediment samples from this waterway. Please also GPS the location of this stream channel and include its location and any pertinent features on future site maps.

6) Page 6, Section 2.2.1.2, 2nd paragraph – The Site reconnaissance noted that vegetation was observed in the Cedar Creek Reservoir Overflow Ditch. Although flow in the overflow ditch this year was atypical, vegetation in the ditch may cause debris to be obstructed and pooling of water. Please conduct another reconnaissance of the ditch at the end of the growing season and ensure that all perennial and annual vegetative growth be cleared from the ditch.

7) Page 7, Section 2.2.1.3, 1st paragraph – Please include the location of the area impacted by bank stabilization work on figure, and describe the measures that will be taken to mitigate any potential impact on surface water and sediment samples and results. If CFAC is hiring an engineering firm to conduct a bank stabilization project on the north side of the Flathead River, this has a high probability of impacting the usability of any surface water and sediment data collected along the north side of the river prior to the stabilization project as well as impacting accessibility to sample monitoring locations in the future. Any figures produced showing the locations where water and sediment will be collected in Flathead River should also show the locations where bank stabilization work is proposed.

8) Page 8, Section 2.2.2.2, 2nd paragraph – Please clarify if the paragraph describes conditions at the Wet Scrubber Sludge Pond, or at a landfill. The paragraph refers to the 'landfill' throughout the paragraph.

9) Page 15, Section 2.2.4.4 – Consider adding TPHs-DROs to Table 6 and provide a discussion for sampling of these chemicals of potential concern (COPCs) in Section 3.0 to allow for opportunistic sampling of the soils around the USTS if there is a possibility that Calbag may remove the USTs during Phase 1. While the tanks themselves may be the responsibility of Calbag, this document should address how any potential contamination resulting from the tanks (i.e., from possible leaks or spills) will be identified. Please include a description of the sampling to be conducted to address this.

10) Pages 19-20, Section 2.3.1 – Please remove the section. In Section 2.3, it is stated that no sampling of the production wells will take place. Therefore, the presentation of historical data should not be included in the SAP addendum. If this historical data is important for future decision making, please submit this data as a separate technical memorandum that can be placed in the site file.

11) Page 21, Section 2.4, first bullet - Please include the number of drilling locations that required clearing.

12) Page 21, Section 2.5, 1st paragraph – Please go into greater detail about how depth was gauged and how the presence of water was assessed. Also, please note that field datasheets are included in Appendix G in this paragraph.

13) Page 23, Section 2.5.1, bullet list – Please add data ranges for all constituents discussed in the list.

14) Page 23, Section 2.5.1, page 23, 3rd bullet - Please break out polycyclic aromatic hydrocarbons (PAHs) as a separate bullet and evaluate against screening levels.

15) Page 23, Section 2.5.2 – Since PAHs (i.e. naphthalene) and TPHs-DROs can also be detected by smell, please include olfactory impacts as another field indicator.

16) Page 23, Section 2.5.2 - Please describe the criteria that were used to select the drilling locations.

17) Page 25, Section 2.6.1 – Please provide justification for the statement "the soil gas screening results indicate landfills are not significant sources of methane or volatile organic compounds (VOCs)". Granted many of the values presented are non-detect (ND). However, there are several detections for VOCs. Please specify how it was determined that landfills are not significant sources of VOCs or remove the statement.

18) Page 26, Section 2.6.2 – Please present the isopleth maps for passive soil gas sampling results in the SAP Addendum. Also, if passive soil gas sample results are driving additional investigation in the drum storage and operational grid areas, please present figures showing the additional investigation locations correlated to the isopleths of the relevant constituents (e.g., a map of the drum storage area with tetrachloroethene isopleths and proposed soil boring locations).

19) Page 26, Section 2.6.1, last paragraph– Please specify under what circumstances "additional soil vapor sampling may also be warranted".

20) Page 27, Section 2.7, last paragraph – please change date from June to July for when the final summary report will be received.

21) Page 28, Section 2.8, 1st partial paragraph; Figures 8 and 9 – Please renumber Figures 8 and 9 as Figures 9 and 8, respectively for continuity. The discussion of ground-penetrating radar appears before the discussion of additional soil borings within the former fueling area.

22) Pages 29-37, Section 3.0 - Please add a section discussing modifications to the incremental sampling methodology (ISM) based on discussions between USEPA, CDM Smith, Roux, Hydrometrics, and Glencore/CFAC on June 22, 2016. Please include a revised ISM SOP for soil sampling, and please also include as an appendix the Test America Laboratories (TAL) SOP for ISM sample preparation.

23) Page 29, Section 3.1, 1st paragraph, 3rd sentence – Please reference correspondence from Roux to USEPA.

24) Page 29, Section 3.1, 2nd paragraph; Figures 8 and 9 – Please renumber Figures 8 and 9 as Figures 9 and 8, respectively for continuity. The discussion of additional soil borings appears after the discussion of ground-penetrating radar (see Specific Comment 7 above).

25) Page 29, Section 3.1, last paragraph –Please note any olfactory observations on field forms. Olfactory observations are just as good as visual observations at determining evidence of petroleum impacts and should be noted. It is also noted that the language specifies that soils will be screened in the field for petroleum impacts, yet TPHs-DROs are not being analyzed for to verify the presence of petroleum impacts detected in the field.

26) Page 30, Section 3.2 2nd paragraph – Please include the field modification form as an additional way to communicate changes in the last sentence.

27) Page 30, Section 3.2, 3rd paragraph – Given the presence of PCE in the Former Drum Storage Area, it is recommended that a field technician split the coring and run a PID down the core to identify potential locations where PCE may be pooled in the coring in order to take depth discrete samples rather than a composite of the coring. Field dye methods are also available to evaluate soil samples collected during the drilling activities for chlorinated solvents. Please review the soil sampling SOP to determine if the SOP needs to be revised to allow for more flexibility in using additional field methods to detect for the presence of PCE and submit a revised SOP as part of the final SAP addendum if it is revised.

28) Page 31, Section 3.3, 2nd paragraph, last sentence – With the use of a field modification form to document field changes, please revise the last sentence.

29) Pages 31-32, Section 3.4: Please add a discussion of historical groundwater elevations, and how the magnitude of seasonal groundwater fluctuations has influenced monitoring well construction. The SAP states that, "The majority of the proposed Phase I monitoring wells will be installed immediately below the groundwater table." However, during field oversight activities, it has been noted that monitoring wells have been constructed with screened intervals approximately 10-12 feet below the water table. Please discuss this discrepancy in the context of historical groundwater data.

30) Pages 31 – 32, Section 3.4 – If the proposed construction details used by Cascade Drilling are different than the well installation SOP submitted in the SAP, please provide a revised SOP in this addendum.

31) Page 33, Section 3.5, final two paragraphs: Please add to the section a discussion of why existing production wells cannot be sampled. The description of the wells states that the wells still have large pumps installed within them: why can't they be sampled?

32) Page 33, Section 3.6 – see comment 5 above

33) Page 34, Section 3.7 – see comment 5 above

34) Page 35, Section 3.7, 2nd full paragraph, last sentence - Please add provide the number for the figure that depicts channel bottom soil/sand sample locations.

35) Page 36, Section 3.7– Please clarify if the sampling design will be documented in another addendum to the SAP or a field modification. It is noted that the surface water sampling design will be reevaluated during low water conditions due to access/safety concerns. Roux will be notifying EPA of the proposed approach in future progress reports, but any change in scope or methodology for the surface water sampling must be documented formally and not limited to a progress report.

36) Table 6 – Ecological soil screening levels (Eco-SSLs) (EPA 2016) and Oak Ridge National Laboratory (ORNL) toxicological benchmarks (Efroymson et al. 1997a,b) should be added.

37) Table 8 – Great Lake Water Quality Initiative, Tier II values from Suter and Tsao (1996) should be added.

38) Table 9 – Please confirm the reference for threshold effect level (TEL) values. These appear to Ingersoll Assessment and Remediation of Contaminated Sediment (ARCS) TEL values (Ingersoll et al. (1996a,b)).

39) Table 9 –Values based on EqP sediment guidelines (ESGs) for PAHs, dieldrin and endrin should be added (EPA 2003a,b,c).

40) Figures 8 and 9 – please renumber the figures to better reflect the progression of discussions in the text (see comment 19 above).

References

Efroymson, R.A., M.E. Will, G.W. Suter II, and A.C. Wooten. 1997a. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision. Prepared for the U.S. Department of Energy, Office of Environmental Management by Lockheed Martin Energy Systems, Inc. managing the Oak Ridge National Laboratory (ORNL). ORNL publication. ES/ER/TM-85/R3, November 1997. http://www.esd.ornl.gov/programs/ecorisk/documents/tm85r3.pdf

Efroymson, R.A., M.E. Will and G.W. Suter II. 1997b. Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision. Prepared for the U.S. Department of Energy, Office of Environmental Management by Lockheed Martin Energy Systems, Inc. managing the Oak Ridge National Laboratory (ORNL). ES/ER/TM-126/R2, November 1997. http://www.esd.ornl.gov/programs/ecorisk/documents/tm126r21.pdf

EPA. 2003a. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: Dieldrin. Office of Research and Development. EPA/600/R-02/010. https://www.epa.gov/nheerl/publications/files/dieldrin.pdf

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EPA. 2003c. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. Office of Research and Development. EPA/600/R-02/013. https://www.epa.gov/nheerl/publications/files/PAHESB.pdf

EPA. 2016. Ecological Soil Screening Level. https://www.epa.gov/chemical-research/ecological-soil-screening-level.

Ingersoll, C.G., P.S. Haverland, E.L. Brunson, T.J. Canfield, F.J. Dwyer, C.E. Henke, N.E. Kemble, and D.R. Mount. 1996a. Calculation and evaluation of sediment effect concentrations for the amphipod Hyalella azteca and the midge Chironomus riparius. National Biological Service Final Report for the U.S. Environmental Protection Agency, Great Lakes National Program Office, Assessment and Remediation of Contaminated Sediment (ARCS) Project. EPA/905/R-96/008. September.

Ingersoll, C.G., P.S. Haverland, E.L. Brunson, T.J. Canfield, F.J. Dwyer, C.E. Henke, N.E. Kemble, D.R. Mount, and R.G. Fox. 1996b. Calculation and evaluation of sediment effect concentrations for the amphipod Hyalella azteca and the midge Chironomus riparius. J. Great Lakes Res. 22:602-623.

Suter II, GW and CL Tsao. 1996. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. Oak Ridge National Laboratory. Document ES/ER/TM-96/R2. June 1996. http://www.esd.ornl.gov/programs/ecorisk/documents/tm96r2.pdf