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UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 8

IN THE MATTER OF:)

Colorado Smelter Site)
Pueblo, Colorado)

Union Pacific Railroad Company,)

Respondent)

Proceeding Under Sections 104, 107)
and 122 of the Comprehensive)
Environmental Response, Compensation,)
and Liability Act, 42 U.S.C. §§ 9604,)
9607 and 9622.)

CERCLA Docket No. CERCLA-08-2022-0009

**ADMINISTRATIVE SETTLEMENT
AGREEMENT AND ORDER ON
CONSENT FOR FOCUSED SITE
CHARACTERIZATION**

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I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent (Settlement) is entered into voluntarily by the United States Environmental Protection Agency (EPA) and Union Pacific Railroad Company (Respondent). This Settlement provides for the performance by Respondent of a focused site characterization on the railroad right of way within the study area (Railroad Property) of the Colorado Smelter Site (Site) located in the City of Pueblo, Pueblo County, Colorado.

2. This Settlement is issued under the authority vested in the President of the United States by Sections 104, 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9607 and 9622 (CERCLA). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2923 (Jan. 29, 1987), and further delegated to Regional Administrators by EPA Delegation Nos. 14-14C (Administrative Actions Through Consent Orders, Jan. 18, 2017) and 14-14D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders, Jan. 18, 2017). These authorities were further redelegated to the Regional Counsel by the Regional Administrator of EPA Region 8 by EPA Delegation No. 14-14-D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders, April 29, 2019) and then further redelegated to the Associate Regional Counsel for Enforcement by EPA Delegation No. 14-14-D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders, August 15, 2019).

3. EPA and Respondent recognize that this Settlement has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Settlement do not constitute an admission of any liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement, the validity of the findings of facts, conclusions of law, and determinations in Section IV (Findings of Fact) and V (Conclusions of Law and Determinations) of this Settlement. Respondent agrees to comply with and be bound by the terms of this Settlement and further agrees that it will not contest the basis or validity of this Settlement or its terms.

II. PARTIES BOUND

4. This Settlement is binding upon EPA and upon Respondent and its successors and assigns. Any change in 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 Settlement.

5. Each undersigned representative of Respondent certifies that he or she is fully authorized to enter into the terms and conditions of this Settlement and to execute and legally bind Respondent to this Settlement.

6. Respondent shall provide a copy of this Settlement to each contractor hired to perform the Work required by this Settlement and to each person representing Respondent with respect to the Site or the Work and shall condition all contracts entered into under this Settlement upon performance of the Work in conformity with the terms of this Settlement. Respondent or its contractors shall provide written notice of the Settlement to all subcontractors hired to perform

any portion of the Work required by this Settlement. Respondent shall nonetheless be responsible for ensuring that its contractors and subcontractors perform the Work in accordance with the terms of this Settlement.

III. DEFINITIONS

7. Unless otherwise expressly provided in this Settlement, terms used in this Settlement that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement or its attached appendices, the following definitions shall apply:

“CERCLA” means the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675.

“Colorado Smelter Site Special Account” means the special account within the EPA Hazardous Substance Superfund, established for the Site by EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3).

“Day” or “day” means a calendar day. In computing any period of time under this Settlement, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.

“Effective Date” means the effective date of this Settlement as provided in Section XXX.

“EPA” means the United States Environmental Protection Agency and its successor departments, agencies, or instrumentalities.

“EPA Hazardous Substance Superfund” means the Hazardous Substance Superfund established by the Internal Revenue Code, 26 U.S.C. § 9507.

“Future Response Costs” means all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing deliverables submitted pursuant to this Settlement, in overseeing implementation of the Work, or otherwise implementing, overseeing, or enforcing this Settlement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Section XI (Property Requirements) (including, but not limited to, cost of attorney time and any monies paid to secure or enforce access, including, but not limited to, the amount of just compensation), Section XV (Emergency Response and Notification of Releases), Paragraph 79 (Work Takeover), Paragraph 24.d (Community Involvement Plan) including, but not limited to, the costs of any technical assistance grant under Section 117(e) of CERCLA, 42 U.S.C. § 9617(e), Section XVII (Dispute Resolution), and all litigation costs.

“Interest” means interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is

subject to change on October 1 of each year. Rates are available online at <https://www.epa.gov/superfund/superfund-interest-rates>.

“National Contingency Plan” or “NCP” means the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

“OU1” means operable unit 1 of the Site, consisting of residential, commercial, school district, and city-owned properties within a 0.5-mile radius of the former smelter, and generally depicted on the map attached hereto as Appendix A.

“OU2” means operable unit 2 of the Site, consisting of approximately 45 acres that overlie the footprint of the former Colorado Smelter facility, including an approximately 700,000 square-foot (16 acre) slag pile, and generally depicted on the Site map attached hereto as Appendix A.

“Paragraph” shall mean a portion of this Settlement identified by an Arabic numeral or an upper or lower case letter.

“Parties” means EPA and Respondent.

“Railroad Property” means the railroad right of way within the Site study area and generally depicted on the Site map attached hereto as Appendix A.

“Respondent” shall mean Union Pacific Railroad Company.

“Section” shall mean a portion of this Settlement identified by a Roman numeral.

“Settlement” shall mean this Administrative Settlement Agreement and Order on Consent and all appendices attached hereto (listed in Section XXIX (Integration/Appendices)). In the event of conflict between this Settlement and any appendix, this Settlement shall control.

“Site” shall mean the Colorado Smelter Site located in Pueblo, Colorado and generally depicted on the Site map attached hereto as Appendix A.

“State” shall mean the State of Colorado.

“Transfer” shall mean to sell, assign, convey, lease, mortgage, or grant a security interest in, or where used as a noun, a sale, assignment, conveyance, or other disposition of any interest by operation of law or otherwise.

“United States” shall mean the United States of America and each department, agency, and instrumentality of the United States, including EPA.

“Waste Material” shall mean (a) any “hazardous substance” under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under Section 101(33) of

CERCLA, 42 U.S.C. § 9601(33); (c) any “solid waste” under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27).

“Work” shall mean all site characterization activities and obligations Respondent is required to perform under the Work Plan and this Settlement, except those required by Section XIII (Record Retention).

“Work Plan” shall mean the approved Work Plan attached hereto as Appendix B.

IV. FINDINGS OF FACT

8. The Site includes a former smelter facility located in the City of Pueblo, Pueblo County, Colorado, and the surrounding community where arsenic and lead contamination from the Colorado Smelter has come to be located. The Colorado Smelter (also known as the Colorado Smelting Company and the Eilers Smelter) was one of five smelters in Pueblo at the turn of the last century. The Colorado Smelter processed silver-lead ore from the Monarch Pass area and operated from 1883 to 1908. The Colorado Smelter merged with the Pueblo Smelter as the American Smelting and Refining Company in 1899. The Colorado Smelter closed in 1908. While most of the historical smelter structures were torn down in 1909, portions of the facility’s foundation and waste piles still exist.

9. The Site was listed on the National Priorities List (NPL) by EPA pursuant to CERCLA § 105, 42 U.S.C. § 9605, in December 2014, 79 Fed. Reg. 73,478 (Dec. 11, 2014). A map of the Site is attached hereto as Appendix A.

10. EPA has organized the Site into two geographic operable units: OU2, the footprint of the former Colorado Smelter facility, and OU1, residential, commercial, and city-owned properties within a 0.5-mile radius of the former Colorado Smelter.

11. EPA began the Remedial Investigation/Feasibility Study for the Site in 2014. EPA has conducted OU1 soil sampling and OU2 surface soil, surface water, sediment, and pore water sampling, which has revealed elevated levels of heavy metals, including lead and arsenic. Specifically, EPA used x-ray fluorescence spectrometry to sample areas within OU2, which revealed lead levels ranging from 1290ppm to 13300ppm, which exceeds the OU2 preliminary lead screening level of 800ppm.

12. Exposure to heavy metals, including lead and arsenic, may cause adverse health effects in humans and adverse effects to ecosystems. For example, lead poisoning can cause nerve damage and hearing and vision impairment in adults. In children, lead poisoning can cause learning and behavioral problems, brain damage, anemia, liver and kidney damage, hearing loss, hyperactivity, and developmental delays. Although the effects of lead exposure are a potential concern for all humans, children under seven years old are most at risk.

13. Respondent, Union Pacific Railroad Company, is the principal operating company of the Union Pacific Corporation.

14. Respondent owns and operates a railroad right of way that is located within the Site study area.

V. EPA's CONCLUSIONS OF LAW AND DETERMINATIONS

15. Based on the Findings of Fact set forth above, and the administrative record, EPA has determined that:

- a. The Colorado Smelter Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
- b. The contamination found at the Site, as identified in the Findings of Fact above, includes "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).
- c. Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
- d. Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).
- e. Respondent is the "owner" and/or "operator" of a portion of the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1).
- f. The conditions described in the Findings of Fact above constitute an actual and/or threatened "release" of a hazardous substance from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).
- g. The actions required by this Settlement are necessary to protect the public health, welfare, or the environment, are in the public interest, 42 U.S.C. § 9622(a), are consistent with CERCLA and the NCP, 42 U.S.C. §§ 9604(a)(1), 9622(a), and will expedite effective remedial action and minimize litigation, 42 U.S.C. § 9622(a).
- h. EPA has determined that Respondent is qualified to conduct the Work within the meaning of Section 104(a) of CERCLA, 42 U.S.C. § 9604(a), and will carry out the Work properly and promptly, in accordance with Sections 104(a) and 122(a) of CERCLA, 42 U.S.C. §§ 9604(a) and 9622(a), if Respondent complies with the terms of this Settlement.

VI. SETTLEMENT AGREEMENT AND ORDER

16. Based upon the Findings of Fact, Conclusions of Law and Determinations set forth above, and the administrative record, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Settlement, including, but not limited to, all appendices to this Settlement and all documents incorporated by reference into this Settlement.

VII. DESIGNATION OF CONTRACTORS AND PROJECT COORDINATORS

17. **Selection of Contractors, Personnel.** All Work performed under this Settlement shall be under the direction and supervision of qualified personnel. Within 30 days after the Effective Date, and before the Work outlined below begins, Respondent shall notify EPA in

writing of the names, titles, addresses, telephone numbers, email addresses, and qualifications of the personnel, including contractors, subcontractors, consultants, and laboratories to be used in carrying out such Work. If, after the commencement of Work, Respondent retains additional contractors or subcontractors, Respondent shall notify EPA of the names, titles, contact information, and qualifications of such contractors or subcontractors retained to perform the Work at least 3 days prior to commencement of Work by such additional contractors or subcontractors. EPA retains the right, at any time, to disapprove of any or all of the contractors and/or subcontractors retained by Respondent. If EPA disapproves of a selected contractor or subcontractor, Respondent shall retain a different contractor or subcontractor and shall notify EPA of that contractor's or subcontractor's name, title, contact information, and qualifications within 10 days after EPA's disapproval. With respect to any proposed contractor, Respondent shall demonstrate that the proposed contractor demonstrates compliance with ASQ/ANSI E4:2014 "Quality management systems for environmental information and technology programs – Requirements with guidance for use" (American Society for Quality, February 2014), by submitting a copy of the proposed contractor's Quality Management Plan (QMP). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," EPA/240/B-01/002 (Reissued May 2006) or equivalent documentation as determined by EPA. The qualifications of the persons undertaking the Work for Respondent shall be subject to EPA's review for verification based on objective assessment criteria (e.g., experience, capacity, technical expertise) and that they do not have a conflict of interest with respect to the project.

18. Within 30 days after the Effective Date, Respondent shall designate a Project Coordinator who shall be responsible for administration of the Work required by this Settlement and shall submit to EPA the designated Project Coordinator's name, title, address, telephone number, email address, and qualifications. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during the Work. EPA retains the right to disapprove of a designated Project Coordinator who does not meet the requirements of Paragraph 17 (Selection of Contractors, Personnel). If EPA disapproves of the designated Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify EPA of that person's name, title, contact information, and qualifications within ten days following EPA's disapproval. Notice or communication relating to this Settlement from EPA to Respondent's Project Coordinator shall constitute notice or communication to Respondent.

19. EPA has designated Sabrina Forrest of the EPA Region 8 Office as its Remedial Project Manager (RPM) for OU2 of the Site. EPA will notify Respondent of a change of its designated RPM. Communications between Respondent and EPA, and all documents concerning the activities performed pursuant to this Settlement, shall be directed to the EPA RPM in accordance with Paragraph 28.a. All deliverables, notices, notifications, proposals, reports, and requests specified in this Settlement must be in writing, unless otherwise specified, and be submitted by email to Sabrina Forrest at Forrest.Sabrina@epa.gov.

20. EPA's RPM shall have the authority lawfully vested in an RPM and On-Scene Coordinator (OSC) by the NCP. In addition, EPA's RPM shall have the authority, consistent with the NCP, to halt, conduct, or direct any Work required by this Settlement, or to direct any other response action when s/he determines that conditions at the Site constitute an emergency situation or may present a threat to public health or welfare or the environment. Absence of the

EPA RPM from the area under study pursuant to this Settlement shall not be cause for stoppage or delay of Work.

VIII. WORK TO BE PERFORMED

21. For any regulation or guidance referenced in the Settlement, the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or guidance. Such modifications, amendments, or replacements apply to the Work only after Respondent receives notification from EPA of the modification, amendment, or replacement.

22. **Activities and Deliverables.** Respondent shall perform the Work and prepare all plans in accordance with the provisions of this Settlement, the attached Work Plan, CERCLA, the NCP, and EPA guidance, including, but not limited to the “Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA” (“RI/FS Guidance”), OSWER Directive # 9355.3-01 (October 1988), available at <https://semspub.epa.gov/src/document/11/128301>.

23. All written documents prepared by Respondent pursuant to this Settlement shall be submitted by Respondent in accordance with Section IX (Submission and Approval of Deliverables). With the exception of monthly progress reports and the Health and Safety Plan, all such submittals will be reviewed and approved by EPA in accordance with Section IX (Submission and Approval of Deliverables). Respondent shall implement all EPA approved, conditionally approved, or modified deliverables.

24. Respondent shall provide EPA with the following deliverables:

a. **Quality Assurance Project Plan/Sampling and Analysis Plan.** Within 45 days after the Effective Date, Respondent shall submit a Quality Assurance Project Plan/Sampling and Analysis Plan (QAPP/SAP) to EPA for review and approval pursuant to Section IX (Submission and Approval of Deliverables). This plan shall include a Field Sampling Plan (FSP). The QAPP/SAP shall be consistent with the NCP, and include all of the data elements required in EPA Region 8’s Quality Assurance Document Review Crosswalk, and applicable guidance documents, including, but not limited to, “Guidance for Quality Assurance Project Plans (QA/G-5)” EPA/240/R-02/009 (December 2002), “EPA Requirements for Quality Assurance Project Plans (QA/R-5)” EPA/240/B-01/003 (March 2001, reissued May 2006), and “Uniform Federal Policy for Quality Assurance Project Plans,” Parts 1-3, EPA/505/B-04/900A-900C (March 2005). Upon its approval by EPA pursuant to Section IX (Submission and Approval of Deliverables), the QAPP/SAP shall be incorporated into and become enforceable under this Settlement.

b. **Data Management Plan.** Within 45 days after the Effective Date, Respondent shall submit a Data Management Plan to EPA for review and approval pursuant to Section IX (Submission and Approval of Deliverables). This plan shall ensure data integrity and consistency for all data collection personnel and from one operational period to the next, provide guidance for data collection by field personnel and subsequent data management activities, and be consistent with *U.S. EPA Region 8 Superfund Remedial Data Management Plan, Version 2016.1.0, February 26, 2016*; and *16-DAT-01.00, Data Management for Field Operations and*

Analytical Support, March 12, 2014. Upon its approval by EPA pursuant to Section IX (Submission and Approval of Deliverables), the Data Management Plan shall be incorporated into and become enforceable under this Settlement.

c. **Health and Safety Plan.** Within 45 days after the Effective Date, Respondent shall submit for EPA review and comment a Health and Safety Plan that ensures the protection of on-site workers and the public during performance of on-site Work under this Settlement. This plan shall be prepared in accordance with “OSWER Integrated Health and Safety Program Operating Practices for OSWER Field Activities,” Pub. 9285.0-O1C (November 2002), available on the NSCEP database at <https://www.epa.gov/nscep/index.html>, and “EPA’s Emergency Responder Health and Safety Manual,” OSWER Directive 9285.3-12 (July 2005 and updates), available at https://www.epaossc.org/_HealthSafetyManual/manual-index.htm. In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration (OSHA) regulations found at 29 C.F.R. Part 1910. Respondent shall incorporate all changes to the plan provided by EPA and shall implement the plan during the pendency of the Work.

d. **Community Involvement Plan.** EPA has prepared a community involvement plan, in accordance with EPA guidance and the NCP. If requested by EPA, Respondent shall participate in community involvement activities, including participation in (i) the preparation of information regarding the Work for dissemination to the public, with consideration given to including mass media and/or Internet notification, and (ii) public meetings that may be held or sponsored by EPA to explain activities at or relating to the Site.

e. **Data Summary Report.** Within 60 days after completion of the Work, Respondent shall submit to EPA a Data Summary Report for review and approval pursuant to Section IX (Submission and Approval of Deliverables). This Report shall include, at a minimum, the following:

- (1) A description of all Work performed;
- (2) All results of sampling and tests and all other data developed under this Settlement; and
- (3) A summary of the focused site characterization of the Railroad Property, including, but not limited to:
 - i. Physical characteristics
 - ii. Sources of contamination
 - iii. Nature and extent of contamination

25. **Modification of the Work Plan**

a. If at any time during the performance of the Work, Respondent identifies a need for additional data, Respondent shall submit a memorandum documenting the need for additional data to EPA’s RPM within ten days after identification. EPA in its discretion will

determine whether the additional data will be collected by Respondent and whether it will be incorporated into deliverables.

b. In the event of unanticipated or changed circumstances at the Railroad Property, Respondent shall notify EPA's RPM by telephone within 2 days of discovery of the unanticipated or changed circumstances. In the event that EPA determines that the unanticipated or changed circumstances warrant changes in the Work Plan, EPA shall modify the Work Plan in writing accordingly or direct Respondent to modify and submit the modified Work Plan to EPA for approval. Respondent shall perform the Work Plan as modified.

c. EPA may determine that, in addition to tasks defined in the initially approved Work Plan, other additional work may be necessary to accomplish the objectives of the Work.

d. Respondent shall confirm its willingness to perform the additional work in writing to EPA within 7 days after receipt of the EPA request. If Respondent objects to any modification determined by EPA to be necessary pursuant to this Paragraph, Respondent may seek dispute resolution pursuant to Section XVII (Dispute Resolution). The Work Plan shall be modified in accordance with the final resolution of the dispute.

e. Respondent shall complete the additional work according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the Work Plan or written Work Plan supplement. EPA reserves the right to conduct the additional work itself, to seek reimbursement from Respondent for the costs incurred in performing the additional work, and/or to seek any other appropriate relief.

f. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions at the Site.

26. Off-Site Shipments

a. Respondent may ship hazardous substances, pollutants, and contaminants from the Site to an off-Site facility only if Respondent complies with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondent will be deemed to be in compliance with CERCLA § 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if Respondent obtains a prior determination from EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b).

b. Respondent may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to any shipment, Respondent provides written notice to the appropriate state environmental official in the receiving facility's state and to EPA's RPM. This notice requirement shall not apply to any off-Site shipments when the total quantity of all such shipments will not exceed ten cubic yards. The written notice must include the following information, if available: (1) the name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. Respondent shall also notify the state environmental official referenced above and EPA's RPM of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility.

c. Respondent may ship Investigation Derived Waste (IDW) from the Site to an off-Site facility only if Respondent complies with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), 40 C.F.R. § 300.440, EPA's "Guide to Management of Investigation Derived Waste," OSWER 9345.3-03FS (Jan. 1992), and any IDW-specific requirements contained in the SOW. Wastes shipped off-Site to a laboratory for characterization, and RCRA hazardous wastes that meet the requirements for an exemption from RCRA under 40 C.F.R. § 261.4(e) shipped off-Site for treatability studies, are not subject to 40 C.F.R. § 300.440.

27. **Monthly Progress Reports.** In addition to the deliverables set forth in this Settlement, Respondent shall submit written monthly progress reports to EPA by the 10th day of the following month, unless otherwise directed in writing by EPA's RPM. This requirement for monthly progress reports shall terminate upon completion of the Work, excluding the requirements under Section XIII (Records Retention). At a minimum, with respect to the preceding month, these progress reports shall:

- a. describe the actions that have been taken to comply with this Settlement;
- b. include all results of sampling and tests and all other data received by Respondent;
- c. describe Work planned for the next month with schedules relating such Work to the overall project schedule for Work completion; and
- d. describe all problems encountered in complying with the requirements of this Settlement and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

IX. SUBMISSION AND APPROVAL OF DELIVERABLES

28. Submission of Deliverables

a. General Requirements for Deliverables

(1) Except as otherwise provided in this Settlement, Respondent shall direct all submissions required by this Settlement to EPA's RPM at Sabrina Forrest, US EPA Region 8, 1595 Wynkoop Street, Denver, Colorado 80202, (303) 312-6484, Forrest.Sabrina@epa.gov. Respondent shall submit all deliverables required by this Settlement or any approved work plan in accordance with the schedule set forth in such plan.

(2) Respondent shall submit all deliverables in electronic form. Technical specifications for sampling and monitoring data and spatial data are addressed in Paragraph 28.b. All other deliverables shall be submitted in the electronic form specified by EPA's RPM. If any deliverable includes maps, drawings, or other exhibits that are larger than 8.5 x 11 inches, Respondent shall also provide paper copies of such exhibits.

b. Technical Specifications for Deliverables

(1) Sampling and monitoring data should be submitted in Microsoft format. Other delivery methods may be allowed if electronic direct submission presents a significant burden or as technology changes. Geospatial data should be submitted following the National Geospatial Deliverable Standard, available online at <https://www.epa.gov/sites/default/files/2020-10/documents/nationalgeospatialdeliverablestandard.pdf>.

(2) Each file must include an attribute name for each site unit or sub-unit submitted. Consult <https://www.epa.gov/geospatial/geospatial-policies-and-standards> for any further available guidance on attribute identification and naming.

(3) Spatial data submitted by Respondent does not, and is not intended to, define the boundaries of the Site.

29. Approval of Deliverables

a. Initial Submissions

(1) After review of any deliverable that is required to be submitted for EPA approval under this Settlement, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.

(2) EPA also may modify the initial submission to cure deficiencies in the submission if: (i) EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the Work; or (ii) previous submission(s) have been disapproved due to material defects and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

b. Resubmissions. Upon receipt of a notice of disapproval under Paragraph 29.a(1) (Initial Submissions), or if required by a notice of approval upon specified conditions under Paragraph 29.a(1), Respondent shall, within ten days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, EPA may: (a) approve, in whole or in part, the resubmission; (b) approve the resubmission upon specified conditions; (c) modify the resubmission; (d) disapprove, in whole or in part, the resubmission, requiring Respondent to correct the deficiencies; or (e) any combination of the foregoing.

c. Implementation. Upon approval, approval upon conditions, or modification by EPA under Paragraph 29.a (Initial Submissions) or Paragraph 29.b (Resubmissions), of any deliverable, or any portion thereof: (i) such deliverable, or portion thereof, will be incorporated into and enforceable under the Settlement; and (ii) Respondent shall take any action required by such deliverable, or portion thereof. Implementation of any non-

deficient portion of a submission shall not relieve Respondent of any liability for penalties under Section XIX (Stipulated Penalties) for violations of this Settlement.

30. Notwithstanding the receipt of a notice of disapproval, Respondent shall proceed to take any action required by any non-deficient portion of the submission, unless otherwise directed by EPA.

31. Respondent shall not proceed with any activities or tasks dependent on the following deliverables until receiving EPA approval, approval on condition, or modification of such deliverables: Work Plan; Sampling and Analysis Plan. While awaiting EPA approval, approval on condition, or modification of these deliverables, Respondent shall proceed with all other tasks and activities that may be conducted independently of these deliverables, in accordance with the schedule set forth under this Settlement.

32. For all remaining deliverables not listed in Paragraph 31, Respondent shall proceed with all subsequent tasks, activities, and deliverables without awaiting EPA approval of the submitted deliverable. EPA reserves the right to stop Respondent from proceeding further, either temporarily or permanently, on any task, activity or deliverable at any point during the Work.

33. **Material Defects.** If an initially submitted or resubmitted plan, report, or other deliverable contains a material defect, and the plan, report, or other deliverable is disapproved or modified by EPA under Paragraph 29.a (Initial Submissions) or 29.b (Resubmissions) due to such material defect, Respondent shall be deemed in violation of this Settlement for failure to submit such plan, report, or other deliverable timely and adequately. Respondent may be subject to penalties for such violation as provided in Section XIX (Stipulated Penalties).

34. Neither failure of EPA to expressly approve or disapprove of Respondent's submissions within a specified time period, nor the absence of comments, shall be construed as approval by EPA.

X. QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS

35. Respondent shall use quality assurance, quality control, and other technical activities and chain of custody procedures for all samples consistent with "EPA Requirements for Quality Assurance Project Plans (QA/R5)," EPA/240/B-01/003 (March 2001, reissued May 2006), "Guidance for Quality Assurance Project Plans (QA/G-5)," EPA/240/R-02/009 (December 2002), and "Uniform Federal Policy for Quality Assurance Project Plans, Parts 1-3, EPA/505/B-04/900A-900C (March 2005).

36. Laboratories

a. Respondent shall ensure that EPA personnel and its authorized representatives are allowed access at reasonable times to all laboratories utilized by Respondent pursuant to this Settlement. In addition, Respondent shall ensure that such laboratories shall analyze all samples submitted by EPA pursuant to the approved QAPP/SAP for quality assurance, quality control, and technical activities that will satisfy the stated performance criteria as specified in the QAPP/SAP and that sampling and field activities are conducted in accordance

with the Agency's "EPA QA Field Activities Procedure" CIO 2105-P-02.1 (9/23/2014), available at <https://www.epa.gov/irmpoli8/epa-qa-field-activities-procedures>. Respondent shall ensure that the laboratories it utilize for the analysis of samples taken pursuant to this Settlement meet the competency requirements set forth in EPA's "Policy to Assure Competency of Laboratories, Field Sampling, and Other Organizations Generating Environmental Measurement Data under Agency-Funded Acquisitions," available at <https://www.epa.gov/measurements/documents-about-measurement-competency-under-acquisition-agreements>, and that the laboratories perform all analyses using EPA-accepted methods. Accepted EPA methods consist of, but are not limited to, methods that are documented in the EPA's Contract Laboratory Program (<https://www.epa.gov/superfund/programs/clp/>), SW 846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (<https://www.epa.gov/hw-sw846>), "Standard Methods for the Examination of Water and Wastewater" (<http://www.standardmethods.org/>), and 40 C.F.R. Part 136, "Air Toxics - Monitoring Methods" (<https://www.epa.gov/amtic/air-toxics-ambient-monitoring#methods>).

b. Upon approval by EPA, Respondent may use other appropriate analytical methods, as long as (i) quality assurance/quality control (QA/QC) criteria are contained in the methods and the methods are included in the QAPP/SAP, (ii) the analytical methods are at least as stringent as the methods listed above, and (iii) the methods have been approved for use by a nationally recognized organization responsible for verification and publication of analytical methods, e.g., EPA, ASTM, NIOSH, OSHA, etc.

c. Respondent shall ensure that all laboratories it uses for analysis of samples taken pursuant to this Settlement have a documented Quality System that complies with ASQ/ANSI E4:2014 "Quality Management Systems for Environmental Information and Technology Programs – Requirements With Guidance for Use" (American Society for Quality, February 2014), and "EPA Requirements for Quality Management Plans (QA/R-2)" EPA/240/B-01/002 (March 2001, reissued May 2006), or equivalent documentation as determined by EPA. EPA may consider Environmental Response Laboratory Network (ERLN) laboratories, laboratories accredited under the National Environmental Laboratory Accreditation Program (NELAP), or laboratories that meet International Standardization Organization (ISO 17025) standards or other nationally recognized programs as meeting the Quality System requirements.

d. Respondent shall ensure that all field methodologies utilized in collecting samples for subsequent analysis pursuant to this Settlement are conducted in accordance with the procedures set forth in the approved QAPP/SAP.

37. Sampling

a. Upon request, Respondent shall provide split or duplicate samples to EPA or its authorized representatives. Respondent shall notify EPA not less than 7 days in advance of any sample collection activity unless shorter notice is agreed to by EPA. In addition, EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall provide to Respondent split or duplicate samples of any samples it takes as part of EPA's oversight of Respondent's implementation of the Work, and any such samples shall be analyzed in accordance with the approved QAPP/SAP.

b. Respondent shall submit to EPA, in the next monthly progress report as described in Paragraph 27 (Progress Reports), the results of all sampling and/or tests or other data obtained or generated by or on behalf of Respondent with respect to the Site and/or the implementation of this Settlement. Results of analytical data subject to data validation will be submitted in the next monthly progress report following validation.

c. Respondent waives any objections to any data gathered, generated, or evaluated by EPA or Respondent in the performance or oversight of the Work that has been verified according to the quality assurance/quality control (QA/QC) procedures required by the Settlement or any EPA-approved Work Plan or Sampling and Analysis Plans. If Respondent objects to any other data relating to the Work, Respondent shall submit to EPA a report that specifically identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to EPA within 15 days after the monthly progress report containing the data.

XI. PROPERTY REQUIREMENTS

38. **Agreements Regarding Access and Non-Interference.** For any portions of the Railroad Property owned or operated by Respondent where access is needed to implement this Settlement, Respondent shall: (i) provide EPA and their representatives, contractors, and subcontractors with access at all reasonable times to such property to conduct any activity regarding the Settlement, including those listed in Paragraph 38.a (Access Requirements); and (ii) refrain from using such property in any manner that EPA determines will interfere with or adversely affect the implementation or integrity of the Work. The Railroad Property includes active railyards and rail lines. Any such access will be subject to Respondent's Health and Safety Plan and Respondent's railroad safety rules including the presence of a Union Pacific escort.

a. **Access Requirements.** The following is a list of activities for which access is required regarding the Railroad Property:

- (1) Monitoring the Work;
- (2) Verifying any data or information submitted to EPA;
- (3) Conducting investigations regarding contamination at or near the Site;
- (4) Obtaining samples;
- (5) Assessing the need for, planning, implementing, or monitoring response actions;
- (6) Assessing implementation of quality assurance and quality control practices as defined in the approved QAPP/SAP;
- (7) Implementing the Work pursuant to the conditions set forth in Paragraph 79 (Work Takeover); and

(8) Assessing Respondents' compliance with the Settlement.

39. Notwithstanding any provision of the Settlement, EPA retains all of its access authorities and rights, as well as all of its rights to require land, water, or other resource use restrictions, including enforcement authorities related thereto under CERCLA, RCRA, and any other applicable statute or regulations.

XII. ACCESS TO INFORMATION

40. Respondent shall provide to EPA, upon request, copies of all records, reports, documents, and other information (including records, reports, documents, and other information in electronic form) (hereinafter referred to as "Records") within Respondent's possession or control or that of its contractors or agents relating to the Work and the implementation of this Settlement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information regarding the Work. Respondent shall also make available to EPA, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

41. **Privileged and Protected Claims**

a. Respondent may assert that all or part of a Record requested by EPA is privileged or protected as provided under federal law, in lieu of providing the Record, provided Respondent complies with Paragraph 41.b, and except as provided in Paragraph 41.c.

b. If Respondent asserts a claim of privilege or protection, Respondent shall provide EPA with the following information regarding such Record: its title; its date; the name, title, affiliation (e.g., company or firm), and address of the author, of each addressee, and of each recipient; a description of the Record's contents; and the privilege or protection asserted. If a claim of privilege or protection applies only to a portion of a Record, Respondent shall provide the Record to EPA in redacted form to mask the privileged or protected portion only. Respondent shall retain all Records that it claims to be privileged or protected until EPA has had a reasonable opportunity to dispute the privilege or protection claim and any such dispute has been resolved in Respondent's favor.

c. Respondent may make no claim of privilege or protection regarding: (1) any data regarding the Site required by the Work, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, radiological, or engineering data, or the portion of any other Record that evidences conditions at or around the Site; or (2) the portion of any Record that Respondent is required to create or generate pursuant to this Settlement.

42. **Business Confidential Claims.** Respondent may assert that all or part of a Record provided to EPA under this Section or Section XIII (Record Retention) is business confidential to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Respondent shall segregate and clearly identify all Records or parts thereof submitted under this Settlement for which Respondent asserts business confidentiality claims. Records claimed as confidential business information will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality

accompanies Records when they are submitted to EPA, or if EPA has notified Respondent that the Records are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such Records without further notice to Respondent.

43. Notwithstanding any provision of this Settlement, EPA retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XIII. RECORD RETENTION

44. Until 10 years after EPA provides Respondent with notice, pursuant to Section XXVIII (Notice of Completion of Work), that all Work has been fully performed in accordance with this Settlement, Respondent shall preserve and retain all non-identical copies of Records (including Records in electronic form) now in its possession or control, or that come into its possession or control, that relate in any manner to its liability under CERCLA with regard to the Site. Respondent must retain, in addition, all Records that relate to the liability of any other person under CERCLA with respect to the Site. Respondent must also retain, and instruct its contractors and agents to preserve, for the same period of time specified above all non-identical copies of the last draft or final version of any Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to the performance of the Work, provided, however, that Respondent (and its contractors and agents) must retain, in addition, copies of all data generated during the performance of the Work and not contained in the aforementioned Records required to be retained. Each of the above record retention requirements shall apply regardless of any corporate retention policy to the contrary.

45. At the conclusion of the document retention period, Respondent shall notify EPA at least 90 days prior to the destruction of any such Records, and, upon request by EPA, and except as provided in Paragraph 41 (Privileged and Protected Claims), Respondent shall deliver any such Records to EPA.

46. Respondent certifies that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by EPA or the State and that it has fully complied with any and all EPA and State requests for information regarding the Site pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927, and state law.

XIV. COMPLIANCE WITH OTHER LAWS

47. Nothing in this Settlement limits Respondent's obligations to comply with the requirements of all applicable state and federal laws and regulations when performing the Work. No local, state, or federal permit shall be required for any portion of the Work conducted entirely on-site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work), including studies, if the action is

selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Work that is not on-site requires a federal or state permit or approval, Respondent shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. Respondent may seek relief under the provisions of Section 59 (Force Majeure) for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval required for the Work, provided that Respondent has submitted timely and complete applications and taken all other actions necessary to obtain all such permits or approvals. This Settlement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XV. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

48. **Emergency Response.** If any event occurs during performance of the Work that causes or threatens to cause a release of Waste Material on, at, or from the Site that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action to prevent, abate, or minimize such release or threat of release. Respondent shall take these actions in accordance with all applicable provisions of this Settlement, including, but not limited to, the Health and Safety Plan. Respondent shall also immediately notify EPA's RPM or, in the event of his/her unavailability, the Regional Duty Officer at (303) 293-1788 and the National Response Center at 1 (800) 424-8802 of the incident or Site conditions. In the event that Respondent fails to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Respondent shall reimburse EPA for all costs of such response action not inconsistent with the NCP pursuant to Section XVI (Payment of Response Costs).

49. **Release Reporting.** Upon the occurrence of any event during performance of the Work that Respondent is required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA), 42 U.S.C. § 11004, Respondent shall immediately orally notify EPA's RPM or, in the event of his/her unavailability, the Regional Duty Officer at (303) 293-1788 and the National Response Center at 1 (800) 424-8802. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, and Section 304 of the EPCRA, 42 U.S.C. § 11004.

50. For any event covered under this Section, Respondent shall submit a written report to EPA within 7 days after the onset of such event, setting forth the action or event that occurred and the measures taken, and to be taken, to mitigate any release or threat of release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release or threat of release.

XVI. PAYMENT OF RESPONSE COSTS

51. **Payments for Future Response Costs.** Respondent shall pay to EPA all Future Response Costs not inconsistent with the NCP.

52. **Periodic Bill.** On a periodic basis, EPA will send Respondent an electronic billing notification, which includes direct and indirect costs incurred by EPA, its contractors,

subcontractors, and the United States Department of Justice. The electronic billing notification will be sent to the following recipient and email address: Kristen Stevens at kmsteven@up.com.

a. Respondent shall make all payments within 30 days after Respondent's receipt of each electronic bill. Respondent shall make payments using one of the payment methods set forth in the electronic billing notification.

b. Respondent may change its electronic billing address by providing notice of the new address to:

Financial Management Officer
US EPA Region 8 (TMS-FMP)
1595 Wynkoop Street
Denver, Colorado 80202

c. If the electronic billing notification is undeliverable, EPA will mail a paper copy of the billing notification to Respondent to: Kristen Stevens, Union Pacific Railroad – ICTF, 2401 E Sepulveda Blvd., Long Beach, CA 90810.

53. The total amount to be paid by Respondent pursuant to Paragraph 52 (Periodic Bill) shall be deposited by EPA in the Colorado Smelter Site Special Account to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

54. **Interest.** In the event that any payment for Future Response Costs is not made by the date required, Respondent shall pay Interest on the unpaid balance. The Interest on Future Response Costs shall begin to accrue on the date after the payment of the bill is due. The Interest shall accrue through the date of Respondent's payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XIX (Stipulated Penalties).

55. **Contesting Future Response Costs.** Respondent may initiate the procedures of Section XVII (Dispute Resolution) regarding payment of any Future Response Costs billed under Paragraph 51 (Payments for Future Response Costs) if Respondent determines that EPA has made a mathematical error or included a cost item that is not within the definition of Future Response Costs, or if Respondent believes EPA incurred excess costs as a direct result of an EPA action that was inconsistent with a specific provision or provisions of the NCP. To initiate such a dispute, Respondent shall submit a Notice of Dispute in writing to EPA's RPM within 30 days after receipt of the bill. Any such Notice of Dispute shall specifically identify the contested Future Response Costs and the basis for objection. If Respondent submits a Notice of Dispute, Respondent shall within the 30-day period, also as a requirement for initiating the dispute, (a) pay all uncontested Future Response Costs to EPA in the manner described in Paragraph 51, and (b) establish, in a duly chartered bank or trust company, an interest-bearing escrow account that is insured by the Federal Deposit Insurance Corporation (FDIC) and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Respondent shall send to EPA's RPM a copy of the transmittal letter and evidence of payment of

the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. If EPA prevails in the dispute, within 5 days after the resolution of the dispute, Respondent shall pay the sums due (with accrued interest) to EPA in the manner described in Paragraph 51. If Respondent prevails concerning any aspect of the contested costs, Respondent shall pay that portion of the costs (plus associated accrued interest) for which it did not prevail to EPA in the manner described in Paragraph 51. Respondent shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XVII (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondent's obligation to reimburse EPA for its Future Response Costs.

XVII. DISPUTE RESOLUTION

56. Unless otherwise expressly provided for in this Settlement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement. The Parties shall attempt to resolve any disagreements concerning this Settlement expeditiously and informally.

57. **Informal Dispute Resolution.** If Respondent objects to any EPA action taken pursuant to this Settlement, including billings for Future Response Costs, Respondent shall send EPA a written Notice of Dispute describing the objection(s) within 7 days after such action. EPA and Respondent shall have 30 days from EPA's receipt of Respondent's Notice of Dispute to resolve the dispute through informal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement.

58. **Formal Dispute Resolution.** If the Parties are unable to reach an agreement within the Negotiation Period, Respondent shall, within 20 days after the end of the Negotiation Period, submit a statement of position to EPA's RPM. EPA may, within 20 days thereafter, submit a statement of position. Thereafter, an EPA management official at the Assistant Regional Administrator level or higher will issue a written decision on the dispute to Respondent. EPA's decision shall be incorporated into and become an enforceable part of this Settlement. Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs.

59. Except as provided in Paragraph 55 (Contesting Future Response Costs) or as agreed by EPA, the invocation of formal dispute resolution procedures under this Section does not extend, postpone, or affect in any way any obligation of Respondent under this Settlement. Except as provided in Paragraph 69, stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Settlement. In the event that Respondent does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XIX (Stipulated Penalties).

XVIII. FORCE MAJEURE

60. “Force Majeure” for purposes of this Settlement, is defined as any event arising from causes beyond the control of Respondent, of any entity controlled by Respondent, or of Respondent’s contractors that delays or prevents the performance of any obligation under this Settlement despite Respondent’s best efforts to fulfill the obligation. The requirement that Respondent exercise “best efforts to fulfill the obligation” includes using best efforts to anticipate any potential force majeure and best efforts to address the effects of any potential force majeure (a) as it is occurring and (b) following the potential force majeure such that the delay and any adverse effects of the delay are minimized to the greatest extent possible. “Force majeure” does not include financial inability to complete the Work or increased cost of performance.

61. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement, Respondent shall notify EPA’s RPM, Sabrina Forrest at (303) 312-6484 orally or, in his/her absence, the alternate EPA RPM, or, in the event both of EPA’s designated representatives are unavailable, the Director of the Waste Management Division, EPA Region 8, within 48 hours of when Respondent first knew that the event might cause a delay. Within 5 days thereafter, Respondent shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent’s rationale for attributing such delay to a force majeure; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health or welfare, or the environment. Respondent shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure. 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. Failure to comply with the above requirements regarding an event shall preclude Respondent from asserting any claim of force majeure regarding that event, provided, however, that if EPA, despite the late or incomplete notice, is able to assess to its satisfaction whether the event is a force majeure under Paragraph 60 and whether Respondent has exercised its best efforts under Paragraph 60, EPA may, in its unreviewable discretion, excuse in writing Respondent’s failure to submit timely or complete notices under this Paragraph.

62. If EPA agrees that the delay or anticipated delay is attributable to a force majeure, the time for performance of the obligations under this Settlement that are affected by the force majeure will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure, EPA will notify Respondent in writing of its decision. If EPA agrees that the delay is attributable to a force majeure, EPA will notify Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure.

63. If Respondent elects to invoke the dispute resolution procedures set forth in Section XVII (Dispute Resolution), Respondent shall do so no later than 15 days after receipt of

EPA’s notice. 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 best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of Paragraphs 60 and 61. If Respondent carries this burden, the delay at issue shall be deemed not to be a violation by Respondent of the affected obligation of this Settlement identified to EPA.

64. The failure by EPA to timely complete any obligation under the Settlement is not a violation of the Settlement, provided, however, that if such failure prevents Respondent from meeting one or more deadlines under the Settlement, Respondent may seek relief under this Section.

XIX. STIPULATED PENALTIES

65. Respondent shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 66.a and 67 for failure to comply with the obligations specified in Paragraphs 66.b and 67, unless excused under Section XVIII (Force Majeure). “Comply” as used in the previous sentence includes compliance by Respondent with all applicable requirements of this Settlement, within the deadlines established under this Settlement.

66. Stipulated Penalty Amounts: Payments, Major Deliverables, and Other Milestones

a. The following stipulated penalties shall accrue per violation per day for any noncompliance with any obligation identified in Paragraph 66.b:

Penalty Per Violation Per Day	Period of Noncompliance
\$ 250	1st through 14th day
\$ 1,000	15th through 30th day
\$ 5,000	31st day and beyond

b. Obligations

(1) Payment of any amount due under Section XVI (Payment of Response Costs).

(2) Establishment of an escrow account to hold any disputed Future Response Costs under Paragraph 55 (Contesting Future Response Costs).

67. **Stipulated Penalty Amounts: Other Deliverables.** The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate deliverables required by this Settlement, other than those specified in Paragraph 66.b:

Penalty Per Violation Per Day	Period of Noncompliance
\$ 200	1st through 14th day
\$ 500	15th through 30th day
\$ 1,000	31st day and beyond

68. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 79 (Work Takeover), Respondent shall be liable for a stipulated penalty in the amount of \$75,000. Stipulated penalties under this Paragraph are in addition to the remedies available to EPA under Paragraph 79 (Work Takeover).

69. All 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 the correction of the noncompliance or completion of the activity. Penalties shall continue to accrue during any dispute resolution period and shall be paid within 15 days after the agreement or the receipt of EPA's decision. However, stipulated penalties shall not accrue: (a) with respect to a deficient submission under Section IX (Submission and Approval of Deliverables), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondent of any deficiency; and (b) with respect to a decision by the EPA Management Official at the Assistant Regional Administrator level or higher, under Paragraph 58 (Formal Dispute Resolution), during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the EPA Management Official issues a final decision regarding such dispute. Nothing in this Settlement shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement.

70. Following EPA's determination that Respondent has failed to comply with a requirement of this Settlement, EPA may give Respondent written notification of the failure and describe the noncompliance. EPA may send Respondent a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondent of a violation.

71. All penalties accruing under this Section shall be due and payable to EPA within 30 days after Respondent's receipt from EPA of a demand for payment of the penalties, unless Respondent invokes the Dispute Resolution procedures under Section XVII (Dispute Resolution) within the 30-day period. All payments to EPA under this Section shall indicate that the payment is for stipulated penalties and shall be made in accordance with Paragraph 51 (Payments for Future Response Costs). Respondent shall send to EPA, in accordance with Paragraph 19, a notice of this payment.

72. If Respondent fails to pay stipulated penalties when due, Respondent shall pay Interest on the unpaid stipulated penalties as follows: (a) if Respondent has timely invoked dispute resolution such that the obligation to pay stipulated penalties has been stayed pending the outcome of dispute resolution, Interest shall accrue from the date stipulated penalties are due pursuant to Paragraph 69 until the date of payment; and (b) if Respondent fails to timely invoke dispute resolution, Interest shall accrue from the date of demand under Paragraph 71 until the date of payment. If Respondent fails to pay stipulated penalties and Interest when due, the United States may institute proceedings to collect the penalties and Interest.

73. The payment of penalties and Interest, if any, shall not alter in any way Respondent's obligation to complete performance of the Work required under this Settlement.

74. Nothing in this Settlement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of

Respondent's violation of this Settlement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3), provided, however, that EPA shall not seek civil penalties pursuant Section 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided in this Settlement, except in the case of willful violation of this Settlement or in the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 79 (Work Takeover).

75. 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 Settlement.

XX. COVENANTS BY EPA

76. Except as provided in Section XXI (Reservations of Rights by EPA), EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and Future Response Costs. These covenants shall take effect upon the Effective Date. These covenants are conditioned upon the complete and satisfactory performance by Respondent of its obligations under this Settlement. These covenants extend only to Respondent and do not extend to any other person.

XXI. RESERVATIONS OF RIGHTS BY EPA

77. Except as specifically provided in this Settlement, nothing in this Settlement shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, 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 on, at, or from the Site. Further, nothing in this Settlement shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.

78. The covenant not to sue set forth in Section XX (Covenants by EPA) above does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:

- a. liability for failure by Respondent to meet a requirement of this Settlement;
- b. liability for costs not included within the definition of Future Response Costs;
- c. liability for performance of response action other than the Work;

- d. criminal liability;
- e. liability for violations of federal or state law that occur during or after implementation of the Work;
- f. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
- g. liability arising from the past, present, or future disposal, release or threat of release of Waste Material outside of the Site; and
- h. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site.

79. Work Takeover

a. In the event EPA determines that Respondent: (1) has ceased implementation of any portion of the Work; (2) is seriously or repeatedly deficient or late in its performance of the Work; or (3) is implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may issue a written notice (“Work Takeover Notice”) to Respondent. Any Work Takeover Notice issued by EPA (which writing may be electronic) will specify the grounds upon which such notice was issued and will provide Respondent a period of 10 days within which to remedy the circumstances giving rise to EPA’s issuance of such notice.

b. If, after expiration of the 10-day notice period specified in Paragraph 79.a, Respondent has not remedied to EPA’s satisfaction the circumstances giving rise to EPA’s issuance of the relevant Work Takeover Notice, EPA may at any time thereafter assume the performance of all or any portion(s) of the Work as EPA deems necessary (“Work Takeover”). EPA will notify Respondent in writing (which writing may be electronic) if EPA determines that implementation of a Work Takeover is warranted under this Paragraph 79.b.

c. Respondent may invoke the procedures set forth in Section XVII (Dispute Resolution) to dispute EPA’s implementation of a Work Takeover under Paragraph 79.b. However, notwithstanding Respondent’s invocation of such dispute resolution procedures, and during the pendency of any such dispute, EPA may in its sole discretion commence and continue a Work Takeover under Paragraph 79.b until the earlier of (1) the date that Respondent remedies, to EPA’s satisfaction, the circumstances giving rise to EPA’s issuance of the relevant Work Takeover Notice, or (2) the date that a written decision terminating such Work Takeover is rendered in accordance with Paragraph 58 (Formal Dispute Resolution).

d. Notwithstanding any other provision of this Settlement, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XXII. COVENANTS BY RESPONDENT

80. Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future Response Costs, or this Settlement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the EPA Hazardous Substance Superfund through Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claims under Sections 107 and 113 of CERCLA, Section 7002(a) of RCRA, 42 U.S.C. § 6972(a), or state law regarding the Work, Future Response Costs, and this Settlement; or

c. any claim arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the Colorado Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, or at common law.

81. These covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Section XXI (Reservations of Rights by EPA), other than in Paragraph 78.a (liability for failure to meet a requirement of the Settlement), 78.d (criminal liability), or 78.e (liability for violations of federal or state law), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

82. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

83. Respondent reserves, and this Settlement is without prejudice to, claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, and brought pursuant to any statute other than CERCLA or RCRA and for which the waiver of sovereign immunity is found in a statute other than CERCLA or RCRA, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States, as that term is defined in 28 U.S.C. § 2671, while acting within the scope of his or her office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, the foregoing shall not include any claim based on EPA's selection of response actions, or the oversight or approval of Respondent's deliverables or activities.

XXIII. OTHER CLAIMS

84. By issuance of this Settlement, 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 shall not be deemed a party to any contract entered into by

Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Settlement.

85. Except as expressly provided in Section XX (Covenants by EPA), nothing in this Settlement constitutes a satisfaction of or release from any claim or cause of action against Respondent or any person not a party to this Settlement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages, and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

86. No action or decision by EPA pursuant to this Settlement shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXIV. EFFECT OF SETTLEMENT/CONTRIBUTION

87. Nothing in this Settlement shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Settlement. Except as provided in Section XXII (Covenants by Respondent), each of the Parties expressly reserves any and all rights (including, but not limited to, pursuant to Section 113 of CERCLA, 42 U.S.C. § 9613), defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto. Nothing in this Settlement diminishes the right of the United States, pursuant to Section 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2)-(3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

88. The Parties agree that this Settlement constitutes an administrative settlement pursuant to which Respondent has, as of the Effective Date, resolved liability to the United States within the meaning of Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), and is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, or as may be otherwise provided by law, for the “matters addressed” in this Settlement. The “matters addressed” in this Settlement are the Work and Future Response Costs.

89. The Parties further agree that this Settlement constitutes an administrative settlement within the meaning of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which Respondent has, as of the Effective Date, resolved liability to the United States for Work and Future Response Costs.

90. Respondent shall, with respect to any suit or claim brought by it for matters related to this Settlement, notify EPA in writing no later than 60 days prior to the initiation of such suit or claim. Respondent also shall, with respect to any suit or claim brought against it for matters related to this Settlement, notify EPA in writing within 10 days after service of the complaint or claim upon it. In addition, Respondent shall notify EPA within 10 days after service or receipt of any Motion for Summary Judgment and within 10 days after receipt of any order from a court setting a case for trial, for matters related to this Settlement.

91. In any subsequent administrative or judicial proceeding initiated by EPA, or by the United States on behalf of EPA, for injunctive relief, recovery of response costs, or other relief relating to the Site, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenant by EPA set forth in Section XX (Covenants By EPA).

XXV. INDEMNIFICATION

92. The United States does not assume any liability by entering into this Settlement or by virtue of any designation of Respondent as EPA's authorized representatives under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e), and 40 C.F.R. § 300.400(d)(3). Respondent shall indemnify, save, and hold harmless the United States, its officials, agents, employees, contractors, subcontractors, and representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, or subcontractors, and any persons acting on Respondent's behalf or under its control, in carrying out activities pursuant to this Settlement. Further, Respondent agrees to pay the United States all costs it incurs, including but not limited to attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Settlement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Settlement. Neither Respondent nor any such contractor shall be considered an agent of the United States.

93. The United States shall give Respondent notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondent prior to settling such claim.

94. Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

XXVI. INSURANCE

95. No later than 30 days before commencing any of the Work, Respondent shall secure, and shall maintain until the first anniversary after issuance of Notice of Completion of Work pursuant to Section XXVIII (Notice of Completion of Work), commercial general liability

insurance with limits of liability of \$1 million per occurrence and in the aggregate, automobile liability insurance with limits of liability of \$1 million combined single limit per accident, and umbrella liability insurance with limits of liability of \$5 million in excess of the required commercial general liability and automobile liability limits. In addition, for the duration of the Settlement, Respondent shall provide EPA with certificates of such insurance. Respondent shall resubmit such certificates each year on the anniversary of the Effective Date. In addition, for the duration of the Settlement, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing Work on behalf of Respondent in furtherance of this Settlement. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in a lesser amount, then, with respect to the contractor or subcontractor, Respondent need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor. Respondent shall ensure that all submittals to EPA under this Paragraph identify the Colorado Smelter Superfund Site, Pueblo, Colorado and the EPA docket number for this action.

XXVII. MODIFICATION

96. EPA's RPM may modify any plan or schedule in writing or by oral direction. Any oral modification will be memorialized in writing by EPA promptly, but shall have as its effective date the date of EPA's RPM's oral direction. Any other requirements of this Settlement may be modified in writing by mutual agreement of the Parties.

97. If Respondent seeks permission to deviate from any approved work plan or schedule, Respondent's Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from EPA's RPM pursuant to Paragraph 96.

98. No informal advice, guidance, suggestion, or comment by EPA's RPM or other EPA representatives regarding any deliverable submitted by Respondent shall relieve Respondent of its obligation to obtain any formal approval required by this Settlement, or to comply with all requirements of this Settlement, unless it is formally modified.

XXVIII. NOTICE OF COMPLETION OF WORK

99. When EPA determines that all Work has been fully performed in accordance with this Settlement, with the exception of any continuing obligations required by this Settlement, including payment of Future Response Costs and Record Retention, EPA will provide written notice to Respondent. If EPA determines that any Work has not been completed in accordance with this Settlement, EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent modify the Work Plan, if appropriate, in order to correct such deficiencies. Respondent shall implement the modified and approved Work Plan and shall submit a modified Final Work Report in accordance with the EPA notice. Failure by Respondent to implement the approved modified Work Plan shall be a violation of this Settlement.

XXIX. INTEGRATION/APPENDICES

100. This Settlement and its appendices constitutes the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement. The Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this Settlement. The following appendices are attached to and incorporated into this Settlement:

- a. "Appendix A" is the map of the Site.
- b. "Appendix B" is the approved Work Plan.

XXX. EFFECTIVE DATE

101. This Settlement shall be effective on the day the Settlement is signed by the Regional Administrator or his/her delegate.

IT IS SO AGREED AND ORDERED:

U.S. ENVIRONMENTAL PROTECTION AGENCY:

Dated

Betsy Smidinger
Director, Superfund and Emergency Management Division
U.S. Environmental Protection Agency, Region 8

IT IS SO AGREED AND ORDERED:

U.S. ENVIRONMENTAL PROTECTION AGENCY:

Dated

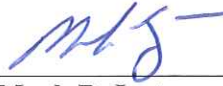
Christopher A. Thompson
Associate Regional Counsel for Enforcement
Office of Regional Counsel
U.S. Environmental Protection Agency, Region 8

Signature Page for Settlement Regarding Colorado Smelter Superfund Site

FOR UNION PACIFIC RAILROAD COMPANY:

9/27/2022

Dated



Mark D. Lutz

AVP Fuel & Environmental Management

Union Pacific Railroad Company

1400 Douglas Street

Mail Stop 0780

Omaha, NE 68179

Appendix A



100011536



Esri Community Maps Contributors, City of Pueblo, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar

Colorado Smelter Superfund Site Pueblo, Colorado

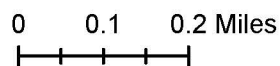


NAD 1983 State Plane Colorado South FIPS 0503 Feet





Imagery: ESRI World Imagery accessed March 2022.

Data: City and County of Pueblo

Map updated 3/1/2022. Created by CEB.



Legend

-  Study Area Boundary
-  Operable Units
-  Community Properties (OU1)
-  Former Smelter Area and Undeveloped Areas (OU2)

Appendix B



Focused Site Characterization (Colorado Smelter) UPRR Work Plan

Union Pacific Railroad Company
Colorado Smelter Site
Pueblo, Colorado

FINAL

August 29, 2022

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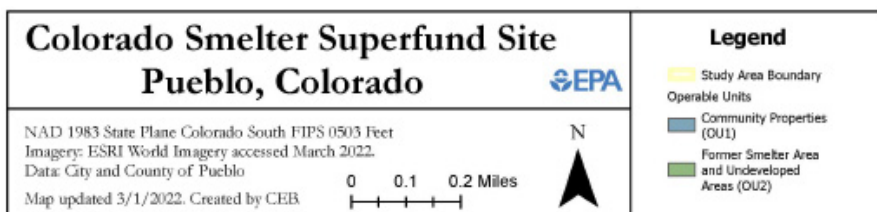
Acronyms and abbreviations

CDPHE	Colorado Department of Public Health and Environment
COC	chain-of-custody
EBV	Ecological Benchmark Values
EPA	Environmental Protection Agency
MCL	Maximum Contaminant Level
MS/MSD	Matrix Spike, Matrix Spike Duplicate
OU	Operable Unit
QA/QC	Quality assurance/quality control
RI	Remedial Investigation
ROW	Right of Way
RSL	Regional Screening Levels
SPLP	Synthetic Precipitation Leaching Procedure
TAL	Target Analyte List
UFP QAPP	Uniform Federal Policy for Quality Assurance Project Plans
UPRR	Union Pacific Railroad Company

1. Introduction

This focused site characterization work plan defines the scope and associated managing documentation for Union Pacific Railroad Company (UPRR) to characterize the nature and extent of contamination within the UPRR right-of-way (ROW) within the study area of the Colorado Smelter Superfund Site in Pueblo, Colorado (Figure 1). The presented scope incorporates technical discussions with the U.S. Environmental Protection Agency (EPA) project team in Fall 2021 and early 2022.

Figure 1. Location Map



2. Purpose and Objectives

The purpose of the focused site characterization is to obtain valid analytical data to assess contaminant concentrations within the UPRR ROW. Analytical data will be used to establish the nature and extent of Colorado Smelter Slag (e.g., the olive-gray to black mining-ore smelter Slag material that appears to have originated from the former Colorado Smelter operations) (Slag) to assess the potential for site-specific worker exposure, ecological risk, and potential contaminant migration to groundwater.

The focused site characterization presented in this Work Plan addresses the UPRR ROW within the study area of the Colorado Smelter Site. The scope is limited to evaluating the ROW from E. Mesa Ave. on the south, to the I-25 cross over on the north. The objective of the focused site characterization is to gather potential contaminant level information on the Slag within the UPRR ROW to determine the concentrations of contaminants associated with the Slag material. The specific objectives of the focused site characterization are to:

- Collect samples of Slag material that comprises the Slag beneath and within the operating railroad ROW to determine the presence or absence and concentrations of target analyte list (TAL) metals. TAL metals are a list of 23 inorganic target analytes defined by the EPA Contract Laboratory Program.
- Slag samples will be submitted to the laboratory for TAL metals and Synthetic Precipitation Leaching Procedure (SPLP) analyses. SPLP is used to determine the potential for metals within the Slag to leach into groundwater and surface water based on geographic location. As such, extraction fluid #2, which is representative of precipitation pH levels west of the Mississippi River, will be used. SPLP analysis will be run for the metals identified in Table 2 that are present in measurable concentrations in the Slag samples.

3. Site Background and Physical Setting

The Colorado Smelter Superfund Site is in south central Pueblo, Colorado and includes the historic Colorado Smelter, previously owned and operated by the American Smelting and Refining Company (ASARCO), and residential, commercial, school district, and City owned properties within a one-half mile radius of the former smelter. The Colorado Smelter operated from 1883 to 1908, and portions of the facility's foundation and waste piles are still present. The site is in the Southwest Quarter of the Northwest Quarter of Section 6, Township 21 South, Range 64 West. The approximate coordinates are 38° 14' 55" north latitude, 104° 36' 30" west longitude.

The Site currently comprises two operable units (OUs): OU1, Community Properties, and OU2, the Former Smelter Area. OU1 and OU2 are depicted in Figure 1. This focused site characterization will address the UPRR ROW, which is located within the Colorado Smelter Site study area (Figure 2). The historic Colorado Smelter footprint (OU2) consists of an approximately 700,000 square-foot (16-acres) Slag pile and several more acres of active commercial businesses that overlie the former smelter footprint. To date, no sampling has been completed on the UPRR ROW.

Site background, history, and site description will be presented in Uniform Federal Policy Quality Assurance Project Plans (UFP QAPP) Worksheet 11.

Figure 2. UPRR Track ROW



3.1 Site Description

The waste piles and residual smelter Slag deposits located at the former Colorado Smelter site contain Slag ranging in size from consolidated outcrops to very coarse gravelly materials and silt. Portions of the Colorado Smelter Slag deposits form a high vertical escarpment visible from Santa Fe Avenue that covers approximately 25 acres. The UPRR railroad tracks, and possibly portions of Interstate 25, appear to have been constructed on portions of these historic smelter Slag deposits.

The section of the railroad ROW within the study area of OU2 is situated on the top of a 50+ foot thickness of Slag over most of its length. This material is very dense and has slump features and evidence of sub-horizontal bedding. These features lead UPRR to a hypothesis that this Slag was deposited in a semi-fluid nature during smelting operations. Based upon UPRR's site-related observations, it appears that the top of the Slag deposit was cut and leveled, and other areas filled in prior to original placement of the railroad track.

The active railroad tracks in the ROW are secured in place by ballast as required by 49 C.F.R. § 213.103. Ballast is material that supports the track, distributes the load, restrains the track's movement laterally, longitudinally, and vertically under dynamic loads, and provides drainage. Without proper ballast, the track can move under dynamic load and water can accumulate around the track, weakening the track and causing a derailment.

In general, for the section of the railroad ROW within the study area of OU2, the supportive ballast section for the active tracks is approximately 30 feet wide. The depth of ballast varies from approximately 1 inch to 1 foot. Ballast beneath the track is Slag but of a different type than the Colorado Smelter Slag. Based on visual observations, it appears to be 95% steel smelter Slag, which is much lighter in color and weight. The remaining 5% is rounded river gravels. The ballast clasts are distinctly different in appearance from the olive-gray to black mining-ore Slag; the ballast is pinkish-gray, greenish-gray, and light to medium dark gray and highly vesicular. Use of the ballast is consistent with Federal Railroad Administration requirements under 49 C.F.R. Part 213, Subpart D.

3.2 Previous Site Investigation

The Colorado Department of Public Health and Environment (CDPHE) and EPA have conducted multiple investigations at OU2. Previous investigations will be summarized in UFP QAPP Worksheet 13.

The primary sources of contamination at the Site that EPA identified in the risk evaluation for the OU1 early interim action include:

- Fugitive dust and particulate air emissions from the historic smelter stack.

OU2 sources of contamination, which are currently under investigation, include:

- Solid wastes such as Slag and Slag-impacted soils.
- Liquid wastes such as process solutions, acids, and rinsates from historic facility operations.

Findings from past EPA investigations indicate high levels of lead and arsenic in some OU1 residential soil and indoor dust samples, and within OU2.

Site investigations conducted by CDPHE in 2010 collected soil/smelter Slag samples to determine concentrations of heavy metals in Slag materials. CDPHE studies concluded that Slag material contains elevated metals concentrations, particularly lead and arsenic, in comparison to Site background values and risk-based decision criteria (CDPHE 2010).

For groundwater, CDPHE previously concluded it was unlikely that shallow groundwater is used as a drinking water source since the area is serviced with a municipal water supply (CDPHE 2011). CDPHE concluded that the municipal wells appear to be in a different hydro-geologic zone and are likely not impacted by the Colorado Smelter site. Further, on page 13 of the document, CDPHE states that

contamination of the Dakota aquifer is unlikely given the low permeability of the overlying Pierre Shale, and it is “probable there are no targets for the groundwater pathway.” There are no known monitoring wells on the Site, and groundwater will not be sampled within the ROW.

CDPHE collected surface water and sediment samples from the Arkansas River with results indicating there are no elevated metals in the surface water or sediments of the Arkansas River downstream of the Probable Point of Entry from the Colorado Smelter site. CDPHE concluded that “there is no apparent impact on the Arkansas River due to the Colorado Smelter” (CDPHE 2011).

Since listing the Site on the National Priorities List in 2014, EPA has sampled surface soil, surface water, sediment, and pore water within the former smelter area of OU2 (PWT 2020a and PWT 2020b). Elevated levels of heavy metals, including lead and arsenic, have been identified within all media sampled.

4. Workplan Rationale

4.1 Data Quality Objectives

The EPA Data Quality Objective (DQO) Process is a seven-step iterative planning approach used to prepare plans for environmental data collection activities. It provides a systematic approach for defining the criteria that a data collection design should satisfy. Soil (consisting of fine-grained Slag particulates) exposure is the pathway of highest potential concern from the exposed Slag on the UPRR ROW. DQOs for the Work Plan submittal will be presented in UPF QAPP Worksheets 11 and 12. The following are for general presentation and consideration.

STEP 1 – The Problem Statement

The problem statement is: Is contamination from Slag present within the UPRR ROW at concentrations of concern?

STEP 2 – Identifying the Decision

The primary study questions for this investigation are:

- Does the Slag material within the ROW contain concentrations of metals elevated above EPA Regional Screening Levels (RSLs) that are protective of human health?
- Does the Slag material within the ROW contain materials available to leach to groundwater at concentrations greater than EPA RSLs?
- Does the Slag material within the ROW contain concentrations of metals above terrestrial ecological screening values (EBV)?

STEP 3 – Identifying the Decision Inputs

The information that is required to arrive at a decision includes:

- Analytical data from UPRR ROW Slag samples will be collected to determine the level and extent of related metal impacts; and Analytical data from the UPRR ROW Slag samples will be submitted for SPLP to evaluate the potential for site material to leach to groundwater and surface water at levels of concern.

STEP 4 – Define the Study Area Boundaries

The study area boundary is the UPRR ROW in Pueblo, CO along the western edge of the Colorado Smelter Superfund Site from East Mesa Ave. on the south to the I-25 underpass on the north. The study area east-west boundary is the UPRR ROW, which is 100 feet wide throughout the study area section of UPRR ROW (Figure 2).

STEP 5 – Developing Decision Rules

As an initial screening, Slag sample results will be compared to EPA RSLs protective of UPRR worker exposure. SPLP sample results will be compared to the screening levels identified in Table 2 to evaluate the potential for Site contaminants to impact groundwater at levels of concern. Data will be compared to ecological benchmark values protective of terrestrial invertebrates, plants, birds, and mammals. Conceptual site models (CSM) for human health and ecological are presented in Figures 3 and 4, respectively.

STEP 6 – Defining Tolerance Limits on Decision Errors

Slag sample results collected will be compared individually to project specific screening level objectives as defined in Worksheet 15. Performance criteria for analytical methods as defined in Worksheet 15 will require co-located duplicates in the field at 10% to provide a reference for the variability in results associated with the Site. Worksheet 15 of the UFP-QAPP also shows the information required to verify that the laboratory can meet the project-specific screening levels with analytical detection levels (Detection Limit and limit of quantitation LOQ). Additionally, criteria for other QC aspects, as measured by field and lab QC samples (Worksheet #12, #24 and #28), must meet the requirements of the project QAPP and method specific criteria.

STEP 7 – Optimizing the Sampling Design

Sample locations will be identified and described in the EPA-approved Sampling and Analysis Plan. Locations will be selected to best represent the Slag deposit beneath the railroad roadbed and to ensure safety of the sampling personnel. Figure 5 presents site and sampling conditions to be encountered by field staff.

Unbiased samples for total metal concentrations will be collected of the Slag at regular intervals along the ROW. Pseudo-random sampling will be used for collection of ecological samples with a bias toward locations in the southern part of the ROW in grassy/treed areas. All analytical data will be reviewed, verified, and independently validated by a 3rd party to ensure data are acceptable for the intended use.

Figure 3. HHRA CSM

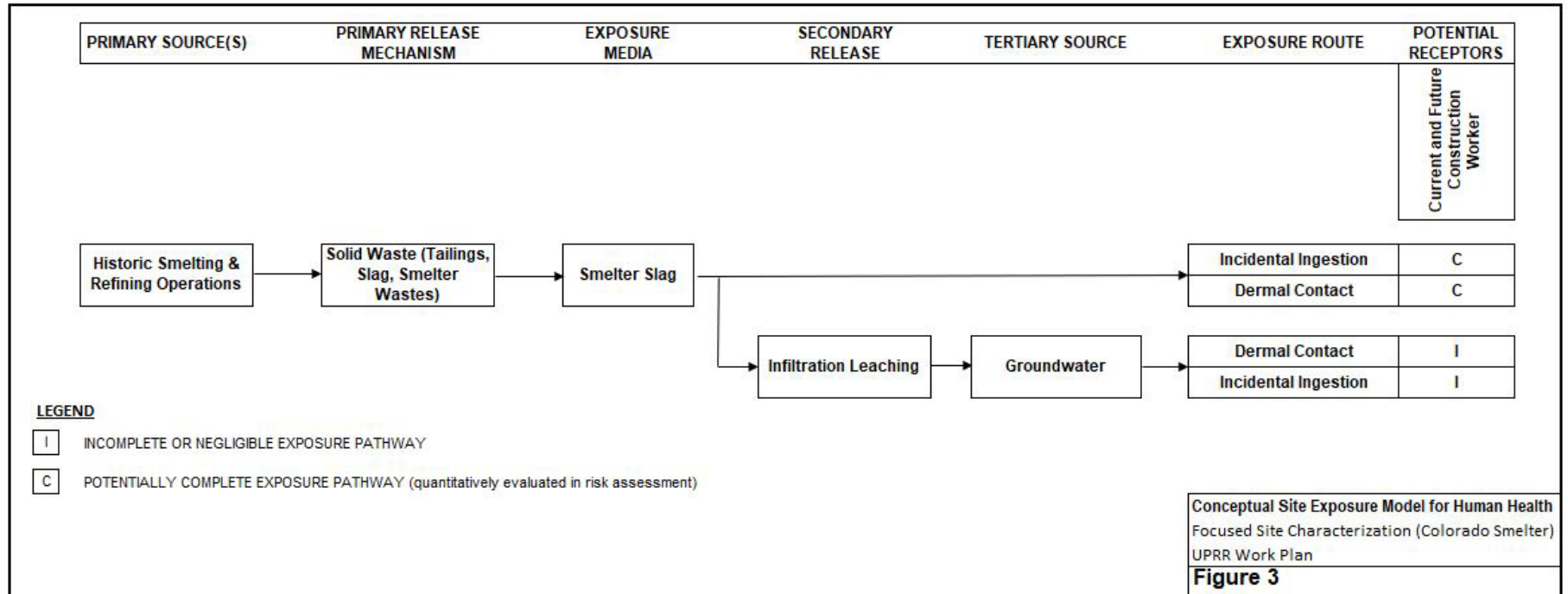


Figure 4. ERA CSM

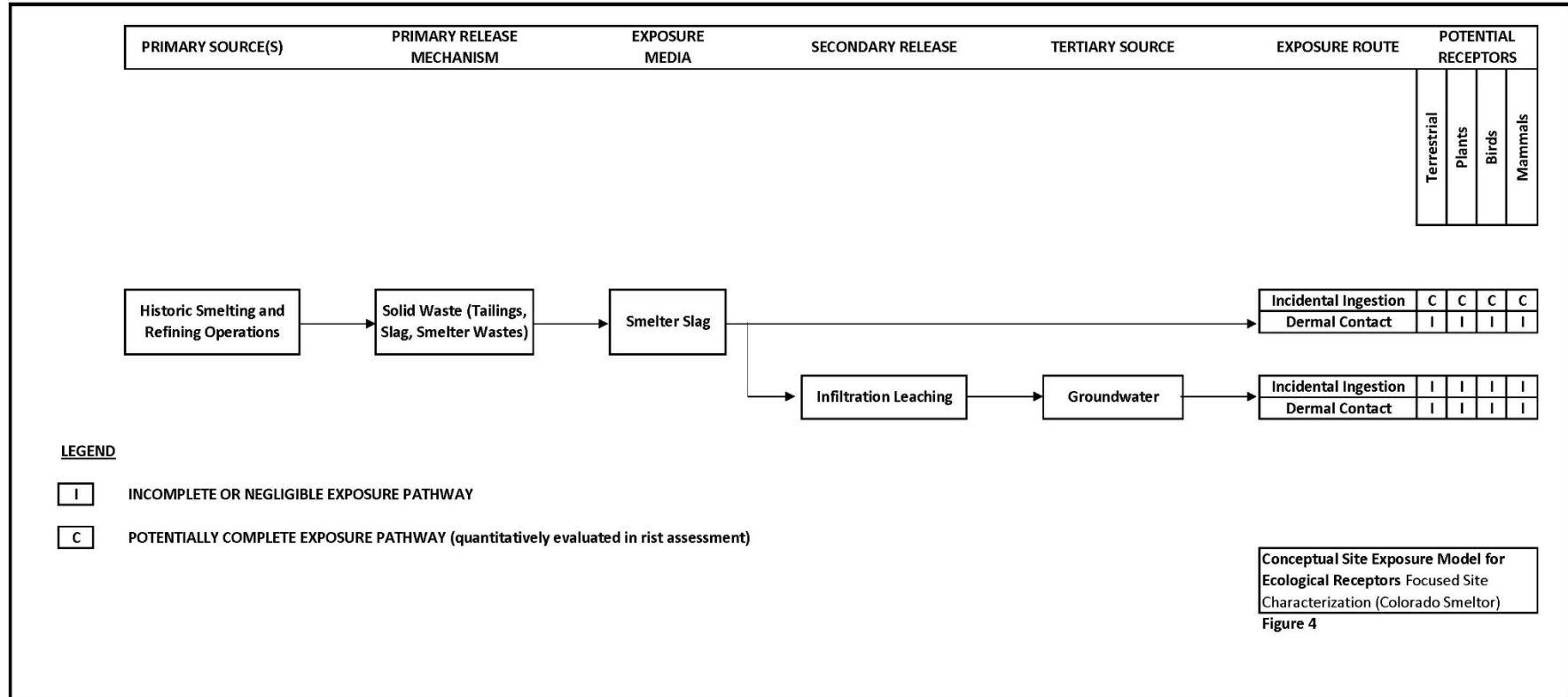


Figure 5. General Colorado Smelter Slag Site Conditions



5. Focused Site Characterization Tasks

5.1 Field Investigation

The goal of the focused site characterization is to identify and define the nature of metals concentrations in the accessible Slag deposit beneath the UPRR ROW roadbed. All analytical data will be reviewed, verified, and independently validated to ensure data are acceptable for the intended use. Sampling tasks will be addressed in greater detail in the UFP QAPP Worksheets 17 through 21.

Sample location selection, as described in the Sampling and Analysis Plan, will bias samples toward areas where Slag is visibly present and will consider safe access for site sampling personnel.

Colorado Smelter Slag Sample:

- Slag samples will be collected from 30 locations for the human health evaluation from within the UPRR ROW and/or Slag escarpment that supports the roadbed. Samples will be collected from the top 0-2-inches of granular Slag particles. For the human health evaluation, Slag samples will consist of 5-point composite samples. Slag samples for human health will be sieved to less than 150 microns and submitted for TAL metals by SW6020 analyses.
- Ten additional Slag samples will be submitted for SPLP analyses. Slag samples for SPLP will be discrete (grab) samples, not composite samples. Slag samples for SPLP will not be sieved to represent potential migration to groundwater from precipitation on Slag in its current natural condition.
- For the ecological evaluation, 15 additional Slag samples will be collected for TAL metals analysis. Ecological samples will focus on the presence of habitat on the east side of the southern end of the UPRR ROW and samples of opportunity elsewhere throughout the ROW. Slag samples for ecological evaluation will be discrete (grab) samples from the top 0-2-inches of the ground surface that will not be sieved but large pieces will be removed so that samples represent materials bioavailable to ecological organisms.

5.2 Sample Analysis

All Slag samples for human health or ecological evaluation will be submitted for TAL metals following EPA SW-846 test method SW6020.

Slag samples submitted for SPLP analyses will follow SPLP extraction method 1312 from the USEPA SW-846 compendium of analytical and test methods. SPLP is a single point leachate test designed to simulate very specific precipitation conditions. Samples will be preliminarily evaluated for solids and particle size. Samples for SPLP will not be ground and will only be analyzed for TAL metals that are positively detected in site samples.

5.3 Data Evaluation

Human exposure, potential leachability to groundwater, and terrestrial ecological receptor exposure are the potential pathways and receptors of concern. A conceptual site model (CSM) for potential human health and ecological risks are presented in Figures 3 and 4, respectively.

Slag analytical data results for total metals will be compared to EPA RSLs protective of worker exposure (Table 1).

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Table 1. Matrix: Slag

Analytical Group: Target Analytes ICP Metals-MS

Table Notes: Total Slag data are reported in mg/kg

Concentration Level: Low-level definitive analysis by SW6020B/SW6010B, SW7470A

Analyte Name	CAS Number	Human Health Limits (composite worker)	Human Health Limits (industrial)	Ecological Limits				PACE Detection Levels	
		RSL	RSL	Plant	Invertebrate	Avian	Mammalian	MDL	Reporting Limit
Aluminum	7429-90-5	1100000	1100000					0.612	5
Antimony	7440-36-0	470	470	11	78	--	2.3	0.0254	0.1
Arsenic	7440-38-2	3	3	18	6.8	15	19	0.011	0.1
Barium	7440-39-3	220000	220000	110	330	720	1800	0.0222	0.1
Beryllium	7440-41-7	2300	2300	2.5	40	--	35	0.0045	0.05
Cadmium	7440-43-9	100	100	32	140	0.29	0.27	0.0064	0.05
Chromium	7440-47-3	6.3/1800000	6.3/1800000	Cr6 (0.35)	Cr6 (0.34)	23	63	0.013	0.1
Cobalt	7440-48-4	350	350	13	--	76	240	0.0084	0.1
Copper	7440-50-8	47000	47000	70	80	14	42	0.005	0.1
Iron	7439-89-6	820000	820000					0.356	5
Lead	7439-92-1	800	800	120	1700	11	93	0.0079	0.1
Magnesium	7439-95-4		-					1.9	5
Manganese	7439-96-5	26000	26000	220	450	1300	1400	0.0238	0.1
Mercury	7439-97-6	46	46					0.0148	0.05
Nickel	7440-02-0			38	280	20	10	0.0067	0.1
Potassium	9/7/7440		-					10.6	50
Selenium	7782-49-2	5800	5800	0.52	4.1	0.71	0.7	0.021	0.1
Silver	7440-22-4	5800	5800	560		2.6	14	0.016	0.05
Sodium	7440-23-5		-					23.5	50
Thallium	7440-28-0	-						0.0143	0.1
Vanadium	7440-62-2	5800	5800	60	--	4.7	290	0.0611	0.1
Zinc	7440-66-6	350000	350000	160	120	47	99	0.073	1

Notes:

MDL Method Detection Limit

mg/kg milligram per kilogram

ICP-MS Inductively Coupled Plasma-Mass Spectrophotometer

RSL Risk Screening Level – Industrial (EPA, 2022)

Ecological Limits from Los Alamos National Laboratories (LANL) database 2021

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SPLP analytical results will be compared to MCLs to assess the potential for Slag material to impact groundwater (Table 2).

Table 2. Slag/SPLP

Analytical Group: Target Analytes ICP Metals

Table Notes: SPLP data from slag are reported in ug/L

Concentration Level: Low-level definitive analysis by SW6020A, SW7470A

Analyte Name	CAS Number	MCL	PACE Detection Levels	
			MDL	Reporting Limit
Aluminum	7429-90-5	-	8.3	50
Antimony	7440-36-0	6	0.12	1.0
Arsenic	7440-38-2	10	0.14	1.0
Barium	7440-39-3	2000	0.38	1.0
Beryllium	7440-41-7	4	0.11	0.50
Cadmium	7440-43-9	5	0.053	0.50
Chromium	7440-47-3	100	0.31	1.0
Cobalt	7440-48-4	-	0.11	1.0
Copper	7440-50-8	1300	0.55	1.0
Iron	7439-89-6	-	6.05	50
Lead	7439-92-1	15	0.20	1.0
Magnesium (SW6010B)	7439-95-4	-	43	50
Manganese	7439-96-5	-	0.16	1
Mercury	7439-97-6	2	0.125	0.2
Nickel	7440-02-0	-	0.18	1
Potassium (SW6010B)	9/7/7440	-	167	500
Selenium	7782-49-2	50	0.18	1
Silver	7440-22-4	-	0.12	0.5
Sodium (SW6010B)	7440-23-5	-	73.2	500
Thallium	7440-28-0	-	0.15	1
Vanadium	7440-62-2	-	0.39	1.0
Zinc	7440-66-6	-	1.7	10

Notes:

MCL Method Contaminant Level (EPA, 2009)

MDL Method Detection Limit

µg/L Microgram Per Liter

ICP-MS Inductively Coupled Plasma

Analytical results will be compared to EBVs protective of terrestrial invertebrates, plants, birds, and mammals. Ecological benchmark values from Los Alamos National Laboratories and Oak Ridge National Laboratories will be used for the ecological screening.

Data evaluation that includes presentation of chemical specific RSLs and EBVs will be presented in the UFP QAPP Worksheet 15.

6. Equipment Decontamination

Procedures will be implemented to minimize cross-contamination between Slag sampling locations if the presence of gross environmental contamination is suspected. All equipment will be decontaminated prior to use and between locations as necessary. Use of disposable equipment will be prioritized to minimize the need for decontamination. Equipment decontamination will be addressed in UFP QAPP Worksheet 22.

7. Laboratories

Pace Analytical Laboratories, 9608 Loiret Blvd, Lenexa, Kansas 66219, a nationally accredited laboratory will be used for chemical analysis of collected site samples. Samples will be preserved as directed by the laboratory. Analytical procedures, calibration procedures, and inspection procedures will be addressed in UFP QAPP Worksheets 23 through 25.

8. Sample Documentation, Handling, and Custody Requirements

Data regarding each sample collected will be documented in field logbooks or sample collection forms. Sample collection, documentation, handling, and tracking will be further detailed in UFP QAPP Worksheets 26, 27, 29, and 30. Key information will include:

- Date and time of sample collection
- Location ID of sample collection site
- Sample Depth
- Sampler name
- Sample sieving requirement
- Analyses requested
- Any special circumstances that influenced sample collection.

Each sample will be labeled with a unique sample number, corresponding to the date and location. A chain-of-custody (COC) form will accompany every shipment of samples to the analytical laboratory. The purpose of the form is to establish the documentation necessary to trace possession from the time of collection to final disposal, and to identify the type of analysis requested. Corrections to the COC record will be initialed and dated by the person making the corrections. Each COC form will include signatures of the appropriate individuals indicated on the form. The originals will accompany the samples to the laboratory, and copies documenting each custody change will be recorded and kept on file. When shipping samples to an analytical laboratory, the COC will indicate:

- Number of containers and sample preservative type
- Methods required and expedited turnaround times
- Date and time of sample relinquishment

Required paperwork, including sample container labels, chain-of-custody forms, custody seals, and shipping package labels will be fully completed in ink prior to shipping of the samples to the laboratory.

9. Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) sample preservation and handling protocol, chain-of-custody control, analytical procedures, field, and laboratory QA/QC protocol will be followed. QA/QC protocol shall include:

- One duplicate will be collected for each analytical batch, with a minimum of 1 per 20 samples.
- One matrix spike, matrix spike duplicate (MS/MSD) will be collected per analytical batch with a minimum of 1 per 20 samples.
- Upon request, UPRR will provide a split or duplicate sample to EPA or its authorized representatives.

Quality control samples will be further discussed in UFP QAPP Worksheet 28.

10. References

Colorado Department of Public Health and Environment (CDPHE). June 2011. Analytical Results Report Colorado Smelter, Pueblo Colorado.

Colorado Department of Public Health and Environment (CDPHE). May 2010. Sampling and Analysis Plan Colorado Smelter, Pueblo Colorado.

Pacific Western Technologies, Ltd (PWT). December 2020a. Technical Memorandum, Operable Unit 2 Surficial Soil Data Summary, DRAFT.

Pacific Western Technologies, Ltd (PWT). December 2020b. Technical Memorandum, Operable Unit 2 Surface Water, Pore Water, and Sediment Data Summary, DRAFT.