Summer 7-25-2023

Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites – Field Sampling Plan (FSP) BRES No. 31 – Waste Dump #5

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July 25, 2023

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Re: Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites – Field Sampling Plan (FSP) BRES No. 31 – Waste Dump #5.

Dear Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company (Atlantic Richfield) to submit the Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed (IR) Sites – Field Sampling and Investigation Plan (FSP) Butte Remediation Evaluation System (BRES) No. 31 – Waste Dump #5.

As described in Appendix D, Attachment C, Section 7.0 of the 2020 BPSOU Consent Decree (CD) (available at https://www.co.silverbow.mt.us/2161/ButtePriority-Soils-Operable-Unit-Consent-Decree), sites listed as IR Solid Media Sites within BPSOU were reclaimed prior to the establishment of the Butte Hill Revegetation Specifications (BHRS), Appendix A to the CD. Since additional reclamation work may be required to bring the sites into compliance with the BHRS, the sites will be evaluated to assess past actions and to identify any site-specific conditions that fail to meet the BHRS.

The site evaluation will include a review of available BRES field evaluations and site construction completion reports along with on-site evaluation and sampling. The site evaluation will include sampling within the existing site boundary performed according to the Atlantic Richfield *2023 Final Insufficiently Reclaimed Sites Quality Assurance Project Plan (QAPP)* (referred to herein as IR Sites QAPP). A link to the IR Sites QAPP is provided in Attachment 1.

This FSP describes field evaluation of the IR Site BRES No. 31 – Waste Dump #5. The sampling boundary and proposed soil sampling stations and deficiencies identified during previous BRES evaluations are shown on Figure 1.

Field sampling within the existing boundary will be performed to determine whether contaminants are present, whether the existing cap and supported growth media are sufficiently protective of human health and the environment, how observed site conditions compare to the BHRS, and whether there are previously unidentified conditions contributing to site deficiencies.

The site evaluation is anticipated to be completed in 2023. A site summary and declaration will be prepared to present all available site data and describe which, if any, BHRS criteria are not met. The site will be evaluated following the Residential Land Use Soil Action Levels for Human Health, Soil Screening Criteria, and cover soil Chemical Suitability Criteria provided in the IR Sites QAPP. Samples obtained outside of the existing reclaimed area will be evaluated following the Soil Action Levels for Human Health and Soil Screening Criteria for Waste Identification in the Atlantic Richfield *2023 Final Unreclaimed (UR) Sites QAPP* (referred to herein as UR Sites QAPP). A link to the UR Sites QAPP is provided in Attachment 1.

If further remediation is recommended after the evaluation and sampling is complete, a remedial action work plan (RAWP) describing actions that will be implemented at the site will be provided for Agency review and approval.

The crosswalk list provided below references where pertinent field sample collection and documentation elements are discussed.

	Reference Location		
Element	**FSP**	**IR Sites QAPP**	**UR Sites QAPP**
Title Page and Approval Authority	Approval Letter	Page i	Page i
Site Introduction and Appropriate Agency-Approved QAPP* Reference	Page 1, Page 2		
Data Quality Objectives		Section 2.5	Section 2.5
Site and Sampling Objectives	Figure 1	Section 3.0	Section 3.0
Proposed Schedule for Site Field Work	Page 2		
Site Figure	Figure 1		
Sampling Procedures and Standard Operating Procedures (SOPs)		Section 3.2 Appendix B	Section 3.2 Appendix B
Sample Analysis Methods		Section 3.3	Section 3.3

Background

Waste Dump #5 (BRES No. 31) is approximately 0.14 acre located north and west of Cora Terrace Street and north of Toboggan Street, just west of the Corra 2 Dump, BRES No. 32. ARCO completed reclamation in 1994, which consisted of completely removing 200 cubic yards of mine waste from the site to the new Butte Mining Repository. Lime rock from the Anaconda Quarry was applied at a rate of 350 tons per acre. Cover material from the Minnie Irvine borrow area was applied at a depth

of 18 inches, and a granular 11-52-0 fertilizer mix was broadcast at a rate of 300 pounds per acre. Following the application of the fertilizer, the area was chisel plowed. A double disc drill seeder was used to plant the Walkerville EPA seed mixture, described in the BPSOU *Solid Media Management Program Plan*[1], at a rate of 20 pounds per acre. A straw spreader was used to spread straw at the rate of 2 tons per acre.

In 1997, an existing ditch located throughout the Corra II (BRES No. 32) site was converted to a grass lined ditch to match the slope to drain storm water into the ditch. This ditch runs east to west under Cora Terrace Street to the north of the BRES No. 31 – Waste Dump #5 site. Sediment that accumulated in the bottom of the ditch was used as seedbed for ditch reseeding.

An adjusted boundary was proposed for BRES No. 31 – Waste Dump #5 to accurately represent the reclaimed area and align site boundaries with site remediation efforts completed on the site. As described in the BPSOU *Source Areas and Reclaimed Boundary Adjustments*[2], this was completed by using a high-resolution aerial image and visual comparisons to identify the areas of apparent remediation. Note, the proposed adjusted boundary has not been approved by the Agencies. To verify the proposed adjusted boundary, samples will be collected in areas that are included in the proposed boundary area, but just out of the original boundary area.

Previous Evaluation Findings

As specified in the CD, information collected during previous site investigations has been reviewed and incorporated into the proposed sampling design. Atlantic Richfield and Butte-Silver Bow (BSB) completed field verification on July 11, 2017. Given the date of reclamation, the site should be investigated to ensure the engineered cap is adequate for operation and maintenance.

The site was evaluated in 2016 and 2020 during the recurring 4-year cycle of field evaluations of previously reclaimed sites within the BPSOU. The results of both field evaluations indicate several of the same issues throughout the site. The findings in both evaluations do not appear to be worsening. The site appears to be maintained by a local neighbor due to the evidence of mowing. Low vegetation is present throughout the entire site with little evidence of undesirable or noxious weeds. An area of exposed waste was identified just outside of the site boundary to the northwest of the site near the grass lined ditch. The materials are being transported via the ditch running along Cora Terrace Street south to a neighboring house.

Previous Sampling Efforts

The Geocortex web-based database at https://eis2.woodardcurran.com/Html5Viewer/index.html?viewer=BPButte.BPSOU contains the records for previous soil samples within the BPSOU. The approximate sample stations located on BRES No. 31 – Waste Dump #5 are included on Figure 1 with results provided in Table 1 below. Sample results highlighted below exceed CD Solid Media soil

[1] Atlantic Richfield Company and Butte-Silver Bow, 2022. Revised Draft Final Solid Media Management Program Plan. Prepared by Pioneer Technical Services, Inc. August 1, 2022.
[2] Draft Final Source Areas and Reclaimed Boundary Adjustments. Prepared by Pioneer Technical Services, Inc. April 4, 2022.

screening criteria. The BPSOU soil action levels and screening criteria are listed in Table 1 and Table 2, respectively, in Section 2.5 of the IR Sites QAPP.

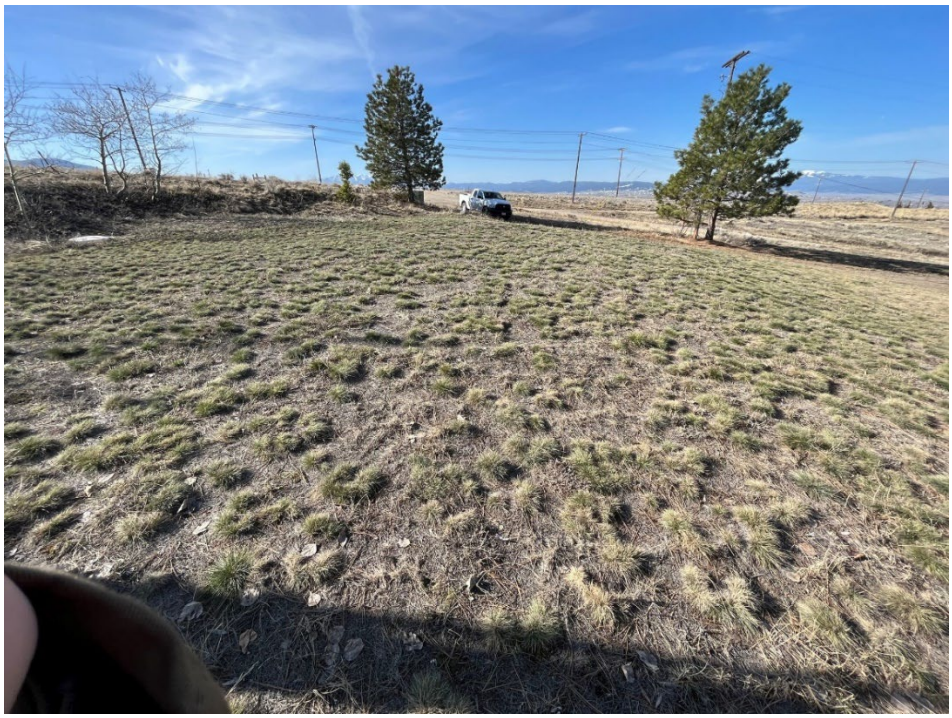
Table 1: Previous Sampling Results from BPSOU Soil Sampling

COCs	Sample ID: **PSERA9302**
Arsenic	27 mg/kg
Cadmium	38 mg/kg
Copper	414 mg/kg
Lead	10,700 mg/kg
Zinc	13 mg/kg
pH	4.4 S.U.

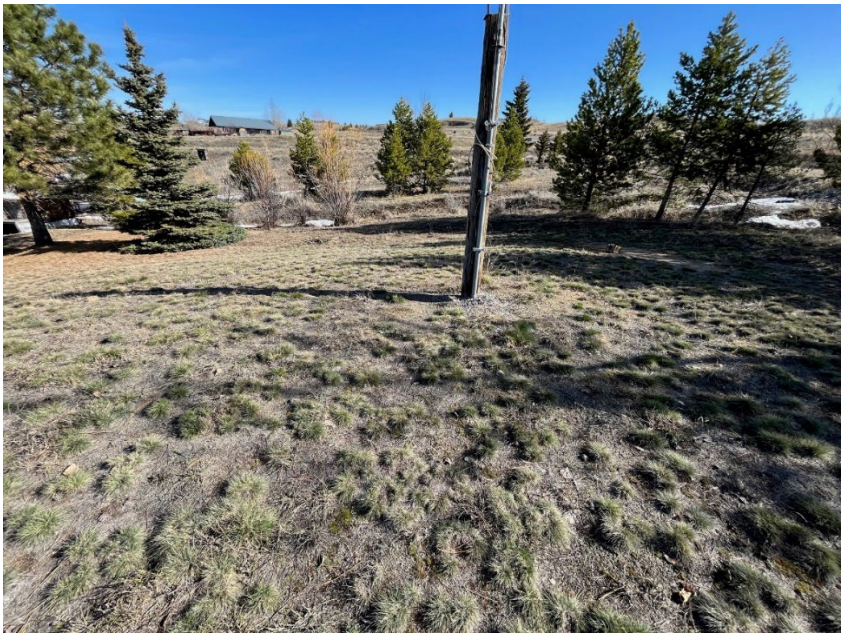
COC: Contaminant of concern. mg/kg: milligrams per kilogram. S.U.: standard unit.

Preliminary Site Evaluation

A preliminary site evaluation was conducted during development of this sampling plan to inspect current site conditions and identify focus areas for further investigation. Photograph 1 through Photograph 4 show the current site conditions. The site investigation found low vegetation establishment, a barren area with surface staining, and verification of the neighbor maintaining the site. The grass lined ditch to the north of site was also inspected, however a significant amount of snow was still present in the channel as of May 1, 2023. Potential waste was noted to the south of the black polyvinyl chloride (PVC) pipe. This ditch is not located on site and will not undergo evaluation with BRES No. 31.

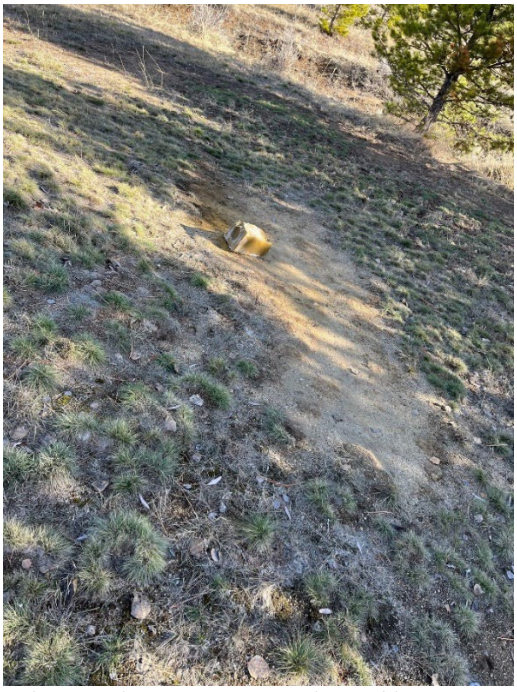


Photograph 1: Site overview looking south.



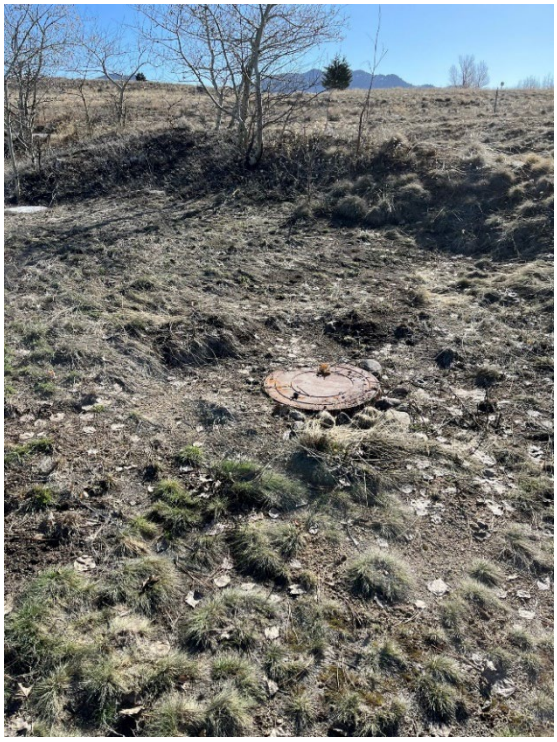
Photograph 2: Site overview looking north.

Overall, the site is in good condition. No erosion or weeds are present on site; however, vegetation is low, and sediment and litter are gathering in between clusters of vegetation. It appears the neighbor is maintaining the site as it is mowed, and a plant cage is around a planted tree. The site is protected from storm water and erosion on the north side from the berm along Cora Terrace Street to the north. A manhole is located on the southeast section of the site near the soil berm.



Photograph 3: Barren area with possible staining.

A barren area was found on the northeast portion of site. A salt lick was present in this barren area along with deer tracks in the soil. Orange to yellow staining is present in this area.



Photograph 4: Manhole located on site.

A manhole is located on the southeast portion of site near the soil berm. It appears the soil around the metal manhole is sloughed or shoveled to match the elevation of the manhole.

Figure 1 illustrates the proposed sample stations as sited during the preliminary site evaluation. Adjusted boundary lines, previous sample locations, and other previous findings are included on Figure 1.

Site Characterization Plan

Per the IR Sites QAPP, the site will be sampled at two depth intervals [(1) 0 to 6 inches and (2) 6 to 18 inches] to determine whether waste is present and/or confirm the depth of previous reclamation efforts. Opportunistic samples may be obtained in the field at the discretion of field sampling personnel or Agency oversight representative(s). The field team leader will be responsible for determining the appropriate number and depth of samples as dictated by field conditions.

Samples collected within the approved BRES boundary will be sampled following procedures in the IR Sites QAPP using a systematic procedure to determine the extent of waste present, previous reclamation, and transient material. Samples collected outside of the original BRES boundary will be collected following protocol described in the 2023 UR Sites QAPP. Samples obtained outside of the

original boundary will be obtained from three depth intervals [(3) 0 to 2 inches, (4) 2 to 6 inches, and (5) 6 to 12 inches] per the UR Sites QAPP sampling protocol.

Field and laboratory analytical results will be used to prepare the site declaration and prescribe site remedial improvements.

Existing site grading and drainages will be evaluated to determine storm water flow patterns and identify whether additional storm water controls will help prevent sediment migration. Contributing sources of storm water upgradient and adjacent to the site will also be investigated.

At minimum, items identified below, but not specifically detailed in the QAPP, may be evaluated to determine adequacy and to identify if additional remedial measures are necessary. Additional items also may be identified during the remedial design process.

- Evaluate relative percent vegetative cover (as needed).
  - Coordinate and confirm plant species with biology/plant ecologist or related subject matter expert (as needed).
- Evaluate the performance of existing storm water controls to mitigate run-on/runoff.
- Evaluate location and condition of existing storm water controls.
- Identify potential remedial improvements to mitigate site erosion and vegetative areas to meet the BHRS.
- Identify necessary maintenance for successful long-term operation.
- Evaluate steep slopes for erosion of possible mining waste and potential for regrading.

The final remedial cap configuration (i.e., vegetative or engineered) will be coordinated with the landowner's end usage. A final RAWP will be provided for Agency review and approval prior to implementation.

Sampling Procedure

All soil sampling and characterization activities and procedures within the existing site boundary will follow the IR Sites QAPP. Samples will be obtained from the sample stations listed below. The IR Sites QAPP describes the quality assurance/quality control policies and procedures that will be used during sample collection and analyses.

Sample Station	Two Depth Intervals (inches)
IR-31-SS01	(1) 0-6, (2) 6-18
IR-31-SS02	(1) 0-6, (2) 6-18
IR-31-SS03	(1) 0-6, (2) 6-18

All soil sampling and characterization activities and procedures outside of the existing site boundary will follow the UR Sites QAPP. Samples will be obtained from the sample stations listed below.

Sample Station	Three Depth Intervals (inches)
IR-31-SS04	(3) 0-2, (4) 2-6, and (5) 6-12

This field work is anticipated to be completed in 2023, depending on site conditions.

Site Summary Report and Declaration

After the site evaluation and data collection activities are complete, a site evaluation summary report will be prepared and submitted to Agencies for review and approval. The report will include a summary of all available site sampling data and a site declaration specifying any deficient criteria as specified in the CD.

If you have questions or comments, please do not hesitate to call me at (907) 355-3914.

Sincerely,

Mike McAnulty

Mike Mc Anulty
Liability Manager
Remediation Management Services Company
An affiliate of **Atlantic Richfield Company**

Attachments:

Figure 1 – Insufficiently Reclaimed Sites BRES No. 31 - Waste Dump #5 Proposed Sample Stations

Attachment 1 – Document Links

Attachment 2 – FSP Submittal List

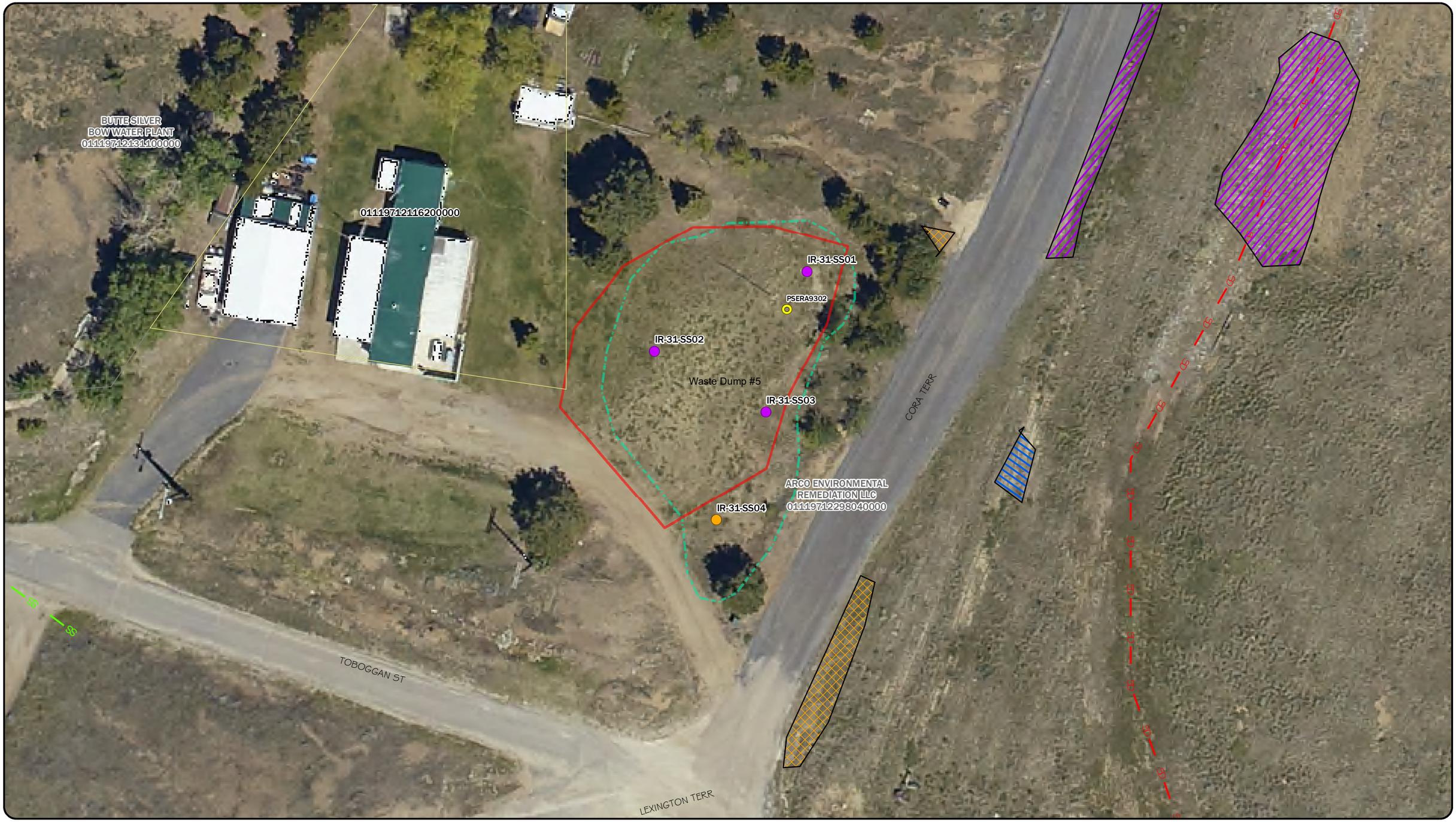
Cc: Chris Greco / Atlantic Richfield – email
Josh Bryson / Atlantic Richfield – email
Mike Mc Anulty / Atlantic Richfield – email
Loren Burmeister / Atlantic Richfield – email
Dave Griffis / Atlantic Richfield – email
Jean Martin / Atlantic Richfield – email
Irene Montero / Atlantic Richfield – email
David A. Gratson / Environmental Standards – email
Mave Gasaway / DGS – email
Adam Cohen / DGS – email
Brianne McClafferty / Holland & Hart – email
David Shanight / CDM - email

Curt Coover / CDM - email
James Freeman / DOJ - email
Amy Steinmetz / DEQ - email
Dave Bowers / DEQ – email
Katie Garcin-Forba / DEQ – email
Carolina Balliew / DEQ - email
Jim Ford / NRDP - email
Pat Cunneen / NRDP - email
Katherine Hausrath / NRDP - email
Ted Duaime / MBMG - email
Gary Icopini / MBMG - email
Becky Summerville / MR - email
John DeJong / UP - email
Robert Bylsma / UP - email
John Gilmour / Kelley Drye - email
Leo Berry / BNSF - email
Robert Lowry / BNSF - email
Brooke Kuhl / BNSF – email
Lauren Knickrehm / BNSF - email
Doug Brannan / Kennedy Jenks - email
Matthew Mavrinac / RARUS - email
Harrison Roughton / RARUS - email
Brad Gordon / RARUS - email
Mark Neary / BSB - email
Eric Hassler / BSB - email
Julia Crain / BSB - email
Brandon Warner / BSB – email
Abigail Peltomaa / BSB - email
Eileen Joyce / BSB – email
Sean Peterson/BSB – email
Josh Vincent / WET - email
Scott Bradshaw / W&C – email
Emily Stoick / W&C – email
Pat Sampson / Pioneer – email
Andy Dare / Pioneer – email
Karen Helfrich / Pioneer – email
Randa Colling / Pioneer – email
Ian Magruder/ CTEC – email
CTEC of Butte – email
Scott Juskiewicz / Montana Tech – email

File: MiningSharePoint@bp.com - email
BPSOU SharePoint – upload

Figures

Figure 1 – Insufficiently Reclaimed Sites BRES No. 31 - Waste Dump #5 Proposed Sample Stations



- SAMPLE UNDER IR QAPP
- SAMPLE UNDER UR QAPP
- HISTORIC SAMPLE STATIONS
- SANITARY SEWER
- STORM WATER LINE
- PROPERTY OWNERSHIP
- ACCESS PROPERTY OWNERSHIP
- BRES EVALUATION EXPOSED WASTE
- BRES EVALUATION BARREN AREA
- BRES EVALUATION VEGETATIVE IMPROVEMENT
- BRES BOUNDARY (ORIGINAL)
- BRES BOUNDARY (PROPOSED ADJUSTMENT)

THE PARCEL BOUNDARIES SHOWN ARE FOR REFERENCE USE ONLY AND DO NOT REPRESENT A LEGAL SURVEY

N

DISPLAYED AS:
PROJECTION/ZONE: MSP
DATUM: NAD 83
UNITS: INT'L FT
SOURCE: PIONEER/BSB/AR/QSI 2020

0 15 30 60
Feet

FIGURE 1

INSUFFICIENTLY RECLAIMED
SITE BRES No.31 WASTE DUMP #5

PIONEER TECHNICAL SERVICES, INC.

DATE: 6/19/2023

Path: Z:\Shared\Active Projects\ARCO\BPSOU\LandSupport\SolidMedia\Insufficiently_Unreclaimed\IR_Sampling\Sampling_2023\IR31_Fig_005_23.mxd

Attachment 1
Document Links

Document Links

Insufficiently Reclaimed Sites QAPP:

https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/EuRW3KcNuu9CqOHRiP3ENvsBOUc-dYqdITUbZZtCVROTAA[3]

Unreclaimed Sites QAPP:

https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/EtZbDgcepsdEie6VxUMdW88BbKopRVYj5ZsLN0sG3RKrhA[4]

[3] Please note that the link provided is valid for one year from the date of this submittal.
[4] Please note that the link provided is valid for one year from the date of this submittal.

Attachment 2
FSPs Submittal List

Site	Submittal Date	Approval Date
BRES No. 104 – Colorado Dump Shaft	9/29/2021	11/5/2021
BRES No. 104 – Colorado Dump Shaft, Final Revised	12/2/2021	12/6/2021
BRES No. 154 – Clark Mill Tailings NE	12/1/2021	12/6/2021
BRES No. 30 – Atlantic-1	1/12/2022	2/22/2022
BRES No. 16 – Curry	1/12/2022	2/22/2022
BRES No. 8 – Belle of Butte	3/11/2022	9/26/2022
BRES No. 38 – Sister Dump	6/16/2022	9/26/2022
BRES No. 32 – Corra 2 Dump	6/20/2022	6/30/2022
BRES No. 158 – Waste Rock Dump	6/20/2022	7/11/2022
BRES No. 50 Zelia	6/22/2022	6/30/2022
BRES No. 93 – Soudan Dump	6/23/2022	6/30/2022
BRES No. 96 Washoe Dump	6/23/2022	7/11/2022
BRES No. 133 – Dexter Mill	7/14/2022	7/26/2022
BRES No. 37 – Josephine Shaft	7/20/2022	7/26/2022
BRES No. 34 – Eveline Dump	7/22/2022	8/2/2022
BRES No. 17 – Paymaster	7/25/2023	
BRES No. 31 – Waste Dump #5	7/25/2023	
BRES No. 48 – Old Glory West	7/25/2023	
BRES No. 66 – West Ruby Dump	7/25/2023	
BRES No. 134 – Star West Dump	7/25/2023	
BRES No. 174 – Buffalo South and Buffalo Ditch	7/25/2023	
BRES No. 84 – Mandan Park		