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**Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites - Field Sampling and Investigation Plan (FSP)
BRES No. 08 – Belle of Butte**

Mike McAnulty

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August 2, 2022

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RE: Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites - Field Sampling and Investigation Plan (FSP) BRES No. 08 – Belle of Butte.

Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company (Atlantic Richfield) to submit Atlantic Richfield's responses to Agency comments provided April 13, 2022, to the *Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites - Field Sampling and Investigation Plan (FSP) BRES No. 08 – Belle of Butte*.

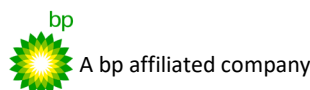
Agency comments and Atlantic Richfield's responses are provided below.

Comments:

1. *Please confirm the boundary for BRES No.08 as depicted on Figure 1 of the FSP. What is believed to be the correct boundary for the site is shown in the figure below. As required, please correct the boundary on Figure 1 as appropriate or clarify the boundary discrepancy.*

Atlantic Richfield Company Response: The boundary referenced in the Agency comment is the original BRES No. 08 boundary. Figure 2 (attached) included in the revised FSP displays the new BRES No. 08 reclaimed area boundary which is consistent with Figure IR-1 included in the CD FRESOW.

2. *Please clarify the inclusion of proposed unreclaimed sample locations for UR-39 depicted on Figure 1 of this FSP.*



Atlantic Richfield Company Response: The Unreclaimed Site UR-39 boundary and proposed 2021 sample locations were included on Figure 1 to show that the northern portion of the original BRES No. 08 boundary was sampled and characterized in the 2021 Unreclaimed Sites sampling event. Sampling is complete, and the legend has been updated to reflect the 2021 Unreclaimed Sampled Stations.

- 3. Please clarify if the property to the south of BRES No.08 has been sampled under the RMAP program and update the FSP with sampling/remediation information as applicable.*

Atlantic Richfield Company Response: Butte-Silver Bow (BSB) Residential Metals Abatement Program (RMAP) provided clarification via email correspondence indicating that no sampling has been performed by RMAP. No historical data are available for the property south of BRES No. 08.

- 4. Please attach the Reclaimed Areas M&M QAPP and Unreclaimed Sites QAPP to this FSP upon final distribution.*

Atlantic Richfield Company Response: The Final 2022 Insufficiently Reclaimed Areas QAPP and Final 2022 Unreclaimed Sites QAPP are provided via links on page 2 and Attachment 1 – Document Links of the FSP.

End of Comments

The revised FSP may be downloaded at the following link:

https://pioneertechnicalservices.sharepoint.com/:f/s/submitted/EiuAVMZEmShEsvY25NbYEyUBaLSy-K616uCuMfWRf7X_HQ.

If you have any questions or comments, please call me at (907) 355-3914.

Sincerely,



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

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Pat Cunneen / NRDP - email
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Katherine Hausrath / NRDP - email
Meranda Flugge / NRDP - email
Ted Duaine / MBMG - email
Gary Icopini / MBMG - email
Becky Summerville / MR - email
Kristen Stevens / UP - email
Robert Bylsma / UP - email
John Gilmour / Kelley Drye - email
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August 2, 2022

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Re: Butte Priority Soils Operable Unit (BPSOU) Revised Draft Final Insufficiently Reclaimed Sites - Field Sampling and Investigation Plan (FSP) BRES No. 8 – Belle of Butte

Dear Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company to submit the Butte Priority Soils Operable Unit (BPSOU) Revised Draft Final Insufficiently Reclaimed Sites - Field Sampling and Investigation Plan (FSP) BRES No. 08 – Belle of Butte.

As described in Appendix D, Attachment C to the 2020 BPSOU Consent Decree (CD) (available at <https://www.co.silverbow.mt.us/2161/ButtePriority-Soils-Operable-Unit-Conse>), sites listed as Insufficiently Reclaimed Solid Media Sites within the BPSOU were reclaimed prior to establishment of the Butte Hill Revegetation Specifications (BHRS), which is Appendix B of Appendix E to the U.S. Environmental Protection Agency (EPA) 2006 Record of Decision (ROD) contained in the CD. Additional reclamation work may be required to bring the sites into compliance with the BHRS. Therefore, 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 previous Butte Reclamation Evaluation System (BRES) field evaluations and site construction completion reports as well as an on-site evaluation. The site evaluation will include additional sampling performed according to the Atlantic Richfield Company 2022 *Final Insufficiently Reclaimed Areas Quality Assurance Project Plan (QAPP)* (referred to as IR Sites QAPP) available at the following link:



<https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Eid2SfSSinhOsfQXY5CXGEOBe5IIf5IQO01hBO43ZROggg>¹.

Field sampling within the existing boundary will be performed to determine whether contaminants are present, if growth media is adequate, and if there are previously unidentified sources contributing to site deficiencies.

Additional sampling performed in adjacent areas outside of the existing site boundary to characterize gap zones where site characterization may be unknown or incomplete will be conducted according to the Atlantic Richfield Company *2022 Final Unreclaimed Sites Quality Assurance Project Plan (QAPP)* (referred to as the Unreclaimed Sites QAPP) which also is a component of the BPSOU Solid Media Management Project Plan available at the following link:

<https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Ev1dhUeMuUdLjU8tnuV5RioBvJZRyC2HpgEjM9KzT-PpjQ>².

Sample results in the areas outside of the existing site boundary will be evaluated to determine if contaminants are present beyond the site boundary at concentrations exceeding action levels listed in Table 1 or Table 2 in the Unreclaimed Sites QAPP. Final sampling data will be used to assist in making the final site declaration.

This FSP provides details related to field evaluation of the Insufficiently Reclaimed Site BRES No. 08 – Belle of Butte. Proposed soil sampling stations and areas of known deficiencies are shown on Figure 1.

The site evaluation is anticipated to be completed in 2022, pending approval and site conditions. A site summary and declaration will be prepared to present all available site data and describe which BHRS criteria, if any, are not met. The site will be evaluated following the Recreational Land Use for Insufficiently Reclaimed samples and Residential Land Use for Unreclaimed samples to evaluate waste identification and action level criteria provided in the IR Sites and Unreclaimed Sites QAPPs. A remedial action work plan (RAWP) describing actions that need to be implemented at the site will be provided for Agency review and approval.

A list of FSPs, provided below, will be updated to record the status and progress related to FSP submittals.

Submittal	Site	Submittal Date	Approval Date
1	BRES No. 104 – Colorado Dump Shaft	9/29/2021	11/5/2021
1R	BRES No. 104 – Colorado Dump Shaft, Final Revised	12/2/2021	12/6/2021
2	BRES No. 154 – Clark Mill Tailings NE	12/1/2021	12/6/2021

¹ Please note the link provided is valid for one year from the date of this submittal.

² Please note that this link is active until June 2022.

Submittal	Site	Submittal Date	Approval Date
3	BRES No. 30 – Atlantic-1	1/12/2022	3/7/2022
4	BRES No. 16 – Curry	1/12/2022	3/7/2022
5	BRES No. 8 – Belle of Butte	2/7/2022	
6	BRES No. 38 – Sister Dump	6/16/2022	
7	BRES No. 32 – Corra 2 Dumps	6/20/2022	6/30/2022
8	BRES No. 158 – Waste Rock Dump	6/20/2022	7/11/2022
9	BRES No. 50 – Zelia	6/22/2022	6/30/2022
10	BRES No. 93 – Soudan Dump	6/23/2022	6/30/2022
11	BRES No. 96 – Washoe Dump	6/23/2022	7/11/2022
12	BRES No. 133 – Dexter Mill	7/14/2022	7/26/2022
13	BRES No. 37 – Josephine Shaft	7/20/2022	7/26/2022
14	BRES No. 34 - Eveline	7/22/2022	

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

Element	Reference Location		
	FSP	IR Sites QAPP	Unreclaimed Sites QAPP
Title page and approval authority.		Page i	Page i
Introduction and appropriate Agency-approved QAPP reference.	X		
Goals and objectives of sampling.		Section 2.4, Section 3.2	Section 2.4, Section 3.2
Proposed schedule for field work.	X		
Site figure including sampling locations, number and depth of samples to be collected, and sample field identification.	X	Section 3.2.1	Section 3.2.1
Field activity methods and procedures, standard operating procedures.		Section 3.2, Table 4	Section 3.2, Table 4
Sample labeling and shipping.		Section 3.2.5, Appendix C	Section 3.2.5, Appendix C
Sample analysis specifying X-ray fluorescence (XRF) vs. laboratory analysis and laboratory name.		Section 3.3	Section 3.3
Figure showing the site and/or area represented by a sample, sample ID, and aliquot locations for composite samples.	X		

Background

Belle of Butte (BRES No. 8) is approximately 0.35 acre located between Dunn Street and East Clark Street in Walkerville, Montana. The shaft was capped in 1987 by Montana Department of State Lands (MDSL). Reclamation was then completed by ARCO in 1995 and consisted of recontouring the slope above the concrete shaft cap to 4 horizontal:1 vertical (H:V). The site was then capped and revegetated. Lime rock was applied at a rate of 350 tons per acre (tons/acre) and 18 inches of clean fill material was placed over the lime rock. Fertilizer was applied to achieve soil concentrations of 60 pounds per acre (lbs/acre) of nitrogen, 80 lbs/acre of phosphorus pentoxide (P₂O₅) and 150 lbs/per acre of potassium oxide (K₂O). A chisel plow was used to mix the fertilizer into the soil. A double-disc drill seeder was used to plant 17.25 lbs/acre of the pre-1997 seed mixture, Butte Seed Mix (BSBSEEBM). Straw mulch was crimped into the surface at a rate of 2 tons/acre.

Previous Evaluation Findings

The site was evaluated in 2016 during the recurring BRES site evaluation process. A review of previous site evaluations will be incorporated into the upcoming site evaluation, sampling, and remedial action. A preliminary review of the evaluation findings indicates issues with vegetation, erosion, site edges, exposed waste, barren areas, and gullies. Material that appeared to be slag with a pH of 6.00 to 7.00 standard units (S.U.) was actively eroding from outside the site boundaries into a gully located on the eastern portion of the site. Eroding barren areas were located on the eastern and western boundaries, and sediment had been transported across the concrete shaft into nearby parcels.

Previous Sampling Efforts

Data obtained from the Geocortex web-based database at <https://eis2.woodardcurran.com/Html5Viewer/index.html?viewer=BPButte.BPSOU> contain the records for previous soil samples collected near BRES No. 8 – Belle of Butte. The approximate sample stations are included on Figure 1 with results provided in Table 1 below. Sample results highlighted below exceed ROD Solid Media soil screening criteria. The BPSOU action levels are listed in Table 1 and Table 2 of the IR Sites QAPP Section 2.4.

Table 1: Previous Sampling Results from BPSOU Soil Sampling

COCs	Sample ID: PSERA9304	Sample ID: 12-01
Arsenic	52 mg/kg	115 mg/kg
Cadmium	2 mg/kg	5 mg/kg
Copper	32 mg/kg	196 mg/kg
Lead	672 mg/kg	2,530 mg/kg
Zinc	302 mg/kg	1,810 mg/kg
pH	4.64 S.U.	4.22 S.U.
COC: contaminant of concern. mg/kg: milligram per kilogram. S.U.: standard unit.		

Sample locations from the 2021 UR sampling effort at UR-39 are shown on Figure 1 to accurately represent the previous sampling efforts. The sample locations are provided to show the extent of the previous sampling surrounding the Insufficiently Reclaimed site boundary. Data from the 2021 UR sampling effort will be reported in the Final UR-39 Site Evaluation Summary Report.

Preliminary Site Evaluation

A preliminary site visit was conducted to qualify existing site conditions and identify areas of focus for additional evaluation. Site photographs were taken during the preliminary site evaluation to capture site conditions. The photographs are included in this section for reference. The site appears to be well vegetated along the north and northeast portions of the site. There are active erosion areas along the western boundary and through the middle of the site. Barren areas are present and subject to erosion at the south toe of the shaft.



**Photograph 1: Barren Areas with Erosion
Toward North Main Street.**



**Photograph 2: Barren Area Near Shaft
with Manganese Staining.**



Photograph 3: Erosion onto North Edge of Shaft.



**Photograph 4: Barren Area South of Shaft,
Active Erosion.**



Photograph 5: Well Vegetated Area on North Boundary.



**Photograph 6: Well Vegetated Area on East Boundary,
Bare Area to the South.**

Site Characterization Plan

Per the IR Sites QAPP, the site will be sampled at 2 depth intervals [(1) 0 to 6 inches and (2) 6 to 18 inches] to determine whether mining related waste is present and/or confirm the depth of previous reclamation efforts. Additional samples obtained outside of the existing site boundary will be obtained from 3 depth intervals [(3) 0 to 2 inches, (4) 2 to 6 inches, and (5) 6 to 12 inches] per the Unreclaimed Sites QAPP sampling protocol. Figure 1 illustrates the proposed sample stations. 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 sampling protocol as dictated by the location of the opportunistic sample(s).

Results will be used to prepare the site declaration and prescribe site remedial improvements. The overall site will be sampled following procedures in the IR Sites QAPP using a systematic procedure to determine spatial characterization of waste, parameters of previous reclamation, and extent of transient material. Sampling performed outside of the existing boundary will be used to determine if waste extends beyond the existing boundary at concentrations which exceed levels listed in Table 1 or Table 2 of the Unreclaimed Sites QAPP and will be applied to prepare the final site declaration.

Existing site grading and drainages will be evaluated to determine storm water flow patterns and identify whether additional storm water controls are necessary to prevent sediment migration. The location and condition of existing storm water features will be field-verified and recorded to implement appropriate corrective actions. Upgradient and adjacent contributing sources of storm water will also be investigated.

Items identified below will be evaluated to determine whether they are adequate and to identify additional remedial measures. The following provides the minimum of site characterization items to consider. Additional items may be identified during the remedial design process.

- Evaluate plant species cover to BHRS seed mix specifications.
 - Coordinate and confirm plant species with biology/plant ecologist or related subject matter expert.
- Evaluate site storm water controls to mitigate run-on/runoff.
- Identify remedial improvements to mitigate site erosion and improve vegetative areas to meet BHRS.
- Identify maintenance items for successful long-term operation.

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.

Sampling Procedure

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

Sample Station	2 Depth Intervals (inches)
IR-08-SS01	(1) 0-6, (2) 6-18
IR-08-SS02	(1) 0-6, (2) 6-18
IR-08-SS03	(1) 0-6, (2) 6-18
IR-08-SS04	(1) 0-6, (2) 6-18
IR-08-SS05	(1) 0-6, (2) 6-18
IR-08-SS06	(1) 0-6, (2) 6-18

All soil sampling and characterization activities beyond the existing site boundary at sample stations listed below will follow the Unreclaimed Sites QAPP.

Sample Station	3 Depth Intervals (inches)
IR-08-SS07	(3) 0-2, (4) 2-6, and (5) 6-12
IR-08-SS08	(3) 0-2, (4) 2-6, and (5) 6-12
IR-08-SS09	(3) 0-2, (4) 2-6, and (5) 6-12
IR-08-SS10	(3) 0-2, (4) 2-6, and (5) 6-12

Fieldwork is anticipated to begin in the summer of 2022.

Site Summary Report and Declaration

After the site evaluation and data collection activities have been completed, a 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 BHRS criteria.

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

Sincerely,

Mike McNulty

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

Attachments:

- Figure 1 – Insufficiently Reclaimed Sites IR-08 Belle of Butte Proposed Sample Stations
- Figure 2 – 2021 BPSOU Reclaimed Areas Boundary Adjustment BRES No. 8, BRES No. 337, and UR-39
- Attachment 1 - Document Links

Cc: Patricia Gallery / Atlantic Richfield - email
Chris Greco / Atlantic Richfield – email
Josh Bryson / Atlantic Richfield – email
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Katherine Hausrath / NRDP - email
Meranda Flugge / NRDP - email
Ted Duaine / MBMG - email
Gary Icopini / MBMG - email
Becky Summerville / MR - email
Kristen Stevens / 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
Jeremie Maehr / Kennedy Jenks - email
Annika Silverman / Kennedy Jenks - email
Matthew Mavrinac / RARUS - email
Harrison Roughton / RARUS - email
Brad Gordon / RARUS - email
Mark Neary / BSB - email
Eric Hassler / BSB - email
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Chad Anderson / BSB - email
Brandon Warner / BSB – email
Abigail Peltomaa / BSB - email
Eileen Joyce / BSB – email

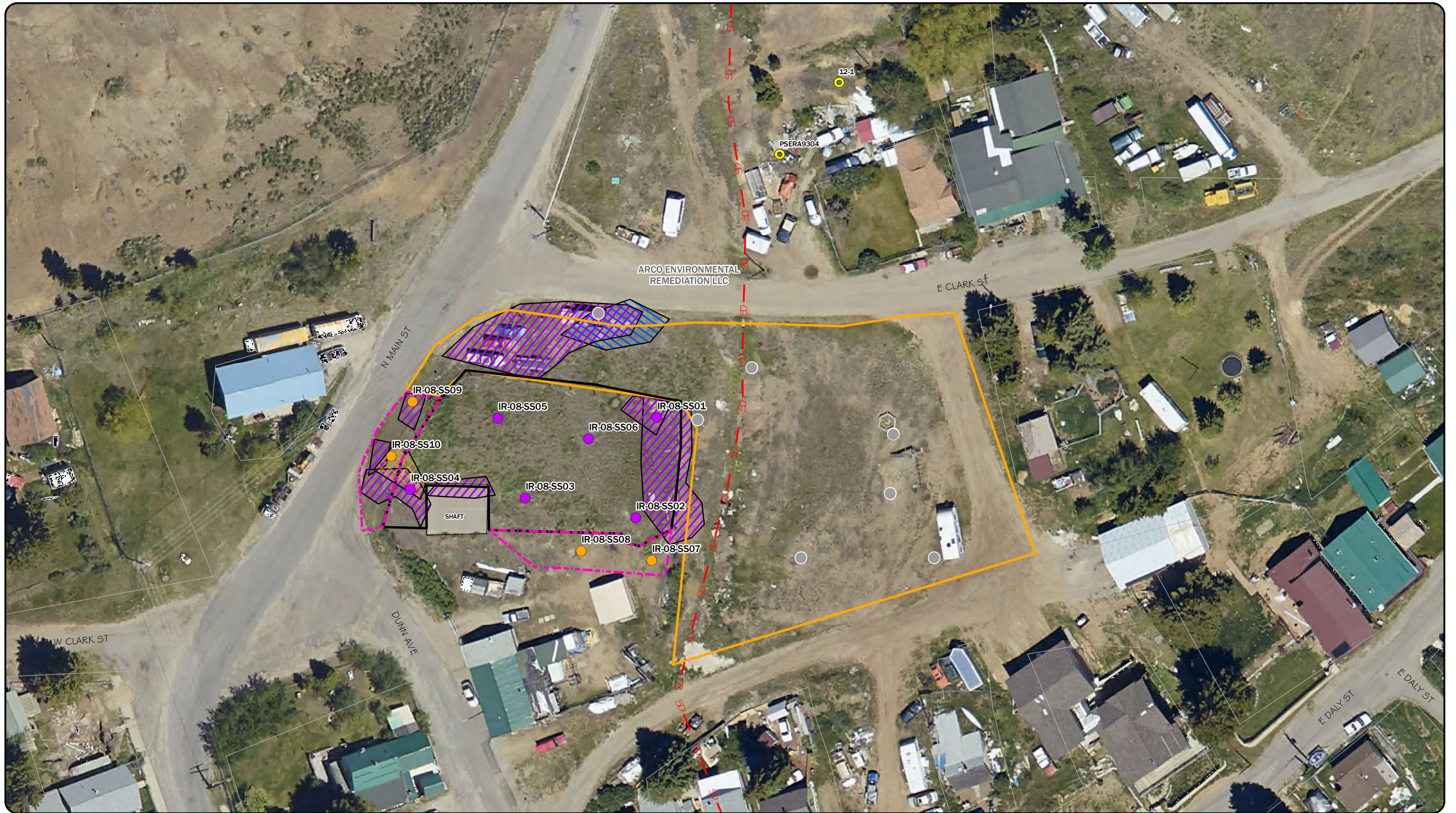
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Andy Dare / Pioneer – email
Karen Helfrich / Pioneer - email
Leesla Jonart / Pioneer - email
Randa Colling / Pioneer – email
Ian Magruder/ CTEC - email
CTEC of Butte - email
Scott Juskiewicz / Montana Tech – email

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

Figures

Figure 1. Insufficiently Reclaimed Sites IR-08 Belle of Butte Proposed Sample Stations

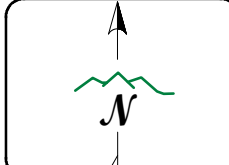
Figure 2. 2021 BPSOU Reclaimed Areas Boundary Adjustment BRES No. 8, BRES No. 337, and UR-39



LEGEND

- SAMPLE UNDER IR QAPP
- SAMPLE UNDER UR QAPP
- 2021 UR SAMPLED STATIONS
- HISTORIC SAMPLE STATIONS
- PROPOSED IR BOUNDARY CHANGES
- INSUFFICIENTLY RECLAIMED AREA
- UNRECLAIMED SITES
- PROPERTY OWNERSHIP
- BRES EVALUATION VEGETATIVE IMPROVEMENT
- BRES EVALUATION EXPOSED WASTE
- BRES EVALUATION BARREN AREA
- STORM WATER LINE

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



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

FIGURE 1

INSUFFICIENTLY RECLAIMED SITES BRES No. 08 BELLE OF BUTTE PROPOSED SAMPLE STATIONS

DATE: 3/4/2022

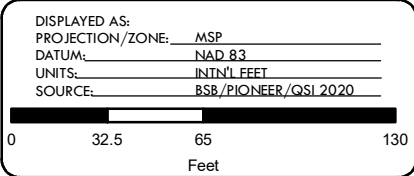
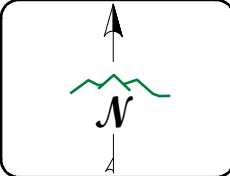


FIGURE 2

PIONEER
 TECHNICAL SERVICES, INC.
 DATE: 4/19/2022

2021 BPSOU
 RECLAIMED AREAS
 BOUNDARY ADJUSTMENTS
 BRES 8, BRES 337, and UR-39

Attachment 1
Document Links

Document Links

Insufficiently Reclaimed Sites QAPP:

<https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Eid2SfSSinhOsfQXY5CXGEOBe5IIlf5IQO01hBO43ZROgpg>³

Unreclaimed Sites QAPP:

<https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Ev1dhUeMuUdLjU8tnuV5RioBvJZRYc2HpgEjM9KzT-PpjQ>⁴

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

⁴ Please note that this link is active until June 2022.