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Summer 7-31-2023

**Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites – Field Sampling Plan (FSP) BRES No. 84 – Mandan Park Play Area**

Mike McAnulty

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**July 31, 2023**

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**Re: Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites – Field Sampling Plan (FSP) BRES No. 84 – Mandan Park Play Area.**

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. 84 – Mandan Park Play Area.

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 the 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. 84 – Mandan Park Play Area. Note, “Mandan Park Play Area” is consistent with the site identification nomenclature provided on the 94ARCO68 map. Sampling associated with the functional park and play area located northeast of

the IR site will be addressed as described in the *Final 2023 RMAP Parks Soil Sampling FSP Submittal #7*<sup>1</sup>. The IR sampling boundary, proposed soil sampling stations of the open space area, and site 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 Recreational 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.

| Element  | Reference Location |                           |                           |
|--|--------------------|---------------------------|---------------------------|
|  | 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<br>Appendix B | Section 3.2<br>Appendix B |
| Sample Analysis Methods  |                    | Section 3.3               | Section 3.3               |

<sup>1</sup> Butte-Silver Bow and Atlantic Richfield Company, 2023. Final 2023 Residential Metals Abatement Program (RMAP) Park Soil Sampling Field Sampling Plan (FSP) Submittal #7. Prepared by Pioneer Technical Services, Inc. May 16, 2023.

## Background

Mandan Park Play Area (BRES No. 84) is approximately 1 acre located along North Wyoming Avenue adjacent to Mandan Park. As described in the BPSOU *Source Areas and Reclaimed Boundary Adjustments*<sup>2</sup>, ARCO performed reclamation in 1991. East Woolman Street was closed and covered with waste from the site, which allowed for a 4H:1V (horizontal:vertical) slope. A north-south berm was built on the east side of Mandan Park, just inside the Kelley Mine Yard, to prevent runoff from entering the park. The parking lot was covered with lime rock. Areas to be revegetated were then covered with 350 tons per acre of lime rock followed by an 18-inch-thick layer of cover material from the Louis Claim borrow area. A granular 11-52-0 fertilizer mix was broadcast at a rate of 300 pounds per acre, followed by chisel plowing. A double disc drill seeder was used to plant 25 pounds per acre of the Walkerville Environmental Protection Agency (WEPA) seed mixture, described in the Atlantic Richfield and Butte-Silver Bow (BSB) 2022 BPSOU Solid Media Management Program Plan<sup>3</sup>, and straw was spread and crimped at a rate of 2 tons per acre. In 1998 and 1999, BSB conducted further reclamation. The site was blanket sprayed for weeds, mowed, and rototilled, and previously reclaimed areas were capped with 12 inches of soil from the BSB Landfill. An additional area that was previously a lime rock parking lot was also capped with landfill soil. BioLogic compost was added at 163 cubic yards per acre and incorporated to a depth of 6 inches. A commercial inoculant of vesicular arbuscular mycorrhizae (VAM-80) was applied at a rate of 83 pounds per acre at the same time the site was seeded with the standard Butte Hill seed mix. The site was then crimped with straw at 2 tons per acre.

An adjusted boundary has been proposed for BRES No. 84 – Mandan Park Play Area to accurately represent the reclaimed area and align site boundaries with site remediation efforts completed on the site. As described in the Atlantic Richfield and BSB 2022 BPSOU *Source Areas and Reclaimed Boundary Adjustments*<sup>4</sup>, 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 outside 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 BSB personnel completed field verification of the site boundary on August 3, 2017. Given the date of reclamation, the site should be investigated to ensure the engineered cap is adequate for operation and maintenance.

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<sup>2</sup> Draft Final Source Areas and Reclaimed Boundary Adjustments. Prepared by Pioneer Technical Services, Inc. April 4, 2022.

<sup>3</sup> 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.

<sup>4</sup> Draft Final Source Areas and Reclaimed Boundary Adjustments. Prepared by Pioneer Technical Services, Inc. April 4, 2022.

The site was evaluated in 2018 and 2022 during the recurring 4-year cycle of field evaluations of previously reclaimed sites within BPSOU. The results of both field evaluations indicate several of the same issues throughout the site; however, the 2022 evaluation suggests the conditions have not deteriorated and are slightly improving. The tree planting area erosion issues in 2018 have improved due to maturing and spreading of the aspen trees. The site was found to have high amounts of live desirable vegetation with a few barren areas due to plant litter. Sparse weeds were present throughout the site. Some erosion issues along the site edge are still present along the west and south portions of the site.

Mandan Park adjoins the northwest portion of reclaimed area of Mandan Park Play Area (BRES No. 84) and will be sampled following the Park Soil Sampling QAPP<sup>5</sup> under the RMAP program. Sampling efforts for Mandan Park are expected to take place in 2023. Sample results will be included in the forthcoming evaluation summary report, if applicable.

### **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 collected within the BPSOU. No previous samples were collected on or near BRES No. 84 – Mandan Park Play Area. The BPSOU soil action levels and screening criteria are listed in Table 1 and Table 2, respectively, of the IR Sites QAPP Section 2.5.

### **Preliminary Site Evaluation**

A preliminary site evaluation was conducted during the development of this sampling plan to inspect current site conditions and identify focus areas for further investigation. Photograph 1 through Photograph 3 show current site conditions. The investigation found the site to have good vegetation cover throughout the site with some weeds present. The south and west portions of the site have steep slopes, but the area near Mandan Park is flat. Aspen trees are located on the site and are encased in a tall fence. The west portion of this fence is seeing some damage; however, this portion of the site is maintained by BSB and is excluded from the proposed boundary adjustments.

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<sup>5</sup> Butte-Silver Bow and Atlantic Richfield Company, 2023. Draft Final 2023 Residential Metals Abatement Program (RMAP) Quality Assurance Project Plan (QAPP) Annual Update (Non-Residential Parcels). Prepared by Pioneer Technical Services, Inc. June 7, 2023.



Photograph 1: Overview facing south from the Mandan Park Parking Lot.



Photograph 2: Overview of the west and south portions of the site facing northeast.

Plant litter is migrating from the site on the west side along North Wyoming Street. No sediment migration was observed from the site. The sidewalk along North Wyoming Street is found to be in deteriorating condition. Overall, the site is in good condition with good vegetation growth.





Photograph 3: Hole found near the site.

A small hole was found during the site evaluation. This hole is located in the parking lot of Mandan Park; however, it is on the boundary line with the UR portion of site. Wooden borders, as seen on Photograph 3, surround the north portion of the site that border Mandan Park. 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.

| <b>Sample Station</b> | <b>Two Depth Intervals<br/>(inches)</b> |
|-----------------------|---|
| IR-84-SS01            | (1) 0-6, (2) 6-18                       |
| IR-84-SS02            | (1) 0-6, (2) 6-18                       |
| IR-84-SS03            | (1) 0-6, (2) 6-18                       |
| IR-84-SS04            | (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.

| <b>Sample Station</b> | <b>Three Depth Intervals<br/>(inches)</b> |
|-----------------------|---|
| IR-84-SS05            | (3) 0-2, (4) 2-6, (5) 6-12                |
| IR-84-SS06            | (3) 0-2, (4) 2-6, (5) 6-12                |
| IR-84-SS07            | (3) 0-2, (4) 2-6, (5) 6-12                |
| IR-84-SS08            | (3) 0-2, (4) 2-6, (5) 6-12                |
| IR-84-SS09            | (3) 0-2, (4) 2-6, (5) 6-12                |

This field work is anticipated to be completed in 2023, depending on site conditions. Sampling efforts will also be in conjunction with RMAP sampling of Mandan Park, which is anticipated to be completed in 2023.



## 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 McNulty*

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

### Attachments:

Figure 1 – Insufficiently Reclaimed Sites BRES No. 84 - Mandan Park Play Area 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  
Brienne 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 Duaiame / 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

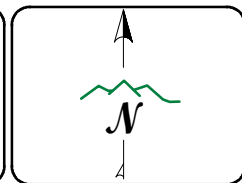
Figure 1 – Insufficiently Reclaimed Sites BRES No. 84 – Mandan Park Play Area Proposed Sample Stations





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

|                      |                                     |  |
|----------------------|-------------------------------------|--|
| STORM WATER LINE     | PROPERTY OWNERSHIP                  | AREA TO BE SAMPLED/ADDRESSED UNDER RMAP PARKS SOILS FSP #7 |
| SANITARY SEWER       | ACCESS PROPERTY OWNERSHIP           |  |
| SAMPLE UNDER IR QAPP | BRES BOUNDARY (ORIGINAL)            |  |
| SAMPLE UNDER UR QAPP | BRES BOUNDARY (PROPOSED ADJUSTMENT) |  |



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

**FIGURE 1**  
 INSUFFICIENTLY RECLAIMED  
 SITE BRES No.84 MANDAN PARK

DATE: 7/24/2023



**Attachment 1**  
**Document Links**

## Document Links

### Insufficiently Reclaimed Sites QAPP:

<https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/EuRW3KcNuu9CqOHRiP3ENvsBOUc-dYqdITUbZZtCVROTAA><sup>6</sup>

### Unreclaimed Sites QAPP:

<https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/EtZbDgcepsdEie6VxUMdW88BbKopRVYj5ZsLN0sG3RkrhA><sup>7</sup>

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<sup>6</sup> Please note the link provided is valid for one year from the date of this submittal.

<sup>7</sup> Please note 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. 68 – Little Mina-2                       | 7/25/2023      |               |
| BRES No. 174 – Buffalo South and Buffalo Ditch    | 7/25/2023      |               |
| BRES No. 84 – Mandan Park                         | 7/31/2023      |               |