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Winter 1-12-2022

**Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites - Field Sampling Plan (FSP) BRES No. 30 – Atlantic-1**

Mike McAnulty

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**January 12, 2022**

Nikia Greene  
Remedial Project Manager  
US EPA – Montana Office  
Baucus Federal Building  
10 West 15th Street, Suite 3200  
Helena, Montana 59626

Erin Agee  
Senior Assistant Regional Counsel  
US EPA Region 8 Office of Regional Counsel  
CERCLA Enforcement Section  
1595 Wynkoop Street  
Denver, CO 80202  
Mail Code: 8ORC-C

Daryl Reed  
DEQ Project Officer  
P.O. Box 200901  
Helena, Montana 59620-0901

Jonathan Morgan, Esq.  
DEQ, Legal Counsel  
P.O. Box 200901  
Helena, Montana 59620-0901

**Re: Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites - Field Sampling Plan (FSP) BRES No. 30 – Atlantic-1.**

Dear Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company to submit the Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites - Field Sampling and Investigation Plan (FSP) BRES No. 30 – Atlantic-1.

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 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. 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 previous Butte Reclamation Evaluation System (BRES) field evaluations and construction completion reports, and on-site evaluations. The site evaluation will include additional sampling performed according to the Atlantic Richfield Company *2021-2022 Final Reclaimed Areas Maintenance and Monitoring (M&M) Quality Project Plan (QAPP)* (referred to as Reclaimed Areas M&M QAPP), which is a component of the BPSOU Solid Media Management Project Plan. The Reclaimed Areas M&M QAPP is available at the following link:



[https://pioneertechnicalservices.sharepoint.com/:b:/s/submitted/Ebj\\_4MWC5ENErHdG89yMF6QBlvjK5T1dpsi483fuVSAQWg](https://pioneertechnicalservices.sharepoint.com/:b:/s/submitted/Ebj_4MWC5ENErHdG89yMF6QBlvjK5T1dpsi483fuVSAQWg)<sup>1</sup>.

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

This FSP provides details related to the field evaluation of the Insufficiently Reclaimed Site BRES No. 30 – Atlantic 1. Proposed soil sampling locations and areas of known deficiencies are shown on Figure 1.

The site evaluation is anticipated to be completed in spring 2022. A site summary and declaration will be prepared to present all available site data and describe which BHRS criteria, if any, are not met. A remedial action work plan (RAWP) describing actions that will 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.

<b>Submittal</b>	<b>Site</b>	<b>Submittal Date</b>	<b>Approval Date</b>
1	BRES No. 104 – Colorado Dump Shaft	9/29/2021	11/5/2021
1R	BRES No. 104 – Colorado Dump Shaft, Final Rev. 1	12/2/2021	12/6/2021
2	BRES No. 154 – Clark Mill Tailings NE	12/1/2021	12/6/2021
3	BRES No. 30 – Atlantic 1	1/12/2022	

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

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

Element	Reference Location	
	FSP	Reclaimed Areas M&M QAPP
Title page and approval authority.		Page i
Introduction and appropriate Agency-approved QAPP reference.	X	
Goals and objectives of sampling.		Section 2.6
Proposed schedule for field work.	X	Section 2.5.1
Site figure including sampling locations, number and depth of samples to be collected, and sample field identification.	X	
Field activity methods and procedures, standard operating procedures.		Section 3.3
Sample labeling and shipping.		Section 3.4.2
Sample analysis, specifying X-ray fluorescence (XRF) vs. laboratory analysis and laboratory name.		Section 2.7
Figure showing the site and/or area represented by a sample, sample ID, and aliquot locations for composite samples.	X	

## Background

The Atlantic-1 site (BRES No. 30) is approximately 6.5 acres located northeast of the intersection of North Main and Lexington Terrace Street. The site was initially regraded to achieve a minimum of 4 Horizontal:1 Vertical (H:V) slope. Reclamation completed by ARCO in 1990 and 1991 consisted of recontouring, recapping, and revegetating the area. Additional reclamation improvements were implemented by ARCO in 1995. Approximately 350 tons per acre (tons/acre) of fill material from the Minnie Irvine stockpile and 1,134 tons of lime rock were applied to the regraded slope, and 18 inches of fill material from the Minnie Irvine borrow source and staging area were used as a final cap. Dozer basins, 6 feet wide, were cut into the existing slope at a frequency of one per every 10 to 12 feet across the site in a "checker board" type pattern to aid in sediment runoff control. A drainage swale, approximately 20 feet by 20 feet, with a rip-rap barrier was formed at the southwest edge of the site to catch any resuspended sediments prior to revegetation. Fertilizer was applied to achieve soil concentrations of 60 pounds per acre nitrogen, 80 pounds per acre phosphorus pentoxide (P<sub>2</sub>O<sub>5</sub>), and 150 pounds per acre of potassium oxide (K<sub>2</sub>O), a chisel plow was used to mix in the fertilizer. A double disc drill seeder was used to sow the EPA95 seed mixture at a rate of 17.25 pounds per acre. Straw was spread over the surface at a rate of 2 tons/acre. Finally, a culvert just south of the site was cleared of debris to aid in runoff management in the adjacent area. Following revegetation, numerous trees were planted on the Atlantic-1 under a voluntary education program. In total, 320 saplings were planted by local elementary school students including 10-inch ponderosa pine, sagebrush, and chokecherry. These saplings were planted mainly in the dozer basins on the site to ensure maximum moisture accumulation by as many of the saplings as possible.

## Proposed 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 site evaluation, sampling, and forthcoming remedial action. A preliminary review of the 2016 evaluation findings indicated issues with vegetation, erosion, exposed waste, site edges, gullies, and barren areas. Vegetation issues originated from presence of knapweed and cheatgrass encroaching from site edges. Along the north site boundary, a grass and dirt lined ditch conveyed water westerly and developed gullies. Sediment was accumulating along curb and gutter on Main Street where it deposited in a sediment basin located in the southwest portion of the site at Main and Bernie's Way. Barren areas on site might have been affected by motor vehicle traffic, weeds, and ant colonies.

## 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. 30 – Atlantic-1. The approximate sample locations are included on Figure 1 with results provided in Table 1 and Table 2 below. Sample results highlighted below exceed ROD Solid Media soil screening criteria. The BPSOU action levels are listed in Table 3 of the Reclaimed Areas M&M QAPP, Section 2.6.1.

**Table 1: Previous Sampling  
Results from BPSOU Soil Sampling**

COCs	Sample ID: <b>WD-097</b>	Sample ID: <b>PSERA9303</b>	Sample ID: <b>TB- SO-10</b>	Sample ID: <b>TB-SO-11</b>
Arsenic	136 mg/kg	47 mg/kg	124 mg/kg	53 mg/kg
Cadmium	98 mg/kg	3 mg/kg	7 mg/kg	13 mg/kg
Copper	2,140 mg/kg	261 mg/kg	800 mg/kg	549 mg/kg
Lead	19,500 mg/kg	2,020 mg/kg	1,070 mg/kg	12,700 mg/kg
Zinc	23,700 mg/kg	1,020 mg/kg	1,900 mg/kg	2,500 mg/kg
pH	4.33 S.U.	4.22 S.U.	4.60 S.U.	4.8 S.U.

COC: contaminant of concern. mg/kg: milligram per kilogram. S.U.: standard unit.

**Table 2: Previous Sampling  
Results from BPSOU Soil Sampling**

COCs	Sample ID: <b>038WA02-0</b>				
Arsenic	48 mg/kg	57 mg/kg	24 mg/kg	145 mg/kg	95 mg/kg
Cadmium	6 mg/kg	11 mg/kg	17 mg/kg	3 mg/kg	3 mg/kg
Copper	461 mg/kg	388 mg/kg	327 mg/kg	537 mg/kg	548 mg/kg
Lead	2,730 mg/kg	2,080 mg/kg	4,160 mg/kg	496 mg/kg	523 mg/kg
Zinc	1,860 mg/kg	2,550 mg/kg	4,740 mg/kg	1,050 mg/kg	918 mg/kg
pH	5.17 S.U.	4.85 S.U.	4.43 S.U.	3.59 S.U.	3.57 S.U.

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

## Preliminary Site Evaluation

A preliminary site visit was conducted to qualify the current 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 with minor areas of bare ground around grasses. Although weed identification is difficult in winter months, it appears the site has limited weed establishment. Remediation efforts have been conducted by BSB in 2021 addressing previous barren areas.



Photograph 1: Repaired Barren Area/Vegetative Improvement



Photograph 2: Repaired Barren Area/Vegetative Improvement



Photograph 3: Repaired Barren Area/Vegetative Improvement



Photograph 4: Diverse Establishment of Grasses and Vegetation



Photograph 5: Well Vegetated Area with Grasses

## Site Characterization Plan

Per the Reclaimed Areas M&M QAPP, the site will be sampled at 2 depth intervals (0-6 inches and 6-18 inches) to determine the presence of waste and/or confirm the depth of previous reclamation efforts. Figure 1 illustrates the proposed sample locations. Opportunistic samples may be obtained in the field at the discretion of field sampling personnel or Agency oversight representative(s).

Results will be used to prepare the site declaration and prescribe site remedial improvements. The overall site will be sampled according to the procedures in the Reclaimed Areas M&M QAPP through a systematic procedure to determine spatial characterization of waste, the parameters of previous reclamation, and the extent of transient material.

Existing site grading will be evaluated to determine storm water flow patterns and identify whether additional storm water controls will 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 necessary additional remedial measures. The following provides the minimum potential site characterization items that will be considered. 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 will follow the Reclaimed Areas M&M QAPP, which also describes the quality assurance/quality control policies and procedures to be used during collection and analysis. Fieldwork is anticipated to begin in 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 McAnulty*

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

### Attachments:

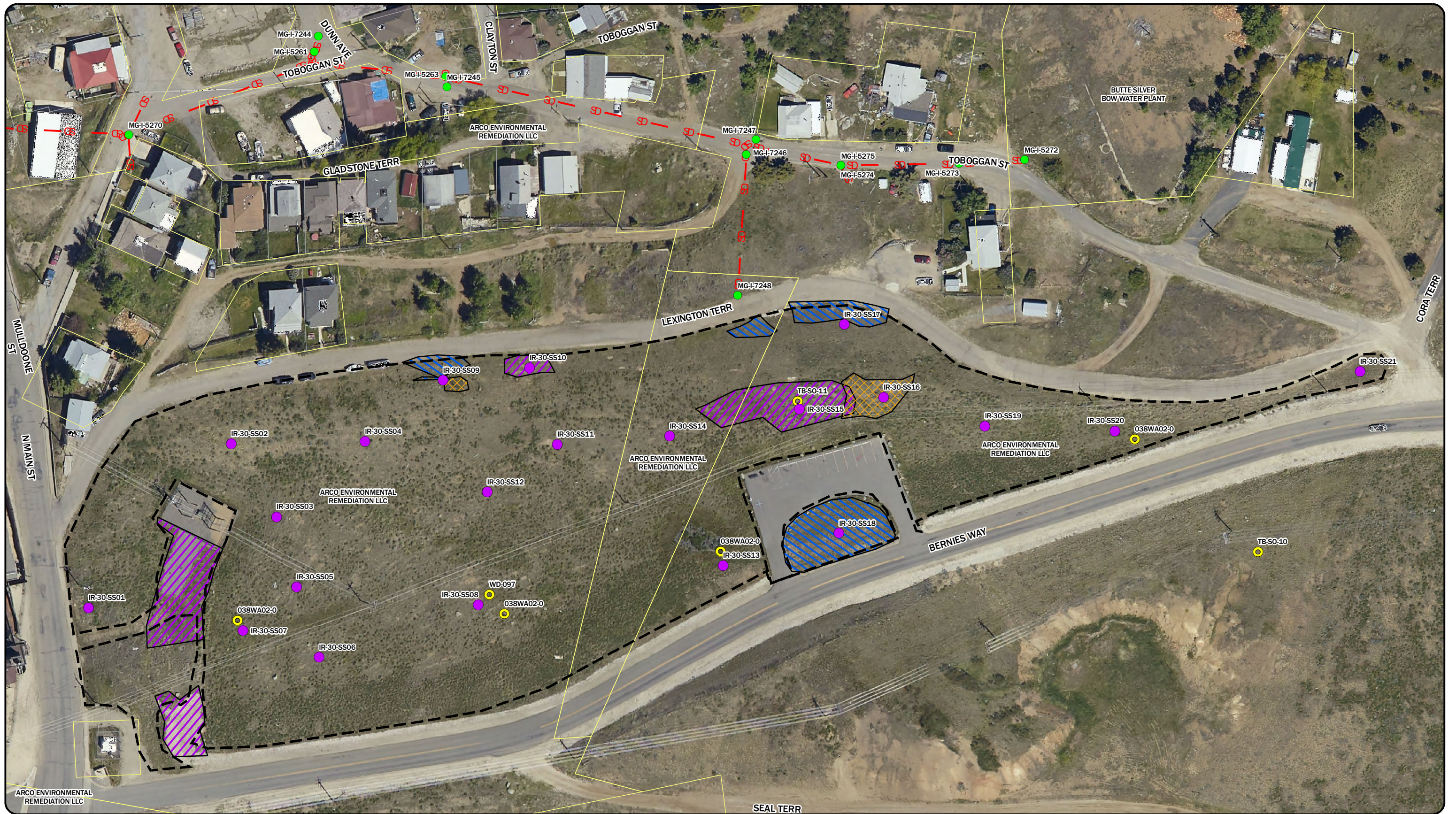
Figure 1 - IR 30 Proposed Sample Locations  
Attachment 1 – Document Links

Cc: Patricia Gallery / Atlantic Richfield - email  
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 / CEAC / email  
Mave Gasaway / DGS - email  
Brianne McClafferty / Holland & Hart – email  
Joe Vranka / EPA - email  
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Jenny Chambers / DEQ - email  
Dave Bowers / DEQ - email  
Carolina Balliew / DEQ - email  
Matthew Dorrington / DEQ - email  
Jim Ford / NRDP - email  
Ray Vinkey / NRDP - email  
Harley Harris / NRDP - email

Katherine Hausrath / NRDP - email  
Meranda Flugge / NRDP - email  
Ted Duaiame / MBMG - email  
Gary Icopini / MBMG - email  
Becky Summerville / MR - email  
Kristen Stevens / UP - email  
Robert Bylsma / UP - email  
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Leo Berry / BNSF - email  
Robert Lowry / BNSF - email  
Brooke Kuhl / BNSF – email  
Mark Engdahl / BNSF – email  
Jeremie Maehr / Kennedy Jenks - email  
Annika Silverman / Kennedy Jenks - email  
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Harrison Roughton / RARUS - email  
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Brandon Warner / BSB – email  
Abigail Peltomaa / BSB - email  
Eileen Joyce / BSB – email  
Sean Peterson / BSB - email  
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Pat Sampson / Pioneer - email  
Mike Borduin / Pioneer - email  
Joe McElroy / Pioneer – email  
Andy Dare / Pioneer – email  
Karen Helfrich / Pioneer - email  
Leesla Jonart / Pioneer - email  
Connie Logan/ Pioneer – email  
Ian Magruder/ CTEC- email  
CTEC of Butte - email  
Scott Juskiewicz / Montana Tech – email

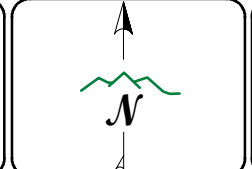
File: MiningSharePoint@bp.com - email  
BPSOU SharePoint – upload

**Figure 1**  
**Insufficiently Reclaimed Sites BRES-30 Atlantic 1**  
**Proposed Sample Locations**



**LEGEND**

Proposed Sample Locations	INSUFFICIENTLY RECLAIMED AREA	BRES EVALUATION VEGETATIVE IMPROVEMENT	STORM LINE
QAPP Program	PROPERTY OWNERSHIP	BRES EVALUATION EXPOSED WASTE	
Sample Under IR QAPP		BRES EVALUATION BARREN AREA	
Historic Sample Location		STORMWATER INLET	



DISPLAYED AS:  
 PROJECTION/ZONE: MSP  
 DATUM: NA  
 UNITS: INTL FT  
 SOURCE: PIONEER/QSI2020

0 50 100  
 Feet



**FIGURE 1**

INSUFFICIENTLY RECLAIMED SITES  
 BRES-30  
 ATLANTIC 1  
 PROPOSED SAMPLE LOCATIONS

DATE: 12/2/2021

**Attachment 1**  
Document Links

## Document Links

### Reclaimed Areas M&M QAPP:

[https://pioneertechnicalservices.sharepoint.com/:b:/s/submitted/Ebj\\_4MWC5ENErHdG89yMF6QBIvjK5T1dpsi483fuVSAQWg](https://pioneertechnicalservices.sharepoint.com/:b:/s/submitted/Ebj_4MWC5ENErHdG89yMF6QBIvjK5T1dpsi483fuVSAQWg)<sup>2</sup>.

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<sup>2</sup> Please note the link provided is valid for one year from the date of this submittal.