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

Mike McAnulty

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August 17, 2022

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Re: Butte Priority Soils Operable Unit (BPSOU) 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) Final Insufficiently Reclaimed Sites - Field Sampling and Investigation Plan (FSP) BRES No. 30 – Atlantic-1. Agency comments provided in the approval letter dated February 22, 2022, have been addressed below. The Agency approval letter can be accessed at the following link:

https://pioneertechnicalservices.sharepoint.com/:b:/s/submitted/ERyldGglyhdAjKi50tfxv4BeoWVJGpeH0mYB4VRr_ju9g¹.

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. 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

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



2022 Final Insufficiently Reclaimed Areas Quality Project Plan (QAPP) (referred to as IR Sites QAPP), which is a component of the BPSOU Solid Media Management Project Plan, and is available at the following link:

[https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Eid2SfSSinhOsfQXY5CXGEOBe5Ilf5IQO01hBO43ZROgpg²](https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Eid2SfSSinhOsfQXY5CXGEOBe5Ilf5IQO01hBO43ZROgpg?).

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.

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, has been updated to record the current 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
3	BRES No. 30 – Atlantic-1	1/12/2022	2/22/2022
4	BRES No. 16 – Curry	1/12/2022	2/22/2022
5	BRES No. 8 – Belle of Butte	3/11/2022	
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	8/2/2022

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

² Please note that the link provided is valid for one year from the date of this submittal.

Element	Reference Location	
	FSP	IR Sites QAPP
Title page and approval authority.		Page i
Introduction and appropriate Agency-approved QAPP reference.	X	
Goals and objectives of sampling.		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
Field activity methods and procedures, standard operating procedures.		Section 3.2, Table 4
Sample labeling and shipping.		Section 3.2.5, Appendix C
Sample analysis, specifying X-ray fluorescence (XRF) vs. laboratory analysis and laboratory name.		Section 3.3
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 Street 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 (P₂O₅), and 150 pounds per acre of potassium oxide (K₂O); 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 the 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 Street 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 1 and Table 2 of the IR Sites QAPP, Section 2.4.

Table 1: Previous Sampling Results from BPSOU Soil Sampling

COCs	Sample ID: WD-097	Sample ID: PSERA9303	Sample ID: TB-SO-10	Sample ID: TB-SO-11
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: 038WA02-01	Sample ID: 038WA02-02	Sample ID: 038WA02-03	Sample ID: 038WA02-04	Sample ID: 038WA02-05
Arsenic	48 mg/kg	57 mg/kg	24 mg/kg	95 mg/kg	145 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	548 mg/kg	537 mg/kg
Lead	2,730 mg/kg	2,080 mg/kg	4,160 mg/kg	523 mg/kg	496 mg/kg
Zinc	1,860 mg/kg	2,550 mg/kg	4,740 mg/kg	918 mg/kg	1,050 mg/kg
pH	5.17 S.U.	4.85 S.U.	4.43 S.U.	3.57 S.U.	3.59 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 were 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 IR Sites QAPP, the site will be sampled at 2 depth intervals (0 to 6 inches and 6 to 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 IR Sites 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 IR Sites QAPP, which also describes the quality assurance/quality control policies and procedures to be used during collection and analysis. Fieldwork is anticipated to be performed in 2022.

Sample Station	2 Depth Intervals (inches)
IR-30-SS01	(1) 0-6, (2) 6-18
IR-30-SS02	(1) 0-6, (2) 6-18
IR-30-SS03	(1) 0-6, (2) 6-18
IR-30-SS04	(1) 0-6, (2) 6-18
IR-30-SS05	(1) 0-6, (2) 6-18
IR-30-SS06	(1) 0-6, (2) 6-18
IR-30-SS07	(1) 0-6, (2) 6-18
IR-30-SS08	(1) 0-6, (2) 6-18
IR-30-SS09	(1) 0-6, (2) 6-18
IR-30-SS10	(1) 0-6, (2) 6-18
IR-30-SS11	(1) 0-6, (2) 6-18
IR-30-SS12	(1) 0-6, (2) 6-18
IR-30-SS13	(1) 0-6, (2) 6-18
IR-30-SS14	(1) 0-6, (2) 6-18
IR-30-SS15	(1) 0-6, (2) 6-18
IR-30-SS16	(1) 0-6, (2) 6-18
IR-30-SS17	(1) 0-6, (2) 6-18
IR-30-SS18	(1) 0-6, (2) 6-18
IR-30-SS19	(1) 0-6, (2) 6-18
IR-30-SS20	(1) 0-6, (2) 6-18
IR-30-SS21	(1) 0-6, (2) 6-18

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

Attachments:

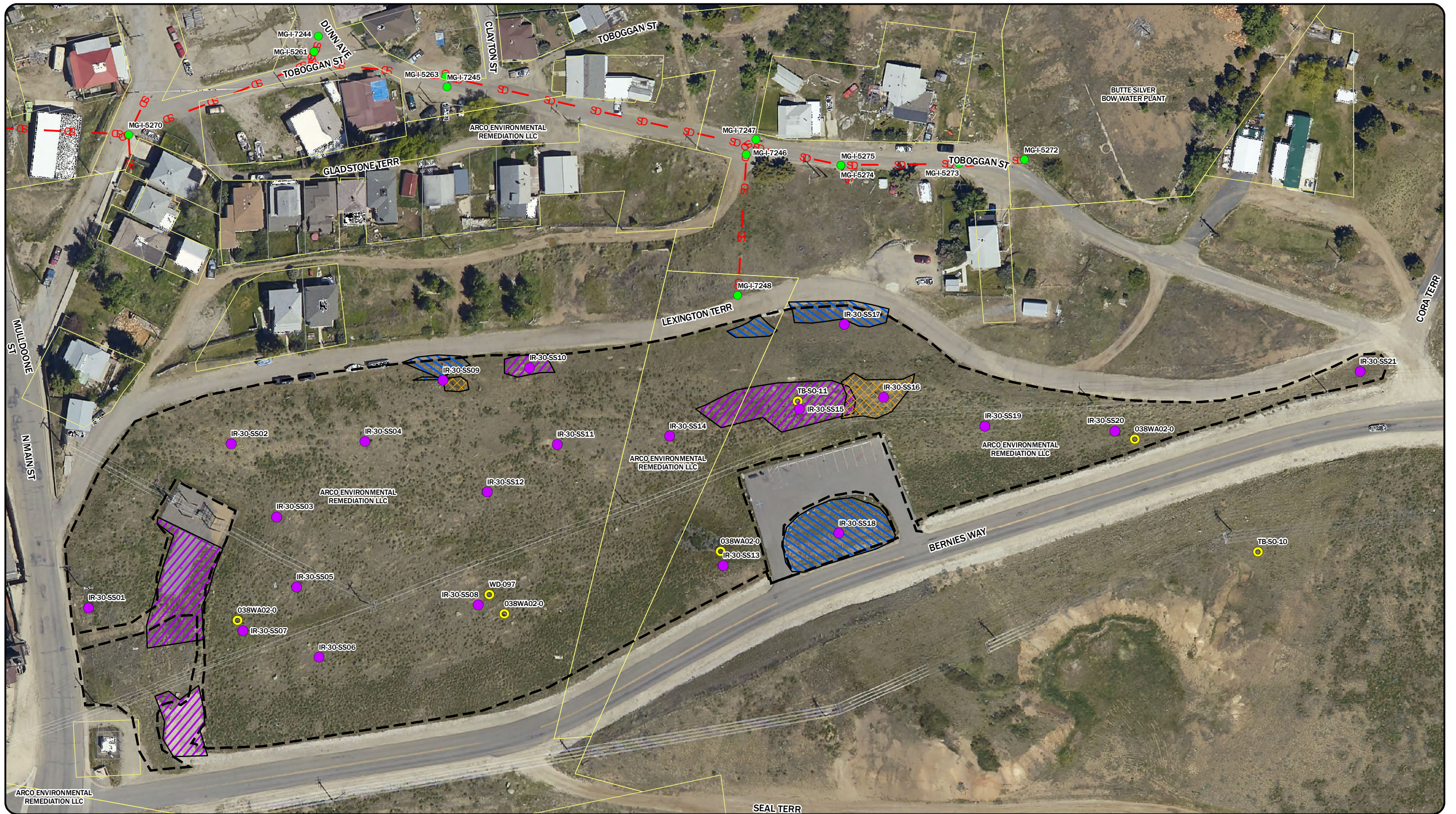
- Figure 1 - IR 30 Proposed Sample Locations
- Attachment 1 – Document Links

Cc: Patricia Gallery / Atlantic Richfield - email
Chris Greco / Atlantic Richfield – email
Josh Bryson / Atlantic Richfield - email
Loren Burmeister / Atlantic Richfield – email
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Curt Coover / CDM - email
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Dave Bowers / DEQ - email
Carolina Balliew / DEQ - email
Matthew Dorrington / DEQ – email
Wil George / DEQ – email
Jim Ford / NRDP - email
Pat Cunneen / NRDP - email
Harley Harris / NRDP - email
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
Julia Crain / BSB - email
Chad Anderson / BSB - email
Brandon Warner / BSB – email

Abigail Peltomaa / BSB - email
Eileen Joyce / BSB – email
Sean Peterson/BSB – email
Gordon Hart / BSB – email
Jeremy Grotbo / BSB – email
Karen Maloughney / BSB – email
Josh Vincent / WET - email
Craig Deeney / TREC - email
Scott Bradshaw / TREC - email
Brad Archibald / Pioneer - email
Pat Sampson / Pioneer - email
Joe McElroy / Pioneer – email
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

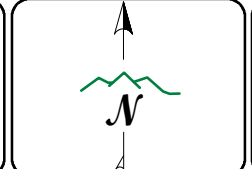
File: MiningSharePoint@bp.com - email
BPSOU SharePoint - upload

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



LEGEND

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



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

0 50 100
Feet



INSUFFICIENTLY RECLAIMED SITES
 BRES-30
 ATLANTIC 1
 PROPOSED SAMPLE LOCATIONS

DATE: 12/2/2021

Attachment 1
Document Links

Document Links

IR Sites QAPP:

<https://pioneertechnicalservices.sharepoint.com/:f/s/submitted/Eid2SfSSinhOsfQXY5CXGEoBe5Ilf5IQO01hBO43ZROgpg>³.

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