Winter 12-7-2022

Final 2022 Residential Metals Abatement Program (RMAP) Cherokee Park Soil Remedial Action Work Plan (RAWP)

Pioneer Technical Services, Inc.

Atlantic Richfield Company

Mike Mc Anulty
Liability Manager

317 Anaconda Road
Butte MT 59701
Direct (406) 782-9964
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December 7, 2022

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Helena, Montana 59620-0901

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

RE: Final 2022 RMAP Cherokee Park Soil Remedial Action Work Plan (RAWP)

Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company and Butte-Silver Bow to submit the Final 2022 RMAP Cherokee Park Soil Remedial Action Work Plan (RAWP) in response to the Agencies November 22, 2022, conditional approval letter of the November 4, 2022, Draft Final submittal. The report and appendices may be downloaded at the following link:

https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/ElSqn6sC2OlIoiojUG3w_koBQRSg9OpZPHRPoQ1OHOZkcw

If you have any questions or comments, please call me at (907) 355-3914 or Eric Hassler at (406) 497-5042.

Sincerely,

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

Eric Hassler, Director
Department of Reclamation
and Environmental Services
Butte-Silver Bow

Atlantic Richfield Company

317 Anaconda Road
Butte MT 59701

Mike Mc Anulty
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Dave Bowers / DEQ - email
Carolina Balliew / 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 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
Jeremie Maehr / Kennedy Jenks - email
Doug Brannan / Kennedy Jenks - email
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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

SILVER BOW CREEK/BUTTE AREA NPL SITE
BUTTE PRIORITY SOILS OPERABLE UNIT

Final

2022 Residential Metals Abatement Program (RMAP)
Cherokee Park
Soil Remedial Action Work Plan (RAWP)

Butte-Silver Bow County

and

Atlantic Richfield Company

December 7, 2022

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 West 15TH Street, Suite 3200
Helena, MT 59626-0096
Phone 866-457-2690
www.epa.gov/region8

Ref: 8MO

November 22, 2022

Mr. Mike McAnulty
Liability Manager
Atlantic Richfield Company
317 Anaconda Road
Butte, Montana 59701

Re: Approval letter for the Draft Final Residential Metals Abatement Program (RMAP) Cherokee Park Soil Remedial Action Work Plan (RAWP) (dated November 4, 2022)

Dear Mike:

The U. S. Environmental Protection Agency (EPA), in consultation with the Montana Department of Environmental Quality (DEQ), is approving the *Draft Final RMAP Cherokee Park RAWP (November 4, 2022)*, with a minor comment below. Please address this comment and distribute the document as final.

Comment

- Figure 1, P-0008: Please revise the following callout – "REPLACE EXISTING ASPHALT CURBING WITH NEW CONCRETE CURB AND GUTTER TO ADDRESS POTENTIAL STORMWATER RUN OFF FROM THE EAST.", to reference Page 93 of the RAWP, BSB Public Works Department, standard Drawing R-CGS1.

If you have any questions or concerns, please call me at (406) 457-5019.

Sincerely,

NIKIA GREENE
Digitally signed by NIKIA GREENE
Date: 2022.11.22 10:37:55 -07'00'

Nikia Greene
Remedial Project Manager

cc: (email only)
Butte File
Matt Dorrington, DEQ
Daryl Reed; DEQ
Will George; DEQ
Jon Morgan; DEQ counsel
Carolina Balliew; DEQ
Harley Harris; NRDP
Katherine Hausrath; NRDP
Jim Ford; NRDP
Pat Cunneen; NRDP
John Gallagher; BSBC
Sean Peterson; BSBC
Eileen Joyce; BSBC
Eric Hassler; BSBC
Brandon Warner; BSBC
Chad Anderson; BSBC
Karen Maloughney; BSBC
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Doug Brannan; Kennedy Jenks for BNSF and UP
Brooke Kuhl; BNSF counsel
Lauren Knickrehm; for BNSF
Philip Hooper; Kennedy Jenks for BNSF and UP
Bob Andreoli; Patroit/RARUS
Becky Summerville; counsel for Inland Properties Inc.
Robert Lowry, BNSF counsel
Loren Burmeister; AR
Josh Bryson; AR
Chris Greco; AR
Mike Mcanulty; AR
Dave Griffis; AR
Jean Martin; Counsel AR
Mave Gasaway; attorney for AR
Adam Cohen; Counsel for AR
Pat Sampson; Pioneer for AR
Scott Sampson; Pioneer for AR
Scott Bradshaw; TREC
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Andy Dare; Pioneer for AR
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Curt Coover, CDM Smith
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Erin Agee, EPA
Joe Vranka; EPA
Chris Wardell; EPA
Dana Barnicoat; EPA
Charlie Partridge; EPA
Ian Magruder; CTEC (Tech Advisor)
Janice Hogan; CTEC
Marissa Stockton; Rosendale State Director
Kristi Carroll; Montana Tech Library

SILVER BOW CREEK/BUTTE AREA NPL SITE
BUTTE PRIORITY SOILS OPERABLE UNIT

Final

2022 Residential Metals Abatement Program (RMAP)
Cherokee Park
Soil Remedial Action Work Plan (RAWP)

Prepared for:

Butte-Silver Bow County
Superfund Division
155 W. Granite
Butte, Montana 59701

and

Atlantic Richfield Company
317 Anaconda Road
Butte, Montana 59701

Prepared by:

Pioneer Technical Services, Inc.
1101 S. Montana Street
Butte, Montana 59701

December 7, 2022

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DOCUMENT MODIFICATION SUMMARY

Modification	Author	Version	Description	Date
0	Jesse Schwarzrock	Draft	Issued for Internal Review	10/24/22
1	Jesse Schwarzrock	Draft Final	Issued for Agency Review	11/04/22
2	Jesse Schwarzrock	Final	Issued Final to Agencies	12/07/22

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) outlines a portion of the remedial action (RA) work resulting from the 2022 Residential Metals Abatement Program (RMAP) park soil sampling event that began in June 2022 and is currently on-going. The sampling event was conducted according to the *Final 2022 Residential Metals Abatement Program (RMAP) Quality Assurance Project Plan (QAPP) (Non-Residential Parcels)* (Butte-Silver Bow County and Atlantic Richfield Company, 2022a) and the *Final 2022 Residential Metals Abatement Program (RMAP) Park Soil Sampling Field Sampling Plan (FSP) Submittal #2 [Covering Scown Field, Cherokee Park, Copper/Emmet, West Side Subdivision Park, Chester Steele Park, and Cinders Field] (*Butte-Silver Bow County and Atlantic Richfield Company, 2022b).

2.0 PARK SOIL REMEDIATION SCOPE

The scope of work covered by this RAWP includes the following park(s):

- Cherokee Park (see Table 1).

3.0 PARK SOIL REMEDIATION SCHEDULE

Remedial activities may begin in the Fall of 2022 but will most likely be initiated and completed during the 2023 construction season. All scheduling decisions will be vetted through relevant stakeholders to ensure minimal disturbance to the public.

4.0 REMEDIAL ACTION WORK PLAN

4.1 Cherokee Park Remedial Action

Remediation at Cherokee Park consists of two polygons totaling approximately 0.05 acres. Play Area 1 (PA1) is in the northwest corner of the park. Play Area 2 (PA2) is in the center of the park.

- Polygon PA1 (79 square feet).
- Polygon PA2 (2,058 square feet).

Both polygons are playground areas with an existing sand material cover (approximately 6 inches thick) on top of the soil tested in this investigation (see Figure 1). The Individual Site Work Plan (ISWP) is provided in Attachment A.

4.1.1 Excavation

Both polygons (PA1 and PA2) have lead exceedances to a depth of 12 inches. As previously stated, both polygons have an existing 6-inch sand material cover. Based on this information, the removal area will be dictated by the original sampling polygon areas with the RMAP maximum removal depth of 14 inches below the existing sand material cover (see Detail 3 on Figure 2).

A 1-foot mandatory buffer will be maintained around all existing utilities. If achieving the removal depth means encroaching within the 1-foot mandatory utility buffer, excavation work will stop when at the 1-foot from utility mark. No removal work will take place within 1 foot of existing utilities. As mandated by Atlantic Richfield Company's *Remediation Management – Control of Work Defined Practices*, mechanical excavation is not allowed within 2 feet of existing utilities. Therefore, any excavation work within 2 feet of the utility shall be hand excavation. The excavation depth will be measured from below the existing wood chip cover, where applicable.

Three pieces of playground equipment exist within the work area. The crew will remove and dispose of monkey bars located within PA1. The monkey bars will be replaced with a new piece of playground equipment approved by Butte-Silver Bow (BSB). PA2 contains a swing set and a newer piece of equipment that includes a slide. The crew will remove and dispose of the swing set. It will be replaced with a new piece of playground equipment approved by BSB. The play set that includes the slide meets current playground equipment requirements and will be left in place. Construction crews will conduct excavation work around this existing structure so much as site conditions allow. Excavation around playground equipment footings will be conducted according to Detail 6 on Figure 3. Crews will avoid disturbing soil adjacent to the playground equipment foundations and slope downward at a 45-degree angle until removal depth is achieved or another obstacle is encountered that limits further excavation. Crews will confer with the on-site U.S. Environmental Protection Agency (EPA) representative to make site-specific excavation decisions around this existing structure.

All excavated material will be disposed of within the Butte Mine Waste Repository (see Figure 4). Crews will verify the depth of the excavation area by measuring using a hand tape and using existing perimeter features (i.e., the elevation of the concrete curbing/tree areas/native soil around the excavation perimeter).

Care will be taken to protect existing asphalt paving and concrete curbing in and around the work area. If any of this existing infrastructure is damaged, it will be replaced/repaired.

If excavations are not able to be backfilled during the same shift that they were developed, site control measures will be implemented during non-working hours. This may include perimeter control via safety cones and caution tape, construction fencing, or other approved methods.

4.1.2 Backfill

Once the on-site EPA representative has approved the excavation area, backfill work will begin (see Detail 4 on Figure 2). A 2-inch-thick layer of sugar beet lime (see Section 5.1, Attachment B, and Attachment B-1) will be placed at the bottom of the excavation in case underlying native soil has pH issues.

Once the lime layer is in place, a separation fabric (see Section 5.2 and Attachment C) will be placed, consistent with current RMAP practices. The separation fabric will indicate the boundary between remediated and native soils for any future excavation work in this area.

Once the separation fabric is installed, 12 inches of Type B fill material (see Section 5.3, Attachment D, and Attachment D-1) will be placed. The backfill material will not be compacted to attain a specific density and moisture content but will be slightly compacted to impede future settling of the backfill material.

After placement and compaction of Type B fill material is complete, a second layer of separation fabric will be placed to act as a weed barrier.

Then a final 6-inch-thick layer of new sand cover material (or other BSB-approved cover material) will be placed on top of the weed barrier.

4.1.3 Revegetation

This playground area will be surfaced with sand material (or other BSB approved cover material). Therefore, revegetation is not anticipated for the primary work areas. However, given the location of the playground areas, existing sod will most likely be disturbed through ingress/egress activities.

For those areas that will need revegetation work, sod placement will be the most appropriate option given the maintained, irrigated nature of the property. Sod procurement is detailed in Section 5.6. All previously sodded areas disturbed during construction will receive sod. After final grading of backfill areas is complete, areas to be sodded will be raked or otherwise cleared of stones larger than 1 inch in any diameter, sticks, stumps, and other debris, which might interfere with sodding, growth of grasses, or subsequent maintenance of grass-covered areas.

4.2 Curb and Gutter

Curb and gutter will be installed along the eastern boundary of Cherokee Park (see Figure 1) to prevent the possibility of storm water runoff from upgradient areas potentially impacting the park area. The curb and gutter will be constructed to meet the BSB Public Works Department Standard Drawing R-CGS1 provided in Attachment E. The work will be completed according to the latest version of the *Montana Public Works Standard Specifications* (Montana Contractors Association, 2021).

4.3 Dust Control

This work will be performed within a residential area; consequently, controlling fugitive dust emissions is a high priority. If fugitive dust emissions become significant during the work, all work will be shut down until alternative and satisfactory dust control methods are determined. The contractor will be responsible for acquiring water for dust control from a source of the contractor's choice.

4.4 Best Management Practices

Best management practices (BMPs) will be installed, as necessary, to ensure sediment does not leave the work area.

5.0 MATERIALS

5.1 Sugar Beet Lime Source

Sugar beet lime will be procured from Western Sugar Cooperative in Billings, Montana. This material is currently being hauled from Billings to the Anaconda Smelter National Priorities List (NPL) Site. Internal quality assurance data from the past three months are provided in Attachment B. The corresponding laboratory reports are in Attachment B-1.

5.2 Fabric Material

Geotex 801 will be used for the separation fabric to provide a barrier between the growth medium and native soil. The material specifications are in Attachment C.

5.3 Type B Backfill Borrow Source

Type B fill material will be used for all required backfill material. Atlantic Richfield Company developed this fill material within the South Borrow Area of Remedial Design Unit (RDU) 8 of the Anaconda Smelter NPL Site in November 2020 (the location is shown on Figure 5) and screened it to a 6-inch minus product. The quality assurance data are provided in Attachment D, and the corresponding laboratory reports are in Attachment D-1. Because this material is fill material (not growth medium), only metals data are, provided consistent with past EPA requests in Anaconda.

5.4 Backfill Borrow Source

Growth medium is not anticipated to be necessary for the Cherokee Park RA at this time. In the event it is required, the Kaw Avenue growth medium borrow stockpile will be used (the location is shown on Figure 6). The Agency-approved quality assurance data are provided in Attachment F, and the corresponding laboratory reports are in Attachments F-1 and F-2.

5.5 Sand Cover Material

Sand cover material will tentatively be procured from S&N Concrete in Anaconda, Montana. These discussions are still on-going with BSB. The quality assurance data are provided in Attachment G, and the corresponding laboratory reports are in Attachment G-1. Because this material is cover material (not growth medium), only metals data are provided, consistent with past EPA requests in Anaconda.

5.6 Sod

Kentucky bluegrass sod will be procured from Summit Valley Turf in Whitehall, Montana.

6.0 REFERENCES

Butte-Silver Bow County and Atlantic Richfield Company, 2022a. Final 2022 Residential Metals Abatement Program (RMAP) Quality Assurance Project Plan (QAPP) (Non-Residential Parcels). Silver Bow Creek/Butte Area NPL Site Butte Priority Soils Operable Unit. June 21, 2022.

Butte-Silver Bow County and Atlantic Richfield Company, 2022b. Final 2022 Residential Metals Abatement Program (RMAP) Park Soil Sampling Field Sampling Plan (FSP) Submittal #2 [Covering Scown Field, Cherokee Park, Copper/Emmet, West Side Subdivision Park, Chester Steele Park, and Cinders Field]. Silver Bow Creek/Butte Area NPL Site Butte Priority Soils Operable Unit. June 21, 2022.

Montana Contractors Association, 2021. Montana Public Works Standard Specifications, Seventh Edition. April 2021.

FIGURES

NOTES:

1. PA1 AND PA2 WILL BE REMEDIATED PER DETAIL 3 ON FIGURE 2.

2. WORK AROUND UTILITIES/UTILITY CORRIDORS WILL BE IN ACCORDANCE WITH BP'S CURRENT GROUND DISTURBANCE POLICY.

PLACE 47 LF OF NEW BSB APPROVED BORDER MATERIAL AND NEW SAND COVER MATERIAL TO MATCH PA3 (OR OTHER MATERIAL APPROVED BY BSB)

MAINTAIN EXISTING ASPHALT

REPLACE EXISTING PLAYGROUND EQUIPMENT WITH BSB APPROVED EQUIPMENT

REPLACE EXISTING PLAYGROUND EQUIPMENT WITH BSB APPROVED EQUIPMENT

REPLACE EXISTING ASPHALT CURBING WITH NEW CONCRETE CURB AND GUTTER TO ADDRESS POTENTIAL STORMWATER RUN OFF FROM THE EAST. SEE RAWP TEXT SECTION 4.2 AS WELL AS ATTACHMENT E.

PLACE NEW SAND COVER MATERIAL TO MATCH PA3 (OR OTHER MATERIAL APPROVED BY BSB)

MAINTAIN EXISTING CONCRETE CURBING

MAINTAIN EXISTING PLAYGROUND EQUIPMENT

W COPPER ST

N CRYSTAL ST

ASPHALT

INC. #1 584 SF
INC. #2 584 SF
INC. #3 586 SF
INC. #4 584 SF
INC. #5 584 SF
INC. #6 584 SF
INC. #7 584 SF
PA1 79 SF
INC. #8 584 SF
INC. #9 585 SF
INC. #10 583 SF
INC. #11 584 SF
INC. #12 584 SF
INC. #13 585 SF
INC. #14 584 SF
INC. #15 584 SF
INC. #16 584 SF
INC. #17 584 SF
PA2 2,058 SF
INC. #18 584 SF
INC. #19 585 SF
INC. #20 584 SF
INC. #21 584 SF
INC. #22 584 SF
INC. #23 584 SF
PA3 1,350 SF
INC. #24 584 SF
INC. #25 585 SF
INC. #26 585 SF
INC. #27 584 SF
INC. #28 584 SF
INC. #29 584 SF
INC. #30 584 SF

LE

LEGEND

- No Action Required
- 14" Removal
- 26" Removal
- Non-Samplable Area

N

DISPLAYED AS:
PROJECTION/ZONE: MSP
DATUM: NAD 83
UNITS: FEET
SOURCE: PIONEER

0 15 30 60
Feet

FIGURE 1

P-0008
CHEROKEE PARK
SITE OVERVIEW

PIONEER TECHNICAL SERVICES, INC.

DATE: 11/22/2022

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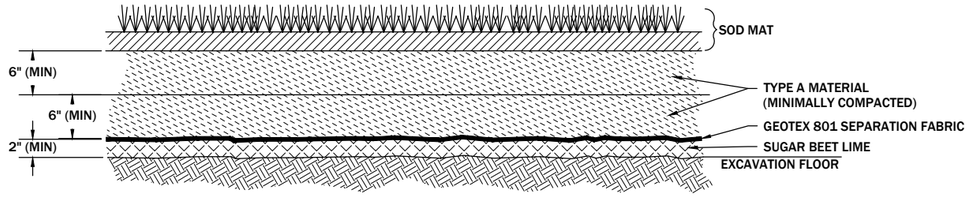
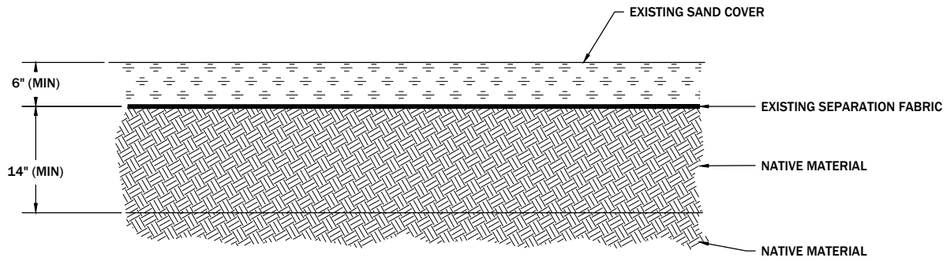
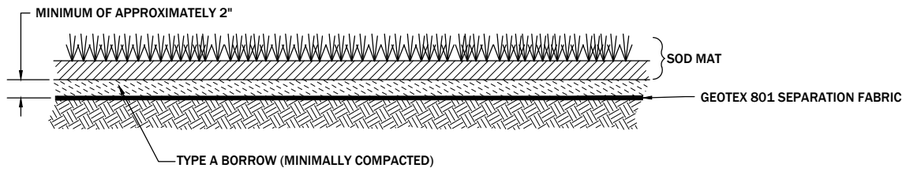


14" SOIL AND SOD REMOVAL/REPLACEMENT DETAIL 1

NOTE: 14" OF NATIVE SOIL TO BE REMOVED. IT WILL BE REPLACED WITH 2" OF LIME, A SEPARATION FABRIC, AND 12" OF TYPE A KAW AVENUE STOCKPILE GROWTH MEDIUM.

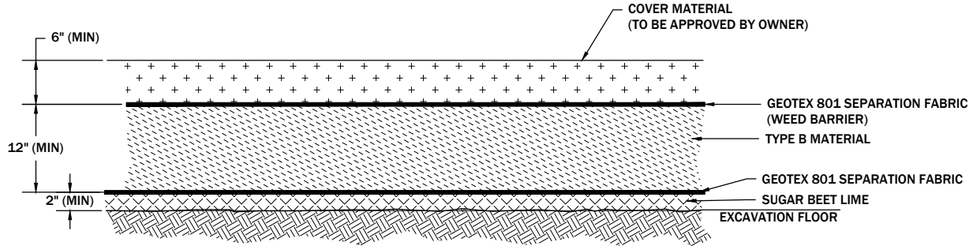


PA1 & PA2 REMOVAL DETAIL 3



TREE CANOPY REMOVAL/REPLACEMENT DETAIL 2

NOTE: A FULL 14" OF REMOVAL WILL BE ATTEMPTED WITHIN TREE CANOPIES, BUT WILL NOT BE FEASIBLE IN ALL AREAS DUE TO TREE ROOTS. IN THESE AREAS, A MINIMUM REMOVAL OF THE EXISTING COVER MATERIAL (SOD/AGGREGATE) PLUS 2" OF NATIVE MATERIAL WILL BE ATTEMPTED. IN THIS SCENARIO, NO LIME WILL BE PLACED. A SEPARATION FABRIC, 2" OF KAW AVENUE STOCKPILE GROWTH MEDIUM, AND WOOD CHIPS/LANDSCAPING MATERIAL CHOSEN BY THE OWNER WILL BE PLACED TO BACKFILL THE EXCAVATION AREA.



PA1 & PA2 REPLACEMENT DETAIL 4

DISPLAYED AS:
COORD SYS/ZONE:
DATUM:
UNITS:
SOURCE:

SCALE IN FEET
0 NTS NTS

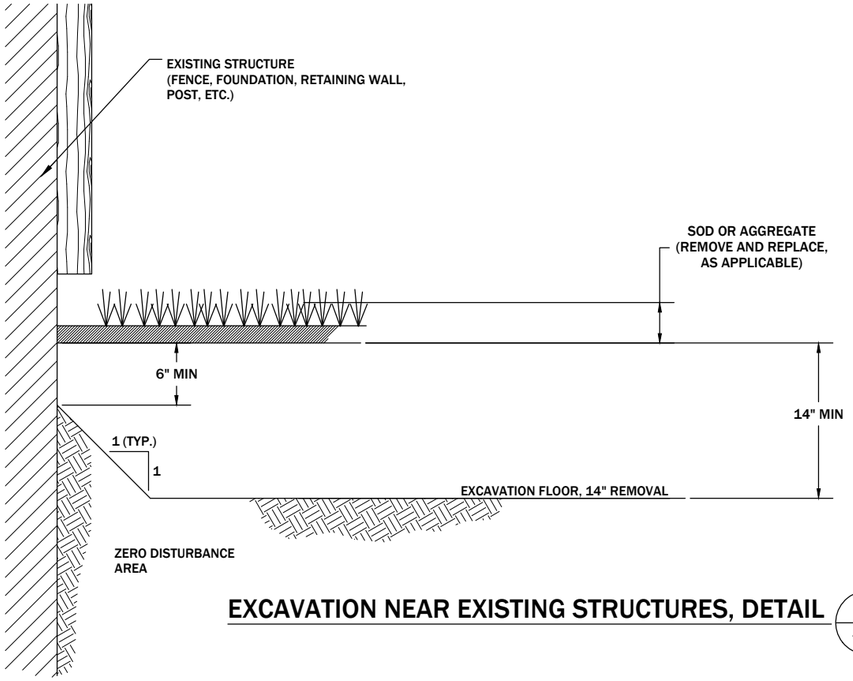
FIGURE 2

PIONEER TECHNICAL SERVICES, INC.

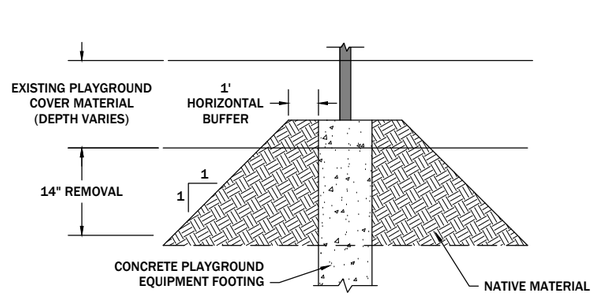
REMOVAL CROSS SECTIONS

DATE: 10/24/2022

10/24/2022 1:19:43 PM Z:\SHARED\ACTIVE PROJECTS\ARCO\BPSOU\RMAP\GIS\PARKS\PARK RAWP FIGURES\CHEROKEEPARK_COPPERCRYSTAL\RAWP_CHEROKEEPARK_COPPERCRYSTAL2.DWG



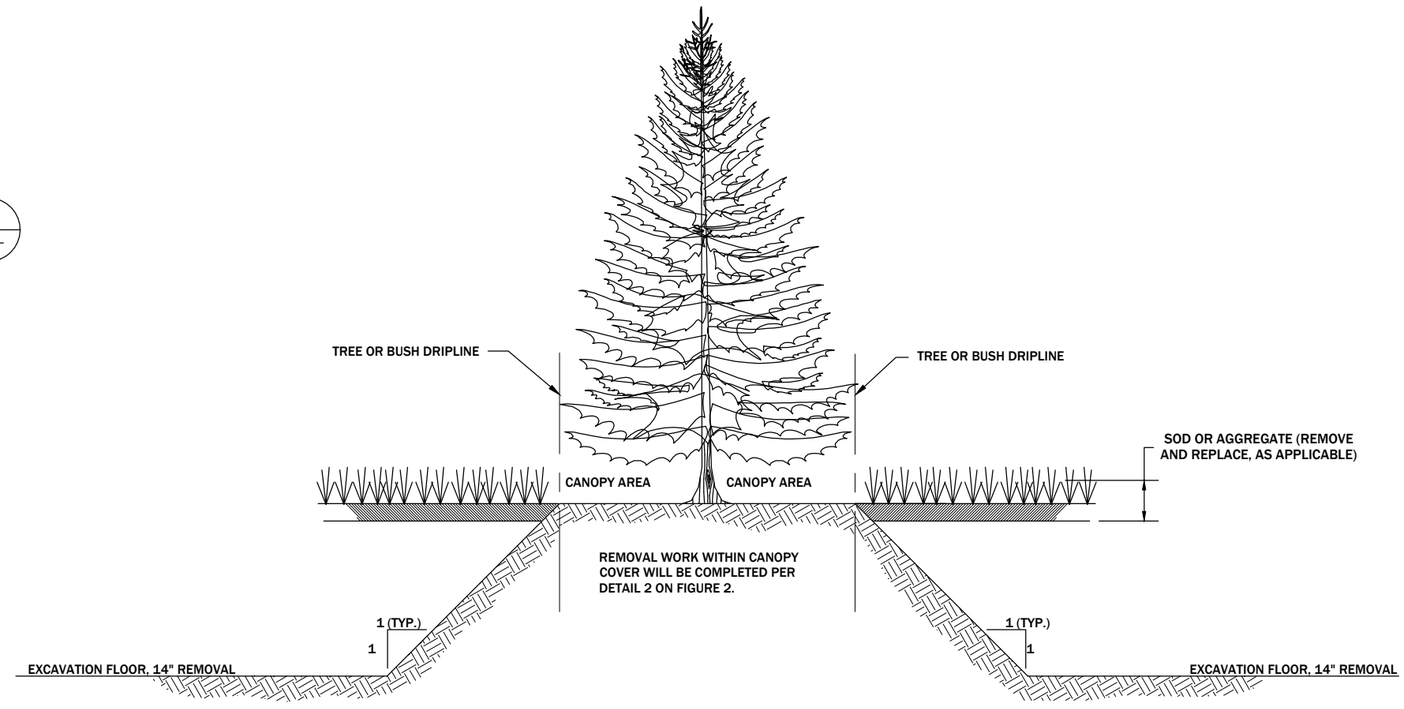
EXCAVATION NEAR EXISTING STRUCTURES, DETAIL 5



EXCAVATION AROUND EXISTING PLAYGROUND EQUIPMENT FOOTINGS 6

NOTE:

1. THIS DETAIL APPLIES TO FOOTINGS AROUND THE PERIMETER OF PLAYGROUND EQUIPMENT SETS. THOSE FOOTINGS ON THE INTERIOR OF THE SETUP MAY BE INACCESSIBLE. TO BE DECIDED ON A SITE SPECIFIC BASIS IN THE FIELD WITH ON-SITE EPA REPRESENTATIVE.



EXCAVATION NEAR EXISTING TREES, BUSHES, AND SHRUBS, DETAIL 7

DISPLAYED AS:
COORD SYS/ZONE:
DATUM:
UNITS:
SOURCE:

SCALE IN FEET
0 NTS NTS

FIGURE 3

REMOVAL DETAILS

PIONEER TECHNICAL SERVICES, INC.

DATE: 10/24/2022

10/27/2022 3:54:30 PM Z:\SHARED\ACTIVE PROJECTS\ARCO\BPSOU\RMAP\GIS\PARKS\PARK RAWP FIGURES\CHEROKEEPARK_COPPERCRYSTAL\RAWP_CHEROKEEPARK_COPPERCRYSTAL3.DWG

DISPLAYED AS:
PROJECTION/ZONE: MSP
DATUM: NAD 83
UNITS: FEET
SOURCE: PIONEER

0 500 1,000 2,000
Feet

FIGURE 4

MINE WASTE REPOSITORY LOCATION

PIONEER TECHNICAL SERVICES, INC.

DATE: 10/24/2022

Path: Z:\Shared\Active Projects\ARCO\BPSOU\RMAP\GIS\Parks\Park RAWP Figures\CherokeePark_CopperCrystal\RAWP_CherokeePark_CopperCrystal4.mxd

DISPLAYED AS:
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DATUM: NAD 83
UNITS: FEET
SOURCE: PIONEER

0 0.75 1.5 3
Miles

FIGURE 5

PIONEER TECHNICAL SERVICES, INC.

TYPE B BORROW STOCKPILE LOCATION

DATE: 10/24/2022

Path: Z:\Shared\Active Projects\ARCO\BPSOU\RMAP\GIS\Parks\Park RAWP Figures\CherokeePark_CopperCrystal\RAWP_CherokeePark_CopperCrystal5.mxd

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DISPLAYED AS:
PROJECTION/ZONE: MSP
DATUM: NAD 83
UNITS: FEET
SOURCE: PIONEER

0 450 900 1,800
Feet

FIGURE 6

KAW AVENUE
BORROW STOCKPILE
LOCATION

PIONEER TECHNICAL SERVICES, INC.

DATE: 10/24/2022

Path: Z:\Shared\Active Projects\ARCO\BPSOU\RMAP\GIS\Parks\Park RAWP Figures\CherokeePark_CopperCrystal\RAWP_CherokeePark_CopperCrystal6.mxd

TABLES

TABLE 1: CHEROKEE PARK PROPERTY INFORMATION

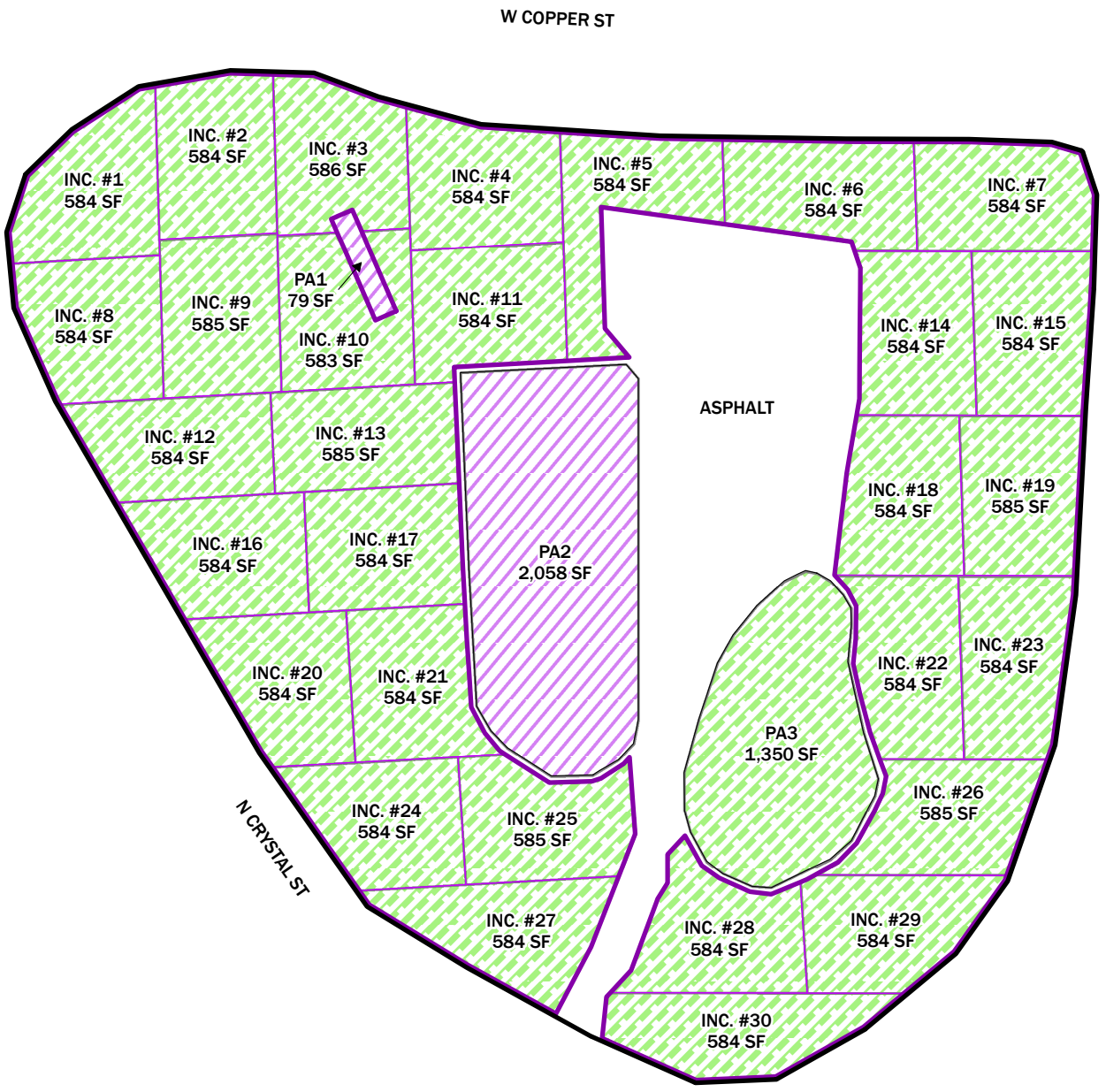
Count	Res-ID	Geocode	Name	Owner
1	P-0008	01119713242120000	Cherokee Park	BSB

ATTACHMENT A

DRAFT CHEROKEE PARK

INDIVIDUAL SITE WORK PLAN (ISWP)

GEOCODE: 01119713242120000
PROPERTY ID: P-0008



P-0008

LEGEND

- No Action Required
- 14" Removal
- 26" Removal
- Un-Samplable Area

CHEROKEE PARK (COPPER/CRYSTAL) INDIVIDUAL SITE WORK PLAN

RESIDENTIAL METALS ABATEMENT PROGRAM (RMAP)

BUTTE, MONTANA
SHEET 1 OF 2

NOTES:

1. LOOK ON BACK OF SHEET FOR DATA TABLE.

Boundaries on this site work plan DO NOT represent a legal survey. These boundaries are to be used for general reference only. No liability is assumed by Atlantic Richfield Company or Pioneer Technical Services for the accuracy of these.

DRAFT
DATA VALIDATION NOT YET COMPLETE

N

30 15 0 30 Feet

Atlantic Richfield Company
A BP affiliated company

BY: PIONEER TECHNICAL SERVICES, INC.

Date: 7/21/2022
Revision#: 0
File Name: RMAP_ISWP_CherokeePark_CopperCrystal

REMEDIAL ACTION SUMMARY TABLE

COMPOSITE SAMPLING DATA SUMMARY

Resident ID	SAMPLING COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPOSITE ARSENIC CONCENTRATION (mg/kg)					COMPOSITE LEAD CONCENTRATION (mg/kg)					COMPOSITE MERCURY CONCENTRATION (mg/kg)				
P-0008			0-2"	2-6"	6-12"	12-18"	18-24"	0-2"	2-6"	6-12"	12-18"	18-24"	0-2"	2-6"	6-12"	12-18"	18-24"
P-0008-PA1	Playground Area 1 (PA1)	79	32	86	137	N/A	N/A	551	521	1,240	N/A	N/A	0.09	0.28	0.49	N/A	N/A
P-0008-PA2	Playground Area 2 (PA2)	2,058	65	112	198	N/A	N/A	1,250	1,740	3,050	N/A	N/A	0.54	0.76	0.65	N/A	N/A
P-0008-PA2-D-2	Play Area 2 (PA2) Duplicate	-	N/A	115	N/A	N/A	N/A	N/A	1,920	N/A	N/A	N/A	N/A	0.89	N/A	N/A	N/A
P-0008-PA3	Playground Area 3 (PA3)	1,350	57	61	32	N/A	N/A	984	902	423	N/A	N/A	0.74	0.46	0.34	N/A	N/A
		Max:	65	115	198	0	0	1,250	1,920	3,050	0	0	0.74	0.89	0.65	0.00	0.00

Composite Arsenic Concentration is ≥ 250 mg/kg.
Composite Lead Concentration is ≥ 1,200 mg/kg.
Composite Mercury Concentration is ≥ 147 mg/kg.
N/A = Not applicable per 2022 RMAP Quality Assurance Project Plan.

ISM SAMPLING DATA SUMMARY

Resident ID	SAMPLING COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	ISM ARSENIC CONCENTRATION (mg/kg)		ISM LEAD CONCENTRATION (mg/kg)		ISM MERCURY CONCENTRATION (mg/kg)	
P-0008			0-2"	2-12"	0-2"	2-12"	0-2"	2-12"
P-0008-IS1	ISM Replicate A	17,534	30	113	543	1,030	0.74	0.86
P-0008-IS1	ISM Replicate B		26	106	392	899	0.21	0.51
P-0008-IS1	ISM Replicate C		32	98	368	951	0.09	0.89
		95% UCL:	35	118	594	1,071	1.22	1.29

ISM Arsenic 95% UCL is ≥ 250 mg/kg.
ISM Lead 95% UCL is ≥ 1,200 mg/kg.
ISM Mercury 95% UCL is ≥ 147 mg/kg.
N/A = Not applicable per 2022 RMAP Quality Assurance Project Plan.

REMEDIAL ACTION SUMMARY

Resident ID	SAMPLING COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	ESTIMATED QUANTITIES			
P-0008			Excavation (Cubic Yards)	Lime (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)
P-0008-PA1	Playground Area 1 (PA1)	79	3	0.5	3	79
P-0008-PA2	Playground Area 2 (PA2)	2,058	89	13	76	2,058
P-0008-PA3	Playground Area 3 (PA3)	1,350	0	0	0	0
P-0008-IS1	ISM Polygon	17,534	0	0	0	0
		21,021	**92**	**13**	**79**	**2,137**

CHEROKEE PARK
(COPPER/CRYSTAL)
INDIVIDUAL SITE WORK PLAN

RESIDENTIAL METALS
ABATEMENT PROGRAM (RMAP)

BUTTE, MONTANA
SHEET 2 OF 2

DRAFT
DATA VALIDATION NOT YET COMPLETE

Atlantic Richfield Company
A BP affiliated company

BY: PIONEER TECHNICAL SERVICES, INC.

ATTACHMENT B

SUGAR BEET LIME QA DATA

APPENDIX B - SUGAR BEET LIME QA DATA
(From ARWW&S, RDU 3)

	Sample ID	Date Collected	Butte Hill Reveg Spec:	Lime % as $CaCO_3$	% Passing No. 60 Screen (dry)
				Min of 65%	Min of 50%
1	22RDU3_SBL_011	06/13/22	Volume Tested: Approximatley 4,500 cy	78.4%	93.9%
2	22RDU3_SBL_012	06/13/22		77.4%	94.3%
3	22RDU3_SBL_013	06/13/22		76.9%	92.8%
4	22RDU3_SBL_014	06/29/22		77.9%	95.7%
5	22RDU3_SBL_015	06/29/22		78.4%	95.9%
6	22RDU3_SBL_016	07/07/22		76.4%	99.3%
7	22RDU3_SBL_017	07/07/22		78.8%	98.5%
8	22RDU3_SBL_018	07/12/22		77.9%	97.0%
9	22RDU3_SBL_019	07/12/22		77.4%	96.3%
			MAX:	78.8%	99.3%
			MIN:	76.4%	92.8%
			AVE:	77.7%	96.0%

ATTACHMENT B-1

ENERGY LABS DATA REPORTS

ANALYTICAL SUMMARY REPORT

June 28, 2022

Woodard and Curran
1015 S Montana St
Butte, MT 59701-2805

Work Order: B22061398 Quote ID: B5361

Project Name: ARWW&S, RDU3, 0232257.03

Energy Laboratories Inc Billings MT received the following 3 samples for Woodard and Curran on 6/15/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B22061398-001	22RDU_3_SBL_011	06/13/22 14:45	06/15/22	Solid	Lime as CaCO3, % Moisture Sieve Analysis, Dry Sieve Analysis, Wet
B22061398-002	22RDU_3_SBL_012	06/13/22 14:50	06/15/22	Solid	Same As Above
B22061398-003	22RDU_3_SBL_013	06/13/22 14:55	06/15/22	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S, RDU3, 0232257.03
Report Date: 06/28/22

Lab ID: B22061398-001
Client Sample ID: 22RDU_3_SBL_011
Collection Date: 06/13/22 14:45
DateReceived: 06/15/22
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	28.6	wt%		0.2		D2974	06/21/22 10:09 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	78.4	%		0.1		USDA23c	06/28/22 07:52 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	84.4	wt%-wet		0.1		SSSA 15-2	06/28/22 07:42 / srm
No. 60 (250um), Passed	93.9	wt%-dry		0.1		SSSA 15-2	06/22/22 14:51 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	06/22/22 14:51 / srm
Pan	15.6	wt%-wet		0.1		SSSA 15-2	06/28/22 07:42 / srm

Lab ID: B22061398-002
Client Sample ID: 22RDU_3_SBL_012
Collection Date: 06/13/22 14:50
DateReceived: 06/15/22
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	28.8	wt%		0.2		D2974	06/21/22 10:09 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	77.4	%		0.1		USDA23c	06/28/22 07:52 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	90.9	wt%-wet		0.1		SSSA 15-2	06/28/22 07:42 / srm
No. 60 (250um), Passed	94.3	wt%-dry		0.1		SSSA 15-2	06/22/22 14:51 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	06/22/22 14:51 / srm
Pan	9.1	wt%-wet		0.1		SSSA 15-2	06/28/22 07:42 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S, RDU3, 0232257.03
Report Date: 06/28/22

Lab ID: B22061398-003
Client Sample ID: 22RDU_3_SBL_013
Collection Date: 06/13/22 14:55
DateReceived: 06/15/22
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	27.5	wt%		0.2		D2974	06/21/22 10:09 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	76.9	%		0.1		USDA23c	06/28/22 07:52 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	78.8	wt%-wet		0.1		SSSA 15-2	06/28/22 07:42 / srm
No. 60 (250um), Passed	92.8	wt%-dry		0.1		SSSA 15-2	06/22/22 14:51 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	06/22/22 14:51 / srm
Pan	21.2	wt%-wet		0.1		SSSA 15-2	06/28/22 07:42 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Woodard and Curran **Work Order:** B22061398 **Report Date:** 06/28/22

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **USDA23c**									Batch: R383791
Lab ID: **B22061398-001A DUP**	Sample Duplicate				Run: MISC-SOIL_220628A				06/28/22 07:52
Lime as CaCO3	78.4	%	0.10				0.0	30	
Lab ID: **LCS-2206280752**	Laboratory Control Sample				Run: MISC-SOIL_220628A				06/28/22 07:52
Lime as CaCO3	9.40	%	0.10	88	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Woodard and Curran

B22061398

Login completed by: Yvonna E. Smith
Date Received: 6/15/2022
Reviewed by: BL2000\lcadreau
Received by: srg
Reviewed Date: 6/19/2022
Carrier name: Return-FedEx Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	14.3°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Woodard & Curran	Project Name, PWS, Permit, Etc.: ARWW&S, RDU3, 0232257.03	Sample Origin State: MT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address (Required): 1015 S Montana St Suite C, Butte MT, 59701 ☒ No Hard Copy Email: gcraig@woodardcurran.com	Contact Name: Garrett Craig; Phone/Fax: (406)291-2617; Cell: (406)291-2617		Sampler: (Please Print) Kristopher Bosch
	Invoice Contact & Phone: Kevin Bethke (406)586-8364	Purchase Order:	Quote/Bottle Order:
Invoice Address (Required): 1800 Koch Suite A, Bozeman MT, 59715 ☐ No Hard Copy Email: kbethke@woodardcurran.com			

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other D DW - Drinking Water

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	B5361 - Lime Quality	SEE ATTACHED
1	22RDU3_SBL_011	06/13/2022	14:45	S	✔	
2	22RDU3_SBL_012	06/13/2022	14:50	S	✔	
3	22RDU3_SBL_013	06/13/2022	14:55	S	✔	
4						
5						
6						
7						
8						
9						
10						

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by:

Cooler ID(s):

Receipt Temp _____ °C

On Ice: Y N

Custody Seal
On Bottle Y N
On Cooler Y N

Intact Y N

Signature Match Y N

LABORATORY USE ONLY B22061398

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
	Kristopher Bosch	06/13/2022 17:30				
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
				Received by Laboratory: Staci Gotlob	Date/Time: 6/15/22 09:20	Signature: Staci Gotlob

Sample Disposal: Return to Client: _____ Lab Disposal: ✔

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ANALYTICAL SUMMARY REPORT

July 13, 2022

Woodard and Curran
1015 S Montana St
Butte, MT 59701-2805

Work Order: B22070163 Quote ID: B5361

Project Name: ARWW&S 0232257.04

Energy Laboratories Inc Billings MT received the following 2 samples for Woodard and Curran on 7/5/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B22070163-001	22RDU3_SBL_014	06/29/22 17:00	07/05/22	Solid	Lime as CaCO3, % Moisture Sieve Analysis, Dry Sieve Analysis, Wet
B22070163-002	22RDU3_SBL_015	06/29/22 17:10	07/05/22	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S 0232257.04
Report Date: 07/13/22

Lab ID: B22070163-001
Client Sample ID: 22RDU3_SBL_014
Collection Date: 06/29/22 17:00
DateReceived: 07/05/22
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	23.8	wt%		0.2		D2974	07/08/22 10:15 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	77.9	%		0.1		USDA23c	07/13/22 15:11 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	93.5	wt%-wet		0.1		SSSA 15-2	07/12/22 11:37 / srm
No. 60 (250um), Passed	95.7	wt%-dry		0.1		SSSA 15-2	07/08/22 11:26 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	07/08/22 11:26 / srm
Pan	6.5	wt%-wet		0.1		SSSA 15-2	07/12/22 11:37 / srm

Lab ID: B22070163-002
Client Sample ID: 22RDU3_SBL_015
Collection Date: 06/29/22 17:10
DateReceived: 07/05/22
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	22.3	wt%		0.2		D2974	07/08/22 10:15 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	78.4	%		0.1		USDA23c	07/13/22 15:11 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	88.1	wt%-wet		0.1		SSSA 15-2	07/12/22 11:37 / srm
No. 60 (250um), Passed	95.9	wt%-dry		0.1		SSSA 15-2	07/08/22 11:26 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	07/08/22 11:26 / srm
Pan	11.9	wt%-wet		0.1		SSSA 15-2	07/12/22 11:37 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Woodard and Curran **Work Order:** B22070163 **Report Date:** 07/13/22

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **USDA23c**									Batch: R384614
Lab ID: **B22070163-001A DUP**	Sample Duplicate				Run: MISC-SOIL_220713B				07/13/22 15:11
Lime as CaCO3	78.4	%	0.10				0.6	30	
Lab ID: **LCS-2207131511**	Laboratory Control Sample				Run: MISC-SOIL_220713B				07/13/22 15:11
Lime as CaCO3	9.80	%	0.10	92	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Woodard and Curran

B22070163

Login completed by: Dylan A. Chirrick
Date Received: 7/5/2022
Reviewed by: gmccartney
Received by: dac
Reviewed Date: 7/9/2022
Carrier name: Return-FedEx Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	25.3°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

The sample identification indicated on the container label for sample 22RDU3_SBL_015 is 22RDU3_SBL_015 and on the Chain of Custody it is 22RDU3_SBL_15. Proceeded with the sample identification as indicated on the sample container.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Woodard & Curran	ARWW&S 0232257.04	State: MT	Yes ☐ No ☐

Report Mail Address (Required):	Contact Name:	Phone/Fax:	Cell:	Sampler: (Please Print)
1015 S Montana St Suite C, Butte MT, 59701 ☒ No Hard Copy Email: gcraig@woodardcurran.com	Garrett Craig	(406)291-2617	(406)291-2617	Shyla Wesely

Invoice Address (Required):	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order:
1800 Koch Suite A, Bozeman MT, 59715 ☐ No Hard Copy Email: kbethke@woodardcurran.com	Kevin Bethke (406)586-8364		

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	B5361 - Lime Quality	SEE ATTACHED
1 22RDU3_SBL_014	6/29/22	1700	S	✔	
2 22RDU3_SBL_15	6/29/22	1710	S	✔	
3					
4					
5					
6					
7					
8					
9					
10					

Standard Turnaround (TAT)

→ R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by:

Cooler ID(s):

Receipt Temp _____ °C

On Ice: Y N

Custody Seal
On Bottle Y N
On Cooler Y N

Intact Y N

Signature Match Y N

LABORATORY USE ONLY B2207063

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Shyla Wesely	6/29/22				
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory: Dylan Chirico	Date/Time: 7/5/22 11:15	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ANALYTICAL SUMMARY REPORT

July 20, 2022

Woodard and Curran
1015 S Montana St
Butte, MT 59701-2805

Work Order: B22070686 Quote ID: B5361

Project Name: ARWW&S, RDU3, 0232257.03

Energy Laboratories Inc Billings MT received the following 2 samples for Woodard and Curran on 7/11/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B22070686-001	22RDU3_SBL_016	07/07/22 11:20	07/11/22	Solid	Lime as CaCO3, % Moisture Sieve Analysis, Dry Sieve Analysis, Wet
B22070686-002	22RDU3_SBL_017	07/07/22 11:25	07/11/22	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S, RDU3, 0232257.03
Report Date: 07/20/22

Lab ID: B22070686-001
Client Sample ID: 22RDU3_SBL_016
Collection Date: 07/07/22 11:20
DateReceived: 07/11/22
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	25.7	wt%		0.2		D2974	07/19/22 09:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	76.4	%		0.1		USDA23c	07/20/22 15:36 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	76.9	wt%-wet		0.1		SSSA 15-2	07/20/22 11:27 / srm
No. 60 (250um), Passed	99.3	wt%-dry		0.1		SSSA 15-2	07/19/22 10:34 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	07/19/22 10:34 / srm
Pan	23.1	wt%-wet		0.1		SSSA 15-2	07/20/22 11:27 / srm

Lab ID: B22070686-002
Client Sample ID: 22RDU3_SBL_017
Collection Date: 07/07/22 11:25
DateReceived: 07/11/22
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	25.9	wt%		0.2		D2974	07/19/22 09:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	78.8	%		0.1		USDA23c	07/20/22 15:36 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	26.8	wt%-wet		0.1		SSSA 15-2	07/20/22 11:27 / srm
No. 60 (250um), Passed	98.5	wt%-dry		0.1		SSSA 15-2	07/19/22 10:34 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	07/19/22 10:34 / srm
Pan	73.2	wt%-wet		0.1		SSSA 15-2	07/20/22 11:27 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Woodard and Curran **Work Order:** B22070686 **Report Date:** 07/20/22

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA23c									Batch: R384936
Lab ID: B22070686-001A DUP	Sample Duplicate				Run: MISC-SOIL_220720B				07/20/22 15:36
Lime as CaCO3	75.9	%	0.10				0.7	30	
Lab ID: LCS-2207201536	Laboratory Control Sample				Run: MISC-SOIL_220720B				07/20/22 15:36
Lime as CaCO3	9.50	%	0.10	89	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Woodard and Curran

B22070686

Login completed by: Dylan A. Chirrick
Reviewed by: BL2000\lcadreau
Reviewed Date: 7/12/2022
Date Received: 7/11/2022
Received by: dac
Carrier name: Return-FedEx Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	24.0°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT (Provide as much information as possible.)

Company Name: Woodard & Curran	Project Name, PWS, Permit, Etc.: ARWW&S, RDU3, 0232257.03	Sample Origin State: MT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address (Required): 1015 S Montana St Suite C, Butte MT, 59701 ☑ No Hard Copy Email: gcraig@woodardcurran.com	Contact Name: Garrett Craig; Phone/Fax: (406)291-2617; Cell: (406)291-2617		Sampler: (Please Print) Kristopher Bosch
	Invoice Contact & Phone: Kevin Bethke (406)586-8364	Purchase Order:	Quote/Bottle Order:
Invoice Address (Required): 1800 Koch Suite A, Bozeman MT, 59715 ❑ No Hard Copy Email: kbethke@woodardcurran.com			

Special Report/Formats:
☐ DW ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____ ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	B5361 - Lime Quality	SEE ATTACHED
1	22RDU3_SBL_016	07/07/2022	11:20	S	✓	
2	22RDU3_SBL_017	07/07/2022	11:25	S	✓	
3						
4						
5						
6						
7						
8						
9						
10						

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by:

Cooler ID(s):

Receipt Temp ____ °C

On Ice: Y N

Custody Seal On Bottle Y N On Cooler Y N

Intact Y N

Signature Match Y N

LABORATORY USE ONLY B22070686

Custody Record MUST be Signed

Relinquished by (print): Hannah Foster	Date/Time: 07/08/22 12:00	Signature: Hannah Foster 7/8/22 12:00pm	Received by (print):
Relinquished by (print):	Date/Time:	Signature:	Received by (print):
Sample Disposal: Return to Client: _____ Lab Disposal: ✓			Received by Laboratory: Date/Time: 7/11/22 11:15 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ANALYTICAL SUMMARY REPORT

July 20, 2022

Woodard and Curran
1015 S Montana St
Butte, MT 59701-2805

Work Order: B22071162 Quote ID: B5361

Project Name: ARWW&S, RDU3, 0232257.03

Energy Laboratories Inc Billings MT received the following 2 samples for Woodard and Curran on 7/14/2022 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B22071162-001	22RDU3_SBL_018	07/12/22 15:00	07/14/22	Solid	Lime as CaCO3, % Moisture Sieve Analysis, Dry Sieve Analysis, Wet
B22071162-002	22RDU3_SBL_019	07/12/22 15:05	07/14/22	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S, RDU3, 0232257.03
Report Date: 07/20/22

Lab ID: B22071162-001
Client Sample ID: 22RDU3_SBL_018
Collection Date: 07/12/22 15:00
DateReceived: 07/14/22
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	23.4	wt%		0.2		D2974	07/19/22 09:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	77.9	%		0.1		USDA23c	07/20/22 15:36 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	60.8	wt%-wet		0.1		SSSA 15-2	07/20/22 11:27 / srm
No. 60 (250um), Passed	97.0	wt%-dry		0.1		SSSA 15-2	07/19/22 10:36 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	07/19/22 10:36 / srm
Pan	39.2	wt%-wet		0.1		SSSA 15-2	07/20/22 11:27 / srm

Lab ID: B22071162-002
Client Sample ID: 22RDU3_SBL_019
Collection Date: 07/12/22 15:05
DateReceived: 07/14/22
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	31.7	wt%		0.2		D2974	07/19/22 09:43 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	77.4	%		0.1		USDA23c	07/20/22 15:36 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	79.7	wt%-wet		0.1		SSSA 15-2	07/20/22 11:27 / srm
No. 60 (250um), Passed	96.3	wt%-dry		0.1		SSSA 15-2	07/19/22 10:36 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	07/19/22 10:36 / srm
Pan	20.3	wt%-wet		0.1		SSSA 15-2	07/20/22 11:27 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Woodard and Curran **Work Order:** B22071162 **Report Date:** 07/20/22

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA23c									Batch: R384936
Lab ID: B22070686-001A DUP	Sample Duplicate				Run: MISC-SOIL_220720B				07/20/22 15:36
Lime as CaCO3	75.9	%	0.10				0.7	30	
Lab ID: LCS-2207201536	Laboratory Control Sample				Run: MISC-SOIL_220720B				07/20/22 15:36
Lime as CaCO3	9.50	%	0.10	89	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Woodard and Curran

B22071162

Login completed by: Tyler J. Gasser
Date Received: 7/14/2022
Reviewed by: gmccartney
Received by: tae
Reviewed Date: 7/19/2022
Carrier name: Return-FedEx Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	22.4°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Woodard & Curran	Project Name, PWS, Permit, Etc.: ARWW&S, RDU3, 0232257.03	Sample Origin: State: MT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address (Required): 1015 S Montana St Suite C, Butte MT, 59701	Contact Name: Garrett Craig / Phone/Fax: (406)291-2617	Cell: (406)291-2617	Sampler: (Please Print) Kristopher Bosch
☒ No Hard Copy Email: gcraig@woodardcurran.com	Invoice Contact & Phone: Kevin Bethke (406)586-8364	Purchase Order:	Quote/Bottle Order:
Invoice Address (Required): 1800 Koch Suite A, Bozeman MT, 59715			
☐ No Hard Copy Email: kbethke@woodardcurran.com			

Special Report/Formats:
☐ DW ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____ ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	B5361 - Lime Quality	SEE ATTACHED
1	22RDU3_SBL_018	07/12/2022	15:00	S	✔	
2	22RDU3_SBL_019	07/12/2022	15:05	S	✔	
3						
4						
5						
6						
7						
8						
9						
10						

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by:
Cooler ID(s):
Receipt Temp ____ °C
On Ice: Y N
Custody Seal: On Bottle Y N; On Cooler Y N
Intact Y N
Signature Match Y N

LABORATORY USE ONLY B22071162

Custody Record MUST be Signed

Relinquished by (print): Hannah Foster	Date/Time: 07/13/22 12:00	Signature: Hannah Foster 7/13/22 12:00	Received by (print):	Date/Time: / Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time: / Signature:
Sample Disposal: Return to Client: _____	Lab Disposal: ✔		Received by Laboratory: Tabitha Edwards	Date/Time: 7-14-22 0915 / Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ATTACHMENT C

FABRIC SPECIFICATION SHEET

GEOTEX® BY PROPEX

Product Data
GEOTEX® 801

GEOTEX® 801 is a polypropylene, staple fiber, needlepunched nonwoven geotextile produced by Propex, and will meet the following Minimum Average Roll Values (MARV) when tested in accordance with the methods listed below. The fibers are needled to form a stable network that retains dimensional stability relative to each other. The geotextile is resistant to ultraviolet degradation and to biological and chemical environments normally found in soils.

GEOTEX 801 conforms to the property values listed below[1]. Propex performs internal Manufacturing Quality Control (MQC) tests that have been accredited by the Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP). This product is NTPEP approved for AASHTO standards.

PROPERTY	TEST METHOD	MARV[2] ENGLISH	MARV[2] METRIC
ORIGIN OF MATERIALS			
% U.S. Manufactured Inputs		100%	100%
% U.S. Manufactured		100%	100%
MECHANICAL			
Tensile Strength (Grab)	ASTM D-4632	205 lbs	912 N
Elongation	ASTM D-4632	50%	50%
CBR Puncture	ASTM D-6241	525 lbs	2336 N
Trapezoidal Tear	ASTM D-4533	80 lbs	356 N
ENDURANCE			
UV Resistance % Retained at 500 hrs	ASTM D-4355	70%	70%
HYDRAULIC			
Apparent Opening Size (AOS)[3]	ASTM D-4751	80 US Std. Sieve	0.180 mm
Permittivity	ASTM D-4491	1.5 sec^{-1}	1.5 sec^{-1}
Water Flow Rate	ASTM D-4491	110 gpm/ft^2	4482 $l/min/m^2$

ROLL SIZES	12.5 ft x 360 ft 15 ft x 300 ft	3.81 m x 109.8 m 4.57 m x 91.5 m

NOTES:
1. The property values listed above are effective 04/2011 and are subject to change without notice.
2. Values shown are in weaker principal direction. Minimum average roll values (MARV) are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
3. Maximum average roll value.

Propex™ Geotextile Systems

TESTED. PROVEN. TRUSTED.
www.geotextile.com

Propex Operating Company, LLC · 6025 Lee Highway, Suite 425 · PO Box 22788 · Chattanooga, TN 37422

ph 423 899 0444 · ph 800 621 1273 · fax 423 899 7619

ATTACHMENT D

TYPE B MATERIAL BORROW STOCKPILE DATA

APPENDIX D - TYPE B MATERIAL QA DATA
(From CS OU)

	Sample ID	Date Collected	Butte Hill Reveg Spec:	As < 97 mg/kg	Cd < 4 mg/kg	Cu < 250 mg/kg	Pb < 100 mg/kg	Zn < 250 mg/kg	Hg < 5 mg/kg
1	20-CS-Type B-1203-001	12/03/20		5.8	0.08	10.9	4.7	21.7	-
2	20-CS-Type B-1203-002	12/03/20		4.5	0.10	12.3	4.9	25.8	-
3	20-CS-Type B-1203-003	12/03/20		3.4	Non Detect	8.7	4.7	19.4	-
4	20-CS-Type B-1203-004	12/03/20		8.3	0.13	17.2	6.3	29.7	-
5	20-CS-Type B-1203-005	12/03/20		7.7	0.11	16.8	7.1	29.9	-
6	20-CS-Type B-1203-006	12/03/20		7.8	0.10	14.6	5.9	28.2	-
7	20-CS-Type B-1203-007	12/03/20	Volume Tested:	10.9	0.09	13.7	5.4	25.7	-
8	20-CS-Type B-1203-008	12/03/20	Approximatley	5.0	0.11	10.5	4.8	23.5	-
9	20-CS-Type B-1203-009	12/03/20	5,000 cy	10.1	0.11	18.2	6.7	31.7	-
10	20-CS-Type B-1203-010	12/03/20		5.7	0.09	12.6	5.5	26.2	-
11	20-CS-Type B-1203-011	12/03/20		3.9	Non Detect	8.6	4.0	20.8	-
12	20-CS-Type B-1203-012	12/03/20		3.8	0.09	8.9	5.3	26.7	-
13	21-TypeB-0817-001	08/17/21		-	-	-	-	-	0.02
14	21-TypeB-0817-002	08/17/21		-	-	-	-	-	0.02
15	21-TypeB-0817-003	08/17/21		-	-	-	-	-	0.01
16	21-TypeB-0817-004	08/17/21		-	-	-	-	-	0.02
			MAX:	10.9	0.13	18.2	7.1	31.7	0.02
			MIN:	3.4	0.08	8.6	4.0	19.4	0.01
			AVE:	6.4	0.10	12.8	5.4	25.8	0.02

ATTACHMENT D-1

PACE ANALYTICAL DATA REPORTS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

December 11, 2020

Jesse Schwarzrock
Pioneer Technical Services
307 E Park
Suite 421
Anaconda, MT 59711

RE: Project: CS OU Borrow Development
Pace Project No.: 10541146

Dear Jesse Schwarzrock:

Enclosed are the analytical results for sample(s) received by the laboratory on December 04, 2020. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Jennifer Norman, Portage Inc.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Pace Analytical Services - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
A2LA Certification #: 2926.01*
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Massachusetts DWP Certification #: via MN 027-053-137
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

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SAMPLE SUMMARY

Project: CS OU Borrow Development
Pace Project No.: 10541146

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10541146001	**20-CS-TypeB-1203-001**	Solid	12/03/20 10:30	12/04/20 10:40
10541146002	**20-CS-TypeB-1203-002**	Solid	12/03/20 10:35	12/04/20 10:40
10541146003	**20-CS-TypeB-1203-003**	Solid	12/03/20 10:40	12/04/20 10:40
10541146004	**20-CS-TypeB-1203-004**	Solid	12/03/20 10:45	12/04/20 10:40
10541146005	**20-CS-TypeB-1203-005**	Solid	12/03/20 10:50	12/04/20 10:40
10541146006	**20-CS-TypeB-1203-006**	Solid	12/03/20 10:55	12/04/20 10:40
10541146007	**20-CS-TypeB-1203-007**	Solid	12/03/20 11:00	12/04/20 10:40
10541146008	**20-CS-TypeB-1203-008**	Solid	12/03/20 11:05	12/04/20 10:40
10541146009	**20-CS-TypeB-1203-009**	Solid	12/03/20 11:10	12/04/20 10:40
10541146010	**20-CS-TypeB-1203-010**	Solid	12/03/20 11:15	12/04/20 10:40
10541146011	**20-CS-TypeB-1203-011**	Solid	12/03/20 11:20	12/04/20 10:40
10541146012	**20-CS-TypeB-1203-012**	Solid	12/03/20 11:25	12/04/20 10:40

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SAMPLE ANALYTE COUNT

Project: CS OU Borrow Development
Pace Project No.: 10541146

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10541146001	**20-CS-TypeB-1203-001**	EPA 6020A	RJS	5	PASI-M
10541146002	**20-CS-TypeB-1203-002**	EPA 6020A	RJS	5	PASI-M
10541146003	**20-CS-TypeB-1203-003**	EPA 6020A	RJS	5	PASI-M
10541146004	**20-CS-TypeB-1203-004**	EPA 6020A	RJS	5	PASI-M
10541146005	**20-CS-TypeB-1203-005**	EPA 6020A	RJS	5	PASI-M
10541146006	**20-CS-TypeB-1203-006**	EPA 6020A	RJS	5	PASI-M
10541146007	**20-CS-TypeB-1203-007**	EPA 6020A	RJS	5	PASI-M
10541146008	**20-CS-TypeB-1203-008**	EPA 6020A	RJS	5	PASI-M
10541146009	**20-CS-TypeB-1203-009**	EPA 6020A	RJS	5	PASI-M
10541146010	**20-CS-TypeB-1203-010**	EPA 6020A	RJS	5	PASI-M
10541146011	**20-CS-TypeB-1203-011**	EPA 6020A	RJS	5	PASI-M
10541146012	**20-CS-TypeB-1203-012**	EPA 6020A	RJS	5	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

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PROJECT NARRATIVE

Project: CS OU Borrow Development
Pace Project No.: 10541146

Method: **EPA 6020A**
Description: 6020A MET ICPMS
Client: BPAR-PIONEER-MT
Date: December 11, 2020

General Information:
12 samples were analyzed for EPA 6020A by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3050B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-001 **Lab ID: 10541146001** Collected: 12/03/20 10:30 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**5.8**	mg/kg	0.49	20	12/08/20 16:12	12/10/20 14:13	7440-38-2	
Cadmium	**0.081**	mg/kg	0.078	20	12/08/20 16:12	12/10/20 14:13	7440-43-9	
Copper	**10.9**	mg/kg	0.98	20	12/08/20 16:12	12/10/20 14:13	7440-50-8	
Lead	**4.7**	mg/kg	0.20	20	12/08/20 16:12	12/10/20 14:13	7439-92-1	
Zinc	**21.7**	mg/kg	4.9	20	12/08/20 16:12	12/10/20 14:13	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-002 **Lab ID: 10541146002** Collected: 12/03/20 10:35 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**4.5**	mg/kg	0.46	20	12/08/20 16:12	12/10/20 14:29	7440-38-2	
Cadmium	**0.10**	mg/kg	0.074	20	12/08/20 16:12	12/10/20 14:29	7440-43-9	
Copper	**12.3**	mg/kg	0.93	20	12/08/20 16:12	12/10/20 14:29	7440-50-8	
Lead	**4.9**	mg/kg	0.19	20	12/08/20 16:12	12/10/20 14:29	7439-92-1	
Zinc	**25.8**	mg/kg	4.6	20	12/08/20 16:12	12/10/20 14:29	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-003 **Lab ID: 10541146003** Collected: 12/03/20 10:40 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**3.4**	mg/kg	0.49	20	12/08/20 16:12	12/10/20 14:32	7440-38-2	
Cadmium	ND	mg/kg	0.078	20	12/08/20 16:12	12/10/20 14:32	7440-43-9	
Copper	**8.7**	mg/kg	0.98	20	12/08/20 16:12	12/10/20 14:32	7440-50-8	
Lead	**4.7**	mg/kg	0.20	20	12/08/20 16:12	12/10/20 14:32	7439-92-1	
Zinc	**19.4**	mg/kg	4.9	20	12/08/20 16:12	12/10/20 14:32	7440-66-6	

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-004 **Lab ID: 10541146004** Collected: 12/03/20 10:45 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**8.3**	mg/kg	0.47	20	12/08/20 16:12	12/10/20 14:41	7440-38-2	
Cadmium	**0.13**	mg/kg	0.075	20	12/08/20 16:12	12/10/20 14:41	7440-43-9	
Copper	**17.2**	mg/kg	0.94	20	12/08/20 16:12	12/10/20 14:41	7440-50-8	
Lead	**6.3**	mg/kg	0.19	20	12/08/20 16:12	12/10/20 14:41	7439-92-1	
Zinc	**29.7**	mg/kg	4.7	20	12/08/20 16:12	12/10/20 14:41	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-005 **Lab ID: 10541146005** Collected: 12/03/20 10:50 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**7.7**	mg/kg	0.47	20	12/08/20 16:12	12/10/20 14:45	7440-38-2	
Cadmium	**0.11**	mg/kg	0.075	20	12/08/20 16:12	12/10/20 14:45	7440-43-9	
Copper	**16.8**	mg/kg	0.93	20	12/08/20 16:12	12/10/20 14:45	7440-50-8	
Lead	**7.1**	mg/kg	0.19	20	12/08/20 16:12	12/10/20 14:45	7439-92-1	
Zinc	**29.9**	mg/kg	4.7	20	12/08/20 16:12	12/10/20 14:45	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-006 **Lab ID: 10541146006** Collected: 12/03/20 10:55 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**7.8**	mg/kg	0.48	20	12/08/20 16:12	12/10/20 14:48	7440-38-2	
Cadmium	**0.10**	mg/kg	0.077	20	12/08/20 16:12	12/10/20 14:48	7440-43-9	
Copper	**14.6**	mg/kg	0.96	20	12/08/20 16:12	12/10/20 14:48	7440-50-8	
Lead	**5.9**	mg/kg	0.19	20	12/08/20 16:12	12/10/20 14:48	7439-92-1	
Zinc	**28.2**	mg/kg	4.8	20	12/08/20 16:12	12/10/20 14:48	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-007 **Lab ID: 10541146007** Collected: 12/03/20 11:00 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**10.9**	mg/kg	0.49	20	12/08/20 16:12	12/10/20 14:51	7440-38-2	
Cadmium	**0.091**	mg/kg	0.078	20	12/08/20 16:12	12/10/20 14:51	7440-43-9	
Copper	**13.7**	mg/kg	0.98	20	12/08/20 16:12	12/10/20 14:51	7440-50-8	
Lead	**5.4**	mg/kg	0.20	20	12/08/20 16:12	12/10/20 14:51	7439-92-1	
Zinc	**25.7**	mg/kg	4.9	20	12/08/20 16:12	12/10/20 14:51	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-008 **Lab ID: 10541146008** Collected: 12/03/20 11:05 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**5.0**	mg/kg	0.47	20	12/08/20 16:12	12/10/20 14:54	7440-38-2	
Cadmium	**0.11**	mg/kg	0.075	20	12/08/20 16:12	12/10/20 14:54	7440-43-9	
Copper	**10.5**	mg/kg	0.94	20	12/08/20 16:12	12/10/20 14:54	7440-50-8	
Lead	**4.8**	mg/kg	0.19	20	12/08/20 16:12	12/10/20 14:54	7439-92-1	
Zinc	**23.5**	mg/kg	4.7	20	12/08/20 16:12	12/10/20 14:54	7440-66-6	

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-009 **Lab ID: 10541146009** Collected: 12/03/20 11:10 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**10.1**	mg/kg	0.46	20	12/08/20 16:12	12/10/20 14:57	7440-38-2	
Cadmium	**0.11**	mg/kg	0.073	20	12/08/20 16:12	12/10/20 14:57	7440-43-9	
Copper	**18.2**	mg/kg	0.92	20	12/08/20 16:12	12/10/20 14:57	7440-50-8	
Lead	**6.7**	mg/kg	0.18	20	12/08/20 16:12	12/10/20 14:57	7439-92-1	
Zinc	**31.7**	mg/kg	4.6	20	12/08/20 16:12	12/10/20 14:57	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-010 **Lab ID: 10541146010** Collected: 12/03/20 11:15 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**5.7**	mg/kg	0.48	20	12/08/20 16:12	12/10/20 15:00	7440-38-2	
Cadmium	**0.094**	mg/kg	0.076	20	12/08/20 16:12	12/10/20 15:00	7440-43-9	
Copper	**12.6**	mg/kg	0.95	20	12/08/20 16:12	12/10/20 15:00	7440-50-8	
Lead	**5.5**	mg/kg	0.19	20	12/08/20 16:12	12/10/20 15:00	7439-92-1	
Zinc	**26.2**	mg/kg	4.8	20	12/08/20 16:12	12/10/20 15:00	7440-66-6	

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-011 **Lab ID: 10541146011** Collected: 12/03/20 11:20 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**3.9**	mg/kg	0.49	20	12/08/20 16:12	12/10/20 15:03	7440-38-2	
Cadmium	ND	mg/kg	0.078	20	12/08/20 16:12	12/10/20 15:03	7440-43-9	
Copper	**8.6**	mg/kg	0.97	20	12/08/20 16:12	12/10/20 15:03	7440-50-8	
Lead	**4.0**	mg/kg	0.19	20	12/08/20 16:12	12/10/20 15:03	7439-92-1	
Zinc	**20.8**	mg/kg	4.9	20	12/08/20 16:12	12/10/20 15:03	7440-66-6	

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ANALYTICAL RESULTS

Project: CS OU Borrow Development
Pace Project No.: 10541146

Sample: 20-CS-TypeB-1203-012 **Lab ID: 10541146012** Collected: 12/03/20 11:25 Received: 12/04/20 10:40 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis							
Arsenic	**3.8**	mg/kg	0.48	20	12/08/20 16:12	12/10/20 15:06	7440-38-2	
Cadmium	**0.094**	mg/kg	0.077	20	12/08/20 16:12	12/10/20 15:06	7440-43-9	
Copper	**8.9**	mg/kg	0.96	20	12/08/20 16:12	12/10/20 15:06	7440-50-8	
Lead	**5.3**	mg/kg	0.19	20	12/08/20 16:12	12/10/20 15:06	7439-92-1	
Zinc	**26.7**	mg/kg	4.8	20	12/08/20 16:12	12/10/20 15:06	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: CS OU Borrow Development
Pace Project No.: 10541146

QC Batch: 714545
QC Batch Method: EPA 3050B
Analysis Method: EPA 6020A
Analysis Description: 6020A Solids UPD4
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10541146001, 10541146002, 10541146003, 10541146004, 10541146005, 10541146006, 10541146007, 10541146008, 10541146009, 10541146010, 10541146011, 10541146012

METHOD BLANK: 3814382 Matrix: Solid
Associated Lab Samples: 10541146001, 10541146002, 10541146003, 10541146004, 10541146005, 10541146006, 10541146007, 10541146008, 10541146009, 10541146010, 10541146011, 10541146012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	0.46	12/10/20 14:05	
Cadmium	mg/kg	ND	0.073	12/10/20 14:05	
Copper	mg/kg	ND	0.92	12/10/20 14:05	
Lead	mg/kg	ND	0.18	12/10/20 14:05	
Zinc	mg/kg	ND	4.6	12/10/20 14:05	

LABORATORY CONTROL SAMPLE: 3814383

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	47.2	42.7	90	80-120	
Cadmium	mg/kg	47.2	44.1	93	80-120	
Copper	mg/kg	47.2	46.6	99	80-120	
Lead	mg/kg	47.2	46.7	99	80-120	
Zinc	mg/kg	47.2	45.0	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3814384 3814385

Parameter	Units	10541146001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	5.8	47.2	49	43.7	47.4	80	85	75-125	8	20	
Cadmium	mg/kg	0.081	47.2	49	41.6	45.2	88	92	75-125	8	20	
Copper	mg/kg	10.9	47.2	49	54.3	59.1	92	98	75-125	9	20	
Lead	mg/kg	4.7	47.2	49	47.3	52.3	90	97	75-125	10	20	
Zinc	mg/kg	21.7	47.2	49	62.1	68.3	86	95	75-125	10	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: CS OU Borrow Development
Pace Project No.: 10541146

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
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(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CS OU Borrow Development
Pace Project No.: 10541146

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10541146001	**20-CS-TypeB-1203-001**	EPA 3050B	714545	EPA 6020A	714943
10541146002	**20-CS-TypeB-1203-002**	EPA 3050B	714545	EPA 6020A	714943
10541146003	**20-CS-TypeB-1203-003**	EPA 3050B	714545	EPA 6020A	714943
10541146004	**20-CS-TypeB-1203-004**	EPA 3050B	714545	EPA 6020A	714943
10541146005	**20-CS-TypeB-1203-005**	EPA 3050B	714545	EPA 6020A	714943
10541146006	**20-CS-TypeB-1203-006**	EPA 3050B	714545	EPA 6020A	714943
10541146007	**20-CS-TypeB-1203-007**	EPA 3050B	714545	EPA 6020A	714943
10541146008	**20-CS-TypeB-1203-008**	EPA 3050B	714545	EPA 6020A	714943
10541146009	**20-CS-TypeB-1203-009**	EPA 3050B	714545	EPA 6020A	714943
10541146010	**20-CS-TypeB-1203-010**	EPA 3050B	714545	EPA 6020A	714943
10541146011	**20-CS-TypeB-1203-011**	EPA 3050B	714545	EPA 6020A	714943
10541146012	**20-CS-TypeB-1203-012**	EPA 3050B	714545	EPA 6020A	714943

bp rm

Laboratory Management Program LaMP Chain of Custody Record

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: X No ___

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Pace Analytical Services	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1700 Elm Street Minneapolis, MN 55414	City, State, ZIP Code:	Consultant/Contractor Project No: CS OU Borrow Development
Lab PM: Jennifer Anderson	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 612-607-1700	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision ___ ___ ___	Email EDD To: Jesse Schwarzrock
Other Info: Profile: 35746, Line 3	Stage: Activity:	Invoice To: BP ___ Contractor X

BP Project Manager (PM): Luke Pokorny

BP PM Phone: 406-723-1832

BP PM Email: luke.pokorny@bp.com

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol		Requested Analyses: As, Cd, Cu, Pb, ZN by 6020									Report Type & QC Level: Standard x / Full Data Package ___	Comments
	20-CS-TypeB-1203-001	12/03/20	10:30	X				1							X									001	
	20-CS-TypeB-1203-002	12/03/20	10:35	X				1							X									002	
	20-CS-TypeB-1203-003	12/03/20	10:40	X				1							X									003	
	20-CS-TypeB-1203-004	12/03/20	10:45	X				1							X									004	
	20-CS-TypeB-1203-005	12/03/20	10:50	X				1							X									005	
	20-CS-TypeB-1203-006	12/03/20	10:55	X				1							X									006	PLEASE RUSH THESE SAMPLES
	20-CS-TypeB-1203-007	12/03/20	11:00	X				1							X									007	
	20-CS-TypeB-1203-008	12/03/20	11:05	X				1							X									008	
	20-CS-TypeB-1203-009	12/03/20	11:10	X				1							X									009	
	20-CS-TypeB-1203-010	12/03/20	11:15	X				1							X									010	
	20-CS-TypeB-1203-011	12/03/20	11:20	X				1							X									011	
	20-CS-TypeB-1203-012	12/03/20	11:25	X				1							X									012	

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Cole Dallaserra						
Sampler's Company:	Pioneer Technical Services	Cole Dallaserra / PTS	12/3/20	11:30	KBL PAL	12/4/20	1040
Shipment Method:	FedEx Overnight Ship Date: 12/3/20						
Shipment Tracking No:							

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 2.7 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

WO# : 10541146

10541146

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - ESI**	Document Revised: 12Aug2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0149 Rev.01**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP - pioneer tech

Project #: **WO#: 10541146**

PM: JMA Due Date: 12/18/20

CLIENT: BP-PIONEER

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 4278 9929 1428 See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other:_____ **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☐ T1(0461) ☒ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 2.5 °C **Average Corrected Temp (no temp blank only):** _____ °C ☐ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

Correction Factor: +0.2 **Cooler Temp Corrected w/temp blank:** 2.7 °C

USDA Regulated Soil: (☐ N/A, water sample/Other:_____) **Date/Initials of Person Examining Contents:** KBR 12/4/20

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐
Rush Turn Around Time Requested?	☒ Yes	☐ No		6.
Sufficient Sample Volume?	☒ Yes	☐ No		
Triple Volume Provided for MS/MSD (if more than 10 samples)?	☐ Yes	☐ No	☒ N/A	7.
Correct Containers Used?	☒ Yes	☐ No		8. plastic bags
-Pace Containers Used?	☐ Yes	☒ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ **ENV-FRM-MIN4-0142**
Matrix: ☐ Water ☒ Soil ☐ Oil ☐ Other_____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first)	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐ **ENV-FRM-MIN4-0142**
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO contaners?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐ **ENV-FRM-MIN4-0140**
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
3 Trip Blanks Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased):_____

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins			**CLIENT NOTIFICATION/RESOLUTION**	**Field Data Required?** ☐ Yes ☐ No
Opened Time: 1158	Temp: 2.5	Corrected Temp: 2.7	Person Contacted:	Date/Time:
Time:	put in cooler		Comments/Resolution:	
Time: 1218	Temp: 3.3	Corrected Temp: 3.5		

Project Manager Review: _____ **Date:** 12/07/2020

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Labeled by: TMC (3)

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

August 25, 2021

Jesse Schwarzrock
Pioneer Technical Services
307 E Park
Suite 421
Anaconda, MT 59711

RE: Project: BPSOU School Sampling
Pace Project No.: 10574925

Dear Jesse Schwarzrock:

Enclosed are the analytical results for sample(s) received by the laboratory on August 18, 2021. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Lester Dupes, Environmental Standards
Alyssa Reed, Environmental Standards, Inc.

Pace Analytical Services, LLC
1700 Elm Street
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CERTIFICATIONS

Project: BPSOU School Sampling
Pace Project No.: 10574925

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
A2LA Certification #: 2926.01*
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
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SAMPLE SUMMARY

Project: BPSOU School Sampling
Pace Project No.: 10574925

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10574925001	**21-TypeB-0817-001**	Solid	08/17/21 11:20	08/18/21 08:50
10574925002	**21-TypeB-0817-002**	Solid	08/17/21 11:30	08/18/21 08:50
10574925003	**21-TypeB-0817-003**	Solid	08/17/21 11:40	08/18/21 08:50
10574925004	**21-TypeB-0817-004**	Solid	08/17/21 11:50	08/18/21 08:50

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Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: BPSOU School Sampling
Pace Project No.: 10574925

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10574925001	**21-TypeB-0817-001**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574925002	**21-TypeB-0817-002**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574925003	**21-TypeB-0817-003**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574925004	**21-TypeB-0817-004**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: BPSOU School Sampling
Pace Project No.: 10574925

Date: August 25, 2021

Samples analyzed for method 6020 arsenic and lead were analyzed after they were dried and sieved using a number 60 sieve.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: BPSOU School Sampling
Pace Project No.: 10574925

Method: **EPA 7471B**
Description: 7471B Mercury
Client: BPAR-PIONEER-MT
Date: August 25, 2021

General Information:
4 samples were analyzed for EPA 7471B by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7471B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574925

Sample: 21-TypeB-0817-001 **Lab ID: 10574925001** Collected: 08/17/21 11:20 Received: 08/18/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.018**	mg/kg	0.018	0.0077	1	08/23/21 17:49	08/25/21 14:51	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**0.99**	%	0.10	0.10	1		08/20/21 13:56		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574925

Sample: 21-TypeB-0817-002 **Lab ID: 10574925002** Collected: 08/17/21 11:30 Received: 08/18/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.017**	mg/kg	0.017	0.0073	1	08/23/21 17:49	08/25/21 14:57	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**1.4**	%	0.10	0.10	1		08/20/21 13:56		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574925

Sample: 21-TypeB-0817-003 **Lab ID: 10574925003** Collected: 08/17/21 11:40 Received: 08/18/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.013J**	mg/kg	0.020	0.0088	1	08/23/21 17:49	08/25/21 14:59	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**1.1**	%	0.10	0.10	1		08/20/21 13:56		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574925

Sample: 21-TypeB-0817-004 **Lab ID: 10574925004** Collected: 08/17/21 11:50 Received: 08/18/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.018J**	mg/kg	0.020	0.0088	1	08/23/21 17:49	08/25/21 15:01	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**1.1**	%	0.10	0.10	1		08/20/21 13:57		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: BPSOU School Sampling
Pace Project No.: 10574925

QC Batch: 765313
QC Batch Method: EPA 7471B
Analysis Method: EPA 7471B
Analysis Description: 7471B Mercury Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10574925001, 10574925002, 10574925003, 10574925004

METHOD BLANK: 4079252 Matrix: Solid
Associated Lab Samples: 10574925001, 10574925002, 10574925003, 10574925004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	<0.0079	0.018	0.0079	08/25/21 14:48	

LABORATORY CONTROL SAMPLE: 4079253

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.47	0.48	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4079254 4079255

Parameter	Units	10574925001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.018	0.48	0.5	0.51	0.51	100	98	80-120	1	20	

SAMPLE DUPLICATE: 4079256

Parameter	Units	10574925001 Result	Dup Result	RPD	Max RPD	Qualifiers
Mercury	mg/kg	0.018	0.018	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: BPSOU School Sampling
Pace Project No.: 10574925

QC Batch: 764856
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight / %M by ASTM D2974
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10574925001, 10574925002, 10574925003, 10574925004

SAMPLE DUPLICATE: 4077836

Parameter	Units	10574920001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	16.2	17.7	9	30	N2

SAMPLE DUPLICATE: 4077837

Parameter	Units	10574716004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	19.4	21.0	8	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: BPSOU School Sampling
Pace Project No.: 10574925

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BPSOU School Sampling
Pace Project No.: 10574925

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10574925001	**21-TypeB-0817-001**	EPA 7471B	765313	EPA 7471B	765752
10574925002	**21-TypeB-0817-002**	EPA 7471B	765313	EPA 7471B	765752
10574925003	**21-TypeB-0817-003**	EPA 7471B	765313	EPA 7471B	765752
10574925004	**21-TypeB-0817-004**	EPA 7471B	765313	EPA 7471B	765752
10574925001	**21-TypeB-0817-001**	ASTM D2974	764856		
10574925002	**21-TypeB-0817-002**	ASTM D2974	764856		
10574925003	**21-TypeB-0817-003**	ASTM D2974	764856		
10574925004	**21-TypeB-0817-004**	ASTM D2974	764856		

bp rm Laboratory Management Program LaMP Chain of Custody Record

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: XX No ___

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Pace Analytical Services	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1700 Elm Street Minneapolis, MN 55414	City, State, ZIP Code:	Consultant/Contractor Project No: BPSOU School Sampling
Lab PM: Jennifer Anderson	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 612-607-1700	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision	Email EDD To: Jesse Schwarzrock
Other Info:	Stage: Activity:	Invoice To: BP Contractor X

BP Project Manager (PM): Mike Mc Anulty

BP PM Phone: 406-723-1822

BP PM Email: mcanumc@bp.com

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses: Air dry&sieve*, 6020 (As, Cd, Cu, Pb, Zn)	Requested Analyses: 7471 Mercury, dry weight	Comments
	21-TypeB-0817-001	08/17/21	1120	X				1							X	RUSH TURNAROUND
	21-TypeB-0817-002	08/17/21	1130	X				1							X	RUSH TURNAROUND
	21-TypeB-0817-003	08/17/21	1140	X				1							X	RUSH TURNAROUND
	21-TypeB-0817-004	08/17/21	1150	X				1							X	RUSH TURNAROUND

Report Type & QC Level: Standard x; Full Data Package

Note: If sample not collected, indicate "No

WO#: 10574925

10574925

Sampler's Name: Molly Sprunger	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Pioneer Technical Services	Molly Sprunger / Pioneer	8/17/21	1245	[signature] / Pace	8/18/21	8:50
Shipment Method: FedEx Overnight Ship Date: 8/17/2021						
Shipment Tracking No: 4278 9935 1703						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 5.4 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - ESI**	Document Revised: 12Aug2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0149 Rev.01**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP

Project #: WO#: 10574925

PM: JMA Due Date: 08/25/21

CLIENT: BP-PIONEER

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 4278 9935 1703 See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☐ T1(0461) ☒ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 5.4 °C **Average Corrected Temp (no temp blank only):** _____ °C ☐ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

Correction Factor: True **Cooler Temp Corrected w/temp blank :** 5.4 °C

USDA Regulated Soil: (☐ N/A, water sample/Other: _____) **Date/Initials of Person Examining Contents:** HKB 8/18/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐
Rush Turn Around Time Requested?	☒ Yes	☐ No		6.
Sufficient Sample Volume?	☒ Yes	☐ No		
Triple Volume Provided for MS/MSD (if more than 10 samples)?	☐ Yes	☐ No	☒ N/A	7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ ENV-FRM-MIN4-0142
Matrix: ☐ Water ☒ Soil ☐ Oil ☐ Other _____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first)	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐ ENV-FRM-MIN4-0142
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO contaners?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐ ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
3 Trip Blanks Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased): _____

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins		
Opened Time: 11:30 Temp: 5.4	Corrected Temp: 5.4	
Time: 11:45 put in cooler		
Time: JMA 8/19/21 Temp:	Corrected Temp:	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: _____ **Date:** 08/19/2021

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

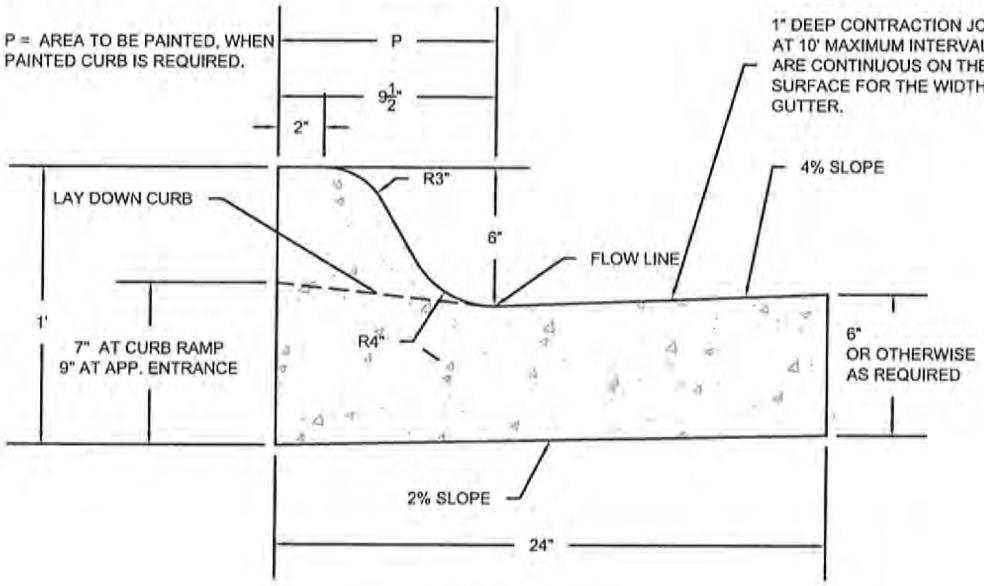
Labeled by: HKB (2) CD

ATTACHMENT E

BSB PUBLIC WORKS DEPARTMENT

STANDARD DRAWING R-CGS1 (CURB & GUTTER)

CONCRETE CURBS



CURB AND GUTTER SECTION

CONSTRUCTION NOTES:

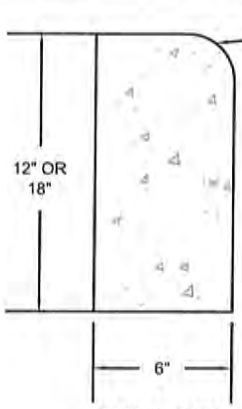
1. SPACE CONTRACTION JOINTS IN CURB AND GUTTER AT 10 FOOT INTERVALS OR LESS EXCEPT AS SPECIFIED. EXTEND 1/2" MIN. WIDTH EXPANSION JOINTS COMPLETELY THROUGH CURB AND GUTTER EVERY 100 FEET (± 30 FEET), AT INTERVALS EQUAL TO THE NEAREST MULTIPLE OF THE CONTRACTION JOINT INTERVAL, AND FILL WITH EXPANSION JOINT FILLER.
2. CONTRACTION JOINTS ARE 1/8" MIN. AND 3/8" MAX. IN WIDTH. FORM JOINTS BY SAWING OR SCORING TO A MINIMUM DEPTH OF 1". FORM SCORED JOINTS BY A TOOL WHICH WILL LEAVE ROUNDED CORNERS AND DESTROY AGGREGATE INTERLOCK TO MINIMUM DEPTH OF 1".
3. SEPARATE THE CURB AND GUTTER FROM ADJACENT SIDEWALK AT POINTS SHOWN ON MDOT STANDARD . DWG. NO. 608-05 WITH A BOND BREAKER MATERIAL, EXCEPT AT APPROACH LAYDOWN CURB LOCATIONS, WHICH REQUIRE SEPARATION USING 1/2" MIN WIDTH PERFORMED EXPANSION JOINT MATERIAL AT ALL CURB RETURNS, BRIDGES, FROM INLETS, AND WHERE MEETING CURB AND GUTTER IN PLACE.
4. 4" OF COMPACTED CRUSHED GRAVEL BASE MATERIAL, 3/4" MINUS IS REQUIRED UNDER CURB AND GUTTER SECTION.

EXPANSION JOINT FILLER MATERIAL:
USE PREFORMED EXPANSION JOINT FILLER MEETING THE REQUIREMENTS IN MDOT STANDARD . SPECIFICATIONS.

BOND BREAKER MATERIAL:
USE A 15 OR 30 POUND ROOFING FELT MATERIAL, OR OTHER PRODUCT AS APPROVED BY THE ENGINEER.
DO NOT USE EXPANSION JOINT MATERIAL.

RADII:
MINIMUM CURB RETURN RADII IS 10 FEET.
15 FOOT RADII ARE DESIRABLE FOR STREETS.

CONCRETE:
UNLESS OTHERWISE SPECIFIED, CONSTRUCT CONRETE CURBS AND CONCRETE INTEGRAL CURB AND GUTTER WITH CLASS "D" CONCRETE OR APPROVED EQUAL.



TYPE "A" CURB

TYPE 'K' CURB NOTES:

1. SHALL ONLY BE USED WITH PRIOR WRITTEN PERMISSION FROM THE PUBLIC WORKS DEPARTMENT.
2. TYPE 'K' CURBS SHALL UTILIZE SPECIFICATIONS ALREADY STATED IN THE CONSTRUCTION NOTES.

Road
Miscellaneous Curbs

Revised: 8/20/2014

BSB Butte - Silver Bow
PUBLIC WORKS DEPARTMENT
126 West Granite
Butte, MT 59701
(406) 497-6515

Standard Drawing
R-CGS1
NOT TO SCALE

ATTACHMENT F

AGENCY APPROVED KAW AVENUE

BORROW STOCKPILE DATA

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-1***

Description		Specification		Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)						
	As	<	97	26.9	X	
	Cd	<	4	0.9	X	
	Cu	<	250	66.9	X	
	Hg	<	5	0.03	X	
	Pb	<	100	29.4	X	
	Zn	<	250	132.0	X	
pH (s.u.)		>	5.5	7.9	X	
		<	8.5			
SAR		<	12	1.12	X	
Saturation (%)		<	85	42.7	X	
		>	25			
EC (mmhos/cm)		<	4	1.3	X	
Textural Classification (USDA) <2.0 mm						
	Loam				X	
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam					
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	13.1	X	

Other Information Requested	
Organic Matter (%)	
	3.70
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	52
Silt (%)	28
Clay (%)	20

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:11:04 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-2***

Description	Specification	Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)				
As	< 97	15.9	X	
Cd	< 4	0.5	X	
Cu	< 250	36.2	X	
Hg	< 5	0.02	X	
Pb	< 100	16.0	X	
Zn	< 250	76.0	X	
pH (s.u.)	> 5.5 < 8.5	8.0	X	
SAR	< 12	0.77	X	
Saturation (%)	< 85 > 25	43.7	X	
EC (mmhos/cm)	< 4	0.9	X	
Textural Classification (USDA) <2.0 mm				
Loam			X	
Sandy loam				
Sandy clay loam				
Sandy clay				
Clay loam				
Silty clay				
Silty clay loam				
Silt loam				
Silt				
*Per EPA Approval (Loamy sand)				
Rock Content (%) (by volume)	< 45	17.3	X	

Other Information Requested	
Organic Matter (%)	3.50
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	44
Silt (%)	32
Clay (%)	24

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:12:44 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-3***

Description	Specification	Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)				
As	< 97	29.8	X	
Cd	< 4	0.8	X	
Cu	< 250	64.7	X	
Hg	< 5	0.02	X	
Pb	< 100	23.8	X	
Zn	< 250	103.0	X	
pH (s.u.)	> 5.5 < 8.5	7.8	X	
SAR	< 12	0.78	X	
Saturation (%)	< 85 > 25	44.4	X	
EC (mmhos/cm)	< 4	1.5	X	
Textural Classification (USDA) <2.0 mm				
Loam			X	
Sandy loam				
Sandy clay loam				
Sandy clay				
Clay loam				
Silty clay				
Silty clay loam				
Silt loam				
Silt				
*Per EPA Approval (Loamy sand)				
Rock Content (%) (by volume)	< 45	12.5	X	

Other Information Requested	
Organic Matter (%)	3.60
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	42
Silt (%)	32
Clay (%)	26

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McInulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:16:08 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-4***

Description	Specification	Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)				
As	< 97	31.0	X	
Cd	< 4	0.8	X	
Cu	< 250	77.9	X	
Hg	< 5	0.03	X	
Pb	< 100	26.6	X	
Zn	< 250	129.0	X	
pH (s.u.)				
	> 5.5 < 8.5	7.7	X	
SAR				
	< 12	0.56	X	
Saturation (%)				
	< 85 > 25	49.4	X	
EC (mmhos/cm)				
	< 4	1.5	X	
Textural Classification (USDA) <2.0 mm				
Loam				
Sandy loam				
Sandy clay loam				
Sandy clay				
Clay loam			X	
Silty clay				
Silty clay loam				
Silt loam				
Silt				
*Per EPA Approval (Loamy sand)				
Rock Content (%) (by volume)	< 45	12.2	X	

Other Information Requested	
Organic Matter (%)	3.50
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	34
Silt (%)	38
Clay (%)	28

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:17:59 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-5***

Description		Specification		Sample	Specification Met Yes	Specification Met No
Chemical (mg/kg)						
	As	<	97	33.9	X	
	Cd	<	4	0.9	X	
	Cu	<	250	78.2	X	
	Hg	<	5	0.03	X	
	Pb	<	100	26.9	X	
	Zn	<	250	127.0	X	
pH (s.u.)						
		>	5.5	7.8	X	
		<	8.5			
SAR						
		<	12	0.47	X	
Saturation (%)						
		<	85	52.2	X	
		>	25			
EC (mmhos/cm)						
		<	4	1.0	X	
Textural Classification (USDA) <2.0 mm						
	Loam					
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam				X	
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	9.3	X	

Other Information Requested	
Organic Matter (%)	
	3.80
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	28
Silt (%)	42
Clay (%)	30

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:19:54 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-6***

Description	Specification	Sample	Specification Met Yes	Specification Met No	Other Information Requested
Chemical (mg/kg)					**Organic Matter (%)**
As	< 97	43.4	X		3.70
Cd	< 4	1.0	X		
Cu	< 250	99.3	X		**Soil Nutrients**
Hg	< 5	0.03	X		
Pb	< 100	36.1	X		N (mg/kg) N/A
Zn	< 250	143.0	X		P (mg/kg) N/A
					K (mg/kg) N/A
pH (s.u.)					
	> 5.5 < 8.5	7.9	X		
SAR					
	< 12	0.88	X		
Saturation (%)					
	< 85 > 25	49.2	X		
EC (mmhos/cm)					
	< 4	1.4	X		
Textural Classification (USDA) <2.0 mm					**Particle Size**
Loam			X		Sand (%) 34
Sandy loam					Silt (%) 40
Sandy clay loam					Clay (%) 26
Sandy clay					
Clay loam					
Silty clay					
Silty clay loam					
Silt loam					
Silt					
*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)	< 45	11.0	X		

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:22:16 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-7***

Description	Specification			Sample	Specification Met Yes	Specification Met No
Chemical (mg/kg)						
As	<	97		36.6	X	
Cd	<	4		0.9	X	
Cu	<	250		85.7	X	
Hg	<	5		0.03	X	
Pb	<	100		28.8	X	
Zn	<	250		133.0	X	
pH (s.u.)						
	>	5.5		7.5	X	
	<	8.5				
SAR						
	<	12		0.39	X	
Saturation (%)						
	<	85		49.3	X	
	>	25				
EC (mmhos/cm)						
	<	4		1.3	X	
Textural Classification (USDA) <2.0 mm						
			Loam			
			Sandy loam			
			Sandy clay loam			
			Sandy clay			
			Clay loam		X	
			Silty clay			
			Silty clay loam			
			Silt loam			
			Silt			
			*Per EPA Approval (Loamy sand)			
Rock Content (%) (by volume)	<	45		11.5	X	

Other Information Requested	
Organic Matter (%)	4.10
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	32
Silt (%)	40
Clay (%)	28

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McInulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:24:49 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-8***

Description	Specification	Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)				
As	< 97	37.8	X	
Cd	< 4	0.9	X	
Cu	< 250	82.9	X	
Hg	< 5	0.03	X	
Pb	< 100	27.5	X	
Zn	< 250	131.0	X	
pH (s.u.)				
	> 5.5 < 8.5	7.4	X	
SAR				
	< 12	0.79	X	
Saturation (%)				
	< 85 > 25	45.7	X	
EC (mmhos/cm)				
	< 4	2.1	X	
Textural Classification (USDA) <2.0 mm				
Loam			X	
Sandy loam				
Sandy clay loam				
Sandy clay				
Clay loam				
Silty clay				
Silty clay loam				
Silt loam				
Silt				
*Per EPA Approval (Loamy sand)				
Rock Content (%) (by volume)	< 45	12.2	X	

Other Information Requested	
Organic Matter (%)	
	3.70
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	46
Silt (%)	28
Clay (%)	26

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McInulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:26:25 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

ATTACHMENT F-1

ENERGY LABS DATA REPORT

ANALYTICAL SUMMARY REPORT

August 20, 2021

Pioneer Technical Services
307 E Park Ste 421
Anaconda, MT 59711-2300

Work Order: B21081152 Quote ID: B5332

Project Name: BPSOU School Sampling

Energy Laboratories Inc Billings MT received the following 8 samples for Pioneer Technical Services on 8/12/2021 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B21081152-001	BPSOU-KAW-1	08/10/21 12:30	08/12/21	Soil	Metals, Saturated Paste Conductivity, Saturated Paste Extract Organic Carbon/Matter Walkley-Black pH, Saturated Paste Saturated Paste Extraction ASA Particle Size Analysis / Texture Sodium Adsorption Ratio Saturation Percentage Sieve Analysis, Dry
B21081152-002	BPSOU-KAW-2	08/10/21 12:35	08/12/21	Soil	Same As Above
B21081152-003	BPSOU-KAW-3	08/10/21 12:40	08/12/21	Soil	Same As Above
B21081152-004	BPSOU-KAW-4	08/10/21 12:45	08/12/21	Soil	Same As Above
B21081152-005	BPSOU-KAW-5	08/10/21 12:50	08/12/21	Soil	Same As Above
B21081152-006	BPSOU-KAW-6	08/10/21 12:55	08/12/21	Soil	Same As Above
B21081152-007	BPSOU-KAW-7	08/10/21 13:00	08/12/21	Soil	Same As Above
B21081152-008	BPSOU-KAW-8	08/10/21 13:05	08/12/21	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Pioneer Technical Services
Project: BPSOU School Sampling
Work Order: B21081152

Report Date: 08/20/21

CASE NARRATIVE

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-001
Client Sample ID: BPSOU-KAW-1

Report Date: 08/20/21
Collection Date: 08/10/21 12:30
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	52	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	20	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	08/19/21 08:57 / eli-h
Conductivity, sat. paste	1.3	mmhos/cm		0.1		ASA10-3	08/19/21 12:46 / eli-h
Saturation	42.7	%		0.1		USDA27a	08/19/21 08:37 / eli-h
Calcium, sat. paste	6.10	meq/L		0.05		SW6010B	08/19/21 23:25 / eli-h
Magnesium, sat. paste	3.16	meq/L		0.08		SW6010B	08/19/21 23:25 / eli-h
Sodium, sat. paste	2.41	meq/L		0.04		SW6010B	08/19/21 23:25 / eli-h
Sodium Adsorption Ratio (SAR)	1.12	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.7	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	5.8	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	13.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	81.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-002
Client Sample ID: BPSOU-KAW-2

Report Date: 08/20/21
Collection Date: 08/10/21 12:35
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	44	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	32	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	24	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	08/19/21 08:57 / eli-h
Conductivity, sat. paste	0.9	mmhos/cm		0.1		ASA10-3	08/19/21 12:47 / eli-h
Saturation	43.7	%		0.1		USDA27a	08/19/21 08:37 / eli-h
Calcium, sat. paste	4.38	meq/L		0.05		SW6010B	08/19/21 23:42 / eli-h
Magnesium, sat. paste	2.60	meq/L		0.08		SW6010B	08/19/21 23:42 / eli-h
Sodium, sat. paste	1.44	meq/L		0.04		SW6010B	08/19/21 23:42 / eli-h
Sodium Adsorption Ratio (SAR)	0.77	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.5	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	17.3	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	82.7	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-003
Client Sample ID: BPSOU-KAW-3

Report Date: 08/20/21
Collection Date: 08/10/21 12:40
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	42	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	32	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	26	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.8	s.u.		0.1		ASA10-3	08/19/21 08:58 / eli-h
Conductivity, sat. paste	1.5	mmhos/cm		0.1		ASA10-3	08/19/21 12:47 / eli-h
Saturation	44.4	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	8.57	meq/L		0.05		SW6010B	08/19/21 23:46 / eli-h
Magnesium, sat. paste	3.22	meq/L		0.08		SW6010B	08/19/21 23:46 / eli-h
Sodium, sat. paste	1.90	meq/L		0.04		SW6010B	08/19/21 23:46 / eli-h
Sodium Adsorption Ratio (SAR)	0.78	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.6	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	3.6	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	12.5	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	83.9	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-004
Client Sample ID: BPSOU-KAW-4

Report Date: 08/20/21
Collection Date: 08/10/21 12:45
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	38	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	CL			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.7	s.u.		0.1		ASA10-3	08/19/21 08:59 / eli-h
Conductivity, sat. paste	1.5	mmhos/cm		0.1		ASA10-3	08/19/21 12:48 / eli-h
Saturation	49.4	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	8.03	meq/L		0.05		SW6010B	08/19/21 23:51 / eli-h
Magnesium, sat. paste	3.97	meq/L		0.08		SW6010B	08/19/21 23:51 / eli-h
Sodium, sat. paste	1.38	meq/L		0.04		SW6010B	08/19/21 23:51 / eli-h
Sodium Adsorption Ratio (SAR)	0.56	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.5	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	12.2	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	87.8	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-005
Client Sample ID: BPSOU-KAW-5

Report Date: 08/20/21
Collection Date: 08/10/21 12:50
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	42	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	30	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	CL			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.8	s.u.		0.1		ASA10-3	08/19/21 09:00 / eli-h
Conductivity, sat. paste	1.0	mmhos/cm		0.1		ASA10-3	08/19/21 12:49 / eli-h
Saturation	52.2	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	5.10	meq/L		0.05		SW6010B	08/19/21 23:55 / eli-h
Magnesium, sat. paste	3.13	meq/L		0.08		SW6010B	08/19/21 23:55 / eli-h
Sodium, sat. paste	0.96	meq/L		0.04		SW6010B	08/19/21 23:55 / eli-h
Sodium Adsorption Ratio (SAR)	0.47	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.8	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	1.6	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	9.3	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	89.0	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-006
Client Sample ID: BPSOU-KAW-6

Report Date: 08/20/21
Collection Date: 08/10/21 12:55
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	40	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	26	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	08/19/21 09:02 / eli-h
Conductivity, sat. paste	1.4	mmhos/cm		0.1		ASA10-3	08/19/21 12:50 / eli-h
Saturation	49.2	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	6.64	meq/L		0.05		SW6010B	08/20/21 00:04 / eli-h
Magnesium, sat. paste	4.32	meq/L		0.08		SW6010B	08/20/21 00:04 / eli-h
Sodium, sat. paste	2.06	meq/L		0.04		SW6010B	08/20/21 00:04 / eli-h
Sodium Adsorption Ratio (SAR)	0.88	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.7	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	11.0	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	89.0	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-007
Client Sample ID: BPSOU-KAW-7

Report Date: 08/20/21
Collection Date: 08/10/21 13:00
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	32	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	40	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	CL			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.5	s.u.		0.1		ASA10-3	08/19/21 09:02 / eli-h
Conductivity, sat. paste	1.3	mmhos/cm		0.1		ASA10-3	08/19/21 12:51 / eli-h
Saturation	49.3	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	7.19	meq/L		0.05		SW6010B	08/20/21 00:51 / eli-h
Magnesium, sat. paste	3.45	meq/L		0.08		SW6010B	08/20/21 00:51 / eli-h
Sodium, sat. paste	0.90	meq/L		0.04		SW6010B	08/20/21 00:51 / eli-h
Sodium Adsorption Ratio (SAR)	0.39	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	4.1	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	11.5	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	88.5	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-008
Client Sample ID: BPSOU-KAW-8

Report Date: 08/20/21
Collection Date: 08/10/21 13:05
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	46	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	26	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.4	s.u.		0.1		ASA10-3	08/19/21 09:03 / eli-h
Conductivity, sat. paste	2.1	mmhos/cm		0.1		ASA10-3	08/19/21 12:52 / eli-h
Saturation	45.7	%		0.1		USDA27a	08/19/21 08:39 / eli-h
Calcium, sat. paste	12.8	meq/L		0.05		SW6010B	08/20/21 00:56 / eli-h
Magnesium, sat. paste	3.82	meq/L		0.08		SW6010B	08/20/21 00:56 / eli-h
Sodium, sat. paste	2.29	meq/L		0.04		SW6010B	08/20/21 00:56 / eli-h
Sodium Adsorption Ratio (SAR)	0.79	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.7	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	12.2	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	87.8	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA10-3**								Analytical Run: SOIL EC_210819A	
Lab ID: **ICV_1_210818_1**	Initial Calibration Verification Standard							08/19/21 12:43	
Conductivity, sat. paste	1.51	mmhos/cm	0.10	107	90	110			
Lab ID: **CCV_1_210818_1**	Continuing Calibration Verification Standard							08/19/21 12:43	
Conductivity, sat. paste	5.22	mmhos/cm	0.10	104	90	110			
Lab ID: **CCV1_1_210818_1**	Continuing Calibration Verification Standard							08/19/21 12:44	
Conductivity, sat. paste	0.924	mmhos/cm	0.10	92	90	110			
Method: **ASA10-3**								Batch: 57600	
Lab ID: **MB-57600**	Method Blank				Run: SOIL EC_210819A			08/19/21 12:45	
Conductivity, sat. paste	ND	mmhos/cm	0.05						
Lab ID: **LCS-57600**	Laboratory Control Sample				Run: SOIL EC_210819A			08/19/21 12:46	
Conductivity, sat. paste	4.37	mmhos/cm	0.10	104	80	120			
Lab ID: **B21081152-005ADUP**	Sample Duplicate				Run: SOIL EC_210819A			08/19/21 12:49	
Conductivity, sat. paste	1.08	mmhos/cm	0.10				3.1	20	
Method: **ASA10-3**								al Run: SOIL PH METER - ORION A211_210819A	
Lab ID: **ICV_1_210818_1**	Initial Calibration Verification Standard							08/19/21 08:53	
pH, sat. paste	7.03	s.u.	0.10	100	98.6	101.4			
Lab ID: **CCV_1_210818_1**	Continuing Calibration Verification Standard							08/19/21 08:54	
pH, sat. paste	7.04	s.u.	0.10	101	98.6	101.4			
Lab ID: **CCV1_1_210818_1**	Continuing Calibration Verification Standard							08/19/21 08:55	
pH, sat. paste	4.01	s.u.	0.10	100	97.5	102.5			
Method: **ASA10-3**								Batch: 57600	
Lab ID: **LCS-57600**	Laboratory Control Sample				Run: SOIL PH METER - ORION A2			08/19/21 08:56	
pH, sat. paste	8.08	s.u.	0.10	100	95	105			
Lab ID: **B21081152-005ADUP**	Sample Duplicate				Run: SOIL PH METER - ORION A2			08/19/21 09:01	
pH, sat. paste	7.82	s.u.	0.10				0.3	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA15-5**									Batch: 57612
Lab ID: **B21081152-002ADUP**	Sample Duplicate				Run: SOIL HYDROMETER_210820			08/19/21 12:17	
Sand	44.0	%	1.0				0.0	20	
Silt	32.0	%	1.0				0.0	20	
Clay	24.0	%	1.0				0.0	20	
Texture	L		1.0						
Lab ID: **LCS-57612**	Laboratory Control Sample				Run: SOIL HYDROMETER_210820			08/19/21 12:17	
Sand	46.0	%	1.0	110	70	130			
Silt	28.0	%	1.0	88	70	130			
Clay	26.0	%	1.0	100	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA29-3**									Batch: 57606
Lab ID: **LCS-57606**	Laboratory Control Sample				Run: MISC SOILS_210820A				08/20/21 12:20
Organic Matter	1.13	%	0.17	116	70	130			
Lab ID: **MB-57606**	Method Blank				Run: MISC SOILS_210820A				08/20/21 12:20
Organic Matter	ND	%	0.2						
Lab ID: **B21081152-006ADUP**	Sample Duplicate				Run: MISC SOILS_210820A				08/20/21 12:20
Organic Matter	3.74	%	0.17						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**								Analytical Run: ICP2-HE_210819B	
Lab ID: **ICV**	Initial Calibration Verification Standard							08/19/21 14:52	
Calcium	40.3	mg/L	1.0	101	90	110			
Magnesium	39.9	mg/L	1.0	100	90	110			
Sodium	40.0	mg/L	1.0	100	90	110			
Lab ID: **CCV**	Continuing Calibration Verification Standard							08/19/21 14:56	
Calcium	25.2	mg/L	1.0	101	90	110			
Magnesium	24.9	mg/L	1.0	100	90	110			
Sodium	25.4	mg/L	1.0	102	90	110			
Lab ID: **ICB**	Continuing Calibration Blank							08/19/21 15:00	
Calcium	0.0347	mg/L	1.0						
Magnesium	0.0127	mg/L	1.0						
Sodium	0.00124	mg/L	1.0						
Lab ID: **ICSA**	Interference Check Sample A							08/19/21 15:09	
Calcium	483	mg/L	1.0	97	80	120			
Magnesium	535	mg/L	1.0	107	80	120			
Sodium	-0.00132	mg/L	1.0		0	0			
Lab ID: **ICSAB**	Interference Check Sample AB							08/19/21 15:14	
Calcium	489	mg/L	1.0	98	80	120			
Magnesium	536	mg/L	1.0	107	80	120			
Sodium	19.6	mg/L	1.0	98	80	120			
Method: **SW6010B**								Batch: 57600	
Lab ID: **MB-57600**	Method Blank				Run: ICP2-HE_210819B			08/19/21 23:03	
Calcium	ND	mg/L	0.1						
Magnesium	ND	mg/L	0.02						
Sodium	ND	mg/L	0.02						
Calcium, sat. paste	ND	meq/L	0.007						
Magnesium, sat. paste	ND	meq/L	0.002						
Sodium, sat. paste	ND	meq/L	0.0009						
Lab ID: **LFB-57600**	Laboratory Fortified Blank				Run: ICP2-HE_210819B			08/19/21 23:08	
Calcium	48.7	mg/L	1.0	97	80	120			
Magnesium	52.8	mg/L	1.0	106	80	120			
Sodium	52.4	mg/L	1.0	105	80	120			
Calcium, sat. paste	2.43	meq/L	0.050	97	80	120			
Magnesium, sat. paste	4.35	meq/L	0.082	106	80	120			
Sodium, sat. paste	2.28	meq/L	0.043	105	80	120			
Lab ID: **LCS-57600**	Laboratory Control Sample				Run: ICP2-HE_210819B			08/19/21 23:12	
Calcium	209	mg/L	1.0	96	70	130			
Magnesium	80.6	mg/L	1.0	95	70	130			
Sodium	692	mg/L	1.0	113	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**									Batch: 57600
Lab ID: **LCS-57600**	Laboratory Control Sample				Run: ICP2-HE_210819B				08/19/21 23:12
Calcium, sat. paste	10.4	meq/L	0.050	96	70	130			
Magnesium, sat. paste	6.64	meq/L	0.082	95	70	130			
Sodium, sat. paste	30.1	meq/L	0.043	113	70	130			
Lab ID: **B21081152-001AMS2**	Sample Matrix Spike				Run: ICP2-HE_210819B				08/19/21 23:34
Calcium	215	mg/L	1.0	92	70	130			
Magnesium	141	mg/L	1.0	102	70	130			
Sodium	162	mg/L	1.0	107	70	130			
Calcium, sat. paste	10.7	meq/L	0.050	92	70	130			
Magnesium, sat. paste	11.6	meq/L	0.082	102	70	130			
Sodium, sat. paste	7.04	meq/L	0.043	107	70	130			
Lab ID: **B21081152-001AMSD2**	Sample Matrix Spike Duplicate				Run: ICP2-HE_210819B				08/19/21 23:38
Calcium	217	mg/L	1.0	95	70	130	1.2	20	
Magnesium	142	mg/L	1.0	104	70	130	0.9	20	
Sodium	157	mg/L	1.0	102	70	130	3.0	20	
Calcium, sat. paste	10.8	meq/L	0.050	95	70	130	1.2	20	
Magnesium, sat. paste	11.7	meq/L	0.082	104	70	130	0.9	20	
Sodium, sat. paste	6.83	meq/L	0.043	102	70	130	3.0	20	
Lab ID: **B21081152-005Adup**	Sample Duplicate				Run: ICP2-HE_210819B				08/19/21 23:59
Calcium	104	mg/L	1.0				1.9	30	
Magnesium	38.8	mg/L	1.0				1.9	30	
Sodium	22.9	mg/L	1.0				3.8	30	
Calcium, sat. paste	5.20	meq/L	0.050				1.9	30	
Magnesium, sat. paste	3.19	meq/L	0.082				1.9	30	
Sodium, sat. paste	0.994	meq/L	0.043				3.8	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA20b									Batch: 57600
Lab ID: B21081152-005ADUP	Sample Duplicate				Run: SOIL CALC_210820A				08/20/21 12:23
Sodium Adsorption Ratio (SAR)	0.480	unitless	0.10				2.1	30	
Lab ID: LCS-57600	Laboratory Control Sample				Run: SOIL CALC_210820A				08/20/21 12:23
Sodium Adsorption Ratio (SAR)	10.3	unitless	0.10	117	80	120			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **USDA27a**									Batch: 57600
Lab ID: **LCS-57600**	Laboratory Control Sample				Run: SOIL DRYING OVEN 2_21082				08/19/21 08:37
Saturation	42.0	%	0.10	101	80	120			
Lab ID: **B21081152-005ADUP**	Sample Duplicate				Run: SOIL DRYING OVEN 2_21082				08/19/21 08:38
Saturation	51.1	%	0.10				2.3	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Pioneer Technical Services

B21081152

Login completed by:	Richard L. Shular	Date Received:	8/12/2021
Reviewed by:	BL2000\tedwards	Received by:	its
Reviewed Date:	8/16/2021	Carrier name:	FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	23.0°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

Results due 08/20/21 per Gina Mccartney, Energy Laboratories Project Manager.

bp rm

Laboratory Management Program LaMP Chain of Custody Record

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: XX No ___

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Energy Laboratories	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1120 S 27th St. Billings MT 59101	City, State, ZIP Code:	Consultant/Contractor Project No: BPSOU School Sampling
Lab PM: Gina McCartney	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 800-735-4489	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision — — —	Email EDD To: Jesse Schwarzrock
Other Info:	Stage: Activity:	Invoice To: BP — Contractor —X

BP Project Manager (PM): Mike Mc Anulty

BP PM Phone: 406-723-1822

BP PM Email: mcanumc@bp.com

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Containers	No. Containers / Preservative: Unpreserved	No. Containers / Preservative: H_2SO_4	No. Containers / Preservative: HNO_3	No. Containers / Preservative: HCl	No. Containers / Preservative: Methanol		Requested Analyses: Texture USDA	Requested Analyses: % Course Material (1" and 2mm)	Requested Analyses: Saturation Percentage	Requested Analyses: Electrical Conductivity	Requested Analyses: Sodium Adsorption Ratio	Requested Analyses: Saturated Paste pH	Requested Analyses: Organic Matter (Walkley Black)				Report Type & QC Level: Standard —X / Full Data Package — Note: If sample not collected, indicate "No Sample" in comments and single-strike out. Comments
	BPSOU-KAW-1	08/10/21	12:30	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND B210811-04
	BPSOU-KAW-2	08/10/21	12:35	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -002
	BPSOU-KAW-3	08/10/21	12:40	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -003
	BPSOU-KAW-4	08/10/21	12:45	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -004
	BPSOU-KAW-5	08/10/21	12:50	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -005
	BPSOU-KAW-6	08/10/21	12:55	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -006
	BPSOU-KAW-7	08/10/21	13:00	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -007
	BPSOU-KAW-8	08/10/21	13:05	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -008

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Kile Denney						
Sampler's Company:	Pioneer Technical Services	Kile Dalleman PTS	8/11/21	1600			
Shipment Method:	Fedex Ship Date: 8/11/21						
Shipment Tracking No:	5728 1538 4791					08/11/21	09:00

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

ATTACHMENT F-2

PACE ANALYTICAL DATA REPORT

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

August 19, 2021

Jesse Schwarzrock
Pioneer Technical Services
307 E Park
Suite 421
Anaconda, MT 59711

RE: Project: BPSOU School Sampling
Pace Project No.: 10574177

Dear Jesse Schwarzrock:

Enclosed are the analytical results for sample(s) received by the laboratory on August 12, 2021. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Cole Dallaserra, Pioneer Technical
Jennifer Norman, Portage Inc.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Pace Analytical Services, LLC - Minneapolis MN
1700 Elm Street SE, Minneapolis, MN 55414
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
A2LA Certification #: 2926.01*
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: BPSOU School Sampling
Pace Project No.: 10574177

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10574177001	**BPSOU-KAW-1**	Solid	08/10/21 12:30	08/12/21 08:50
10574177002	**BPSOU-KAW-1**	Solid	08/10/21 12:30	08/12/21 08:50
10574177003	**BPSOU-KAW-2**	Solid	08/10/21 12:35	08/12/21 08:50
10574177004	**BPSOU-KAW-2**	Solid	08/10/21 12:35	08/12/21 08:50
10574177005	**BPSOU-KAW-3**	Solid	08/10/21 12:40	08/12/21 08:50
10574177006	**BPSOU-KAW-3**	Solid	08/10/21 12:40	08/12/21 08:50
10574177007	**BPSOU-KAW-4**	Solid	08/10/21 12:45	08/12/21 08:50
10574177008	**BPSOU-KAW-4**	Solid	08/10/21 12:45	08/12/21 08:50
10574177009	**BPSOU-KAW-5**	Solid	08/10/21 12:50	08/12/21 08:50
10574177010	**BPSOU-KAW-5**	Solid	08/10/21 12:50	08/12/21 08:50
10574177011	**BPSOU-KAW-6**	Solid	08/10/21 12:55	08/12/21 08:50
10574177012	**BPSOU-KAW-6**	Solid	08/10/21 12:55	08/12/21 08:50
10574177013	**BPSOU-KAW-7**	Solid	08/10/21 13:00	08/12/21 08:50
10574177014	**BPSOU-KAW-7**	Solid	08/10/21 13:00	08/12/21 08:50
10574177015	**BPSOU-KAW-8**	Solid	08/10/21 13:05	08/12/21 08:50
10574177016	**BPSOU-KAW-8**	Solid	08/10/21 13:05	08/12/21 08:50

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: BPSOU School Sampling
Pace Project No.: 10574177

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10574177001	**BPSOU-KAW-1**	EPA 6020A	BWB	5	PASI-M
10574177002	**BPSOU-KAW-1**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177003	**BPSOU-KAW-2**	EPA 6020A	BWB	5	PASI-M
10574177004	**BPSOU-KAW-2**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177005	**BPSOU-KAW-3**	EPA 6020A	BWB	5	PASI-M
10574177006	**BPSOU-KAW-3**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177007	**BPSOU-KAW-4**	EPA 6020A	BWB	5	PASI-M
10574177008	**BPSOU-KAW-4**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177009	**BPSOU-KAW-5**	EPA 6020A	BWB	5	PASI-M
10574177010	**BPSOU-KAW-5**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177011	**BPSOU-KAW-6**	EPA 6020A	BWB	5	PASI-M
10574177012	**BPSOU-KAW-6**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177013	**BPSOU-KAW-7**	EPA 6020A	BWB	5	PASI-M
10574177014	**BPSOU-KAW-7**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177015	**BPSOU-KAW-8**	EPA 6020A	BWB	5	PASI-M
10574177016	**BPSOU-KAW-8**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: BPSOU School Sampling
Pace Project No.: 10574177

Date: August 19, 2021

Samples analyzed for method 6020 arsenic, cadmium, copper, lead and zinc were analyzed after they were dried and sieved using a number 60 sieve.

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PROJECT NARRATIVE

Project: BPSOU School Sampling
Pace Project No.: 10574177

Method: **EPA 6020A**
Description: 6020A MET ICPMS
Client: BPAR-PIONEER-MT
Date: August 19, 2021

General Information:
8 samples were analyzed for EPA 6020A by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3050B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 764488

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10574177001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 4075058)
  - Zinc

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: BPSOU School Sampling
Pace Project No.: 10574177

Method: **EPA 7471B**
Description: 7471B Mercury
Client: BPAR-PIONEER-MT
Date: August 19, 2021

General Information:
8 samples were analyzed for EPA 7471B by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7471B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-1 **Lab ID: 10574177001** Collected: 08/10/21 12:30 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**26.9**	mg/kg	0.50	0.11	1	08/19/21 08:25	08/19/21 11:57	7440-38-2	
Cadmium	**0.90**	mg/kg	0.079	0.031	1	08/19/21 08:25	08/19/21 11:57	7440-43-9	
Copper	**66.9**	mg/kg	0.99	0.24	1	08/19/21 08:25	08/19/21 11:57	7440-50-8	
Lead	**29.4**	mg/kg	0.20	0.029	1	08/19/21 08:25	08/19/21 11:57	7439-92-1	
Zinc	**132**	mg/kg	5.0	0.89	1	08/19/21 08:25	08/19/21 11:57	7440-66-6	M1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-1 **Lab ID: 10574177002** Collected: 08/10/21 12:30 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.026**	mg/kg	0.022	0.0094	1	08/16/21 13:44	08/18/21 15:47	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**10.5**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-2 **Lab ID: 10574177003** Collected: 08/10/21 12:35 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**15.9**	mg/kg	0.46	0.10	1	08/19/21 08:25	08/19/21 12:17	7440-38-2	
Cadmium	**0.49**	mg/kg	0.074	0.029	1	08/19/21 08:25	08/19/21 12:17	7440-43-9	
Copper	**36.2**	mg/kg	0.93	0.22	1	08/19/21 08:25	08/19/21 12:17	7440-50-8	
Lead	**16.0**	mg/kg	0.19	0.027	1	08/19/21 08:25	08/19/21 12:17	7439-92-1	
Zinc	**76.0**	mg/kg	4.6	0.83	1	08/19/21 08:25	08/19/21 12:17	7440-66-6	

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-2 **Lab ID: 10574177004** Collected: 08/10/21 12:35 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.022**	mg/kg	0.022	0.0095	1	08/16/21 13:44	08/18/21 15:53	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**11.7**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-3 **Lab ID: 10574177005** Collected: 08/10/21 12:40 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**29.8**	mg/kg	0.49	0.11	1	08/19/21 08:25	08/19/21 12:20	7440-38-2	
Cadmium	**0.82**	mg/kg	0.078	0.031	1	08/19/21 08:25	08/19/21 12:20	7440-43-9	
Copper	**64.7**	mg/kg	0.98	0.24	1	08/19/21 08:25	08/19/21 12:20	7440-50-8	
Lead	**23.8**	mg/kg	0.20	0.029	1	08/19/21 08:25	08/19/21 12:20	7439-92-1	
Zinc	**103**	mg/kg	4.9	0.88	1	08/19/21 08:25	08/19/21 12:20	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-3 **Lab ID: 10574177006** Collected: 08/10/21 12:40 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.016J**	mg/kg	0.020	0.0086	1	08/16/21 13:44	08/18/21 15:55	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**10.9**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-4 **Lab ID: 10574177007** Collected: 08/10/21 12:45 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**31.0**	mg/kg	0.45	0.099	1	08/19/21 08:25	08/19/21 12:31	7440-38-2	
Cadmium	**0.77**	mg/kg	0.073	0.029	1	08/19/21 08:25	08/19/21 12:31	7440-43-9	
Copper	**77.9**	mg/kg	0.91	0.22	1	08/19/21 08:25	08/19/21 12:31	7440-50-8	
Lead	**26.6**	mg/kg	0.18	0.027	1	08/19/21 08:25	08/19/21 12:31	7439-92-1	
Zinc	**129**	mg/kg	4.5	0.82	1	08/19/21 08:25	08/19/21 12:31	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-4 **Lab ID: 10574177008** Collected: 08/10/21 12:45 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.027**	mg/kg	0.019	0.0082	1	08/16/21 13:44	08/18/21 16:00	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**9.4**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-5 **Lab ID: 10574177009** Collected: 08/10/21 12:50 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**33.9**	mg/kg	0.47	0.10	1	08/19/21 08:25	08/19/21 12:34	7440-38-2	
Cadmium	**0.90**	mg/kg	0.075	0.030	1	08/19/21 08:25	08/19/21 12:34	7440-43-9	
Copper	**78.2**	mg/kg	0.94	0.23	1	08/19/21 08:25	08/19/21 12:34	7440-50-8	
Lead	**26.9**	mg/kg	0.19	0.028	1	08/19/21 08:25	08/19/21 12:34	7439-92-1	
Zinc	**127**	mg/kg	4.7	0.85	1	08/19/21 08:25	08/19/21 12:34	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-5 **Lab ID: 10574177010** Collected: 08/10/21 12:50 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.026**	mg/kg	0.022	0.0097	1	08/16/21 13:44	08/18/21 16:02	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**13.3**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-6 **Lab ID: 10574177011** Collected: 08/10/21 12:55 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**43.4**	mg/kg	0.47	0.10	1	08/19/21 08:25	08/19/21 12:37	7440-38-2	
Cadmium	**1.0**	mg/kg	0.075	0.030	1	08/19/21 08:25	08/19/21 12:37	7440-43-9	
Copper	**99.3**	mg/kg	0.94	0.23	1	08/19/21 08:25	08/19/21 12:37	7440-50-8	
Lead	**36.1**	mg/kg	0.19	0.028	1	08/19/21 08:25	08/19/21 12:37	7439-92-1	
Zinc	**143**	mg/kg	4.7	0.85	1	08/19/21 08:25	08/19/21 12:37	7440-66-6	

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-6 **Lab ID: 10574177012** Collected: 08/10/21 12:55 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.027**	mg/kg	0.020	0.0088	1	08/16/21 13:44	08/18/21 16:03	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**7.2**	%	0.10	0.10	1		08/17/21 10:42		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-7 **Lab ID: 10574177013** Collected: 08/10/21 13:00 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**36.6**	mg/kg	0.47	0.10	1	08/19/21 08:25	08/19/21 12:41	7440-38-2	
Cadmium	**0.91**	mg/kg	0.075	0.030	1	08/19/21 08:25	08/19/21 12:41	7440-43-9	
Copper	**85.7**	mg/kg	0.94	0.23	1	08/19/21 08:25	08/19/21 12:41	7440-50-8	
Lead	**28.8**	mg/kg	0.19	0.028	1	08/19/21 08:25	08/19/21 12:41	7439-92-1	
Zinc	**133**	mg/kg	4.7	0.85	1	08/19/21 08:25	08/19/21 12:41	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-7 **Lab ID: 10574177014** Collected: 08/10/21 13:00 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.032**	mg/kg	0.018	0.0079	1	08/16/21 13:44	08/18/21 16:05	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**8.4**	%	0.10	0.10	1		08/17/21 10:42		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-8 **Lab ID: 10574177015** Collected: 08/10/21 13:05 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**37.8**	mg/kg	0.50	0.11	1	08/19/21 08:25	08/19/21 12:44	7440-38-2	
Cadmium	**0.86**	mg/kg	0.080	0.031	1	08/19/21 08:25	08/19/21 12:44	7440-43-9	
Copper	**82.9**	mg/kg	1.0	0.24	1	08/19/21 08:25	08/19/21 12:44	7440-50-8	
Lead	**27.5**	mg/kg	0.20	0.029	1	08/19/21 08:25	08/19/21 12:44	7439-92-1	
Zinc	**131**	mg/kg	5.0	0.90	1	08/19/21 08:25	08/19/21 12:44	7440-66-6	

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-8 **Lab ID: 10574177016** Collected: 08/10/21 13:05 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.028**	mg/kg	0.020	0.0086	1	08/16/21 13:44	08/18/21 16:06	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**8.6**	%	0.10	0.10	1		08/17/21 10:42		N2

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BPSOU School Sampling
Pace Project No.: 10574177

QC Batch: 763252
QC Batch Method: EPA 7471B
Analysis Method: EPA 7471B
Analysis Description: 7471B Mercury Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10574177002, 10574177004, 10574177006, 10574177008, 10574177010, 10574177012, 10574177014, 10574177016

METHOD BLANK: 4069399 Matrix: Solid
Associated Lab Samples: 10574177002, 10574177004, 10574177006, 10574177008, 10574177010, 10574177012, 10574177014, 10574177016

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	<0.0087	0.020	0.0087	08/18/21 15:44	

LABORATORY CONTROL SAMPLE: 4069400

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.48	0.47	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4069402 4069403

Parameter	Units	10574177002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.026	0.5	0.53	0.50	0.53	93	95	80-120	5	20	

SAMPLE DUPLICATE: 4069401

Parameter	Units	10574177002 Result	Dup Result	RPD	Max RPD	Qualifiers
Mercury	mg/kg	0.026	0.028	8	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BPSOU School Sampling
Pace Project No.: 10574177

QC Batch: 764488
QC Batch Method: EPA 3050B
Analysis Method: EPA 6020A
Analysis Description: 6020A Solids UPD4
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10574177001, 10574177003, 10574177005, 10574177007, 10574177009, 10574177011, 10574177013, 10574177015

METHOD BLANK: 4075056 Matrix: Solid
Associated Lab Samples: 10574177001, 10574177003, 10574177005, 10574177007, 10574177009, 10574177011, 10574177013, 10574177015

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	<0.11	0.50	0.11	08/19/21 11:50	
Cadmium	mg/kg	<0.031	0.079	0.031	08/19/21 11:50	
Copper	mg/kg	<0.24	0.99	0.24	08/19/21 11:50	
Lead	mg/kg	<0.029	0.20	0.029	08/19/21 11:50	
Zinc	mg/kg	<0.89	5.0	0.89	08/19/21 11:50	

LABORATORY CONTROL SAMPLE: 4075057

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	48.1	54.5	113	80-120	
Cadmium	mg/kg	48.1	56.5	118	80-120	
Copper	mg/kg	48.1	57.1	119	80-120	
Lead	mg/kg	48.1	56.3	117	80-120	
Zinc	mg/kg	48.1	55.9	116	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4075058 4075059

Parameter	Units	10574177001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	26.9	48.1	47.6	82.6	82.6	116	117	75-125	0	20	
Cadmium	mg/kg	0.90	48.1	47.6	58.1	57.4	119	119	75-125	1	20	
Copper	mg/kg	66.9	48.1	47.6	127	124	125	119	75-125	3	20	
Lead	mg/kg	29.4	48.1	47.6	85.6	85.6	117	118	75-125	0	20	
Zinc	mg/kg	132	48.1	47.6	194	191	130	123	75-125	2	20	M1

SAMPLE DUPLICATE: 4075963

Parameter	Units	10574177001 Result	Dup Result	RPD	Max RPD	Qualifiers
Arsenic	mg/kg	26.9	27.3	2	20	
Cadmium	mg/kg	0.90	0.94	5	20	
Copper	mg/kg	66.9	68.1	2	20	
Lead	mg/kg	29.4	30.0	2	20	
Zinc	mg/kg	132	133	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: BPSOU School Sampling
Pace Project No.: 10574177

QC Batch: 763834
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight / %M by ASTM D2974
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10574177002, 10574177004, 10574177006, 10574177008, 10574177010, 10574177012, 10574177014, 10574177016

SAMPLE DUPLICATE: 4072583

Parameter	Units	10573913001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.6	6.3	5	30	N2

SAMPLE DUPLICATE: 4072770

Parameter	Units	10574177014 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	8.4	7.9	6	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: BPSOU School Sampling
Pace Project No.: 10574177

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BPSOU School Sampling
Pace Project No.: 10574177

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10574177001	**BPSOU-KAW-1**	EPA 3050B	764488	EPA 6020A	764645
10574177003	**BPSOU-KAW-2**	EPA 3050B	764488	EPA 6020A	764645
10574177005	**BPSOU-KAW-3**	EPA 3050B	764488	EPA 6020A	764645
10574177007	**BPSOU-KAW-4**	EPA 3050B	764488	EPA 6020A	764645
10574177009	**BPSOU-KAW-5**	EPA 3050B	764488	EPA 6020A	764645
10574177011	**BPSOU-KAW-6**	EPA 3050B	764488	EPA 6020A	764645
10574177013	**BPSOU-KAW-7**	EPA 3050B	764488	EPA 6020A	764645
10574177015	**BPSOU-KAW-8**	EPA 3050B	764488	EPA 6020A	764645
10574177002	**BPSOU-KAW-1**	EPA 7471B	763252	EPA 7471B	764049
10574177004	**BPSOU-KAW-2**	EPA 7471B	763252	EPA 7471B	764049
10574177006	**BPSOU-KAW-3**	EPA 7471B	763252	EPA 7471B	764049
10574177008	**BPSOU-KAW-4**	EPA 7471B	763252	EPA 7471B	764049
10574177010	**BPSOU-KAW-5**	EPA 7471B	763252	EPA 7471B	764049
10574177012	**BPSOU-KAW-6**	EPA 7471B	763252	EPA 7471B	764049
10574177014	**BPSOU-KAW-7**	EPA 7471B	763252	EPA 7471B	764049
10574177016	**BPSOU-KAW-8**	EPA 7471B	763252	EPA 7471B	764049
10574177002	**BPSOU-KAW-1**	ASTM D2974	763834		
10574177004	**BPSOU-KAW-2**	ASTM D2974	763834		
10574177006	**BPSOU-KAW-3**	ASTM D2974	763834		
10574177008	**BPSOU-KAW-4**	ASTM D2974	763834		
10574177010	**BPSOU-KAW-5**	ASTM D2974	763834		
10574177012	**BPSOU-KAW-6**	ASTM D2974	763834		
10574177014	**BPSOU-KAW-7**	ASTM D2974	763834		
10574177016	**BPSOU-KAW-8**	ASTM D2974	763834		

Borrow Hy

Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: XX No ____

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Pace Analytical Services	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1700 Elm Street Minneapolis, MN 55414	City, State, ZIP Code:	Consultant/Contractor Project No: BPSOU School Sampling
Lab PM: Jennifer Anderson	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 612-607-1700	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision ___ ___ ___	Email EDD To: Jesse Schwarzrock
Other Info:	Stage: Activity:	Invoice To: BP ___ Contractor ___ X

BP Project Manager (PM): Mike Mc Anulty

BP PM Phone: 406-723-1822

BP PM Email: mcanumc@bp.com

WO#: 10574177

10574177

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses: Air dry&sieve*, 6020 (As, Cd, Cu, Pb, Zn)	7471 Mercury, dry weight	Report Type & QC Level
	BPSOU-KAW-1	08/10/21	12:30	X				2						X	X	RUSH TURNAROUND ~~001~~ 002
	BPSOU-KAW-2	08/10/21	12:35	X				2						X	X	RUSH TURNAROUND ~~002~~ 004
	BPSOU-KAW-3	08/10/21	12:40	X				2						X	X	RUSH TURNAROUND ~~003~~ 006
	BPSOU-KAW-4	08/10/21	12:45	X				2						X	X	RUSH TURNAROUND ~~004~~ 008
	BPSOU-KAW-5	08/10/21	12:50	X				2						X	X	RUSH TURNAROUND ~~005~~ 010
	BPSOU-KAW-6	08/10/21	12:55	X				2						X	X	RUSH TURNAROUND ~~006~~ 012
	BPSOU-KAW-7	08/10/21	13:00	X				2						X	X	RUSH TURNAROUND ~~007~~ 014
	BPSOU-KAW-8	08/10/21	13:05	X				2						X	X	RUSH TURNAROUND ~~008~~ 016

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Kile Denney						
Sampler's Company:	Pioneer Technical Services	Kile Denney / PTS	8/11/21	1600	[illegible] / PACE	8/12/21	850
Shipment Method:	FedEx Overnight Ship Date: 8/11/21						
Shipment Tracking No:	9950 9446 8703						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: (Yes) / No | Temp Blank: (Yes) / No | Cooler Temp on Receipt: 2.9 °F (C) | Trip Blank: Yes / (No) | MS/MSD Sample Submitted: Yes / (No)

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - ESI**	Document Revised: 12Aug2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0149 Rev.01**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP - Pioneer

Project #: WO#: 10574177
PM: JMA Due Date: 08/19/21
CLIENT: BP-PIONEER

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 9550 9946 8703 **See Exceptions** ☐ **ENV-FRM-MIN4-0142**

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☐ T1(0461) ☒ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 2.9 °C **Average Corrected Temp (no temp blank only):** _____ °C ☐ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

Correction Factor: true **Cooler Temp Corrected w/temp blank:** 2.9 °C

USDA Regulated Soil: (☐ N/A, water sample/Other: _____) **Date/Initials of Person Examining Contents:** HB 8/12/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐
Rush Turn Around Time Requested?	☒ Yes	☐ No		6.
Sufficient Sample Volume?	☒ Yes	☐ No		
Triple Volume Provided for MS/MSD (if more than 10 samples)?	☐ Yes	☐ No	☒ N/A	7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC	☒ Yes	☐ No		11. If no, write ID/ Date/Time on Container Below: **See Exception** ☐ **ENV-FRM-MIN4-0142**
Matrix: ☐ Water ☒ Soil ☐ Oil ☐ Other _____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first)	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐ **ENV-FRM-MIN4-0142**
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO contaners?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐ **ENV-FRM-MIN4-0140**
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
3 Trip Blanks Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased): _____

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins		
Opened Time: 1145	Temp: 2.9	Corrected Temp: 2.9
Time:	put in cooler	
Time: 1158	Temp: 3.0	Corrected Temp: 3.0

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: _____ **Date:** 08/16/2021

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Labeled by: HB (2)

Internal Transfer Chain of Custody

4023149

Pace Analytical®
www.pacelabs.com

[X] Samples Pre-Logged into eCOC.

State Of Origin: MT
Cert. Needed: [ ] Yes [x] No

Workorder: 10574177 Workorder Name: BPSOU School Sampling

Owner Received Date: 8/12/2021 Results Requested By: 8/19/2021

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	PB					Requested Analysis: Air Dry & Sieve												LAB USE ONLY
1	BPSOU-KAW-1	PS	8/10/2021 12:30	10574177001	Solid	1						X												001
2	BPSOU-KAW-2	PS	8/10/2021 12:35	10574177003	Solid	1						X												002
3	BPSOU-KAW-3	PS	8/10/2021 12:40	10574177005	Solid	1						X												003
4	BPSOU-KAW-4	PS	8/10/2021 12:45	10574177007	Solid	1						X												004
5	BPSOU-KAW-5	PS	8/10/2021 12:50	10574177009	Solid	1						X												005
6	BPSOU-KAW-6	PS	8/10/2021 12:55	10574177011	Solid	1						X												006
7	BPSOU-KAW-7	PS	8/10/2021 13:00	10574177013	Solid	1						X												007
8	BPSOU-KAW-8	PS	8/10/2021 13:05	10574177015	Solid	1						X												008

Transfers	Released By	Date/Time	Received By	Date/Time
1	FedEX	8/13/21 0940	MBerseth Pace	8/13/21 0940
2				
3				

Comments
IR40-Rush
#60 Sieve
Include soil prep log
Follow QAPP

Cooler Temperature on Receipt N/A °C | Custody Seal (Y) or N | Received on Ice Y or (N) | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Laboratory Management Program LaMP Chain of Custody Record

40231693 Benson Mobile

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: XX No ___

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Pace Analytical Services	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1700 Elm Street Minneapolis, MN 55414	City, State, ZIP Code:	Consultant/Contractor Project No: BPSOU School Sampling
Lab PM: Jennifer Anderson	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 612-607-1700	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision ___ ___ ___	Email EDD To: Jesse Schwarzrock
Other Info:	Stage: Activity:	Invoice To: BP ___ Contractor ___ X

BP Project Manager (PM): Mike Mc Anulty

BP PM Phone: 406-723-1822

BP PM Email: mcanumc@bp.com

Report Type & QC Level: Standard ___ x ; Full Data Package ___

Note: If sample not collected, indicate "No

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol		Requested Analyses: Air dry&sieve*, 6020 (As, Cd, Cu, Pb, Zn)	Requested Analyses: 7471 Mercury, dry weight								Comments
8001	BPSOU-KAW-1	08/10/21	12:30	X				2							X	X								RUSH TURNAROUND
8002	BPSOU-KAW-2	08/10/21	12:35	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-3	08/10/21	12:40	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-4	08/10/21	12:45	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-5	08/10/21	12:50	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-6	08/10/21	12:55	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-7	08/10/21	13:00	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-8	08/10/21	13:05	X				2							X	X								RUSH TURNAROUND

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Kile Denney						
Sampler's Company:	Pioneer Technical Services	Kile Dellbaum / PTS	8/11/21	1600			
Shipment Method:	FedEx Overnight Ship Date: 8/11/21	Fed Ex	8/13/21	0940	M Benson Pace	8/13/21	0940
Shipment Tracking No:	9950 9946 9537						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Page 36 of 37

Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: Pace Minn Project # 40231493

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN						
001																																2.5 / 5 / 10
002																																2.5 / 5 / 10
003																																2.5 / 5 / 10
004																																2.5 / 5 / 10
005																																2.5 / 5 / 10
006																																2.5 / 5 / 10
007																																2.5 / 5 / 10
008																																2.5 / 5 / 10
009																																2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016			VP																													2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

8/13/21

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40231493

40231493

Client Name: Pace Minn

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 9550 9946 9537

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 90 IR 8/13/21 **Type of Ice:** Wet Blue Dry (None) ☐ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: N/A /Corr: N/A

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents: Date: 8/13/21 /Initials: HB

Labeled By Initials:

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☒N/A	4. IRWO HB 8/13/21
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	(☒) Yes ☒No HB 8/13/21	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD: ☐Yes ☒No ☐N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☐Yes ☐No ☒N/A	
-Pace IR Containers Used:	☐Yes ☒No ☐N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: S	☒Yes (☒) No HB ☐N/A	12. 005 Time 12:4 HB 8/13/21
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Page 2 of 2

Internal Transfer Chain of Custody

4023 1493

Pace Analytical®
www.pacelabs.com

[X] Samples Pre-Logged into eCOC.

State Of Origin: MT
Cert. Needed: [ ] Yes [x] No

Workorder: 10574177 Workorder Name: BPSOU School Sampling
Owner Received Date: 8/12/2021 Results Requested By: 8/19/2021

Report To
Jennifer Anderson
Pace Analytical Minnesota
1700 Elm Street
Minneapolis, MN 55414
Phone (612)607-6436

Subcontract To
Pace Analytical Green Bay
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Phone (920)469-2436

PB

WO#: 10574177
10574177

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Requested Analysis: Air Dry & Sieve	LAB USE ONLY
1	BPSOU-KAW-1	PS	8/10/2021 12:30	10574177001	Solid	1	X	001
2	BPSOU-KAW-2	PS	8/10/2021 12:35	10574177003	Solid	1	X	002
3	BPSOU-KAW-3	PS	8/10/2021 12:40	10574177005	Solid	1	X	003
4	BPSOU-KAW-4	PS	8/10/2021 12:45	10574177007	Solid	1	X	004
5	BPSOU-KAW-5	PS	8/10/2021 12:50	10574177009	Solid	1	X	005
6	BPSOU-KAW-6	PS	8/10/2021 12:55	10574177011	Solid	1	X	006
7	BPSOU-KAW-7	PS	8/10/2021 13:00	10574177013	Solid	1	X	007
8	BPSOU-KAW-8	PS	8/10/2021 13:05	10574177015	Solid	1	X	008

Transfers	Released By	Date/Time	Received By	Date/Time
1	FedEX	8/13/21 0940	M Benson Pace	8/13/21 0940
2	[illegible]	8/16/21 1[illegible]	[illegible] / Pace	8/16/21 8:5[illegible]
3				

Comments
IR40-Rush
#60 Sieve
Include soil prep log
Follow QAPP

Cooler Temperature on Receipt N/A °C **Custody Seal** (Y) or N **Received on Ice** Y or (N) **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 14Apr2021 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.02**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: Pace GreenBay

Project #:

WO#: 10574177

PM: JMA **Due Date: 08/19/21**

CLIENT: BP-PIONEER

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☑Commercial

Tracking Number: 293718 6-1

See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☑Yes ☐No **Seals Intact?** ☑Yes ☐No **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☐Yes ☑No

Thermometer: ☐T1(0461) ☑T2(1336) ☐T3(0459) ☐OS418-LS ☐T4(0254) ☐T5(0489) ☐160285052 **Type of Ice:** ☐Wet ☐Blue ☑None ☐Dry ☐Melted

Did Samples Originate in West Virginia? ☐Yes ☑No **Were All Container Temps Taken?** ☐Yes ☐No ☑N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:**_____ °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:**_____ °C

Average Corrected Temp (no temp blank only): 19.7 °C ☑See Exceptions ENV-FRM-MIN4-0142 ☐1 Container

USDA Regulated Soil: (☐ N/A, water sample/Other:_____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☑No

Date/Initials of Person Examining Contents: HKB 8/17/21

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☑No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑Yes	☐No		1.
Chain of Custody Relinquished?	☑Yes	☐No		2.
Sampler Name and/or Signature on COC?	☐Yes	☑No	☐N/A	3.
Samples Arrived within Hold Time?	☑Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☑Yes	☐No		6.
Sufficient Volume?	☑Yes	☐No		7.
Correct Containers Used? -Pace Containers Used?	☑Yes ☑Yes	☐No ☐No		8.
Containers Intact?	☑Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐Water ☑Soil ☐Oil ☐Other_____	☑Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☑N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐Yes	☐No	☑N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☑N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐ ENV-FRM-MIN4-0142 Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐Yes	☐No	☑N/A	13. **See Exception** ☐ ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☑N/A	
Trip Blank Present?	☐Yes	☐No	☑N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review: _____ **Date:** 08/19/2021

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: HKB(1)

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) Exception Form**	Document Revised: 04Jun2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0142 Rev.01**	Pace Analytical Services - **Minneapolis**

SCUR Exceptions:

Workorder #: 10574177

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
19.8	T	19.7
19.7	↓	
19.6		
19.6		

Tracking Number/Temperature	

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Comments:

ATTACHMENT G

S&N CONCRETE AGGREGATE

STOCKPILE DATA

APPENDIX G - S&N CONCRETE AGGREGATE QA DATA

	Sample ID	Date Collected	Butte Hill Reveg Spec:	As < 97 mg/kg	Cd < 4 mg/kg	Cu < 250 mg/kg	Pb < 100 mg/kg	Zn < 250 mg/kg	Hg < 5 mg/kg
1	22-RMAP-SNROAD-1	07/27/22	Volume Tested: Approximatley 10,000 cy	8.1	0.13	36.1	10.0	89.4	0.01
2	22-RMAP-SNROAD-2	07/27/22		7.4	0.11	32.1	9.0	82.0	0.01
3	22-RMAP-SNPIT-1	07/27/22		9.2	0.15	45.0	10.9	102.0	0.01
4	22-RMAP-SNPIT-2	07/27/22		8.3	0.15	42.7	9.8	96.1	0.01
			MAX:	9.2	0.15	45.0	10.9	102.0	0.01
			MIN:	7.4	0.11	32.1	9.0	82.0	0.01
			AVE:	8.3	0.14	39.0	9.9	92.4	0.01

ATTACHMENT G-1

PACE ANALYTICAL DATA REPORTS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

August 16, 2022

Jesse Schwarzrock
Pioneer Technical Services
307 E Park
Suite 421
Anaconda, MT 59711

RE: Project: BPSOU Park Sampling
Pace Project No.: 10618818

Dear Jesse Schwarzrock:

Enclosed are the analytical results for sample(s) received by the laboratory on July 28, 2022. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:
- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Cole Dallaserra, Pioneer Technical
BPEquis UploadEmail, BP EQUIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Pace Analytical Services, LLC - Minneapolis MN
1700 Elm Street SE, Minneapolis, MN 55414
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
A2LA Certification #: 2926.01*
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification (A2LA) #: R-036
North Dakota Certification (MN) #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10618818001	**22-RMAP-SNROAD-1**	Solid	07/27/22 08:00	07/28/22 08:50
10618818002	**22-RMAP-SNROAD-1**	Solid	07/27/22 08:00	07/28/22 08:50
10618818003	**22-RMAP-SNROAD-2**	Solid	07/27/22 08:05	07/28/22 08:50
10618818004	**22-RMAP-SNROAD-2**	Solid	07/27/22 08:05	07/28/22 08:50
10618818005	**22-RMAP-SNPIT-1**	Solid	07/27/22 08:15	07/28/22 08:50
10618818006	**22-RMAP-SNPIT-1**	Solid	07/27/22 08:15	07/28/22 08:50
10618818007	**22-RMAP-SNPIT-2**	Solid	07/27/22 08:20	07/28/22 08:50
10618818008	**22-RMAP-SNPIT-2**	Solid	07/27/22 08:20	07/28/22 08:50

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10618818001	**22-RMAP-SNROAD-1**	EPA 6020A	NN2	5	PASI-M
10618818002	**22-RMAP-SNROAD-1**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10618818003	**22-RMAP-SNROAD-2**	EPA 6020A	NN2	5	PASI-M
10618818004	**22-RMAP-SNROAD-2**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10618818005	**22-RMAP-SNPIT-1**	EPA 6020A	NN2	5	PASI-M
10618818006	**22-RMAP-SNPIT-1**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10618818007	**22-RMAP-SNPIT-2**	EPA 6020A	NN2	5	PASI-M
10618818008	**22-RMAP-SNPIT-2**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Date: August 16, 2022

Samples analyzed for method 6020 were analyzed after they were dried and sieved using a number 60 sieve.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Method: **EPA 6020A**
Description: 6020A MET ICPMS
Client: BPAR-PIONEER-MT
Date: August 16, 2022

General Information:
4 samples were analyzed for EPA 6020A by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3050B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Method: **EPA 7471B**
Description: 7471B Mercury
Client: BPAR-PIONEER-MT
Date: August 16, 2022

General Information:
4 samples were analyzed for EPA 7471B by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7471B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Sample: 22-RMAP-SNROAD-1 **Lab ID: 10618818001** Collected: 07/27/22 08:00 Received: 07/28/22 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**8.1**	mg/kg	0.49	0.14	1	08/11/22 18:24	08/16/22 00:15	7440-38-2	
Cadmium	**0.13**	mg/kg	0.078	0.029	1	08/11/22 18:24	08/16/22 00:15	7440-43-9	
Copper	**36.1**	mg/kg	0.97	0.30	1	08/11/22 18:24	08/16/22 00:15	7440-50-8	
Lead	**10**	mg/kg	2.4	0.45	5	08/11/22 18:24	08/12/22 19:48	7439-92-1	
Zinc	**89.4**	mg/kg	4.9	1.1	1	08/11/22 18:24	08/16/22 00:15	7440-66-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Sample: 22-RMAP-SNROAD-1 **Lab ID: 10618818002** Collected: 07/27/22 08:00 Received: 07/28/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**<0.0087**	mg/kg	0.020	0.0087	1	08/09/22 14:37	08/10/22 15:32	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**0.63**	%	0.10	0.10	1		08/04/22 13:09		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Sample: 22-RMAP-SNROAD-2 **Lab ID: 10618818003** Collected: 07/27/22 08:05 Received: 07/28/22 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**7.4**	mg/kg	0.46	0.13	1	08/11/22 18:24	08/16/22 00:18	7440-38-2	
Cadmium	**0.11**	mg/kg	0.074	0.027	1	08/11/22 18:24	08/16/22 00:18	7440-43-9	
Copper	**32.1**	mg/kg	0.93	0.28	1	08/11/22 18:24	08/16/22 00:18	7440-50-8	
Lead	**9.0**	mg/kg	2.3	0.43	5	08/11/22 18:24	08/12/22 19:52	7439-92-1	
Zinc	**82.0**	mg/kg	4.6	1.1	1	08/11/22 18:24	08/16/22 00:18	7440-66-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Sample: 22-RMAP-SNROAD-2 **Lab ID: 10618818004** Collected: 07/27/22 08:05 Received: 07/28/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.010J**	mg/kg	0.018	0.0080	1	08/09/22 14:37	08/10/22 15:33	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**0.78**	%	0.10	0.10	1		08/04/22 13:09		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Sample: 22-RMAP-SNPIT-1 **Lab ID: 10618818005** Collected: 07/27/22 08:15 Received: 07/28/22 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**9.2**	mg/kg	0.46	0.13	1	08/11/22 18:24	08/16/22 00:22	7440-38-2	
Cadmium	**0.15**	mg/kg	0.074	0.027	1	08/11/22 18:24	08/16/22 00:22	7440-43-9	
Copper	**45.0**	mg/kg	0.93	0.28	1	08/11/22 18:24	08/16/22 00:22	7440-50-8	
Lead	**10.9**	mg/kg	2.3	0.43	5	08/11/22 18:24	08/12/22 19:55	7439-92-1	
Zinc	**102**	mg/kg	4.6	1.1	1	08/11/22 18:24	08/16/22 00:22	7440-66-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Sample: 22-RMAP-SNPIT-1 **Lab ID: 10618818006** Collected: 07/27/22 08:15 Received: 07/28/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.0096J**	mg/kg	0.019	0.0084	1	08/09/22 14:37	08/10/22 15:35	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**3.7**	%	0.10	0.10	1		08/04/22 13:10		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Sample: 22-RMAP-SNPIT-2 **Lab ID: 10618818007** Collected: 07/27/22 08:20 Received: 07/28/22 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**8.3**	mg/kg	0.49	0.14	1	08/11/22 18:24	08/16/22 00:25	7440-38-2	
Cadmium	**0.15**	mg/kg	0.078	0.029	1	08/11/22 18:24	08/16/22 00:25	7440-43-9	
Copper	**42.7**	mg/kg	0.98	0.30	1	08/11/22 18:24	08/16/22 00:25	7440-50-8	
Lead	**9.8**	mg/kg	2.5	0.46	5	08/11/22 18:24	08/12/22 19:59	7439-92-1	
Zinc	**96.1**	mg/kg	4.9	1.2	1	08/11/22 18:24	08/16/22 00:25	7440-66-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Sample: 22-RMAP-SNPIT-2 **Lab ID: 10618818008** Collected: 07/27/22 08:20 Received: 07/28/22 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.011J**	mg/kg	0.018	0.0079	1	08/09/22 14:37	08/10/22 15:36	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**2.9**	%	0.10	0.10	1		08/04/22 13:10		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: BPSOU Park Sampling
Pace Project No.: 10618818

QC Batch: 832541
QC Batch Method: EPA 7471B
Analysis Method: EPA 7471B
Analysis Description: 7471B Mercury Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10618818002, 10618818004, 10618818006, 10618818008

METHOD BLANK: 4409993 Matrix: Solid
Associated Lab Samples: 10618818002, 10618818004, 10618818006, 10618818008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	<0.0085	0.020	0.0085	08/09/22 18:40	

LABORATORY CONTROL SAMPLE: 4409994

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.49	0.51	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4409996 4409997

Parameter	Units	10618797002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.027	0.65	0.68	0.81	0.81	120	114	80-120	1	20	

SAMPLE DUPLICATE: 4409995

Parameter	Units	10618797002 Result	Dup Result	RPD	Max RPD	Qualifiers
Mercury	mg/kg	0.027	0.028	4	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: BPSOU Park Sampling
Pace Project No.: 10618818

QC Batch: 832536
QC Batch Method: EPA 3050B
Analysis Method: EPA 6020A
Analysis Description: 6020A Solids UPD4
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10618818001, 10618818003, 10618818005, 10618818007

METHOD BLANK: 4409975 Matrix: Solid
Associated Lab Samples: 10618818001, 10618818003, 10618818005, 10618818007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	<0.14	0.50	0.14	08/12/22 18:21	
Cadmium	mg/kg	<0.029	0.080	0.029	08/12/22 18:21	
Copper	mg/kg	<0.31	1.0	0.31	08/12/22 18:21	
Lead	mg/kg	<0.093	0.50	0.093	08/12/22 18:21	
Zinc	mg/kg	1.4J	5.0	1.2	08/12/22 18:21	

LABORATORY CONTROL SAMPLE: 4409976

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	52.7	105	80-120	
Cadmium	mg/kg	50	52.7	105	80-120	
Copper	mg/kg	50	54.4	109	80-120	
Lead	mg/kg	50	56.4	113	80-120	
Zinc	mg/kg	50	53.0	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4409978 4409979

Parameter	Units	10618797001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	22.9	50	48.1	72.0	73.0	98	104	75-125	2	20	
Cadmium	mg/kg	0.83	50	48.1	50.7	51.5	100	105	75-125	2	20	
Copper	mg/kg	79.5	50	48.1	129	134	98	113	75-125	4	20	
Lead	mg/kg	29.8	50	48.1	84.4	88.8	109	123	75-125	5	20	
Zinc	mg/kg	184	50	48.1	226	235	83	106	75-125	4	20	

SAMPLE DUPLICATE: 4409977

Parameter	Units	10618797001 Result	Dup Result	RPD	Max RPD	Qualifiers
Arsenic	mg/kg	22.9	23.3	2	20	
Cadmium	mg/kg	0.83	0.90	8	20	
Copper	mg/kg	79.5	81.8	3	20	
Lead	mg/kg	29.8	32.0	7	20	
Zinc	mg/kg	184	188	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: BPSOU Park Sampling
Pace Project No.: 10618818

QC Batch: 832300
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight / %M by ASTM D2974
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10618818002, 10618818004, 10618818006, 10618818008

SAMPLE DUPLICATE: 4408950

Parameter	Units	10618818002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	0.63	0.61	2	30	N2

SAMPLE DUPLICATE: 4408951

Parameter	Units	10618144001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	41.9	43.3	3	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: BPSOU Park Sampling
Pace Project No.: 10618818

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BPSOU Park Sampling
Pace Project No.: 10618818

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10618818001	**22-RMAP-SNROAD-1**	EPA 3050B	832536	EPA 6020A	834148
10618818003	**22-RMAP-SNROAD-2**	EPA 3050B	832536	EPA 6020A	834148
10618818005	**22-RMAP-SNPIT-1**	EPA 3050B	832536	EPA 6020A	834148
10618818007	**22-RMAP-SNPIT-2**	EPA 3050B	832536	EPA 6020A	834148
10618818002	**22-RMAP-SNROAD-1**	EPA 7471B	832541	EPA 7471B	833446
10618818004	**22-RMAP-SNROAD-2**	EPA 7471B	832541	EPA 7471B	833446
10618818006	**22-RMAP-SNPIT-1**	EPA 7471B	832541	EPA 7471B	833446
10618818008	**22-RMAP-SNPIT-2**	EPA 7471B	832541	EPA 7471B	833446
10618818002	**22-RMAP-SNROAD-1**	ASTM D2974	832300		
10618818004	**22-RMAP-SNROAD-2**	ASTM D2974	832300		
10618818006	**22-RMAP-SNPIT-1**	ASTM D2974	832300		
10618818008	**22-RMAP-SNPIT-2**	ASTM D2974	832300		

bp rm

Laboratory Management Program LaMP Chain of Custody Record

S2N Hg

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: XX No ____

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Pace Analytical Services	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1700 Elm Street Minneapolis, MN 55414	City, State, ZIP Code:	Consultant/Contractor Project No: BPSOU Park Sampling
Lab PM: Jennifer Anderson	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 612-607-1700	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision — — —	Email EDD To: Jesse Schwarzrock
Other Info:	Stage: Activity:	Invoice To: BP — Contractor — X

BP Project Manager (PM): Mike Mc Anulty

BP PM Phone: 406-723-1822

BP PM Email: mcanumc@bp.com

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses: Air dry&sieve*, 6020 (As, Cd, Cu, Pb, Zn)	7471 Mercury, dry weight	Report Type & QC Level
	22-RMAP-SNROAD-1	07/27/22	8:00 AM	X				2						X	X	RUSH TURNAROUND
	22-RMAP-SNROAD-2	07/27/22	8:05 AM	X				2						X	X	RUSH TURNAROUND
	22-RMAP-SNPIT-1	07/27/22	8:15 AM	X				2						X	X	RUSH TURNAROUND
	22-RMAP-SNPIT-2	07/27/22	8:20	X				2						X	X	RUSH TURNAROUND

Standard — x

Full Data Package —

WO#: 10618818

10618818

Sampler's Name: Cole Dallaserra	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Pioneer Technical Services	Cole Dallaserra / PTS	7/27/22	1600	MMusel/PACE	7/28/22	8:50
Shipment Method: FedEx Overnight Ship Date: 7/27/2022						
Shipment Tracking No: 5405 1821 0385						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: (Yes) / No | Temp Blank: (Yes) / No | Cooler Temp on Receipt: 0.4 °F/C | Trip Blank: Yes / (No) | MS/MSD Sample Submitted: Yes / (No)

Page 1 of 2

DC#_Title: ENV-FRM-MIN4-0149 v03_Sample Condition Upon Receipt (SCUR) - ESI

Effective Date: 04/12/2022

Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP-Pioneer

Project #: **WO#: 10618818**

PM: JMA **Due Date: 08/04/22**

CLIENT: BP-PIONEER

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 540518210385 See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☐ T1(0461) ☐ T2(1336) ☒ T3(0459) ☐ T4(0254) ☐ T5(0489) ☐ T6(0235) ☐ T7(0042) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 0.4 °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:** 0.4 °C

Average Corrected Temp (no temp blank only): _____ °C ☐ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

USDA Regulated Soil: (☐ N/A, water sample/Other: _____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Date/Initials of Person Examining Contents: PMM 7/28/22

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested?	☒ Yes	☐ No		6.
Sufficient Sample Volume?	☒ Yes	☐ No		
Triple Volume Provided for MS/MSD (if more than 10 samples)?	☐ Yes	☐ No	☒ N/A	7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. If no, write ID/ Date/Time on Container Below: See Exception ☐ ENV-FRM-MIN4-0142
Matrix: ☐ Water ☒ Soil ☐ Oil ☐ Other_____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first)	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No pH Paper Lot# See Exception ☐ ENV-FRM-MIN4-0142
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. See Exception ☐ ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
3 Trip Blanks Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased): _____

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins		
Opened Time: 10:15	Temp: 0.4	Corrected Temp: 0.4
Time: 10:35	put in cooler	
Time:	Temp:	Corrected Temp:

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: _____ **Date:** 08/01/2022

Note: Whenever there is a discrepancy affecting NC compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers)

Labeled by: _____

PMM (2)

Qualtrax ID: 52738

Page 1 of 1

Internal Transfer Chain of Custody

4224895

Pace Analytical®
www.pacelabs.com

[x] Samples Pre-Logged into eCOC.

State Of Origin: MT
Cert. Needed: [ ] Yes [x] No

Workorder: 10618818 Workorder Name: BPSOU Park Sampling

Owner Received Date: 7/28/2022 Results Requested By: 8/4/2022

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	PB					Requested Analysis: Air Dry & Sieve												LAB USE ONLY
1	22-RMAP-SNROAD-1	PS	7/27/2022 08:00	10618818001	Solid	1						X												001
2	22-RMAP-SNROAD-2	PS	7/27/2022 08:05	10618818003	Solid	1						X												002
3	22-RMAP-SNPIT-1	PS	7/27/2022 08:15	10618818005	Solid	1						X												003
4	22-RMAP-SNPIT-2	PS	7/27/2022 08:20	10618818007	Solid	1						X												004
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	Fedex	7/29/22 1015	[signature]	7/29/22 1015
2				
3				

Comments

IR40-Rush Normal processing
#60 Sieve
Include soil prep log
Follow QAPP

Cooler Temperature on Receipt NA °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

bp rm

Laboratory Management Program LaMP Chain of Custody Record

4024955 STM metals

Page 1 of 1

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: XX No ___

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Pace Analytical Services	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1700 Elm Street Minneapolis, MN 55414	City, State, ZIP Code:	Consultant/Contractor Project No: BPSOU Park Sampling
Lab PM: Jennifer Anderson	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 612-607-1700	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision — — —	Email EDD To: Jesse Schwarzrock
Other Info:	Stage: Activity:	Invoice To: BP — Contractor — X

BP Project Manager (PM): Mike Mc Anulty

BP PM Phone: 406-723-1822

BP PM Email: mcanumc@bp.com

Report Type & QC Level: Standard — x; Full Data Package —

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol		Requested Analyses: Air dry&sieve*, 6020 (As, Cd, Cu, Pb, Zn)	Requested Analyses: 7471 Mercury, dry weight									Comments
001	22-RMAP-SNROAD-1	07/27/22	8:00 AM	X				2							X	X									RUSH TURNAROUND
002	22-RMAP-SNROAD-2	07/27/22	8:05 AM	X				2							X	X									RUSH TURNAROUND
003	22-RMAP-SNPIT-1	07/27/22	8:15 AM	X				2							X	X									RUSH TURNAROUND
004	22-RMAP-SNPIT-2	07/27/22	8:20	X				2							X	X									RUSH TURNAROUND

Sampler's Name: Cole Dallaserra	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Pioneer Technical Services	[signature] IPTS	7/28/22	600			
Shipment Method: FedEx Overnight Ship Date: 7/27/2022	Fedex	7/29/22	1015	[signature] Pace	7/29/22	1015
Shipment Tracking No: 5150 1602 9976						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: NA °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Sample Preservation Receipt Form

Client Name: Pace MN

Project # A0248955

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Initial when completed: Date/ Time:

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	Vials: VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																									1								2.5 / 5 / 10
002																									1								2.5 / 5 / 10
003																									1								2.5 / 5 / 10
004																									1								2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
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016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

7/12 9/22 MP

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: ________ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9A	40 mL clear ascorbic	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG5U	100 mL amber glass unpres			VG9D	40 mL clear vial DI	ZPLC	ziploc bag
AG2S	500 mL amber glass H2SO4					GN	
BG3U	250 mL clear glass unpres						

Page 1 of 2

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: Pace MN

WO# : 40248955

40248955

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 5150 1602 9976/5150 1602 998

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other

Thermometer Used SR - 107 **Type of Ice:** Wet Blue Dry (None) ☐ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: N/A /Corr: N/A

Person examining contents:

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Date: 7/29/22 Initials: MP

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Labeled By Initials:

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☒N/A	4. IRWO 7/29/22 MP
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☒Yes ☐No	7/29/22 MP
Sufficient Volume:		8.
For Analysis: ☒Yes ☐No MS/MSD:	☐Yes ☒No ☐N/A	
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☐Yes ☒No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix:	5	
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample login

Internal Transfer Chain of Custody

4324895

Pace Analytical
www.pacelabs.com

[x] Samples Pre-Logged into eCOC.

State Of Origin: MT
Cert. Needed: [ ] Yes [x] No
Owner Received Date: 7/28/2022 Results Requested By: 8/4/2022

Workorder: 10618818 Workorder Name: BPSOU Park Sampling

WO# : 10618818

10618818

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	PB					Air Dry & Sieve											LAB USE ONLY
1	22-RMAP-SNROAD-1	PS	7/27/2022 08:00	10618818001	Solid	1						X											001
2	22-RMAP-SNROAD-2	PS	7/27/2022 08:05	10618818003	Solid	1						X											002
3	22-RMAP-SNPIT-1	PS	7/27/2022 08:15	10618818005	Solid	1						X											003
4	22-RMAP-SNPIT-2	PS	7/27/2022 08:20	10618818007	Solid	1						X											004
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	Fedex	7/29/22 10:15	[signature]	7/29/22 1015
2	[signature] pace	8/1/22 16:00	[signature] Pace	8/3/22 0913
3				

Comments
IR40-Rush Normal processing
#60 Sieve
Include soil prep log
Follow QAPP

Cooler Temperature on Receipt — °C | Custody Seal Y or (N) | Received on Ice Y or (N) | Samples Intact Y or N

JMA 8/16/22

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace ANALYTICAL SERVICES	**DC#_Title: ENV-FRM-MIN4-0150 v05_Sample Condition Upon Receipt (SCUR)**
	Effective Date: 04/12/2022

Sample Condition Upon Receipt

Client Name: Pace-Green Bay

Project #:

WO#: 10618818

PM: JMA **Due Date: 08/04/22**

CLIENT: BP-PIONEER

Courier: ☐Fed Ex ☐UPS ☒USPS ☐Client ☐Pace ☐SpeeDee ☒Commercial

See Exceptions ☐ENV-FRM-MIN4-0142

Tracking Number:

Custody Seal on Cooler/Box Present? ☒Yes ☐No **Seals Intact?** ☒Yes ☐No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☒Bubble Wrap ☐Bubble Bags ☐None ☐Other: **Temp Blank?** ☐Yes ☒No

Thermometer: ☐T1(0461) ☐T2(1336) ☐T3(0459) ☐T4(0254) ☐T5(0489) ☐T6(0235) ☐T7 (0042) ☐01339252/1710 ☐122639816 ☐140792808 **Type of Ice:** ☐Wet ☐Blue ☒None ☐Dry ☐Melted

Did Samples Originate in West Virginia? ☐Yes ☒No **Were All Container Temps Taken?** ☐Yes ☐No ☒N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** AMB °C

Correction Factor: — **Cooler Temp Corrected w/temp blank:** AMB °C

Average Corrected Temp (no temp blank only): °C ☐See Exceptions ENV-FRM-MIN4-0142 ☐1 Container

USDA Regulated Soil: (☐ N/A, water sample/Other:)

Date/Initials of Person Examining Contents: 08/3/22

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☒No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☒No

If Yes to either question, fill out a Regulated Soil Checklist ENV-FRM-MIN4-0154 and include with SCUR/COC paperwork.

Location (check one): ☐ Duluth ☒ Minneapolis ☐ Virginia

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☐Yes	☐No	☒N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4. If Fecal: ☐<8 hrs ☐>8hr, <24 hrs, ☐>24 hrs
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other
Rush Turn Around Time Requested?	☒Yes	☐No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used?	☒Yes	☐No		8.
-Pace Containers Used?	☐Yes	☒No		
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐Water ☒Soil ☐Oil ☐Other-	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ **ENV-FRM-MIN4-0142**
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☒N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐Yes	☐No	☒N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☒N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐ **ENV-FRM-MIN4-0142**
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in Methyl Mercury Container?	☐Yes	☐No	☒N/A	
Extra labels present on soil VOA or WIDRO containers?	☐Yes	☐No	☒N/A	13. **See Exception** ☐ **ENV-FRM-MIN4-0140**
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☒N/A	
Trip Blank Present?	☐Yes	☐No	☒N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: **Date:** 08/16/2022

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect container).

Labeled by: