Fall 9-3-2021

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

Pioneer Technical Services, Inc.

Atlantic Richfield Company

317 Anaconda Road
Butte MT 59701

Mike Mc Anulty
Liability Manager

Direct (406) 782-9964
Fax (406) 782-9980

September 3, 2021

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

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

RE: Final RMAP Headstart (former Lincoln School) Soil Remedial Action Work Plan (RAWP)

Dear Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company to submit the Final RMAP Headstart (former Lincoln School) Soil Remedial Action Work Plan (RAWP). This submittal is in response to EPA's September 2, 2021 Approval Letter of the Draft Final version of this document (dated August 30, 2021). The report and appendices may be downloaded at the following link:

https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/EsYmHRWxie5BqrGdDqsBNL4BcK1mgxKnhTYtddpaNPFdfg

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

Sincerely,

Mike McAnulty

Mike Mc Anulty
Liability Manager & Global Risk Champion
Remediation Management Services Company
An affiliate of **Atlantic Richfield Company**

Atlantic Richfield Company

317 Anaconda Road
Butte MT 59701

Mike Mc Anulty
Liability Manager

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Jeremy Grotbo / BSB – email
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Craig Deeney / TREC - email
Scott Bradshaw / TREC - email
Brad Archibald / Pioneer - email
Pat Sampson / Pioneer - email
Mike Borduin / Pioneer - email
Joe McElroy / Pioneer – email
Andy Dare / Pioneer – email
Karen Helfrich / Pioneer - email
Leesla Jonart / Pioneer - email
Connie Logan/ Pioneer – email
Ian Magruder/ CTEC- email
CTEC of Butte – email
Scott Juskiewicz / Montana Tech – email

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

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

September 2, 2021

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

Re: Draft Final RMAP Headstart (former Lincoln School) Soil Remedial Action Work Plan (RAWP) (dated 8/30/21)

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 Headstart (former Lincoln School) Soil Remedial Action Work Plan (RAWP) (dated 8/30/21).* Please distribute and name the work plan as final with this approval letter.

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

Sincerely,

NIKIA GREENE

Digitally signed by NIKIA GREENE
Date: 2021.09.02 16:33:40 -06'00'

Nikia Greene
Remedial Project Manager

cc: (email only)
Butte File
Jenny Chambers; DEQ
Matt Dorrington, DEQ
Daryl Reed; DEQ
Jon Morgan; DEQ counsel
Carolina Balliew; DEQ
Harley Harris; NRDP

Katherine Hausrath; NRDP
Jim Ford; NRDP
Ray Vinkey; NRDP
John Gallagher; BSBC
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Sean Peterson; BSBC
Eric Hassler; BSBC
Brandon Warner; BSBC
Chad Anderson; BSBC
Karen Sullivan; BSBC
Julia Crain; BSBC
Abby Peltomaa; BSBC
Jeremy Grotbo; BSBC
Anne Walsh; UP
Robert Bylsma; UP counsel
Leo Berry; BNSF and UP counsel
Mark Engdahl; BNSF
Brooke Kuhl; BNSF counsel
Jeremie Maehr; Kennedy Jenks for BNSF and UP
Annika Silverman; 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
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 Bradshaw; TREC
Mike Borduin; Pioneer for AR
Karen Helfrich; Pioneer for AR
Andy Dare; Pioneer for AR
Scott Sampson; Pioneer for AR
Brad Archibald; Pioneer for AR
Andy Dare; Pioneer for AR
Tina Donovan; Woodardcurran for AR
Don Booth; AR consultant
Ted Duaime; MBMG
Gary Icopini; MBMG
David Shanight, CDM Smith
Curt Coover, CDM Smith
Chapin Storrar; CDM Smith
Erin Agee, EPA
Joe Vranka; EPA

Chris Wardell; EPA
Dana Barnicoat; EPA
Charlie Partridge; EPA
Jean Belille; EPA
Ian Magruder; CTEC (Tech Advisor)
Janice Hogan; CTEC
Kristi Carroll; Montana Tech Library

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

Final

2021 Residential Metals Abatement Program (RMAP)
Headstart (former Lincoln School)
Soil Remedial Action Work Plan (RAWP)

Butte-Silver Bow County

and

Atlantic Richfield Company

September 3, 2021

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

Final

2021 Residential Metals Abatement Program (RMAP)
Headstart (former Lincoln School)
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

September 3, 2021

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Attachment C Type B Material Pace Analytical Data Reports

DOCUMENT MODIFICATION SUMMARY

Modification	Author	Version	Description	Date
0	Jesse Schwarzrock	Draft Final	Issued for Agency Review	08/30/21
1	Jesse Schwarzrock	Final	Issued Final to Agencies	09/03/21

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) was developed to outline a portion of the remedial action (RA) work resulting from the 2021 Residential Metals Abatement Program (RMAP) school soil sampling event completed in July and August 2021. The sampling event was conducted in accordance with the *Final Residential Metals Abatement Program (RMAP) Quality Assurance Project Plan* (QAPP) *(Non-Residential Parcels)* (Butte-Silver Bow County and Atlantic Richfield Company, 2021).

2.0 SCHOOL SOIL REMEDIATION SCOPE

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

- Headstart (former Lincoln School).

3.0 SCHOOL SOIL REMEDIATION SCHEDULE

This remedial action scope of work will be completed in September 2021. The work is currently estimated to require 1 to 2 days to complete.

4.0 REMEDIAL ACTION WORK PLAN

4.1 Headstart (former Lincoln School)

Remediation at the Headstart facility located within the former Lincoln School site consists of a 562-square foot polygon (PA1) located in the southwest corner of the school property near the intersection of North Clark Street and West Broadway Street. This Headstart facility is currently vacant and undergoing renovation work. PA1 was a playground area at one time as evidenced by the existing 6-inch thick wood chip cover. Conversations with Headstart personnel indicate that the area will be utilized as a playground area in the future. Based on this assumption, Headstart personnel have requested that the area be surfaced with new wood chips as part of this remedial effort. The Individual Site Work Plan (ISWP) is provided in Attachment A.

4.1.1 Excavation

The PA1 polygon has lead exceedances to a depth of 12 inches. Based on this information, the removal area will be dictated by the original sampling polygon area while the removal depth will be 18 inches (in order to remove the existing 6 inch thick wood chip layer plus the maximum RMAP removal depth of 12 inches of soil below existing ground surface to ensure complete removal of the source material). All excavated material will be disposed of within the Butte Mine Waste Repository (see Figure 1). Because of the small work area involved, depth verification of the excavation area will consist of measuring using a hand tape and existing perimeter features (i.e., the elevation of the concrete curbing around the excavation perimeter).

4.1.2 Backfill

Once the on-site U.S. Environmental Protection Agency (EPA) representative has approved the excavation area, backfill work will begin. A separation fabric (see Section 5.1 and Attachment B) 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 has been installed, 12 inches of Type B fill material (see Section 5.2, Tables 2 and 3, and Attachment C) 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 2nd layer of separation fabric will be placed to act as a weed barrier.

Then a 6-inch thick layer of new woodchips will be placed on top of the weed barrier.

4.1.3 Revegetation

This playground area will be surfaced with new wood chips per Headstart personnel request. Therefore, revegetation isn't applicable.

4.2 Dust Control

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

4.3 Best Management Practices (BMPs)

Given the site layout, best management practices (BMPs) are not anticipated to be necessary.

5.0 MATERIALS

5.1 Fabric Material

Geotex 801 will be used for the separation fabric to provide a barrier between the native soil and newly placed Type B fill material as well as the weed barrier between the newly placed Type B fill material and the newly placed wood chip layer. The material specifications are located in Attachment B.

5.2 Type B Backfill Borrow Source

Type B fill material will be utilized for all required backfill material. This fill material was developed by Atlantic Richfield Company 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 1) and screened to a 6-inch minus product. The quality assurance data are provided in Tables 2 and 3, and the corresponding laboratory reports are located in Attachment C. Because this material is fill material (not growth medium), only metals data has been provided consistent with past EPA requests in Anaconda.

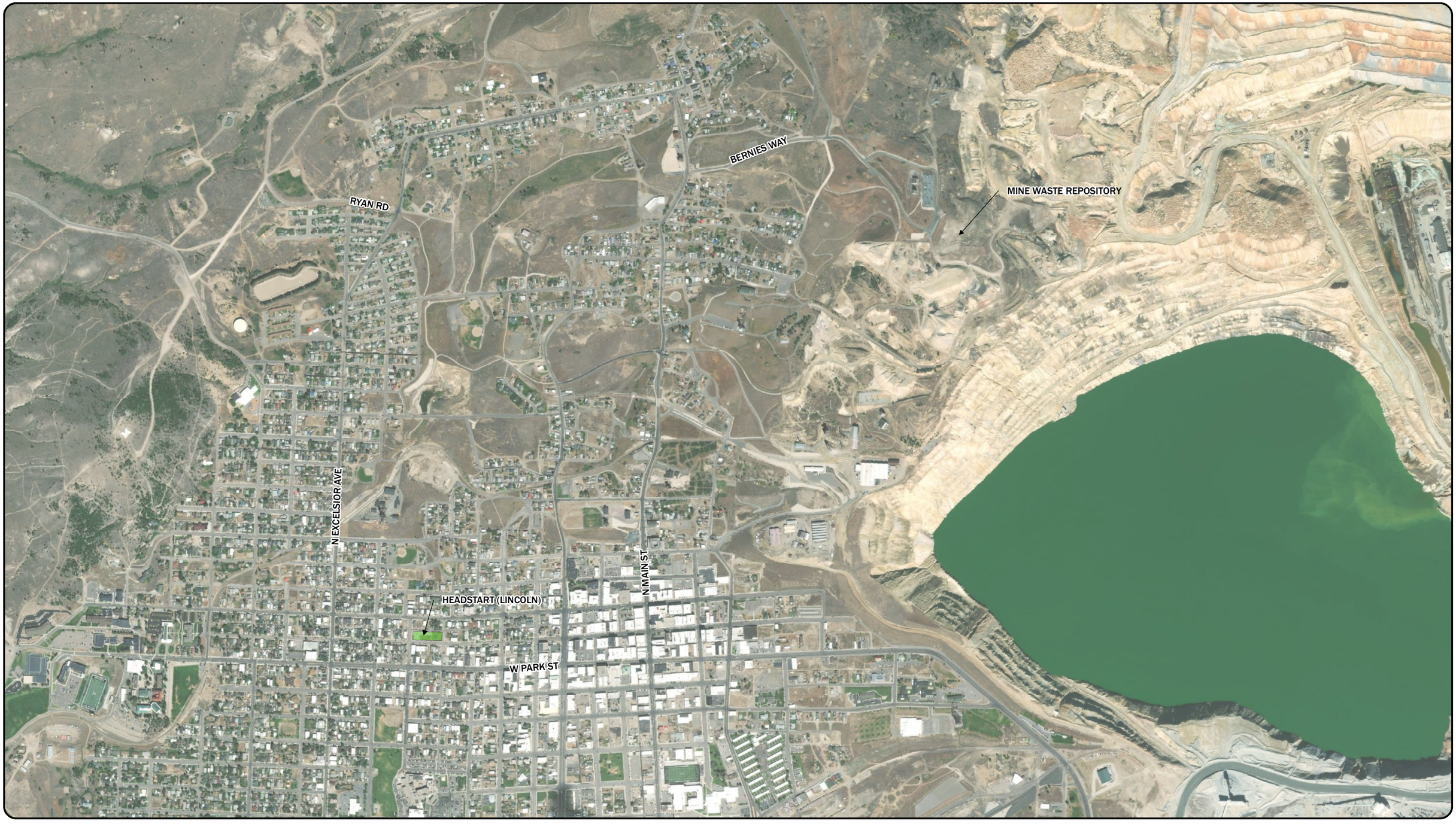
5.3 Wood Chips Source

Wood chips will be procured from either Sun Mountain Lumber in Deer Lodge, Montana or Western Pine in Townsend, Montana.

6.0 REFERENCES

Butte-Silver Bow County and Atlantic Richfield Company, 2021. Silver Bow Creek/Butte Area NPL Site Butte Priority Soils Operable Unit, Final Residential Metals Abatement Program (RMAP) Quality Assurance Project Plan (QAPP). July 2021.

FIGURES



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

0 500 1,000 2,000
Feet

FIGURE 1

MINE WASTE REPOSITORY LOCATION

PIONEER TECHNICAL SERVICES, INC.

DATE: 8/25/2021

Path: Z:\Shared\Active Projects\ARCO\BPSOU\RMAP\GIS\SchoolRAWP Figures\Headstart(Lincoln)\RAWP_HeadstartLincoln2.mxd

N

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

0 0.75 1.5 3
Miles

FIGURE 2

PIONEER TECHNICAL SERVICES, INC.

TYPE B MATERIAL STOCKPILE LOCATION

DATE: 8/25/2021

Path: Z:\Shared\Active Projects\ARCO\BPSOU\RMAP\GIS\SchoolRAWP Figures\Headstart(Lincoln)\RAWP_HeadstartLincoln3.mxd

TABLES

TABLE 1: HEADSTART (FORMER LINCOLN SCHOOL) PROPERTY INFORMATION

Count	Res-ID	Geocode	Name	Owner	Construction Date
1	S-0013	01119713226010000	Headstart (Lincoln)	Action, Inc.	1958

TABLE 2: CS OU TYPE B MATERIAL STOCKPILE

(As, Cd, Cu, Pb, Zn Data)

	Sample ID [2]	Volume Tested (LCY)	As < 97 mg/kg	As FLAG	Cd < 4 mg/kg	Cd FLAG	Cu < 250 mg/kg	Cu FLAG	Pb < 100 mg/kg	Pb FLAG	Zn < 250 mg/kg	Zn FLAG
1	20-CS-TypeB-1203-001	approx 6,000 LCY	5.8		0.08		10.9		4.7		21.7	
2	20-CS-TypeB-1203-002		4.5		0.10		12.3		4.9		25.8	
3	20-CS-TypeB-1203-003		3.4		ND[1]		8.7		4.7		19.4	
4	20-CS-TypeB-1203-004		8.3		0.13		17.2		6.3		29.7	
5	20-CS-TypeB-1203-005		7.7		0.11		16.8		7.1		29.9	
6	20-CS-TypeB-1203-006		7.8		0.10		14.6		5.9		28.2	
7	20-CS-TypeB-1203-007		10.9		0.09		13.7		5.4		25.7	
8	20-CS-TypeB-1203-008		5.0		0.11		10.5		4.8		23.5	
9	20-CS-TypeB-1203-009		10.1		0.11		18.2		6.7		31.7	
10	20-CS-TypeB-1203-010		5.7		0.09		12.6		5.5		26.2	
11	20-CS-TypeB-1203-011		3.9		ND[1]		8.6		4.0		20.8	
12	20-CS-TypeB-1203-012		3.8		0.09		8.9		5.3		26.7	
		MAX:	10.9		0.13		18.2		7.1		31.7	
		MIN:	3.4		0.08		8.6		4.0		19.4	
		AVE:	6.4		0.10		12.8		5.4		25.8	

[1] ND = Non Detect

[2] These 12 Community Soils samples were collected on 12/3/20 at the RDU 8 South Borrow Area stockpile.

TABLE 3: CS OU TYPE B MATERIAL STOCKPILE
(Hg Data)

	Sample ID [1]	Volume Tested (LCY)	Hg < 5 mg/kg	Hg FLAG
1	21-Type B-0817-001	approx 3,000 LCY	0.02	
2	21-Type B-0817-002		0.02	
3	21-Type B-0817-003		0.01	J
4	21-Type B-0817-004		0.02	J
		MAX:	0.02	
		MIN:	0.01	
		AVE:	0.02	

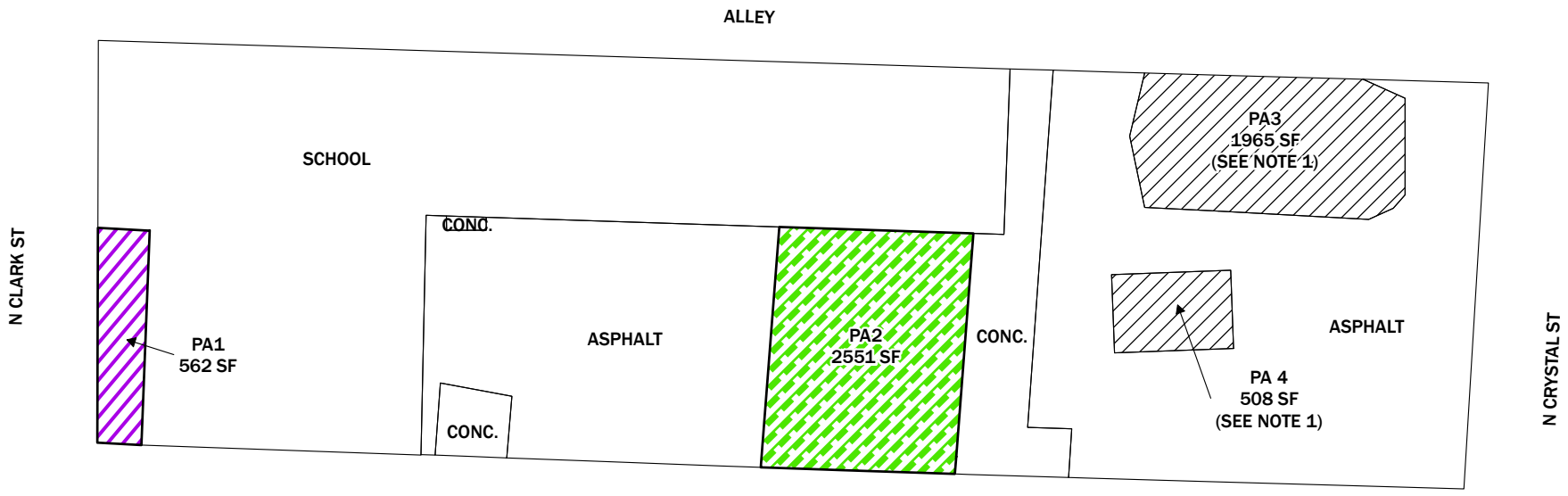
[1] These 4 mercury samples were collected on 8/17/21 at the RDU 8 South Borrow Area stockpile.

ATTACHMENT A

DRAFT HEADSTART (FORMER LINCOLN SCHOOL)

INDIVIDUAL SITE WORK PLAN (ISWP)

ADDRESS: 100 N CLARK STREET
PROPERTY ID: S-0013



S-0013

REMEDIAL ACTION SUMMARY TABLE

Resident ID	SAMPLING COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)					COMPONENT LEAD CONCENTRATION (mg/kg)					COMPONENT MERCURY CONCENTRATION (mg/kg)					ESTIMATED QUANTITIES		
S-0013			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"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)
S-0013-PA1	Playground Area 1 (PA1)	562	74	67	92	N/A	N/A	1,730	1,340	1,340	N/A	N/A	0.38	0.30	0.72	N/A	N/A	20.8	20.8	0
S-0013-PA2	Playground Area 2 (PA2)	2,551	68	71	57	N/A	N/A	534	619	644	N/A	N/A	0.37	0.14	0.40	N/A	N/A	0.0	0.0	0
S-0013-PA3	Playground Area 3 (PA3)	1,965	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0.0	0
S-0013-PA4	Playground Area 4 (PA4)	508	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0.0	0
																		20.8	20.8	0.0
	Component Arsenic Concentration is ≥ 250 mg/kg.																			
	Component Lead Concentration is ≥ 1,200 mg/kg.																			
	Component Mercury Concentration is ≥ 147 mg/kg.																			
N/A	= Not applicable per 2021 RMAP Quality Assurance Project Plan.																			

LEGEND

- No Action Required
- 12" Removal
- 24" Removal

HEADSTART (FORMER LINCOLN)
INDIVIDUAL SITE WORK PLAN

RESIDENTIAL METALS ABATEMENT PROGRAM (RMAP)

BUTTE, MONTANA
SHEET 1 OF 1

DRAFT
DATA VALIDATION NOT YET COMPLETE

N

40 20 0 40
Feet

NOTES:

1. PA3 AND PA4 WERE UN-SAMPLABLE AREAS. THE OWNER BUILT THESE 2 AREAS BY PLACING WOODCHIPS ON TOP OF EXISTING ASPHALT. THEREFORE, THERE WAS NO SOIL TO SAMPLE.

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.

Atlantic Richfield Company
A BP affiliated company

BY: PIONEER TECHNICAL SERVICES, INC.

Date: 8/9/2021
Revision#: 0
File Name: RMAP_ISWP_HeadstartLincoln

ATTACHMENT B

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 C

TYPE B MATERIAL 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	

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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	

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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	

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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	

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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	

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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

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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
Minneapolis, MN 55414
(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									Comments
	20-CS-TypeB-1203-001	12/03/20	10:30	X				1							X								001	PLEASE RUSH THESE SAMPLES
	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	
	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	

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

		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: [X] 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? [X] Yes [ ] No **Seals Intact?** [X] Yes [ ] No **Biological Tissue Frozen?** [ ] Yes [ ] No [X] N/A

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [X] None [ ] Other:_____ **Temp Blank?** [X] Yes [ ] No

Thermometer: [ ] T1(0461) [X] T2(1336) [ ] T3(0459) [ ] T4(0254) [ ] T5(0489) **Type of Ice:** [X] 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 [X] No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? [ ] Yes [X] 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?	[X] Yes	[ ] No		1.
Chain of Custody Relinquished?	[X] Yes	[ ] No		2.
Sampler Name and/or Signature on COC?	[X] Yes	[ ] No	[ ] N/A	3.
Samples Arrived within Hold Time?	[X] Yes	[ ] No		4.
Short Hold Time Analysis (<72 hr)?	[ ] Yes	[X] No		5. [ ] Fecal Coliform [ ] HPC [ ] Total Coliform/E coli [ ] BOD/cBOD [ ] Hex Chrome [ ] Turbidity [ ] Nitrate [ ] Nitrite [ ] Orthophos [ ]
Rush Turn Around Time Requested?	[X] Yes	[ ] No		6.
Sufficient Sample Volume?	[X] Yes	[ ] No		
Triple Volume Provided for MS/MSD (if more than 10 samples)?	[ ] Yes	[ ] No	[X] N/A	7.
Correct Containers Used?	[X] Yes	[ ] No		8. plastic bags
-Pace Containers Used?	[ ] Yes	[X] No		
Containers Intact?	[X] Yes	[ ] No		9.
Field Filtered Volume Received for Dissolved Tests?	[ ] Yes	[ ] No	[X] N/A	10. Is sediment visible in the dissolved container? [ ] Yes [ ] No
Is sufficient information available to reconcile the samples to the COC	[X] Yes	[ ] No		11. If no, write ID/ Date/Time on Container Below: See Exception [ ] ENV-FRM-MIN4-0142
Matrix: [ ] Water [X] Soil [ ] Oil [ ] Other_____				
All containers needing acid/base preservation have been checked?	[ ] Yes	[ ] No	[X] 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	[X] 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	[X] 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	[X] N/A	13. See Exception [ ] ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)?	[ ] Yes	[ ] No	[X] N/A	
3 Trip Blanks Present?	[ ] Yes	[ ] No	[X] N/A	14.
Trip Blank Custody Seals Present?	[ ] Yes	[ ] No	[X] 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: Andrea **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
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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 (*).

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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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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
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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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Minneapolis, MN 55414
(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