

January 28, 2022

Mr. Dustin Armstrong
Environmental Cleanup Program
PA Department of Environmental Protection
2 East Main Street
Norristown, Pennsylvania 19401

Re: Former Bishop Tube Property
Recent Regulatory Updates
Laboratory Data Package Correction

Dear Mr. Armstrong:

This letter is submitted by Roux Associates, Inc. ("Roux") on behalf of Johnson Matthey Inc. and Whittaker Corporation (collectively, the "BT Team"), the two parties that conducted the Remedial Investigation ("RI") and the Feasibility Study ("FS") for the former Bishop Tube property located at 1 South Malin Road in Malvern, Pennsylvania ("Property"). The RI and FS addressed an area inclusive of and beyond the Property (i.e., "Site"¹).

This letter presents updated information related to the recent regulatory updates and a correction to one previously submitted laboratory package.

- Pennsylvania Code, Title 25, Chapter 93, ("PADEP Chapter 93") updated surface water quality standards ("SWQS") human health criterion ("HHC") effective March 19, 2021. SWQS HHC are not pertinent for the January 13, 2021 Human Health Risk Assessment because they are protective of exposure pathways not considered complete at the Site (namely, use of surface water as a drinking water source, and ingestion of fish from the surface water body). However, the risk assessment is consistent with the SWQS HHC applicable exposure factors and toxicity criteria².
- Pennsylvania Code, Title 25, Chapter 250, ("PADEP Chapter 250") updated Statewide Health Standards ("SHS") effective November 20, 2021. No substantive changes were made to the Medium-Specific Standards ("MSCs") for the primary constituents of concern ("COCs"). Groundwater MSCs for the primary COCs did not change. To the extent that Soil MSCs were updated for primary COCs, the changes were minimal or resulted in a less stringent standard. Therefore, the conclusions of the RI and FS Reports remain protective of human health, safety and the environment.

¹ The term "Site" as used in this letter is in accordance with Chapter 250, Section 1.

² PADEP, 2022. Land Recycling Program Toxicity Database Summary of Toxicity Values. On-line search: current as of 1/18/2022: <http://cedatareporting.pa.gov/Reportserver/Pages/ReportViewer.aspx?/Public/DEP/DEP/SSRS/Toxicity>

- Roux's laboratory subcontractor, Alpha Analytical Laboratory ("Alpha"), conducted an internal audit of their analytical data. The concentration of hexavalent chromium in sample WDL-CB02R (17-18)³ collected on May 18, 2021 was corrected from 1.37 mg/kg to 55.5 mg/kg. Alpha re-issued the laboratory report that contained this sample and verified that no other corrections were required. This revised laboratory report is included as Attachment A.

These data were included in the August 24, 2021 Memorandum ("August 2021 Memorandum") entitled Soil Investigation for Certain Inorganic Constituents, Groundwater Investigation for VOCs and Certain Inorganic Constituents. As the corrected analytical result for hexavalent chromium does not exceed the Residential Used Aquifer ("RUA") Soil-to-Groundwater ("SGW") MSC of 190 mg/kg or the 2-15 Non-Residential Direct Contact ("NRDC") MSC, this corrected result does not change the conclusions of the August 2021 Memorandum, which state that there are no total or hexavalent chromium soil AOCs that require remediation.

Should you have any questions, please reach out to the undersigned at 856-423-8800.

Sincerely,

ROUX ASSOCIATES, INC.



Sara Redding, P.G.
Senior Hydrogeologist



Gregory D. Martin, P.G.
Vice President/Principal Hydrogeologist

cc: Bishop Tube Project Team - E-mail
Richard Staron - PADEP - E-mail
Bonnie McClennen - PADEP - E-mail
Mr. Bram, Esq. - PADEP - E-mail
East Whiteland Township, Environmental Advisory Committee

³ Sample collected from 17 to 18 feet below ground surface.

Revised Laboratory Report



ANALYTICAL REPORT

Lab Number:	L2126169
Client:	Roux Associates 402 Heron Drive Logan Township, NJ 08085
ATTN:	Sara Redding
Phone:	(856) 423-8800
Project Name:	BISHOP TUBE
Project Number:	0539.0003J000
Report Date:	01/18/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2126169-01	WDL-03R (15-16)	SOIL	MALVERN, PA	05/18/21 09:45	05/18/21
L2126169-02	ARPSA02R (7-8)	SOIL	MALVERN, PA	05/18/21 10:10	05/18/21
L2126169-03	LAG-05R (6-7)	SOIL	MALVERN, PA	05/18/21 10:25	05/18/21
L2126169-04	LAG-06R (6-7)	SOIL	MALVERN, PA	05/18/21 10:40	05/18/21
L2126169-05	LAG-07R (6-7)	SOIL	MALVERN, PA	05/18/21 11:00	05/18/21
L2126169-06	ARPSA03R (10-11)	SOIL	MALVERN, PA	05/18/21 11:15	05/18/21
L2126169-07	B-4R (5-6)	SOIL	MALVERN, PA	05/18/21 11:35	05/18/21
L2126169-08	MW-05R (5-6)	SOIL	MALVERN, PA	05/18/21 12:00	05/18/21
L2126169-09	VSP-05R (15-16)	SOIL	MALVERN, PA	05/18/21 12:40	05/18/21
L2126169-10	VSP-01R (11-12)	SOIL	MALVERN, PA	05/18/21 13:05	05/18/21
L2126169-11	PTA-01R (5-6)	SOIL	MALVERN, PA	05/18/21 14:35	05/18/21
L2126169-12	VSP-03R (3-4)	SOIL	MALVERN, PA	05/18/21 14:40	05/18/21
L2126169-13	WDL-CB02R (17-18)	SOIL	MALVERN, PA	05/18/21 15:00	05/18/21
L2126169-14	DUP-20210518-01	SOIL	MALVERN, PA	05/18/21 00:00	05/18/21
L2126169-15	DUP-20210518-02	SOIL	MALVERN, PA	05/18/21 00:00	05/18/21
L2126169-16	DUP-20210518-03	SOIL	MALVERN, PA	05/18/21 00:00	05/18/21
L2126169-17	FB-20210518	WATER	MALVERN, PA	05/18/21 15:15	05/18/21

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Case Narrative (continued)

Report Revision

January 18, 2022: The Hexavalent Chromium result has been corrected on L2126169-13.

Report Submission

June 08, 2021: This final report includes the results of all requested analyses.

May 26, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1501720-3 MS recovery for chromium (1030%) performed on L2126169-01, does not apply because the sample concentration is greater than four times the spike amount added.

The WG1501720-4 Laboratory Duplicate RPD for chromium (93%) performed on L2126169-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

Hexavalent Chromium

The WG1502141-4 Insoluble MS recovery for chromium, hexavalent (51%), performed on L2126169-03, is outside the acceptance criteria. The Soluble MS recovery for chromium, hexavalent (2%) was also outside criteria. This has been attributed to matrix interference. A post-spike was performed with a recovery of 107%. The WG1502142-4 Insoluble MS recovery for chromium, hexavalent (30%), performed on L2126169-12, is outside the acceptance criteria. The Soluble MS recovery for chromium, hexavalent (32%) was also outside criteria. This has been attributed to matrix interference. A post-spike was performed with a recovery of 88%.

Fluoride

WG1501157: A Matrix Spike and Laboratory Duplicate were prepared with the sample batch, however, the

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

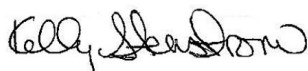
Lab Number: L2126169
Report Date: 01/18/22

Case Narrative (continued)

native sample required re-analysis; therefore, the results could not be reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 01/18/22

METALS

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-01
 Client ID: WDL-03R (15-16)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 09:45
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	119		mg/kg	0.518	0.050	1	05/22/21 09:00	05/25/21 10:42	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-02
 Client ID: ARPSA02R (7-8)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 10:10
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	137		mg/kg	0.488	0.047	1	05/22/21 09:00	05/25/21 10:32	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-03
 Client ID: LAG-05R (6-7)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 10:25
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	308		mg/kg	0.467	0.045	1	05/22/21 09:00	05/25/21 10:37	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-04
 Client ID: LAG-06R (6-7)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 10:40
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth: TCLP/SPLP Ext. Date: 06/04/21 04:50
 Matrix: Soil
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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SPLP Metals by EPA 1312 - Mansfield Lab

Nickel, SPLP	24.5		ug/l	20.0	5.56	10	06/08/21 12:11	06/08/21 14:29	EPA 3005A	1,6020B	CD
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Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-04
 Client ID: LAG-06R (6-7)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 10:40
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	1040		mg/kg	0.496	0.048	1	05/22/21 09:00	05/25/21 11:34	EPA 3050B	1,6010D	EW
Nickel, Total	1050		mg/kg	1.24	0.120	1	05/22/21 09:00	05/25/21 11:34	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-05
 Client ID: LAG-07R (6-7)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 11:00
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth: TCLP/SPLP Ext. Date: 06/04/21 04:50
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
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SPLP Metals by EPA 1312 - Mansfield Lab

Nickel, SPLP	388.		ug/l	20.0	5.56	10	06/08/21 12:11	06/08/21 14:34	EPA 3005A	1,6020B	CD
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Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-05
 Client ID: LAG-07R (6-7)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 11:00
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	851		mg/kg	0.475	0.046	1	05/22/21 09:00	05/25/21 11:38	EPA 3050B	1,6010D	EW
Nickel, Total	796		mg/kg	1.19	0.115	1	05/22/21 09:00	05/25/21 11:38	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-06
 Client ID: ARPSA03R (10-11)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 11:15
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	1220		mg/kg	0.489	0.047	1	05/22/21 09:00	05/25/21 11:43	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-07
 Client ID: B-4R (5-6)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 11:35
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	115		mg/kg	0.467	0.045	1	05/22/21 09:00	05/25/21 11:48	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-08
 Client ID: MW-05R (5-6)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 12:00
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	2440		mg/kg	0.943	0.091	2	05/22/21 09:00	05/25/21 13:38	EPA 3050B	1,6010D	SV



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-09
 Client ID: VSP-05R (15-16)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 12:40
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Cobalt, Total	15.1		mg/kg	1.07	0.089	1	05/22/21 09:00	05/25/21 11:57	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-10
 Client ID: VSP-01R (11-12)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 13:05
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	21.8		mg/kg	0.482	0.046	1	05/22/21 09:00	05/25/21 12:02	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-11
 Client ID: PTA-01R (5-6)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 14:35
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	127		mg/kg	0.483	0.046	1	05/22/21 09:00	05/25/21 12:07	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-12
 Client ID: VSP-03R (3-4)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 14:40
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	11.1		mg/kg	0.481	0.100	1	05/22/21 09:00	05/25/21 12:11	EPA 3050B	1,6010D	EW
Chromium, Total	20.8		mg/kg	0.481	0.046	1	05/22/21 09:00	05/25/21 12:11	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-13
 Client ID: WDL-CB02R (17-18)
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 15:00
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	396		mg/kg	0.533	0.051	1	05/22/21 09:00	05/25/21 12:16	EPA 3050B	1,6010D	EW



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-14
 Client ID: DUP-20210518-01
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 00:00
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Chromium, Total	1710		mg/kg	0.486	0.047	1	05/22/21 09:00	05/25/21 12:43	EPA 3050B	1,6010D	EW
Nickel, Total	1880		mg/kg	2.43	0.235	2	05/22/21 09:00	05/25/21 13:43	EPA 3050B	1,6010D	SV



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-15
 Client ID: DUP-20210518-02
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 00:00
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Cobalt, Total	21.8		mg/kg	1.11	0.092	1	05/22/21 09:00	05/25/21 12:47	EPA 3050B	1,6010D	SV



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-16
 Client ID: DUP-20210518-03
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 00:00
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	10.1		mg/kg	0.451	0.094	1	05/22/21 09:00	05/25/21 13:33	EPA 3050B	1,6010D	SV



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-17
 Client ID: FB-20210518
 Sample Location: MALVERN, PA

Date Collected: 05/18/21 15:15
 Date Received: 05/18/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Arsenic, Total	ND		ug/l	0.5000	0.1650	1	05/20/21 04:52	05/25/21 18:49	EPA 3005A	1,6020B	CD
Chromium, Total	ND		ug/l	1.000	0.1780	1	05/20/21 04:52	05/25/21 18:49	EPA 3005A	1,6020B	CD
Cobalt, Total	ND		ug/l	0.5000	0.1630	1	05/20/21 04:52	05/25/21 18:49	EPA 3005A	1,6020B	CD
Nickel, Total	ND		ug/l	2.000	0.5560	1	05/20/21 04:52	05/25/21 18:49	EPA 3005A	1,6020B	CD



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 17 Batch: WG1501188-1									
Arsenic, Total	ND	ug/l	0.5000	0.1650	1	05/20/21 04:52	05/25/21 18:39	1,6020B	CD
Chromium, Total	ND	ug/l	1.000	0.1780	1	05/20/21 04:52	05/25/21 18:39	1,6020B	CD
Cobalt, Total	ND	ug/l	0.5000	0.1630	1	05/20/21 04:52	05/25/21 18:39	1,6020B	CD
Nickel, Total	ND	ug/l	2.000	0.5560	1	05/20/21 04:52	05/25/21 18:39	1,6020B	CD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-16 Batch: WG1501720-1									
Arsenic, Total	ND	mg/kg	0.400	0.083	1	05/22/21 09:00	05/25/21 10:19	1,6010D	EW
Chromium, Total	ND	mg/kg	0.400	0.038	1	05/22/21 09:00	05/25/21 10:19	1,6010D	EW
Cobalt, Total	ND	mg/kg	0.800	0.066	1	05/22/21 09:00	05/25/21 10:19	1,6010D	EW
Nickel, Total	ND	mg/kg	1.00	0.097	1	05/22/21 09:00	05/25/21 10:19	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
SPLP Metals by EPA 1312 - Mansfield Lab for sample(s): 04-05 Batch: WG1508891-1									
Nickel, SPLP	ND	ug/l	20.0	5.56	10	06/08/21 12:11	06/08/21 14:04	1,6020B	CD

Prep Information

Digestion Method: EPA 3005A
TCLP/SPLP Extraction Date: 06/04/21 04:50

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Metals - Mansfield Lab Associated sample(s): 17 Batch: WG1501188-2								
Arsenic, Total	101		-		80-120	-		
Chromium, Total	96		-		80-120	-		
Cobalt, Total	98		-		80-120	-		
Nickel, Total	95		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-16 Batch: WG1501720-2 SRM Lot Number: D109-540								
Arsenic, Total	87		-		70-130	-		
Chromium, Total	83		-		70-130	-		
Cobalt, Total	93		-		75-125	-		
Nickel, Total	87		-		70-130	-		
SPLP Metals by EPA 1312 - Mansfield Lab Associated sample(s): 04-05 Batch: WG1508891-2								
Nickel, SPLP	94		-		80-120	-		

Matrix Spike Analysis Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 17 QC Batch ID: WG1501188-3 QC Sample: L2125973-01 Client ID: MS Sample												
Arsenic, Total	1.329	120	116.1	96		-	-		75-125	-		20
Chromium, Total	0.2784J	200	172.1	86		-	-		75-125	-		20
Cobalt, Total	0.7840	500	458.1	91		-	-		75-125	-		20
Nickel, Total	2.205	500	439.2	87		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-16 QC Batch ID: WG1501720-3 QC Sample: L2126169-01 Client ID: WDL-03R (15-16)												
Arsenic, Total	18.8	11.9	17.2	0	Q	-	-		75-125	-		20
Chromium, Total	119	19.9	324	1030	Q	-	-		75-125	-		20
Cobalt, Total	10.7	49.7	45.8	71	Q	-	-		75-125	-		20
Nickel, Total	41.0	49.7	128	175	Q	-	-		75-125	-		20
SPLP Metals by EPA 1312 - Mansfield Lab Associated sample(s): 04-05 QC Batch ID: WG1508891-3 QC Sample: L2126169-04 Client ID: LAG-06R (6-7)												
Nickel, SPLP	24.5	500	495	94		-	-		80-120	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: BISHOP TUBE

Project Number: 0539.0003J000

Lab Number: L2126169

Report Date: 01/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-16 QC Batch ID: WG1501720-4 QC Sample: L2126169-01 Client ID: WDL-03R (15-16)						
Chromium, Total	119	327	mg/kg	93	Q	20
SPLP Metals by EPA 1312 - Mansfield Lab Associated sample(s): 04-05 QC Batch ID: WG1508891-4 QC Sample: L2126169-04 Client ID: LAG-06R (6-7)						
Nickel, SPLP	24.5	21.1	ug/l	15		20

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

**Lab Serial Dilution
 Analysis
 Batch Quality Control**

Lab Number: L2126169
Report Date: 01/18/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-16 QC Batch ID: WG1501720-6 QC Sample: L2126169-01 Client ID: WDL-03R (15-16)						
Chromium, Total	119	127	mg/kg	7		20

INORGANICS & MISCELLANEOUS

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-01
Client ID: WDL-03R (15-16)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 09:45
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.5		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	410		mg/kg	65	6.8	5	05/21/21 17:00	05/21/21 20:00	121,4500F-BC	EN
Chromium, Hexavalent	24.9		mg/kg	1.04	0.209	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-02
Client ID: ARPSA02R (7-8)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 10:10
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.6		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	110		mg/kg	13	1.3	1	05/19/21 16:50	05/19/21 19:45	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	1.02	0.204	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-03
Client ID: LAG-05R (6-7)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 10:25
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.4		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	130		mg/kg	12	1.2	1	05/19/21 16:50	05/19/21 19:45	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	0.959	0.192	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-04
Client ID: LAG-06R (6-7)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 10:40
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.4		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	860		mg/kg	130	13.	10	05/21/21 17:00	05/21/21 20:00	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	1.03	0.207	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-05
Client ID: LAG-07R (6-7)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 11:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	740		mg/kg	120	13.	10	05/21/21 17:00	05/21/21 20:00	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	0.982	0.196	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-06
Client ID: ARPSA03R (10-11)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 11:15
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.5		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	290		mg/kg	64	6.7	5	05/21/21 17:00	05/21/21 20:00	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	1.03	0.206	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-07
Client ID: B-4R (5-6)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 11:35
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.6		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	110		mg/kg	12	1.3	1	05/19/21 16:50	05/19/21 19:45	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	0.980	0.196	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-08
Client ID: MW-05R (5-6)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 12:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	690		mg/kg	120	13.	10	05/21/21 17:00	05/21/21 20:00	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	0.973	0.195	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-09
Client ID: VSP-05R (15-16)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 12:40
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.6		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	150		mg/kg	14	1.4	1	05/19/21 16:50	05/19/21 19:45	121,4500F-BC	EN



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-10
Client ID: VSP-01R (11-12)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 13:05
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.0		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	100		mg/kg	12	1.3	1	05/19/21 16:50	05/19/21 19:45	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	0.988	0.198	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-11
Client ID: PTA-01R (5-6)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 14:35
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.9		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	7700		mg/kg	300	32.	25	05/21/21 17:00	05/21/21 20:00	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	0.977	0.195	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-12
Client ID: VSP-03R (3-4)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 14:40
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.9		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	110		mg/kg	12	1.3	1	05/19/21 16:50	05/19/21 19:45	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	1.00	0.200	1	05/21/21 17:23	05/24/21 15:49	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-13
Client ID: WDL-CB02R (17-18)
Sample Location: MALVERN, PA

Date Collected: 05/18/21 15:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.6		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	1000		mg/kg	140	14.	10	05/21/21 17:00	05/21/21 20:00	121,4500F-BC	EN
Chromium, Hexavalent	55.5		mg/kg	1.12	0.223	1	05/21/21 17:23	05/24/21 15:50	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-14
Client ID: DUP-20210518-01
Sample Location: MALVERN, PA

Date Collected: 05/18/21 00:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.3		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI
Fluoride	780		mg/kg	130	13.	10	05/21/21 17:00	05/21/21 20:00	121,4500F-BC	EN
Chromium, Hexavalent	ND		mg/kg	1.03	0.207	1	05/21/21 17:23	05/24/21 15:50	1,7196A	NA



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-15
Client ID: DUP-20210518-02
Sample Location: MALVERN, PA

Date Collected: 05/18/21 00:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	70.3		%	0.100	NA	1	-	05/19/21 11:56	121,2540G	RI



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-16
Client ID: DUP-20210518-03
Sample Location: MALVERN, PA

Date Collected: 05/18/21 00:00
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	05/19/21 12:52	121,2540G	RI



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

SAMPLE RESULTS

Lab ID: L2126169-17
Client ID: FB-20210518
Sample Location: MALVERN, PA

Date Collected: 05/18/21 15:15
Date Received: 05/18/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Fluoride	30.	J	ug/l	200	17.	1	05/21/21 20:45	05/21/21 22:30	121,4500F-BC	EN
Chromium, Hexavalent	ND		ug/l	10.0	3.00	1	05/19/21 09:40	05/19/21 10:21	1,7196A	KP



Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 17 Batch: WG1500908-1										
Chromium, Hexavalent	ND		ug/l	10.0	3.00	1	05/19/21 09:40	05/19/21 10:10	1,7196A	KP
General Chemistry - Westborough Lab for sample(s): 02-03,07,09-10,12 Batch: WG1501157-1										
Fluoride	ND		mg/kg	10	1.0	1	05/19/21 16:50	05/19/21 19:45	121,4500F-BC	EN
General Chemistry - Westborough Lab for sample(s): 01-08,10-11 Batch: WG1502141-1										
Chromium, Hexavalent	0.160	J	mg/kg	0.800	0.160	1	05/21/21 15:32	05/21/21 21:02	1,7196A	NA
General Chemistry - Westborough Lab for sample(s): 12-14 Batch: WG1502142-1										
Chromium, Hexavalent	ND		mg/kg	0.800	0.160	1	05/21/21 17:23	05/24/21 15:43	1,7196A	NA
General Chemistry - Westborough Lab for sample(s): 01,04-06,08,11,13-14 Batch: WG1502228-1										
Fluoride	ND		mg/kg	10	1.0	1	05/21/21 17:00	05/21/21 20:00	121,4500F-BC	EN
General Chemistry - Westborough Lab for sample(s): 17 Batch: WG1502281-1										
Fluoride	ND		ug/l	200	17.	1	05/21/21 20:45	05/21/21 22:30	121,4500F-BC	EN

Lab Control Sample Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 17 Batch: WG1500908-2								
Chromium, Hexavalent	105		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 02-03,07,09-10,12 Batch: WG1501157-2								
Fluoride	91		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01-08,10-11 Batch: WG1502141-2								
Chromium, Hexavalent	88		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 12-14 Batch: WG1502142-2								
Chromium, Hexavalent	88		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01,04-06,08,11,13-14 Batch: WG1502228-2								
Fluoride	96		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 17 Batch: WG1502281-2								
Fluoride	90		-		78-120	-		

Matrix Spike Analysis Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 17 QC Batch ID: WG1500908-4 QC Sample: L2126169-17 Client ID: FB-20210518												
Chromium, Hexavalent	ND	100	110	110		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01-08,10-11 QC Batch ID: WG1502141-4 QC Sample: L2126169-03 Client ID: LAG-05R (6-7)												
Chromium, Hexavalent	ND	1290	658	51	Q	-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 12-14 QC Batch ID: WG1502142-4 QC Sample: L2126169-12 Client ID: VSP-03R (3-4)												
Chromium, Hexavalent	ND	917	280	30	Q	-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01,04-06,08,11,13-14 QC Batch ID: WG1502228-4 QC Sample: L2126169-01 Client ID: WDL-03R (15-16)												
Fluoride	410	323	680	84		-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 17 QC Batch ID: WG1502281-4 QC Sample: L2122674-119 Client ID: MS Sample												
Fluoride	360	1000	1200	84		-	-		69-124	-		13

Lab Duplicate Analysis

Batch Quality Control

Project Name: BISHOP TUBE
Project Number: 0539.0003J000

Lab Number: L2126169
Report Date: 01/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 17 QC Batch ID: WG1500908-3 QC Sample: L2126169-17 Client ID: FB-20210518						
Chromium, Hexavalent	ND	ND	ug/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01-15 QC Batch ID: WG1500931-1 QC Sample: L2125898-01 Client ID: DUP Sample						
Solids, Total	75.0	77.4	%	3		20
General Chemistry - Westborough Lab Associated sample(s): 16 QC Batch ID: WG1500960-1 QC Sample: L2125317-01 Client ID: DUP Sample						
Solids, Total	85.7	87.2	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 01-08,10-11 QC Batch ID: WG1502141-6 QC Sample: L2126169-03 Client ID: LAG-05R (6-7)						
Chromium, Hexavalent	ND	ND	mg/kg	NC		20
General Chemistry - Westborough Lab Associated sample(s): 12-14 QC Batch ID: WG1502142-6 QC Sample: L2126169-12 Client ID: VSP-03R (3-4)						
Chromium, Hexavalent	ND	ND	mg/kg	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01,04-06,08,11,13-14 QC Batch ID: WG1502228-3 QC Sample: L2126169-01 Client ID: WDL-03R (15-16)						
Fluoride	410	460	mg/kg	11		20
General Chemistry - Westborough Lab Associated sample(s): 17 QC Batch ID: WG1502281-3 QC Sample: L2122674-119 Client ID: DUP Sample						
Fluoride	360	340	ug/l	6		13

Project Name: BISHOP TUBE**Lab Number:** L2126169**Project Number:** 0539.0003J000**Report Date:** 01/18/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126169-01A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180)
L2126169-01B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-01C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180)
L2126169-02B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-02C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-03A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180)
L2126169-03B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-03C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		NI-TI(180),CR-TI(180)
L2126169-04B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-04C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-04X	Plastic 250ml HNO3 preserved Extracts	NA	NA			Y	Absent		SPLP-NI-6020T-PPB(180)
L2126169-04X9	Tumble Vessel	NA	NA			Y	Absent		-
L2126169-05A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		NI-TI(180),CR-TI(180)
L2126169-05B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-05C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-05X	Plastic 250ml HNO3 preserved Extracts	NA	NA			Y	Absent		SPLP-NI-6020T-PPB(180)
L2126169-05X9	Tumble Vessel	NA	NA			Y	Absent		-
L2126169-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180)

Project Name: BISHOP TUBE**Lab Number:** L2126169**Project Number:** 0539.0003J000**Report Date:** 01/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126169-06B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-06C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-07A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180)
L2126169-07B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-07C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180)
L2126169-08B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-08C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-09A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CO-TI(180)
L2126169-09B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7)
L2126169-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180)
L2126169-10B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-10C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-11A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180)
L2126169-11B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-11C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		AS-TI(180),CR-TI(180)
L2126169-12B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-12C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-13A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180)
L2126169-13B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-13C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		CR-TI(180),NI-TI(180)

Project Name: BISHOP TUBE
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2126169-14B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-14C	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		HOLD-CONTINGENCY(14),F-4500(28),TS(7),HEXCR-7196(30)
L2126169-15A	Glass 60ml unpreserved split	A	NA		2.7	Y	Absent		CO-TI(180)
L2126169-15B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2126169-16A	Glass 60ml unpreserved split	A	NA		2.7	Y	Absent		AS-TI(180)
L2126169-16B	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2126169-17A	Plastic 250ml unpreserved	A	7	7	2.7	Y	Absent		F-4500-PPB(28),HEXCR-7196-PPB(1)
L2126169-17B	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		CO-6020T-PPB(180),CR-6020T-PPB(180),AS-6020T-PPB(180),NI-6020T-PPB(180)

Project Name: BISHOP TUBE
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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: BISHOP TUBE
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Report Date: 01/18/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water


EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.


EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

 ALPHA ANALYTICAL Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193	NEW JERSEY CHAIN OF CUSTODY Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288	<u>Service Centers</u> Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105	Page 1 of 2	Date Rec'd in Lab 5/19/21	ALPHA Job # 62126169												
Client Information Client: <i>Roux Associates</i> Address: <i>402 Heron Dr. Logan Twp, NJ 08085</i> Phone: <i>856-423-8800</i> Fax: Email: <i>Redding@rouxinc.com</i>	Project Information Project Name: <i>Bishop Tube</i> Project Location: <i>Mahwah, PA</i> Project # <i>0539.0003.000</i> (Use Project name as Project #) <input type="checkbox"/> Project Manager: <i>Sara Redding</i> ALPHAQuote #: Turn-Around Time Standard <input checked="" type="checkbox"/> Due Date: Rush (only if pre approved) <input type="checkbox"/> # of Days:	Deliverables <input type="checkbox"/> NJ Full / Reduced <input type="checkbox"/> EQUIS (1 File) <input type="checkbox"/> EQUIS (4 File) <input checked="" type="checkbox"/> Other <i>Roux EDD</i>	Billing Information <input type="checkbox"/> Same as Client Info PO #	Regulatory Requirement <input type="checkbox"/> SRS Residential/Non Residential <input type="checkbox"/> SRS Impact to Groundwater <input type="checkbox"/> NJ Ground Water Quality Standards <input type="checkbox"/> NJ IGW SPLP Leachate Criteria <input checked="" type="checkbox"/> Other <i>PADEP MSCs</i>	Site Information Is this site impacted by Petroleum? Yes <input type="checkbox"/> Petroleum Product:												
These samples have been previously analyzed by Alpha <input type="checkbox"/>		ANALYSIS <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align:center;">Hexavalent Chromium</td> <td style="text-align:center;">Chromium</td> <td style="text-align:center;">Fluoride</td> <td style="text-align:center;">SPLP Fluoride</td> <td style="text-align:center;">Nickel</td> <td style="text-align:center;">Cobalt</td> </tr> <tr> <td style="text-align:center;"><input checked="" type="checkbox"/></td> <td style="text-align:center;"><input checked="" type="checkbox"/></td> <td style="text-align:center;"><input checked="" type="checkbox"/></td> <td style="text-align:center;"><input checked="" type="checkbox"/></td> <td style="text-align:center;"><input type="checkbox"/></td> <td style="text-align:center;"><input type="checkbox"/></td> </tr> </table>			Hexavalent Chromium	Chromium	Fluoride	SPLP Fluoride	Nickel	Cobalt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample Filtration <input type="checkbox"/> Done <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please Specify below)
Hexavalent Chromium	Chromium	Fluoride	SPLP Fluoride	Nickel	Cobalt												
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
For EPH, selection is REQUIRED: <input type="checkbox"/> Category 1 <input type="checkbox"/> Category 2	For VOC, selection is REQUIRED: <input type="checkbox"/> 1,4-Dioxane <input type="checkbox"/> 8011	Other project specific requirements/comments: <i>H = hold analysis on SPLP Fluoride</i> Please specify Metals or TAL.			Sample Specific Comments												
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date Time		Sample Matrix	Sampler's Initials	Total Bottle											
<i>26169-01</i>	<i>WDL-03R (15-16)</i>	<i>5/18/21</i>	<i>0945</i>	<i>SO</i>	<i>Roux</i>	3											
<i>-02</i>	<i>ARPSA02R (7-8)</i>		<i>1010</i>			3											
<i>-03</i>	<i>LAG-05R (6-7)</i>		<i>1025</i>			3											
<i>-04</i>	<i>LAG-06R (6-7)</i>		<i>1040</i>			3											
<i>-05</i>	<i>LAG-07R (6-7)</i>		<i>1100</i>			3											
<i>-06</i>	<i>ARPSA03R (10-11)</i>		<i>1115</i>			3											
<i>-07</i>	<i>B-4R (5-6)</i>		<i>1135</i>			3											
<i>-08</i>	<i>MUJ-05R (5-6)</i>		<i>1200</i>			3											
<i>-09</i>	<i>VSP-05R (15/16)</i>		<i>1240</i>			2											
<i>-10</i>	<i>VSP-01R (11-12)</i>	↓	<i>1305</i>	↓	↓	3											
Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other	Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle	Westboro: Certification No: MA935 Mansfield: Certification No: MA015	Container Type Preservative		Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)												
Requisitioned By: <i>[Signature]</i>		Date/Time: <i>5/18/21 1520</i>		Received By: <i>[Signature]</i>		Date/Time: <i>5/18/21 1520</i>											
Requisitioned By: <i>[Signature]</i>		Date/Time: <i>5/18/21 1800</i>		Received By: <i>[Signature]</i>		Date/Time: <i>5/18/21 1800</i>											
Requisitioned By: <i>[Signature]</i>		Date/Time: <i>5/18/21 2000</i>		Received By: <i>[Signature]</i>		Date/Time: <i>5/18/21 2000</i>											
Requisitioned By: <i>[Signature]</i>		Date/Time: <i>5/19/21 0145</i>		Received By: <i>[Signature]</i>		Date/Time: <i>5/19/21 0145</i>											

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			Project Information			Deliverables			Billing Information								
Client Information			Regulatory Requirement			Site Information											
Client: Knix Associates Address: 402 Heron Dr. Logan Twp. NJ 08085 Phone: 856-423-8800 Fax: _____ Email: Sredding@knixinc.com			Project Name: BISHOP Tube Project Location: Malvern, PA Project # 0539.0003.5000 (Use Project name as Project #) <input type="checkbox"/>			Same as Client Info <input type="checkbox"/> PO # _____											
Project Manager: Sara Redding ALPHAQuote #: _____			SRS Residential/Non Residential <input type="checkbox"/> SRS Impact to Groundwater <input type="checkbox"/> NJ Ground Water Quality Standards <input type="checkbox"/> NJ IGW SPLP Leachate Criteria <input type="checkbox"/> Other <input checked="" type="checkbox"/> PADEP MSC's			Is this site impacted by Petroleum? Yes <input type="checkbox"/> Petroleum Product: _____											
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ALPHA Lab ID (Lab Use Only)			Sample ID			Collection Date Time			Sample Matrix			Sampler's Initials			Total Bottles 3 3 3 3 1 1 2		
26169-11			PTA-01R (5-6)			5/18/21 1435			SO			Rax					
-12			VSP-03R (3-4)			1440											
-13			WDL-CB02R (17-18)			1500											
-14			DUP-20210518-01			-											
-15			DUP-20210518-02			-											
-16			DUP-20210518-03			-											
-17			FB-20210518			1515			FB			↓					
Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other			Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle			Westboro: Certification No: MA935 Mansfield: Certification No: MA015			Container Type A A A A A A			Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)					
									Preservative A A A A A A								
Relinquished By: [Signature] Date/Time: 5/18/21 1520 5/18/21 1500 5/18/21 0000 4-1-19 0000			Received By: [Signature] Date/Time: 5/18/21 1520 5/18/21 1800 5/19/21 0000														