



Analytical Resources, Incorporated
Analytical Chemists and Consultants

April 14, 2016

Philip Nerenberg
Apex Laboratories
12232 SW Garden Place
Tigard, OR 97223

RE: Project: A6C1124
ARI Job No.: AYO5

Dear Mr. Nerenberg:

Please find enclosed the original Chain of Custody records (COCs), sample receipt documentation, and the final data for the samples from the project referenced above.

Sample receipt information and analytical details are addressed in the Case Narrative.

An electronic copy of this report and all supporting raw data will be kept on file at ARI. Should you have any questions or concerns, please feel free to call me at your convenience.

Respectfully,
ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink, appearing to read "Cheronne Oreiro".

Cheronne Oreiro
Project Manager
(206) 695-6214
cheronneo@arilabs.com
www.arilabs.com

cc: eFile: AYO5

Enclosures

1 of 17

SUBCONTRACT ORDER

Apex Laboratories

A6C1124

Ayos

SENDING LABORATORY:

Apex Laboratories
12232 S.W. Garden Place
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 718-0333
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Analytical Resources, INC
4611 S. 134th Place
Tukwila, WA 98168
Phone : (206) 695-6200
Fax: (206) 695-6201

Sample Name: 5237-160329-DC-EMB010 **Soil** **Sampled:** 03/29/16 10:15 **Soil Embankmebnt-010 (0-3.5)** (A6C1124-02)

Analysis Due Expires Comments

Sulfide, Total by PSEP (376.2) (SUB) 04/12/16 17:00 04/12/16 10:15

Containers Supplied:
(E)4 oz Glass Jar

Sample Name: 5237-160329-DC-EMB005 **Soil** **Sampled:** 03/29/16 10:35 **Soil Embankmebnt-010 (0-3.5)** (A6C1124-04)

Analysis Due Expires Comments

Sulfide, Total by PSEP (376.2) (SUB) 04/12/16 17:00 04/12/16 10:35

Containers Supplied:
(E)4 oz Glass Jar

Sample Name: 5237-160329-DC-EMB004 **Soil** **Sampled:** 03/29/16 11:15 **Soil Embankmebnt-010 (0-3.5)** (A6C1124-06)

Analysis Due Expires Comments

Sulfide, Total by PSEP (376.2) (SUB) 04/12/16 17:00 04/12/16 11:15

Containers Supplied:
(E)4 oz Glass Jar

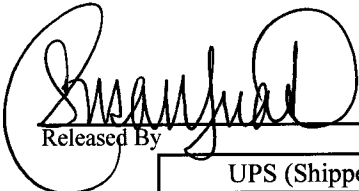
Sample Name: 5237-160329-DC-EMB001 **Soil** **Sampled:** 03/29/16 12:00 **Soil Embankmebnt-010 (0-3.5)** (A6C1124-08)

Analysis Due Expires Comments

Sulfide, Total by PSEP (376.2) (SUB) 04/12/16 17:00 04/12/16 12:00

Containers Supplied:
(E)4 oz Glass Jar


Standard TAT



Released By Date
UPS (Shipper)

3/31/16

UPS (Shipper)

Received By Date
 4-1-16 @ 12:00

Released By Date Received By Date

SUBCONTRACT ORDER

Apex Laboratories

A6C1124

Soil Embankmebnt-010 (0-3.5)
Sample Name: 5237-160329-DC-EMB013 **Soil** **Sampled: 03/29/16 13:15** **(A6C1124-10)**

Analysis	Due	Expires	Comments
Sulfide, Total by PSEP (376.2) (SUB)	04/12/16 17:00	04/12/16 13:15	
<i>Containers Supplied:</i> (E)4 oz Glass Jar			

Soil Embankmebnt-010 (0-3.5)
Sample Name: 5237-160329-DC-EMB014 **Soil** **Sampled: 03/29/16 13:40** **(A6C1124-12)**

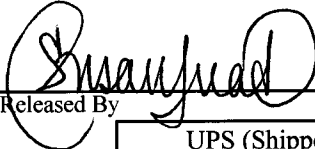
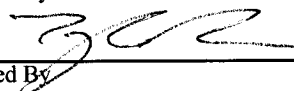
Analysis	Due	Expires	Comments
Sulfide, Total by PSEP (376.2) (SUB)	04/12/16 17:00	04/12/16 13:40	
<i>Containers Supplied:</i> (E)4 oz Glass Jar			

Soil Embankmebnt-010 (0-3.5)
Sample Name: 5237-160329-DC-EMB017 **Soil** **Sampled: 03/29/16 14:25** **(A6C1124-14)**

Analysis	Due	Expires	Comments
Sulfide, Total by PSEP (376.2) (SUB)	04/12/16 17:00	04/12/16 14:25	
<i>Containers Supplied:</i> (E)4 oz Glass Jar			

Soil Embankmebnt-010 (0-3.5)
Sample Name: 5237-160329-DC-EMB020 **Soil** **Sampled: 03/29/16 15:10** **(A6C1124-16)**

Analysis	Due	Expires	Comments
Sulfide, Total by PSEP (376.2) (SUB)	04/12/16 17:00	04/12/16 15:10	
<i>Containers Supplied:</i> (E)4 oz Glass Jar			

	3/31/16	UPS (Shipper)	
Released By	Date	Received By	Date
			4-1-16 1300
Released By	Date	Received By	Date



Cooler Receipt Form

ARI Client: Apex

Project Name: _____

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: AY05

Tracking No: 1Z X4720R139506 1527 NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)
Time: 1.4

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: D005276

Cooler Accepted by: TR Date: 4-1-16 Time: 1300

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI NA

Was Sample Split by ARI : YES Date/Time: _____ Equipment: _____ Split by: _____

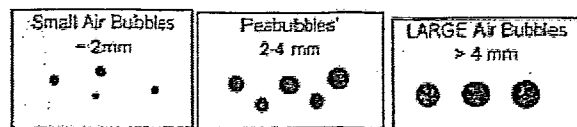
Samples Logged by: TR Date: 4-1-16 Time: 1430

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)



Case Narrative

Client: Apex Laboratories
Project: A6C1124
ARI Job No.: AYO5

Sample Receipt

Analytical Resources, Inc. (ARI) accepted eight soil samples on April 1, 2016 under ARI job AYO5. The cooler temperature measured by IR thermometer following ARI SOP was 1.4°C. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

The samples were analyzed for parameters as requested.

Sulfide by SM4500-S2

Sulfide sample volumes were preserved upon receipt.

There were no irregularities with this analysis.

Sample ID Cross Reference Report



ARI Job No: AY05
Client: Apex Labs
Project Event: A6C1124
Project Name: N/A

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. 5237-160329-DC-EMB010	AY05A	16-5352	Soil	03/29/16 10:15	04/01/16 13:00
2. 5237-160329-DC-EMB005	AY05B	16-5353	Soil	03/29/16 10:35	04/01/16 13:00
3. 5237-160329-DC-EMB004	AY05C	16-5354	Soil	03/29/16 11:15	04/01/16 13:00
4. 5237-160329-DC-EMB001	AY05D	16-5355	Soil	03/29/16 12:00	04/01/16 13:00
5. 5237-160329-DC-EMB013	AY05E	16-5356	Soil	03/29/16 13:15	04/01/16 13:00
6. 5237-160329-DC-EMB014	AY05F	16-5357	Soil	03/29/16 13:40	04/01/16 13:00
7. 5237-160329-DC-EMB017	AY05G	16-5358	Soil	03/29/16 14:25	04/01/16 13:00
8. 5237-160329-DC-EMB020	AY05H	16-5359	Soil	03/29/16 15:10	04/01/16 13:00

SAMPLE RESULTS--CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized: W
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: 03/29/16
Date Received: 04/01/16

Client ID: 5237-160329-DC-EMB010
ARI ID: 16-5352 AY05A

Analyte	Date	Method	Units	RL	Sample
Preserved Total Solids	04/05/16 040516#1	SM2540G	Percent	0.01	69.24
Sulfide	04/04/16 040416#1	SM4500-S2D	mg/kg	1.44	< 1.44 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized:
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: 03/29/16
Date Received: 04/01/16

Client ID: 5237-160329-DC-EMB005
ARI ID: 16-5353 AY05B

Analyte	Date	Method	Units	RL	Sample
Preserved Total Solids	04/05/16 040516#1	SM2540G	Percent	0.01	71.45
Sulfide	04/04/16 040416#1	SM4500-S2D	mg/kg	1.39	< 1.39 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized: w
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: 03/29/16
Date Received: 04/01/16

Client ID: 5237-160329-DC-EMB004
ARI ID: 16-5354 AY05C

Analyte	Date	Method	Units	RL	Sample
Preserved Total Solids	04/05/16 040516#1	SM2540G	Percent	0.01	72.53
Sulfide	04/04/16 040416#1	SM4500-S2D	mg/kg	1.38	< 1.38 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized: ^W
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: 03/29/16
Date Received: 04/01/16

Client ID: 5237-160329-DC-EMB001
ARI ID: 16-5355 AY05D

Analyte	Date	Method	Units	RL	Sample
Preserved Total Solids	04/05/16 040516#1	SM2540G	Percent	0.01	73.55
Sulfide	04/04/16 040416#1	SM4500-S2D	mg/kg	1.35	< 1.35 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized: ✓
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: 03/29/16
Date Received: 04/01/16

Client ID: 5237-160329-DC-EMB013
ARI ID: 16-5356 AY05E

Analyte	Date	Method	Units	RL	Sample
Preserved Total Solids	04/05/16 040516#1	SM2540G	Percent	0.01	73.31
Sulfide	04/04/16 040416#1	SM4500-S2D	mg/kg	1.34	< 1.34 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized:
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: 03/29/16
Date Received: 04/01/16

Client ID: 5237-160329-DC-EMB014
ARI ID: 16-5357 AY05F

Analyte	Date	Method	Units	RL	Sample
Preserved Total Solids	04/05/16 040516#1	SM2540G	Percent	0.01	74.64
Sulfide	04/04/16 040416#1	SM4500-S2D	mg/kg	1.34	< 1.34 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized: W
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: 03/29/16
Date Received: 04/01/16


Client ID: 5237-160329-DC-EMB017
ARI ID: 16-5358 AY05G

Analyte	Date	Method	Units	RL	Sample
Preserved Total Solids	04/05/16 040516#1	SM2540G	Percent	0.01	71.02
Sulfide	04/04/16 040416#1	SM4500-S2D	mg/kg	1.40	< 1.40 U

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized: 
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: 03/29/16
Date Received: 04/01/16

Client ID: 5237-160329-DC-EMB020
ARI ID: 16-5359 AY05H

Analyte	Date	Method	Units	RL	Sample
Preserved Total Solids	04/05/16 040516#1	SM2540G	Percent	0.01	69.30
Sulfide	04/04/16 040416#1	SM4500-S2D	mg/kg	1.43	< 1.43 U

RL Analytical reporting limit
U Undetected at reported detection limit

REPLICATE RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized: ✓
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: 03/29/16
Date Received: 04/01/16

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: AY05A Client ID: 5237-160329-DC-EMB010					
Preserved Total Solids	04/05/16	Percent	69.24	70.41	1.7%

LAB CONTROL RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized:
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Sulfide SM4500-S2D	PREP	04/04/16	mg/kg	7.19	7.19	100.0%

METHOD BLANK RESULTS-CONVENTIONALS
AY05-Apex Labs



Matrix: Soil
Data Release Authorized: *W*
Reported: 04/13/16

Project: NA
Event: A6C1124
Date Sampled: NA
Date Received: NA

Analyte	Date	Units	Blank	QC ID
Preserved Total Solids	04/05/16	Percent	< 0.01 U	ICB
Sulfide	04/04/16	mg/kg	< 0.05 U	PREP