

TECHNICAL MEMORANDUM

DATE May 26, 2022

TO Barbara Nielsen Cyprus Amax Minerals Company

СС

FROM Jamie Bailey

EMAIL jamie.bailey@wsp.com

LOWLAND SLAG INVESTIGATION

Dear Mrs. Nielsen,

Golder Associates USA Inc. (Golder) is pleased to provide this technical memorandum to Cyprus Amax Minerals Company (CMAC), for the completion of the Lowland Slag Investigation (LSI) at the Former Satralloy Site located in Mingo Junction, Ohio (the Site) between March 9 and 10, 2022.

INTRODUCTION

The purpose of the LSI was to address data gaps with respect to the vertical extent of buried slag located in the Lowland areas at the Site. This technical memorandum summarizes the work completed and data acquired during the LSI.

BACKGROUND

Soil & slag investigation work historically performed at the Site, including test pits and boreholes, showed varying vertical extent of slag located in the Lowland areas at the Site. Upon review of this historic information, it was noted that data gaps existed in a number of locations located across the Lowland areas. Therefore, CMAC decided to proceed with the work. Outputs form this effort will be shared with Golder design engineers so they may include the findings into their interim action design plan and specifications. The Lowland slag is scheduled for future relocation to the upland mine area as a part of the planned interim actions for the Site.

TEST PIT LOCATIONS

On March 9 and 10, 2022, Jamie Bailey, Sr. Consultant, Geologist with Golder supervised Remedial Construction Services (RECON) while they excavated 11 pre-selected test pits at the Site in the following areas:

Slag Area 1 – This southern-most Area is located generally adjacent to the north of County Road 74 in the southern portion of the Lowland area of the Site.

- Slag Area 2 Located in the southern portion of the Lowland area, southeast of the South Mill Building and adjacent to the northwest of County Road 74.
- <u>Slag Area 3</u> Located generally adjacent to the south of Slag Area 2 in the southern portion of the Lowland area.
- Slag Area 4 Located southwest of the South Mill Building, adjacent to the new haul road in the southern portion of the Lowland area of the Site.
- Slag Area 5 This Area is located northeast of Slag Area 1 also adjacent to the north of County Road 74 in the southern portion of the Lowland area of the Site.
- Slag Area 6 This Area was omitted during the planning stages of the LSI.
- Slag Area 7 This Area is located adjacent to the west, behind the South Mill Building.
- Slag Area 8 This Area is located adjacent to the northwest, behind the North Mill Building.
- Sludge Pit 1&2 This Area is located northeast of Slag Area 5, adjacent to the north of County Road 74 in the southern portion of the Lowland area of the Site.
- Sludge Pit 3&4 This Area is located adjacent to the northeast of Sludge Pit 1&2. This Area was not originally listed in the LSI; however, because of access issues as discussed below, one test pit was excavated in this area as a replacement for Slag Area 3.

Test pits were excavated utilizing a Caterpillar (CAT) 320 excavator until one of three following situations was met: native soil was encountered, a maximum depth of 20-feet below ground surface (bgs), or maximum reach of the excavator. Test pits were generally a bucket width wide or wide enough to maintain side wall stability. Materials excavated were placed around the transect in such a manner to prevent entrance by field personnel into the excavation while open. Test pits were backfilled immediately with excavated materials and compacted with the excavator bucket. A CAT 953K loader was utilized to regrade and stabilize the test pits. Above referenced Areas are depicted on Figure 1, Slag and Sludge Pit Area Test Pits 2022 – attached to this document.

TEST PIT FIELD OBSERVATIONS

The following is a summary of observations made during the LSI activities performed at the Site between March 9-10, 2022:

- Slag Area 1 Two test pits, TP-1-West and TP-1-East, identified slag at depths of (1-2') and (1-4.5'), respectively. Native soils were encountered at depths of 2' and 4.5', respectively. Test pits were conducted on the west and east sides of the access road to not disturb the access road and create unsafe travel for other ongoing work in the area. Trees located in Slag Area 1 required the initial desired test pit location to be moved a few feet.
- Slag Area 2 One test pit, TP-2, was completed in this area. TP-2 did not identify slag; however, a very hard layer from (0.5-3') bgs was encountered and is believed to be similar in composition to materials located in the former Ore Bins. Native soil was encountered at 3' bgs.



- <u>Slag Area 3</u> Located generally adjacent to the south of Slag Area 2 in the southern portion of the Lowland area. Test pits could not be completed in this area due to access limitations.
- Slag Area 4 Two test pits, TP-4-North and TP-4-South, were completed in this area near the Haul Road. Slag was not encountered in either of the test pits. Native soils were observed to the termination depth, 20', of both test pits.
- Slag Area 5 One test pit, TP-5, was completed in this area. Slag was observed from just below the topsoil ground surface to 4' bgs. Native soils were encountered at 4' bgs.
- <u>Slag Area 7</u> This Area is located behind the South Mill Building. Test pits were not conducted here because of ongoing demolition of the South Mill Building.
- Slag Area 8 Two test pits, TP-8-North and TP-8-South, were completed behind the North Mill Building terminating at depths of 17' bgs. A mixture of soil with slag fill, different from existing slag on site, was encountered from (3-17') bgs in TP-8-North and from (1-16') bgs in TP-8-South. Native soil was encountered at 16' bgs in TP-8-South. Native soil was not encountered in TP-8-North at the maximum reach of the excavator. Slag percent in fill varied between TP-8-North and TP-8-South with approximately 2% and 25% by volume, respectively.
- Former Sludge Pits 1&2 Two test pits, TP-SP-1 and TP-SP-2 were conducted in this area to depths of 15' bgs and 13' bgs, respectively. Dark gray, fine-grained, process residuals (previously interpreted as sludge) were identified from the ground surface and graded to light gray fine-grained, process residuals from 8' bgs to 15' bgs in TP-SP-1. Native soil was not encountered in TP-SP-1 at the maximum reach of the excavator. Dark gray, fine-grained, process residuals were identified from the ground surface to 11.5' bgs when native soil was encountered in TP-SP-2.
- Former Sludge Pit 3&4 One test pit, TP-SP-4 was conducted in this area to a depth of 5' bgs. Dark gray, fine-grained, process residuals were identified from the ground surface to 4' bgs. Native soil was encountered at 4' bgs.

Test pit logs are included as Attachment A to this document.

ENVIRONMENTAL SAMPLING

The slag observed in TP-8-North and TP-8-South visually looked different than the existing slag located at the Site. Compared to Site slag, the material identified at TP-8-South appeared much darker and more conglomerate in composition with significant iron staining. One sample of the slag from TP-8-South was collected and shipped on ice, under chain of custody (COC) to Eurofins Canton, in Barberton, Ohio. The slag sample from TP-8-South was analyzed for COPC Metals by USEPA Method 6010D. Particle reduction was completed on the sample prior to sample analysis. Sample analysis results of the slag sampled at TP-8-South are summarized in Table 1.



	TP-8-South
Parameter	(3-16')
	3/10/2022
	Mg/kg
Aluminum	33000 F2
Antimony	< 120 F1
Arsenic	< 99 F1
Cadmium	< 25
Chromium	27
Cobalt	37
Copper	< 25
Iron	440000 F2
Lead	< 120
Manganese	7400
Nickel	27 J
Selenium	< 120
Silver	< 25 F1
Thallium	< 120
Titanium	870
Vanadium	61 J
Zinc	< 120

Table 1 – TP-8-South Analytical Results

Analytical results of the slag sample from TP-8-South are not consistent with the analytical results of existing slag on Site. Metal concentrations of Chromium, Iron, Manganese, and Titanium detected in the TP-8-South sample are significantly different from average concentrations detected in Site slag samples collected during the RI, confirming this slag material was not generated by the same processes used at the Site. TP-8-South total chromium is 27 times lower than the average identified in Site slag (see RI Table 4-1.1C, Slag Analytical Results). TP-8-South Iron is 34 times higher than the average Site slag concentration, and 7 times higher than the Site slag maximum detected in slag. Manganese and Titanium concentrations in TP-8-South are 13-17 times higher than the respective average Site slag concentrations. However, the data do not indicate any problem with consolidating the material with other Site slag.

The analytical report is included as Attachment B to this document.



CLOSING

We appreciate the opportunity to provide continuing support to the CAMC team. If you have any questions or are in need of additional information, please contact John Wise.

Sincerely,

Golder Associates Inc.

Gamie EDailey

Jamie E. Bailey Sr. Consultant, Geologist

John D. Wise

John Wise Senior Consultant

JEB/JW

- Distribution: [Click here and type distribution list]
- Attachments Figure 1 Slag and Sludge Pit Area Test Pits 2022 Attachment A – Test Pit Logs Attachment B – Analytical Report



FIGURE





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						sp	GOI	LD	ER	DIMENSIONS: 5.0 ft length x 3.0 ft width LOGGED: Jamie Bailey CHECKED: Bob Ireson	REV: DATE: Mar 09, 2022 DATE: Apr 19, 2022

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EPTH	NUIPN	METH	DESCRIPTION	scs	'RATA LOT	DEPTH	MBER	ΥPE	ERVA	
	Ш	-			P ST	(ft)	NN		AL	
			TOPSOIL. FILL - (SW) gravelly SAND, fine to coarse, well graded, fine to coarse			0.0 718.5	_			
1			rounded to angular gravel, trace non plastic fines; dark gray with light gray, strong cementation; Ore/byproduct; hard.	≥		0.5				
2				S						
3			(CH) CLAY, high plasticity, some fine to medium sand, trace fine			716.0 3.0				
4			rounded gravel; brownish orange, changes to gray @12'; cohesive, w ~ PL, stiff.							
5										
6										
- 7										
9	20	tion								
10	CAT 3	Excava								
11				Т						
12				0						
13										
- 14										
15										
16										
1/										
18										
E 19										
- 20			End of hole at 20.00 ft.			699.0				
										REV:
					sn	GOI	ים	= D	DIMENSIONS: 5.0 ft length v 3.0 ft width	
				••	' '				LOGGED: Jamie Bailey	DATE: Mar 10, 2022
Golder - 3	3 Imperia	al US / (Golder US Auto (common in US) / 2022-04-19						CHECKED: Bob Ireson	DATE: Apr 19, 2022

			RECORD OF	TI	EST	PIT:	T	P-4	-North	Sheet 1 of 1
CLI	ENT	Г:	Cyprus Amax Minerals Company DATE:	M	 larch 09,	2022			GROUND ELEV: 798.9 ft	
PR	OJE	CT	Former Satralloy Site						COORDINATES: N: 238822.0 ft E: 2	2477851.6 ft
PR	JJE	СТ	NO: 1239330906 CONTRACTOR	R: R	ECON				COORD SYS: SP OH North FIPS	3401 Ft
LO	CAT	ION	I: Jefferson County OH						HORZ DATUM: NAD83 VERT	DATUM: NAVD88
-	1						C 4 4			
(£	Т			1			SAN		IONS	
TH	PME	HH		ŝ	ATA T	ELEV.	Ш	ш	TI ON THOM	
DE	EQU	B	DESCRIPTION	nsc	PLO	DEPTH	NUME	μĘ	ADD	
	_					(π)			` ö	
Ē			TOPSOIL.		<u>مالد مالد</u> د مالد م	0.0				
- 1			FILL - (GW) sandy GRAVEL coarse well graded rounded medium		sile sile	797.9				
Ē			to coarse sand, trace non plastic fines; grayish brown, BALLAST;			1.0				
- 2			cohesive, moist.	В						
	20	tion				705.0				
- 3	CAT 3	xcava	(CL) sandy SILTY CLAY, medium plasticity, fine to medium sand;			3.0	-			
		ш	brown; cohesive, w ~ PL, firm.							
4				_						
Ē,				0						
Ē										
Ē	L		End of hole of 6 00 ft			792.9				
Ē			End of hole at 6.00 ft.							
- 7										
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- 8										
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E 10										
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14										
E 1										
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	-									REV:
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				11.	SD.	GOL	- D	ER	DIMENSIONS: 5.0 ft length x 3.0 ft width	
					- T				LOGGED: Jamie Bailey	DATE: Mar 09, 2022
Golder -	3 Imperia	al US / (Solder US Auto (common in US) / 2022-04-19							שתוב. קיו וש, 2022

CL PR PR	IEN ⁻ OJE OJE	T: ECT: ECT	Cyprus Amax Minerals Company START DATE Former Satralloy Site NO: 1239330906 Cyprus Amax Minerals Company END DATE: CONTRACTO	• TI ∞ ™	EST 1arch 09 1arch 10 ECON	9, 2022 0, 2022	Т	P-4	-South GROUND ELEV: 799.9 ft COORDINATES: N: 238752.3 ft E: 2 COORD SYS: SP OH North FIPS	Sheet 1 of 1 2477796.9 ft 3401 Ft
LO	CAT	101	N: Jefferson County OH						HORZ DATUM: NAD83 VERT	DATUM: NAVD88
	F		MATERIAL PROFILE		1		SAM	IPLES	SNS SNS	
DEPTH (ft	EQUIPMEN	METHOD	DESCRIPTION	NSCS	STRATA PLOT	ELEV. DEPTH (ft)	NUMBER	ТҮРЕ	ADDITION	
ամամամամամամամամամամամամամամամամամամամ		Excevation	TOPSOIL. (CL) sandy SILTY CLAY, medium plasticity, medium to coarse sand; dark brown; 5% by volume, subangular, Sandstone cobbles/boulders cohesive, moist.	ਹ ਹ		 0.0 798.9 1.0 				
1	7		End of hole at 17.00 ft			782.9				
1	з									
1	ə									
- 2										
										BEV:
Galder	- 3 Imperi		Galder 15 Alek Konsenson in 105 / 972-0.1 42	W	۶p	GOI	LD	ER	DIMENSIONS: 6.0 ft length x 3.0 ft width LOGGED: Jamie Bailey CHECKED: Bob Ireson	DATE: Mar 09, 2022 DATE: Apr 19, 2022

			RECORD	OF	= TE	EST F		: TI	- 5	Sheet 1 of 1
	ENT	: СТ·	Cyprus Amax Minerals Company DATE: Former Satrallov Site	М	arch 09	9, 2022			GROUND ELEV: 711.0 ft	2477576 2 ft
PR	JE	CT N	IO: 1239330906 CONTRACTOR	R: RE	ECON				COORD SYS: SP OH North FIPS	3401 Ft
LOC	ATI	ON:	Jefferson County OH						HORZ DATUM: NAD83 VERT	DATUM: NAVD88
			MATERIAL PROFILE				SAN	IPLES	ω	
(t) T	AENT	B				EL EV			, DNAL	
EPT	JUIPN	ИЕТН	DESCRIPTION	SCS	'RATA	DEPTH	IMBER	ΥPE	SERV/	
	Ш	-			L S d	(ft)	N		OBS	
-		-	TOPSOIL. SLAG-FILL - (GW) GRAVEL and SAND, fine to coarse, well graded,	-	sile sile	0.0 710.7	-			
F 1			rounded to angular, and fine to coarse SAND, trace non plastic fines; light gray with banded white; very strong Slag, 40% by volume,			0.2				
-			subangular to angular, Slag cobbles/boulders; non-cohesive, moist, dense.							
	F 320	wation		б						
- 3	CA.	Exce								
Ē						707.0				
4			(CL) SILTY CLAY, medium plasticity, trace medium to coarse sand; w \sim PL, stiff.			4.0				
5			End of hole at 5.00 ft	0		706.0				
6										
- 7										
- 8										
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E 10										
- 11										
- 12										
E 13										
E 14										
E 15										
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Golder -	Imperia	I US / Gold	der US Auto (common in US) / 2022-04-19						CHECKED: Bob Ireson	DATE: Apr 19, 2022

CLIENT: PROJECT PROJECT LOCATION	Γ: Γ ΝΟ: Ν:	RECORD OFCyprus Amax Minerals CompanyDATE:Former Satralloy Site1239330906CONTRACTORJefferson County OHJefferson County OH	TI M	EST larch 10, ECON	PIT: 2022	TI	⊃-8.	GROUND ELEV: 747.0 ft COORDINATES: N: 240254.8 ft E: 2478582.1 ft COORD SYS: SP OH North FIPS 3401 Ft HORZ DATUM: NAD83 VERT DATUM: NAVD88
		MATERIAL PROFILE				SAM	PLES	.S
DEPTH (ft) EQUIPMENT METHOD		DESCRIPTION	NSCS	STRATA PLOT	ELEV. DEPTH (ft)	NUMBER	ТҮРЕ	ADDITIONAL
1 1 2 3	CON MIX CLA coal volu FILL trac Slag	NCRETE; Crushed concrete from silo demo. TURE of SOIL and COBBLES/BOULDERS - FILL - (GC) sandy YEY GRAVEL, coarse, subangular to angular, non plastic fines, res sand; gray, no staining, no odor; strong sandstone, 5% by me, subrounded to angular, Slag cobbles/boulders; wet, loose. with SLAG - (CL) sandy SILTY CLAY, low plasticity, coarse sand, e coarse rounded to angular gravel; dark gray to light bluish gray; g, 2% by volume, subangular to angular, Slag cobbles/boulders;	9		0.0 746.0 1.0 744.0 3.0	-		
1	coh	esive, moist, stiff.						
Truntan particular de la 3. CAT 3. Exceval			ъ					
13 14 15								
16								
17	-	End of hole at 17.00 ft.			730.0			
18								

NS GOLDER

Golder - 3 Imperial US / Golder US Auto (common in US) / 2022-04-19

DIMENSIONS: 5.0 ft length x 3.0 ft width LOGGED: Jamie Bailey CHECKED: Bob Ireson

DATE: Mar 10, 2022 DATE: Apr 19, 2022

			RECORD OF	TI	EST	PIT:	T	- 8-	-South Sheet 1
		: ст.	Cyprus Amax Minerals Company DATE:	N	Aarch 10	, 2022			GROUND ELEV: 742.9 ft
PRC) JE	CT.	NO: 1239330906 CONTRACTO	R: R	ECON				COORD SYS: SP OH North FIPS 3401 Ft
LOC	AT	ION	N: Jefferson County OH						HORZ DATUM: NAD83 VERT DATUM: NAVD88
	F		MATERIAL PROFILE				SAM	PLES	, og
ΓH (ft)	MENT	HOD		0	≤_	ELEV.	с.		ATTONAL
DEP'	EQUIF	MET	DESCRIPTION	USC	STRAI	DEPTH	NUMBE	ТҮРЕ	A D SERVI
-	_		CONCRETE: Concrete EILL from demo of silos	+	1.0.5.5	(π)	_		Ö
1						741.9			
- - - - 2			SAND, some non plastic fines; dark gray and brown; Slag, 25% by			1.0			
3			volume, subangular to angular, Slag cobbles/boulders; non-cohesive dry to moist, hard.						
4									
ш.									
6									
- 7 									
8	VT 320	avation							
- 9 	Ċ	Exc					1-17	GS	
10 10									
11									
12									
13									
14									
15									
16			(CL) SILTY CLAY, medium plasticity, some fine to medium sand;	+-		726.9	-		
17			brownish gray; cohesive, w ~ PL, firm. End of hole at 17.00 ft.	ō		725.9			
18									
19									
20									
									REV:
				W	SD.	GOI	D	ER	DIMENSIONS: 5.0 ft length x 3.0 ft width
					1.1				LOGGED: Jamie Bailey DATE: Mar 10, 2022

Golder - 3 Imperial US / Golder US Auto (common in US) / 2022-04-19

DATE: Apr 19, 2022

CHECKED: Bob Ireson

			RECORD O	F 1	TES	TPI	T: '	TP-	SP-1	Sheet 1 of 1
CLIE PRC PRC LOC	ENT DJE DJE ATI	: CT: CT ON	Cyprus Amax Minerals Company DATE: Former Satralloy Site NO: 1239330906 CONTRACTOR : Jefferson County OH	M R: RI	arch 09	9, 2022			GROUND ELEV: 730.3 ft COORDINATES: N: 238470.7 ft E: 2477 COORD SYS: SP OH North FIPS 340 HORZ DATUM: NAD83 VERT DAT	884.5 ft 1 Ft FUM: NAVD88
	_		MATERIAL PROFILE				SAM	PLES	ι Ω I Z	
DEPTH (ft)	EQUIPMEN	METHOD	DESCRIPTION	NSCS	STRATA PLOT	ELEV. DEPTH (ft)	NUMBER	TYPE	ADDITIONAL	
1 2 3 3 4 5 6 6 7 7 8 9 10 11 12 13 13 14 15 15 15 15 15 15 15 15 15 15 15 15 15	CAT 320	Excavation	SLUDGE FILL - (ML) SILT, non plastic, trace coarse gravel; dark gray, friable, no staining, no odor; non-cohesive, moist, compact, (Process Residuals).	ML		722.3 8.0 715.3				
			Maximum reach of excavator							
Golder - 3	Imperial	I US / G	adér US Auto (common in US) / 2022-04-28	///	sp	GOI	DI	ER	DIMENSIONS: 10.0 ft length x 3.0 ft width LOGGED: Jamie Bailey D CHECKED: Bob Ireson D	REV: ATE: Mar 09, 2022 ATE: Apr 19, 2022

CLIE PRC PRC	ENT DJE DJE	: CT: CT	Cyprus Amax Minerals Company DATE: Former Satralloy Site NO: 1239330906 CONTRACTOF	F 7 Mi R: RE	TES arch 14 ECON	T PI , 2022	T: -	TP-S	SP-2 GROUND ELEV: 721.1 ft COORDINATES: N: 238536.6 ft E: 2 COORD SYS: SP OH North FIPS HORZ DATUM: NAD83 VERT	Sheet 1 of 1 2478010.7 ft 3401 Ft DATUM: NAVD88
		r –								
(ft)	ENT	B	MATERIAL PROFILE				SAM	PLES	INAL	
DEPTH	EQUIPM	METH	DESCRIPTION	NSCS	STRATA PLOT	ELEV. DEPTH (ft)	NUMBER	ТҮРЕ	ADDITIC	
1 2 3 4 4 5 6 7 8 9 10 11 11 12	CAT 320	Excavation	SLUDGE FILL - (ML) SILT, non plastic, trace coarse gravel; dark gray, friable, no staining, no odor; non-cohesive, moist, compact, (Process Residuals).	CH ML		0.0 709.6 11.5				
13			End of hole at 13.00 ft.			708.1				
14										
Golder - 3	Imperia	<u>ส บร / G</u>		// •	s p	GOL	. D I	ĒR	DIMENSIONS: 10.0 ft length x 3.0 ft width LOGGED: Jamie Bailey CHECKED: Bob Ireson	REV: DATE: Mar 14, 2022 DATE: Apr 19, 2022

			RECORD	OF ⁻	TES		T: ⁻	TP-S	SP-4	Sheet 1 of 1
CLIE	ENT	:	Cyprus Amax Minerals Company DATE:	M	larch 0	9, 2022			GROUND ELEV: 712.3 ft	
PRC	JE	CT:	Former Satralloy Site						COORDINATES: N: 238624.1 ft E: 24	78270.1 ft
PRC	JE	СТ	NO: 1239330906 CONTRAC	TOR: R	ECON				COORD SYS: SP OH North FIPS 3	401 Ft
LOC	AT	ION	: Jefferson County OH						HORZ DATUM: NAD83 VERT [DATUM: NAVD88
		1					SVW		<i>"</i>	
(£f)	ENT	Q					5Aivi		LONS	
PTH	IIPME	THO	DECODIDE ON	S	ATA	ELEV.	ËR	щ		
DE	EQU	ME	DESCRIPTION	nSi	STR	DEPTH (ff)	MUM	Ϊ	BSE	
			SUIDGE FILL - (ML) SILT non plastic trace fine to coarse gravel			0.0			0	
-			dark gray, friable; non-cohesive, moist, compact, (Process	,		0.0				
-			i colutais).							
-										
- 1										
- '										
-										
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-										
- 2				R						
-										
-	. 320	vation								
-	CAT	Exca								
-										
- 3										
-										
-										
4						708.3				
- 1			(CH) CLAY, high plasticity, trace fine to medium sand; orangish brown; cohesive, w ~ PL, stiff.			4.0				
-										
-				공						
-										
-						707 3				
- 5			End of hole at 5.00 ft.			707.5				
-										RFV.
				- 11	SD.	GOI	DI	ER	DIMENSIONS: 10.0 ft length x 3.0 ft width	
					1				LOGGED: Jamie Bailey	DATE: Mar 09, 2022
Golder - 3	Imperia	il US / G	older US Auto (common in US) / 2022-04-28						CHECKED: Bob Ireson	DATE: Apr 19, 2022

ATTACHMENT B ANALYTICAL REPORT



🛟 eurofins

Environment Testing America

ANALYTICAL REPORT

Eurofins Canton 180 S. Van Buren Avenue Barberton, OH 44203 Tel: (330)497-9396

Laboratory Job ID: 240-163712-1

Client Project/Site: Former Satralloy Lowland Slag Investigation

For:

.....Links

Review your project results through

Total Access

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The

www.eurofinsus.com/Env

Visit us at:

Expert

Golder Associates Inc. 1335 Dublin Road Suite 126-D Columbus, Ohio 43215

Attn: Mr. Bob Ireson

les Brooks

Authorized for release by: 3/29/2022 2:13:14 PM

Kris Brooks, Project Manager II (330)966-9790 Kris.Brooks@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

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8

Definitions/Glossary

Client: Golder Associates Inc. Project/Site: Former Satralloy Lowland Slag Investigation

Job ID: 240-163712-1

Qualifiers

Metals	
Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Qualifiers		3
Metals Qualifier	Qualifier Description	4
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not	
	applicable.	5
F1	MS and/or MSD recovery exceeds control limits.	
F2	MS/MSD RPD exceeds control limits	
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.	
Glossary		
Abbreviation	These commonly used abbreviations may or may not be present in this report.	
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis	8
%R	Percent Recovery	
CFL	Contains Free Liquid	9
CFU	Colony Forming Unit	
CNF	Contains No Free Liquid	
DER	Duplicate Error Ratio (normalized absolute difference)	
Dil Fac	Dilution Factor	
DL	Detection Limit (DoD/DOE)	
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample	
DLC	Decision Level Concentration (Radiochemistry)	
EDL	Estimated Detection Limit (Dioxin)	12
LOD	Limit of Detection (DoD/DOE)	
LOQ	Limit of Quantitation (DoD/DOE)	
MCL	EPA recommended "Maximum Contaminant Level"	
MDA	Minimum Detectable Activity (Radiochemistry)	
MDC	Minimum Detectable Concentration (Radiochemistry)	
MDL	Method Detection Limit	
ML	Minimum Level (Dioxin)	
MPN	Most Probable Number	
MQL	Method Quantitation Limit	
NC	Not Calculated	
ND	Not Detected at the reporting limit (or MDL or EDL if shown)	
NEG	Negative / Absent	
POS	Positive / Present	
PQL	Practical Quantitation Limit	
PRES	Presumptive	
QC	Quality Control	
RER	Relative Error Ratio (Radiochemistry)	
RL	Reporting Limit or Requested Limit (Radiochemistry)	
RPD	Relative Percent Difference, a measure of the relative difference between two points	
TEF	Toxicity Equivalent Factor (Dioxin)	
TEQ	Toxicity Equivalent Quotient (Dioxin)	
TNTC	Too Numerous To Count	

Laboratory: Eurofins Canton

Narrative

Job Narrative 240-163712-1

Comments

The SW846 Method 6010D Metals (ICP) and ASTM Method D2216-80 Percent Solids analyses were performed at the Eurofins Sacramento laboratory.

Receipt

The sample was received on 3/15/2022 5:30 PM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.2° C.

Metals

Methods 200.7 Rev 4.4, 6010C, 6010D: The following sample was diluted due to the presence of an interferent. TP-8-SOUTH (3-16") (240-163712-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc. Project/Site: Former Satralloy Lowland Slag Investigation

3 4 5

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	TAL CF
Moisture	Percent Moisture	EPA	TAL CF
Part Size Red	Particle Size Reduction Preparation	None	TAL CAN
3050B	Preparation, Metals	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396 TAL CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Eurofins Canton

Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-163712-1	TP-8-SOUTH (3-16")	Solid	03/10/22 10:30	03/15/22 17:30

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-163712-1	TP-8-SOUTH (3-16")	Solid	03/10/22 10:30	03/15/22 17:30

Job ID: 240-163712-1

Detection Summary

Client: Golder Associates Inc. Project/Site: Former Satralloy Lowland Slag Investigation

Client Sample ID: TP-8-SOUTH (3-16")

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	33000	F2	620	180	mg/Kg	25	₽	6010D	Total/NA
Cobalt	37		25	7.4	mg/Kg	25	₽	6010D	Total/NA
Chromium	27		25	8.1	mg/Kg	25	₽	6010D	Total/NA
Iron	440000	F2	1200	320	mg/Kg	25	₽	6010D	Total/NA
Manganese	7400		62	15	mg/Kg	25	₽	6010D	Total/NA
Nickel	27	J	62	21	mg/Kg	25	₽	6010D	Total/NA
Titanium	870		62	18	mg/Kg	25	₽	6010D	Total/NA
Vanadium	61	J	62	20	mg/Kg	25	₽	6010D	Total/NA
PSR sample generated	Done				NONE	1		Part Size Red	Total/NA

Eurofins Canton

Job ID: 240-163712-1

Lab Sample ID: 240-163712-1

Client Sample Results

Client: Golder Associates Inc. Project/Site: Former Satralloy Lowland Slag Investigation

Client Sample ID: TP-8-SOUTH (3-16") Date Collected: 03/10/22 10:30 Date Received: 03/15/22 17:30

Method: 6010D - Metals (ICP)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	<11	F1	25	11	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
Aluminum	33000	F2	620	180	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
Arsenic	<54	F1	99	54	mg/Kg	₽	03/19/22 09:30	03/23/22 11:29	25
Cadmium	<9.6		25	9.6	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
Cobalt	37		25	7.4	mg/Kg	₽	03/19/22 09:30	03/24/22 12:57	25
Chromium	27		25	8.1	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
Copper	<15		25	15	mg/Kg	₽	03/19/22 09:30	03/23/22 11:29	25
Iron	440000	F2	1200	320	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
Manganese	7400		62	15	mg/Kg	₽	03/19/22 09:30	03/23/22 11:29	25
Nickel	27	J	62	21	mg/Kg	₽	03/19/22 09:30	03/23/22 11:29	25
Lead	<47		120	47	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
Antimony	<47	F1	120	47	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
Selenium	<72		120	72	mg/Kg	₽	03/19/22 09:30	03/23/22 11:29	25
Titanium	870		62	18	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
Thallium	<59		120	59	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
Vanadium	61	J	62	20	mg/Kg	₽	03/19/22 09:30	03/23/22 11:29	25
Zinc	<52		120	52	mg/Kg	¢	03/19/22 09:30	03/23/22 11:29	25
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	8.7		0.1	0.1	%			03/21/22 13:11	1
Percent Solids	91.3		0.1	0.1	%			03/21/22 13:11	1
Method: Part Size Red - Particle	e Size Red	uction Prep	aration						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	Done				NONE			03/17/22 13:15	1

Percent Solids: 91.3

Matrix: Solid

Lab Sample ID: 240-163712-1

13

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QC Sample Results

Client: Golder Associates Inc. Project/Site: Former Satralloy Lowland Slag Investigation

Chromium

Copper

Method: 6010D - Metals	s (ICP)										
Lab Sample ID: MB 310-34 Matrix: Solid Analysis Batch: 347753	7064/1-A						Clie	ent Sam	ple ID: M Prep Ty Prep Ba	ethod pe: To atch: 3	Blank tal/NA 47064
		MB MB									
Analyte	Re	esult Qualifier			MDL Unit		<u>D</u> P	repared	Analy	zed	Dil Fac
Cobalt	<	0.27		0.89	0.27 mg/K	g	03/1	9/22 09:30	0 03/24/22	12:49	1
Lab Sample ID: LCS 310-3 Matrix: Solid Analysis Batch: 347753	47064/2-A		Spike	LCS	LCS	Clie	ent Sai	mple ID:	Lab Cou Prep Ty Prep Ba %Rec.	ntrol S pe: To atch: 3	ample tal/NA 47064
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Cobalt			96.7	91.6		mg/Kg		95	80 - 120		
Lab Sample ID: 240-16371 Matrix: Solid Analysis Batch: 347503	2-1 MS Sample	Sample	Spike	MS	MS	Clie	ent Sa	mple ID:	: TP-8-SC Prep Ty Prep Ba %Rec.	OUTH (pe: To atch: 3	3-16") tal/NA 47064
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Silver	<11	F1	98.0	110		mg/Kg	₽	112	75 - 125		
Aluminum	33000	F2	196	26100	4	mg/Kg	¢	-3624	75 - 125		
Arsenic	<54	F1	196	250	F1	mg/Kg	☆	128	75 - 125		
Cadmium	<9.6		98.0	102		mg/Kg	¢	104	75 - 125		
Chromium	27		98.0	130		mg/Kg	÷.	105	/5 - 125		
Copper	<15		196	222		mg/Kg	÷	113	75 - 125		
Iron	440000	F2	196	467000	4	mg/Kg	¢	13480	75 - 125		
Manganese	7400		98.0	6940	4	mg/Kg	÷.	-454	75 - 125		
Nickel	27	J	196	230		mg/Kg	÷	103	/5 - 125		
Lead	<47		196	189	- 4	mg/Kg	₩	96	75 - 125		
Antimony	<47	F1	196	<47	F1	mg/Kg		0	75 - 125		
Selenium	<72		392	387		mg/Kg		99	75-125		
	870		196	1030	4	mg/Kg	₩	81	75 - 125		
	<59		196	220		mg/Kg	-Q-	112	75-125		
	01 <52	J	98.0	108		mg/Kg	÷÷÷÷	109	75 125		
	<52		190	197		mg/ĸg	4 7	101	79-129		
Lab Sample ID: 240-163712 Matrix: Solid	2-1 MS					Clie	ent Sa	mple ID:	TP-8-SC Prep Ty	OUTH (pe: To	3-16") tal/NA
Analysis Daltil. 34//33	Sample	Sample	Sniko	МС	MS				%Rec	aturi. 3	+1004
Analyto	Rosult	Qualifier		Rosult	Qualifier	Unit	п	%Rec	l imite		
Cobalt	37		98.0	145	Quanner	ma/Ka	— <u>–</u>	110	75 - 125		
	01		00.0	140		ing/itg	4	110	10-120		
Lab Sample ID: 240-16371 Matrix: Solid Analysis Batch: 347503	2-1 MSD	0 and 1	0		MOD	Clie	ent Sai	mple ID:	TP-8-SC Prep Ty Prep Ba	OUTH (pe: To atch: 3	3-16") tal/NA 47064
Ameliate	Sample	Sample	Spike	MSD	MSD	11 14	-	0/ P -	%Rec.		RPD
Analyte Silver	Result		Added	Kesult			<u> </u>	%Kec			
Silver	22000		96.2	128	F 1 4 E 2	mg/Kg	ф. 	133	75 - 125 75 - 125	15	20
	33UUU ~= 4	r'Z E1	192	35/00	4 FZ	mg/Kg	ф Ф	1000	75 125	31	20
Aiseille	<04 ~0.6		192	∠00 110		mg/Kg		130	75 120	0 10	20 20
Gauniuni	~9.0		90.Z	112		mg/r.g	놔	117	10-120	10	∠0

Eurofins Canton

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20

20

Job ID: 240-163712-1

9

133

240

mg/Kg

mg/Kg

mg/Kg

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111

125

75 - 125

75 - 125

96.2

192

27

<15

QC Sample Results

Client: Golder Associates Inc. Project/Site: Former Satralloy Lowland Slag Investigation

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: 240-163712-1 MSD								Client Sample ID: TP-8-SOUTH (3-16")									
Matrix: Solid					Prep Ty	pe: Tot	al/NÁ										
Analysis Batch: 347503									Prep Ba	atch: 34	47064						
-	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD						
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit						
Iron	440000	F2	192	325000	4 F2	mg/Kg		-6026	75 - 125	36	20						
Manganese	7400		96.2	6440	4	mg/Kg		-979	75_125	7	20						
Nickel	27	J	192	243		mg/Kg	¢	112	75 - 125	5	20						
Lead	<47		192	226		mg/Kg	¢	117	75 - 125	18	20						
Antimony	<47	F1	192	<46	F1	mg/Kg	¢	0	75 - 125	NC	20						
Selenium	<72		385	457		mg/Kg	¢	119	75 - 125	17	20						
Titanium	870		192	1180	4	mg/Kg	☆	161	75 - 125	14	20						
Thallium	<59		192	240		mg/Kg	¢	125	75 - 125	9	20						
Vanadium	61	J	96.2	160		mg/Kg	¢	103	75 - 125	5	20						
Zinc	<52		192	221		mg/Kg	☆	115	75 - 125	11	20						
Lab Sample ID: 240-163712-1 MSD							nt Sa	mple ID	: TP-8-SC	OUTH (3	3-16")						

Matrix: Solid Prep Type: Total/NA Analysis Batch: 347753 Prep Batch: 347064 MSD MSD RPD Sample Sample Spike %Rec. Analyte **Result Qualifier** Added Result Qualifier Unit Limits RPD Limit D %Rec Cobalt 37 96.2 135 mg/Kg ☆ 102 75 - 125 7 20

Method: Moisture - Percent Moisture

Lab Sample ID: 240-16 Matrix: Solid Analysis Batch: 34722	3712-1 DU 1				Clie	ent Sample	BID: TP-8-SOUTH (Prep Type: Tot	3-16") tal/NA
	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Percent Moisture	8.7		7.7		%		13	39
Percent Solids	91.3		92.3		%		1	10

Job ID: 240-163712-1

QC Association Summary

Client: Golder Associates Inc. Project/Site: Former Satralloy Lowland Slag Investigation

Metals

Prep Batch: 347064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch	
240-163712-1	TP-8-SOUTH (3-16")	Total/NA	Solid	3050B		
MB 310-347064/1-A	Method Blank	Total/NA	Solid	3050B		Ð
LCS 310-347064/2-A	Lab Control Sample	Total/NA	Solid	3050B		
240-163712-1 MS	TP-8-SOUTH (3-16")	Total/NA	Solid	3050B		
240-163712-1 MSD	TP-8-SOUTH (3-16")	Total/NA	Solid	3050B		
Analysis Batch: 347	503					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch	8
240-163712-1	TP-8-SOUTH (3-16")	Total/NA	Solid	6010D	347064	
240-163712-1 MS	TP-8-SOUTH (3-16")	Total/NA	Solid	6010D	347064	9
240-163712-1 MSD	TP-8-SOUTH (3-16")	Total/NA	Solid	6010D	347064	
Analysis Batch: 347	753				1	0
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch	
240-163712-1	TP-8-SOUTH (3-16")	Total/NA	Solid	6010D	347064	
MB 310-347064/1-A	Method Blank	Total/NA	Solid	6010D	347064	
LCS 310-347064/2-A	Lab Control Sample	Total/NA	Solid	6010D	347064	
240-163712-1 MS	TP-8-SOUTH (3-16")	Total/NA	Solid	6010D	347064	
240-163712-1 MSD	TP-8-SOUTH (3-16")	Total/NA	Solid	6010D	347064	5
General Chemist	ry				1	
Analysis Batch: 347	221					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch	
240-163712-1	TP-8-SOUTH (3-16")	Total/NA	Solid	Moisture		
240-163712-1 DU	TP-8-SOUTH (3-16")	Total/NA	Solid	Moisture		
Organic Prep						
Analysis Batch: 520	249					

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-163712-1	TP-8-SOUTH (3-16")	Total/NA	Solid	Part Size Red	

Job ID: 240-163712-1

Lab Chronicle

Client: Golder Associates Inc. Project/Site: Former Satralloy Lowland Slag Investigation

Client Sample ID: TP-8-SOUTH (3-16") Date Collected: 03/10/22 10:30 Date Received: 03/15/22 17:30

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Туре	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	347221	03/21/22 13:11	SJN	TAL CF
Total/NA	Analysis	Part Size Red		1	520249	03/17/22 13:15	DRJ	TAL CAN

Client Sample ID: TP-8-SOUTH (3-16") Date Collected: 03/10/22 10:30 Date Received: 03/15/22 17:30

-	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			347064	03/19/22 09:30	ACM2	TAL CF
Total/NA	Analysis	6010D		25	347503	03/23/22 11:29	СТВ	TAL CF
Total/NA	Prep	3050B			347064	03/19/22 09:30	ACM2	TAL CF
Total/NA	Analysis	6010D		25	347753	03/24/22 12:57	СТВ	TAL CF

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

TAL CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Job ID: 240-163712-1

Lab Sample ID: 240-163712-1 Matrix: Solid

Lab Sample ID: 240-163712-1

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Matrix: Solid

Percent Solids: 91.3

Eurofins Canton

Accreditation/Certification Summary

Client: Golder Associates Inc. Project/Site: Former Satralloy Lowland Slag Investigation

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22 *
Connecticut	State	PH-0590	12-31-21 *
Florida	NELAP	E87225	06-30-22
Georgia	State	4062	02-23-22 *
Illinois	NELAP	200004	07-31-22
lowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22 *
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Laboratory: Eurofins Cedar Falls

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Colorado	Petroleum Storage Tank Program	IA100001 (OR)	09-29-22
Georgia	State	IA100001 (OR)	09-29-22
Illinois	NELAP	200024	11-29-22
lowa	State	007	12-01-21 *
Kansas	NELAP	E-10341	01-31-23
Minnesota	NELAP	019-999-319	12-31-22
Minnesota (Petrofund)	State	3349	04-06-23
North Dakota	State	R-186	09-29-22
Oregon	NELAP	IA100001	09-29-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Job ID: 240-163712-1

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180 S. Van Buren Avenue Barberton, OH 44203

Chain of Custody Record /-4//2

Controlins Environment Testing

Phone (330) 497-9396 Phone (330) 497-0772			•			
Client Information	Sampler J. Bailey	Brook	v <s, kris="" m<="" th=""><th>Carrier Tracking No(s) Courier</th><th>CUC No 240-92246-34349.1</th><th>_</th></s,>	Carrier Tracking No(s) Courier	CUC No 240-92246-34349.1	_
Client Contact Mr. Bob Ireson	Phone (614) 486-1700	E-Mail Kris.B	3rooks@Eurofinset.com	State of Origin Ohio	Page 11 of 1	
Company Golder Associates Inc.	DISMA		Analvsis Re	uested	# dol.	
Address 1335 Dublin Road Suite 126-D	Due Date Requested:				Preservation Codes:	_
City Columbus	TAT Requested (days): Standard				A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2	-
State. Zp. OH, 43215	Compliance Project: Δ Yes Δ No				D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3	
Phone	PO# 123-9330906		(c		F - MeOH R - Na2S203 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dorderaburrate	
Email Bob_Ireson@golder.com	# OM		s or No)	SJ	J - DI Water V - MCAA	
Project Name Satralloy Lowland Slag Investigation	Project # 24009044		63 OL		K - EDTA W - pH 4-5 L - EDA Z - other (specify)	_
Site Former Satralloy Site	SSOW#		dures	01 COI	Other:	
Samole Identification	Sam Typ Sample (C=co Sample G=cr	le Matrix (W-watet, S-solid, Th, O-wastetoil, D) B1-TIssue, A=Art)	Perform MS/M Perform Metals COPC Metals	nbar Number	Special Instructions/Note:	
	Pres	ervation Code:	- XX			-
TP-8-South (3-16')	3/10/22 1030 G	S	×ZZ			-
		1				-
						-
						-
						_
D LA			Custody	240-163712 Chain of (_
1) and Mar						
1 alien 1						-
X						-
						-
Possible Hazard Identification			Sample Disposal (A fee may be	issessed if samples are retain	ed longer than 1 month)	-
Non-Hazard Flammable Skin Irritant Pois Deliverable Requested: I, III, IV, Other (specify)	son B X Unknown Radiolog	ical	Special Instructions/QC Requireme	Disposal By Lab Arch	ive For Months	_
Empty Kit Relinquished by:	Date.		Time	Method of Shipment		
Reinquerte and Mi Opld	Date Time / 150	6 Company dr	r Received by Church Dan D	Date/Time	15.00 Company	-
Reinquirter by	Datiment 17. 31	Company	Received by	Date/Time	Company	_
Relinquened by	Date/Time	Company	Received by MM & Baas	Date/Time	Company	
Custody Seals Intact: Custody Seal No.: A Yes A No			Cooler Temperature(s) °C and Other R	emarks		
					Ver 01/16/2019	_
			11 12 13 14	7 8 9 10	2 3 4 5 6	

Eurofins TestAmerica Canton Sample Receipt Form/Narrative	Login # :163717
	Cooler unpacked by:
$C_{\text{relen}} P_{\text{rel}} = \frac{2}{3} \sqrt{\frac{2}{5}} \frac{27}{7} \qquad \text{Oncerved on } \frac{3}{5} \sqrt{\frac{6}{77}}$	mat
FedEv: 1 st Grd Even LIPS EAS Clinner Client Dron Off Text America Course	Conther Contraction of the contr
Receipt After-hours: Drop-off Date/Time Storage Location	
TestAmerica Cooler # Foam Box Client Cooler Box Other	
 Packing material used: Rubble Wrap Foam Plastic Bag None Other COOLANT: Wetlce Blue Ice Dry Ice Water None 1. Cooler temperature upon receipt See Multiple Cooler IR GUN# IR-14 (CF -0.2 °C) Observed Cooler Temp. 4 °C Corrected Cooler IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp. °C Corrected Cooler IR GUN #IR-15 (CF -0.7°C) Observed Cooler Temp. °C Corrected Cooler . Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity . Were the seals on the outside of the cooler(s) signed & dated? . Were tamper/custody seals intact and uncompromised? 3. Shippers' packing slip attached to the cooler(s)? 4. Did custody papers accompany the sample(s)? 5. Were the person(s) who collected the samples clearly identified on the COC? 7. Did all bottle labels (ID/Date/Time) be reconciled with the COC? 9. For each sample, does the COC specify preservatives (YNN), # of containers (YNN), and 10. Were correct bottle(s) used for the test(s) indicated? 12. Are these work share samples and all listed on the COC? 	Form er Temp.]. Z °C er Temp. °C es No Yes No
12. Are mose work share samples and an instead on the COC? If yes, Questions 13-17 have been checked at the originating laboratory. 13. Were all preserved sample(s) at the correct pH upon receipt? 14. Were VOAs on the COC? 15. Were air bubbles >6 mm in any VOA vials? 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 17. Was a LL Hg or Me Hg trip blank present?	Yes No NA pH Strip Lot# <u>HC157842</u> Yes No Da Yes No Da Yes No
Contacted PM Date by via Verbal	Voice Mail Other
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page	Samples processed by:
19. SAMPLE CONDITION	
Sample(s) were received after the recommended however received after the recommended how were received after the receive	lding time had expired. ved in a broken container.
Sample(s) were received with bubble >6 mr	n in diameter. (Notify PM)
20. SAMPLE PRESERVATION	
Sample(s)were	further preserved in the laboratory.
Time preserved:Preservative(s) added/Lot number(s):	
VOA Sample Preservation - Date/Time VOAs Frozen:	



Environment Testing America



240-163712 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information				
Client (mton				
City/State CITY Bur ber ton STATE PI	roject.			
Receipt Information				
Date/TimeDATETIMEReceived31422415R	eceived By h			
Delivery Type UPS FedEx	FedEx Ground 🛛 US Mail 🗌 Spee-Dee			
Lab Courier Lab Field Services	Client Drop-off			
Condition of Cooler/Containers				
Sample(s) received in Cooler?	f <i>yes</i> Cocler ID			
Multiple Coolers? Yes No I	f yes Cooler # of			
Cooler Custody Seals Present? Yes No I No	fyes Cooler custody seals intact? 🗌 Yes 🗌			
Sample Custody Seals Present? Yes No	f yes Sample custody seals intact? Yes			
Trip Blank Present? 🗌 Yes 🖼 No 👘	f yes Which VOA samples are in cooler? 1			
Temperature Record	· ··· · · · · · · · · · · · · · · · ·			
Coolant 🖸 Wet ice 🗌 Blue ice 🗌 Dry ice	Other NONE			
Thermometer ID	orrection Factor (°C)			
• Temp Blank Temperature - If no temp blank, of temp blank temperature	rature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C) C	orrected Temp (°C)			
Sample Container Temperature				
Container(s) used	CONTAINER 2			
Uncorrected Temp (°C) - O, 3				
Corrected Temp (°C) - 0 3				
Exceptions Noted				
1) If temperature exceeds criteria, was sample(s) received same day of sampling? Yes No a) If yes Is there evidence that the chilling process began? Yes No				
 2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e g , bulging septa, broken/cracked bottles, frozen solid?) 				
NOTE. If yes, contact PM before proceeding If no, proceed	with login			
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Barberton, OH 44203

Chain of Custody Record



Phone: 330-497-9396 Fax: 330-497-0772															Г
Client Information (Sub Contract Lab)	Sampler			Broo	M: ks, Kris M				Carrier Tr	acking No(s		COC No: 240-14991	71		1
Client Contact Shipping/Receiving	Phone:			E-Mail Kris.I	: Brooks@E	urofinset.	Ш		State of O Ohio	rigin:		Page: Page 1 of	1		1
Company: Eurofins Environment Testing North Centr					Accreditation	is Required	(See note):					Job #: 240-16371	2-1		
Address: 3019 Venture Way	Due Date Requester 3/28/2022	#					Anal	ysis Re	questec	_		Preservatio	on Codes: M	елехан	
City. Cedar Fails	TAT Requested (da)	:(Ձ										B NaOH C Zn Aceta D Minic Aci	zoa 2t	None AsnaO2 Na204S	
State, Zip: IA, 50613												E NaHSO4	. 0 ad	Na2SO3 Na2S2O3 Na2S2O3	
Phone: 319-277-2401(Tel) 319-277-2425(Fax)	PO#:				.(0							G Amchlor H Ascorbic	Acid S	H2SO4 TSP Dodecahydrate	
Email:	# 0M				1 Of N No) 1si							J Ice J DIWater K CDTA	⊃>3	Acetone MCAA AH ALS	
Project Name: Former Satralloy Site	Project #: 24009044				ieY) e 10 ee 1 eleie 1 eleie	einis						enisin 7 T	N	other (specify)	· · · · · ·
Site:	SSOW#:				Iqmes (Y) asi M 290	IoM Ju						Letto Jo			r
(U) is the second of the second se	Samnla Date	Sample Time	Sample Type (C=comp,	Matrix (wwater, s=solid, Owweetood,	sotoD/3020B C: settorm M3/W fotom M3/W	Nolatural Perce						Total Number N	cial Instru	ictions/Note:	······
		X	Preserva	tion Code:		•									<u></u>
ТР-8-SOUTH (3-16") (240-163712-1)	3/10/22	10:30 Factern		Solid	×	×									
		L03(0111													1
															1
															1
															1
Note: Since laboratory accreditations are subject to change. Eurofins Environme: laboratory does not currently maintain accreditation in the State of Origin listed al accreditation status should be brought to Eurofins Environment Testing North Ce	nt Testing North Central bove for analysis/tests/r attention imm	, LLC places t natrix being ar iediately. If al	he ownership - nalyzed, the sa I requested ac	of method, analy imples must be creditations are	As & accredit shipped back current to da	ation compl to the Euro te, return the	lance upon fins Enviro e signed Ch	out subcon ment Testi ain of Cust	ract laborate ig North Cer dy attesting	ntes. This a trait, LLC lai to said corr	ample ship ooratory or pilcance to	tent is forwarded ur ther instructions wi Eurofins Environme	nder chain-c Il be provide int Testing N	rf-custody. If the d. Any changes to lorth Central, LLC.	
Possible Hazard Identification					Sampl	e Dispos	al (A fee	may be	assessed	'if sampl	es are re	ained longer ti	han 1 mo	nth)	_
Unconfirmed					Ì	Return To	Client		Disposal I	3y Lab	<u>ן</u> ר	Archive For		Months	1
Deliverable Requested. I. II III IV Other (specify)	Primary Deliveral	ble Rank: 2			Specia	l Instructio	ons/QC F	equireme	nts:						
Empty Kit Relinquished by]	Date:			Time:				Meth	nod of Shipn	hent:				
Registrat by:	Date/Time: 3~17-22		1528	company EPA	Rec	eived by:		2	Υ.	Date	3)(8)	22 1	a 6	mpany	· ·
Reiinquished by:	Date/Time:			Company	Rec	eived by:				Date	/Літе:	a.	<u>8</u>	mpany	
Relinquished by:	Date/Time:			Company	Rec	eived by:				Date	/Time:		8	mpany	
Custody Seals Intract: Custody Seal No. Δ Yes Δ No					රි	ler Tempera	sture(s) °C ;	ind Other R	emarks:						
					-								Ň	r 06/08/2021	1

Client: Golder Associates Inc.

Login Number: 163712 List Number: 2 Creator: Homolar, Dana J

Job Number:	240-163712-1
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List Source: Eurofins Cedar Falls

List Creation: 03/18/22 11:06 AM

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	