

PM

## SULFIDUTREDNING ASPUDDEN



SLUTRAPPORT  
2021-03-30

**UPPDRAG** 313322, Sulfidutredning Aspudden

Titel på rapport: Sulfidutredning Aspudden

Status: Slutrapport

Datum: 2021-03-30

**MEDVERKANDE**

Beställare: AB Abacus Bostad

Kontaktperson: Fredrik Brehmer

Konsult: Tyréns AB

Uppdragsansvarig: Aristeidis Kritikos

Handläggare: Aristeidis Kritikos

Uppdragsansvarig:

Aristeidis Kritikos

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Datum: 2021-03-30

Handlingen granskad av:

Jennifer Wänseth

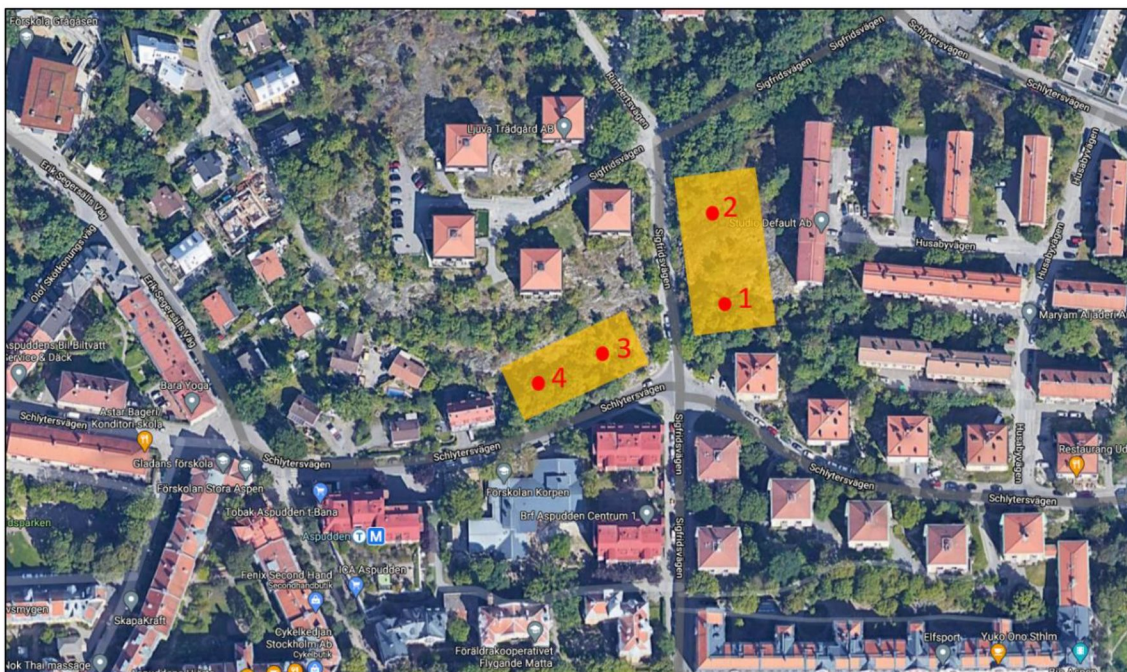
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## 1 INLEDNING

Tyréns AB har på uppdrag av AB Abacus Bostad utfört provtagning och sulfidutredning vid korsningen Schlytersvägen/Sigfridsvägen i Aspudden, Figur 1.



Figur 1. Kartutsnitt från Google Maps, 20210329. Undersökningsområdet är markerat med gul och provtagningsläge med rött.

## 2 BERGGRUNDSGEOLOGISKA FÖRHÅLLANDEN

Enligt SGU:s berggrundsgeologiska karta består bergmassan inom planerat detaljområdet av sedimentgnejs (Figur 2).



Figur 2. Berggrundskarta från SGU:s kartgenerator. Aktuellt område är inringat i rött.



### 3 PROVTAGNING OCH ANALYS

Provtagningen genomfördes 2021-03-10 av Aristeidis Kritikos, geolog, Tyréns AB. Totalt 4 prover togs och skickades till ALS labb för ABA testning. Resultaten redovisas i Tabell 1 och i Bilaga.



Figur 3. Bild längst Sigfridsvägen där del av provtagningen utfördes.

ABA-test (Acid Base Accounting), är egentligen en metod för att geokemiskt karaktärisera gruvavfall. I Sverige utförs ABA-analyser enligt den svenska standarden SS-EN 15875. Testet fastställer materialets syrabildningspotential och neutralisationspotential, samt kombinationen av dessa. Bergmassans förurningsförmåga genom urlakning beror på den relativa koncentrationen av, och reaktionshastigheten hos syragenererande svavelmineral samt mineral som verkar neutraliserande. Baserat på analysresultaten beräknas neutralisationspotential (NP) och syrapotential (AP). Kvoten mellan dessa, NP/AP benämns NPR (Neutraliseringspotentialkvoten) eller kapaciteten att producera surt lakvatten. NP/AP-kvoten visar den teoretiska neutralisationspotentialkvoten som anger kapaciteten för ett avfall att generera surt lakvatten.

Enligt Region Stockholms dokument *'Hantering av risk för sulfidhaltiga bergmassor i utbyggnaden av tunnelbanan i Stockholm'* (ID:1410-P11-32-00001) och svenska förordningen SFS 2013:319 6§ tolkas kvoten enligt:

$$NPR = \frac{NP}{AP} < 1$$

→ Materialet är syrabildande.

$$NPR = \frac{NP}{AP}, \text{ mellan } 1 - 3$$

→ Möjlig risk för syrabildning.

$$NPR = \frac{NP}{AP} > 3$$

→ Ingen risk för syrabildning.

Tabell 1. ABA-test analysresultat.

Provnummer	Bergart	Mottagen vikt (kg)	S-IR08 S%	C-IR07 C%	NP tCaCO <sub>3</sub> /1Kt	AP tCaCO <sub>3</sub> /1Kt	NPR NP/AP	NNP tCaCO <sub>3</sub> /1Kt
313322-1	Grovkorning felsisk	1.05	<0.01	0.04	5	<0.3	35.33	5
313322-2	Grovkorning felsisk	1.09	<0.01	0.04	4	<0.3	28.67	4
313322-3	Grovkorning felsisk	1.38	<0.01	0.05	5	<0.3	33.33	5
313322-4	Sedimentgnejs	1.08	0.07	0.03	6	2	3.1	4

**Prov 313322-1:** NPR är 35.33 (större än 3) vilket visar att materialet inte är syrabildande.

**Prov 313322-2:** NPR är 28.67 (större än 3) vilket visar att materialet inte är syrabildande.

**Prov 313322-3:** NPR är 33.33 (större än 3) vilket visar att materialet inte är syrabildande.

**Prov 313322-4:** NPR är 3.1 (större än 3) vilket visar att materialet inte är syrabildande.

## 4 DISKUSSION OCH REKOMMENDATIONER

Värdena för totalt svavelhalt samt NPR-värde i analyserade bergprover visar att bergmaterialet i undersökningsområdet inte är syrabildande och finns ingen risk för försurning vid återanvändning av bergmaterialet.

## 5 BILAGA



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Total # Pages: 2 (A)  
Plus Appendix Pages  
Finalized Date: 26-MAR-2021  
Account: BYTANS

CERTIFICATE PI21061243	
Project: Sulfidutredning berg, Aspudden P.O. No.: 313322 This report is for 4 samples of Rock submitted to our lab in Pitea, Sweden on 15-MAR-2021. The following have access to data associated with this certificate: FREDRIK BREHMER      ARISTEIDIS KRITIKOS	

SAMPLE PREPARATION	
ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample Login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% < 2mm
SPL-22Y	Split Sample - Boyd Rotary Splitter
PUL-31	Pulverize up to 250g 85% < 75 um
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test

ANALYTICAL PROCEDURES		
ALS CODE	DESCRIPTION	INSTRUMENT
S-CAL19	Sulphide Sulphur (Calculated)	LECO
C-IR07	Total Carbon (IR Spectroscopy)	LECO
C-IR06	Non-Carbonate C by HCl Leach, IR Spec	LECO
C-CAL04	Inorganic Carbon	LECO
OA-VOL08EU	AP & NP of Sulphidic Waste	
S-IR08	Total Sulphur (IR Spectroscopy)	LECO
S-ICP19	Sulphate Sulphur / By ICP-AES	ICP-AES

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.  
\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*  
Comments: Samples were received on 15-Mar-2021 and the SSF/Request on 15-Mar-2021.

Signature:

  
Andrey Tairov, Technical Manager, Ireland




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Project: Sulfidutredning berg, Aspudden

CERTIFICATE OF ANALYSIS

PI21061243

Sample Description	Method Analyte Units LOD	WEI-21 Recvd Wt. kg	CRU-QC Pass2mm %	PUL-QC Pass75um %	S-IR08 S %	S-ICP19 S %	S-CAL19 S %	C-IR07 C %	C-IR06 C organi %	C-CAL04 C inorga %	OA-VOL08EU NP tCaCO3/1kt	OA-VOL08EU AP tCaCO3/1kt	OA-VOL08EU NPR Unity	OA-VOL08EU NNP tCaCO3/1kt
313322-1		1.05	90.1	92.6	<0.01	<0.01	<0.01	0.04	0.01	0.03	5	<0.3	35.33	5
313322-2		1.09	72.0		<0.01	<0.01	<0.01	0.04	0.02	0.02	4	<0.3	28.67	4
313322-3		1.38	76.6		<0.01	<0.01	<0.01	0.05	0.03	0.02	5	<0.3	33.33	5
313322-4		1.08			0.07	<0.01	0.07	0.03	0.01	0.02	6	2.0	3.10	4

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Project: Sulfidutredning berg, Aspudden

**CERTIFICATE OF ANALYSIS** PI21061243

	CERTIFICATE COMMENTS		
	ANALYTICAL COMMENTS		
Applies to Method:	OA-VOL08EU Units: $\text{tCaCO}_3/1\text{kt} = \text{tCaCO}_3/1000\text{t ore}$ OA-VOL08EU		
	ACCREDITATION COMMENTS		
Applies to Method:	The methods immediately below this line are ISO 17025:2017 Accredited. INAB Registration No: 173T C-IR07 S-IR08		
			
	LABORATORY ADDRESSES		
Applies to Method:	Processed at ALS Pitea located at Hammarvagen 22, SE-943 36, Ojebyn, Sweden. CRU-31 CRU-QC LOG-22 PUL-31 PUL-QC SPL-22Y WEI-21		
Applies to Method:	Processed at ALS Loughrea located at Dublin Road, Loughrea, Co. Galway, Ireland. C-CAL04 C-IR06 C-IR07 OA-VOL08EU S-CAL19 S-ICP19 S-IR08		





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### QC CERTIFICATE PI21061243

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The following have access to data associated with this certificate:  
FREDRIK BREHMER ARISTEIDIS KRITIKOS

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C-CAL04	Inorganic Carbon	LECO
QA-VOL08EU	AP & NP of Sulphidic Waste	
S-IR08	Total Sulphur (IR Spectroscopy)	LECO
S-ICP19	Sulphate Sulphur / By ICP-AES	ICP-AES

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Signature:

  
Andrey Tairov, Technical Manager, Ireland



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Project: Sulfidutredning berg, Aspudden

### QC CERTIFICATE OF ANALYSIS PI21061243

Sample Description	Method Analyte Units LOD	S-IR08 S N 0.01	S-ICP19 S N 0.01	C-IR07 C N 0.01	C-IR06 C organ N 0.01	QA-VOL08EU NP tCaCO3/1kt 1	QA-VOL08EU AP tCaCO3/1kt 0.3	QA-VOL08EU NPR tCaCO3/1kt 0.01	QA-VOL08EU NNP tCaCO3/1kt 1
STANDARDS									
AmmSO4		25.0							
AmmSO4		25.4							
Target Range - Lower Bound		23.0							
Target Range - Upper Bound		25.5							
GCC-03					14.95				
Target Range - Lower Bound					14.35				
Target Range - Upper Bound					15.40				
GCC-09	4.60			2.93					
Target Range - Lower Bound	4.42			2.84					
Target Range - Upper Bound	4.76			3.06					
GCC-11	5.08								
Target Range - Lower Bound	3.70								
Target Range - Upper Bound	3.87								
KZK-1						61	24.9	2.46	36
Target Range - Lower Bound						54	22.8	2.21	31
Target Range - Upper Bound						64	27.0	2.57	38
NBM-1						48	6.7	5.44	39
Target Range - Lower Bound						45	7.8	5.50	36
Target Range - Upper Bound						54	9.6	6.36	45
NCSZC73007					0.82				
Target Range - Lower Bound					0.77				
Target Range - Upper Bound					0.85				
SY-4					0.11				
Target Range - Lower Bound					0.11				
Target Range - Upper Bound					0.15				
BLANKS									
BLANK					<0.01				
BLANK					0.01				
Target Range - Lower Bound					<0.01				
Target Range - Upper Bound					0.02				
BLANK						<0.3			
Target Range - Lower Bound						1.00000000	<0.3	0.01000000	1.00000000
Target Range - Upper Bound						2.00000000	0.6	0.02000000	2.00000000
BLANK					<0.01				
Target Range - Lower Bound					<0.01				
Target Range - Upper Bound					0.02				
BLANK					<0.01				
Target Range - Lower Bound					<0.01				
Target Range - Upper Bound					0.02				

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Project: Sulfidutredning berg, Aspudden

QC CERTIFICATE OF ANALYSIS PI21061243

Sample Description	Method Analyte Units LOD

Comments: Samples were received on 15-Mar-2021 and the SSF/Request on 15-Mar-2021.



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Project: Sulfidutredning berg, Aspudden

QC CERTIFICATE OF ANALYSIS PI21061243

Sample Description	Method Analyte Units LOD	S-IR08 S %	S-ICP19 S %	C-IR07 C %	C-IR06 C organ %	OA-VOL08EU NP tCaCO <sub>3</sub> /1kt	OA-VOL08EU AP tCaCO <sub>3</sub> /1kt	OA-VOL08EU NPK Unity	OA-VOL08EU NPK tCaCO <sub>3</sub> /1kt
		0.01	0.01	0.01	0.01	1	0.3	0.01	1
ORIGINAL			0.02						
DUP			0.02						
Target Range - Lower Bound			<0.01						
Upper Bound			0.03						
ORIGINAL		0.64		0.17					
DUP		0.63		0.17					
Target Range - Lower Bound		0.61		0.16					
Upper Bound		0.66		0.18					
ORIGINAL					0.06				
DUP					0.06				
Target Range - Lower Bound					0.05				
Upper Bound					0.07				
ORIGINAL					0.02				
DUP					0.02				
Target Range - Lower Bound					<0.01				
Upper Bound					0.03				
313322-1		<0.01		0.04					
DUP		<0.01		0.03					
Target Range - Lower Bound		<0.01		0.02					
Upper Bound		0.02		0.05					
313322-4						6	2.0	3.10	4
DUP						6	2.0	2.95	4
Target Range - Lower Bound						5	1.6	2.96	3
Upper Bound						7	2.4	3.19	5
ORIGINAL			0.14						
DUP			0.18						
Target Range - Lower Bound			0.14						
Upper Bound			0.16						

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