

**APPENDIX A**

**PHOTOS**

(Pages A-1 to A-9)



Photo1 – Great Slave Lake near Proposed Temporary Barge Docking Facility.



Photo 2 – Proposed Hydromet Site location at historic gravel borrow area.



Photo 3 – Cominco tailings embankment and reclaimed tailings beach to right.



Photo 4 – View looking south showing N-38 Pit.



Photo 5 – View looking north showing conditions in bottom of N-38 Pit.



Photo 6 – View looking southeast showing N-33 Pit.



Photo 7 – View showing historic gravel borrow face to left of photo.



Photo 8 – View showing till with minimal organics overlying bedrock.





Photo 9 – View showing till overburden with rilling (small erosion gullies).



Photo 10 - View showing gravel overlying deep till overburden.



Photo 11 – View showing Presqu'île dolostone in N-38 Pit wall.



Photo 12 – View showing crystalline dolostone form Presqu'île formation.



Photo 13 – View of settlement on haul road due to melting of permafrost.



Photo 14 – View of Sulphurous spring discharge at Buffalo River tributary.





Photo 15 – View of Sulphurous discharge in Buffalo River tributary.



Photo 16 – View of Buffalo River tributary with mineralized water from aquifer.



Photo 17 – View showing N-33 Pit wall seepage from bedding plane.



Photo 18 – N-33 Pit wall seepage discharge.

**APPENDIX B**

LIST OF REFERENCES

(Page B-1)

### **List of References**

1. Durston, K., 1979, Open Pit Dewatering at the Pine Point Operations of Cominco Limited.
2. GTC Geologic Testing Consultants, Hydrogeologic Evaluation of the Pine Point - Great Slave Lake Region, GTC Geologic Testing Consultants, 1983.
3. Hannigan, P., 2007, Metallogeny of the Pine Point Mississippi Valley-Type Zinc-Lead District, Southern Northwest Territories.
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5. Knight and Piésold Ltd., 1984, Trial Grouting Program for Seepage Control - Laboratory Tests on Blended Till Slurries.
6. Rhodes, D., E.A., Lantos, J.A. Lantos, R.J. Webb, D.C. Owens (1984), Pine Point Orebodies and Their Relationship to the Stratigraphy, Structure, Dolomitization, and Karstification of the Middle Devonian Barrier Complex, Economic Geology Vol. 79, 1984 pp. 991-1055.
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9. Turner, W., and Gal, L., 2003, Regional Structural Data from the Hay River Area, Northwest Territories, with Emphasis on the Pine Point Mining Camp.
10. Tyson, R., 2006, Minerals of the Pine Point Lead-Zinc Deposits Northwest Territories Canada.
11. Vick, S.G., 1990, Planning, Design, and Analysis of Tailings Dams.
12. Vogwill, R., 1976, Some Practical Aspects of Open-Pit Dewatering at Pine Point.



#### Appendix C.6

**Thor Lake Project – Hydrometallurgical Site – Hydrogeological Field Program Summary.  
Report NB10-00656**

## MEMORANDUM

To:	Mr. David Swisher	Date:	December 8, 2010
Copy To:	John Goode, Bill Mercer, Matthew Parfitt, Jordin Barclay	File No.:	NB101-390/2-A.01
From:	Ryan Weir	Cont. No.:	NB10-00656
Re:	Thor Lake Project – Hydrometallurgical Site – Hydrogeological Field Program Summary		

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### **INTRODUCTION**

Avalon Rare Metals Inc. (Avalon) is planning to develop a hydrometallurgical processing facility at Pine Point located 80 km east of the community of Hay River, NWT. The processing facility will support Avalon's Thor Lake Project (the Project); the mining of the Nechalacho Rare Earth Element Deposit located 100 km east southeast of Yellowknife, NWT. Figure 1 shows the locations of the Project and Pine Point.

Knight Piésold Ltd. (Knight Piésold) was retained to coordinate and supervise a hydrogeological field program at the hydrometallurgical site, including drilling and installation of groundwater monitoring wells to facilitate water sampling, and logging of soil and rock encountered in drillholes.

A total of six monitoring wells were successfully installed in drillholes at the hydrometallurgical site. All work was completed under the direction and supervision of Knight Piésold field personnel between October 20 and November 13, 2010.

The following is a detailed summary of the hydrogeological field program.

### **FIELD PROGRAM DETAILS**

#### **Drilling and Well Installation**

The drilling of hydrogeological holes and installation of groundwater monitoring wells was carried out with the intent of characterizing the surficial soils and bedrock, and facilitating future water sampling.

The drilling and groundwater monitoring well installation was completed by Procore Drilling Ltd. (Procore) using a skid-mounted Boyles 25A rotary diamond drilling rig equipped with either HQ- (triconing and casing) or NQ-sized drill rods (coring). All drillhole sites were located in previously disturbed areas. Drill water was managed in natural depressions and, if necessary, by constructing small diversion berms. Drillholes were advanced by either: 1) triconing to the prescribed depth, pulling rods and reaming HQ/casing, and, if necessary, coring out the shoe bit with NQ; 2) triconing approximately 3 to 6 m into bedrock, pulling rods and reaming HQ/casing 3 to 6 m into bedrock, coring with NQ to the prescribed depth, and reaming HQ/casing to the prescribed depth; or 3) a combination of 1 and 2. Two Standard Penetration Test (SPT) samples were taken at surface at drillhole DH-2010-05, one of which was mainly of cave-in; however, the soil type, as well as time and budget constraints were not conducive to continuing SPT sampling.

Groundwater monitoring wells were installed through the drill casing before the casing was removed, or directly in drillholes with relatively stable walls after the casing was pulled. The wells consist of standard 50 mm (2") PVC screen, and risers and were installed in 3.05 m (10') sections. Each well had

3.05 m (10') of screen installed. Clean silica sand was used to form filter packs from the well bottoms to approximately 2 m above the screened section of each well. A bentonite slurry was pumped down between the outside of the well and drillhole wall to form a seal from the filter pack to surface. Risers were temporarily cut flush with the ground surface to allow the drill to be moved without causing damage to the well. A riser extension was installed such that each well has a stickup of approximately 0.8 m. Lockable well casings were then installed and cemented into place.

Table 1 provides a summary of the drillhole and well details, including UTM coordinates, elevation, depth to bedrock, total depth drilled and start and end dates. Figure 2 shows the locations of the drillholes completed at the hydrometallurgical site. Drillhole logs including description of encountered materials and well installation details are provided in Appendix A. Appendix B provides photo summaries of each drillhole site and samples taken, if applicable.

Total drillhole depths ranged from 18.62 to 62.18 m and averaged 47.03 m. There was generally no overburden recovery as surficial soils were drilled using tricone materials.

### **Logging and Sampling**

Logging of soil and rock in drillholes consisted of general descriptions of site conditions; depths; and general soil descriptions, including observed particle size, particle shape, plasticity, colour, odour, compactness or consistency, structure, inclusions, moisture condition and an interpretation of the origin of the soil where applicable.

Two SPTs were conducted near surface in one drillhole (DH-2010-05), one of which was mainly in cave material.

### **In Situ Testing**

In situ testing during the field program consisted of SPTs completed near surface in one drillhole using a standard 0.61 m (2') split spoon sampler to determine SPT 'N' values and the relative density of the soil and obtain soil samples.

Blow counts were recorded during sampling at intervals of approximately 150 mm (6"); four intervals in total). The 'N' values are calculated by adding the blow counts for the second and third intervals together and the results are included on the logs in blows/ft. The 'N' values can be used to estimate the relative density of sands.

Results of the SPTs are provided on the drillhole logs in Appendix A.

### **RECOMMENDATIONS**


The following are recommendations for additional work at the hydrometallurgical site:


- Survey wells
- Develop wells
- Take ongoing water level measurements
- Conduct seasonal water sampling

Note that Knight Piésold has submitted a scope of work for the aforementioned additional work to a local engineering firm.

**CLOSURE**

Should you have any questions regarding the hydrogeological field program, please do not hesitate to contact the undersigned.

Signed:   
Ryan Weir, EIT  
Geological Engineering

Approved:   
Matthew Parfitt, P.Eng.  
Specialist Engineer/Project Manager

Attachments:

Table 1 Rev 0	Summary of Drillhole Details
Figure 1 Rev 0	Project Location Map
Figure 2 Rev 0	Hydrogeological Field Program Summary - Site Plan
Appendix A	Drillhole / Well Installation Logs
Appendix B	Drillhole Photo Summaries

/rdw



TABLE 1

AVALON RARE METALS INC.  
THOR LAKE PROJECT

HYDROGEOLOGICAL FIELD PROGRAM SUMMARY  
SUMMARY OF DRILLHOLE DETAILS

Print Dec/08/10 16:04:19

Site Identification	Site Coordinates <sup>(1,2)</sup>				Depth to Bedrock (m)	Total Depth (m)	Well Depth (m)	Measured Water Level (m)	Date and Time of Measured Water Level	Date Drillhole Started	Date Drillhole Completed
	Easting (m)	Northing (m)	Zone	Approximate Ground Elevation (m)							
DH-2010-01	640,377	6,749,627	11V	223.0	12.28	49.57	49.3	33.5 <sup>(3)</sup>	4-Nov-10	3-Nov-10	4-Nov-10
DH-2010-02D	641,116	6,750,910	11V	218.0	6.78	61.26	42.6	19.78	14-Nov-2010 13:00	24-Oct-10	26-Oct-10
DH-2010-02S	641,105	6,750,914	11V	218.0	7.32	62.18	40.8	28.47	25-Oct-2010 08:45	20-Oct-10	22-Oct-10
DH-2010-03	642,925	6,751,244	11V	213.0	11.00	48.77	46.0	26.91	14-Nov-2010 14:10	6-Nov-10	8-Nov-10
DH-2010-04	640,635	6,751,146	11V	214.0	19.38	41.76	41.8	29.15	14-Nov-2010 14:00	29-Oct-10	31-Oct-10
DH-2010-05	641,707	6,753,511	11V	206.5	10.67	18.62	18.6	13.09	14-Nov-2010 14:20	9-Nov-10	13-Nov-10

I:\1\01\00390\02\A\Correspondence\NB10-00656 - Hydrogeo Field Program Summary\[Table 1.xls]Table 1 - Details

**NOTES:**

- COORDINATES ARE APPROXIMATE AND WERE SURVEYED WITH A HANDHELD GPS OR ESTIMATED FROM DIGITAL MAPPING.
- DATUM FOR COORDINATES IS NAD83.
- MEASUREMENT BASED ON DRILLER EXPERIENCE, DRILL HEAD PRESSURE AND WATER GAUGE PRESSURE.

0	08DEC'10	ISSUED WITH MEMO NB10-00656	RDW	CLS	MRP
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



**NOTES:**

1. IMAGERY FROM NASA WORLD WIND.

AVALON RARE METALS INC.

THOR LAKE PROJECT

PROJECT LOCATION MAP

**Knight Piésold**  
CONSULTING

P/A NO.  
NB101-390/2

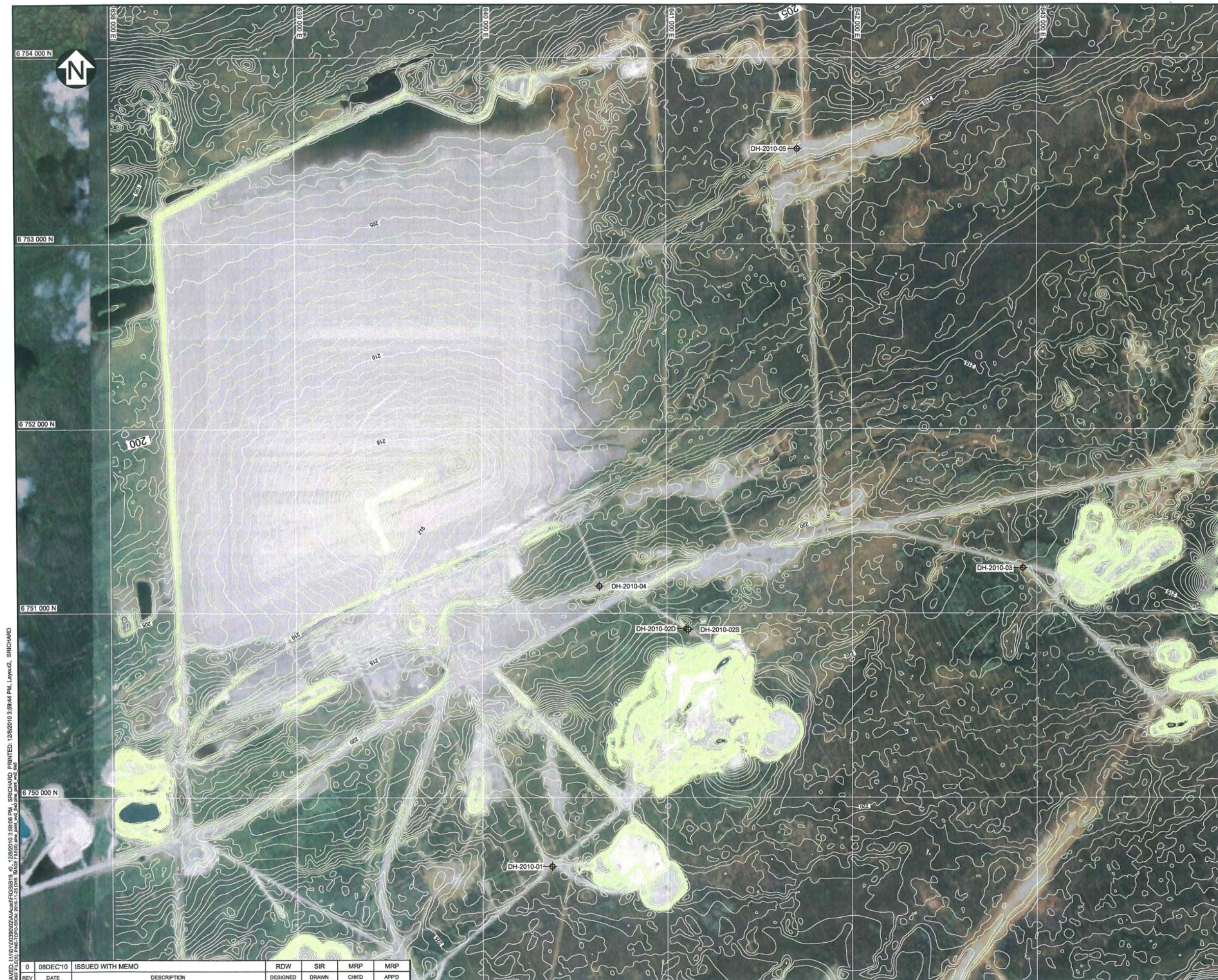
REF NO.  
NB10-00656

**FIGURE 1**

REV  
0

0	08DEC10	ISSUED WITH MEMO	RDW	SIR	MRP	MRP
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D





SAVED: J:\10\10000000\Avalon\HGS\B10\_0\_1202010\_3:59:44 PM\_SRICARD\_PRINTED: 12/01/2010 3:59:44 PM\_Layou2\_SRICARD  
SWF FILES: J:\10\10000000\Avalon\HGS\B10\_0\_1202010\_3:59:44 PM\_SRICARD\_PRINTED: 12/01/2010 3:59:44 PM\_Layou2\_SRICARD

**LEGEND:**  
⊕ GROUNDWATER MONITORING WELL/HYDROGEOLOGICAL DRILLHOLE

**NOTES:**  
1. COORDINATE GRID IS UTM NAD83 ZONE 11N.  
2. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 0.5 METRES.  
3. CONTOURS AND IMAGE PROVIDED BY PINE POINT COMBINED SURVEY, NOVEMBER 1, 2010.

200 100 0 200 400 600 800 1000 m  
SCALE A

AVALON RARE METALS INC.  
THOR LAKE PROJECT  
HYDROGEOLOGICAL FIELD PROGRAM SUMMARY  
SITE PLAN

**Knight Piésold**  
CONSULTING

P/A NO. NB101-390/2	REF NO. NB10-00656
FIGURE 2	
REV 0	

0	08DEC'10	ISSUED WITH MEMO	RDW	SIR	MRP	MRP
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHKD	APPD



**APPENDIX A**

**DRILLHOLE / WELL INSTALLATION LOGS**

(Pages A-1 to A-14)



**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-01**Page:** 1 of 2

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 3 Nov 10

Location: PINE POINT, WEST OF N38 PIT

Total Depth: 49.57 m

Date Completed: 4 Nov 10

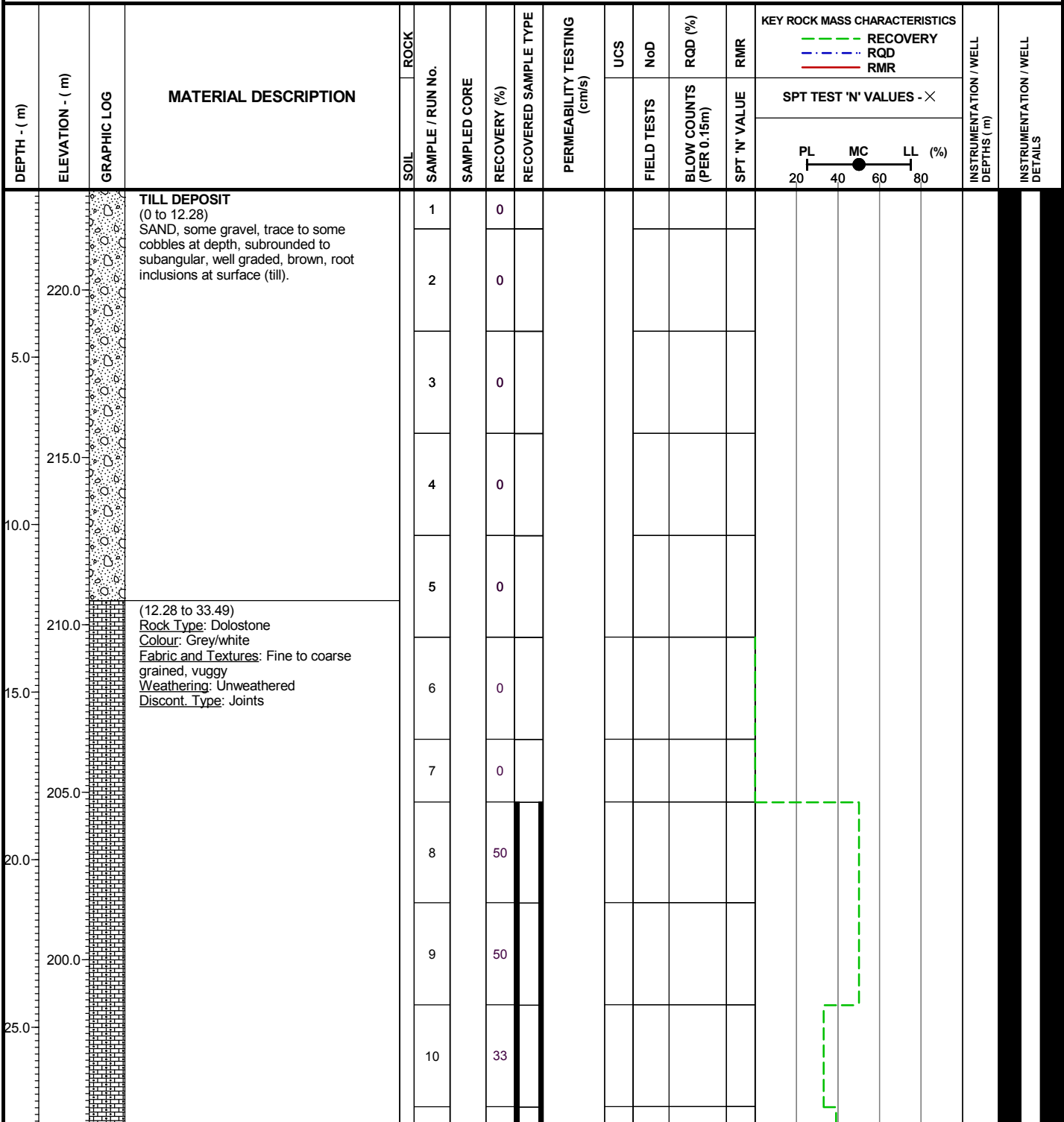
Coordinates: 6,749,627 N, 640,377 E

Elevation: 223.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

**SYMBOLS:**

BULK



SPOON



THERMISTOR



BENTONITE



SLOUGH



CORE



SHELBY TUBE



WELL



SAND

**AVALON RARE METALS INC.**  
**THOR LAKE PROJECT****Knight Piesold**  
CONSULTINGProject No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-1**I:\110100390\02\ADATA\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\INT\LIBRARY\KP LIB.GLB; DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10

**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-01**Page:** 2 of 2

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 3 Nov 10

Location: PINE POINT, WEST OF N38 PIT

Total Depth: 49.57 m

Date Completed: 4 Nov 10

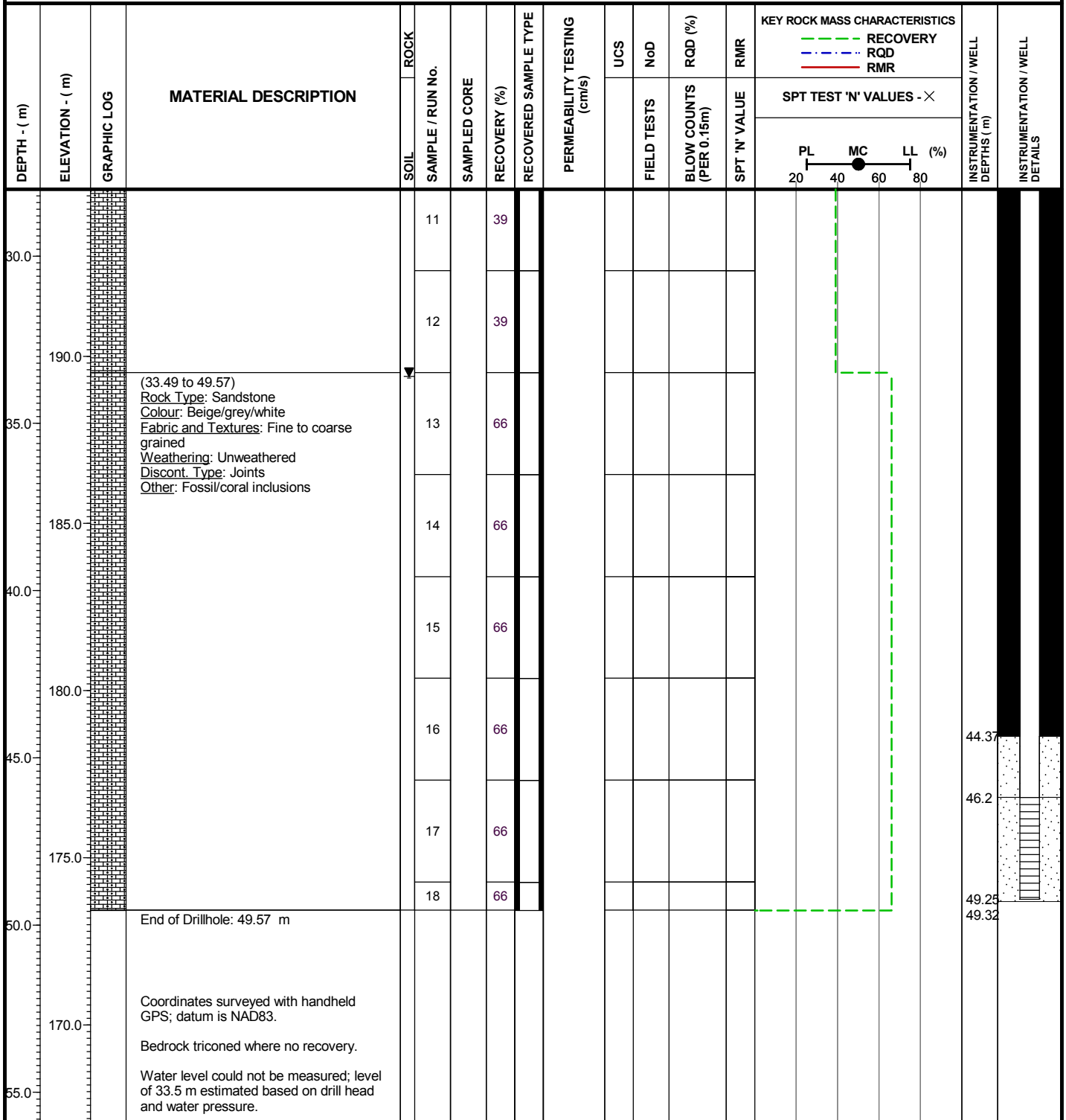
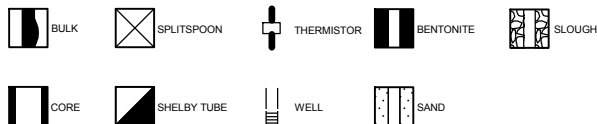
Coordinates: 6,749,627 N, 640,377 E

Elevation: 223.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

**SYMBOLS:****AVALON RARE METALS INC.  
THOR LAKE PROJECT****Knight Piésold  
CONSULTING**Project No. NB101-390/2  
Ref. No. NB10-00656  
Rev. 0**FIGURE A-1**I:\10100390\02\ADAT\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\INT\LIBRARY\KP LIB\GLB; DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10

**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-02D**Page:** 1 of 3

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 24 Oct 10

Location: PINE POINT, NORTH OF N38 PIT

Total Depth: 61.26 m

Date Completed: 26 Oct 10

Coordinates: 6,750,910 N, 641,116 E

Elevation: 218.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

DEPTH - ( m )	ELEVATION - ( m )	GRAPHIC LOG	MATERIAL DESCRIPTION	ROCK		SAMPLE / RUN No.	SAMPLED CORE	RECOVERY (%)	RECOVERED SAMPLE TYPE	PERMEABILITY TESTING (cm/s)	UCS	NoD	RQD (%)	RMR	KEY ROCK MASS CHARACTERISTICS					INSTRUMENTATION / WELL DEPTHS ( m )	INSTRUMENTATION / WELL DETAILS	
				SOIL	SAMPLE / RUN No.										SPT TEST 'N' VALUES - X							
															PL	MC	LL	(%)				
			FILL (0 to 0.61) COBBLES, some sand, some gravel, angular to subangular, well graded, grey, massive, moist (fill).  TILL DEPOSIT (0.61 to 6.78) SAND, some gravel, trace cobbles, subrounded to rounded, well graded, brown to grey, massive, moist (till).		1		0															
	215.0					2		0														
5.0						3		0														
			(6.78 to 34.75) Rock Type: Dolostone Colour: Grey/white Fabric and Textures: Medium to coarse grained Weathering: Unweathered		4		0															
10.0	210.0					5		0														
	205.0					6		0														
15.0						7		0														
	200.0					8		0														
20.0																						

**SYMBOLS:**AVALON RARE METALS INC.  
THOR LAKE PROJECT**Knight Piesold**  
CONSULTINGProject No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-2**I:\10100390\2\ADAT\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\INT\LIBRARY\KP LIB.GLB; DRILLHOLE LOG\_WELL INSTALLATIONS; KP DATA TEMPLATE.GDT, 8 Dec 10



\\101100390102\DATA\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
\\01\GINT\LIBRARY\KP LIB.GLB, DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10

**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-02D**Page:** 3 of 3

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 24 Oct 10

Location: PINE POINT, NORTH OF N38 PIT

Total Depth: 61.26 m

Date Completed: 26 Oct 10

Coordinates: 6,750,910 N, 641,116 E

Elevation: 218.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

DEPTH - ( m )	ELEVATION - ( m )	GRAPHIC LOG	MATERIAL DESCRIPTION	SOIL	ROCK	SAMPLED CORE	RECOVERY (%)	RECOVERED SAMPLE TYPE	PERMEABILITY TESTING (cm/s)	UCS	NoD	RQD (%)	RMR	KEY ROCK MASS CHARACTERISTICS			INSTRUMENTATION / WELL DEPTHS (m)	INSTRUMENTATION / WELL DETAILS
					SAMPLE / RUN No.									SPT TEST 'N' VALUES - X				
														PL	MC	LL (%)		
45.0					16		0											
170.0					17		0											
50.0					18		0											
165.0					19		0											
55.0					20		0											
160.0					21		0											
60.0																		
61.26			End of Drillhole: 61.26 m															
155.0			Coordinates surveyed with handheld GPS; datum is NAD83.															
			Bedrock triconed where no recovery.															
65.0			Water level of 19.78 m measured at 1300h on November 14, 2010.															

**SYMBOLS:**AVALON RARE METALS INC.  
THOR LAKE PROJECT**Knight Piésold**  
CONSULTINGProject No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-2**I:\10100390\02\ADAT\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\INT\LIBRARY\KP LIB\GLB - DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10

**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-02S**Page:** 1 of 3

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 20 Oct 10

Location: PINE POINT, NORTH OF N38 PIT

Total Depth: 62.18 m

Date Completed: 22 Oct 10

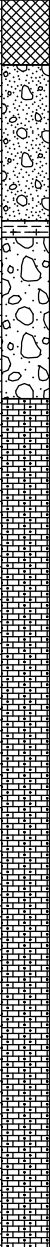
Coordinates: 6,750,914 N, 641,105 E

Elevation: 218.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

DEPTH - ( m )	ELEVATION - ( m )	GRAPHIC LOG	MATERIAL DESCRIPTION	ROCK		SAMPLED CORE	RECOVERY (%)	RECOVERED SAMPLE TYPE	PERMEABILITY TESTING (cm/s)	UCS	NoD	RQD (%)	RMR	KEY ROCK MASS CHARACTERISTICS				INSTRUMENTATION / WELL DEPTHS ( m )	INSTRUMENTATION / WELL DETAILS
				SOIL	SAMPLE / RUN No.									SPT TEST 'N' VALUES - X					
														PL	MC	LL	(%)		
			<b>FILL</b> (0 to 1.22) SAND AND GRAVEL, some cobbles, trace boulders, angular to subangular, well graded, grey, massive, dry to moist (fill).		1		0												
	215.0		<b>TILL DEPOSIT</b> (1.22 to 4.07) Gravelly SAND, trace cobbles, trace boulders, subrounded to rounded, well graded, brown, massive, moist (till).		2		0												
	5.0		<b>CLAY</b> (4.07 to 4.37) Silty CLAY, poorly graded, grey.																
			<b>TILL DEPOSIT</b> (4.37 to 7.32) SAND AND GRAVEL, some cobbles, trace boulders, well graded, brown to grey (till).		3		0												
	210.0		(7.32 to 37.8) Rock Type: Dolostone Colour: Grey/white Fabric and Textures: Fine to coarse grained, vuggy Weathering: Unweathered Other: Voids encountered at 18.5, 27 and 33.5 m.		4		0												
	10.0																		
					5		0												
	205.0																		
	15.0				6		0												
	200.0				7		0												
	20.0				8		0												

**SYMBOLS:**

BULK



SPLIT SPOON



THERMISTOR



BENTONITE



SLOUGH



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SHELBY TUBE



WELL



SAND

AVALON RARE METALS INC.  
THOR LAKE PROJECT**Knight Piésold**  
CONSULTINGProject No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-3**I:\10100390\02\ADATA\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\GINT\LIBRARY\KP LIB.GLB; DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10



**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-02S**Page:** 2 of 3

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 20 Oct 10

Location: PINE POINT, NORTH OF N38 PIT

Total Depth: 62.18 m

Date Completed: 22 Oct 10

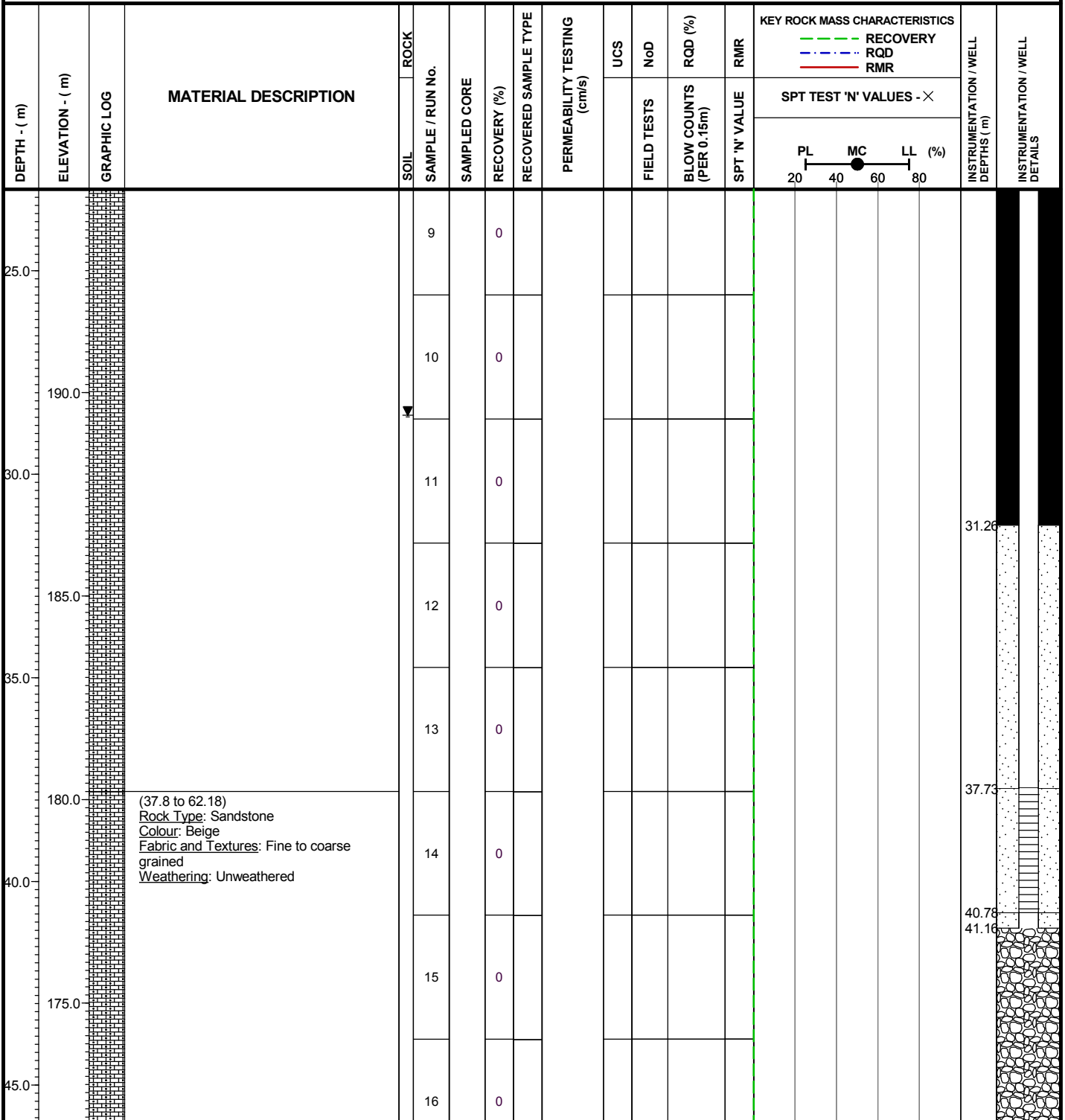
Coordinates: 6,750,914 N, 641,105 E

Elevation: 218.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

**SYMBOLS:**

BULK



SPLIT SPOON



THERMISTOR



BENTONITE



SLOUGH



CORE



SHELBY TUBE



WELL



SAND

AVALON RARE METALS INC.  
THOR LAKE PROJECT**Knight Piésold**  
CONSULTINGProject No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-3**I:\10100390\2\ADAT\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\INT\LIBRARY\KP LIB.GLB; DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10

**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-02S**Page:** 3 of 3

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 20 Oct 10

Location: PINE POINT, NORTH OF N38 PIT

Total Depth: 62.18 m

Date Completed: 22 Oct 10

Coordinates: 6,750,914 N, 641,105 E

Elevation: 218.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

DEPTH - ( m )	ELEVATION - ( m )	GRAPHIC LOG	MATERIAL DESCRIPTION	SOIL		ROCK	SAMPLE / RUN No.	SAMPLED CORE	RECOVERY (%)	RECOVERED SAMPLE TYPE	PERMEABILITY TESTING (cm/s)	UCS	NoD	RQD (%)	RMR	KEY ROCK MASS CHARACTERISTICS				INSTRUMENTATION / WELL DEPTHS ( m )	INSTRUMENTATION / WELL DETAILS
																RECOVERY	RQD	RMR	SPT TEST 'N' VALUES - X		
170.0						17		0													
50.0						18		0													
165.0																					
65.0						19		0													
160.0						20		0													
60.0						21		0													
155.0			End of Drillhole: 62.18 m																62.18		
65.0			Coordinates surveyed with handheld GPS; datum is NAD83.																		
			Lost return water at 51.5 m.																		
			Bedrock triconed where no recovery.																		
			Water level of 28.471 m measured at 0845h on October 25, 2010.																		
150.0																					

**SYMBOLS:**

BULK



SPLIT SPOON



THERMISTOR



BENTONITE



SLOUGH



CORE



SHELBY TUBE



WELL



SAND

AVALON RARE METALS INC.  
THOR LAKE PROJECT**Knight Piesold**  
CONSULTINGProject No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-3**I:\10100390\02\ADAT\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\INT\LIBRARY\KP LIB.GLB; DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10

**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-03**Page:** 1 of 3

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 6 Nov 10

Location: PINE POINT, NORTHEAST OF N38 PIT

Total Depth: 48.77 m

Date Completed: 8 Nov 10

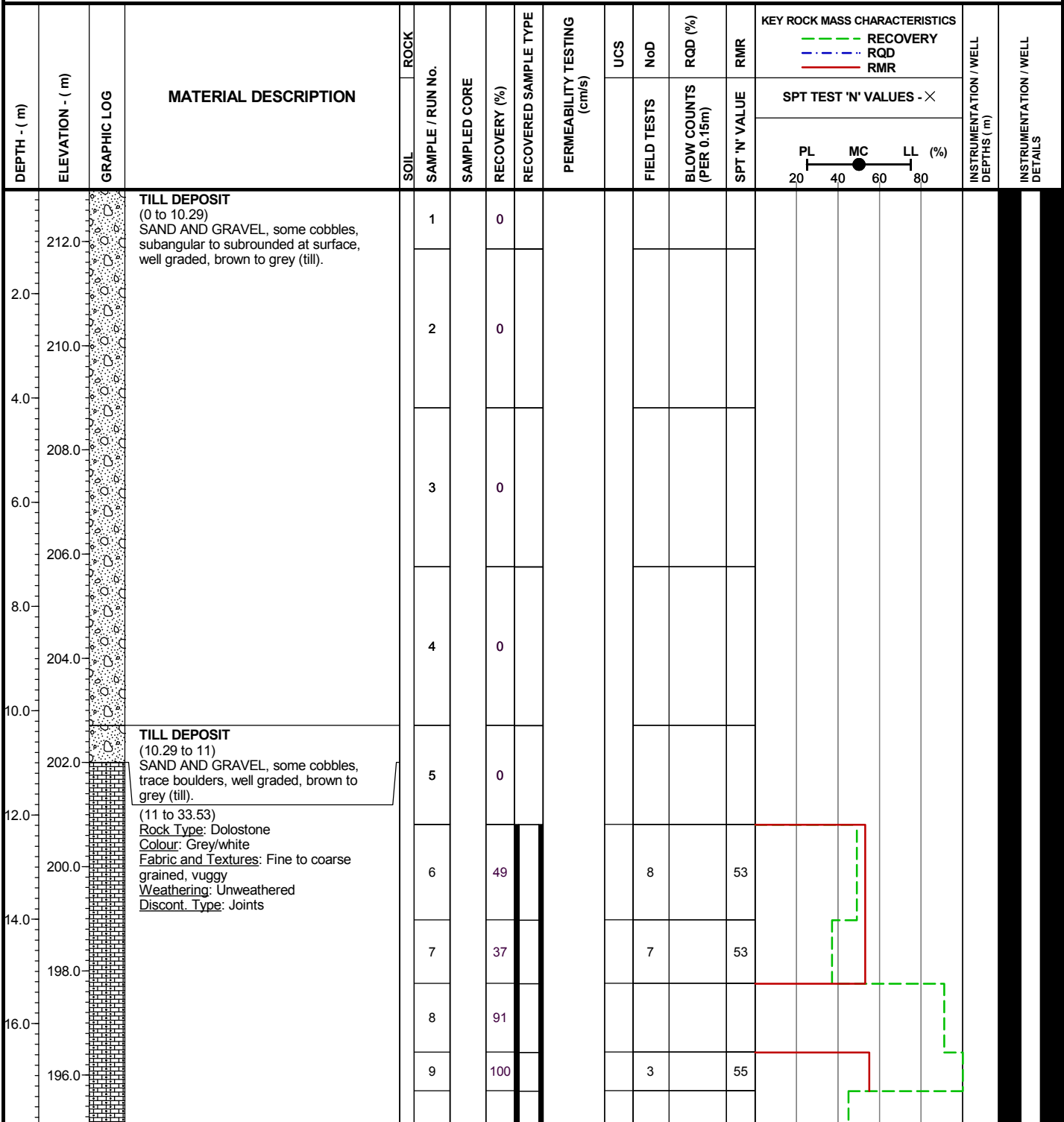
Coordinates: 6,751,244 N, 642,925 E

Elevation: 213.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

**SYMBOLS:**

BULK



SPLIT SPOON



THERMISTOR



BENTONITE



SLOUGH



CORE



SHELBY TUBE



WELL



SAND

AVALON RARE METALS INC.  
THOR LAKE PROJECT**Knight Piesold**  
CONSULTINGProject No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-4**I:\10100390\02\ADAT\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\INT\LIBRARY\KP LIB.GLB; DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10



```

.:10100390102\ADATA\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ
.:0\GINT\LIBRARY\KP LIB.GLB, DRILLHOLE LOG WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10

```

**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-03**Page:** 3 of 3

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 6 Nov 10

Location: PINE POINT, NORTHEAST OF N38 PIT

Total Depth: 48.77 m

Date Completed: 8 Nov 10

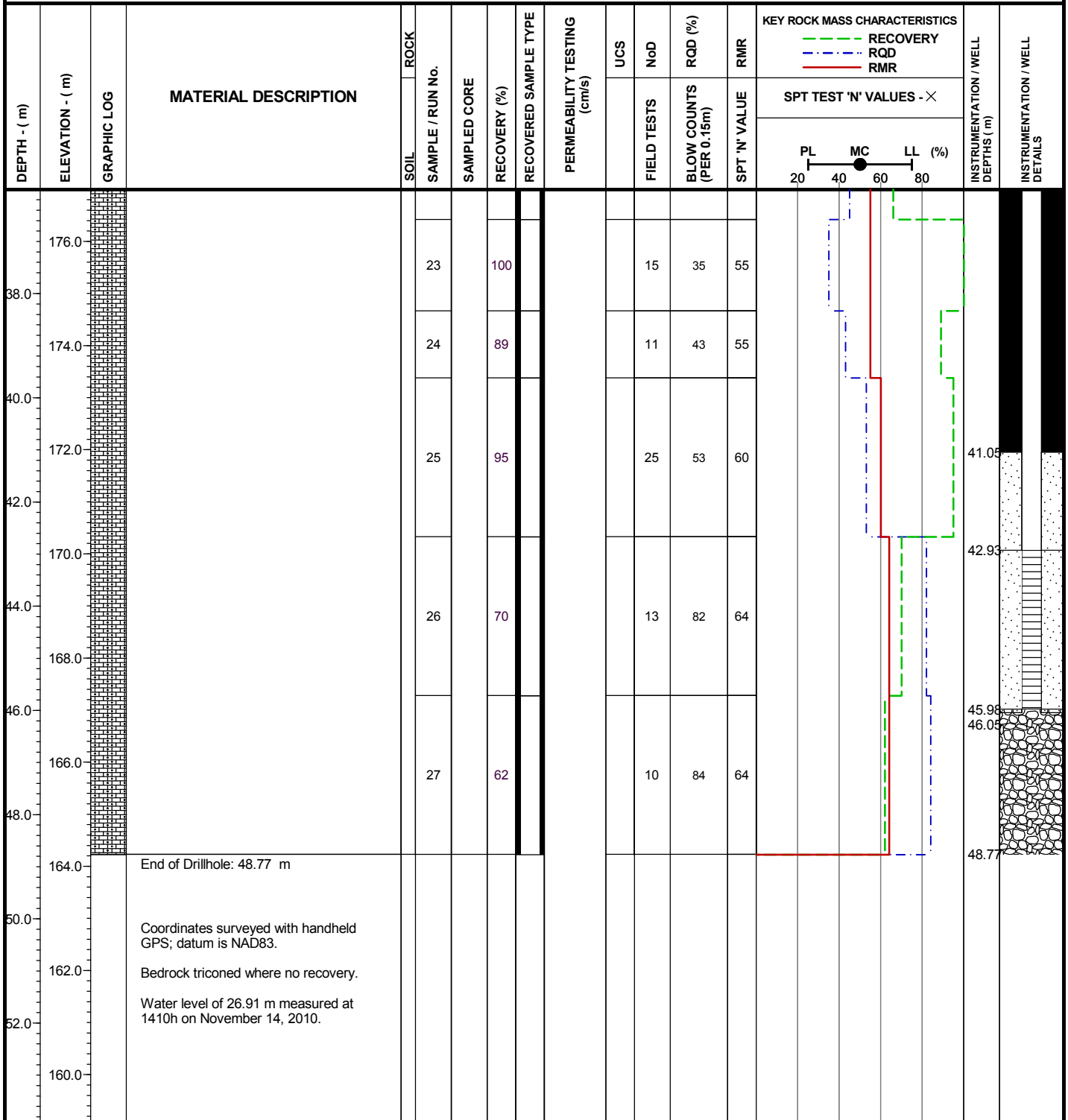
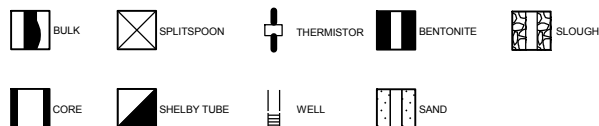
Coordinates: 6,751,244 N, 642,925 E

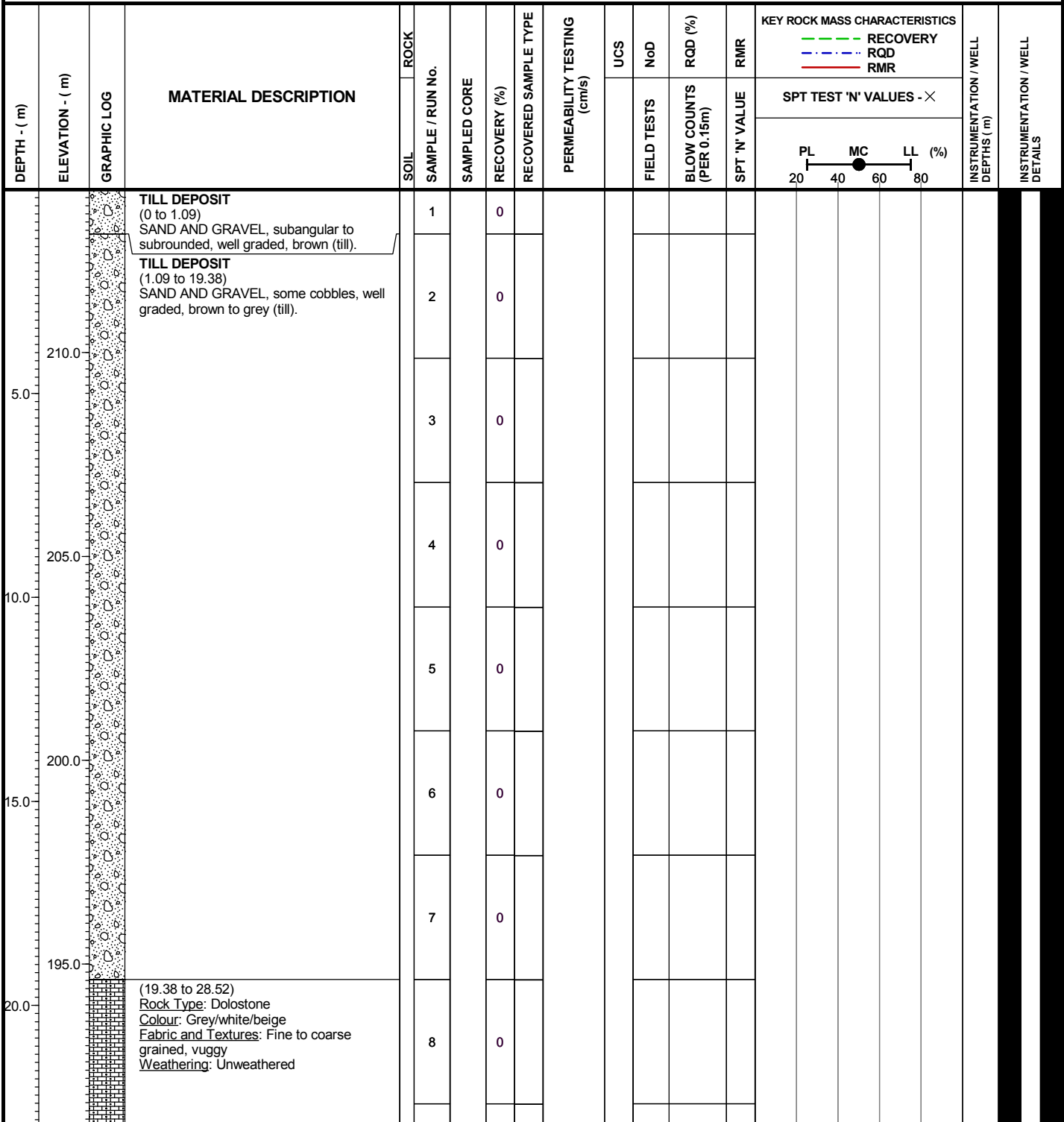
Elevation: 213.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

**SYMBOLS:****AVALON RARE METALS INC.**  
**THOR LAKE PROJECT****Knight Piésold**  
CONSULTINGProject No. NB101-390/2  
Ref. No. NB101-00656  
Rev. 0**FIGURE A-4**I:\110100390\2\ADAT\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\GINT\LIBRARY\KP LIB.GLB; DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10

**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-04**Page:** 1 of 2**Contractor:** PROCORE DRILLING LTD.**Drill Type:** BOYLES 25A**Date Started:** 29 Oct 10**Location:** PINE POINT, NORTH OF N38 PIT**Total Depth:** 41.76 m**Date Completed:** 31 Oct 10**Coordinates:** 6,751,146 N, 640,635 E**Elevation:** 214.00 m**Logged by:** RDW**Inclination:** -90**Reviewed by:** CLS**SYMBOLS:**

BULK



SPLIT SPOON



THERMISTOR



BENTONITE



SLOUGH



CORE



SHELBY TUBE



WELL



SAND

**AVALON RARE METALS INC.  
THOR LAKE PROJECT****Knight Piesold  
CONSULTING**Project No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-5**



**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-04**Page:** 2 of 2

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 29 Oct 10

Location: PINE POINT, NORTH OF N38 PIT

Total Depth: 41.76 m

Date Completed: 31 Oct 10

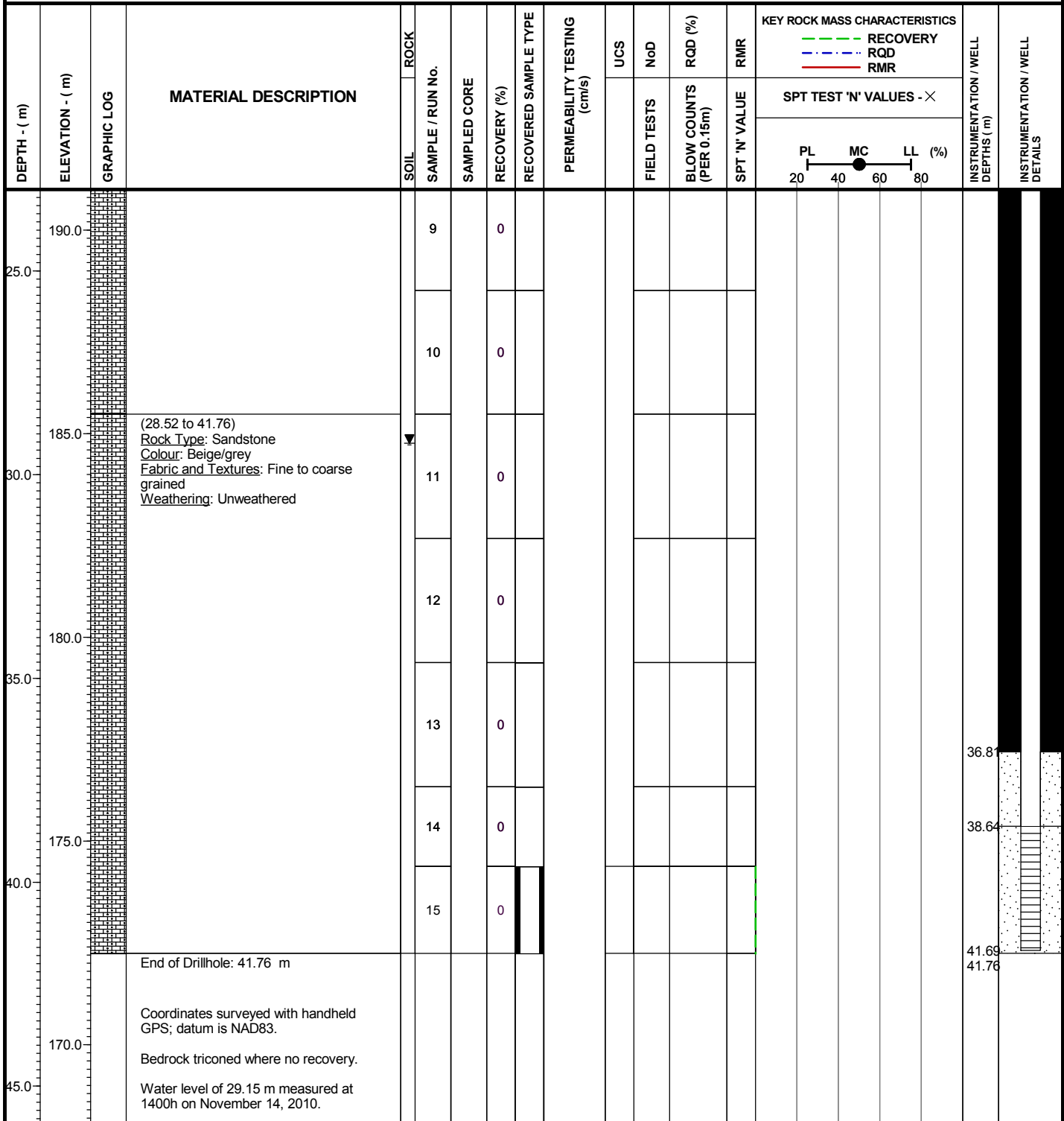
Coordinates: 6,751,146 N, 640,635 E

Elevation: 214.00 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

**SYMBOLS:**

BULK



SPLIT SPOON



THERMISTOR



BENTONITE



SLOUGH



CORE



SHELBY TUBE



WELL



SAND

AVALON RARE METALS INC.  
THOR LAKE PROJECT**Knight Piésold**  
CONSULTINGProject No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-5**I:\10100390\02\ADAT\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\INT\LIBRARY\KP LIB.GLB; DRILLHOLE LOG\_WELL INSTALLATIONS, KP DATA TEMPLATE.GDT, 8 Dec 10

**Project:** THOR LAKE PROJECT**Drillhole No.:** DH-2010-05**Page:** 1 of 1

Contractor: PROCORE DRILLING LTD.

Drill Type: BOYLES 25A

Date Started: 9 Nov 10

Location: PINE POINT, NORTH OF N38 PIT

Total Depth: 18.62 m

Date Completed: 13 Nov 10

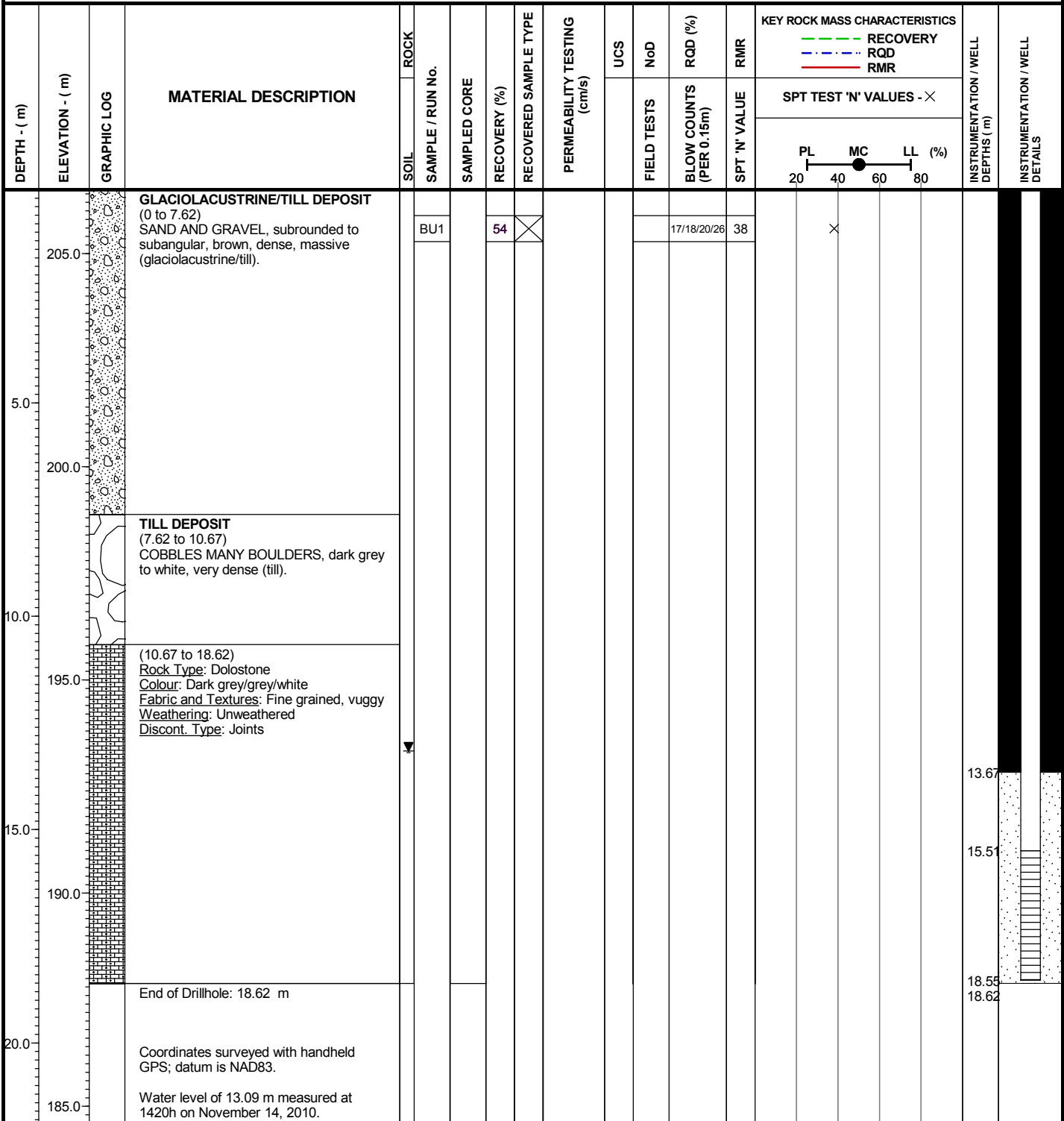
Coordinates: 6,753,511 N, 641,707 E

Elevation: 206.50 m

Logged by: RDW

Inclination: -90

Reviewed by: CLS

**SYMBOLS:**

BULK



SPLIT SPOON



THERMISTOR



BENTONITE



SLOUGH



CORE



SHELBY TUBE



WELL



SAND

AVALON RARE METALS INC.  
THOR LAKE PROJECT**Knight Piésold**  
CONSULTINGProject No.  
NB101-390/2Ref. No.  
NB10-00656Rev.  
0**FIGURE A-6**I:\10100390\02\ADAT\WORK FILES\WF02 - PINE POINT SI LOGS\DRILLHOLE LOGS.GPJ  
I:\0\INT\LIBRARY\KP LIB\GLB; DRILLHOLE LOG\_WELL INSTALLATIONS; KP DATA TEMPLATE.GDT, 8 Dec 10

**APPENDIX B**

**DRILLHOLE PHOTO SUMMARIES**

(Pages B-1 to B-5)



Photo 1 - DH-2010-01 looking north



Photo 2 - DH-2010-01 looking east



Photo 3 - DH-2010-01 looking south



Photo 4 - DH-2010-01 looking west

0	08DEC'10	ISSUED WITH MEMO	RDW	CLS	MRP
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

AVALON RARE METALS INC.		
THOR LAKE PROJECT		
HYDROGEOLOGICAL FIELD PROGRAM SUMMARY DH-2010-01 PHOTO SUMMARY		
<b><i>Knight Piésold</i></b> CONSULTING	P/A NO. NB101-390/2	REF. NO. NB10-00656
	<b>FIGURE B-1</b>	
		REV 0





Photo 1 - Profile of road embankment



Photo 2 - Profile of nearby depression



Photo 3 - DH-2010-02 looking southeast



Photo 4 - DH-2010-02 looking northwest



Photo 5 - DH-2010-02 looking east

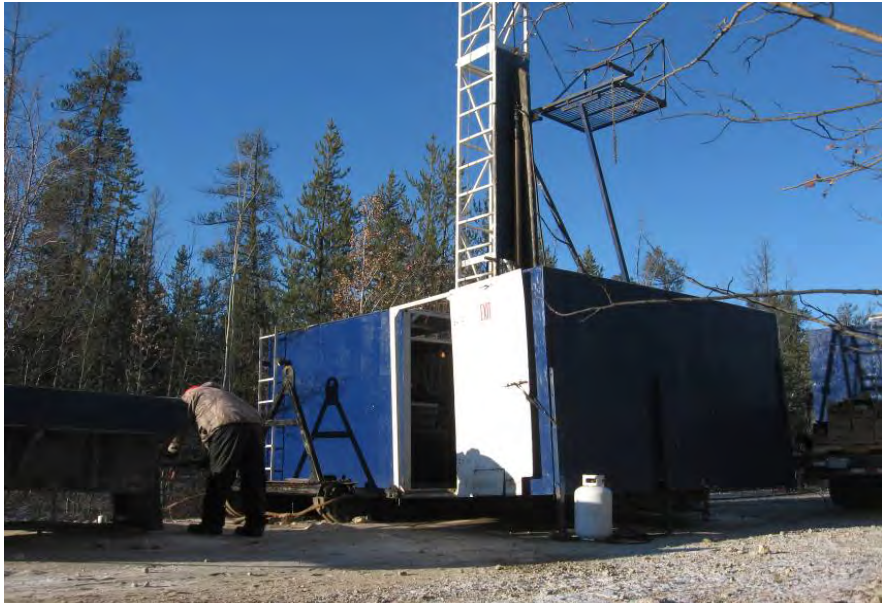


Photo 6 - DH-2010-02 looking west

0	08DEC'10	ISSUED WITH MEMO	RDW	CLS	MRP
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

AVALON RARE METALS INC.		
THOR LAKE PROJECT		
HYDROGEOLOGICAL FIELD PROGRAM SUMMARY DH-2010-02D&S PHOTO SUMMARY		
<b><i>Knight Piésold</i></b> CONSULTING	P/A NO. NB101-390/2	REF. NO. NB10-00656
	FIGURE B-2	
		REV 0





Photo 1 - DH-2010-03 looking north



Photo 2 - DH-2010-03 looking east



Photo 3 - DH-2010-03 looking south



Photo 4 - DH-2010-03 looking west

0	08DEC'10	ISSUED WITH MEMO	RDW	CLS	MRP
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

AVALON RARE METALS INC.		
THOR LAKE PROJECT		
HYDROGEOLOGICAL FIELD PROGRAM SUMMARY DH-2010-03 PHOTO SUMMARY		
<b><i>Knight Piésold</i></b> CONSULTING	P/A NO. NB101-390/2	REF. NO. NB10-00656
	<b>FIGURE B-3</b>	
		REV 0





Photo 1 - DH-2010-04 looking north



Photo 2 - DH-2010-04 looking east



Photo 3 - DH-2010-04 looking south



Photo 4 - DH-2010-04 looking west



Photo 5 - DH-2010-04 drill water diversion berms



Photo 6 - DH-2010-04 drill water diversion berm



Photo 7 - DH-2010-04 drill water diversion berms



Photo 8 - DH-2010-04 drill water diversion berms

0	08DEC'10	ISSUED WITH MEMO	RDW	CLS	MRP
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

AVALON RARE METALS INC.			
THOR LAKE PROJECT			
HYDROGEOLOGICAL FIELD PROGRAM SUMMARY DH-2010-04 PHOTO SUMMARY			
<i>Knight Piésold</i> CONSULTING	P/A NO. NB101-390/2	REF. NO. NB10-00656	REV 0
	FIGURE B-4		



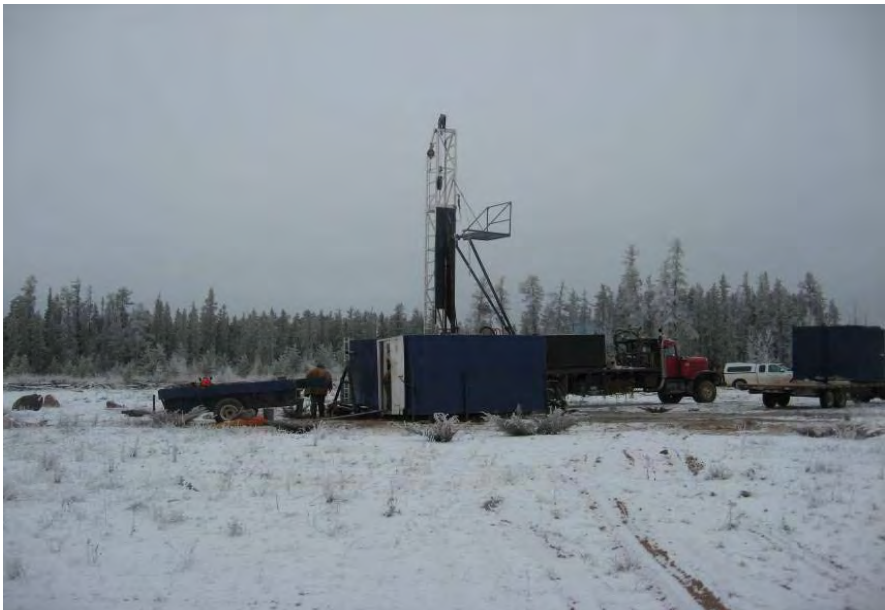


Photo 1 - DH-2010-05 looking north



Photo 2 - DH-2010-05 looking east



Photo 3 - DH-2010-05 looking south



Photo 4 - DH-2010-05 looking west



Photo 5 - DH-2010-05 BU1(0.61 - 1.22 m)



Photo 6 - DH-2010-05 BU2 (0.76 - 1.37 m)

0	08DEC'10	ISSUED WITH MEMO	RDW	CLS	MRP
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

AVALON RARE METALS INC.			
THOR LAKE PROJECT			
HYDROGEOLOGICAL FIELD PROGRAM SUMMARY DH-2010-05 PHOTO SUMMARY			
<i><b>Knight Piésold</b></i> CONSULTING	P/A NO. NB101-390/2	REF. NO. NB10-00656	REV 0
	FIGURE B-5		