An Australian Government Initiative

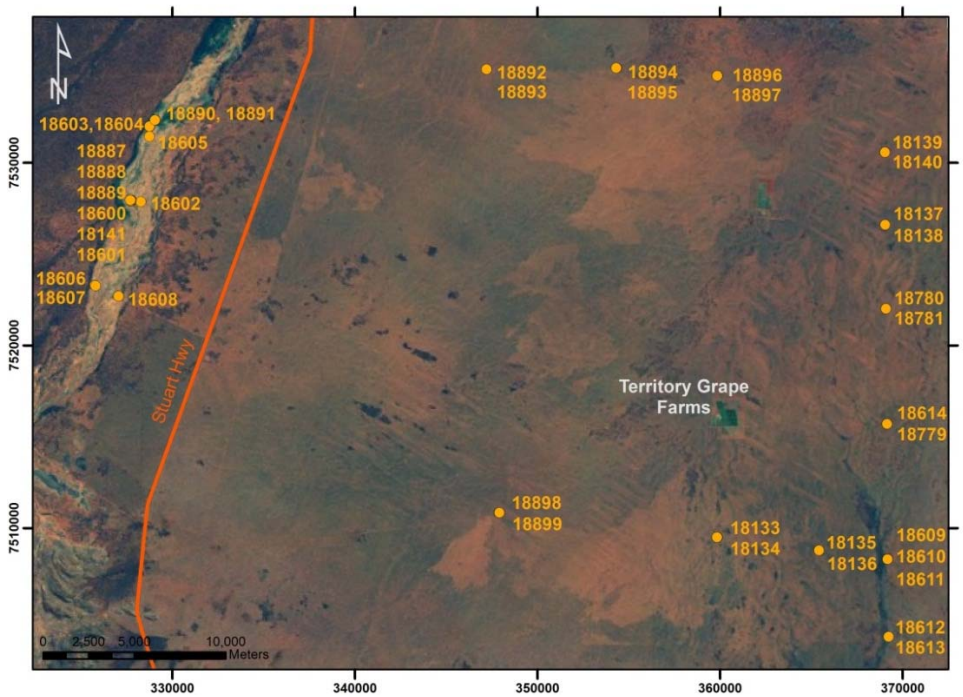
Groundwater Education Investment Fund Project

Borehole Infrastructure Report

Borehole Type	Multi-Level Piezometer	**GPS Easting**	(MGA-94 Zone 53)	369046
Unique Well ID	18137	**GPS Northing**		7526600
Completion Date	29 November 2011	**Location**		Pine Hill Station, NT
Drilled By	NRETAS	**Installed By**		NRETAS
Monument Type	Round-White-Swing Top	**Depth Drilled**		66.0 m
Monument Diameter/Width	216 mm	**Drilled Diameter/Method**		200 mm (min), Rotary Air
Development Details	Airlift 7 L/s.			

Project Comments: 18137 is a triple completion multi-level piezometer. It is located adjacent to 18138. Together, these bores provide a nest of five piezometers sampling different depths in the unconfined aquifer.

Bore ID	Casing Size (mm)/ Type	TOC (mAHD)	Casing Depth (mBGL)		Screen Size (mm)/ Aperture (mm)/ Type	Cement (mBGL)		Screen Depth (mBGL)		SWL (mTOC)
	200/Steel		-0.8	5.7	NA	0.0	5.7	NA	NA	NA
18137-3	50/PVC9	550.272	-0.725	39.6	50/1/PVC			37.6	38.6	14.355
18137-2	50/PVC9	550.288	-0.755	47.1	50/1/PVC			45.1	46.1	14.381
18137-1	50/PVC9	550.231	-0.725	52.5	50/1/PVC			50.5	51.5	14.337



Map of Ti Tree Super Science Piezometer Locations, Pine Hill Station, NT.

Note* Appendix includes Well Completion, Lithology and Geophysical Logs, Hydraulic Test and Chemical Analysis.

Infrastructure Report prepared by:	Contact Details:	Checked by: Prof Peter Cook
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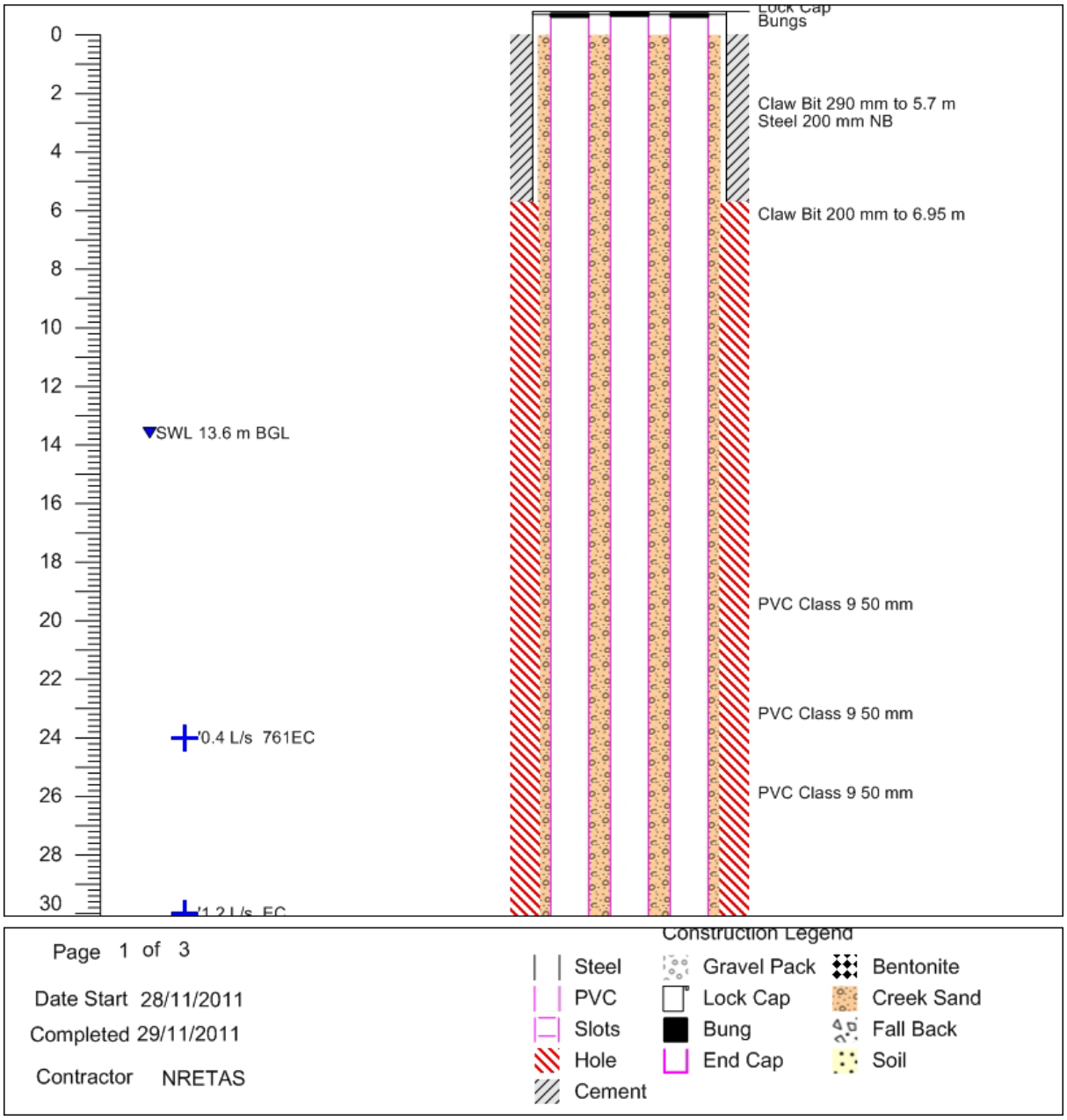
Well Completion Log



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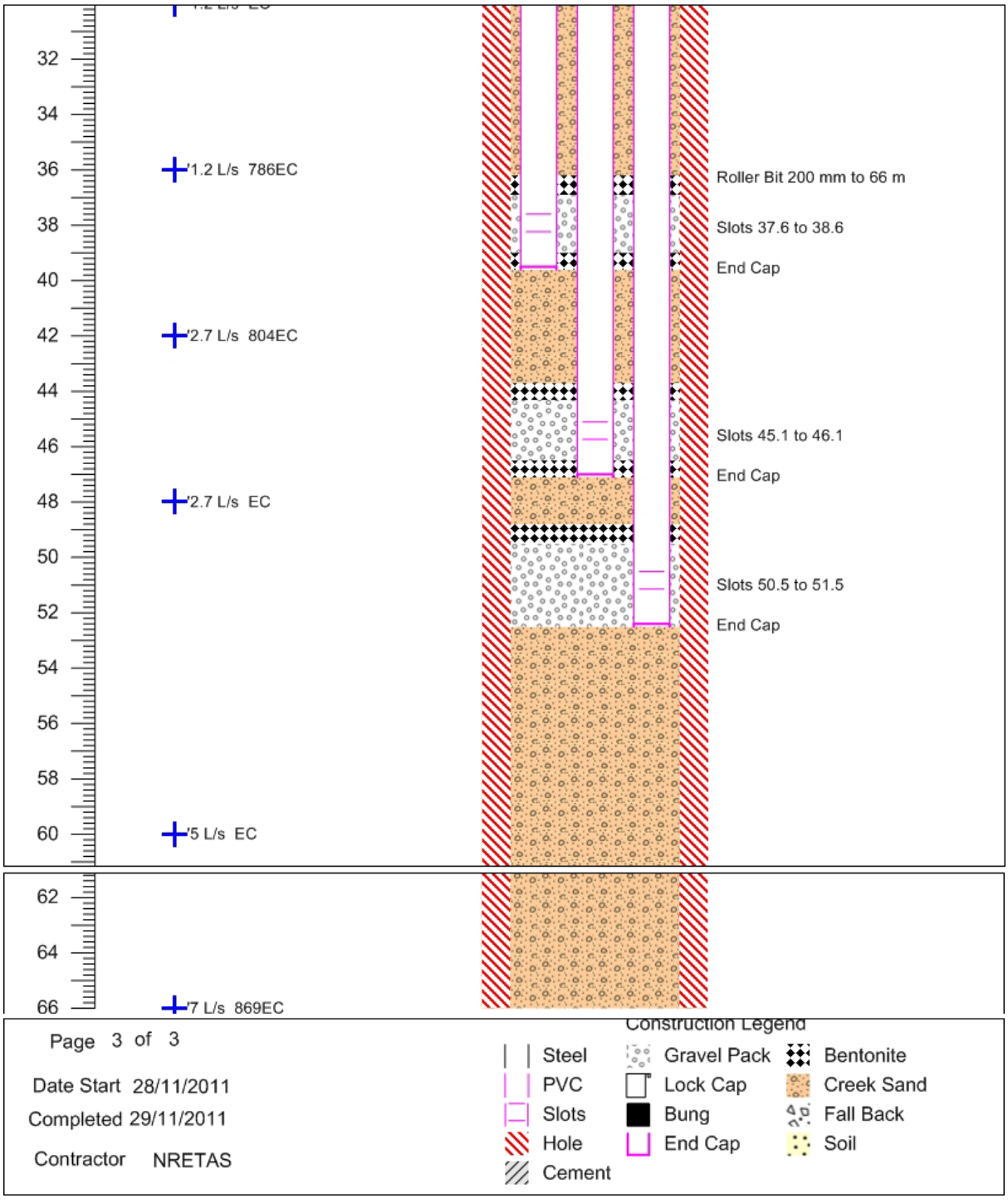
Date Start 28/11/2011

Completed 29/11/2011

Contractor NRETAS

Construction Legend

Steel	Gravel Pack	Bentonite
PVC	Lock Cap	Creek Sand
Slots	Bung	Fall Back
Hole	End Cap	Soil
Cement		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58
60
62
64
66
1.2 L/s 786EC
2.7 L/s 804EC
2.7 L/s EC
5 L/s EC
7 L/s 869EC
Roller Bit 200 mm to 66 m
Slots 37.6 to 38.6
End Cap
Slots 45.1 to 46.1
End Cap
Slots 50.5 to 51.5
End Cap
Page 3 of 3
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Contractor NRETAS
Construction Legend
Steel
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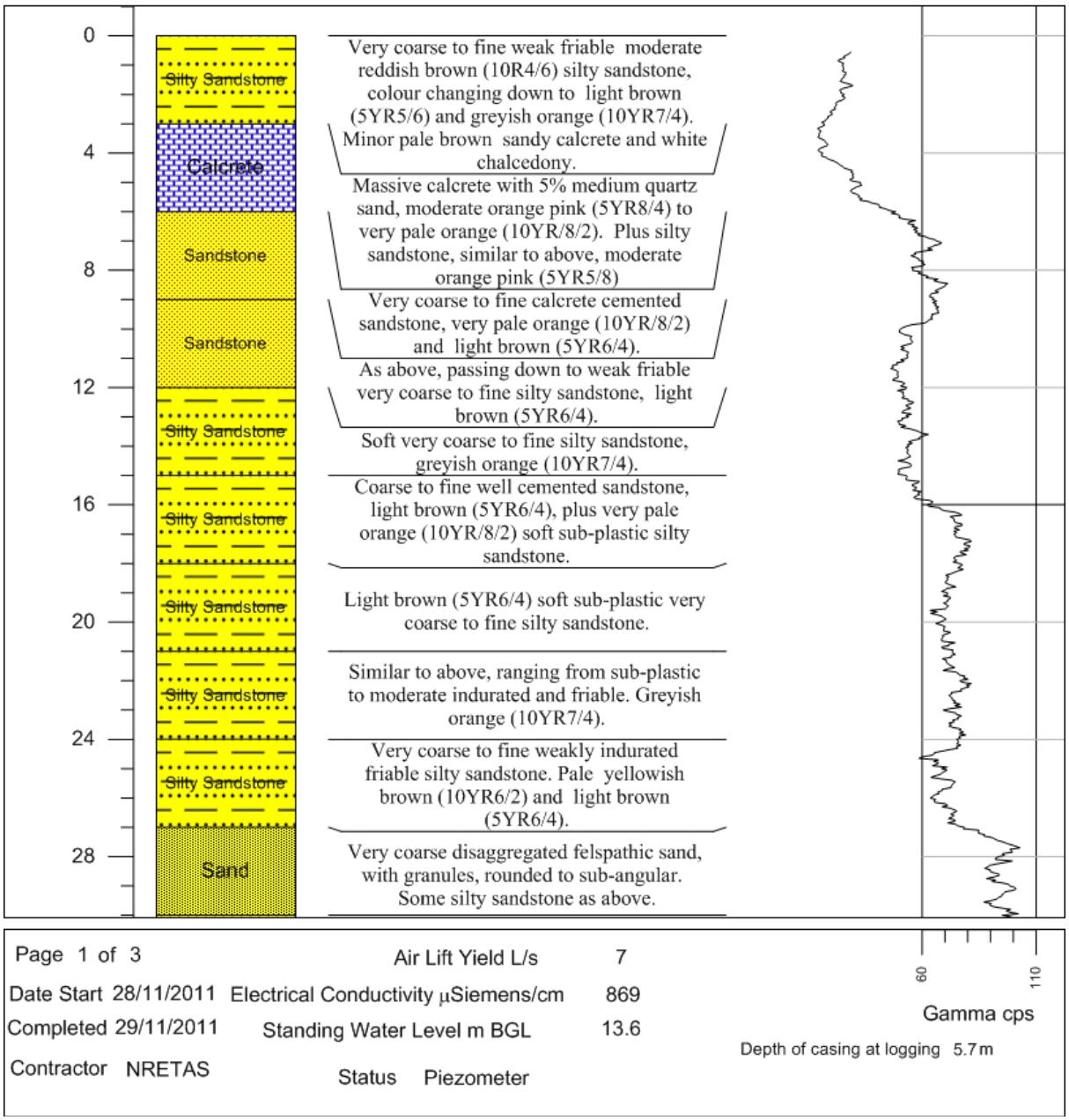
Fall Back
Soil

Lithology Log



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Date Start 28/11/2011

Completed 29/11/2011

Contractor NRETAS

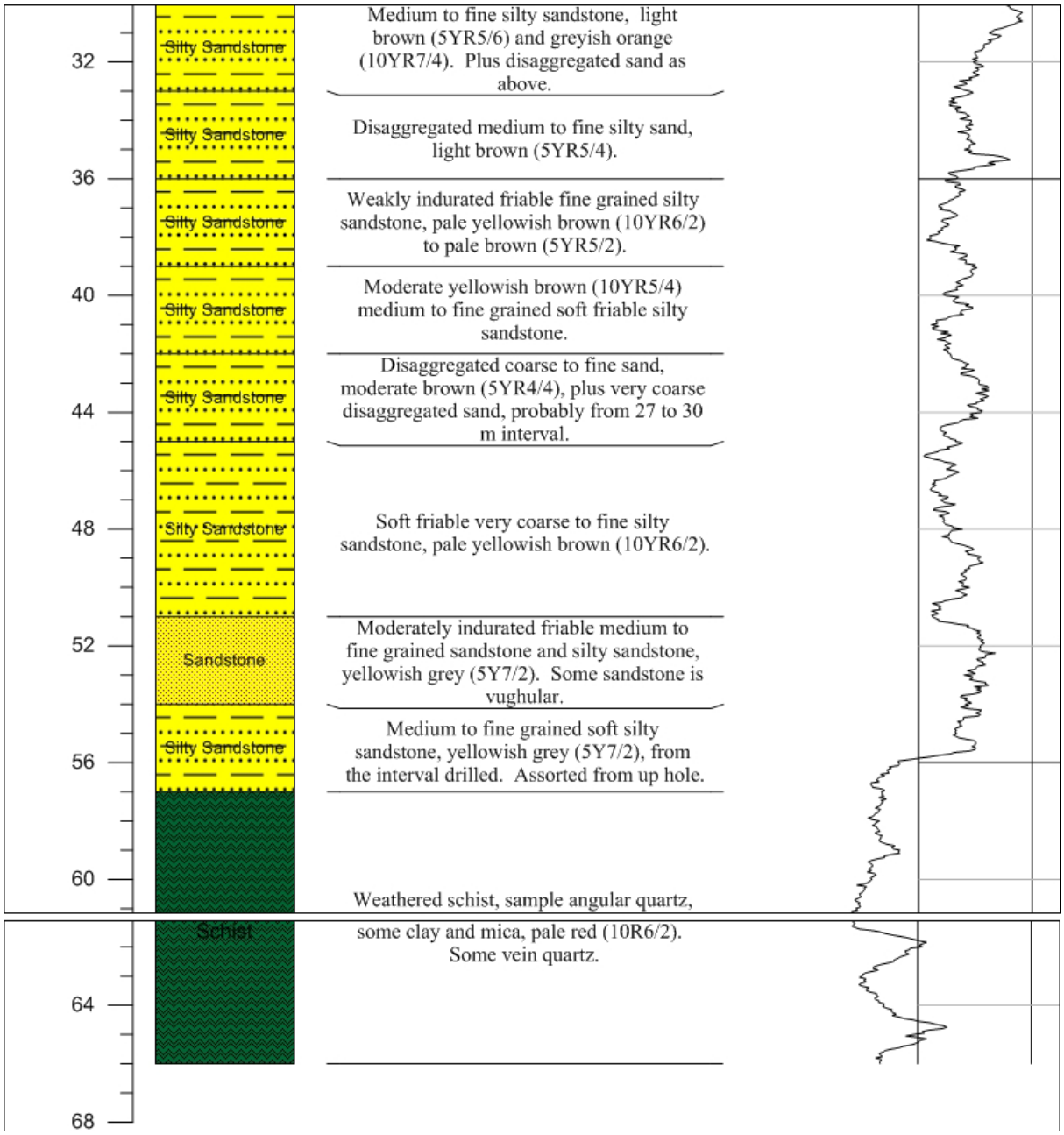
Air Lift Yield L/s 7

Electrical Conductivity µSiemens/cm 869

Standing Water Level m BGL 13.6

Status Piezometer

Depth of casing at logging 5.7 m



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Date Start 28/11/2011

Completed 29/11/2011

Contractor NRETAS

Air Lift Yield L/s 7

Electrical Conductivity µSiemens/cm 869

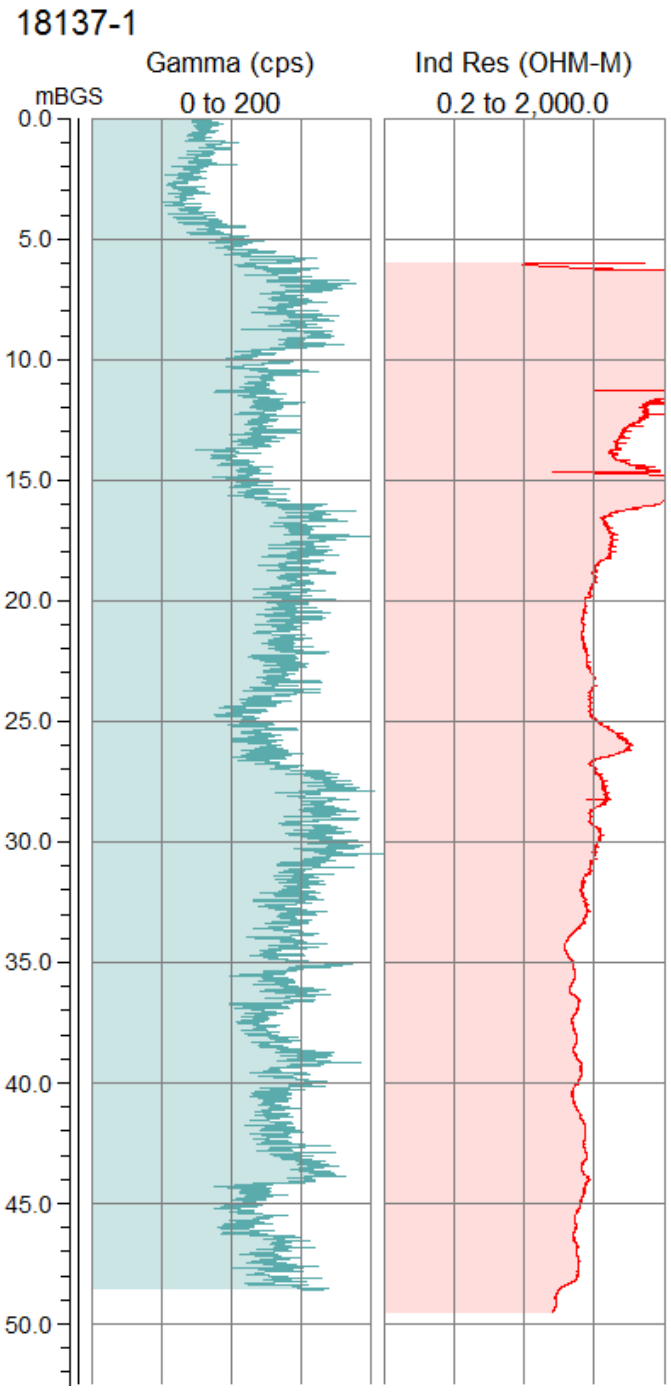
Standing Water Level m BGL 13.6

Status Piezometer

Depth of casing at logging 5.7 m

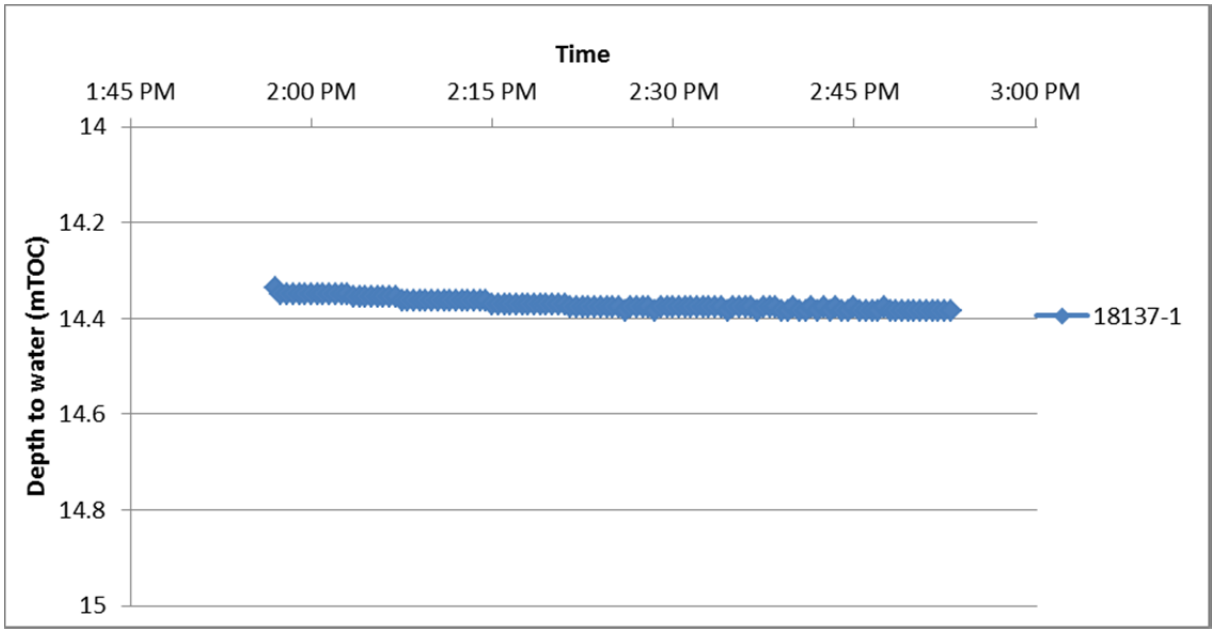
Geophysical Logs

The portable Mount Sopris logging system was used to collect geophysical data from bore 18137-1. The 2PGS probe was used to collect natural gamma measurements, and the 2PIA probe was used to measure conductivity/induced resistivity.

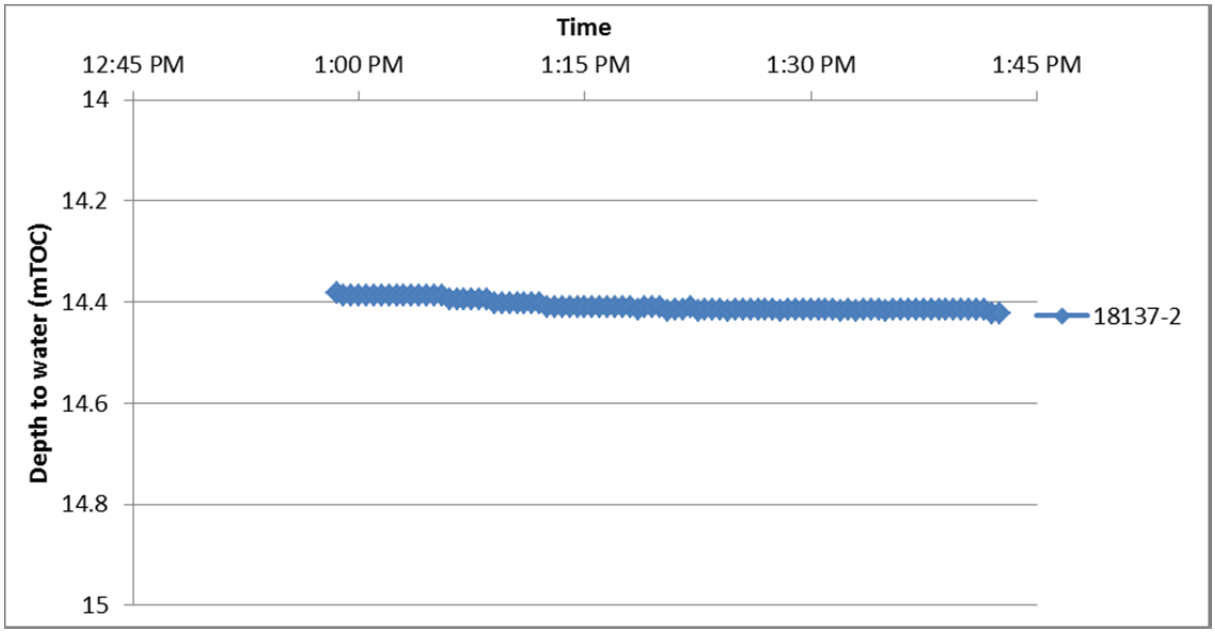


Pumping Test

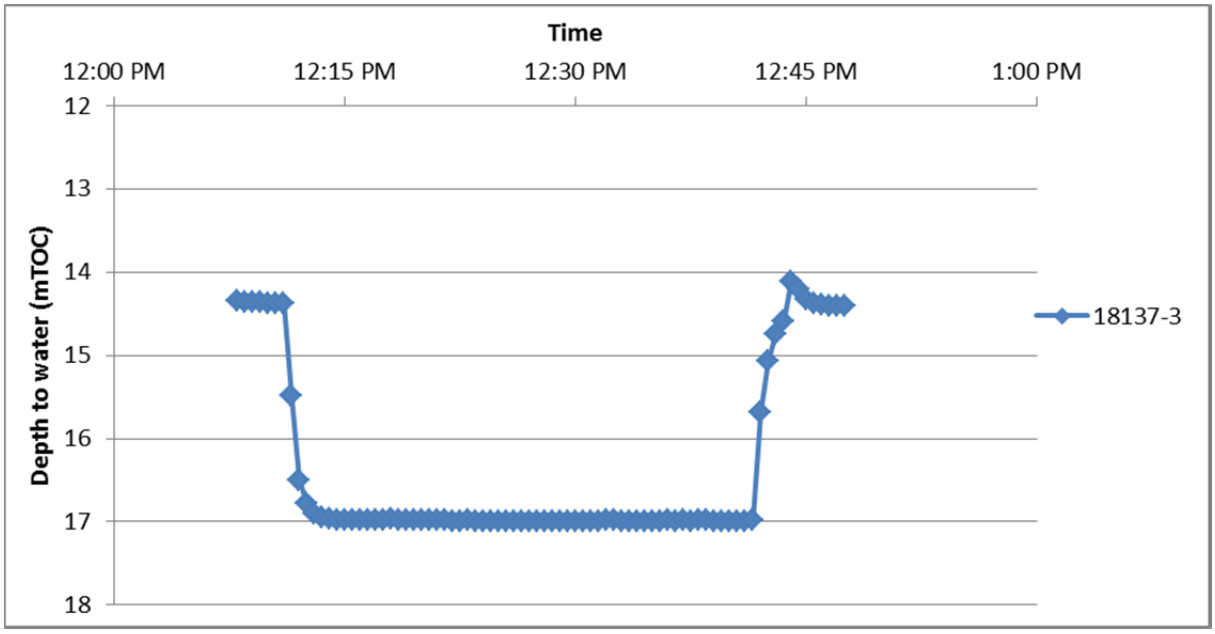
A pumping test was performed on piezometer 18137-1 on 5/02/2012 by attaching a level logger to a submersible Grundfos MP1 pump, lowering the pump to a depth of 20 mTOC and using a flow rate of 7.8 L/min. The results of the test are presented below. The pump was not able to draw down the water level very much in this piezometer. The report author may be contacted for the full data set.



A pumping test was performed on piezometer 18137-2 on 5/02/2012 by attaching a level logger to a submersible Grundfos MP1 pump, lowering the pump to a depth of 20 mTOC and using a flow rate of 8.3 L/min. The results of the test are presented below. The pump was not able to draw down the water level very much in this piezometer. The report author may be contacted for the full data set.



A pumping test was performed on piezometer 18137-3 on 5/02/2012 by attaching a level logger to a submersible Grundfos MP1 pump, lowering the pump to a depth of 22 mTOC and using a flow rate of 8 L/min. The results of the test are presented below. The report author may be contacted for the full data set.



Chemical Analysis

Basic chemical analysis of the dissolved solutes and concentration of ions in the borehole was performed. The testing also included hydrogen ion activity (pH) and fluid electrical conductivity (EC). Data from the chemical analysis is shown below.

Well ID	Date Sampled	SWL	Field Parameters				Laboratory Analyses							
		m TOC	pH	EC µS/cm	Temp °C	Alkalinity mg/L $CaCo^3$	Ca^{2+} mg/L	K^+ mg/L	Mg^{2+} mg/L	Na^+ mg/L	Si mg/L	Cl^- mg/L	NO_3^- mg/L	SO_4^{2-} mg/L
18137-3	5/02/2012	14.36	7.36	963	30	230	29.1	17.4	20.3	111	37.8	59.7	73.3	73.15
18137-2	5/02/2012	14.38	7.3	993	30.1	233	35.7	19.2	22.6	107	36.8	82.3	77.6	65.85
18137-1	5/02/2012	14.34	7.1	1129	30.4	226	41.3	19	23.5	120	31.7	116	69.5	86.34