An Australian Government Initiative

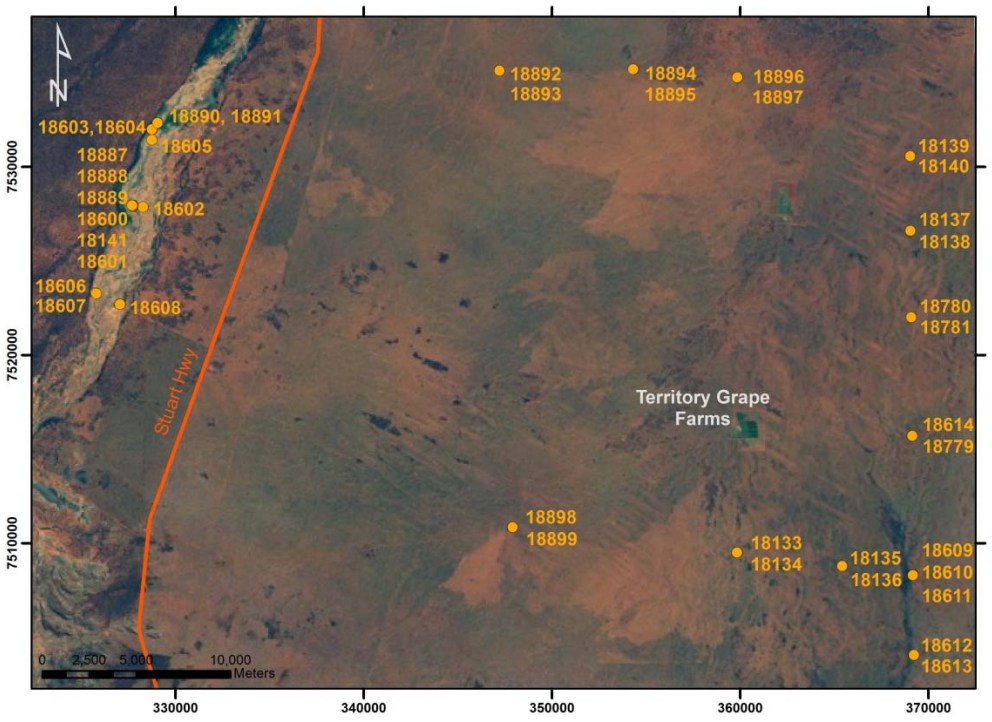
Groundwater Education Investment Fund Project

Borehole Infrastructure Report

Borehole Type	Multi-Level Piezometer	**GPS Easting**	(MGA-94 Zone 53)	365420
Unique Well ID	18136	**GPS Northing**		7508772
Completion Date	26 November 2011	**Location**		Pine Hill Station, NT
Drilled By	NRETAS	**Installed By**		NRETAS
Monument Type	Round-White-Swing Top	**Depth Drilled**		42.3 m
Monument Diameter/Width	216 mm	**Drilled Diameter/Method**		200 mm (min), Rotary Air
Development Details	Airlift 0.6 L/s.			

Project Comments: 18136 is a dual completion multi-level piezometer. It is located adjacent to 18135. 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
18136-2	50/PVC9	577.810	-0.76	33.5	50/1/PVC	-0.5	0.0	30.5	32.5	30.139
18136-1	50/PVC9	577.786	-0.74	42	50/1/PVC	-0.5	0.0	39	41	30.123



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.

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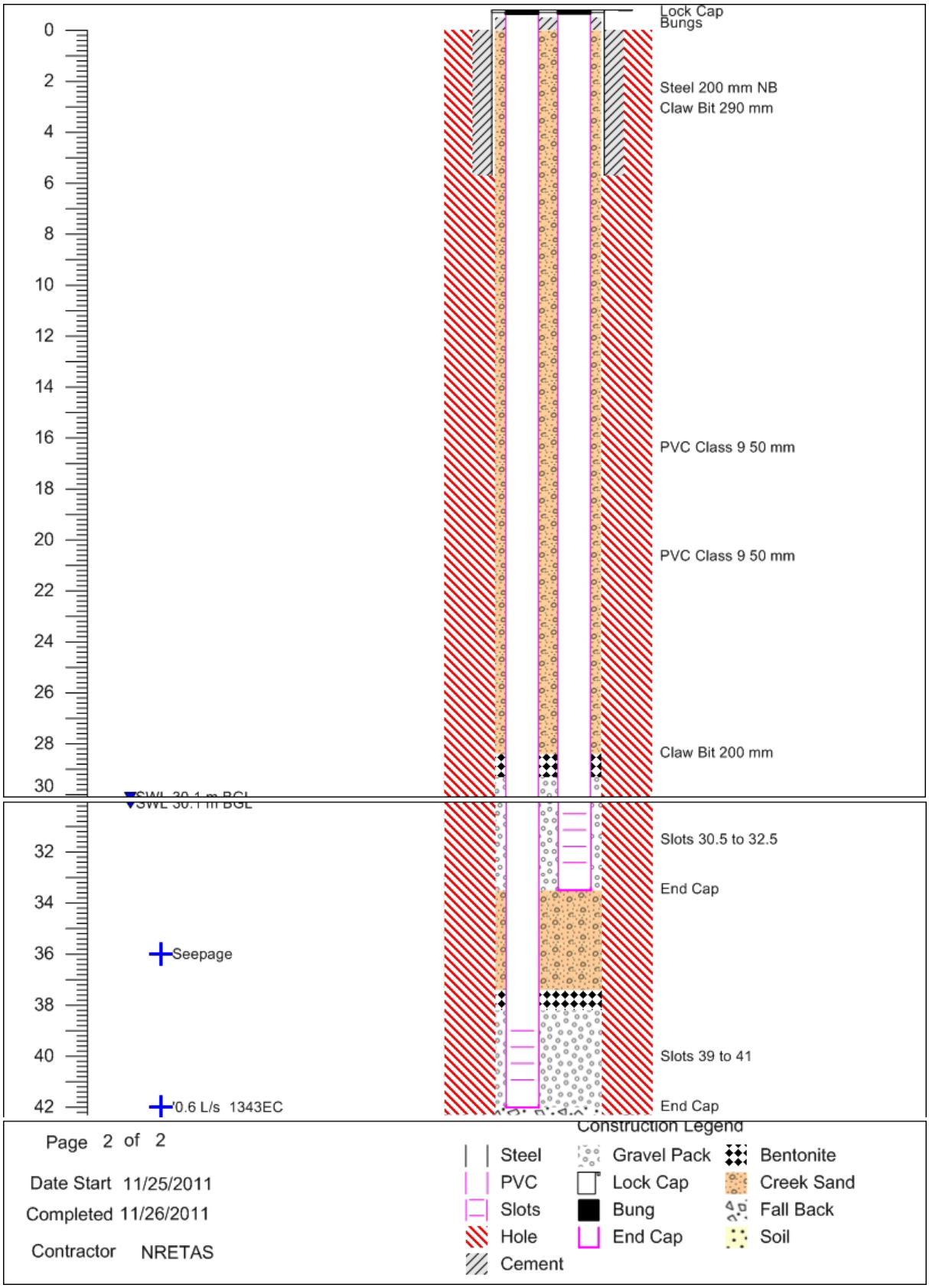
Well Completion Log



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Date Start 11/25/2011

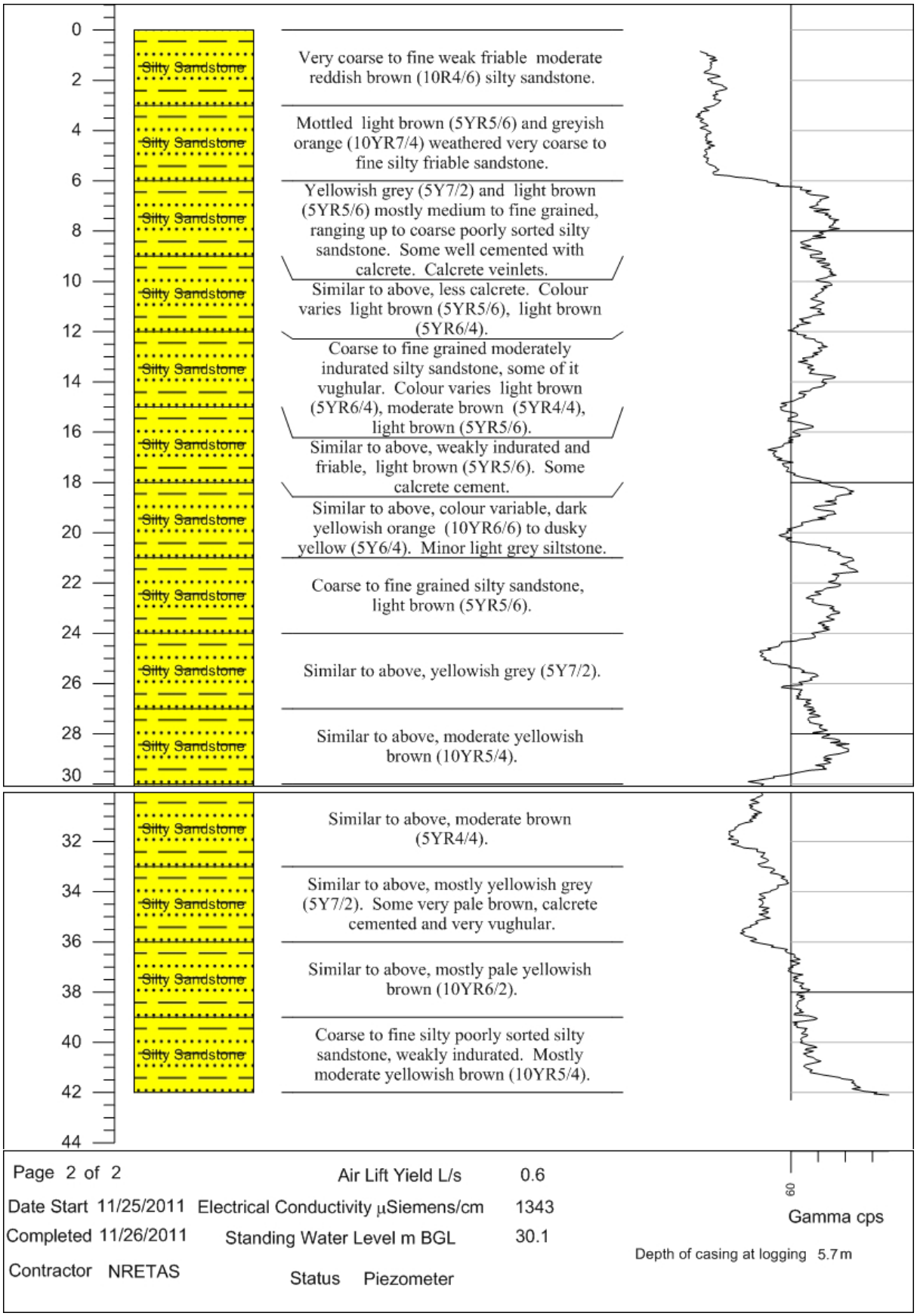
Completed 11/26/2011

Contractor NRETAS

Construction Legend

Steel	Gravel Pack	Bentonite
PVC	Lock Cap	Creek Sand
Slots	Bung	Fall Back
Hole	End Cap	Soil
Cement		

Lithology Log



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Date Start 11/25/2011

Completed 11/26/2011

Contractor NRETAS

Air Lift Yield L/s 0.6

Electrical Conductivity µSiemens/cm 1343

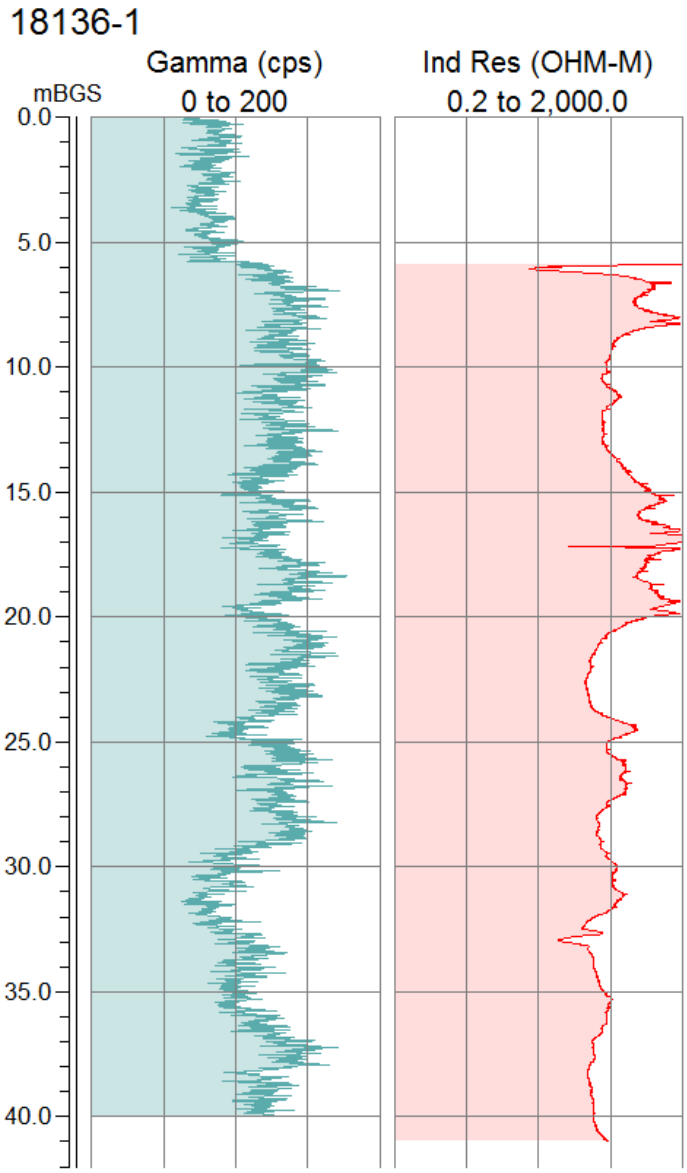
Standing Water Level m BGL 30.1

Status Piezometer

Depth of casing at logging 5.7 m

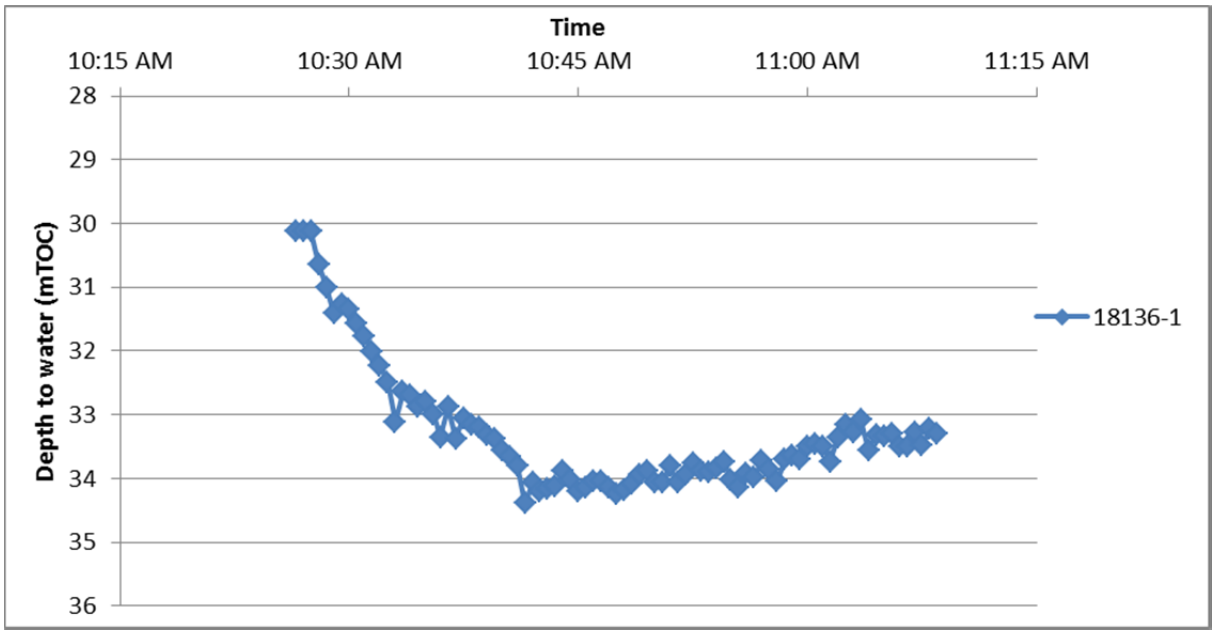
Geophysical Logs

The portable Mount Sopris logging system was used to collect geophysical data from bore 18136-1. The 2PGS probe was used to collect natural gamma measurements, and the 2PIA probe was used to measure conductivity/induced resistivity.

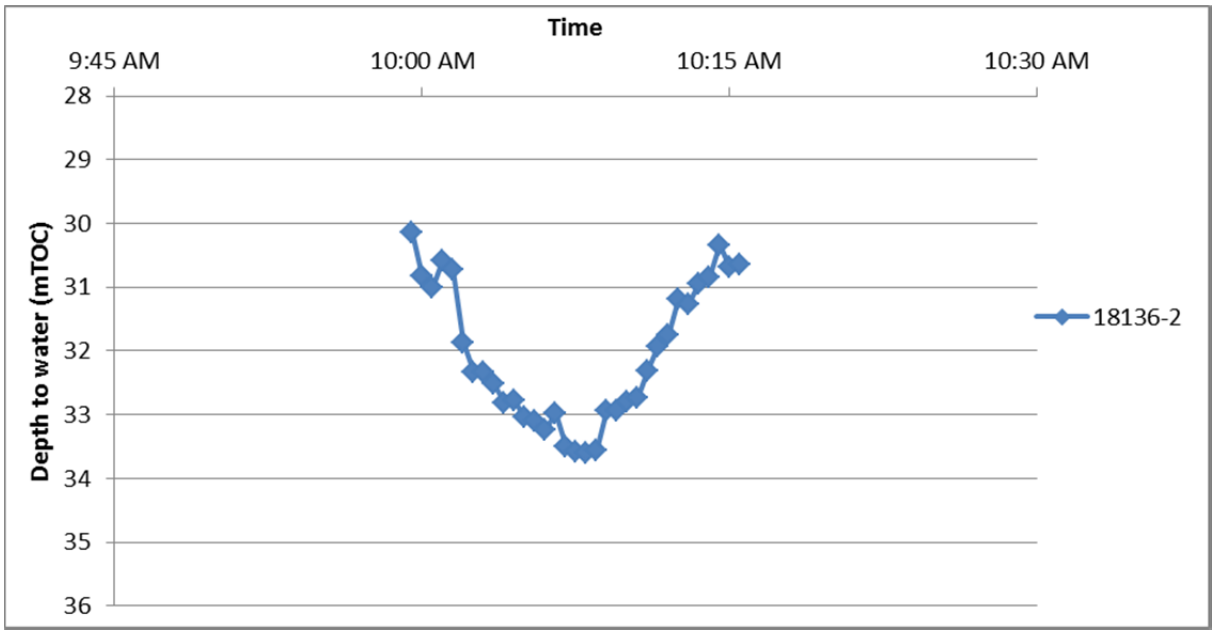


Pumping Test

A pumping test was performed on piezometer 18136-1 on 4/02/2012 by attaching a level logger to a submersible Grundfos MP1 pump, lowering the pump to a depth of 36 mTOC and using a flow rate of 6.6 L/min. The results of the test are presented below. The pump was turned off at 10:55am but the recovery was slow and the pump was removed before full recovery was observed. The report author may be contacted for the full data set.



A pumping test was performed on piezometer 18136-2 on 4/02/2012 by attaching a level logger to a submersible Grundfos MP1 pump, lowering the pump to a depth of 34 mTOC and using a flow rate of 3 L/min. The results of the test are presented below. The water level reached the level of the pump relatively quickly and the pump was turned off. The initial recovery from 33.5-32.9 m is likely from water in the tubing draining back into the well. 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	SWL	Field Parameters				Laboratory Analyses							
	Sampled	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
18136-2	4/02/2012	30.14	7.17	1734	30.5	259	69.2	24.5	34.1	164	32.9	257	229	125.42
18136-1	4/02/2012	30.12	7.14	1565	29.7	228	63.1	24.1	30.8	152	37	234	215	102.76