An Australian Government Initiative

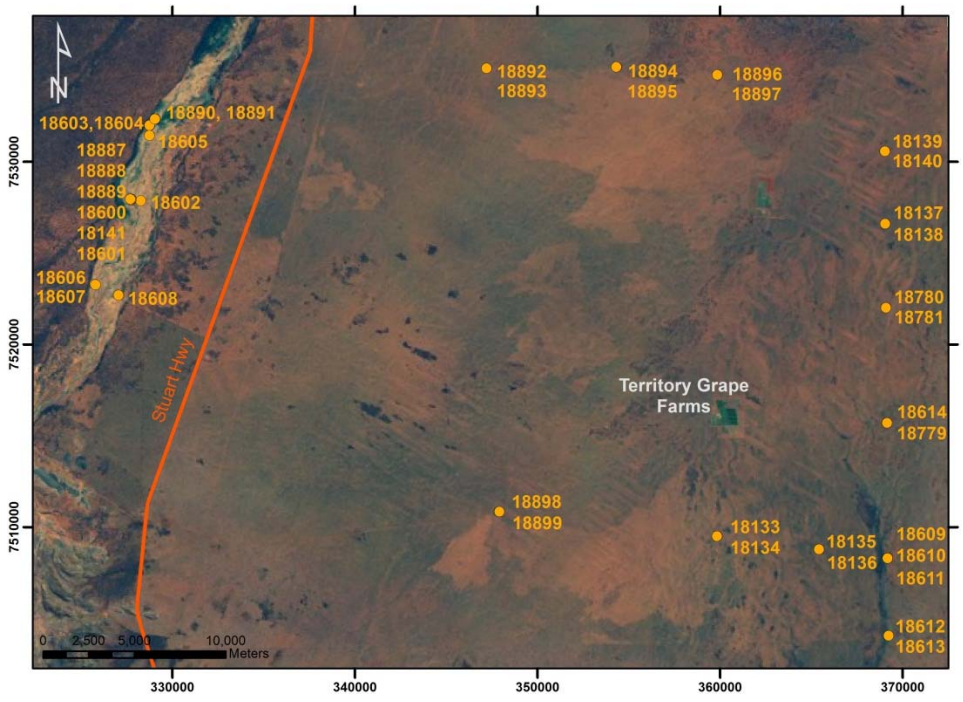
Groundwater Education Investment Fund Project

Borehole Infrastructure Report

Borehole Type	Multi-Level Piezometer	**GPS Easting**	(MGA-94 Zone 53)	369180
Unique Well ID	18610	**GPS Northing**		7508304
Completion Date	3 June 2011	**Location**		Pine Hill Station, NT
Drilled By	NRETAS	**Installed By**		NRETAS
Monument Type	Round-White-Swing Top	**Depth Drilled**		60.5 m
Monument Diameter/Width	216 mm	**Drilled Diameter/Method**		200 mm (min), Rotary Air
Development Details	Airlift 2.5 L/s.			

Project Comments: 18610 is a dual completion multi-level piezometer. It is located adjacent to 18609 and 18611. 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		-0.71	3.5	NA	0.0	3.5	NA	NA	NA
18610-2	50/PVC12	578.634	-0.625	48	50/1/PVC	-0.5	1.0	46	47	31.97
18610-1	50/PVC12	578.643	-0.635	57	50/1/PVC	-0.5	1.0	55	56	31.94



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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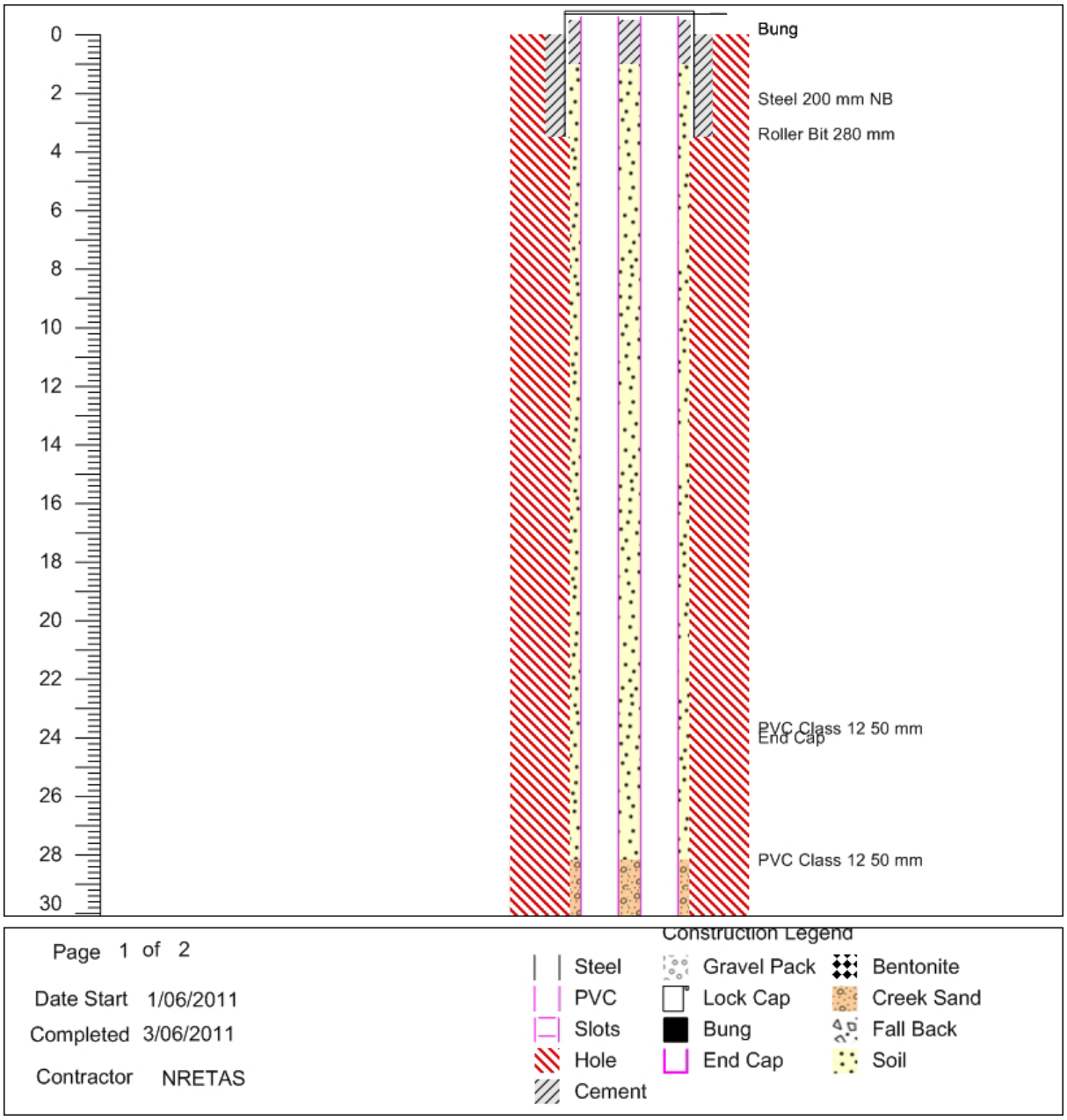
Well Completion Log



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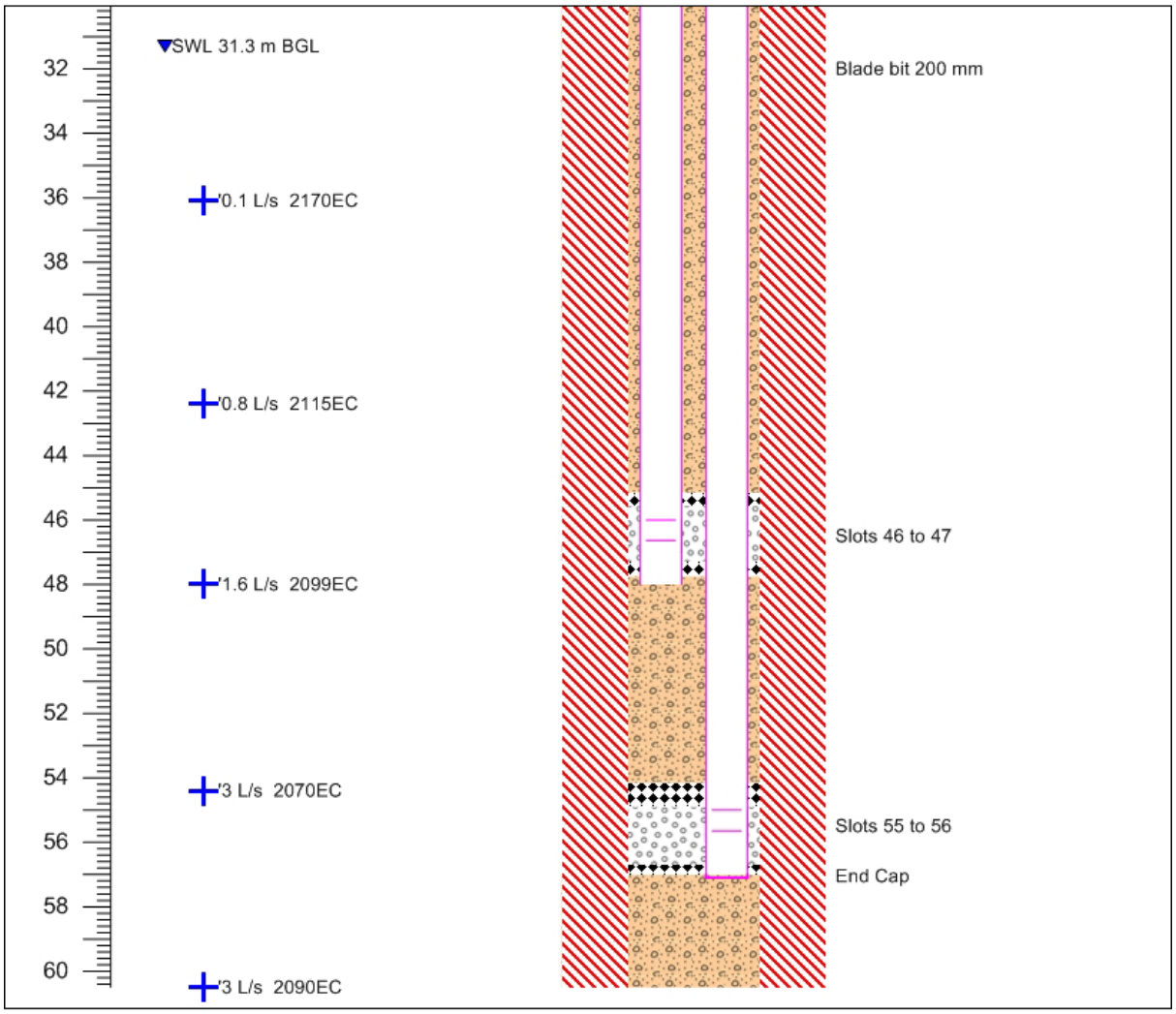
Date Start 1/06/2011

Completed 3/06/2011

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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Date Start 1/06/2011

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Contractor NRETAS

Construction Legend

Steel	Gravel Pack	Bentonite
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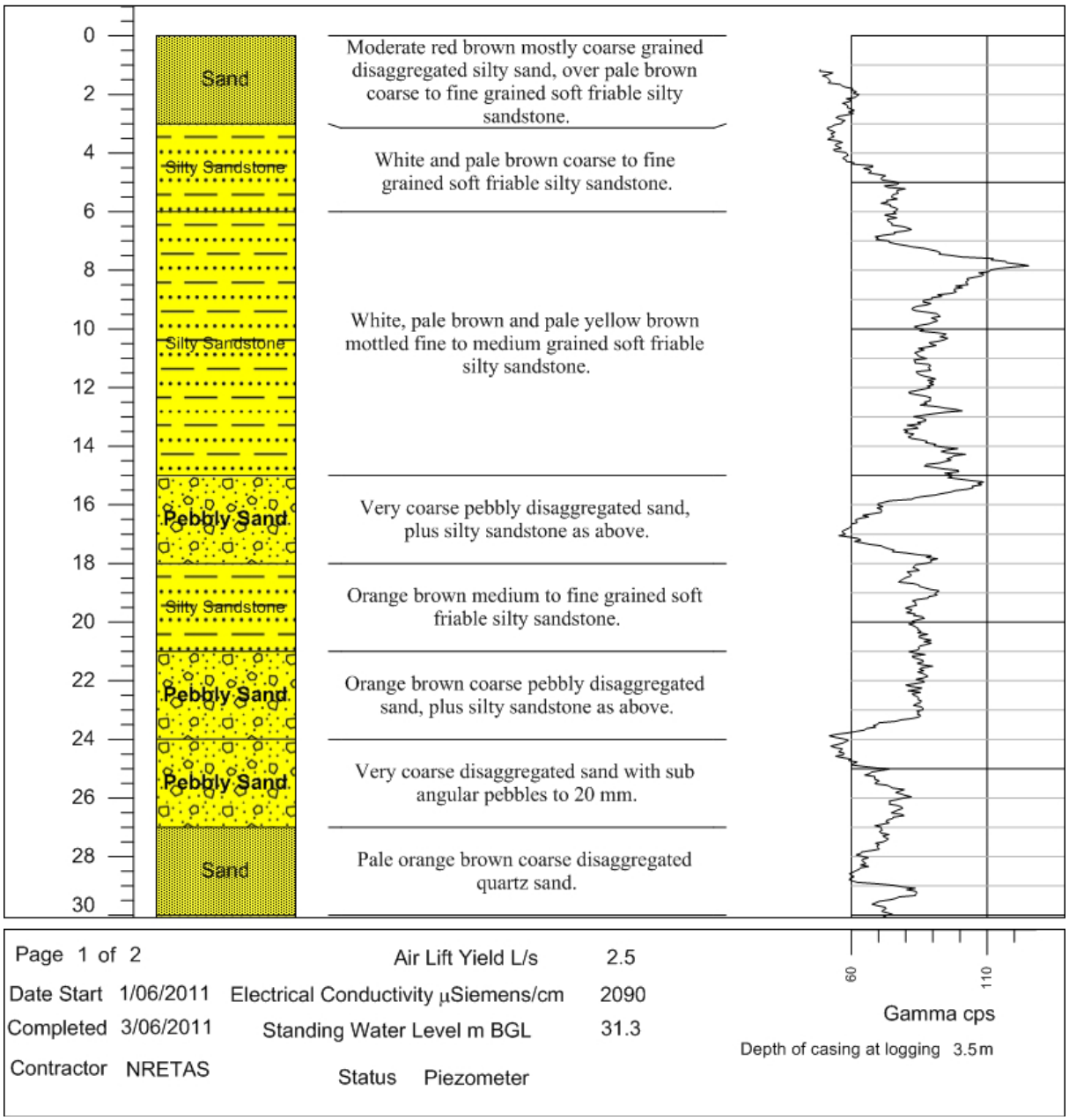
Lithology Log



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Date Start 1/06/2011

Completed 3/06/2011

Contractor NRETAS

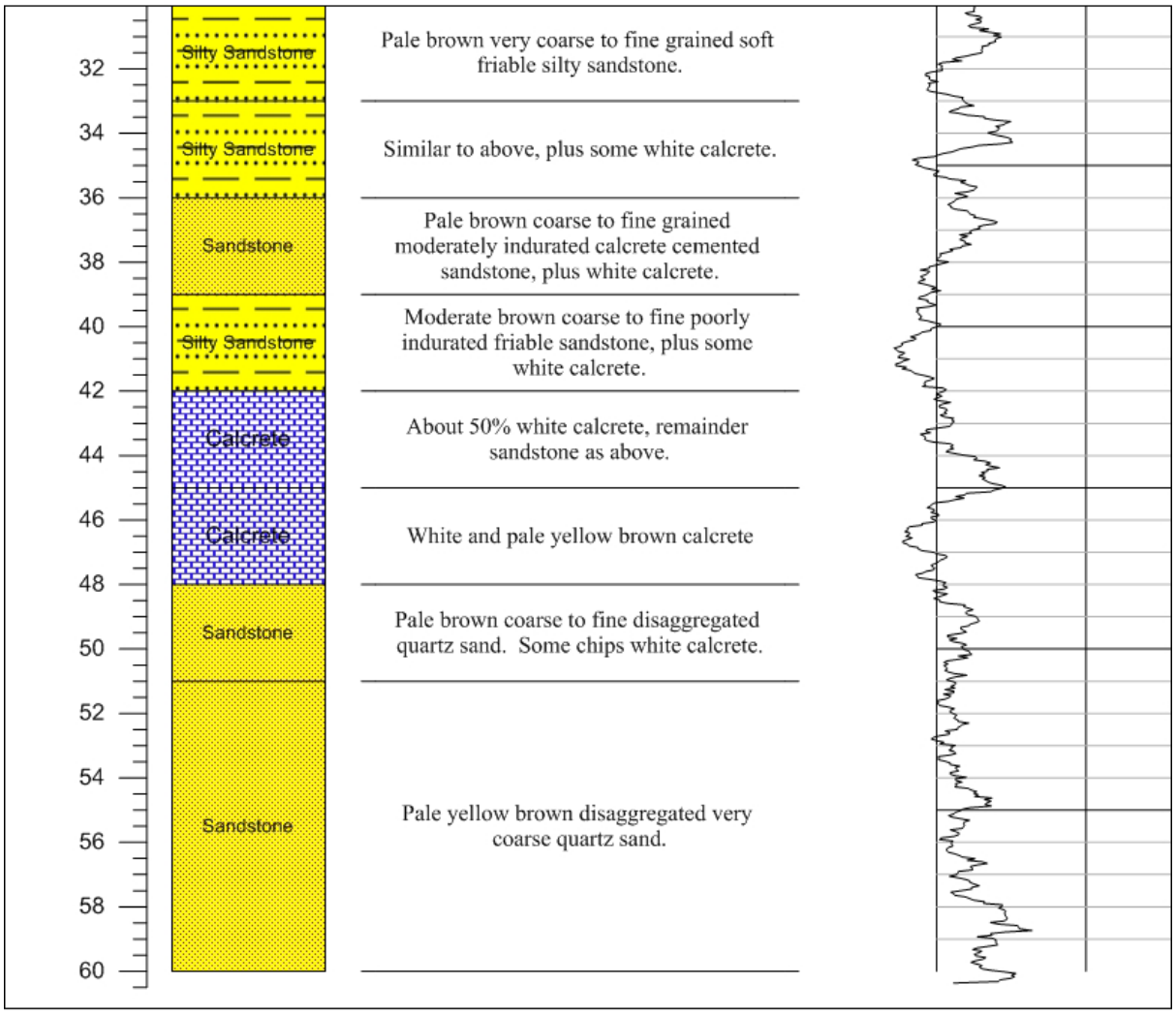
Air Lift Yield L/s 2.5

Electrical Conductivity µSiemens/cm 2090

Standing Water Level m BGL 31.3

Status Piezometer

Depth of casing at logging 3.5m



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Date Start 1/06/2011

Completed 3/06/2011

Contractor NRETAS

Air Lift Yield L/s 2.5

Electrical Conductivity µSiemens/cm 2090

Standing Water Level m BGL 31.3

Status Piezometer

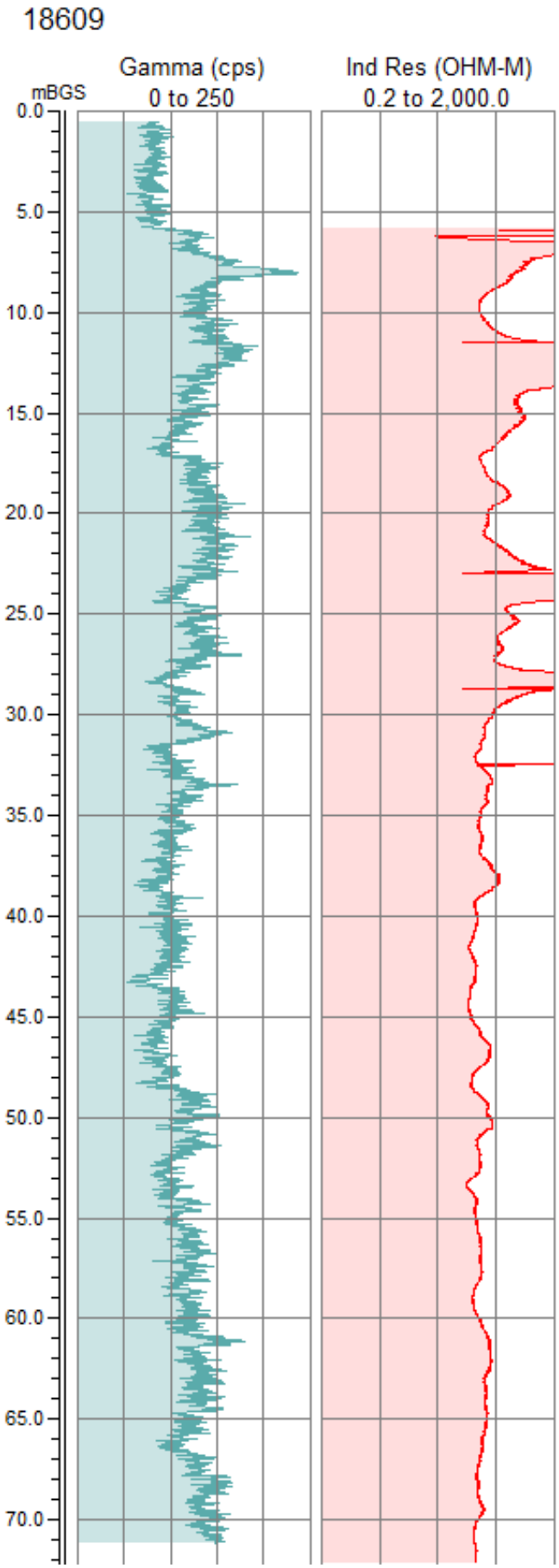
60 110

Gamma cps

Depth of casing at logging 3.5m

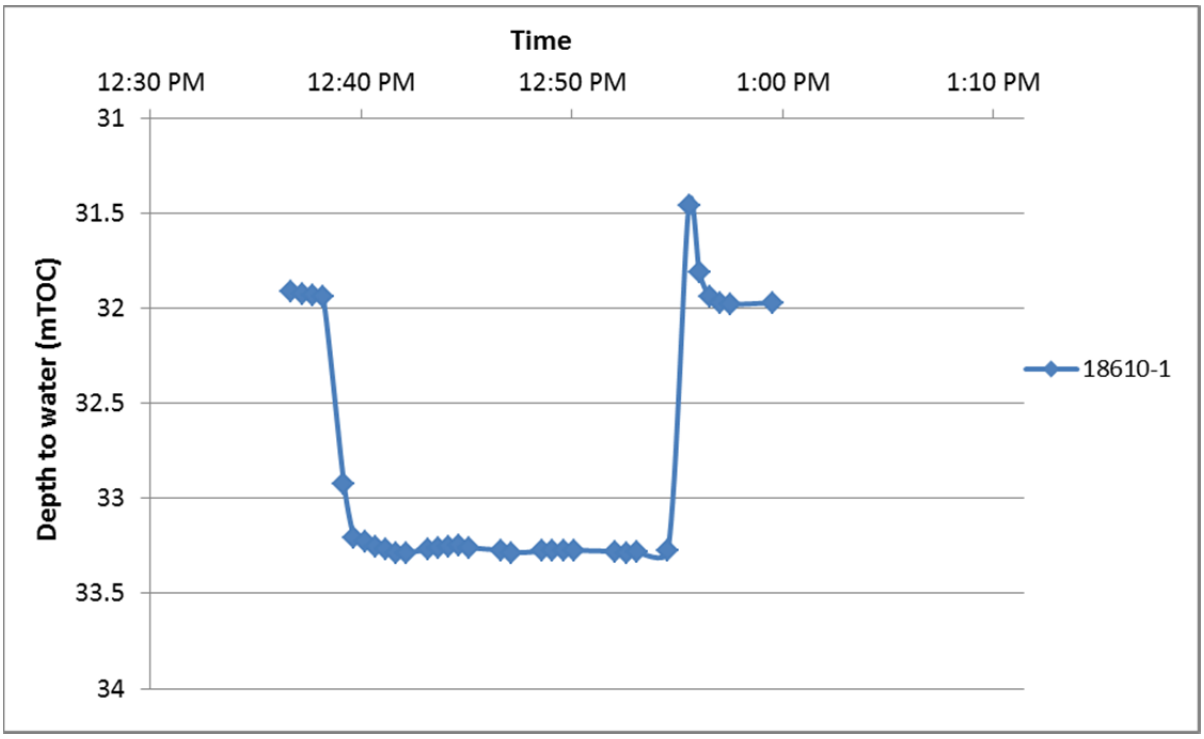
Geophysical Logs

The portable Mount Sopris logging system was used to collect geophysical data from bore 18609, the deepest piezometer in the adjacent bore. The 2PGS probe was used to collect natural gamma measurements, and the 2PIA probe was used to measure conductivity/induced resistivity.

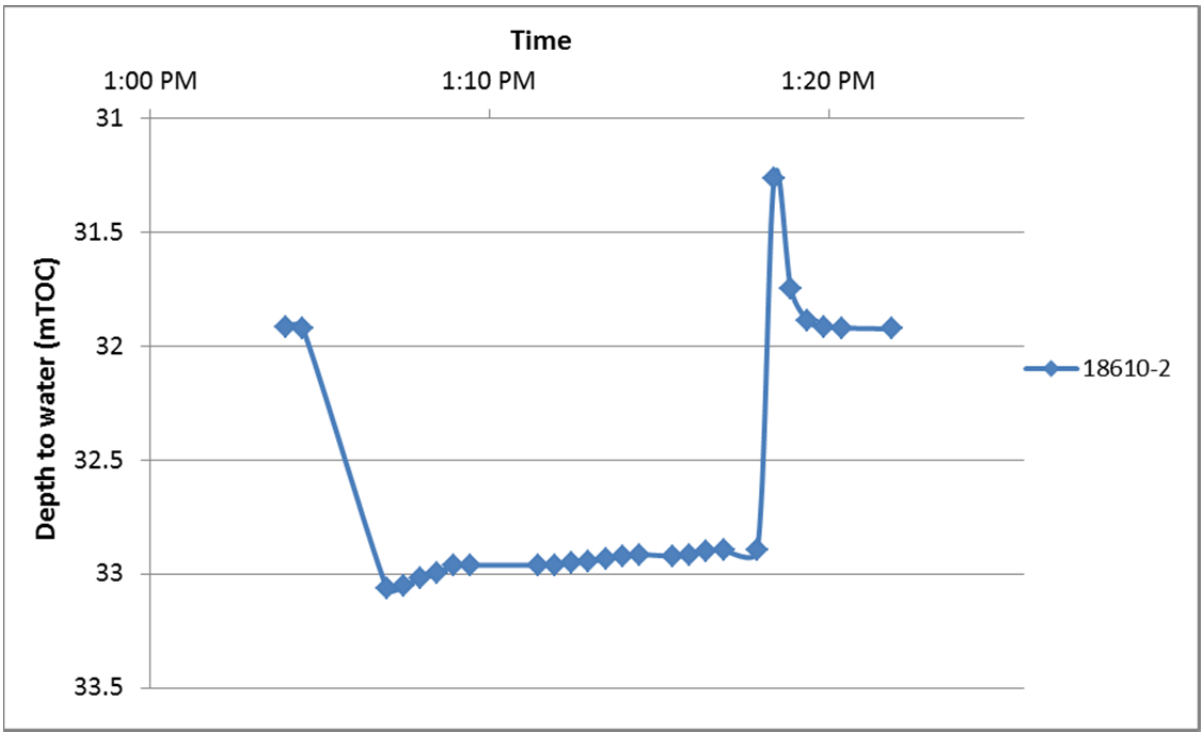


Pumping Test

A pumping test was performed on piezometer 18610-1 on 8/08/2012 by attaching a level logger to a submersible Grundfos MP1 pump, lowering the pump to a depth of 45 mTOC and using a flow rate of 5.7 L/min. The results of the test are presented below. The high water level occurring after the pump was turned off is likely from water draining out of the tubing. The report author may be contacted for the full data set.



A pumping test was performed on piezometer 18610-2 on 8/08/2012 by attaching a level logger to a submersible Grundfos MP1 pump, lowering the pump to a depth of 45 mTOC and using a flow rate of 6.0 L/min. The results of the test are presented below. The high water level occurring after the pump was turned off is likely from water draining out of the tubing. 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	pH	EC	Temp	Alkalinity	Ca^{2+}	K^{+}	Mg^{2+}	Na^{+}	Si	Cl^{-}	NO_3^{-}	SO_4^{2-}
		TOC		µS/cm	°C	mg/L $CaCo^3$	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
18610-2	5/09/2011	31.97	7.5	1979	30	213	69.2	23.6	35.7	221	35.2	350	98	180
18610-1	5/09/2011	31.94	7.4	2058	30		66.9	21.3	33.7	222	33.1	340	88	200