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Loxton Salt Interception Scheme Aquifer Testing and Well Hydraulics

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FOREWORD

South Australia's natural resources are fundamental to the economic and social well-being of the State. One of the State's most precious natural resources, water is a basic requirement of all living organisms and is one of the essential elements ensuring biological diversity of life at all levels. In pristine or undeveloped situations, the condition of water resources reflects the equilibrium between, rainfall, vegetation and other physical parameters. Development of these resources changes the natural balance and may cause degradation. If degradation is small, and the resource retains its utility, the community may assess these changes as being acceptable. However, significant stress will impact on the ability of the resource to continue to meet the needs of users and the environment. Understanding the cause and effect relationship between the various stresses imposed on the natural resources is paramount to developing effective management strategies. Reports of investigations into the availability and quality of water supplies throughout the State aim to build upon the existing knowledge base enabling the community to make informed decisions concerning the future management of the natural resources thus ensuring conservation of biological diversity.

Bryan Harris

Director, Knowledge and Information Division

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During the investigations undertaken at Loxton, numerous discussions were held with Mr Don Armstrong (Lisdon Associates) regarding pumping test design and analysis. Mr Armstrong also undertook a final review of the report.

EXECUTIVE SUMMARY

It is proposed that a salt interception scheme (SIS) comprising a curtain of production wells be constructed at Loxton on the River Murray in South Australia to control the flux of saline groundwater that enters the river along this reach.

Extensive pumping tests (including 30 step drawdown tests and 29 constant rate discharge tests) have been conducted on the aquifer sequence underlying the area with the objectives of determining the:

1) Hydraulic behaviour of production wells.
2) Aquifer and aquitard hydraulic parameters, hydraulic boundaries, and extent of pumping influence.
3) Target aquifer(s) for salt interception, and preferred production well construction.

The results of the investigation program confirm the confined nature of the Murray Group Limestone, effectively separated from the overlying Monoman Formation and Loxton Sands by the Bookpurnong Formation. Therefore, it is both the Monoman Formation and Loxton Sands that should be targeted for salt interception.

The aquifer and aquitard hydraulic parameters determined from pumping tests have been used in the numerical groundwater model of the region (Yan et al 2005) that has assisted with broadscale planning of a conceptual interception wellfield. This conceptual design will need to be confirmed when implementation is in progress by the continual evaluation of empirical data collected during further testing of production wells.

It is recommended that production wells completed in the Monoman Formation be constructed with a standard 1.2 mm aperture wirewound screen and an 8:16 gravel pack. This is beneficial to the rolling out of a wellfield. In addition, it is recommended that each production well site is pre-drilled in an air-core drilling program, to ensure grainsize and determine screen setting.

Interception in the Loxton Sands can only be adequately achieved by horizontal production wells. At the time of writing, a trial horizontal production well with a horizontal component 250 m in length, is being constructed.

1. INTRODUCTION

1.1 Background

The Loxton irrigation area is located adjacent the River Murray in the northwest region of the Murray Basin (Fig. 1).

A component of the water accession passing the root zone (rainfall infiltration, irrigation drainage, and other associated irrigation losses) recharges the watertable in the Loxton Sands and has resulted in the development of a groundwater mound. This groundwater mound has significantly increased the flux of saline groundwater entering the River Murray.

Run-of-river salinity surveys indicate that the magnitude of the salt load entering the River Murray is 98 tonnes/day in the Loxton reach (river kilometre 482–502) at flows of less than 5000 ML/day. The salt load may double at flows between 20 000 and 30 000 ML/day. The construction of a SIS has been proposed to intercept the flux of saline groundwater before it enters the river. It is anticipated that a SIS will involve a curtain of production wells pumping to reduce the watertable to River Murray pool level at the mid-point (between the production wells).

Australian Water Environments (AWE) undertook preliminary hydrogeological investigations in the Loxton - Bookpurnong area aimed at increasing the knowledge of the hydrogeology in relation to the construction of SIS in both areas. This work culminated in a submission (DWLBC 2003) to the MDBC High Level Inter-jurisdictional Working Group on Salt Interception in February 2003 regarding SIS.

The Department of Water, Land and Biodiversity Conservation (DWLBC) commenced further investigations in the Loxton region in mid 2003 with the objective of designing a SIS and progressing the project to a point where the scheme was construction-ready. The term construction-ready meaning that there is sufficiently detailed knowledge of the hydrogeology of the Loxton region (and that this knowledge has been ground-truthed by in-river salinity methods, drilling, hydrochemistry, geophysics and aquifer testing), and confidence in numerical groundwater modelling, that a SIS can be designed to a point where it is ready for construction with minimal additional investigative work.

This report details the pumping tests that were conducted in the Loxton region in relation to the proposed SIS. At the time of writing, other investigations related to the Loxton SIS were nearing conclusion and will be reported separately.

1.2 AWE testing

AWE conducted 15 constant rate discharge tests in the Loxton region with the primary aim of determining transmissivity values (B Hopkins – pers comm). Brief comments and test data were provided in DWLBC 2003a. These tests have been further analysed in this report.

1.3 DWLBC testing and objectives

DWLBC Technical Officers conducted 30 step drawdown (and individual stage) tests generally comprising 3 x 100 minutes steps, and 14 constant rate discharge tests in the Loxton region. These tests were conducted with the objective of determining the:

1) Hydraulic behaviour of production wells (step drawdown tests).

   The development of the well equation, that relates drawdown to discharge rate and time, allows prediction of the hydraulic performance of production wells for a design discharge rate and the yield drawdown curves (at times of 1, 10, 100, 1000, 10 000, 100 000, 1 000 000 minutes).

   The well equation is:

   $s = (a Q + c Q^2) + b \log_{10} (t) Q$

   where:

   s = drawdown (m)

   Q = discharge/injection rate (m^3/min)

   t = time (min)

   a = constant related to well loss for laminar flow

   b = constant related to aquifer loss for laminar flow

   c = constant related to well loss for turbulent flow

   well loss = $(aQ + cQ^2)$

   aquifer loss = $(b \log^{10} (t) Q)$

2) Aquifer and aquitard hydraulic parameters, hydraulic boundaries, relationship between aquifers and extent of pumping influence in the production aquifer by conducting constant rate discharge tests.

   The aquifer hydraulic parameters (transmissivity, storage coefficient, specific yield and aquitard hydraulic resistance and vertical hydraulic conductivity) can (in theory) be used in conjunction with equations and numerical groundwater models to determine well spacings for production wells comprising a conceptual wellfield, and predict the hydraulic response of the aquifer system to the operation of a SIS prior to implementation.

3) Target aquifer(s) for salt interception and preferred production well construction.

2. HYDROGEOLOGICAL UNITS

The characteristics of each hydrogeological unit in the Loxton region (Table 1) are briefly discussed in order of increasing depth below ground surface in the following sections. A hydrogeological cross-section is given in Figure 2.

Table 1. Hydrogeological units of the Loxton – Bookpurnong region

Hydrogeological Unit		**Aquifer / aquitard**
Coonambidgal Formation		Aquitard – clay
Monoman Formation		Aquifer leaky-confined in river valley
Loxton Sands		Aquifer unconfined on highland
Lower Loxton Clay and Shells		Aquitard – clay, shells
Bookpurnong Formation		Aquitard – clay
Murray Group Limestone	Pata Formation	Aquifer (confined upstream of river kilometre 486) limestone
	Winnambool Fm	Aquitard – marl
	Glenforslan Fm	Aquifer confined limestone
	Finniss Fm	Aquitard – marl
	Upper Mannum Fm	Aquifer confined limestone
	Lower Mannum Fm	Aquifer confined limestone

2.1 Coonambidgal Formation

The Coonambidgal Formation aquitard covers the floodplain and consists of clay and silts. This formation is generally 4–5 m thick, but varies between 1–11 m in thickness.

2.2 Monoman Formation

The Monoman Formation (semi) confined aquifer is restricted to the River Murray valley and consists of clean, fine to coarse grained, fluvial sands, but occasionally comprises minor clay and silt layers. This formation is 4–10 m thick. The Monoman Formation is in direct hydraulic communication with the River Murray and the Loxton Sands, and may be in direct contact with Pata Formation where the underlying Bookpurnong Formation has been eroded.

2.3 Loxton Sands (plus Lower Loxton Clay and Shells)

The Loxton Sands unconfined aquifer represents an inverted aquifer, with the most permeable coarse grained and frequently unsaturated sands occurring at the top of the sequence, and the least permeable fine sands (and occasional permeable shell hash) occurring at the base of the sequence. The low permeability silty clay and shell facies that occur towards the base are referred to as the Lower Loxton Clay plus Shells. The formation is 25–30 m thick with the permeable shell facies 2–3 m thick in the Loxton region.

2.4 Bookpurnong Formation

The Bookpurnong Formation aquitard separates the Loxton Sands and Monoman Formation from the Pata Formation. This formation consists of poorly consolidated plastic silts and shelly clays. The Bookpurnong Formation reaches a maximum thickness of 14 m, but is highly variable and may be occasionally absent.

2.5 Murray Group Limestone

2.5.1 PATA FORMATION

The Pata Formation low permeability confined aquifer is a poorly consolidated marly bryozoal limestone with interbedded sand layers. This formation is 10–15 m thick.

2.5.2 WINNAMBOOL FORMATION

The Winnambool Formation aquitard separates the Pata Formation and Glenforslan Formation. This formation consists of calcareous clay (marl) and silty clay. This formation is 3–15 m thick.

2.5.3 GLENFORSLAN FORMATION

The Glenforslan Formation low permeability confined aquifer is a sandy limestone with contains occasional fine-grained hard bands. This formation is 20–30 m thick.

2.5.4 FINNIS FORMATION

The Finniss Formation aquitard separates the Glenforslan Formation and Upper Mannum Formation. This formation consists of clay with thin sand layers and hard bands. This formation has a maximum thickness of 4.5 m but is commonly 1–2 m thick.

2.5.5 UPPER MANNUM FORMATION

The Upper Mannum Formation confined aquifer has only been fully penetrated by a small number of wells in the area. This formation consists of highly fossiliferous calcarenitic and sandy limestone. This formation has a thickness of ~30 m.

2.5.6 LOWER MANNUM FORMATION

The Lower Mannum Formation confined aquifer has only been fully penetrated by a small number of wells in the area. This formation consists of hard, well compacted and moderately to well-cemented limestone. This formation has a thickness ~35 m.

3. DATA ANALYSIS – GENERAL COMMENTS

1) Step drawdown test data were analysed using a Paradox V7.0 application of the Hazel graphical method (Hazel C P 1975) developed by the author.
2) Constant rate discharge test data were analysed using Waterloo Hydrogeologic AquiferTest V3.5.
3) While it is correct that the test data can be interpreted using different methods, the analysis provided here is sufficient to clearly indicate the aquifer type, and aquifer and aquitard hydraulic parameters.
4) Several discussions were had with Mr Don Armstrong (Lisdon Associates) regarding the analysis and interpretation of the test data.
5) Due to the very large number of tests, reporting has been simplified.
6) DWLBC step drawdown tests were analysed using the manual data.
7) For constant rate discharge tests, the logger and manual data were compared and:
   - Where logger data was validated by the manual data, the logger data was analysed.
   - Where logger data was not validated by the manual data, the manual data was analysed.
   - Where there was a consistent separation between logger and manual data, the logger data was corrected to match the manual data and analysed.
8) Issues noted during the review and analysis of the AWE tests included:
   - Manual water levels were only recorded for short intervals at the beginning of the tests conducted on wells completed in the Monoman Formation. As a result, the value of the data has been compromised. In some of these tests, it is apparent that logger readings deviate from the manual readings, and this data must be treated with caution.
   - Limited manual measurements were taken during the tests conducted on wells completed in the aquifers of the Murray Group Limestone.
   - Production wells were not step-drawdown tested which would have provided useful additional information on well hydraulics.
9) Logger data sets have been stripped for inclusion in this report according to the following rules:
   - Records at 1 minute interval (or the closest) between 1 and 100 minutes.
   - Records at 10 minute intervals (or the closest) between 100 and 1000 minutes.
   - Records at 100 minute intervals (or the closest) between 1000 and 10 000 minutes.
   - Records at 500 minute intervals (or the closest) between 10 000 and end of test.
10) Data analysis is discussed in the following sections for formations in decreasing order of depth below ground surface.
11) This report discusses wells in terms of Project Number. The correspondence between Project Numbers and Unit Numbers is given in Table 2.
12) Appendixes:
   - Step drawdown test data is given in Appendix A.
   - Constant rate discharge test data is given in Appendix B.
   - Water chemistry reports (where available) are given in for Appendix C.
   - Water chemistry reports for LHP47 long-term test are given in Appendix D.

Table 2. Correspondence between well Project Numbers and Unit Numbers

Project No	Unit No
LFO10	7029-1735
LFO11	7029-1729
LFO12	7029-1730
LFO13	7029-1731
LFO14	7029-1732
LFO15	7029-1872
LFO16	7029-1873
LFO1A	7029-1574
LFO1GF	7029-1572
LFO1P	7029-1571
LFO1UMF	7029-1570
LFO22	7029-1871
LFO26	7029-1856
LFO27	7029-1857
LFO35	7029-1902
LFO36	7029-1903
LFO37	7029-1904
LFO39	7029-1905
LFO3A	7029-1404
LFO3GF	7029-1405
LFO3GF_2	7029-1722
LFO3P	7029-1403
LFO3P_2	7029-1723
LFO40	7029-1906
LFO41	7029-1909
LFO42	7029-1907
LFO4umf	7029-1414(?)
LFO6A	7029-1408
LFO6GF	7029-1406
LFO6P	7029-1407
LFP11	7029-1733
LFP12	7029-1734
LFP12_2	7029-1854
LFP13	7029-1861
LFP13_2	7029-1855
LFP14	7029-1862
LFP14_2	7029-1848
LFP15	7029-1851

Project No	Unit No
LFP15_2	7029-1875
LFP16	7029-1850
LFP16_2	7029-1914
LFP18	7029-1919
LFP1P	7029-1569
LFP2P	7029-1530
LFP3GF	7029-1721
LFP3P	7029-1724
LHO13	7029-1512
LHO14P	7029-1728
LHO40GF	7029-1531
LHO40P	7029-1529
LHO42	7029-1796
LHO42P	7029-1726
LHO43P	7029-1797
LHO44	7029-1879
LHO48	7029-1852
LHO49	7029-1878
LHO50	7029-1877
LHO51	7029-1916
LHO53	7029-1915
LHO55	7029-1918
LHO56	7029-1911
LHO57	7029-1912
LHP13	7029-1795
LHP14P	7029-1727
LHP1GF	7029-1533
LHP42P	7029-1725
LHP43P	7029-1798
LHP44	7029-1880
LHP45	7029-1876
LHP46	7029-1917
LHP47	7029-1910
LHP48	7029-1913
LPP1	7029-1519
LPP10	7029-1528
LPP2	7029-1520
LPP3	7029-1521

Project No	Unit No
LPP4	7029-1522
LPP5	7029-1523
LPP6	7029-1524
LPP7	7029-1525
LPP8	7029-1526
LPP9	7029-1527
MAN11O	7029-1487
MAN12O	7029-1488
MAN1O	7029-1481
MAN5P	7029-1483
MAN7O	7029-1484
MAN8P	7029-1485

4. STEP DRAWDOWN TESTING

Step drawdown testing was conducted on production wells completed in the Glenforslan Formation, Pata Formation, Loxton Sands and Monoman Formation. Production well locations are given in Figure 3, test details are given in Table 3, data is provided in Appendix 'A'.

Table 3. Step drawdown test details

Production aquifer	Project No.	Date	Step	Dur. (mins)	Q (L/s)	Purpose	Org.
Glenforslan	LFP3GF	6/03/2004	1	100	0.50	Well equation	DWLBC
			2	100	1.00	Rate for long-term test	
			3	100	1.50		
Pata	LFP3P	2/03/2004	1	100	0.20	Well equation	DWLBC
			2	100	0.40	Rate for long-term test	
			3	100	0.60		
Pata	LHO14P	7/03/2004	1	100	0.25	Well equation	DWLBC
			2	100	0.35	Rate for long-term test	
			3	100	0.45		
Pata	LHP42P	27/02/2004	1	100	0.20	Well equation	DWLBC
			2	100	0.40	Rate for long-term test	
			3	100	0.60		
Pata	LHP43P	21/12/2003	1	100	0.30	Well equation	DWLBC
			2	100	0.49	Rate for long-term test	
			3	100	0.70		
Loxton Sand + shells	LHP13	20/12/2003	1	100	0.40	Well equation	DWLBC
			2	100	0.80	Rate for long-term test	
			3	280	1.21	hydraulic properties	
Loxton Sand + shells	LHP44	14/07/2004	1	100	0.67	Well equation	DWLBC
			2	100	1.34	Rate for long-term test	
			3	100	2.01		
Loxton Sand + shells	LHP44	25/08/2004	1	60	0.67	Post acid wash	DWLBC
			2	60	1.34	well equation	
			3	60	2.01	rate for long-term test	
			4	60	2.68		
Loxton Sand + shells	LHP45	18/07/2004	1	100	0.22	Well equation	DWLBC
			2	100	0.44	Rate for long-term test	
			3	100	0.66		
			4	100	0.88		
Loxton Sand + shells	LHP46	15/07/2004	1	100	0.62	Well equation	DWLBC
			2	100	1.24	Rate for long-term test	
			3	100	1.86		
Loxton Sand + shells	LHP47	12/08/2004	1	100	0.67	Well equation	DWLBC
			2	100	1.34	Rate for long-term test	
			3	100	2.01		
Loxton Sand + shells	LHP47	29/08/2004	1	60	0.67	Post acid wash	DWLBC
			2	60	1.34	well equation	
			3	60	2.01	Rate for long-term test	
Loxton Sand + shells	LHP48	11/08/2004	1	100	0.19	Well equation	DWLBC
			2	100	0.38	Rate for long-term test	
			3	100	0.57		

Production aquifer	Project No.	Date	Step	Dur. (mins)	Q (L/s)	Purpose	Org.
Monoman	LFP11	1/03/2004	1	100	0.75	Well equation	DWLBC
			2	100	1.50	Rate for long-term test	
			3	100	2.25		
Monoman	LFP12	3/03/2004	1	100	0.50	Well equation	DWLBC
			2	100	1.25	Rate for long-term test	
			3	100	2.00	LFP12 construction trial	
Monoman	LFP12	21/05/2004	1	100	1.50	LFP12 construction trial	DWLBC
			2	16	3.00		
Monoman	LFP12_2	19/05/2004	1	100	1.50	Well equation	DWLBC
			2	100	3.00	Rate for long-term test	
			3	100	4.50	LFP12 construction trial	
Monoman	LFP12_2	16/07/2004	1	100	3.20	LFP12 construction trial	DWLBC
Monoman	LFP13	22/05/2004	1	100	1.50	Well equation	DWLBC
			2	100	3.00	Rate for long-term test	
			3	100	4.50	LFP12 construction trial	
Monoman	LFP13_2	20/05/2004	1	100	1.50	Well equation	DWLBC
			2	100	3.00	Rate for long-term test	
			3	100	4.50	LFP12 construction trial	
Monoman	LFP13_2	26/05/2004	1	100	4.50	LFP12 construction trial	DWLBC
Monoman	LFP14	24/05/2004	1	100	2.00	Well equation	DWLBC
			2	100	4.00	Rate for long-term test	
			3	100	6.00	LFP14 construction trial	
Monoman	LFP14_2	21/05/2004	1	100	2.00	Well equation	DWLBC
			2	100	4.00	Rate for long-term test	
			3	100	6.00	LFP14 construction trial	
Monoman	LFP15	26/05/2004	1	100	2.00	Well equation	DWLBC
			2	100	4.00	Rate for long-term test	
			3	100	6.00	LFP14 construction trial	
Monoman	LFP15_2	23/05/2004	1	100	2.00	Well equation	DWLBC
			2	100	4.00	Rate for long-term test	
			3	100	6.00	LFP14 construction trial	
Monoman	LFP16	25/05/2004	1	100	3.00	Well equation	DWLBC
			2	100	6.00	Rate for long-term test	
			3	100	9.00		
Monoman	LFP16	25/08/2004	1	60	3.00	Post acid wash	DWLBC
			2	60	6.00	well equation	
			3	60	9.00	Rate for long-term test	
Monoman	LFP16_2	17/07/2004	1	100	2.60	Well equation	DWLBC
			2	100	5.20	Rate for long-term test	
			3	100	7.80		
Monoman	LFP16_2	24/08/2004	1	60	2.60	Post acid wash	DWLBC
			2	60	5.20	well equation	
			3	60	7.80	Rate for long-term test	
Monoman	LFP18	21/07/2004	1	100	2.70	Well equation	DWLBC
			2	100	5.40	Rate for long-term test	
			3	100	8.10		

The results of the step drawdown analysis are given in Table 4 that includes:

1) The well equation constants a, b, c.
2) The available drawdown, ie the length from the standing water level to the top of the production zone.
3) The long-term (100 000 minutes) design discharge rate that will draw the water level in the well down to the top of the production zone over a duration of 100 000 minutes. For the Monoman Formation in particular, the long-term discharge rate for the well should be regarded as an estimate only, as the highly variable nature of the floodplain is likely to result in the well behaving differently to that predicted by the well equation.
4) The specific capacity at a time of 100 000 minutes at the long-term design discharge rate.
5) The well loss at a time of 100 000 minutes for the long-term design discharge rate as a percentage of the total drawdown.
6) Note that transmissivity values determined from step drawdown testing should be treated with caution and those obtained from the constant rate discharge testing should be used in preference.

Analyses are given in Figures 4–30.

Table 4. Step drawdown test analysis results

Where: St_{Av} = Approximate available drawdown (m)
- confined aquifer = depth to water to top aquifer
- unconfined aquifer = depth to water to top screen
- Monoman Formation = depth to water to top of screen

Q = Long-term discharge rate (L/s) to match St_{Av} at 100 000 minutes
SC = Specific capacity ([L/s]/m) at 100 000 minutes
WellLoss% = Well loss as % of total drawdown at 100 000 minutes

Production aquifer	Project No.	Date	a	b	c	St_{Av}	Q	SC	Well loss %	Fig No.
Glenforslan	LFP3GF	6/03/2004	168.37	87.04	175.76	39.6	1.10	0.02	26	4
Pata	LFP3P	2/03/2004	279.00	168.06	-6003.96	12.98	0.21	_	_	5
Pata	LHO14P	7/03/2004	435.57	65.08	1783.76	21.05	0.44	0.02	55	6
Pata	LHP42P	27/02/2004	368.57	236.57	-6946.14	26.88	0.32	_	_	7
Pata	LHP43P	21/12/2003	216.82	120.63	1319.58	22.90	0.45	0.02	26	8
Loxton Sand + shells	LHP13	20/12/2003	56.81	6.32	76.99	8.49	1.49	0.16	63	9
Loxton Sand + shells	LHP44	14/07/2004	14.14	1.66	28.00	0.74	0.53	0.67	60	10
Loxton Sand + shells	LHP44	25/08/2004*	11.26	2.57	52.20	0.74	0.49	0.59	45	11
Loxton Sand + shells	LHP45	18/07/2004	NA	NA	NA	6.48	~0.6	_	_	12
Loxton Sand + shells	LHP46	15/07/2004	24.24	3.45	7.59	2.52	1.01	0.37	54	13
Loxton Sand + shells	LHP47	12/08/2004	21.45	2.68	31.16	2.43	1.10	0.42	59	14
Loxton Sand + shells	LHP47	29/08/2004*	18.94	2.31	47.13	2.43	1.20	0.46	62	15
Loxton Sand + shells	LHP48	11/08/2004	79.43	3.51	35.52	1.93	0.33	0.16	79	16
Monoman	LFP11	1/03/2004	19.20	3.04	29.62	4.43	1.96	0.41	56	17
Monoman	LFP12	3/03/2004	16.84	4.00	39.15	3.00	1.26	0.38	45	18
Monoman	LFP12_2	19/05/2004	9.78	3.09	7.65	3.00	1.91	0.57	37	19
Monoman	LFP13	22/05/2004	11.34	1.72	1.93	3.00	2.47	0.76	53	20
Monoman	LFP13_2	20/05/2004	7.90	1.86	2.69	3.00	2.82	0.86	42	21
Monoman	LFP14	24/05/2004	6.67	0.59	4.27	1.50	2.45	1.54	67	22
Monoman	LFP14_2	21/05/2004	5.18	0.50	0.71	1.50	3.17	1.98	64	23
Monoman	LFP15	26/05/2004	7.43	0.58	1.37	1.50	2.36	1.49	69	24
Monoman	LFP15_2	23/05/2004	8.41	1.06	2.32	1.50	1.78	1.10	58	25
Monoman	LFP16	25/05/2004	10.77	0.81	2.06	6.63	7.04	1.01	70	26
Monoman	LFP16	25/08/2004*	9.30	0.76	1.58	6.63	7.94	1.14	69	27

Production aquifer	Project No.	Date	a	b	c	St_{Av}	Q	SC	Well loss %	Fig No.
Monoman	LFP16_2	17/07/2004	9.35	1.11	3.29	6.63	6.81	0.96	62	28
Monoman	LFP16_2	24/08/2004*	8.95	1.07	3.00	6.63	7.09	1.00	61	29
Monoman	LFP18	21/07/2004	4.84	1.73	0.69	4.16	5.07	1.07	33	30

* Post acid wash development

4.1 Glenforslan Formation - general hydraulic behaviour of production wells

Step drawdown testing on the only production well completed in the Glenforslan Formation indicates its hydraulic behaviour. The following general comments can be:

1) Analysis of step drawdown tests results in well equation constants with high values:
   a) 168
   b) 87
   c) 176
2) The long-term discharge rate is low (1.1 L/s) although the available drawdown is 39.6 m. The specific capacity is ~0.02 (L/s)/m. Well loss is 26% of the total drawdown.
3) Note that the production well is partially penetrating and completed open hole over the centre of the aquifer.

4.2 Pata Formation - general hydraulic behaviour of production wells

Step drawdown testing conducted on production wells completed in the Pata Formation indicates their hydraulic behaviour. The following general comments can be made:

1) Note that two of the tests (LFP3P, LHP42P) could not be correctly analysed, as the resulting values of c were negative (not possible). This is probably related to the extremely low permeability of the Pata Formation combined with the low discharge rates.
2) For production wells LHO14P and LHP43P analysis of the step drawdown tests results in well equation constants with extraordinarily high values, especially for c. From the tests conducted the ranges are:
   a) 217–436
   b) 65–121
   c) 1320–1784
3) For production wells LHO14P and LHP43P the long-term discharge rates are extremely low (0.4–0.5 L/s) although the available drawdown in 23–26 m. The specific capacity is ~0.02 (L/s)/m. Well loss is 26–55% of the total drawdown.
4) The extreme low permeability of the Pata Formation can be demonstrated by the well equation for production well LHO14P. If this well were pumped at a discharge rate of 10 L/s, a drawdown of 1098 m would develop. Physically this would only be practical if the Pata Formation occurred at a depth in excess of 1098 m and had a groundwater level close to ground surface.
5) Note that the production wells are nearly fully penetrating and completed open hole.

4.3 Loxton Sands - general hydraulic behaviour of production wells

Step drawdown testing conducted on production wells completed in the Loxton Sands plus Shells indicates their hydraulic behaviour. The following general comments can be:

1) Note that four of the tests did not readily lend themselves to the Hazel analysis:
   - LHP13
   - LHP45
   - LHP47
   - LHP48

   The poor analysis may be related to lower permeability than indicated by the analysis, and the result of pumping from the most permeable layer of the aquifer with leakage occurring from other layers.
2) Analysis of step drawdown tests results in well equation constants with the range:
   a) 11–79 average 32
   b) 2–6 average 3
   c) 8–77 average 40
3) The long-term discharge rates are low (0.3–1.5 L/s) as is the available drawdown, (generally 1–3 m, however two wells have higher values 6–9 m). The specific capacity is 0.16–0.67 (L/s)/m. Well loss is 45–80% of the total drawdown.
4) Acid washing of production wells LHP44 and LHP47 resulted in a variation in the well equation constants (although the values of c increased which is difficult to explain).
5) Note that the production wells are partially penetrating and completed over the lower 1/3–1/2 of the aquifer.

4.4 Monoman Formation - general hydraulic behaviour of production wells

Step drawdown testing conducted on production wells completed in the Monoman Formation indicates their hydraulic behaviour. The following general comments can be:

1) Note that in two of the tests (LFP13, LFP14_2) the step-3 corrected line has been fitted slightly above the data to give a better well equation.
2) Analysis of step drawdown tests results in well equation constants with the range:
   - 5–19 average 10
   - 1–4 average 2
   - 1–39 average 7
3) The long-term discharge rates are moderate (1.5–6.7 L/s) depending on aquifer transmissivity and thickness. The available drawdown is low (1.5–7 m). The specific capacity is 0.41–1.98 (L/s)/m. Well loss is 33–70% of the total drawdown.
4) Acid washing of production wells LFP16 and LFP16_2 resulted in a reduction in the well equation constants that indicates that a benefit was achieved.
5) Note that the production wells are partially penetrating and completed over the lower 1/3–1/2 of the aquifer.

4.5 Monoman Formation well construction trial

4.5.1 LFP12 SITE

Due to concerns regarding the efficiency of production wells, in terms of the drawdown developing at distance, a well construction efficiency trial was conducted at the site of Monoman Formation production well LFP12 to assess the relative efficiency of different well construction options. Test details are given in Table 3, analyses results are given in Table 4, data is provided in Appendix 'A'. Production wells and their construction details are given in Table 5.

Ideally, production wells should have the minimum well loss so that the drawdown is transferred into the aquifer resulting in greater well spacing.

Table 5. LFP12 well construction trial well specification

Target Aquifer	Project No.	Screen	Screened Interval (m)	Screen ID (mm)	Aperture (mm)	Open area %	Gravel pack
Monoman	LFP12	Slotted Class 12 PVC	7-10	175	0.5	~3.3%	8:16
Monoman	LFP12_2	Slotted Class 12 PVC	7-10	175	1	~6%	8:16
Monoman	LFP13	Wire wound 316	7-10	174	0.4	14.9%	NA
Monoman	LFP13_2	Wire wound 316	7-10	174	1.2	34.4%	8:16

Step drawdown testing and stage testing was undertaken to determine the well equations and the drawdown developed at production wells, and the drawdown developed at observation wells located at a radial distance of 11.5 and 21.5 m.

The drawdown developed in the production wells during step drawdown testing at discharge rates of 1.5, 3, 4.5 L/s is given in Figure 31. The data indicate that:

1) Production well LFP13_2 has the most efficient construction, ie the least drawdown develops.
2) Production well LFP12 has the least efficient construction, ie the greatest drawdown develops.
3) Production well LFP13 is more efficient than production well LFP12_2, ie less drawdown develops.
4) The well equations (refer Table 4) determined for the production wells similarly reflect these relative efficiencies.
5) The results of testing are transferable to other sites where production wells are to be completed in the Monoman Formation, and can be expected to be applicable to the Loxton Sands.

Due to the additional expense of the wirewound screens over the slotted casing it had been previously suggested that production wells similar to LFP12_2 (ie a standard 1 mm slotted Class 12 PVC screen and an 8:16 gravel pack) should be used in preference to wells similar to LFP13_2 (ie a standard 1.2 mm aperture wirewound screen and an 8:16 gravel pack). Over a period of 100 minutes, the maximum discharge rate that production well LFP12_2 can be pumped to draw the water level down to the top of the screen, is 3.2 L/s; and for production well LFP13_2 it is 4.5 L/s. The drawdown developed at these discharge rates in observation wells LFO27 and LFO13 at a radial distance of 11.5 and 21.5 m respectively is given in Figures 32 and 33. The data indicate that:

1) The drawdown developed at distance from production well LFP13_2 is considerably greater than that developed at distance from production well LFP12_2.
2) The more efficient production wells can be pumped at a higher discharge rate and this results in more drawdown development at distance.
3) The more efficient design of well LFP13_2 should be adopted as the well construction standard.

The ease of construction of production wells similar to LFP13_2 (ie a standard 1.2 mm aperture wirewound screen and an 8:16 gravel pack) is beneficial to the rolling out of a wellfield. It is recommended that each production well site is pre-drilled in an air-core drilling program, to ensure grainsize and determine screen setting.

4.5.2 LFP14 SITE

The data obtained from the LFP12 production well site resulted in what would notionally be expected, ie that the production well completed with screen with the largest open area would be the most efficient.

A similar well construction trial was conducted at the site of Monoman Formation production well LFP14. Test details are given in Table 6, analyses results are given in Table 4, data is provided in Appendix 'A'. Production wells and their construction details are given in Table 6.

Table 6. LFP14 well construction trial well specification

Target Aquifer	Project No.	Screen	Screened Interval (m)	Screen ID (mm)	Aperture (mm)	Open area %	Gravel pack
Monoman	LFP14	Wire wound 316	6.4-10.4	174	1.2	34.4%	8:16
Monoman	LFP14_2	Slotted Class 12 PVC	6.4-10.4	175	0.5	~3.3%	8:16
Monoman	LFP15	Wire wound 316	6.5-10.5	174	0.35	13.3%	NA
Monoman	LFP15_2	Slotted Class 12 PVC	6.4-10.4	175	1	~6%	8:16

At this site, results of initial step drawdown testing indicated that production well LFP14_2 was the most efficient. This is not possible as this well has the smallest open area, and it is assumed that the wells were drilled over a rapidly changing facies, or that there was an error made during the identification of the wells, assignation of the step drawdown test results, or ineffective development.

4.5.3 LFP16 SITE

Production wells LFP16 (0.5 mm slotted Class 12 PVC and 8:16 gravel pack) and LFP16_2 (1.2 mm aperture wirewound screen and 8:16 gravel pack) were drilled adjacent one another. Interestingly, in this case the post acid washed results of step drawdown testing indicate that LFP16 is slightly more efficient. Again, this should be regarded as an anomaly, as the screened well must be more efficient if all other factors affecting the well are equal.

5. CONSTANT RATE DISCHARGE TESTING

Constant rate discharge testing was conducted on production wells completed in the Upper Mannum Formation, Glenforslan Formation, Pata Formation, Loxton Sands and Monoman Formation. The locations of production wells are given in Figure 34. Test details are given in Table 7, data is provided in Appendix 'B'.

Table 7. Constant rate discharge test details

Where: t = Duration (minutes)
Q = Discharge rate (L/s)

Production aquifer	Project No.	Date	t	Q	Purpose: Hydraulic properties of +	Org.
Upper Mannum	LFP1P	3/01/2002	10 085	7.4	Aquifer + aquitard	AWE
Upper Mannum	MAN5P	29/10/2002	9809	7.37	Aquifer + aquitard	AWE
Upper Mannum	MAN8P	25/10/2002	9810	7.3	Aquifer + aquitard	AWE
Glenforslan	LHP1GF	8/11/2002	4489	2.02	Aquifer + aquitard	AWE
Glenforslan	LFP3GF	8/03/2004	720	1.5	Aquifer + aquitard	DWLBC
Pata	LFP2P	5/11/2002	6660	0.53	Aquifer + aquitard	AWE
Pata	LFP3P	3/03/2004	720	0.5	Aquifer + aquitard	DWLBC
Pata	LHO14P	9/03/2004	720	0.4	Aquifer + aquitard	DWLBC
Pata	LHP42P	28/02/2004	720	0.4	Aquifer + aquitard	DWLBC
Pata	LHP43P	21/12/2003	720	0.6	Aquifer + aquitard	DWLBC
Loxton Sand + shells	LHP44	23/07/2004	720	1.9	Aquifer + extent influence	DWLBC
Loxton Sand + shells	LHP45	24/07/2004	720	0.6	Aquifer + extent influence	DWLBC
Loxton Sand + shells	LHP46	19/07/2004	720	1.5	Aquifer + extent influence	DWLBC
Loxton Sand + shells	LHP47	26/11/2004	108 200	1	Aquifer + extent influence	DWLBC
Loxton Sand + shells	LHP48	13/08/2004	720	0.4	Aquifer + extent influence	DWLBC
Monoman	LFP11	4/03/2004	720	2.25	Aquifer + extent influence + boundaries	DWLBC
Monoman	LFP12	7/03/2004	720	2	Aquifer + extent influence + boundaries	DWLBC
Monoman	LFP16_2	26/08/2004	21 508	6.45	Aquifer + extent influence + boundaries	DWLBC
Monoman	LFP18	8/08/2004	17 454	5.5	Aquifer + extent influence + boundaries	DWLBC
Monoman	LPP1	28/10/2002	390	2	Aquifer + extent influence + boundaries	AWE
Monoman	LPP2	29/10/2002	501	2	Aquifer + extent influence + boundaries	AWE
Monoman	LPP3	30/10/2002	288	1.46	Aquifer + extent influence + boundaries	AWE
Monoman	LPP4	28/10/2002	223	1.46	Aquifer + extent influence + boundaries	AWE
Monoman	LPP5	25/10/2002	222	2	Aquifer + extent influence + boundaries	AWE
Monoman	LPP6	27/10/2002	284	2	Aquifer + extent influence + boundaries	AWE
Monoman	LPP7	23/10/2002	452	2	Aquifer + extent influence + boundaries	AWE
Monoman	LPP8	24/10/2002	439	2	Aquifer + extent influence + boundaries	AWE
Monoman	LPP9	24/10/2002	352	2	Aquifer + extent influence + boundaries	AWE
Monoman	LPP10	14/10/2002	375	2	Aquifer + extent influence + boundaries	AWE

The results of the constant rate test analysis, in terms of the aquifer and aquitard hydraulic parameters for observation wells completed in the production aquifer, are given in Table 8. The results of the analyses are given in Figures 35–122. Analyses results are summarised for each formation in Figures 123–127.

Table 8. Constant rate analysis results

Where: r = Radial distance from production well (m)
T = Transmissivity (m^2/day)
K = Hydraulic conductivity (m/day)
S = Storage coefficient (-)
c = Hydraulic resistance (days)
K_V = Vertical hydraulic conductivity (m/day)
S_Y = Specific yield (-)

Production aquifer	Prod Well	Date	Obs well(s)	r	Method	Aquifer and aquitard hydraulic parameters						Fig. No.
						T	K	S	c	K_V	S_Y	
Upper Mannum	LFP1P	3/01/2002	LFO1UMF	52	Cooper-Jacob t vs s	133	2.65	1.93E-04	_	_	_	35
					Walton	69	1.37	2.75E-04	158	6.34E-03	_	36
			ALL		t/r2 vs drawdown	_	_	_	_	_	_	37
Upper Mannum	MAN5P	29/10/2002	MAN12O	57	Cooper-Jacob t vs s	79	1.57	1.48E-04	_	_	_	38
					Walton	62	1.25	2.12E-04	20 833	7.20E-05	_	39
Upper Mannum	MAN8P	25/10/2002	MAN11O	61	Cooper-Jacob t vs s	119	2.38	1.91E-04	_	_	_	40
					Walton	112	2.25	2.42E-04	147 222	1.36E-05	_	41
			MAN7O		Cooper-Jacob t vs s	_	_	_	_	_	_	42
					Theis	_	_	_	_	_	_	43
			ALL		t/r2 vs drawdown	_	_	_	_	_	_	44
Glenforslan	LHP1GF	8/11/2002	LHO40GF	44	Cooper-Jacob t vs s	10	0.56	1.56E-04	_	_	_	45
					Walton	9	0.55	1.81E-04	82 639	3.03E-05	_	46
			ALL		t/r2 vs drawdown	_	_	_	_	_	_	47
Glenforslan	LFP3GF	8/03/2004	LFO3GF_2	39	Cooper-Jacob t vs s	5	0.22	1.60E-04	_	_	_	48
					Walton	3	0.14	1.95E-04	3257	4.45E-03	_	49
			ALL		t/r2 vs drawdown	_	_	_	_	_	_	50
Pata	LFP2P	5/11/2002	LFO6P	49	Cooper-Jacob t vs s	6	0.72	5.18E-05	_	_	_	51
					Walton	1	0.09	3.12E-05	826	2.42E-03	_	52
			ALL		t/r2 vs drawdown	_	_	_	_	_	_	53
Pata	LFP3P	3/03/2004	LFPO3P_2	15	Cooper-Jacob t vs s	4	0.40	2.12E-04	_	_	_	54
					Walton	3	0.35	2.63E-04	1653	3.93E-03	_	55
			ALL		t/r2 vs drawdown	_	_	_	_	_	_	56

Production aquifer	Prod Well	Date	Obs well(s)	r	Method	Aquifer and aquitard hydraulic parameters						Fig. No.
						T	K	S	c	K_V	S_Y	
Pata	LHO14P	9/03/2004	LHP14P	23	Cooper-Jacob t vs s	2	0.21	3.72E-04	_	_	_	57
					Walton	1	0.14	4.91E-04	2396	4.17E-03	_	58
			ALL		t/r2 vs drawdown	_	_	_	_	_	_	59
Pata	LHP42P	28/02/2004	LHO42P	21	Cooper-Jacob t vs s	3	0.59	1.39E-04	_	_	_	60
					Walton	2	0.42	1.94E-04	2729	4.76E-03	_	61
			ALL		t/r2 vs drawdown	_	_	_	_	_	_	62
Pata	LHP43P	21/12/2003	LHO43P	15	Cooper-Jacob t vs s	5	0.32	1.90E-04	_	_	_	63
					Walton	4	0.26	2.52E-04	3708	3.51E-03	_	64
Loxton Sand + shells	LHP44	23/07/2004	LHO44	18	Cooper-Jacob t vs s	450	78.30	_	_	_	_	65
			LHO44	18	Theis	_	_	_	_	_	_	66
			ALL		Cooper-Jacob r vs s	109	19.00	_	_	_	_	67
Loxton Sand + shells	LHP45	24/07/2004	LHO48	15	Cooper-Jacob t vs s	437	51.50	_	_	_	_	68
Loxton Sand + shells	LHP46	19/07/2004	LHO51	16	Cooper-Jacob t vs s	240	47.70	_	_	_	_	69
					Neuman	178	35.40	_	_	_	0.01	70
Loxton Sand + shells	LHP47	26/11/2004	LHO44	18	Cooper-Jacob t vs r	_	_	_	_	_	_	71
			LHO44	18	Neuman	_	_	_	_	_	_	72
			LHP47	0	Cooper-Jacob t vs s	100	20.3	_	_	_	_	73
			ALL		Cooper-Jacob r vs s	297	60.2	_	_	_	_	74
			ALL		t/r^2 vs drawdown	_	_	_	_	_	_	75
Loxton Sand + shells	LHP48	13/08/2004	LHO56	10	Cooper-Jacob t vs s	260	52.70	_	_	_	_	76
					Neuman	271	55.00	4.82E-03	_	_	_	77
Monoman	LFP11	4/03/2004	LFO11	30	Cooper-Jacob t vs s	155	31.00	3.68E-04	_	_	_	78
					Walton	52	10.40	3.85E-04	_	_	_	79
			ALL		Cooper-Jacob r vs s	207	41.40	9.74E-04	_	_	_	80
Monoman	LFP12	7/03/2004	LFO13	22	Cooper-Jacob t vs s	154	30.80	6.69E-04	_	_	_	81
					Walton	87	17.30	9.26E-04	_	_	_	82
			ALL		Cooper-Jacob r vs s	157	31.40	1.38E-03	_	_	_	83
Monoman	LFP16_2	26/08/2004	LFO22	14	Cooper-Jacob t vs s	339	37.70	2.2E-03	_	_	_	84
					Walton	194	21.50	1.32E-03	_	_	_	85
					Theis recovery	561	62.30	_	_	_	_	86
			LFO35	25	Cooper-Jacob t vs s	485	53.90	4.71E-04	_	_	_	87

Production aquifer	Prod Well	Date	Obs well(s)	r	Method	Aquifer and aquitard hydraulic parameters						Fig. No.
						T	K	S	c	K_V	S_Y	
					Walton	267	29.70	6.38E-04	_	_	_	88
					Theis recovery	735	81.60	_	_	_	_	89
			ALL		Cooper-Jacob r vs s	312	34.60	2.73E-03	_	_	_	90
			ALL		t/r^2 vs drawdown	_	_	_	_	_	_	91
			ALL		Rwl end of test	_	_	_	_	_	_	92
Monoman	LFP18	8/08/2004	LFO39	8	Cooper-Jacob t vs s	133	26.60	2.72E-03	_	_	_	93
					Walton	122	24.50	3.10E-03	_	_	_	94
					Theis recovery	128	25.60	_	_	_	_	95
			LFO40	25	Cooper-Jacob t vs s	170	34.00	5.08E-04	_	_	_	96
					Walton	122	24.50	6.54E-04	_	_	_	97
					Theis recovery	164	32.80	_	_	_	_	98
			ALL		Cooper-Jacob r vs s	243	48.70	6.17E-04	_	_	_	99
			ALL		t/r^2 vs drawdown	_	_	_	_	_	_	100
			ALL		Rwl end of test	_	_	_	_	_	_	101
Monoman	LPP1	28/10/2002	LPP2	48	Cooper-Jacob t vs s	111	37.10	1.80E-04	_	_	_	102
					Walton	40	13.40	1.89E-04	_	_	_	103
					Theis recovery	142	47.50	_				104
Monoman	LPP2	29/10/2002	LPP1	48	Cooper-Jacob t vs s	139	34.70	2.13E-04	_	_	_	105
					Walton	77	19.30	2.79E-04	_	_	_	106
Monoman	LPP3	30/10/2002	LPP4	56	Cooper-Jacob t vs s	338	61.40	5.84E-04	_	_	_	107
					Walton	189	34.40	7.08E-04	_	_	_	108
Monoman	LPP4	28/10/2002	LPP3	56	Cooper-Jacob t vs s	431	78.40	4.88E-04	_	_	_	109
					Theis	448	81.50	4.89E-04	_	_	_	110
Monoman	LPP5	25/10/2002	LPP6	56	Cooper-Jacob t vs s	315	62.90	1.92E-04	_	_	_	111
					Walton	248	49.60	2.47E-04	_	_	_	112
Monoman	LPP6	27/10/2002	LPP5	56	Cooper-Jacob t vs s	326	54.30	1.68E-04	_	_	_	113
					Walton	232	38.60	2.25E-04	_	_	_	114
Monoman	LPP7	23/10/2002	LPP8	50	Cooper-Jacob t vs s	561	152.00	9.04E-04	_	_	_	115
					Theis	362	98.00	1.24E-03	_	_	_	116

Production aquifer	Prod Well	Date	Obs well(s)	r	Method	Aquifer and aquitard hydraulic parameters						Fig. No.
						T	K	S	c	K_V	S_Y	
Monoman	LPP8	23/10/2002	LPP7	50	Cooper-Jacob t vs s	561	118.00	5.30E-04	_	_	_	117
					Theis	494	104.00	6.59E-04	_	_	_	118
Monoman	LPP9	15/10/2002	LPP10	50	Cooper-Jacob t vs s	_	_	_	_	_	_	119
					Theis	_	_	_	_	_	_	120
Monoman	LPP10	14/10/2002	LPP9	50	Cooper-Jacob t vs s	_	_	_	_	_	_	121
					Theis	_	_	_	_	_	_	122

5.1 Upper Mannum Formation constant rate discharge testing

5.1.1 LFP1P CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Upper Mannum Formation production well LFP1P at a rate of 7.4 L/s for a duration of 10 085 minutes. Test details are given in Table 7.

Aquifer setting:

- The Upper Mannum Formation occurs at a depth of 58 m (a thickness of 50 m has been assumed), and is overlain by the Finnis Formation aquitard with a thickness of 1 m.

Drawdown development:

- Upper Mannum Formation observation well LFO1UMF log(t) vs linear(s) Cooper-Jacob analysis (Fig. 35) and log(t) vs log(s) Walton analysis (Fig. 36) indicates a drawdown signature consistent with a confined aquifer.

Issues relating to the data and analysis include:

- Manual measurements were not provided (AWE test).
- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Finnis Formation.
- Observation well LFO1UMF:
    - This observation well is completed in the Upper Mannum Formation.
    - This observation well is located at a radial distance of 52 m (r = 1.06 times the aquifer thickness) from the production well.
    - The Walton analysis type curve has been selected to fit the early time drawdown data prior to the influence of leakage.
    - The Walton analysis type curve indicates the influence of a low permeability boundary following the onset of leakage.
- Observation wells LFO1UMF, LFO1GF, LFO1P, LFO1A:
    - These observation wells are completed in the Upper Mannum Formation, Glenforslan Formation, Pata Formation and Monoman Formation respectively in close proximity at a radial distance of ~50 m from the production well.
    - Inter-formational leakage into the Upper Mannum Formation through the Finnis Formation (from the Glenforslan Formation) is indicated in the $\log(t/r^2)$ vs log(s) plot (Fig. 37) with drawdowns trending towards a common value.
    - The small drawdown indicated in the Pata Formation and Monoman Formation in the $\log(t/r^2)$ vs log(s) plot may be due to leakage or hydraulic unloading of the aquifer system.

5.1.2 MAN5P CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Upper Mannum Formation production well MAN5P at a rate of 7.37 L/s for a duration of 9809 minutes. Test details are given in Table 7.

Aquifer setting:

- The Upper Mannum Formation occurs at a depth of 53 m (a thickness of 50 m has been assumed), and is overlain by the Finnis Formation aquitard with a thickness of 1.5 m.

Drawdown development:

- Upper Mannum Formation observation well MAN12O log-linear Cooper-Jacob time-drawdown analysis (Fig. 38) and log-log Walton time-drawdown analysis (Fig. 39) indicates a drawdown signature consistent with a confined aquifer.

Issues relating to the data and analysis include:

- Manual measurements were not provided (AWE test).
- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Finnis Formation.
- Observation well MAN12O:
  - This observation well is completed in the Upper Mannum Formation.
  - This observation well is located at a radial distance of 57 m (r = 1.14 times the aquifer thickness) from the production well.
  - The Walton analysis type curve has been selected assuming that leakage would occur through the overlying Finniss Formation immediately if the test had continued, which results in the maximum vertical hydraulic conductivity being calculated.

5.1.3 MAN8P CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Upper Mannum Formation production well MAN8P at a rate of 7.3 L/s for a duration of 9,810 minutes. Test details are given in Table 7.

Aquifer setting:

- The Upper Mannum Formation occurs at a depth of 73 m (a thickness of 50 m has been assumed), and is overlain by the Finnis Formation aquitard with a thickness of 2 m.

Drawdown development:

- Upper Mannum Formation observation well MAN11O log-linear Cooper-Jacob time-drawdown analysis (Fig. 40) and log-log Walton time-drawdown analysis (Fig. 41) indicates a drawdown signature consistent with a confined aquifer.

Issues relating to the data and analysis include:

- Manual measurements were not provided (AWE test).
- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Finnis Formation.
- Observation well MAN110:
  - This observation well is completed in the Upper Mannum Formation.
  - This observation well is located at a radial distance of 61 m (r = 1.22 times the aquifer thickness) from the production well.
  - The Walton analysis type curve has been selected assuming that leakage would occur through the overlying Finniss Formation immediately if the test had continued, which results in the maximum vertical hydraulic conductivity being calculated.
- Observation well MAN70:
  - This observation well is completed in the Upper Mannum Formation.
  - This observation well is located at a radial distance of 899 m (r = 17.98 times the aquifer thickness) from the production well.
  - There is evidence of low permeability material or a low permeability boundary in the log-linear Cooper-Jacob analysis (Fig. 42) and log-log Theis analysis (Fig. 43).

- Observation well LFO4umf:
  - This observation well is completed in the Glenforslan (?Pata) Formation at a radial distance of 641 m from the production well.
  - Drawdown data indicates leakage through the Finnis Formation (refer to the log(t/r^2) vs log(s) plot Fig. 44).
  - Drawdown developed in this observation well is less than that developed in observation well MAN7O located at a radial distance of 899 m from the production well.
  - Note that evidence of leakage during the test contradicts the data obtained from observation well MAN110.

5.2 Upper Mannum Formation - general behaviour under pumping stress

Constant rate discharge testing conducted on production wells completed in the Upper Mannum Formation indicates its hydraulic behaviour under pumping stress and aquifer hydraulic parameters. The following general comments can be made:

1) The Upper Mannum Formation exhibits drawdown signatures at observation wells completed in the production aquifer consistent with a confined aquifer. Leakage is likely to occur in some areas.
2) There is some evidence of lower permeability boundaries in the Upper Mannum Formation that is probably related to lower permeability aquifer material.
3) Inter-formational leakage is indicated by observation wells completed in the overlying Glenforslan Formation. The associated drawdown response observed in the Pata Formation and Monoman Formation may be in response to leakage or hydraulic unloading of the aquifer system.
4) The Upper Mannum Formation has a transmissivity of ~100 m^2/day, an hydraulic conductivity of ~2 m/day, and a storage coefficient of ~2E-4.
5) The vertical hydraulic conductivity of the Finniss Formation is difficult to clearly define. However, a working value of 1E-5 – 1E-4 m/day is probably appropriate (although it may be as high as 1E-3 in some areas).
6) Note that the production wells are partially penetrating and completed open hole over the top of the aquifer.

5.3 Glenforslan Formation constant rate discharge testing

5.3.1 LHP1GF CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Glenforslan Formation production well LHP1GF at a rate of 2.02 L/s for a duration of 4489 minutes. Test details are given in Table 7.

Aquifer setting:

- The Glenforslan Formation occurs at a depth of 31 m, has a thickness of 17 m, is overlain by the Winnambool Formation aquitard with a thickness of 2.5 m, and is underlain by the Finnis Formation aquitard although this was not drilled

Drawdown development:

- Glenforslan Formation observation well LHO40GF log-linear Cooper-Jacob time-drawdown analysis (Fig. 45) and log-log Walton time-drawdown analysis (Fig. 46) indicates a drawdown signature consistent with a confined aquifer.

Issues relating to the data and analysis include:

- Manual measurements were not provided (AWE test).
- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Winnambool Formation.
- Observation well LHO40GF:
  - This observation well is completed in the Glenforslan Formation.
  - This observation well is located at a radial distance of 44 m (r = 2.59 times the aquifer thickness) from the production well.
  - The Walton analysis type curve has been selected assuming that leakage would occur through the overlying Winnambool Formation immediately if the test had continued, which results in the maximum vertical hydraulic conductivity being calculated.
- Observation well LHO40P:
  - This observation well is completed in the Pata Formation at a radial distance of ~40 m from the production well.
  - The small drawdown response indicated in the Pata Formation in the $\log(t/r^2)$ vs log(s) plot (Fig. 47) may be due to the leakage or hydraulic unloading of the aquifer system.
  - The lack of an observation well completed in the Upper Mannum Formation precludes comments regarding leakage through the Finnis Formation aquitard. However, the apparent lack of leakage indicated during the test supports the confined nature of the Glenforslan Formation.

5.3.2 LFP3GF CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Glenforslan Formation production well LFP3GF at a rate of 1.5 L/s for a duration of 720 minutes. Test details are given in Table 7.

Aquifer setting:

- The Glenforslan Formation occurs at a depth of 41 m, has a thickness of 20.5 m, is overlain by the Winnambool Formation aquitard with a thickness of 14.5 m, and is underlain by the Finnis Formation aquitard with a thickness of 2 m.

Drawdown development:

- Glenforslan Formation observation well LFO3GF_2 log(t) vs linear(s) Cooper-Jacob analysis (Fig. 48) and log(t) vs log(s) Walton analysis (Fig. 49) indicates a drawdown signature consistent with a confined aquifer.

Issues relating to the data and analysis include:

- The data from observation well LFO3GF_2 located at a radial distance of 1.9 times the aquifer thickness are used in preference to those of LFO3GF located at a radial distance of 0.54 times the aquifer thickness. At the greater radial distance observation wells are unaffected by partial penetration effects.
- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Winnambool Formation.

- Observation well LFO3GF_2:
  - This observation well is completed in the Glenforslan Formation.
  - This observation well is located at a radial distance of 39 m (r = 1.91 times the aquifer thickness) from the production well.
  - The Walton analysis type curve has been selected to fit the early time drawdown data.
  - The Walton analysis type curve has been selected to fit the early time drawdown data prior to the influence of leakage.
  - The Walton analysis type curve indicates the influence of a low permeability boundary following the onset of leakage.
- Observation wells MAN1O, LFO3GF, LFO3P, LFO3A:
  - These observation wells are completed in the Upper Mannum Formation, Glenforslan Formation, Pata Formation, Monoman Formation respectively in close proximity at a radial distance of ~10 m from the production well.
  - The lack of drawdown response in observation wells MAN1O, LFO3P, LFO3A precludes their occurrence on the $\log(t/r^2)$ vs $\log(s)$ plot (Fig. 50). These wells responded during the test with a slight increase in potentiometric head prior to commencing a slight drawdown. This response is indicative of an effective aquitard.

5.4 Glenforslan Formation – general behaviour under pumping stress

Constant rate discharge testing conducted on production wells completed in the Glenforslan Formation indicates its hydraulic behaviour under pumping stress and aquifer hydraulic parameters. The following general comments can be made:

1) The Glenforslan Formation exhibits drawdown signatures at observation wells completed in the production aquifer consistent with a confined aquifer, however there may be slight leakage.
2) There is some evidence of lower permeability boundaries in the Glenforslan Formation that are probably related to lower permeability aquifer material.
3) The Glenforslan Formation has a transmissivity less than 10 m^2/day, an hydraulic conductivity less than 0.6 m/day, and a storage coefficient of ~1.75E-4.
4) If it is assumed that all leakage occurs through the overlying Winnambool Formation, a working value for the vertical hydraulic conductivity of 1E-5 – 1E-3 m/day is probably appropriate.
5) Note that the production wells are partially penetrating and completed open hole over the middle of the aquifer.

5.5 Pata Formation constant rate discharge testing

5.5.1 LFP2P CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Pata Formation production well LFP2P at a rate of 0.53 L/s for a duration of 6660 minutes. Test details are given in Table 7.

Aquifer setting:

- The Pata Formation occurs at a depth of 13 m, has a thickness of 8.5 m, is overlain by the Bookpurnong Formation aquitard with a thickness of 2 m, and is underlain by the Winnambool Formation aquitard with a thickness of (?)10 m.

Drawdown development:

- Pata Formation observation well LFO6P log(t) vs linear(s) Cooper-Jacob analysis (Fig. 51) and log(t) vs log(s) Walton analysis (Fig. 52) indicates a drawdown signature consistent with a semi-confined aquifer.

Issues relating to the data and analysis include:

- Manual measurements were not provided (AWE test).
- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Bookpurnong Formation.
- Observation well LFO6P:
  - This observation well is completed in the Pata Formation.
  - This observation well is located at a radial distance of 49 m (r = 5.76 times the aquifer thickness) from the production well.
  - The Walton analysis type curve indicates leakage.
- Observation wells LFO6GF, LFO6A:
  - These observation wells are completed in the Glenforslan Formation and Monoman Formation respectively in close proximity at a radial distance of 49 m from the production well.
  - The small drawdown response indicated in Monoman Formation in the $\log(t/r^2)$ vs log(s) plot (Fig. 53) may be due to leakage or hydraulic unloading of the aquifer system.
  - The significant drawdown response (indicated in Glenforslan Formation in the $\log(t/r^2)$ vs log(s) plot) indicates leakage through the Winnambool Formation.

5.5.2 LFP3P CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Pata Formation production well LFP3P at a rate of 0.5 L/s for a duration of 720 minutes. Test details are given in Table 7.

Aquifer setting:

- The Pata Formation occurs at a depth of 17.5 m, has a thickness of 9 m, is overlain by the Bookpurnong Formation aquitard with a thickness of 6.5 m, and is underlain by the Winnambool Formation aquitard with a thickness of 14.5 m.

Drawdown development:

- Pata Formation observation well LFO3P_2 log(t) vs linear(s) Cooper-Jacob analysis (Fig. 54) and log(t) vs log(s) Walton analysis (Fig. 55) indicates a drawdown signature consistent with a confined aquifer.

Issues relating to the data and analysis include:

- The data from observation well LFO3P_2 located at a radial distance of 1.66 times the aquifer thickness are used in preference to those of LFO3P located at a radial distance of 1.03 times the aquifer thickness. At the greater radial distance observation wells are unaffected by issues related to the production well that may result in greater drawdown developing.
- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Bookpurnong Formation.
- Observation well LFO3P_2:
  - This observation well is completed in the Pata Formation.

- This observation well is located at a radial distance of 9.25 m (r = 1.66 times the aquifer thickness) from the production well.
- The Walton analysis type curve indicates slight leakage.

- Observation wells MAN1O, LFO3GF, LFO3P, LFO3A:
  - These observation wells are completed in the Upper Mannum Formation, Glenforslan Formation, Pata Formation, Monoman Formation respectively in close proximity at a radial distance of ~10 m from the production well.
  - The lack of drawdown response from observation wells MAN1O and LFO3GF precludes their occurrence on the log(t/r^2) vs log(s) plot (Fig. 56). These wells responded during the test with a slight increase in potentiometric head indicative of an effective aquitard.
  - The small drawdown response indicated in the Monoman Formation in the log(t/r^2) vs log(s) plot may be due to leakage or hydraulic unloading of the aquifer system.

5.5.3 LHO14P CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Pata Formation observation well LHO14P (not the production well in this case due to well problems) at a rate of 0.4 L/s for a duration of 720 minutes. Test details are given in Table 7.

Aquifer setting:

- The Pata Formation occurs at a depth of 51 m, has a thickness of 10 m, is overlain by the Bookpurnong Formation aquitard with a thickness of 10 m, and is underlain by the Winnambool Formation aquitard although this was not drilled.

Drawdown development:

- Pata Formation observation well LHP14P log(t) vs linear(s) Cooper-Jacob analysis (Fig. 57) and log(t) vs log(s) Walton analysis (Fig. 58) indicates a drawdown signature consistent with a confined aquifer.

Issues relating to the data and analysis include:

- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Bookpurnong Formation.
- Observation well LHP14P:
  - This observation well is completed in the Pata Formation.
  - This observation well is located at a radial distance of 23.4 m (r = 2.34 times the aquifer thickness) from the production well.
  - The Walton analysis type curve indicates slight leakage.
- Observation well LHP14:
  - This observation well is completed in the Loxton Sands at a radial distance of ~3 m from the production well.
  - The small drawdown response indicated in the Loxton Sands in the log(t/r^2) vs log(s) plot (Fig. 59) may be due to leakage or hydraulic unloading of the aquifer system.
  - The lack of an observation well completed in the Glenforslan Formation precludes comments regarding leakage through the Winnambool Formation aquitard.

5.5.4 LHP42P CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Pata Formation production well LHP42P at a rate of 0.4 L/s for a duration of 720 minutes. Test details are given in Table 7.

Aquifer setting:

- The Pata Formation occurs at a depth of 41 m, has a thickness of 8.5 m, is overlain by the Bookpurnong Formation aquitard with a thickness of 13 m, and is underlain by the Winnambool Formation aquitard although this was not drilled.

Drawdown development:

- Pata Formation observation well LHO42P log(t) vs linear(s) Cooper-Jacob analysis (Fig. 60) and log(t) vs log(s) Walton analysis (Fig. 61) indicates a drawdown signature consistent with a confined aquifer.

Issues relating to the data and analysis include:

- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Bookpurnong Formation.
- Observation well LHO42P:
  - This observation well is completed in the Pata Formation.
  - This observation well is located at a radial distance of 20.76 m (r = 2.44 times the aquifer thickness) from the production well.
  - The Walton analysis type curve indicates slight leakage.
- Observation well LHO42:
  - This observation well is completed in the Monoman Formation at a radial distance of ~12 m from the production well.
  - The lack of drawdown response indicated in the $\log(t/r^2)$ vs log(s) plot (Fig. 62) confirms the confined nature of the Pata Formation.
  - The lack of an observation well completed in the Glenforslan Formation precludes comments regarding leakage through the Winnambool Formation aquitard.

5.5.5 LHP43P CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Pata Formation production well LHP43P at a rate of 0.6 L/s for a duration of 720 minutes. Test details are given in Table 7.

Aquifer setting:

- The Pata Formation occurs at a depth of 47 m, has a thickness of 15 m, is overlain by the Bookpurnong Formation aquitard with a thickness of 13 m, and is underlain by the Winnambool Formation aquitard although this was not drilled.

Drawdown development:

- Pata Formation observation well LHO43P log(t) vs linear(s) Cooper-Jacob analysis (Fig. 63) and log(t) vs log(s) Walton analysis (Fig. 64) indicates a drawdown signature consistent with a confined aquifer.

Issues relating to the data and analysis include:

- Aquifer and aquitard hydraulic parameters are given in Table 8.
- The vertical hydraulic conductivity is assumed to be that of the Bookpurnong Formation.
- Observation well LHO43P:

- This observation well is completed in the Pata Formation.
- This observation well is located at a radial distance of 15.05 m (r = 1 times the aquifer thickness) from the production well.
- The Walton analysis type curve has been selected assuming that leakage would occur through the overlying Bookpurnongs Formation immediately if the test had continued, which results in the maximum vertical hydraulic conductivity being calculated.

- Observation well LHP13:
  - This observation well is completed in the Monoman Formation at a radial distance of ~3 m from the production well.
  - The lack of drawdown response indicated in the data (note that the initial depth to water value is missing) confirms the confined nature of the Pata Formation.

5.6 Pata Formation – general behaviour under pumping stress

Constant rate discharge testing conducted on production wells completed in the Pata Formation indicates its hydraulic behaviour under pumping stress and aquifer hydraulic parameters. The following general comments can be made:

1) The Pata Formation exhibits drawdown signatures at observation wells completed in the production aquifer consistent with a confined aquifer, however there is evidence of leakage.
2) Evidence from drilling indicates that the Bookpurnong Formation may be absent at some locations in the River Murray valley.
3) The Pata Formation has a transmissivity less than 6 m^2/day, an hydraulic conductivity less than 0.7 m/day, and a storage coefficient of ~3E-5–5E-4.
4) If it is assumed that all leakage occurs through the overlying Bookpurnong Formation, a working value for the vertical hydraulic conductivity of 1E-3–5E-3 is probably appropriate.
5) Note that the production wells are nearly fully penetrating and completed open hole.
6) Tests conducted on the Upper Mannum Formation, Glenforslan Formation and Pata Formation are considered sufficient to provide clear evidence for the confined nature of the Upper Mannum Formation that is effectively separated from the overlying Monoman Formation and Loxton Sands by the Bookpurnong Formation. However, it should be noted that the Bookpurnong Formation may be absent at some locations in the River Murray valley resulting in the low permeability Pata Formation being poorly confined. This does not affect the general confined interpretation for the Upper Mannum Formation.
7) Testing confirms that both the Monoman Formation and the Loxton Sands should be targeted for the interception of salt entering the River Murray in the Loxton reach.

5.7 Loxton Sands constant rate discharge testing

5.7.1 LHP44, LHP45, LHP46, LHP48 CONSTANT RATE DISCHARGE TESTS

Constant rate discharge tests with a duration of 720 minutes were conducted on production wells completed in the Loxton Sands plus Shells. Test details are given in Table 7. Aquifer and aquitard hydraulic parameters are given in Table 8 (as are Figs 65–70, and Figs 76–77).

Drawdown development at distance from the production wells was minimal. During the test conducted on production well LHP44 no drawdown developed at observation well LHO55 located at a radial distance of 100 m from the production well.

5.7.2 LHP47 CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Loxton Sands production well LHP47 at a rate of 1 L/s for a duration of 108 200 minutes. Test details are given in Table 7.

Aquifer setting:

- The saturated Loxton Sands occurs at a depth of 16 m, has a thickness of 5 m, and is underlain by the Bookpurnong Formation aquitard although this was not drilled. Permeable shell hash one metre in thickness occurs within the production zone.

Drawdown development:

- Loxton Sands observation well LHO44 log(t) vs linear(s) Cooper-Jacob analysis (Fig. 71) and log(t) vs log(s) Neuman analysis (Fig. 72) indicates a drawdown signature consistent with an unconfined aquifer with lower permeability material at some distance from the production well.

Issues relating to the data and analysis include:

- Aquifer hydraulic parameters are given in Table 8.
- Production well LHP47:
  - The log(t) vs linear(s) Cooper-Jacob analysis is given in Figure 73.
- Observation wells LHO44, LHO49, LHO50:
  - These observation wells are completed in the Loxton Sands at radial distances out to 50 m from the production well.
  - Cooper-Jacob log-linear distance-drawdown analysis at a time of 1000 minutes is given in Figure 74.
  - The drawdown response of these wells is indicated in the $\log(t/r^2)$ vs log(s) plot (Fig. 75).
  - A drawdown of only 0.27 m develops at observation well LHO50 at a radial distance of 50 m from the production well.

5.8 Loxton Sands – general behaviour under pumping stress

Constant rate discharge testing conducted on production wells completed in the Loxton Sands indicates its hydraulic behaviour under pumping stress and aquifer hydraulic parameters. The following general comments can be made:

1) The Loxton Sands exhibits drawdown signatures at the observation wells consistent with an unconfined aquifer.
2) The Loxton Sands exhibits (in some cases) evidence of low permeability material at distance from production wells.
3) It is possible that leakage may occur from the underlying Bookpurnong Formation, although this is not indicated in test data.
4) The Loxton Sands has a transmissivity of 100–300 m^2/day (but may be higher), and an hydraulic conductivity of 20–50 m/day, these higher values are likely to be related to the shell hash and the existence of coarse sands in some of the wells. Specific yield could not be adequately determined from any of the tests.
5) It should be noted that while the transmissivity is comparable with that of the Monoman Formation, the unconfined and thin saturated interval of the aquifer with associated lack of submergence for pumps, results in minimal drawdown development at distance from the production well. These results indicate that conventional production wells will be

impractical for interception in the highland areas where the target aquifer is the Loxton Sands.

6) Long-term pumping of production well LHP47 over a period of 108 000 minutes indicates that a drawdown of only 0.27 m developed at a radial distance of 50 m from the production well.
7) The testing that has been conducted has been sufficient to indicate the variability in the Loxton Sands and to provide a basis for conceptual wellfield design.
8) Note that the production wells are partially penetrating and completed over the lower 1/3–1/2 of the aquifer.

5.9 Monoman Formation constant rate discharge testing

5.9.1 LFP11, LFP12, LPP1, LPP2, LPP3, LPP4, LPP5, LPP6, LPP7, LPP8, LPP9, LPP10 CONSTANT RATE DISCHARGE TESTS

Constant rate discharge tests with durations up to 720 minutes were conducted on production wells completed in the Monoman Formation. Test details are given in Table 7. Aquifer and aquitard hydraulic parameters are given in Table 8 (as are Figs 78–83, and Figs 102–122).

Issues relating to the data and analysis include:

- Manual measurements unsatisfactory for the LPP1 – LPP10 tests (AWE tests).
- Drawdown development in observation wells was consistent with a semi-confined - confined aquifer.
- Leakage, low permeability boundaries and channel aquifer conditions are evident in the test data.

5.9.2 LFP16_2 CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Monoman Formation production well LFP16_2 at a rate of 6.45 L/s for a duration of 21 508 minutes. Test details are given in Table 7.

Aquifer setting:

- The Monoman Formation occurs at a depth of 5 m, has a thickness of 9 m, is overlain by the Coonambidgal Formation aquitard, and is underlain by the Bookpurnong Formation aquitard / Pata Formation aquifer although this was not drilled.

Drawdown development:

- Monoman Formation observation well LFO22 log(t) vs linear(s) Cooper-Jacob analysis (Fig. 84), log(t) vs log(s) Walton analysis (Fig. 85), and log(t) vs linear(s) Theis recovery analysis (Fig. 86) indicates a drawdown signature consistent with a (semi) confined aquifer.
- Monoman Formation observation well LFO35 data are given in Figures 87–89.

Issues relating to the data and analysis include:

- Aquifer and aquitard hydraulic parameters are given in Table 8.
- Observation well LFO22:
    - This observation well is completed in the Monoman Formation.

- This observation well is located at a radial distance of 13.5 m (r = 1.5 times the aquifer thickness) from the production well.
- The Walton analysis type curve has been selected to fit the early time drawdown data prior to the influence of leakage.
- The Walton analysis type curve indicates the influence of a low permeability boundary following the onset of leakage.

- Observation wells LFO22, LFO35, LFO36, LFO37:
  - These observation wells are completed in the Monoman Formation at radial distances out to 100 m respectively from the production well.
  - Cooper-Jacob log-linear distance-drawdown analysis at a time of 100 minutes is given in Figure 90.
  - The drawdown response of these wells is indicated in the log(t/r^2) vs log(s) plot (Fig. 91).
  - Drawdown of 0.72 m develops at observation well LFO37 at a radial distance of 100 m from the production well.
  - The reduced elevations of groundwater levels at the end of the test are given in Figure 92, which also indicates the geometry of the aquifer.

5.9.3 LFP18 CONSTANT RATE DISCHARGE TEST

A constant rate discharge test was conducted on Monoman Formation production well LFP18 at a rate of 5.5 L/s for a duration of 17 454 minutes. Test details are given in Table 7.

Aquifer setting:

- The Monoman Formation occurs at a depth of 4 m, has a thickness of 5 m, is overlain by the Coonambidgal Formation aquitard, and is underlain by the Bookpurnong Formation aquitard aquifer although this was not drilled.

Drawdown development:

- Monoman Formation observation well LFO39 log(t) vs linear(s) Cooper-Jacob analysis (Fig. 93), log(t) vs log(s) Walton analysis (Fig. 94), and log(t) vs linear(s) Theis recovery analysis (Fig. 95) indicates a drawdown signature consistent with a (semi) confined aquifer.
- Monoman Formation observation wells LFO40 data are given in Figures 96–98.

Issues relating to the data and analysis include:

- Aquifer and aquitard hydraulic parameters are given in Table 8.
- Observation well LFO39:
  - This observation well is completed in the Monoman Formation.
  - This observation well is located at a radial distance of 7.5 m (r = 1.5 times the aquifer thickness) from the production well.
  - The Walton analysis type curve has been selected to fit the early time drawdown data prior to the influence of leakage.
  - The Walton analysis type curve indicates the influence of a low permeability boundary following the onset of leakage.
  - While it is true that the drawdown data can be fitted to the Neuman type curves, this results in unrealistic values for specific yield, validating the interpretation of the aquifer type as (semi) confined.
- Observation wells LFO39, LFO40, LFO41, LFO42:

- These observation wells are completed in the Monoman Formation at radial distances out to 100 m from the production well.
- Cooper-Jacob log-linear distance-drawdown analysis at a time of 100 minutes is given in Figure 99.
- The drawdown response of these wells is indicated in the log(t/r^2) vs log(s) plot (Fig. 100).
- Drawdown of 0.83 m develops at observation well LFO42 at a radial distance of 100 m from the production well.
- The reduced elevations of groundwater levels at the end of the test are given in Figure 101, which also indicates the geometry of the aquifer.

5.10 Monoman Formation – general behaviour under pumping stress

Constant rate discharge testing conducted on production wells completed in the Monoman Formation indicates its hydraulic behaviour under pumping stress and aquifer hydraulic parameters. The following general comments can be made:

1) The Monoman Formation exhibits drawdown signatures at the observation wells consistent with a (semi) confined aquifer. Leakage develops after short pumping times. The source of leakage may be the Coonambidgal Formation, in which case, when this has drained, greater drawdown will develop in the aquifer. An alternative source of leakage is the underlying Bookpurnong Formation, or in its absence, the Pata Formation, in which case leakage will be persistent. The leakage signature is often interrupted by the influence of low permeability (material) boundaries.
2) In some cases, the Monoman Formation exhibits a drawdown signature consistent with a (semi) confined channel aquifer (ie high permeability channel surrounded by low permeability material). This response is not unexpected in the floodplain hydrogeological environment.
3) Due to the shallow depth to aquifer, the drawdown that develops in the production well is likely to result in the aquifer becoming unconfined close to the production well. However, the aquifer remains (semi) confined at distance from the production well.
4) Distribution-frequency plots of transmissivity, hydraulic conductivity, and storage coefficient analysis are given in Figures 128–130 respectively. The Monoman Formation has a:
   - Transmissivity (generally) of 50–600 m^2/day, with the most frequent value 100–200 m^2/day, however there may be ancient channels where the transmissivity may be much higher.
   - Hydraulic conductivity of 10–120 m/day, with the most frequent value 30–40 m/day.
   - Storage coefficient (generally) of 1E-4–1.4E-3, with the most frequent value 4E-4–8E-4, however there are areas where the storage coefficient may be higher.
5) Long-term pumping (in excess of 10 000 minutes) indicates that drawdown in excess of 0.5 m can develop at a radial distance of 100 m from the production well where there is a sufficiently thick aquifer to allow higher pumping rates (>5 L/s)
6) The testing that has been conducted has been sufficient to indicate the variability in the Monoman Formation and to provide a basis for conceptual wellfield design.
7) Note that the production wells are partially penetrating and completed over the lower 1/3–1/2 of the aquifer.

6. CONCLUSION

6.1 Relevance of results to Salt Interception Schemes

Extensive pumping tests have been conducted in the Loxton region and these have provided key information of relevance for the proposed SIS, in particular:

1) There is sufficient regional information on aquifer and aquitard hydraulic parameters, and the response of the aquifers to pumping stress, to confirm the hydrogeological model of the Loxton region given in Yan et al 2004.
2) Tests conducted on the Upper Mannum Formation, when considered in conjunction with the tests conducted on the Glenforslan Formation and the Pata Formation, are considered sufficient to provide clear evidence for the confined nature of the Murray Group Limestone that is effectively separated from the overlying Monoman Formation and Loxton Sands by the Bookpurnong Formation. However, it should be noted that the Bookpurnong Formation may be absent at some locations in the River Murray valley resulting in the low permeability Pata Formation being unconfined.
3) Both the Monoman Formation and the Loxton Sands should be targeted for the interception of salt entering the River Murray in the Loxton river reach.
4) Step drawdown testing conducted on production wells with differing construction at the same site indicates their relative hydraulic behaviour and has confirmed a production well design for the Monoman Formation and the Loxton Sands.
5) Horizontal drilling and an horizontal production well would offer a much more efficient method of salt interception in the Loxton Sands.

6.2 Recommendations

While short-term (up to 720 minutes) constant rate discharge tests are useful for determining aquifer hydraulic parameters, they are less useful for determining the development of drawdown at distance.

The aquifer hydraulic parameters (transmissivity, storage coefficient, specific yield and aquitard hydraulic resistance and vertical hydraulic conductivity) can, in theory, be used in conjunction with equations and numerical groundwater models to determine well spacings for production wells comprising a conceptual wellfield in the Monoman Formation and Loxton Sands, and predict the hydraulic response of the aquifer system (drawdown) to the operation of a SIS prior to implementation.

However, in practice, the influence of leakage from vertically adjacent aquifers, prevalence of low permeability boundaries, and possible recharge from the River Murray, reduce the value of prediction. As a consequence, long-duration constant rate discharge testing was been conducted at several key sites in the Monoman Formation and Loxton Sands.

Recommendations:

1) During the investigation phase associated with SIS:
   a) Constant rate discharge tests should be conducted for a duration in excess of seven days at key sites. These sites should include multiple observation wells completed in the production aquifer and adjacent aquifers to gain adequate information regarding the development of drawdown at distance and aquifer parameters.

   b) Additional test sites should include a production well and (at least) two observation wells to primarily gain information on drawdown at distance out to the expected midpoint between production wells.
   c) In all cases the underlying aquitard should be fully drilled.
2) During the construction rollout of the operational wellfield:
   a) Step drawdown tests should be conducted on all production wells with the midpoint observation wells in place.
   b) Constant rate discharge tests should be conducted for a duration of between 8–24 hours, or until obvious drawdown develops at the midpoint production wells.
3) Monoman Formation production wells should be constructed with a standard 1.2 mm aperture wirewound screen and an 8:16 gravel pack. This is beneficial to the rolling out of a wellfield. In addition, it is recommended that each production well site is pre-drilled in an air-core drilling program, to ensure grainsize and determine screen setting.
4) Observation wells should be constructed at the same diameter as production wells, but with slotted PVC screens. This construction means that these wells can be utilised as pseudo-production wells if the proposed production wells do not result in sufficient drawdown development.
5) Interception in the Loxton Sands can only be adequately achieved by horizontal production wells.

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Department for Water, Land and Biodiversity Conservation (2003) Bookpurnong and Loxton Salt Interception Schemes. Joint Works/ State Action Approval Submission to the Murray - Darling Basin Commission High Inter-Jurisdictional Working Group on Salt Interception. February 2003.

Department for Water, Land and Biodiversity Conservation (2003a) Loxton Salt interception Scheme Investigations Data Report Volume 2, September 2003.

Hazel C P (1975) Groundwater Hydraulics. Lectures presented by CP Hazel of the Irrigation and Water Supply Commission, Queensland to the Australian Water Resources Council's Groundwater School, Adelaide August 1975.

Yan W, Howles S, Howe B, Hill A (2005) Loxton – Bookpurnong Numerical Groundwater model 2005, Department for Water, Land and Biodiversity Conservation Report Book 2005/17.

FIGURES

Figure 1: Regional location plan

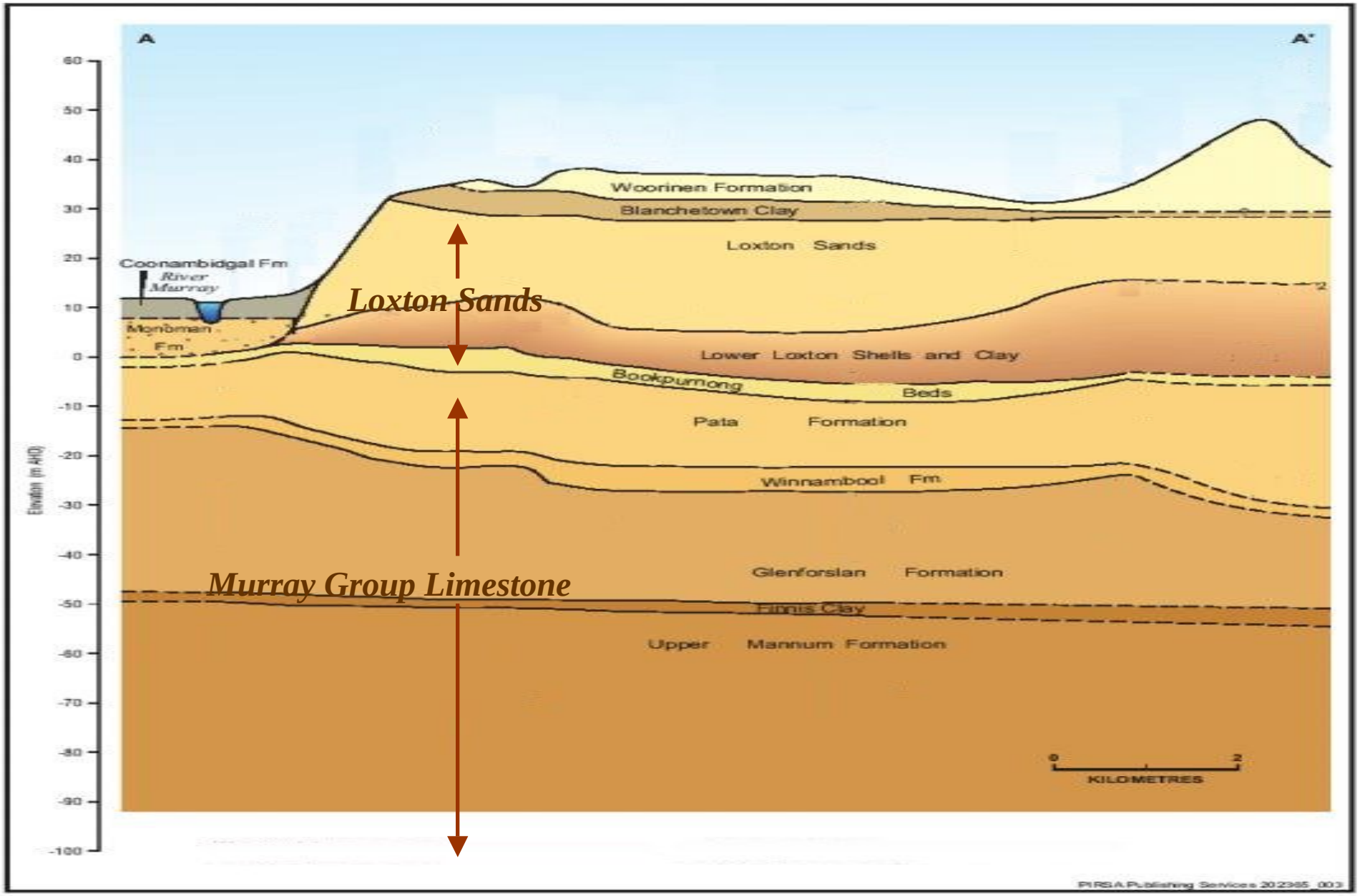


Figure 2: Hydrogeological cross-section (See Figure 1 for line of section)

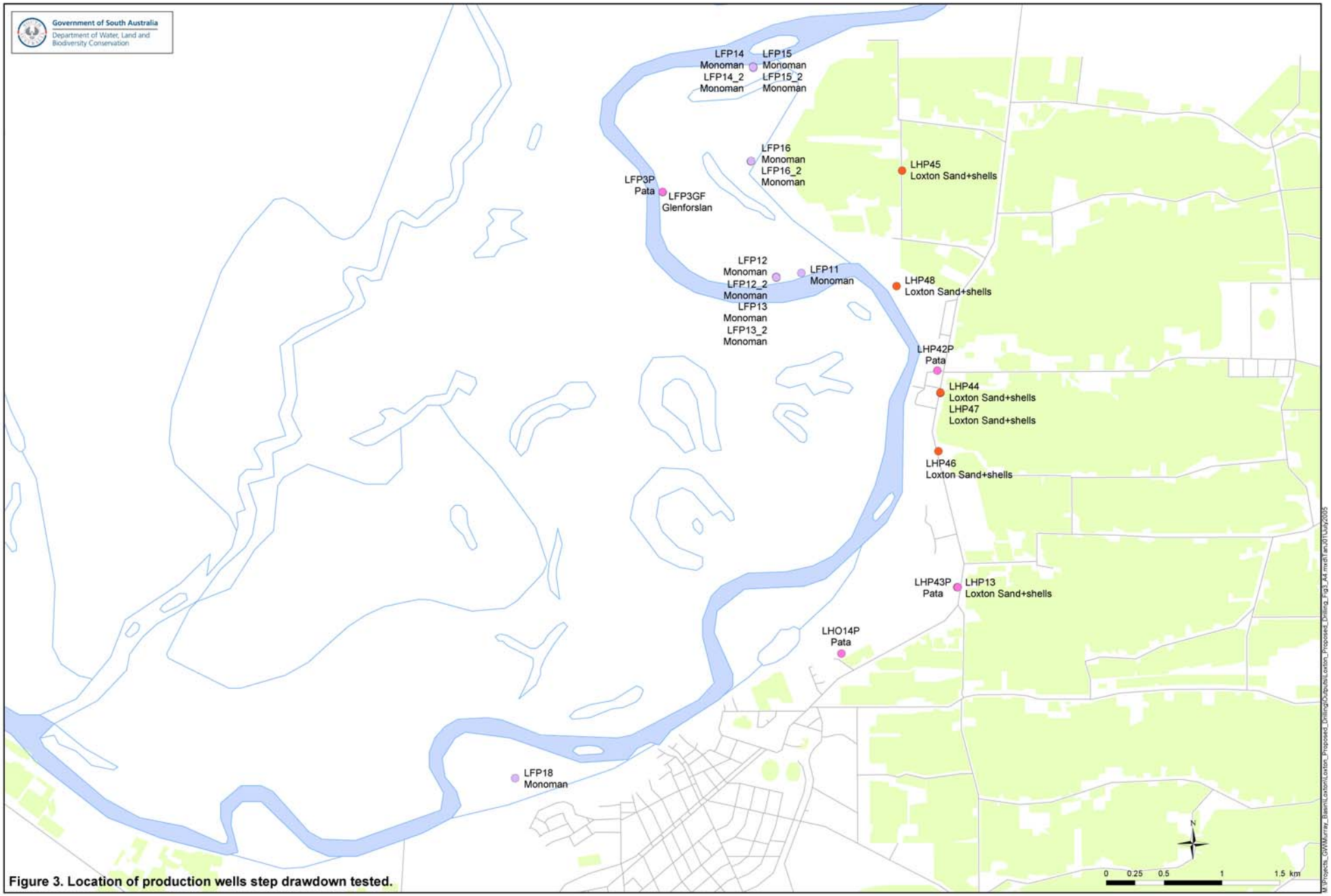
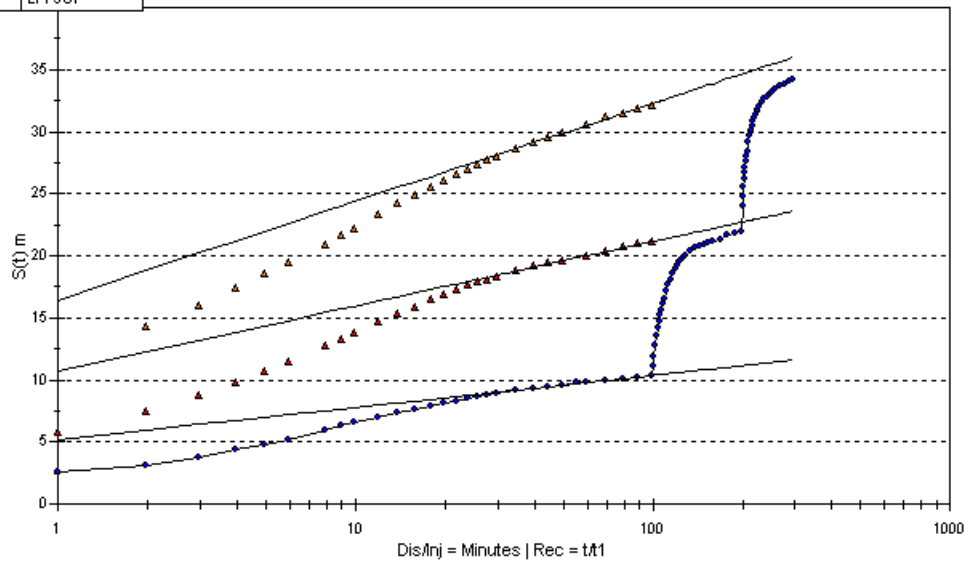


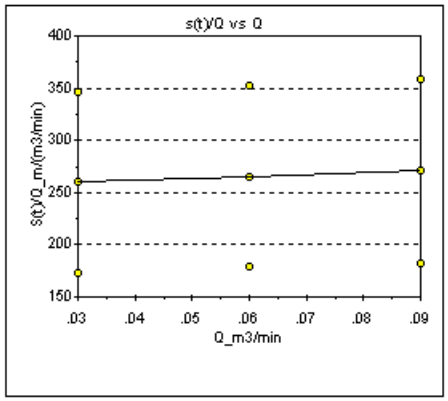
Figure 3. Location of production wells step drawdown tested.

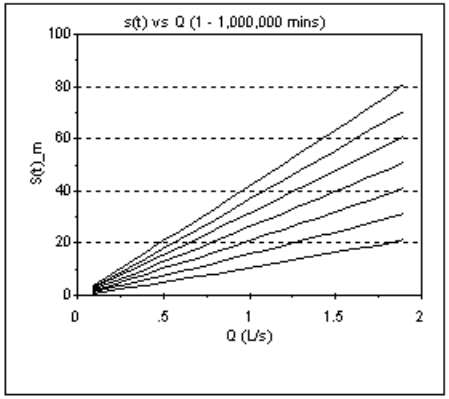
INDEXX : 1215 Project : LOXTON TestType : STEP DRAWDOWN StartDate : 6/03/2004 StartTime :

Defn	UnitNo
I/PW	LFP3GF



S(t) = [a Q + c Q2] + b log(t) Q, where a : 168.46 b : 87.04 c : 175.76

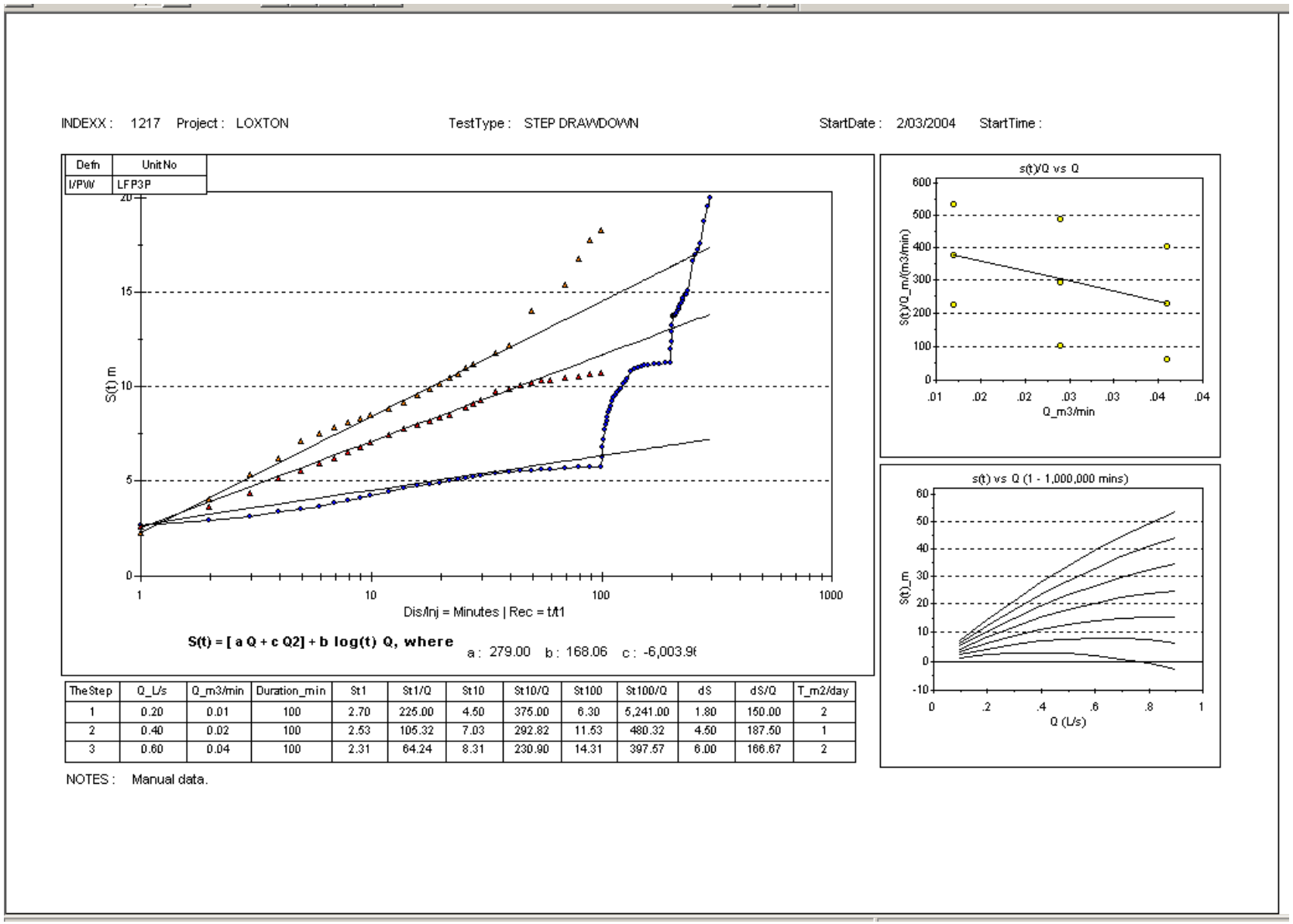




TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.50	0.03	100	5.22	174.00	7.82	260.67	10.42	347.33	2.60	86.67	3
2	1.00	0.06	100	10.79	179.81	15.99	266.48	21.19	353.15	5.20	86.67	3
3	1.50	0.09	100	16.51	183.43	24.41	271.21	32.31	358.99	7.90	87.78	3

NOTES : Manual data.

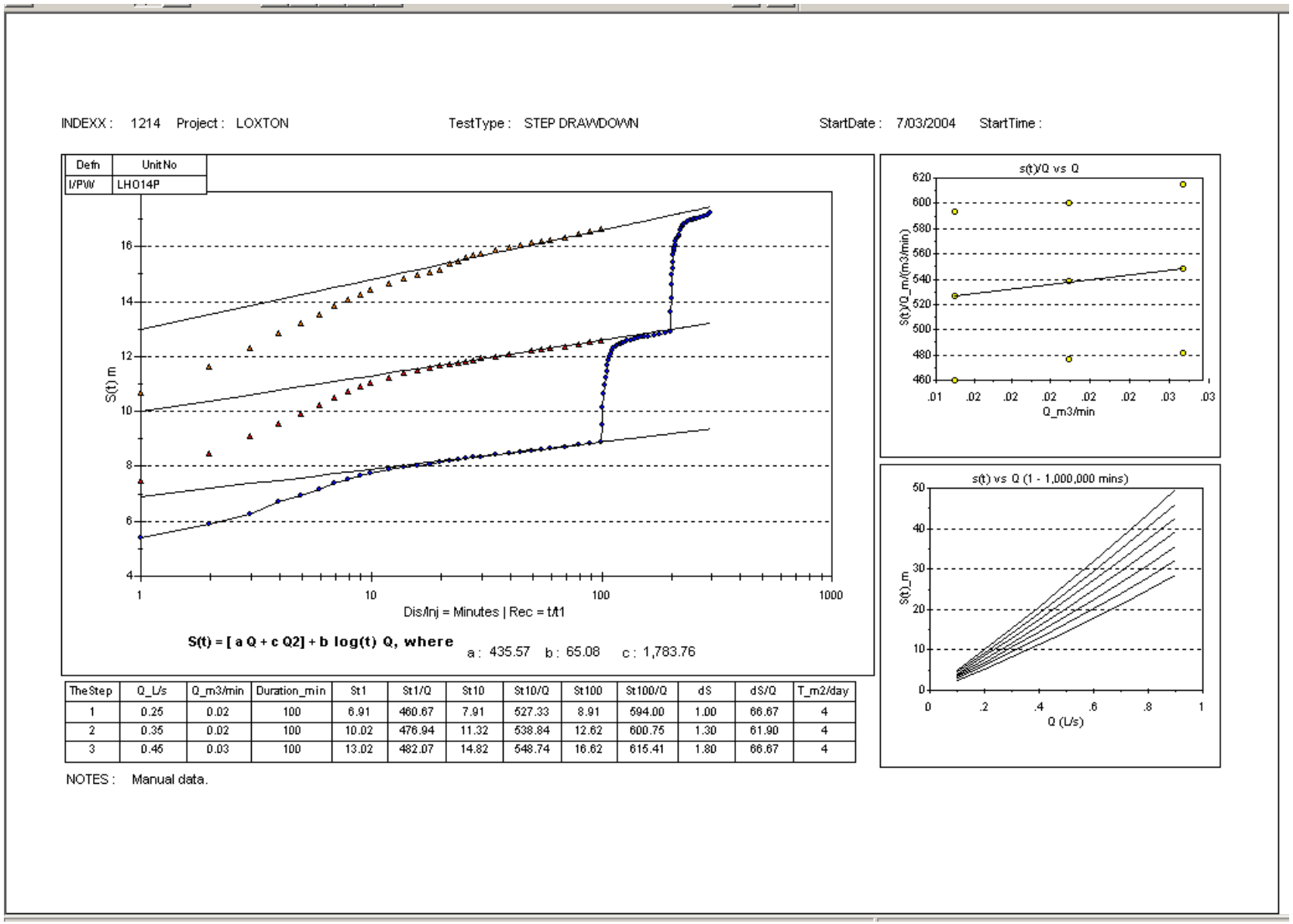
Figure 4 LFP3GF 6/03/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.20	0.01	100	2.70	225.00	4.50	375.00	6.30	5,241.00	1.80	150.00	2
2	0.40	0.02	100	2.53	105.32	7.03	292.82	11.53	480.32	4.50	187.50	1
3	0.60	0.04	100	2.31	64.24	8.31	230.90	14.31	397.57	6.00	166.67	2

NOTES : Manual data.

Figure 5 LFP3P 2/03/2004 Hazel step drawdown analysis



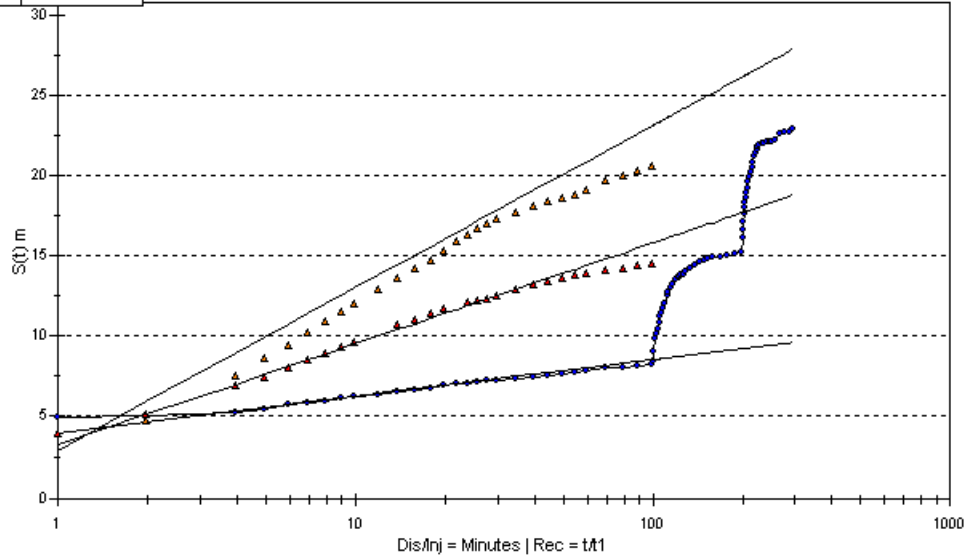
TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.25	0.02	100	6.91	460.67	7.91	527.33	8.91	594.00	1.00	66.67	4
2	0.35	0.02	100	10.02	476.94	11.32	538.84	12.62	600.75	1.30	61.90	4
3	0.45	0.03	100	13.02	482.07	14.82	548.74	16.62	615.41	1.80	66.67	4

NOTES : Manual data.

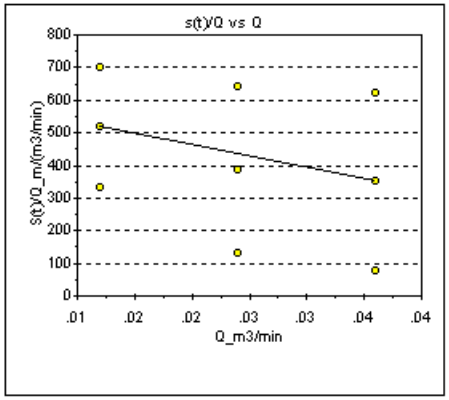
Figure 6 LHO14P 7/03/2004 Hazel step drawdown analysis

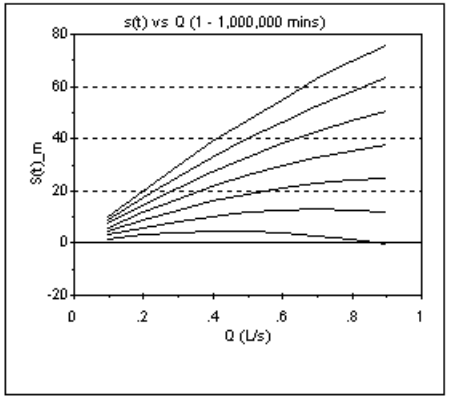
INDEXX : 1209 Project : LOXTON TestType : STEP DRAWDOWN StartDate : 27/02/2004 StartTime :

Defn	UnitNo
I/P\W	LHP42P



S(t) = [a Q + c Q2] + b log(t) Q, where a : 368.57 b : 236.57 c : -6,946.1

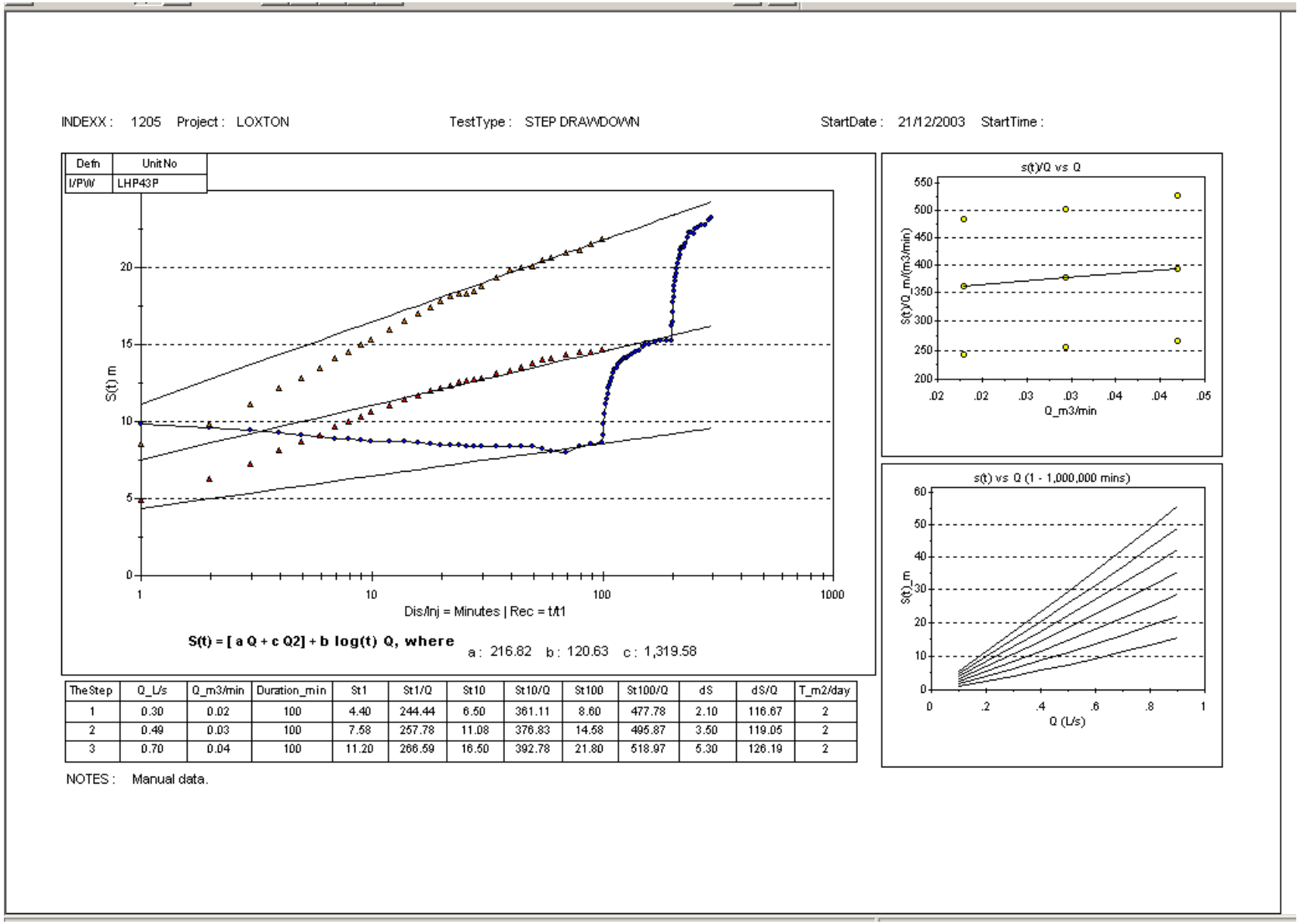




TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.20	0.01	100	4.06	338.33	6.26	521.67	8.46	705.00	2.20	183.33	1
2	0.40	0.02	100	3.29	137.21	9.39	391.38	15.49	645.55	6.10	254.17	1
3	0.60	0.04	100	2.98	82.74	12.78	354.96	22.58	627.18	9.80	272.22	1

NOTES : Manual data.

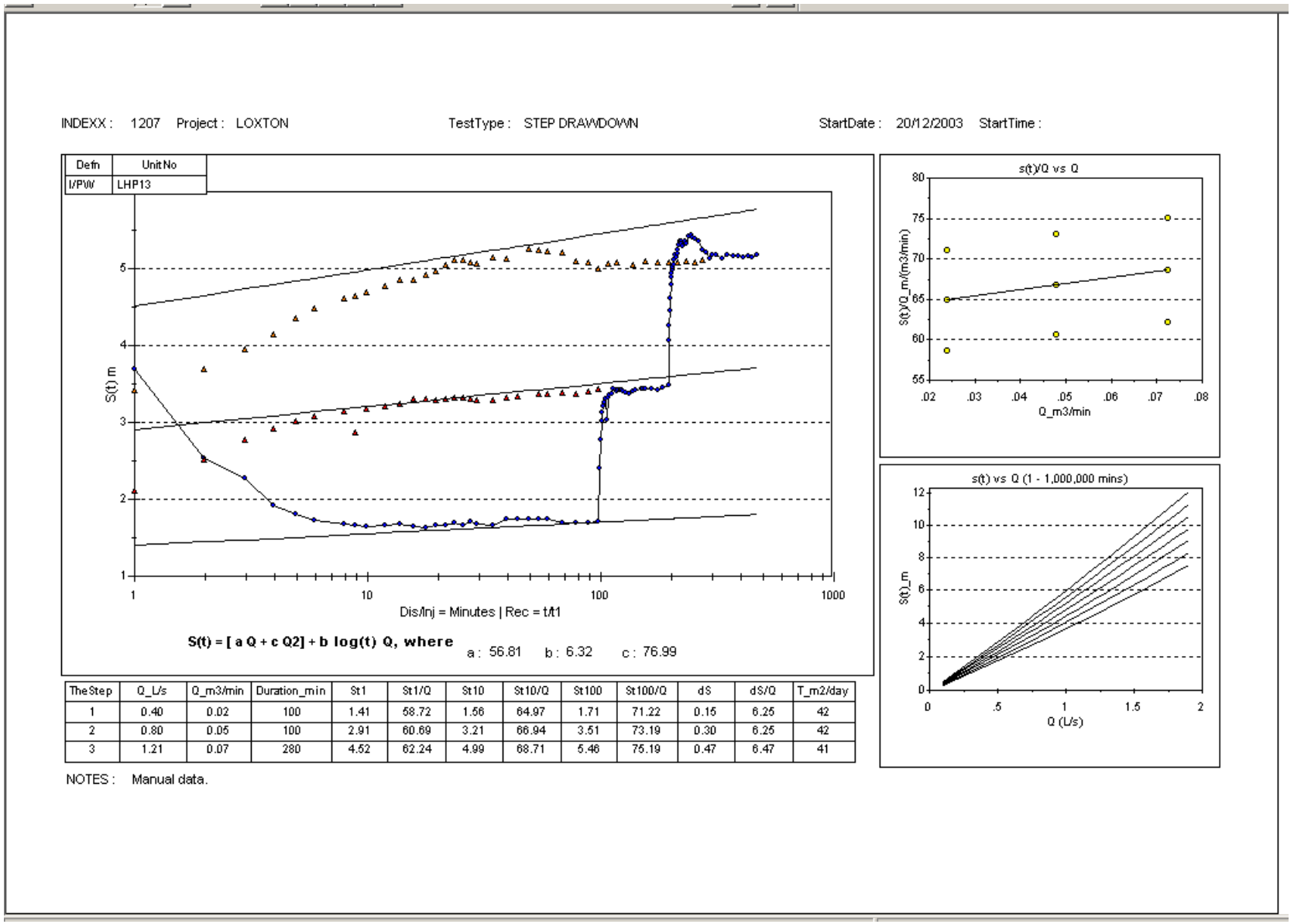
Figure 7 LHP42P 27/02/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.30	0.02	100	4.40	244.44	6.50	361.11	8.60	477.78	2.10	116.67	2
2	0.49	0.03	100	7.58	257.78	11.08	376.83	14.58	495.87	3.50	119.05	2
3	0.70	0.04	100	11.20	266.59	16.50	392.78	21.80	518.97	5.30	126.19	2

NOTES : Manual data.

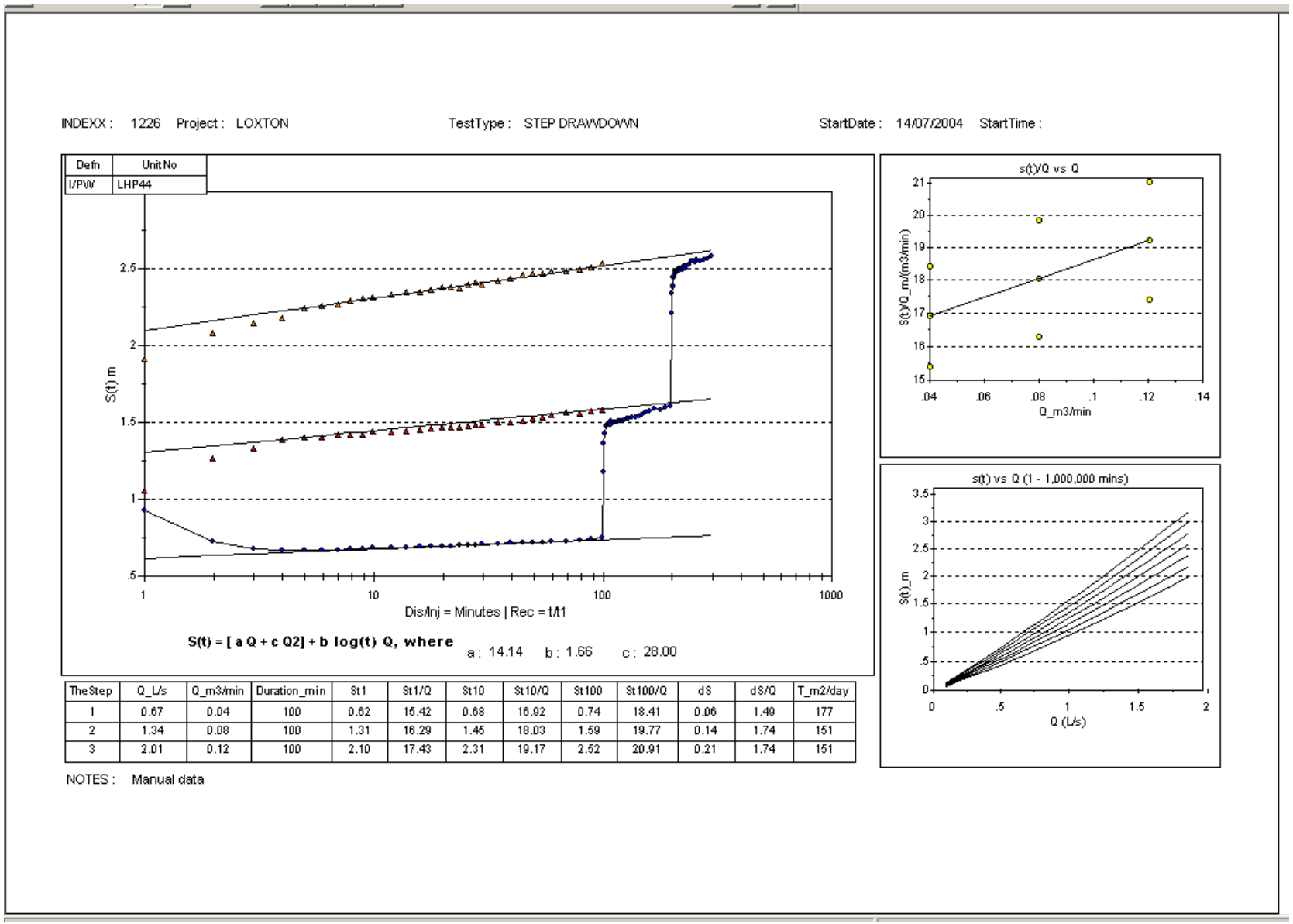
Figure 8 **LHP43P 21/12/2003 Hazel step drawdown analysis**



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.40	0.02	100	1.41	58.72	1.56	64.97	1.71	71.22	0.15	6.25	42
2	0.80	0.05	100	2.91	60.69	3.21	66.94	3.51	73.19	0.30	6.25	42
3	1.21	0.07	280	4.52	62.24	4.99	68.71	5.46	75.19	0.47	6.47	41

NOTES : Manual data.

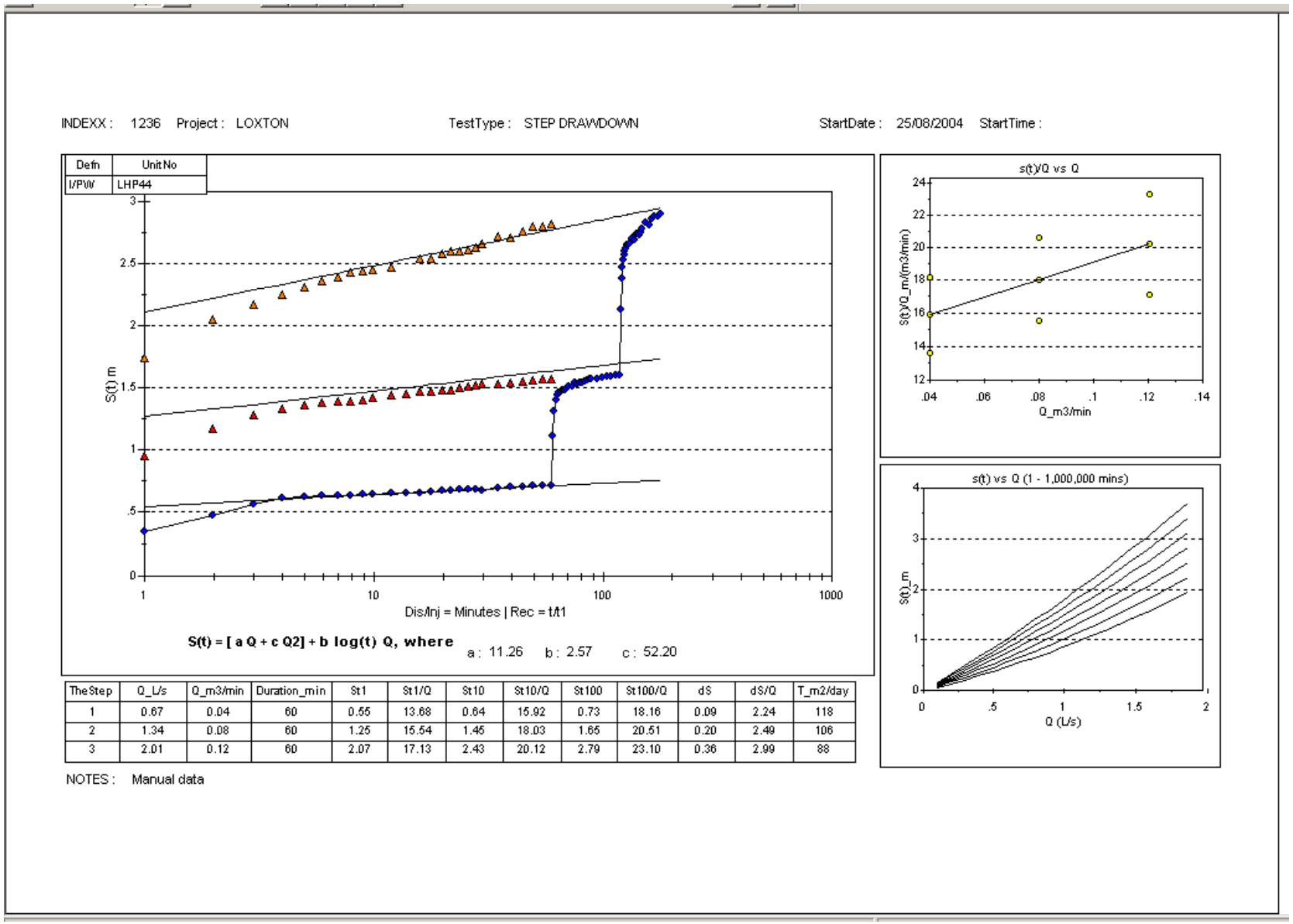
Figure 9 LHP13 20/12/2003 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.67	0.04	100	0.62	15.42	0.68	16.92	0.74	18.41	0.06	1.49	177
2	1.34	0.08	100	1.31	16.29	1.45	18.03	1.59	19.77	0.14	1.74	151
3	2.01	0.12	100	2.10	17.43	2.31	19.17	2.52	20.91	0.21	1.74	151

NOTES : Manual data

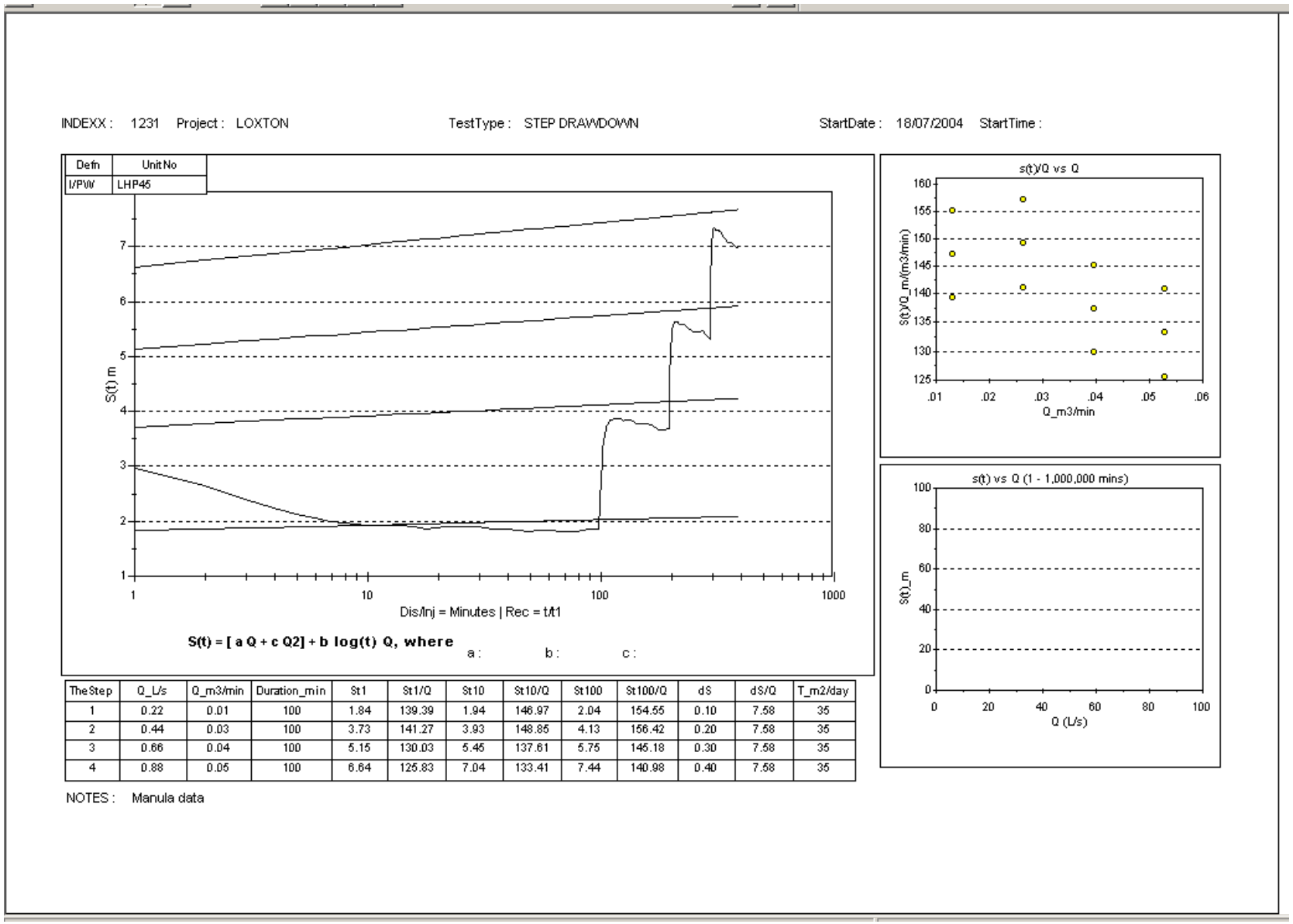
Figure 10 LHP44 14/07/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.67	0.04	60	0.55	13.68	0.64	15.92	0.73	18.16	0.09	2.24	118
2	1.34	0.08	60	1.25	15.54	1.45	18.03	1.65	20.51	0.20	2.49	106
3	2.01	0.12	60	2.07	17.13	2.43	20.12	2.79	23.10	0.36	2.99	88

NOTES : Manual data

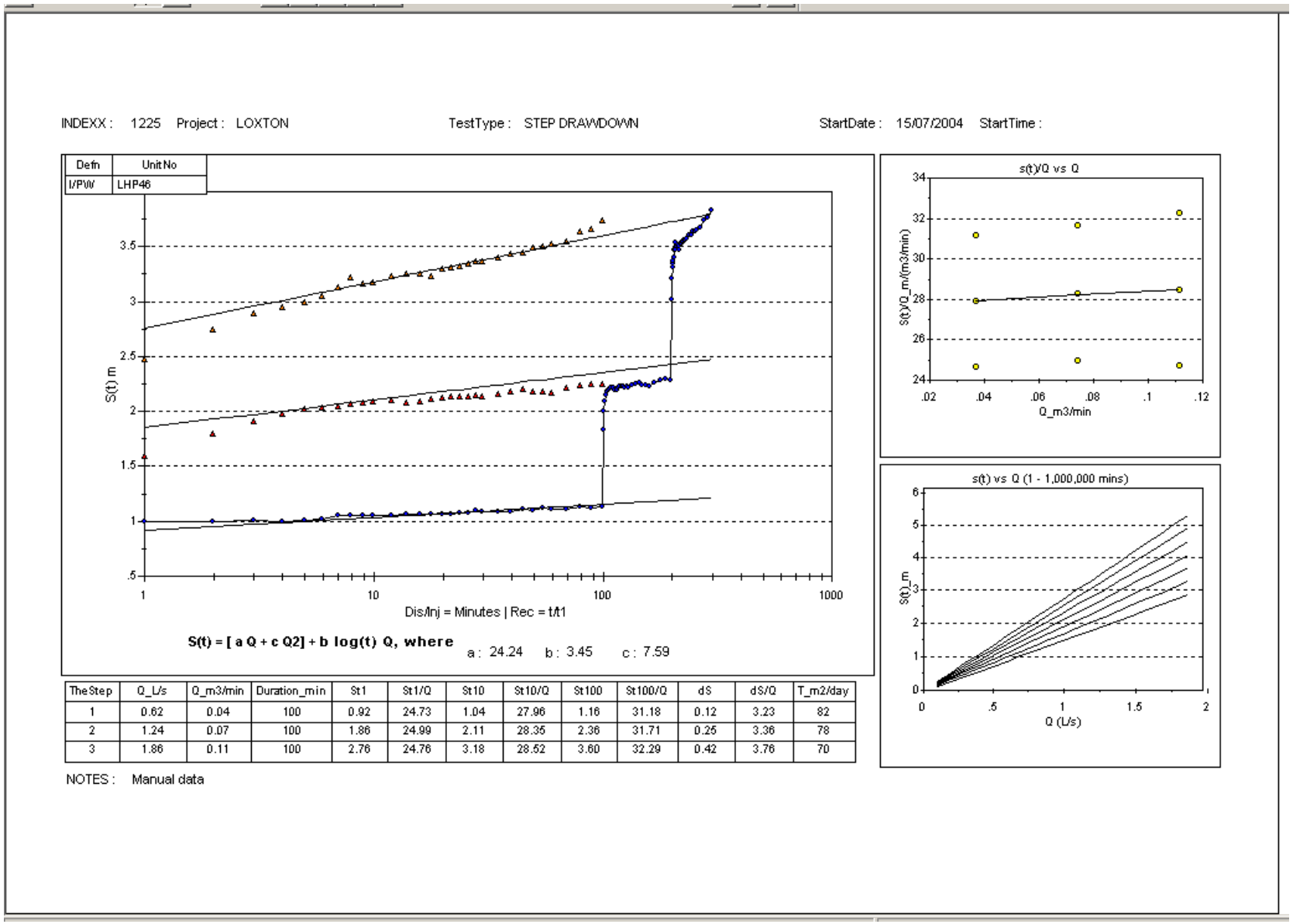
Figure 11 LHP44 25/08/2004 Hazel step drawdown analysis (post acid wash)



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.22	0.01	100	1.84	139.39	1.94	146.97	2.04	154.55	0.10	7.58	35
2	0.44	0.03	100	3.73	141.27	3.93	148.85	4.13	156.42	0.20	7.58	35
3	0.66	0.04	100	5.15	130.03	5.45	137.61	5.75	145.18	0.30	7.58	35
4	0.88	0.05	100	6.64	125.83	7.04	133.41	7.44	140.98	0.40	7.58	35

NOTES : Manula data

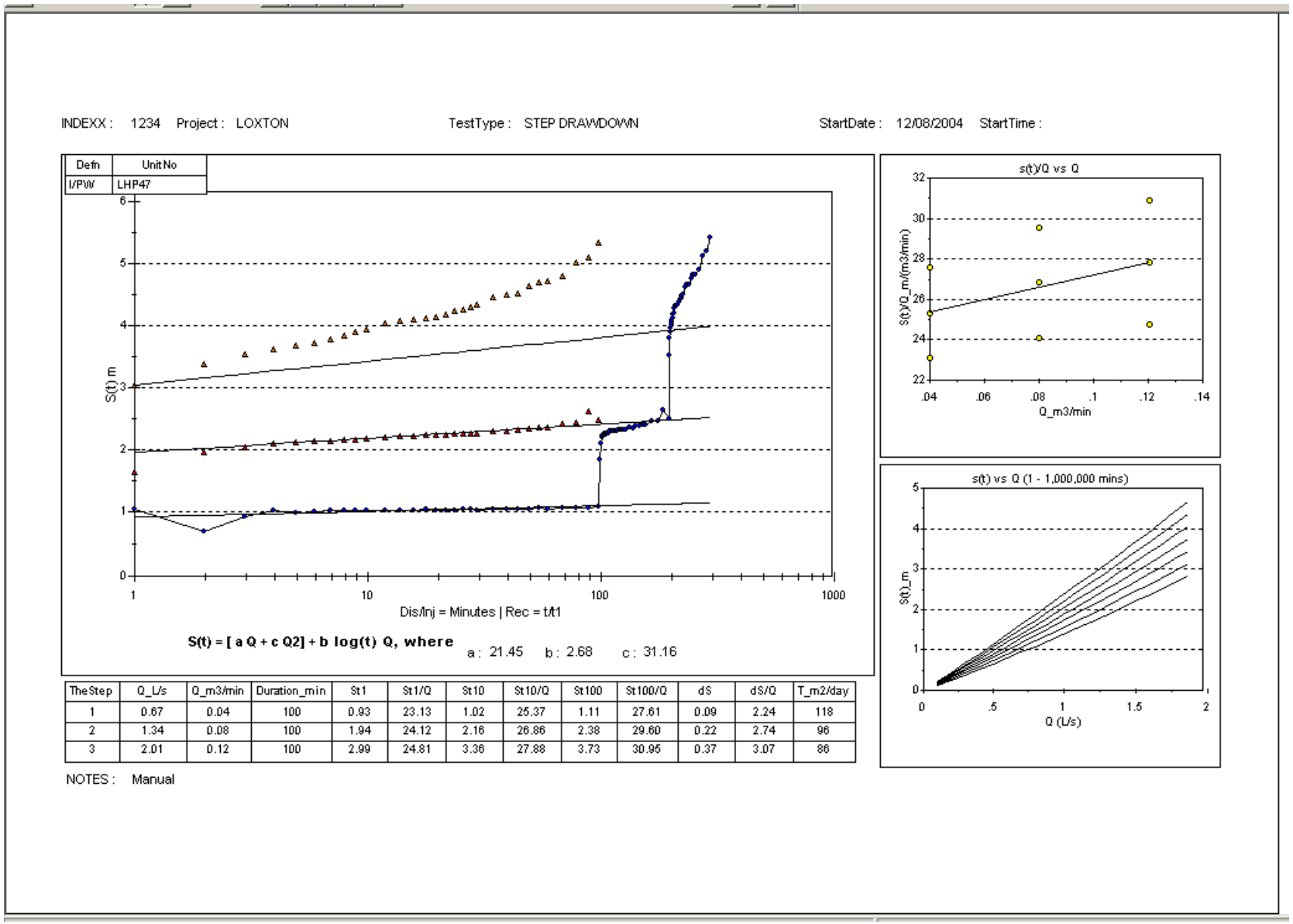
Figure 12 LHP45 18/07/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.62	0.04	100	0.92	24.73	1.04	27.96	1.16	31.18	0.12	3.23	82
2	1.24	0.07	100	1.86	24.99	2.11	28.35	2.36	31.71	0.25	3.36	78
3	1.86	0.11	100	2.76	24.76	3.18	28.52	3.60	32.29	0.42	3.76	70

NOTES : Manual data

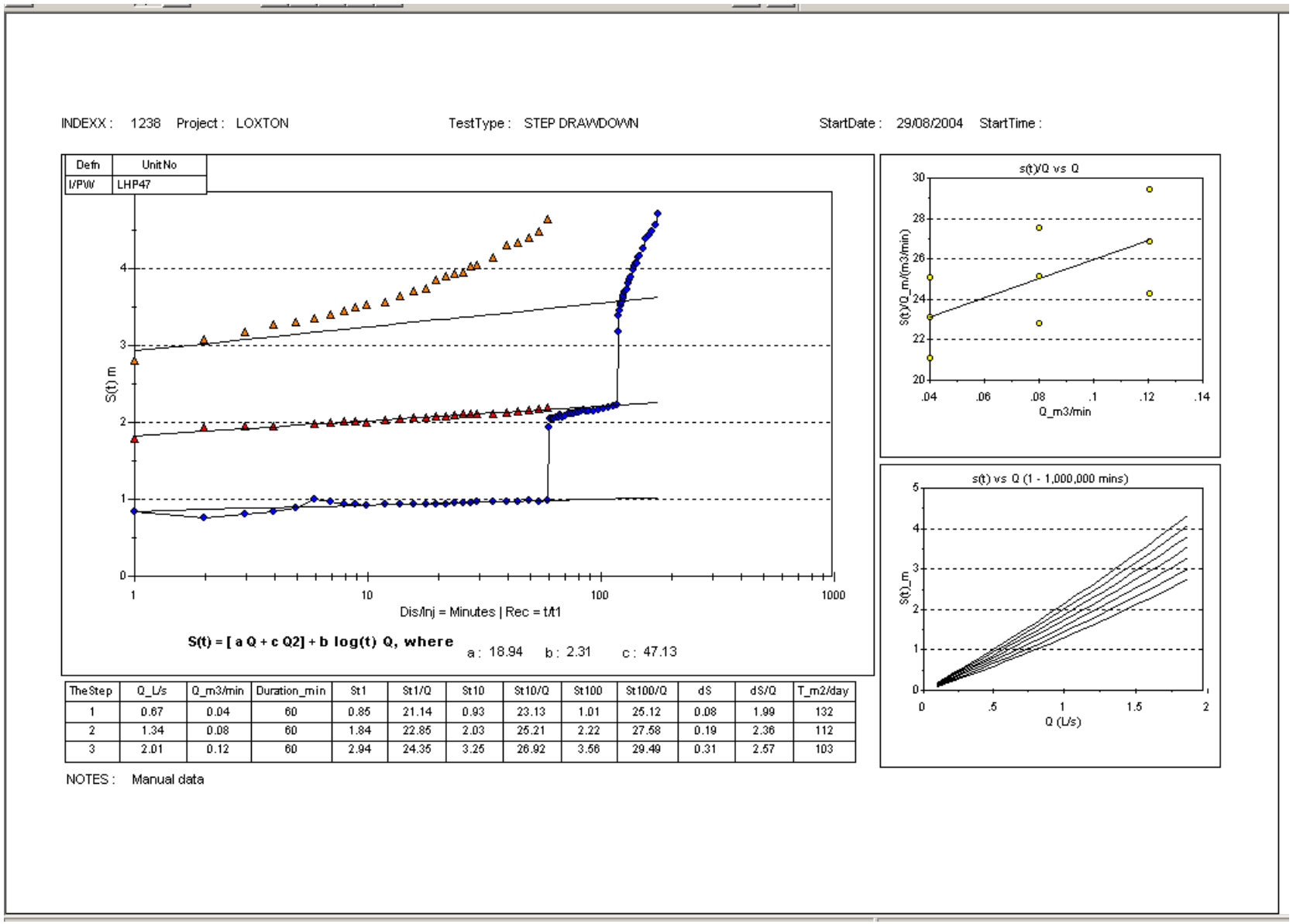
Figure 13 LHP46 15/07/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.67	0.04	100	0.93	23.13	1.02	25.37	1.11	27.61	0.09	2.24	118
2	1.34	0.08	100	1.94	24.12	2.16	26.86	2.38	29.60	0.22	2.74	96
3	2.01	0.12	100	2.99	24.81	3.36	27.88	3.73	30.95	0.37	3.07	86

NOTES : Manual

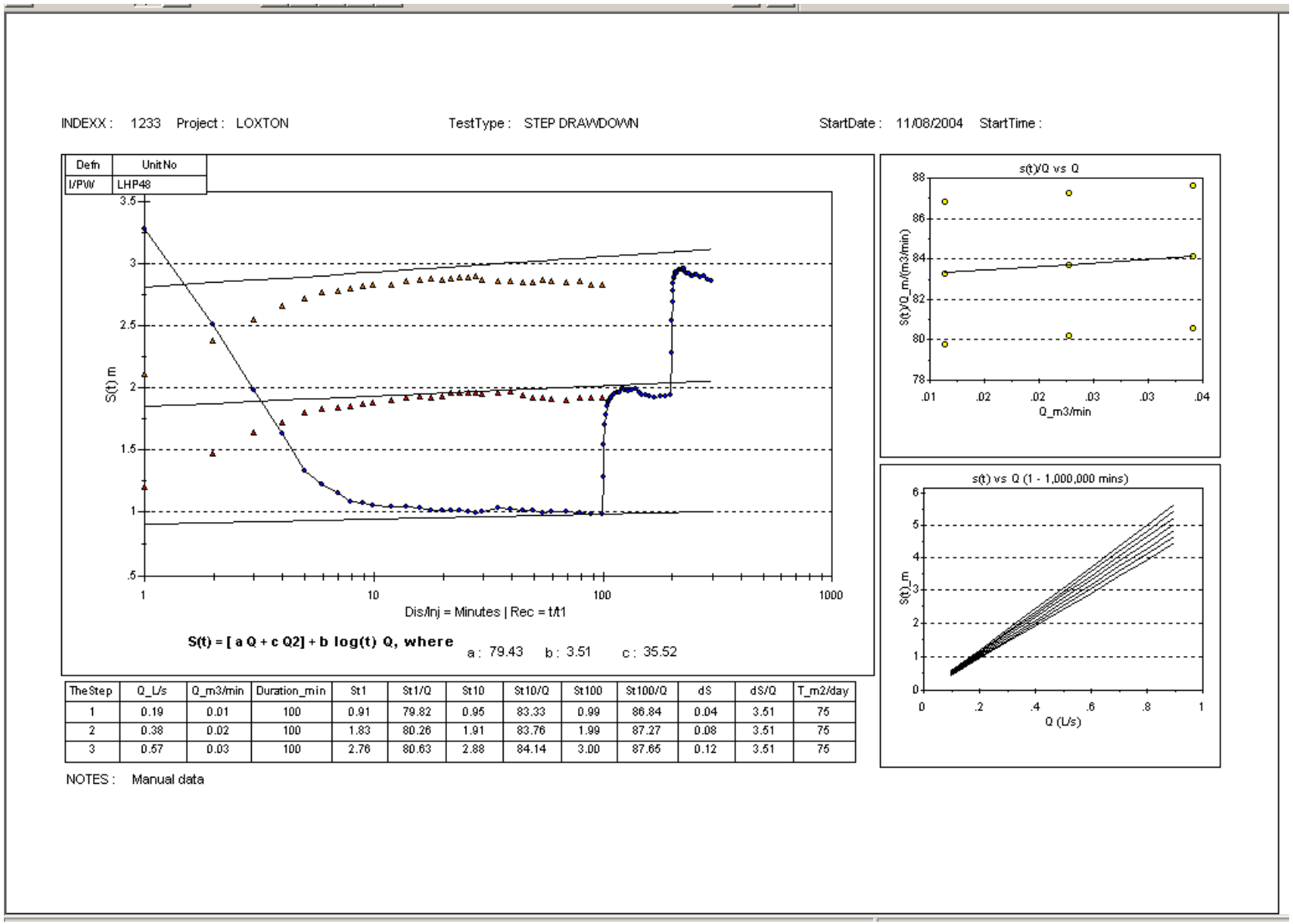
Figure 14 LHP47 12/08/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.67	0.04	60	0.85	21.14	0.93	23.13	1.01	25.12	0.08	1.99	132
2	1.34	0.08	60	1.84	22.85	2.03	25.21	2.22	27.58	0.19	2.36	112
3	2.01	0.12	60	2.94	24.35	3.25	26.92	3.56	29.49	0.31	2.57	103

NOTES : Manual data

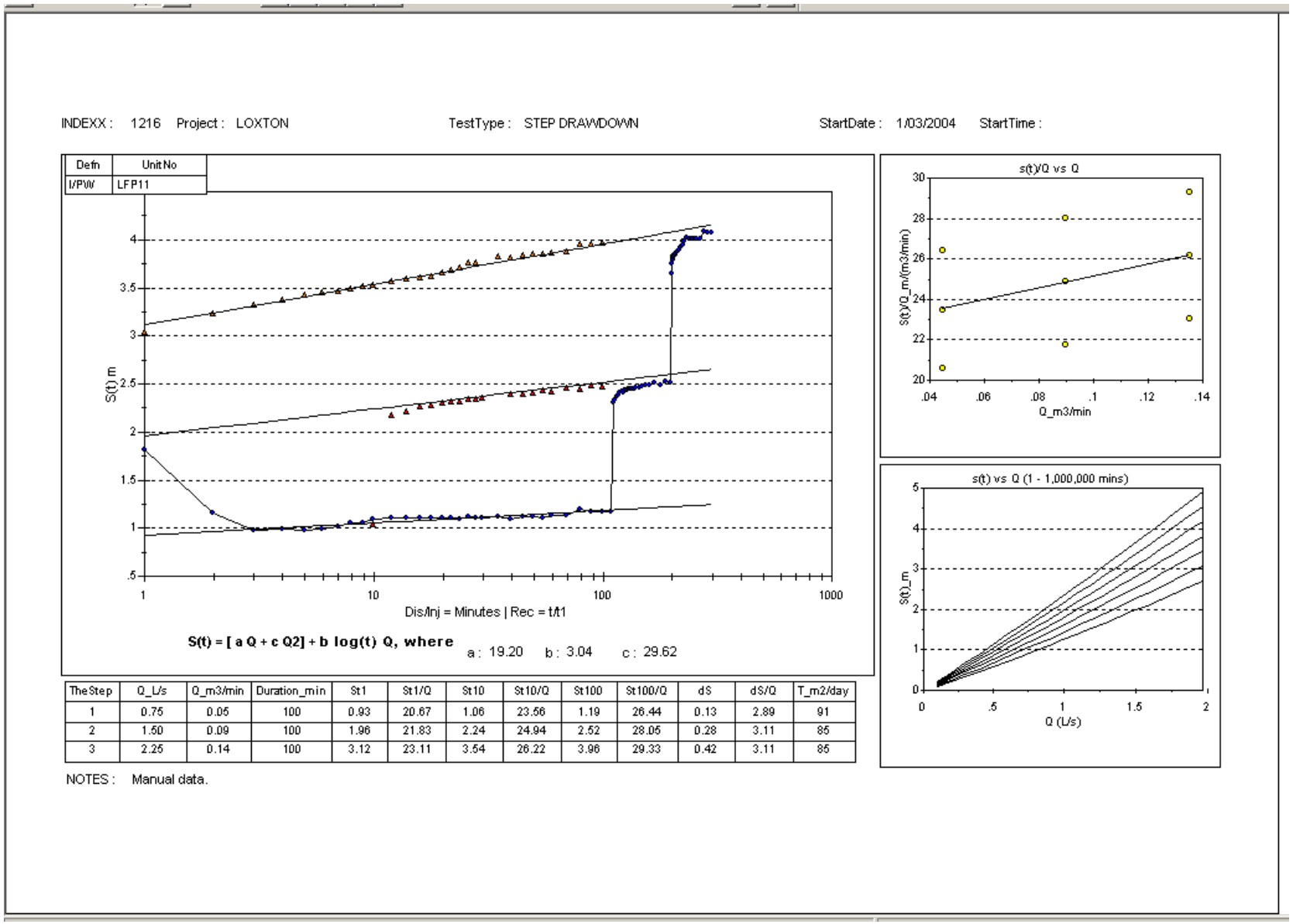
Figure 15 LHP47 29/08/2004 Hazel step drawdown analysis (post acid wash)



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.19	0.01	100	0.91	79.82	0.95	83.33	0.99	86.84	0.04	3.51	75
2	0.38	0.02	100	1.83	80.26	1.91	83.76	1.99	87.27	0.08	3.51	75
3	0.57	0.03	100	2.76	80.63	2.88	84.14	3.00	87.65	0.12	3.51	75

NOTES : Manual data

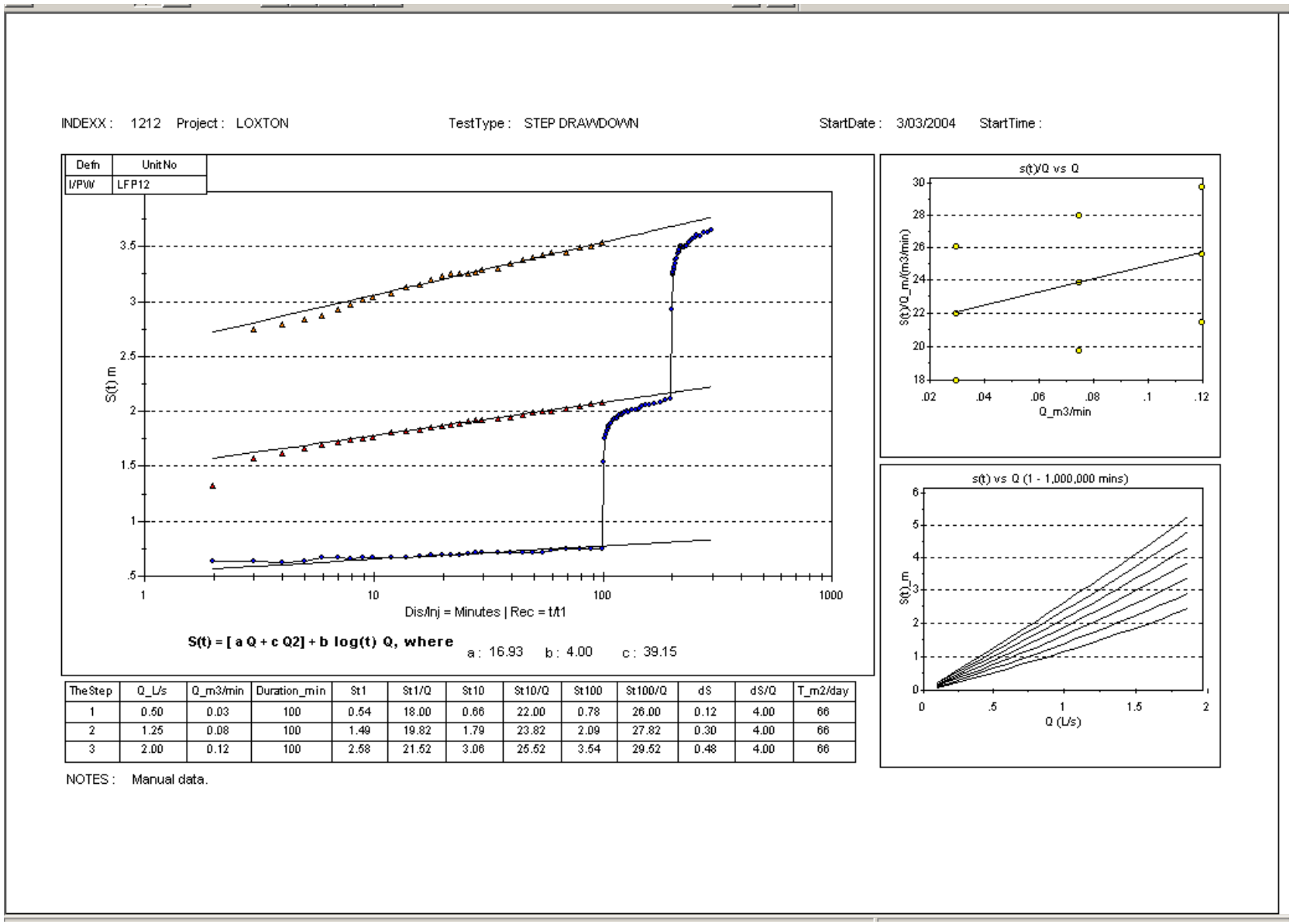
Figure 16 LHP48 11/08/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.75	0.05	100	0.93	20.67	1.06	23.56	1.19	26.44	0.13	2.89	91
2	1.50	0.09	100	1.96	21.83	2.24	24.94	2.52	28.05	0.28	3.11	85
3	2.25	0.14	100	3.12	23.11	3.54	26.22	3.96	29.33	0.42	3.11	85

NOTES : Manual data.

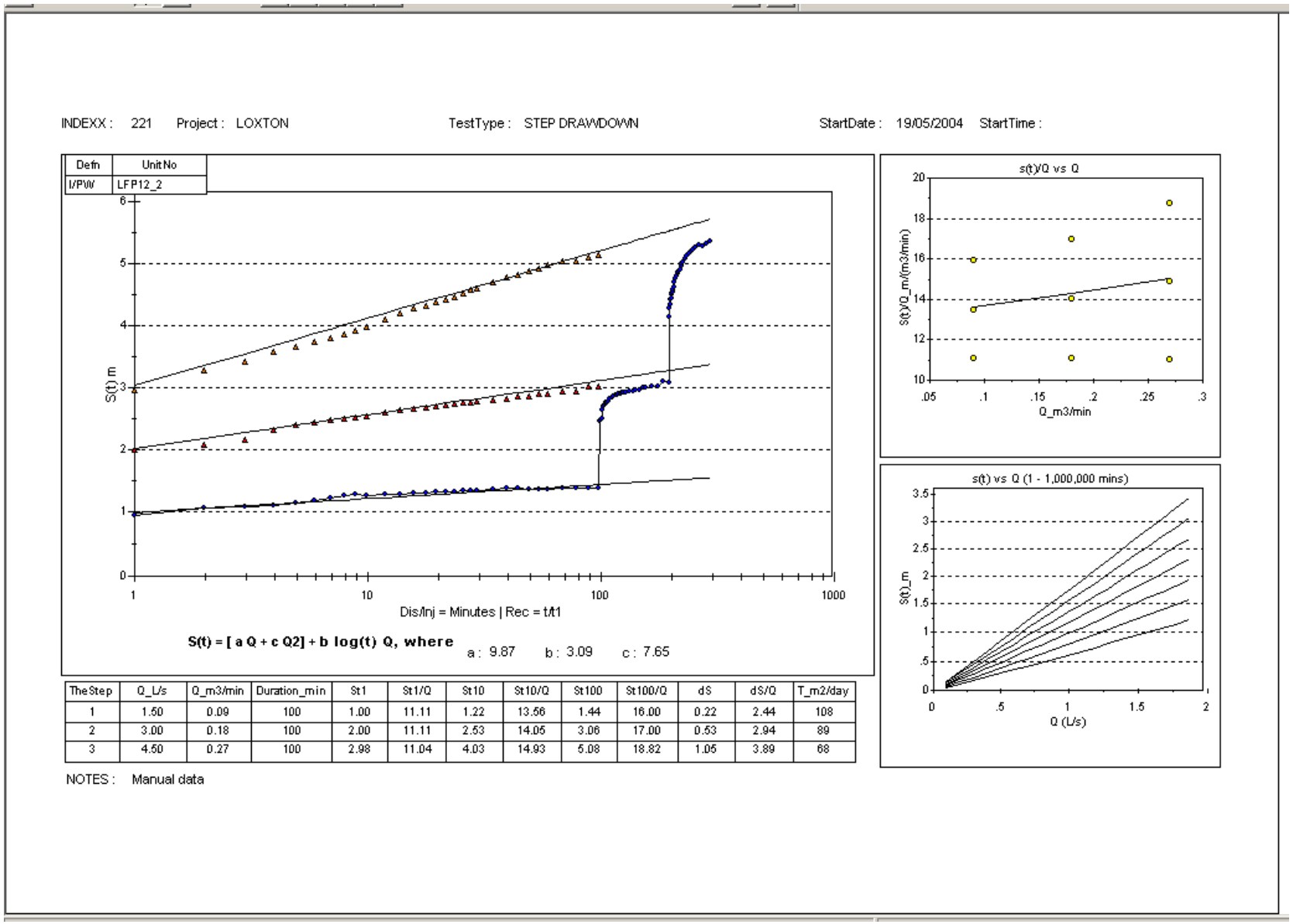
Figure 17 LFP11 1/03/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	0.50	0.03	100	0.54	18.00	0.66	22.00	0.78	26.00	0.12	4.00	66
2	1.25	0.08	100	1.49	19.82	1.79	23.82	2.09	27.82	0.30	4.00	66
3	2.00	0.12	100	2.58	21.52	3.06	25.52	3.54	29.52	0.48	4.00	66

NOTES : Manual data.

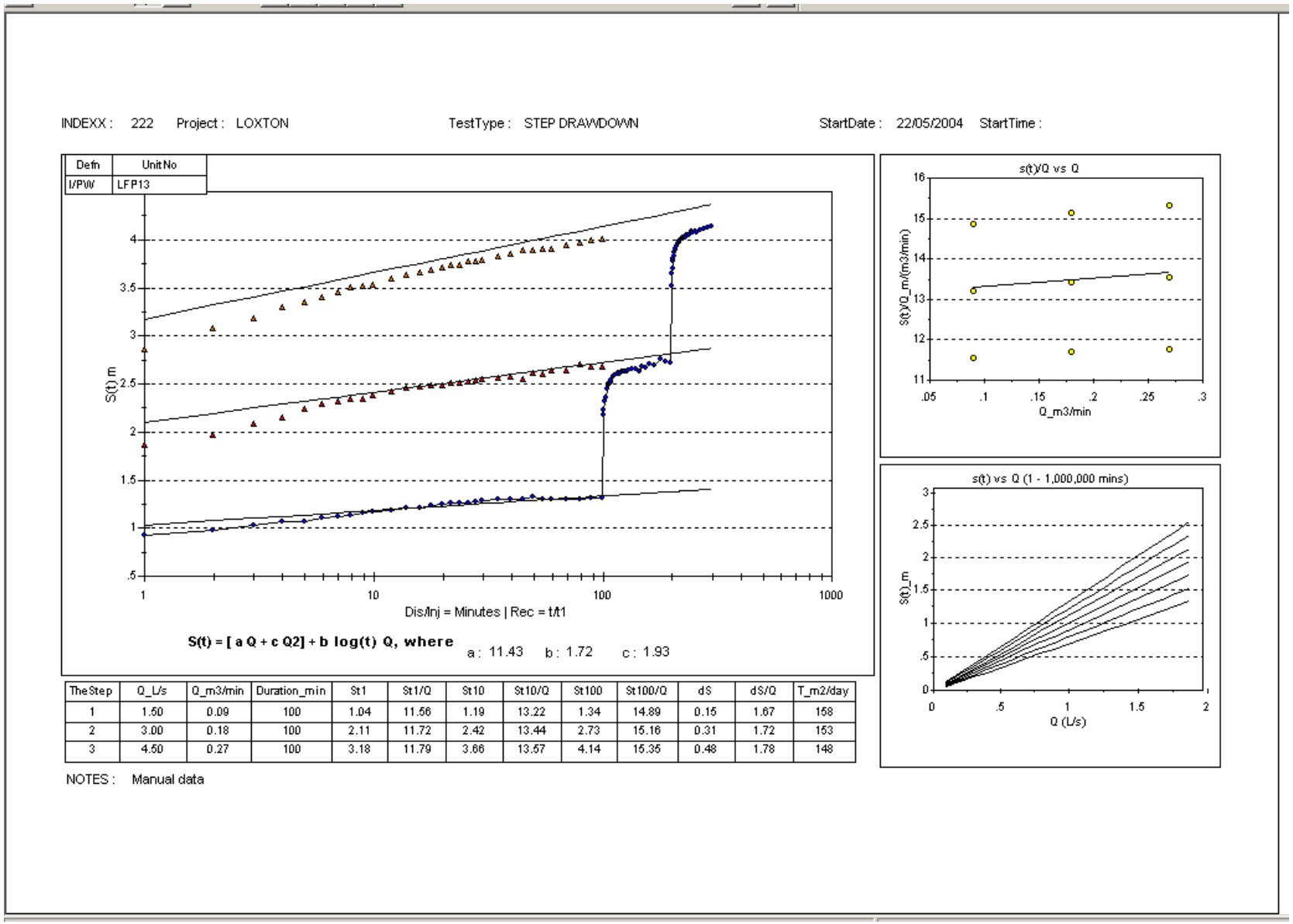
Figure 18 LFP12 3/03/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	1.50	0.09	100	1.00	11.11	1.22	13.56	1.44	16.00	0.22	2.44	108
2	3.00	0.18	100	2.00	11.11	2.53	14.05	3.06	17.00	0.53	2.94	89
3	4.50	0.27	100	2.98	11.04	4.03	14.93	5.08	18.82	1.05	3.89	68

NOTES : Manual data

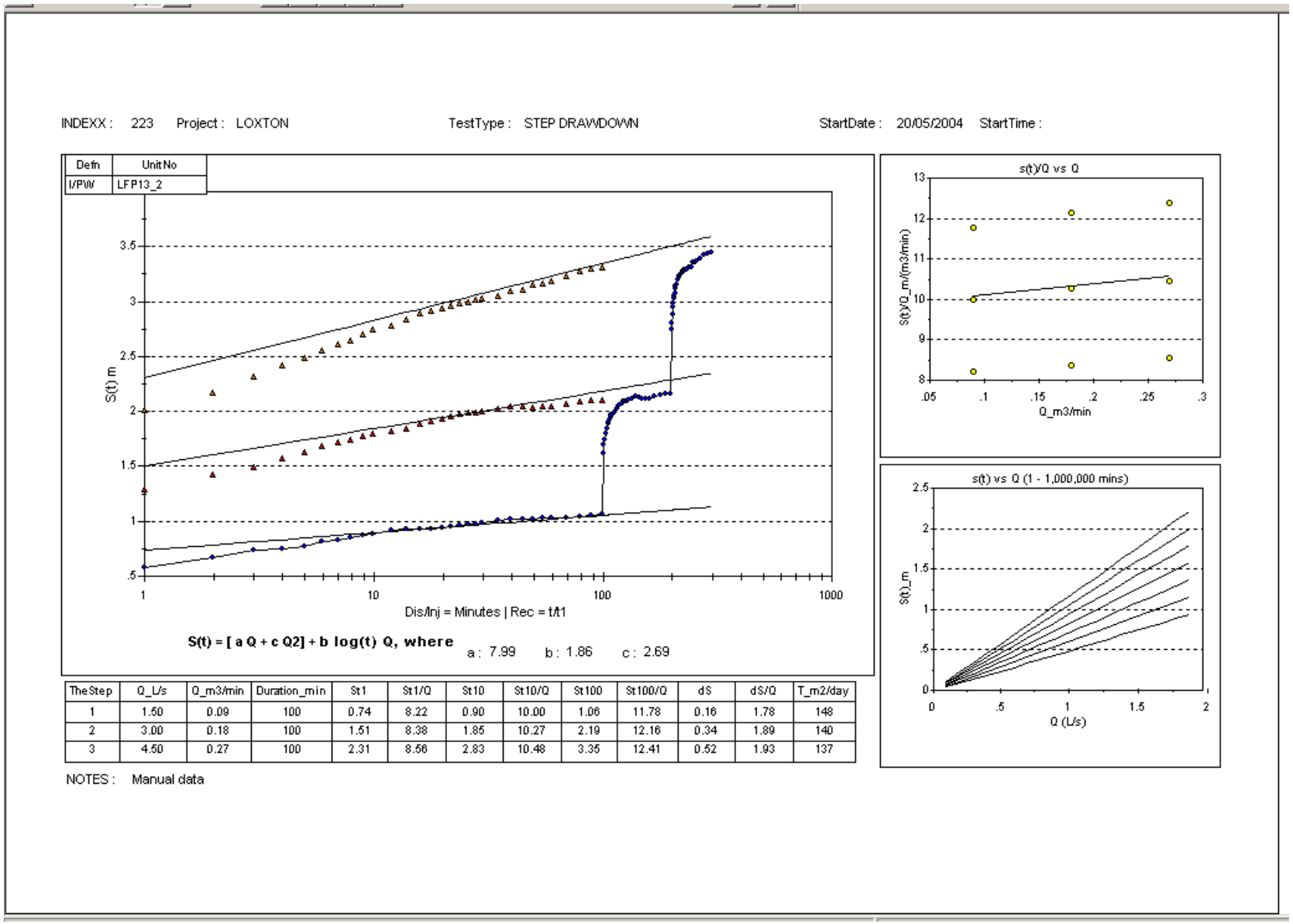
Figure 19 LFP12_2 19/05/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	1.50	0.09	100	1.04	11.56	1.19	13.22	1.34	14.89	0.15	1.67	158
2	3.00	0.18	100	2.11	11.72	2.42	13.44	2.73	15.16	0.31	1.72	153
3	4.50	0.27	100	3.18	11.79	3.66	13.57	4.14	15.35	0.48	1.78	148

NOTES : Manual data

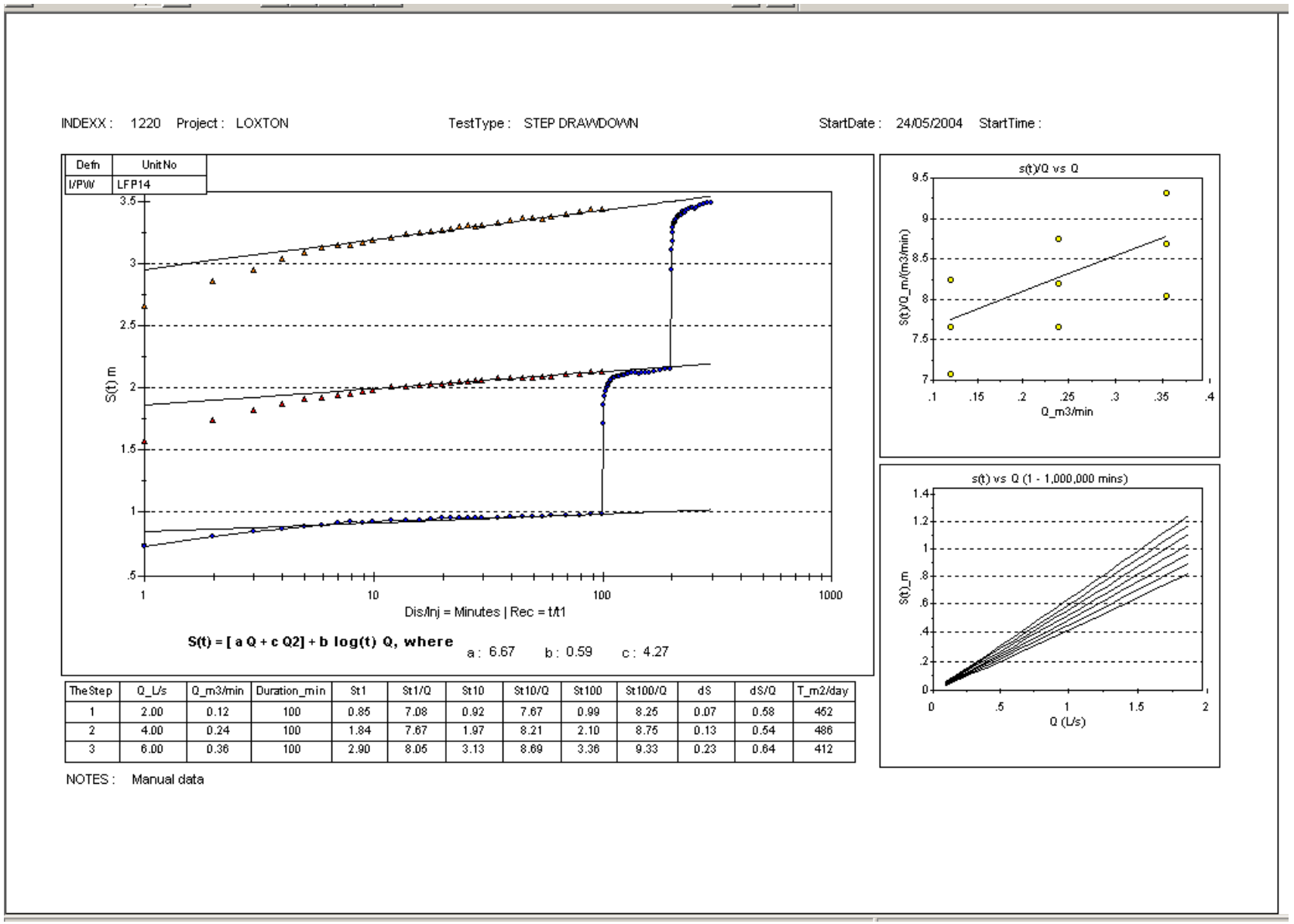
Figure 20 LFP13 22/05/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	1.50	0.09	100	0.74	8.22	0.90	10.00	1.06	11.78	0.16	1.78	148
2	3.00	0.18	100	1.51	8.38	1.85	10.27	2.19	12.16	0.34	1.89	140
3	4.50	0.27	100	2.31	8.56	2.83	10.48	3.35	12.41	0.52	1.93	137

NOTES : Manual data

Figure 21 LFP13_2 20/05/2004 Hazel step drawdown analysis

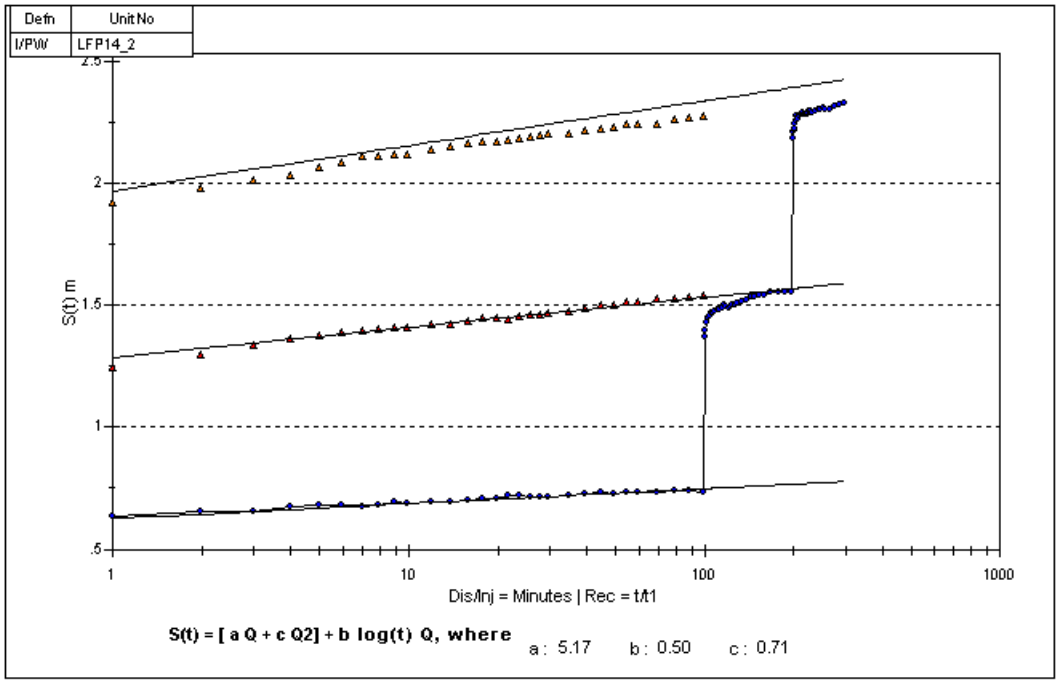


TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	2.00	0.12	100	0.85	7.08	0.92	7.67	0.99	8.25	0.07	0.58	452
2	4.00	0.24	100	1.84	7.67	1.97	8.21	2.10	8.75	0.13	0.54	486
3	6.00	0.36	100	2.90	8.05	3.13	8.69	3.36	9.33	0.23	0.64	412

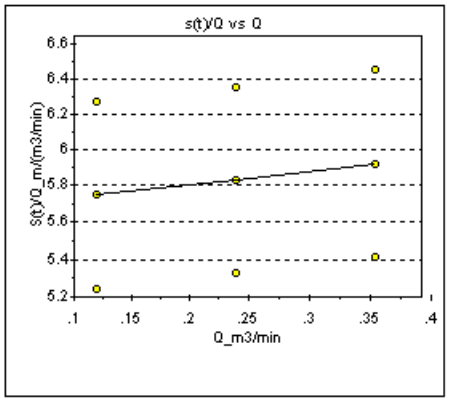
NOTES : Manual data

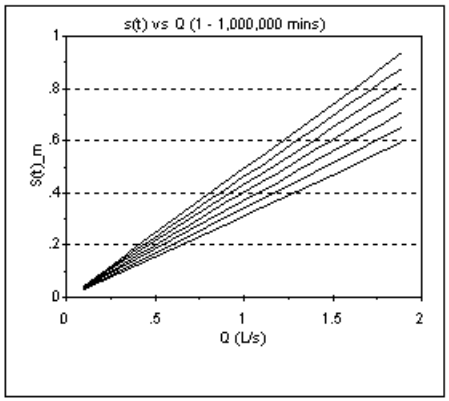
Figure 22 LFP14 24/05/2004 Hazel step drawdown analysis

INDEXX : 1221 Project : LOXTON TestType : STEP DRAWDOWN StartDate : 21/05/2004 StartTime :



S(t) = [a Q + c Q2] + b log(t) Q, where a : 5.17 b : 0.50 c : 0.71

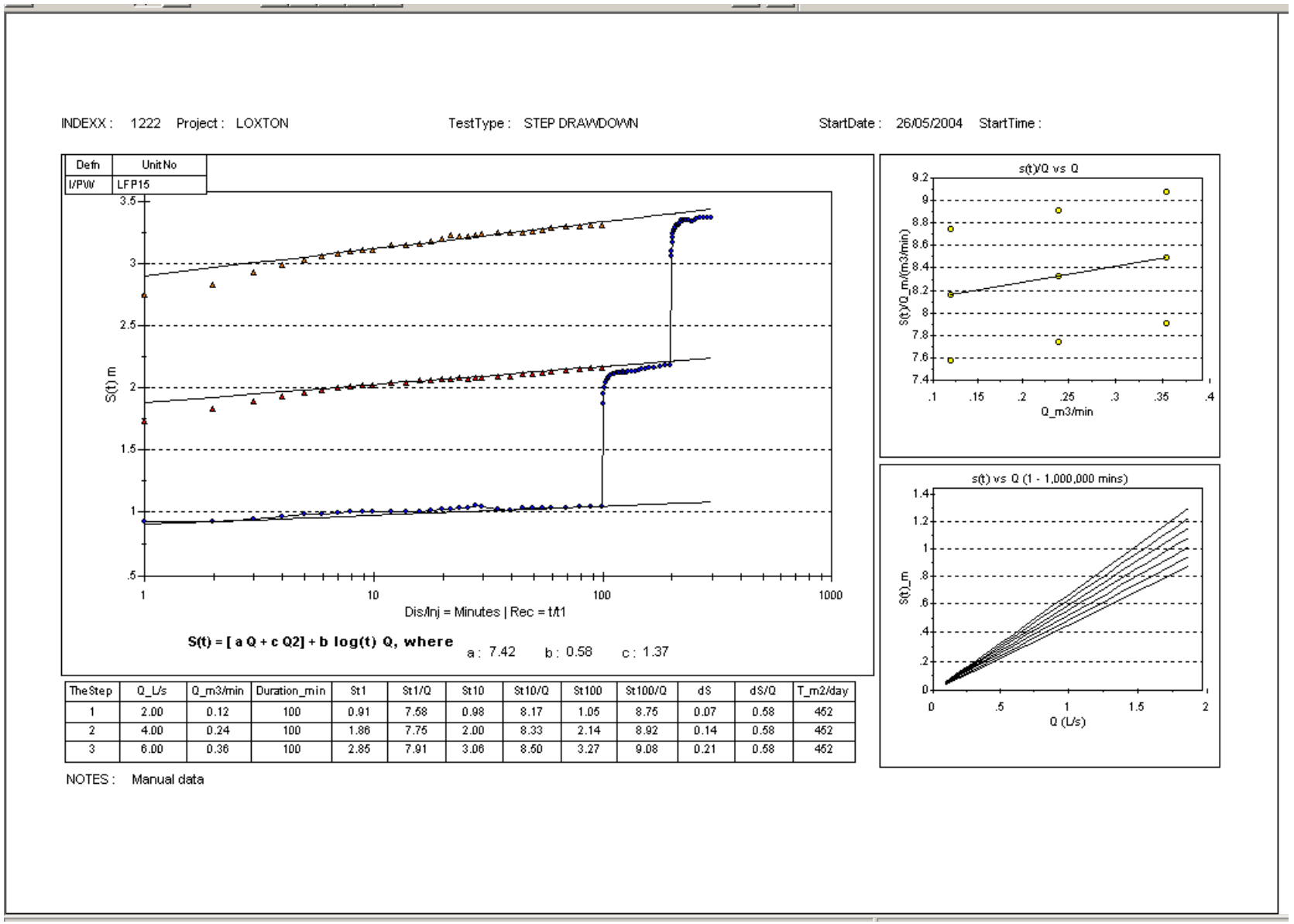




TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	2.00	0.12	100	0.63	5.25	0.69	5.75	0.75	6.25	0.06	0.50	527
2	4.00	0.24	100	1.28	5.33	1.40	5.83	1.52	6.33	0.12	0.50	527
3	6.00	0.36	100	1.95	5.42	2.13	5.92	2.31	6.42	0.18	0.50	527

NOTES : Manual data

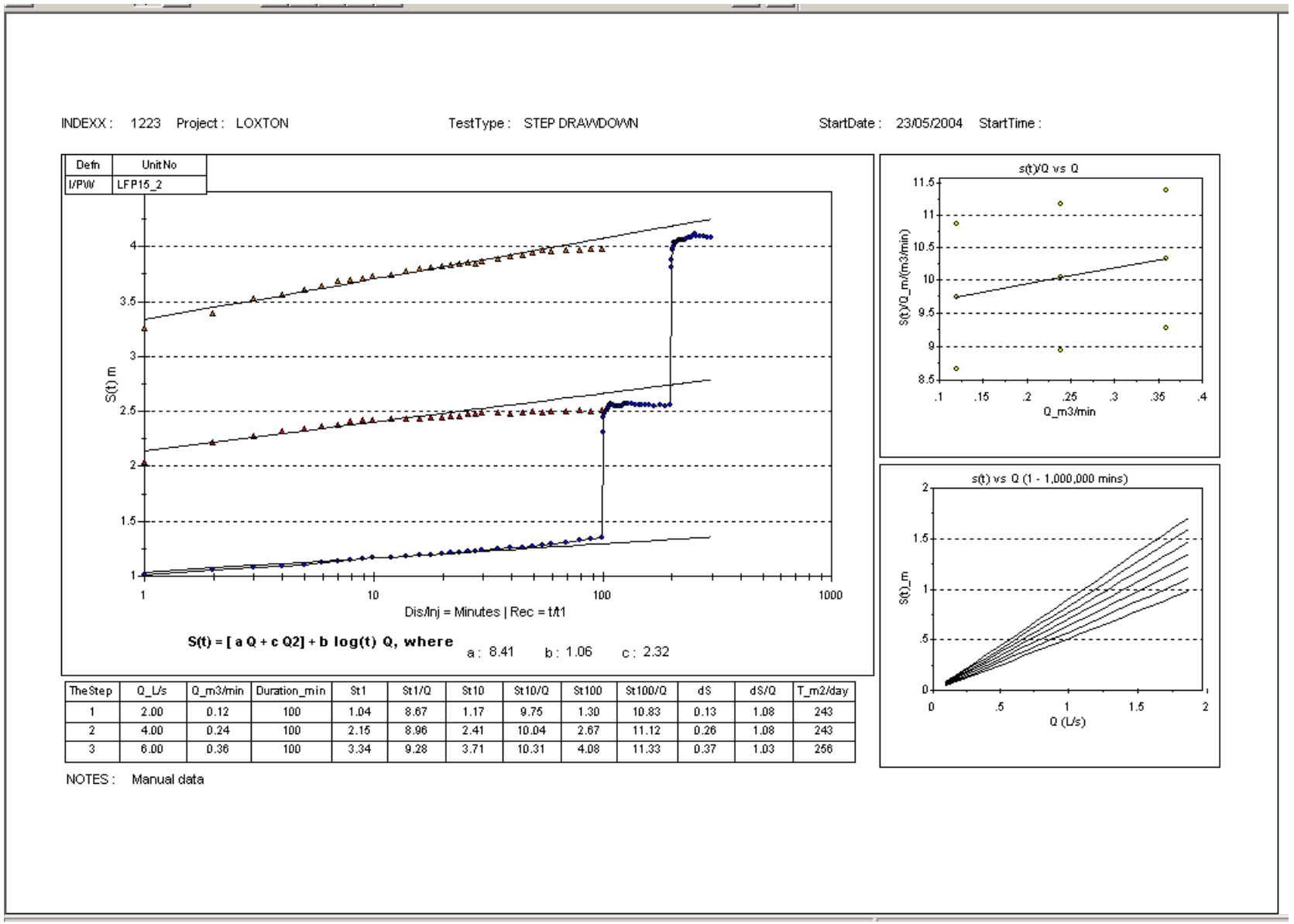
Figure 23 LFP14_2 21/05/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	2.00	0.12	100	0.91	7.58	0.98	8.17	1.05	8.75	0.07	0.58	452
2	4.00	0.24	100	1.86	7.75	2.00	8.33	2.14	8.92	0.14	0.58	452
3	6.00	0.36	100	2.85	7.91	3.06	8.50	3.27	9.08	0.21	0.58	452

NOTES : Manual data

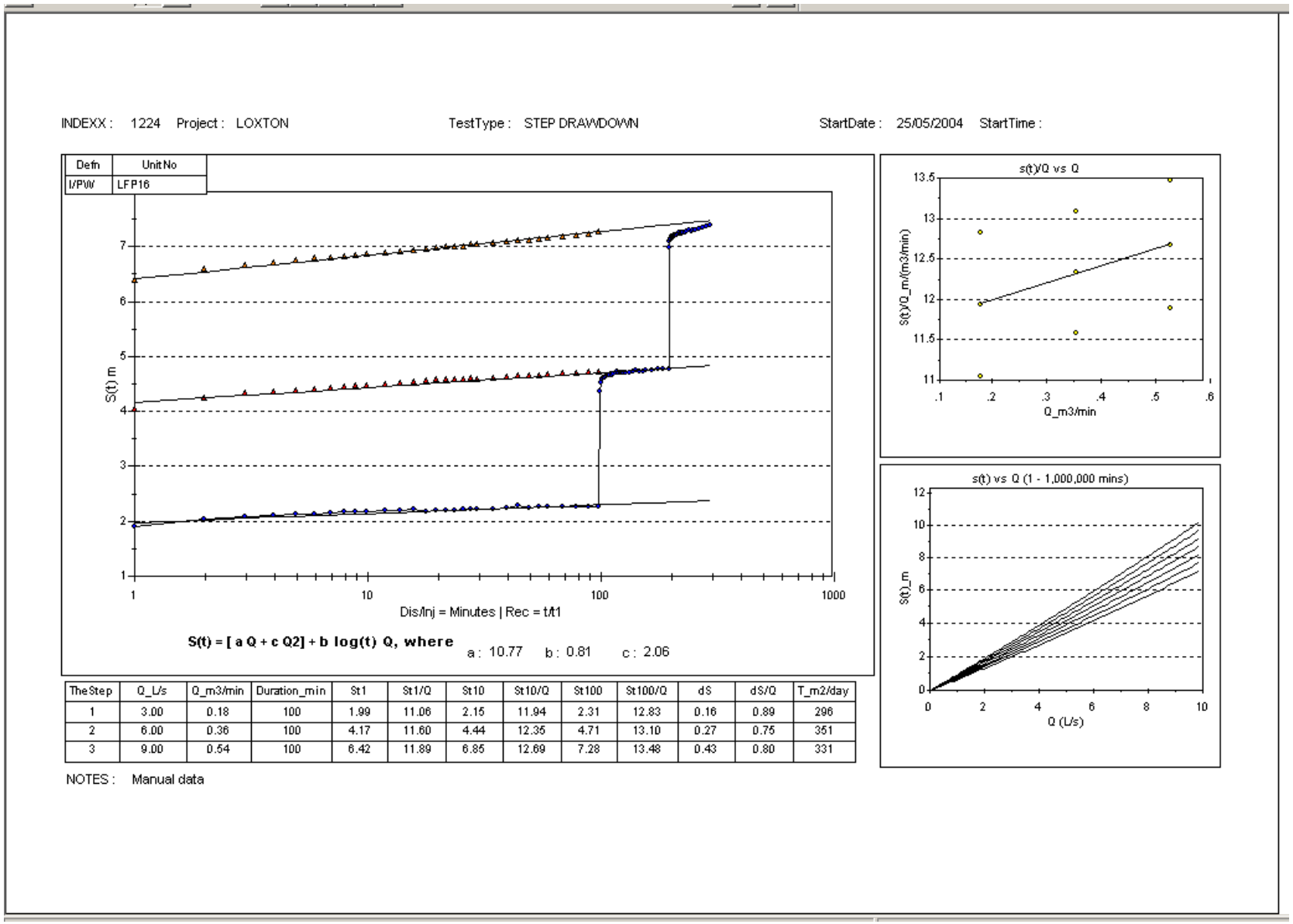
Figure 24 LFP15 26/05/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	2.00	0.12	100	1.04	8.67	1.17	9.75	1.30	10.83	0.13	1.08	243
2	4.00	0.24	100	2.15	8.96	2.41	10.04	2.67	11.12	0.26	1.08	243
3	6.00	0.36	100	3.34	9.28	3.71	10.31	4.08	11.33	0.37	1.03	256

NOTES : Manual data

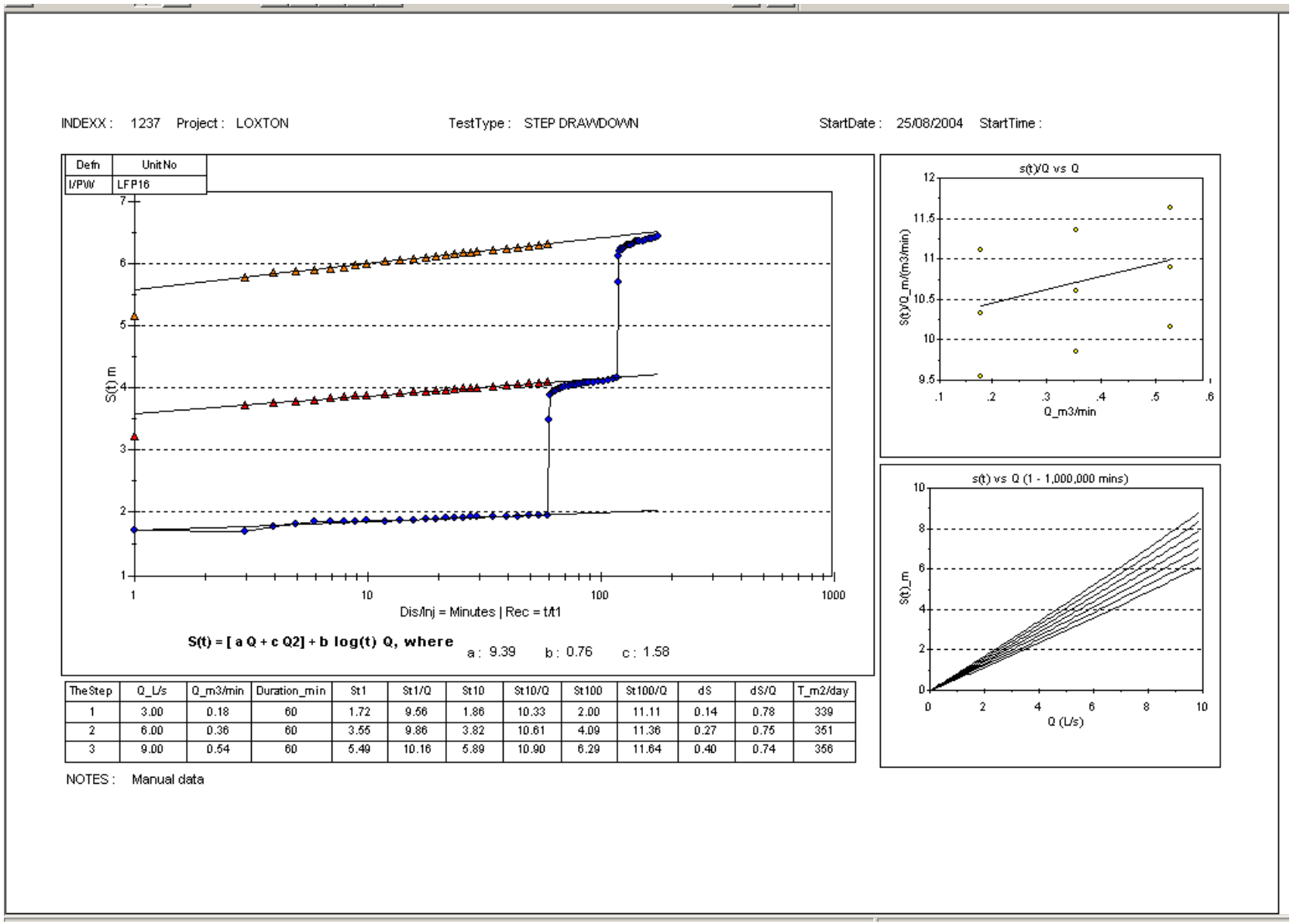
Figure 25 LFP15_2 23/05/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	3.00	0.18	100	1.99	11.06	2.15	11.94	2.31	12.83	0.16	0.89	296
2	6.00	0.36	100	4.17	11.60	4.44	12.35	4.71	13.10	0.27	0.75	351
3	9.00	0.54	100	6.42	11.89	6.85	12.69	7.28	13.48	0.43	0.80	331

NOTES : Manual data

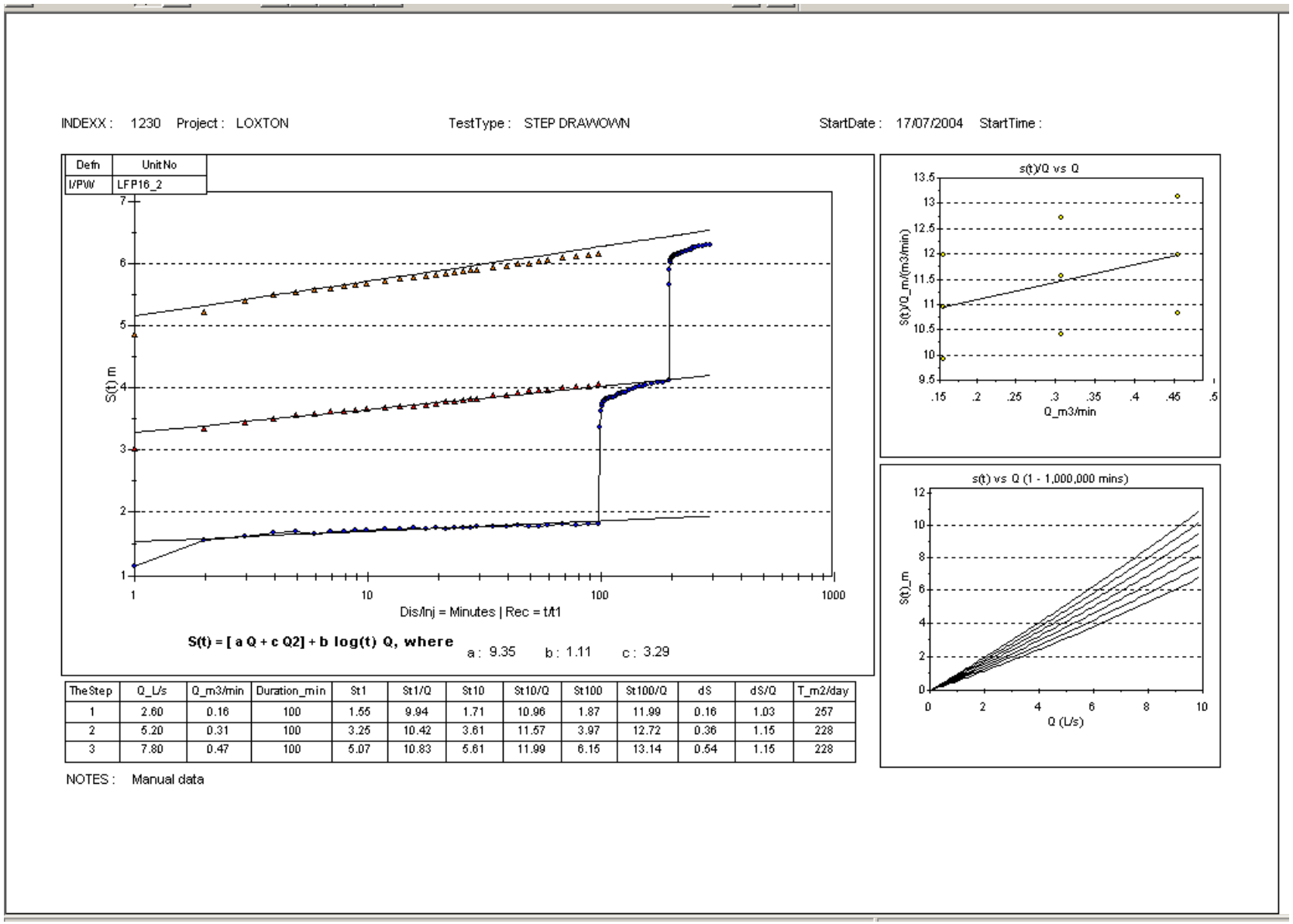
Figure 26 LFP16 25/05/2004 Hazel step drawdown analysis



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	3.00	0.18	60	1.72	9.56	1.86	10.33	2.00	11.11	0.14	0.78	339
2	6.00	0.36	60	3.55	9.86	3.82	10.61	4.09	11.36	0.27	0.75	351
3	9.00	0.54	60	5.49	10.16	5.89	10.90	6.29	11.64	0.40	0.74	356

NOTES : Manual data

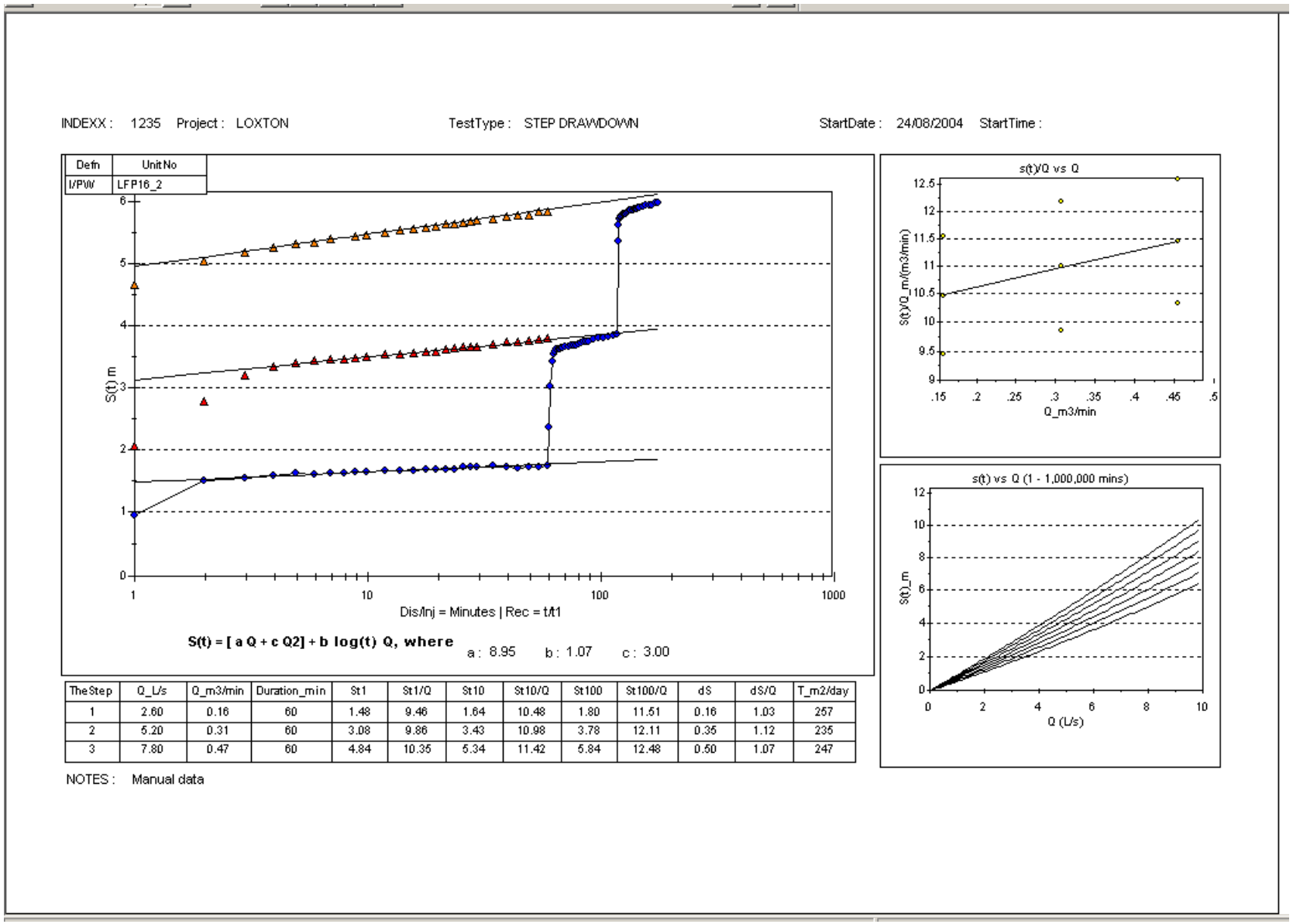
Figure 27 LFP16 25/08/2004 Hazel step drawdown analysis (post acid wash)



TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	2.60	0.16	100	1.55	9.94	1.71	10.96	1.87	11.99	0.16	1.03	257
2	5.20	0.31	100	3.25	10.42	3.61	11.57	3.97	12.72	0.36	1.15	228
3	7.80	0.47	100	5.07	10.83	5.61	11.99	6.15	13.14	0.54	1.15	228

NOTES : Manual data

Figure 28 LFP16_2 17/07/2004 Hazel step drawdown analysis

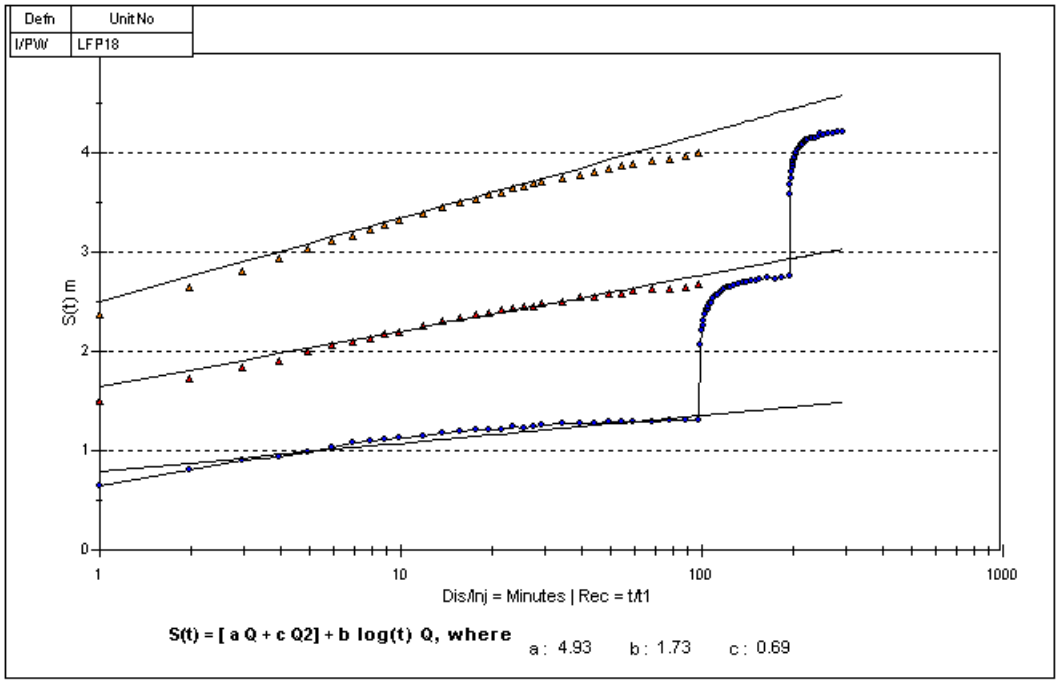


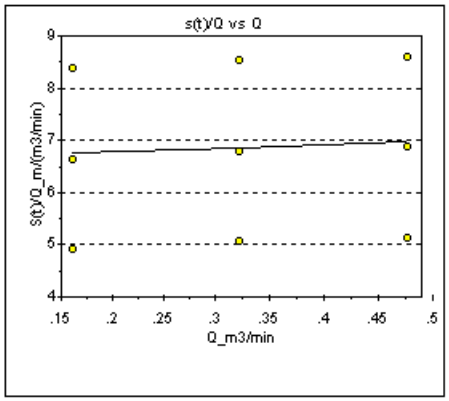
TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	2.60	0.16	60	1.48	9.46	1.64	10.48	1.80	11.51	0.16	1.03	257
2	5.20	0.31	60	3.08	9.86	3.43	10.98	3.78	12.11	0.35	1.12	235
3	7.80	0.47	60	4.84	10.35	5.34	11.42	5.84	12.48	0.50	1.07	247

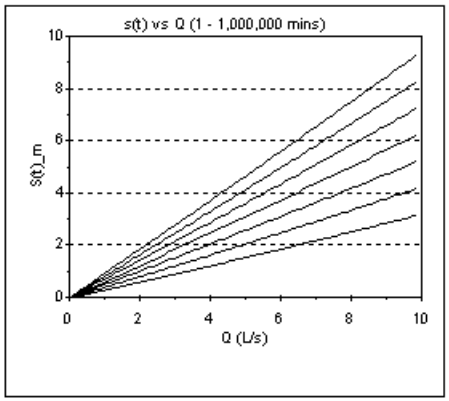
NOTES : Manual data

Figure 29 LFP16_2 24/08/2004 Hazel step drawdown analysis (post acid wash)

INDEXX : 1232 Project : LOXTON TestType : STEP DRAWDOWN StartDate : 21/07/2004 StartTime :







TheStep	Q_L/s	Q_m3/min	Duration_min	St1	St1/Q	St10	St10/Q	St100	St100/Q	dS	dS/Q	T_m2/day
1	2.70	0.16	100	0.80	4.94	1.08	6.67	1.36	8.40	0.28	1.73	152
2	5.40	0.32	100	1.65	5.09	2.21	6.82	2.77	8.55	0.56	1.73	152
3	8.10	0.49	100	2.51	5.16	3.35	6.89	4.19	8.62	0.84	1.73	152

NOTES : Manual data

Figure 30 LFP18 21/07/2004 Hazel step drawdown analysis

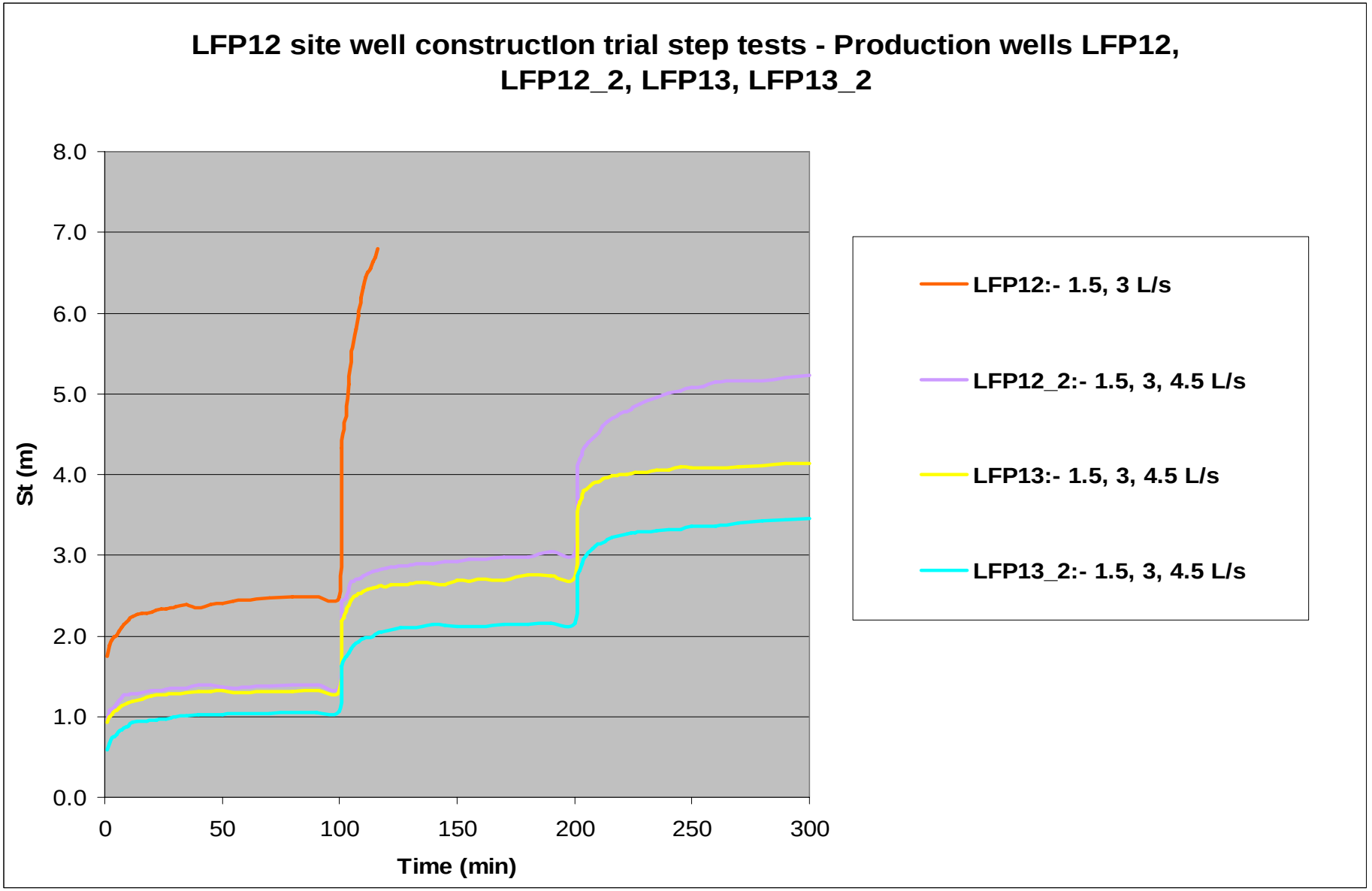


Figure 31 **LFP12 well construction trial - drawdown developed in production wells**

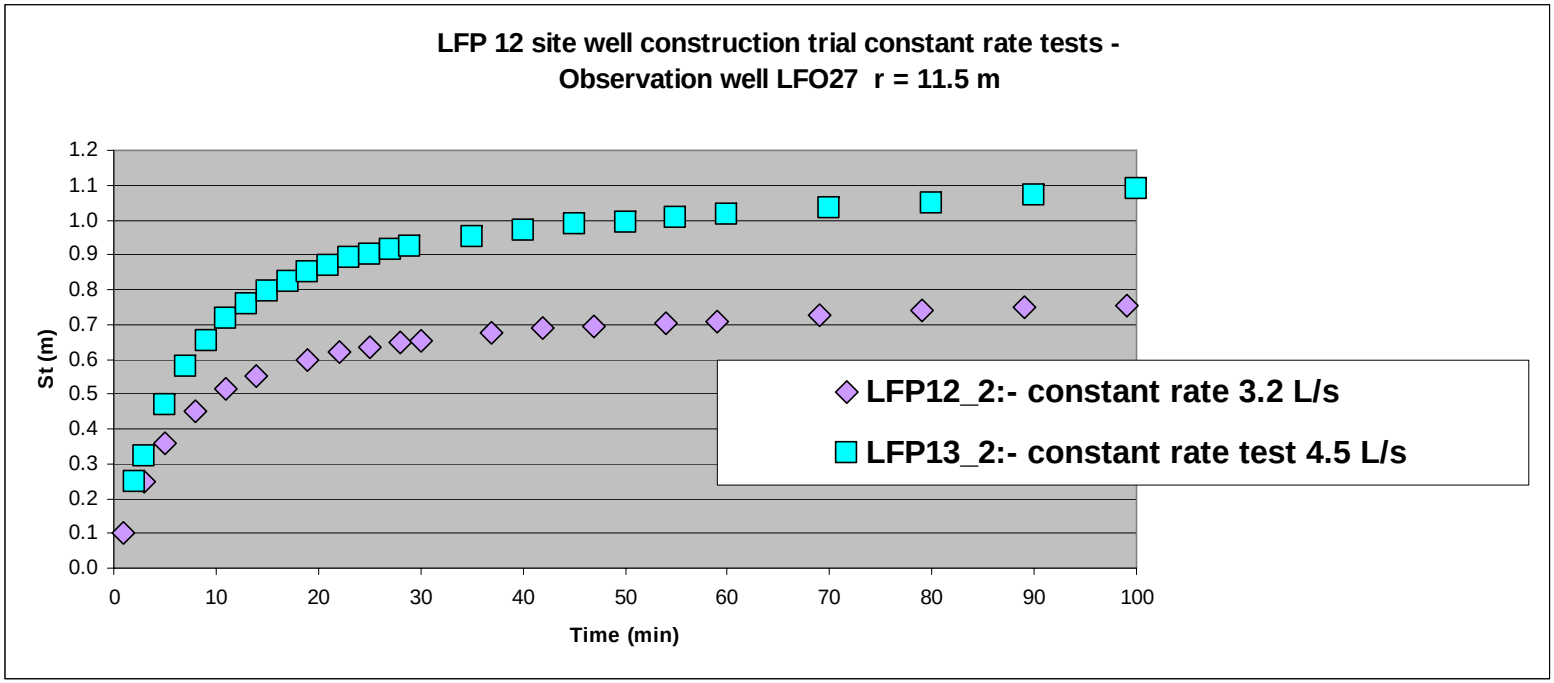


Figure 32 **LFP12 well construction trial – drawdown developed in observation well at r = 11.5 m**

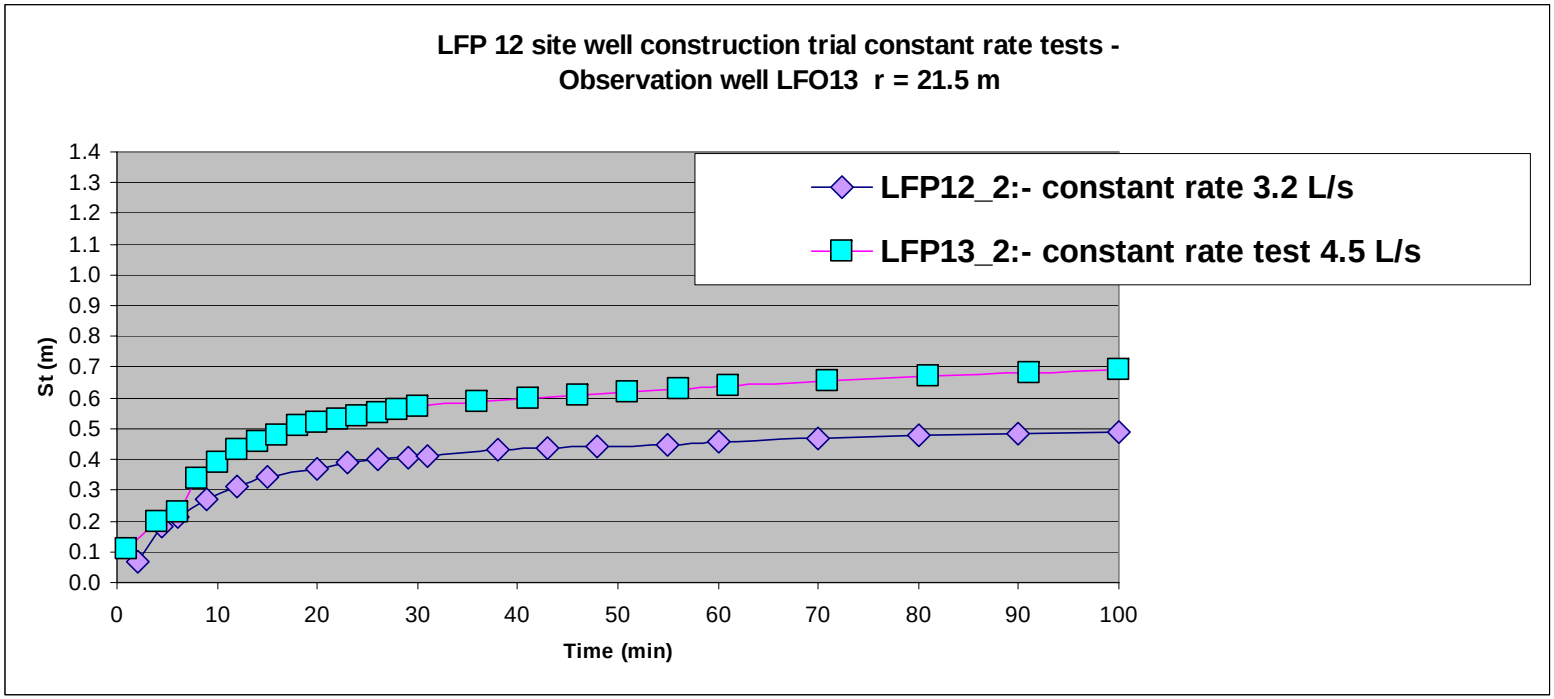


Figure 33 **LFP12 well construction trial – drawdown developed in observation well at r = 21.5 m**

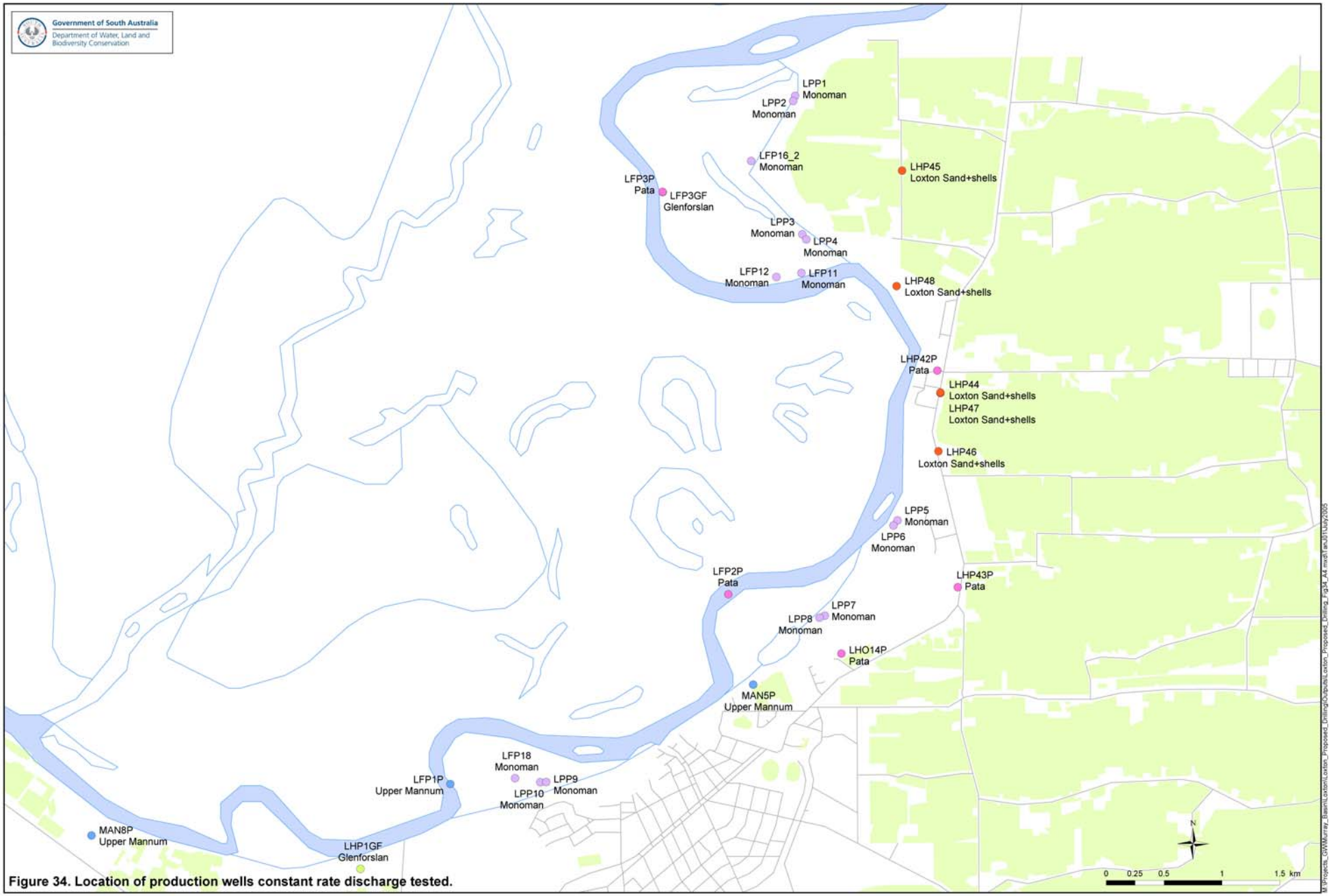


Figure 34. Location of production wells constant rate discharge tested.

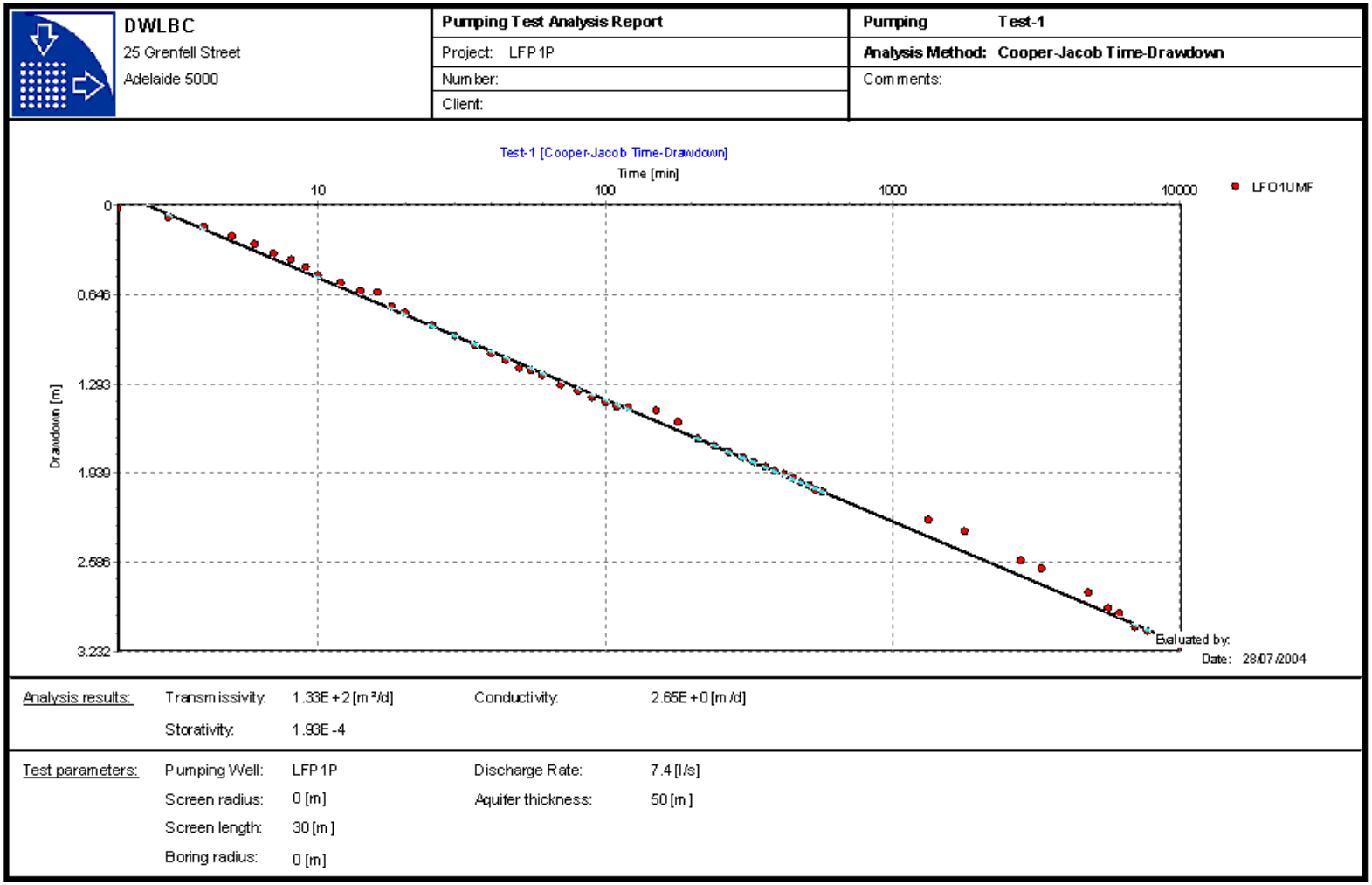


Figure 35 **LFP1P 3/1/2002 constant rate discharge test, LFO1UMF Cooper-Jacob t vs s analysis**

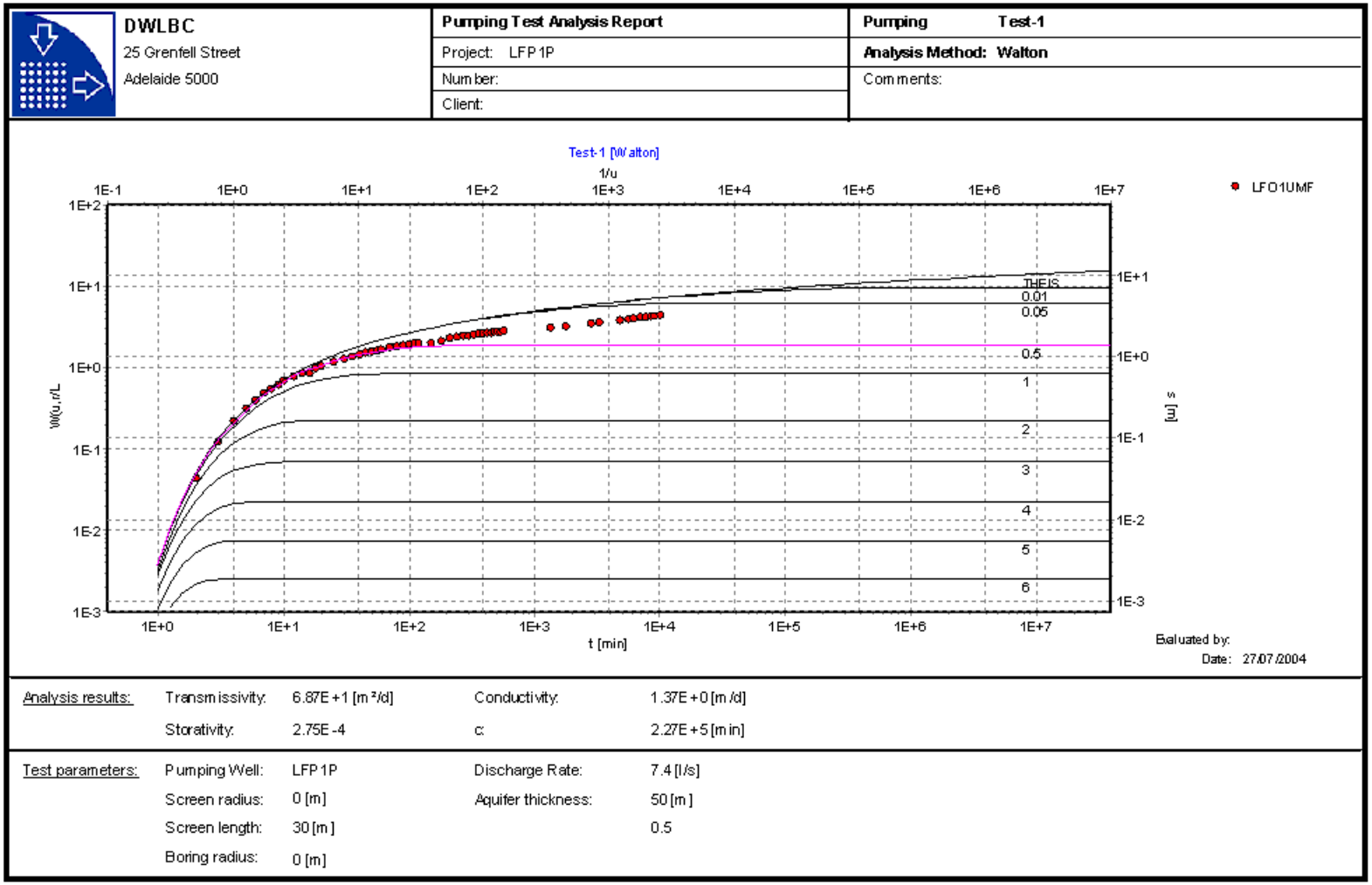


Figure 36 **LFP1P 3/1/2002 constant rate discharge test, LFO1UMF Walton analysis**

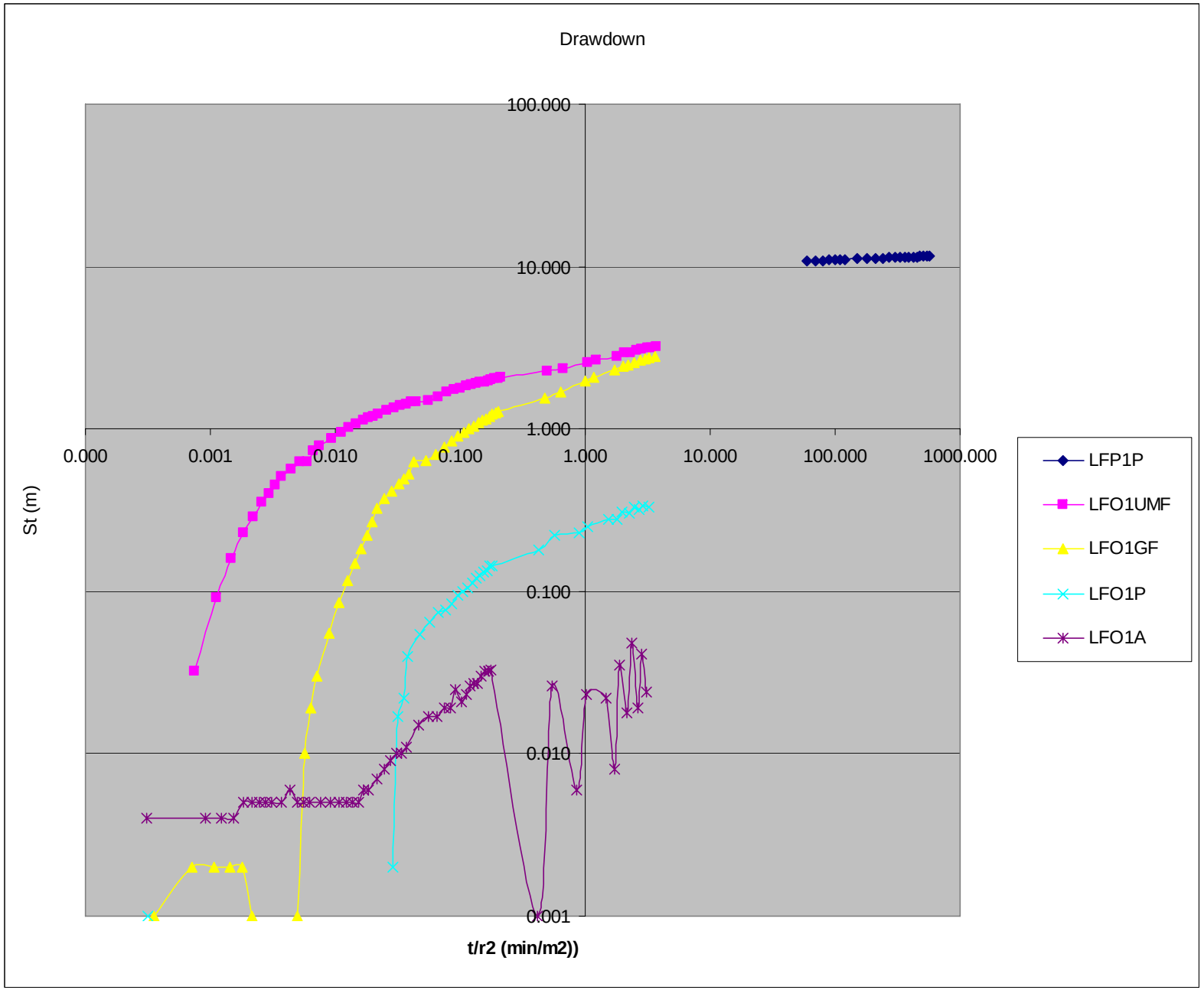


Figure 37 **LFP1P 3/1/2002 constant rate discharge test, t/r^2 vs drawdown plot**

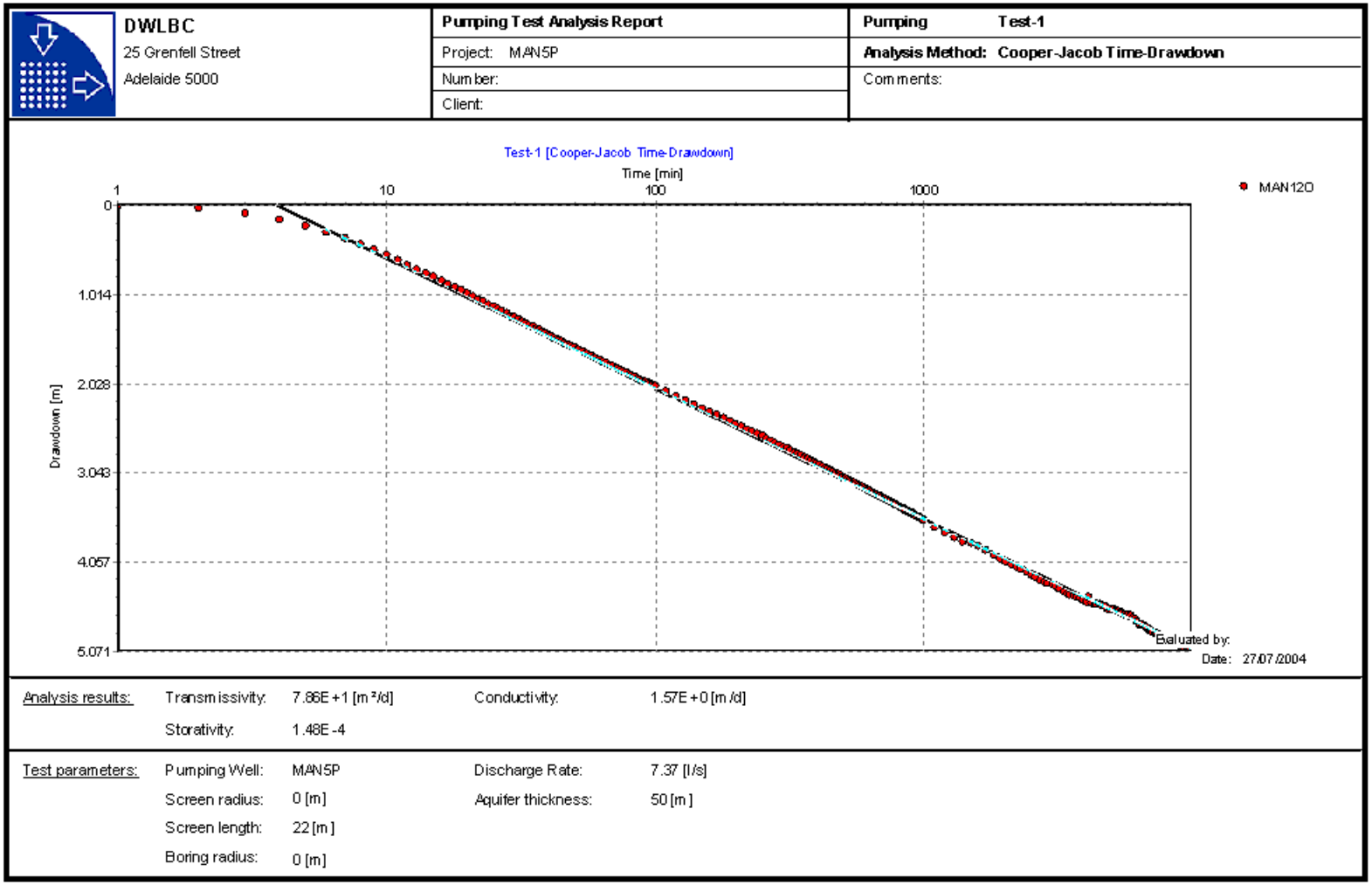


Figure 38 MAN5P 29/10/2002 constant rate discharge test, MAN12O Cooper-Jacob t vs s analysis

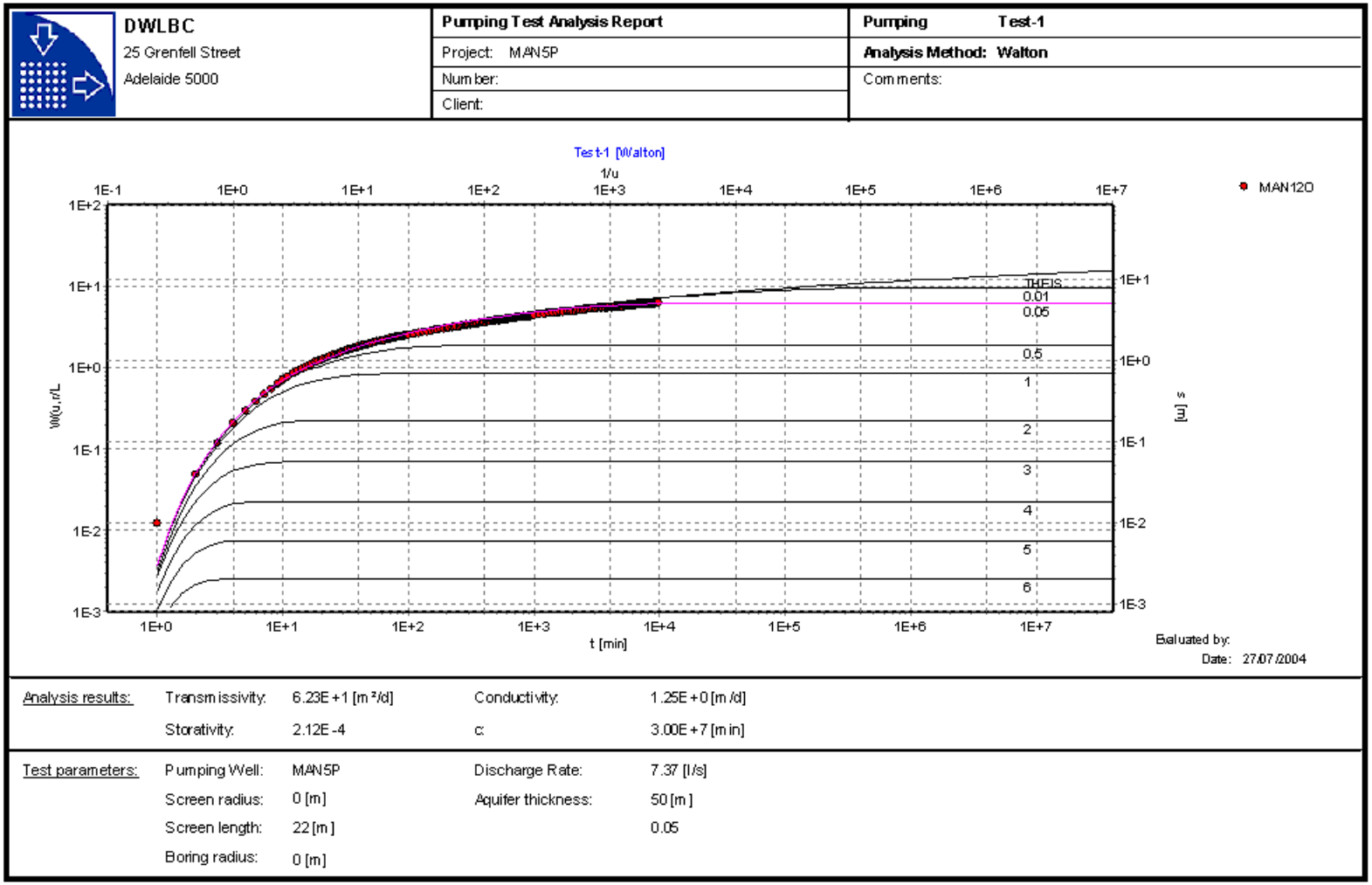


Figure 39 **MAN5P 29/10/2002 constant rate discharge test, MAN12O Walton analysis**

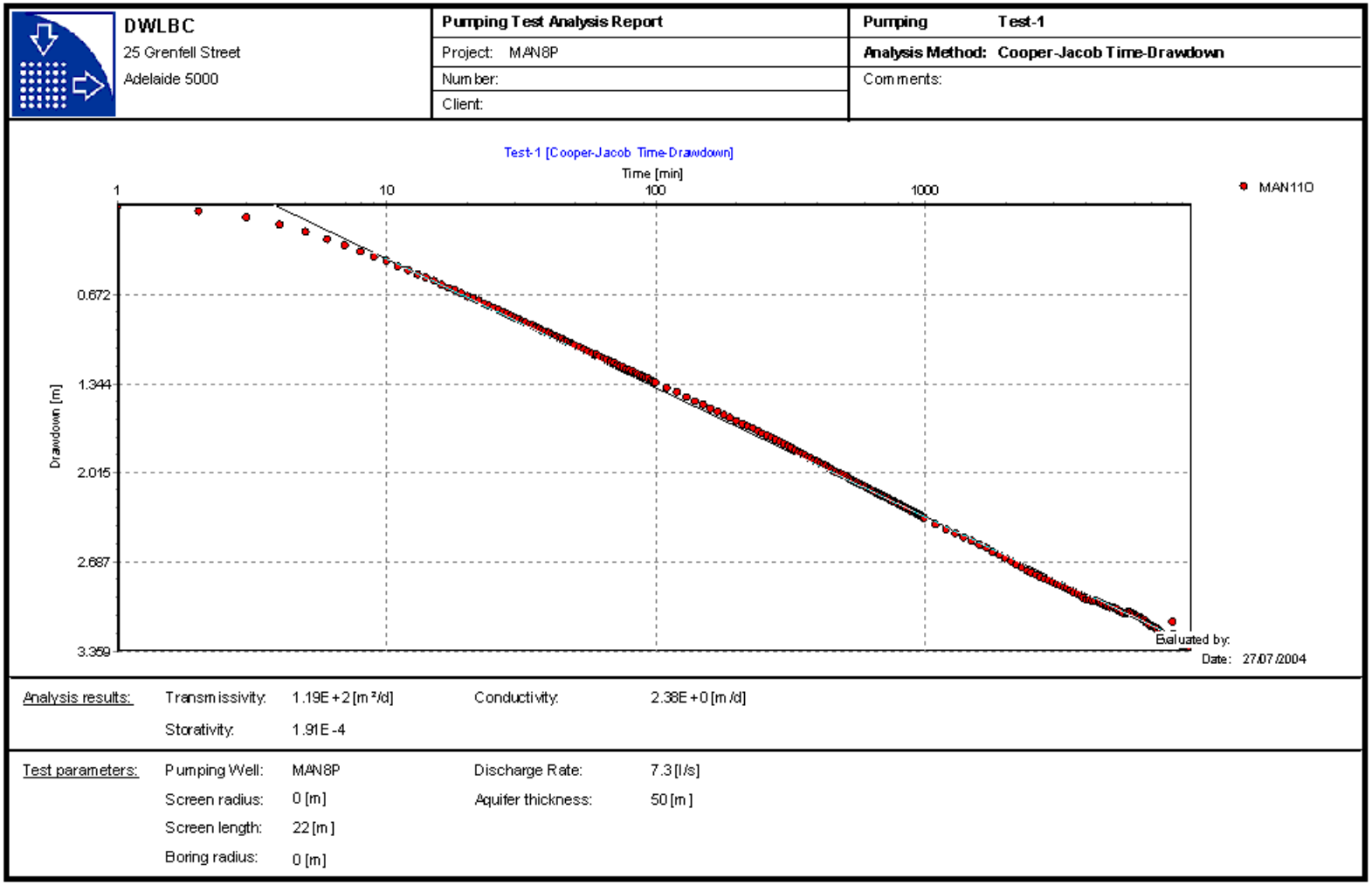


Figure 40 MAN8P 25/10/2002 constant rate discharge test, MAN11O Cooper-Jacob t vs s analysis

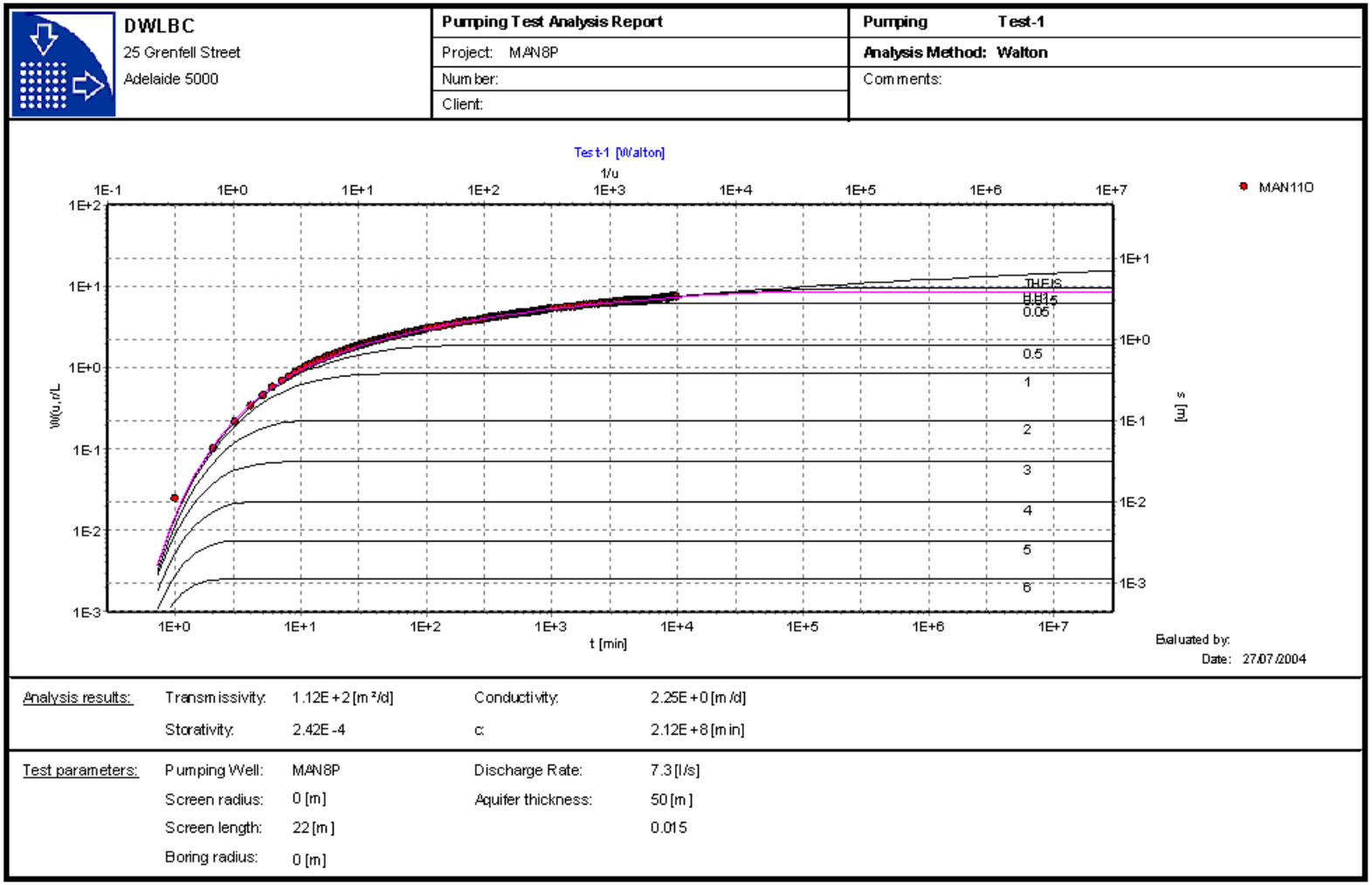


Figure 41 **MAN8P 25/10/2002 constant rate discharge test, MAN11O Walton analysis**

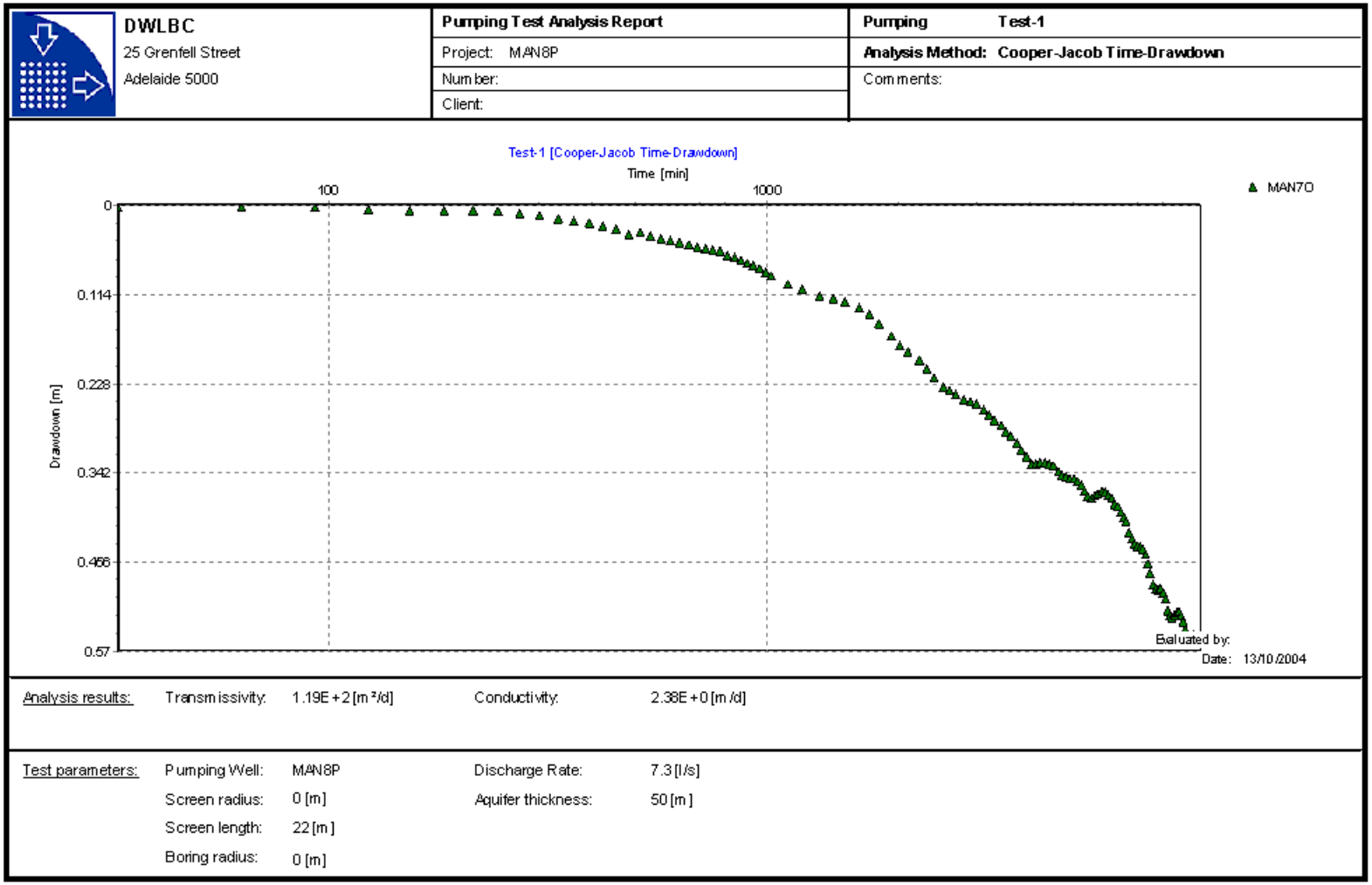


Figure 42 **MAN8P 25/10/2002 constant rate discharge test, MAN7O Cooper-Jacob t vs s analysis**

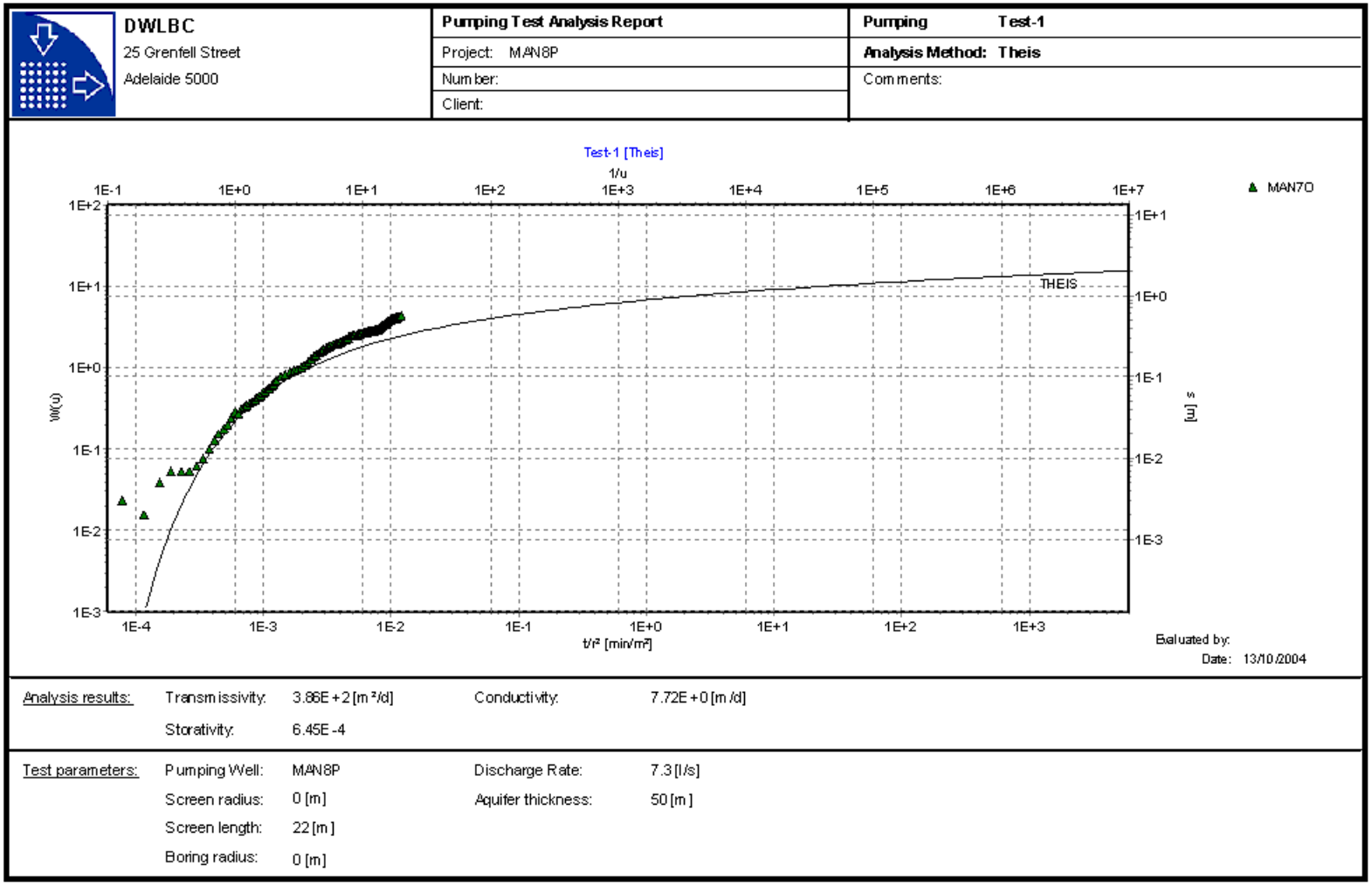


Figure 43 MAN8P 25/10/2002 constant rate discharge test, MAN7O Theis analysis

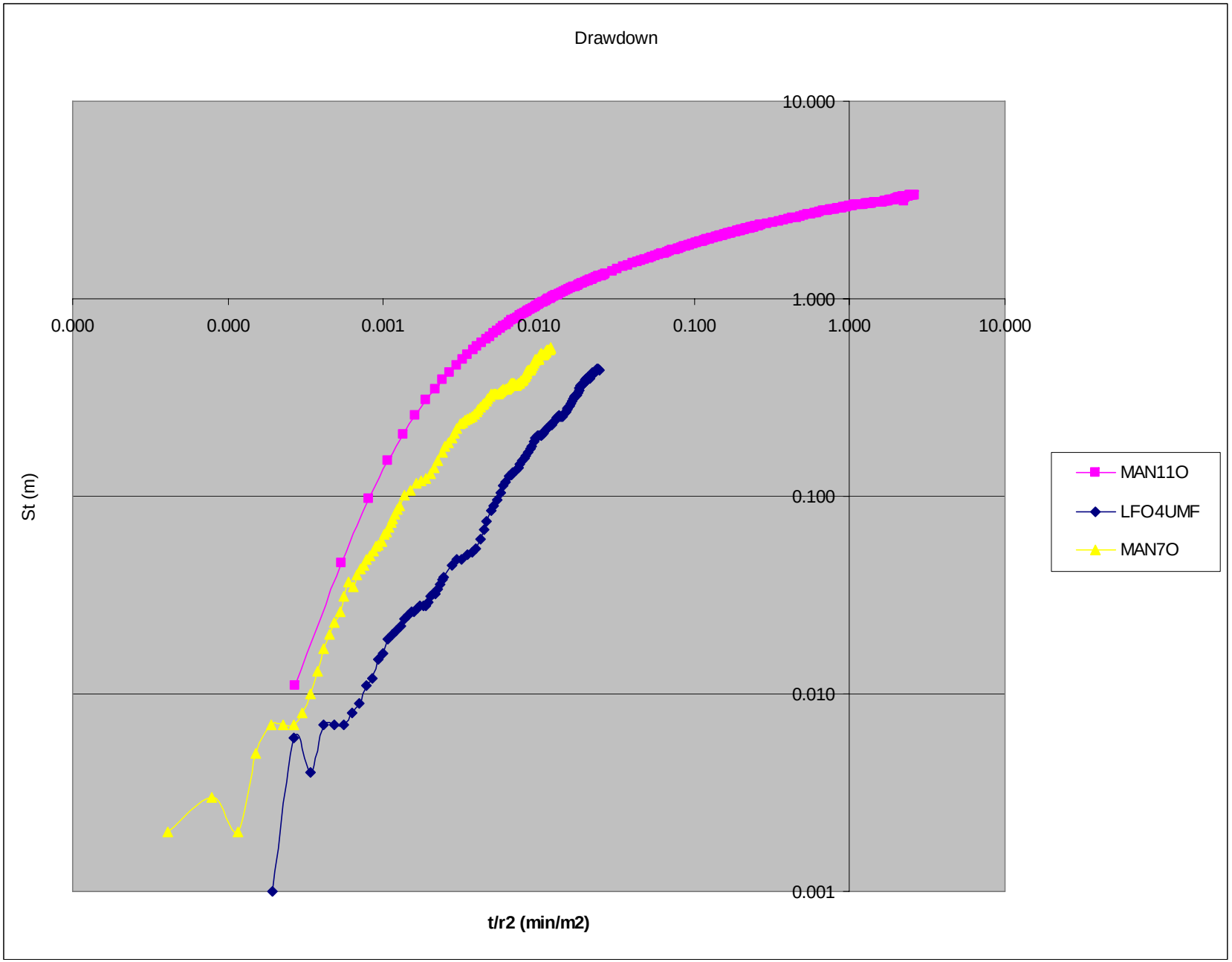


Figure 44 **MAN8P 25/10/2002 constant rate discharge test, t/r^2 vs drawdown plot**

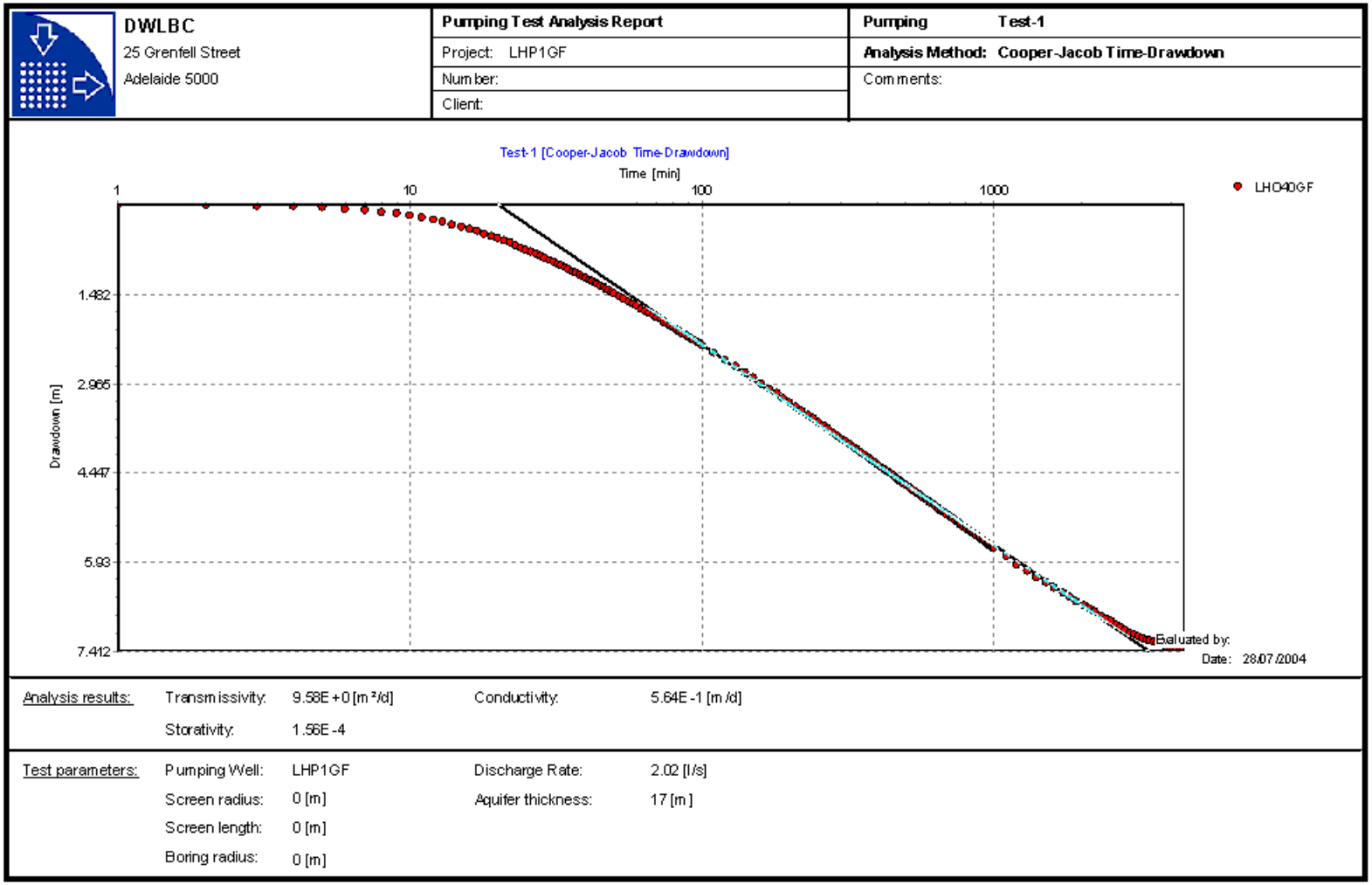


Figure 45 **LHP1GF 8/11/2002 constant rate discharge test, LHO40GF Cooper-Jacob t vs s analysis**

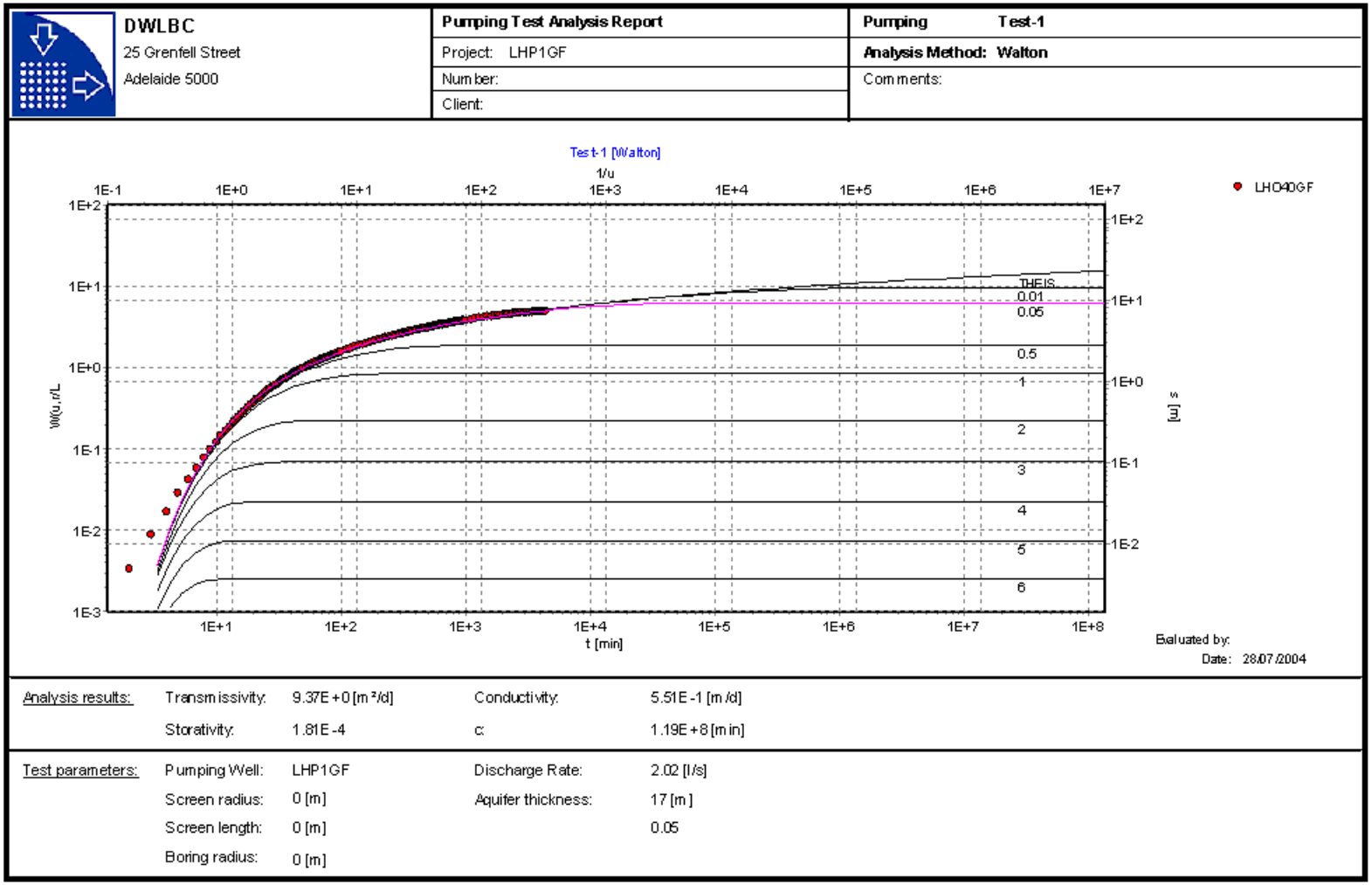


Figure 46 **LHP1GF 8/11/2002 constant rate discharge test, LHO40GF Walton analysis**

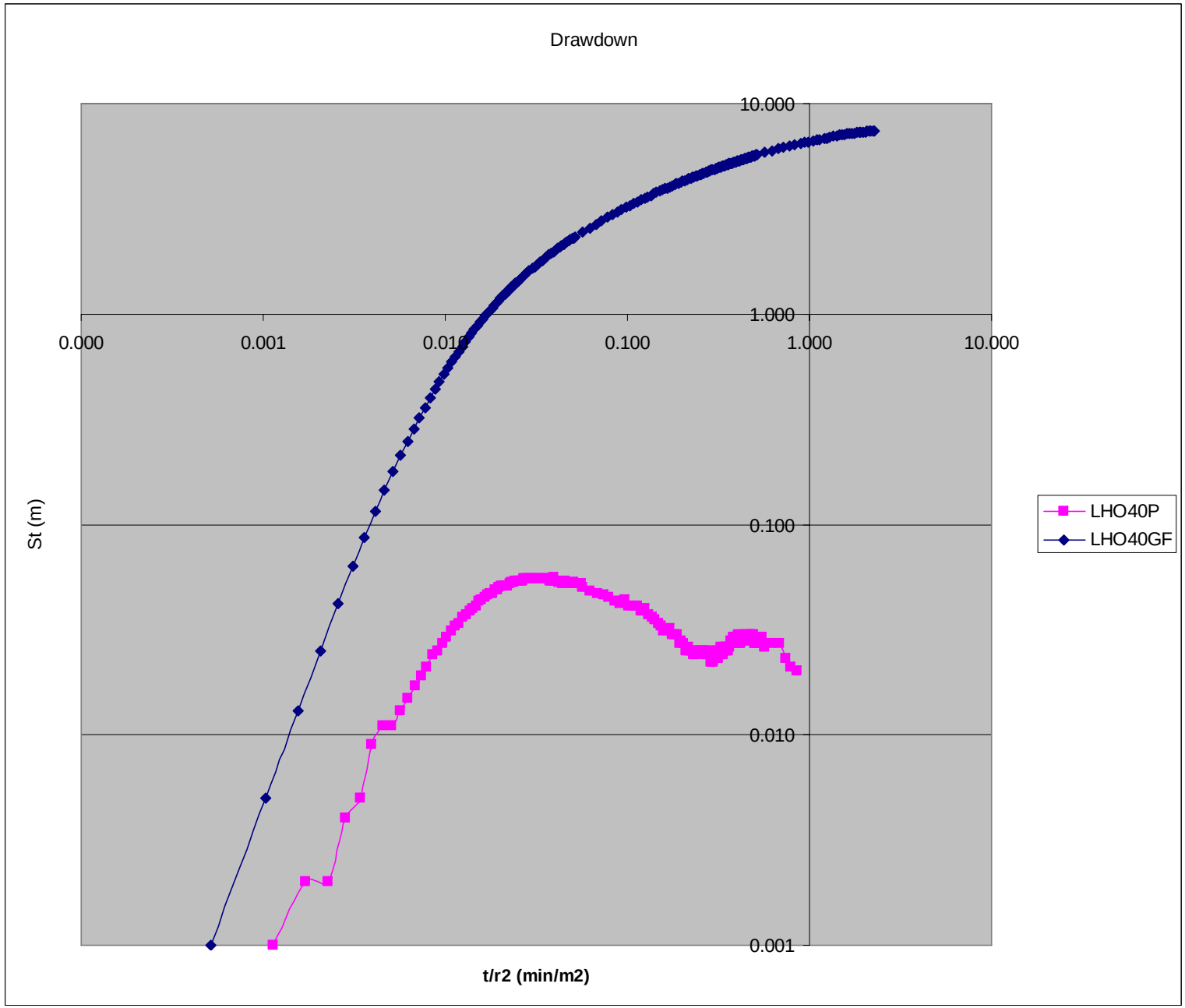


Figure 47 **LHP1GF 8/11/2002 constant rate discharge test, t/r^2 vs drawdown plot**

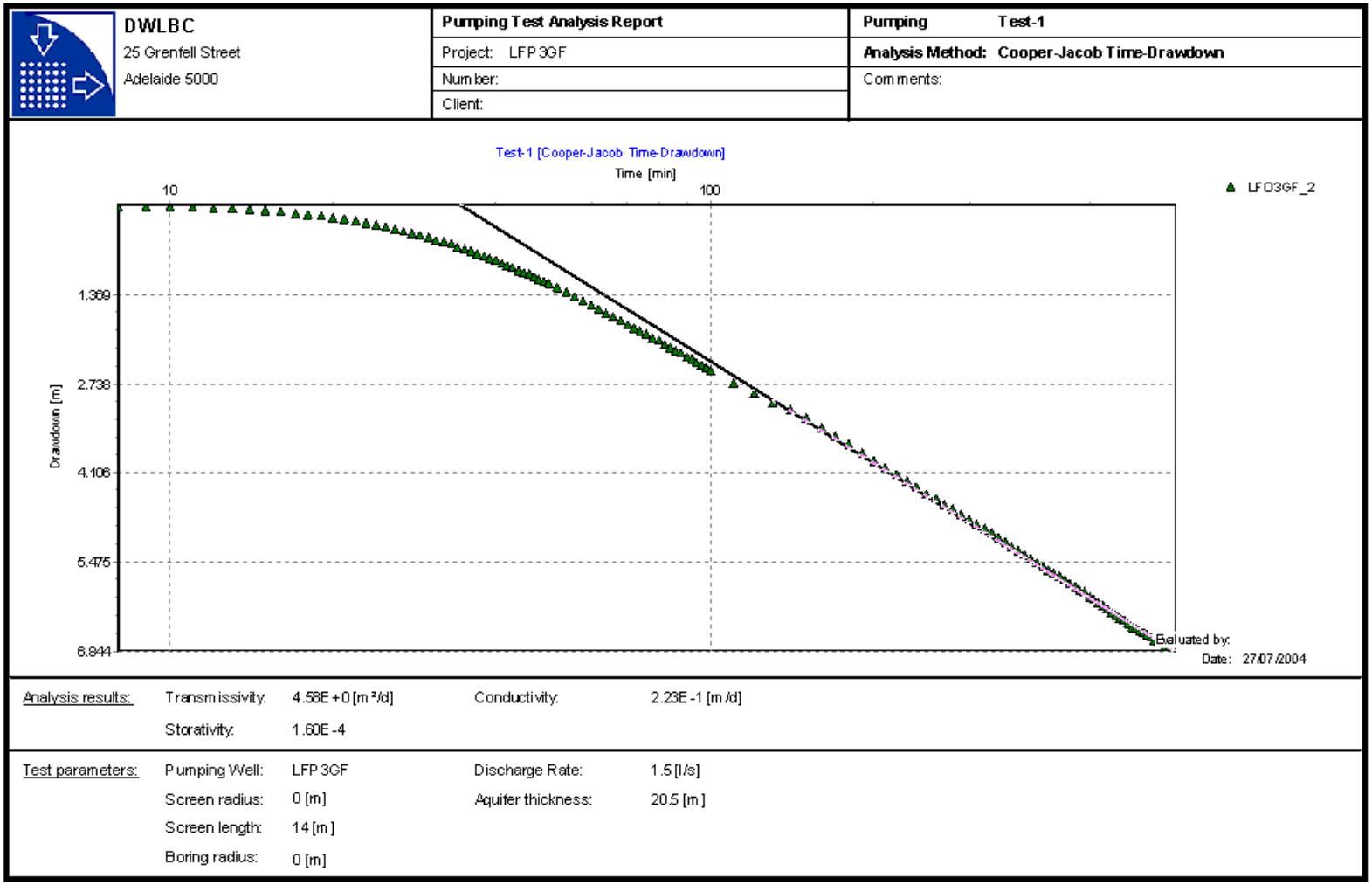


Figure 48 **LFP3GF 8/3/2004 constant rate discharge test, LFO3GF_2 Cooper-Jacob t vs s analysis**

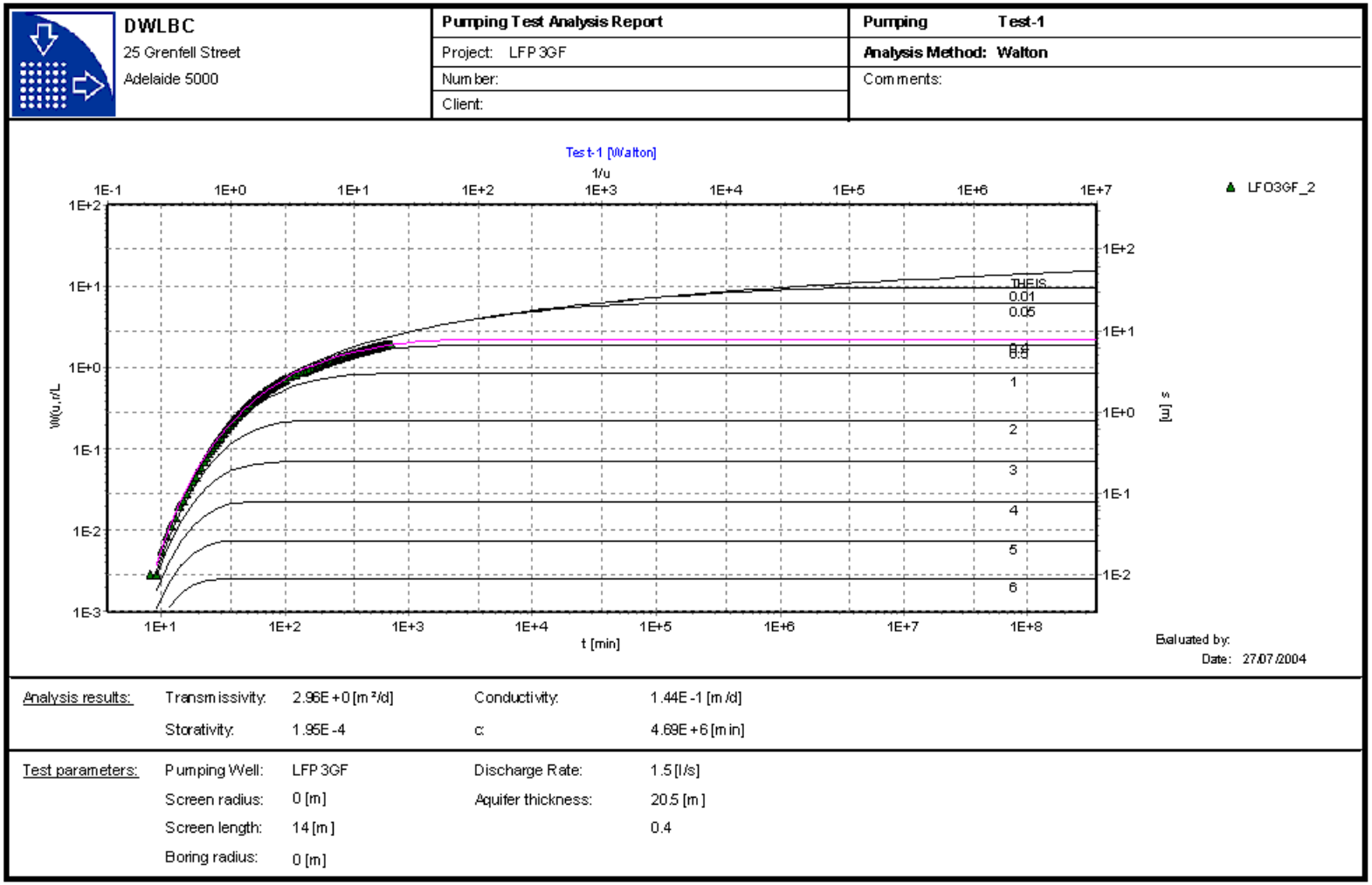


Figure 49 **LFP3GF 8/3/2004 constant rate discharge test, LFO3GF_2 Walton analysis**

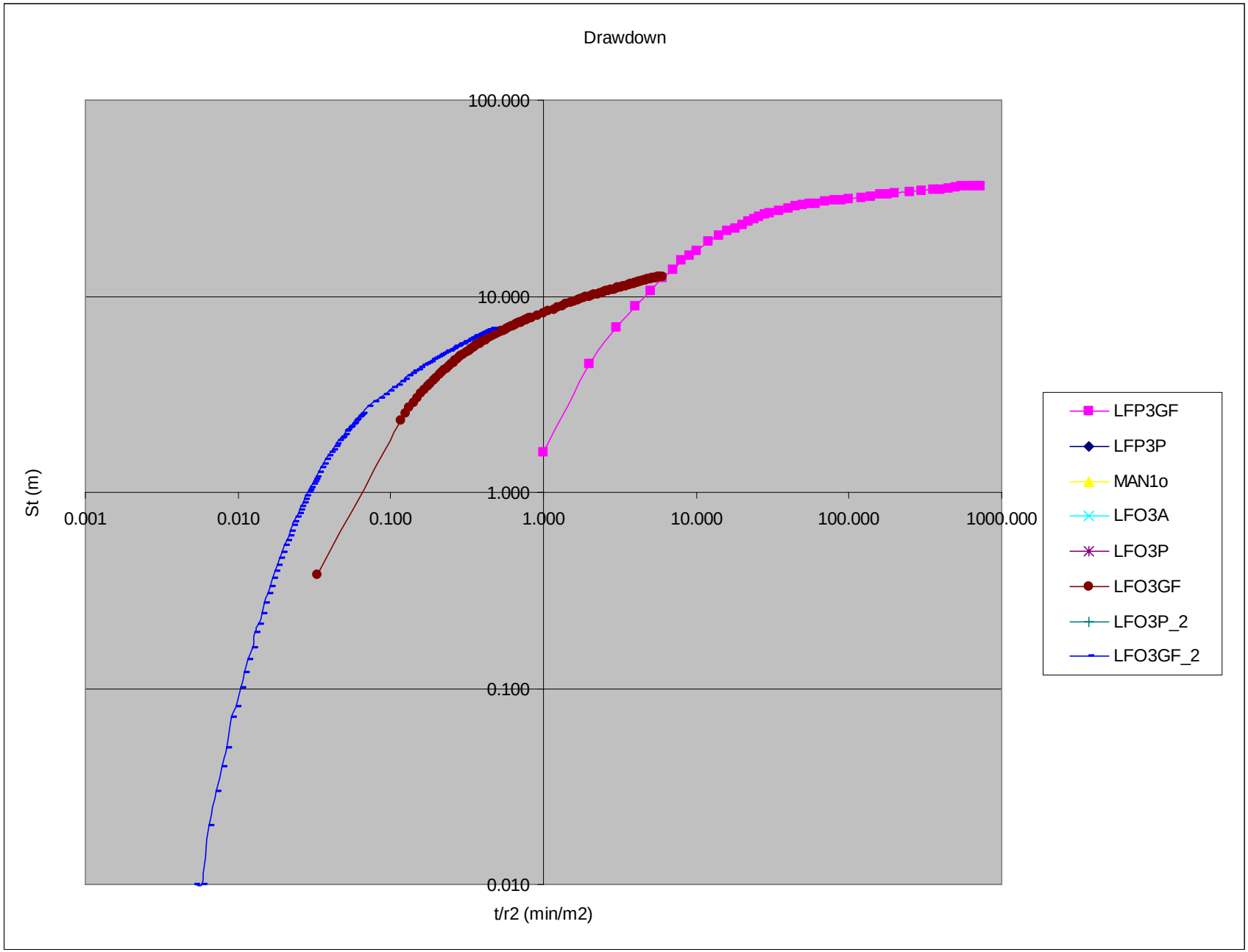


Figure 50 **LFP3GF 8/3/2004 constant rate discharge test, t/r^2 vs drawdown plot**

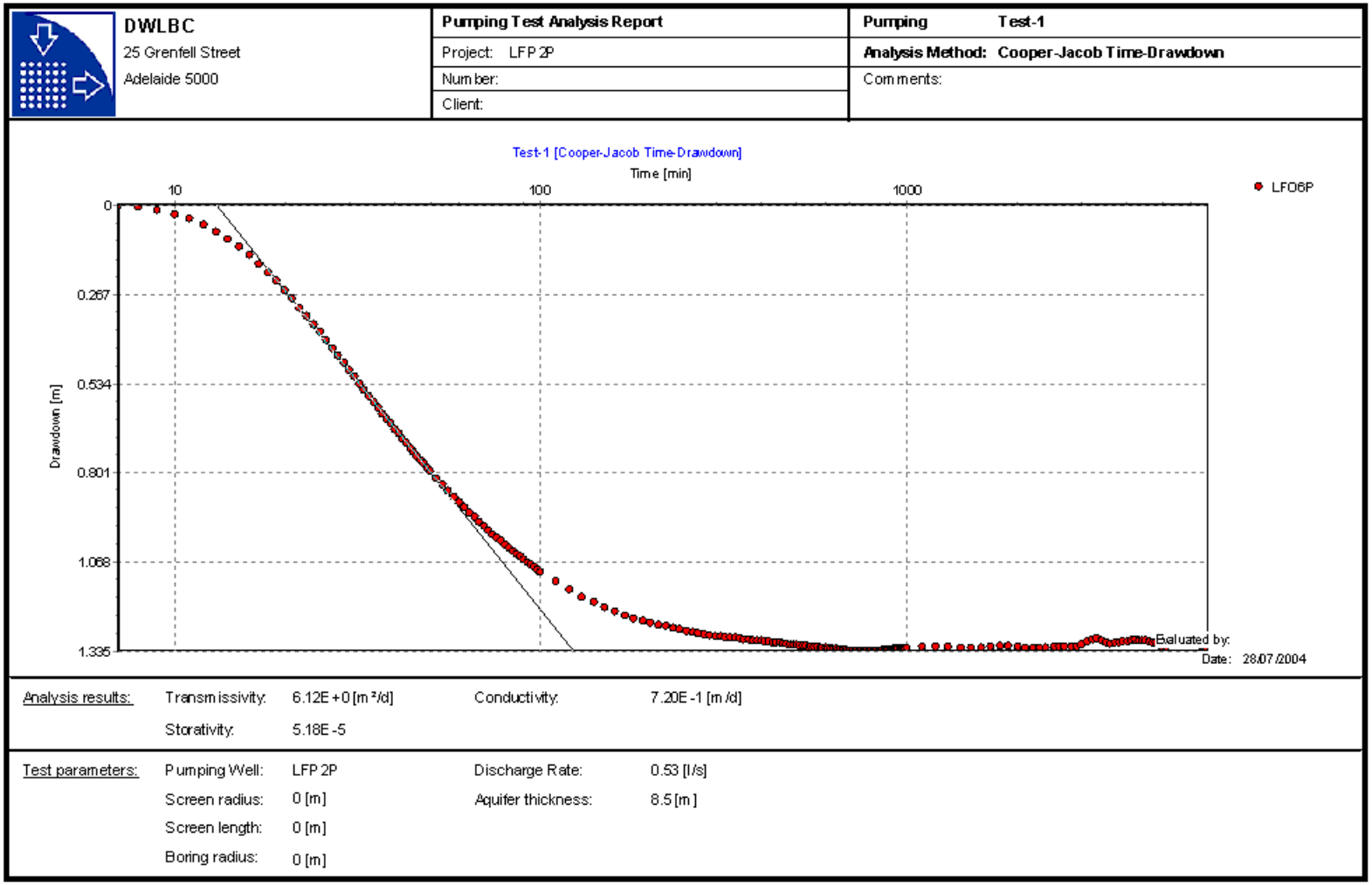


Figure 51 **LFP2P 5/11/2002 constant rate discharge test, LFO6P Cooper-Jacob t vs s analysis**

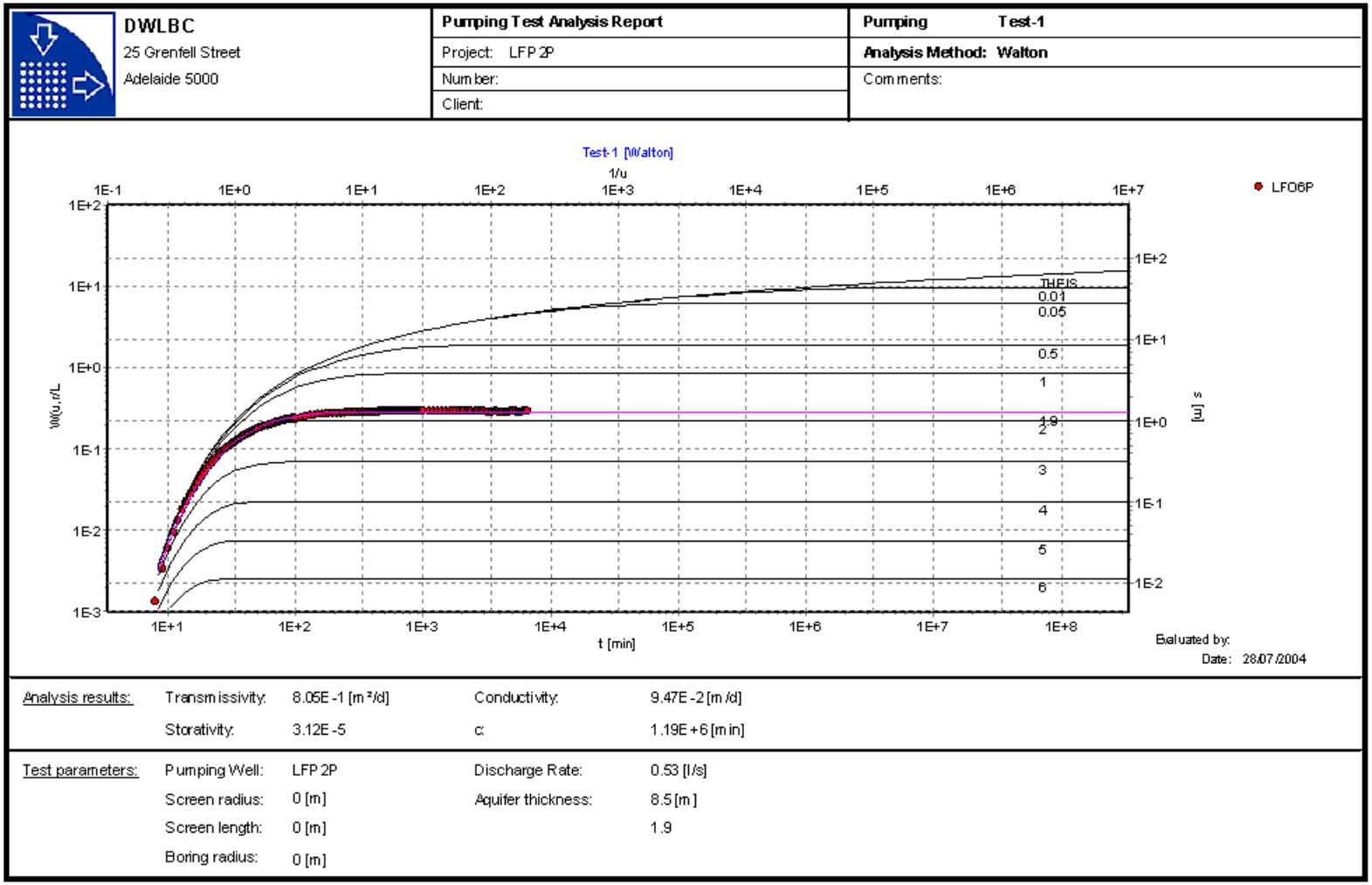


Figure 52 LFP2P 5/11/2002 constant rate discharge test, LFO6P Walton analysis

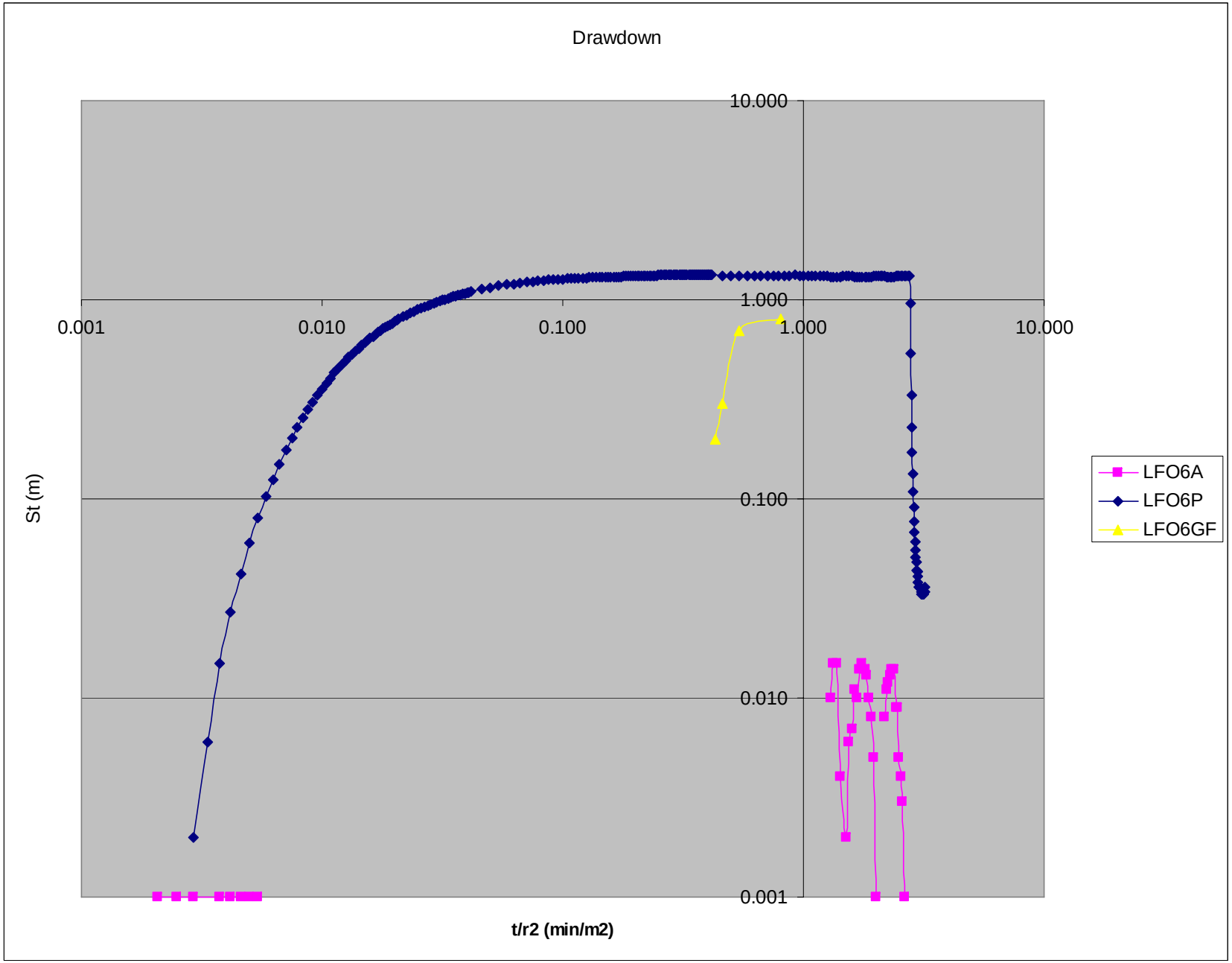


Figure 53 **LFP2P 5/11/2002 constant rate discharge test, t/r^2 vs drawdown plot**

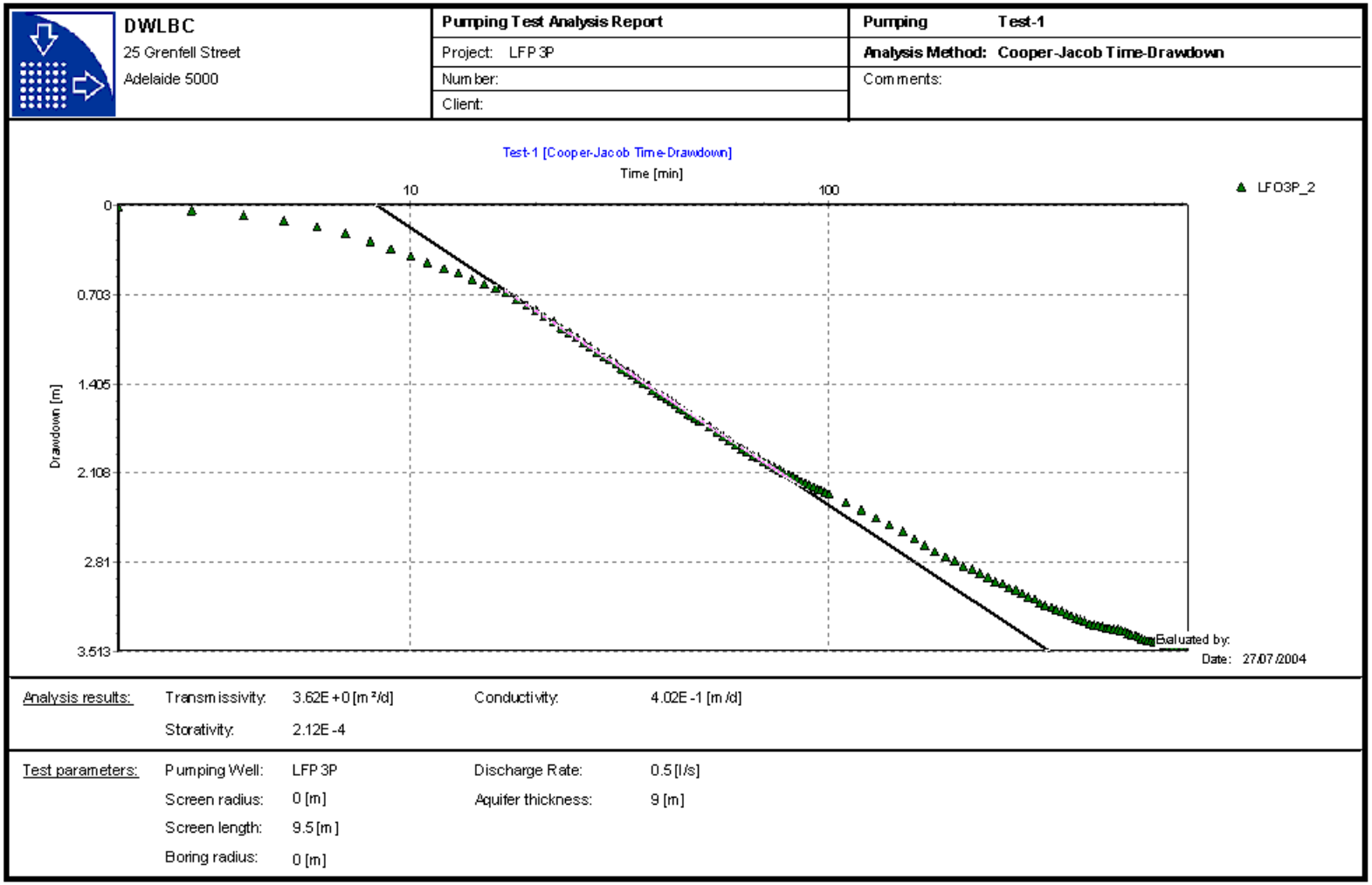


Figure 54 **LFP3P 3/3/2004 constant rate discharge test, LFO3P_2 Cooper-Jacob t vs s analysis**

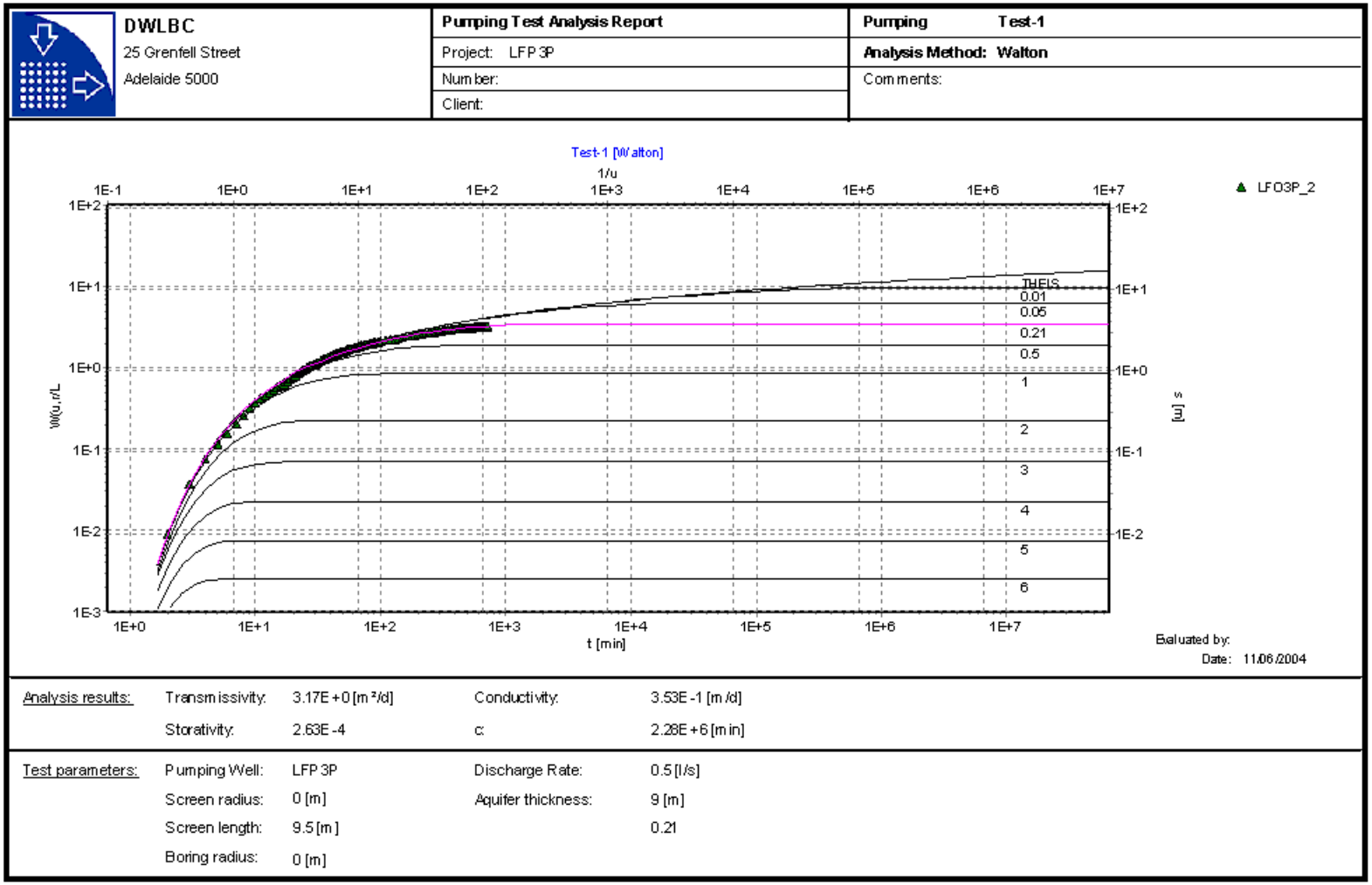


Figure 55 **LFP3P 3/3/2004 constant rate discharge test, LFO3P_2 Walton analysis**

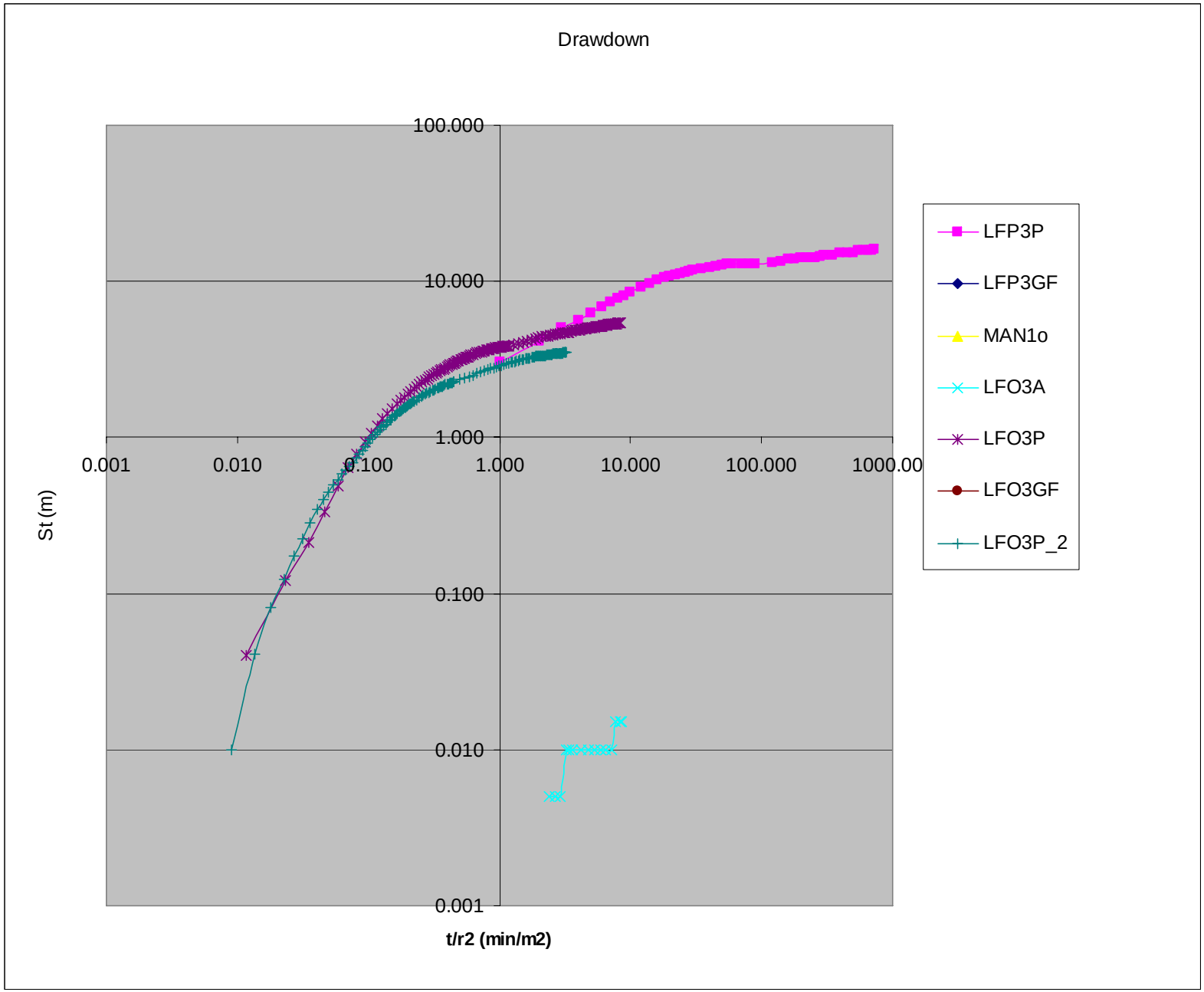


Figure 56 **LFP3P 3/3/2004 constant rate discharge test, t/r^2 vs drawdown plot**

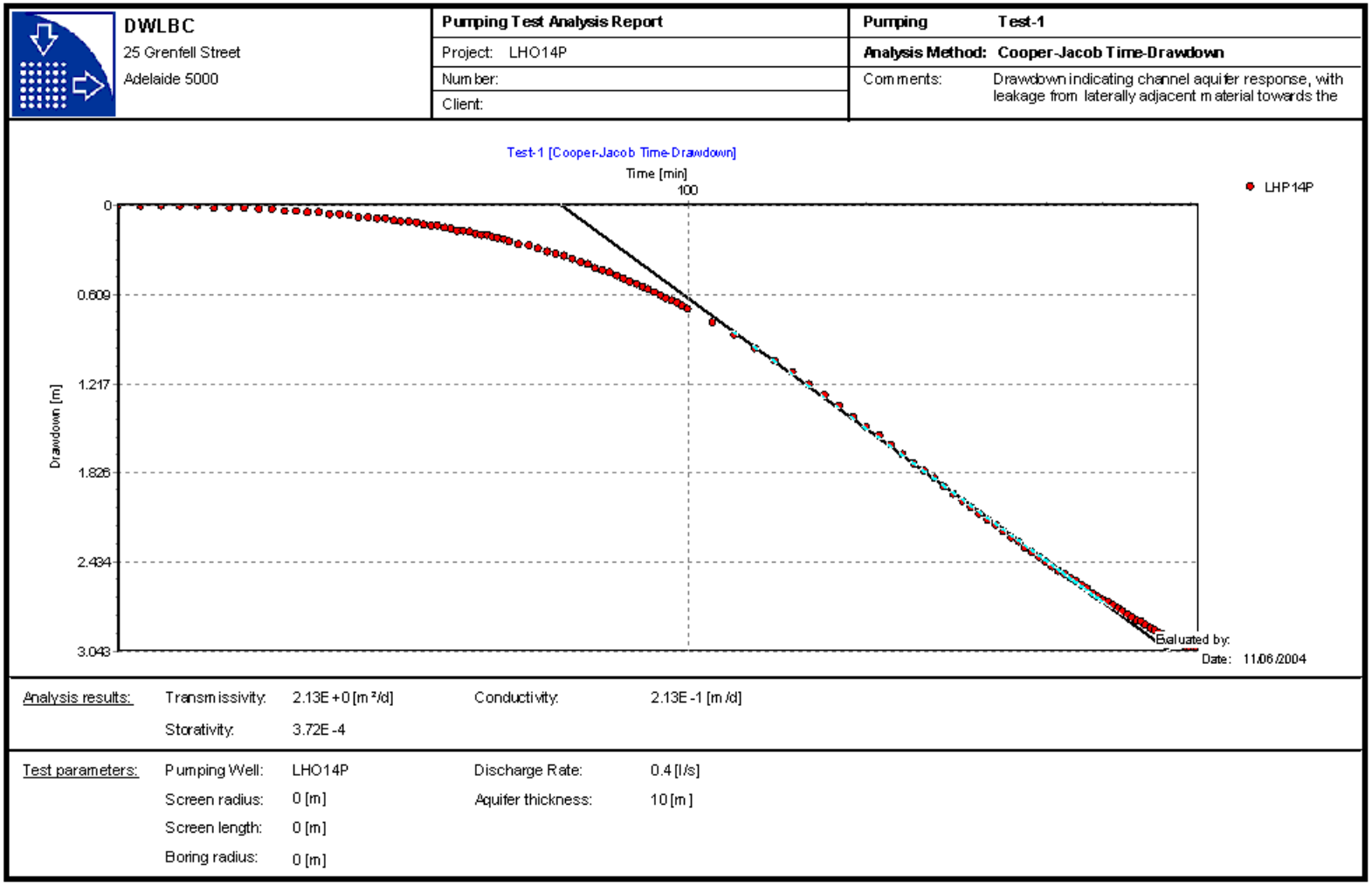


Figure 57 **LHO14P 9/3/2004 constant rate discharge test, LHP14P Cooper-Jacob t vs s analysis**

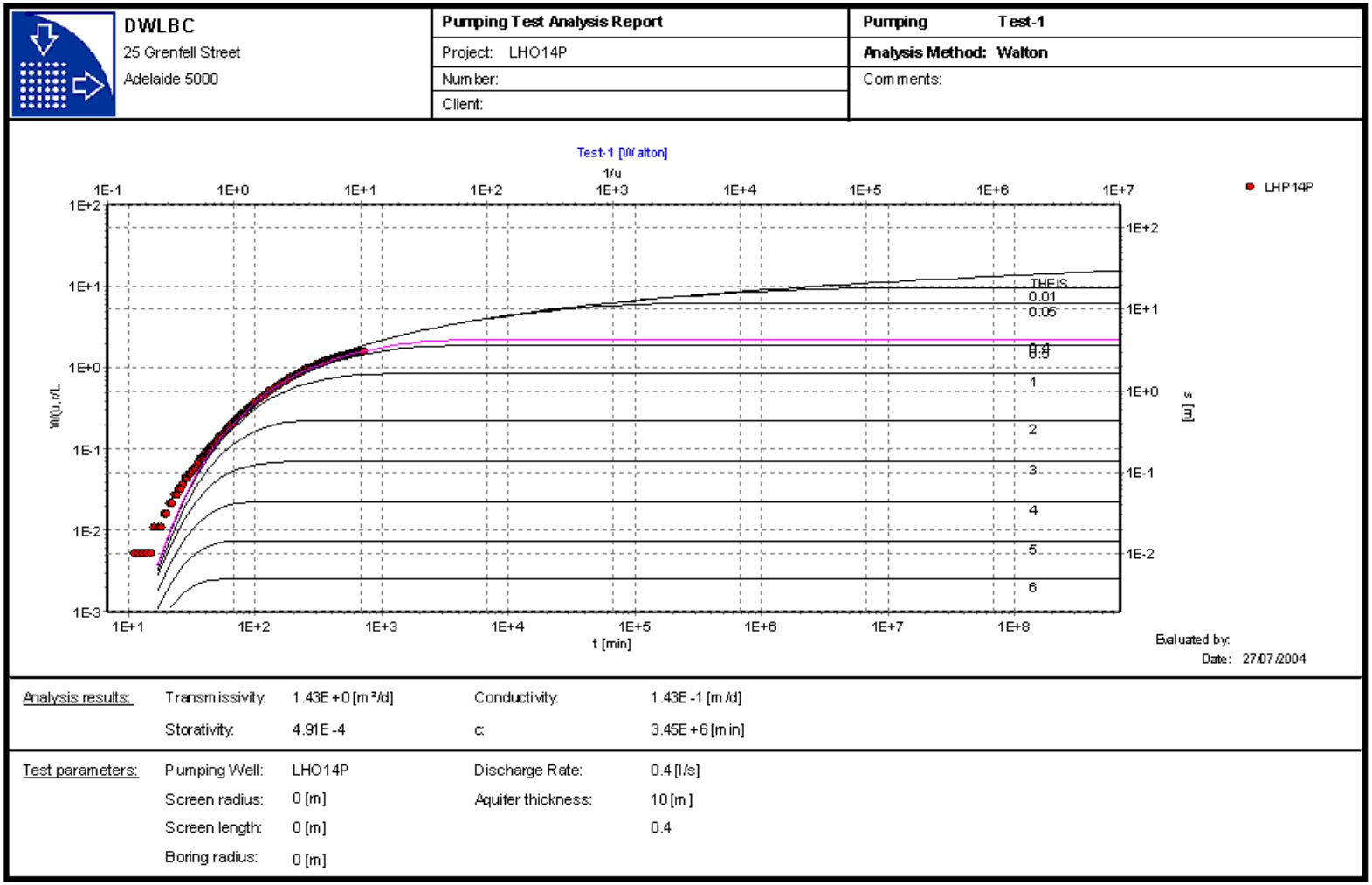


Figure 58 LHO14P 9/3/2004 constant rate discharge test, LHP14P Walton analysis

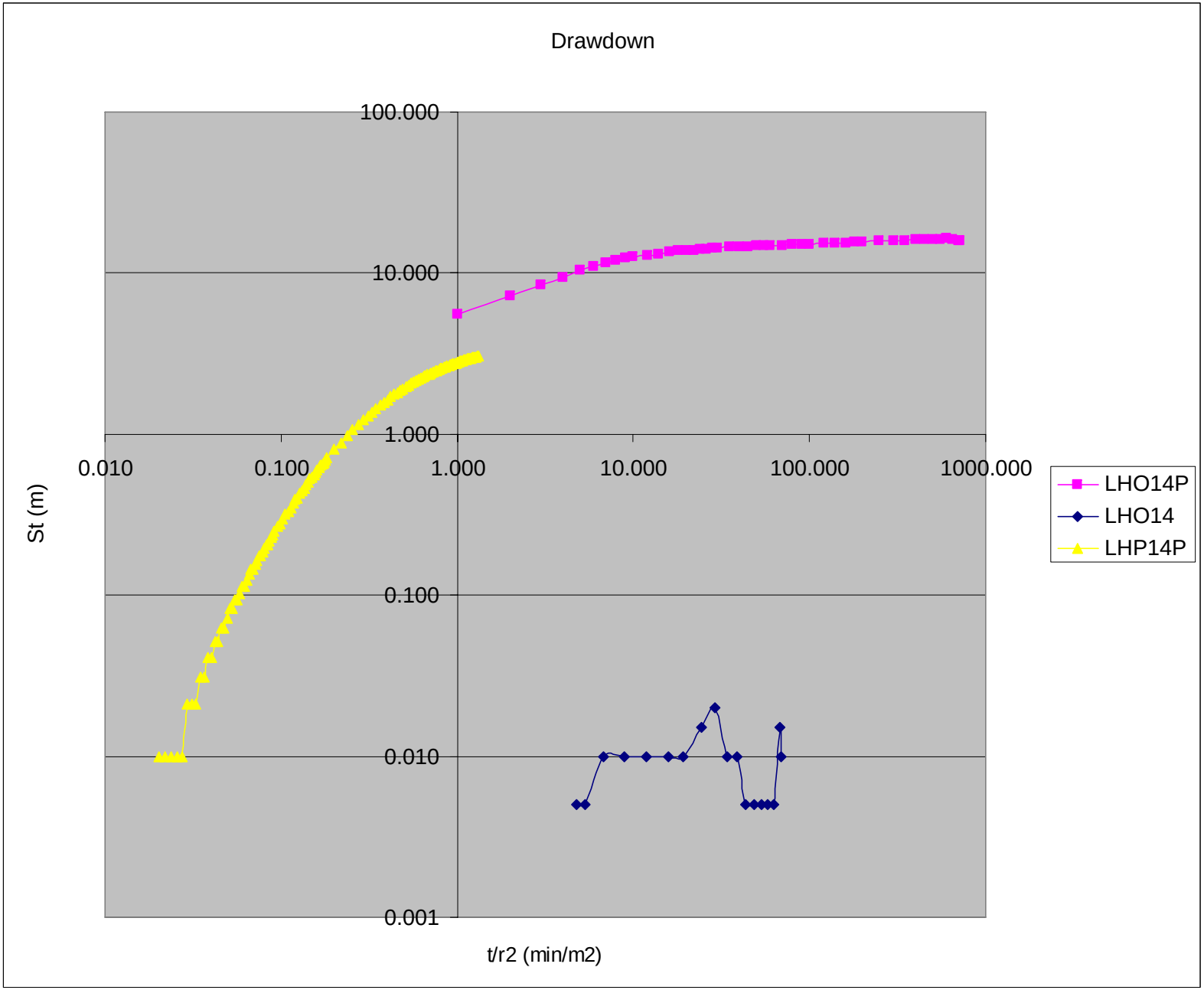


Figure 59 **LHO14P 9/3/2004 constant rate discharge test, t/r^2 vs drawdown plot**

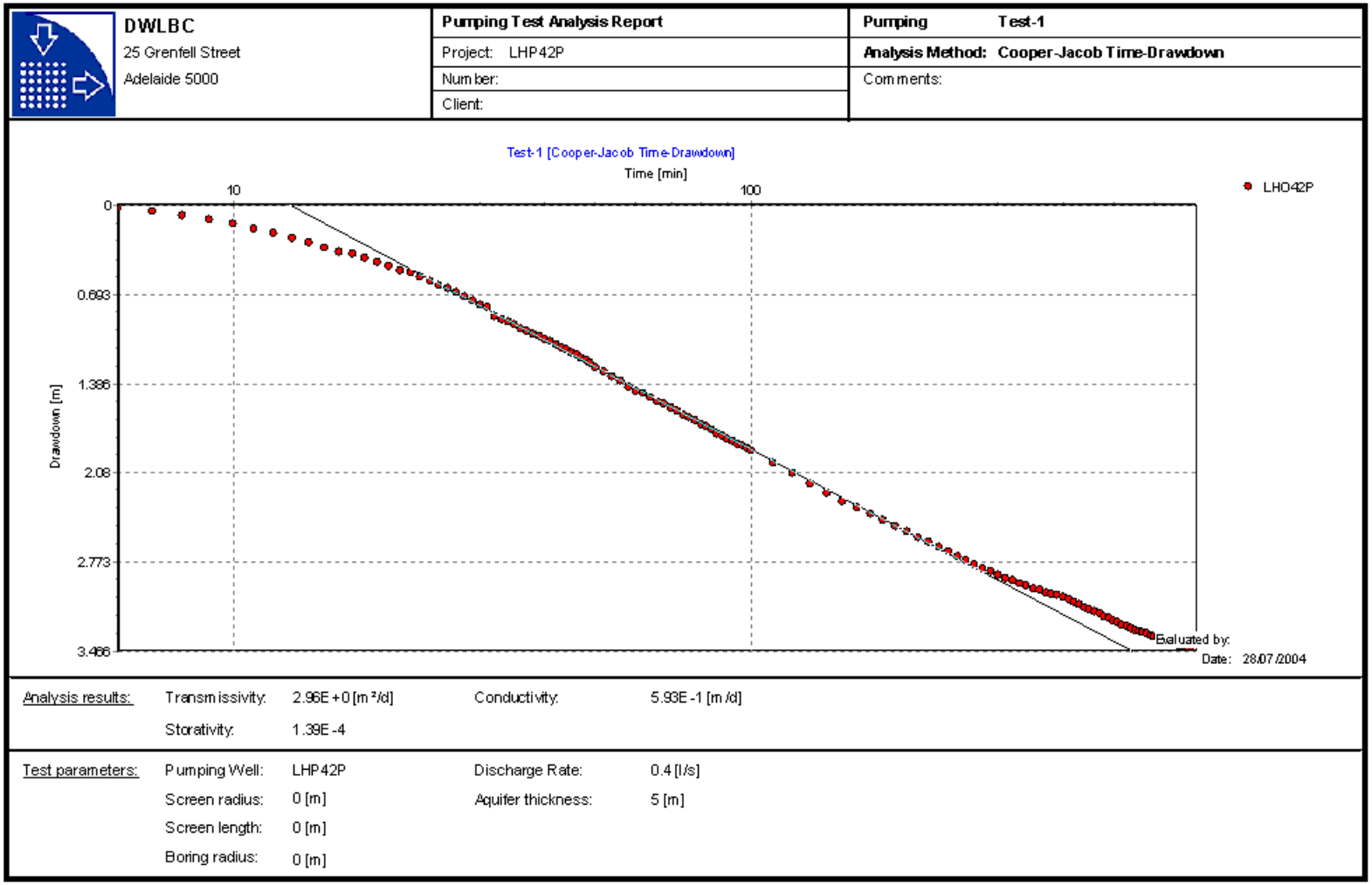


Figure 60 **LHP42P 28/2/2004 constant rate discharge test, LHO42P Cooper-Jacob t vs s analysis**

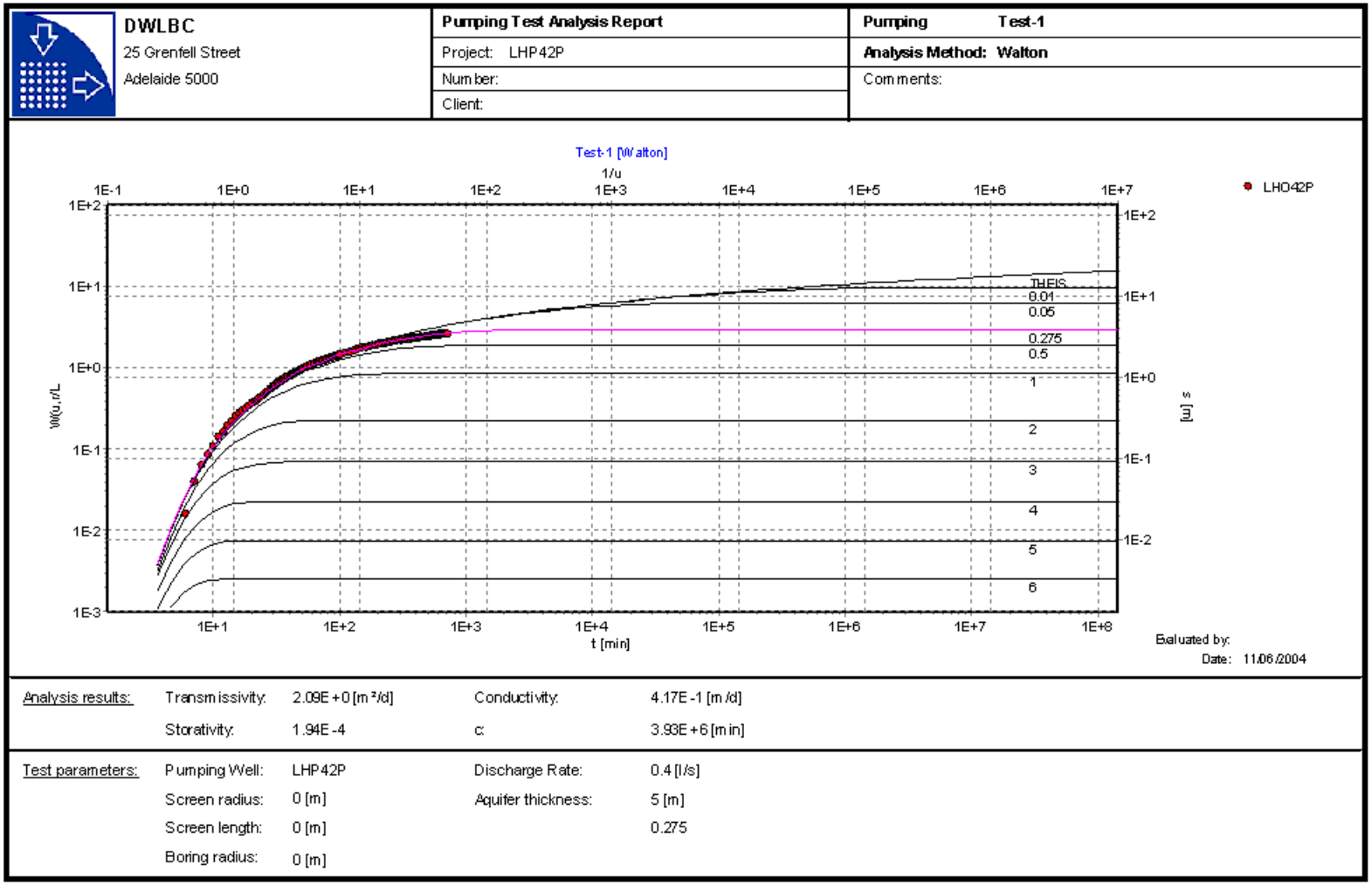


Figure 61 LHP42P 28/2/2004 constant rate discharge test, LHO42P Walton analysis

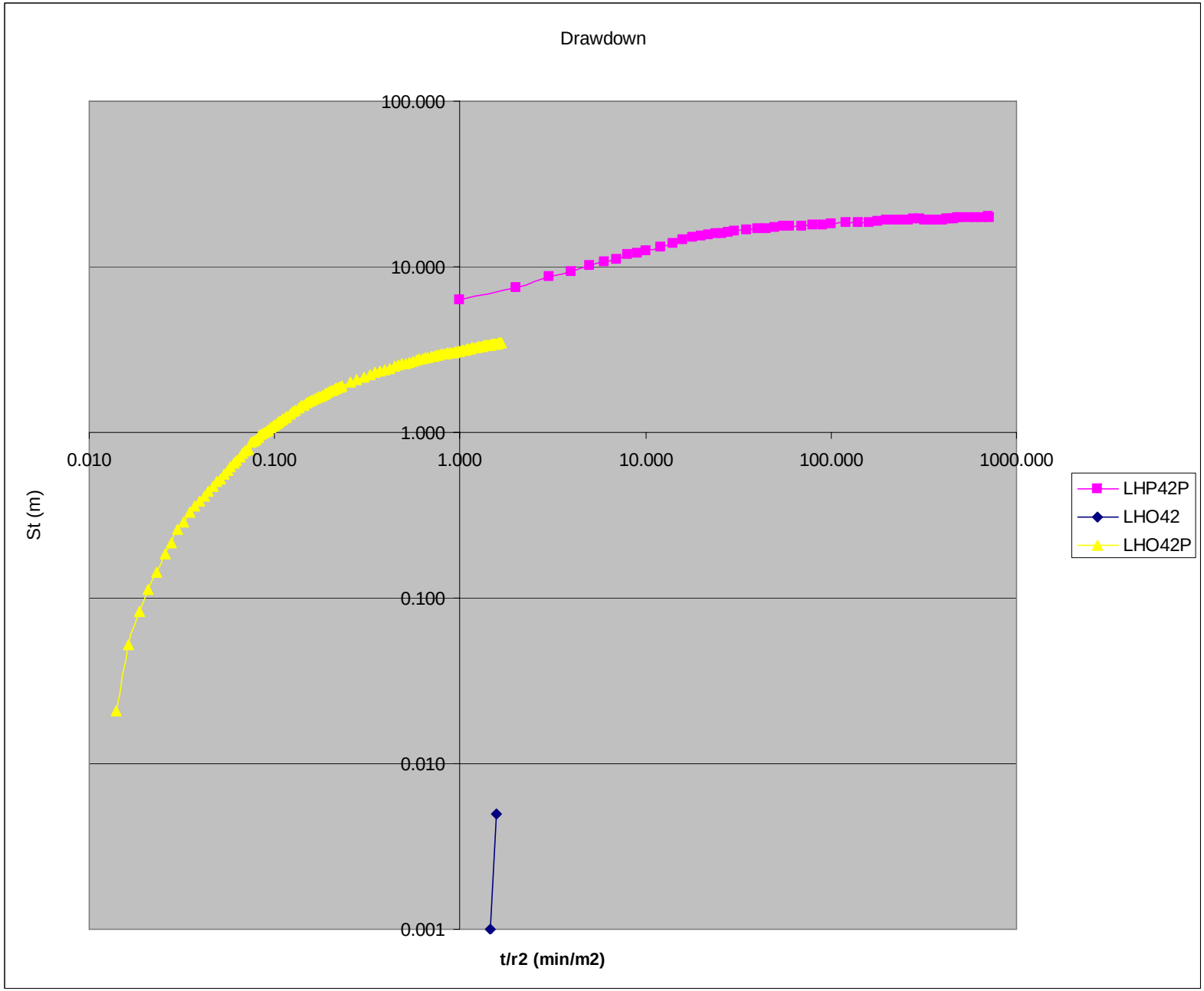


Figure 62 **LHP42P 28/2/2004 constant rate discharge test, t/r^2 vs drawdown plot**

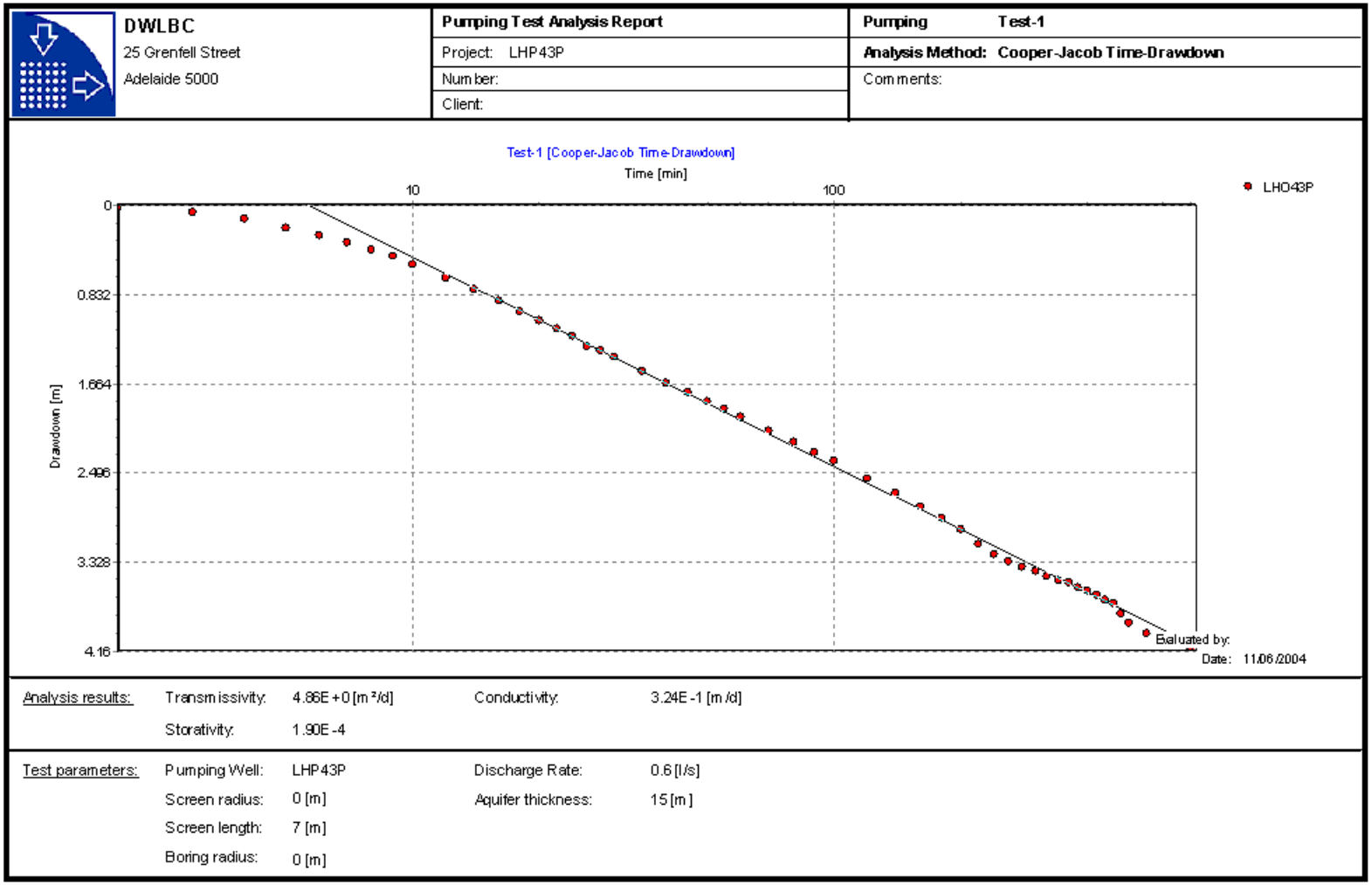


Figure 63 **LHP43P 21/12/2003 constant rate discharge test, LHO43P Cooper-Jacob t vs s analysis**

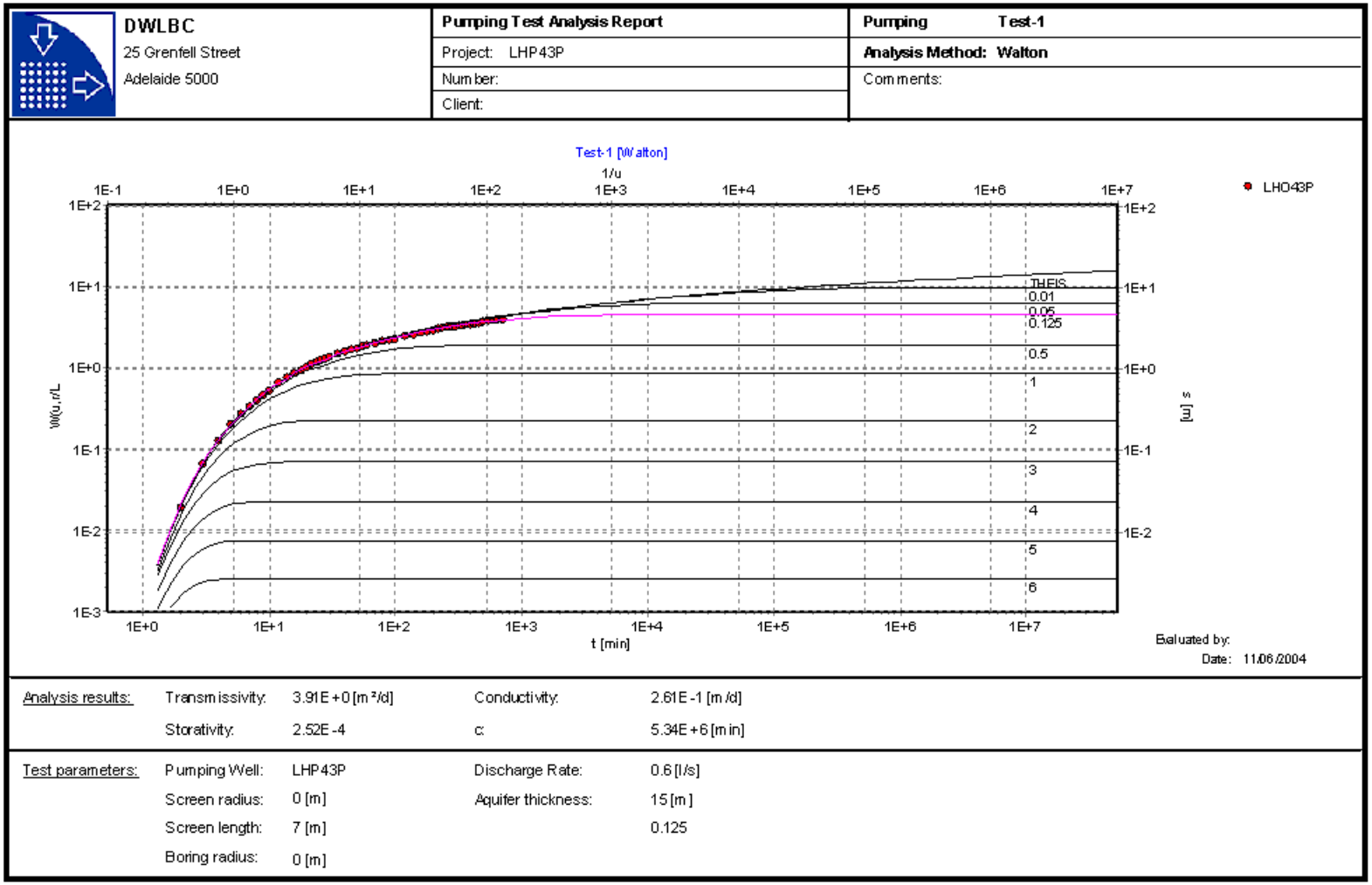


Figure 64 **LHP43P 21/12/2003 constant rate discharge test, LHO43P Walton analysis**

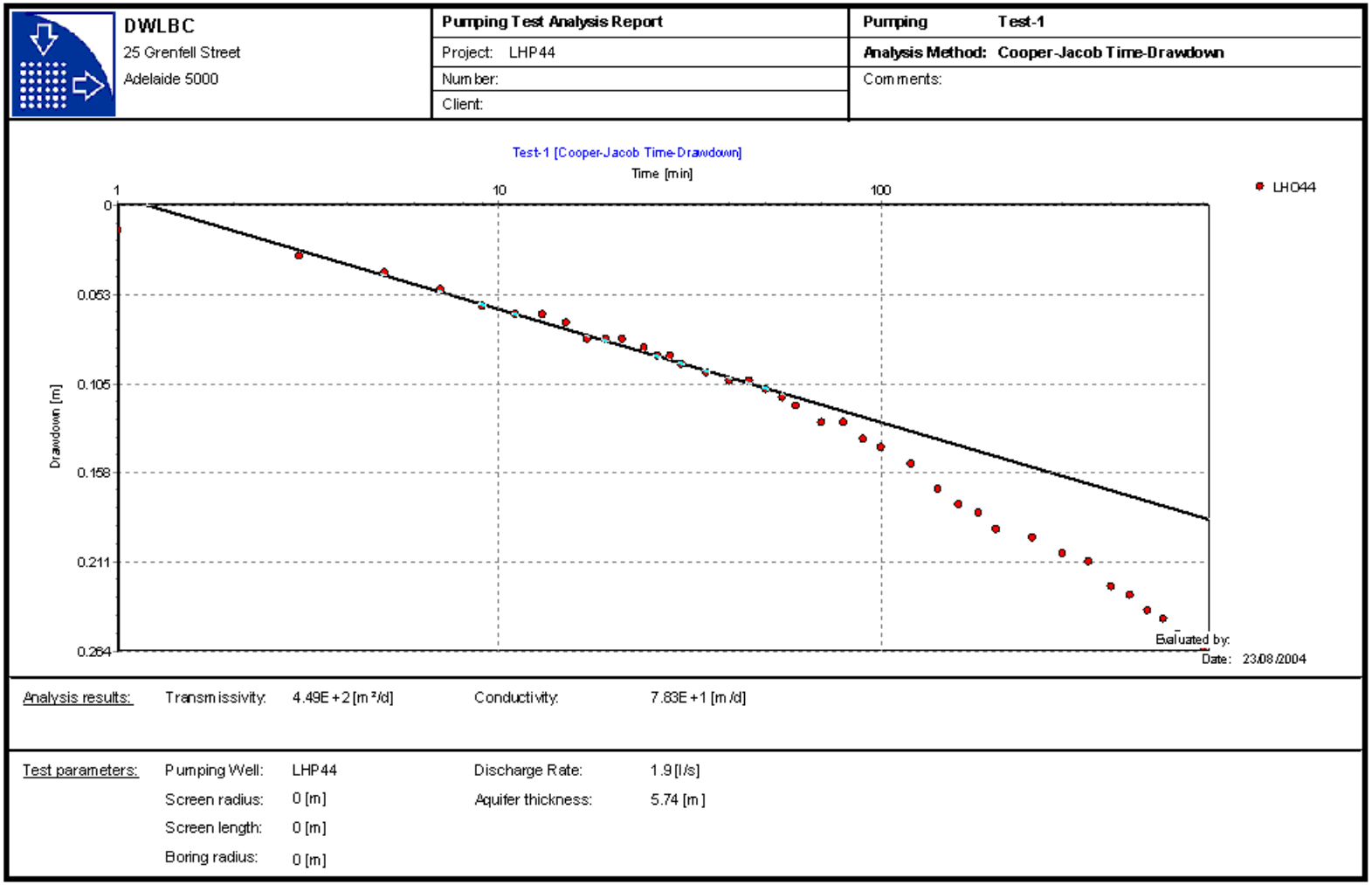


Figure 65 **LHP44 23/7/2004 constant rate discharge test, LHO44 Cooper-Jacob t vs s analysis**

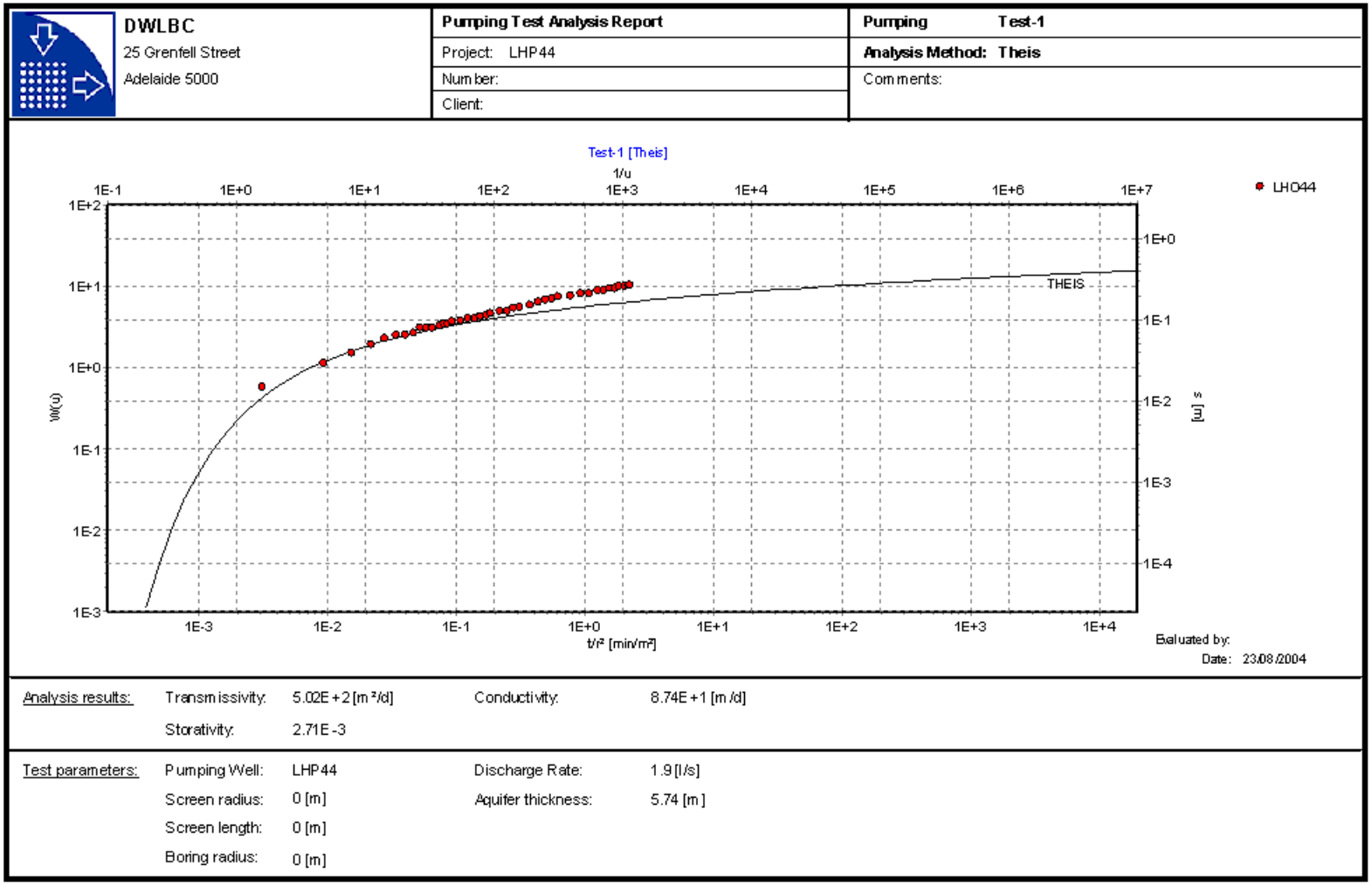


Figure 66 **LHP44 23/7/2004 constant rate discharge test, LHO44 Theis analysis**

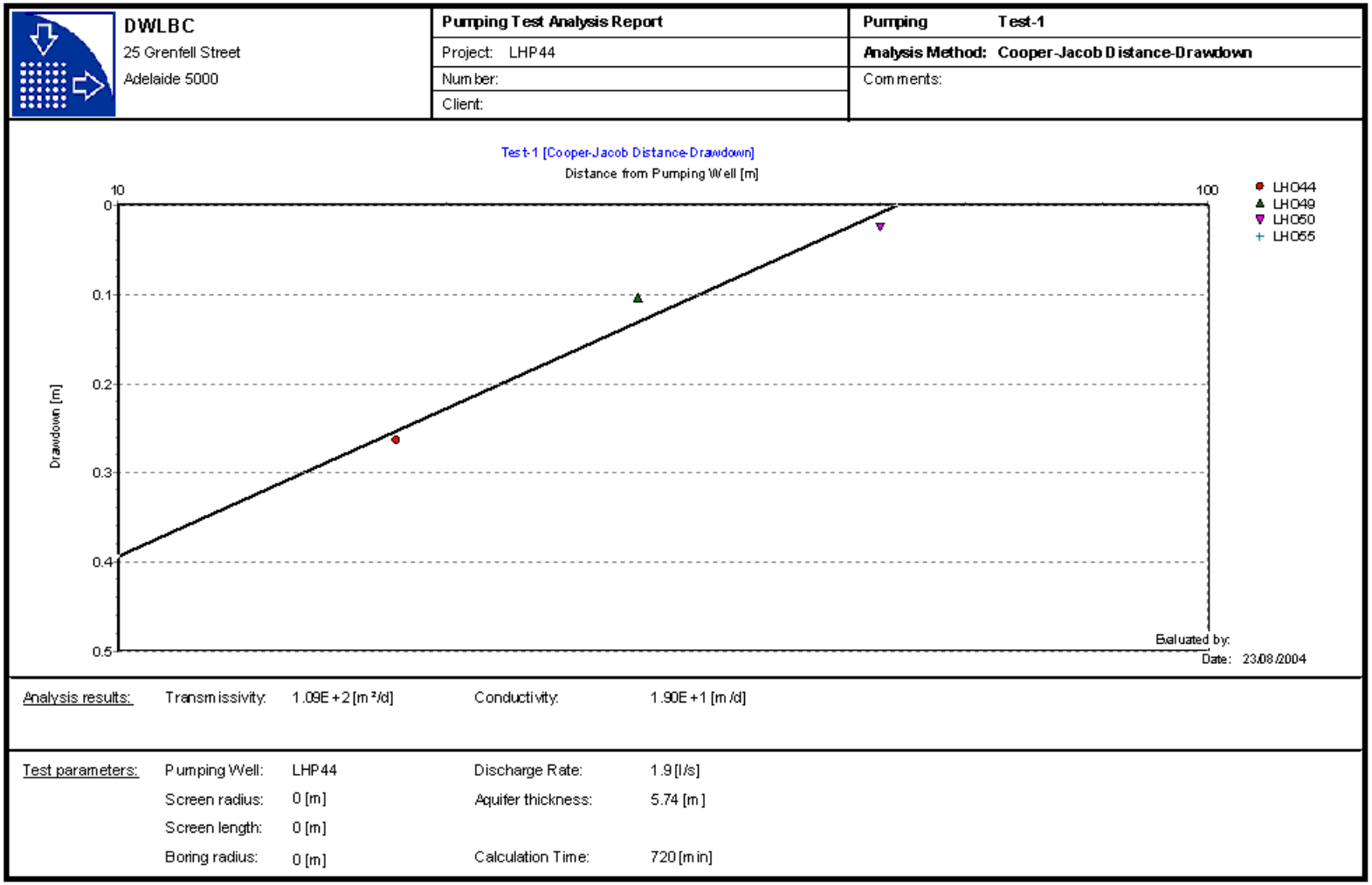


Figure 67 **LHP44 23/7/2004 constant rate discharge test, Cooper-Jacob r vs s analysis**

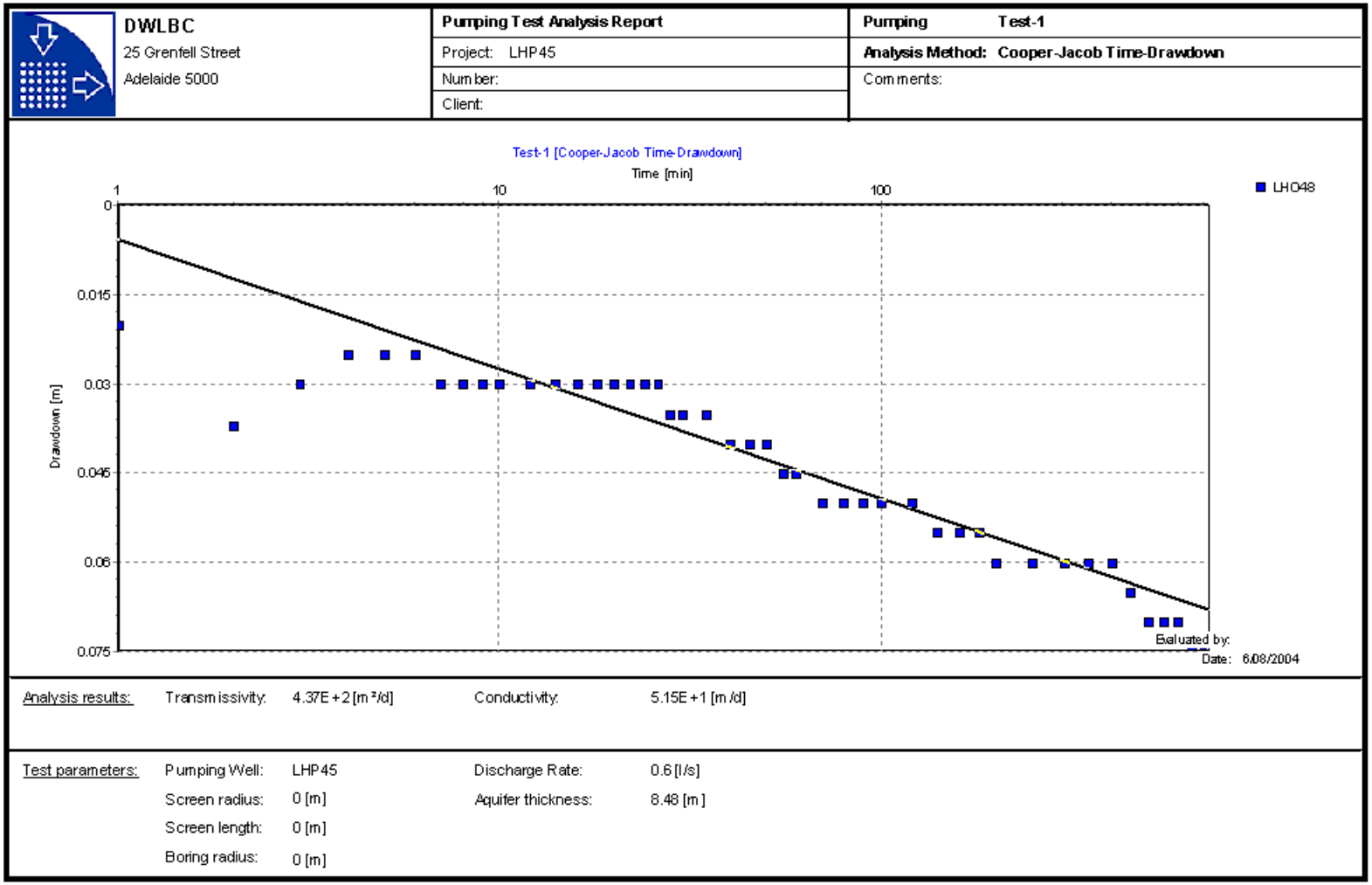


Figure 68 **LHP45 24/7/2004 constant rate discharge test, LHO48 Cooper-Jacob t vs s analysis**

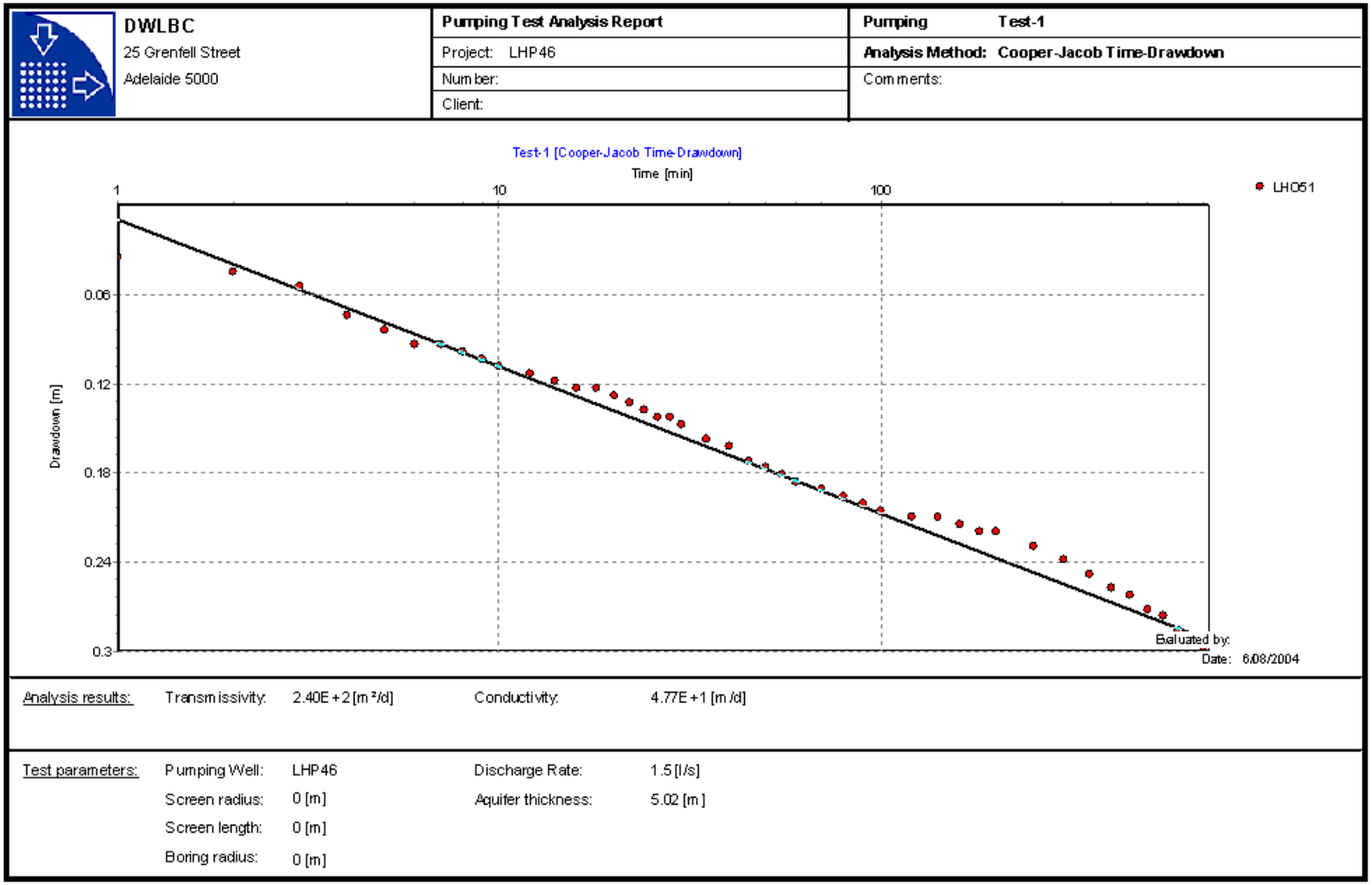


Figure 69 **LHP46 19/7/2004 constant rate discharge test, LHO51 Cooper-Jacob t vs s analysis**

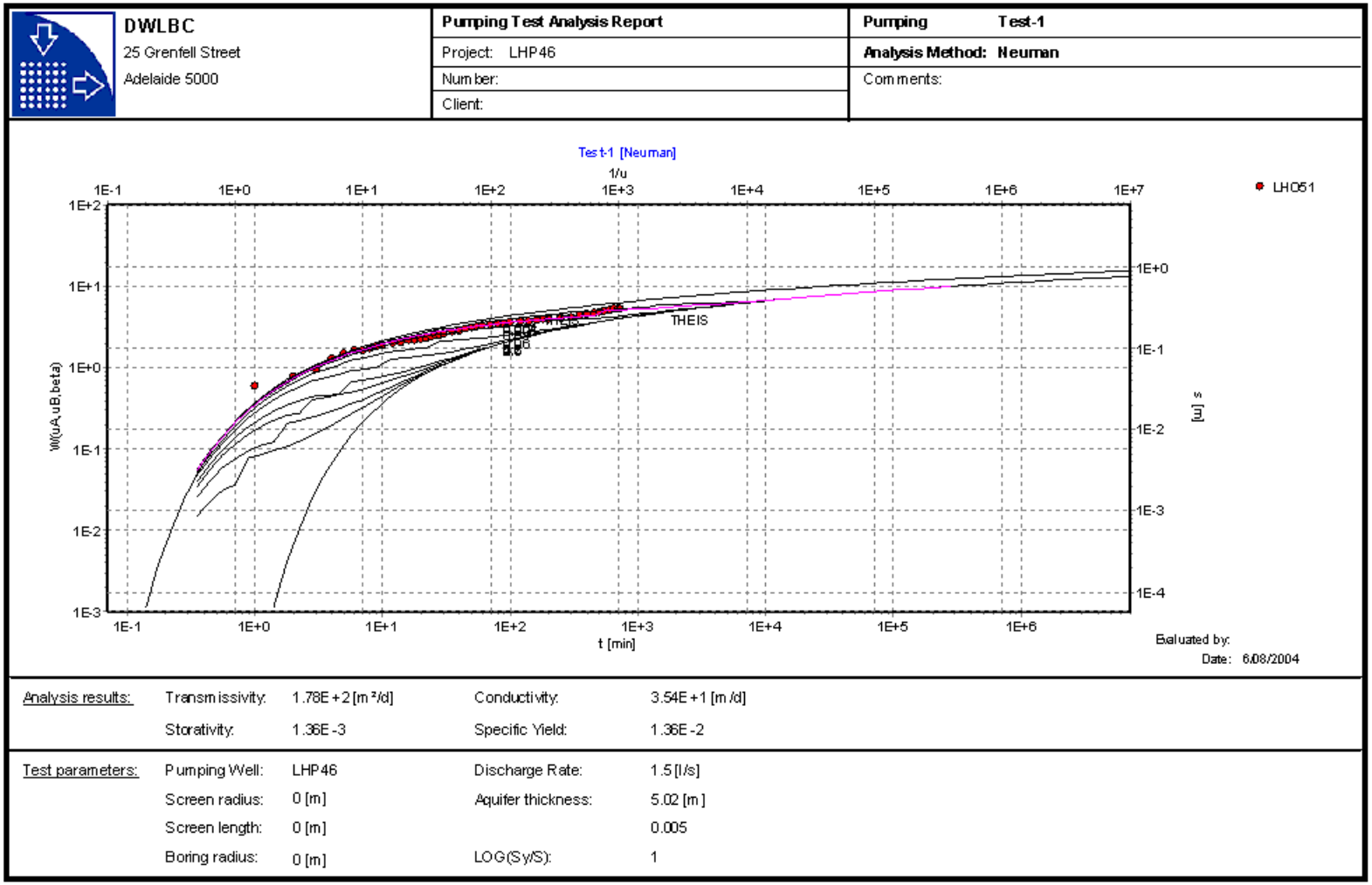


Figure 70 LHP46 19/7/2004 constant rate discharge test, LHO51 Neuman analysis

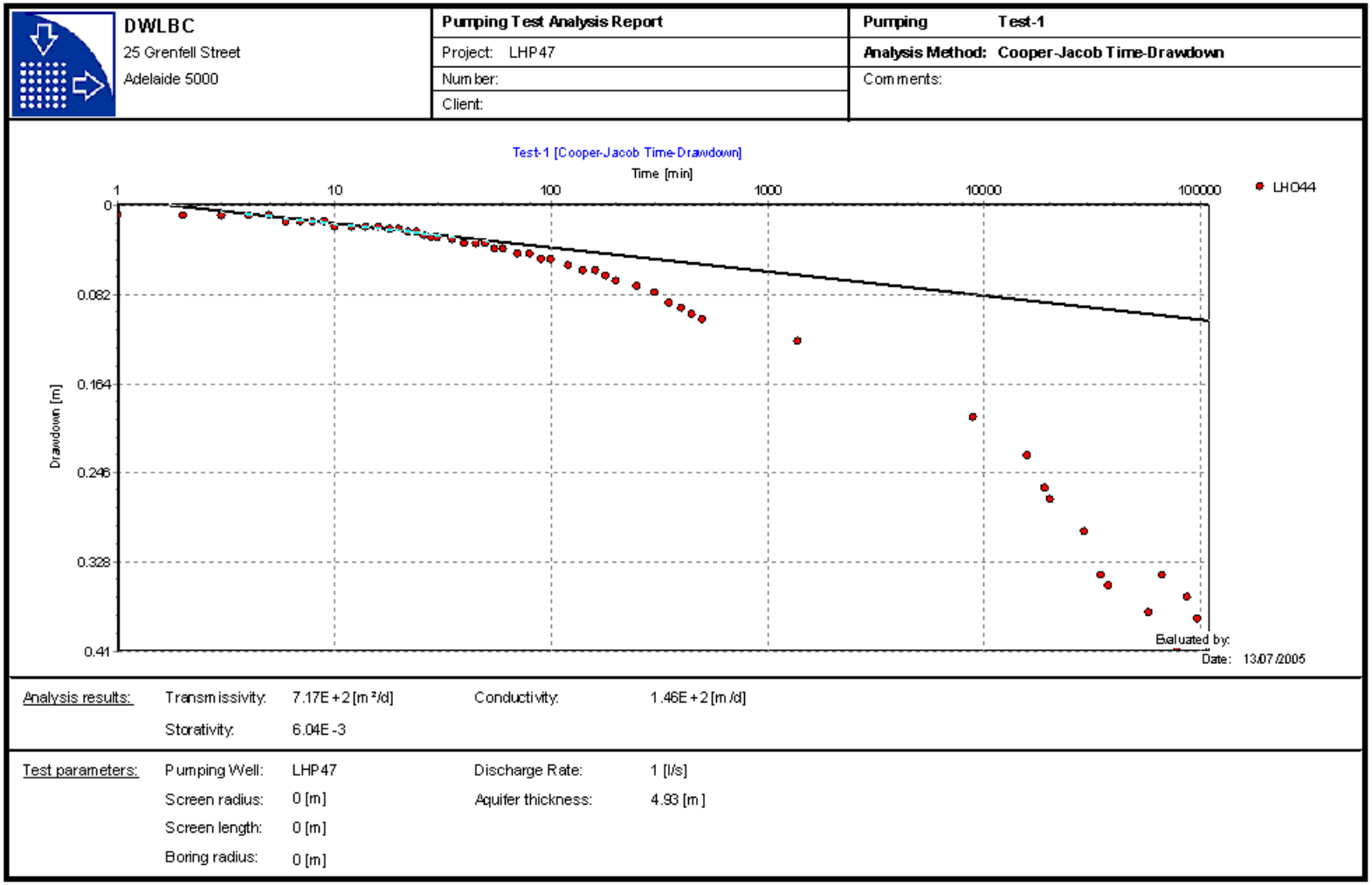


Figure 71 **LHP47 26/11/2004 constant rate discharge test, LHO44 Cooper-Jacob t vs s analysis**

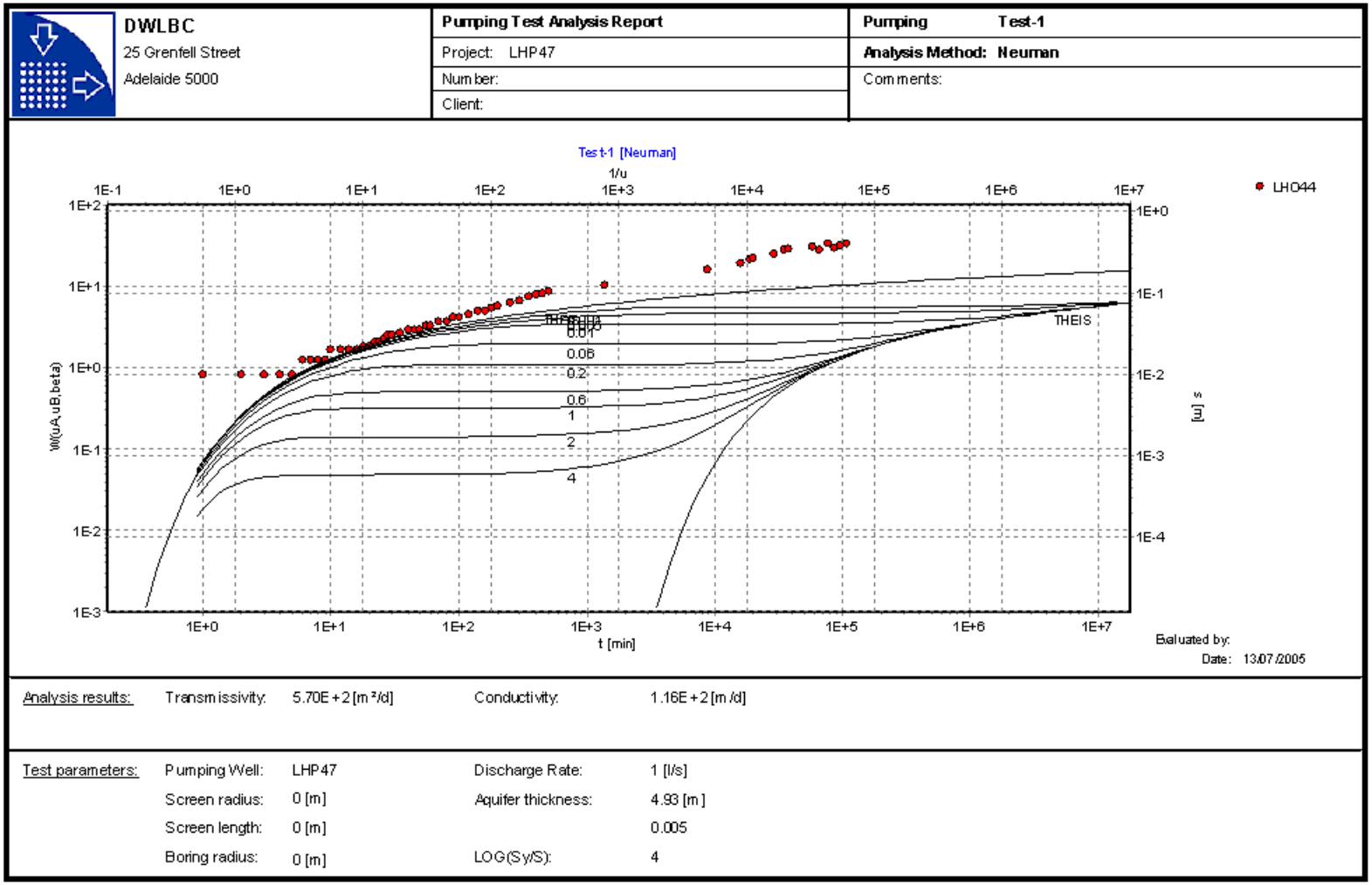


Figure 72 **LHP47 26/11/2004 constant rate discharge test, LHO44 Neuman analysis**

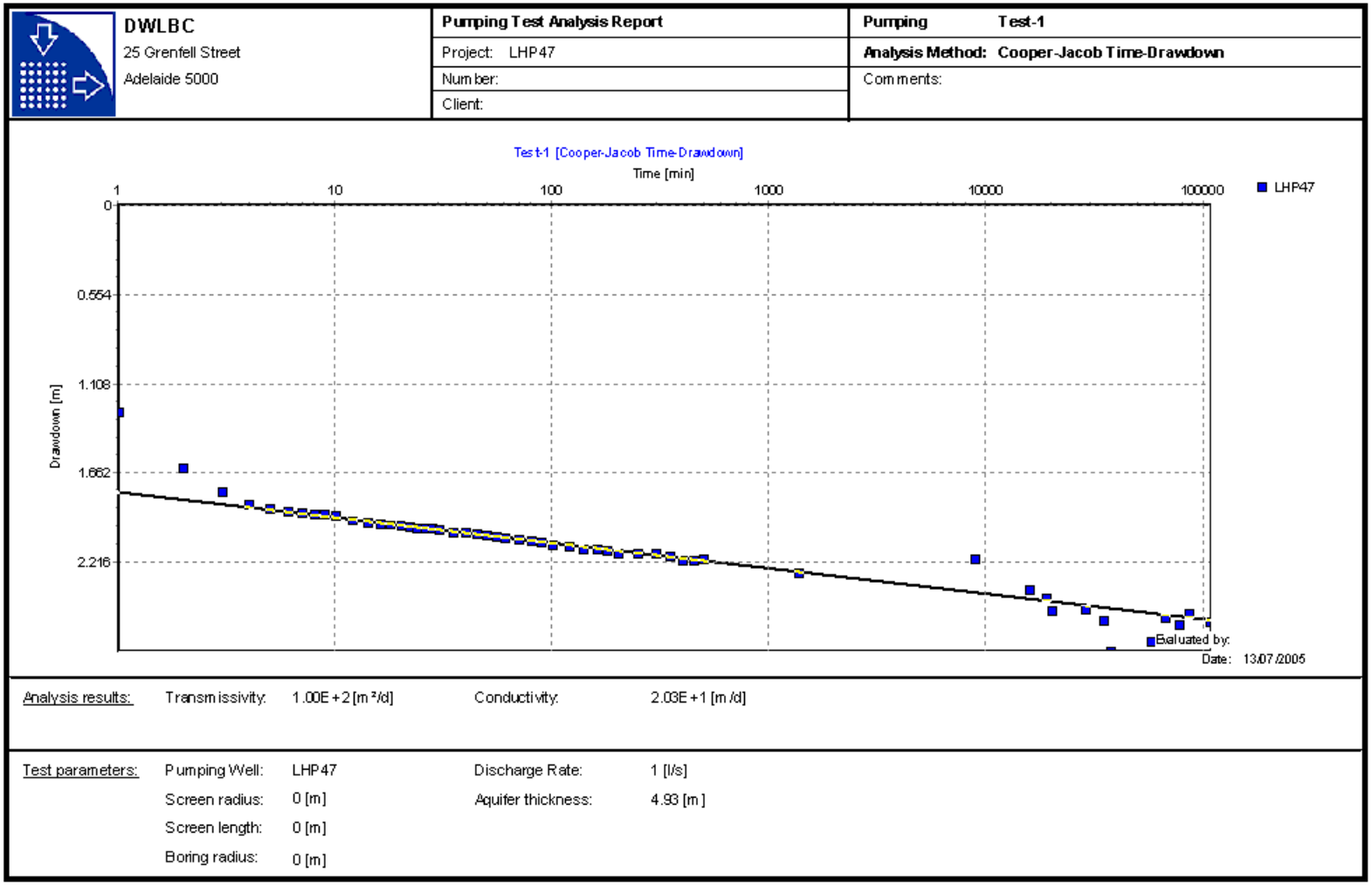


Figure 73 **LHP47 26/11/2004 constant rate discharge test, LHP47 Cooper-Jacob t vs s analysis**

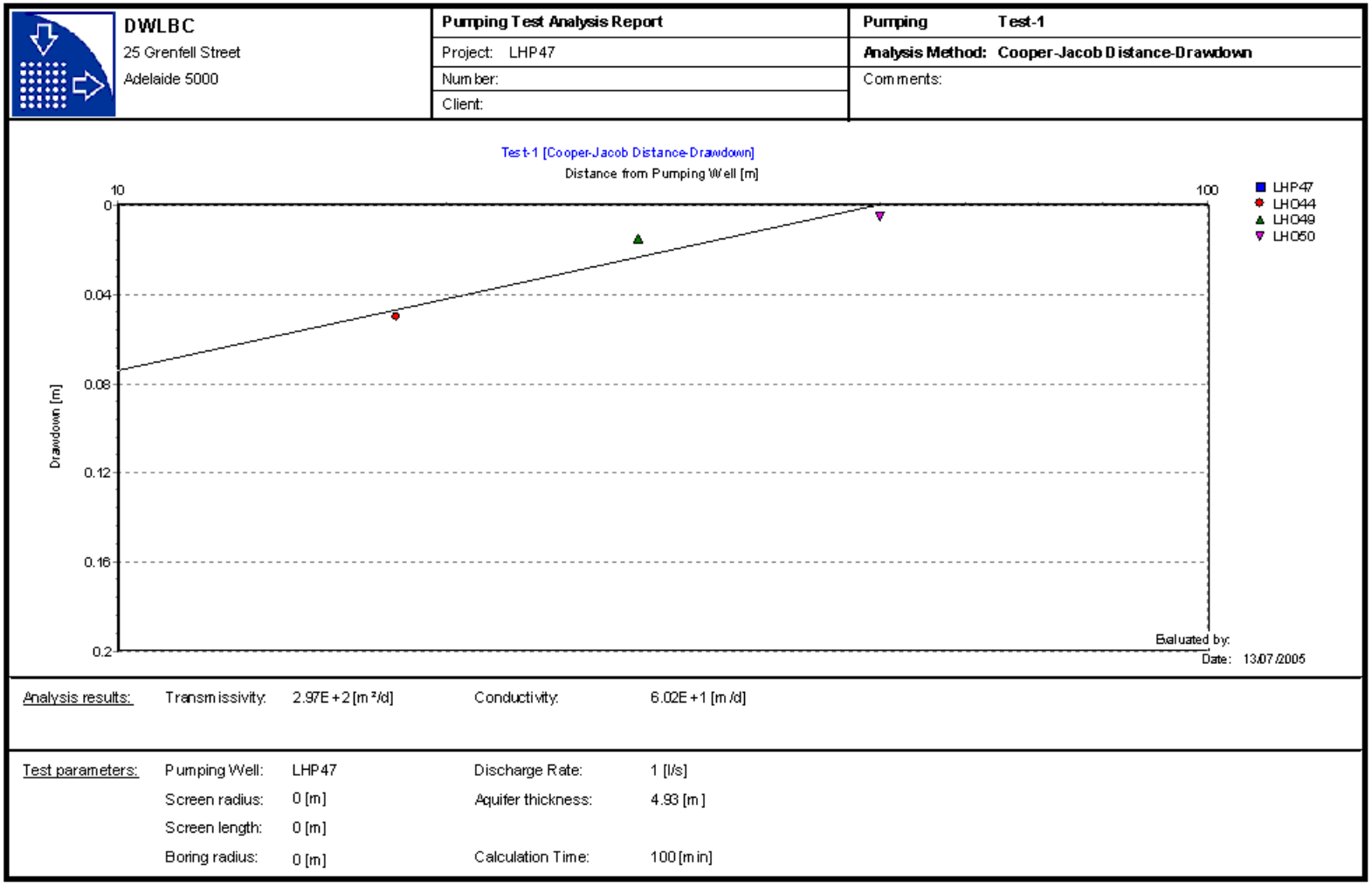


Figure 74 **LHP47 26/11/2004 constant rate discharge test, Cooper-Jacob r vs s analysis**

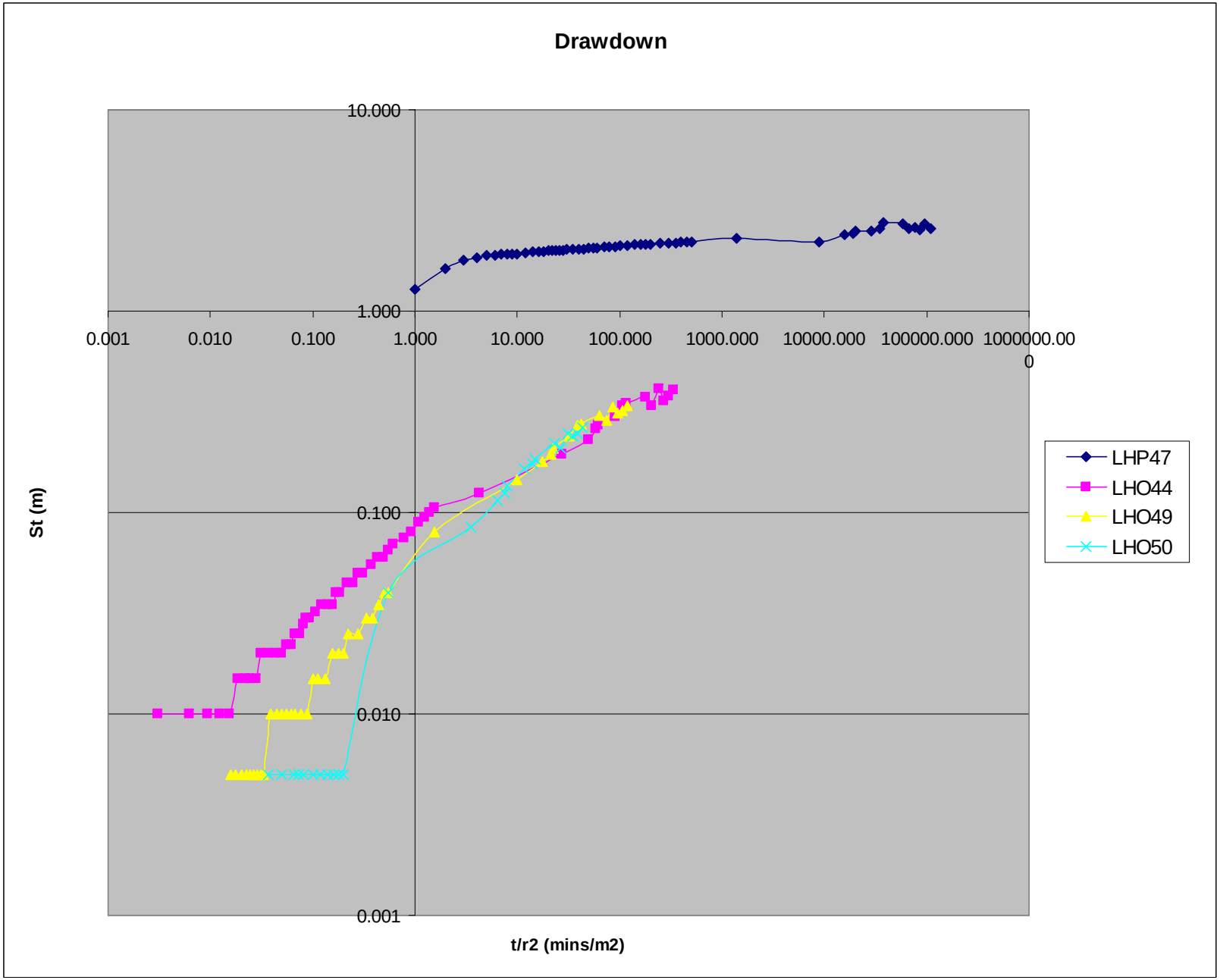


Figure 75 **LHP47 26/11//2004 constant rate discharge test, t/r^2 vs drawdown plot**

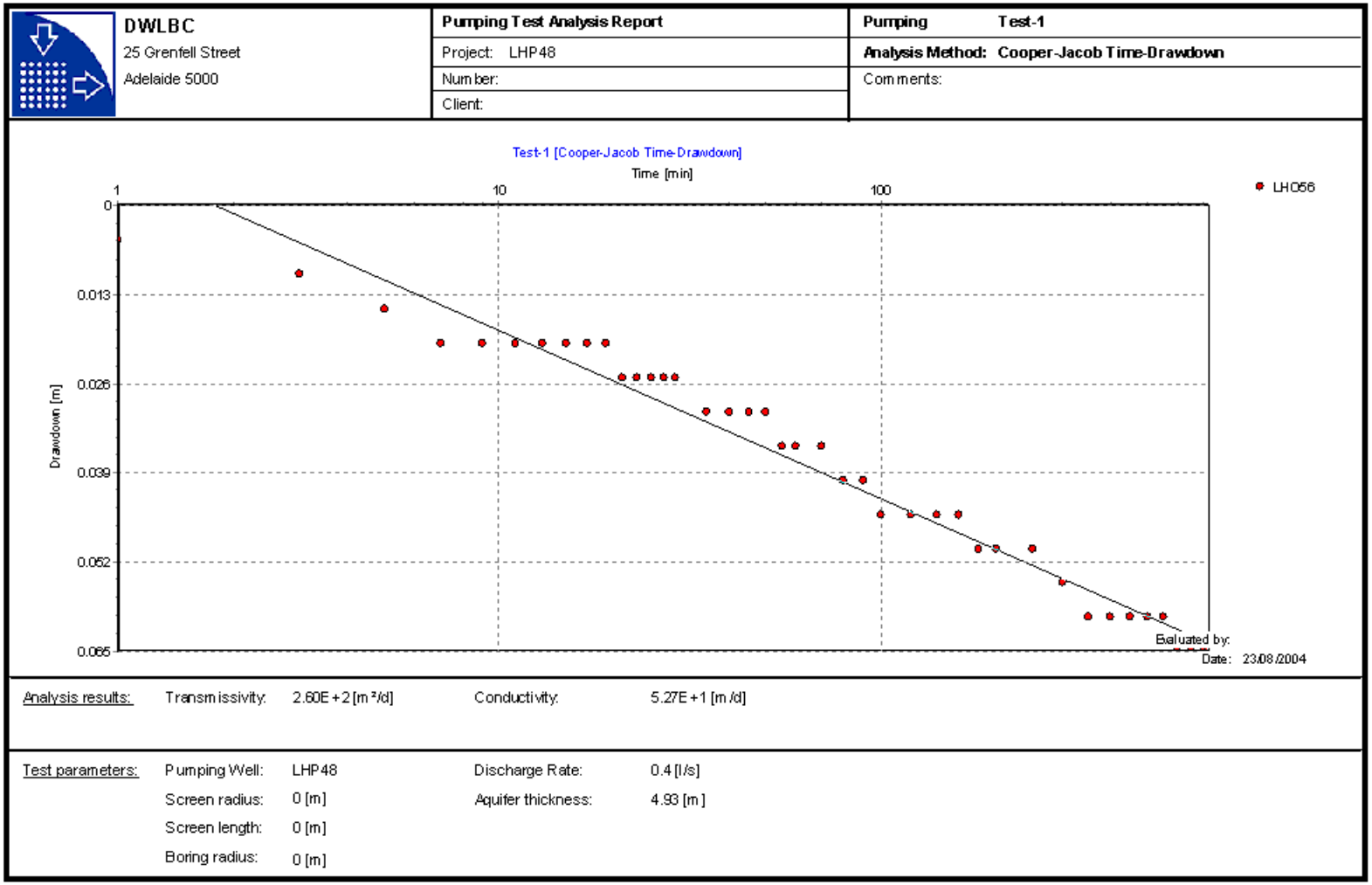


Figure 76 **LHP48 13/8/2004 constant rate discharge test, LHO56 Cooper-Jacob t vs s analysis**

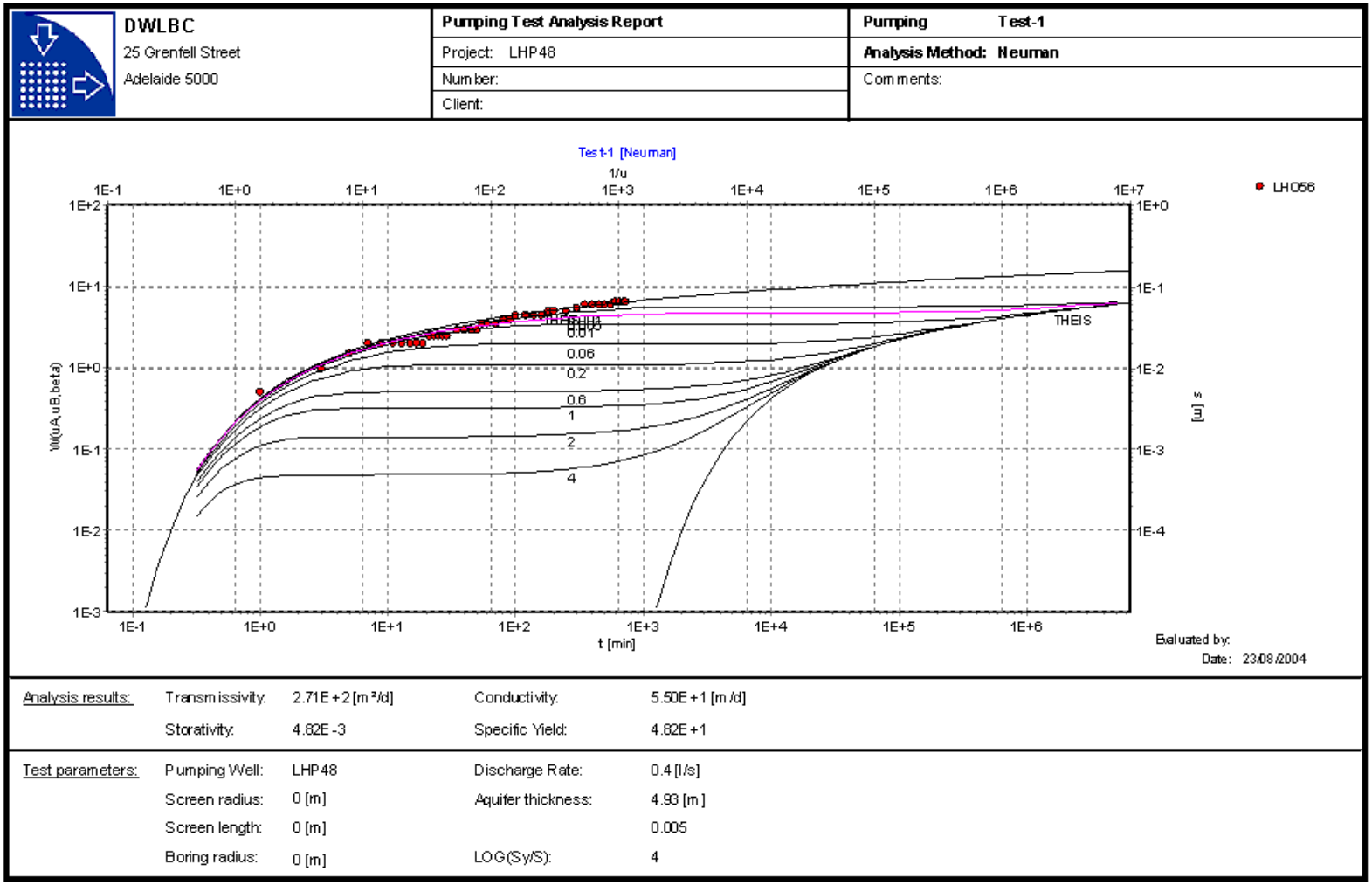


Figure 77 **LHP48 13/8/2004 constant rate discharge test, LHO56 Neuman analysis**

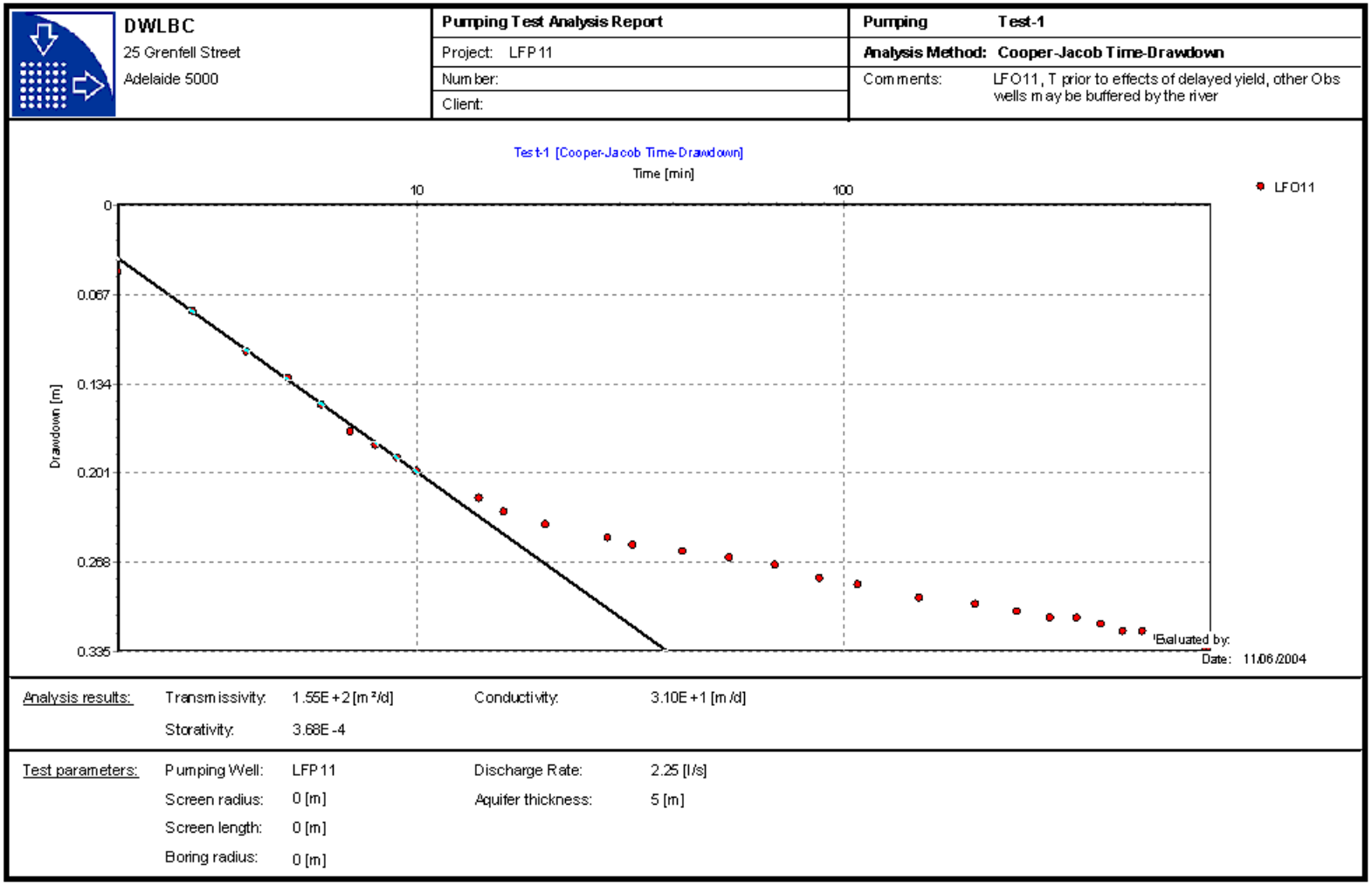


Figure 78 **LFP11 4/3/2004 constant rate discharge test, LFO11 Cooper-Jacob t vs s analysis**

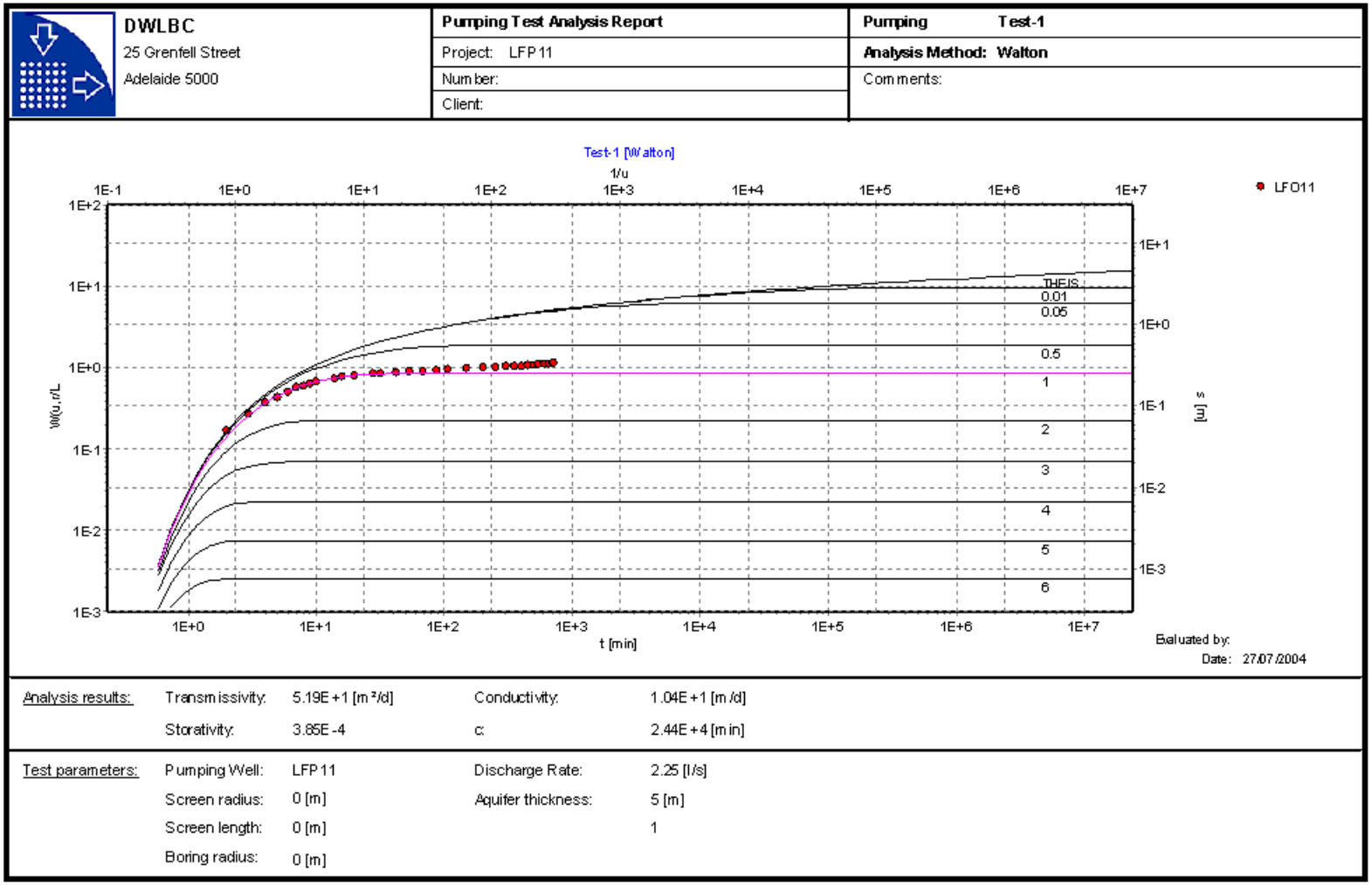


Figure 79 **LFP11 4/3/2004 constant rate discharge test, LFO11 Walton analysis**

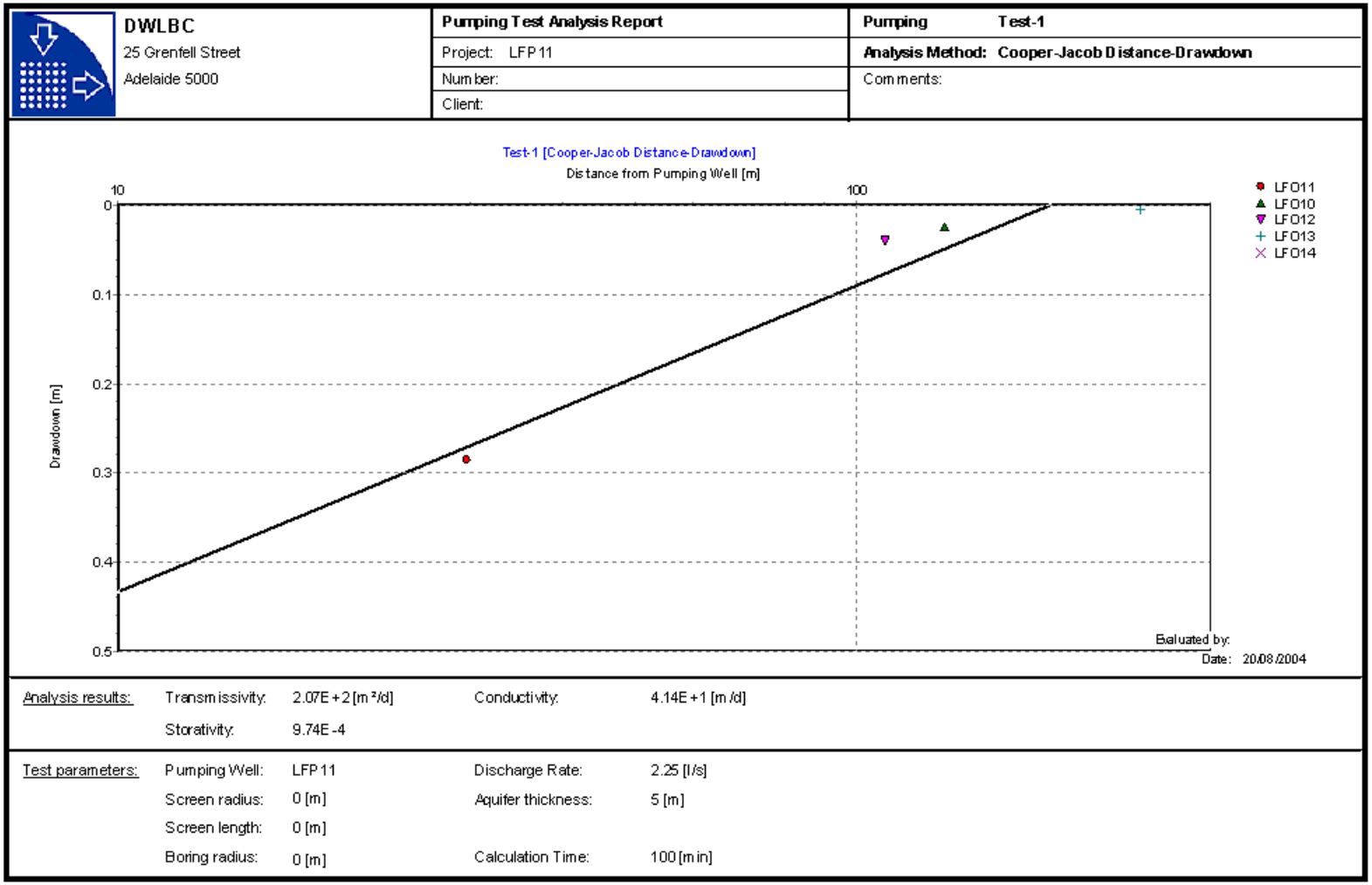


Figure 80 **LFP11 4/3/2004 constant rate discharge test Cooper-Jacob r vs s analysis**

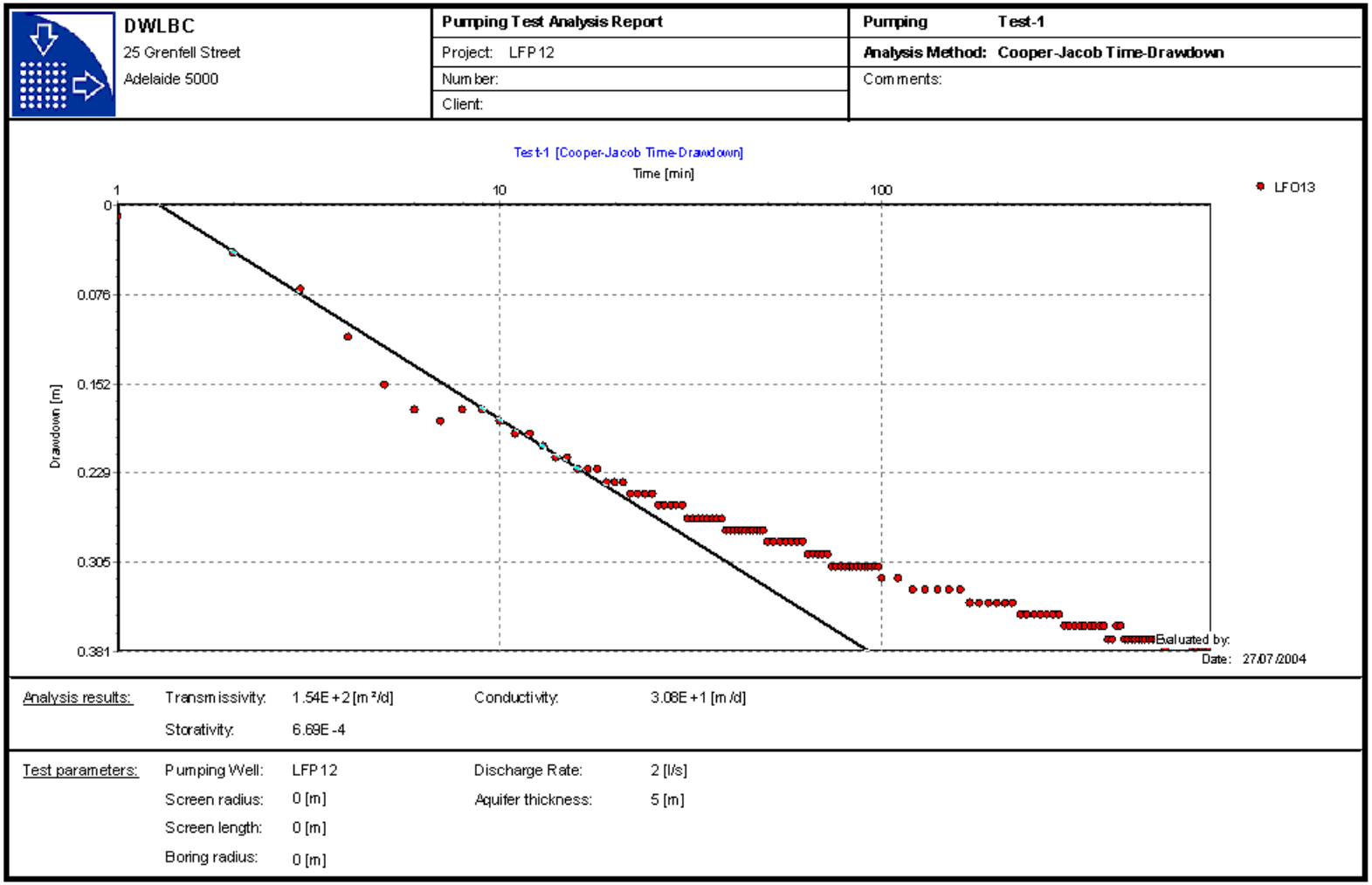


Figure 81 **LFP12 7/3/2004 constant rate discharge test, LFO13 Cooper-Jacob t vs s analysis**

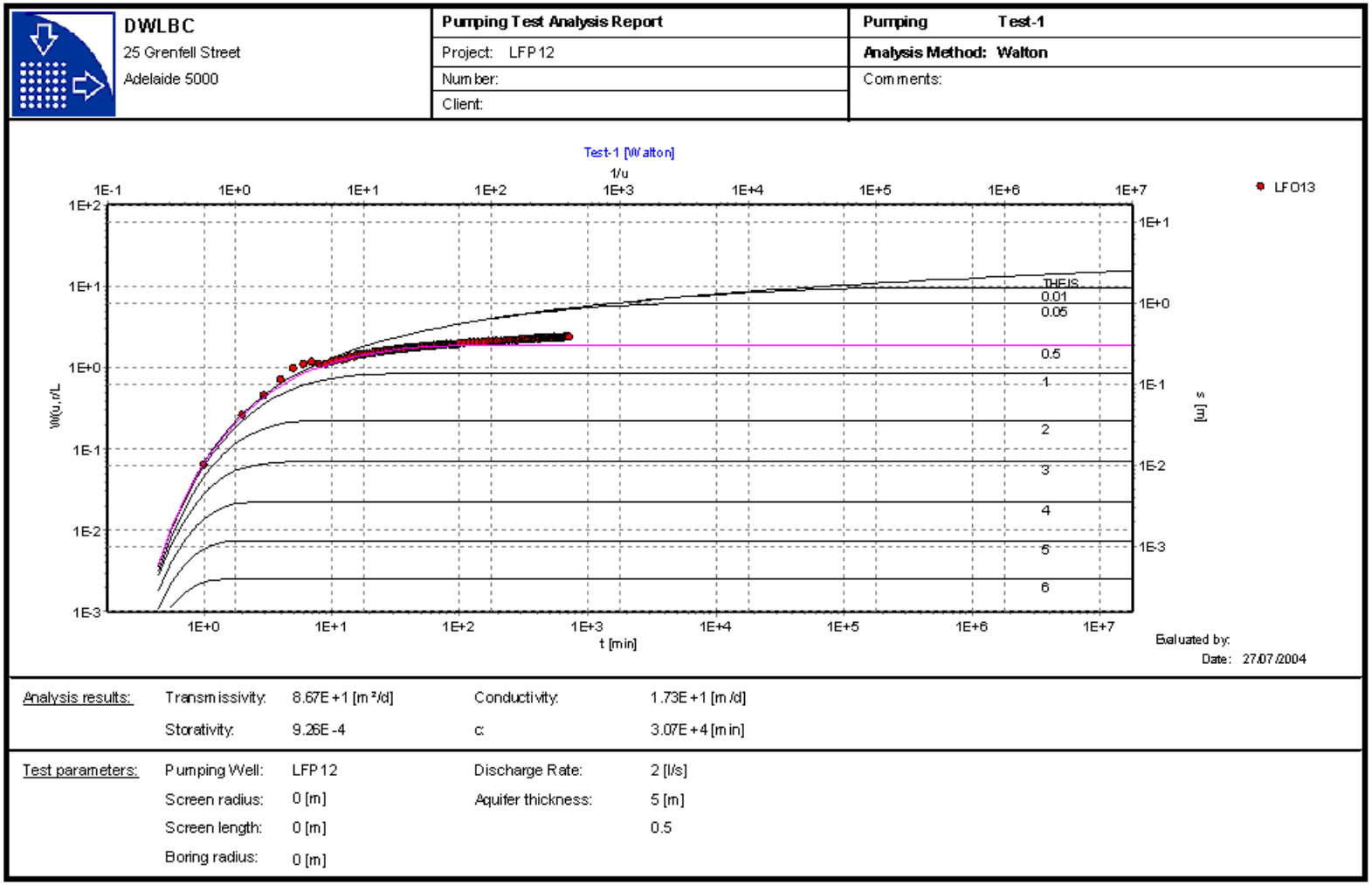


Figure 82 **LFP12 7/3/2004 constant rate discharge test, LFO13 Walton analysis**

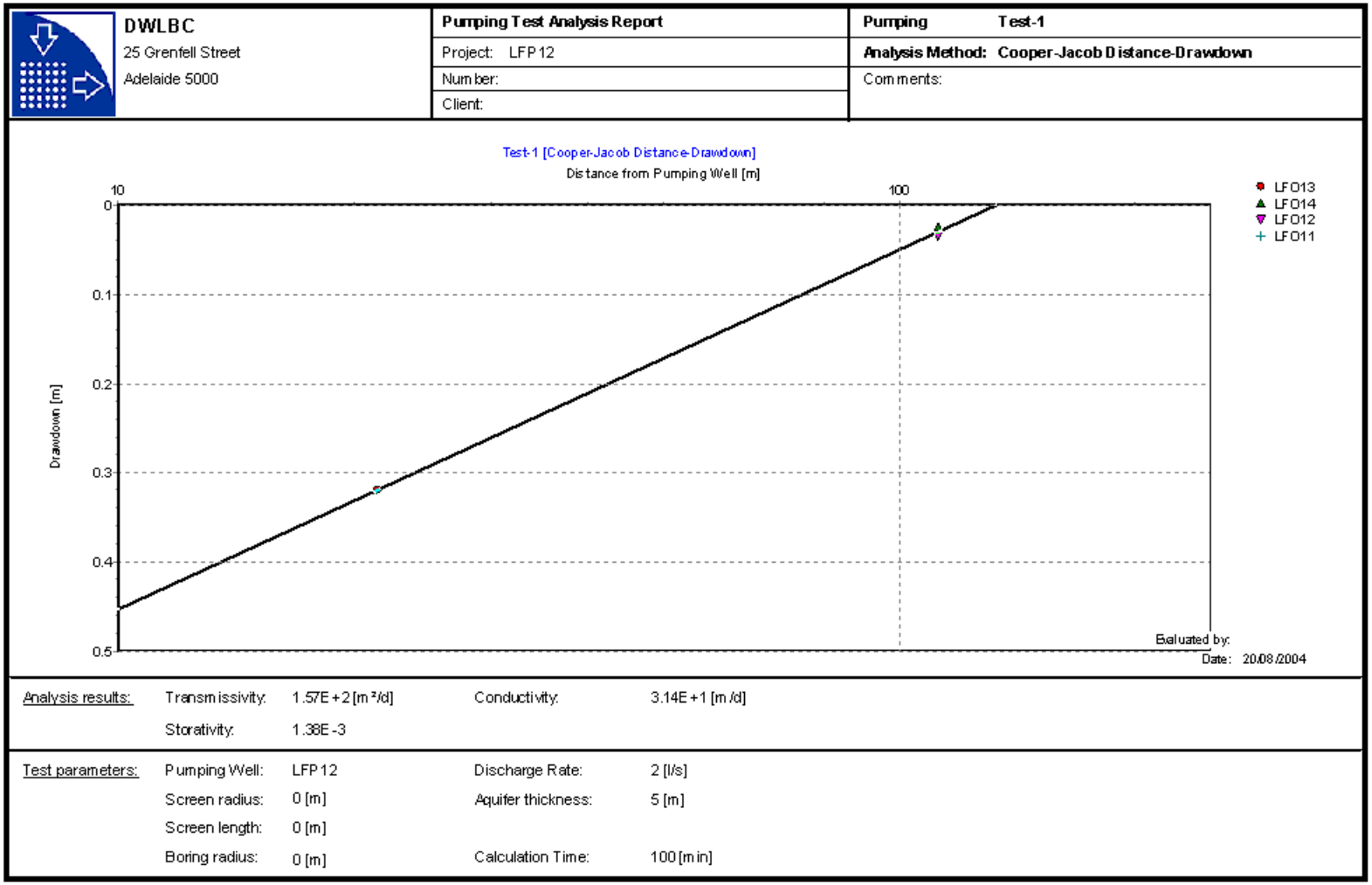


Figure 83 LFP12 7/3/2004 constant rate discharge test Cooper-Jacob r vs s analysis

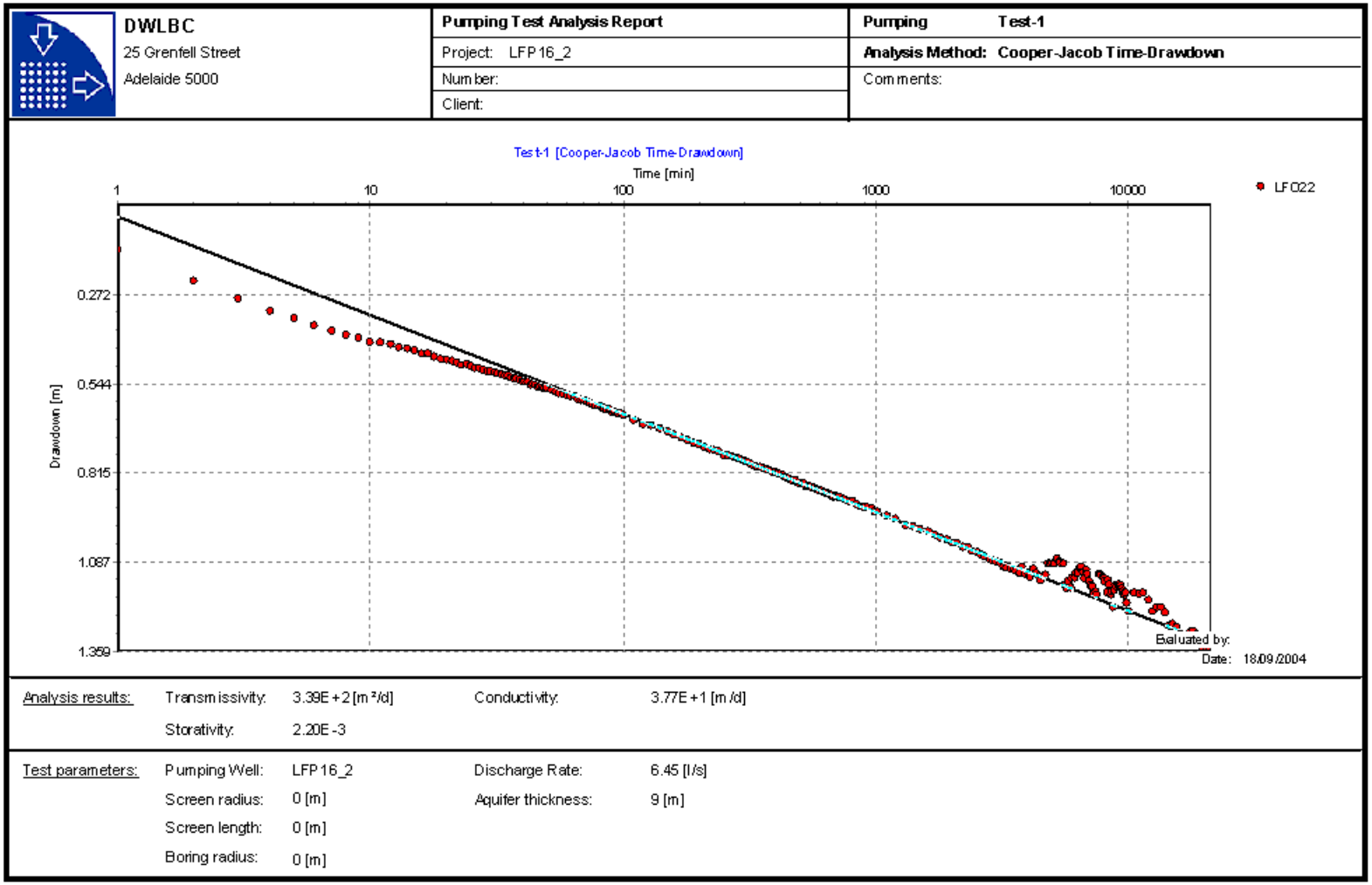


Figure 84 **LFP16_2 26/8/2004 constant rate discharge test, LFO22 Cooper-Jacob t vs s analysis**

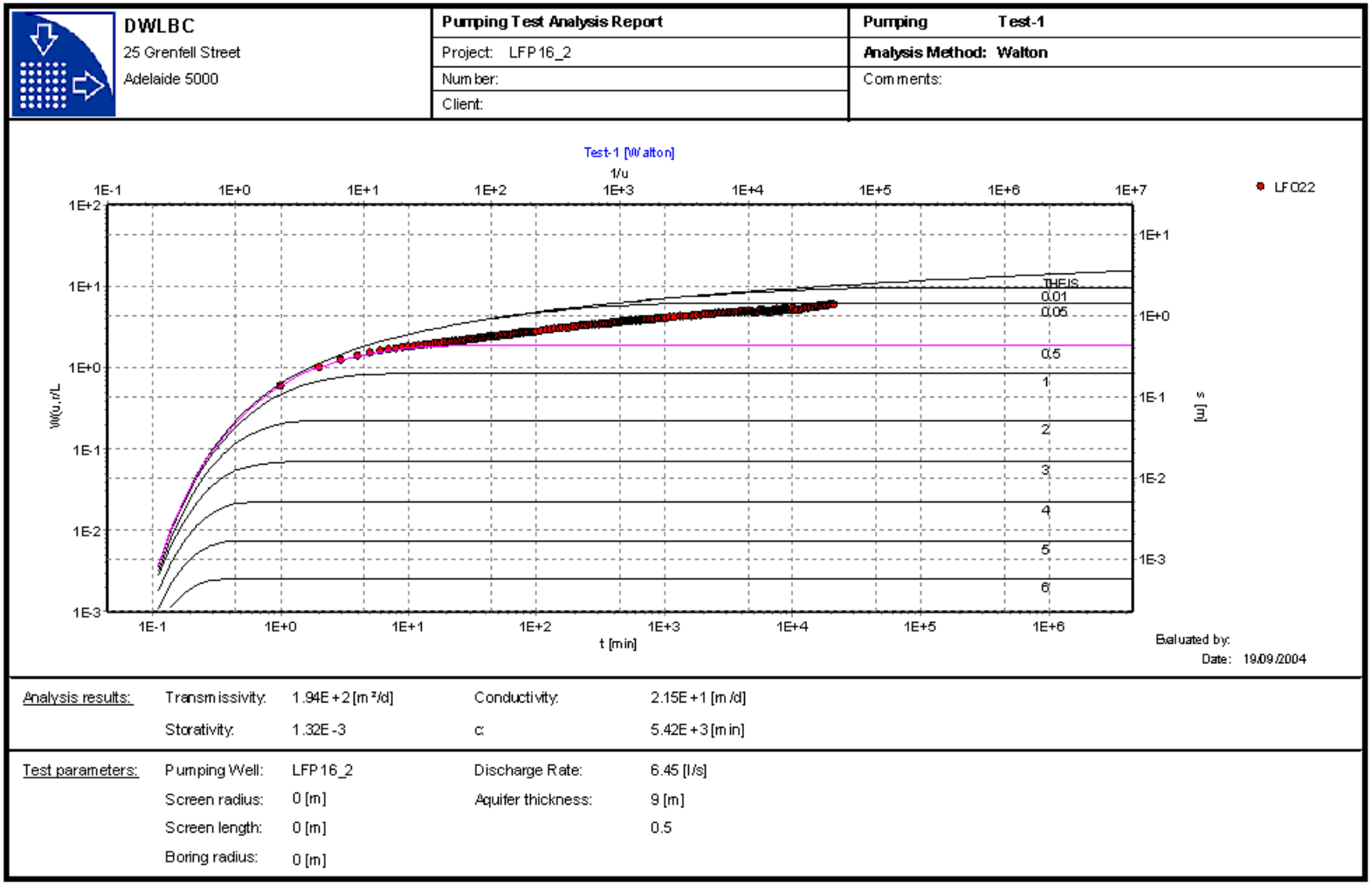


Figure 85 LFP16_2 26/8/2004 constant rate discharge test, LFO22 Walton analysis

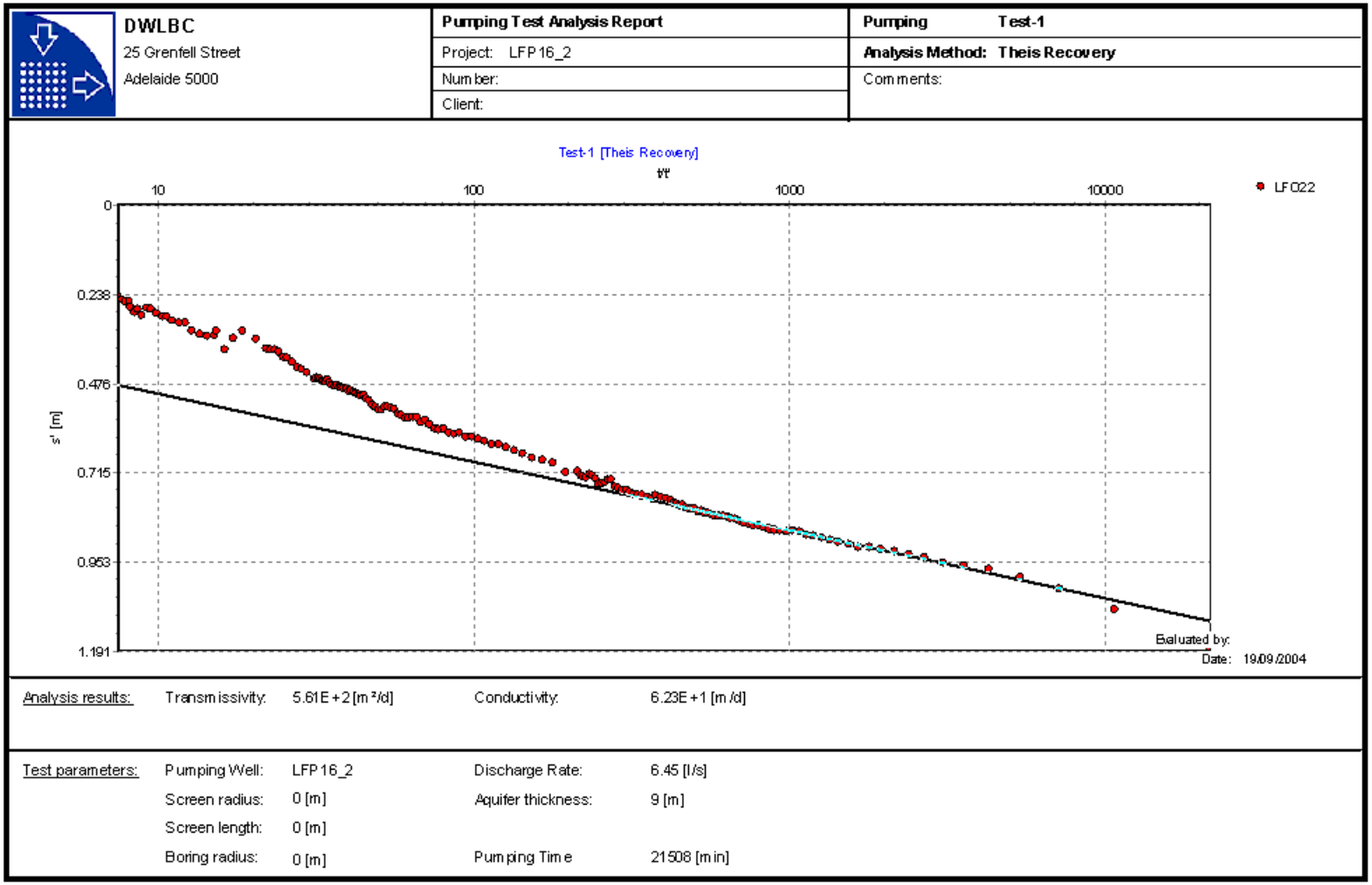


Figure 86 LFP16_2 26/8/2004 constant rate discharge test, LFO22 Theis recovery analysis

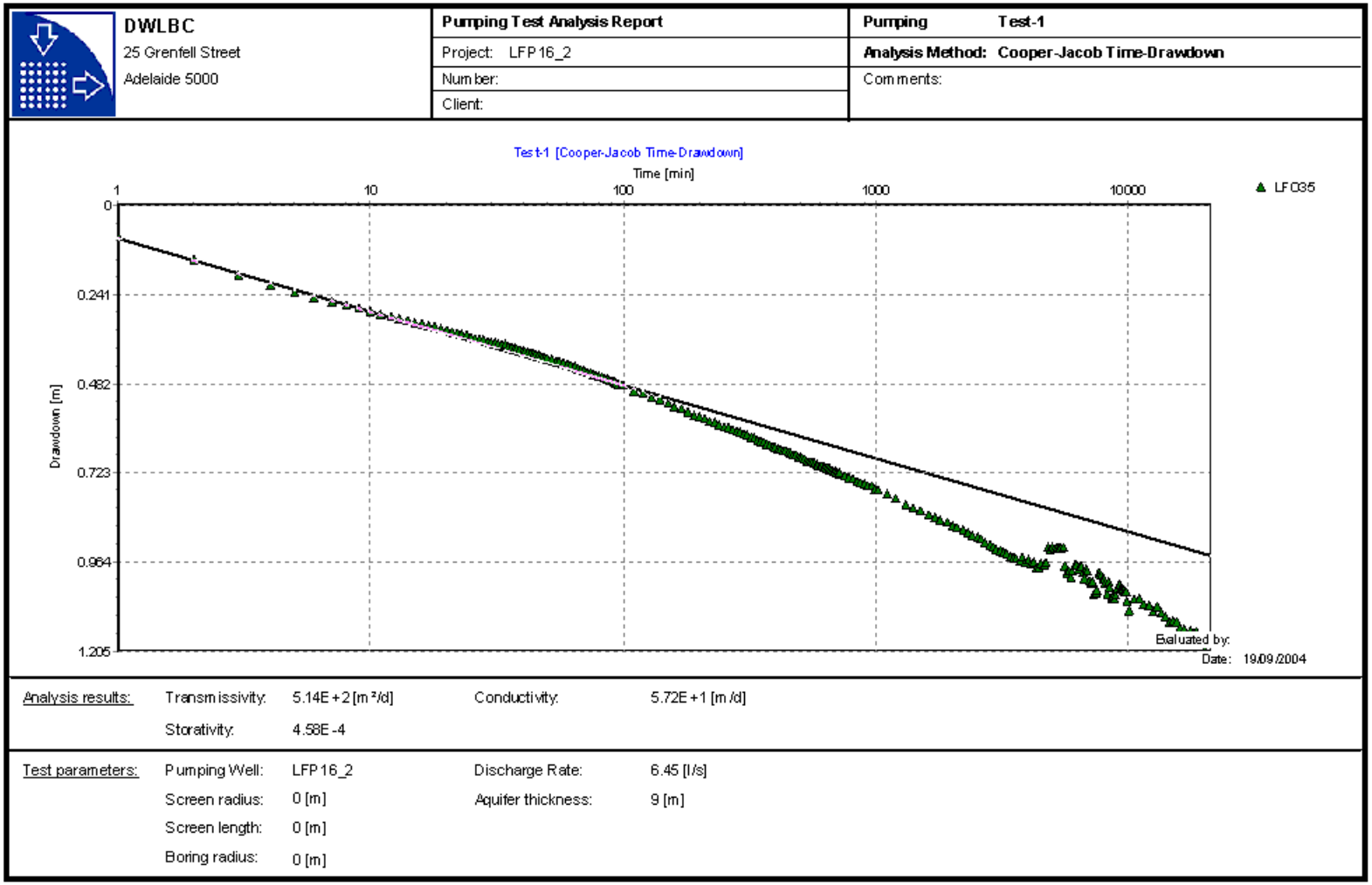


Figure 87 **LFP16_2 26/8/2004 constant rate discharge test, LFO35 Cooper-Jacob t vs s analysis**

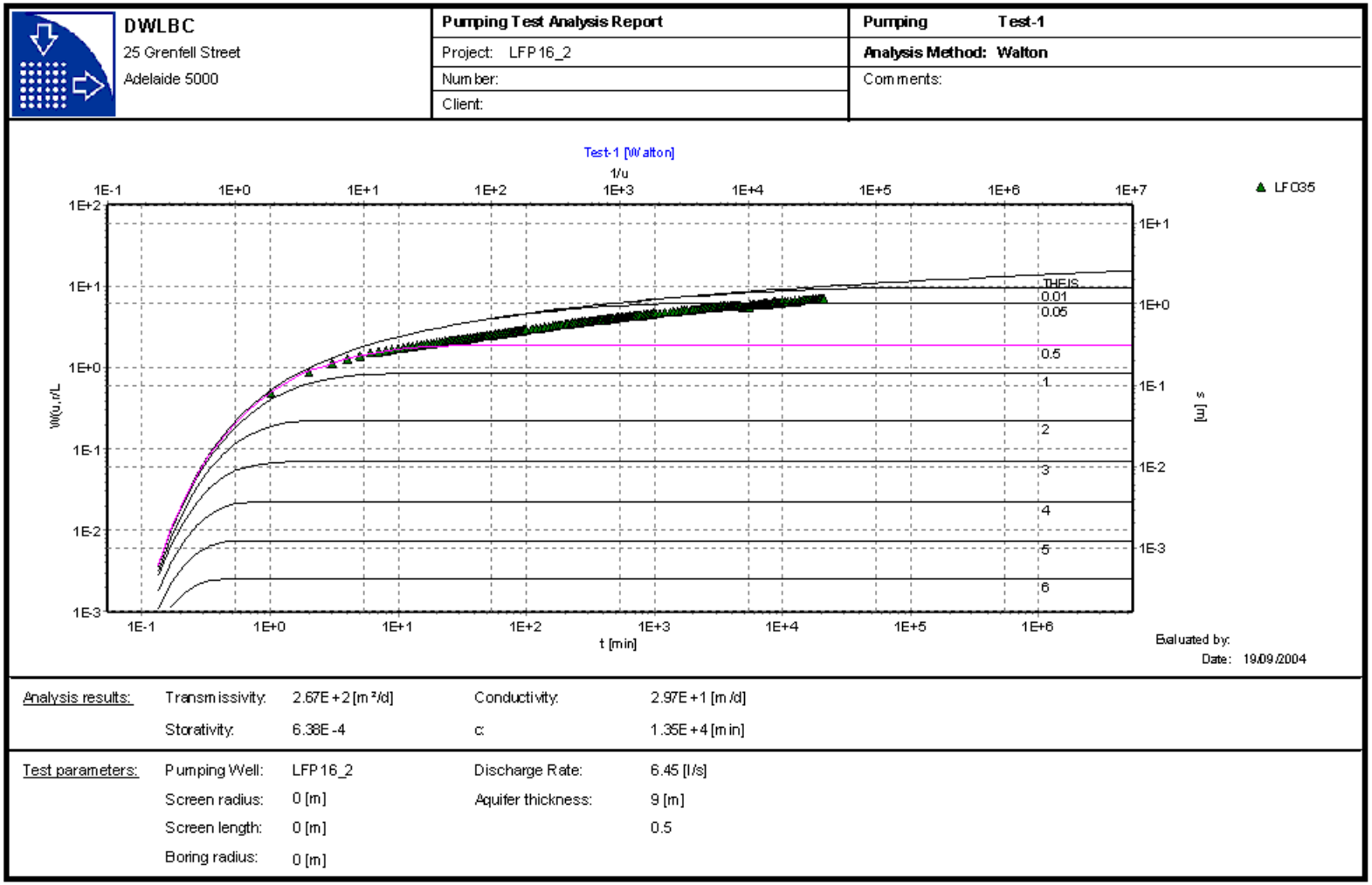


Figure 88 LFP16_2 26/8/2004 constant rate discharge test, LFO35 Walton analysis

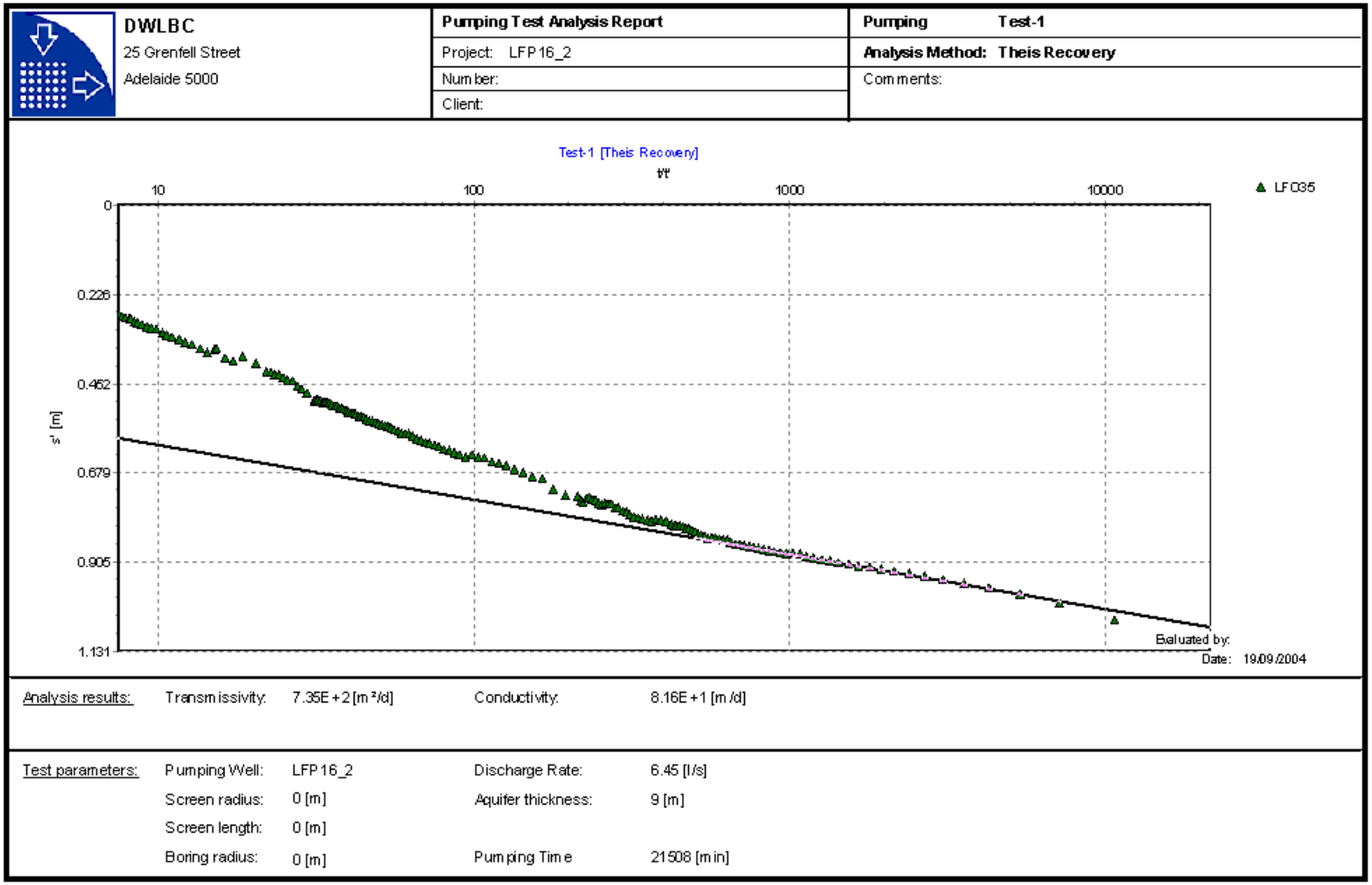


Figure 89 **LFP16_2 26/8/2004 constant rate discharge test, LFO35 Theis recovery analysis**

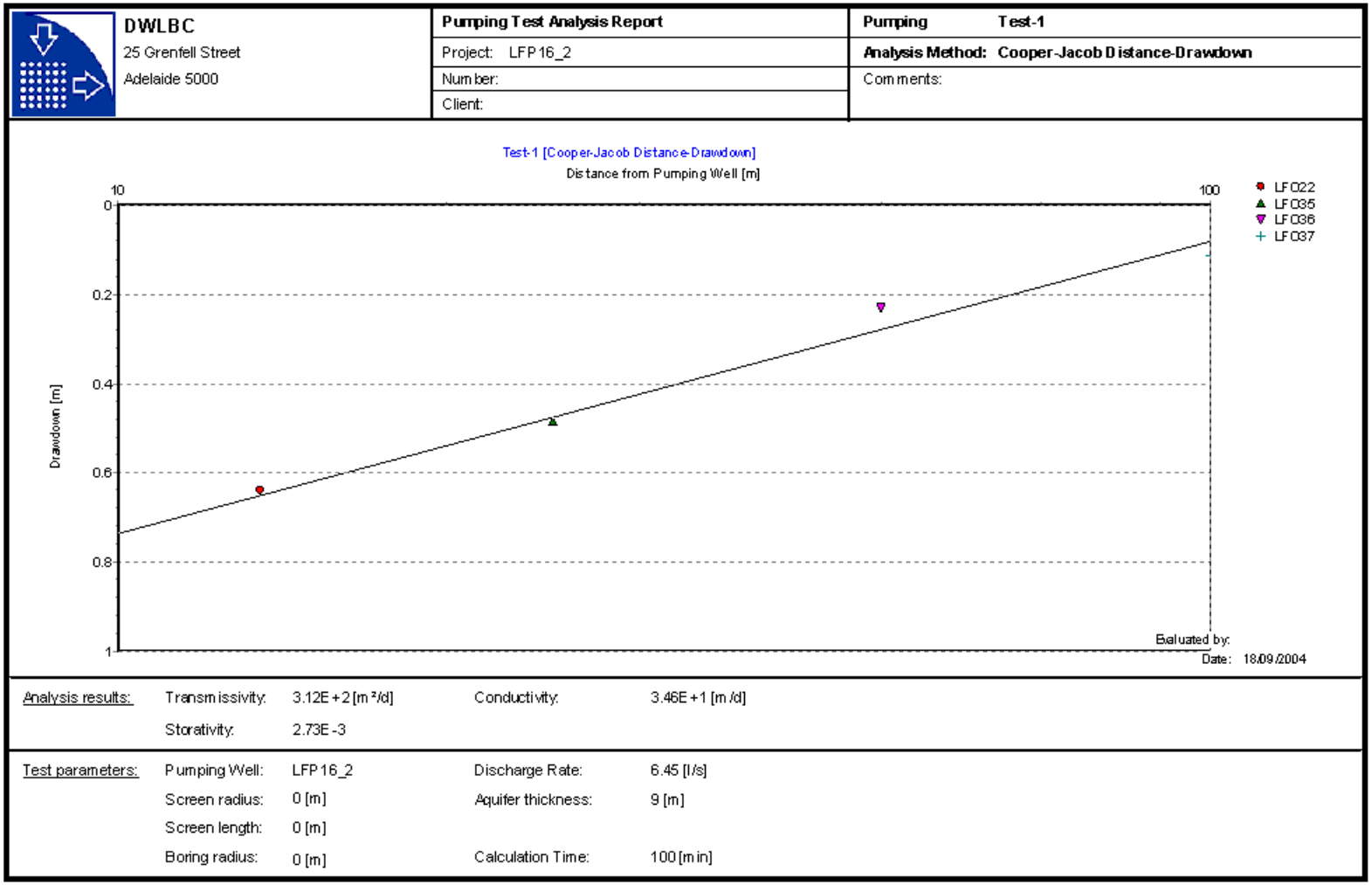


Figure 90 **LFP16_2 26/8/2004 constant rate discharge test, Cooper-Jacob r vs s analysis**

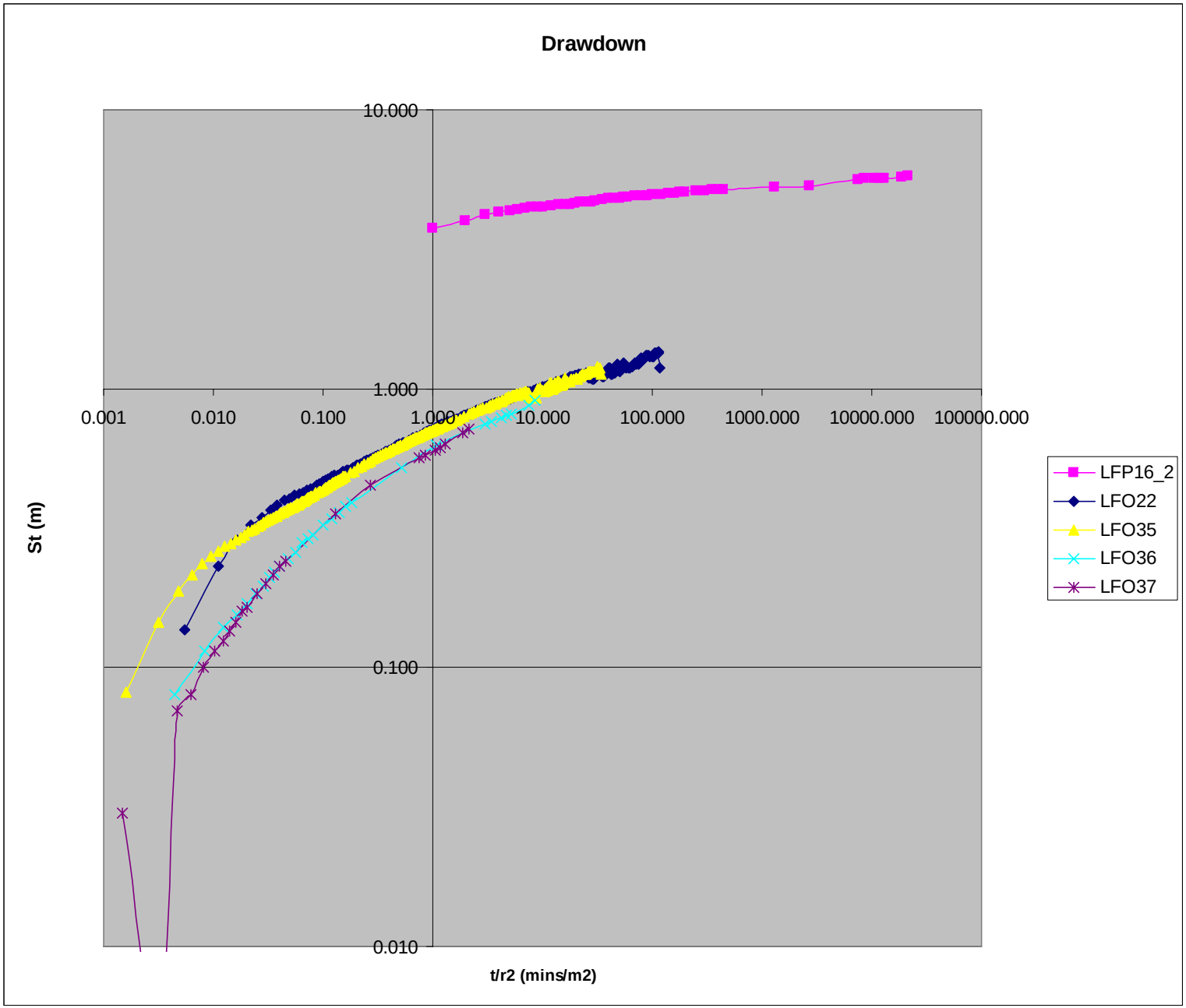


Figure 91 **LFP16_2 26/8/2004 constant rate discharge test, t/r^2 vs drawdown plot**

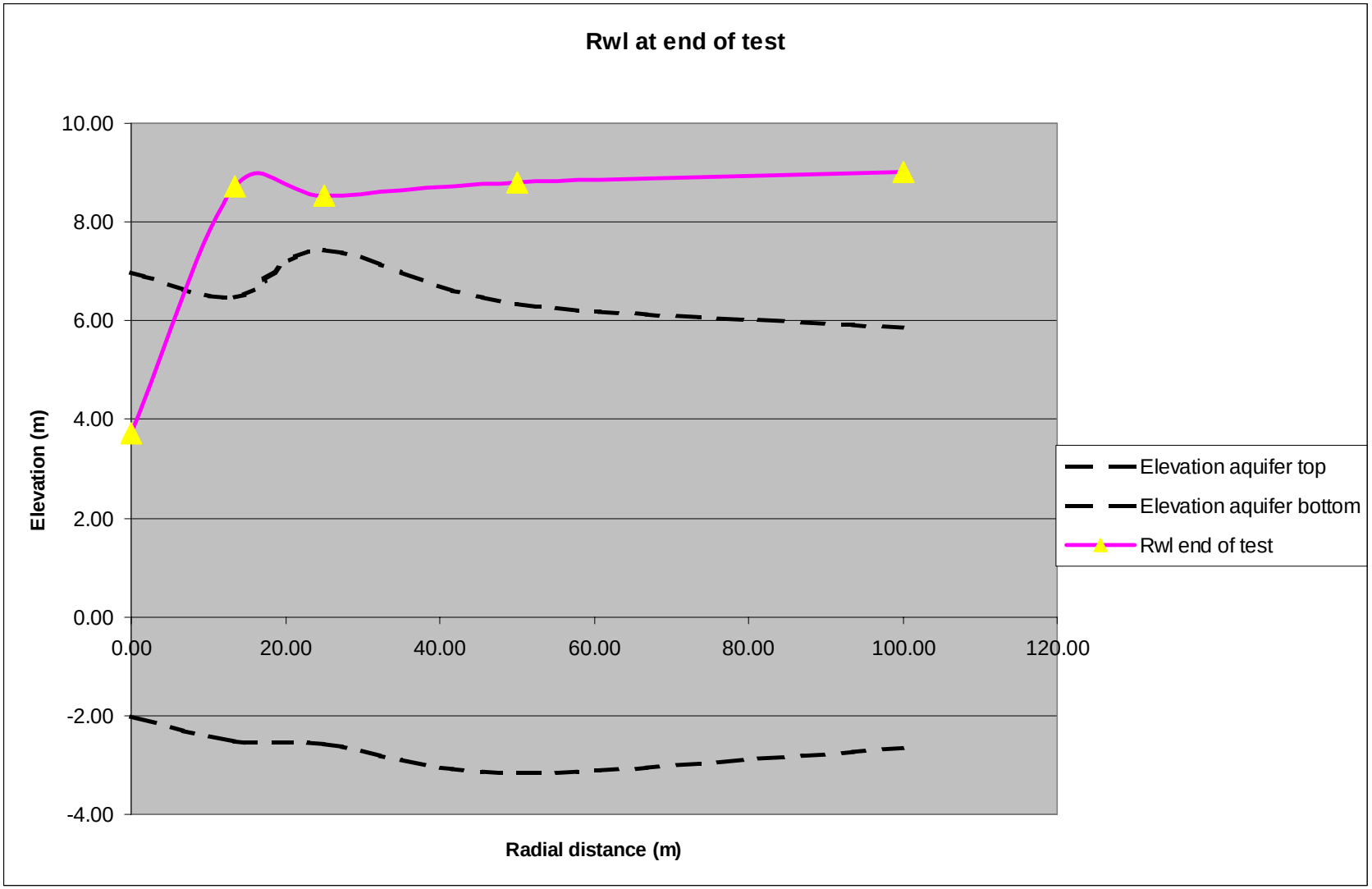


Figure 92 **LFP16_2 26/8/2004 reduced water levels at end of test**

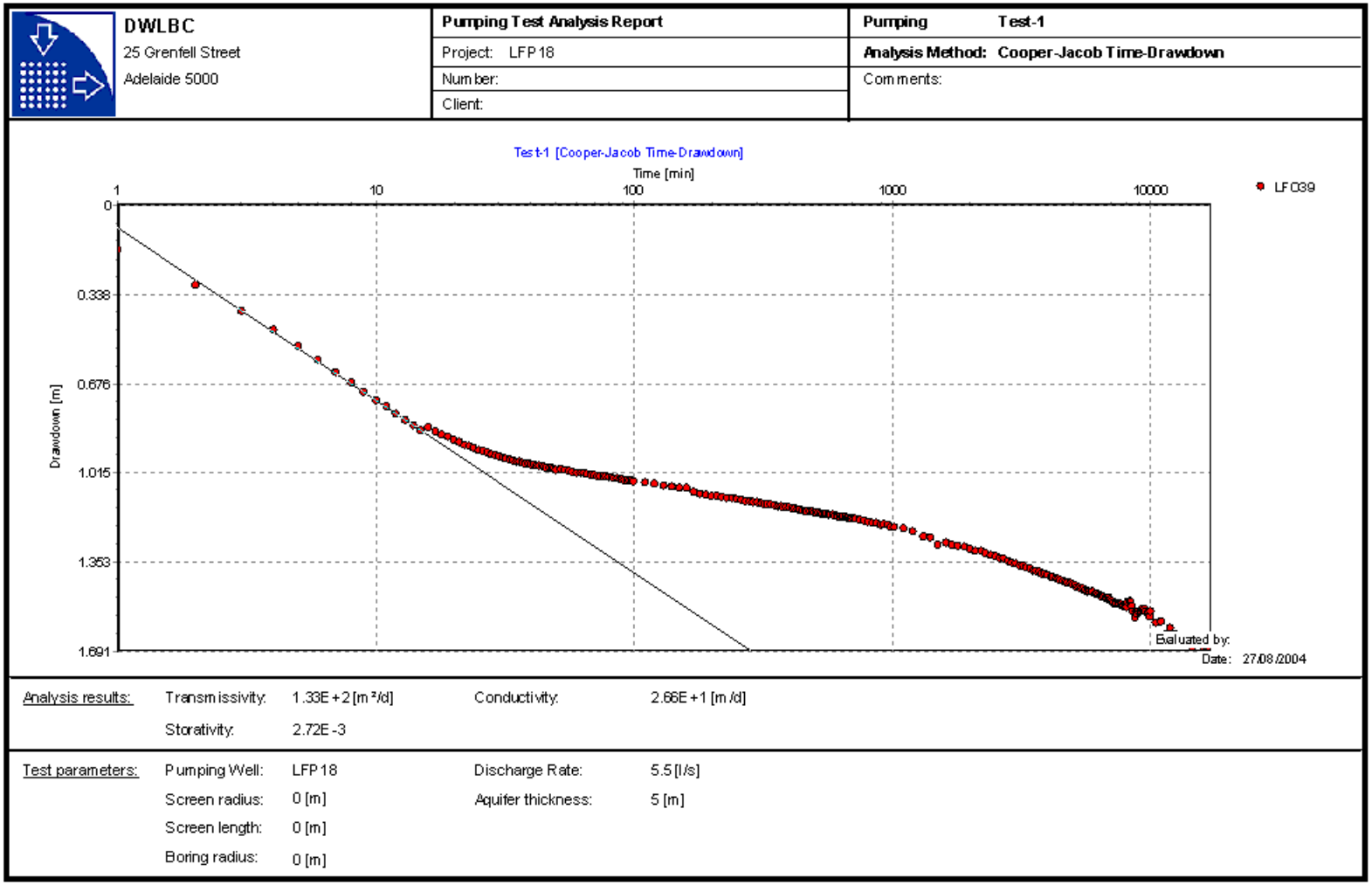


Figure 93 LFP18 8/8/2004 constant rate discharge test, LFO39 Cooper-Jacob t vs s analysis

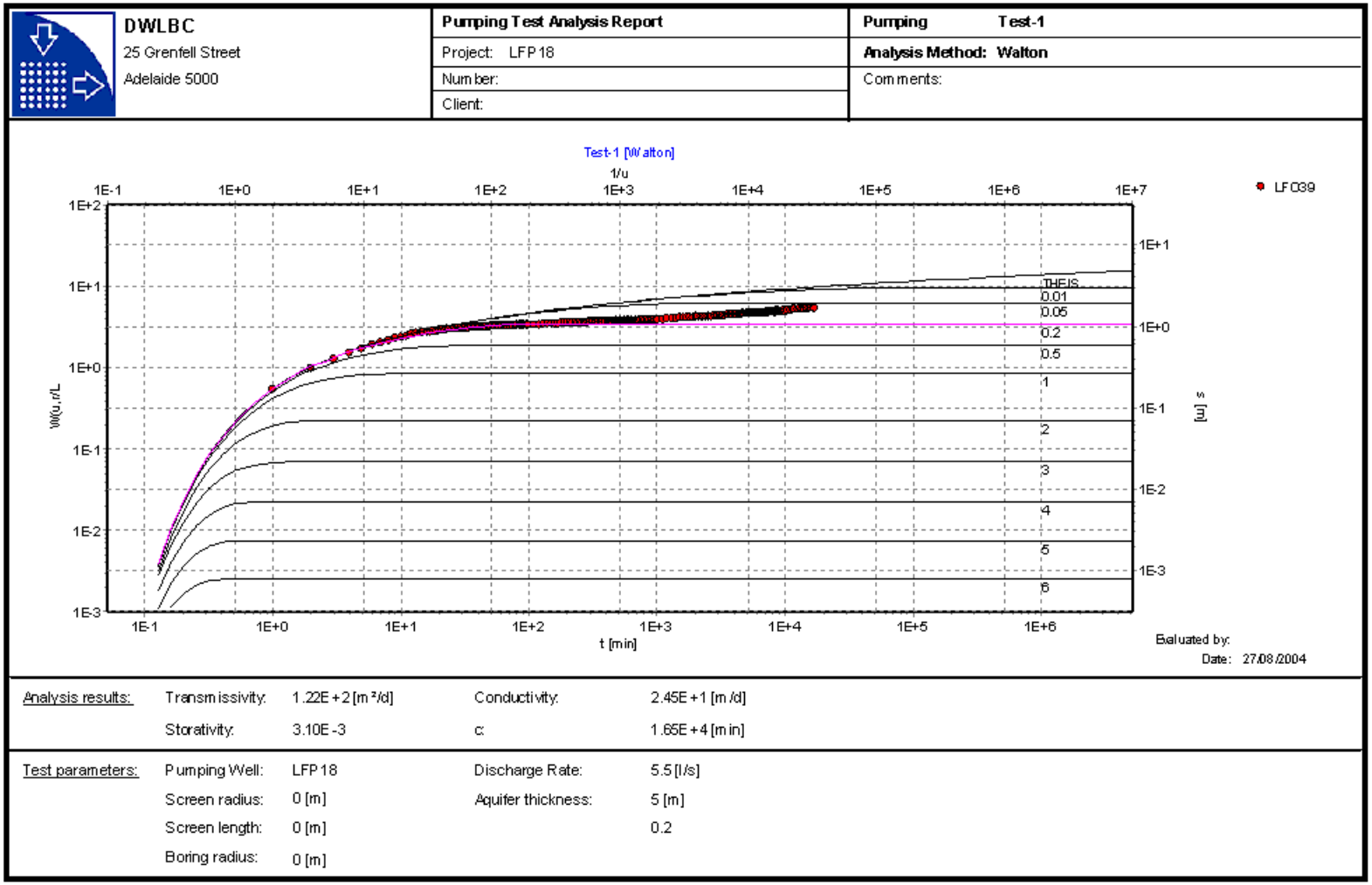


Figure 94 LFP18 8/8/2004 constant rate discharge test, LFO39 Walton analysis

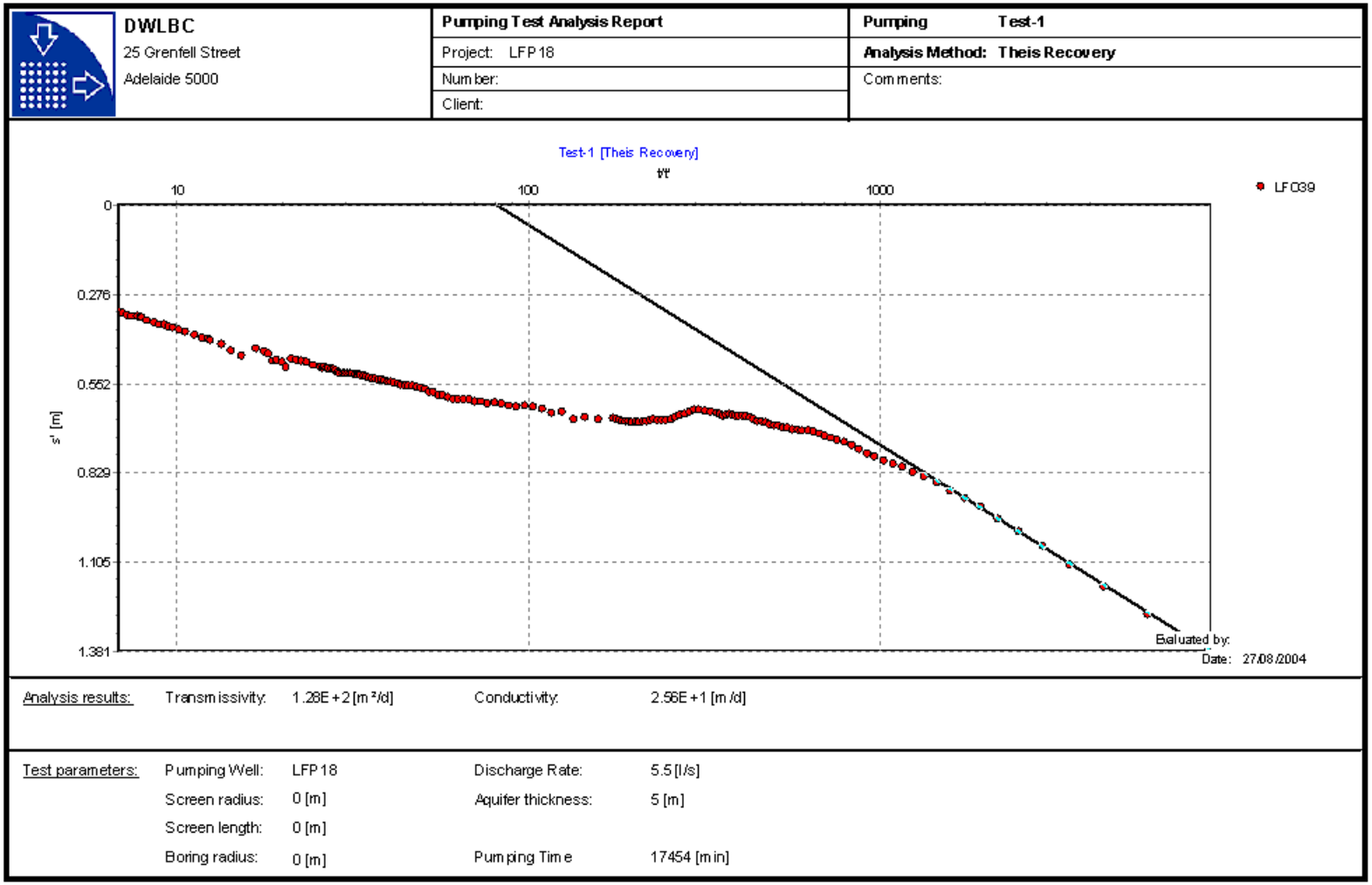


Figure 95 **LFP18 8/8/2004 constant rate discharge test, LFO39 Theis recovery analysis**

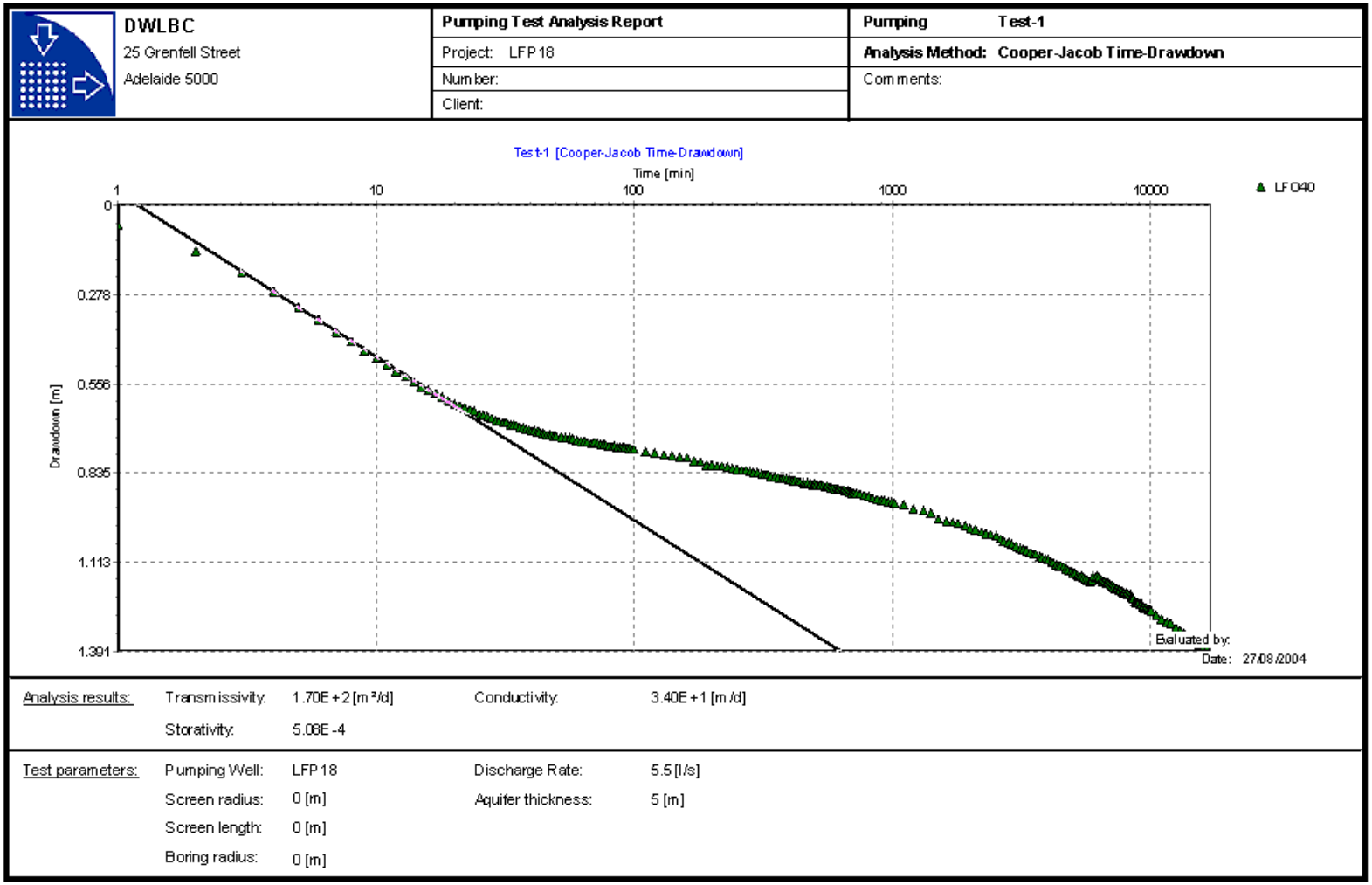


Figure 96 **LFP18 8/8/2004 constant rate discharge test, LFO40 Cooper-Jacob t vs s analysis**

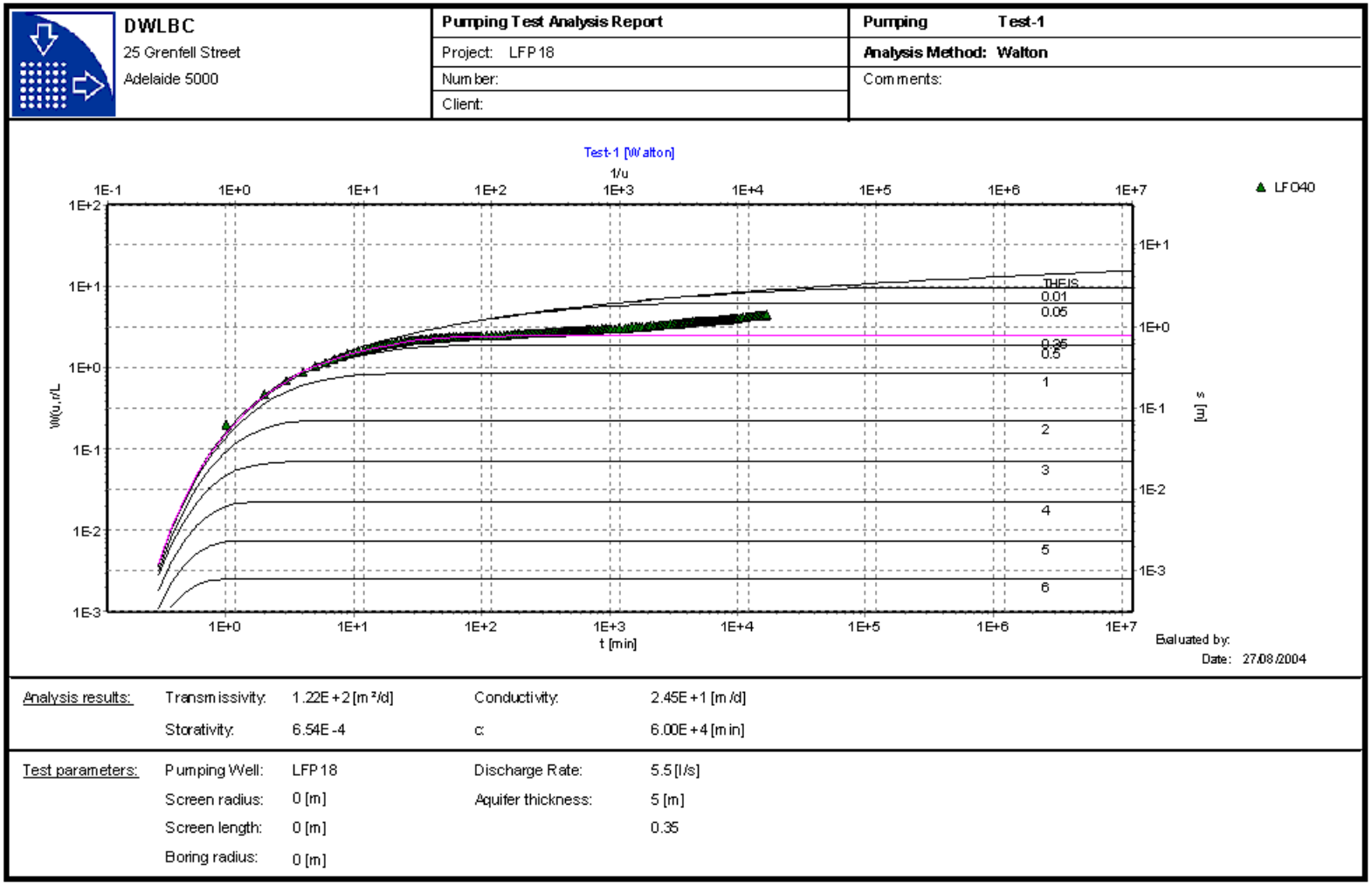


Figure 97 **LFP18 8/8/2004 constant rate discharge test, LFO40 Walton analysis**

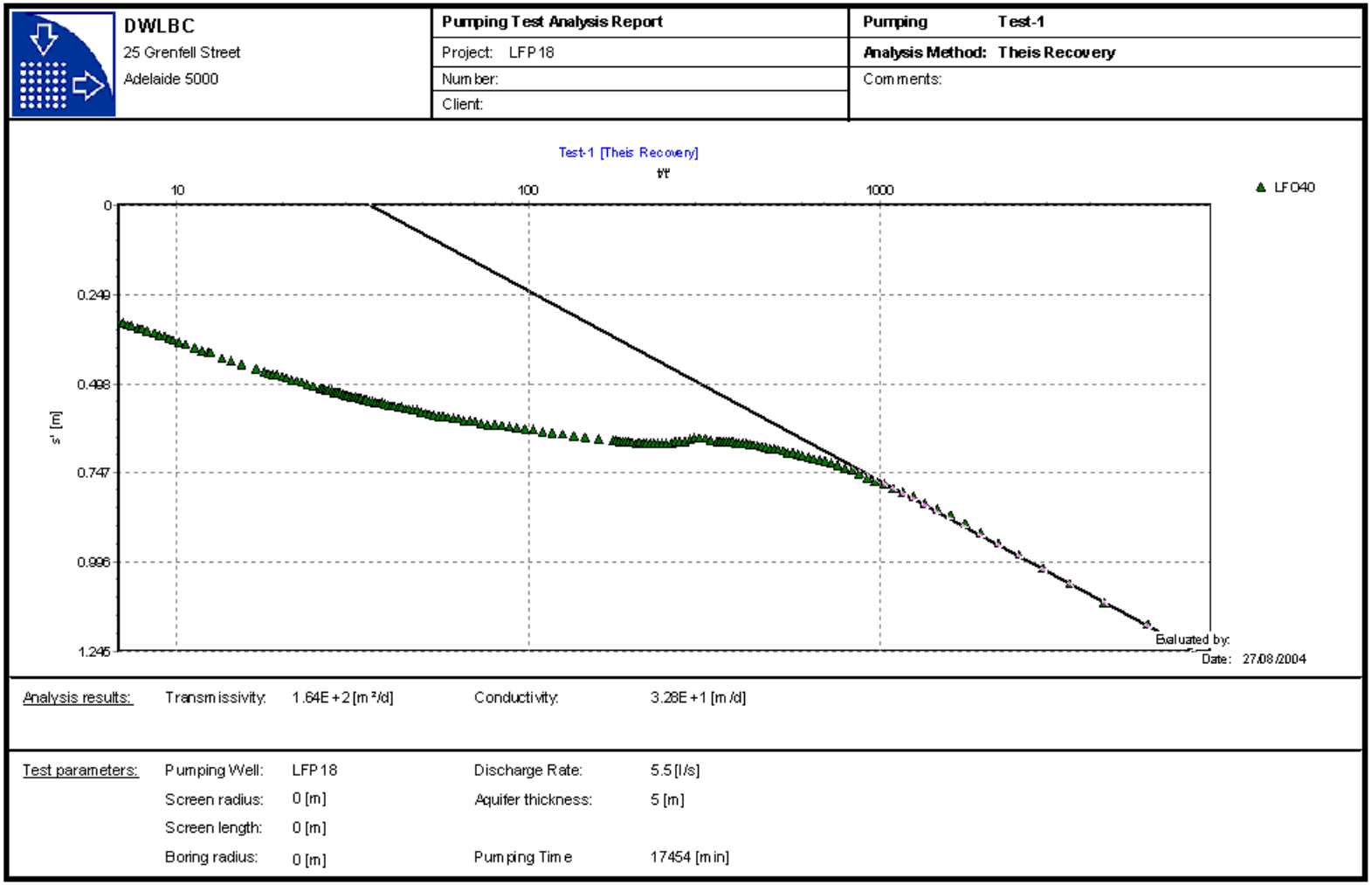


Figure 98 **LFP18 8/8/2004 constant rate discharge test, LFO40 Theis recovery analysis**

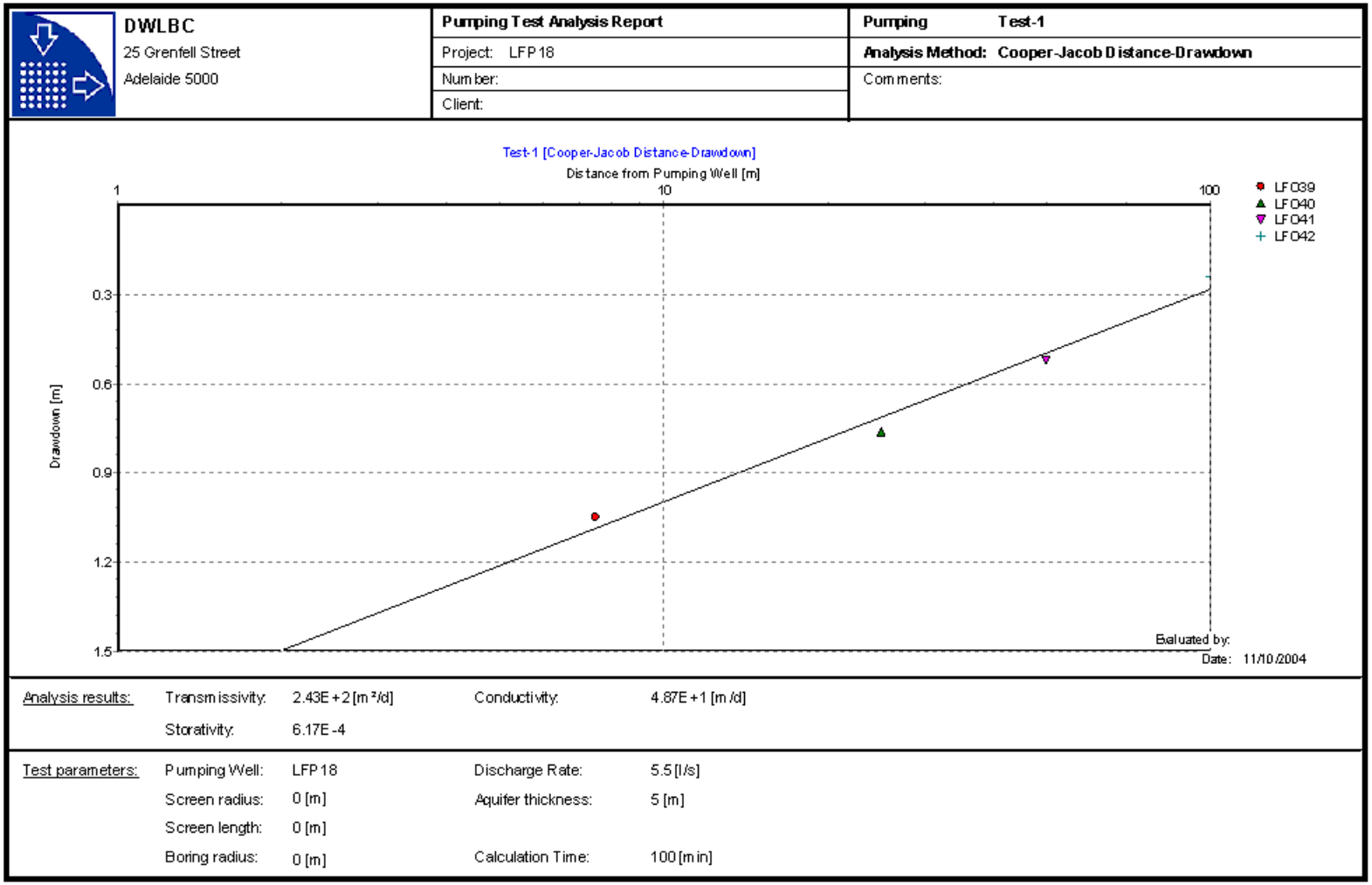


Figure 99 **LFP18 8/8/2004 constant rate discharge test, Cooper-Jacob r vs s analysis**

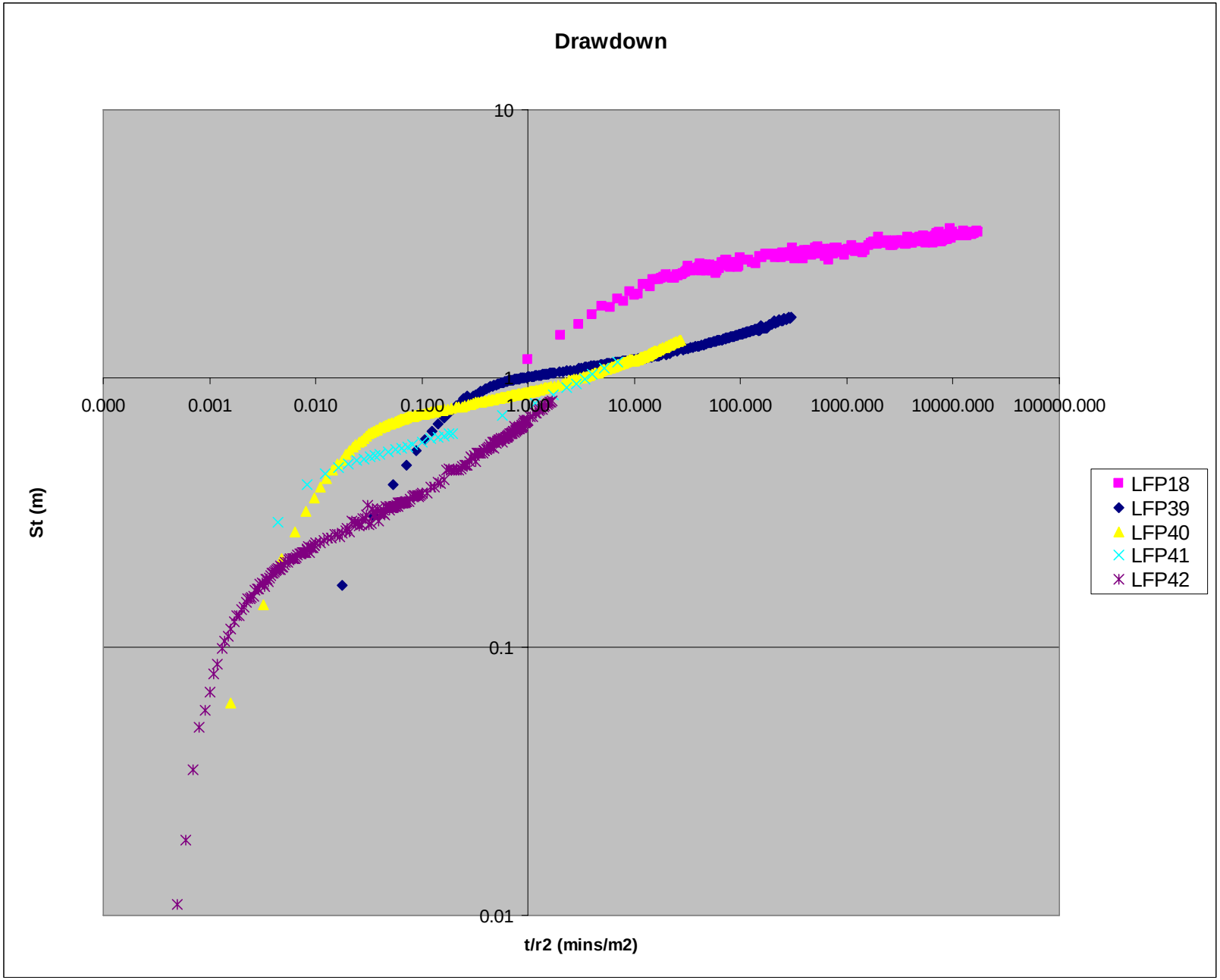


Figure 100 **LFP18 8/8/2004 constant rate discharge test, t/r^2 vs drawdown plot**

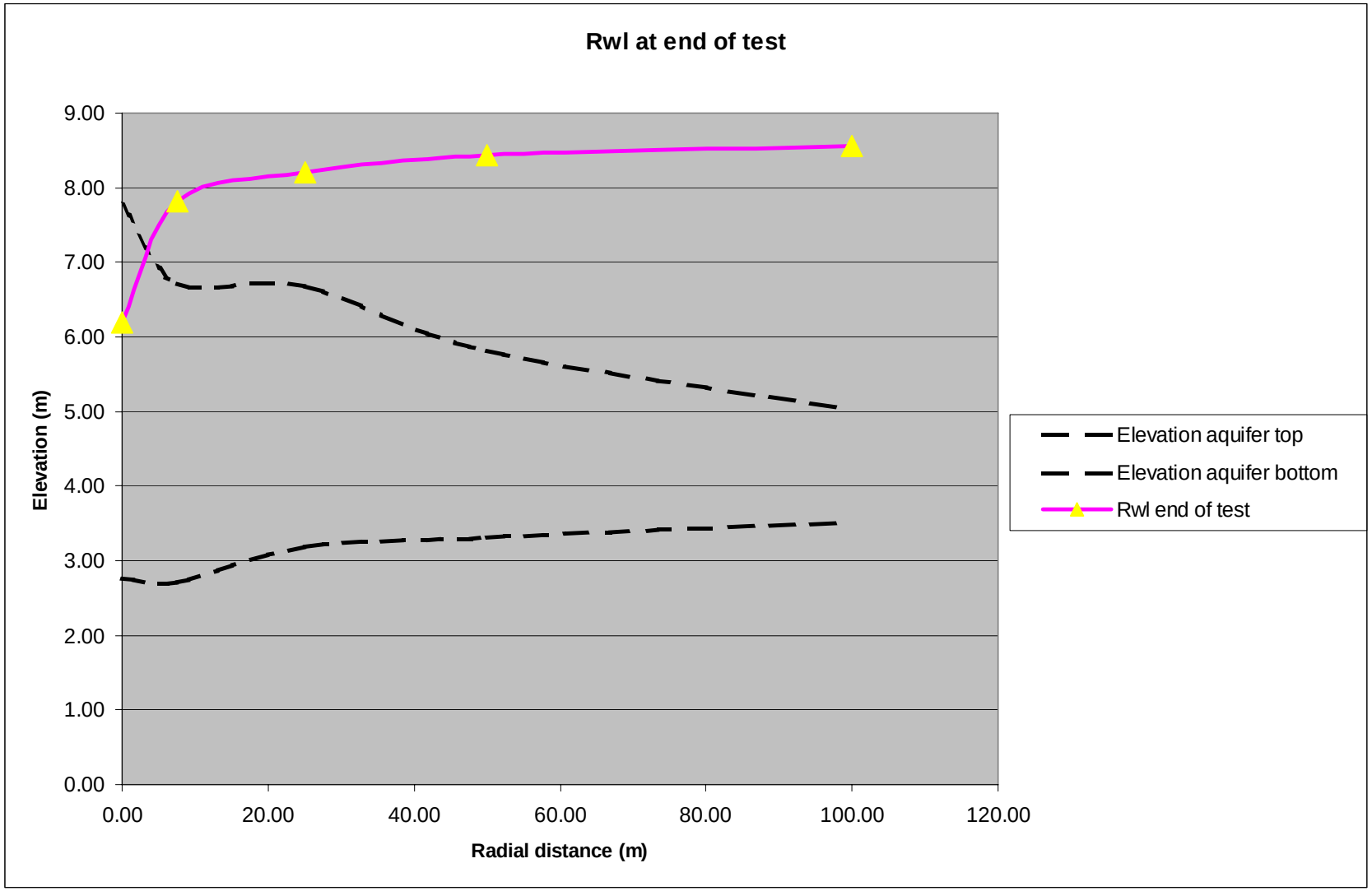


Figure 101 **LFP18 8/8/2004 reduced water levels at end of test**

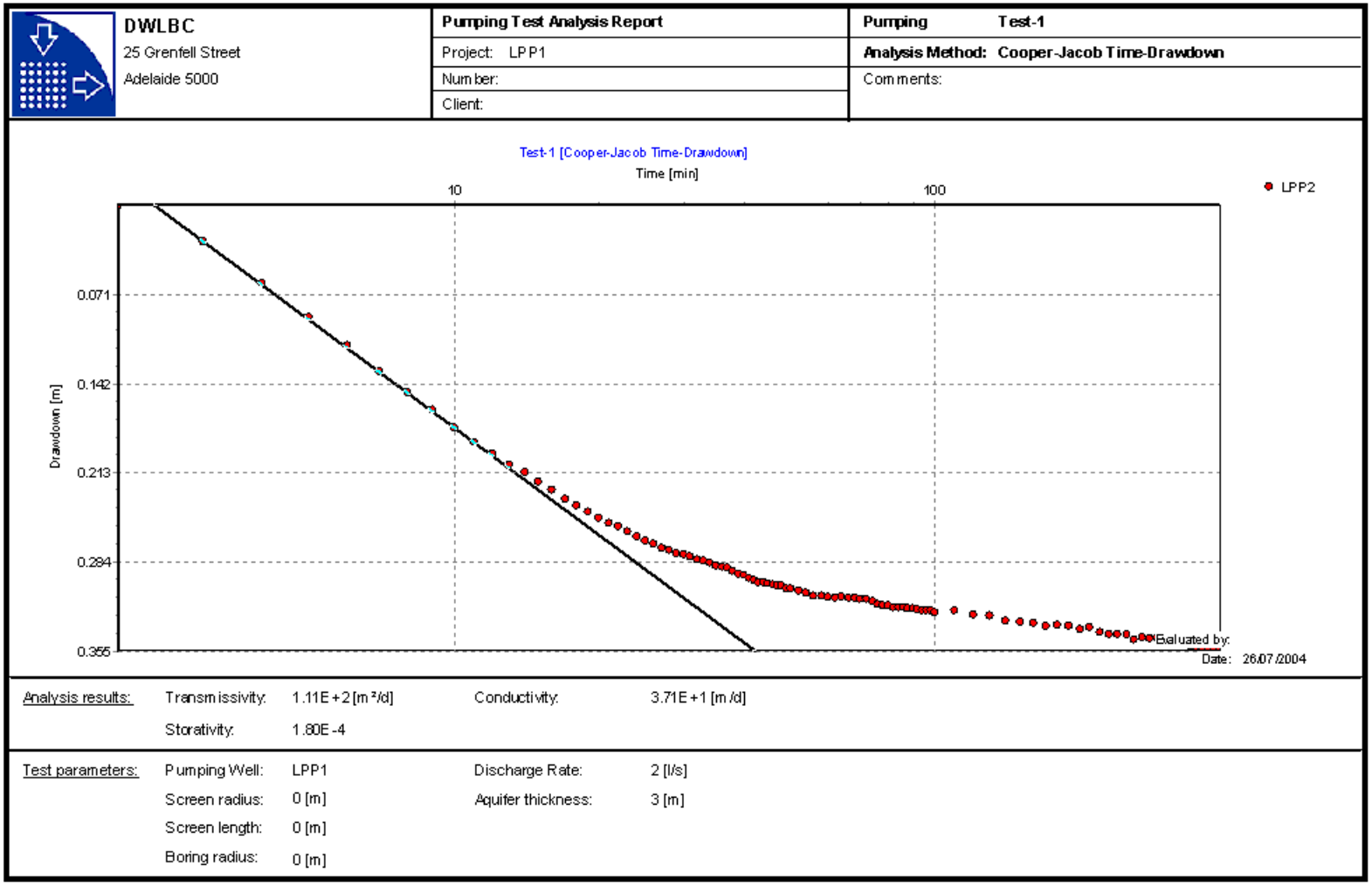


Figure 102 LPP1 28/10/2002 constant rate discharge test, LPP2 Cooper-Jacob t vs s analysis

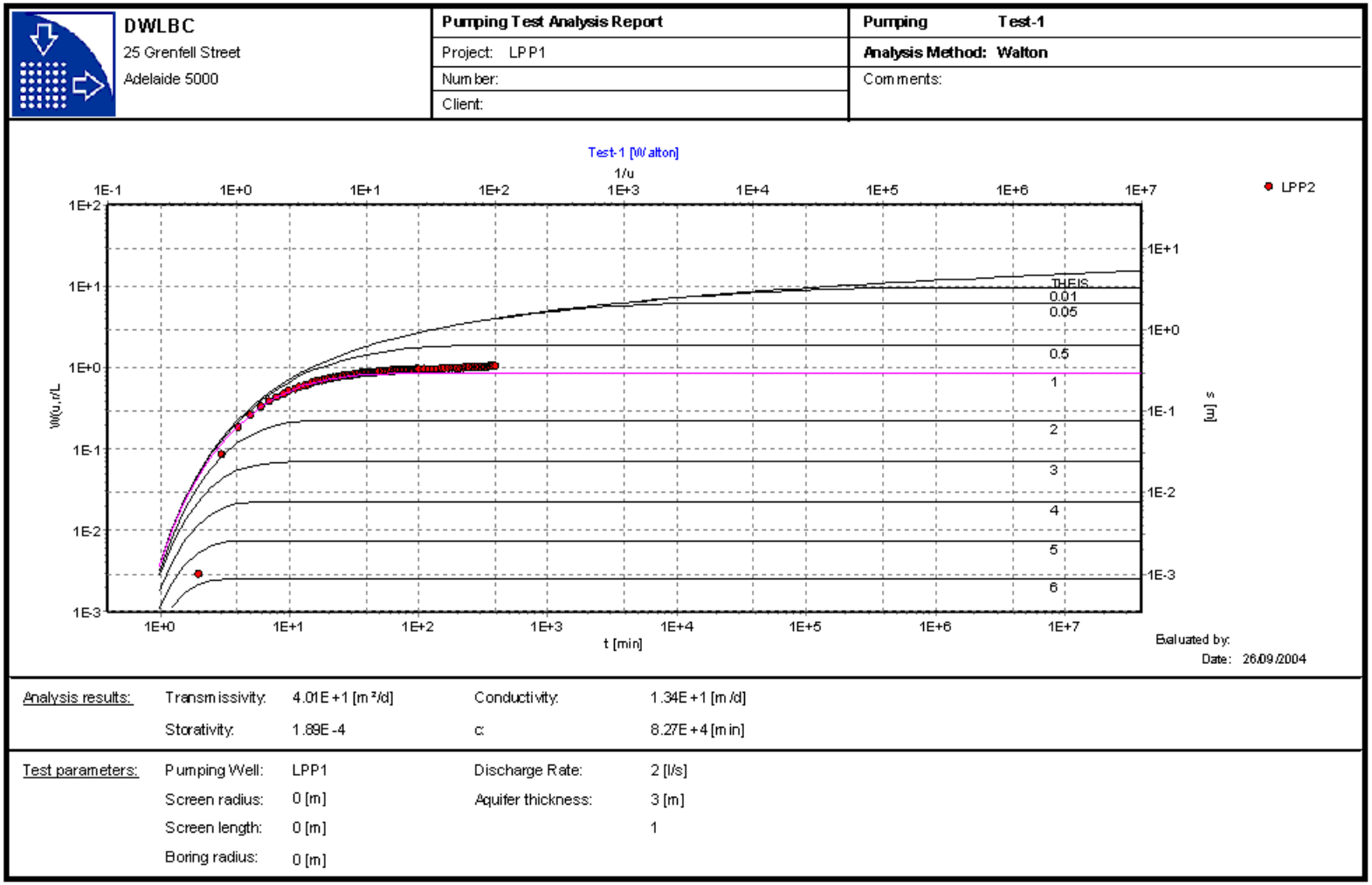


Figure 103 LPP1 28/10/2002 constant rate discharge test, LPP2 Walton analysis

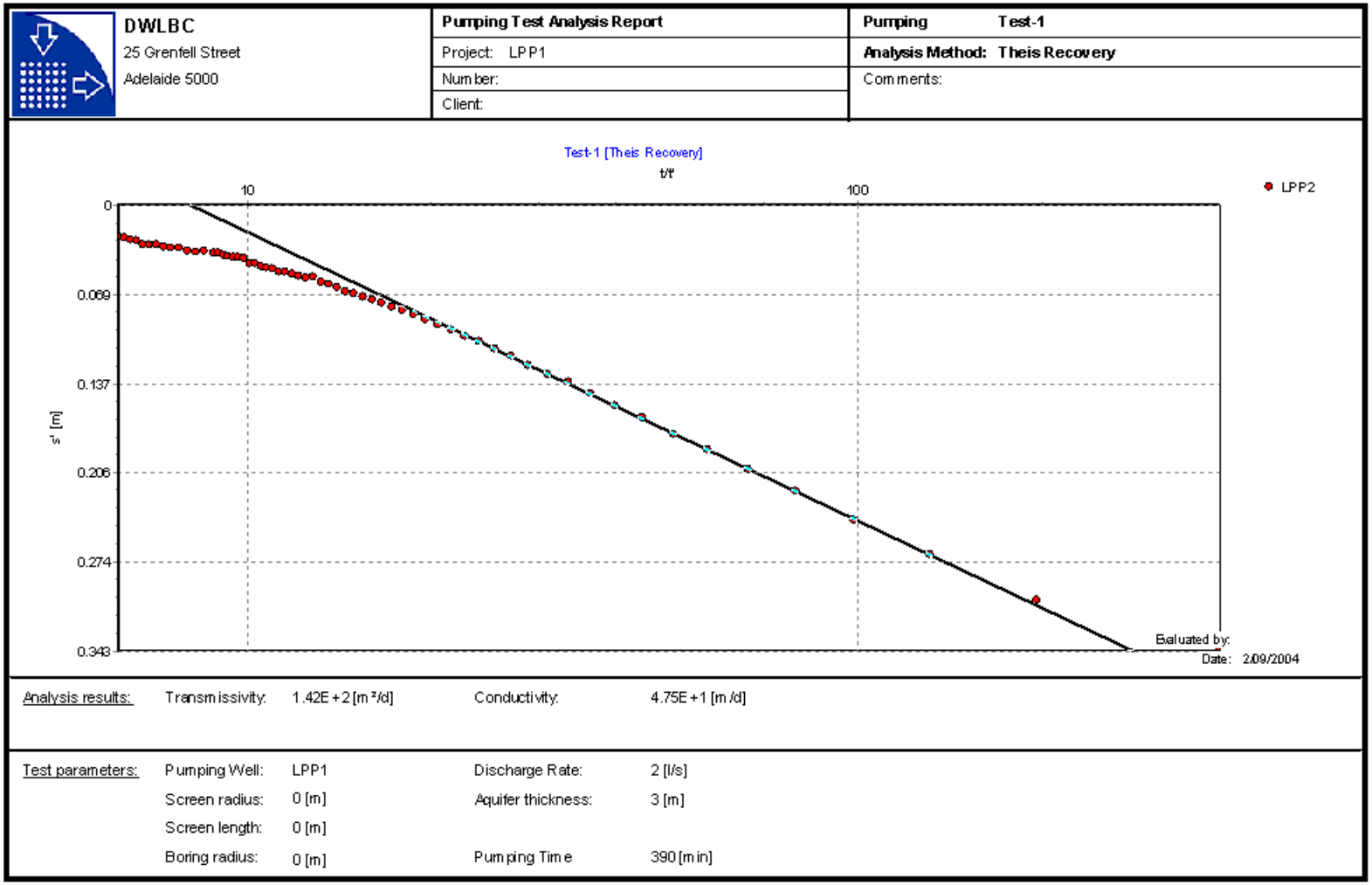


Figure 104 LPP1 28/10/2002 constant rate discharge test, LPP2 Theis recovery analysis

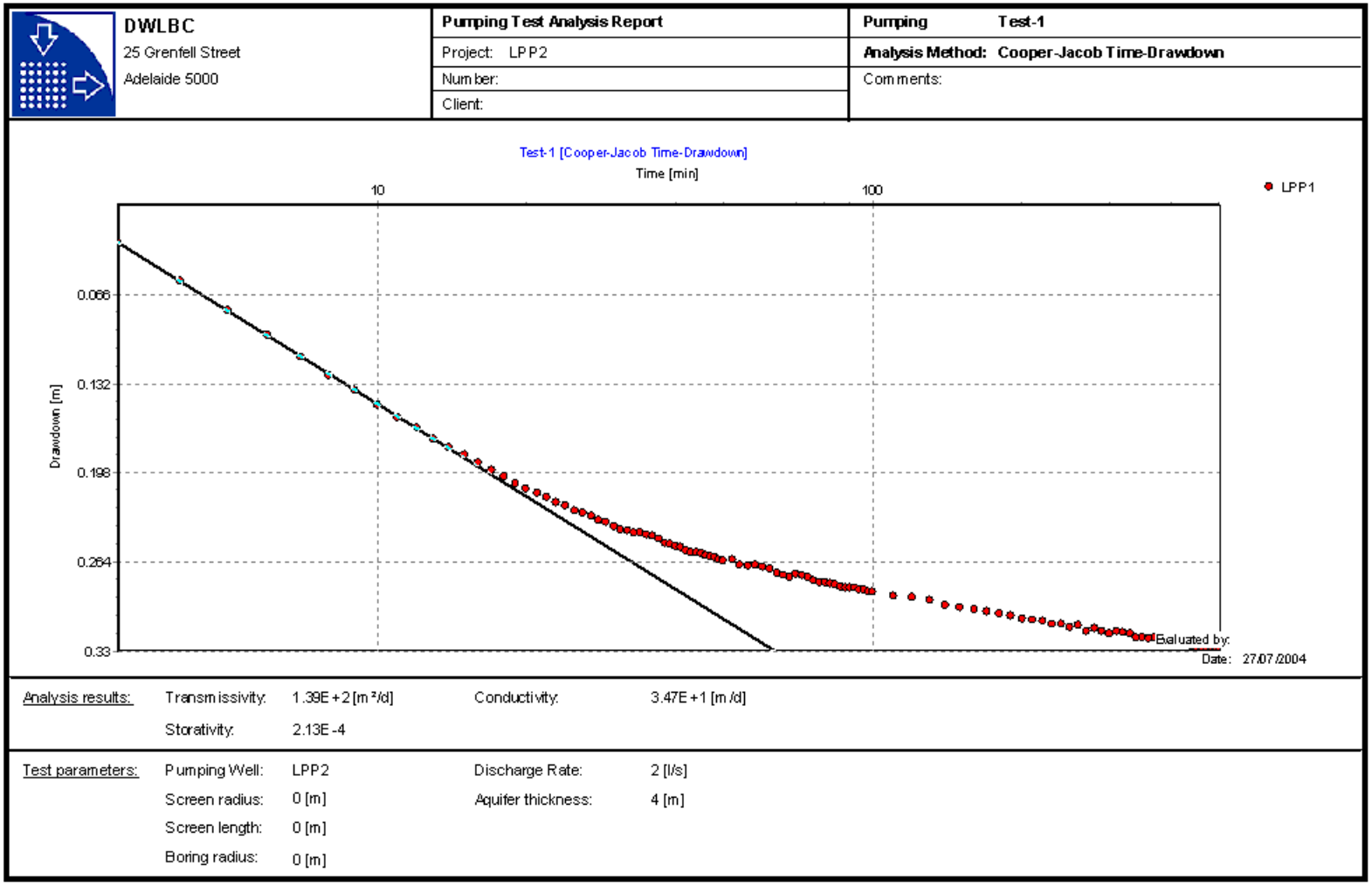


Figure 105 LPP2 29/10/2002 constant rate discharge test, LPP1 Cooper-Jacob t vs s analysis

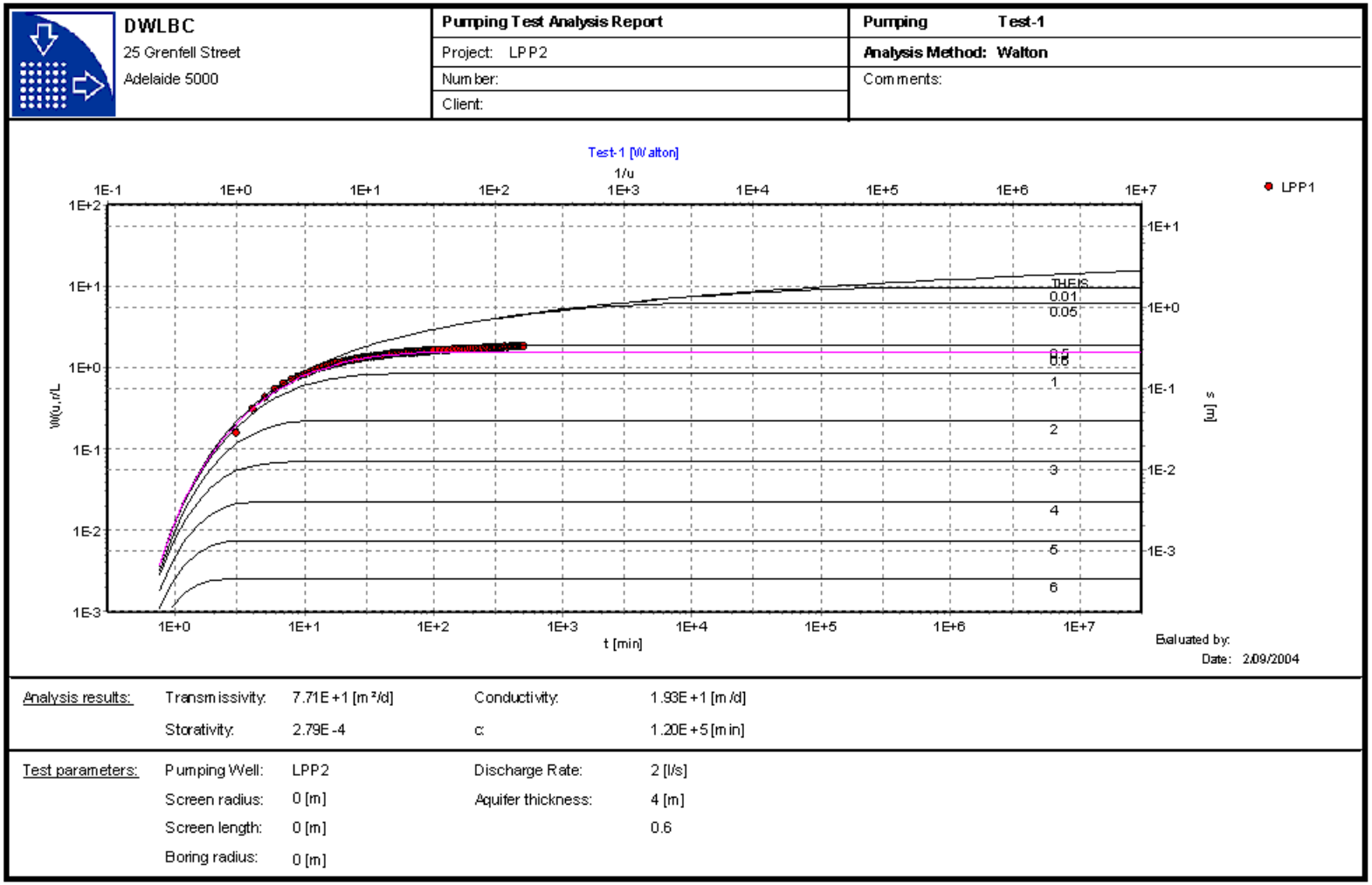


Figure 106 LPP2 29/10/2002 constant rate discharge test, LPP1 Walton analysis

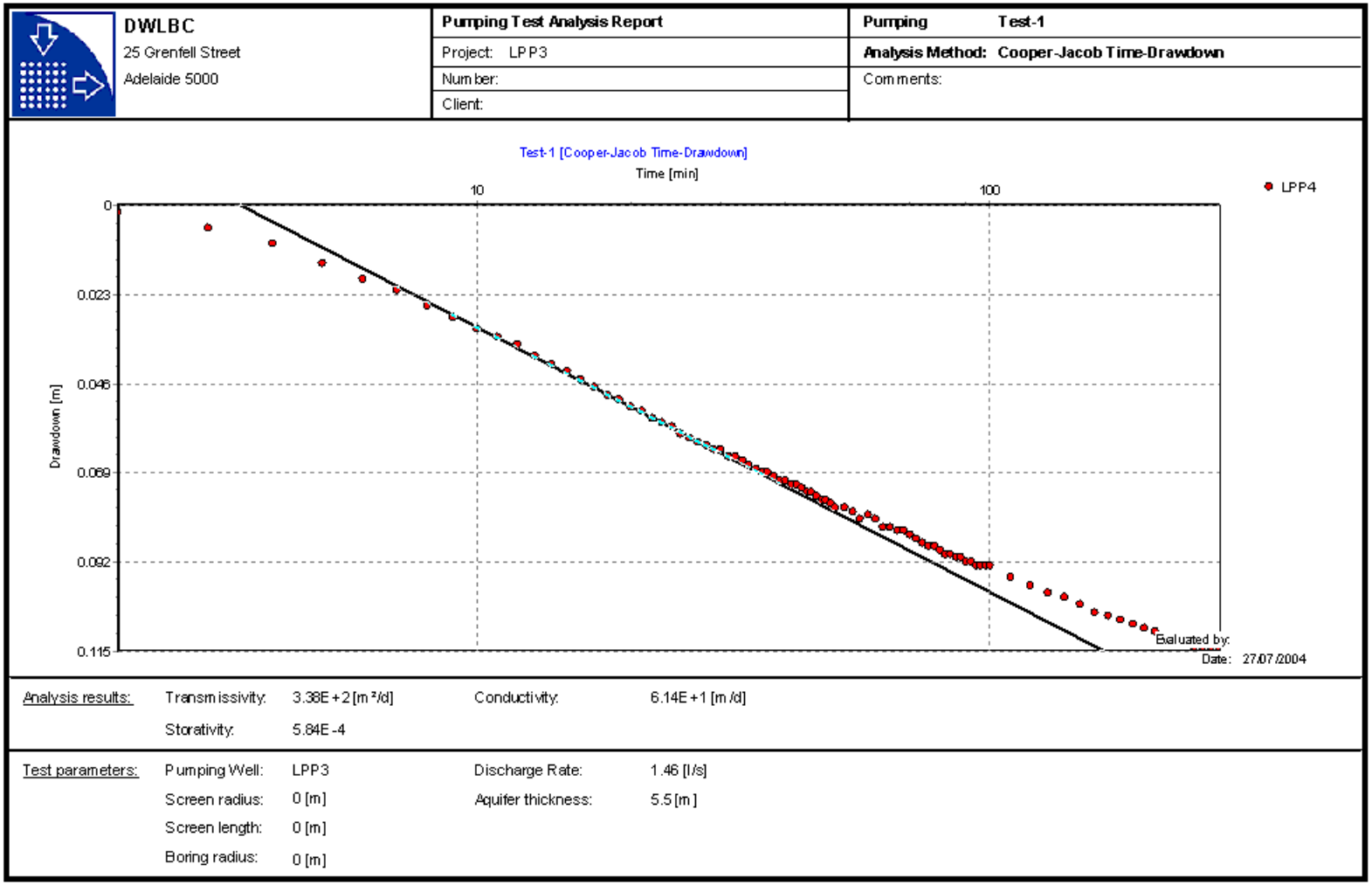


Figure 107 LPP3 30/10/2002 constant rate discharge test, LPP4 Cooper-Jacob t vs s analysis

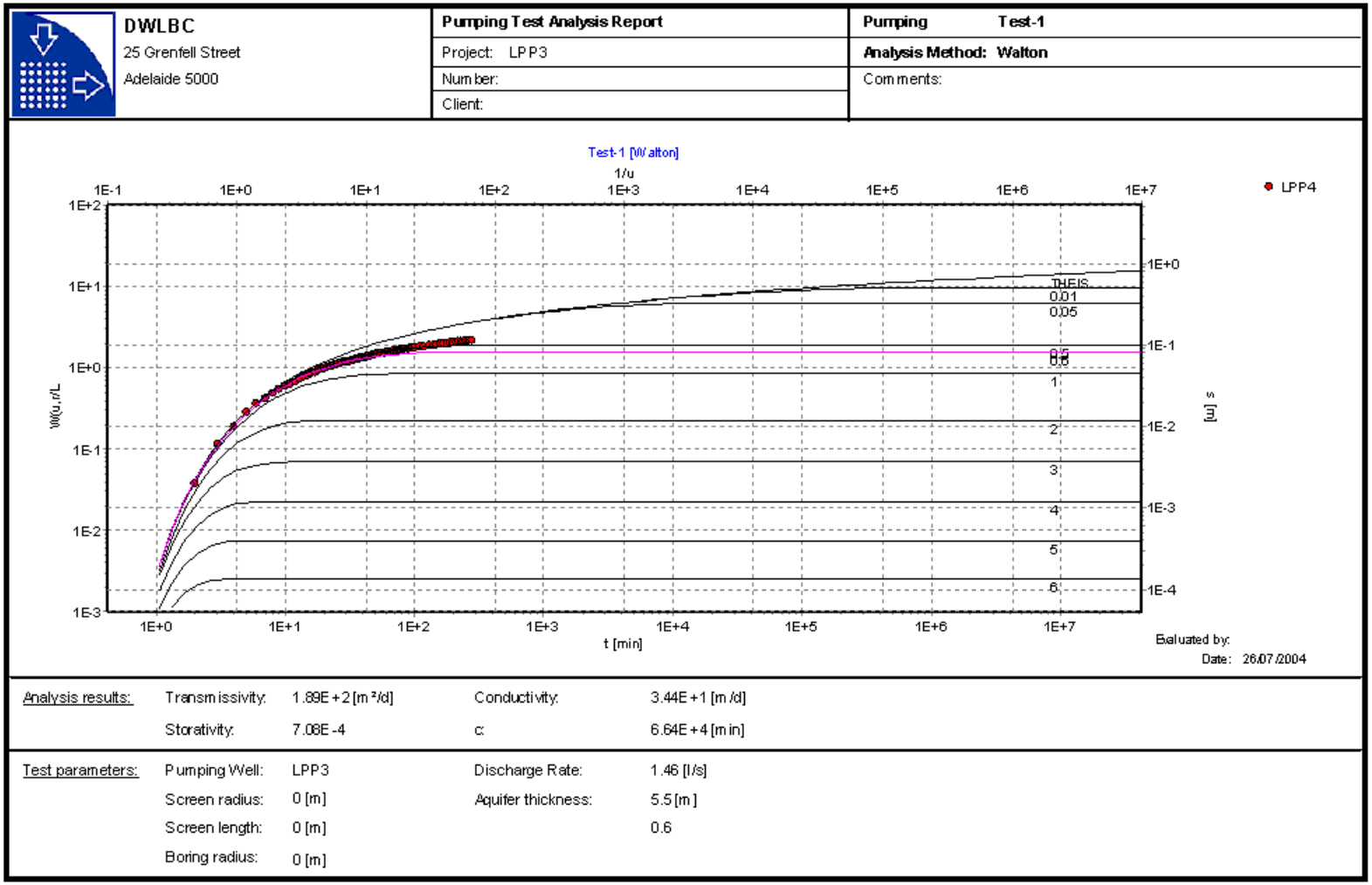


Figure 108 LPP3 30/10/2002 constant rate discharge test, LPP4 Walton analysis

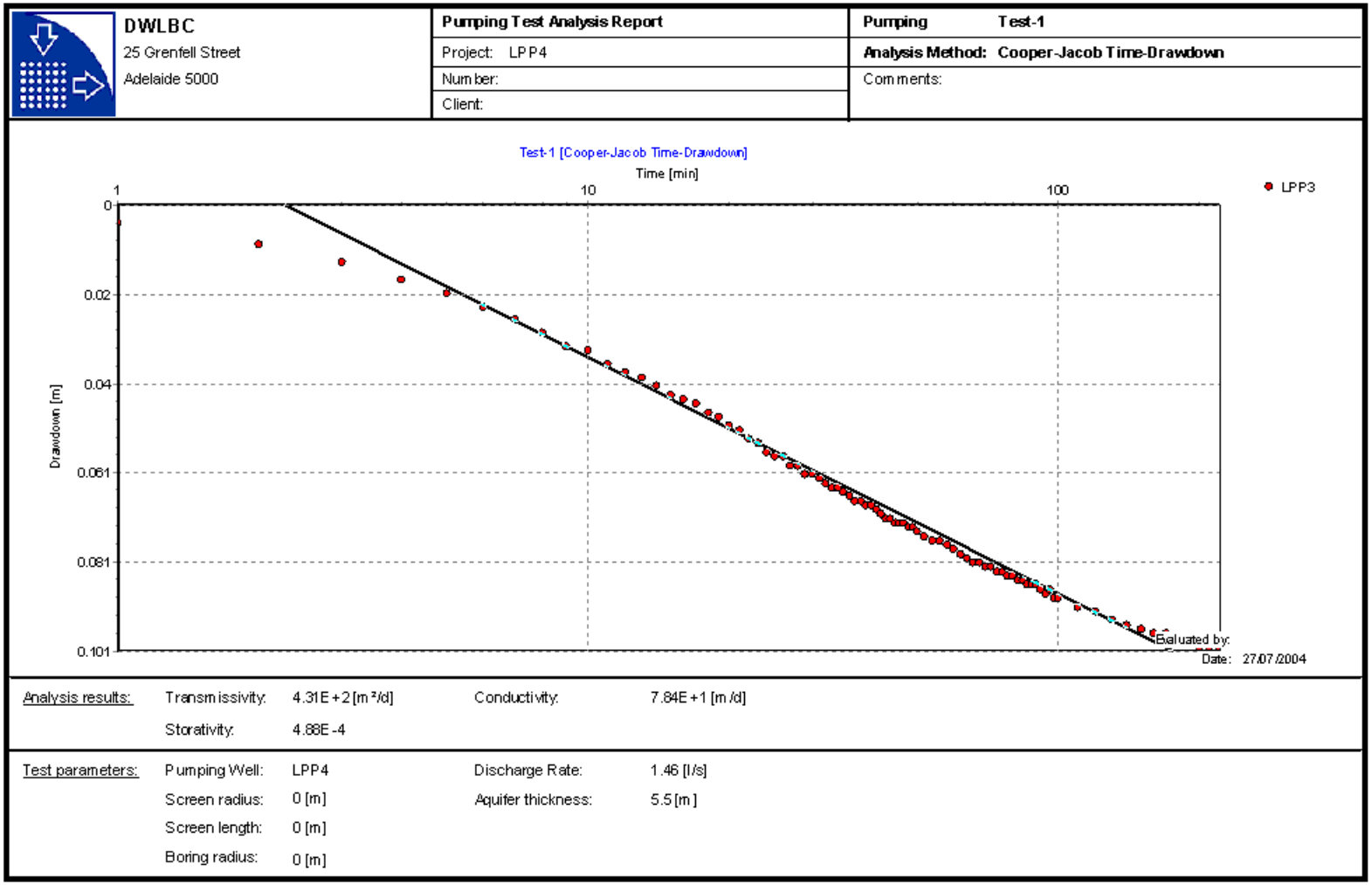


Figure 109 LPP4 28/10/2002 constant rate discharge test, LPP3 Cooper-Jacob t vs s analysis

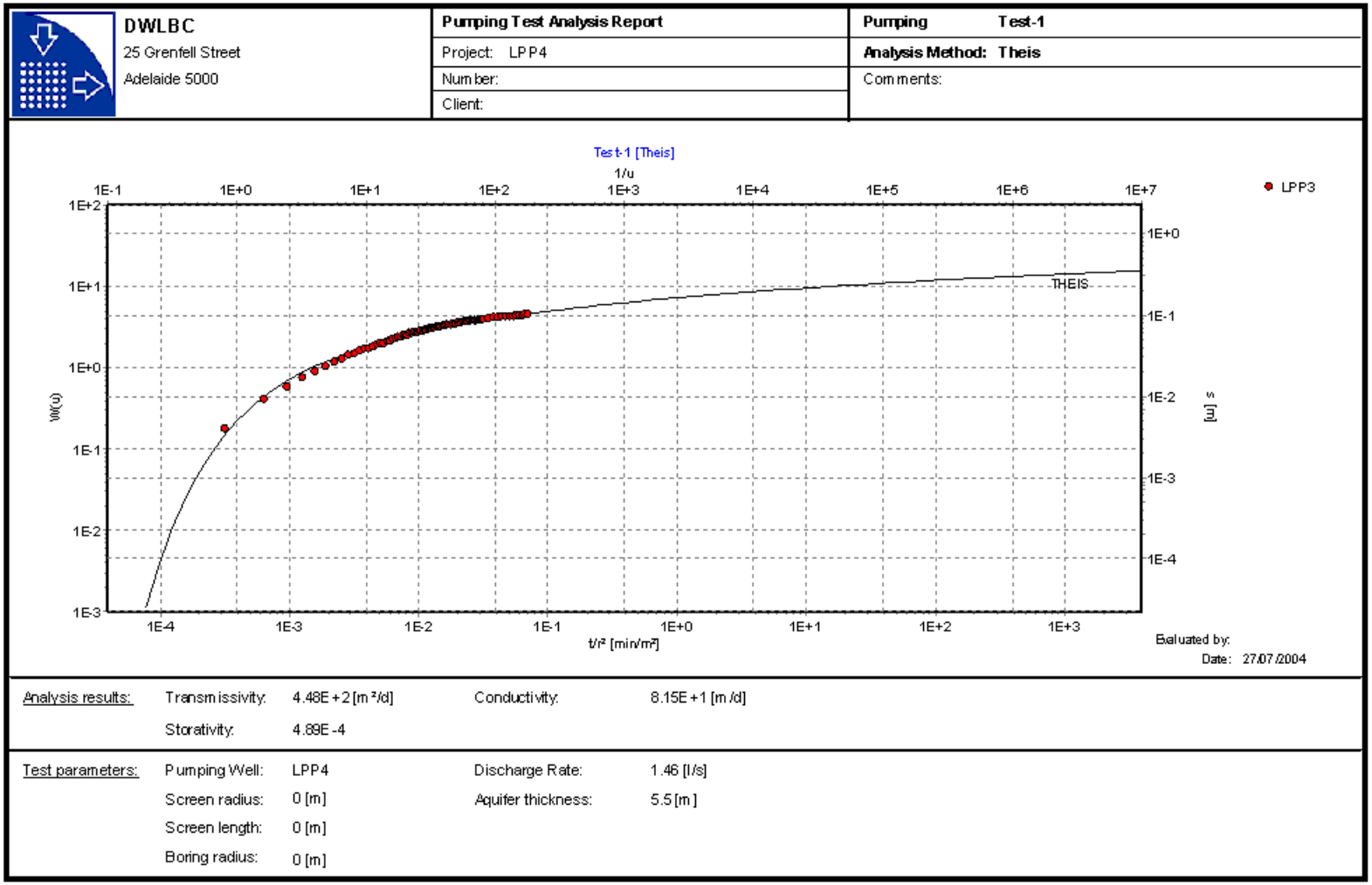


Figure 110 LPP4 28/10/2002 constant rate discharge test, LPP3 Theis analysis

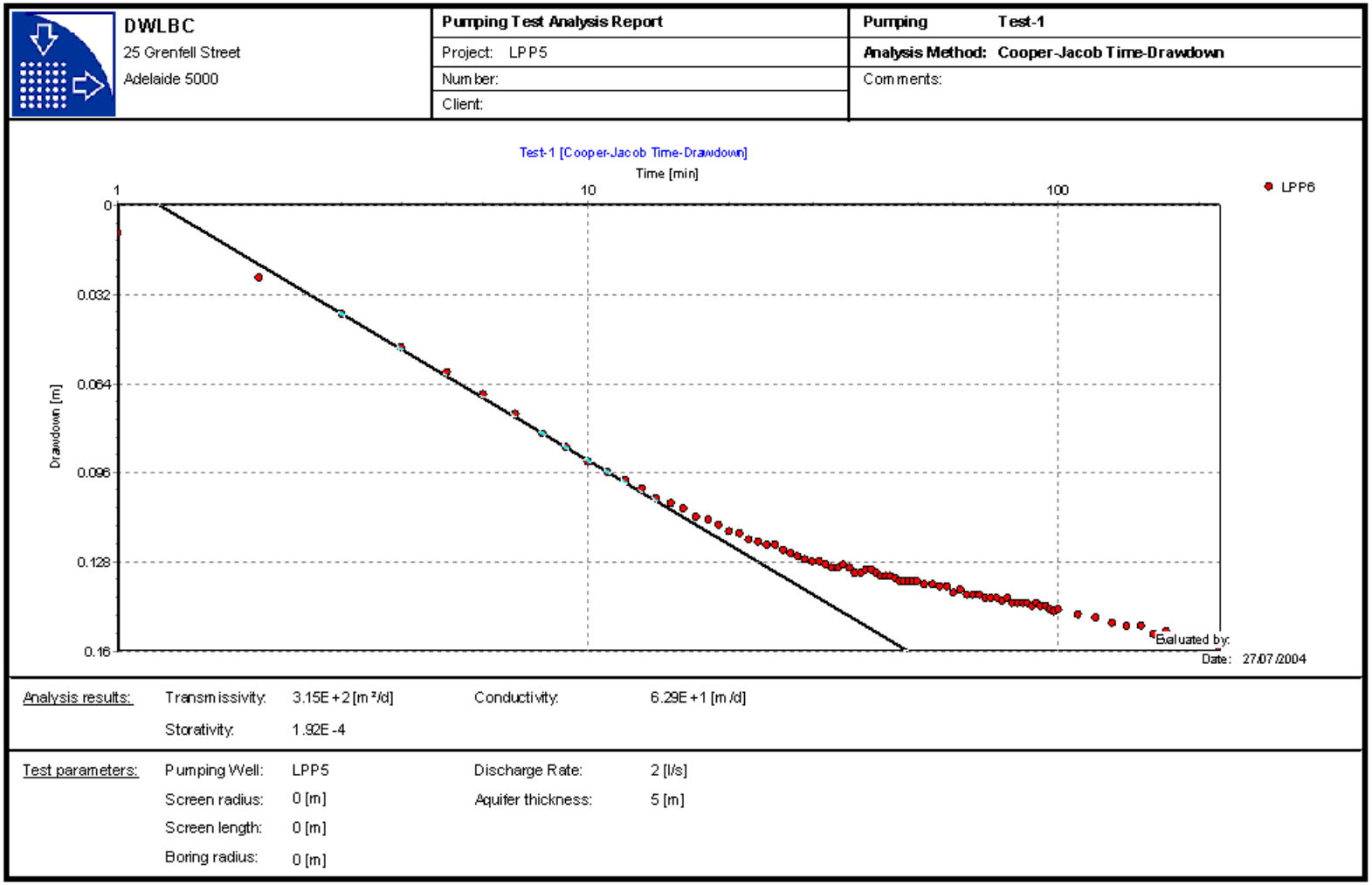


Figure 111 LPP5 25/10/2002 constant rate discharge test, LPP6 Cooper-Jacob t vs s analysis

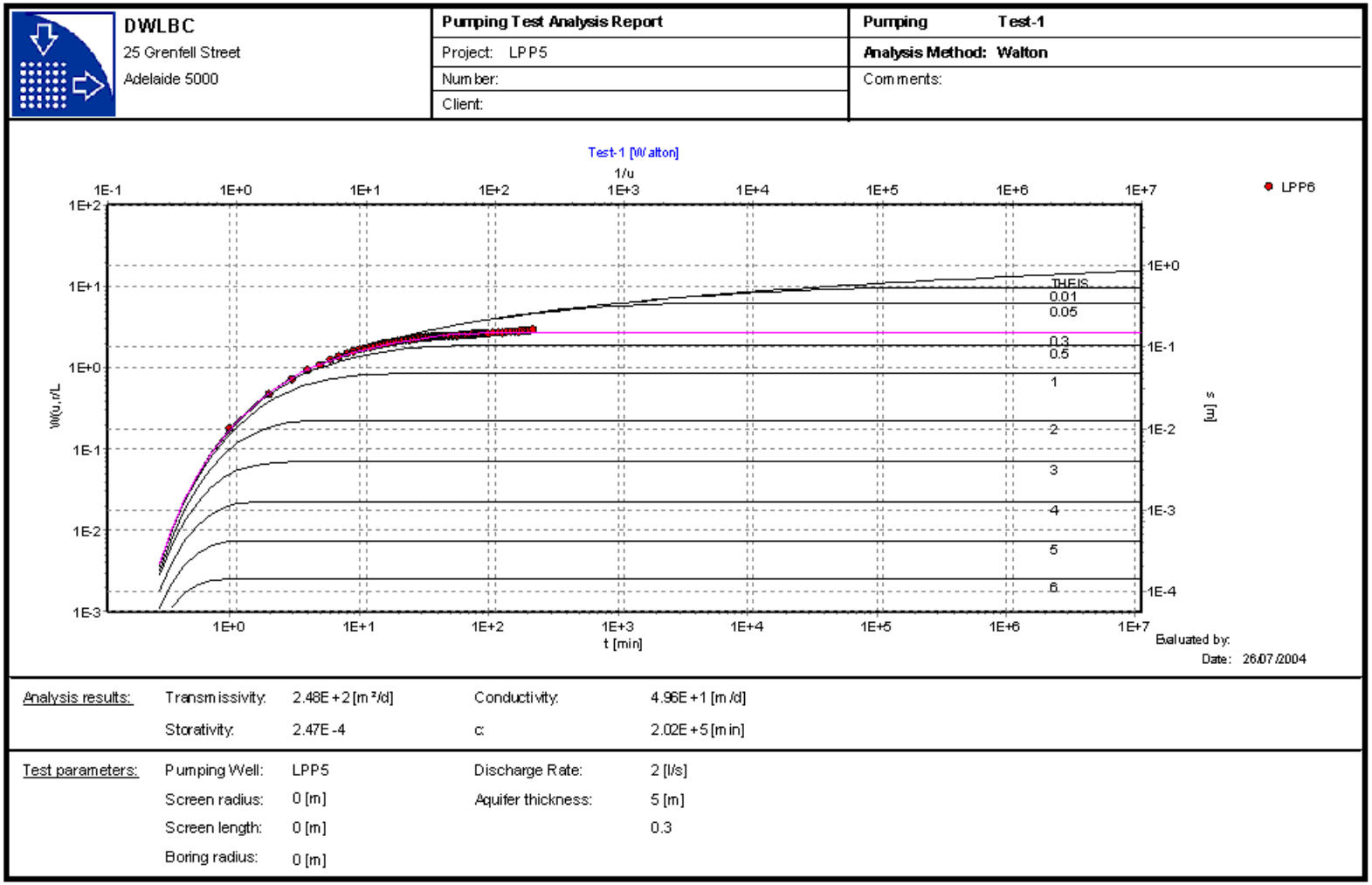


Figure 112 LPP5 25/10/2002 constant rate discharge test, LPP6 Walton analysis

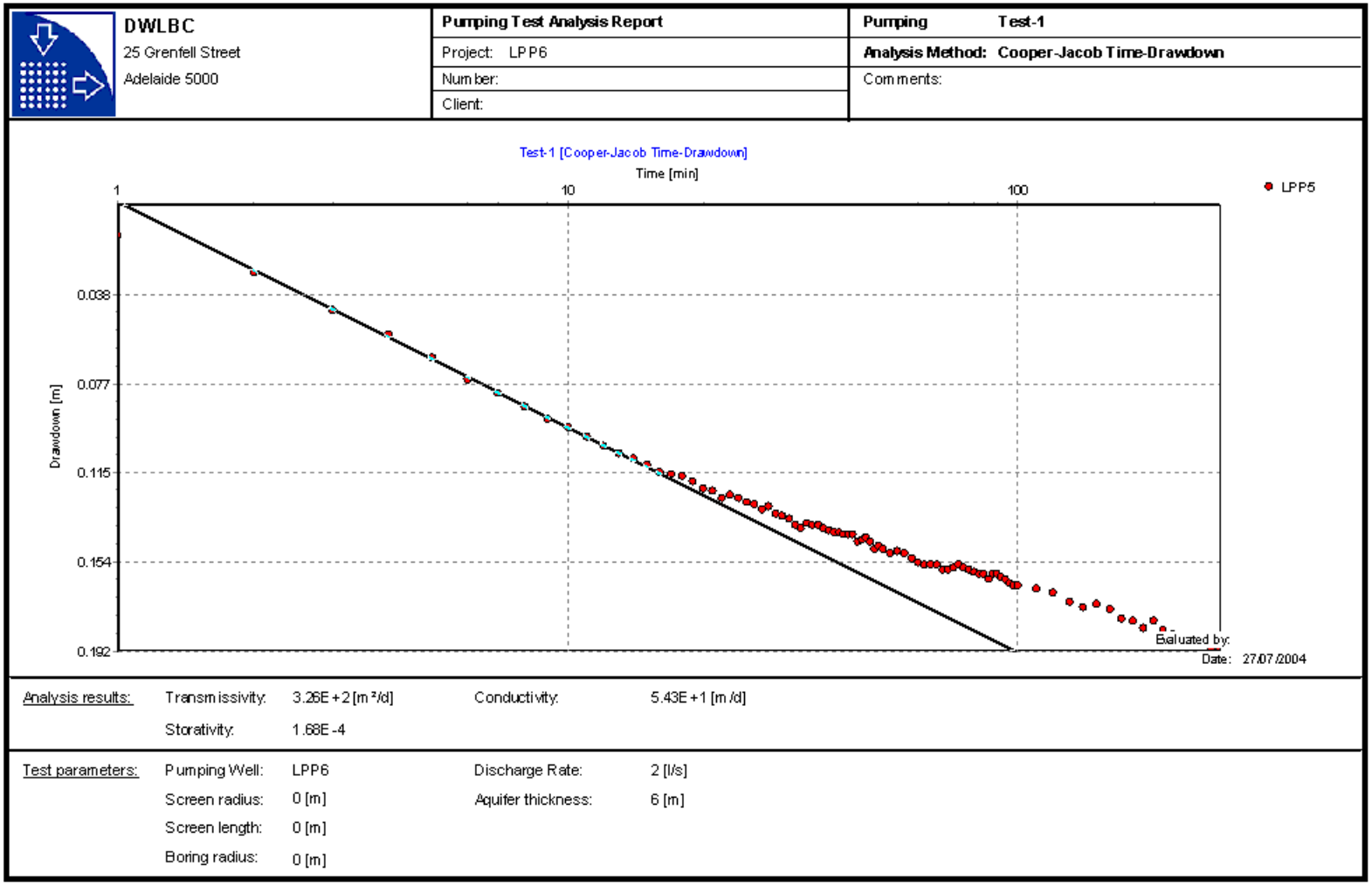


Figure 113 LPP6 27/10/2002 constant rate discharge test, LPP5 Cooper-Jacob t vs s analysis

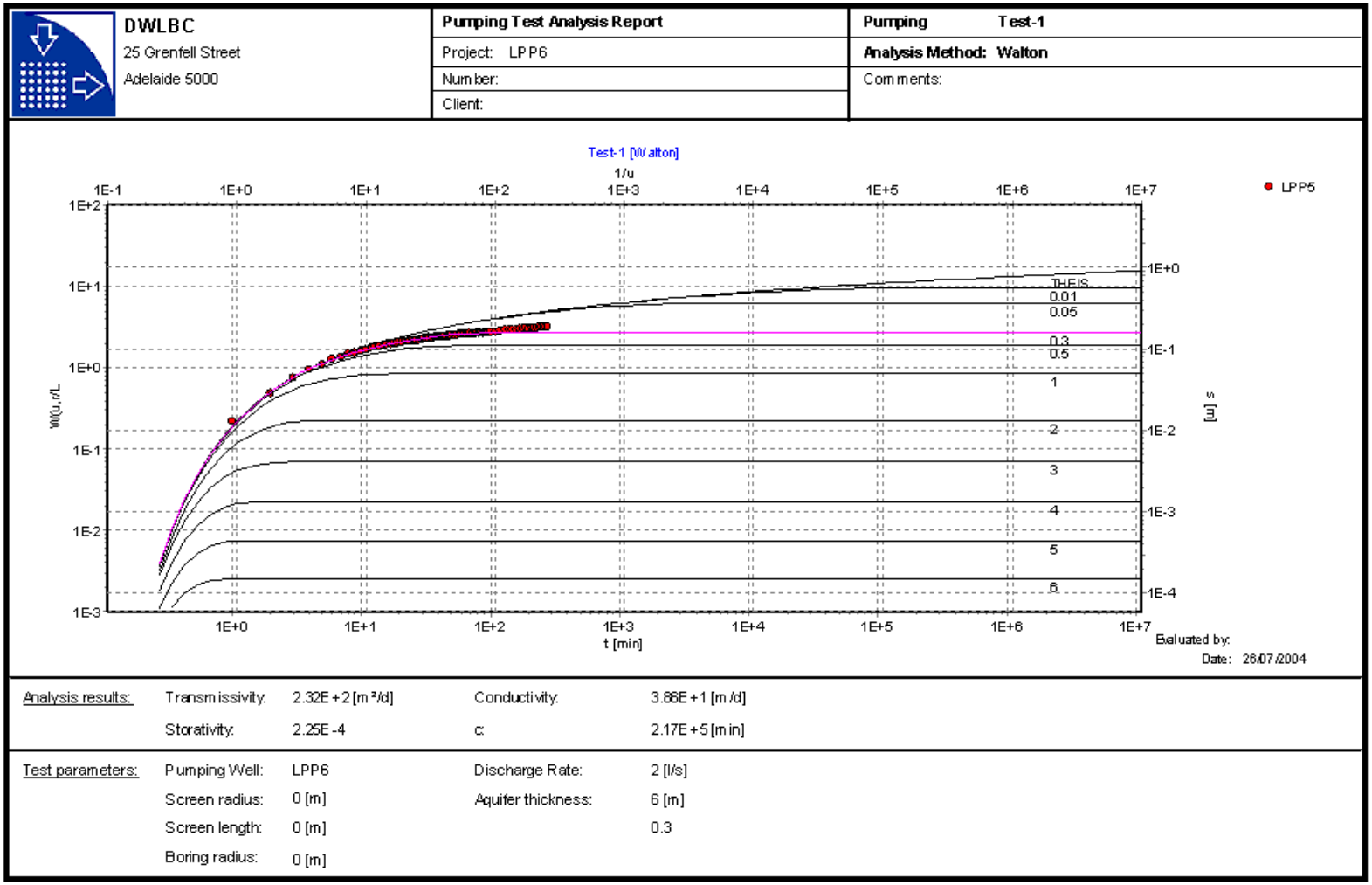


Figure 114 LPP6 27/10/2002 constant rate discharge test, LPP5 Walton analysis

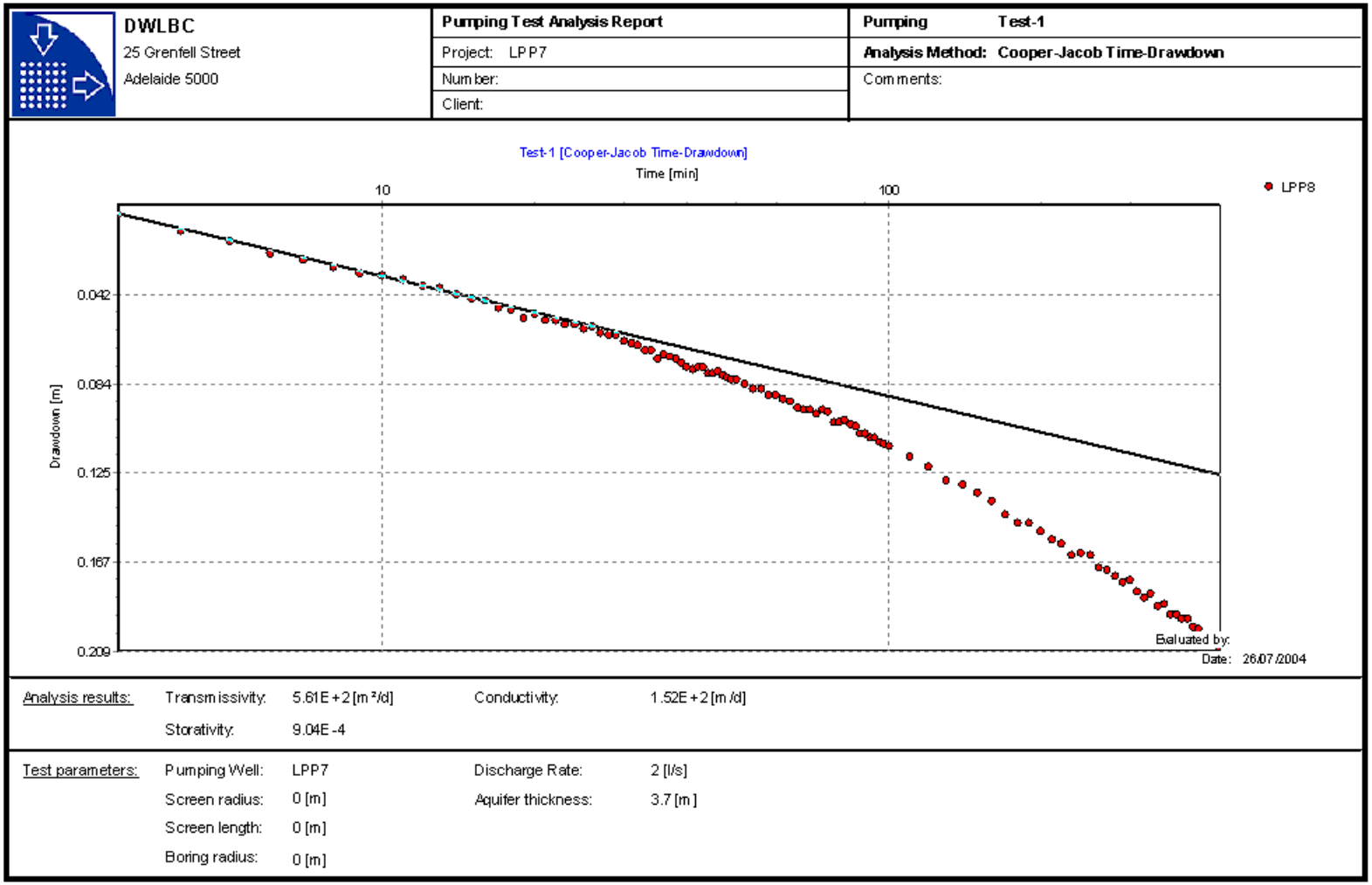


Figure 115 LPP7 23/10/2002 constant rate discharge test, LPP8 Cooper-Jacob t vs s analysis

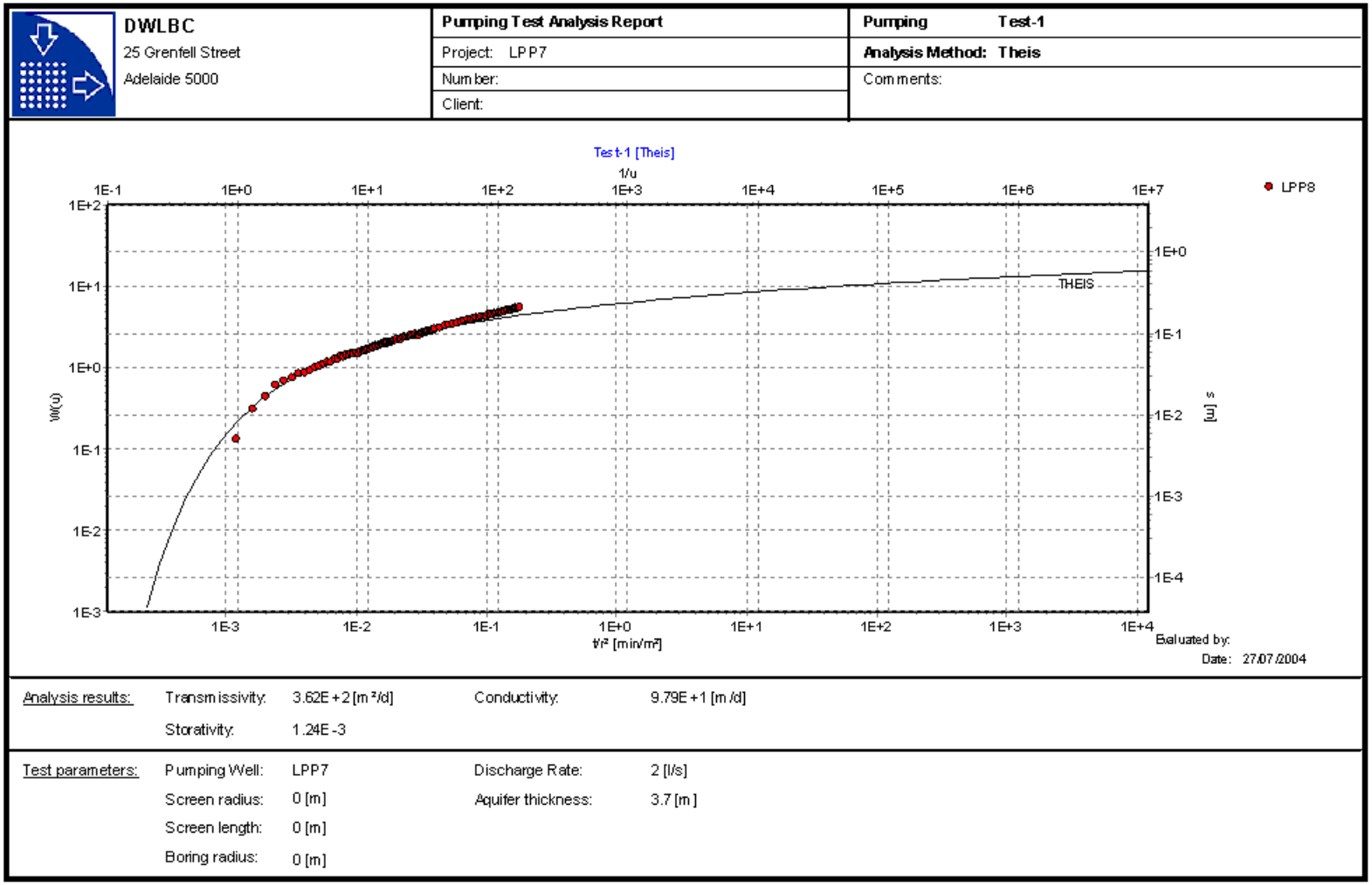


Figure 116 LPP7 23/10/2002 constant rate discharge test, LPP8 Theis analysis

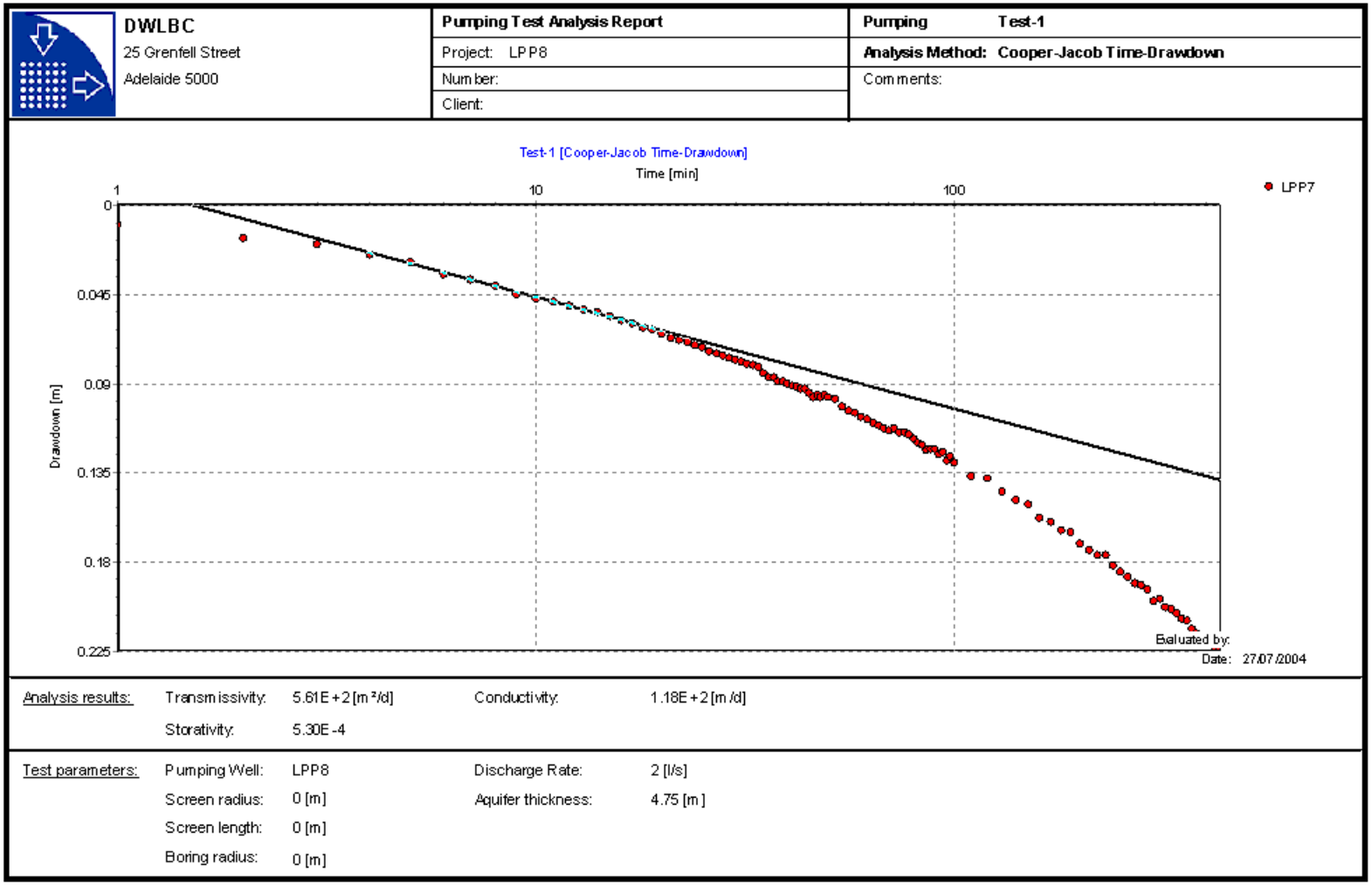


Figure 117 LPP8 23/10/2002 constant rate discharge test, LPP7 Cooper-Jacob t vs s analysis

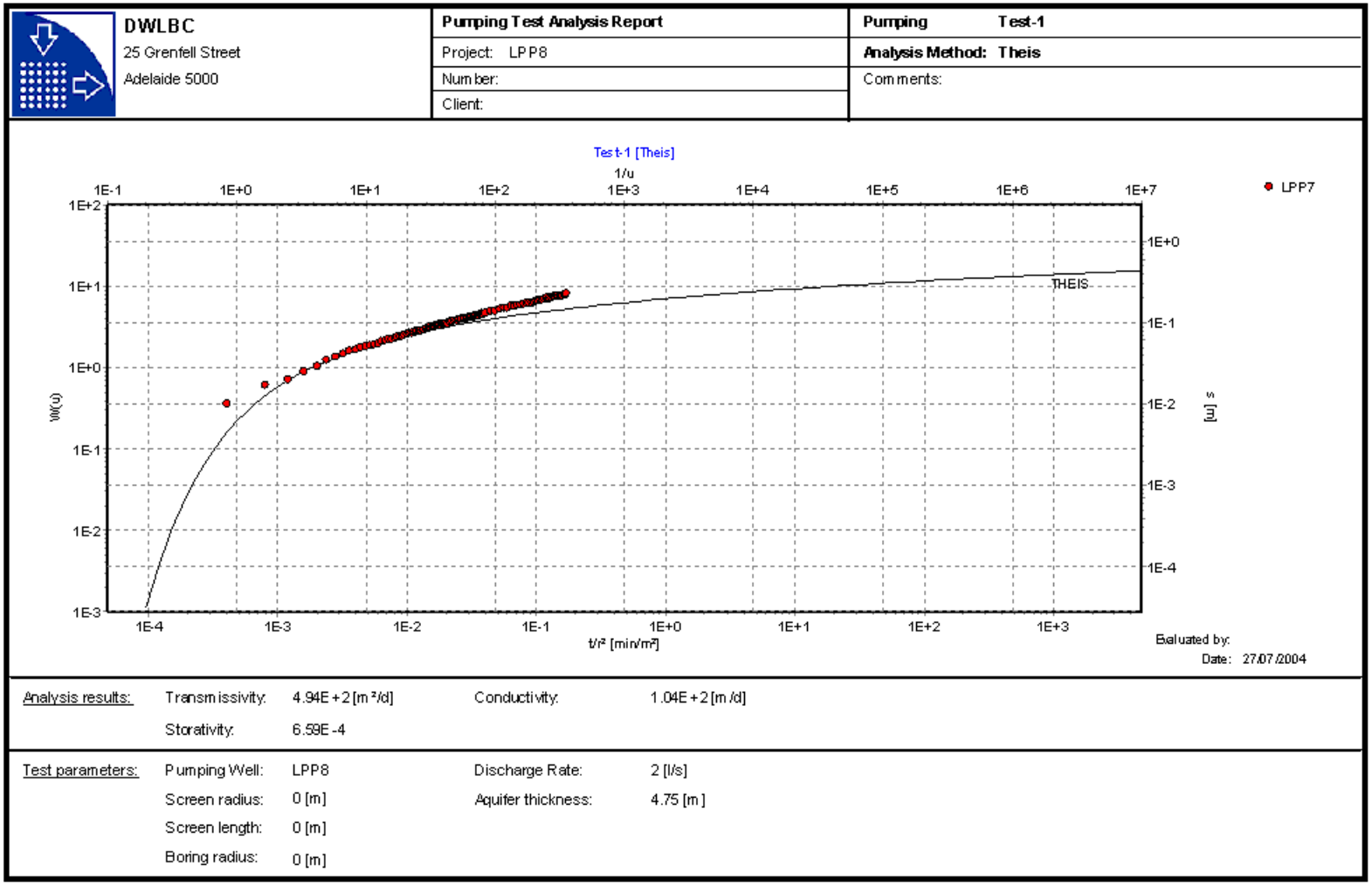


Figure 118 LPP8 23/10/2002 constant rate discharge test, LPP7 Theis analysis

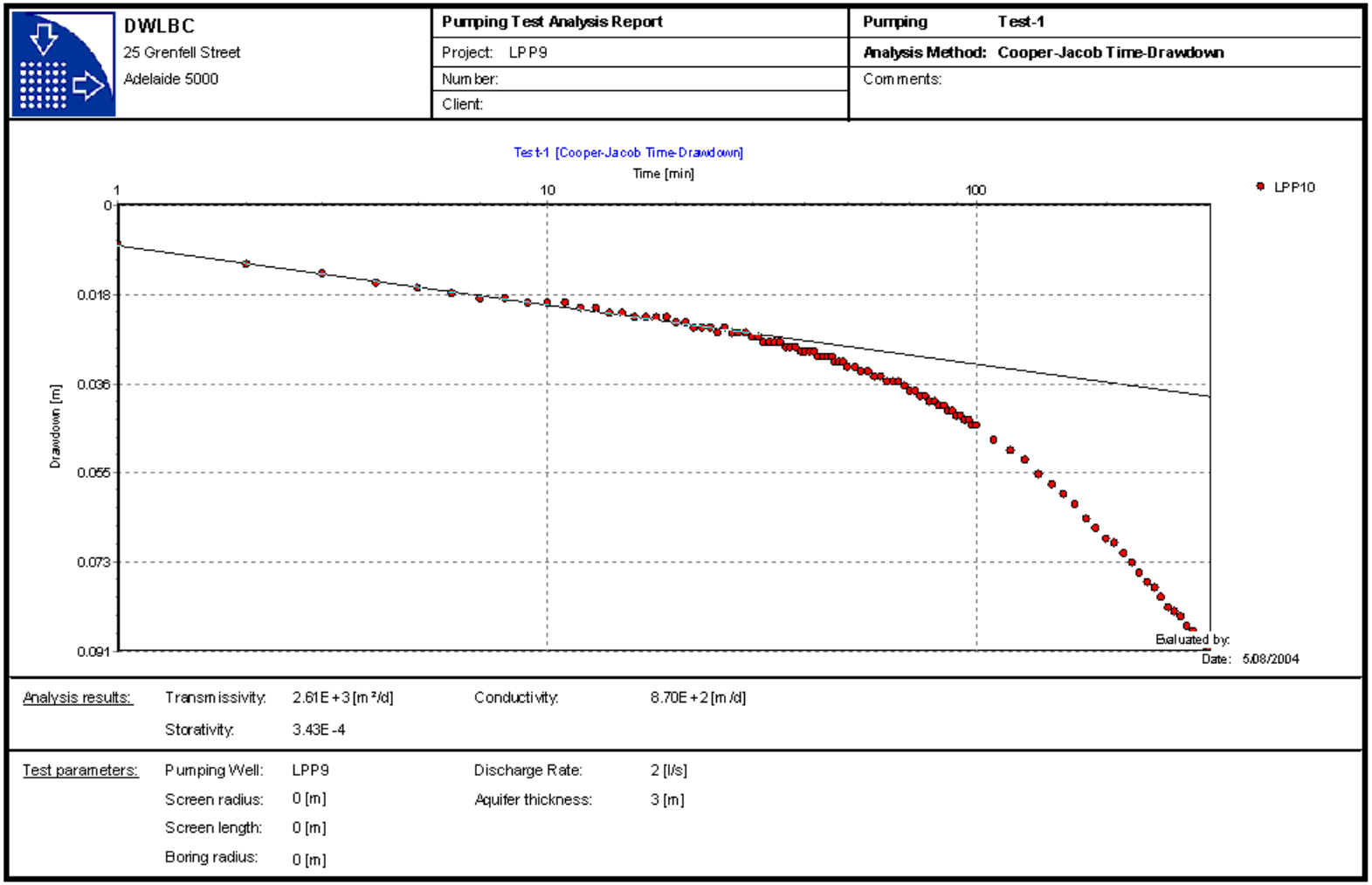


Figure 119 LPP9 15/10/2002 constant rate discharge test, LPP10 Cooper-Jacob t vs s analysis

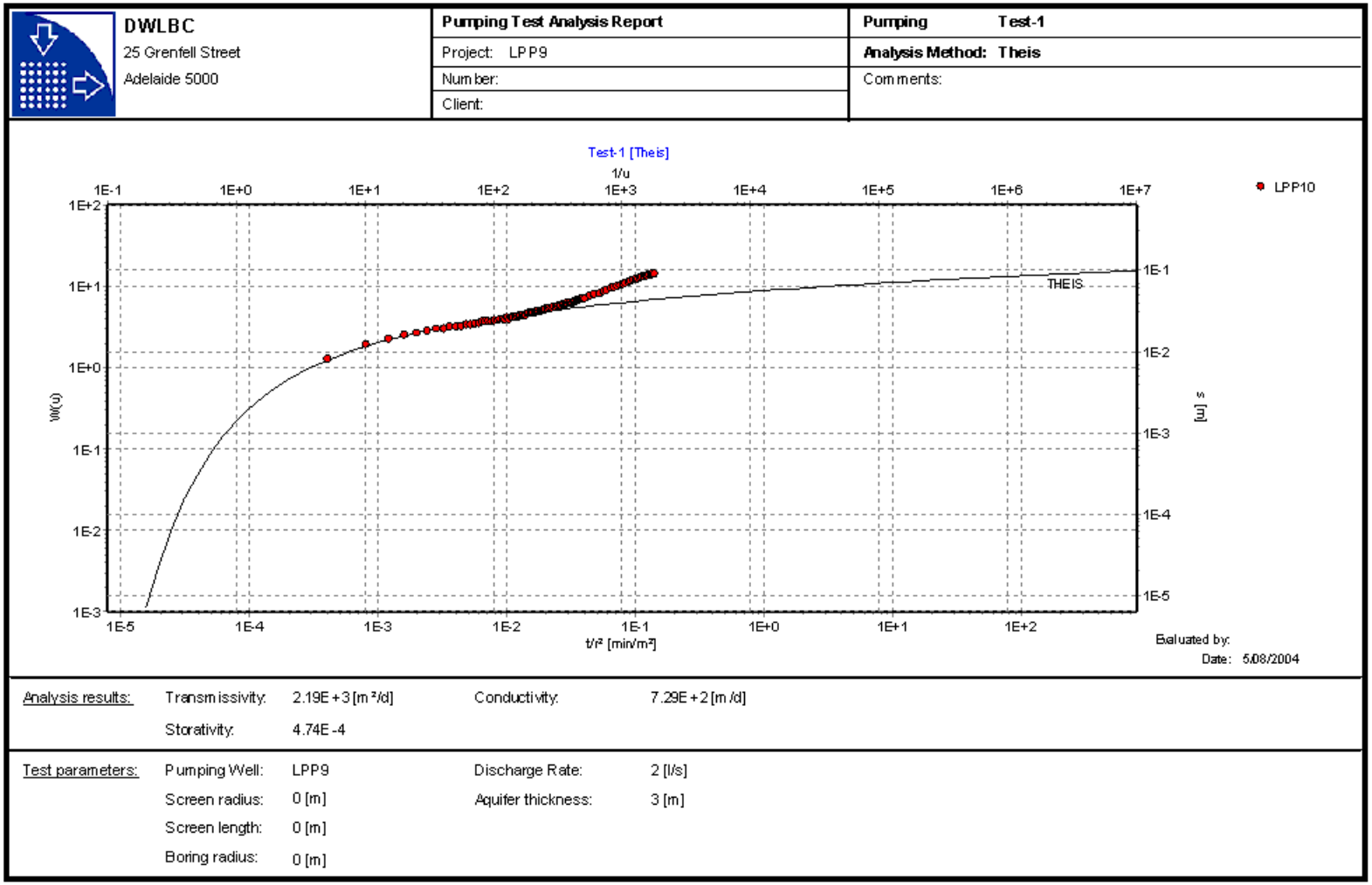


Figure 120 LPP9 15/10/2002 constant rate discharge test, LPP10 Theis analysis

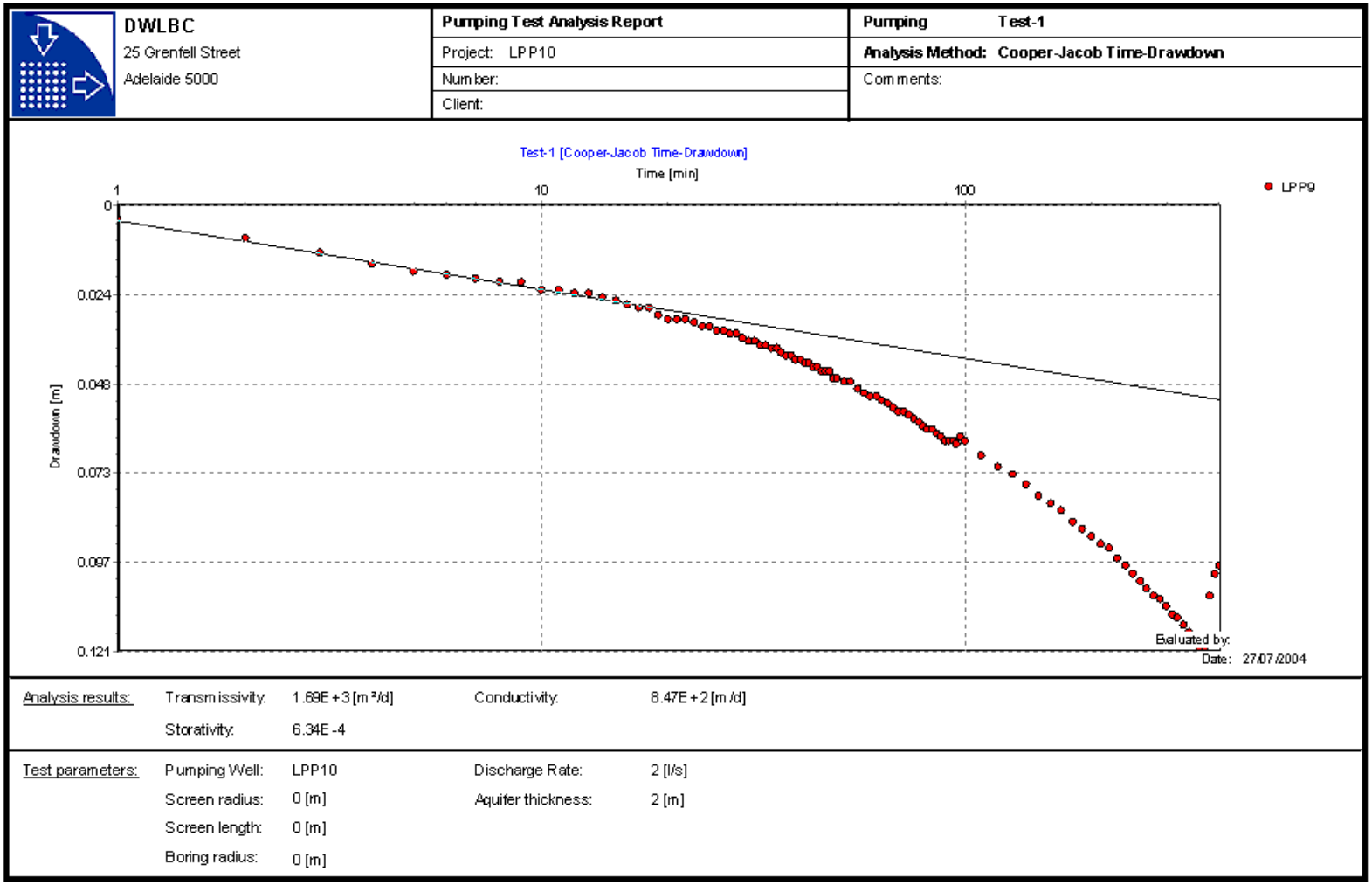


Figure 121 **LPP10 14/10/2002 constant rate discharge test, LPP9 Cooper-Jacob t vs s analysis**

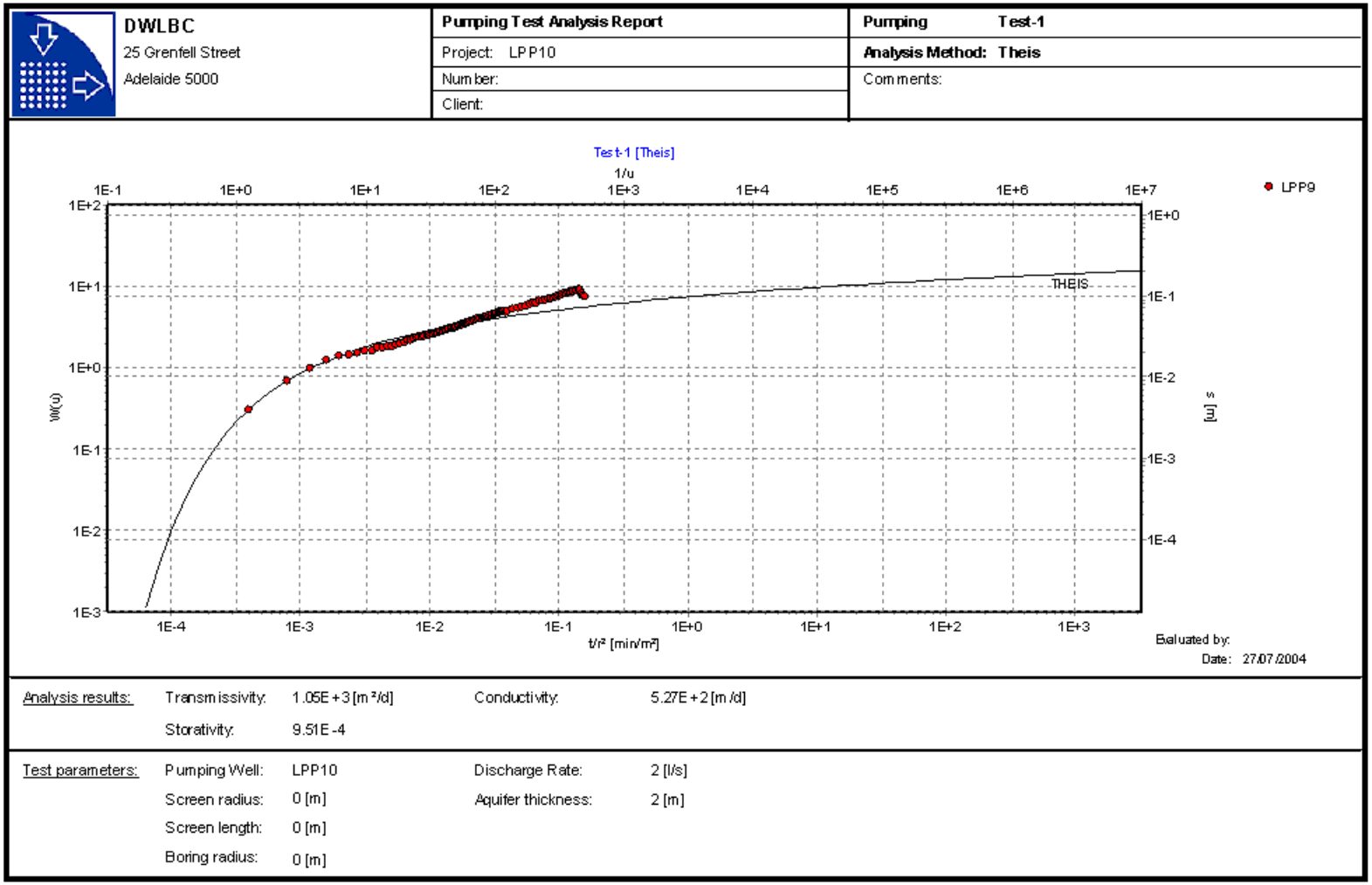


Figure 122 LPP10 14/10/2002 constant rate discharge test, LPP9 Theis analysis

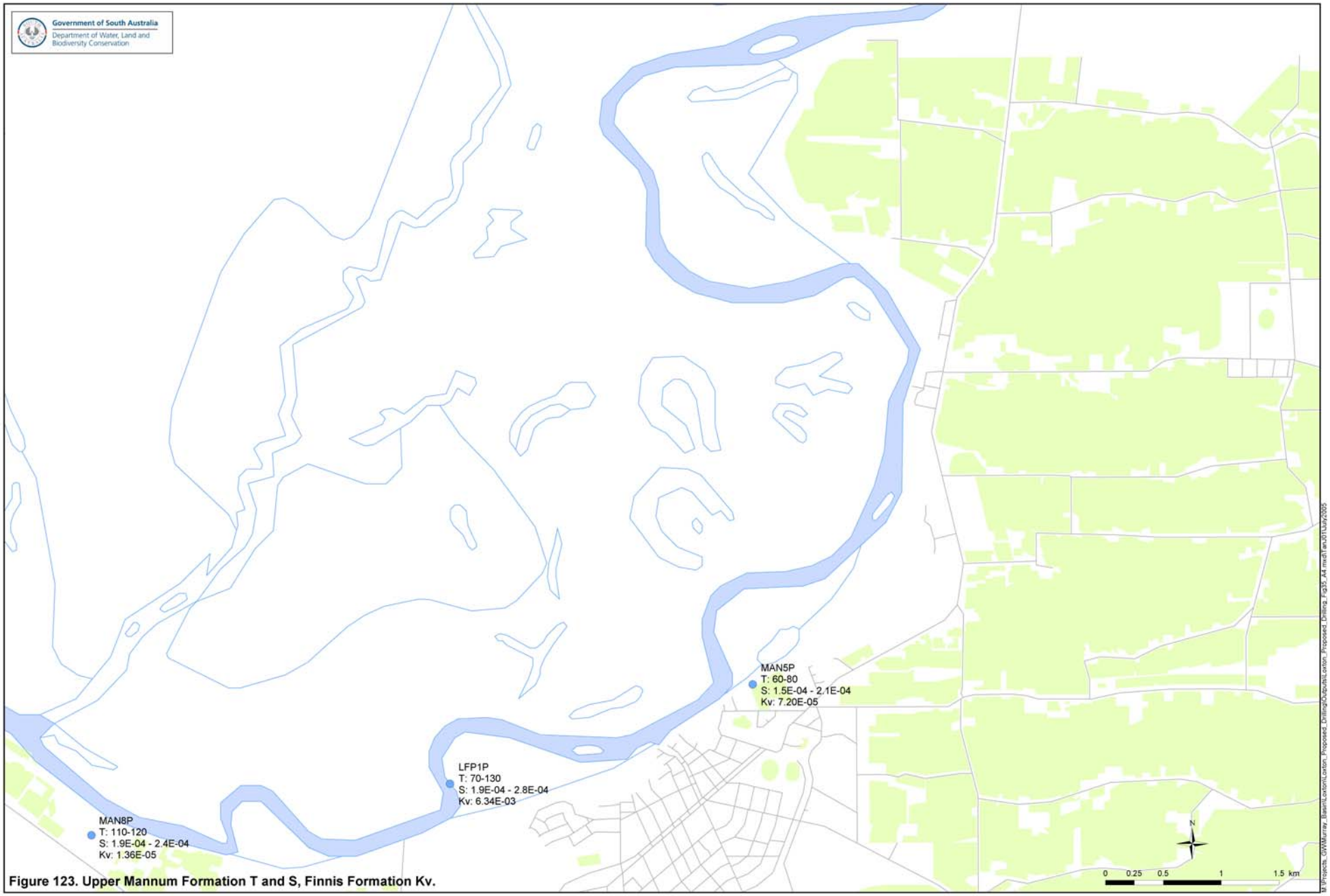


Figure 123. Upper Mannum Formation T and S, Finnis Formation Kv.

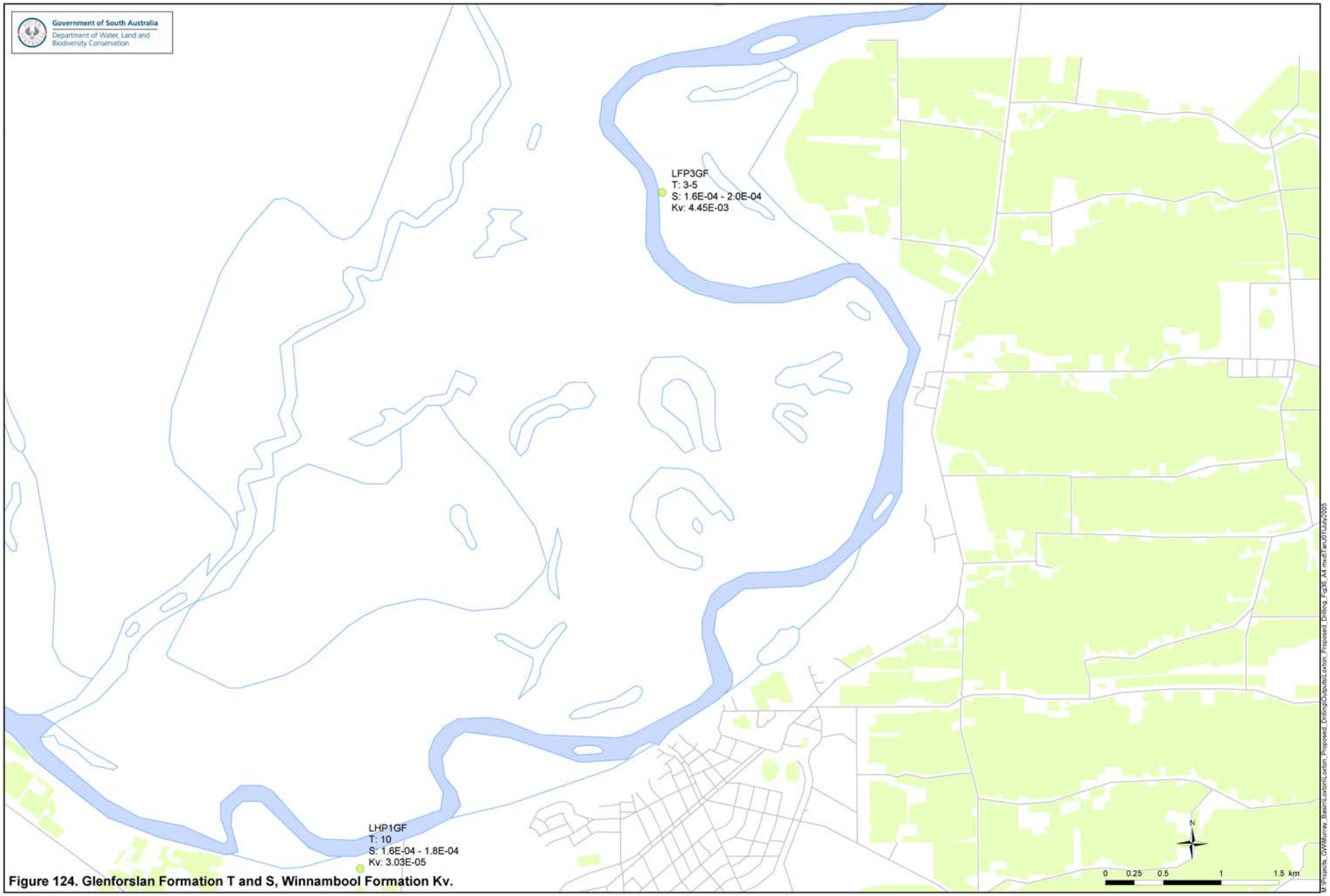


Figure 124. Glenforslan Formation T and S, Winnambool Formation Kv.

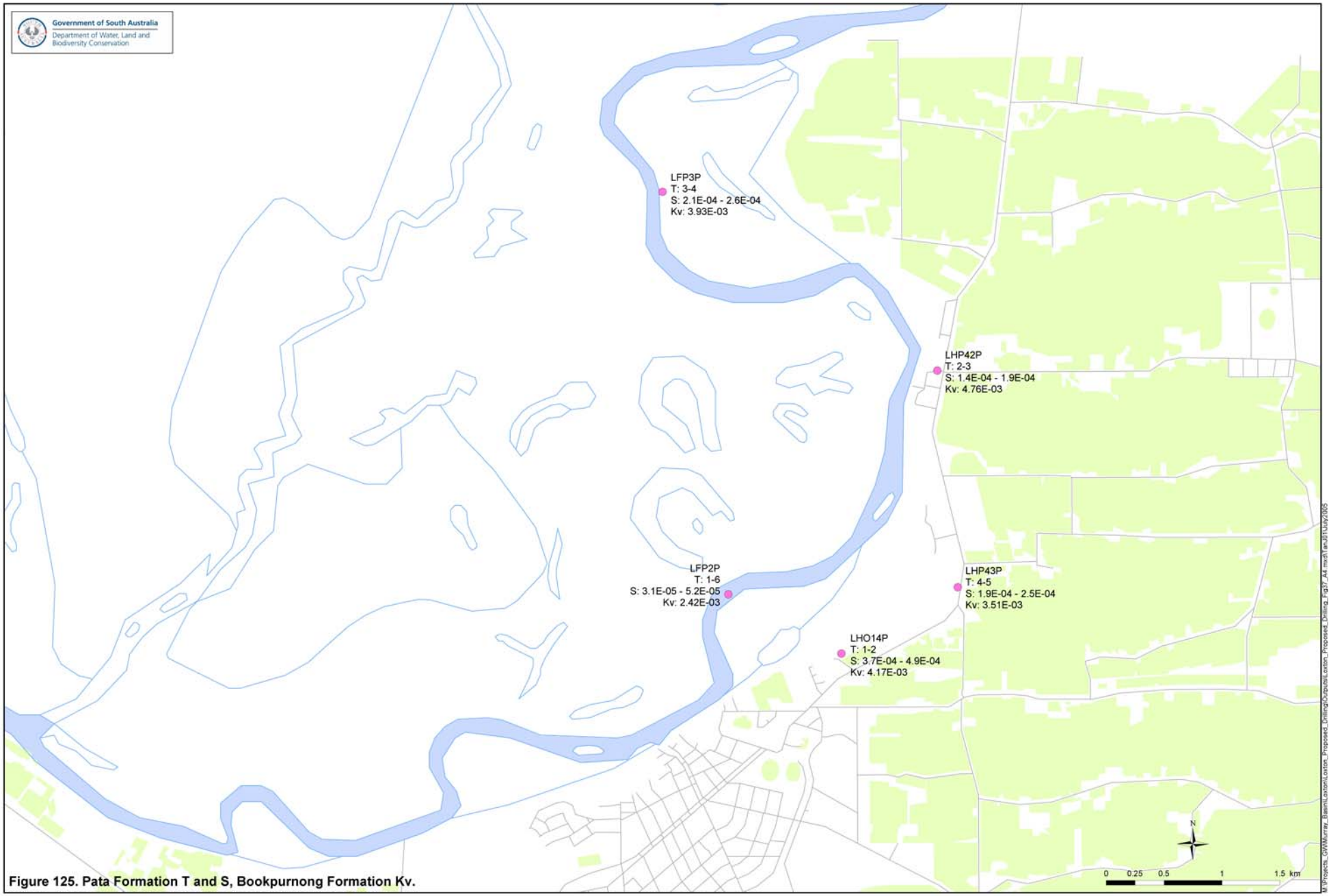


Figure 125. Pata Formation T and S, Bookpurnong Formation Kv.

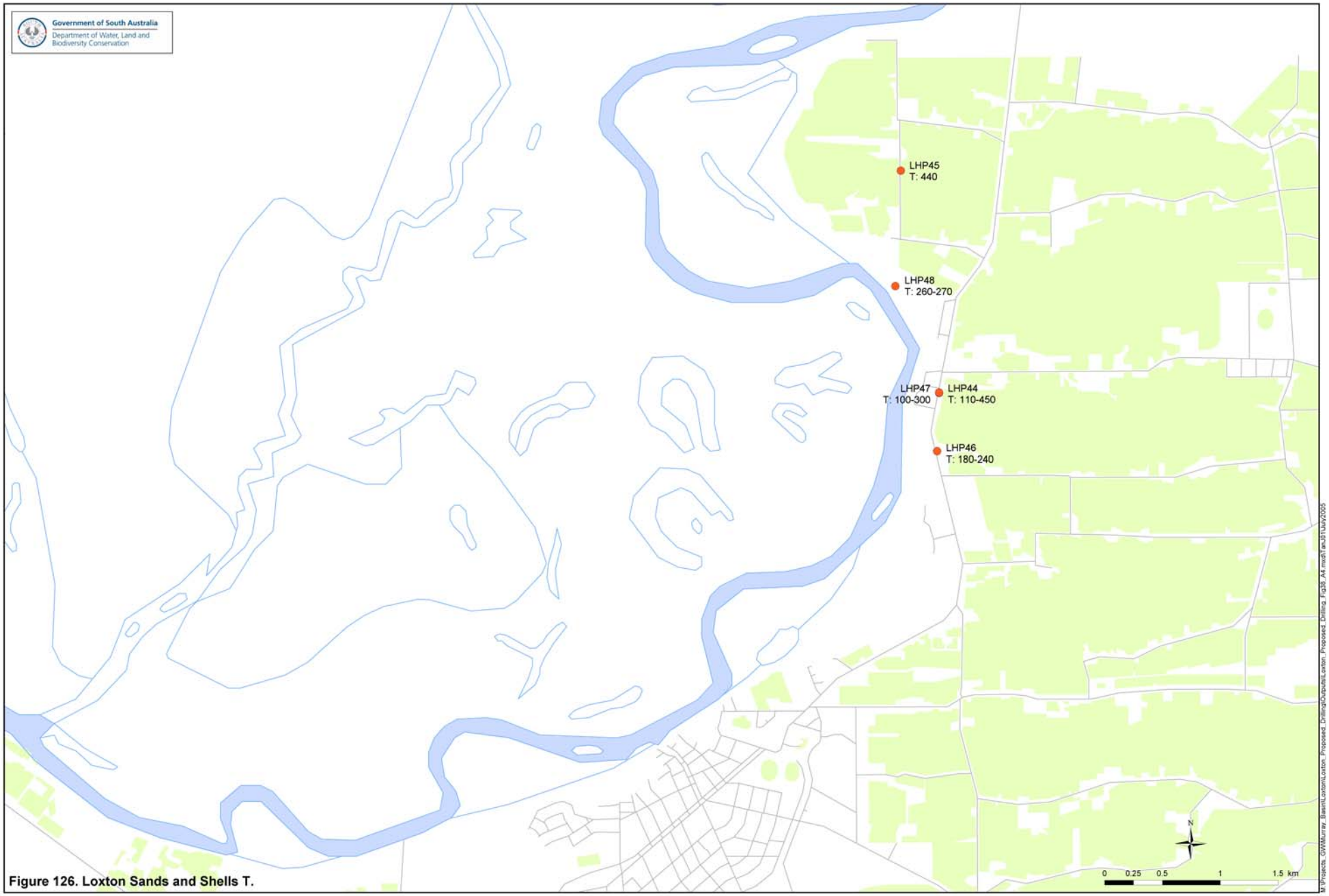


Figure 126. Loxton Sands and Shells T.

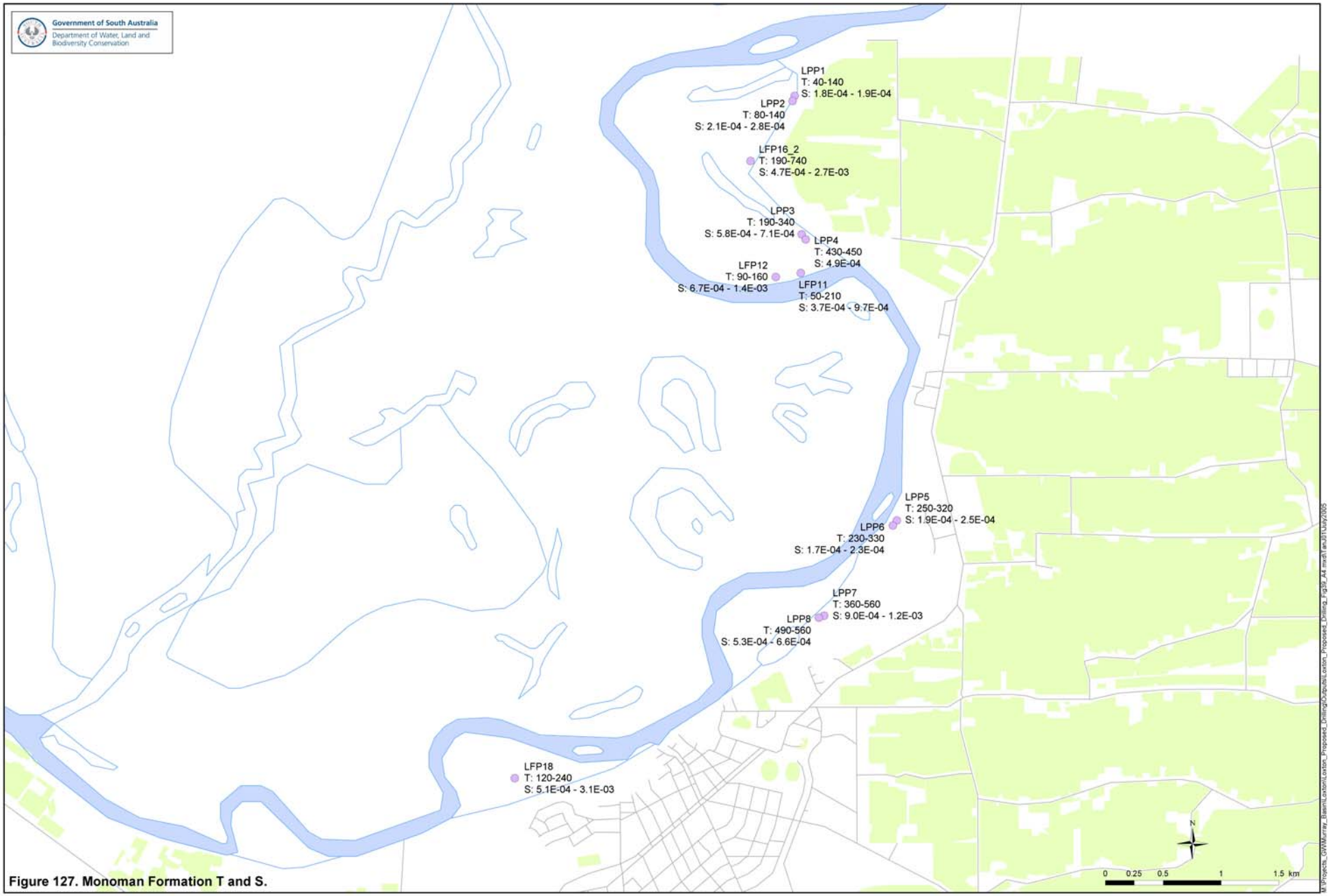


Figure 127. Monoman Formation T and S.

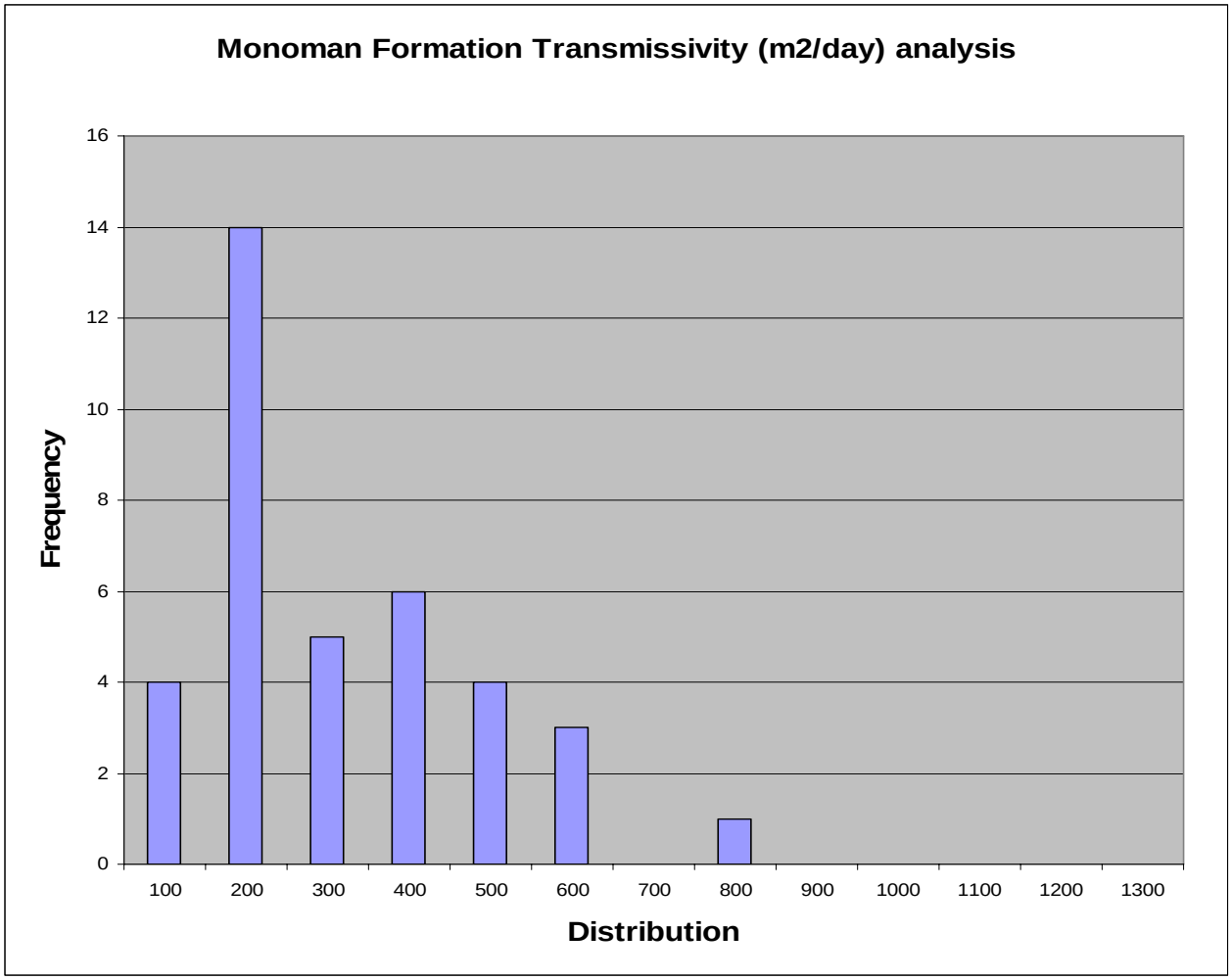


Figure 128 **Transmissivity distribution-frequency plot**

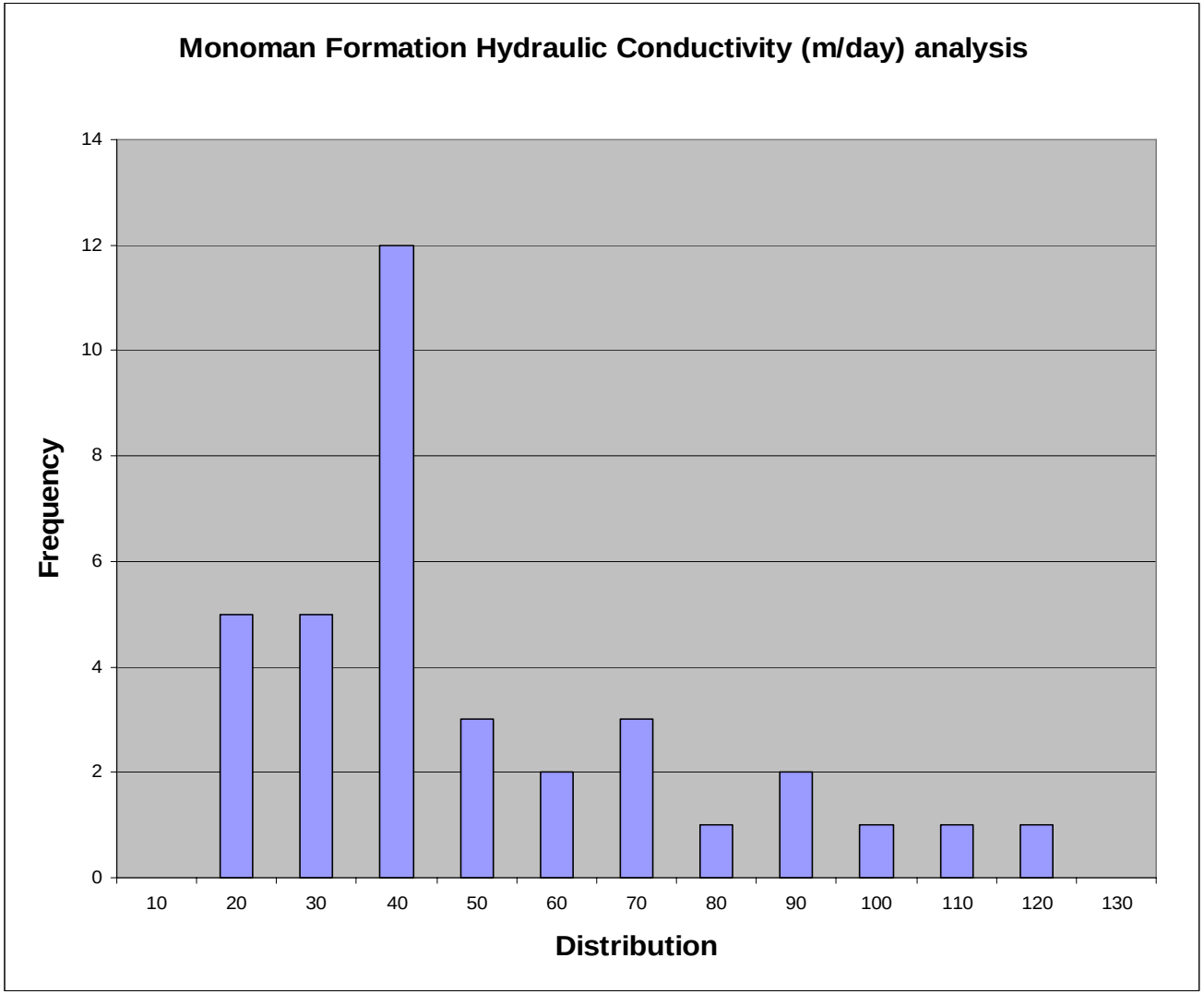


Figure 129 **Hydraulic conductivity distribution-frequency plot**

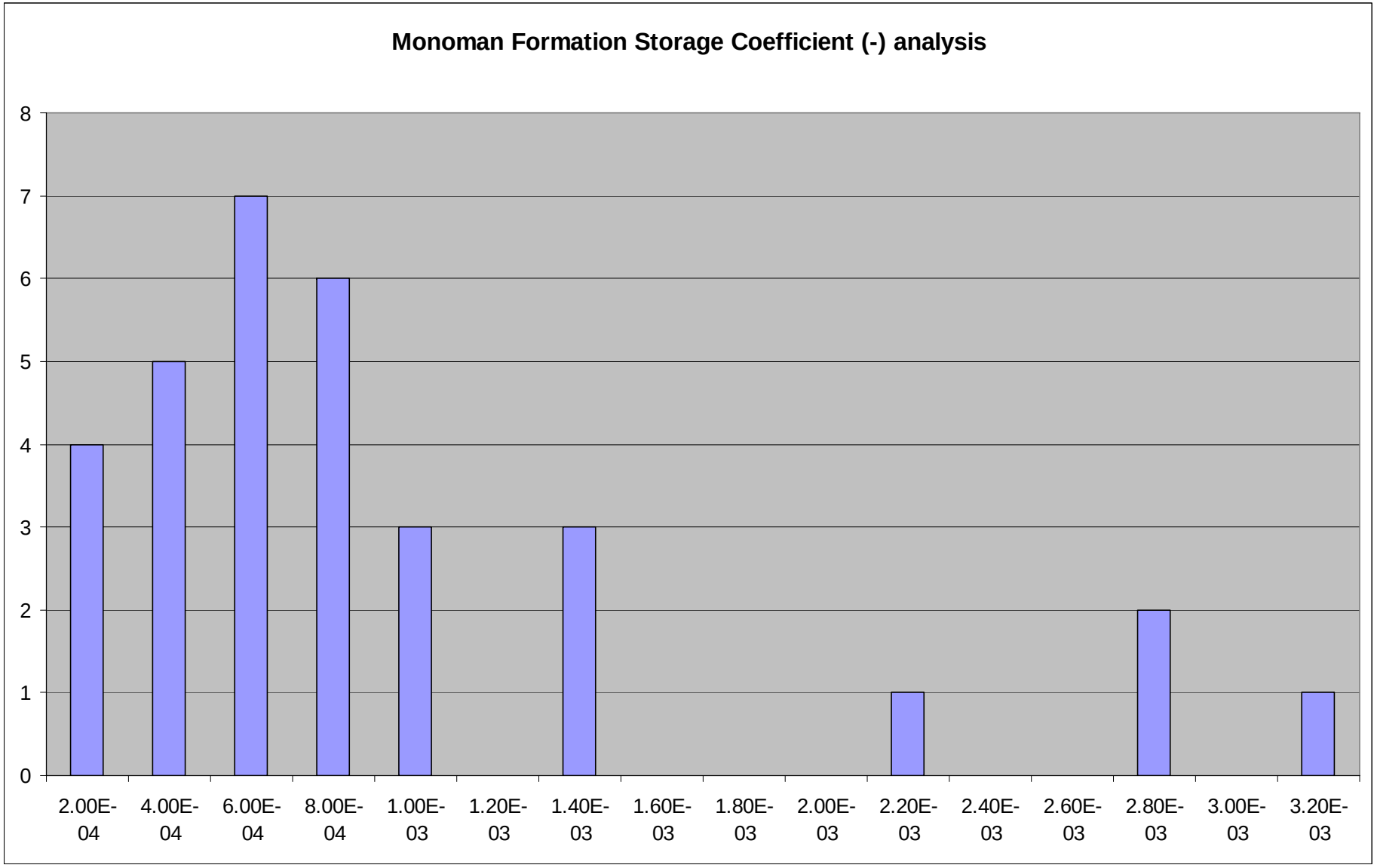


Figure 130 Storage coefficient distribution-frequency plot

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Loxton Salt Interception Scheme Aquifer Testing and Well Hydraulics

SR Howles and AG Smith

Knowledge and Information Division

Department of Water, Land and Biodiversity Conservation

September 2005

Report DWLBC 2005/20

Volume 2 — Appendixes

APPENDIXES

Appendix 'A': Step drawdown test data

LFP11 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		01/03/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.75
2	100	1.50
3	100	2.25
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP11	Monoman	461427	6192155	12.88	12.57		0.00	0.00	7.00	7.00	3.52	9.36
Obs													
Obs													
Obs													
Obs													

Well Type	Project No	Aquifer monitored				
Production	LFP11	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Obs		4.00	11.00	7.00	8.57	1.57
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP11	SC	8.00	11.00	3.00	175	1.00	0.5	8:16	175
Obs										
Obs										
Obs										
Obs										

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	5.340	1.820	7.536	0.75	0.41
2	4.690	1.170	8.186	0.75	0.64
3	4.510	0.990	8.366	0.75	0.76
4	4.520	1.000	8.356	0.75	0.75
5	4.510	0.990	8.366	0.75	0.76
6	4.520	1.000	8.356	0.75	0.75
7	4.540	1.020	8.336	0.75	0.74
8	4.580	1.060	8.296	0.75	0.71
9	4.585	1.065	8.291	0.75	0.70
10	4.615	1.095	8.261	0.75	0.68
12	4.635	1.115	8.241	0.75	0.67
14	4.630	1.110	8.246	0.75	0.68
16	4.630	1.110	8.246	0.75	0.68
18	4.630	1.110	8.246	0.75	0.68
20	4.630	1.110	8.246	0.75	0.68
22	4.635	1.115	8.241	0.75	0.67
24	4.620	1.100	8.256	0.75	0.68
26	4.640	1.120	8.236	0.75	0.67
28	4.630	1.110	8.246	0.75	0.68
30	4.630	1.110	8.246	0.75	0.68
35	4.640	1.120	8.236	0.75	0.67
40	4.625	1.105	8.251	0.75	0.68
45	4.645	1.125	8.231	0.75	0.67
50	4.640	1.120	8.236	0.75	0.67
55	4.635	1.115	8.241	0.75	0.67
60	4.660	1.140	8.216	0.75	0.66
70	4.665	1.145	8.211	0.75	0.66
80	4.720	1.200	8.156	0.75	0.63
90	4.700	1.180	8.176	0.75	0.64
100	4.700	1.180	8.176	0.75	0.64
110	4.700	1.180	8.176	1.50	1.27
112	5.830	2.310	7.046	1.50	0.65
114	5.860	2.340	7.016	1.50	0.64
116	5.900	2.380	6.976	1.50	0.63
118	5.915	2.395	6.961	1.50	0.63
120	5.930	2.410	6.946	1.50	0.62
122	5.945	2.425	6.931	1.50	0.62
124	5.940	2.420	6.936	1.50	0.62
126	5.960	2.440	6.916	1.50	0.61
128	5.960	2.440	6.916	1.50	0.61
130	5.970	2.450	6.906	1.50	0.61
132	5.970	2.450	6.906	1.50	0.61
134	5.970	2.450	6.906	1.50	0.61
136	5.970	2.450	6.906	1.50	0.61
138	5.975	2.455	6.901	1.50	0.61
140	5.990	2.470	6.886	1.50	0.61
145	5.985	2.465	6.891	1.50	0.61
150	6.000	2.480	6.876	1.50	0.60
155	6.015	2.495	6.861	1.50	0.60
160	6.010	2.490	6.866	1.50	0.60
170	6.035	2.515	6.841	1.50	0.60
180	6.020	2.500	6.856	1.50	0.60
190	6.050	2.530	6.826	1.50	0.59

200	6.035	2.515	6.841	1.50	0.60
201	7.170	3.650	5.706	2.25	0.62
202	7.275	3.755	5.601	2.25	0.60
203	7.320	3.800	5.556	2.25	0.59
204	7.340	3.820	5.536	2.25	0.59
205	7.360	3.840	5.516	2.25	0.59
206	7.370	3.850	5.506	2.25	0.58
207	7.360	3.840	5.516	2.25	0.59
208	7.370	3.850	5.506	2.25	0.58
209	7.385	3.865	5.491	2.25	0.58
210	7.385	3.865	5.491	2.25	0.58
212	7.400	3.880	5.476	2.25	0.58
214	7.410	3.890	5.466	2.25	0.58
216	7.415	3.895	5.461	2.25	0.58
218	7.415	3.895	5.461	2.25	0.58
220	7.440	3.920	5.436	2.25	0.57
222	7.460	3.940	5.416	2.25	0.57
224	7.475	3.955	5.401	2.25	0.57
226	7.510	3.990	5.366	2.25	0.56
228	7.505	3.985	5.371	2.25	0.56
230	7.520	4.000	5.356	2.25	0.56
235	7.550	4.030	5.326	2.25	0.56
240	7.530	4.010	5.346	2.25	0.56
245	7.535	4.015	5.341	2.25	0.56
250	7.540	4.020	5.336	2.25	0.56
255	7.540	4.020	5.336	2.25	0.56
260	7.540	4.020	5.336	2.25	0.56
270	7.535	4.015	5.341	2.25	0.56
280	7.610	4.090	5.266	2.25	0.55
290	7.600	4.080	5.276	2.25	0.55
300	7.605	4.085	5.271	2.25	0.55

LFP12 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		
LFP12 Well construction comparison		

Start date		03/03/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.50
2	100	1.25
3	100	2.00
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP12	Monoman	461210	6192120	13.05	12.79		0.00	0.00	5.00	5.00	3.27	9.78
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP12	5.00	10.00	5.00	7.79	2.79
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP12	SC	7.00	10.00	3.00	175	1.00	0.5	8:16	175
Obs										
Obs										
Obs										
Obs										

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
2	3.910	0.640	9.137	0.50	0.78
3	3.910	0.640	9.137	0.50	0.78
4	3.900	0.630	9.147	0.50	0.79
5	3.910	0.640	9.137	0.50	0.78
6	3.940	0.670	9.107	0.50	0.75
7	3.945	0.675	9.102	0.50	0.74
8	3.935	0.665	9.112	0.50	0.75
9	3.940	0.670	9.107	0.50	0.75
10	3.945	0.675	9.102	0.50	0.74
12	3.940	0.670	9.107	0.50	0.75
14	3.950	0.680	9.097	0.50	0.74
16	3.960	0.690	9.087	0.50	0.72
18	3.970	0.700	9.077	0.50	0.71
20	3.970	0.700	9.077	0.50	0.71
22	3.970	0.700	9.077	0.50	0.71
24	3.970	0.700	9.077	0.50	0.71
26	3.980	0.710	9.067	0.50	0.70
28	3.990	0.720	9.057	0.50	0.69
30	3.990	0.720	9.057	0.50	0.69
35	3.985	0.715	9.062	0.50	0.70
40	3.990	0.720	9.057	0.50	0.69
45	3.995	0.725	9.052	0.50	0.69
50	3.995	0.725	9.052	0.50	0.69
55	3.995	0.725	9.052	0.50	0.69
60	4.010	0.740	9.037	0.50	0.68
70	4.020	0.750	9.027	0.50	0.67
80	4.020	0.750	9.027	0.50	0.67
90	4.025	0.755	9.022	0.50	0.66
100	4.025	0.755	9.022	0.50	0.66
102	4.810	1.540	8.237	1.25	0.81
103	5.030	1.760	8.017	1.25	0.71
104	5.060	1.790	7.987	1.25	0.70
105	5.100	1.830	7.947	1.25	0.68
106	5.120	1.850	7.927	1.25	0.68
107	5.140	1.870	7.907	1.25	0.67
108	5.155	1.885	7.892	1.25	0.66
109	5.160	1.890	7.887	1.25	0.66
110	5.170	1.900	7.877	1.25	0.66
112	5.200	1.930	7.847	1.25	0.65
114	5.210	1.940	7.837	1.25	0.64
116	5.210	1.940	7.837	1.25	0.64
118	5.230	1.960	7.817	1.25	0.64
120	5.240	1.970	7.807	1.25	0.63
122	5.245	1.975	7.802	1.25	0.63
124	5.255	1.985	7.792	1.25	0.63
126	5.270	2.000	7.777	1.25	0.63
128	5.275	2.005	7.772	1.25	0.62
130	5.270	2.000	7.777	1.25	0.63
135	5.285	2.015	7.762	1.25	0.62
140	5.290	2.020	7.757	1.25	0.62
145	5.305	2.035	7.742	1.25	0.61
150	5.320	2.050	7.727	1.25	0.61
155	5.330	2.060	7.717	1.25	0.61

160	5.330	2.060	7.717	1.25	0.61
170	5.350	2.080	7.697	1.25	0.60
180	5.360	2.090	7.687	1.25	0.60
190	5.380	2.110	7.667	1.25	0.59
200	5.390	2.120	7.657	1.25	0.59
201	6.200	2.930	6.847	2.00	0.68
203	6.520	3.250	6.527	2.00	0.62
204	6.530	3.260	6.517	2.00	0.61
205	6.540	3.270	6.507	2.00	0.61
206	6.560	3.290	6.487	2.00	0.61
207	6.590	3.320	6.457	2.00	0.60
208	6.620	3.350	6.427	2.00	0.60
209	6.650	3.380	6.397	2.00	0.59
210	6.660	3.390	6.387	2.00	0.59
212	6.670	3.400	6.377	2.00	0.59
214	6.710	3.440	6.337	2.00	0.58
216	6.725	3.455	6.322	2.00	0.58
218	6.750	3.480	6.297	2.00	0.57
220	6.775	3.505	6.272	2.00	0.57
222	6.780	3.510	6.267	2.00	0.57
224	6.770	3.500	6.277	2.00	0.57
226	6.770	3.500	6.277	2.00	0.57
228	6.770	3.500	6.277	2.00	0.57
230	6.780	3.510	6.267	2.00	0.57
235	6.780	3.510	6.267	2.00	0.57
240	6.810	3.540	6.237	2.00	0.56
245	6.830	3.560	6.217	2.00	0.56
250	6.850	3.580	6.197	2.00	0.56
255	6.860	3.590	6.187	2.00	0.56
260	6.875	3.605	6.172	2.00	0.55
270	6.865	3.595	6.182	2.00	0.56
280	6.900	3.630	6.147	2.00	0.55
290	6.900	3.630	6.147	2.00	0.55
300	6.920	3.650	6.127	2.00	0.55

LFP12 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		21/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	1.50
2	16	3.00
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP12	Monoman	461210	6192120	13.05	12.79		0.00	0.00	5.00	5.00	3.61	9.44
Obs	LFO27	Monoman (Pata)	461199	6192117	13.50	12.71		11.50	2.30	5.00	NA	3.72	9.78
Obs	LFO13	Monoman	461189	6192114	13.33	12.62		21.50	4.30	5.00	NA	3.50	9.83
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP12	5.00	10.00	5.00	7.79	2.79
Obs	LFO27	5.00	11.00	6.00	7.71	1.71
Obs	LFO13	4.00	10.00	6.00	8.62	2.62
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP12	SC	7.00	10.00	3.00	175	1.00	0.5	8:16	175
Obs	LFO27	SC	5.00	11.00	6.00	80	NA	NA	NA	80
Obs	LFO13	SC	7.50	10.50	3.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

data not analysed as only 2 steps

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	5.360	1.750	7.687	1.50	0.86
2	5.490	1.880	7.557	1.50	0.80
3	5.560	1.950	7.487	1.50	0.77
4	5.600	1.990	7.447	1.50	0.75
5	5.620	2.010	7.427	1.50	0.75
6	5.670	2.060	7.377	1.50	0.73
7	5.710	2.100	7.337	1.50	0.71
8	5.760	2.150	7.287	1.50	0.70
9	5.780	2.170	7.267	1.50	0.69
10	5.810	2.200	7.237	1.50	0.68
12	5.850	2.240	7.197	1.50	0.67
14	5.880	2.270	7.167	1.50	0.66
16	5.890	2.280	7.157	1.50	0.66
18	5.890	2.280	7.157	1.50	0.66
20	5.900	2.290	7.147	1.50	0.66
22	5.930	2.320	7.117	1.50	0.65
24	5.945	2.335	7.102	1.50	0.64
26	5.950	2.340	7.097	1.50	0.64
28	5.955	2.345	7.092	1.50	0.64
30	5.965	2.355	7.082	1.50	0.64
35	6.000	2.390	7.047	1.50	0.63
40	5.960	2.350	7.087	1.50	0.64
45	6.000	2.390	7.047	1.50	0.63
50	6.015	2.405	7.032	1.50	0.62
55	6.040	2.430	7.007	1.50	0.62
60	6.050	2.440	6.997	1.50	0.61
70	6.080	2.470	6.967	1.50	0.61
80	6.090	2.480	6.957	1.50	0.60
90	6.095	2.485	6.952	1.50	0.60
100	6.101	2.491	6.946	1.50	0.60
101	7.940	4.330	5.107	3.00	0.69
102	8.210	4.600	4.837	3.00	0.65
103	8.390	4.780	4.657	3.00	0.63
104	8.730	5.120	4.317	3.00	0.59
105	9.090	5.480	3.957	3.00	0.55
106	9.260	5.650	3.787	3.00	0.53
107	9.410	5.800	3.637	3.00	0.52
108	9.580	5.970	3.467	3.00	0.50
109	9.790	6.180	3.257	3.00	0.49
110	9.930	6.320	3.117	3.00	0.47
111	10.050	6.440	2.997	3.00	0.47
112	10.120	6.510	2.927	3.00	0.46
113	10.160	6.550	2.887	3.00	0.46
114	10.250	6.640	2.797	3.00	0.45
115	10.300	6.690	2.747	3.00	0.45
116	10.410	6.800	2.637	3.00	0.44

LFP12_2 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		
LFP12 Well construction comparison		

Start date		19/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	1.50
2	100	3.00
3	100	4.50
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP12_2	Monoman	461209	6192122	13.06	12.76		0.00	0.00	5.00	5.00	3.60	9.46
Obs	LFO27	Monoman (Pata)	461199	6192117	13.50	12.71		11.50	2.30	5.00	NA	3.68	9.82
Obs	LFO13	Monoman	461189	6192114	13.33	12.62		21.50	4.30	5.00	NA	3.50	9.83
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP12_2	5.00	10.00	5.00	7.76	2.76
Obs	LFO27	5.00	11.00	6.00	7.71	1.71
Obs	LFO13	4.00	10.00	6.00	8.62	2.62
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP12_2	SC	7.00	10.00	3.00	175	0.60	1.0	8:16	175
Obs	LFO27	SC	5.00	11.00	6.00	80	NA	NA	NA	80
Obs	LFO13	SC	7.50	10.50	3.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	4.550	0.950	8.511	1.50	1.58
2	4.680	1.080	8.381	1.50	1.39
3	4.690	1.090	8.371	1.50	1.38
4	4.720	1.120	8.341	1.50	1.34
5	4.760	1.160	8.301	1.50	1.29
6	4.800	1.200	8.261	1.50	1.25
7	4.830	1.230	8.231	1.50	1.22
8	4.870	1.270	8.191	1.50	1.18
9	4.875	1.275	8.186	1.50	1.18
10	4.870	1.270	8.191	1.50	1.18
12	4.880	1.280	8.181	1.50	1.17
14	4.890	1.290	8.171	1.50	1.16
16	4.900	1.300	8.161	1.50	1.15
18	4.910	1.310	8.151	1.50	1.15
20	4.920	1.320	8.141	1.50	1.14
22	4.930	1.330	8.131	1.50	1.13
24	4.930	1.330	8.131	1.50	1.13
26	4.940	1.340	8.121	1.50	1.12
28	4.945	1.345	8.116	1.50	1.12
30	4.945	1.345	8.116	1.50	1.12
35	4.955	1.355	8.106	1.50	1.11
40	4.990	1.390	8.071	1.50	1.08
45	4.990	1.390	8.071	1.50	1.08
50	4.960	1.360	8.101	1.50	1.10
55	4.955	1.355	8.106	1.50	1.11
60	4.960	1.360	8.101	1.50	1.10
70	4.985	1.385	8.076	1.50	1.08
80	4.990	1.390	8.071	1.50	1.08
90	4.990	1.390	8.071	1.50	1.08
100	4.980	1.380	8.081	1.50	1.09
101	6.025	2.425	7.036	3.00	1.24
102	6.040	2.440	7.021	3.00	1.23
103	6.070	2.470	6.991	3.00	1.21
104	6.200	2.600	6.861	3.00	1.15
105	6.270	2.670	6.791	3.00	1.12
106	6.275	2.675	6.786	3.00	1.12
107	6.300	2.700	6.761	3.00	1.11
108	6.305	2.705	6.756	3.00	1.11
109	6.320	2.720	6.741	3.00	1.10
110	6.340	2.740	6.721	3.00	1.09
112	6.370	2.770	6.691	3.00	1.08
114	6.400	2.800	6.661	3.00	1.07
116	6.415	2.815	6.646	3.00	1.07
118	6.430	2.830	6.631	3.00	1.06
120	6.440	2.840	6.621	3.00	1.06
122	6.450	2.850	6.611	3.00	1.05
124	6.460	2.860	6.601	3.00	1.05
126	6.470	2.870	6.591	3.00	1.05
128	6.470	2.870	6.591	3.00	1.05
130	6.480	2.880	6.581	3.00	1.04
135	6.490	2.890	6.571	3.00	1.04
140	6.495	2.895	6.566	3.00	1.04
145	6.515	2.915	6.546	3.00	1.03

150	6.520	2.920	6.541	3.00	1.03
155	6.545	2.945	6.516	3.00	1.02
160	6.545	2.945	6.516	3.00	1.02
170	6.580	2.980	6.481	3.00	1.01
180	6.570	2.970	6.491	3.00	1.01
190	6.640	3.040	6.421	3.00	0.99
200	6.630	3.030	6.431	3.00	0.99
201	7.650	4.050	5.411	4.50	1.11
202	7.790	4.190	5.271	4.50	1.07
203	7.840	4.240	5.221	4.50	1.06
204	7.920	4.320	5.141	4.50	1.04
205	7.950	4.350	5.111	4.50	1.03
206	8.000	4.400	5.061	4.50	1.02
207	8.020	4.420	5.041	4.50	1.02
208	8.045	4.445	5.016	4.50	1.01
209	8.080	4.480	4.981	4.50	1.00
210	8.110	4.510	4.951	4.50	1.00
212	8.200	4.600	4.861	4.50	0.98
214	8.250	4.650	4.811	4.50	0.97
216	8.300	4.700	4.761	4.50	0.96
218	8.330	4.730	4.731	4.50	0.95
220	8.360	4.760	4.701	4.50	0.95
222	8.380	4.780	4.681	4.50	0.94
224	8.400	4.800	4.661	4.50	0.94
226	8.450	4.850	4.611	4.50	0.93
228	8.480	4.880	4.581	4.50	0.92
230	8.495	4.895	4.566	4.50	0.92
235	8.555	4.955	4.506	4.50	0.91
240	8.610	5.010	4.451	4.50	0.90
245	8.640	5.040	4.421	4.50	0.89
250	8.680	5.080	4.381	4.50	0.89
255	8.695	5.095	4.366	4.50	0.88
260	8.740	5.140	4.321	4.50	0.88
270	8.765	5.165	4.296	4.50	0.87
280	8.760	5.160	4.301	4.50	0.87
290	8.800	5.200	4.261	4.50	0.87
300	8.825	5.225	4.236	4.50	0.86

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	3.740	0.060	9.761
3	3.810	0.130	9.691
5	3.860	0.180	9.641
7	3.890	0.210	9.611
9	3.920	0.240	9.581
12	3.940	0.260	9.561
14	3.950	0.270	9.551
16	3.960	0.280	9.541
18	3.965	0.285	9.536
20	3.970	0.290	9.531
22	3.980	0.300	9.521
24	3.980	0.300	9.521
26	3.990	0.310	9.511
28	3.990	0.310	9.511
30	3.995	0.315	9.506
35	4.000	0.320	9.501
40	4.010	0.330	9.491
45	4.015	0.335	9.486
50	4.015	0.335	9.486
55	4.015	0.335	9.486
60	4.020	0.340	9.481
70	4.025	0.345	9.476
80	4.030	0.350	9.471
90	4.040	0.360	9.461
100	4.040	0.360	9.461
102	4.110	0.430	9.391
104	4.170	0.490	9.331
106	4.210	0.530	9.291
108	4.250	0.570	9.251
110	4.260	0.580	9.241
112	4.285	0.605	9.216
114	4.300	0.620	9.201
116	4.310	0.630	9.191
118	4.320	0.640	9.181
120	4.325	0.645	9.176
122	4.330	0.650	9.171
124	4.335	0.655	9.166
126	4.340	0.660	9.161
128	4.345	0.665	9.156
130	4.350	0.670	9.151
135	4.360	0.680	9.141
140	4.365	0.685	9.136
145	4.370	0.690	9.131
150	4.375	0.695	9.126
155	4.385	0.705	9.116
160	4.385	0.705	9.116
170	4.400	0.720	9.101
180	4.400	0.720	9.101
190	4.410	0.730	9.091
200	4.420	0.740	9.081
202	4.500	0.820	9.001
204	4.555	0.875	8.946
206	4.590	0.910	8.911
208	4.620	0.940	8.881

210	4.640	0.960	8.861
212	4.670	0.990	8.831
214	4.680	1.000	8.821
216	4.690	1.010	8.811
218	4.700	1.020	8.801
220	4.710	1.030	8.791
222	4.715	1.035	8.786
224	4.720	1.040	8.781
226	4.725	1.045	8.776
228	4.730	1.050	8.771
230	4.735	1.055	8.766
235	4.745	1.065	8.756
240	4.750	1.070	8.751
245	4.755	1.075	8.746
250	4.760	1.080	8.741
255	4.765	1.085	8.736
260	4.770	1.090	8.731
270	4.780	1.100	8.721
280	4.785	1.105	8.716
290	4.790	1.110	8.711
300	4.795	1.115	8.706

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	3.540	0.040	9.792
4	3.575	0.075	9.757
6	3.600	0.100	9.732
8	3.620	0.120	9.712
10	3.630	0.130	9.702
13	3.650	0.150	9.682
15	3.660	0.160	9.672
17	3.660	0.160	9.672
19	3.665	0.165	9.667
21	3.670	0.170	9.662
23	3.675	0.175	9.657
25	3.680	0.180	9.652
27	3.685	0.185	9.647
29	3.690	0.190	9.642
31	3.690	0.190	9.642
36	3.695	0.195	9.637
41	3.700	0.200	9.632
46	3.705	0.205	9.627
51	3.705	0.205	9.627
56	3.705	0.205	9.627
61	3.710	0.210	9.622
71	3.715	0.215	9.617
81	3.720	0.220	9.612
91	3.725	0.225	9.607
100	3.725	0.225	9.607
101	3.730	0.230	9.602
103	3.775	0.275	9.557
105	3.810	0.310	9.522
107	3.830	0.330	9.502
109	3.850	0.350	9.482
111	3.860	0.360	9.472
113	3.880	0.380	9.452
115	3.885	0.385	9.447
117	3.890	0.390	9.442
119	3.900	0.400	9.432
121	3.905	0.405	9.427
123	3.905	0.405	9.427
125	3.910	0.410	9.422
127	3.915	0.415	9.417
129	3.920	0.420	9.412
131	3.920	0.420	9.412
136	3.925	0.425	9.407
141	3.930	0.430	9.402
146	3.935	0.435	9.397
151	3.940	0.440	9.392
156	3.945	0.445	9.387
161	3.950	0.450	9.382
171	3.960	0.460	9.372
181	3.965	0.465	9.367
191	3.970	0.470	9.362
200	3.975	0.475	9.357
201	3.985	0.485	9.347
203	4.030	0.530	9.302
205	4.060	0.560	9.272

207	4.080	0.580	9.252
209	4.100	0.600	9.232
211	4.110	0.610	9.222
213	4.120	0.620	9.212
215	4.130	0.630	9.202
217	4.140	0.640	9.192
219	4.150	0.650	9.182
221	4.150	0.650	9.182
223	4.155	0.655	9.177
225	4.160	0.660	9.172
227	4.165	0.665	9.167
229	4.165	0.665	9.167
231	4.170	0.670	9.162
236	4.175	0.675	9.157
241	4.180	0.680	9.152
246	4.185	0.685	9.147
251	4.190	0.690	9.142
256	4.190	0.690	9.142
261	4.195	0.695	9.137
271	4.200	0.700	9.132
281	4.205	0.705	9.127
291	4.210	0.710	9.122
300	4.215	0.715	9.117

LFP12_2 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		16/07/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		100

Step	Duration (minutes)	Q (L/s)
1	100	3.20
2	single step only	
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP12_2	Monoman	461209	6192122	13.06	12.76		0.00	0.00	5.00	5.00	3.74	9.32
Obs	LFO27	Monoman (Pata)	461199	6192117	13.50	12.71		11.50	2.30	5.00	NA	3.65	9.85
Obs	LFO13	Monoman	461189	6192114	13.33	12.62		21.50	4.30	5.00	NA	3.40	9.93
Obs	LFO26	Monoman	461179	6192111	13.52	12.56		33.50	6.70	5.00	NA	3.66	9.87
Obs	LFO14	Monoman	461097	6192119	13.57	12.73		112.21	22.44	5.00	NA	3.69	9.88

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP12_2	5.00	10.00	5.00	7.76	2.76
Obs	LFO27	5.00	11.00	6.00	7.71	1.71
Obs	LFO13	4.00	10.00	6.00	8.62	2.62
Obs	LFO26	5.00	10.00	5.00	7.56	2.56
Obs	LFO14	4.00	10.00	6.00	8.73	2.73

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP12_2	SC	7.00	10.00	3.00	175	0.60	1.0	8:16	175
Obs	LFO27	SC	5.00	11.00	6.00	80	NA	NA	NA	80
Obs	LFO13	SC	7.50	10.50	3.00	80	NA	NA	NA	80
Obs	LFO26	SC	5.00	10.00	5.00	80	NA	NA	NA	80
Obs	LFO14	SC	7.00	10.00	3.00	80	NA	NA	NA	80

Note:

data not analysed as only 100 minutes

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	5.670	1.930	7.391	3.20	1.66
2	6.000	2.260	7.061	3.20	1.42
3	6.120	2.380	6.941	3.20	1.34
4	6.220	2.480	6.841	3.20	1.29
5	6.310	2.570	6.751	3.20	1.25
6	6.375	2.635	6.686	3.20	1.21
7	6.440	2.700	6.621	3.20	1.19
8	6.440	2.700	6.621	3.20	1.19
9	6.500	2.760	6.561	3.20	1.16
10	6.530	2.790	6.531	3.20	1.15
12	6.590	2.850	6.471	3.20	1.12
14	6.630	2.890	6.431	3.20	1.11
16	6.670	2.930	6.391	3.20	1.09
18	6.685	2.945	6.376	3.20	1.09
20	6.720	2.980	6.341	3.20	1.07
22	6.730	2.990	6.331	3.20	1.07
24	6.750	3.010	6.311	3.20	1.06
26	6.765	3.025	6.296	3.20	1.06
28	6.780	3.040	6.281	3.20	1.05
30	6.800	3.060	6.261	3.20	1.05
35	6.820	3.080	6.241	3.20	1.04
40	6.840	3.100	6.221	3.20	1.03
45	6.820	3.080	6.241	3.20	1.04
50	6.870	3.130	6.191	3.20	1.02
55	6.880	3.140	6.181	3.20	1.02
60	6.900	3.160	6.161	3.20	1.01
70	6.930	3.190	6.131	3.20	1.00
80	6.940	3.200	6.121	3.20	1.00
90	6.950	3.210	6.111	3.20	1.00
100	6.970	3.230	6.091	3.20	0.99

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	3.750	0.100	9.751
3	3.900	0.250	9.601
5	4.010	0.360	9.491
8	4.100	0.450	9.401
11	4.165	0.515	9.336
14	4.200	0.550	9.301
19	4.250	0.600	9.251
22	4.270	0.620	9.231
25	4.285	0.635	9.216
28	4.300	0.650	9.201
30	4.305	0.655	9.196
37	4.325	0.675	9.176
42	4.340	0.690	9.161
47	4.345	0.695	9.156
54	4.355	0.705	9.146
59	4.360	0.710	9.141
69	4.375	0.725	9.126
79	4.390	0.740	9.111
79	4.400	0.750	9.101
99	4.405	0.755	9.096

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	3.470	0.070	9.862
4.5	3.580	0.180	9.752
6	3.615	0.215	9.717
9	3.670	0.270	9.662
12	3.710	0.310	9.622
15	3.745	0.345	9.587
20	3.770	0.370	9.562
23	3.790	0.390	9.542
26	3.800	0.400	9.532
29	3.805	0.405	9.527
31	3.810	0.410	9.522
38	3.830	0.430	9.502
41	3.835	0.435	9.497
48	3.840	0.440	9.492
55	3.850	0.450	9.482
60	3.860	0.460	9.472
70	3.870	0.470	9.462
80	3.880	0.480	9.452
90	3.885	0.485	9.447
100	3.890	0.490	9.442

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
4	3.740	0.085	9.592
7	3.790	0.135	9.542
10	3.830	0.175	9.502
13	3.860	0.205	9.472
18	3.885	0.230	9.447
24	3.910	0.255	9.422
27	3.915	0.260	9.417
32	3.930	0.275	9.402
39	3.940	0.285	9.392
44	3.950	0.295	9.382
49	3.955	0.300	9.377
56	3.960	0.305	9.372
61	3.965	0.310	9.367
71	3.970	0.315	9.362
81	3.980	0.325	9.352
91	3.990	0.335	9.342
101	4.000	0.345	9.332

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
35	3.710	0.020	9.622
52	3.715	0.025	9.617
66	3.720	0.030	9.612
84	3.725	0.035	9.607
103	3.725	0.035	9.607

LFP13 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		
LFP12 Well construction comparison		

Start date		22/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	1.50
2	100	3.00
3	100	4.50
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP13	Monoman	461210	6192115	13.20	12.78		0.00	0.00	5.00	5.00	3.72	9.48
Obs	LFO27	Monoman (Pata)	461199	6192117	13.50	12.71		11.50	2.30	5.00	NA	3.68	9.82
Obs	LFO13	Monoman	461189	6192114	13.33	12.62		21.50	4.30	5.00	NA	3.52	9.81
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP13	5.00	10.00	5.00	7.78	2.78
Obs	LFO27	5.00	11.00	6.00	7.71	1.71
Obs	LFO13	4.00	10.00	6.00	8.62	2.62
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP13	WS	7.00	10.00	3.00	174	0.60	0.4	NA	200
Obs	LFO27	SC	5.00	11.00	6.00	80	NA	NA	NA	80
Obs	LFO13	SC	7.50	10.50	3.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	4.650	0.930	8.549	1.50	1.61
2	4.710	0.990	8.489	1.50	1.52
3	4.750	1.030	8.449	1.50	1.46
4	4.790	1.070	8.409	1.50	1.40
5	4.800	1.080	8.399	1.50	1.39
6	4.830	1.110	8.369	1.50	1.35
7	4.850	1.130	8.349	1.50	1.33
8	4.860	1.140	8.339	1.50	1.32
9	4.880	1.160	8.319	1.50	1.29
10	4.900	1.180	8.299	1.50	1.27
12	4.910	1.190	8.289	1.50	1.26
14	4.925	1.205	8.274	1.50	1.24
16	4.940	1.220	8.259	1.50	1.23
18	4.960	1.240	8.239	1.50	1.21
20	4.970	1.250	8.229	1.50	1.20
22	4.985	1.265	8.214	1.50	1.19
24	4.985	1.265	8.214	1.50	1.19
26	4.990	1.270	8.209	1.50	1.18
28	5.000	1.280	8.199	1.50	1.17
30	5.010	1.290	8.189	1.50	1.16
35	5.020	1.300	8.179	1.50	1.15
40	5.030	1.310	8.169	1.50	1.15
45	5.030	1.310	8.169	1.50	1.15
50	5.045	1.325	8.154	1.50	1.13
55	5.015	1.295	8.184	1.50	1.16
60	5.020	1.300	8.179	1.50	1.15
70	5.030	1.310	8.169	1.50	1.15
80	5.025	1.305	8.174	1.50	1.15
90	5.040	1.320	8.159	1.50	1.14
100	5.040	1.320	8.159	1.50	1.14
101	5.900	2.180	7.299	3.00	1.38
102	5.950	2.230	7.249	3.00	1.35
103	6.050	2.330	7.149	3.00	1.29
104	6.090	2.370	7.109	3.00	1.27
105	6.170	2.450	7.029	3.00	1.22
106	6.210	2.490	6.989	3.00	1.20
107	6.220	2.500	6.979	3.00	1.20
108	6.240	2.520	6.959	3.00	1.19
109	6.240	2.520	6.959	3.00	1.19
110	6.270	2.550	6.929	3.00	1.18
112	6.300	2.580	6.899	3.00	1.16
114	6.320	2.600	6.879	3.00	1.15
116	6.330	2.610	6.869	3.00	1.15
118	6.335	2.615	6.864	3.00	1.15
120	6.330	2.610	6.869	3.00	1.15
122	6.350	2.630	6.849	3.00	1.14
124	6.350	2.630	6.849	3.00	1.14
126	6.360	2.640	6.839	3.00	1.14
128	6.360	2.640	6.839	3.00	1.14
130	6.365	2.645	6.834	3.00	1.13
135	6.380	2.660	6.819	3.00	1.13
140	6.375	2.655	6.824	3.00	1.13
145	6.360	2.640	6.839	3.00	1.14

150	6.410	2.690	6.789	3.00	1.12
155	6.400	2.680	6.799	3.00	1.12
160	6.425	2.705	6.774	3.00	1.11
170	6.415	2.695	6.784	3.00	1.11
180	6.480	2.760	6.719	3.00	1.09
190	6.460	2.740	6.739	3.00	1.09
200	6.450	2.730	6.749	3.00	1.10
201	7.250	3.530	5.949	4.50	1.27
202	7.380	3.660	5.819	4.50	1.23
203	7.430	3.710	5.769	4.50	1.21
204	7.510	3.790	5.689	4.50	1.19
205	7.530	3.810	5.669	4.50	1.18
206	7.560	3.840	5.639	4.50	1.17
207	7.590	3.870	5.609	4.50	1.16
208	7.615	3.895	5.584	4.50	1.16
209	7.620	3.900	5.579	4.50	1.15
210	7.630	3.910	5.569	4.50	1.15
212	7.660	3.940	5.539	4.50	1.14
214	7.680	3.960	5.519	4.50	1.14
216	7.700	3.980	5.499	4.50	1.13
218	7.710	3.990	5.489	4.50	1.13
220	7.720	4.000	5.479	4.50	1.13
222	7.725	4.005	5.474	4.50	1.12
224	7.730	4.010	5.469	4.50	1.12
226	7.745	4.025	5.454	4.50	1.12
228	7.750	4.030	5.449	4.50	1.12
230	7.750	4.030	5.449	4.50	1.12
235	7.770	4.050	5.429	4.50	1.11
240	7.780	4.060	5.419	4.50	1.11
245	7.810	4.090	5.389	4.50	1.10
250	7.800	4.080	5.399	4.50	1.10
255	7.805	4.085	5.394	4.50	1.10
260	7.800	4.080	5.399	4.50	1.10
270	7.820	4.100	5.379	4.50	1.10
280	7.835	4.115	5.364	4.50	1.09
290	7.850	4.130	5.349	4.50	1.09
300	7.860	4.140	5.339	4.50	1.09

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	3.760	0.080	9.741
3	3.830	0.150	9.671
5	3.880	0.200	9.621
7	3.920	0.240	9.581
9	3.940	0.260	9.561
11	3.960	0.280	9.541
13	3.970	0.290	9.531
15	3.980	0.300	9.521
17	3.990	0.310	9.511
19	4.000	0.320	9.501
21	4.005	0.325	9.496
23	4.010	0.330	9.491
25	4.015	0.335	9.486
27	4.020	0.340	9.481
29	4.025	0.345	9.476
35	4.030	0.350	9.471
40	4.040	0.360	9.461
45	4.045	0.365	9.456
50	4.055	0.375	9.446
55	4.050	0.370	9.451
60	4.050	0.370	9.451
70	4.055	0.375	9.446
80	4.060	0.380	9.441
90	4.065	0.385	9.436
100	4.070	0.390	9.431
101	4.100	0.420	9.401
103	4.200	0.520	9.301
105	4.250	0.570	9.251
107	4.290	0.610	9.211
109	4.320	0.640	9.181
111	4.340	0.660	9.161
113	4.360	0.680	9.141
115	4.375	0.695	9.126
117	4.380	0.700	9.121
119	4.390	0.710	9.111
121	4.400	0.720	9.101
123	4.400	0.720	9.101
125	4.405	0.725	9.096
127	4.405	0.725	9.096
129	4.410	0.730	9.091
135	4.420	0.740	9.081
140	4.425	0.745	9.076
145	4.430	0.750	9.071
150	4.440	0.760	9.061
155	4.450	0.770	9.051
160	4.450	0.770	9.051
170	4.455	0.775	9.046
180	4.490	0.810	9.011
190	4.480	0.800	9.021
200	4.485	0.805	9.016
201	4.530	0.850	8.971
203	4.610	0.930	8.891
205	4.655	0.975	8.846
207	4.695	1.015	8.806

209	4.720	1.040	8.781
211	4.740	1.060	8.761
213	4.760	1.080	8.741
215	4.770	1.090	8.731
217	4.780	1.100	8.721
219	4.790	1.110	8.711
221	4.795	1.115	8.706
223	4.800	1.120	8.701
225	4.810	1.130	8.691
227	4.815	1.135	8.686
229	4.820	1.140	8.681
235	4.830	1.150	8.671
240	4.840	1.160	8.661
245	4.845	1.165	8.656
250	4.850	1.170	8.651
255	4.855	1.175	8.646
260	4.860	1.180	8.641
270	4.870	1.190	8.631
280	4.880	1.200	8.621
290	4.890	1.210	8.611
300	4.900	1.220	8.601

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	3.540	0.020	9.792
4	3.580	0.060	9.752
6	3.610	0.090	9.722
8	3.630	0.110	9.702
10	3.640	0.120	9.692
12	3.660	0.140	9.672
14	3.665	0.145	9.667
16	3.670	0.150	9.662
18	3.680	0.160	9.652
20	3.685	0.165	9.647
22	3.690	0.170	9.642
24	3.690	0.170	9.642
26	3.695	0.175	9.637
28	3.700	0.180	9.632
30	3.700	0.180	9.632
36	3.710	0.190	9.622
41	3.715	0.195	9.617
46	3.720	0.200	9.612
51	3.725	0.205	9.607
56	3.725	0.205	9.607
61	3.725	0.205	9.607
71	3.730	0.210	9.602
81	3.735	0.215	9.597
91	3.735	0.215	9.597
100	3.740	0.220	9.592
102	3.775	0.255	9.557
104	3.820	0.300	9.512
106	3.850	0.330	9.482
108	3.880	0.360	9.452
110	3.895	0.375	9.437
112	3.910	0.390	9.422
114	3.920	0.400	9.412
116	3.930	0.410	9.402
118	3.935	0.415	9.397
120	3.940	0.420	9.392
122	3.950	0.430	9.382
124	3.950	0.430	9.382
126	3.955	0.435	9.377
128	3.960	0.440	9.372
130	3.960	0.440	9.372
136	3.965	0.445	9.367
141	3.970	0.450	9.362
146	3.970	0.450	9.362
151	3.980	0.460	9.352
156	3.985	0.465	9.347
161	3.990	0.470	9.342
171	3.995	0.475	9.337
181	4.015	0.495	9.317
191	4.015	0.495	9.317
200	4.015	0.495	9.317
202	4.050	0.530	9.282
204	4.100	0.580	9.232
206	4.130	0.610	9.202
208	4.150	0.630	9.182

210	4.160	0.640	9.172
212	4.175	0.655	9.157
214	4.190	0.670	9.142
216	4.195	0.675	9.137
218	4.200	0.680	9.132
220	4.210	0.690	9.122
222	4.210	0.690	9.122
224	4.220	0.700	9.112
226	4.220	0.700	9.112
228	4.225	0.705	9.107
230	4.230	0.710	9.102
236	4.235	0.715	9.097
241	4.245	0.725	9.087
246	4.250	0.730	9.082
251	4.255	0.735	9.077
256	4.260	0.740	9.072
261	4.260	0.740	9.072
271	4.270	0.750	9.062
281	4.280	0.760	9.052
291	4.290	0.770	9.042
300	4.295	0.775	9.037

LFP13_2 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		
LFP12 Well construction comparison		

Start date		20/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	1.50
2	100	3.00
3	100	4.50
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP13_2	Monoman	461210	6192117	13.25	12.76		0.00	0.00	5.00	5.00	3.73	9.52
Obs	LFO27	Monoman (Pata)	461199	6192117	13.50	12.71		11.50	2.30	5.00	NA	3.70	9.80
Obs	LFO13	Monoman	461189	6192114	13.33	12.62		21.50	4.30	5.00	NA	3.51	9.82
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP13_2	5.00	10.00	5.00	7.76	2.76
Obs	LFO27	5.00	11.00	6.00	7.71	1.71
Obs	LFO13	4.00	10.00	6.00	8.62	2.62
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP13_2	WS	7.00	10.00	3.00	174	0.60	1.2	8:16	175
Obs	LFO27	SC	5.00	11.00	6.00	80	NA	NA	NA	80
Obs	LFO13	SC	7.50	10.50	3.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	4.320	0.590	8.932	1.50	2.54
2	4.400	0.670	8.852	1.50	2.24
3	4.470	0.740	8.782	1.50	2.03
4	4.480	0.750	8.772	1.50	2.00
5	4.510	0.780	8.742	1.50	1.92
6	4.550	0.820	8.702	1.50	1.83
7	4.560	0.830	8.692	1.50	1.81
8	4.585	0.855	8.667	1.50	1.75
9	4.605	0.875	8.647	1.50	1.71
10	4.620	0.890	8.632	1.50	1.69
12	4.655	0.925	8.597	1.50	1.62
14	4.670	0.940	8.582	1.50	1.60
16	4.670	0.940	8.582	1.50	1.60
18	4.670	0.940	8.582	1.50	1.60
20	4.680	0.950	8.572	1.50	1.58
22	4.690	0.960	8.562	1.50	1.56
24	4.700	0.970	8.552	1.50	1.55
26	4.705	0.975	8.547	1.50	1.54
28	4.710	0.980	8.542	1.50	1.53
30	4.720	0.990	8.532	1.50	1.52
35	4.740	1.010	8.512	1.50	1.49
40	4.750	1.020	8.502	1.50	1.47
45	4.760	1.030	8.492	1.50	1.46
50	4.760	1.030	8.492	1.50	1.46
55	4.770	1.040	8.482	1.50	1.44
60	4.770	1.040	8.482	1.50	1.44
70	4.765	1.035	8.487	1.50	1.45
80	4.780	1.050	8.472	1.50	1.43
90	4.785	1.055	8.467	1.50	1.42
100	4.795	1.065	8.457	1.50	1.41
101	5.350	1.620	7.902	3.00	1.85
102	5.430	1.700	7.822	3.00	1.76
103	5.480	1.750	7.772	3.00	1.71
104	5.525	1.795	7.727	3.00	1.67
105	5.575	1.845	7.677	3.00	1.63
106	5.620	1.890	7.632	3.00	1.59
107	5.640	1.910	7.612	3.00	1.57
108	5.655	1.925	7.597	3.00	1.56
109	5.680	1.950	7.572	3.00	1.54
110	5.695	1.965	7.557	3.00	1.53
112	5.705	1.975	7.547	3.00	1.52
114	5.725	1.995	7.527	3.00	1.50
116	5.760	2.030	7.492	3.00	1.48
118	5.775	2.045	7.477	3.00	1.47
120	5.790	2.060	7.462	3.00	1.46
122	5.805	2.075	7.447	3.00	1.45
124	5.825	2.095	7.427	3.00	1.43
126	5.830	2.100	7.422	3.00	1.43
128	5.830	2.100	7.422	3.00	1.43
130	5.835	2.105	7.417	3.00	1.43
135	5.850	2.120	7.402	3.00	1.42
140	5.870	2.140	7.382	3.00	1.40
145	5.860	2.130	7.392	3.00	1.41

150	5.850	2.120	7.402	3.00	1.42
155	5.850	2.120	7.402	3.00	1.42
160	5.850	2.120	7.402	3.00	1.42
170	5.870	2.140	7.382	3.00	1.40
180	5.880	2.150	7.372	3.00	1.40
190	5.885	2.155	7.367	3.00	1.39
200	5.890	2.160	7.362	3.00	1.39
201	6.480	2.750	6.772	4.50	1.64
202	6.540	2.810	6.712	4.50	1.60
203	6.620	2.890	6.632	4.50	1.56
204	6.680	2.950	6.572	4.50	1.53
205	6.715	2.985	6.537	4.50	1.51
206	6.755	3.025	6.497	4.50	1.49
207	6.790	3.060	6.462	4.50	1.47
208	6.810	3.080	6.442	4.50	1.46
209	6.845	3.115	6.407	4.50	1.44
210	6.875	3.145	6.377	4.50	1.43
212	6.890	3.160	6.362	4.50	1.42
214	6.925	3.195	6.327	4.50	1.41
216	6.955	3.225	6.297	4.50	1.40
218	6.965	3.235	6.287	4.50	1.39
220	6.980	3.250	6.272	4.50	1.38
222	6.990	3.260	6.262	4.50	1.38
224	7.000	3.270	6.252	4.50	1.38
226	7.010	3.280	6.242	4.50	1.37
228	7.015	3.285	6.237	4.50	1.37
230	7.020	3.290	6.232	4.50	1.37
235	7.030	3.300	6.222	4.50	1.36
240	7.050	3.320	6.202	4.50	1.36
245	7.050	3.320	6.202	4.50	1.36
250	7.090	3.360	6.162	4.50	1.34
255	7.090	3.360	6.162	4.50	1.34
260	7.095	3.365	6.157	4.50	1.34
270	7.130	3.400	6.122	4.50	1.32
280	7.155	3.425	6.097	4.50	1.31
290	7.170	3.440	6.082	4.50	1.31
300	7.180	3.450	6.072	4.50	1.30

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	3.750	0.050	9.751
3	3.820	0.120	9.681
5	3.870	0.170	9.631
7	3.900	0.200	9.601
9	3.920	0.220	9.581
11	3.940	0.240	9.561
13	3.960	0.260	9.541
15	3.970	0.270	9.531
17	3.980	0.280	9.521
19	3.990	0.290	9.511
21	3.990	0.290	9.511
23	4.000	0.300	9.501
25	4.005	0.305	9.496
27	4.010	0.310	9.491
29	4.010	0.310	9.491
35	4.020	0.320	9.481
40	4.030	0.330	9.471
45	4.035	0.335	9.466
50	4.040	0.340	9.461
55	4.045	0.345	9.456
60	4.050	0.350	9.451
70	4.050	0.350	9.451
80	4.055	0.355	9.446
90	4.060	0.360	9.441
100	4.065	0.365	9.436
101	4.095	0.395	9.406
103	4.165	0.465	9.336
105	4.220	0.520	9.281
107	4.255	0.555	9.246
109	4.280	0.580	9.221
111	4.300	0.600	9.201
113	4.315	0.615	9.186
115	4.330	0.630	9.171
117	4.340	0.640	9.161
119	4.350	0.650	9.151
121	4.360	0.660	9.141
123	4.365	0.665	9.136
125	4.370	0.670	9.131
127	4.380	0.680	9.121
129	4.385	0.685	9.116
135	4.395	0.695	9.106
140	4.400	0.700	9.101
145	4.410	0.710	9.091
150	4.410	0.710	9.091
155	4.415	0.715	9.086
160	4.415	0.715	9.086
170	4.425	0.725	9.076
180	4.430	0.730	9.071
190	4.440	0.740	9.061
200	4.445	0.745	9.056
201	4.460	0.760	9.041
203	4.520	0.820	8.981
205	4.595	0.895	8.906
207	4.635	0.935	8.866

209	4.650	0.950	8.851
211	4.685	0.985	8.816
213	4.695	0.995	8.806
215	4.710	1.010	8.791
217	4.730	1.030	8.771
219	4.735	1.035	8.766
221	4.740	1.040	8.761
223	4.745	1.045	8.756
225	4.750	1.050	8.751
227	4.755	1.055	8.746
229	4.760	1.060	8.741
235	4.770	1.070	8.731
240	4.780	1.080	8.721
245	4.785	1.085	8.716
250	4.790	1.090	8.711
255	4.790	1.090	8.711
260	4.795	1.095	8.706
270	4.805	1.105	8.696
280	4.820	1.120	8.681
290	4.830	1.130	8.671
300	4.835	1.135	8.666

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	3.540	0.030	9.792
4	3.580	0.070	9.752
6	3.610	0.100	9.722
8	3.630	0.120	9.702
10	3.640	0.130	9.692
12	3.650	0.140	9.682
14	3.660	0.150	9.672
16	3.670	0.160	9.662
18	3.675	0.165	9.657
20	3.680	0.170	9.652
22	3.685	0.175	9.647
24	3.690	0.180	9.642
26	3.695	0.185	9.637
28	3.700	0.190	9.632
30	3.700	0.190	9.632
36	3.710	0.200	9.622
41	3.710	0.200	9.622
46	3.715	0.205	9.617
51	3.720	0.210	9.612
56	3.725	0.215	9.607
61	3.730	0.220	9.602
71	3.730	0.220	9.602
81	3.735	0.225	9.597
91	3.740	0.230	9.592
100	3.745	0.235	9.587
102	3.770	0.260	9.562
104	3.810	0.300	9.522
106	3.835	0.325	9.497
108	3.860	0.350	9.472
110	3.870	0.360	9.462
112	3.890	0.380	9.442
114	3.900	0.390	9.432
116	3.905	0.395	9.427
118	3.910	0.400	9.422
120	3.920	0.410	9.412
122	3.920	0.410	9.412
124	3.930	0.420	9.402
126	3.930	0.420	9.402
128	3.935	0.425	9.397
130	3.940	0.430	9.392
136	3.950	0.440	9.382
141	3.950	0.440	9.382
146	3.960	0.450	9.372
151	3.960	0.450	9.372
156	3.965	0.455	9.367
161	3.970	0.460	9.362
171	3.975	0.465	9.357
181	3.980	0.470	9.352
191	3.990	0.480	9.342
200	3.990	0.480	9.342
202	4.010	0.500	9.322
204	4.055	0.545	9.277
206	4.080	0.570	9.252
208	4.100	0.590	9.232

210	4.120	0.610	9.212
212	4.130	0.620	9.202
214	4.145	0.635	9.187
216	4.160	0.650	9.172
218	4.165	0.655	9.167
220	4.170	0.660	9.162
222	4.175	0.665	9.157
224	4.180	0.670	9.152
226	4.185	0.675	9.147
228	4.190	0.680	9.142
230	4.195	0.685	9.137
236	4.200	0.690	9.132
241	4.205	0.695	9.127
246	4.210	0.700	9.122
251	4.215	0.705	9.117
256	4.220	0.710	9.112
261	4.220	0.710	9.112
271	4.230	0.720	9.102
281	4.240	0.730	9.092
291	4.245	0.735	9.087
300	4.250	0.740	9.082

LFP13_2 HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		26/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		100

Step	Duration (minutes)	Q (L/s)
1	100	4.50
2	single step only	
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP13_2	Monoman	461210	6192117	13.25	12.76		0.00	0.00	5.00	5.00	3.73	9.52
Obs	LFO27	Monoman (Pata)	461199	6192117	13.50	12.71		11.50	2.30	5.00	NA	3.67	9.83
Obs	LFO13	Monoman	461189	6192114	13.33	12.62		21.50	4.30	5.00	NA	3.48	9.85
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP13_2	5.00	10.00	5.00	7.76	2.76
Obs	LFO27	5.00	11.00	6.00	7.71	1.71
Obs	LFO13	4.00	10.00	6.00	8.62	2.62
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP13_2	WS	7.00	10.00	3.00	174	0.60	1.2	8:16	175
Obs	LFO27	SC	5.00	11.00	6.00	80	NA	NA	NA	80
Obs	LFO13	SC	7.50	10.50	3.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)
1	5.500	1.770	7.752	1.000	4.50	2.54
2	5.710	1.980	7.542	2.000	4.50	2.27
3	5.890	2.160	7.362	3.000	4.50	2.08
4	6.030	2.300	7.222	4.000	4.50	1.96
5	6.150	2.420	7.102	5.000	4.50	1.86
6	6.220	2.490	7.032	6.000	4.50	1.81
7	6.330	2.600	6.922	7.000	4.50	1.73
8	6.420	2.690	6.832	8.000	4.50	1.67
9	6.450	2.720	6.802	9.000	4.50	1.65
10	6.490	2.760	6.762	10.000	4.50	1.63
12	6.550	2.820	6.702	12.000	4.50	1.60
14	6.630	2.900	6.622	14.000	4.50	1.55
16	6.675	2.945	6.577	16.000	4.50	1.53
18	6.720	2.990	6.532	18.000	4.50	1.51
20	6.745	3.015	6.507	20.000	4.50	1.49
22	6.780	3.050	6.472	22.000	4.50	1.48
24	6.800	3.070	6.452	24.000	4.50	1.47
26	6.820	3.090	6.432	26.000	4.50	1.46
28	6.835	3.105	6.417	28.000	4.50	1.45
30	6.860	3.130	6.392	30.000	4.50	1.44
35	6.885	3.155	6.367	35.000	4.50	1.43
40	6.905	3.175	6.347	40.000	4.50	1.42
45	6.930	3.200	6.322	45.000	4.50	1.41
50	6.950	3.220	6.302	50.000	4.50	1.40
55	6.965	3.235	6.287	55.000	4.50	1.39
60	6.975	3.245	6.277	60.000	4.50	1.39
70	7.000	3.270	6.252	70.000	4.50	1.38
80	7.020	3.290	6.232	80.000	4.50	1.37
90	7.050	3.320	6.202	90.000	4.50	1.36
100	7.065	3.335	6.187	100.000	4.50	1.35

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
2	3.920	0.250	9.581	0.015
3	3.990	0.320	9.511	0.023
5	4.140	0.470	9.361	0.038
7	4.250	0.580	9.251	0.053
9	4.325	0.655	9.176	0.068
11	4.385	0.715	9.116	0.083
13	4.430	0.760	9.071	0.098
15	4.465	0.795	9.036	0.113
17	4.495	0.825	9.006	0.129
19	4.520	0.850	8.981	0.144
21	4.540	0.870	8.961	0.159
23	4.560	0.890	8.941	0.174
25	4.570	0.900	8.931	0.189
27	4.585	0.915	8.916	0.204
29	4.595	0.925	8.906	0.219
35	4.620	0.950	8.881	0.265
40	4.640	0.970	8.861	0.302
45	4.660	0.990	8.841	0.340
50	4.665	0.995	8.836	0.378
55	4.675	1.005	8.826	0.416
60	4.685	1.015	8.816	0.454
70	4.705	1.035	8.796	0.529
80	4.720	1.050	8.781	0.605
90	4.740	1.070	8.761	0.681
100	4.760	1.090	8.741	0.756

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	3.590	0.110	9.742	0.002
4	3.680	0.200	9.652	0.009
6	3.710	0.230	9.622	0.013
8	3.820	0.340	9.512	0.017
10	3.870	0.390	9.462	0.022
12	3.910	0.430	9.422	0.026
14	3.940	0.460	9.392	0.030
16	3.960	0.480	9.372	0.035
18	3.990	0.510	9.342	0.039
20	4.000	0.520	9.332	0.043
22	4.010	0.530	9.322	0.048
24	4.020	0.540	9.312	0.052
26	4.030	0.550	9.302	0.056
28	4.040	0.560	9.292	0.061
30	4.050	0.570	9.282	0.065
36	4.070	0.590	9.262	0.078
41	4.080	0.600	9.252	0.089
46	4.090	0.610	9.242	0.100
51	4.100	0.620	9.232	0.110
56	4.110	0.630	9.222	0.121
61	4.120	0.640	9.212	0.132
71	4.135	0.655	9.197	0.154
81	4.150	0.670	9.182	0.175
91	4.160	0.680	9.172	0.197
100	4.170	0.690	9.162	0.216

LFP14 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

LFP14 Well construction comparison

Start date		24/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	2.00
2	100	4.00
3	100	6.00
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP14	Monoman	461011	6193929	14.18	13.85		0.00	0.00	6.51	5.41	4.99	9.19
Obs	LFO15	Monoman (Pata)	461025	6193938	14.57	13.98		16.50	2.53	6.51	NA	4.69	9.88
Obs	LFO16	Monoman	461038	6193936	14.67	13.89		30.00	4.61	6.51	NA	4.84	9.83
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP14	2.00	11.50	9.50	11.85	2.35
Obs	LFO15	4.00	14.00	10.00	9.98	-0.03
Obs	LFO16	3.00	13.00	10.00	10.89	0.89
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP14	WS	6.40	10.40	4.00	174	0.60	1.2	8:16	175
Obs	LFO15	SC	7.00	12.00	5.00	80	NA	NA	NA	80
Obs	LFO16	SC	6	12.00	6.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	5.730	0.740	8.452	2.00	2.70
2	5.800	0.810	8.382	2.00	2.47
3	5.840	0.850	8.342	2.00	2.35
4	5.865	0.875	8.317	2.00	2.29
5	5.880	0.890	8.302	2.00	2.25
6	5.895	0.905	8.287	2.00	2.21
7	5.910	0.920	8.272	2.00	2.17
8	5.920	0.930	8.262	2.00	2.15
9	5.915	0.925	8.267	2.00	2.16
10	5.920	0.930	8.262	2.00	2.15
12	5.930	0.940	8.252	2.00	2.13
14	5.930	0.940	8.252	2.00	2.13
16	5.935	0.945	8.247	2.00	2.12
18	5.940	0.950	8.242	2.00	2.11
20	5.945	0.955	8.237	2.00	2.09
22	5.945	0.955	8.237	2.00	2.09
24	5.945	0.955	8.237	2.00	2.09
26	5.945	0.955	8.237	2.00	2.09
28	5.950	0.960	8.232	2.00	2.08
30	5.950	0.960	8.232	2.00	2.08
35	5.950	0.960	8.232	2.00	2.08
40	5.955	0.965	8.227	2.00	2.07
45	5.955	0.965	8.227	2.00	2.07
50	5.955	0.965	8.227	2.00	2.07
55	5.960	0.970	8.222	2.00	2.06
60	5.965	0.975	8.217	2.00	2.05
70	5.970	0.980	8.212	2.00	2.04
80	5.970	0.980	8.212	2.00	2.04
90	5.975	0.985	8.207	2.00	2.03
100	5.980	0.990	8.202	2.00	2.02
101	6.690	1.700	7.492	4.00	2.35
102	6.830	1.840	7.352	4.00	2.17
103	6.900	1.910	7.282	4.00	2.09
104	6.940	1.950	7.242	4.00	2.05
105	6.970	1.980	7.212	4.00	2.02
106	6.980	1.990	7.202	4.00	2.01
107	6.990	2.000	7.192	4.00	2.00
108	7.000	2.010	7.182	4.00	1.99
109	7.010	2.020	7.172	4.00	1.98
110	7.020	2.030	7.162	4.00	1.97
112	7.040	2.050	7.142	4.00	1.95
114	7.040	2.050	7.142	4.00	1.95
116	7.050	2.060	7.132	4.00	1.94
118	7.050	2.060	7.132	4.00	1.94
120	7.050	2.060	7.132	4.00	1.94
122	7.060	2.070	7.122	4.00	1.93
124	7.065	2.075	7.117	4.00	1.93
126	7.065	2.075	7.117	4.00	1.93
128	7.070	2.080	7.112	4.00	1.92
130	7.070	2.080	7.112	4.00	1.92
135	7.080	2.090	7.102	4.00	1.91
140	7.080	2.090	7.102	4.00	1.91
145	7.075	2.085	7.107	4.00	1.92

150	7.080	2.090	7.102	4.00	1.91
155	7.080	2.090	7.102	4.00	1.91
160	7.080	2.090	7.102	4.00	1.91
170	7.095	2.105	7.087	4.00	1.90
180	7.100	2.110	7.082	4.00	1.90
190	7.110	2.120	7.072	4.00	1.89
200	7.110	2.120	7.072	4.00	1.89
201	7.890	2.900	6.292	6.00	2.07
202	8.040	3.050	6.142	6.00	1.97
203	8.110	3.120	6.072	6.00	1.92
204	8.180	3.190	6.002	6.00	1.88
205	8.210	3.220	5.972	6.00	1.86
206	8.240	3.250	5.942	6.00	1.85
207	8.250	3.260	5.932	6.00	1.84
208	8.250	3.260	5.932	6.00	1.84
209	8.260	3.270	5.922	6.00	1.83
210	8.270	3.280	5.912	6.00	1.83
212	8.285	3.295	5.897	6.00	1.82
214	8.300	3.310	5.882	6.00	1.81
216	8.305	3.315	5.877	6.00	1.81
218	8.310	3.320	5.872	6.00	1.81
220	8.310	3.320	5.872	6.00	1.81
222	8.315	3.325	5.867	6.00	1.80
224	8.335	3.345	5.847	6.00	1.79
226	8.340	3.350	5.842	6.00	1.79
228	8.330	3.340	5.852	6.00	1.80
230	8.335	3.345	5.847	6.00	1.79
235	8.350	3.360	5.832	6.00	1.79
240	8.360	3.370	5.822	6.00	1.78
245	8.370	3.380	5.812	6.00	1.78
250	8.370	3.380	5.812	6.00	1.78
255	8.360	3.370	5.822	6.00	1.78
260	8.370	3.380	5.812	6.00	1.78
270	8.385	3.395	5.797	6.00	1.77
280	8.400	3.410	5.782	6.00	1.76
290	8.410	3.420	5.772	6.00	1.75
300	8.410	3.420	5.772	6.00	1.75

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	4.740	0.050	9.833
3	4.800	0.110	9.773
5	4.820	0.130	9.753
7	4.840	0.150	9.733
9	4.850	0.160	9.723
11	4.850	0.160	9.723
13	4.860	0.170	9.713
15	4.860	0.170	9.713
17	4.860	0.170	9.713
19	4.865	0.175	9.708
21	4.870	0.180	9.703
23	4.870	0.180	9.703
25	4.870	0.180	9.703
27	4.870	0.180	9.703
29	4.875	0.185	9.698
35	4.875	0.185	9.698
40	4.880	0.190	9.693
45	4.880	0.190	9.693
50	4.880	0.190	9.693
55	4.880	0.190	9.693
60	4.885	0.195	9.688
70	4.890	0.200	9.683
80	4.890	0.200	9.683
90	4.890	0.200	9.683
100	4.895	0.205	9.678
101	4.920	0.230	9.653
103	4.990	0.300	9.583
105	5.025	0.335	9.548
107	5.040	0.350	9.533
109	5.055	0.365	9.518
111	5.060	0.370	9.513
113	5.070	0.380	9.503
115	5.075	0.385	9.498
117	5.080	0.390	9.493
119	5.080	0.390	9.493
121	5.080	0.390	9.493
123	5.085	0.395	9.488
125	5.085	0.395	9.488
127	5.085	0.395	9.488
129	5.090	0.400	9.483
135	5.090	0.400	9.483
140	5.095	0.405	9.478
145	5.100	0.410	9.473
150	5.100	0.410	9.473
155	5.100	0.410	9.473
160	5.100	0.410	9.473
170	5.110	0.420	9.463
180	5.110	0.420	9.463
190	5.115	0.425	9.458
200	5.120	0.430	9.453
201	5.180	0.490	9.393
203	5.210	0.520	9.363
205	5.250	0.560	9.323
207	5.270	0.580	9.303

209	5.280	0.590	9.293
211	5.285	0.595	9.288
213	5.290	0.600	9.283
215	5.295	0.605	9.278
217	5.300	0.610	9.273
219	5.305	0.615	9.268
221	5.305	0.615	9.268
223	5.310	0.620	9.263
225	5.310	0.620	9.263
227	5.310	0.620	9.263
229	5.310	0.620	9.263
235	5.315	0.625	9.258
240	5.315	0.625	9.258
245	5.320	0.630	9.253
250	5.320	0.630	9.253
255	5.320	0.630	9.253
260	5.325	0.635	9.248
270	5.325	0.635	9.248
280	5.330	0.640	9.243
290	5.330	0.640	9.243
300	5.330	0.640	9.243

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	4.860	0.020	9.808
4	4.890	0.050	9.778
6	4.900	0.060	9.768
8	4.910	0.070	9.758
10	4.920	0.080	9.748
12	4.925	0.085	9.743
14	4.925	0.085	9.743
16	4.930	0.090	9.738
18	4.935	0.095	9.733
20	4.935	0.095	9.733
22	4.940	0.100	9.728
24	4.940	0.100	9.728
26	4.945	0.105	9.723
28	4.945	0.105	9.723
30	4.945	0.105	9.723
36	4.950	0.110	9.718
41	4.950	0.110	9.718
46	4.950	0.110	9.718
51	4.950	0.110	9.718
56	4.950	0.110	9.718
61	4.950	0.110	9.718
71	4.955	0.115	9.713
81	4.960	0.120	9.708
91	4.960	0.120	9.708
100	4.965	0.125	9.703
102	4.995	0.155	9.673
104	5.030	0.190	9.638
106	5.050	0.210	9.618
108	5.060	0.220	9.608
110	5.070	0.230	9.598
112	5.075	0.235	9.593
114	5.080	0.240	9.588
116	5.085	0.245	9.583
118	5.085	0.245	9.583
120	5.090	0.250	9.578
122	5.095	0.255	9.573
124	5.095	0.255	9.573
126	5.095	0.255	9.573
128	5.100	0.260	9.568
130	5.100	0.260	9.568
136	5.100	0.260	9.568
141	5.105	0.265	9.563
146	5.110	0.270	9.558
151	5.110	0.270	9.558
156	5.110	0.270	9.558
161	5.115	0.275	9.553
171	5.120	0.280	9.548
181	5.120	0.280	9.548
191	5.125	0.285	9.543
200	5.130	0.290	9.538
202	5.150	0.310	9.518
204	5.190	0.350	9.478
206	5.210	0.370	9.458
208	5.225	0.385	9.443

210	5.230	0.390	9.438
212	5.240	0.400	9.428
214	5.245	0.405	9.423
216	5.245	0.405	9.423
218	5.250	0.410	9.418
220	5.250	0.410	9.418
222	5.255	0.415	9.413
224	5.255	0.415	9.413
226	5.255	0.415	9.413
228	5.260	0.420	9.408
230	5.260	0.420	9.408
236	5.260	0.420	9.408
241	5.265	0.425	9.403
246	5.270	0.430	9.398
251	5.270	0.430	9.398
256	5.270	0.430	9.398
261	5.270	0.430	9.398
271	5.275	0.435	9.393
281	5.275	0.435	9.393
291	5.280	0.440	9.388
300	5.280	0.440	9.388

LFP14_2 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		
LFP14 Well construction comparison		

Start date		21/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	2.00
2	100	4.00
3	100	6.00
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP14_2	Monoman	461008	6193940	14.42	14.06		0.00	0.00	6.82	5.72	4.68	9.74
Obs	LFO15	Monoman (Pata)	461025	6193938	14.57	13.98		16.50	2.42	6.82	NA	4.68	9.89
Obs	LFO16	Monoman	461038	6193936	14.67	13.89		30.00	4.40	6.82	NA	4.81	9.86
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP14_2	2.00	11.50	9.50	12.06	2.56
Obs	LFO15	4.00	14.00	10.00	9.98	-0.03
Obs	LFO16	3.00	13.00	10.00	10.89	0.89
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP14_2	SC	6.4	10.40	4.00	175	0.60	0.5	8:16	175
Obs	LFO15	SC	7.00	12.00	5.00	80	NA	NA	NA	80
Obs	LFO16	SC	6	12.00	6.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	5.320	0.640	9.095	2.00	3.13
2	5.340	0.660	9.075	2.00	3.03
3	5.340	0.660	9.075	2.00	3.03
4	5.355	0.675	9.060	2.00	2.96
5	5.365	0.685	9.050	2.00	2.92
6	5.365	0.685	9.050	2.00	2.92
7	5.360	0.680	9.055	2.00	2.94
8	5.365	0.685	9.050	2.00	2.92
9	5.375	0.695	9.040	2.00	2.88
10	5.370	0.690	9.045	2.00	2.90
12	5.380	0.700	9.035	2.00	2.86
14	5.380	0.700	9.035	2.00	2.86
16	5.385	0.705	9.030	2.00	2.84
18	5.390	0.710	9.025	2.00	2.82
20	5.390	0.710	9.025	2.00	2.82
22	5.400	0.720	9.015	2.00	2.78
24	5.400	0.720	9.015	2.00	2.78
26	5.395	0.715	9.020	2.00	2.80
28	5.395	0.715	9.020	2.00	2.80
30	5.395	0.715	9.020	2.00	2.80
35	5.400	0.720	9.015	2.00	2.78
40	5.410	0.730	9.005	2.00	2.74
45	5.415	0.735	9.000	2.00	2.72
50	5.410	0.730	9.005	2.00	2.74
55	5.415	0.735	9.000	2.00	2.72
60	5.415	0.735	9.000	2.00	2.72
70	5.415	0.735	9.000	2.00	2.72
80	5.420	0.740	8.995	2.00	2.70
90	5.420	0.740	8.995	2.00	2.70
100	5.415	0.735	9.000	2.00	2.72
101	6.040	1.360	8.375	4.00	2.94
102	6.070	1.390	8.345	4.00	2.88
103	6.100	1.420	8.315	4.00	2.82
104	6.120	1.440	8.295	4.00	2.78
105	6.125	1.445	8.290	4.00	2.77
106	6.135	1.455	8.280	4.00	2.75
107	6.140	1.460	8.275	4.00	2.74
108	6.140	1.460	8.275	4.00	2.74
109	6.145	1.465	8.270	4.00	2.73
110	6.145	1.465	8.270	4.00	2.73
112	6.150	1.470	8.265	4.00	2.72
114	6.150	1.470	8.265	4.00	2.72
116	6.160	1.480	8.255	4.00	2.70
118	6.170	1.490	8.245	4.00	2.68
120	6.165	1.485	8.250	4.00	2.69
122	6.160	1.480	8.255	4.00	2.70
124	6.165	1.485	8.250	4.00	2.69
126	6.170	1.490	8.245	4.00	2.68
128	6.170	1.490	8.245	4.00	2.68
130	6.175	1.495	8.240	4.00	2.68
135	6.180	1.500	8.235	4.00	2.67
140	6.190	1.510	8.225	4.00	2.65
145	6.200	1.520	8.215	4.00	2.63

150	6.200	1.520	8.215	4.00	2.63
155	6.210	1.530	8.205	4.00	2.61
160	6.210	1.530	8.205	4.00	2.61
170	6.220	1.540	8.195	4.00	2.60
180	6.220	1.540	8.195	4.00	2.60
190	6.220	1.540	8.195	4.00	2.60
200	6.225	1.545	8.190	4.00	2.59
201	6.840	2.160	7.575	6.00	2.78
202	6.865	2.185	7.550	6.00	2.75
203	6.875	2.195	7.540	6.00	2.73
204	6.880	2.200	7.535	6.00	2.73
205	6.900	2.220	7.515	6.00	2.70
206	6.910	2.230	7.505	6.00	2.69
207	6.930	2.250	7.485	6.00	2.67
208	6.925	2.245	7.490	6.00	2.67
209	6.925	2.245	7.490	6.00	2.67
210	6.920	2.240	7.495	6.00	2.68
212	6.930	2.250	7.485	6.00	2.67
214	6.935	2.255	7.480	6.00	2.66
216	6.940	2.260	7.475	6.00	2.65
218	6.945	2.265	7.470	6.00	2.65
220	6.940	2.260	7.475	6.00	2.65
222	6.940	2.260	7.475	6.00	2.65
224	6.940	2.260	7.475	6.00	2.65
226	6.945	2.265	7.470	6.00	2.65
228	6.950	2.270	7.465	6.00	2.64
230	6.950	2.270	7.465	6.00	2.64
235	6.945	2.265	7.470	6.00	2.65
240	6.950	2.270	7.465	6.00	2.64
245	6.955	2.275	7.460	6.00	2.64
250	6.960	2.280	7.455	6.00	2.63
255	6.965	2.285	7.450	6.00	2.63
260	6.960	2.280	7.455	6.00	2.63
270	6.960	2.280	7.455	6.00	2.63
280	6.970	2.290	7.445	6.00	2.62
290	6.975	2.295	7.440	6.00	2.61
300	6.980	2.300	7.435	6.00	2.61

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	4.760	0.080	9.813
3	4.800	0.120	9.773
5	4.810	0.130	9.763
7	4.830	0.150	9.743
9	4.830	0.150	9.743
11	4.840	0.160	9.733
13	4.840	0.160	9.733
15	4.845	0.165	9.728
17	4.850	0.170	9.723
19	4.850	0.170	9.723
21	4.855	0.175	9.718
23	4.855	0.175	9.718
25	4.860	0.180	9.713
27	4.860	0.180	9.713
29	4.860	0.180	9.713
35	4.860	0.180	9.713
40	4.865	0.185	9.708
45	4.870	0.190	9.703
50	4.870	0.190	9.703
55	4.870	0.190	9.703
60	4.870	0.190	9.703
70	4.875	0.195	9.698
80	4.880	0.200	9.693
90	4.880	0.200	9.693
100	4.880	0.200	9.693
101	4.940	0.260	9.633
103	4.990	0.310	9.583
105	5.020	0.340	9.553
107	5.030	0.350	9.543
109	5.040	0.360	9.533
111	5.045	0.365	9.528
113	5.050	0.370	9.523
115	5.055	0.375	9.518
117	5.060	0.380	9.513
119	5.060	0.380	9.513
121	5.060	0.380	9.513
123	5.065	0.385	9.508
125	5.070	0.390	9.503
127	5.070	0.390	9.503
129	5.070	0.390	9.503
135	5.075	0.395	9.498
140	5.080	0.400	9.493
145	5.080	0.400	9.493
150	5.080	0.400	9.493
155	5.085	0.405	9.488
160	5.090	0.410	9.483
170	5.090	0.410	9.483
180	5.095	0.415	9.478
190	5.095	0.415	9.478
200	5.100	0.420	9.473
201	5.110	0.430	9.463
203	5.190	0.510	9.383
205	5.220	0.540	9.353
207	5.240	0.560	9.333

209	5.250	0.570	9.323
211	5.250	0.570	9.323
213	5.255	0.575	9.318
215	5.255	0.575	9.318
217	5.260	0.580	9.313
219	5.265	0.585	9.308
221	5.265	0.585	9.308
223	5.265	0.585	9.308
225	5.265	0.585	9.308
227	5.270	0.590	9.303
229	5.270	0.590	9.303
235	5.270	0.590	9.303
240	5.275	0.595	9.298
245	5.275	0.595	9.298
250	5.280	0.600	9.293
255	5.280	0.600	9.293
260	5.280	0.600	9.293
270	5.280	0.600	9.293
280	5.285	0.605	9.288
290	5.290	0.610	9.283
300	5.290	0.610	9.283

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	4.880	0.070	9.788
4	4.890	0.080	9.778
6	4.910	0.100	9.758
8	4.920	0.110	9.748
10	4.920	0.110	9.748
12	4.925	0.115	9.743
14	4.930	0.120	9.738
16	4.930	0.120	9.738
18	4.930	0.120	9.738
20	4.935	0.125	9.733
22	4.935	0.125	9.733
24	4.935	0.125	9.733
26	4.940	0.130	9.728
28	4.940	0.130	9.728
30	4.940	0.130	9.728
36	4.945	0.135	9.723
41	4.950	0.140	9.718
46	4.950	0.140	9.718
51	4.950	0.140	9.718
56	4.950	0.140	9.718
61	4.955	0.145	9.713
71	4.960	0.150	9.708
81	4.965	0.155	9.703
91	4.965	0.155	9.703
100	4.965	0.155	9.703
102	5.020	0.210	9.648
104	5.045	0.235	9.623
106	5.060	0.250	9.608
108	5.070	0.260	9.598
110	5.075	0.265	9.593
112	5.080	0.270	9.588
114	5.085	0.275	9.583
116	5.090	0.280	9.578
118	5.090	0.280	9.578
120	5.095	0.285	9.573
122	5.100	0.290	9.568
124	5.100	0.290	9.568
126	5.100	0.290	9.568
128	5.100	0.290	9.568
130	5.105	0.295	9.563
136	5.110	0.300	9.558
141	5.110	0.300	9.558
146	5.110	0.300	9.558
151	5.115	0.305	9.553
156	5.115	0.305	9.553
161	5.120	0.310	9.548
171	5.120	0.310	9.548
181	5.130	0.320	9.538
191	5.130	0.320	9.538
200	5.130	0.320	9.538
202	5.160	0.350	9.508
204	5.200	0.390	9.468
206	5.210	0.400	9.458
208	5.220	0.410	9.448

210	5.230	0.420	9.438
212	5.235	0.425	9.433
214	5.240	0.430	9.428
216	5.245	0.435	9.423
218	5.245	0.435	9.423
220	5.245	0.435	9.423
222	5.250	0.440	9.418
224	5.250	0.440	9.418
226	5.255	0.445	9.413
228	5.250	0.440	9.418
230	5.255	0.445	9.413
236	5.260	0.450	9.408
241	5.260	0.450	9.408
246	5.260	0.450	9.408
251	5.260	0.450	9.408
256	5.265	0.455	9.403
261	5.265	0.455	9.403
271	5.265	0.455	9.403
281	5.265	0.455	9.403
291	5.270	0.460	9.398
300	5.270	0.460	9.398

LFP15 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		
LFP14 Well construction comparison		

Start date		26/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	2.00
2	100	4.00
3	100	6.00
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP15	Monoman	461009	6193943	14.40	14.13		0.00	0.00	6.54	5.54	4.96	9.44
Obs	LFO15	Monoman (Pata)	461025	6193938	14.57	13.98		16.50	2.52	6.54	NA	4.68	9.89
Obs	LFO16	Monoman	461038	6193936	14.67	13.89		30.00	4.59	6.54	NA	4.82	9.85
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP15	2.00	11.50	9.50	12.13	2.63
Obs	LFO15	4.00	14.00	10.00	9.98	-0.03
Obs	LFO16	3.00	13.00	10.00	10.89	0.89
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP15	WS	6.5	10.50	4.00	174	0.60	0.35	NA	200
Obs	LFO15	SC	7.00	12.00	5.00	80	NA	NA	NA	80
Obs	LFO16	SC	6	12.00	6.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	5.890	0.930	8.512	2.00	2.15
2	5.890	0.930	8.512	2.00	2.15
3	5.910	0.950	8.492	2.00	2.11
4	5.930	0.970	8.472	2.00	2.06
5	5.950	0.990	8.452	2.00	2.02
6	5.950	0.990	8.452	2.00	2.02
7	5.960	1.000	8.442	2.00	2.00
8	5.965	1.005	8.437	2.00	1.99
9	5.965	1.005	8.437	2.00	1.99
10	5.965	1.005	8.437	2.00	1.99
12	5.965	1.005	8.437	2.00	1.99
14	5.970	1.010	8.432	2.00	1.98
16	5.970	1.010	8.432	2.00	1.98
18	5.980	1.020	8.422	2.00	1.96
20	5.985	1.025	8.417	2.00	1.95
22	5.990	1.030	8.412	2.00	1.94
24	5.995	1.035	8.407	2.00	1.93
26	6.000	1.040	8.402	2.00	1.92
28	6.020	1.060	8.382	2.00	1.89
30	6.010	1.050	8.392	2.00	1.90
35	5.990	1.030	8.412	2.00	1.94
40	5.980	1.020	8.422	2.00	1.96
45	6.000	1.040	8.402	2.00	1.92
50	6.000	1.040	8.402	2.00	1.92
55	6.000	1.040	8.402	2.00	1.92
60	6.000	1.040	8.402	2.00	1.92
70	6.000	1.040	8.402	2.00	1.92
80	6.005	1.045	8.397	2.00	1.91
90	6.005	1.045	8.397	2.00	1.91
100	6.005	1.045	8.397	2.00	1.91
101	6.810	1.850	7.592	4.00	2.16
102	6.890	1.930	7.512	4.00	2.07
103	6.935	1.975	7.467	4.00	2.03
104	6.970	2.010	7.432	4.00	1.99
105	6.990	2.030	7.412	4.00	1.97
106	7.000	2.040	7.402	4.00	1.96
107	7.015	2.055	7.387	4.00	1.95
108	7.020	2.060	7.382	4.00	1.94
109	7.030	2.070	7.372	4.00	1.93
110	7.030	2.070	7.372	4.00	1.93
112	7.040	2.080	7.362	4.00	1.92
114	7.040	2.080	7.362	4.00	1.92
116	7.050	2.090	7.352	4.00	1.91
118	7.050	2.090	7.352	4.00	1.91
120	7.055	2.095	7.347	4.00	1.91
122	7.055	2.095	7.347	4.00	1.91
124	7.060	2.100	7.342	4.00	1.90
126	7.055	2.095	7.347	4.00	1.91
128	7.055	2.095	7.347	4.00	1.91
130	7.060	2.100	7.342	4.00	1.90
135	7.060	2.100	7.342	4.00	1.90
140	7.065	2.105	7.337	4.00	1.90
145	7.075	2.115	7.327	4.00	1.89

150	7.080	2.120	7.322	4.00	1.89
155	7.080	2.120	7.322	4.00	1.89
160	7.090	2.130	7.312	4.00	1.88
170	7.095	2.135	7.307	4.00	1.87
180	7.105	2.145	7.297	4.00	1.86
190	7.110	2.150	7.292	4.00	1.86
200	7.110	2.150	7.292	4.00	1.86
201	7.960	3.000	6.442	6.00	2.00
202	8.000	3.040	6.402	6.00	1.97
203	8.070	3.110	6.332	6.00	1.93
204	8.110	3.150	6.292	6.00	1.90
205	8.135	3.175	6.267	6.00	1.89
206	8.155	3.195	6.247	6.00	1.88
207	8.165	3.205	6.237	6.00	1.87
208	8.175	3.215	6.227	6.00	1.87
209	8.180	3.220	6.222	6.00	1.86
210	8.180	3.220	6.222	6.00	1.86
212	8.200	3.240	6.202	6.00	1.85
214	8.200	3.240	6.202	6.00	1.85
216	8.200	3.240	6.202	6.00	1.85
218	8.215	3.255	6.187	6.00	1.84
220	8.225	3.265	6.177	6.00	1.84
222	8.245	3.285	6.157	6.00	1.83
224	8.235	3.275	6.167	6.00	1.83
226	8.230	3.270	6.172	6.00	1.83
228	8.240	3.280	6.162	6.00	1.83
230	8.245	3.285	6.157	6.00	1.83
235	8.240	3.280	6.162	6.00	1.83
240	8.240	3.280	6.162	6.00	1.83
245	8.235	3.275	6.167	6.00	1.83
250	8.235	3.275	6.167	6.00	1.83
255	8.245	3.285	6.157	6.00	1.83
260	8.255	3.295	6.147	6.00	1.82
270	8.260	3.300	6.142	6.00	1.82
280	8.260	3.300	6.142	6.00	1.82
290	8.265	3.305	6.137	6.00	1.82
300	8.260	3.300	6.142	6.00	1.82

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	4.750	0.070	9.823
3	4.810	0.130	9.763
5	4.830	0.150	9.743
7	4.845	0.165	9.728
9	4.855	0.175	9.718
11	4.860	0.180	9.713
13	4.860	0.180	9.713
15	4.865	0.185	9.708
17	4.870	0.190	9.703
19	4.870	0.190	9.703
21	4.870	0.190	9.703
23	4.875	0.195	9.698
25	4.880	0.200	9.693
27	4.880	0.200	9.693
29	4.880	0.200	9.693
35	4.880	0.200	9.693
40	4.880	0.200	9.693
45	4.885	0.205	9.688
50	4.885	0.205	9.688
55	4.890	0.210	9.683
60	4.890	0.210	9.683
70	4.890	0.210	9.683
80	4.895	0.215	9.678
90	4.895	0.215	9.678
100	4.900	0.220	9.673
101	4.940	0.260	9.633
103	5.005	0.325	9.568
105	5.035	0.355	9.538
107	5.050	0.370	9.523
109	5.060	0.380	9.513
111	5.070	0.390	9.503
113	5.075	0.395	9.498
115	5.075	0.395	9.498
117	5.080	0.400	9.493
119	5.085	0.405	9.488
121	5.085	0.405	9.488
123	5.090	0.410	9.483
125	5.090	0.410	9.483
127	5.090	0.410	9.483
129	5.095	0.415	9.478
135	5.100	0.420	9.473
140	5.100	0.420	9.473
145	5.105	0.425	9.468
150	5.105	0.425	9.468
155	5.110	0.430	9.463
160	5.110	0.430	9.463
170	5.120	0.440	9.453
180	5.120	0.440	9.453
190	5.120	0.440	9.453
200	5.125	0.445	9.448
201	5.160	0.480	9.413
203	5.235	0.555	9.338
205	5.265	0.585	9.308
207	5.280	0.600	9.293

209	5.290	0.610	9.283
211	5.300	0.620	9.273
213	5.300	0.620	9.273
215	5.310	0.630	9.263
217	5.310	0.630	9.263
219	5.315	0.635	9.258
221	5.315	0.635	9.258
223	5.320	0.640	9.253
225	5.320	0.640	9.253
227	5.325	0.645	9.248
229	5.325	0.645	9.248
235	5.330	0.650	9.243
240	5.330	0.650	9.243
245	5.330	0.650	9.243
250	5.335	0.655	9.238
255	5.335	0.655	9.238
260	5.340	0.660	9.233
270	5.340	0.660	9.233
280	5.345	0.665	9.228
290	5.345	0.665	9.228
300	5.345	0.665	9.228

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	4.870	0.050	9.798
4	4.900	0.080	9.768
6	4.910	0.090	9.758
8	4.920	0.100	9.748
10	4.925	0.105	9.743
12	4.930	0.110	9.738
14	4.935	0.115	9.733
16	4.935	0.115	9.733
18	4.935	0.115	9.733
20	4.940	0.120	9.728
22	4.940	0.120	9.728
24	4.945	0.125	9.723
26	4.945	0.125	9.723
28	4.945	0.125	9.723
30	4.950	0.130	9.718
36	4.950	0.130	9.718
41	4.950	0.130	9.718
46	4.950	0.130	9.718
51	4.955	0.135	9.713
56	4.955	0.135	9.713
61	4.955	0.135	9.713
71	4.960	0.140	9.708
81	4.960	0.140	9.708
91	4.960	0.140	9.708
100	4.965	0.145	9.703
102	5.000	0.180	9.668
104	5.035	0.215	9.633
106	5.035	0.215	9.633
108	5.060	0.240	9.608
110	5.070	0.250	9.598
112	5.075	0.255	9.593
114	5.080	0.260	9.588
116	5.085	0.265	9.583
118	5.090	0.270	9.578
120	5.090	0.270	9.578
122	5.090	0.270	9.578
124	5.095	0.275	9.573
126	5.095	0.275	9.573
128	5.100	0.280	9.568
130	5.100	0.280	9.568
136	5.100	0.280	9.568
141	5.105	0.285	9.563
146	5.110	0.290	9.558
151	5.110	0.290	9.558
156	5.115	0.295	9.553
161	5.115	0.295	9.553
171	5.120	0.300	9.548
181	5.125	0.305	9.543
191	5.125	0.305	9.543
200	5.130	0.310	9.538
202	5.165	0.345	9.503
204	5.200	0.380	9.468
206	5.220	0.400	9.448
208	5.230	0.410	9.438

210	5.235	0.415	9.433
212	5.245	0.425	9.423
214	5.250	0.430	9.418
216	5.250	0.430	9.418
218	5.255	0.435	9.413
220	5.260	0.440	9.408
222	5.260	0.440	9.408
224	5.260	0.440	9.408
226	5.260	0.440	9.408
228	5.265	0.445	9.403
230	5.270	0.450	9.398
236	5.260	0.440	9.408
241	5.270	0.450	9.398
246	5.270	0.450	9.398
251	5.280	0.460	9.388
256	5.280	0.460	9.388
261	5.280	0.460	9.388
271	5.285	0.465	9.383
281	5.290	0.470	9.378
291	5.290	0.470	9.378
300	5.290	0.470	9.378

LFP15_2 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		
LFP14 Well construction comparison		

Start date		23/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	2.00
2	100	4.00
3	100	6.00
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP15_2	Monoman	461009	6193937	14.30	13.99		0.00	0.00	6.58	5.48	4.92	9.38
Obs	LFO15	Monoman	461025	6193938	14.57	13.98		16.50	2.51	6.58	NA	4.67	9.90
Obs	LFO16	Monoman	461038	6193936	14.67	13.89		30.00	4.56	6.58	NA	4.81	9.86
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP15_2	2.00	11.50	9.50	11.99	2.49
Obs	LFO15	4.00	14.00	10.00	9.98	-0.03
Obs	LFO16	3.00	13.00	10.00	10.89	0.89
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP15_2	SC	6.4	10.40	4.00	175	0.60	1.0	8:16	175
Obs	LFO15	SC	7.00	12.00	5.00	80	NA	NA	NA	80
Obs	LFO16	SC	6	12.00	6.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

data is a component of well construction comparison testing

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	5.940	1.020	8.364	2.00	1.96
2	5.980	1.060	8.324	2.00	1.89
3	6.000	1.080	8.304	2.00	1.85
4	6.020	1.100	8.284	2.00	1.82
5	6.030	1.110	8.274	2.00	1.80
6	6.050	1.130	8.254	2.00	1.77
7	6.060	1.140	8.244	2.00	1.75
8	6.070	1.150	8.234	2.00	1.74
9	6.080	1.160	8.224	2.00	1.72
10	6.090	1.170	8.214	2.00	1.71
12	6.100	1.180	8.204	2.00	1.69
14	6.110	1.190	8.194	2.00	1.68
16	6.115	1.195	8.189	2.00	1.67
18	6.120	1.200	8.184	2.00	1.67
20	6.130	1.210	8.174	2.00	1.65
22	6.140	1.220	8.164	2.00	1.64
24	6.145	1.225	8.159	2.00	1.63
26	6.155	1.235	8.149	2.00	1.62
28	6.155	1.235	8.149	2.00	1.62
30	6.160	1.240	8.144	2.00	1.61
35	6.170	1.250	8.134	2.00	1.60
40	6.185	1.265	8.119	2.00	1.58
45	6.190	1.270	8.114	2.00	1.57
50	6.200	1.280	8.104	2.00	1.56
55	6.210	1.290	8.094	2.00	1.55
60	6.220	1.300	8.084	2.00	1.54
70	6.235	1.315	8.069	2.00	1.52
80	6.255	1.335	8.049	2.00	1.50
90	6.265	1.345	8.039	2.00	1.49
100	6.270	1.350	8.034	2.00	1.48
101	7.230	2.310	7.074	4.00	1.73
102	7.370	2.450	6.934	4.00	1.63
103	7.400	2.480	6.904	4.00	1.61
104	7.430	2.510	6.874	4.00	1.59
105	7.440	2.520	6.864	4.00	1.59
106	7.450	2.530	6.854	4.00	1.58
107	7.460	2.540	6.844	4.00	1.57
108	7.480	2.560	6.824	4.00	1.56
109	7.490	2.570	6.814	4.00	1.56
110	7.480	2.560	6.824	4.00	1.56
112	7.480	2.560	6.824	4.00	1.56
114	7.475	2.555	6.829	4.00	1.57
116	7.470	2.550	6.834	4.00	1.57
118	7.475	2.555	6.829	4.00	1.57
120	7.470	2.550	6.834	4.00	1.57
122	7.475	2.555	6.829	4.00	1.57
124	7.480	2.560	6.824	4.00	1.56
126	7.490	2.570	6.814	4.00	1.56
128	7.490	2.570	6.814	4.00	1.56
130	7.495	2.575	6.809	4.00	1.55
135	7.490	2.570	6.814	4.00	1.56
140	7.480	2.560	6.824	4.00	1.56
145	7.480	2.560	6.824	4.00	1.56

150	7.485	2.565	6.819	4.00	1.56
155	7.480	2.560	6.824	4.00	1.56
160	7.480	2.560	6.824	4.00	1.56
170	7.475	2.555	6.829	4.00	1.57
180	7.480	2.560	6.824	4.00	1.56
190	7.470	2.550	6.834	4.00	1.57
200	7.480	2.560	6.824	4.00	1.56
201	8.740	3.820	5.564	6.00	1.57
202	8.800	3.880	5.504	6.00	1.55
203	8.890	3.970	5.414	6.00	1.51
204	8.895	3.975	5.409	6.00	1.51
205	8.910	3.990	5.394	6.00	1.50
206	8.925	4.005	5.379	6.00	1.50
207	8.960	4.040	5.344	6.00	1.49
208	8.960	4.040	5.344	6.00	1.49
209	8.950	4.030	5.354	6.00	1.49
210	8.960	4.040	5.344	6.00	1.49
212	8.960	4.040	5.344	6.00	1.49
214	8.975	4.055	5.329	6.00	1.48
216	8.980	4.060	5.324	6.00	1.48
218	8.980	4.060	5.324	6.00	1.48
220	8.980	4.060	5.324	6.00	1.48
222	8.990	4.070	5.314	6.00	1.47
224	8.990	4.070	5.314	6.00	1.47
226	8.990	4.070	5.314	6.00	1.47
228	8.980	4.060	5.324	6.00	1.48
230	8.990	4.070	5.314	6.00	1.47
235	9.000	4.080	5.304	6.00	1.47
240	9.005	4.085	5.299	6.00	1.47
245	9.010	4.090	5.294	6.00	1.47
250	9.020	4.100	5.284	6.00	1.46
255	9.040	4.120	5.264	6.00	1.46
260	9.020	4.100	5.284	6.00	1.46
270	9.020	4.100	5.284	6.00	1.46
280	9.015	4.095	5.289	6.00	1.47
290	9.010	4.090	5.294	6.00	1.47
300	9.010	4.090	5.294	6.00	1.47

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	4.750	0.080	9.823
3	4.788	0.118	9.786
5	4.800	0.130	9.773
7	4.815	0.145	9.758
9	4.820	0.150	9.753
11	4.825	0.155	9.748
13	4.830	0.160	9.743
15	4.830	0.160	9.743
17	4.835	0.165	9.738
19	4.835	0.165	9.738
21	4.840	0.170	9.733
23	4.840	0.170	9.733
25	4.840	0.170	9.733
27	4.845	0.175	9.728
29	4.845	0.175	9.728
35	4.850	0.180	9.723
40	4.850	0.180	9.723
45	4.850	0.180	9.723
50	4.850	0.180	9.723
55	4.860	0.190	9.713
60	4.860	0.190	9.713
70	4.860	0.190	9.713
80	4.860	0.190	9.713
90	4.865	0.195	9.708
100	4.865	0.195	9.708
101	4.900	0.230	9.673
103	4.950	0.280	9.623
105	4.990	0.320	9.583
107	5.010	0.340	9.563
109	5.020	0.350	9.553
111	5.025	0.355	9.548
113	5.030	0.360	9.543
115	5.050	0.380	9.523
117	5.040	0.370	9.533
119	5.045	0.375	9.528
121	5.050	0.380	9.523
123	5.050	0.380	9.523
125	5.050	0.380	9.523
127	5.055	0.385	9.518
129	5.055	0.385	9.518
135	5.060	0.390	9.513
140	5.060	0.390	9.513
145	5.065	0.395	9.508
150	5.070	0.400	9.503
155	5.070	0.400	9.503
160	5.070	0.400	9.503
170	5.075	0.405	9.498
180	5.080	0.410	9.493
190	5.080	0.410	9.493
200	5.085	0.415	9.488
201	5.110	0.440	9.463
202	5.135	0.465	9.438
203	5.220	0.550	9.353
204	5.280	0.610	9.293

207	5.250	0.580	9.323
209	5.255	0.585	9.318
211	5.260	0.590	9.313
213	5.265	0.595	9.308
215	5.270	0.600	9.303
217	5.270	0.600	9.303
219	5.270	0.600	9.303
221	5.275	0.605	9.298
223	5.275	0.605	9.298
225	5.280	0.610	9.293
227	5.280	0.610	9.293
229	5.280	0.610	9.293
235	5.285	0.615	9.288
240	5.290	0.620	9.283
245	5.295	0.625	9.278
250	5.295	0.625	9.278
255	5.295	0.625	9.278
260	5.300	0.630	9.273
270	5.300	0.630	9.273
280	5.300	0.630	9.273
290	5.305	0.635	9.268
300	5.305		

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	4.850	0.040	9.818
4	4.870	0.060	9.798
6	4.890	0.080	9.778
8	4.900	0.090	9.768
10	4.900	0.090	9.768
12	4.910	0.100	9.758
14	4.910	0.100	9.758
16	4.910	0.100	9.758
18	4.915	0.105	9.753
20	4.915	0.105	9.753
22	4.915	0.105	9.753
24	4.920	0.110	9.748
26	4.920	0.110	9.748
28	4.920	0.110	9.748
30	4.925	0.115	9.743
36	4.925	0.115	9.743
41	4.925	0.115	9.743
46	4.930	0.120	9.738
51	4.930	0.120	9.738
56	4.935	0.125	9.733
61	4.935	0.125	9.733
71	4.935	0.125	9.733
81	4.940	0.130	9.728
91	4.940	0.130	9.728
100	4.945	0.135	9.723
102	4.970	0.160	9.698
104	5.000	0.190	9.668
106	5.025	0.215	9.643
108	5.040	0.230	9.628
110	5.040	0.230	9.628
112	5.045	0.235	9.623
114	5.050	0.240	9.618
116	5.060	0.250	9.608
118	5.060	0.250	9.608
120	5.060	0.250	9.608
122	5.065	0.255	9.603
124	5.070	0.260	9.598
126	5.070	0.260	9.598
128	5.070	0.260	9.598
130	5.070	0.260	9.598
136	5.075	0.265	9.593
141	5.080	0.270	9.588
146	5.085	0.275	9.583
151	5.085	0.275	9.583
156	5.090	0.280	9.578
161	5.090	0.280	9.578
171	5.090	0.280	9.578
181	5.095	0.285	9.573
191	5.100	0.290	9.568
200	5.100	0.290	9.568
202	5.130	0.320	9.538
204	5.160	0.350	9.508
206	5.190	0.380	9.478
208	5.200	0.390	9.468

210	5.210	0.400	9.458
212	5.215	0.405	9.453
214	5.220	0.410	9.448
216	5.220	0.410	9.448
218	5.225	0.415	9.443
220	5.230	0.420	9.438
222	5.230	0.420	9.438
224	5.235	0.425	9.433
226	5.235	0.425	9.433
228	5.235	0.425	9.433
230	5.240	0.430	9.428
236	5.240	0.430	9.428
241	5.245	0.435	9.423
246	5.250	0.440	9.418
251	5.250	0.440	9.418
256	5.250	0.440	9.418
261	5.255	0.445	9.413
271	5.255	0.445	9.413
281	5.255	0.445	9.413
291	5.260	0.450	9.408
300	5.260	0.450	9.408

LFP16 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		25/05/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	3.00
2	100	6.00
3	100	9.00
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP16	Monoman	460990	6193121	12.29	12.05		0.00	0.00	9.00	8.50	2.76	9.53
Obs	LFO22	Monoman (Pata)	460984	6193110	12.49	11.50		13.50	1.50	9.00	NA	2.52	9.97
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP16	5.00	14.00	9.00	7.05	-1.95
Obs	LFO22	5.00	14.00	9.00	6.50	-2.50
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP16	SC	9.50	13.50	4.00	175	1.00	0.5	8:16	175
Obs	LFO22	SC	8.00	14.00	6.00	80	NA	NA	NA	80
Obs										
Obs										
Obs										

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	4.680	1.920	7.613	3.00	1.56
2	4.800	2.040	7.493	3.00	1.47
3	4.860	2.100	7.433	3.00	1.43
4	4.880	2.120	7.413	3.00	1.42
5	4.890	2.130	7.403	3.00	1.41
6	4.910	2.150	7.383	3.00	1.40
7	4.920	2.160	7.373	3.00	1.39
8	4.940	2.180	7.353	3.00	1.38
9	4.940	2.180	7.353	3.00	1.38
10	4.955	2.195	7.338	3.00	1.37
12	4.970	2.210	7.323	3.00	1.36
14	4.960	2.200	7.333	3.00	1.36
16	4.980	2.220	7.313	3.00	1.35
18	4.950	2.190	7.343	3.00	1.37
20	4.960	2.200	7.333	3.00	1.36
22	4.970	2.210	7.323	3.00	1.36
24	4.975	2.215	7.318	3.00	1.35
26	4.990	2.230	7.303	3.00	1.35
28	4.990	2.230	7.303	3.00	1.35
30	4.990	2.230	7.303	3.00	1.35
35	5.000	2.240	7.293	3.00	1.34
40	5.010	2.250	7.283	3.00	1.33
45	5.055	2.295	7.238	3.00	1.31
50	5.010	2.250	7.283	3.00	1.33
55	5.030	2.270	7.263	3.00	1.32
60	5.030	2.270	7.263	3.00	1.32
70	5.030	2.270	7.263	3.00	1.32
80	5.030	2.270	7.263	3.00	1.32
90	5.040	2.280	7.253	3.00	1.32
100	5.045	2.285	7.248	3.00	1.31
101	7.145	4.385	5.148	6.00	1.37
102	7.300	4.540	4.993	6.00	1.32
103	7.360	4.600	4.933	6.00	1.30
104	7.370	4.610	4.923	6.00	1.30
105	7.375	4.615	4.918	6.00	1.30
106	7.390	4.630	4.903	6.00	1.30
107	7.400	4.640	4.893	6.00	1.29
108	7.410	4.650	4.883	6.00	1.29
109	7.420	4.660	4.873	6.00	1.29
110	7.425	4.665	4.868	6.00	1.29
112	7.430	4.670	4.863	6.00	1.28
114	7.430	4.670	4.863	6.00	1.28
116	7.450	4.690	4.843	6.00	1.28
118	7.480	4.720	4.813	6.00	1.27
120	7.495	4.735	4.798	6.00	1.27
122	7.475	4.715	4.818	6.00	1.27
124	7.480	4.720	4.813	6.00	1.27
126	7.470	4.710	4.823	6.00	1.27
128	7.480	4.720	4.813	6.00	1.27
130	7.470	4.710	4.823	6.00	1.27
135	7.480	4.720	4.813	6.00	1.27
140	7.490	4.730	4.803	6.00	1.27
145	7.520	4.760	4.773	6.00	1.26

150	7.500	4.740	4.793	6.00	1.27
155	7.500	4.740	4.793	6.00	1.27
160	7.530	4.770	4.763	6.00	1.26
170	7.530	4.770	4.763	6.00	1.26
180	7.535	4.775	4.758	6.00	1.26
190	7.540	4.780	4.753	6.00	1.26
200	7.550	4.790	4.743	6.00	1.25
201	9.760	7.000	2.533	9.00	1.29
202	9.870	7.110	2.423	9.00	1.27
203	9.890	7.130	2.403	9.00	1.26
204	9.920	7.160	2.373	9.00	1.26
205	9.930	7.170	2.363	9.00	1.26
206	9.950	7.190	2.343	9.00	1.25
207	9.940	7.180	2.353	9.00	1.25
208	9.945	7.185	2.348	9.00	1.25
209	9.950	7.190	2.343	9.00	1.25
210	9.960	7.200	2.333	9.00	1.25
212	9.970	7.210	2.323	9.00	1.25
214	9.980	7.220	2.313	9.00	1.25
216	9.990	7.230	2.303	9.00	1.24
218	10.000	7.240	2.293	9.00	1.24
220	10.010	7.250	2.283	9.00	1.24
222	10.015	7.255	2.278	9.00	1.24
224	10.010	7.250	2.283	9.00	1.24
226	10.010	7.250	2.283	9.00	1.24
228	10.030	7.270	2.263	9.00	1.24
230	10.035	7.275	2.258	9.00	1.24
235	10.035	7.275	2.258	9.00	1.24
240	10.055	7.295	2.238	9.00	1.23
245	10.065	7.305	2.228	9.00	1.23
250	10.055	7.295	2.238	9.00	1.23
255	10.065	7.305	2.228	9.00	1.23
260	10.075	7.315	2.218	9.00	1.23
270	10.100	7.340	2.193	9.00	1.23
280	10.110	7.350	2.183	9.00	1.22
290	10.130	7.370	2.163	9.00	1.22
300	10.155	7.395	2.138	9.00	1.22

LFP16 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		25/08/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		180

Step	Duration (minutes)	Q (L/s)
1	60	3.00
2	60	6.00
3	60	9.00
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP16	Monoman	460990	6193121	12.29	12.05		0.00	0.00	9.00	8.50	2.87	9.42
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP16	5.00	14.00	9.00	7.05	-1.95
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP16	SC	9.50	13.50	4.00	175	1.00	0.5	8:16	175
Obs										
Obs										
Obs										
Obs										

Note:

post acid wash development

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	4.590	1.720	7.703	3.00	1.74
3	4.580	1.710	7.713	3.00	1.75
4	4.660	1.790	7.633	3.00	1.68
5	4.700	1.830	7.593	3.00	1.64
6	4.730	1.860	7.563	3.00	1.61
7	4.730	1.860	7.563	3.00	1.61
8	4.730	1.860	7.563	3.00	1.61
9	4.730	1.860	7.563	3.00	1.61
10	4.745	1.875	7.548	3.00	1.60
12	4.740	1.870	7.553	3.00	1.60
14	4.750	1.880	7.543	3.00	1.60
16	4.760	1.890	7.533	3.00	1.59
18	4.770	1.900	7.523	3.00	1.58
20	4.775	1.905	7.518	3.00	1.57
22	4.785	1.915	7.508	3.00	1.57
24	4.795	1.925	7.498	3.00	1.56
26	4.795	1.925	7.498	3.00	1.56
28	4.800	1.930	7.493	3.00	1.55
30	4.810	1.940	7.483	3.00	1.55
35	4.800	1.930	7.493	3.00	1.55
40	4.810	1.940	7.483	3.00	1.55
45	4.815	1.945	7.478	3.00	1.54
50	4.820	1.950	7.473	3.00	1.54
55	4.820	1.950	7.473	3.00	1.54
60	4.825	1.955	7.468	3.00	1.53
61	6.320	3.450	5.973	6.00	1.74
62	6.700	3.830	5.593	6.00	1.57
63	6.740	3.870	5.553	6.00	1.55
64	6.755	3.885	5.538	6.00	1.54
65	6.770	3.900	5.523	6.00	1.54
66	6.780	3.910	5.513	6.00	1.53
67	6.800	3.930	5.493	6.00	1.53
68	6.810	3.940	5.483	6.00	1.52
69	6.820	3.950	5.473	6.00	1.52
70	6.825	3.955	5.468	6.00	1.52
72	6.835	3.965	5.458	6.00	1.51
74	6.850	3.980	5.443	6.00	1.51
76	6.855	3.985	5.438	6.00	1.51
78	6.855	3.985	5.438	6.00	1.51
80	6.865	3.995	5.428	6.00	1.50
82	6.870	4.000	5.423	6.00	1.50
84	6.870	4.000	5.423	6.00	1.50
86	6.890	4.020	5.403	6.00	1.49
88	6.890	4.020	5.403	6.00	1.49
90	6.890	4.020	5.403	6.00	1.49
95	6.900	4.030	5.393	6.00	1.49
100	6.915	4.045	5.378	6.00	1.48
105	6.925	4.055	5.368	6.00	1.48
110	6.940	4.070	5.353	6.00	1.47
115	6.950	4.080	5.343	6.00	1.47
120	6.970	4.100	5.323	6.00	1.46
121	8.460	5.590	3.833	9.00	1.61
122	8.880	6.010	3.413	9.00	1.50

123	8.950	6.080	3.343	9.00	1.48
124	8.980	6.110	3.313	9.00	1.47
125	8.985	6.115	3.308	9.00	1.47
126	8.975	6.105	3.318	9.00	1.47
127	8.980	6.110	3.313	9.00	1.47
128	8.995	6.125	3.298	9.00	1.47
129	9.010	6.140	3.283	9.00	1.47
130	9.025	6.155	3.268	9.00	1.46
132	9.040	6.170	3.253	9.00	1.46
134	9.040	6.170	3.253	9.00	1.46
136	9.050	6.180	3.243	9.00	1.46
138	9.055	6.185	3.238	9.00	1.46
140	9.065	6.195	3.228	9.00	1.45
142	9.080	6.210	3.213	9.00	1.45
144	9.100	6.230	3.193	9.00	1.44
146	9.100	6.230	3.193	9.00	1.44
148	9.100	6.230	3.193	9.00	1.44
150	9.115	6.245	3.178	9.00	1.44
155	9.110	6.240	3.183	9.00	1.44
160	9.125	6.255	3.168	9.00	1.44
165	9.140	6.270	3.153	9.00	1.44
170	9.150	6.280	3.143	9.00	1.43
175	9.155	6.285	3.138	9.00	1.43
180	9.175	6.305	3.118	9.00	1.43

LFP16_2 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		17/07/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	2.60
2	100	5.20
3	100	7.80
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP16_2	Monoman	460993	6193124	12.279	11.988		0.00	0.00	9.00	8.50	2.92	9.36
Obs	LFO22	Monoman (Pata)	460984	6193110	12.489	11.497		13.50	1.50	9.00	NA	2.43	10.06
Obs	LFO35	Monoman	461006	6193102	11.970	11.447		25.00	2.78	9.00	NA	2.30	9.67
Obs	LFO36	Monoman	461021	6193082	11.820	11.347		50.00	5.56	9.00	NA	2.15	9.67
Obs	LFO37	Monoman	461056	6193032	12.268	11.870		100.00	11.11	9.00	NA	2.54	9.73

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP16_2	5.00	14.00	9.00	6.99	-2.01
Obs	LFO22	5.00	14.00	9.00	6.50	-2.50
Obs	LFO35	4.00	14.00	10.00	7.45	-2.55
Obs	LFO36	5.00	14.50	9.50	6.35	-3.15
Obs	LFO37	6.00	14.50	8.50	5.87	-2.63

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP16_2	WS	9.50	13.50	4.00	175	1.00	1.2	8:16	175
Obs	LFO22	SC	8.00	14.00	6.00	80	NA	NA	NA	80
Obs	LFO35	SC	9.50	13.50	4.00	80	NA	NA	NA	80
Obs	LFO36	SC	9.50	13.50	4.00	80	NA	NA	NA	80
Obs	LFO37	SC	9.50	13.50	4.00	80	NA	NA	NA	80

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	4.090	1.170	8.189	2.60	2.22
2	4.490	1.570	7.789	2.60	1.66
3	4.550	1.630	7.729	2.60	1.60
4	4.600	1.680	7.679	2.60	1.55
5	4.620	1.700	7.659	2.60	1.53
6	4.590	1.670	7.689	2.60	1.56
7	4.620	1.700	7.659	2.60	1.53
8	4.630	1.710	7.649	2.60	1.52
9	4.640	1.720	7.639	2.60	1.51
10	4.650	1.730	7.629	2.60	1.50
12	4.660	1.740	7.619	2.60	1.49
14	4.670	1.750	7.609	2.60	1.49
16	4.680	1.760	7.599	2.60	1.48
18	4.670	1.750	7.609	2.60	1.49
20	4.680	1.760	7.599	2.60	1.48
22	4.670	1.750	7.609	2.60	1.49
24	4.680	1.760	7.599	2.60	1.48
26	4.680	1.760	7.599	2.60	1.48
28	4.690	1.770	7.589	2.60	1.47
30	4.710	1.790	7.569	2.60	1.45
35	4.710	1.790	7.569	2.60	1.45
40	4.710	1.790	7.569	2.60	1.45
45	4.715	1.795	7.564	2.60	1.45
50	4.710	1.790	7.569	2.60	1.45
55	4.710	1.790	7.569	2.60	1.45
60	4.730	1.810	7.549	2.60	1.44
70	4.735	1.815	7.544	2.60	1.43
80	4.730	1.810	7.549	2.60	1.44
90	4.740	1.820	7.539	2.60	1.43
100	4.750	1.830	7.529	2.60	1.42
101	6.250	3.330	6.029	5.20	1.56
102	6.510	3.590	5.769	5.20	1.45
103	6.580	3.660	5.699	5.20	1.42
104	6.620	3.700	5.659	5.20	1.41
105	6.650	3.730	5.629	5.20	1.39
106	6.665	3.745	5.614	5.20	1.39
107	6.690	3.770	5.589	5.20	1.38
108	6.690	3.770	5.589	5.20	1.38
109	6.690	3.770	5.589	5.20	1.38
110	6.700	3.780	5.579	5.20	1.38
112	6.710	3.790	5.569	5.20	1.37
114	6.720	3.800	5.559	5.20	1.37
116	6.725	3.805	5.554	5.20	1.37
118	6.740	3.820	5.539	5.20	1.36
120	6.750	3.830	5.529	5.20	1.36
122	6.770	3.850	5.509	5.20	1.35
124	6.770	3.850	5.509	5.20	1.35
126	6.785	3.865	5.494	5.20	1.35
128	6.795	3.875	5.484	5.20	1.34
130	6.800	3.880	5.479	5.20	1.34
135	6.840	3.920	5.439	5.20	1.33
140	6.850	3.930	5.429	5.20	1.32
145	6.870	3.950	5.409	5.20	1.32

150	6.900	3.980	5.379	5.20	1.31
155	6.900	3.980	5.379	5.20	1.31
160	6.910	3.990	5.369	5.20	1.30
170	6.930	4.010	5.349	5.20	1.30
180	6.940	4.020	5.339	5.20	1.29
190	6.950	4.030	5.329	5.20	1.29
200	6.980	4.060	5.299	5.20	1.28
201	8.470	5.550	3.809	7.80	1.41
202	8.710	5.790	3.569	7.80	1.35
203	8.820	5.900	3.459	7.80	1.32
204	8.870	5.950	3.409	7.80	1.31
205	8.885	5.965	3.394	7.80	1.31
206	8.890	5.970	3.389	7.80	1.31
207	8.900	5.980	3.379	7.80	1.30
208	8.910	5.990	3.369	7.80	1.30
209	8.920	6.000	3.359	7.80	1.30
210	8.925	6.005	3.354	7.80	1.30
212	8.935	6.015	3.344	7.80	1.30
214	8.950	6.030	3.329	7.80	1.29
216	8.950	6.030	3.329	7.80	1.29
218	8.955	6.035	3.324	7.80	1.29
220	8.950	6.030	3.329	7.80	1.29
222	8.970	6.050	3.309	7.80	1.29
224	8.970	6.050	3.309	7.80	1.29
226	8.980	6.060	3.299	7.80	1.29
228	8.980	6.060	3.299	7.80	1.29
230	8.985	6.065	3.294	7.80	1.29
235	8.995	6.075	3.284	7.80	1.28
240	9.000	6.080	3.279	7.80	1.28
245	9.020	6.100	3.259	7.80	1.28
250	9.020	6.100	3.259	7.80	1.28
255	9.050	6.130	3.229	7.80	1.27
260	9.050	6.130	3.229	7.80	1.27
270	9.070	6.150	3.209	7.80	1.27
280	9.080	6.160	3.199	7.80	1.27
290	9.090	6.170	3.189	7.80	1.26
300	9.100	6.180	3.179	7.80	1.26

LFP16_2 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		24/08/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		180

Step	Duration (minutes)	Q (L/s)
1	60	2.60
2	60	5.20
3	60	7.80
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP16_2	Monoman	460993	6193124	12.279	11.988		0.00	0.00	9.00	8.50	2.93	9.35
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP16_2	5.00	14.00	9.00	6.99	-2.01
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP16_2	WS	9.50	13.50	4.00	175	1.00	1.2	8:16	175
Obs										
Obs										
Obs										
Obs										

Note:

post acid wash development

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	3.890	0.965	8.389	2.60	2.69
2	4.420	1.495	7.859	2.60	1.74
3	4.460	1.535	7.819	2.60	1.69
4	4.500	1.575	7.779	2.60	1.65
5	4.540	1.615	7.739	2.60	1.61
6	4.530	1.605	7.749	2.60	1.62
7	4.540	1.615	7.739	2.60	1.61
8	4.550	1.625	7.729	2.60	1.60
9	4.555	1.630	7.724	2.60	1.60
10	4.565	1.640	7.714	2.60	1.59
12	4.580	1.655	7.699	2.60	1.57
14	4.580	1.655	7.699	2.60	1.57
16	4.585	1.660	7.694	2.60	1.57
18	4.600	1.675	7.679	2.60	1.55
20	4.605	1.680	7.674	2.60	1.55
22	4.590	1.665	7.689	2.60	1.56
24	4.605	1.680	7.674	2.60	1.55
26	4.630	1.705	7.649	2.60	1.52
28	4.630	1.705	7.649	2.60	1.52
30	4.630	1.705	7.649	2.60	1.52
35	4.650	1.725	7.629	2.60	1.51
40	4.635	1.710	7.644	2.60	1.52
45	4.620	1.695	7.659	2.60	1.53
50	4.630	1.705	7.649	2.60	1.52
55	4.630	1.705	7.649	2.60	1.52
60	4.660	1.735	7.619	2.60	1.50
61	5.250	2.325	7.029	5.20	2.24
62	5.900	2.975	6.379	5.20	1.75
63	6.280	3.355	5.999	5.20	1.55
64	6.400	3.475	5.879	5.20	1.50
65	6.440	3.515	5.839	5.20	1.48
66	6.470	3.545	5.809	5.20	1.47
67	6.480	3.555	5.799	5.20	1.46
68	6.480	3.555	5.799	5.20	1.46
69	6.490	3.565	5.789	5.20	1.46
70	6.495	3.570	5.784	5.20	1.46
72	6.515	3.590	5.764	5.20	1.45
74	6.520	3.595	5.759	5.20	1.45
76	6.525	3.600	5.754	5.20	1.44
78	6.540	3.615	5.739	5.20	1.44
80	6.540	3.615	5.739	5.20	1.44
82	6.560	3.635	5.719	5.20	1.43
84	6.580	3.655	5.699	5.20	1.42
86	6.590	3.665	5.689	5.20	1.42
88	6.590	3.665	5.689	5.20	1.42
90	6.600	3.675	5.679	5.20	1.41
95	6.630	3.705	5.649	5.20	1.40
100	6.650	3.725	5.629	5.20	1.40
105	6.660	3.735	5.619	5.20	1.39
110	6.675	3.750	5.604	5.20	1.39
115	6.690	3.765	5.589	5.20	1.38
120	6.700	3.775	5.579	5.20	1.38
121	8.160	5.235	4.119	7.80	1.49

122	8.420	5.495	3.859	7.80	1.42
123	8.500	5.575	3.779	7.80	1.40
124	8.525	5.600	3.754	7.80	1.39
125	8.550	5.625	3.729	7.80	1.39
126	8.560	5.635	3.719	7.80	1.38
127	8.580	5.655	3.699	7.80	1.38
129	8.590	5.665	3.689	7.80	1.38
130	8.590	5.665	3.689	7.80	1.38
132	8.610	5.685	3.669	7.80	1.37
134	8.625	5.700	3.654	7.80	1.37
136	8.640	5.715	3.639	7.80	1.36
138	8.645	5.720	3.634	7.80	1.36
140	8.650	5.725	3.629	7.80	1.36
142	8.660	5.735	3.619	7.80	1.36
144	8.665	5.740	3.614	7.80	1.36
146	8.670	5.745	3.609	7.80	1.36
148	8.680	5.755	3.599	7.80	1.36
150	8.690	5.765	3.589	7.80	1.35
155	8.700	5.775	3.579	7.80	1.35
160	8.725	5.800	3.554	7.80	1.34
165	8.725	5.800	3.554	7.80	1.34
170	8.725	5.800	3.554	7.80	1.34
175	8.760	5.835	3.519	7.80	1.34
180	8.765	5.840	3.514	7.80	1.34

LFP18 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		21/07/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	2.70
2	100	5.40
3	100	8.10
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP18	Monoman	458953	6187787	12.02	11.77		0.00	0.00	5.00	5.00	2.84	9.18
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP18	4.00	9.00	5.00	7.77	2.77
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP18	WS	6.50	10.50	2.50	175	1.00	1.2	8:16	175
Obs										
Obs										
Obs										

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	3.500	0.660	8.523	2.70	4.09
2	3.660	0.820	8.363	2.70	3.29
3	3.750	0.910	8.273	2.70	2.97
4	3.790	0.950	8.233	2.70	2.84
5	3.840	1.000	8.183	2.70	2.70
6	3.880	1.040	8.143	2.70	2.60
7	3.930	1.090	8.093	2.70	2.48
8	3.945	1.105	8.078	2.70	2.44
9	3.965	1.125	8.058	2.70	2.40
10	3.980	1.140	8.043	2.70	2.37
12	4.000	1.160	8.023	2.70	2.33
14	4.020	1.180	8.003	2.70	2.29
16	4.035	1.195	7.988	2.70	2.26
18	4.050	1.210	7.973	2.70	2.23
20	4.065	1.225	7.958	2.70	2.20
22	4.065	1.225	7.958	2.70	2.20
24	4.090	1.250	7.933	2.70	2.16
26	4.080	1.240	7.943	2.70	2.18
28	4.095	1.255	7.928	2.70	2.15
30	4.105	1.265	7.918	2.70	2.13
35	4.115	1.275	7.908	2.70	2.12
40	4.130	1.290	7.893	2.70	2.09
45	4.130	1.290	7.893	2.70	2.09
50	4.135	1.295	7.888	2.70	2.08
55	4.135	1.295	7.888	2.70	2.08
60	4.140	1.300	7.883	2.70	2.08
70	4.140	1.300	7.883	2.70	2.08
80	4.150	1.310	7.873	2.70	2.06
90	4.155	1.315	7.868	2.70	2.05
100	4.155	1.315	7.868	2.70	2.05
101	4.910	2.070	7.113	5.40	2.61
102	5.050	2.210	6.973	5.40	2.44
103	5.110	2.270	6.913	5.40	2.38
104	5.155	2.315	6.868	5.40	2.33
105	5.225	2.385	6.798	5.40	2.26
106	5.265	2.425	6.758	5.40	2.23
107	5.275	2.435	6.748	5.40	2.22
108	5.300	2.460	6.723	5.40	2.20
109	5.325	2.485	6.698	5.40	2.17
110	5.330	2.490	6.693	5.40	2.17
112	5.380	2.540	6.643	5.40	2.13
114	5.410	2.570	6.613	5.40	2.10
116	5.420	2.580	6.603	5.40	2.09
118	5.450	2.610	6.573	5.40	2.07
120	5.455	2.615	6.568	5.40	2.07
122	5.470	2.630	6.553	5.40	2.05
124	5.490	2.650	6.533	5.40	2.04
126	5.495	2.655	6.528	5.40	2.03
128	5.490	2.650	6.533	5.40	2.04
130	5.505	2.665	6.518	5.40	2.03
135	5.520	2.680	6.503	5.40	2.01
140	5.545	2.705	6.478	5.40	2.00
145	5.540	2.700	6.483	5.40	2.00

150	5.560	2.720	6.463	5.40	1.99
155	5.560	2.720	6.463	5.40	1.99
160	5.580	2.740	6.443	5.40	1.97
170	5.590	2.750	6.433	5.40	1.96
180	5.580	2.740	6.443	5.40	1.97
190	5.590	2.750	6.433	5.40	1.96
200	5.605	2.765	6.418	5.40	1.95
201	6.425	3.585	5.598	8.10	2.26
202	6.530	3.690	5.493	8.10	2.20
203	6.590	3.750	5.433	8.10	2.16
204	6.660	3.820	5.363	8.10	2.12
205	6.710	3.870	5.313	8.10	2.09
206	6.740	3.900	5.283	8.10	2.08
207	6.760	3.920	5.263	8.10	2.07
208	6.790	3.950	5.233	8.10	2.05
209	6.800	3.960	5.223	8.10	2.05
210	6.830	3.990	5.193	8.10	2.03
212	6.855	4.015	5.168	8.10	2.02
214	6.885	4.045	5.138	8.10	2.00
216	6.900	4.060	5.123	8.10	2.00
218	6.920	4.080	5.103	8.10	1.99
220	6.935	4.095	5.088	8.10	1.98
222	6.935	4.095	5.088	8.10	1.98
224	6.960	4.120	5.063	8.10	1.97
226	6.960	4.120	5.063	8.10	1.97
228	6.980	4.140	5.043	8.10	1.96
230	6.980	4.140	5.043	8.10	1.96
235	6.990	4.150	5.033	8.10	1.95
240	6.990	4.150	5.033	8.10	1.95
245	7.000	4.160	5.023	8.10	1.95
250	7.015	4.175	5.008	8.10	1.94
255	7.035	4.195	4.988	8.10	1.93
260	7.025	4.185	4.998	8.10	1.94
270	7.035	4.195	4.988	8.10	1.93
280	7.040	4.200	4.983	8.10	1.93
290	7.055	4.215	4.968	8.10	1.92
300	7.060	4.220	4.963	8.10	1.92

LFP3GF HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		06/03/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.50
2	100	1.00
3	100	1.50
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP3GF	Glenforslan	460229	6192854	14.62	13.72		0.00	0.00	20.50	17.00	0.31	14.31
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP3GF	41.00	61.50	20.50	-27.28	-47.78
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP3GF	OH	44.00	58.00	14.00	200	NA	NA	NA	200
Obs										
Obs										
Obs										
Obs										

Note:

note that well has a small artesian head of ~0.5 m - test was run by installing the pump and pumping as quikley as possible

MAN1o used to give aquifer thicknesses for production well and close wells

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	2.930	2.620	11.694	0.50	0.19
2	3.480	3.170	11.144	0.50	0.16
3	4.170	3.860	10.454	0.50	0.13
4	4.700	4.390	9.924	0.50	0.11
5	5.100	4.790	9.524	0.50	0.10
6	5.600	5.290	9.024	0.50	0.09
8	6.340	6.030	8.284	0.50	0.08
9	6.650	6.340	7.974	0.50	0.08
10	6.920	6.610	7.704	0.50	0.08
12	7.320	7.010	7.304	0.50	0.07
14	7.680	7.370	6.944	0.50	0.07
16	7.960	7.650	6.664	0.50	0.07
18	8.240	7.930	6.384	0.50	0.06
20	8.490	8.180	6.134	0.50	0.06
22	8.690	8.380	5.934	0.50	0.06
24	8.880	8.570	5.744	0.50	0.06
26	9.000	8.690	5.624	0.50	0.06
28	9.130	8.820	5.494	0.50	0.06
30	9.250	8.940	5.374	0.50	0.06
35	9.530	9.220	5.094	0.50	0.05
40	9.680	9.370	4.944	0.50	0.05
45	9.810	9.500	4.814	0.50	0.05
50	9.950	9.640	4.674	0.50	0.05
56	10.200	9.890	4.424	0.50	0.05
60	10.190	9.880	4.434	0.50	0.05
70	10.340	10.030	4.284	0.50	0.05
80	10.440	10.130	4.184	0.50	0.05
90	10.535	10.225	4.089	0.50	0.05
100	10.660	10.350	3.964	0.50	0.05
101	11.410	11.100	3.214	1.00	0.09
102	12.280	11.970	2.344	1.00	0.08
103	13.190	12.880	1.434	1.00	0.08
104	13.870	13.560	0.754	1.00	0.07
105	14.580	14.270	0.044	1.00	0.07
106	15.110	14.800	-0.486	1.00	0.07
107	15.580	15.270	-0.956	1.00	0.07
108	16.030	15.720	-1.406	1.00	0.06
109	16.500	16.190	-1.876	1.00	0.06
110	16.925	16.615	-2.301	1.00	0.06
112	17.600	17.290	-2.976	1.00	0.06
114	18.100	17.790	-3.476	1.00	0.06
116	18.470	18.160	-3.846	1.00	0.06
118	18.960	18.650	-4.336	1.00	0.05
120	19.290	18.980	-4.666	1.00	0.05
122	19.590	19.280	-4.966	1.00	0.05
124	19.870	19.560	-5.246	1.00	0.05
126	20.040	19.730	-5.416	1.00	0.05
128	20.190	19.880	-5.566	1.00	0.05
130	20.410	20.100	-5.786	1.00	0.05
135	20.780	20.470	-6.156	1.00	0.05
140	20.970	20.660	-6.346	1.00	0.05
145	21.170	20.860	-6.546	1.00	0.05
150	21.280	20.970	-6.656	1.00	0.05

155	21.420	21.110	-6.796	1.00	0.05
160	21.510	21.200	-6.886	1.00	0.05
170	21.700	21.390	-7.076	1.00	0.05
180	22.000	21.690	-7.376	1.00	0.05
190	22.240	21.930	-7.616	1.00	0.05
200	22.350	22.040	-7.726	1.00	0.05
202	24.370	24.060	-9.746	1.50	0.06
203	25.150	24.840	-10.526	1.50	0.06
204	25.970	25.660	-11.346	1.50	0.06
205	26.570	26.260	-11.946	1.50	0.06
206	27.040	26.730	-12.416	1.50	0.06
207	27.510	27.200	-12.886	1.50	0.06
208	27.960	27.650	-13.336	1.50	0.05
209	28.400	28.090	-13.776	1.50	0.05
210	28.750	28.440	-14.126	1.50	0.05
212	29.550	29.240	-14.926	1.50	0.05
214	30.110	29.800	-15.486	1.50	0.05
216	30.480	30.170	-15.856	1.50	0.05
218	30.860	30.550	-16.236	1.50	0.05
220	31.180	30.870	-16.556	1.50	0.05
222	31.520	31.210	-16.896	1.50	0.05
224	31.780	31.470	-17.156	1.50	0.05
226	32.010	31.700	-17.386	1.50	0.05
228	32.180	31.870	-17.556	1.50	0.05
230	32.360	32.050	-17.736	1.50	0.05
235	32.700	32.390	-18.076	1.50	0.05
240	32.980	32.670	-18.356	1.50	0.05
245	33.160	32.850	-18.536	1.50	0.05
250	33.400	33.090	-18.776	1.50	0.05
255	33.570	33.260	-18.946	1.50	0.05
260	33.780	33.470	-19.156	1.50	0.04
270	34.070	33.760	-19.446	1.50	0.04
280	34.160	33.850	-19.536	1.50	0.04
290	34.380	34.070	-19.756	1.50	0.04
300	34.590	34.280	-19.966	1.50	0.04

LFP3P HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		02/03/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.20
2	100	0.40
3	100	0.60
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP3P	Pata	460227	6192858	14.26	13.74		0.00	0.00	9.00	9.00	5.03	9.23
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP3P	17.50	26.50	9.00	-3.76	-12.76
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP3P	OH	17.50	27.00	9.00	175	NA	NA	NA	175
Obs										
Obs										
Obs										
Obs										

Note:

MAN1o used to give aquifer thicknesses for production well and close wells

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	7.73	2.700	6.533	0.20	0.07
2	7.97	2.940	6.293	0.20	0.07
3	8.19	3.160	6.073	0.20	0.06
4	8.4	3.370	5.863	0.20	0.06
5	8.57	3.540	5.693	0.20	0.06
6	8.7	3.670	5.563	0.20	0.05
7	8.84	3.810	5.423	0.20	0.05
8	8.99	3.960	5.273	0.20	0.05
9	9.145	4.115	5.118	0.20	0.05
10	9.27	4.240	4.993	0.20	0.05
12	9.44	4.410	4.823	0.20	0.05
14	9.625	4.595	4.638	0.20	0.04
16	9.745	4.715	4.518	0.20	0.04
18	9.86	4.830	4.403	0.20	0.04
20	9.93	4.900	4.333	0.20	0.04
22	10.04	5.010	4.223	0.20	0.04
24	10.12	5.090	4.143	0.20	0.04
26	10.18	5.150	4.083	0.20	0.04
28	10.23	5.200	4.033	0.20	0.04
30	10.3	5.270	3.963	0.20	0.04
35	10.39	5.360	3.873	0.20	0.04
40	10.46	5.430	3.803	0.20	0.04
45	10.52	5.490	3.743	0.20	0.04
50	10.54	5.510	3.723	0.20	0.04
55	10.59	5.560	3.673	0.20	0.04
60	10.64	5.610	3.623	0.20	0.04
70	10.66	5.630	3.603	0.20	0.04
80	10.73	5.700	3.533	0.20	0.04
90	10.75	5.720	3.513	0.20	0.03
100	10.75	5.720	3.513	0.20	0.03
101	11.265	6.235	2.998	0.40	0.06
102	11.76	6.730	2.503	0.40	0.06
103	12.15	7.120	2.113	0.40	0.06
104	12.675	7.645	1.588	0.40	0.05
105	12.915	7.885	1.348	0.40	0.05
106	13.15	8.120	1.113	0.40	0.05
107	13.34	8.310	0.923	0.40	0.05
108	13.565	8.535	0.698	0.40	0.05
109	13.725	8.695	0.538	0.40	0.05
110	13.875	8.845	0.388	0.40	0.05
112	14.18	9.150	0.083	0.40	0.04
114	14.35	9.320	-0.087	0.40	0.04
116	14.51	9.480	-0.247	0.40	0.04
118	14.61	9.580	-0.347	0.40	0.04
120	14.71	9.680	-0.447	0.40	0.04
122	14.79	9.760	-0.527	0.40	0.04
126	15.09	10.060	-0.827	0.40	0.04
128	15.21	10.180	-0.947	0.40	0.04
130	15.34	10.310	-1.077	0.40	0.04
135	15.71	10.680	-1.447	0.40	0.04
140	15.81	10.780	-1.547	0.40	0.04
145	15.895	10.865	-1.632	0.40	0.04
150	15.99	10.960	-1.727	0.40	0.04

155	16.04	11.010	-1.777	0.40	0.04
160	16.05	11.020	-1.787	0.40	0.04
170	16.08	11.050	-1.817	0.40	0.04
180	16.1	11.070	-1.837	0.40	0.04
190	16.14	11.110	-1.877	0.40	0.04
200	16.19	11.160	-1.927	0.40	0.04
201	16.9	11.870	-2.637	0.60	0.05
202	17.26	12.230	-2.997	0.60	0.05
203	17.77	12.740	-3.507	0.60	0.05
204	18.1	13.070	-3.837	0.60	0.05
205	18.57	13.540	-4.307	0.60	0.04
206	18.635	13.605	-4.372	0.60	0.04
207	18.625	13.595	-4.362	0.60	0.04
208	18.635	13.605	-4.372	0.60	0.04
209	18.635	13.605	-4.372	0.60	0.04
210	18.635	13.605	-4.372	0.60	0.04
212	18.65	13.620	-4.387	0.60	0.04
214	18.71	13.680	-4.447	0.60	0.04
216	18.85	13.820	-4.587	0.60	0.04
218	18.95	13.920	-4.687	0.60	0.04
220	19.03	14.000	-4.767	0.60	0.04
222	19.195	14.165	-4.932	0.60	0.04
224	19.28	14.250	-5.017	0.60	0.04
226	19.415	14.385	-5.152	0.60	0.04
228	19.49	14.460	-5.227	0.60	0.04
232	19.7	14.670	-5.437	0.60	0.04
235	19.73	14.700	-5.467	0.60	0.04
240	19.9	14.870	-5.637	0.60	0.04
250	21.43	16.400	-7.167	0.60	0.04
256	21.78	16.750	-7.517	0.60	0.04
265	22	16.970	-7.737	0.60	0.04
270	22.325	17.295	-8.062	0.60	0.03
280	23.535	18.505	-9.272	0.60	0.03
290	24.32	19.290	-10.057	0.60	0.03
300	24.745	19.715	-10.482	0.60	0.03

LHO14P HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		07/03/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.25
2	100	0.35
3	100	0.45
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Observation	LHO14P	Pata	461772	6188864	44.72	44.07		0.00	0.00	10.00	10.00	29.90	14.82
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Observation	LHO14P	51.00	61.00	10.00	-6.93	-16.93
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Observation	LHO14P	OH	53.00	61.00	8.00	100	NA	NA	NA	100
Obs										
Obs										
Obs										
Obs										

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	35.310	5.410	9.411	0.25	0.05
2	35.830	5.930	8.891	0.25	0.04
3	36.180	6.280	8.541	0.25	0.04
4	36.620	6.720	8.101	0.25	0.04
5	36.840	6.940	7.881	0.25	0.04
6	37.070	7.170	7.651	0.25	0.03
7	37.300	7.400	7.421	0.25	0.03
8	37.430	7.530	7.291	0.25	0.03
9	37.570	7.670	7.151	0.25	0.03
10	37.650	7.750	7.071	0.25	0.03
12	37.800	7.900	6.921	0.25	0.03
14	37.880	7.980	6.841	0.25	0.03
16	37.940	8.040	6.781	0.25	0.03
18	38.000	8.100	6.721	0.25	0.03
20	38.070	8.170	6.651	0.25	0.03
22	38.120	8.220	6.601	0.25	0.03
24	38.150	8.250	6.571	0.25	0.03
26	38.200	8.300	6.521	0.25	0.03
28	38.240	8.340	6.481	0.25	0.03
30	38.270	8.370	6.451	0.25	0.03
35	38.330	8.430	6.391	0.25	0.03
40	38.400	8.500	6.321	0.25	0.03
45	38.435	8.535	6.286	0.25	0.03
50	38.490	8.590	6.231	0.25	0.03
55	38.520	8.620	6.201	0.25	0.03
60	38.570	8.670	6.151	0.25	0.03
70	38.640	8.740	6.081	0.25	0.03
80	38.695	8.795	6.026	0.25	0.03
90	38.735	8.835	5.986	0.25	0.03
100	38.780	8.880	5.941	0.25	0.03
101	39.420	9.520	5.301	0.35	0.04
102	40.080	10.180	4.641	0.35	0.03
103	40.550	10.650	4.171	0.35	0.03
104	40.900	11.000	3.821	0.35	0.03
105	41.170	11.270	3.551	0.35	0.03
106	41.380	11.480	3.341	0.35	0.03
107	41.610	11.710	3.111	0.35	0.03
108	41.780	11.880	2.941	0.35	0.03
109	41.900	12.000	2.821	0.35	0.03
110	41.990	12.090	2.731	0.35	0.03
112	42.120	12.220	2.601	0.35	0.03
114	42.220	12.320	2.501	0.35	0.03
116	42.280	12.380	2.441	0.35	0.03
118	42.310	12.410	2.411	0.35	0.03
120	42.360	12.460	2.361	0.35	0.03
122	42.390	12.490	2.331	0.35	0.03
124	42.420	12.520	2.301	0.35	0.03
126	42.430	12.530	2.291	0.35	0.03
128	42.460	12.560	2.261	0.35	0.03
130	42.490	12.590	2.231	0.35	0.03
135	42.520	12.620	2.201	0.35	0.03
140	42.560	12.660	2.161	0.35	0.03
146	42.590	12.690	2.131	0.35	0.03

150	42.630	12.730	2.091	0.35	0.03
155	42.650	12.750	2.071	0.35	0.03
160	42.660	12.760	2.061	0.35	0.03
170	42.680	12.780	2.041	0.35	0.03
180	42.740	12.840	1.981	0.35	0.03
190	42.780	12.880	1.941	0.35	0.03
200	42.810	12.910	1.911	0.35	0.03
201	43.520	13.620	1.201	0.45	0.03
202	44.050	14.150	0.671	0.45	0.03
203	44.520	14.620	0.201	0.45	0.03
204	44.910	15.010	-0.189	0.45	0.03
205	45.130	15.230	-0.409	0.45	0.03
206	45.370	15.470	-0.649	0.45	0.03
207	45.600	15.700	-0.879	0.45	0.03
208	45.750	15.850	-1.029	0.45	0.03
209	45.860	15.960	-1.139	0.45	0.03
210	45.970	16.070	-1.249	0.45	0.03
212	46.130	16.230	-1.409	0.45	0.03
214	46.200	16.300	-1.479	0.45	0.03
216	46.270	16.370	-1.549	0.45	0.03
218	46.310	16.410	-1.589	0.45	0.03
220	46.350	16.450	-1.629	0.45	0.03
222	46.510	16.610	-1.789	0.45	0.03
224	46.600	16.700	-1.879	0.45	0.03
226	46.680	16.780	-1.959	0.45	0.03
228	46.720	16.820	-1.999	0.45	0.03
230	46.750	16.850	-2.029	0.45	0.03
235	46.800	16.900	-2.079	0.45	0.03
240	46.850	16.950	-2.129	0.45	0.03
245	46.880	16.980	-2.159	0.45	0.03
250	46.900	17.000	-2.179	0.45	0.03
255	46.910	17.010	-2.189	0.45	0.03
260	46.930	17.030	-2.209	0.45	0.03
270	46.960	17.060	-2.239	0.45	0.03
280	47.020	17.120	-2.299	0.45	0.03
290	47.070	17.170	-2.349	0.45	0.03
300	47.155	17.255	-2.434	0.45	0.03

LHP13 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		
Hydraulic properties of aquifer - transmissivity		

Start date		20/12/2003
Start time		
Stop date		
Stop time		
Duration (minutes)		480

Step	Duration (minutes)	Q (L/s)
1	100	0.4
2	100	0.8
3	280	1.21
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP13	Loxton shells & sand	462774	6189440	41.98	41.74		0.00	0.00	14.49	10.49	21.51	20.47
Obs	LHO13	Loxton shells & sand	462770	6189423	42.42	41.63		16.80	1.16	14.49	14.49	21.80	20.62
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP13	8.00	35.00	27.00	33.74	6.74
Obs	LHO13	8.00	36.00	28.00	33.63	5.63
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP13	SC	30.00	32.00	2.00	175	?	0.5	8:16	175
Obs	LHO13	SC	25.00	36.00	11.00	NA	NA	NA	NA	80
Obs										
Obs										
Obs										

Note:

Step test only conducted on this well

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	25.950	4.440	16.032	0.40	0.09
2	24.350	2.840	17.632	0.40	0.14
3	24.030	2.520	17.952	0.40	0.16
4	23.600	2.090	18.382	0.40	0.19
5	23.470	1.960	18.512	0.40	0.20
6	23.380	1.870	18.602	0.40	0.21
8	23.320	1.810	18.662	0.40	0.22
9	23.290	1.780	18.692	0.40	0.22
10	23.270	1.760	18.712	0.40	0.23
12	23.290	1.780	18.692	0.40	0.22
14	23.310	1.800	18.672	0.40	0.22
16	23.270	1.760	18.712	0.40	0.23
18	23.260	1.750	18.722	0.40	0.23
20	23.300	1.790	18.682	0.40	0.22
22	23.330	1.820	18.652	0.40	0.22
24	23.340	1.830	18.642	0.40	0.22
26	23.330	1.820	18.652	0.40	0.22
28	23.300	1.790	18.682	0.40	0.22
30	23.310	1.800	18.672	0.40	0.22
35	23.290	1.780	18.692	0.40	0.22
40	23.390	1.880	18.592	0.40	0.21
45	23.400	1.890	18.582	0.40	0.21
50	23.400	1.890	18.582	0.40	0.21
55	23.400	1.890	18.582	0.40	0.21
60	23.400	1.890	18.582	0.40	0.21
70	23.340	1.830	18.642	0.40	0.22
80	23.340	1.830	18.642	0.40	0.22
90	23.340	1.830	18.642	0.40	0.22
100	23.350	1.840	18.632	0.40	0.22
101	24.190	2.680	17.792	0.80	0.30
102	24.650	3.140	17.332	0.80	0.25
103	24.970	3.460	17.012	0.80	0.23
104	25.130	3.620	16.852	0.80	0.22
105	25.250	3.740	16.732	0.80	0.21
106	25.320	3.810	16.662	0.80	0.21
107	25.370	3.860	16.612	0.80	0.21
108	25.385	3.875	16.597	0.80	0.21
109	25.000	3.490	16.982	0.80	0.23
110	25.410	3.900	16.572	0.80	0.21
112	25.440	3.930	16.542	0.80	0.20
114	25.470	3.960	16.512	0.80	0.20
116	25.510	4.000	16.472	0.80	0.20
118	25.550	4.040	16.432	0.80	0.20
120	25.520	4.010	16.462	0.80	0.20
122	25.530	4.020	16.452	0.80	0.20
124	25.545	4.035	16.437	0.80	0.20
126	25.545	4.035	16.437	0.80	0.20
128	25.520	4.010	16.462	0.80	0.20
130	25.490	3.980	16.492	0.80	0.20
135	25.480	3.970	16.502	0.80	0.20
140	25.520	4.010	16.462	0.80	0.20
145	25.530	4.020	16.452	0.80	0.20
153	25.570	4.060	16.412	0.80	0.20

155	25.560	4.050	16.422	0.80	0.20
160	25.565	4.055	16.417	0.80	0.20
170	25.565	4.055	16.417	0.80	0.20
180	25.550	4.040	16.432	0.80	0.20
190	25.595	4.085	16.387	0.80	0.20
200	25.635	4.125	16.347	0.80	0.19
201	26.520	5.010	15.462	1.21	0.24
202	26.810	5.300	15.172	1.21	0.23
203	27.160	5.650	14.822	1.21	0.21
204	27.440	5.930	14.542	1.21	0.20
205	27.760	6.250	14.222	1.21	0.19
206	27.950	6.440	14.032	1.21	0.19
207	28.020	6.510	13.962	1.21	0.19
208	28.130	6.620	13.852	1.21	0.18
209	28.190	6.680	13.792	1.21	0.18
210	28.240	6.730	13.742	1.21	0.18
212	28.370	6.860	13.612	1.21	0.18
214	28.500	6.990	13.482	1.21	0.17
216	28.450	6.940	13.532	1.21	0.17
218	28.560	7.050	13.422	1.21	0.17
220	28.640	7.130	13.342	1.21	0.17
222	28.780	7.270	13.202	1.21	0.17
224	28.900	7.390	13.082	1.21	0.16
226	28.890	7.380	13.092	1.21	0.16
228	28.810	7.300	13.172	1.21	0.17
230	28.760	7.250	13.222	1.21	0.17
235	28.910	7.400	13.072	1.21	0.16
240	28.830	7.320	13.152	1.21	0.17
246	29.050	7.540	12.932	1.21	0.16
250	29.065	7.555	12.917	1.21	0.16
255	29.000	7.490	12.982	1.21	0.16
261	28.950	7.440	13.032	1.21	0.16
270	28.900	7.390	13.082	1.21	0.16
280	28.640	7.130	13.342	1.21	0.17
290	28.570	7.060	13.412	1.21	0.17
300	28.400	6.890	13.582	1.21	0.18
310	28.500	6.990	13.482	1.21	0.17
320	28.515	7.005	13.467	1.21	0.17
340	28.430	6.920	13.552	1.21	0.17
360	28.510	7.000	13.472	1.21	0.17
380	28.470	6.960	13.512	1.21	0.17
400	28.470	6.960	13.512	1.21	0.17
420	28.450	6.940	13.532	1.21	0.17
440	28.480	6.970	13.502	1.21	0.17
460	28.450	6.940	13.532	1.21	0.17
480	28.510	7.000	13.472	1.21	0.17

LHP42P HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		27/02/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.20
2	100	0.40
3	100	0.60
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP42P	Pata	462601	6191310	31.64	31.42		0.00	0.00	8.50	8.50	13.92	17.72
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP42P	41.00	49.50	8.50	-9.58	-18.08
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP42P	OH	42.00	50.00	7.50	175	NA	NA	NA	175
Obs										
Obs										
Obs										
Obs										

Note:

D based on well LHO42P

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	22.130	8.210	9.513	0.20	0.02
2	22.270	8.350	9.373	0.20	0.02
4	22.460	8.540	9.183	0.20	0.02
5	22.610	8.690	9.033	0.20	0.02
6	22.890	8.970	8.753	0.20	0.02
7	22.980	9.060	8.663	0.20	0.02
8	23.120	9.200	8.523	0.20	0.02
9	23.290	9.370	8.353	0.20	0.02
10	23.370	9.450	8.273	0.20	0.02
12	23.550	9.630	8.093	0.20	0.02
14	23.680	9.760	7.963	0.20	0.02
16	23.840	9.920	7.803	0.20	0.02
18	23.940	10.020	7.703	0.20	0.02
20	24.060	10.140	7.583	0.20	0.02
22	24.140	10.220	7.503	0.20	0.02
24	24.230	10.310	7.413	0.20	0.02
26	24.280	10.360	7.363	0.20	0.02
28	24.340	10.420	7.303	0.20	0.02
30	24.400	10.480	7.243	0.20	0.02
35	24.510	10.590	7.133	0.20	0.02
40	24.590	10.670	7.053	0.20	0.02
45	24.660	10.740	6.983	0.20	0.02
50	24.740	10.820	6.903	0.20	0.02
55	24.830	10.910	6.813	0.20	0.02
60	24.980	11.060	6.663	0.20	0.02
70	25.130	11.210	6.513	0.20	0.02
80	25.200	11.280	6.443	0.20	0.02
90	25.260	11.340	6.383	0.20	0.02
100	25.310	11.390	6.333	0.20	0.02
101	25.570	11.650	6.073	0.40	0.03
102	26.090	12.170	5.553	0.40	0.03
103	26.850	12.930	4.793	0.40	0.03
104	27.180	13.260	4.463	0.40	0.03
105	27.490	13.570	4.153	0.40	0.03
106	27.910	13.990	3.733	0.40	0.03
107	28.240	14.320	3.403	0.40	0.03
108	28.470	14.550	3.173	0.40	0.03
109	28.770	14.850	2.873	0.40	0.03
110	29.020	15.100	2.623	0.40	0.03
113	29.540	15.620	2.103	0.40	0.03
114	29.750	15.830	1.893	0.40	0.03
116	29.980	16.060	1.663	0.40	0.02
118	30.200	16.280	1.443	0.40	0.02
120	30.440	16.520	1.203	0.40	0.02
123	30.575	16.655	1.068	0.40	0.02
124	30.645	16.725	0.998	0.40	0.02
126	30.730	16.810	0.913	0.40	0.02
128	30.810	16.890	0.833	0.40	0.02
130	30.950	17.030	0.693	0.40	0.02
135	31.200	17.280	0.443	0.40	0.02
140	31.340	17.420	0.303	0.40	0.02
145	31.500	17.580	0.143	0.40	0.02
150	31.605	17.685	0.038	0.40	0.02

155	31.725	17.805	-0.082	0.40	0.02
160	31.800	17.880	-0.157	0.40	0.02
170	31.875	17.955	-0.232	0.40	0.02
180	31.975	18.055	-0.332	0.40	0.02
190	32.045	18.125	-0.402	0.40	0.02
200	32.120	18.200	-0.477	0.40	0.02
202	33.010	19.090	-1.367	0.60	0.03
203	33.500	19.580	-1.857	0.60	0.03
204	33.950	20.030	-2.307	0.60	0.03
205	34.400	20.480	-2.757	0.60	0.03
206	34.790	20.870	-3.147	0.60	0.03
207	35.160	21.240	-3.517	0.60	0.03
208	35.450	21.530	-3.807	0.60	0.03
209	35.750	21.830	-4.107	0.60	0.03
210	35.990	22.070	-4.347	0.60	0.03
212	36.390	22.470	-4.747	0.60	0.03
214	36.710	22.790	-5.067	0.60	0.03
216	36.960	23.040	-5.317	0.60	0.03
218	37.240	23.320	-5.597	0.60	0.03
220	37.580	23.660	-5.937	0.60	0.03
222	37.880	23.960	-6.237	0.60	0.03
224	38.150	24.230	-6.507	0.60	0.02
226	38.320	24.400	-6.677	0.60	0.02
228	38.480	24.560	-6.837	0.60	0.02
230	38.590	24.670	-6.947	0.60	0.02
235	38.660	24.740	-7.017	0.60	0.02
240	38.730	24.810	-7.087	0.60	0.02
245	38.775	24.855	-7.132	0.60	0.02
250	38.790	24.870	-7.147	0.60	0.02
255	38.830	24.910	-7.187	0.60	0.02
260	38.910	24.990	-7.267	0.60	0.02
270	39.280	25.360	-7.637	0.60	0.02
280	39.350	25.430	-7.707	0.60	0.02
290	39.400	25.480	-7.757	0.60	0.02
300	39.575	25.655	-7.932	0.60	0.02

LHP42P HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		27/02/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.20
2	100	0.40
3	100	0.60
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP42P	Pata	462601	6191310	31.64	31.42		0.00	0.00	8.50	8.50	13.92	17.72
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP42P	41.00	49.50	8.50	-9.58	-18.08
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP42P	OH	42.00	50.00	7.50	175	NA	NA	NA	175
Obs										
Obs										
Obs										
Obs										

Note:

D based on well LHO42P

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	22.130	8.210	9.513	0.20	0.02
2	22.270	8.350	9.373	0.20	0.02
4	22.460	8.540	9.183	0.20	0.02
5	22.610	8.690	9.033	0.20	0.02
6	22.890	8.970	8.753	0.20	0.02
7	22.980	9.060	8.663	0.20	0.02
8	23.120	9.200	8.523	0.20	0.02
9	23.290	9.370	8.353	0.20	0.02
10	23.370	9.450	8.273	0.20	0.02
12	23.550	9.630	8.093	0.20	0.02
14	23.680	9.760	7.963	0.20	0.02
16	23.840	9.920	7.803	0.20	0.02
18	23.940	10.020	7.703	0.20	0.02
20	24.060	10.140	7.583	0.20	0.02
22	24.140	10.220	7.503	0.20	0.02
24	24.230	10.310	7.413	0.20	0.02
26	24.280	10.360	7.363	0.20	0.02
28	24.340	10.420	7.303	0.20	0.02
30	24.400	10.480	7.243	0.20	0.02
35	24.510	10.590	7.133	0.20	0.02
40	24.590	10.670	7.053	0.20	0.02
45	24.660	10.740	6.983	0.20	0.02
50	24.740	10.820	6.903	0.20	0.02
55	24.830	10.910	6.813	0.20	0.02
60	24.980	11.060	6.663	0.20	0.02
70	25.130	11.210	6.513	0.20	0.02
80	25.200	11.280	6.443	0.20	0.02
90	25.260	11.340	6.383	0.20	0.02
100	25.310	11.390	6.333	0.20	0.02
101	25.570	11.650	6.073	0.40	0.03
102	26.090	12.170	5.553	0.40	0.03
103	26.850	12.930	4.793	0.40	0.03
104	27.180	13.260	4.463	0.40	0.03
105	27.490	13.570	4.153	0.40	0.03
106	27.910	13.990	3.733	0.40	0.03
107	28.240	14.320	3.403	0.40	0.03
108	28.470	14.550	3.173	0.40	0.03
109	28.770	14.850	2.873	0.40	0.03
110	29.020	15.100	2.623	0.40	0.03
113	29.540	15.620	2.103	0.40	0.03
114	29.750	15.830	1.893	0.40	0.03
116	29.980	16.060	1.663	0.40	0.02
118	30.200	16.280	1.443	0.40	0.02
120	30.440	16.520	1.203	0.40	0.02
123	30.575	16.655	1.068	0.40	0.02
124	30.645	16.725	0.998	0.40	0.02
126	30.730	16.810	0.913	0.40	0.02
128	30.810	16.890	0.833	0.40	0.02
130	30.950	17.030	0.693	0.40	0.02
135	31.200	17.280	0.443	0.40	0.02
140	31.340	17.420	0.303	0.40	0.02
145	31.500	17.580	0.143	0.40	0.02
150	31.605	17.685	0.038	0.40	0.02

155	31.725	17.805	-0.082	0.40	0.02
160	31.800	17.880	-0.157	0.40	0.02
170	31.875	17.955	-0.232	0.40	0.02
180	31.975	18.055	-0.332	0.40	0.02
190	32.045	18.125	-0.402	0.40	0.02
200	32.120	18.200	-0.477	0.40	0.02
202	33.010	19.090	-1.367	0.60	0.03
203	33.500	19.580	-1.857	0.60	0.03
204	33.950	20.030	-2.307	0.60	0.03
205	34.400	20.480	-2.757	0.60	0.03
206	34.790	20.870	-3.147	0.60	0.03
207	35.160	21.240	-3.517	0.60	0.03
208	35.450	21.530	-3.807	0.60	0.03
209	35.750	21.830	-4.107	0.60	0.03
210	35.990	22.070	-4.347	0.60	0.03
212	36.390	22.470	-4.747	0.60	0.03
214	36.710	22.790	-5.067	0.60	0.03
216	36.960	23.040	-5.317	0.60	0.03
218	37.240	23.320	-5.597	0.60	0.03
220	37.580	23.660	-5.937	0.60	0.03
222	37.880	23.960	-6.237	0.60	0.03
224	38.150	24.230	-6.507	0.60	0.02
226	38.320	24.400	-6.677	0.60	0.02
228	38.480	24.560	-6.837	0.60	0.02
230	38.590	24.670	-6.947	0.60	0.02
235	38.660	24.740	-7.017	0.60	0.02
240	38.730	24.810	-7.087	0.60	0.02
245	38.775	24.855	-7.132	0.60	0.02
250	38.790	24.870	-7.147	0.60	0.02
255	38.830	24.910	-7.187	0.60	0.02
260	38.910	24.990	-7.267	0.60	0.02
270	39.280	25.360	-7.637	0.60	0.02
280	39.350	25.430	-7.707	0.60	0.02
290	39.400	25.480	-7.757	0.60	0.02
300	39.575	25.655	-7.932	0.60	0.02

LHP43P HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		21/12/2003
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.30
2	100	0.49
3	100	0.70
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP43P	Pata	462778	6189440	42.12	41.80		0.00	0.00	14.00	11.00	24.21	17.91
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP43P	47.00	61.00	14.00	-5.20	-19.20
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP43P	OH	51.00	58.00	7.00	150	NA	NA	NA	150
Obs										
Obs										
Obs										
Obs										

Note

D based on well LHO43P

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	34.110	9.900	8.012	0.30	0.03
2	33.870	9.660	8.252	0.30	0.03
3	33.710	9.500	8.412	0.30	0.03
4	33.530	9.320	8.592	0.30	0.03
5	33.370	9.160	8.752	0.30	0.03
6	33.260	9.050	8.862	0.30	0.03
7	33.140	8.930	8.982	0.30	0.03
8	33.100	8.890	9.022	0.30	0.03
9	33.030	8.820	9.092	0.30	0.03
10	33.000	8.790	9.122	0.30	0.03
12	32.990	8.780	9.132	0.30	0.03
14	33.000	8.790	9.122	0.30	0.03
16	32.860	8.650	9.262	0.30	0.03
18	32.760	8.550	9.362	0.30	0.04
20	32.730	8.520	9.392	0.30	0.04
22	32.700	8.490	9.422	0.30	0.04
24	32.680	8.470	9.442	0.30	0.04
26	32.670	8.460	9.452	0.30	0.04
28	32.640	8.430	9.482	0.30	0.04
30	32.650	8.440	9.472	0.30	0.04
35	32.600	8.390	9.522	0.30	0.04
40	32.640	8.430	9.482	0.30	0.04
45	32.610	8.400	9.512	0.30	0.04
50	32.615	8.405	9.507	0.30	0.04
55	32.440	8.230	9.682	0.30	0.04
60	32.320	8.110	9.802	0.30	0.04
70	32.250	8.040	9.872	0.30	0.04
80	32.660	8.450	9.462	0.30	0.04
90	32.830	8.620	9.292	0.30	0.03
100	32.890	8.680	9.232	0.30	0.03
101	33.390	9.180	8.732	0.49	0.05
102	34.090	9.880	8.032	0.49	0.05
103	34.770	10.560	7.352	0.49	0.05
104	35.360	11.150	6.762	0.49	0.04
105	35.730	11.520	6.392	0.49	0.04
106	36.020	11.810	6.102	0.49	0.04
107	36.410	12.200	5.712	0.49	0.04
108	36.610	12.400	5.512	0.49	0.04
109	36.850	12.640	5.272	0.49	0.04
110	37.065	12.855	5.057	0.49	0.04
112	37.370	13.160	4.752	0.49	0.04
114	37.640	13.430	4.482	0.49	0.04
116	37.750	13.540	4.372	0.49	0.04
118	37.960	13.750	4.162	0.49	0.04
120	38.090	13.880	4.032	0.49	0.04
122	38.190	13.980	3.932	0.49	0.04
124	38.310	14.100	3.812	0.49	0.03
126	38.350	14.140	3.772	0.49	0.03
128	38.390	14.180	3.732	0.49	0.03
130	38.420	14.210	3.702	0.49	0.03
135	38.620	14.410	3.502	0.49	0.03
140	38.730	14.520	3.392	0.49	0.03
145	38.875	14.665	3.247	0.49	0.03

150	39.080	14.870	3.042	0.49	0.03
155	39.210	15.000	2.912	0.49	0.03
160	39.285	15.075	2.837	0.49	0.03
170	39.400	15.190	2.722	0.49	0.03
180	39.470	15.260	2.652	0.49	0.03
190	39.480	15.270	2.642	0.49	0.03
200	39.520	15.310	2.602	0.49	0.03
201	40.450	16.240	1.672	0.70	0.04
202	40.700	16.490	1.422	0.70	0.04
203	41.370	17.160	0.752	0.70	0.04
204	42.000	17.790	0.122	0.70	0.04
205	42.340	18.130	-0.218	0.70	0.04
206	42.680	18.470	-0.558	0.70	0.04
207	43.080	18.870	-0.958	0.70	0.04
208	43.325	19.115	-1.203	0.70	0.04
209	43.620	19.410	-1.498	0.70	0.04
210	43.815	19.605	-1.693	0.70	0.04
212	44.160	19.950	-2.038	0.70	0.04
214	44.520	20.310	-2.398	0.70	0.03
216	44.815	20.605	-2.693	0.70	0.03
218	45.050	20.840	-2.928	0.70	0.03
220	45.350	21.140	-3.228	0.70	0.03
222	45.530	21.320	-3.408	0.70	0.03
224	45.560	21.350	-3.438	0.70	0.03
226	45.525	21.315	-3.403	0.70	0.03
228	45.565	21.355	-3.443	0.70	0.03
230	45.770	21.560	-3.648	0.70	0.03
235	46.200	21.990	-4.078	0.70	0.03
240	46.490	22.280	-4.368	0.70	0.03
245	46.525	22.315	-4.403	0.70	0.03
250	46.460	22.250	-4.338	0.70	0.03
255	46.790	22.580	-4.668	0.70	0.03
260	46.860	22.650	-4.738	0.70	0.03
270	47.010	22.800	-4.888	0.70	0.03
280	47.000	22.790	-4.878	0.70	0.03
290	47.330	23.120	-5.208	0.70	0.03
300	47.490	23.280	-5.368	0.70	0.03

LHP44 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		14/07/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.67
2	100	1.34
3	100	2.01
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP44	Loxton shells & sand	462628	6191116	31.723	31.472		0.00	0.00	4.77	4.77	16.23	15.49
Obs	LHO44	Loxton shells & sand	462625	6191101	32.097	31.349		18.00	3.77	4.77	NA	15.83	16.27
Obs	LHO49	Loxton shells & sand	462622	6191086	32.055	31.285		30.00	6.29	4.77	NA	15.75	16.31
Obs	LHO50	Loxton shells & sand	462618	6191067	32.076	31.288		50.00	10.48	4.77	NA	15.73	16.35
Obs	LHO55	Loxton shells & sand	462608	6191018	31.864	31.409		100.00	20.96	4.77	NA	15.66	16.20

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP44	5.00	21.00	16.00	26.47	10.47
Obs	LHO44	5.00	21.00	16.00	26.35	10.35
Obs	LHO49	5.00	19.00	14.00	26.29	12.29
Obs	LHO50	5.00	19.00	14.00	26.29	12.29
Obs	LHO55	6.00	21.00	15.00	25.41	10.41

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP44	WS	17.00	22.00	4.00	174	0.60	0.5	8:16	175
Obs	LHO44	SC	17.00	22.00	4.00	80	NA	NA	NA	80
Obs	LHO49	SC	16.00	21.00	3.00	80	NA	NA	NA	80
Obs	LHO50	SC	17.00	20.00	2.00	80	NA	NA	NA	80
Obs	LHO55	SC	18.00	21.00	3.00	80	NA	NA	NA	80

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	17.160	0.930	14.563	0.67	0.72
2	16.960	0.730	14.763	0.67	0.92
3	16.910	0.680	14.813	0.67	0.99
4	16.905	0.675	14.818	0.67	0.99
5	16.900	0.670	14.823	0.67	1.00
6	16.900	0.670	14.823	0.67	1.00
7	16.900	0.670	14.823	0.67	1.00
8	16.910	0.680	14.813	0.67	0.99
9	16.915	0.685	14.808	0.67	0.98
10	16.920	0.690	14.803	0.67	0.97
12	16.920	0.690	14.803	0.67	0.97
14	16.920	0.690	14.803	0.67	0.97
16	16.930	0.700	14.793	0.67	0.96
18	16.930	0.700	14.793	0.67	0.96
20	16.930	0.700	14.793	0.67	0.96
22	16.930	0.700	14.793	0.67	0.96
24	16.935	0.705	14.788	0.67	0.95
26	16.935	0.705	14.788	0.67	0.95
28	16.935	0.705	14.788	0.67	0.95
30	16.940	0.710	14.783	0.67	0.94
35	16.940	0.710	14.783	0.67	0.94
40	16.950	0.720	14.773	0.67	0.93
45	16.950	0.720	14.773	0.67	0.93
50	16.950	0.720	14.773	0.67	0.93
55	16.955	0.725	14.768	0.67	0.92
60	16.960	0.730	14.763	0.67	0.92
70	16.960	0.730	14.763	0.67	0.92
80	16.965	0.735	14.758	0.67	0.91
90	16.975	0.745	14.748	0.67	0.90
100	16.985	0.755	14.738	0.67	0.89
101	17.410	1.180	14.313	1.34	1.14
102	17.600	1.370	14.123	1.34	0.98
103	17.660	1.430	14.063	1.34	0.94
104	17.710	1.480	14.013	1.34	0.91
105	17.715	1.485	14.008	1.34	0.90
106	17.715	1.485	14.008	1.34	0.90
107	17.725	1.495	13.998	1.34	0.90
108	17.725	1.495	13.998	1.34	0.90
109	17.720	1.490	14.003	1.34	0.90
110	17.740	1.510	13.983	1.34	0.89
112	17.730	1.500	13.993	1.34	0.89
114	17.735	1.505	13.988	1.34	0.89
116	17.735	1.505	13.988	1.34	0.89
118	17.740	1.510	13.983	1.34	0.89
120	17.745	1.515	13.978	1.34	0.88
122	17.745	1.515	13.978	1.34	0.88
124	17.745	1.515	13.978	1.34	0.88
126	17.750	1.520	13.973	1.34	0.88
128	17.755	1.525	13.968	1.34	0.88
130	17.760	1.530	13.963	1.34	0.88
135	17.770	1.540	13.953	1.34	0.87
140	17.770	1.540	13.953	1.34	0.87
145	17.775	1.545	13.948	1.34	0.87

150	17.785	1.555	13.938	1.34	0.86
155	17.795	1.565	13.928	1.34	0.86
160	17.805	1.575	13.918	1.34	0.85
170	17.820	1.590	13.903	1.34	0.84
180	17.815	1.585	13.908	1.34	0.85
190	17.830	1.600	13.893	1.34	0.84
200	17.835	1.605	13.888	1.34	0.83
201	18.440	2.210	13.283	2.01	0.91
202	18.570	2.340	13.153	2.01	0.86
203	18.615	2.385	13.108	2.01	0.84
204	18.625	2.395	13.098	2.01	0.84
205	18.680	2.450	13.043	2.01	0.82
206	18.680	2.450	13.043	2.01	0.82
207	18.685	2.455	13.038	2.01	0.82
208	18.700	2.470	13.023	2.01	0.81
209	18.710	2.480	13.013	2.01	0.81
210	18.715	2.485	13.008	2.01	0.81
212	18.720	2.490	13.003	2.01	0.81
214	18.725	2.495	12.998	2.01	0.81
216	18.720	2.490	13.003	2.01	0.81
218	18.730	2.500	12.993	2.01	0.80
220	18.735	2.505	12.988	2.01	0.80
222	18.730	2.500	12.993	2.01	0.80
224	18.724	2.494	12.999	2.01	0.81
226	18.740	2.510	12.983	2.01	0.80
228	18.750	2.520	12.973	2.01	0.80
230	18.735	2.505	12.988	2.01	0.80
235	18.750	2.520	12.973	2.01	0.80
240	18.760	2.530	12.963	2.01	0.79
245	18.780	2.550	12.943	2.01	0.79
250	18.780	2.550	12.943	2.01	0.79
255	18.775	2.545	12.948	2.01	0.79
260	18.790	2.560	12.933	2.01	0.79
270	18.780	2.550	12.943	2.01	0.79
280	18.790	2.560	12.933	2.01	0.79
290	18.795	2.565	12.928	2.01	0.78
300	18.815	2.585	12.908	2.01	0.78

LHP44 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		25/08/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		240

Step	Duration (minutes)	Q (L/s)
1	60	0.67
2	60	1.34
3	60	2.01
4	60	2.68
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP44	Loxton shells & sand	462628	6191116	31.723	31.472		0.00	0.00	4.73	4.73	16.27	15.45
Obs	LHP47	Loxton shells & sand	462628	6191116	31.723	31.472		5.00	1.06	4.73	NA	15.46	16.26
Obs	LHO44	Loxton shells & sand	462625	6191101	32.097	31.349		18.00	3.81	4.73	NA	15.81	16.29
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP44	5.00	21.00	16.00	26.47	10.47
Obs	LHP47	5.00	21.00	16.00	26.47	10.47
Obs	LHO44	5.00	21.00	16.00	26.35	10.35
Obs						
Obs						

		Production zone							
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP44	WS	17.00	22.00	4.00	174	0.60	0.5	8:16	175
Obs	LHP47	WS	18.50	21.00	2.50	174	0.60	1.2	8:16	175
Obs	LHO44	SC	17.00	22.00	4.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

post acid wash development

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	16.620	0.350	15.103	0.67	1.91
2	16.750	0.480	14.973	0.67	1.40
3	16.840	0.570	14.883	0.67	1.18
4	16.880	0.610	14.843	0.67	1.10
5	16.890	0.620	14.833	0.67	1.08
6	16.905	0.635	14.818	0.67	1.06
7	16.900	0.630	14.823	0.67	1.06
8	16.905	0.635	14.818	0.67	1.06
9	16.910	0.640	14.813	0.67	1.05
10	16.910	0.640	14.813	0.67	1.05
12	16.920	0.650	14.803	0.67	1.03
14	16.920	0.650	14.803	0.67	1.03
16	16.925	0.655	14.798	0.67	1.02
18	16.935	0.665	14.788	0.67	1.01
20	16.940	0.670	14.783	0.67	1.00
22	16.940	0.670	14.783	0.67	1.00
24	16.950	0.680	14.773	0.67	0.99
26	16.950	0.680	14.773	0.67	0.99
28	16.950	0.680	14.773	0.67	0.99
30	16.945	0.675	14.778	0.67	0.99
35	16.960	0.690	14.763	0.67	0.97
40	16.970	0.700	14.753	0.67	0.96
45	16.970	0.700	14.753	0.67	0.96
50	16.980	0.710	14.743	0.67	0.94
55	16.985	0.715	14.738	0.67	0.94
60	16.980	0.710	14.743	0.67	0.94
61	17.370	1.100	14.353	1.34	1.22
62	17.560	1.290	14.163	1.34	1.04
63	17.650	1.380	14.073	1.34	0.97
64	17.690	1.420	14.033	1.34	0.94
65	17.710	1.440	14.013	1.34	0.93
66	17.720	1.450	14.003	1.34	0.92
67	17.730	1.460	13.993	1.34	0.92
68	17.725	1.455	13.998	1.34	0.92
69	17.730	1.460	13.993	1.34	0.92
70	17.740	1.470	13.983	1.34	0.91
72	17.755	1.485	13.968	1.34	0.90
74	17.760	1.490	13.963	1.34	0.90
76	17.780	1.510	13.943	1.34	0.89
78	17.775	1.505	13.948	1.34	0.89
80	17.785	1.515	13.938	1.34	0.88
82	17.780	1.510	13.943	1.34	0.89
84	17.790	1.520	13.933	1.34	0.88
86	17.805	1.535	13.918	1.34	0.87
88	17.810	1.540	13.913	1.34	0.87
90	17.815	1.545	13.908	1.34	0.87
95	17.815	1.545	13.908	1.34	0.87
100	17.825	1.555	13.898	1.34	0.86
105	17.830	1.560	13.893	1.34	0.86
110	17.830	1.560	13.893	1.34	0.86
115	17.845	1.575	13.878	1.34	0.85
120	17.845	1.575	13.878	1.34	0.85
121	18.360	2.090	13.363	2.01	0.96

122	18.600	2.330	13.123	2.01	0.86
123	18.680	2.410	13.043	2.01	0.83
124	18.740	2.470	12.983	2.01	0.81
125	18.780	2.510	12.943	2.01	0.80
126	18.815	2.545	12.908	2.01	0.79
127	18.830	2.560	12.893	2.01	0.79
128	18.855	2.585	12.868	2.01	0.78
129	18.860	2.590	12.863	2.01	0.78
130	18.860	2.590	12.863	2.01	0.78
132	18.865	2.595	12.858	2.01	0.77
136	18.910	2.640	12.813	2.01	0.76
138	18.900	2.630	12.823	2.01	0.76
140	18.935	2.665	12.788	2.01	0.75
142	18.945	2.675	12.778	2.01	0.75
144	18.945	2.675	12.778	2.01	0.75
146	18.940	2.670	12.783	2.01	0.75
148	18.955	2.685	12.768	2.01	0.75
150	18.980	2.710	12.743	2.01	0.74
155	19.030	2.760	12.693	2.01	0.73
160	19.010	2.740	12.713	2.01	0.73
165	19.060	2.790	12.663	2.01	0.72
170	19.085	2.815	12.638	2.01	0.71
175	19.080	2.810	12.643	2.01	0.72
180	19.100	2.830	12.623	2.01	0.71
181	20.040	3.770	11.683	2.68	0.71
182	20.530	4.260	11.193	2.68	0.63
183	20.750	4.480	10.973	2.68	0.60
184	20.870	4.600	10.853	2.68	0.58
185	20.950	4.680	10.773	2.68	0.57
186	21.020	4.750	10.703	2.68	0.56
187	21.075	4.805	10.648	2.68	0.56
188	21.120	4.850	10.603	2.68	0.55
189	21.150	4.880	10.573	2.68	0.55
190	21.190	4.920	10.533	2.68	0.54
192	21.250	4.980	10.473	2.68	0.54
194	21.300	5.030	10.423	2.68	0.53
196	21.350	5.080	10.373	2.68	0.53
198	21.390	5.120	10.333	2.68	0.52
200	21.430	5.160	10.293	2.68	0.52
202	21.450	5.180	10.273	2.68	0.52
204	21.450	5.180	10.273	2.68	0.52
206	21.475	5.205	10.248	2.68	0.51
208	21.520	5.250	10.203	2.68	0.51
210	21.520	5.250	10.203	2.68	0.51
215	21.710	5.440	10.013	2.68	0.49
220	21.780	5.510	9.943	2.68	0.49
225	21.900	5.630	9.823	2.68	0.48
230	21.960	5.690	9.763	2.68	0.47
235	22.150	5.880	9.573	2.68	0.46

LHP45 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		18/07/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		400

Step	Duration (minutes)	Q (L/s)
1	100	0.22
2	100	0.44
3	100	0.66
4	100	0.88
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP45	Loxton Sands	462296	6193040	26.662	26.047		0.00	0.00	10.14	9.45	6.46	20.20
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP45	4.00	16.60	12.60	22.05	9.45
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP45	SC	13.00	16.00	3.00	175	0.60	0.5	16:30	175
Obs										
Obs										
Obs										
Obs										

Note:

Unclear whether full production aquifer thickness has been drilled or not

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	9.440	2.980	17.222	0.22	0.07
2	9.120	2.660	17.542	0.22	0.08
3	8.880	2.420	17.782	0.22	0.09
4	8.710	2.250	17.952	0.22	0.10
5	8.600	2.140	18.062	0.22	0.10
6	8.530	2.070	18.132	0.22	0.11
7	8.470	2.010	18.192	0.22	0.11
8	8.450	1.990	18.212	0.22	0.11
9	8.420	1.960	18.242	0.22	0.11
10	8.390	1.930	18.272	0.22	0.11
12	8.400	1.940	18.262	0.22	0.11
14	8.390	1.930	18.272	0.22	0.11
16	8.370	1.910	18.292	0.22	0.12
18	8.335	1.875	18.327	0.22	0.12
20	8.350	1.890	18.312	0.22	0.12
22	8.370	1.910	18.292	0.22	0.12
24	8.380	1.920	18.282	0.22	0.11
26	8.370	1.910	18.292	0.22	0.12
28	8.370	1.910	18.292	0.22	0.12
30	8.370	1.910	18.292	0.22	0.12
35	8.340	1.880	18.322	0.22	0.12
40	8.325	1.865	18.337	0.22	0.12
45	8.305	1.845	18.357	0.22	0.12
50	8.295	1.835	18.367	0.22	0.12
55	8.305	1.845	18.357	0.22	0.12
60	8.300	1.840	18.362	0.22	0.12
70	8.285	1.825	18.377	0.22	0.12
80	8.290	1.830	18.372	0.22	0.12
90	8.330	1.870	18.332	0.22	0.12
100	8.340	1.880	18.322	0.22	0.12
101	8.790	2.330	17.872	0.44	0.19
102	9.280	2.820	17.382	0.44	0.16
103	9.530	3.070	17.132	0.44	0.14
104	9.790	3.330	16.872	0.44	0.13
105	9.920	3.460	16.742	0.44	0.13
106	10.050	3.590	16.612	0.44	0.12
107	10.130	3.670	16.532	0.44	0.12
108	10.195	3.735	16.467	0.44	0.12
109	10.230	3.770	16.432	0.44	0.12
110	10.255	3.795	16.407	0.44	0.12
112	10.315	3.855	16.347	0.44	0.11
114	10.320	3.860	16.342	0.44	0.11
116	10.330	3.870	16.332	0.44	0.11
118	10.340	3.880	16.322	0.44	0.11
120	10.335	3.875	16.327	0.44	0.11
122	10.335	3.875	16.327	0.44	0.11
124	10.330	3.870	16.332	0.44	0.11
126	10.320	3.860	16.342	0.44	0.11
128	10.305	3.845	16.357	0.44	0.11
130	10.320	3.860	16.342	0.44	0.11
135	10.315	3.855	16.347	0.44	0.11
140	10.285	3.825	16.377	0.44	0.12
145	10.250	3.790	16.412	0.44	0.12

150	10.250	3.790	16.412	0.44	0.12
155	10.240	3.780	16.422	0.44	0.12
160	10.250	3.790	16.412	0.44	0.12
170	10.215	3.755	16.447	0.44	0.12
180	10.145	3.685	16.517	0.44	0.12
190	10.130	3.670	16.532	0.44	0.12
200	10.150	3.690	16.512	0.44	0.12
201	10.740	4.280	15.922	0.66	0.15
202	11.170	4.710	15.492	0.66	0.14
203	11.445	4.985	15.217	0.66	0.13
204	11.640	5.180	15.022	0.66	0.13
205	11.780	5.320	14.882	0.66	0.12
206	11.890	5.430	14.772	0.66	0.12
207	11.960	5.500	14.702	0.66	0.12
208	12.020	5.560	14.642	0.66	0.12
209	12.060	5.600	14.602	0.66	0.12
210	12.080	5.620	14.582	0.66	0.12
212	12.100	5.640	14.562	0.66	0.12
214	12.100	5.640	14.562	0.66	0.12
216	12.105	5.645	14.557	0.66	0.12
218	12.105	5.645	14.557	0.66	0.12
220	12.095	5.635	14.567	0.66	0.12
222	12.060	5.600	14.602	0.66	0.12
224	12.065	5.605	14.597	0.66	0.12
226	12.060	5.600	14.602	0.66	0.12
228	12.060	5.600	14.602	0.66	0.12
230	12.050	5.590	14.612	0.66	0.12
235	12.025	5.565	14.637	0.66	0.12
240	12.010	5.550	14.652	0.66	0.12
245	11.955	5.495	14.707	0.66	0.12
250	11.950	5.490	14.712	0.66	0.12
255	11.930	5.470	14.732	0.66	0.12
260	11.930	5.470	14.732	0.66	0.12
270	11.915	5.455	14.747	0.66	0.12
280	11.935	5.475	14.727	0.66	0.12
290	11.850	5.390	14.812	0.66	0.12
300	11.795	5.335	14.867	0.66	0.12
301	12.200	5.740	14.462	0.88	0.15
302	12.670	6.210	13.992	0.88	0.14
303	13.000	6.540	13.662	0.88	0.13
304	13.250	6.790	13.412	0.88	0.13
305	13.380	6.920	13.282	0.88	0.13
306	13.480	7.020	13.182	0.88	0.13
307	13.545	7.085	13.117	0.88	0.12
308	13.670	7.210	12.992	0.88	0.12
309	13.740	7.280	12.922	0.88	0.12
310	13.790	7.330	12.872	0.88	0.12
312	13.820	7.360	12.842	0.88	0.12
314	13.820	7.360	12.842	0.88	0.12
316	13.795	7.335	12.867	0.88	0.12
318	13.780	7.320	12.882	0.88	0.12
320	13.780	7.320	12.882	0.88	0.12
322	13.780	7.320	12.882	0.88	0.12
324	13.775	7.315	12.887	0.88	0.12
326	13.770	7.310	12.892	0.88	0.12
328	13.760	7.300	12.902	0.88	0.12

330	13.750	7.290	12.912	0.88	0.12
335	13.720	7.260	12.942	0.88	0.12
340	13.650	7.190	13.012	0.88	0.12
345	13.630	7.170	13.032	0.88	0.12
350	13.610	7.150	13.052	0.88	0.12
355	13.590	7.130	13.072	0.88	0.12
360	13.540	7.080	13.122	0.88	0.12
370	13.550	7.090	13.112	0.88	0.12
380	13.510	7.050	13.152	0.88	0.12
390	13.455	6.995	13.207	0.88	0.13
400	13.440	6.980	13.222	0.88	0.13

LHP46 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		15/07/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.62
2	100	1.24
3	100	1.86
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP46	Loxton shells & sand	462611	6190613	36.128	35.748		0.00	0.00	5.15	4.65	19.85	16.28
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP46	7.00	25.00	18.00	28.75	10.75
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP46	WS	22.50	24.50	2.00	175	1.00	0.5	8:16	175
Obs										
Obs										
Obs										
Obs										

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	20.850	1.000	15.278	0.62	0.62
2	20.850	1.000	15.278	0.62	0.62
3	20.860	1.010	15.268	0.62	0.61
4	20.855	1.005	15.273	0.62	0.62
5	20.860	1.010	15.268	0.62	0.61
6	20.870	1.020	15.258	0.62	0.61
7	20.910	1.060	15.218	0.62	0.58
8	20.905	1.055	15.223	0.62	0.59
9	20.910	1.060	15.218	0.62	0.58
10	20.910	1.060	15.218	0.62	0.58
12	20.905	1.055	15.223	0.62	0.59
14	20.920	1.070	15.208	0.62	0.58
16	20.920	1.070	15.208	0.62	0.58
18	20.915	1.065	15.213	0.62	0.58
20	20.920	1.070	15.208	0.62	0.58
22	20.925	1.075	15.203	0.62	0.58
24	20.930	1.080	15.198	0.62	0.57
26	20.930	1.080	15.198	0.62	0.57
28	20.950	1.100	15.178	0.62	0.56
30	20.945	1.095	15.183	0.62	0.57
35	20.940	1.090	15.188	0.62	0.57
40	20.940	1.090	15.188	0.62	0.57
45	20.950	1.100	15.178	0.62	0.56
50	20.955	1.105	15.173	0.62	0.56
55	20.980	1.130	15.148	0.62	0.55
60	20.960	1.110	15.168	0.62	0.56
70	20.970	1.120	15.158	0.62	0.55
80	20.990	1.140	15.138	0.62	0.54
90	20.980	1.130	15.148	0.62	0.55
100	20.985	1.135	15.143	0.62	0.55
101	21.690	1.840	14.438	1.24	0.67
102	21.860	2.010	14.268	1.24	0.62
103	21.950	2.100	14.178	1.24	0.59
104	22.000	2.150	14.128	1.24	0.58
105	22.035	2.185	14.093	1.24	0.57
106	22.045	2.195	14.083	1.24	0.56
107	22.050	2.200	14.078	1.24	0.56
108	22.055	2.205	14.073	1.24	0.56
109	22.070	2.220	14.058	1.24	0.56
110	22.070	2.220	14.058	1.24	0.56
112	22.070	2.220	14.058	1.24	0.56
114	22.050	2.200	14.078	1.24	0.56
116	22.050	2.200	14.078	1.24	0.56
118	22.070	2.220	14.058	1.24	0.56
120	22.080	2.230	14.048	1.24	0.56
122	22.080	2.230	14.048	1.24	0.56
124	22.080	2.230	14.048	1.24	0.56
126	22.070	2.220	14.058	1.24	0.56
128	22.085	2.235	14.043	1.24	0.55
130	22.070	2.220	14.058	1.24	0.56
135	22.090	2.240	14.038	1.24	0.55
140	22.100	2.250	14.028	1.24	0.55
145	22.120	2.270	14.008	1.24	0.55

150	22.090	2.240	14.038	1.24	0.55
155	22.095	2.245	14.033	1.24	0.55
160	22.080	2.230	14.048	1.24	0.56
170	22.115	2.265	14.013	1.24	0.55
180	22.140	2.290	13.988	1.24	0.54
190	22.150	2.300	13.978	1.24	0.54
200	22.140	2.290	13.988	1.24	0.54
201	22.870	3.020	13.258	1.86	0.62
202	23.060	3.210	13.068	1.86	0.58
203	23.170	3.320	12.958	1.86	0.56
204	23.200	3.350	12.928	1.86	0.56
205	23.220	3.370	12.908	1.86	0.55
206	23.255	3.405	12.873	1.86	0.55
207	23.320	3.470	12.808	1.86	0.54
208	23.325	3.475	12.803	1.86	0.54
209	23.825	3.975	12.303	1.86	0.47
210	23.330	3.480	12.798	1.86	0.53
212	23.360	3.510	12.768	1.86	0.53
214	23.370	3.520	12.758	1.86	0.53
216	23.360	3.510	12.768	1.86	0.53
218	23.370	3.520	12.758	1.86	0.53
220	23.380	3.530	12.748	1.86	0.53
222	23.380	3.530	12.748	1.86	0.53
224	23.390	3.540	12.738	1.86	0.53
226	23.400	3.550	12.728	1.86	0.52
228	23.420	3.570	12.708	1.86	0.52
230	23.415	3.565	12.713	1.86	0.52
235	23.430	3.580	12.698	1.86	0.52
240	23.460	3.610	12.668	1.86	0.52
245	23.460	3.610	12.668	1.86	0.52
250	23.490	3.640	12.638	1.86	0.51
255	23.495	3.645	12.633	1.86	0.51
260	23.510	3.660	12.618	1.86	0.51
270	23.530	3.680	12.598	1.86	0.51
280	23.600	3.750	12.528	1.86	0.50
290	23.620	3.770	12.508	1.86	0.49
300	23.690	3.840	12.438	1.86	0.48

LHP47 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		12/08/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.67
2	100	1.34
3	100	2.01
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP47	Loxton shells & sand	462629	6191121	31.748	31.505		0.00	0.00	4.75	4.75	16.25	15.50
Obs	LHO44	Loxton shells & sand	462625	6191101	32.097	31.349		18.00	3.79	4.75	NA	15.83	16.27
Obs	LHO49	Loxton shells & sand	462622	6191086	32.055	31.285		30.00	6.32	4.75	NA	15.75	16.31
Obs	LHO50	Loxton shells & sand	462618	6191067	32.076	31.288		50.00	10.53	4.75	NA	15.72	16.36
Obs	LHO55	Loxton shells & sand	462608	6191018	31.864	31.409		100.00	21.05	4.75	NA	15.64	16.22

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP47	5.00	21.00	16.00	26.51	10.51
Obs	LHO44	5.00	21.00	16.00	26.35	10.35
Obs	LHO49	5.00	19.00	14.00	26.29	12.29
Obs	LHO50	5.00	19.00	14.00	26.29	12.29
Obs	LHO55	6.00	21.00	15.00	25.41	10.41

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP47	WS	18.50	21.00	2.50	174	0.60	1.2	8:16	175
Obs	LHO44	SC	17.00	22.00	4.00	80	NA	NA	NA	80
Obs	LHO49	SC	16.00	21.00	3.00	80	NA	NA	NA	80
Obs	LHO50	SC	17.00	20.00	2.00	80	NA	NA	NA	80
Obs	LHO55	SC	18.00	21.00	3.00	80	NA	NA	NA	80

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	17.310	1.060	14.438	0.67	0.63
2	16.950	0.700	14.798	0.67	0.96
3	17.195	0.945	14.553	0.67	0.71
4	17.280	1.030	14.468	0.67	0.65
5	17.255	1.005	14.493	0.67	0.67
6	17.270	1.020	14.478	0.67	0.66
7	17.295	1.045	14.453	0.67	0.64
8	17.285	1.035	14.463	0.67	0.65
9	17.290	1.040	14.458	0.67	0.64
10	17.285	1.035	14.463	0.67	0.65
12	17.280	1.030	14.468	0.67	0.65
14	17.280	1.030	14.468	0.67	0.65
16	17.295	1.045	14.453	0.67	0.64
18	17.300	1.050	14.448	0.67	0.64
20	17.285	1.035	14.463	0.67	0.65
22	17.290	1.040	14.458	0.67	0.64
24	17.290	1.040	14.458	0.67	0.64
26	17.305	1.055	14.443	0.67	0.64
28	17.300	1.050	14.448	0.67	0.64
30	17.295	1.045	14.453	0.67	0.64
35	17.305	1.055	14.443	0.67	0.64
40	17.310	1.060	14.438	0.67	0.63
45	17.310	1.060	14.438	0.67	0.63
50	17.305	1.055	14.443	0.67	0.64
55	17.315	1.065	14.433	0.67	0.63
60	17.310	1.060	14.438	0.67	0.63
70	17.315	1.065	14.433	0.67	0.63
80	17.320	1.070	14.428	0.67	0.63
90	17.330	1.080	14.418	0.67	0.62
100	17.340	1.090	14.408	0.67	0.61
101	18.070	1.820	13.678	1.34	0.74
102	18.340	2.090	13.408	1.34	0.64
103	18.420	2.170	13.328	1.34	0.62
104	18.450	2.200	13.298	1.34	0.61
105	18.470	2.220	13.278	1.34	0.60
106	18.485	2.235	13.263	1.34	0.60
107	18.475	2.225	13.273	1.34	0.60
108	18.490	2.240	13.258	1.34	0.60
109	18.495	2.245	13.253	1.34	0.60
110	18.495	2.245	13.253	1.34	0.60
112	18.520	2.270	13.228	1.34	0.59
114	18.530	2.280	13.218	1.34	0.59
116	18.530	2.280	13.218	1.34	0.59
118	18.530	2.280	13.218	1.34	0.59
120	18.530	2.280	13.218	1.34	0.59
122	18.540	2.290	13.208	1.34	0.59
124	18.550	2.300	13.198	1.34	0.58
126	18.550	2.300	13.198	1.34	0.58
128	18.550	2.300	13.198	1.34	0.58
130	18.550	2.300	13.198	1.34	0.58
135	18.575	2.325	13.173	1.34	0.58
140	18.570	2.320	13.178	1.34	0.58
145	18.595	2.345	13.153	1.34	0.57

150	18.610	2.360	13.138	1.34	0.57
155	18.615	2.365	13.133	1.34	0.57
160	18.620	2.370	13.128	1.34	0.57
170	18.675	2.425	13.073	1.34	0.55
180	18.685	2.435	13.063	1.34	0.55
190	18.860	2.610	12.888	1.34	0.51
200	18.725	2.475	13.023	1.34	0.54
201	19.710	3.460	12.038	2.01	0.58
202	19.970	3.720	11.778	2.01	0.54
203	20.080	3.830	11.668	2.01	0.52
204	20.135	3.885	11.613	2.01	0.52
205	20.170	3.920	11.578	2.01	0.51
206	20.200	3.950	11.548	2.01	0.51
207	20.250	4.000	11.498	2.01	0.50
208	20.290	4.040	11.458	2.01	0.50
209	20.340	4.090	11.408	2.01	0.49
210	20.370	4.120	11.378	2.01	0.49
212	20.440	4.190	11.308	2.01	0.48
214	20.480	4.230	11.268	2.01	0.48
216	20.480	4.230	11.268	2.01	0.48
218	20.490	4.240	11.258	2.01	0.47
220	20.500	4.250	11.248	2.01	0.47
222	20.540	4.290	11.208	2.01	0.47
224	20.580	4.330	11.168	2.01	0.46
226	20.600	4.350	11.148	2.01	0.46
228	20.630	4.380	11.118	2.01	0.46
230	20.660	4.410	11.088	2.01	0.46
235	20.760	4.510	10.988	2.01	0.45
240	20.800	4.550	10.948	2.01	0.44
245	20.810	4.560	10.938	2.01	0.44
250	20.910	4.660	10.838	2.01	0.43
255	20.965	4.715	10.783	2.01	0.43
260	20.970	4.720	10.778	2.01	0.43
270	21.050	4.800	10.698	2.01	0.42
280	21.250	5.000	10.498	2.01	0.40
290	21.325	5.075	10.423	2.01	0.40
300	21.540	5.290	10.208	2.01	0.38

LHP47 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		29/08/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		180

Step	Duration (minutes)	Q (L/s)
1	60	0.67
2	60	1.34
3	60	2.01
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP47	Loxton shells & sand	462629	6191121	31.748	31.505		0.00	0.00	4.75	4.75	16.25	15.50
Obs	LHP44	Loxton shells & sand	462628	6191116	31.723	31.472		5.00	1.05	4.75	NA	15.49	16.23
Obs	LHO44	Loxton shells & sand	462625	6191101	32.097	31.349		18.00	3.79	4.75	NA	15.80	16.30
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP47	5.00	21.00	16.00	26.51	10.51
Obs	LHP44	5.00	21.00	16.00	26.47	10.47
Obs	LHO44	5.00	19.00	14.00	26.35	12.35
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP47	WS	18.50	21.00	2.50	174	0.60	1.2	8:16	175
Obs	LHP44	WS	17.00	22.00	4.00	174	0.60	0.5	8:16	175
Obs	LHO44	SC	16.00	21.00	3.00	80	NA	NA	NA	80
Obs										
Obs										
Obs										

Note:

post acid wash development

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	17.100	0.850	14.648	0.67	0.79
2	17.020	0.770	14.728	0.67	0.87
3	17.070	0.820	14.678	0.67	0.82
4	17.090	0.840	14.658	0.67	0.80
5	17.150	0.900	14.598	0.67	0.74
6	17.260	1.010	14.488	0.67	0.66
7	17.230	0.980	14.518	0.67	0.68
8	17.200	0.950	14.548	0.67	0.71
9	17.190	0.940	14.558	0.67	0.71
10	17.185	0.935	14.563	0.67	0.72
12	17.200	0.950	14.548	0.67	0.71
14	17.195	0.945	14.553	0.67	0.71
16	17.195	0.945	14.553	0.67	0.71
18	17.200	0.950	14.548	0.67	0.71
20	17.200	0.950	14.548	0.67	0.71
22	17.200	0.950	14.548	0.67	0.71
24	17.205	0.955	14.543	0.67	0.70
26	17.205	0.955	14.543	0.67	0.70
28	17.210	0.960	14.538	0.67	0.70
30	17.225	0.975	14.523	0.67	0.69
35	17.230	0.980	14.518	0.67	0.68
40	17.230	0.980	14.518	0.67	0.68
45	17.230	0.980	14.518	0.67	0.68
50	17.235	0.985	14.513	0.67	0.68
55	17.230	0.980	14.518	0.67	0.68
60	17.240	0.990	14.508	0.67	0.68
61	18.190	1.940	13.558	1.34	0.69
62	18.310	2.060	13.438	1.34	0.65
63	18.310	2.060	13.438	1.34	0.65
64	18.300	2.050	13.448	1.34	0.65
66	18.325	2.075	13.423	1.34	0.65
67	18.330	2.080	13.418	1.34	0.64
68	18.350	2.100	13.398	1.34	0.64
69	18.340	2.090	13.408	1.34	0.64
70	18.330	2.080	13.418	1.34	0.64
72	18.345	2.095	13.403	1.34	0.64
74	18.370	2.120	13.378	1.34	0.63
76	18.375	2.125	13.373	1.34	0.63
78	18.375	2.125	13.373	1.34	0.63
80	18.380	2.130	13.368	1.34	0.63
82	18.385	2.135	13.363	1.34	0.63
84	18.400	2.150	13.348	1.34	0.62
86	18.415	2.165	13.333	1.34	0.62
88	18.410	2.160	13.338	1.34	0.62
90	18.405	2.155	13.343	1.34	0.62
95	18.405	2.155	13.343	1.34	0.62
100	18.415	2.165	13.333	1.34	0.62
105	18.435	2.185	13.313	1.34	0.61
110	18.450	2.200	13.298	1.34	0.61
115	18.460	2.210	13.288	1.34	0.61
120	18.480	2.230	13.268	1.34	0.60
121	19.430	3.180	12.318	2.01	0.63
122	19.650	3.400	12.098	2.01	0.59

123	19.715	3.465	12.033	2.01	0.58
124	19.780	3.530	11.968	2.01	0.57
125	19.805	3.555	11.943	2.01	0.57
126	19.830	3.580	11.918	2.01	0.56
127	19.865	3.615	11.883	2.01	0.56
128	19.910	3.660	11.838	2.01	0.55
129	19.950	3.700	11.798	2.01	0.54
130	19.970	3.720	11.778	2.01	0.54
132	19.990	3.740	11.758	2.01	0.54
134	20.060	3.810	11.688	2.01	0.53
136	20.120	3.870	11.628	2.01	0.52
138	20.140	3.890	11.608	2.01	0.52
140	20.240	3.990	11.508	2.01	0.50
142	20.285	4.035	11.463	2.01	0.50
144	20.320	4.070	11.428	2.01	0.49
146	20.330	4.080	11.418	2.01	0.49
148	20.400	4.150	11.348	2.01	0.48
150	20.420	4.170	11.328	2.01	0.48
155	20.510	4.260	11.238	2.01	0.47
160	20.650	4.400	11.098	2.01	0.46
165	20.690	4.440	11.058	2.01	0.45
170	20.735	4.485	11.013	2.01	0.45
175	20.825	4.575	10.923	2.01	0.44
180	20.975	4.725	10.773	2.01	0.43

LHP48 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		

Start date		11/08/2004
Start time		
Stop date		
Stop time		
Duration (minutes)		300

Step	Duration (minutes)	Q (L/s)
1	100	0.19
2	100	0.38
3	100	0.57
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP48	Loxton shells & sand	462249	6192041	32.722	32.413		0.00	0.00	4.91	3.91	19.09	13.63
Obs													
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP48	6.00	24.00	18.00	26.41	8.41
Obs						
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP48	WS	21.00	23.00	2.00	175	0.60	0.5	16:30	175
Obs										
Obs										
Obs										
Obs										

Note:

Unclear whether full production aqufier thickness has been drilled

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	Q (L/s)	SC ((L/s)/m)
1	22.300	3.210	10.422	0.19	0.06
2	21.560	2.470	11.162	0.19	0.08
3	21.050	1.960	11.672	0.19	0.10
4	20.710	1.620	12.012	0.19	0.12
5	20.420	1.330	12.302	0.19	0.14
6	20.310	1.220	12.412	0.19	0.16
7	20.245	1.155	12.477	0.19	0.16
8	20.175	1.085	12.547	0.19	0.18
9	20.170	1.080	12.552	0.19	0.18
10	20.150	1.060	12.572	0.19	0.18
12	20.140	1.050	12.582	0.19	0.18
14	20.135	1.045	12.587	0.19	0.18
16	20.125	1.035	12.597	0.19	0.18
18	20.110	1.020	12.612	0.19	0.19
20	20.110	1.020	12.612	0.19	0.19
22	20.110	1.020	12.612	0.19	0.19
24	20.105	1.015	12.617	0.19	0.19
26	20.100	1.010	12.622	0.19	0.19
28	20.090	1.000	12.632	0.19	0.19
30	20.100	1.010	12.622	0.19	0.19
35	20.130	1.040	12.592	0.19	0.18
40	20.120	1.030	12.602	0.19	0.18
45	20.110	1.020	12.612	0.19	0.19
50	20.105	1.015	12.617	0.19	0.19
55	20.090	1.000	12.632	0.19	0.19
60	20.100	1.010	12.622	0.19	0.19
70	20.100	1.010	12.622	0.19	0.19
80	20.085	0.995	12.637	0.19	0.19
90	20.075	0.985	12.647	0.19	0.19
100	20.075	0.985	12.647	0.19	0.19
101	20.370	1.280	12.352	0.38	0.30
102	20.620	1.530	12.102	0.38	0.25
103	20.780	1.690	11.942	0.38	0.22
104	20.855	1.765	11.867	0.38	0.22
105	20.925	1.835	11.797	0.38	0.21
106	20.950	1.860	11.772	0.38	0.20
107	20.960	1.870	11.762	0.38	0.20
108	20.970	1.880	11.752	0.38	0.20
109	20.980	1.890	11.742	0.38	0.20
110	20.990	1.900	11.732	0.38	0.20
112	21.010	1.920	11.712	0.38	0.20
114	21.020	1.930	11.702	0.38	0.20
116	21.030	1.940	11.692	0.38	0.20
118	21.025	1.935	11.697	0.38	0.20
120	21.030	1.940	11.692	0.38	0.20
122	21.060	1.970	11.662	0.38	0.19
124	21.055	1.965	11.667	0.38	0.19
126	21.050	1.960	11.672	0.38	0.19
128	21.050	1.960	11.672	0.38	0.19
130	21.040	1.950	11.682	0.38	0.19
135	21.050	1.960	11.672	0.38	0.19
140	21.055	1.965	11.667	0.38	0.19
145	21.025	1.935	11.697	0.38	0.20

150	21.010	1.920	11.712	0.38	0.20
155	21.005	1.915	11.717	0.38	0.20
160	21.000	1.910	11.722	0.38	0.20
170	20.985	1.895	11.737	0.38	0.20
180	21.000	1.910	11.722	0.38	0.20
190	21.000	1.910	11.722	0.38	0.20
200	21.005	1.915	11.717	0.38	0.20
201	21.340	2.250	11.382	0.57	0.25
202	21.585	2.495	11.137	0.57	0.23
203	21.735	2.645	10.987	0.57	0.22
204	21.825	2.735	10.897	0.57	0.21
205	21.880	2.790	10.842	0.57	0.20
206	21.920	2.830	10.802	0.57	0.20
207	21.930	2.840	10.792	0.57	0.20
208	21.945	2.855	10.777	0.57	0.20
209	21.960	2.870	10.762	0.57	0.20
210	21.965	2.875	10.757	0.57	0.20
212	21.960	2.870	10.762	0.57	0.20
214	21.980	2.890	10.742	0.57	0.20
216	21.985	2.895	10.737	0.57	0.20
218	21.990	2.900	10.732	0.57	0.20
220	21.985	2.895	10.737	0.57	0.20
222	21.985	2.895	10.737	0.57	0.20
224	21.990	2.900	10.732	0.57	0.20
226	21.995	2.905	10.727	0.57	0.20
228	21.995	2.905	10.727	0.57	0.20
230	21.970	2.880	10.752	0.57	0.20
235	21.955	2.865	10.767	0.57	0.20
240	21.955	2.865	10.767	0.57	0.20
245	21.940	2.850	10.782	0.57	0.20
250	21.935	2.845	10.787	0.57	0.20
255	21.950	2.860	10.772	0.57	0.20
260	21.945	2.855	10.777	0.57	0.20
270	21.930	2.840	10.792	0.57	0.20
280	21.935	2.845	10.787	0.57	0.20
290	21.905	2.815	10.817	0.57	0.20
300	21.900	2.810	10.822	0.57	0.20

Appendix 'B': Constant rate discharge test data

LFP11 HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		04/03/2004
Start time		8:00AM
Stop date		
Stop time		
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	2.25
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP11	Monoman	461427	6192155	12.88	12.57		0.00	0.00	7.00	7.00	3.57	9.31
Obs	LFO11	Monoman	461455	6192166	13.17	12.42		29.68	4.24	7.00	NA	3.27	9.90
Obs	LFO12	Monoman	461321	6192132	13.42	12.70		109.10	15.59	7.00	NA	3.51	9.91
Obs	LFO10	Monoman	461551	6192197	12.27	11.66		130.92	18.70	7.00	NA	2.38	9.89
Obs	LFO13	Monoman	461189	6192114	13.33	12.62		241.36	34.48	7.00	NA	3.45	9.88
Obs	LFO14	Monoman	461097	6192119	13.57	12.73		332.20	47.46	7.00	NA	3.73	9.84

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP11	4.00	11.00	7.00	8.57	1.57
Obs	LFO11	6.00	11.00	5.00	6.42	1.42
Obs	LFO12	4.00	11.00	7.00	8.70	1.70
Obs	LFO10	4.00	11.00	7.00	7.66	0.66
Obs	LFO13	4.00	10.00	6.00	8.62	2.62
Obs	LFO14	4.00	10.00	6.00	8.73	2.73

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP11	SC	8.00	11.00	3.00	175	1.00	0.5	8:16	175
Obs	LFO11	SC	7.50	10.50	3.00	NA	NA	NA	NA	80
Obs	LFO12	SC	7.50	10.50	3.00	NA	NA	NA	NA	80
Obs	LFO10	SC	7.50	10.50	3.00	NA	NA	NA	NA	80
Obs	LFO13	SC	7.50	10.50	3.00	NA	NA	NA	NA	80
Obs	LFO14	SC	7.00	10.00	3.00	NA	NA	NA	NA	80

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	5.650	2.080	7.226	1.000	2.25	1.08	
2	6.570	3.000	6.306	2.000	2.25	0.75	
3	7.020	3.450	5.856	3.000	2.25	0.65	
4	7.045	3.475	5.831	4.000	2.25	0.65	
5	7.040	3.470	5.836	5.000	2.25	0.65	
6	7.070	3.500	5.806	6.000	2.25	0.64	
7	7.150	3.580	5.726	7.000	2.25	0.63	
8	7.180	3.610	5.696	8.000	2.25	0.62	
9	7.170	3.600	5.706	9.000	2.25	0.63	
10	7.200	3.630	5.676	10.000	2.25	0.62	
12	7.245	3.675	5.631	12.000	2.25	0.61	
14	7.280	3.710	5.596	14.000	2.25	0.61	
16	7.310	3.740	5.566	16.000	2.25	0.60	34339
18	7.325	3.755	5.551	18.000	2.25	0.60	
20	7.350	3.780	5.526	20.000	2.25	0.60	
22	7.365	3.795	5.511	22.000	2.25	0.59	
24	7.370	3.800	5.506	24.000	2.25	0.59	
26	7.400	3.830	5.476	26.000	2.25	0.59	
28	7.390	3.820	5.486	28.000	2.25	0.59	
30	7.400	3.830	5.476	30.000	2.25	0.59	
35	7.410	3.840	5.466	35.000	2.25	0.59	
40	7.435	3.865	5.441	40.000	2.25	0.58	
45	7.430	3.860	5.446	45.000	2.25	0.58	
50	7.450	3.880	5.426	50.000	2.25	0.58	
55	7.450	3.880	5.426	55.000	2.25	0.58	
60	7.475	3.905	5.401	60.000	2.25	0.58	34273
70	7.470	3.900	5.406	70.000	2.25	0.58	
80	7.495	3.925	5.381	80.000	2.25	0.57	
90	7.570	4.000	5.306	90.000	2.25	0.56	
100	7.570	4.000	5.306	100.000	2.25	0.56	
120	7.600	4.030	5.276	120.000	2.25	0.56	34273
140	7.635	4.065	5.241	140.000	2.25	0.55	
160	7.630	4.060	5.246	160.000	2.25	0.55	
180	7.640	4.070	5.236	180.000	2.25	0.55	34273
200	7.670	4.100	5.206	200.000	2.25	0.55	
240				240.000			34273
250	7.700	4.130	5.176	250.000	2.25	0.54	
300	7.730	4.160	5.146	300.000	2.25	0.54	34155
350	7.780	4.210	5.096	350.000	2.25	0.53	
360				360.000			34089
400	7.795	4.225	5.081	400.000	2.25	0.53	
420				420.000			33776
450	7.835	4.265	5.041	450.000	2.25	0.53	
490				490.000			33776
500	7.855	4.285	5.021	500.000	2.25	0.53	
540				540.000			33892
550	7.880	4.310	4.996	550.000	2.25	0.52	
600	7.950	4.380	4.926	600.000	2.25	0.51	33776
650	7.880	4.310	4.996	650.000	2.25	0.52	
660				660.000			33958
700	7.920	4.350	4.956	700.000	2.25	0.52	
720	7.920	4.350	4.956	720.000	2.25	0.52	33776

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
2	3.320	0.050	9.850	0.002
3	3.350	0.080	9.820	0.003
4	3.380	0.110	9.790	0.005
5	3.400	0.130	9.770	0.006
6	3.420	0.150	9.750	0.007
7	3.440	0.170	9.730	0.008
8	3.450	0.180	9.720	0.009
9	3.460	0.190	9.710	0.010
10	3.470	0.200	9.700	0.011
14	3.490	0.220	9.680	0.016
16	3.500	0.230	9.670	0.018
20	3.510	0.240	9.660	0.023
28	3.520	0.250	9.650	0.032
32	3.525	0.255	9.645	0.036
42	3.530	0.260	9.640	0.048
54	3.535	0.265	9.635	0.061
69	3.540	0.270	9.630	0.078
88	3.550	0.280	9.620	0.100
108	3.555	0.285	9.615	0.123
150	3.565	0.295	9.605	0.170
203	3.570	0.300	9.600	0.230
254	3.575	0.305	9.595	0.288
304	3.580	0.310	9.590	0.345
352	3.580	0.310	9.590	0.400
400	3.585	0.315	9.585	0.454
450	3.590	0.320	9.580	0.511
500	3.590	0.320	9.580	0.568
544	3.595	0.325	9.575	0.618
606	3.595	0.325	9.575	0.688
653	3.600	0.330	9.570	0.741
701	3.605	0.335	9.565	0.796
720	3.605	0.335	9.565	0.817

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
21	3.530	0.020	9.889	0.002
34	3.540	0.030	9.879	0.003
49	3.540	0.030	9.879	0.004
62	3.545	0.035	9.874	0.005
79	3.545	0.035	9.874	0.007
100	3.550	0.040	9.869	0.008
155	3.560	0.050	9.859	0.013
207	3.565	0.055	9.854	0.017
260	3.570	0.060	9.849	0.022
310	3.570	0.060	9.849	0.026
356	3.570	0.060	9.849	0.030
452	3.575	0.065	9.844	0.038
504	3.580	0.070	9.839	0.042
558	3.585	0.075	9.834	0.047
611	3.580	0.070	9.839	0.051
657	3.580	0.070	9.839	0.055
728	3.590	0.080	9.829	0.061

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
12	2.380	0.000	9.892	0.001
18	2.390	0.010	9.882	0.001
30	2.400	0.020	9.872	0.002
44	2.400	0.020	9.872	0.003
56	2.400	0.020	9.872	0.003
71	2.400	0.020	9.872	0.004
90	2.405	0.025	9.867	0.005
110	2.405	0.025	9.867	0.006
152	2.410	0.030	9.862	0.009
204	2.415	0.035	9.857	0.012
257	2.420	0.040	9.852	0.015
307	2.420	0.040	9.852	0.018
354	2.420	0.040	9.852	0.021
450	2.420	0.040	9.852	0.026
502	2.420	0.040	9.852	0.029
550	2.420	0.040	9.852	0.032
608	2.425	0.045	9.847	0.035
654	2.430	0.050	9.842	0.038
725	2.435	0.055	9.837	0.042

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
20	3.450	0.000	9.882	0.000
37	3.450	0.000	9.882	0.001
65	3.460	0.010	9.872	0.001
82	3.460	0.010	9.872	0.001
103	3.455	0.005	9.877	0.002
157	3.455	0.005	9.877	0.003
210	3.455	0.005	9.877	0.004
263	3.450	0.000	9.882	0.005
312	3.455	0.005	9.877	0.005
358	3.455	0.005	9.877	0.006
454	3.450	0.000	9.882	0.008
507	3.450	0.000	9.882	0.009
552	3.450	0.000	9.882	0.009
613	3.455	0.005	9.877	0.011
659	3.455	0.005	9.877	0.011
730	3.460	0.010	9.872	0.013

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
40	3.730	0.000	9.837	0.000
67	3.730	0.000	9.837	0.001
85	3.730	0.000	9.837	0.001
105	3.730	0.000	9.837	0.001
160	3.730	0.000	9.837	0.001
212	3.730	0.000	9.837	0.002
265	3.725	-0.005	9.842	0.002
314	3.725	-0.005	9.842	0.003
360	3.725	-0.005	9.842	0.003
456	3.720	-0.010	9.847	0.004
513	3.715	-0.015	9.852	0.005
505	3.715	-0.015	9.852	0.005
616	3.720	-0.010	9.847	0.006
660	3.725	-0.005	9.842	0.006
732	3.730	0.000	9.837	0.007

LFP12 HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		07/03/2004
Start time		2:30PM
Stop date		
Stop time		
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	2.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP12	Monoman	461210	6192120	13.05	12.79		0.00	0.00	5.00	5.00	4.17	8.88
Obs	LFO13	Monoman	461189	6192114	13.33	12.62		21.50	4.30	5.00	NA	3.46	9.88
Obs	LFO14	Monoman	461097	6192119	13.57	12.73		112.21	22.44	5.00	NA	3.76	9.81
Obs	LFO12	Monoman	461321	6192132	13.42	12.70		112.09	22.42	5.00	NA	3.53	9.89
Obs	LFO11	Monoman	461455	6192166	13.17	12.42		250.20	50.04	5.00	NA	3.28	9.89

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP12	5.00	10.00	5.00	7.79	2.79
Obs	LFO13	4.00	10.00	6.00	8.62	2.62
Obs	LFO14	4.00	10.00	6.00	8.73	2.73
Obs	LFO12	4.00	11.00	7.00	8.70	1.70
Obs	LFO11	6.00	11.00	5.00	6.42	1.42

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP12	SC	7.00	10.00	3.00	175	1.00	0.5	8:16	175
Obs	LFO13	SC	7.50	10.50	3.00	80	NA	NA	NA	80
Obs	LFO14	SC	7.00	10.00	3.00	80	NA	NA	NA	80
Obs	LFO12	SC	7.00	10.00	3.00	NA	NA	NA	NA	80
Obs	LFO11	SC	7.50	10.50	3.00	NA	NA	NA	NA	80

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	6.570	2.400	6.477	1.000	2.00	0.83	
2	7.470	3.300	5.577	2.000	2.00	0.61	
3	8.270	4.100	4.777	3.000	2.00	0.49	
4	9.250	5.080	3.797	4.000	2.00	0.39	
5	9.750	5.580	3.297	5.000	2.00	0.36	
6	8.400	4.230	4.647	6.000	2.00	0.47	
7	6.150	1.980	6.897	7.000	2.00	1.01	
8	6.400	2.230	6.647	8.000	2.00	0.90	
9	7.070	2.900	5.977	9.000	2.00	0.69	
10	7.230	3.060	5.817	10.000	2.00	0.65	
12	7.340	3.170	5.707	12.000	2.00	0.63	
14	7.390	3.220	5.657	14.000	2.00	0.62	
15				15.000			41860
16	7.450	3.280	5.597	16.000	2.00	0.61	
18	7.470	3.300	5.577	18.000	2.00	0.61	
20	7.490	3.320	5.557	20.000	2.00	0.60	
22	7.540	3.370	5.507	22.000	2.00	0.59	
24	7.560	3.390	5.487	24.000	2.00	0.59	
26	7.565	3.395	5.482	26.000	2.00	0.59	
28	7.570	3.400	5.477	28.000	2.00	0.59	
30	7.580	3.410	5.467	30.000	2.00	0.59	
35	7.590	3.420	5.457	35.000	2.00	0.58	
40	7.620	3.450	5.427	40.000	2.00	0.58	
45	7.665	3.495	5.382	45.000	2.00	0.57	
50	7.670	3.500	5.377	50.000	2.00	0.57	
55	7.675	3.505	5.372	55.000	2.00	0.57	
60	7.675	3.505	5.372	60.000	2.00	0.57	41720
70	7.720	3.550	5.327	70.000	2.00	0.56	
80	7.750	3.580	5.297	80.000	2.00	0.56	
90	7.750	3.580	5.297	90.000	2.00	0.56	
100	7.790	3.620	5.257	100.000	2.00	0.55	
120	7.840	3.670	5.207	120.000	2.00	0.54	41860
140	7.840	3.670	5.207	140.000	2.00	0.54	
160	7.910	3.740	5.137	160.000	2.00	0.53	
180	7.930	3.760	5.117	180.000	2.00	0.53	41790
200	7.960	3.790	5.087	200.000	2.00	0.53	
240				240.000			41930
250	8.050	3.880	4.997	250.000	2.00	0.52	
300	8.130	3.960	4.917	300.000	2.00	0.51	41790
350	8.170	4.000	4.877	350.000	2.00	0.50	
360				360.000			41790
400	8.190	4.020	4.857	400.000	2.00	0.50	
450	8.220	4.050	4.827	450.000	2.00	0.49	
480				480.000			41720
500	8.220	4.050	4.827	500.000	2.00	0.49	
540				540.000			41790
550	8.240	4.070	4.807	550.000	2.00	0.49	
600	8.250	4.080	4.797	600.000	2.00	0.49	41860
650	8.280	4.110	4.767	650.000	2.00	0.49	
700	8.300	4.130	4.747	700.000	2.00	0.48	
720	8.305	4.135	4.742	720.000	2.00	0.48	41930

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	3.465	0.010	9.867	0.002
2	3.496	0.041	9.836	0.004
3	3.527	0.072	9.805	0.006
4	3.568	0.113	9.764	0.009
5	3.609	0.154	9.723	0.011
6	3.630	0.175	9.702	0.013
7	3.640	0.185	9.692	0.015
8	3.630	0.175	9.702	0.017
9	3.630	0.175	9.702	0.019
10	3.640	0.185	9.692	0.022
11	3.650	0.195	9.682	0.024
12	3.650	0.195	9.682	0.026
13	3.661	0.206	9.671	0.028
14	3.671	0.216	9.661	0.030
15	3.671	0.216	9.661	0.032
16	3.681	0.226	9.651	0.035
17	3.681	0.226	9.651	0.037
18	3.681	0.226	9.651	0.039
19	3.692	0.237	9.640	0.041
20	3.692	0.237	9.640	0.043
21	3.692	0.237	9.640	0.045
22	3.702	0.247	9.630	0.048
23	3.702	0.247	9.630	0.050
24	3.702	0.247	9.630	0.052
25	3.702	0.247	9.630	0.054
26	3.712	0.257	9.620	0.056
27	3.712	0.257	9.620	0.058
28	3.712	0.257	9.620	0.061
29	3.712	0.257	9.620	0.063
30	3.712	0.257	9.620	0.065
31	3.723	0.268	9.609	0.067
32	3.723	0.268	9.609	0.069
33	3.723	0.268	9.609	0.071
34	3.723	0.268	9.609	0.074
35	3.723	0.268	9.609	0.076
36	3.723	0.268	9.609	0.078
37	3.723	0.268	9.609	0.080
38	3.723	0.268	9.609	0.082
39	3.733	0.278	9.599	0.084
40	3.733	0.278	9.599	0.087
41	3.733	0.278	9.599	0.089
42	3.733	0.278	9.599	0.091
43	3.733	0.278	9.599	0.093
44	3.733	0.278	9.599	0.095
45	3.733	0.278	9.599	0.097
46	3.733	0.278	9.599	0.100
47	3.733	0.278	9.599	0.102
48	3.733	0.278	9.599	0.104
49	3.733	0.278	9.599	0.106
50	3.743	0.288	9.589	0.108
52	3.743	0.288	9.589	0.112
54	3.743	0.288	9.589	0.117
56	3.743	0.288	9.589	0.121
58	3.743	0.288	9.589	0.125

60	3.743	0.288	9.589	0.130
62	3.743	0.288	9.589	0.134
64	3.753	0.298	9.579	0.138
66	3.753	0.298	9.579	0.143
68	3.753	0.298	9.579	0.147
70	3.753	0.298	9.579	0.151
72	3.753	0.298	9.579	0.156
74	3.764	0.309	9.568	0.160
76	3.764	0.309	9.568	0.164
78	3.764	0.309	9.568	0.169
80	3.764	0.309	9.568	0.173
82	3.764	0.309	9.568	0.177
84	3.764	0.309	9.568	0.182
86	3.764	0.309	9.568	0.186
88	3.764	0.309	9.568	0.190
90	3.764	0.309	9.568	0.195
92	3.764	0.309	9.568	0.199
94	3.764	0.309	9.568	0.203
96	3.764	0.309	9.568	0.208
98	3.764	0.309	9.568	0.212
100	3.774	0.319	9.558	0.216
110	3.774	0.319	9.558	0.238
120	3.784	0.329	9.548	0.260
130	3.784	0.329	9.548	0.281
140	3.784	0.329	9.548	0.303
150	3.784	0.329	9.548	0.324
160	3.784	0.329	9.548	0.346
170	3.795	0.340	9.537	0.368
180	3.795	0.340	9.537	0.389
190	3.795	0.340	9.537	0.411
200	3.795	0.340	9.537	0.433
210	3.795	0.340	9.537	0.454
220	3.795	0.340	9.537	0.476
230	3.805	0.350	9.527	0.498
240	3.805	0.350	9.527	0.519
250	3.805	0.350	9.527	0.541
260	3.805	0.350	9.527	0.562
270	3.805	0.350	9.527	0.584
280	3.805	0.350	9.527	0.606
290	3.805	0.350	9.527	0.627
300	3.815	0.360	9.517	0.649
310	3.815	0.360	9.517	0.671
320	3.815	0.360	9.517	0.692
330	3.815	0.360	9.517	0.714
340	3.815	0.360	9.517	0.736
350	3.815	0.360	9.517	0.757
360	3.815	0.360	9.517	0.779
370	3.815	0.360	9.517	0.800
380	3.815	0.360	9.517	0.822
390	3.826	0.371	9.506	0.844
400	3.826	0.371	9.506	0.865
410	3.815	0.360	9.517	0.887
420	3.815	0.360	9.517	0.909
430	3.826	0.371	9.506	0.930
440	3.826	0.371	9.506	0.952
450	3.826	0.371	9.506	0.973

460	3.826	0.371	9.506	0.995
470	3.826	0.371	9.506	1.017
480	3.826	0.371	9.506	1.038
490	3.826	0.371	9.506	1.060
500	3.826	0.371	9.506	1.082
510	3.826	0.371	9.506	1.103
520	3.826	0.371	9.506	1.125
530	3.826	0.371	9.506	1.147
540	3.826	0.371	9.506	1.168
550	3.836	0.381	9.496	1.190
560	3.826	0.371	9.506	1.211
570	3.826	0.371	9.506	1.233
580	3.826	0.371	9.506	1.255
590	3.826	0.371	9.506	1.276
600	3.826	0.371	9.506	1.298
610	3.826	0.371	9.506	1.320
620	3.826	0.371	9.506	1.341
630	3.826	0.371	9.506	1.363
640	3.826	0.371	9.506	1.385
650	3.836	0.381	9.496	1.406
660	3.836	0.381	9.496	1.428
670	3.836	0.381	9.496	1.449
680	3.836	0.381	9.496	1.471
690	3.836	0.381	9.496	1.493
700	3.836	0.381	9.496	1.514
710	3.836	0.381	9.496	1.536
720	3.836	0.381	9.496	1.558

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
30	3.780	0.025	9.787	0.002
74	3.775	0.020	9.792	0.006
103	3.780	0.025	9.787	0.008
144	3.780	0.025	9.787	0.011
183	3.785	0.030	9.782	0.015
213	3.785	0.030	9.782	0.017
254	3.790	0.035	9.777	0.020
305	3.790	0.035	9.777	0.024
354	3.790	0.035	9.777	0.028
403	3.790	0.035	9.777	0.032
458	3.800	0.045	9.767	0.036
501	3.795	0.040	9.772	0.040
562	3.800	0.045	9.767	0.045
608	3.800	0.045	9.767	0.048
654	3.800	0.045	9.767	0.052
722	3.800	0.045	9.767	0.057

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
33	3.540	0.015	9.879	0.003
78	3.550	0.025	9.869	0.006
124	3.560	0.035	9.859	0.010
165	3.560	0.035	9.859	0.013
206	3.565	0.040	9.854	0.016
257	3.570	0.045	9.849	0.020
308	3.570	0.045	9.849	0.025
357	3.570	0.045	9.849	0.028
405	3.575	0.050	9.844	0.032
460	3.580	0.055	9.839	0.037
504	3.580	0.055	9.839	0.040
564	3.580	0.055	9.839	0.045
610	3.580	0.055	9.839	0.049
657	3.580	0.055	9.839	0.052
725	3.585	0.060	9.834	0.058

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
36	3.270	-0.010	9.900	0.001
82	3.270	-0.010	9.900	0.001
127	3.275	-0.005	9.895	0.002
167	3.275	-0.005	9.895	0.003
209	3.280	0.000	9.890	0.003
259	3.280	0.000	9.890	0.004
310	3.280	0.000	9.890	0.005
359	3.280	0.000	9.890	0.006
407	3.280	0.000	9.890	0.007
462	3.280	0.000	9.890	0.007
510	3.280	0.000	9.890	0.008
570	3.280	0.000	9.890	0.009
612	3.280	0.000	9.890	0.010
659	3.280	0.000	9.890	0.011
728	3.280	0.000	9.890	0.012

LFP16_2 HEADER

DWLBC TEST

Purpose		
Determine		
Well equation		
Rate for long term testing		
Boundary conditions		

Start date		26/08/2004
Start time		10:45AM
Stop date		10/09/2004
Stop time		09:12AM
Duration (minutes)		21508

Step	Duration (minutes)	Q (L/s)
1	21509	6.45
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP16_2	Monoman	460993	6193124	12.279	11.988		0.00	0.00	9.00	8.50	2.76	9.52
Obs	LFO22	Monoman (Pata)	460984	6193110	12.489	11.497		13.50	1.50	9.00	NA	2.44	10.05
Obs	LFO35	Monoman	461006	6193102	11.970	11.447		25.00	2.78	9.00	NA	2.25	9.72
Obs	LFO36	Monoman	461021	6193082	11.820	11.347		50.00	5.56	9.00	NA	2.12	9.70
Obs	LFO37	Monoman	461056	6193032	12.268	11.870		100.00	11.11	9.00	NA	2.52	9.75

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP16_2	5.00	14.00	9.00	6.99	-2.01
Obs	LFO22	5.00	14.00	9.00	6.50	-2.50
Obs	LFO35	4.00	14.00	10.00	7.45	-2.55
Obs	LFO36	5.00	14.50	9.50	6.35	-3.15
Obs	LFO37	6.00	14.50	8.50	5.87	-2.63

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP16_2	WS	9.50	13.50	4.00	175	1.00	1.2	8:16	175
Obs	LFO22	SC	8.00	14.00	6.00	80	NA	NA	NA	80
Obs	LFO35	SC	9.50	13.50	4.00	80	NA	NA	NA	80
Obs	LFO36	SC	9.50	13.50	4.00	80	NA	NA	NA	80
Obs	LFO37	SC	9.50	13.50	4.00	80	NA	NA	NA	80

Note:

post acid wash development

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	6.530	3.770	5.749	1.000	6.45	1.71	
2	6.740	3.980	5.539	2.000	6.45	1.62	
3	6.980	4.220	5.299	3.000	6.45	1.53	
4	7.060	4.300	5.219	4.000	6.45	1.50	
5	7.100	4.340	5.179	5.000	6.45	1.49	
6	7.155	4.395	5.124	6.000	6.45	1.47	
7	7.200	4.440	5.079	7.000	6.45	1.45	
8	7.220	4.460	5.059	8.000	6.45	1.45	
9	7.220	4.460	5.059	9.000	6.45	1.45	
10	7.220	4.460	5.059	10.000	6.45	1.45	
12	7.270	4.510	5.009	12.000	6.45	1.43	
14	7.310	4.550	4.969	14.000	6.45	1.42	
15				15.000			42770
16	7.335	4.575	4.944	16.000	6.45	1.41	
18	7.350	4.590	4.929	18.000	6.45	1.41	
20	7.375	4.615	4.904	20.000	6.45	1.40	
22	7.415	4.655	4.864	22.000	6.45	1.39	
24	7.415	4.655	4.864	24.000	6.45	1.39	
26	7.440	4.680	4.839	26.000	6.45	1.38	
28	7.450	4.690	4.829	28.000	6.45	1.38	
30	7.470	4.710	4.809	30.000	6.45	1.37	
35	7.530	4.770	4.749	35.000	6.45	1.35	
40	7.550	4.790	4.729	40.000	6.45	1.35	
45	7.580	4.820	4.699	45.000	6.45	1.34	
50	7.595	4.835	4.684	50.000	6.45	1.33	
55	7.610	4.850	4.669	55.000	6.45	1.33	
60	7.625	4.865	4.654	60.000	6.45	1.33	
70	7.650	4.890	4.629	70.000	6.45	1.32	
80	7.675	4.915	4.604	80.000	6.45	1.31	
90	7.690	4.930	4.589	90.000	6.45	1.31	
100	7.720	4.960	4.559	100.000	6.45	1.30	42490
120	7.750	4.990	4.529	120.000	6.45	1.29	
140	7.770	5.010	4.509	140.000	6.45	1.29	
160	7.795	5.035	4.484	160.000	6.45	1.28	
180	7.820	5.060	4.459	180.000	6.45	1.27	
200	7.830	5.070	4.449	200.000	6.45	1.27	42140
250	7.865	5.105	4.414	250.000	6.45	1.26	
300	7.875	5.115	4.404	300.000	6.45	1.26	
350	7.915	5.155	4.364	350.000	6.45	1.25	
400	7.930	5.170	4.349	400.000	6.45	1.25	40950
450	7.935	5.175	4.344	450.000	6.45	1.25	
1275				1275.000			39900
1295	8.055	5.295	4.224	1295.000	6.45	1.22	
2728	8.100	5.340	4.179	2728.000	6.45	1.21	
2740				2740.000			38360
7550	8.400	5.640	3.879	7550.000	6.45	1.14	38220
8575	8.420	5.660	3.859	8575.000	6.45	1.14	
8585				8585.000			35419
10473	8.440	5.680	3.839	10473.000	6.45	1.14	
10485				10485.000			35234
11735	8.450	5.690	3.829	11735.000	6.45	1.13	
11745				11745.000			35234
12835				12835.000			38430

12840	8.465	5.705	3.814	12840.000	6.45	1.13	
18565	8.500	5.740	3.779	18565.000	6.45	1.12	
18580				18580.000			38220
21495				21495.000			34851
21501	8.550	5.790	3.729	21501.000	6.45	1.11	

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	2.576	0.136	9.913	0.005
2	2.672	0.232	9.817	0.011
3	2.726	0.286	9.763	0.016
4	2.763	0.323	9.726	0.022
5	2.786	0.346	9.703	0.027
6	2.808	0.368	9.681	0.033
7	2.824	0.384	9.665	0.038
8	2.837	0.397	9.652	0.044
9	2.844	0.404	9.645	0.049
10	2.857	0.417	9.632	0.055
11	2.859	0.419	9.63	0.06
12	2.864	0.424	9.625	0.066
13	2.873	0.433	9.616	0.071
14	2.878	0.438	9.611	0.077
15	2.883	0.443	9.606	0.082
16	2.892	0.452	9.597	0.088
17	2.894	0.454	9.595	0.093
18	2.903	0.463	9.586	0.099
19	2.91	0.47	9.579	0.104
20	2.913	0.473	9.576	0.11
21	2.915	0.475	9.574	0.115
22	2.923	0.483	9.566	0.121
23	2.928	0.488	9.561	0.126
24	2.926	0.486	9.563	0.132
25	2.93	0.49	9.559	0.137
26	2.937	0.497	9.552	0.143
27	2.938	0.498	9.551	0.148
28	2.943	0.503	9.546	0.154
29	2.947	0.507	9.542	0.159
30	2.948	0.508	9.541	0.165
31	2.951	0.511	9.538	0.17
32	2.952	0.512	9.537	0.176
33	2.956	0.516	9.533	0.181
34	2.959	0.519	9.53	0.187
35	2.961	0.521	9.528	0.192
36	2.965	0.525	9.524	0.198
37	2.97	0.53	9.519	0.203
38	2.97	0.53	9.519	0.209
39	2.973	0.533	9.516	0.214
40	2.977	0.537	9.512	0.219
41	2.98	0.54	9.509	0.225
42	2.98	0.54	9.509	0.23
43	2.987	0.547	9.502	0.236
44	2.985	0.545	9.504	0.241
45	2.987	0.547	9.502	0.247
46	2.994	0.554	9.495	0.252
47	2.995	0.555	9.494	0.258
48	2.997	0.557	9.492	0.263
49	2.998	0.558	9.491	0.269
50	2.998	0.558	9.491	0.274
52	3.005	0.565	9.484	0.285
54	3.01	0.57	9.479	0.296
56	3.012	0.572	9.477	0.307
58	3.017	0.577	9.472	0.318

60	3.019	0.579	9.47	0.329
62	3.022	0.582	9.467	0.34
64	3.024	0.584	9.465	0.351
66	3.032	0.592	9.457	0.362
68	3.034	0.594	9.455	0.373
70	3.036	0.596	9.453	0.384
72	3.04	0.6	9.449	0.395
74	3.044	0.604	9.445	0.406
76	3.047	0.607	9.442	0.417
78	3.051	0.611	9.438	0.428
80	3.051	0.611	9.438	0.439
82	3.055	0.615	9.434	0.45
84	3.06	0.62	9.429	0.461
86	3.065	0.625	9.424	0.472
88	3.062	0.622	9.427	0.483
90	3.071	0.631	9.418	0.494
92	3.069	0.629	9.42	0.505
94	3.075	0.635	9.414	0.516
96	3.075	0.635	9.414	0.527
98	3.078	0.638	9.411	0.538
100	3.079	0.639	9.41	0.549
110	3.096	0.656	9.393	0.604
120	3.107	0.667	9.382	0.658
130	3.113	0.673	9.376	0.713
140	3.122	0.682	9.367	0.768
150	3.132	0.692	9.357	0.823
160	3.14	0.7	9.349	0.878
170	3.149	0.709	9.34	0.933
180	3.157	0.717	9.332	0.988
190	3.167	0.727	9.322	1.043
200	3.169	0.729	9.32	1.097
210	3.177	0.737	9.312	1.152
220	3.184	0.744	9.305	1.207
230	3.188	0.748	9.301	1.262
240	3.192	0.752	9.297	1.317
250	3.203	0.763	9.286	1.372
260	3.205	0.765	9.284	1.427
270	3.206	0.766	9.283	1.481
280	3.209	0.769	9.28	1.536
290	3.212	0.772	9.277	1.591
300	3.219	0.779	9.27	1.646
310	3.222	0.782	9.267	1.701
320	3.228	0.788	9.261	1.756
330	3.235	0.795	9.254	1.811
340	3.237	0.797	9.252	1.866
350	3.239	0.799	9.25	1.92
360	3.243	0.803	9.246	1.975
370	3.244	0.804	9.245	2.03
380	3.249	0.809	9.24	2.085
390	3.254	0.814	9.235	2.14
400	3.254	0.814	9.235	2.195
410	3.258	0.818	9.231	2.25
420	3.261	0.821	9.228	2.305
430	3.265	0.825	9.224	2.359
440	3.27	0.83	9.219	2.414
450	3.274	0.834	9.215	2.469

460	3.277	0.837	9.212	2.524
470	3.28	0.84	9.209	2.579
480	3.28	0.84	9.209	2.634
490	3.285	0.845	9.204	2.689
500	3.288	0.848	9.201	2.743
510	3.289	0.849	9.2	2.798
520	3.29	0.85	9.199	2.853
530	3.297	0.857	9.192	2.908
540	3.296	0.856	9.193	2.963
550	3.3	0.86	9.189	3.018
560	3.301	0.861	9.188	3.073
570	3.301	0.861	9.188	3.128
580	3.306	0.866	9.183	3.182
590	3.309	0.869	9.18	3.237
600	3.311	0.871	9.178	3.292
610	3.31	0.87	9.179	3.347
620	3.313	0.873	9.176	3.402
630	3.318	0.878	9.171	3.457
640	3.317	0.877	9.172	3.512
650	3.321	0.881	9.168	3.567
660	3.32	0.88	9.169	3.621
670	3.323	0.883	9.166	3.676
680	3.329	0.889	9.16	3.731
690	3.327	0.887	9.162	3.786
700	3.327	0.887	9.162	3.841
710	3.329	0.889	9.16	3.896
720	3.33	0.89	9.159	3.951
750	3.336	0.896	9.153	4.115
780	3.343	0.903	9.146	4.28
810	3.344	0.904	9.145	4.444
840	3.351	0.911	9.138	4.609
870	3.358	0.918	9.131	4.774
900	3.361	0.921	9.128	4.938
930	3.361	0.921	9.128	5.103
960	3.365	0.925	9.124	5.267
990	3.376	0.936	9.113	5.432
1020	3.373	0.933	9.116	5.597
1110	3.386	0.946	9.103	6.091
1200	3.396	0.956	9.093	6.584
1320	3.417	0.977	9.072	7.243
1410	3.42	0.98	9.069	7.737
1500	3.427	0.987	9.062	8.23
1620	3.435	0.995	9.054	8.889
1710	3.444	1.004	9.045	9.383
1800	3.454	1.014	9.035	9.877
1920	3.459	1.019	9.03	10.535
2010	3.471	1.031	9.018	11.029
2100	3.471	1.031	9.018	11.523
2220	3.481	1.041	9.008	12.181
2310	3.483	1.043	9.006	12.675
2400	3.496	1.056	8.993	13.169
2520	3.499	1.059	8.99	13.827
2610	3.505	1.065	8.984	14.321
2700	3.511	1.071	8.978	14.815
2820	3.519	1.079	8.97	15.473
2910	3.523	1.083	8.966	15.967

3000	3.526	1.086	8.963	16.461
3120	3.53	1.09	8.959	17.119
3210	3.541	1.101	8.948	17.613
3300	3.544	1.104	8.945	18.107
3420	3.548	1.108	8.941	18.765
3510	3.549	1.109	8.94	19.259
3600	3.554	1.114	8.935	19.753
3720	3.56	1.12	8.929	20.412
3810	3.542	1.102	8.947	20.905
3900	3.563	1.123	8.926	21.399
4020	3.56	1.12	8.929	22.058
4110	3.573	1.133	8.916	22.551
4200	3.549	1.109	8.94	23.045
4320	3.561	1.121	8.928	23.704
4410	3.572	1.132	8.917	24.198
4500	3.583	1.143	8.906	24.691
4620	3.57	1.13	8.919	25.35
4710	3.569	1.129	8.92	25.844
4800	3.532	1.092	8.957	26.337
4920	3.534	1.094	8.955	26.996
5010	3.534	1.094	8.955	27.49
5100	3.533	1.093	8.956	27.984
5220	3.518	1.078	8.971	28.642
5310	3.526	1.086	8.963	29.136
5400	3.529	1.089	8.96	29.63
5520	3.532	1.092	8.957	30.288
5610	3.599	1.159	8.89	30.782
5700	3.61	1.17	8.879	31.276
5820	3.586	1.146	8.903	31.934
5910	3.605	1.165	8.884	32.428
6000	3.577	1.137	8.912	32.922
6120	3.578	1.138	8.911	33.58
6210	3.562	1.122	8.927	34.074
6300	3.56	1.12	8.929	34.568
6420	3.546	1.106	8.943	35.226
6510	3.542	1.102	8.947	35.72
6600	3.557	1.117	8.932	36.214
6720	3.576	1.136	8.913	36.872
6810	3.551	1.111	8.938	37.366
6900	3.564	1.124	8.925	37.86
7020	3.588	1.148	8.901	38.519
7110	3.6	1.16	8.889	39.012
7200	3.603	1.163	8.886	39.506
7320	3.623	1.183	8.866	40.165
7410	3.619	1.179	8.87	40.658
7500	3.629	1.189	8.86	41.152
7620	3.564	1.124	8.925	41.811
7710	3.563	1.123	8.926	42.305
7800	3.569	1.129	8.92	42.798
7920	3.575	1.135	8.914	43.457
8010	3.577	1.137	8.912	43.951
8100	3.586	1.146	8.903	44.444
8220	3.623	1.183	8.866	45.103
8310	3.584	1.144	8.905	45.597
8400	3.597	1.157	8.892	46.091
8520	3.627	1.187	8.862	46.749

8610	3.617	1.177	8.872	47.243
8700	3.665	1.225	8.824	47.737
8820	3.615	1.175	8.874	48.395
8910	3.601	1.161	8.888	48.889
9000	3.603	1.163	8.886	49.383
9120	3.598	1.158	8.891	50.041
9210	3.596	1.156	8.893	50.535
9300	3.601	1.161	8.888	51.029
9420	3.609	1.169	8.88	51.687
9510	3.617	1.177	8.872	52.181
9600	3.627	1.187	8.862	52.675
9720	3.629	1.189	8.86	53.333
9810	3.622	1.182	8.867	53.827
9900	3.653	1.213	8.836	54.321
10020	3.678	1.238	8.811	54.979
10500	3.622	1.182	8.867	57.613
11010	3.624	1.184	8.865	60.412
11519	3.623	1.183	8.866	63.204
12029	3.645	1.205	8.844	66.003
12509	3.68	1.24	8.809	68.636
13019	3.665	1.225	8.824	71.435
13529	3.665	1.225	8.824	74.233
14009	3.683	1.243	8.806	76.867
14519	3.724	1.284	8.765	79.665
15029	3.718	1.278	8.771	82.464
15509	3.725	1.285	8.764	85.097
16019	3.754	1.314	8.735	87.896
16529	3.753	1.313	8.736	90.694
17009	3.755	1.315	8.734	93.328
17519	3.742	1.302	8.747	96.126
18029	3.739	1.299	8.75	98.925
18509	3.747	1.307	8.742	101.558
19019	3.777	1.337	8.712	104.357
19529	3.785	1.345	8.704	107.155
20009	3.783	1.343	8.706	109.789
20519	3.788	1.348	8.701	112.587
21029	3.799	1.359	8.69	115.385
21509	3.631	1.191	8.858	118.019
21510	3.52	1.08	8.969	118.025
21511	3.465	1.025	9.024	118.03
21512	3.433	0.993	9.056	118.036
21513	3.413	0.973	9.076	118.041
21514	3.402	0.962	9.087	118.047
21515	3.396	0.956	9.093	118.052
21516	3.382	0.942	9.107	118.058
21517	3.373	0.933	9.116	118.063
21518	3.365	0.925	9.124	118.069
21519	3.359	0.919	9.13	118.074
21520	3.353	0.913	9.136	118.08
21521	3.352	0.912	9.137	118.085
21522	3.344	0.904	9.145	118.091
21523	3.34	0.9	9.149	118.096
21524	3.335	0.895	9.154	118.102
21525	3.329	0.889	9.16	118.107
21526	3.323	0.883	9.166	118.112
21527	3.319	0.879	9.17	118.118

21528	3.311	0.871	9.178	118.123
21529	3.309	0.869	9.18	118.129
21530	3.311	0.871	9.178	118.134
21531	3.31	0.87	9.179	118.14
21532	3.308	0.868	9.181	118.145
21533	3.305	0.865	9.184	118.151
21534	3.301	0.861	9.188	118.156
21535	3.294	0.854	9.195	118.162
21536	3.296	0.856	9.193	118.167
21537	3.291	0.851	9.198	118.173
21538	3.289	0.849	9.2	118.178
21539	3.284	0.844	9.205	118.184
21540	3.278	0.838	9.211	118.189
21541	3.275	0.835	9.214	118.195
21542	3.274	0.834	9.215	118.2
21543	3.27	0.83	9.219	118.206
21544	3.27	0.83	9.219	118.211
21545	3.269	0.829	9.22	118.217
21546	3.268	0.828	9.221	118.222
21547	3.261	0.821	9.228	118.228
21548	3.261	0.821	9.228	118.233
21549	3.257	0.817	9.232	118.239
21550	3.258	0.818	9.231	118.244
21551	3.252	0.812	9.237	118.25
21552	3.251	0.811	9.238	118.255
21553	3.252	0.812	9.237	118.261
21554	3.247	0.807	9.242	118.266
21555	3.239	0.799	9.25	118.272
21556	3.241	0.801	9.248	118.277
21557	3.238	0.798	9.251	118.283
21558	3.235	0.795	9.254	118.288
21559	3.229	0.789	9.26	118.294
21561	3.223	0.783	9.266	118.305
21563	3.22	0.78	9.269	118.316
21565	3.215	0.775	9.274	118.326
21567	3.223	0.783	9.266	118.337
21569	3.219	0.779	9.27	118.348
21571	3.215	0.775	9.274	118.359
21573	3.214	0.774	9.275	118.37
21575	3.213	0.773	9.276	118.381
21577	3.207	0.767	9.282	118.392
21579	3.202	0.762	9.287	118.403
21581	3.201	0.761	9.288	118.414
21583	3.194	0.754	9.295	118.425
21585	3.193	0.753	9.296	118.436
21587	3.174	0.734	9.315	118.447
21589	3.173	0.733	9.316	118.458
21591	3.181	0.741	9.308	118.469
21593	3.183	0.743	9.306	118.48
21595	3.183	0.743	9.306	118.491
21597	3.171	0.731	9.318	118.502
21599	3.163	0.723	9.326	118.513
21601	3.158	0.718	9.331	118.524
21603	3.166	0.726	9.323	118.535
21605	3.164	0.724	9.325	118.546
21607	3.163	0.723	9.326	118.557

21609	3.15	0.71	9.339	118.568
21619	3.154	0.714	9.335	118.623
21629	3.128	0.688	9.361	118.678
21639	3.119	0.679	9.37	118.733
21649	3.115	0.675	9.374	118.787
21659	3.104	0.664	9.385	118.842
21669	3.096	0.656	9.393	118.897
21679	3.087	0.647	9.402	118.952
21689	3.079	0.639	9.41	119.007
21699	3.078	0.638	9.411	119.062
21709	3.071	0.631	9.418	119.117
21719	3.064	0.624	9.425	119.171
21729	3.06	0.62	9.429	119.226
21739	3.06	0.62	9.429	119.281
21749	3.048	0.608	9.441	119.336
21759	3.052	0.612	9.437	119.391
21769	3.047	0.607	9.442	119.446
21779	3.037	0.597	9.452	119.501
21789	3.04	0.6	9.449	119.556
21799	3.036	0.596	9.453	119.61
21809	3.026	0.586	9.463	119.665
21819	3.015	0.575	9.474	119.72
21829	3.02	0.58	9.469	119.775
21839	3.006	0.566	9.483	119.83
21849	3.007	0.567	9.482	119.885
21859	3.01	0.57	9.479	119.94
21869	3.01	0.57	9.479	119.995
21879	3	0.56	9.489	120.049
21889	2.997	0.557	9.492	120.104
21899	2.984	0.544	9.505	120.159
21909	2.98	0.54	9.509	120.214
21919	2.979	0.539	9.51	120.269
21929	2.979	0.539	9.51	120.324
21939	2.987	0.547	9.502	120.379
21949	2.988	0.548	9.501	120.433
21959	2.978	0.538	9.511	120.488
21969	2.974	0.534	9.515	120.543
21979	2.961	0.521	9.528	120.598
21989	2.955	0.515	9.534	120.653
21999	2.948	0.508	9.541	120.708
22000	2.948	0.508	9.541	120.713
22009	2.948	0.508	9.541	120.763
22019	2.944	0.504	9.545	120.818
22029	2.943	0.503	9.546	120.872
22039	2.94	0.5	9.549	120.927
22049	2.933	0.493	9.556	120.982
22059	2.937	0.497	9.552	121.037
22069	2.932	0.492	9.557	121.092
22079	2.929	0.489	9.56	121.147
22089	2.927	0.487	9.562	121.202
22099	2.927	0.487	9.562	121.257
22109	2.92	0.48	9.569	121.311
22119	2.922	0.482	9.567	121.366
22129	2.921	0.481	9.568	121.421
22139	2.915	0.475	9.574	121.476
22149	2.907	0.467	9.582	121.531

22159	2.912	0.472	9.577	121.586
22169	2.909	0.469	9.58	121.641
22179	2.908	0.468	9.581	121.695
22189	2.905	0.465	9.584	121.75
22199	2.903	0.463	9.586	121.805
22209	2.901	0.461	9.588	121.86
22219	2.905	0.465	9.584	121.915
22258	2.887	0.447	9.602	122.129
22288	2.88	0.44	9.609	122.294
22318	2.873	0.433	9.616	122.458
22348	2.858	0.418	9.631	122.623
22378	2.848	0.408	9.641	122.787
22408	2.845	0.405	9.644	122.952
22438	2.832	0.392	9.657	123.117
22468	2.826	0.386	9.663	123.281
22498	2.825	0.385	9.664	123.446
22528	2.824	0.384	9.665	123.61
22618	2.797	0.357	9.692	124.104
22738	2.776	0.336	9.713	124.763
22828	2.795	0.355	9.694	125.257
22918	2.826	0.386	9.663	125.75
23008	2.776	0.336	9.713	126.244
23038	2.786	0.346	9.703	126.409
23128	2.791	0.351	9.698	126.903
23218	2.783	0.343	9.706	127.396
23338	2.775	0.335	9.714	128.055
23428	2.755	0.315	9.734	128.549
23518	2.755	0.315	9.734	129.043
23638	2.747	0.307	9.742	129.701
23728	2.738	0.298	9.751	130.195
23818	2.736	0.296	9.753	130.689
23938	2.728	0.288	9.761	131.347
24028	2.718	0.278	9.771	131.841
24118	2.714	0.274	9.775	132.335
24237	2.735	0.295	9.754	132.988
24327	2.719	0.279	9.77	133.481
24417	2.725	0.285	9.764	133.975
24507	2.713	0.273	9.776	134.469
24537	2.697	0.257	9.792	134.634
24627	2.697	0.257	9.792	135.128
24717	2.694	0.254	9.795	135.621
24837	2.684	0.244	9.805	136.28

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	2.33	0.082	9.638	0.002
2	2.40	0.146	9.574	0.003
3	2.44	0.188	9.532	0.005
4	2.47	0.215	9.505	0.006
5	2.49	0.235	9.485	0.008
6	2.50	0.250	9.470	0.010
7	2.51	0.262	9.458	0.011
8	2.52	0.271	9.449	0.013
9	2.53	0.279	9.441	0.014
10	2.54	0.287	9.433	0.016
11	2.54	0.294	9.426	0.018
12	2.55	0.300	9.420	0.019
13	2.56	0.307	9.413	0.021
14	2.56	0.312	9.408	0.022
15	2.57	0.316	9.404	0.024
16	2.57	0.321	9.399	0.026
17	2.58	0.326	9.394	0.027
18	2.58	0.330	9.390	0.029
19	2.58	0.334	9.386	0.030
20	2.59	0.338	9.382	0.032
21	2.59	0.342	9.378	0.034
22	2.60	0.345	9.375	0.035
23	2.60	0.349	9.371	0.037
24	2.60	0.349	9.371	0.038
25	2.61	0.356	9.364	0.040
26	2.61	0.359	9.361	0.042
27	2.61	0.361	9.359	0.043
28	2.61	0.362	9.358	0.045
29	2.62	0.368	9.352	0.046
30	2.62	0.370	9.350	0.048
31	2.62	0.371	9.349	0.050
32	2.62	0.373	9.347	0.051
33	2.63	0.376	9.344	0.053
34	2.63	0.377	9.343	0.054
35	2.63	0.381	9.339	0.056
36	2.64	0.386	9.334	0.058
37	2.63	0.384	9.336	0.059
38	2.64	0.388	9.332	0.061
39	2.64	0.391	9.329	0.062
40	2.64	0.393	9.327	0.064
41	2.65	0.395	9.325	0.066
42	2.65	0.396	9.324	0.067
43	2.65	0.400	9.320	0.069
44	2.65	0.401	9.319	0.070
45	2.65	0.404	9.316	0.072
46	2.66	0.405	9.315	0.074
47	2.66	0.407	9.313	0.075
48	2.66	0.410	9.310	0.077
49	2.66	0.412	9.308	0.078
50	2.66	0.413	9.307	0.080
52	2.67	0.415	9.305	0.083
54	2.67	0.422	9.298	0.086
56	2.67	0.422	9.298	0.090
58	2.68	0.427	9.293	0.093

60	2.68	0.430	9.290	0.096
62	2.68	0.433	9.287	0.099
64	2.69	0.436	9.284	0.102
66	2.69	0.440	9.280	0.106
68	2.69	0.444	9.276	0.109
70	2.70	0.448	9.272	0.112
72	2.70	0.451	9.269	0.115
74	2.70	0.452	9.268	0.118
76	2.71	0.458	9.262	0.122
78	2.71	0.459	9.261	0.125
80	2.71	0.460	9.260	0.128
82	2.71	0.464	9.256	0.131
84	2.72	0.466	9.254	0.134
86	2.72	0.469	9.251	0.138
88	2.72	0.472	9.248	0.141
90	2.72	0.474	9.246	0.144
92	2.73	0.477	9.243	0.147
94	2.73	0.479	9.241	0.150
96	2.73	0.483	9.237	0.154
98	2.74	0.485	9.235	0.157
100	2.74	0.485	9.235	0.160
110	2.75	0.502	9.218	0.176
120	2.76	0.507	9.213	0.192
130	2.77	0.519	9.201	0.208
140	2.78	0.526	9.194	0.224
150	2.79	0.535	9.185	0.240
160	2.79	0.544	9.176	0.256
170	2.80	0.550	9.170	0.272
180	2.81	0.558	9.162	0.288
190	2.82	0.566	9.154	0.304
200	2.82	0.569	9.151	0.320
210	2.83	0.576	9.144	0.336
220	2.83	0.583	9.137	0.352
230	2.84	0.588	9.132	0.368
240	2.84	0.592	9.128	0.384
250	2.85	0.598	9.122	0.400
260	2.85	0.602	9.118	0.416
270	2.86	0.606	9.114	0.432
280	2.86	0.609	9.111	0.448
290	2.86	0.613	9.107	0.464
300	2.87	0.619	9.101	0.480
310	2.87	0.622	9.098	0.496
320	2.88	0.626	9.094	0.512
330	2.88	0.628	9.092	0.528
340	2.88	0.634	9.086	0.544
350	2.89	0.638	9.082	0.560
360	2.89	0.640	9.080	0.576
370	2.90	0.646	9.074	0.592
380	2.90	0.648	9.072	0.608
390	2.90	0.651	9.069	0.624
400	2.90	0.654	9.066	0.640
410	2.91	0.657	9.063	0.656
420	2.91	0.659	9.061	0.672
430	2.91	0.664	9.056	0.688
440	2.91	0.664	9.056	0.704
450	2.92	0.667	9.053	0.720

460	2.92	0.670	9.050	0.736
470	2.92	0.674	9.046	0.752
480	2.93	0.675	9.045	0.768
490	2.93	0.679	9.041	0.784
500	2.93	0.681	9.039	0.800
510	2.93	0.682	9.038	0.816
520	2.94	0.686	9.034	0.832
530	2.94	0.690	9.030	0.848
540	2.94	0.693	9.027	0.864
550	2.94	0.694	9.026	0.880
560	2.94	0.694	9.026	0.896
570	2.95	0.697	9.023	0.912
580	2.95	0.699	9.021	0.928
590	2.95	0.701	9.019	0.944
600	2.96	0.705	9.015	0.960
610	2.96	0.705	9.015	0.976
620	2.96	0.709	9.011	0.992
630	2.96	0.709	9.011	1.008
640	2.96	0.710	9.010	1.024
650	2.96	0.712	9.008	1.040
660	2.97	0.715	9.005	1.056
670	2.97	0.717	9.003	1.072
680	2.97	0.718	9.002	1.088
690	2.97	0.720	9.000	1.104
700	2.97	0.723	8.997	1.120
710	2.98	0.725	8.995	1.136
720	2.97	0.723	8.997	1.152
750	2.98	0.731	8.989	1.200
780	2.99	0.735	8.985	1.248
810	2.99	0.739	8.981	1.296
840	3.00	0.746	8.974	1.344
870	3.00	0.750	8.970	1.392
900	3.00	0.753	8.967	1.440
930	3.01	0.758	8.962	1.488
960	3.01	0.759	8.961	1.536
990	3.02	0.767	8.953	1.584
1020	3.02	0.770	8.950	1.632
1110	3.03	0.782	8.938	1.776
1200	3.04	0.793	8.927	1.920
1320	3.06	0.808	8.912	2.112
1410	3.07	0.818	8.902	2.256
1500	3.08	0.826	8.894	2.400
1620	3.09	0.837	8.883	2.592
1710	3.09	0.844	8.876	2.736
1800	3.10	0.852	8.868	2.880
1920	3.11	0.858	8.862	3.072
2010	3.12	0.865	8.855	3.216
2100	3.12	0.871	8.849	3.360
2220	3.13	0.877	8.843	3.552
2310	3.14	0.885	8.835	3.696
2400	3.14	0.893	8.827	3.840
2520	3.15	0.896	8.824	4.032
2610	3.15	0.903	8.817	4.176
2700	3.16	0.910	8.810	4.320
2820	3.17	0.919	8.801	4.512
2910	3.17	0.924	8.796	4.656

3000	3.18	0.931	8.789	4.800
3120	3.18	0.933	8.787	4.992
3210	3.19	0.938	8.782	5.136
3300	3.19	0.942	8.778	5.280
3420	3.20	0.948	8.772	5.472
3510	3.20	0.951	8.769	5.616
3600	3.21	0.956	8.764	5.760
3720	3.21	0.961	8.759	5.952
3810	3.20	0.950	8.770	6.096
3900	3.22	0.966	8.754	6.240
4020	3.21	0.958	8.762	6.432
4110	3.22	0.969	8.751	6.576
4200	3.21	0.963	8.757	6.720
4320	3.23	0.980	8.740	6.912
4410	3.23	0.979	8.741	7.056
4500	3.22	0.970	8.750	7.200
4620	3.22	0.971	8.749	7.392
4710	3.22	0.967	8.753	7.536
4800	3.17	0.923	8.797	7.680
4920	3.18	0.929	8.791	7.872
5010	3.17	0.924	8.796	8.016
5100	3.18	0.928	8.792	8.160
5220	3.17	0.924	8.796	8.352
5310	3.18	0.925	8.795	8.496
5400	3.18	0.928	8.792	8.640
5520	3.17	0.924	8.796	8.832
5610	3.23	0.976	8.744	8.976
5700	3.24	0.993	8.727	9.120
5820	3.24	0.988	8.732	9.312
5910	3.26	1.006	8.714	9.456
6000	3.24	0.989	8.731	9.600
6120	3.22	0.973	8.747	9.792
6210	3.22	0.972	8.748	9.936
6300	3.23	0.982	8.738	10.080
6420	3.23	0.976	8.744	10.272
6510	3.22	0.974	8.746	10.416
6600	3.24	0.992	8.728	10.560
6720	3.26	1.008	8.712	10.752
6810	3.23	0.984	8.736	10.896
6900	3.24	0.989	8.731	11.040
7020	3.26	1.014	8.706	11.232
7110	3.27	1.022	8.698	11.376
7200	3.27	1.018	8.702	11.520
7320	3.30	1.053	8.667	11.712
7410	3.30	1.049	8.671	11.856
7500	3.29	1.040	8.680	12.000
7620	3.24	0.992	8.728	12.192
7710	3.25	0.998	8.722	12.336
7800	3.25	1.000	8.720	12.480
7920	3.26	1.009	8.711	12.672
8010	3.26	1.012	8.708	12.816
8100	3.27	1.019	8.701	12.960
8220	3.30	1.050	8.670	13.152
8310	3.27	1.018	8.702	13.296
8400	3.28	1.031	8.689	13.440
8520	3.31	1.062	8.658	13.632

8610	3.31	1.059	8.661	13.776
8700	3.32	1.065	8.655	13.920
8820	3.32	1.065	8.655	14.112
8910	3.30	1.052	8.668	14.256
9000	3.29	1.036	8.684	14.400
9120	3.28	1.026	8.694	14.592
9210	3.28	1.026	8.694	14.736
9300	3.28	1.033	8.687	14.880
9420	3.29	1.036	8.684	15.072
9510	3.29	1.038	8.682	15.216
9600	3.29	1.041	8.679	15.360
9720	3.30	1.045	8.675	15.552
9810	3.29	1.044	8.676	15.696
9900	3.32	1.069	8.651	15.840
10020	3.35	1.096	8.624	16.032
10500	3.31	1.064	8.656	16.800
11010	3.31	1.063	8.657	17.616
11519	3.33	1.079	8.641	18.430
12029	3.33	1.082	8.638	19.246
12509	3.35	1.098	8.622	20.014
13019	3.33	1.083	8.637	20.830
13529	3.35	1.100	8.620	21.646
14009	3.36	1.111	8.609	22.414
14519	3.38	1.127	8.593	23.230
15029	3.37	1.123	8.597	24.046
15509	3.38	1.125	8.595	24.814
16019	3.39	1.144	8.576	25.630
16529	3.40	1.147	8.573	26.446
17009	3.41	1.157	8.563	27.214
17519	3.40	1.150	8.570	28.030
18029	3.41	1.156	8.564	28.846
18509	3.40	1.153	8.567	29.614
19019	3.41	1.163	8.557	30.430
19529	3.43	1.176	8.544	31.246
20009	3.46	1.205	8.515	32.014
20519	3.43	1.177	8.543	32.830
21029	3.44	1.186	8.534	33.646
21509	3.38	1.131	8.589	34.414
21510	3.30	1.053	8.667	34.416
21511	3.26	1.011	8.709	34.418
21512	3.24	0.985	8.735	34.419
21513	3.22	0.969	8.751	34.421
21514	3.21	0.959	8.761	34.422
21515	3.20	0.950	8.770	34.424
21516	3.19	0.941	8.779	34.426
21517	3.18	0.934	8.786	34.427
21518	3.18	0.929	8.791	34.429
21519	3.17	0.923	8.797	34.430
21520	3.17	0.917	8.803	34.432
21521	3.17	0.915	8.805	34.434
21522	3.16	0.910	8.810	34.435
21523	3.16	0.907	8.813	34.437
21524	3.15	0.902	8.818	34.438
21525	3.15	0.898	8.822	34.440
21526	3.14	0.894	8.826	34.442
21527	3.14	0.890	8.830	34.443

21528	3.13	0.884	8.836	34.445
21529	3.13	0.881	8.839	34.446
21530	3.13	0.882	8.838	34.448
21531	3.13	0.880	8.840	34.450
21532	3.13	0.877	8.843	34.451
21533	3.13	0.875	8.845	34.453
21534	3.12	0.873	8.847	34.454
21535	3.12	0.869	8.851	34.456
21536	3.12	0.867	8.853	34.458
21537	3.11	0.864	8.856	34.459
21538	3.11	0.862	8.858	34.461
21539	3.11	0.860	8.860	34.462
21540	3.11	0.860	8.860	34.464
21541	3.10	0.854	8.866	34.466
21542	3.10	0.850	8.870	34.467
21543	3.10	0.849	8.871	34.469
21544	3.10	0.847	8.873	34.470
21545	3.09	0.843	8.877	34.472
21546	3.09	0.843	8.877	34.474
21547	3.09	0.843	8.877	34.475
21548	3.09	0.839	8.881	34.477
21549	3.09	0.836	8.884	34.478
21550	3.09	0.836	8.884	34.480
21551	3.08	0.829	8.891	34.482
21552	3.07	0.824	8.896	34.483
21553	3.07	0.821	8.899	34.485
21554	3.07	0.819	8.901	34.486
21555	3.07	0.815	8.905	34.488
21556	3.06	0.812	8.908	34.490
21557	3.06	0.812	8.908	34.491
21558	3.06	0.813	8.907	34.493
21559	3.06	0.810	8.910	34.494
21561	3.05	0.801	8.919	34.498
21563	3.05	0.799	8.921	34.501
21565	3.05	0.796	8.924	34.504
21567	3.05	0.801	8.919	34.507
21569	3.05	0.799	8.921	34.510
21571	3.05	0.797	8.923	34.514
21573	3.04	0.794	8.926	34.517
21575	3.04	0.791	8.929	34.520
21577	3.04	0.785	8.935	34.523
21579	3.03	0.779	8.941	34.526
21581	3.03	0.775	8.945	34.530
21583	3.02	0.768	8.952	34.533
21585	3.02	0.768	8.952	34.536
21587	3.01	0.757	8.963	34.539
21589	3.01	0.756	8.964	34.542
21591	3.01	0.757	8.963	34.546
21593	3.01	0.759	8.961	34.549
21595	3.01	0.757	8.963	34.552
21597	3.00	0.748	8.972	34.555
21599	3.00	0.745	8.975	34.558
21601	2.99	0.740	8.980	34.562
21603	2.99	0.744	8.976	34.565
21605	3.00	0.754	8.966	34.568
21607	3.00	0.748	8.972	34.571

21609	2.99	0.737	8.983	34.574
21619	2.99	0.735	8.985	34.590
21629	2.97	0.719	9.001	34.606
21639	2.94	0.694	9.026	34.622
21649	2.94	0.689	9.031	34.638
21659	2.93	0.677	9.043	34.654
21669	2.92	0.669	9.051	34.670
21679	2.91	0.659	9.061	34.686
21689	2.90	0.654	9.066	34.702
21699	2.90	0.652	9.068	34.718
21709	2.89	0.641	9.079	34.734
21719	2.89	0.637	9.083	34.750
21729	2.88	0.633	9.087	34.766
21739	2.89	0.638	9.082	34.782
21749	2.88	0.634	9.086	34.798
21759	2.88	0.627	9.093	34.814
21769	2.87	0.622	9.098	34.830
21779	2.87	0.619	9.101	34.846
21789	2.86	0.612	9.108	34.862
21799	2.86	0.609	9.111	34.878
21809	2.85	0.603	9.117	34.894
21819	2.85	0.601	9.119	34.910
21829	2.85	0.597	9.123	34.926
21839	2.84	0.592	9.128	34.942
21849	2.84	0.586	9.134	34.958
21859	2.83	0.581	9.139	34.974
21869	2.83	0.580	9.140	34.990
21879	2.83	0.577	9.143	35.006
21889	2.82	0.573	9.147	35.022
21899	2.82	0.570	9.150	35.038
21909	2.82	0.565	9.155	35.054
21919	2.81	0.562	9.158	35.070
21929	2.81	0.559	9.161	35.086
21939	2.81	0.556	9.164	35.102
21949	2.80	0.554	9.166	35.118
21959	2.80	0.551	9.169	35.134
21969	2.80	0.549	9.171	35.150
21979	2.80	0.545	9.175	35.166
21989	2.79	0.542	9.178	35.182
21999	2.79	0.538	9.182	35.198
22000	2.79	0.537	9.183	35.200
22009	2.79	0.536	9.184	35.214
22019	2.78	0.534	9.186	35.230
22029	2.78	0.531	9.189	35.246
22039	2.78	0.528	9.192	35.262
22049	2.78	0.526	9.194	35.278
22059	2.77	0.524	9.196	35.294
22069	2.77	0.519	9.201	35.310
22079	2.77	0.518	9.202	35.326
22089	2.77	0.515	9.205	35.342
22099	2.76	0.513	9.207	35.358
22109	2.76	0.510	9.210	35.374
22119	2.76	0.509	9.211	35.390
22129	2.76	0.506	9.214	35.406
22139	2.75	0.502	9.218	35.422
22149	2.75	0.502	9.218	35.438

22159	2.75	0.499	9.221	35.454
22169	2.75	0.500	9.220	35.470
22179	2.75	0.498	9.222	35.486
22189	2.75	0.495	9.225	35.502
22199	2.74	0.494	9.226	35.518
22209	2.74	0.492	9.228	35.534
22219	2.75	0.496	9.224	35.550
22258	2.73	0.477	9.243	35.613
22288	2.72	0.467	9.253	35.661
22318	2.71	0.458	9.262	35.709
22348	2.70	0.446	9.274	35.757
22378	2.69	0.442	9.278	35.805
22408	2.69	0.437	9.283	35.853
22438	2.68	0.430	9.290	35.901
22468	2.68	0.429	9.291	35.949
22498	2.68	0.425	9.295	35.997
22528	2.67	0.422	9.298	36.045
22618	2.65	0.402	9.318	36.189
22738	2.63	0.383	9.337	36.381
22828	2.65	0.396	9.324	36.525
22918	2.64	0.387	9.333	36.669
23008	2.61	0.363	9.357	36.813
23038	2.62	0.367	9.353	36.861
23128	2.62	0.374	9.346	37.005
23218	2.61	0.363	9.357	37.149
23338	2.60	0.353	9.367	37.341
23428	2.60	0.347	9.373	37.485
23518	2.59	0.341	9.379	37.629
23638	2.59	0.335	9.385	37.821
23728	2.58	0.330	9.390	37.965
23818	2.57	0.323	9.397	38.109
23938	2.56	0.314	9.406	38.301
24028	2.56	0.311	9.409	38.445
24118	2.56	0.308	9.412	38.589
24237	2.55	0.304	9.416	38.779
24327	2.55	0.298	9.422	38.923
24417	2.55	0.296	9.424	39.067
24507	2.54	0.287	9.433	39.211
24537	2.54	0.287	9.433	39.259
24627	2.54	0.285	9.435	39.403
24717	2.53	0.281	9.439	39.547
24837	2.52	0.273	9.447	39.739

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
11	2.200	0.080	9.620	0.004
21	2.235	0.115	9.585	0.008
31	2.260	0.140	9.560	0.012
41	2.275	0.155	9.545	0.016
51	2.290	0.170	9.530	0.020
61	2.305	0.185	9.515	0.024
71	2.315	0.195	9.505	0.028
81	2.330	0.210	9.490	0.032
91	2.340	0.220	9.480	0.036
101	2.350	0.230	9.470	0.040
121	2.365	0.245	9.455	0.048
141	2.380	0.260	9.440	0.056
161	2.400	0.280	9.420	0.064
181	2.410	0.290	9.410	0.072
201	2.420	0.300	9.400	0.080
251	2.445	0.325	9.375	0.100
301	2.460	0.340	9.360	0.120
351	2.480	0.360	9.340	0.140
401	2.500	0.380	9.320	0.160
451	2.510	0.390	9.310	0.180
1300	2.640	0.520	9.180	0.520
2734	2.745	0.625	9.075	1.094
7555	2.865	0.745	8.955	3.022
8580	2.885	0.765	8.935	3.432
10479	2.905	0.785	8.915	4.192
11740	2.920	0.800	8.900	4.696
12843	2.935	0.815	8.885	5.137
18571	2.995	0.875	8.825	7.428
21504	3.030	0.910	8.790	8.602

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
15	2.550	0.030	9.718	0.002
32	2.525	0.005	9.743	0.003
47	2.590	0.070	9.678	0.005
62	2.600	0.080	9.668	0.006
82	2.620	0.100	9.648	0.008
102	2.635	0.115	9.633	0.010
122	2.645	0.125	9.623	0.012
142	2.655	0.135	9.613	0.014
162	2.665	0.145	9.603	0.016
182	2.680	0.160	9.588	0.018
202	2.685	0.165	9.583	0.020
252	2.705	0.185	9.563	0.025
302	2.720	0.200	9.548	0.030
352	2.735	0.215	9.533	0.035
402	2.750	0.230	9.518	0.040
452	2.760	0.240	9.508	0.045
1302	2.875	0.355	9.393	0.130
2735	2.970	0.450	9.298	0.273
7557	3.085	0.565	9.183	0.756
8582	3.095	0.575	9.173	0.858
10481	3.120	0.600	9.148	1.048
11742	3.135	0.615	9.133	1.174
12845	3.155	0.635	9.113	1.285
18573	3.215	0.695	9.053	1.857
21506	3.240	0.720	9.028	2.151

LFP18 HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		08/08/2004
Start time		8:00AM
Stop date		20/08/2004
Stop time		10:53 AM
Duration (minutes)		17454

Step	Duration (minutes)	Q (L/s)
1	17455	5.50
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP18	Monoman	458953	6187787	12.023	11.768		0.00	0.00	5.00	5.00	2.34	9.69
Obs	LFO39	Monoman	458963	6187790	12.147	11.726		7.50	1.50	5.00	NA	2.65	9.50
Obs	LFO40	Monoman	458978	6187786	12.206	11.689		25.00	5.00	5.00	NA	2.61	9.60
Obs	LFO41	Monoman	459003	6187783	12.291	11.819		50.00	10.00	5.00	NA	2.70	9.59
Obs	LFO42	Monoman	459052	6187774	12.212	12.023		100.00	20.00	5.00	NA	2.83	9.38

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP18	4.00	9.00	5.00	7.77	2.77
Obs	LFO39	5.00	9.00	4.00	6.73	2.73
Obs	LFO40	5.00	8.50	3.50	6.69	3.19
Obs	LFO41	6.00	8.50	2.50	5.82	3.32
Obs	LFO42	7.00	8.50	1.50	5.02	3.52

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP18	WS	6.50	10.50	2.50	175	1.00	1.2	8:16	175
Obs	LFO39	SC	5.00	9.00	4.00	80	NA	NA	NA	80
Obs	LFO40	SC	5.00	8.00	3.00	80	NA	NA	NA	80
Obs	LFO41	SC	6.00	8.00	2.00	80	NA	NA	NA	80
Obs	LFO42	SC	7.00	8.00	1.00	80	NA	NA	NA	80

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	3.513	1.178	8.510	1.000	5.50	4.67	
2	3.786	1.451	8.237	2.000	5.50	3.79	
3	3.921	1.586	8.102	3.000	5.50	3.47	
4	4.054	1.719	7.969	4.000	5.50	3.20	
5	4.198	1.863	7.825	5.000	5.50	2.95	
6	4.163	1.828	7.860	6.000	5.50	3.01	
7	4.300	1.965	7.723	7.000	5.50	2.80	
8	4.269	1.934	7.754	8.000	5.50	2.84	
9	4.436	2.101	7.587	9.000	5.50	2.62	
10	4.361	2.026	7.662	10.000	5.50	2.71	16238
11	4.387	2.052	7.636	11.000	5.50	2.68	
12	4.570	2.235	7.453	12.000	5.50	2.46	
13	4.580	2.245	7.443	13.000	5.50	2.45	
14	4.534	2.199	7.489	14.000	5.50	2.50	
15	4.656	2.321	7.367	15.000	5.50	2.37	
16	4.661	2.326	7.362	16.000	5.50	2.36	
17	4.663	2.328	7.360	17.000	5.50	2.36	
18	4.697	2.362	7.326	18.000	5.50	2.33	
19	4.714	2.379	7.309	19.000	5.50	2.31	
20	4.759	2.424	7.264	20.000	5.50	2.27	
21	4.723	2.388	7.300	21.000	5.50	2.30	
22	4.720	2.385	7.303	22.000	5.50	2.31	
23	4.679	2.344	7.344	23.000	5.50	2.35	
24	4.678	2.343	7.345	24.000	5.50	2.35	
25	4.756	2.421	7.267	25.000	5.50	2.27	
26	4.731	2.396	7.292	26.000	5.50	2.30	
27	4.763	2.428	7.260	27.000	5.50	2.27	
28	4.759	2.424	7.264	28.000	5.50	2.27	
29	4.789	2.454	7.234	29.000	5.50	2.24	
30	4.824	2.489	7.199	30.000	5.50	2.21	
31	4.842	2.507	7.181	31.000	5.50	2.19	
32	4.941	2.606	7.082	32.000	5.50	2.11	
33	4.871	2.536	7.152	33.000	5.50	2.17	
34	4.884	2.549	7.139	34.000	5.50	2.16	
35	4.835	2.5	7.188	35.000	5.50	2.20	
36	4.870	2.535	7.153	36.000	5.50	2.17	
37	4.871	2.536	7.152	37.000	5.50	2.17	
38	4.861	2.526	7.162	38.000	5.50	2.18	
39	4.868	2.533	7.155	39.000	5.50	2.17	
40	4.907	2.572	7.116	40.000	5.50	2.14	
41	4.924	2.589	7.099	41.000	5.50	2.12	
42	4.990	2.655	7.033	42.000	5.50	2.07	
43	4.842	2.507	7.181	43.000	5.50	2.19	
44	4.986	2.651	7.037	44.000	5.50	2.07	
45	4.879	2.544	7.144	45.000	5.50	2.16	
46	4.930	2.595	7.093	46.000	5.50	2.12	
47	4.840	2.505	7.183	47.000	5.50	2.20	
48	4.972	2.637	7.051	48.000	5.50	2.09	
49	4.867	2.532	7.156	49.000	5.50	2.17	
50	4.858	2.523	7.165	50.000	5.50	2.18	
52	4.984	2.649	7.039	52.000	5.50	2.08	
54	4.850	2.515	7.173	54.000	5.50	2.19	
56	4.934	2.599	7.089	56.000	5.50	2.12	

Note that water sample collection times are approximate only

58	4.792	2.457	7.231	58.000	5.50	2.24
60	4.835	2.5	7.188	60.000	5.50	2.20
62	4.942	2.607	7.081	62.000	5.50	2.11
64	4.896	2.561	7.127	64.000	5.50	2.15
66	5.024	2.689	6.999	66.000	5.50	2.05
68	4.984	2.649	7.039	68.000	5.50	2.08
70	5.029	2.694	6.994	70.000	5.50	2.04
72	5.079	2.744	6.944	72.000	5.50	2.00
74	5.077	2.742	6.946	74.000	5.50	2.01
76	4.981	2.646	7.042	76.000	5.50	2.08
78	4.961	2.626	7.062	78.000	5.50	2.09
80	4.909	2.574	7.114	80.000	5.50	2.14
82	4.977	2.642	7.046	82.000	5.50	2.08
84	4.947	2.612	7.076	84.000	5.50	2.11
86	4.979	2.644	7.044	86.000	5.50	2.08
88	5.044	2.709	6.979	88.000	5.50	2.03
90	5.036	2.701	6.987	90.000	5.50	2.04
92	4.980	2.645	7.043	92.000	5.50	2.08
94	4.917	2.582	7.106	94.000	5.50	2.13
96	4.947	2.612	7.076	96.000	5.50	2.11
98	5.093	2.758	6.930	98.000	5.50	1.99
100	5.139	2.804	6.884	100.000	5.50	1.96
110	5.079	2.744	6.944	110.000	5.50	2.00
120	5.081	2.746	6.942	120.000	5.50	2.00
130	5.030	2.695	6.993	130.000	5.50	2.04
140	5.006	2.671	7.017	140.000	5.50	2.06
150	5.167	2.832	6.856	150.000	5.50	1.94
160	5.135	2.8	6.888	160.000	5.50	1.96
170	5.239	2.904	6.784	170.000	5.50	1.89
180	5.246	2.911	6.777	180.000	5.50	1.89
190	5.202	2.867	6.821	190.000	5.50	1.92
200	5.236	2.901	6.787	200.000	5.50	1.90
210	5.148	2.813	6.875	210.000	5.50	1.96
220	5.198	2.863	6.825	220.000	5.50	1.92
230	5.197	2.862	6.826	230.000	5.50	1.92
240	5.151	2.816	6.872	240.000	5.50	1.95
250	5.277	2.942	6.746	250.000	5.50	1.87
260	5.190	2.855	6.833	260.000	5.50	1.93
270	5.224	2.889	6.799	270.000	5.50	1.90
280	5.184	2.849	6.839	280.000	5.50	1.93
290	5.263	2.928	6.760	290.000	5.50	1.88
300	5.223	2.888	6.800	300.000	5.50	1.90
310	5.397	3.062	6.626	310.000	5.50	1.80
320	5.105	2.77	6.918	320.000	5.50	1.99
330	5.258	2.923	6.765	330.000	5.50	1.88
340	5.298	2.963	6.725	340.000	5.50	1.86
350	5.209	2.874	6.814	350.000	5.50	1.91
360	5.250	2.915	6.773	360.000	5.50	1.89
370	5.262	2.927	6.761	370.000	5.50	1.88
380	5.244	2.909	6.779	380.000	5.50	1.89
390	5.113	2.778	6.910	390.000	5.50	1.98
400	5.317	2.982	6.706	400.000	5.50	1.84
410	5.306	2.971	6.717	410.000	5.50	1.85
420	5.229	2.894	6.794	420.000	5.50	1.90
430	5.328	2.993	6.695	430.000	5.50	1.84
440	5.220	2.885	6.803	440.000	5.50	1.91

450	5.246	2.911	6.777	450.000	5.50	1.89	
460	5.244	2.909	6.779	460.000	5.50	1.89	
470	5.215	2.88	6.808	470.000	5.50	1.91	
480	5.281	2.946	6.742	480.000	5.50	1.87	
490	5.286	2.951	6.737	490.000	5.50	1.86	
500	5.375	3.04	6.648	500.000	5.50	1.81	
510	5.281	2.946	6.742	510.000	5.50	1.87	
520	5.254	2.919	6.769	520.000	5.50	1.88	
530	5.414	3.079	6.609	530.000	5.50	1.79	
540	5.229	2.894	6.794	540.000	5.50	1.90	
550	5.240	2.905	6.783	550.000	5.50	1.89	
560	5.242	2.907	6.781	560.000	5.50	1.89	
570	5.309	2.974	6.714	570.000	5.50	1.85	
580	5.243	2.908	6.780	580.000	5.50	1.89	
590	5.241	2.906	6.782	590.000	5.50	1.89	
600	5.244	2.909	6.779	600.000	5.50	1.89	
610	5.367	3.032	6.656	610.000	5.50	1.81	
620	5.174	2.839	6.849	620.000	5.50	1.94	
630	5.305	2.97	6.718	630.000	5.50	1.85	
640	5.253	2.918	6.770	640.000	5.50	1.88	
650	5.294	2.959	6.729	650.000	5.50	1.86	
660	5.266	2.931	6.757	660.000	5.50	1.88	
670	5.099	2.764	6.924	670.000	5.50	1.99	
680	5.280	2.945	6.743	680.000	5.50	1.87	
690	5.337	3.002	6.686	690.000	5.50	1.83	
700	5.308	2.973	6.715	700.000	5.50	1.85	
710	5.364	3.029	6.659	710.000	5.50	1.82	
720	5.262	2.927	6.761	720.000	5.50	1.88	
750	5.239	2.904	6.784	750.000	5.50	1.89	
780	5.378	3.043	6.645	780.000	5.50	1.81	
810	5.376	3.041	6.647	810.000	5.50	1.81	
840	5.338	3.003	6.685	840.000	5.50	1.83	
870	5.312	2.977	6.711	870.000	5.50	1.85	
900	5.298	2.963	6.725	900.000	5.50	1.86	
930	5.259	2.924	6.764	930.000	5.50	1.88	
960	5.214	2.879	6.809	960.000	5.50	1.91	
990	5.340	3.005	6.683	990.000	5.50	1.83	
1020	5.357	3.022	6.666	1020.000	5.50	1.82	
1110	5.461	3.126	6.562	1110.000	5.50	1.76	
1200	5.289	2.954	6.734	1200.000	5.50	1.86	
1320	5.396	3.061	6.627	1320.000	5.50	1.80	
1410	5.262	2.927	6.761	1410.000	5.50	1.88	15848
1500	5.335	3	6.688	1500.000	5.50	1.83	
1620	5.443	3.108	6.580	1620.000	5.50	1.77	
1710	5.512	3.177	6.511	1710.000	5.50	1.73	
1800	5.547	3.212	6.476	1800.000	5.50	1.71	
1920	5.494	3.159	6.529	1920.000	5.50	1.74	
2010	5.698	3.363	6.325	2010.000	5.50	1.64	
2100	5.513	3.178	6.510	2100.000	5.50	1.73	
2220	5.524	3.189	6.499	2220.000	5.50	1.72	
2310	5.528	3.193	6.495	2310.000	5.50	1.72	
2400	5.579	3.244	6.444	2400.000	5.50	1.70	
2520	5.561	3.226	6.462	2520.000	5.50	1.70	
2610	5.467	3.132	6.556	2610.000	5.50	1.76	
2700	5.444	3.109	6.579	2700.000	5.50	1.77	
2820	5.496	3.161	6.527	2820.000	5.50	1.74	15578

2910	5.594	3.259	6.429	2910.000	5.50	1.69	
3000	5.533	3.198	6.490	3000.000	5.50	1.72	
3120	5.560	3.225	6.463	3120.000	5.50	1.71	
3210	5.547	3.212	6.476	3210.000	5.50	1.71	
3300	5.599	3.264	6.424	3300.000	5.50	1.69	
3420	5.529	3.194	6.494	3420.000	5.50	1.72	
3510	5.487	3.152	6.536	3510.000	5.50	1.74	
3600	5.480	3.145	6.543	3600.000	5.50	1.75	
3720	5.697	3.362	6.326	3720.000	5.50	1.64	
3810	5.551	3.216	6.472	3810.000	5.50	1.71	
3900	5.581	3.246	6.442	3900.000	5.50	1.69	
4020	5.583	3.248	6.440	4020.000	5.50	1.69	
4110	5.509	3.174	6.514	4110.000	5.50	1.73	
4200	5.505	3.17	6.518	4200.000	5.50	1.74	
4320	5.571	3.236	6.452	4320.000	5.50	1.70	15578
4410	5.639	3.304	6.384	4410.000	5.50	1.66	
4500	5.613	3.278	6.410	4500.000	5.50	1.68	
4620	5.613	3.278	6.410	4620.000	5.50	1.68	
4710	5.601	3.266	6.422	4710.000	5.50	1.68	
4800	5.644	3.309	6.379	4800.000	5.50	1.66	
4920	5.682	3.347	6.341	4920.000	5.50	1.64	
5010	5.654	3.319	6.369	5010.000	5.50	1.66	
5100	5.541	3.206	6.482	5100.000	5.50	1.72	
5220	5.711	3.376	6.312	5220.000	5.50	1.63	
5310	5.622	3.287	6.401	5310.000	5.50	1.67	
5400	5.680	3.345	6.343	5400.000	5.50	1.64	
5520	5.534	3.199	6.489	5520.000	5.50	1.72	
5610	5.636	3.301	6.387	5610.000	5.50	1.67	
5700	5.666	3.331	6.357	5700.000	5.50	1.65	16448
5820	5.664	3.329	6.359	5820.000	5.50	1.65	
5910	5.628	3.293	6.395	5910.000	5.50	1.67	
6000	5.597	3.262	6.426	6000.000	5.50	1.69	
6120	5.618	3.283	6.405	6120.000	5.50	1.68	
6210	5.656	3.321	6.367	6210.000	5.50	1.66	
6300	5.687	3.352	6.336	6300.000	5.50	1.64	
6420	5.534	3.199	6.489	6420.000	5.50	1.72	
6510	5.650	3.315	6.373	6510.000	5.50	1.66	
6600	5.658	3.323	6.365	6600.000	5.50	1.66	
6720	5.684	3.349	6.339	6720.000	5.50	1.64	
6810	5.729	3.394	6.294	6810.000	5.50	1.62	
6900	5.613	3.278	6.410	6900.000	5.50	1.68	
7020	5.657	3.322	6.366	7020.000	5.50	1.66	
7110	5.802	3.467	6.221	7110.000	5.50	1.59	
7200	5.791	3.456	6.232	7200.000	5.50	1.59	16117
7320	5.714	3.379	6.309	7320.000	5.50	1.63	
7410	5.815	3.48	6.208	7410.000	5.50	1.58	
7500	5.720	3.385	6.303	7500.000	5.50	1.62	
7620	5.619	3.284	6.404	7620.000	5.50	1.67	
7710	5.578	3.243	6.445	7710.000	5.50	1.70	
7800	5.569	3.234	6.454	7800.000	5.50	1.70	
7920	5.580	3.245	6.443	7920.000	5.50	1.69	
8010	5.651	3.316	6.372	8010.000	5.50	1.66	
8100	5.672	3.337	6.351	8100.000	5.50	1.65	
8220	5.642	3.307	6.381	8220.000	5.50	1.66	
8310	5.625	3.29	6.398	8310.000	5.50	1.67	
8400	5.630	3.295	6.393	8400.000	5.50	1.67	

8520	5.688	3.353	6.335	8520.000	5.50	1.64	
8610	5.629	3.294	6.394	8610.000	5.50	1.67	15189
8700	5.775	3.44	6.248	8700.000	5.50	1.60	
8820	5.670	3.335	6.353	8820.000	5.50	1.65	
8910	5.734	3.399	6.289	8910.000	5.50	1.62	
9000	5.608	3.273	6.415	9000.000	5.50	1.68	
9120	5.724	3.389	6.299	9120.000	5.50	1.62	
9210	5.756	3.421	6.267	9210.000	5.50	1.61	
9300	5.929	3.594	6.094	9300.000	5.50	1.53	
9420	5.904	3.569	6.119	9420.000	5.50	1.54	
9510	5.645	3.31	6.378	9510.000	5.50	1.66	
9600	5.720	3.385	6.303	9600.000	5.50	1.62	
9720	5.754	3.419	6.269	9720.000	5.50	1.61	
9810	5.829	3.494	6.194	9810.000	5.50	1.57	
9900	5.718	3.383	6.305	9900.000	5.50	1.63	
10020	5.764	3.429	6.259	10020.000	5.50	1.60	16448
10500	5.753	3.418	6.270	10500.000	5.50	1.61	
11010	5.741	3.406	6.282	11010.000	5.50	1.61	
11520	5.710	3.375	6.313	11520.000	5.50	1.63	
12000	5.737	3.402	6.286	12000.000	5.50	1.62	16359
12510	5.868	3.533	6.155	12510.000	5.50	1.56	
13019	5.732	3.397	6.291	13019.000	5.50	1.62	
13529	5.719	3.384	6.304	13529.000	5.50	1.63	
14009	5.786	3.451	6.237	14009.000	5.50	1.59	
14519	5.825	3.49	6.198	14519.000	5.50	1.58	
15029	5.758	3.423	6.265	15029.000	5.50	1.61	
15509	5.793	3.458	6.230	15509.000	5.50	1.59	
16019	5.803	3.468	6.220	16019.000	5.50	1.59	
16529	5.856	3.521	6.167	16529.000	5.50	1.56	
17009	5.829	3.494	6.194	17009.000	5.50	1.57	17113

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	2.820	0.170	9.327	0.018
2	2.955	0.305	9.192	0.036
3	3.051	0.401	9.096	0.053
4	3.124	0.474	9.023	0.071
5	3.188	0.538	8.959	0.089
6	3.239	0.589	8.908	0.107
7	3.285	0.635	8.862	0.124
8	3.326	0.676	8.821	0.142
9	3.360	0.710	8.787	0.160
10	3.390	0.740	8.757	0.178
11	3.416	0.766	8.731	0.196
12	3.443	0.793	8.704	0.213
13	3.466	0.816	8.681	0.231
14	3.487	0.837	8.660	0.249
15	3.506	0.856	8.641	0.267
16	3.492	0.842	8.655	0.284
17	3.508	0.858	8.639	0.302
18	3.521	0.871	8.626	0.320
19	3.530	0.880	8.617	0.338
20	3.541	0.891	8.606	0.356
21	3.549	0.899	8.598	0.373
22	3.561	0.911	8.586	0.391
23	3.566	0.916	8.581	0.409
24	3.572	0.922	8.575	0.427
25	3.581	0.931	8.566	0.444
26	3.586	0.936	8.561	0.462
27	3.588	0.938	8.559	0.480
28	3.596	0.946	8.551	0.498
29	3.599	0.949	8.548	0.516
30	3.605	0.955	8.542	0.533
31	3.609	0.959	8.538	0.551
32	3.612	0.962	8.535	0.569
33	3.616	0.966	8.531	0.587
34	3.619	0.969	8.528	0.604
35	3.622	0.972	8.525	0.622
36	3.625	0.975	8.522	0.640
37	3.628	0.978	8.519	0.658
38	3.630	0.980	8.517	0.676
39	3.632	0.982	8.515	0.693
40	3.634	0.984	8.513	0.711
41	3.637	0.987	8.510	0.729
42	3.639	0.989	8.508	0.747
43	3.640	0.990	8.507	0.764
44	3.641	0.991	8.506	0.782
45	3.643	0.993	8.504	0.800
46	3.646	0.996	8.501	0.818
47	3.646	0.996	8.501	0.836
48	3.649	0.999	8.498	0.853
49	3.650	1.000	8.497	0.871
50	3.654	1.004	8.493	0.889
52	3.653	1.003	8.494	0.924
54	3.656	1.006	8.491	0.960
56	3.659	1.009	8.488	0.996
58	3.664	1.014	8.483	1.031

60	3.665	1.015	8.482	1.067
62	3.666	1.016	8.481	1.102
64	3.668	1.018	8.479	1.138
66	3.671	1.021	8.476	1.173
68	3.675	1.025	8.472	1.209
70	3.676	1.026	8.471	1.244
72	3.679	1.029	8.468	1.280
74	3.677	1.027	8.470	1.316
76	3.680	1.030	8.467	1.351
78	3.680	1.030	8.467	1.387
80	3.683	1.033	8.464	1.422
82	3.683	1.033	8.464	1.458
84	3.685	1.035	8.462	1.493
86	3.688	1.038	8.459	1.529
88	3.689	1.039	8.458	1.564
90	3.691	1.041	8.456	1.600
92	3.693	1.043	8.454	1.636
94	3.694	1.044	8.453	1.671
96	3.695	1.045	8.452	1.707
98	3.696	1.046	8.451	1.742
100	3.700	1.050	8.447	1.778
110	3.703	1.053	8.444	1.956
120	3.708	1.058	8.439	2.133
130	3.714	1.064	8.433	2.311
140	3.718	1.068	8.429	2.489
150	3.723	1.073	8.424	2.667
160	3.723	1.073	8.424	2.844
170	3.738	1.088	8.409	3.022
180	3.746	1.096	8.401	3.200
190	3.749	1.099	8.398	3.378
200	3.753	1.103	8.394	3.556
210	3.755	1.105	8.392	3.733
220	3.759	1.109	8.388	3.911
230	3.762	1.112	8.385	4.089
240	3.763	1.113	8.384	4.267
250	3.765	1.115	8.382	4.444
260	3.769	1.119	8.378	4.622
270	3.773	1.123	8.374	4.800
280	3.774	1.124	8.373	4.978
290	3.779	1.129	8.368	5.156
300	3.779	1.129	8.368	5.333
310	3.782	1.132	8.365	5.511
320	3.784	1.134	8.363	5.689
330	3.784	1.134	8.363	5.867
340	3.785	1.135	8.362	6.044
350	3.790	1.140	8.357	6.222
360	3.792	1.142	8.355	6.400
370	3.794	1.144	8.353	6.578
380	3.796	1.146	8.351	6.756
390	3.798	1.148	8.349	6.933
400	3.799	1.149	8.348	7.111
410	3.800	1.150	8.347	7.289
420	3.802	1.152	8.345	7.467
430	3.805	1.155	8.342	7.644
440	3.804	1.154	8.343	7.822
450	3.808	1.158	8.339	8.000

460	3.812	1.162	8.335	8.178
470	3.813	1.163	8.334	8.356
480	3.814	1.164	8.333	8.533
490	3.814	1.164	8.333	8.711
500	3.816	1.166	8.331	8.889
510	3.816	1.166	8.331	9.067
520	3.817	1.167	8.330	9.244
530	3.819	1.169	8.328	9.422
540	3.821	1.171	8.326	9.600
550	3.821	1.171	8.326	9.778
560	3.821	1.171	8.326	9.956
570	3.823	1.173	8.324	10.133
580	3.826	1.176	8.321	10.311
590	3.826	1.176	8.321	10.489
600	3.829	1.179	8.318	10.667
610	3.829	1.179	8.318	10.844
620	3.831	1.181	8.316	11.022
630	3.833	1.183	8.314	11.200
640	3.833	1.183	8.314	11.378
650	3.832	1.182	8.315	11.556
660	3.833	1.183	8.314	11.733
670	3.835	1.185	8.312	11.911
680	3.835	1.185	8.312	12.089
690	3.838	1.188	8.309	12.267
700	3.841	1.191	8.306	12.444
710	3.842	1.192	8.305	12.622
720	3.841	1.191	8.306	12.800
750	3.845	1.195	8.302	13.333
780	3.850	1.200	8.297	13.867
810	3.851	1.201	8.296	14.400
840	3.857	1.207	8.290	14.933
870	3.858	1.208	8.289	15.467
900	3.863	1.213	8.284	16.000
930	3.862	1.212	8.285	16.533
960	3.863	1.213	8.284	17.067
990	3.871	1.221	8.276	17.600
1020	3.871	1.221	8.276	18.133
1110	3.876	1.226	8.271	19.733
1200	3.888	1.238	8.259	21.333
1320	3.906	1.256	8.241	23.467
1410	3.912	1.262	8.235	25.067
1500	3.938	1.288	8.209	26.667
1620	3.931	1.281	8.216	28.800
1710	3.937	1.287	8.210	30.400
1800	3.941	1.291	8.206	32.000
1920	3.948	1.298	8.199	34.133
2010	3.955	1.305	8.192	35.733
2100	3.961	1.311	8.186	37.333
2220	3.964	1.314	8.183	39.467
2310	3.972	1.322	8.175	41.067
2400	3.979	1.329	8.168	42.667
2520	3.983	1.333	8.164	44.800
2610	3.992	1.342	8.155	46.400
2700	3.992	1.342	8.155	48.000
2820	4.001	1.351	8.146	50.133
2910	4.007	1.357	8.140	51.733

3000	4.010	1.360	8.137	53.333
3120	4.018	1.368	8.129	55.467
3210	4.019	1.369	8.128	57.067
3300	4.025	1.375	8.122	58.667
3420	4.031	1.381	8.116	60.800
3510	4.036	1.386	8.111	62.400
3600	4.037	1.387	8.110	64.000
3720	4.042	1.392	8.105	66.133
3810	4.048	1.398	8.099	67.733
3900	4.050	1.400	8.097	69.333
4020	4.053	1.403	8.094	71.467
4110	4.060	1.410	8.087	73.067
4200	4.063	1.413	8.084	74.667
4320	4.064	1.414	8.083	76.800
4410	4.069	1.419	8.078	78.400
4500	4.073	1.423	8.074	80.000
4620	4.075	1.425	8.072	82.133
4710	4.079	1.429	8.068	83.733
4800	4.081	1.431	8.066	85.333
4920	4.086	1.436	8.061	87.467
5010	4.089	1.439	8.058	89.067
5100	4.094	1.444	8.053	90.667
5220	4.101	1.451	8.046	92.800
5310	4.101	1.451	8.046	94.400
5400	4.105	1.455	8.042	96.000
5520	4.106	1.456	8.041	98.133
5610	4.113	1.463	8.034	99.733
5700	4.116	1.466	8.031	101.333
5820	4.116	1.466	8.031	103.467
5910	4.118	1.468	8.029	105.067
6000	4.118	1.468	8.029	106.667
6120	4.123	1.473	8.024	108.800
6210	4.124	1.474	8.023	110.400
6300	4.129	1.479	8.018	112.000
6420	4.133	1.483	8.014	114.133
6510	4.136	1.486	8.011	115.733
6600	4.135	1.485	8.012	117.333
6720	4.140	1.490	8.007	119.467
6810	4.144	1.494	8.003	121.067
6900	4.141	1.491	8.006	122.667
7020	4.148	1.498	7.999	124.800
7110	4.151	1.501	7.996	126.400
7200	4.159	1.509	7.988	128.000
7320	4.163	1.513	7.984	130.133
7410	4.162	1.512	7.985	131.733
7500	4.160	1.510	7.987	133.333
7620	4.165	1.515	7.982	135.467
7710	4.165	1.515	7.982	137.067
7800	4.170	1.520	7.977	138.667
7920	4.172	1.522	7.975	140.800
8010	4.173	1.523	7.974	142.400
8100	4.176	1.526	7.971	144.000
8220	4.156	1.506	7.991	146.133
8310	4.153	1.503	7.994	147.733
8400	4.156	1.506	7.991	149.333
8520	4.170	1.520	7.977	151.467

8610	4.193	1.543	7.954	153.067
8700	4.216	1.566	7.931	154.667
8820	4.193	1.543	7.954	156.800
8910	4.198	1.548	7.949	158.400
9000	4.191	1.541	7.956	160.000
9120	4.191	1.541	7.956	162.133
9210	4.191	1.541	7.956	163.733
9300	4.183	1.533	7.964	165.333
9420	4.187	1.537	7.960	167.467
9510	4.185	1.535	7.962	169.067
9600	4.190	1.540	7.957	170.667
9720	4.199	1.549	7.948	172.800
9810	4.194	1.544	7.953	174.400
9900	4.211	1.561	7.936	176.000
10020	4.190	1.540	7.957	178.133
10500	4.236	1.586	7.911	186.667
11010	4.231	1.581	7.916	195.733
11520	4.278	1.628	7.869	204.800
12000	4.255	1.605	7.892	213.333
12510	4.276	1.626	7.871	222.400
13019	4.301	1.651	7.846	231.449
13529	4.283	1.633	7.864	240.516
14009	4.291	1.641	7.856	249.049
14519	4.328	1.678	7.819	258.116
15029	4.308	1.658	7.839	267.182
15509	4.313	1.663	7.834	275.716
16019	4.341	1.691	7.806	284.782
16529	4.327	1.677	7.820	293.849
17009	4.332	1.682	7.815	302.382
17456	4.031	1.381	8.116	310.329
17457	3.918	1.268	8.229	310.347
17458	3.833	1.183	8.314	310.364
17459	3.764	1.114	8.383	310.382
17460	3.707	1.057	8.440	310.400
17461	3.662	1.012	8.485	310.418
17462	3.622	0.972	8.525	310.436
17463	3.585	0.935	8.562	310.453
17464	3.558	0.908	8.589	310.471
17465	3.534	0.884	8.613	310.489
17466	3.511	0.861	8.636	310.507
17467	3.489	0.839	8.658	310.524
17468	3.476	0.826	8.671	310.542
17469	3.462	0.812	8.685	310.560
17470	3.452	0.802	8.695	310.578
17471	3.441	0.791	8.706	310.596
17472	3.430	0.780	8.717	310.613
17473	3.418	0.768	8.729	310.631
17474	3.406	0.756	8.741	310.649
17475	3.395	0.745	8.752	310.667
17476	3.384	0.734	8.763	310.684
17477	3.377	0.727	8.770	310.702
17478	3.371	0.721	8.776	310.720
17479	3.365	0.715	8.782	310.738
17480	3.358	0.708	8.789	310.756
17481	3.352	0.702	8.795	310.773
17482	3.349	0.699	8.798	310.791

17483	3.349	0.699	8.798	310.809
17484	3.346	0.696	8.801	310.827
17485	3.345	0.695	8.802	310.844
17486	3.340	0.690	8.807	310.862
17487	3.339	0.689	8.808	310.880
17488	3.331	0.681	8.816	310.898
17489	3.331	0.681	8.816	310.916
17490	3.328	0.678	8.819	310.933
17491	3.323	0.673	8.824	310.951
17492	3.321	0.671	8.826	310.969
17493	3.318	0.668	8.829	310.987
17494	3.314	0.664	8.833	311.004
17495	3.308	0.658	8.839	311.022
17496	3.304	0.654	8.843	311.040
17497	3.304	0.654	8.843	311.058
17498	3.303	0.653	8.844	311.076
17499	3.305	0.655	8.842	311.093
17500	3.300	0.650	8.847	311.111
17501	3.298	0.648	8.849	311.129
17502	3.301	0.651	8.846	311.147
17503	3.302	0.652	8.845	311.164
17504	3.297	0.647	8.850	311.182
17505	3.294	0.644	8.853	311.200
17507	3.291	0.641	8.856	311.236
17509	3.288	0.638	8.859	311.271
17511	3.285	0.635	8.862	311.307
17513	3.285	0.635	8.862	311.342
17515	3.290	0.640	8.857	311.378
17517	3.297	0.647	8.850	311.413
17519	3.301	0.651	8.846	311.449
17521	3.307	0.657	8.840	311.484
17523	3.314	0.664	8.833	311.520
17525	3.316	0.666	8.831	311.556
17527	3.316	0.666	8.831	311.591
17529	3.317	0.667	8.830	311.627
17531	3.312	0.662	8.835	311.662
17533	3.316	0.666	8.831	311.698
17535	3.318	0.668	8.829	311.733
17537	3.320	0.670	8.827	311.769
17539	3.322	0.672	8.825	311.804
17541	3.321	0.671	8.826	311.840
17543	3.324	0.674	8.823	311.876
17545	3.319	0.669	8.828	311.911
17547	3.319	0.669	8.828	311.947
17549	3.318	0.668	8.829	311.982
17551	3.317	0.667	8.830	312.018
17553	3.314	0.664	8.833	312.053
17555	3.310	0.660	8.837	312.089
17565	3.313	0.663	8.834	312.267
17575	3.306	0.656	8.841	312.444
17585	3.312	0.662	8.835	312.622
17595	3.291	0.641	8.856	312.800
17605	3.295	0.645	8.852	312.978
17615	3.281	0.631	8.866	313.156
17625	3.275	0.625	8.872	313.333
17635	3.272	0.622	8.875	313.511

17645	3.273	0.623	8.874	313.689
17655	3.271	0.621	8.876	313.867
17665	3.266	0.616	8.881	314.044
17675	3.263	0.613	8.884	314.222
17685	3.264	0.614	8.883	314.400
17695	3.257	0.607	8.890	314.578
17705	3.258	0.608	8.889	314.756
17715	3.253	0.603	8.894	314.933
17725	3.251	0.601	8.896	315.111
17735	3.252	0.602	8.895	315.289
17745	3.251	0.601	8.896	315.467
17755	3.247	0.597	8.900	315.644
17765	3.238	0.588	8.909	315.822
17775	3.239	0.589	8.908	316.000
17785	3.228	0.578	8.919	316.178
17795	3.230	0.580	8.917	316.356
17805	3.220	0.570	8.927	316.533
17815	3.216	0.566	8.931	316.711
17825	3.212	0.562	8.935	316.889
17835	3.209	0.559	8.938	317.067
17845	3.210	0.560	8.937	317.244
17855	3.209	0.559	8.938	317.422
17865	3.207	0.557	8.940	317.600
17875	3.204	0.554	8.943	317.778
17885	3.202	0.552	8.945	317.956
17895	3.197	0.547	8.950	318.133
17905	3.197	0.547	8.950	318.311
17915	3.194	0.544	8.953	318.489
17925	3.192	0.542	8.955	318.667
17935	3.190	0.540	8.957	318.844
17945	3.189	0.539	8.958	319.022
17955	3.187	0.537	8.960	319.200
17965	3.185	0.535	8.962	319.378
17975	3.182	0.532	8.965	319.556
17985	3.179	0.529	8.968	319.733
17995	3.179	0.529	8.968	319.911
18000	3.176	0.526	8.971	320.000
18005	3.175	0.525	8.972	320.089
18015	3.175	0.525	8.972	320.267
18025	3.173	0.523	8.974	320.444
18035	3.172	0.522	8.975	320.622
18045	3.170	0.520	8.977	320.800
18055	3.172	0.522	8.975	320.978
18065	3.172	0.522	8.975	321.156
18075	3.173	0.523	8.974	321.333
18085	3.169	0.519	8.978	321.511
18095	3.163	0.513	8.984	321.689
18105	3.159	0.509	8.988	321.867
18115	3.156	0.506	8.991	322.044
18125	3.155	0.505	8.992	322.222
18135	3.154	0.504	8.993	322.400
18145	3.151	0.501	8.996	322.578
18155	3.154	0.504	8.993	322.756
18165	3.151	0.501	8.996	322.933
18204	3.146	0.496	9.001	323.627
18234	3.135	0.485	9.012	324.160

18264	3.133	0.483	9.014	324.693
18294	3.129	0.479	9.018	325.227
18324	3.126	0.476	9.021	325.760
18354	3.153	0.503	8.994	326.293
18384	3.136	0.486	9.011	326.827
18414	3.131	0.481	9.016	327.360
18444	3.134	0.484	9.013	327.893
18474	3.109	0.459	9.038	328.427
18504	3.104	0.454	9.043	328.960
18564	3.095	0.445	9.052	330.027
18684	3.116	0.466	9.031	332.160
18774	3.101	0.451	9.046	333.760
18864	3.080	0.430	9.067	335.360
18984	3.069	0.419	9.078	337.493
19014	3.066	0.416	9.081	338.027
19074	3.061	0.411	9.086	339.093
19164	3.053	0.403	9.094	340.693
19284	3.044	0.394	9.103	342.827
19374	3.036	0.386	9.111	344.427
19464	3.030	0.380	9.117	346.027
19524	3.026	0.376	9.121	347.093
19584	3.021	0.371	9.126	348.160
19674	3.019	0.369	9.128	349.760
19764	3.014	0.364	9.133	351.360
19884	3.006	0.356	9.141	353.493
19974	2.999	0.349	9.148	355.093
20004	2.997	0.347	9.150	355.627
20064	2.995	0.345	9.152	356.693
20184	2.993	0.343	9.154	358.827
20274	2.991	0.341	9.156	360.427
20364	2.984	0.334	9.163	362.027
20484	2.978	0.328	9.169	364.160

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	2.672	0.062	9.534	0.002
2	2.754	0.144	9.452	0.003
3	2.822	0.212	9.384	0.005
4	2.879	0.269	9.327	0.006
5	2.928	0.318	9.278	0.008
6	2.967	0.357	9.239	0.010
7	3.004	0.394	9.202	0.011
8	3.034	0.424	9.172	0.013
9	3.063	0.453	9.143	0.014
10	3.088	0.478	9.118	0.016
11	3.107	0.497	9.099	0.018
12	3.129	0.519	9.077	0.019
13	3.146	0.536	9.060	0.021
14	3.162	0.552	9.044	0.022
15	3.176	0.566	9.030	0.024
16	3.186	0.576	9.020	0.026
17	3.197	0.587	9.009	0.027
18	3.208	0.598	8.998	0.029
19	3.219	0.609	8.987	0.030
20	3.229	0.619	8.977	0.032
21	3.236	0.626	8.970	0.034
22	3.243	0.633	8.963	0.035
23	3.249	0.639	8.957	0.037
24	3.253	0.643	8.953	0.038
25	3.262	0.652	8.944	0.040
26	3.266	0.656	8.940	0.042
27	3.269	0.659	8.937	0.043
28	3.274	0.664	8.932	0.045
29	3.280	0.67	8.926	0.046
30	3.285	0.675	8.921	0.048
31	3.289	0.679	8.917	0.050
32	3.289	0.679	8.917	0.051
33	3.294	0.684	8.912	0.053
34	3.295	0.685	8.911	0.054
35	3.299	0.689	8.907	0.056
36	3.303	0.693	8.903	0.058
37	3.305	0.695	8.901	0.059
38	3.307	0.697	8.899	0.061
39	3.311	0.701	8.895	0.062
40	3.312	0.702	8.894	0.064
41	3.315	0.705	8.891	0.066
42	3.317	0.707	8.889	0.067
43	3.318	0.708	8.888	0.069
44	3.320	0.71	8.886	0.070
45	3.322	0.712	8.884	0.072
46	3.326	0.716	8.880	0.074
47	3.326	0.716	8.880	0.075
48	3.328	0.718	8.878	0.077
49	3.330	0.72	8.876	0.078
50	3.330	0.72	8.876	0.080
52	3.333	0.723	8.873	0.083
54	3.335	0.725	8.871	0.086
56	3.336	0.726	8.870	0.090
58	3.341	0.731	8.865	0.093

60	3.343	0.733	8.863	0.096
62	3.345	0.735	8.861	0.099
64	3.347	0.737	8.859	0.102
66	3.348	0.738	8.858	0.106
68	3.351	0.741	8.855	0.109
70	3.349	0.739	8.857	0.112
72	3.354	0.744	8.852	0.115
74	3.355	0.745	8.851	0.118
76	3.357	0.747	8.849	0.122
78	3.360	0.75	8.846	0.125
80	3.361	0.751	8.845	0.128
82	3.361	0.751	8.845	0.131
84	3.363	0.753	8.843	0.134
86	3.364	0.754	8.842	0.138
88	3.364	0.754	8.842	0.141
90	3.364	0.754	8.842	0.144
92	3.365	0.755	8.841	0.147
94	3.366	0.756	8.840	0.150
96	3.368	0.758	8.838	0.154
98	3.371	0.761	8.835	0.157
100	3.372	0.762	8.834	0.160
110	3.378	0.768	8.828	0.176
120	3.383	0.773	8.823	0.192
130	3.388	0.778	8.818	0.208
140	3.391	0.781	8.815	0.224
150	3.394	0.784	8.812	0.240
160	3.398	0.788	8.808	0.256
170	3.407	0.797	8.799	0.272
180	3.412	0.802	8.794	0.288
190	3.419	0.809	8.787	0.304
200	3.421	0.811	8.785	0.320
210	3.423	0.813	8.783	0.336
220	3.425	0.815	8.781	0.352
230	3.426	0.816	8.780	0.368
240	3.431	0.821	8.775	0.384
250	3.433	0.823	8.773	0.400
260	3.436	0.826	8.770	0.416
270	3.438	0.828	8.768	0.432
280	3.441	0.831	8.765	0.448
290	3.443	0.833	8.763	0.464
300	3.444	0.834	8.762	0.480
310	3.448	0.838	8.758	0.496
320	3.450	0.84	8.756	0.512
330	3.451	0.841	8.755	0.528
340	3.455	0.845	8.751	0.544
350	3.457	0.847	8.749	0.560
360	3.459	0.849	8.747	0.576
370	3.462	0.852	8.744	0.592
380	3.462	0.852	8.744	0.608
390	3.464	0.854	8.742	0.624
400	3.465	0.855	8.741	0.640
410	3.468	0.858	8.738	0.656
420	3.469	0.859	8.737	0.672
430	3.471	0.861	8.735	0.688
440	3.474	0.864	8.732	0.704
450	3.476	0.866	8.730	0.720

460	3.479	0.869	8.727	0.736
470	3.477	0.867	8.729	0.752
480	3.479	0.869	8.727	0.768
490	3.481	0.871	8.725	0.784
500	3.480	0.87	8.726	0.800
510	3.483	0.873	8.723	0.816
520	3.485	0.875	8.721	0.832
530	3.481	0.871	8.725	0.848
540	3.486	0.876	8.720	0.864
550	3.488	0.878	8.718	0.880
560	3.487	0.877	8.719	0.896
570	3.488	0.878	8.718	0.912
580	3.492	0.882	8.714	0.928
590	3.491	0.881	8.715	0.944
600	3.495	0.885	8.711	0.960
610	3.496	0.886	8.710	0.976
620	3.496	0.886	8.710	0.992
630	3.499	0.889	8.707	1.008
640	3.498	0.888	8.708	1.024
650	3.500	0.89	8.706	1.040
660	3.501	0.891	8.705	1.056
670	3.502	0.892	8.704	1.072
680	3.504	0.894	8.702	1.088
690	3.506	0.896	8.700	1.104
700	3.507	0.897	8.699	1.120
710	3.507	0.897	8.699	1.136
720	3.508	0.898	8.698	1.152
750	3.512	0.902	8.694	1.200
780	3.515	0.905	8.691	1.248
810	3.518	0.908	8.688	1.296
840	3.523	0.913	8.683	1.344
870	3.526	0.916	8.680	1.392
900	3.530	0.92	8.676	1.440
930	3.531	0.921	8.675	1.488
960	3.535	0.925	8.671	1.536
990	3.536	0.926	8.670	1.584
1020	3.539	0.929	8.667	1.632
1110	3.545	0.935	8.661	1.776
1200	3.556	0.946	8.650	1.920
1320	3.564	0.954	8.642	2.112
1410	3.569	0.959	8.637	2.256
1500	3.588	0.978	8.618	2.400
1620	3.595	0.985	8.611	2.592
1710	3.599	0.989	8.607	2.736
1800	3.602	0.992	8.604	2.880
1920	3.610	1	8.596	3.072
2010	3.617	1.007	8.589	3.216
2100	3.623	1.013	8.583	3.360
2220	3.629	1.019	8.577	3.552
2310	3.635	1.025	8.571	3.696
2400	3.639	1.029	8.567	3.840
2520	3.642	1.032	8.564	4.032
2610	3.651	1.041	8.555	4.176
2700	3.658	1.048	8.548	4.320
2820	3.661	1.051	8.545	4.512
2910	3.667	1.057	8.539	4.656

3000	3.673	1.063	8.533	4.800
3120	3.681	1.071	8.525	4.992
3210	3.684	1.074	8.522	5.136
3300	3.685	1.075	8.521	5.280
3420	3.693	1.083	8.513	5.472
3510	3.700	1.09	8.506	5.616
3600	3.698	1.088	8.508	5.760
3720	3.705	1.095	8.501	5.952
3810	3.708	1.098	8.498	6.096
3900	3.711	1.101	8.495	6.240
4020	3.717	1.107	8.489	6.432
4110	3.722	1.112	8.484	6.576
4200	3.727	1.117	8.479	6.720
4320	3.732	1.122	8.474	6.912
4410	3.735	1.125	8.471	7.056
4500	3.736	1.126	8.470	7.200
4620	3.739	1.129	8.467	7.392
4710	3.745	1.135	8.461	7.536
4800	3.747	1.137	8.459	7.680
4920	3.752	1.142	8.454	7.872
5010	3.757	1.147	8.449	8.016
5100	3.758	1.148	8.448	8.160
5220	3.763	1.153	8.443	8.352
5310	3.767	1.157	8.439	8.496
5400	3.769	1.159	8.437	8.640
5520	3.771	1.161	8.435	8.832
5610	3.778	1.168	8.428	8.976
5700	3.782	1.172	8.424	9.120
5820	3.784	1.174	8.422	9.312
5910	3.782	1.172	8.424	9.456
6000	3.767	1.157	8.439	9.600
6120	3.771	1.161	8.435	9.792
6210	3.769	1.159	8.437	9.936
6300	3.772	1.162	8.434	10.080
6420	3.778	1.168	8.428	10.272
6510	3.783	1.173	8.423	10.416
6600	3.783	1.173	8.423	10.560
6720	3.788	1.178	8.418	10.752
6810	3.788	1.178	8.418	10.896
6900	3.790	1.18	8.416	11.040
7020	3.794	1.184	8.412	11.232
7110	3.797	1.187	8.409	11.376
7200	3.804	1.194	8.402	11.520
7320	3.807	1.197	8.399	11.712
7410	3.806	1.196	8.400	11.856
7500	3.808	1.198	8.398	12.000
7620	3.811	1.201	8.395	12.192
7710	3.813	1.203	8.393	12.336
7800	3.817	1.207	8.389	12.480
7920	3.819	1.209	8.387	12.672
8010	3.821	1.211	8.385	12.816
8100	3.821	1.211	8.385	12.960
8220	3.823	1.213	8.383	13.152
8310	3.822	1.212	8.384	13.296
8400	3.829	1.219	8.377	13.440
8520	3.831	1.221	8.375	13.632

8610	3.836	1.226	8.370	13.776
8700	3.845	1.235	8.361	13.920
8820	3.847	1.237	8.359	14.112
8910	3.847	1.237	8.359	14.256
9000	3.851	1.241	8.355	14.400
9120	3.856	1.246	8.350	14.592
9210	3.856	1.246	8.350	14.736
9300	3.862	1.252	8.344	14.880
9420	3.862	1.252	8.344	15.072
9510	3.867	1.257	8.339	15.216
9600	3.866	1.256	8.340	15.360
9720	3.867	1.257	8.339	15.552
9810	3.870	1.26	8.336	15.696
9900	3.870	1.26	8.336	15.840
10020	3.875	1.265	8.331	16.032
10500	3.886	1.276	8.320	16.800
11010	3.900	1.29	8.306	17.616
11520	3.911	1.301	8.295	18.432
12000	3.915	1.305	8.291	19.200
12510	3.929	1.319	8.277	20.016
13019	3.936	1.326	8.270	20.830
13529	3.945	1.335	8.261	21.646
14009	3.954	1.344	8.252	22.414
14519	3.963	1.353	8.243	23.230
15029	3.973	1.363	8.233	24.046
15509	3.981	1.371	8.225	24.814
16019	3.986	1.376	8.220	25.630
16529	3.993	1.383	8.213	26.446
17009	4.001	1.391	8.205	27.214
17456	3.855	1.245	8.351	27.930
17457	3.780	1.17	8.426	27.931
17458	3.720	1.11	8.486	27.933
17459	3.666	1.056	8.540	27.934
17460	3.624	1.014	8.582	27.936
17461	3.585	0.975	8.621	27.938
17462	3.552	0.942	8.654	27.939
17463	3.525	0.915	8.681	27.941
17464	3.499	0.889	8.707	27.942
17465	3.476	0.866	8.730	27.944
17466	3.458	0.848	8.748	27.946
17467	3.442	0.832	8.764	27.947
17468	3.422	0.812	8.784	27.949
17469	3.412	0.802	8.794	27.950
17470	3.398	0.788	8.808	27.952
17471	3.389	0.779	8.817	27.954
17472	3.378	0.768	8.828	27.955
17473	3.369	0.759	8.837	27.957
17474	3.360	0.75	8.846	27.958
17475	3.351	0.741	8.855	27.960
17476	3.343	0.733	8.863	27.962
17477	3.335	0.725	8.871	27.963
17478	3.330	0.72	8.876	27.965
17479	3.325	0.715	8.881	27.966
17480	3.322	0.712	8.884	27.968
17481	3.318	0.708	8.888	27.970
17482	3.313	0.703	8.893	27.971

17483	3.310	0.7	8.896	27.973
17484	3.307	0.697	8.899	27.974
17485	3.302	0.692	8.904	27.976
17486	3.300	0.69	8.906	27.978
17487	3.296	0.686	8.910	27.979
17488	3.293	0.683	8.913	27.981
17489	3.290	0.68	8.916	27.982
17490	3.288	0.678	8.918	27.984
17491	3.286	0.676	8.920	27.986
17492	3.284	0.674	8.922	27.987
17493	3.280	0.67	8.926	27.989
17494	3.279	0.669	8.927	27.990
17495	3.278	0.668	8.928	27.992
17496	3.276	0.666	8.930	27.994
17497	3.274	0.664	8.932	27.995
17498	3.274	0.664	8.932	27.997
17499	3.274	0.664	8.932	27.998
17500	3.270	0.66	8.936	28.000
17501	3.269	0.659	8.937	28.002
17502	3.270	0.66	8.936	28.003
17503	3.269	0.659	8.937	28.005
17504	3.269	0.659	8.937	28.006
17505	3.269	0.659	8.937	28.008
17507	3.265	0.655	8.941	28.011
17509	3.260	0.65	8.946	28.014
17511	3.261	0.651	8.945	28.018
17513	3.260	0.65	8.946	28.021
17515	3.262	0.652	8.944	28.024
17517	3.269	0.659	8.937	28.027
17519	3.269	0.659	8.937	28.030
17521	3.270	0.66	8.936	28.034
17523	3.274	0.664	8.932	28.037
17525	3.276	0.666	8.930	28.040
17527	3.276	0.666	8.930	28.043
17529	3.276	0.666	8.930	28.046
17531	3.276	0.666	8.930	28.050
17533	3.274	0.664	8.932	28.053
17535	3.275	0.665	8.931	28.056
17537	3.274	0.664	8.932	28.059
17539	3.273	0.663	8.933	28.062
17541	3.274	0.664	8.932	28.066
17543	3.271	0.661	8.935	28.069
17545	3.269	0.659	8.937	28.072
17547	3.269	0.659	8.937	28.075
17549	3.269	0.659	8.937	28.078
17551	3.269	0.659	8.937	28.082
17553	3.267	0.657	8.939	28.085
17555	3.266	0.656	8.940	28.088
17565	3.262	0.652	8.944	28.104
17575	3.258	0.648	8.948	28.120
17585	3.254	0.644	8.952	28.136
17595	3.249	0.639	8.957	28.152
17605	3.245	0.635	8.961	28.168
17615	3.242	0.632	8.964	28.184
17625	3.238	0.628	8.968	28.200
17635	3.234	0.624	8.972	28.216

17645	3.232	0.622	8.974	28.232
17655	3.229	0.619	8.977	28.248
17665	3.224	0.614	8.982	28.264
17675	3.221	0.611	8.985	28.280
17685	3.221	0.611	8.985	28.296
17695	3.218	0.608	8.988	28.312
17705	3.215	0.605	8.991	28.328
17715	3.211	0.601	8.995	28.344
17725	3.211	0.601	8.995	28.360
17735	3.205	0.595	9.001	28.376
17745	3.205	0.595	9.001	28.392
17755	3.203	0.593	9.003	28.408
17765	3.199	0.589	9.007	28.424
17775	3.198	0.588	9.008	28.440
17785	3.195	0.585	9.011	28.456
17795	3.192	0.582	9.014	28.472
17805	3.189	0.579	9.017	28.488
17815	3.187	0.577	9.019	28.504
17825	3.183	0.573	9.023	28.520
17835	3.181	0.571	9.025	28.536
17845	3.179	0.569	9.027	28.552
17855	3.178	0.568	9.028	28.568
17865	3.174	0.564	9.032	28.584
17875	3.173	0.563	9.033	28.600
17885	3.171	0.561	9.035	28.616
17895	3.170	0.56	9.036	28.632
17905	3.167	0.557	9.039	28.648
17915	3.165	0.555	9.041	28.664
17925	3.162	0.552	9.044	28.680
17935	3.160	0.55	9.046	28.696
17945	3.162	0.552	9.044	28.712
17955	3.158	0.548	9.048	28.728
17965	3.156	0.546	9.050	28.744
17975	3.153	0.543	9.053	28.760
17985	3.152	0.542	9.054	28.776
17995	3.149	0.539	9.057	28.792
18000	3.149	0.539	9.057	28.800
18005	3.147	0.537	9.059	28.808
18015	3.145	0.535	9.061	28.824
18025	3.146	0.536	9.060	28.840
18035	3.144	0.534	9.062	28.856
18045	3.142	0.532	9.064	28.872
18055	3.142	0.532	9.064	28.888
18065	3.137	0.527	9.069	28.904
18075	3.135	0.525	9.071	28.920
18085	3.133	0.523	9.073	28.936
18095	3.133	0.523	9.073	28.952
18105	3.132	0.522	9.074	28.968
18115	3.128	0.518	9.078	28.984
18125	3.126	0.516	9.080	29.000
18135	3.127	0.517	9.079	29.016
18145	3.123	0.513	9.083	29.032
18155	3.122	0.512	9.084	29.048
18165	3.121	0.511	9.085	29.064
18204	3.114	0.504	9.092	29.126
18234	3.109	0.499	9.097	29.174

18264	3.104	0.494	9.102	29.222
18294	3.100	0.49	9.106	29.270
18324	3.098	0.488	9.108	29.318
18354	3.093	0.483	9.113	29.366
18384	3.090	0.48	9.116	29.414
18414	3.084	0.474	9.122	29.462
18444	3.082	0.472	9.124	29.510
18474	3.080	0.47	9.126	29.558
18504	3.073	0.463	9.133	29.606
18564	3.067	0.457	9.139	29.702
18684	3.055	0.445	9.151	29.894
18774	3.044	0.434	9.162	30.038
18864	3.036	0.426	9.170	30.182
18984	3.023	0.413	9.183	30.374
19014	3.020	0.41	9.186	30.422
19074	3.017	0.407	9.189	30.518
19164	3.009	0.399	9.197	30.662
19284	2.998	0.388	9.208	30.854
19374	2.992	0.382	9.214	30.998
19464	2.986	0.376	9.220	31.142
19524	2.981	0.371	9.225	31.238
19584	2.977	0.367	9.229	31.334
19674	2.973	0.363	9.233	31.478
19764	2.967	0.357	9.239	31.622
19884	2.961	0.351	9.245	31.814
19974	2.954	0.344	9.252	31.958
20004	2.954	0.344	9.252	32.006
20064	2.952	0.342	9.254	32.102
20184	2.946	0.336	9.260	32.294
20274	2.943	0.333	9.263	32.438
20364	2.937	0.327	9.269	32.582
20484	2.932	0.322	9.274	32.774

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
11	2.990	0.290	9.301	0.0044
21	3.100	0.400	9.191	0.0084
31	3.140	0.440	9.151	0.0124
41	3.165	0.465	9.126	0.0164
51	3.180	0.480	9.111	0.0204
61	3.195	0.495	9.096	0.0244
71	3.200	0.500	9.091	0.0284
81	3.210	0.510	9.081	0.0324
91	3.215	0.515	9.076	0.0364
101	3.220	0.520	9.071	0.0404
121	3.230	0.530	9.061	0.0484
142	3.245	0.545	9.046	0.0568
162	3.250	0.550	9.041	0.0648
182	3.255	0.555	9.036	0.0728
202	3.265	0.565	9.026	0.0808
252	3.280	0.580	9.011	0.1008
302	3.295	0.595	8.996	0.1208
352	3.300	0.600	8.991	0.1408
402	3.310	0.610	8.981	0.1608
452	3.320	0.620	8.971	0.1808
482	3.325	0.625	8.966	0.1928
1447	3.425	0.725	8.866	0.5788
2881	3.505	0.805	8.786	1.1524
4308	3.570	0.870	8.721	1.7232
5747	3.620	0.920	8.671	2.2988
7191	3.655	0.955	8.636	2.8764
8635	3.695	0.995	8.596	3.454
10111	3.730	1.030	8.561	4.0444
13095	3.790	1.090	8.501	5.238
17443	3.850	1.150	8.441	6.9772

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
5	2.841	0.011	9.371	0.001
6	2.849	0.019	9.363	0.001
7	2.865	0.035	9.347	0.001
8	2.880	0.050	9.332	0.001
9	2.888	0.058	9.324	0.001
10	2.898	0.068	9.314	0.001
11	2.909	0.079	9.303	0.001
12	2.916	0.086	9.296	0.001
13	2.929	0.099	9.283	0.001
14	2.935	0.105	9.277	0.001
15	2.940	0.110	9.272	0.002
16	2.947	0.117	9.265	0.002
17	2.954	0.124	9.258	0.002
18	2.960	0.130	9.252	0.002
19	2.961	0.131	9.251	0.002
20	2.967	0.137	9.245	0.002
21	2.971	0.141	9.241	0.002
22	2.976	0.146	9.236	0.002
23	2.981	0.151	9.231	0.002
24	2.981	0.151	9.231	0.002
25	2.983	0.153	9.229	0.003
26	2.985	0.155	9.227	0.003
27	2.992	0.162	9.220	0.003
28	2.994	0.164	9.218	0.003
29	2.995	0.165	9.217	0.003
30	3.001	0.171	9.211	0.003
31	3.003	0.173	9.209	0.003
32	3.001	0.171	9.211	0.003
33	2.997	0.167	9.215	0.003
34	3.008	0.178	9.204	0.003
35	3.009	0.179	9.203	0.004
36	3.005	0.175	9.207	0.004
37	3.010	0.180	9.202	0.004
38	3.014	0.184	9.198	0.004
39	3.017	0.187	9.195	0.004
40	3.017	0.187	9.195	0.004
41	3.020	0.190	9.192	0.004
42	3.021	0.191	9.191	0.004
43	3.023	0.193	9.189	0.004
44	3.025	0.195	9.187	0.004
45	3.023	0.193	9.189	0.005
46	3.030	0.200	9.182	0.005
47	3.024	0.194	9.188	0.005
48	3.028	0.198	9.184	0.005
49	3.028	0.198	9.184	0.005
50	3.033	0.203	9.179	0.005
52	3.036	0.206	9.176	0.005
54	3.036	0.206	9.176	0.005
56	3.040	0.210	9.172	0.006
58	3.043	0.213	9.169	0.006
60	3.043	0.213	9.169	0.006
62	3.043	0.213	9.169	0.006
64	3.042	0.212	9.170	0.006
66	3.046	0.216	9.166	0.007

68	3.049	0.219	9.163	0.007
70	3.051	0.221	9.161	0.007
72	3.051	0.221	9.161	0.007
74	3.054	0.224	9.158	0.007
76	3.055	0.225	9.157	0.008
78	3.054	0.224	9.158	0.008
80	3.054	0.224	9.158	0.008
82	3.059	0.229	9.153	0.008
84	3.062	0.232	9.150	0.008
86	3.066	0.236	9.146	0.009
88	3.054	0.224	9.158	0.009
90	3.063	0.233	9.149	0.009
92	3.064	0.234	9.148	0.009
94	3.065	0.235	9.147	0.009
96	3.069	0.239	9.143	0.010
98	3.068	0.238	9.144	0.010
100	3.073	0.243	9.139	0.010
110	3.073	0.243	9.139	0.011
120	3.079	0.249	9.133	0.012
130	3.083	0.253	9.129	0.013
140	3.085	0.255	9.127	0.014
150	3.093	0.263	9.119	0.015
160	3.093	0.263	9.119	0.016
170	3.088	0.258	9.124	0.017
180	3.095	0.265	9.117	0.018
190	3.101	0.271	9.111	0.019
200	3.105	0.275	9.107	0.020
210	3.099	0.269	9.113	0.021
220	3.124	0.294	9.088	0.022
230	3.121	0.291	9.091	0.023
240	3.118	0.288	9.094	0.024
250	3.120	0.290	9.092	0.025
260	3.113	0.283	9.099	0.026
270	3.114	0.284	9.098	0.027
280	3.129	0.299	9.083	0.028
290	3.131	0.301	9.081	0.029
300	3.139	0.309	9.073	0.030
310	3.168	0.338	9.044	0.031
320	3.115	0.285	9.097	0.032
330	3.119	0.289	9.093	0.033
340	3.155	0.325	9.057	0.034
350	3.137	0.307	9.075	0.035
360	3.140	0.310	9.072	0.036
370	3.146	0.316	9.066	0.037
380	3.157	0.327	9.055	0.038
390	3.124	0.294	9.088	0.039
400	3.144	0.314	9.068	0.040
410	3.145	0.315	9.067	0.041
420	3.147	0.317	9.065	0.042
430	3.143	0.313	9.069	0.043
440	3.153	0.323	9.059	0.044
450	3.141	0.311	9.071	0.045
460	3.162	0.332	9.050	0.046
470	3.160	0.330	9.052	0.047
480	3.158	0.328	9.054	0.048
490	3.154	0.324	9.058	0.049

500	3.162	0.332	9.050	0.050
510	3.158	0.328	9.054	0.051
520	3.160	0.330	9.052	0.052
530	3.159	0.329	9.053	0.053
540	3.164	0.334	9.048	0.054
550	3.162	0.332	9.050	0.055
560	3.162	0.332	9.050	0.056
570	3.163	0.333	9.049	0.057
580	3.166	0.336	9.046	0.058
590	3.163	0.333	9.049	0.059
600	3.175	0.345	9.037	0.060
610	3.170	0.340	9.042	0.061
620	3.172	0.342	9.040	0.062
630	3.175	0.345	9.037	0.063
640	3.175	0.345	9.037	0.064
650	3.172	0.342	9.040	0.065
660	3.173	0.343	9.039	0.066
670	3.173	0.343	9.039	0.067
680	3.173	0.343	9.039	0.068
690	3.174	0.344	9.038	0.069
700	3.179	0.349	9.033	0.070
710	3.176	0.346	9.036	0.071
720	3.179	0.349	9.033	0.072
750	3.176	0.346	9.036	0.075
780	3.185	0.355	9.027	0.078
810	3.191	0.361	9.021	0.081
840	3.196	0.366	9.016	0.084
870	3.197	0.367	9.015	0.087
900	3.196	0.366	9.016	0.090
930	3.193	0.363	9.019	0.093
960	3.194	0.364	9.018	0.096
990	3.201	0.371	9.011	0.099
1020	3.203	0.373	9.009	0.102
1110	3.205	0.375	9.007	0.111
1200	3.225	0.395	8.987	0.120
1320	3.225	0.395	8.987	0.132
1410	3.239	0.409	8.973	0.141
1500	3.238	0.408	8.974	0.150
1620	3.249	0.419	8.963	0.162
1710	3.284	0.454	8.928	0.171
1800	3.288	0.458	8.924	0.180
1920	3.287	0.457	8.925	0.192
2010	3.283	0.453	8.929	0.201
2100	3.283	0.453	8.929	0.210
2220	3.287	0.457	8.925	0.222
2310	3.288	0.458	8.924	0.231
2400	3.299	0.469	8.913	0.240
2520	3.304	0.474	8.908	0.252
2610	3.306	0.476	8.906	0.261
2700	3.305	0.475	8.907	0.270
2820	3.317	0.487	8.895	0.282
2910	3.342	0.512	8.870	0.291
3000	3.337	0.507	8.875	0.300
3120	3.343	0.513	8.869	0.312
3210	3.318	0.488	8.894	0.321
3300	3.354	0.524	8.858	0.330

3420	3.356	0.526	8.856	0.342
3510	3.355	0.525	8.857	0.351
3600	3.357	0.527	8.855	0.360
3720	3.356	0.526	8.856	0.372
3810	3.365	0.535	8.847	0.381
3900	3.370	0.540	8.842	0.390
4020	3.371	0.541	8.841	0.402
4110	3.373	0.543	8.839	0.411
4200	3.377	0.547	8.835	0.420
4320	3.383	0.553	8.829	0.432
4410	3.396	0.566	8.816	0.441
4500	3.383	0.553	8.829	0.450
4620	3.408	0.578	8.804	0.462
4710	3.379	0.549	8.833	0.471
4800	3.408	0.578	8.804	0.480
4920	3.411	0.581	8.801	0.492
5010	3.405	0.575	8.807	0.501
5100	3.413	0.583	8.799	0.510
5220	3.420	0.590	8.792	0.522
5310	3.417	0.587	8.795	0.531
5400	3.421	0.591	8.791	0.540
5520	3.425	0.595	8.787	0.552
5610	3.428	0.598	8.784	0.561
5700	3.409	0.579	8.803	0.570
5820	3.427	0.597	8.785	0.582
5910	3.426	0.596	8.786	0.591
6000	3.428	0.598	8.784	0.600
6120	3.434	0.604	8.778	0.612
6210	3.432	0.602	8.780	0.621
6300	3.430	0.600	8.782	0.630
6420	3.437	0.607	8.775	0.642
6510	3.440	0.610	8.772	0.651
6600	3.444	0.614	8.768	0.660
6720	3.452	0.622	8.760	0.672
6810	3.449	0.619	8.763	0.681
6900	3.453	0.623	8.759	0.690
7020	3.453	0.623	8.759	0.702
7110	3.456	0.626	8.756	0.711
7200	3.462	0.632	8.750	0.720
7320	3.464	0.634	8.748	0.732
7410	3.493	0.663	8.719	0.741
7500	3.460	0.630	8.752	0.750
7620	3.471	0.641	8.741	0.762
7710	3.468	0.638	8.744	0.771
7800	3.472	0.642	8.740	0.780
7920	3.477	0.647	8.735	0.792
8010	3.483	0.653	8.729	0.801
8100	3.481	0.651	8.731	0.810
8220	3.477	0.647	8.735	0.822
8310	3.480	0.650	8.732	0.831
8400	3.484	0.654	8.728	0.840
8520	3.485	0.655	8.727	0.852
8610	3.492	0.662	8.720	0.861
8700	3.499	0.669	8.713	0.870
8820	3.484	0.654	8.728	0.882
8910	3.492	0.662	8.720	0.891

9000	3.508	0.678	8.704	0.900
9120	3.526	0.696	8.686	0.912
9210	3.513	0.683	8.699	0.921
9300	3.515	0.685	8.697	0.930
9420	3.516	0.686	8.696	0.942
9510	3.520	0.690	8.692	0.951
9600	3.520	0.690	8.692	0.960
9720	3.520	0.690	8.692	0.972
9810	3.525	0.695	8.687	0.981
9900	3.524	0.694	8.688	0.990
10020	3.527	0.697	8.685	1.002
10500	3.547	0.717	8.665	1.050
11010	3.553	0.723	8.659	1.101
11520	3.572	0.742	8.640	1.152
12000	3.572	0.742	8.640	1.200
12510	3.585	0.755	8.627	1.251
13019	3.596	0.766	8.616	1.302
13529	3.597	0.767	8.615	1.353
14009	3.611	0.781	8.601	1.401
14519	3.618	0.788	8.594	1.452
15029	3.625	0.795	8.587	1.503
15509	3.637	0.807	8.575	1.551
16019	3.645	0.815	8.567	1.602
16529	3.644	0.814	8.568	1.653
17009	3.657	0.827	8.555	1.701
17455	3.674	0.844	8.538	1.746
17456	3.664	0.834	8.548	1.746
17457	3.662	0.832	8.550	1.746
17458	3.657	0.827	8.555	1.746
17459	3.648	0.818	8.564	1.746
17460	3.638	0.808	8.574	1.746
17461	3.631	0.801	8.581	1.746
17462	3.618	0.788	8.594	1.746
17463	3.602	0.772	8.610	1.746
17464	3.595	0.765	8.617	1.746
17465	3.590	0.760	8.622	1.747
17466	3.580	0.750	8.632	1.747
17467	3.573	0.743	8.639	1.747
17468	3.571	0.741	8.641	1.747
17469	3.555	0.725	8.657	1.747
17470	3.556	0.726	8.656	1.747
17471	3.556	0.726	8.656	1.747
17472	3.533	0.703	8.679	1.747
17473	3.521	0.691	8.691	1.747
17474	3.513	0.683	8.699	1.747
17475	3.516	0.686	8.696	1.748
17476	3.510	0.680	8.702	1.748
17477	3.506	0.676	8.706	1.748
17478	3.504	0.674	8.708	1.748
17479	3.503	0.673	8.709	1.748
17480	3.499	0.669	8.713	1.748
17481	3.496	0.666	8.716	1.748
17482	3.497	0.667	8.715	1.748
17483	3.509	0.679	8.703	1.748
17484	3.501	0.671	8.711	1.748
17485	3.498	0.668	8.714	1.749

17486	3.497	0.667	8.715	1.749
17487	3.499	0.669	8.713	1.749
17488	3.483	0.653	8.729	1.749
17489	3.492	0.662	8.720	1.749
17490	3.492	0.662	8.720	1.749
17491	3.477	0.647	8.735	1.749
17492	3.474	0.644	8.738	1.749
17493	3.473	0.643	8.739	1.749
17494	3.469	0.639	8.743	1.749
17495	3.461	0.631	8.751	1.750
17496	3.468	0.638	8.744	1.750
17497	3.477	0.647	8.735	1.750
17498	3.473	0.643	8.739	1.750
17499	3.469	0.639	8.743	1.750
17500	3.467	0.637	8.745	1.750
17501	3.467	0.637	8.745	1.750
17502	3.473	0.643	8.739	1.750
17503	3.467	0.637	8.745	1.750
17504	3.463	0.633	8.749	1.750
17506	3.458	0.628	8.754	1.751
17508	3.459	0.629	8.753	1.751
17510	3.457	0.627	8.755	1.751
17512	3.457	0.627	8.755	1.751
17514	3.450	0.620	8.762	1.751
17516	3.454	0.624	8.758	1.752
17518	3.453	0.623	8.759	1.752
17520	3.461	0.631	8.751	1.752
17522	3.465	0.635	8.747	1.752
17524	3.456	0.626	8.756	1.752
17526	3.455	0.625	8.757	1.753
17528	3.457	0.627	8.755	1.753
17530	3.454	0.624	8.758	1.753
17532	3.456	0.626	8.756	1.753
17534	3.459	0.629	8.753	1.753
17536	3.459	0.629	8.753	1.754
17538	3.455	0.625	8.757	1.754
17540	3.457	0.627	8.755	1.754
17542	3.450	0.620	8.762	1.754
17544	3.452	0.622	8.760	1.754
17546	3.451	0.621	8.761	1.755
17548	3.447	0.617	8.765	1.755
17550	3.451	0.621	8.761	1.755
17552	3.445	0.615	8.767	1.755
17554	3.444	0.614	8.768	1.755
17564	3.455	0.625	8.757	1.756
17574	3.439	0.609	8.773	1.757
17584	3.445	0.615	8.767	1.758
17594	3.435	0.605	8.777	1.759
17604	3.442	0.612	8.770	1.760
17614	3.423	0.593	8.789	1.761
17624	3.427	0.597	8.785	1.762
17634	3.426	0.596	8.786	1.763
17644	3.423	0.593	8.789	1.764
17654	3.419	0.589	8.793	1.765
17664	3.418	0.588	8.794	1.766
17674	3.414	0.584	8.798	1.767

17684	3.412	0.582	8.800	1.768
17694	3.411	0.581	8.801	1.769
17704	3.415	0.585	8.797	1.770
17714	3.409	0.579	8.803	1.771
17724	3.408	0.578	8.804	1.772
17734	3.406	0.576	8.806	1.773
17744	3.405	0.575	8.807	1.774
17754	3.402	0.572	8.810	1.775
17764	3.397	0.567	8.815	1.776
17774	3.404	0.574	8.808	1.777
17784	3.392	0.562	8.820	1.778
17794	3.393	0.563	8.819	1.779
17804	3.389	0.559	8.823	1.780
17814	3.387	0.557	8.825	1.781
17824	3.387	0.557	8.825	1.782
17834	3.385	0.555	8.827	1.783
17844	3.382	0.552	8.830	1.784
17854	3.383	0.553	8.829	1.785
17864	3.382	0.552	8.830	1.786
17874	3.384	0.554	8.828	1.787
17884	3.380	0.550	8.832	1.788
17894	3.378	0.548	8.834	1.789
17904	3.377	0.547	8.835	1.790
17914	3.374	0.544	8.838	1.791
17924	3.373	0.543	8.839	1.792
17934	3.374	0.544	8.838	1.793
17944	3.372	0.542	8.840	1.794
17954	3.369	0.539	8.843	1.795
17964	3.370	0.540	8.842	1.796
17974	3.366	0.536	8.846	1.797
17984	3.365	0.535	8.847	1.798
17994	3.364	0.534	8.848	1.799
18000	3.361	0.531	8.851	1.800
18004	3.362	0.532	8.850	1.800
18014	3.362	0.532	8.850	1.801
18024	3.358	0.528	8.854	1.802
18034	3.358	0.528	8.854	1.803
18044	3.355	0.525	8.857	1.804
18054	3.357	0.527	8.855	1.805
18064	3.355	0.525	8.857	1.806
18074	3.353	0.523	8.859	1.807
18084	3.351	0.521	8.861	1.808
18094	3.346	0.516	8.866	1.809
18104	3.347	0.517	8.865	1.810
18114	3.345	0.515	8.867	1.811
18124	3.347	0.517	8.865	1.812
18134	3.347	0.517	8.865	1.813
18144	3.343	0.513	8.869	1.814
18154	3.341	0.511	8.871	1.815
18164	3.340	0.510	8.872	1.816
18204	3.336	0.506	8.876	1.820
18234	3.331	0.501	8.881	1.823
18264	3.329	0.499	8.883	1.826
18294	3.324	0.494	8.888	1.829
18324	3.324	0.494	8.888	1.832
18354	3.321	0.491	8.891	1.835

18384	3.318	0.488	8.894	1.838
18414	3.313	0.483	8.899	1.841
18444	3.308	0.478	8.904	1.844
18474	3.308	0.478	8.904	1.847
18504	3.304	0.474	8.908	1.850
18564	3.297	0.467	8.915	1.856
18654	3.290	0.460	8.922	1.865
18774	3.275	0.445	8.937	1.877
18864	3.260	0.430	8.952	1.886
18954	3.269	0.439	8.943	1.895
19014	3.270	0.440	8.942	1.901
19074	3.251	0.421	8.961	1.907
19164	3.249	0.419	8.963	1.916
19254	3.241	0.411	8.971	1.925
19374	3.235	0.405	8.977	1.937
19464	3.227	0.397	8.985	1.946
19524	3.226	0.396	8.986	1.952
19554	3.227	0.397	8.985	1.955
19674	3.220	0.390	8.992	1.967
19764	3.211	0.381	9.001	1.976
19854	3.210	0.380	9.002	1.985
19974	3.201	0.371	9.011	1.997
20004	3.199	0.369	9.013	2.000
20064	3.195	0.365	9.017	2.006
20154	3.198	0.368	9.014	2.015
20274	3.190	0.360	9.022	2.027
20364	3.189	0.359	9.023	2.036
20454	3.172	0.342	9.040	2.045

LFP1P HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		03/01/2002
Start time		10:15AM
Stop date		10/01/2002
Stop time		10:20AM
Duration (minutes)		10085

Step	Duration (minutes)	Q (L/s)
1	10085	7.40
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP1P	Upper Mannum	458393	6187736	12.95	11.29	NA	0.00	0.00	50.00	32.00	NA	NA
Obs	LFO1UMF	Upper Mannum	458381	6187788	12.02	11.29	NW	52.00	1.04	50.00	16.20	NA	NA
Obs	LFO1GF	Glenforslan	458381	6187789	12.16	11.29	NW	53.00	1.06	50.00	NA	NA	NA
Obs	LFO1P	Pata	458381	6187786	12.13	11.29	NW	56.00	1.12	50.00	NA	NA	NA
Obs	LFO1A	Monoman	458385	6187792	12.32	11.29	NW	57.00	1.14	50.00	NA	NA	NA

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP1P	58.00	108.00	50.00	-46.71	-96.71
Obs	LFO1UMF	60.00	110.00	50.00	-48.71	-98.71
Obs	LFO1GF	33.00	49.70	16.70	-21.71	-38.41
Obs	LFO1P	12.00	18.00	6.00	-0.71	-6.71
Obs	LFO1A	4.00	8.00	4.00	7.29	3.29

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP1P	NA	59.80	90.00	30.20	NA	NA	NA	NA	NA
Obs	LFO1UMF	NA	64.20	76.20	12.00	NA	NA	NA	NA	NA
Obs	LFO1GF	NA	36.80	49.70	12.90	NA	NA	NA	NA	NA
Obs	LFO1P	NA	14.90	17.90	3.00	NA	NA	NA	NA	NA
Obs	LFO1A	NA	6.00	8.00	2.00	NA	NA	NA	NA	NA

Note:

No manual data provided

Have not includeed all production zone details for these deep wells - construction issues are critical for the Monoman wells only

AWE modified data was supplied only - not got original logger files

Iswl values not provided by AWE, Rwl not calculated (note that aquifer is confined)

D for UMF based on well LHC1

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	NA	0.000	NA	0.000
2	NA	0.032	NA	0.001
3	NA	0.091	NA	0.001
4	NA	0.160	NA	0.001
5	NA	0.228	NA	0.002
6	NA	0.289	NA	0.002
7	NA	0.354	NA	0.003
8	NA	0.402	NA	0.003
9	NA	0.450	NA	0.003
10	NA	0.514	NA	0.004
12	NA	0.568	NA	0.004
14	NA	0.627	NA	0.005
16	NA	0.632	NA	0.006
18	NA	0.736	NA	0.007
20	NA	0.782	NA	0.007
25	NA	0.877	NA	0.009
30	NA	0.948	NA	0.011
35	NA	1.015	NA	0.013
40	NA	1.074	NA	0.015
45	NA	1.126	NA	0.017
50	NA	1.182	NA	0.018
55	NA	1.201	NA	0.020
60	NA	1.236	NA	0.022
70	NA	1.301	NA	0.026
80	NA	1.349	NA	0.030
90	NA	1.392	NA	0.033
100	NA	1.432	NA	0.037
110	NA	1.459	NA	0.041
120	NA	1.466	NA	0.044
150	NA	1.488	NA	0.055
180	NA	1.578	NA	0.067
210	NA	1.695	NA	0.078
240	NA	1.746	NA	0.089
270	NA	1.794	NA	0.100
300	NA	1.830	NA	0.111
330	NA	1.864	NA	0.122
360	NA	1.897	NA	0.133
390	NA	1.927	NA	0.144
420	NA	1.952	NA	0.155
450	NA	1.979	NA	0.166
480	NA	2.011	NA	0.178
510	NA	2.034	NA	0.189
540	NA	2.061	NA	0.200
570	NA	2.076	NA	0.211
1335	NA	2.286	NA	0.494
1785	NA	2.362	NA	0.660
2805	NA	2.576	NA	1.037
3315	NA	2.636	NA	1.226
4815	NA	2.808	NA	1.781
5610	NA	2.922	NA	2.075
6165	NA	2.960	NA	2.280
6990	NA	3.056	NA	2.585
7695	NA	3.092	NA	2.846
8490	NA	3.168	NA	3.140
9105	NA	3.170	NA	3.367
10080	NA	3.232	NA	3.728

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	NA	0.001	NA	0.000
2	NA	0.002	NA	0.001
3	NA	0.002	NA	0.001
4	NA	0.002	NA	0.001
5	NA	0.002	NA	0.002
6	NA	0.001	NA	0.002
7	NA	0.000	NA	0.002
8	NA	0.000	NA	0.003
9	NA	0.000	NA	0.003
10	NA	-0.001	NA	0.004
12	NA	-0.001	NA	0.004
14	NA	0.001	NA	0.005
16	NA	0.010	NA	0.006
18	NA	0.019	NA	0.006
20	NA	0.030	NA	0.007
25	NA	0.055	NA	0.009
30	NA	0.085	NA	0.011
35	NA	0.116	NA	0.012
40	NA	0.149	NA	0.014
45	NA	0.183	NA	0.016
50	NA	0.221	NA	0.018
55	NA	0.267	NA	0.020
60	NA	0.323	NA	0.021
70	NA	0.370	NA	0.025
80	NA	0.415	NA	0.028
90	NA	0.459	NA	0.032
100	NA	0.496	NA	0.036
110	NA	0.527	NA	0.039
120	NA	0.623	NA	0.043
150	NA	0.639	NA	0.053
180	NA	0.702	NA	0.064
210	NA	0.780	NA	0.075
240	NA	0.849	NA	0.085
270	NA	0.909	NA	0.096
300	NA	0.960	NA	0.107
330	NA	1.007	NA	0.117
360	NA	1.047	NA	0.128
390	NA	1.099	NA	0.139
420	NA	1.124	NA	0.150
450	NA	1.159	NA	0.160
480	NA	1.198	NA	0.171
510	NA	1.231	NA	0.182
540	NA	1.268	NA	0.192
570	NA	1.282	NA	0.203
1335	NA	1.549	NA	0.475
1785	NA	1.702	NA	0.635
2805	NA	1.983	NA	0.999
3315	NA	2.065	NA	1.180
4815	NA	2.300	NA	1.714
5610	NA	2.416	NA	1.997
6165	NA	2.478	NA	2.195
6990	NA	2.580	NA	2.488
7695	NA	2.637	NA	2.739
8490	NA	2.717	NA	3.022
9105	NA	2.744	NA	3.241
10080	NA	2.816	NA	3.588

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	NA	0.001	NA	0.000
3	NA	-0.001	NA	0.001
4	NA	-0.001	NA	0.001
5	NA	-0.001	NA	0.002
6	NA	-0.001	NA	0.002
7	NA	-0.001	NA	0.002
8	NA	-0.006	NA	0.003
9	NA	-0.004	NA	0.003
10	NA	-0.004	NA	0.003
12	NA	-0.007	NA	0.004
14	NA	-0.009	NA	0.004
16	NA	-0.010	NA	0.005
18	NA	-0.011	NA	0.006
20	NA	-0.013	NA	0.006
25	NA	-0.018	NA	0.008
30	NA	-0.018	NA	0.010
35	NA	-0.020	NA	0.011
40	NA	-0.020	NA	0.013
45	NA	-0.019	NA	0.014
50	NA	-0.018	NA	0.016
55	NA	-0.018	NA	0.018
60	NA	-0.017	NA	0.019
70	NA	-0.011	NA	0.022
80	NA	-0.006	NA	0.026
90	NA	0.002	NA	0.029
100	NA	0.017	NA	0.032
110	NA	0.022	NA	0.035
120	NA	0.040	NA	0.038
150	NA	0.054	NA	0.048
180	NA	0.065	NA	0.057
210	NA	0.074	NA	0.067
240	NA	0.077	NA	0.077
270	NA	0.084	NA	0.086
300	NA	0.095	NA	0.096
330	NA	0.100	NA	0.105
360	NA	0.105	NA	0.115
390	NA	0.113	NA	0.124
420	NA	0.120	NA	0.134
450	NA	0.124	NA	0.143
480	NA	0.131	NA	0.153
510	NA	0.134	NA	0.163
540	NA	0.143	NA	0.172
570	NA	0.144	NA	0.182
1335	NA	0.180	NA	0.426
1785	NA	0.220	NA	0.569
2805	NA	0.231	NA	0.894
3315	NA	0.249	NA	1.057
4815	NA	0.279	NA	1.535
5610	NA	0.277	NA	1.789
6165	NA	0.307	NA	1.966
6990	NA	0.304	NA	2.229
7695	NA	0.333	NA	2.454
8490	NA	0.319	NA	2.707
9105	NA	0.337	NA	2.903
10080	NA	0.333	NA	3.214

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	NA	0.004	NA	0.000
3	NA	0.004	NA	0.001
4	NA	0.004	NA	0.001
5	NA	0.004	NA	0.002
6	NA	0.005	NA	0.002
7	NA	0.005	NA	0.002
8	NA	0.005	NA	0.002
9	NA	0.005	NA	0.003
10	NA	0.005	NA	0.003
12	NA	0.005	NA	0.004
14	NA	0.006	NA	0.004
16	NA	0.005	NA	0.005
18	NA	0.005	NA	0.006
20	NA	0.005	NA	0.006
25	NA	0.005	NA	0.008
30	NA	0.005	NA	0.009
35	NA	0.005	NA	0.011
40	NA	0.005	NA	0.012
45	NA	0.005	NA	0.014
50	NA	0.005	NA	0.015
55	NA	0.006	NA	0.017
60	NA	0.006	NA	0.018
70	NA	0.007	NA	0.022
80	NA	0.008	NA	0.025
90	NA	0.009	NA	0.028
100	NA	0.010	NA	0.031
110	NA	0.010	NA	0.034
120	NA	0.011	NA	0.037
150	NA	0.015	NA	0.046
180	NA	0.017	NA	0.055
210	NA	0.017	NA	0.065
240	NA	0.019	NA	0.074
270	NA	0.019	NA	0.083
300	NA	0.025	NA	0.092
330	NA	0.021	NA	0.102
360	NA	0.023	NA	0.111
390	NA	0.026	NA	0.120
420	NA	0.027	NA	0.129
450	NA	0.027	NA	0.139
480	NA	0.030	NA	0.148
510	NA	0.032	NA	0.157
540	NA	0.032	NA	0.166
570	NA	0.033	NA	0.175
1335	NA	0.001	NA	0.411
1785	NA	0.026	NA	0.549
2805	NA	0.006	NA	0.863
3315	NA	0.023	NA	1.020
4815	NA	0.022	NA	1.482
5610	NA	0.008	NA	1.727
6165	NA	0.035	NA	1.898
6990	NA	0.018	NA	2.151
7695	NA	0.048	NA	2.368
8490	NA	0.019	NA	2.613
9105	NA	0.041	NA	2.802
10080	NA	0.024	NA	3.102

LFP2P HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		05/11/2002
Start time		9:00AM
Stop date		10/11/2002
Stop time		0:00AM
Duration (minutes)		6660

Step	Duration (minutes)	Q (L/s)
1	6660	0.53
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP2P	Pata	460796	6189378	11.43	10.93	NA	0.00	0.00	8.50	8.50	NA	NA
Obs	LFO6A	Monoman	460750	6189360	11.58	11.04	WSW	49.00	5.76	8.50	NA	1.75	9.83
Obs	LFO6P	Pata	460750	6189360	11.63	11.04	WSW	49.00	5.76	8.50	NA	1.72	9.91
Obs	LFO6GF	Glenforslan	460750	6189360	11.62	11.04	WSW	49.00	5.76	8.50	NA	-4.50	16.12

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP2P	13.00	21.50	8.50	-2.07	-10.57
Obs	LFO6A	0.00	11.00	11.00	11.04	0.04
Obs	LFO6P	12.50	26.00	13.50	-1.46	-14.96
Obs	LFO6GF	33.00	42.00	9.00	-21.96	-30.96

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP2P	NA	14.00	23.00	7.50	NA	NA	NA	NA	NA
Obs	LFO6A	NA	6.00	11.00	5.00	NA	NA	NA	NA	NA
Obs	LFO6P	NA	20.00	26.00	3.00	NA	NA	NA	NA	NA
Obs	LFO6GF	NA	36.00	42.00	6.00	NA	NA	NA	NA	NA

Note:

D for obs wells based on log of well LFO6G

No manual data provided

Have not includeed all production zone details for these deep wells - construction issues are critical for the Monoman wells only

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
5.000	1.749	0.001	9.828	0.002
6.000	1.749	0.001	9.828	0.002
7.000	1.749	0.001	9.828	0.003
9.000	1.749	0.001	9.828	0.004
10.000	1.749	0.001	9.828	0.004
11.000	1.749	0.001	9.828	0.005
12.000	1.749	0.001	9.828	0.005
13.000	1.749	0.001	9.828	0.005
17.000	1.747	-0.001	9.830	0.007
18.000	1.746	-0.002	9.831	0.007
19.000	1.746	-0.002	9.831	0.008
20.000	1.746	-0.002	9.831	0.008
21.000	1.745	-0.003	9.832	0.009
22.000	1.744	-0.004	9.833	0.009
23.000	1.744	-0.004	9.833	0.010
24.000	1.743	-0.005	9.834	0.010
25.000	1.743	-0.005	9.834	0.010
26.000	1.742	-0.006	9.835	0.011
27.000	1.742	-0.006	9.835	0.011
28.000	1.742	-0.006	9.835	0.012
29.000	1.741	-0.007	9.836	0.012
30.000	1.741	-0.007	9.836	0.012
31.000	1.740	-0.008	9.837	0.013
32.000	1.740	-0.008	9.837	0.013
33.000	1.740	-0.008	9.837	0.014
34.000	1.740	-0.008	9.837	0.014
35.000	1.740	-0.008	9.837	0.015
36.000	1.739	-0.009	9.838	0.015
37.000	1.739	-0.009	9.838	0.015
38.000	1.738	-0.010	9.839	0.016
39.000	1.738	-0.010	9.839	0.016
40.000	1.737	-0.011	9.840	0.017
41.000	1.737	-0.011	9.840	0.017
42.000	1.736	-0.012	9.841	0.017
43.000	1.736	-0.012	9.841	0.018
44.000	1.736	-0.012	9.841	0.018
45.000	1.736	-0.012	9.841	0.019
46.000	1.736	-0.012	9.841	0.019
47.000	1.736	-0.012	9.841	0.020
48.000	1.736	-0.012	9.841	0.020
49.000	1.736	-0.012	9.841	0.020
50.000	1.736	-0.012	9.841	0.021
52.000	1.736	-0.012	9.841	0.022
54.000	1.735	-0.013	9.842	0.022
56.000	1.735	-0.013	9.842	0.023
58.000	1.735	-0.013	9.842	0.024
60.000	1.735	-0.013	9.842	0.025
62.000	1.735	-0.013	9.842	0.026
64.000	1.735	-0.013	9.842	0.027
66.000	1.734	-0.014	9.843	0.027
68.000	1.733	-0.015	9.844	0.028
70.000	1.733	-0.015	9.844	0.029
72.000	1.733	-0.015	9.844	0.030
74.000	1.733	-0.015	9.844	0.031

76.000	1.733	-0.015	9.844	0.032
78.000	1.733	-0.015	9.844	0.032
80.000	1.732	-0.016	9.845	0.033
82.000	1.733	-0.015	9.844	0.034
84.000	1.733	-0.015	9.844	0.035
86.000	1.732	-0.016	9.845	0.036
88.000	1.732	-0.016	9.845	0.037
90.000	1.733	-0.015	9.844	0.037
92.000	1.732	-0.016	9.845	0.038
94.000	1.733	-0.015	9.844	0.039
96.000	1.732	-0.016	9.845	0.040
98.000	1.733	-0.015	9.844	0.041
100.000	1.733	-0.015	9.844	0.042
110.000	1.733	-0.015	9.844	0.046
120.000	1.732	-0.016	9.845	0.050
130.000	1.731	-0.017	9.846	0.054
140.000	1.729	-0.019	9.848	0.058
150.000	1.730	-0.018	9.847	0.062
160.000	1.729	-0.019	9.848	0.067
170.000	1.730	-0.018	9.847	0.071
180.000	1.729	-0.019	9.848	0.075
190.000	1.729	-0.019	9.848	0.079
200.000	1.729	-0.019	9.848	0.083
210.000	1.729	-0.019	9.848	0.087
220.000	1.730	-0.018	9.847	0.092
230.000	1.729	-0.019	9.848	0.096
240.000	1.731	-0.017	9.846	0.100
250.000	1.729	-0.019	9.848	0.104
260.000	1.728	-0.020	9.849	0.108
270.000	1.728	-0.020	9.849	0.112
280.000	1.728	-0.020	9.849	0.117
290.000	1.727	-0.021	9.850	0.121
300.000	1.727	-0.021	9.850	0.125
310.000	1.728	-0.020	9.849	0.129
320.000	1.729	-0.019	9.848	0.133
330.000	1.728	-0.020	9.849	0.137
340.000	1.727	-0.021	9.850	0.142
350.000	1.727	-0.021	9.850	0.146
360.000	1.725	-0.023	9.852	0.150
370.000	1.724	-0.024	9.853	0.154
380.000	1.725	-0.023	9.852	0.158
390.000	1.724	-0.024	9.853	0.162
400.000	1.725	-0.023	9.852	0.167
410.000	1.723	-0.025	9.854	0.171
420.000	1.722	-0.026	9.855	0.175
430.000	1.721	-0.027	9.856	0.179
440.000	1.721	-0.027	9.856	0.183
450.000	1.721	-0.027	9.856	0.187
460.000	1.721	-0.027	9.856	0.192
470.000	1.720	-0.028	9.857	0.196
480.000	1.719	-0.029	9.858	0.200
490.000	1.718	-0.030	9.859	0.204
500.000	1.717	-0.031	9.860	0.208
510.000	1.717	-0.031	9.860	0.212
520.000	1.717	-0.031	9.860	0.217
530.000	1.716	-0.032	9.861	0.221

540.000	1.715	-0.033	9.862	0.225
550.000	1.714	-0.034	9.863	0.229
560.000	1.715	-0.033	9.862	0.233
570.000	1.713	-0.035	9.864	0.237
580.000	1.721	-0.027	9.856	0.242
590.000	1.721	-0.027	9.856	0.246
600.000	1.720	-0.028	9.857	0.250
610.000	1.720	-0.028	9.857	0.254
620.000	1.720	-0.028	9.857	0.258
630.000	1.721	-0.027	9.856	0.262
640.000	1.720	-0.028	9.857	0.267
650.000	1.720	-0.028	9.857	0.271
660.000	1.720	-0.028	9.857	0.275
670.000	1.720	-0.028	9.857	0.279
680.000	1.719	-0.029	9.858	0.283
690.000	1.720	-0.028	9.857	0.287
700.000	1.720	-0.028	9.857	0.292
710.000	1.721	-0.027	9.856	0.296
720.000	1.721	-0.027	9.856	0.300
730.000	1.721	-0.027	9.856	0.304
740.000	1.722	-0.026	9.855	0.308
750.000	1.722	-0.026	9.855	0.312
760.000	1.722	-0.026	9.855	0.317
770.000	1.722	-0.026	9.855	0.321
780.000	1.723	-0.025	9.854	0.325
790.000	1.723	-0.025	9.854	0.329
800.000	1.723	-0.025	9.854	0.333
810.000	1.723	-0.025	9.854	0.337
820.000	1.724	-0.024	9.853	0.342
830.000	1.724	-0.024	9.853	0.346
840.000	1.725	-0.023	9.852	0.350
850.000	1.726	-0.022	9.851	0.354
860.000	1.726	-0.022	9.851	0.358
870.000	1.727	-0.021	9.850	0.362
880.000	1.728	-0.020	9.849	0.367
890.000	1.729	-0.019	9.848	0.371
900.000	1.729	-0.019	9.848	0.375
910.000	1.729	-0.019	9.848	0.379
920.000	1.729	-0.019	9.848	0.383
930.000	1.729	-0.019	9.848	0.387
940.000	1.730	-0.018	9.847	0.392
950.000	1.731	-0.017	9.846	0.396
960.000	1.730	-0.018	9.847	0.400
970.000	1.731	-0.017	9.846	0.404
980.000	1.732	-0.016	9.845	0.408
990.000	1.732	-0.016	9.845	0.412
1000.000	1.732	-0.016	9.845	0.416
1100.000	1.734	-0.014	9.843	0.458
1200.000	1.736	-0.012	9.841	0.500
1300.000	1.737	-0.011	9.840	0.541
1400.000	1.736	-0.012	9.841	0.583
1500.000	1.735	-0.013	9.842	0.625
1600.000	1.735	-0.013	9.842	0.666
1700.000	1.736	-0.012	9.841	0.708
1800.000	1.737	-0.011	9.840	0.750
1900.000	1.737	-0.011	9.840	0.791

2010.000	1.734	-0.014	9.843	0.837
2100.000	1.733	-0.015	9.844	0.875
2220.000	1.732	-0.016	9.845	0.925
2310.000	1.733	-0.015	9.844	0.962
2400.000	1.735	-0.013	9.842	1.000
2520.000	1.736	-0.012	9.841	1.050
2610.000	1.737	-0.011	9.840	1.087
2700.000	1.737	-0.011	9.840	1.125
2820.000	1.739	-0.009	9.838	1.175
2910.000	1.742	-0.006	9.835	1.212
3000.000	1.747	-0.001	9.830	1.249
3120.000	1.758	0.010	9.819	1.299
3210.000	1.763	0.015	9.814	1.337
3300.000	1.763	0.015	9.814	1.374
3420.000	1.752	0.004	9.825	1.424
3600.000	1.750	0.002	9.827	1.499
3720.000	1.754	0.006	9.823	1.549
3810.000	1.755	0.007	9.822	1.587
3900.000	1.759	0.011	9.818	1.624
4020.000	1.758	0.010	9.819	1.674
4110.000	1.762	0.014	9.815	1.712
4200.000	1.763	0.015	9.814	1.749
4320.000	1.762	0.014	9.815	1.799
4410.000	1.761	0.013	9.816	1.837
4500.000	1.758	0.010	9.819	1.874
4620.000	1.756	0.008	9.821	1.924
4710.000	1.753	0.005	9.824	1.962
4800.000	1.749	0.001	9.828	1.999
4920.000	1.742	-0.006	9.835	2.049
5010.000	1.744	-0.004	9.833	2.087
5100.000	1.747	-0.001	9.830	2.124
5220.000	1.756	0.008	9.821	2.174
5310.000	1.759	0.011	9.818	2.212
5400.000	1.760	0.012	9.817	2.249
5520.000	1.761	0.013	9.816	2.299
5610.000	1.762	0.014	9.815	2.337
5700.000	1.762	0.014	9.815	2.374
5820.000	1.757	0.009	9.820	2.424
5910.000	1.757	0.009	9.820	2.461
6000.000	1.753	0.005	9.824	2.499
6120.000	1.752	0.004	9.825	2.549
6210.000	1.751	0.003	9.826	2.586
6300.000	1.749	0.001	9.828	2.624
6420.000	1.740	-0.008	9.837	2.674
6510.000	1.741	-0.007	9.836	2.711
6600.000	1.741	-0.007	9.836	2.749

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
7	1.722	0.002	9.909	0.003
8	1.726	0.006	9.905	0.003
9	1.735	0.015	9.896	0.004
10	1.747	0.027	9.884	0.004
11	1.762	0.042	9.869	0.005
12	1.780	0.060	9.851	0.005
13	1.800	0.080	9.831	0.005
14	1.823	0.103	9.808	0.006
15	1.845	0.125	9.786	0.006
16	1.870	0.150	9.761	0.007
17	1.896	0.176	9.735	0.007
18	1.922	0.202	9.709	0.007
19	1.948	0.228	9.683	0.008
20	1.974	0.254	9.657	0.008
21	2.001	0.281	9.630	0.009
22	2.027	0.307	9.604	0.009
23	2.052	0.332	9.579	0.010
24	2.077	0.357	9.554	0.010
25	2.101	0.381	9.530	0.010
26	2.125	0.405	9.506	0.011
27	2.149	0.429	9.482	0.011
28	2.171	0.451	9.460	0.012
29	2.193	0.473	9.438	0.012
30	2.214	0.494	9.417	0.012
31	2.234	0.514	9.397	0.013
32	2.254	0.534	9.377	0.013
33	2.273	0.553	9.358	0.014
34	2.292	0.572	9.339	0.014
35	2.310	0.590	9.321	0.015
36	2.327	0.607	9.304	0.015
37	2.344	0.624	9.287	0.015
38	2.360	0.640	9.271	0.016
39	2.375	0.655	9.256	0.016
40	2.391	0.671	9.240	0.017
41	2.405	0.685	9.226	0.017
42	2.420	0.700	9.211	0.017
43	2.434	0.714	9.197	0.018
44	2.447	0.727	9.184	0.018
45	2.460	0.740	9.171	0.019
46	2.472	0.752	9.159	0.019
47	2.484	0.764	9.147	0.020
48	2.496	0.776	9.135	0.020
49	2.507	0.787	9.124	0.020
50	2.518	0.798	9.113	0.021
52	2.539	0.819	9.092	0.022
54	2.558	0.838	9.073	0.022
56	2.577	0.857	9.054	0.023
58	2.595	0.875	9.036	0.024
60	2.611	0.891	9.020	0.025
62	2.626	0.906	9.005	0.026
64	2.640	0.920	8.991	0.027
66	2.655	0.935	8.976	0.027
68	2.668	0.948	8.963	0.028
70	2.681	0.961	8.950	0.029

72	2.693	0.973	8.938	0.030
74	2.705	0.985	8.926	0.031
76	2.716	0.996	8.915	0.032
78	2.726	1.006	8.905	0.032
80	2.737	1.017	8.894	0.033
82	2.747	1.027	8.884	0.034
84	2.756	1.036	8.875	0.035
86	2.765	1.045	8.866	0.036
88	2.773	1.053	8.858	0.037
90	2.782	1.062	8.849	0.037
92	2.789	1.069	8.842	0.038
94	2.797	1.077	8.834	0.039
96	2.804	1.084	8.827	0.040
98	2.811	1.091	8.820	0.041
100	2.817	1.097	8.814	0.042
110	2.847	1.127	8.784	0.046
120	2.872	1.152	8.759	0.050
130	2.892	1.172	8.739	0.054
140	2.909	1.189	8.722	0.058
150	2.924	1.204	8.707	0.062
160	2.936	1.216	8.695	0.067
170	2.948	1.228	8.683	0.071
180	2.957	1.237	8.674	0.075
190	2.964	1.244	8.667	0.079
200	2.971	1.251	8.660	0.083
210	2.977	1.257	8.654	0.087
220	2.981	1.261	8.650	0.092
230	2.987	1.267	8.644	0.096
240	2.991	1.271	8.640	0.100
250	2.995	1.275	8.636	0.104
260	2.999	1.279	8.632	0.108
270	3.002	1.282	8.629	0.112
280	3.005	1.285	8.626	0.117
290	3.007	1.287	8.624	0.121
300	3.010	1.290	8.621	0.125
310	3.011	1.291	8.620	0.129
320	3.013	1.293	8.618	0.133
330	3.015	1.295	8.616	0.137
340	3.016	1.296	8.615	0.142
350	3.018	1.298	8.613	0.146
360	3.020	1.300	8.611	0.150
370	3.021	1.301	8.610	0.154
380	3.023	1.303	8.608	0.158
390	3.024	1.304	8.607	0.162
400	3.025	1.305	8.606	0.167
410	3.026	1.306	8.605	0.171
420	3.028	1.308	8.603	0.175
430	3.029	1.309	8.602	0.179
440	3.030	1.310	8.601	0.183
450	3.031	1.311	8.600	0.187
460	3.032	1.312	8.599	0.192
470	3.033	1.313	8.598	0.196
480	3.035	1.315	8.596	0.200
490	3.036	1.316	8.595	0.204
500	3.037	1.317	8.594	0.208
510	3.038	1.318	8.593	0.212

520	3.039	1.319	8.592	0.217
530	3.040	1.320	8.591	0.221
540	3.041	1.321	8.590	0.225
550	3.042	1.322	8.589	0.229
560	3.043	1.323	8.588	0.233
570	3.044	1.324	8.587	0.237
580	3.045	1.325	8.586	0.242
590	3.046	1.326	8.585	0.246
600	3.047	1.327	8.584	0.250
610	3.048	1.328	8.583	0.254
620	3.049	1.329	8.582	0.258
630	3.049	1.329	8.582	0.262
640	3.050	1.330	8.581	0.267
650	3.051	1.331	8.580	0.271
660	3.052	1.332	8.579	0.275
670	3.053	1.333	8.578	0.279
680	3.053	1.333	8.578	0.283
690	3.054	1.334	8.577	0.287
700	3.054	1.334	8.577	0.292
710	3.054	1.334	8.577	0.296
720	3.054	1.334	8.577	0.300
730	3.055	1.335	8.576	0.304
740	3.055	1.335	8.576	0.308
750	3.054	1.334	8.577	0.312
760	3.054	1.334	8.577	0.317
770	3.055	1.335	8.576	0.321
780	3.055	1.335	8.576	0.325
790	3.054	1.334	8.577	0.329
800	3.055	1.335	8.576	0.333
810	3.055	1.335	8.576	0.337
820	3.055	1.335	8.576	0.342
830	3.055	1.335	8.576	0.346
840	3.054	1.334	8.577	0.350
850	3.054	1.334	8.577	0.354
860	3.053	1.333	8.578	0.358
870	3.053	1.333	8.578	0.362
880	3.052	1.332	8.579	0.367
890	3.052	1.332	8.579	0.371
900	3.051	1.331	8.580	0.375
910	3.051	1.331	8.580	0.379
920	3.050	1.330	8.581	0.383
930	3.050	1.330	8.581	0.387
940	3.050	1.330	8.581	0.392
950	3.049	1.329	8.582	0.396
960	3.049	1.329	8.582	0.400
970	3.049	1.329	8.582	0.404
980	3.048	1.328	8.583	0.408
990	3.048	1.328	8.583	0.412
1000	3.047	1.327	8.584	0.416
1100	3.044	1.324	8.587	0.458
1200	3.044	1.324	8.587	0.500
1300	3.044	1.324	8.587	0.541
1400	3.045	1.325	8.586	0.583
1500	3.046	1.326	8.585	0.625
1600	3.046	1.326	8.585	0.666
1700	3.043	1.323	8.588	0.708

1800	3.039	1.319	8.592	0.750
1900	3.039	1.319	8.592	0.791
2010	3.042	1.322	8.589	0.837
2100	3.045	1.325	8.586	0.875
2220	3.047	1.327	8.584	0.925
2310	3.046	1.326	8.585	0.962
2400	3.045	1.325	8.586	1.000
2520	3.044	1.324	8.587	1.050
2610	3.043	1.323	8.588	1.087
2700	3.044	1.324	8.587	1.125
2820	3.043	1.323	8.588	1.175
2910	3.041	1.321	8.590	1.212
3000	3.037	1.317	8.594	1.249
3120	3.027	1.307	8.604	1.299
3210	3.021	1.301	8.610	1.337
3300	3.019	1.299	8.612	1.374
3420	3.024	1.304	8.607	1.424
3510	3.030	1.310	8.601	1.462
3600	3.032	1.312	8.599	1.499
3720	3.031	1.311	8.600	1.549
3810	3.030	1.310	8.601	1.587
3900	3.028	1.308	8.603	1.624
4020	3.027	1.307	8.604	1.674
4110	3.024	1.304	8.607	1.712
4200	3.022	1.302	8.609	1.749
4320	3.023	1.303	8.608	1.799
4410	3.024	1.304	8.607	1.837
4500	3.025	1.305	8.606	1.874
4620	3.026	1.306	8.605	1.924
4710	3.029	1.309	8.602	1.962
4800	3.031	1.311	8.600	1.999
4920	3.040	1.320	8.591	2.049
5010	3.041	1.321	8.590	2.087
5100	3.041	1.321	8.590	2.124
5220	3.033	1.313	8.598	2.174
5310	3.028	1.308	8.603	2.212
5400	3.027	1.307	8.604	2.249
5520	3.028	1.308	8.603	2.299
5610	3.027	1.307	8.604	2.337
5700	3.027	1.307	8.604	2.374
5820	3.029	1.309	8.602	2.424
5910	3.030	1.310	8.601	2.461
6000	3.032	1.312	8.599	2.499
6120	3.032	1.312	8.599	2.549
6210	3.034	1.314	8.597	2.586
6300	3.036	1.316	8.595	2.624
6420	3.043	1.323	8.588	2.674
6510	3.046	1.326	8.585	2.711
6600	3.046	1.326	8.585	2.749
6690	2.685	0.965	8.946	2.786
6720	2.260	0.540	9.371	2.799
6750	2.053	0.333	9.578	2.811
6780	1.948	0.228	9.683	2.824
6810	1.891	0.171	9.740	2.836
6840	1.853	0.133	9.778	2.849
6870	1.828	0.108	9.803	2.861

6900	1.811	0.091	9.820	2.874
6930	1.797	0.077	9.834	2.886
6960	1.788	0.068	9.843	2.899
6990	1.781	0.061	9.850	2.911
7020	1.775	0.055	9.856	2.924
7050	1.771	0.051	9.860	2.936
7080	1.768	0.048	9.863	2.949
7110	1.764	0.044	9.867	2.961
7140	1.763	0.043	9.868	2.974
7170	1.761	0.041	9.870	2.986
7200	1.758	0.038	9.873	2.999
7230	1.756	0.036	9.875	3.011
7260	1.756	0.036	9.875	3.024
7290	1.756	0.036	9.875	3.036
7320	1.756	0.036	9.875	3.049
7350	1.756	0.036	9.875	3.061
7380	1.755	0.035	9.876	3.074
7410	1.754	0.034	9.877	3.086
7440	1.753	0.033	9.878	3.099
7470	1.753	0.033	9.878	3.111
7500	1.753	0.033	9.878	3.124
7530	1.753	0.033	9.878	3.136
7560	1.753	0.033	9.878	3.149
7590	1.754	0.034	9.877	3.161
7620	1.754	0.034	9.877	3.174
7650	1.754	0.034	9.877	3.186
7680	1.756	0.036	9.875	3.199

LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
0	-4.500	0.000	16.119	0.000
940	-4.500	0.000	16.119	0.392
1030	-4.300	0.200	15.919	0.429
1100	-4.200	0.300	15.819	0.458
1300	-3.800	0.700	15.419	0.541
1930	-3.700	0.800	15.319	0.804

LFP3GF HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		08/03/2004
Start time		1:30PM
Stop date		
Stop time		
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	1.50
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP3GF	Glenforslan	460229	6192854	14.62	13.72		0.00	0.00	20.50	17.00	1.40	13.22
Obs	LFP3P	Pata	460227	6192858	14.26	13.74		4.40	0.21	20.50	NA	4.38	9.88
Obs	MAN1O	Upper Mannum	460222	6192856	14.80	13.71		6.92	0.34	20.50	NA	0.42	14.38
Obs	LFO3A	Monoman	460221	6192857	14.47	13.78		9.20	0.45	20.50	NA	4.63	9.84
Obs	LFO3P	Pata	460220	6192856	14.53	13.78		9.25	0.45	20.50	NA	4.58	9.95
Obs	LFO3GF	Glenforslan	460221	6192857	14.59	13.78		10.97	0.54	20.50	4.00	0.23	14.36
Obs	LFO3P_2	Pata	460242	6192861	14.06	13.65		14.90	0.73	20.50	NA	4.13	9.93
Obs	LFO3GF_2	Glenforslan	460265	6192869	14.58	13.16		39.24	1.91	20.50	17.00	0.39	14.19

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP3GF	41.00	61.50	20.50	-27.28	-47.78
Obs	LFP3P	17.50	26.50	9.00	-3.76	-12.76
Obs	MAN1O	63.50	133.50	70.00	-49.79	-119.79
Obs	LFO3A	5.00	11.00	6.00	8.78	2.78
Obs	LFO3P	17.50	26.00	8.50	-3.72	-12.22
Obs	LFO3GF	41.00	61.50	20.50	-27.22	-47.72
Obs	LFO3P_2	17.50	26.00	8.50	-3.85	-12.35
Obs	LFO3GF_2	41.00	61.50	20.50	-27.84	-48.34

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP3GF	OH	44.00	58.00	14.00	200	NA	NA	NA	200
Obs	LFP3P	OH	17.50	27.00	9.50	NA	NA	NA	NA	175
Obs	MAN1O	OH / SC?	65.50	90.00	24.50	NA	NA	NA	NA	100
Obs	LFO3A	SC	6.00	12.00	6.00	NA	NA	NA	NA	80
Obs	LFO3P	SC	20.00	26.00	6.00	NA	NA	NA	NA	80
Obs	LFO3GF	SC	39.00	45.00	6.00	NA	NA	NA	NA	80
Obs	LFO3P_2	OH	18.00	28.00	10.00	NA	NA	NA	NA	100
Obs	LFO3GF_2	OH	42.00	58.00	16.00	NA	NA	NA	NA	100

Note:

MAN1o - estimated bottom to give aquifer thickness

MAN1o used to give aquifer thicknesses for production well and close wells

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	3.010	1.610	11.614	1.000	1.50	0.93	
2	5.920	4.520	8.704	2.000	1.50	0.33	
3	8.290	6.890	6.334	3.000	1.50	0.22	
4	10.290	8.890	4.334	4.000	1.50	0.17	
5	12.050	10.650	2.574	5.000	1.50	0.14	24241
6	13.730	12.330	0.894	6.000	1.50	0.12	
7	14.960	13.560	-0.336	7.000	1.50	0.11	
8	16.700	15.300	-2.076	8.000	1.50	0.10	
9	17.470	16.070	-2.846	9.000	1.50	0.09	
10	18.500	17.100	-3.876	10.000	1.50	0.09	
12	20.400	19.000	-5.776	12.000	1.50	0.08	
14	21.740	20.340	-7.116	14.000	1.50	0.07	
16	22.840	21.440	-8.216	16.000	1.50	0.07	
18	23.680	22.280	-9.056	18.000	1.50	0.07	
20	24.600	23.200	-9.976	20.000	1.50	0.06	
22	25.450	24.050	-10.826	22.000	1.50	0.06	
24	26.210	24.810	-11.586	24.000	1.50	0.06	
26	26.780	25.380	-12.156	26.000	1.50	0.06	
28	27.400	26.000	-12.776	28.000	1.50	0.06	
30	28.020	26.620	-13.396	30.000	1.50	0.06	
35	28.730	27.330	-14.106	35.000	1.50	0.05	
40	29.430	28.030	-14.806	40.000	1.50	0.05	
45	30.130	28.730	-15.506	45.000	1.50	0.05	
50	30.540	29.140	-15.916	50.000	1.50	0.05	
55	30.890	29.490	-16.266	55.000	1.50	0.05	
60	31.210	29.810	-16.586	60.000	1.50	0.05	24407
70	31.740	30.340	-17.116	70.000	1.50	0.05	
80	32.130	30.730	-17.506	80.000	1.50	0.05	
90	32.430	31.030	-17.806	90.000	1.50	0.05	
100	32.690	31.290	-18.066	100.000	1.50	0.05	
120	33.120	31.720	-18.496	120.000	1.50	0.05	
140	33.510	32.110	-18.886	140.000	1.50	0.05	
160	34.300	32.900	-19.676	160.000	1.50	0.05	
180	34.610	33.210	-19.986	180.000	1.50	0.05	24344
200	34.880	33.480	-20.256	200.000	1.50	0.04	
250	35.220	33.820	-20.596	250.000	1.50	0.04	24344
300	35.820	34.420	-21.196	300.000	1.50	0.04	24407
360	36.360	34.960	-21.736	360.000	1.50	0.04	24344
400	36.380	34.980	-21.756	400.000	1.50	0.04	
420				420.000			24344
450	36.990	35.590	-22.366	450.000	1.50	0.04	
480				480.000			24470
500	37.120	35.720	-22.496	500.000	1.50	0.04	
540				540.000			24533
550	37.640	36.240	-23.016	550.000	1.50	0.04	
600	37.750	36.350	-23.126	600.000	1.50	0.04	24596
650	37.830	36.430	-23.206	650.000	1.50	0.04	
660				660.000			24533
700	37.840	36.440	-23.216	700.000	1.50	0.04	
720	37.850	36.450	-23.226	720.000	1.50	0.04	24533

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
8	4.355	-0.025	9.908	0.413
22	4.310	-0.070	9.953	1.136
30	4.290	-0.090	9.973	1.550
49	4.240	-0.140	10.023	2.531
73	4.230	-0.150	10.033	3.771
92	4.220	-0.160	10.043	4.752
128	4.220	-0.160	10.043	6.612
185	4.210	-0.170	10.053	9.556
255	4.210	-0.170	10.053	13.171
302	4.220	-0.160	10.043	15.599
362	4.220	-0.160	10.043	18.698
410	4.230	-0.150	10.033	21.178
458	4.240	-0.140	10.023	23.657
607	4.240	-0.140	10.023	31.353
660	4.250	-0.130	10.013	34.091
720	4.260	-0.120	10.003	37.190

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
5	0.415	-0.005	14.385	0.104
21	0.400	-0.020	14.400	0.439
27	0.395	-0.025	14.405	0.564
51	0.390	-0.030	14.410	1.065
68	0.380	-0.040	14.420	1.420
91	0.380	-0.040	14.420	1.900
124	0.370	-0.050	14.430	2.589
199	0.365	-0.055	14.435	4.156
252	0.360	-0.060	14.440	5.262
299	0.360	-0.060	14.440	6.244
360	0.360	-0.060	14.440	7.518
407	0.360	-0.060	14.440	8.499
462	0.370	-0.050	14.430	9.648
502	0.375	-0.045	14.425	10.483
554	0.380	-0.040	14.420	11.569
603	0.390	-0.030	14.410	12.592
654	0.390	-0.030	14.410	13.657
720	0.400	-0.020	14.400	15.036

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
7	4.620	-0.010	9.850	0.083
20	4.620	-0.010	9.850	0.236
29	4.620	-0.010	9.850	0.343
48	4.620	-0.010	9.850	0.567
71	4.620	-0.010	9.850	0.839
88	4.620	-0.010	9.850	1.040
126	4.615	-0.015	9.855	1.489
183	4.620	-0.010	9.850	2.162
199	4.620	-0.010	9.850	2.351
254	4.620	-0.010	9.850	3.001
361	4.620	-0.010	9.850	4.265
409	4.620	-0.010	9.850	4.832
464	4.620	-0.010	9.850	5.482
504	4.620	-0.010	9.850	5.955
556	4.620	-0.010	9.850	6.569
607	4.625	-0.005	9.845	7.172
720	4.630	0.000	9.840	8.507

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
6	4.560	-0.020	9.970	0.070
21	4.510	-0.070	10.020	0.245
28	4.485	-0.095	10.045	0.327
49	4.450	-0.130	10.080	0.573
69	4.430	-0.150	10.100	0.806
89	4.425	-0.155	10.105	1.040
125	4.420	-0.160	10.110	1.461
181	4.410	-0.170	10.120	2.115
198	4.410	-0.170	10.120	2.314
253	4.420	-0.160	10.110	2.957
298	4.420	-0.160	10.110	3.483
360	4.420	-0.160	10.110	4.207
408	4.440	-0.140	10.090	4.768
463	4.440	-0.140	10.090	5.411
603	4.450	-0.130	10.080	7.047
656	4.460	-0.120	10.070	7.667
720	4.460	-0.120	10.070	8.415

STRIPPED LOGGER DATA

Minutes	WL(m)	St (m)	Rwl (m)	t/r2
4	0.610	0.380	13.980	0.033
14	2.561	2.331	12.029	0.116
15	2.756	2.526	11.834	0.125
16	2.930	2.700	11.660	0.133
17	3.105	2.875	11.485	0.141
18	3.259	3.029	11.331	0.150
19	3.412	3.182	11.178	0.158
20	3.556	3.326	11.034	0.166
21	3.700	3.470	10.890	0.175
22	3.823	3.593	10.767	0.183
23	3.967	3.737	10.623	0.191
24	4.080	3.850	10.510	0.199
25	4.193	3.963	10.398	0.208
26	4.316	4.086	10.274	0.216
27	4.429	4.199	10.161	0.224
28	4.531	4.301	10.059	0.233
29	4.644	4.414	9.946	0.241
30	4.747	4.517	9.843	0.249
31	4.839	4.609	9.751	0.258
32	4.931	4.701	9.659	0.266
33	5.024	4.794	9.566	0.274
34	5.106	4.876	9.484	0.283
35	5.198	4.968	9.392	0.291
36	5.280	5.050	9.310	0.299
38	5.434	5.204	9.156	0.316
39	5.506	5.276	9.084	0.324
40	5.578	5.348	9.012	0.332
41	5.650	5.420	8.940	0.341
42	5.712	5.482	8.878	0.349
43	5.783	5.553	8.807	0.357
44	5.845	5.615	8.745	0.366
45	5.917	5.687	8.673	0.374
46	5.978	5.748	8.612	0.382
47	6.040	5.810	8.550	0.391
48	6.102	5.872	8.488	0.399
49	6.163	5.933	8.427	0.407
50	6.214	5.984	8.376	0.415
52	6.327	6.097	8.263	0.432
54	6.430	6.200	8.160	0.449
56	6.512	6.282	8.078	0.465
58	6.604	6.374	7.986	0.482
60	6.687	6.457	7.903	0.499
62	6.769	6.539	7.821	0.515
64	6.841	6.611	7.749	0.532
66	6.923	6.693	7.667	0.548
68	6.994	6.764	7.596	0.565
70	7.077	6.847	7.513	0.582
72	7.138	6.908	7.452	0.598
74	7.210	6.980	7.380	0.615
76	7.282	7.052	7.308	0.632
78	7.343	7.113	7.247	0.648
80	7.415	7.185	7.175	0.665
83	7.508	7.278	7.082	0.690
84	7.538	7.308	7.052	0.698

86	7.600	7.370	6.990	0.715
88	7.651	7.421	6.939	0.731
90	7.713	7.483	6.877	0.748
92	7.764	7.534	6.826	0.764
94	7.826	7.596	6.764	0.781
96	7.877	7.647	6.713	0.798
98	7.928	7.698	6.662	0.814
100	7.980	7.750	6.610	0.831
110	8.216	7.986	6.374	0.914
120	8.421	8.191	6.169	0.997
130	8.626	8.396	5.964	1.080
140	8.801	8.571	5.789	1.163
150	8.975	8.745	5.615	1.246
160	9.140	8.910	5.450	1.330
170	9.314	9.084	5.276	1.413
180	9.468	9.238	5.122	1.496
190	9.612	9.382	4.978	1.579
200	9.745	9.515	4.845	1.662
210	9.868	9.638	4.722	1.745
220	9.981	9.751	4.609	1.828
230	10.104	9.874	4.486	1.911
240	10.197	9.967	4.393	1.994
250	10.289	10.059	4.301	2.077
260	10.371	10.141	4.219	2.161
270	10.464	10.234	4.126	2.244
280	10.566	10.336	4.024	2.327
290	10.648	10.418	3.942	2.410
300	10.720	10.490	3.870	2.493
310	10.802	10.572	3.788	2.576
320	10.884	10.654	3.706	2.659
330	10.946	10.716	3.644	2.742
340	11.018	10.788	3.572	2.825
350	11.090	10.860	3.500	2.908
360	11.172	10.942	3.418	2.992
370	11.254	11.024	3.336	3.075
380	11.326	11.096	3.264	3.158
390	11.387	11.157	3.203	3.241
400	11.439	11.209	3.151	3.324
410	11.490	11.260	3.100	3.407
420	11.541	11.311	3.049	3.490
430	11.613	11.383	2.977	3.573
440	11.675	11.445	2.915	3.656
450	11.736	11.506	2.854	3.739
460	11.798	11.568	2.792	3.822
470	11.849	11.619	2.741	3.906
480	11.890	11.660	2.700	3.989
490	11.942	11.712	2.648	4.072
500	11.993	11.763	2.597	4.155
510	12.044	11.814	2.546	4.238
520	12.106	11.876	2.484	4.321
530	12.198	11.968	2.392	4.404
540	12.270	12.040	2.320	4.487
550	12.321	12.091	2.269	4.570
560	12.362	12.132	2.228	4.653
570	12.393	12.163	2.197	4.737
580	12.424	12.194	2.166	4.820

590	12.434	12.204	2.156	4.903
600	12.475	12.245	2.115	4.986
610	12.516	12.286	2.074	5.069
620	12.547	12.317	2.043	5.152
630	12.588	12.358	2.002	5.235
640	12.629	12.399	1.961	5.318
650	12.670	12.440	1.920	5.401
660	12.691	12.461	1.899	5.484
670	12.732	12.502	1.858	5.568
680	12.752	12.522	1.838	5.651
690	12.783	12.553	1.807	5.734
700	12.814	12.584	1.776	5.817
710	12.835	12.605	1.755	5.900
720	12.865	12.635	1.725	5.983

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
9	4.100	-0.030	9.962	0.041
22	4.060	-0.070	10.002	0.099
31	4.035	-0.095	10.027	0.140
49	4.010	-0.120	10.052	0.221
74	3.990	-0.140	10.072	0.333
93	3.980	-0.150	10.082	0.419
130	3.980	-0.150	10.082	0.586
186	3.975	-0.155	10.087	0.838
201	3.980	-0.150	10.082	0.905
256	3.980	-0.150	10.082	1.153
303	3.985	-0.145	10.077	1.365
364	3.990	-0.140	10.072	1.640
401	4.000	-0.130	10.062	1.806
467	4.010	-0.120	10.052	2.104
502	4.010	-0.120	10.052	2.261
559	4.010	-0.120	10.052	2.518
609	4.020	-0.110	10.042	2.743
661	4.020	-0.110	10.042	2.977
720	4.030	-0.100	10.032	3.243

STRIPPED LOGGER DATA

Minutes	WL(m)	St (m)	Rwl (m)	t/r2
8	0.400	0.010	14.182	0.005
9	0.400	0.010	14.182	0.006
10	0.410	0.020	14.172	0.006
11	0.420	0.030	14.162	0.007
12	0.430	0.040	14.152	0.008
13	0.440	0.050	14.142	0.008
14	0.461	0.071	14.121	0.009
15	0.471	0.081	14.111	0.010
16	0.491	0.101	14.091	0.010
17	0.511	0.121	14.071	0.011
18	0.531	0.141	14.051	0.012
19	0.552	0.162	14.030	0.012
20	0.582	0.192	14.000	0.013
21	0.602	0.212	13.980	0.014
22	0.632	0.242	13.950	0.014
23	0.663	0.273	13.919	0.015
24	0.693	0.303	13.889	0.016
25	0.723	0.333	13.859	0.016
26	0.753	0.363	13.829	0.017
27	0.784	0.394	13.798	0.018
28	0.814	0.424	13.768	0.018
29	0.854	0.464	13.728	0.019
30	0.885	0.495	13.697	0.019
31	0.925	0.535	13.657	0.020
32	0.955	0.565	13.627	0.021
33	0.986	0.596	13.596	0.021
34	1.026	0.636	13.556	0.022
35	1.066	0.676	13.516	0.023
36	1.097	0.707	13.485	0.023
37	1.137	0.747	13.445	0.024
38	1.167	0.777	13.415	0.025
39	1.208	0.818	13.374	0.025
40	1.238	0.848	13.344	0.026
41	1.278	0.888	13.304	0.027
42	1.309	0.919	13.273	0.027
43	1.349	0.959	13.233	0.028
44	1.389	0.999	13.193	0.029
45	1.420	1.030	13.162	0.029
46	1.450	1.060	13.132	0.030
47	1.490	1.100	13.092	0.031
48	1.521	1.131	13.061	0.031
49	1.561	1.171	13.021	0.032
50	1.591	1.201	12.991	0.032
52	1.652	1.262	12.930	0.034
54	1.722	1.332	12.860	0.035
56	1.793	1.403	12.789	0.036
58	1.854	1.464	12.728	0.038
60	1.924	1.534	12.658	0.039
62	1.985	1.595	12.597	0.040
64	2.046	1.656	12.536	0.042
66	2.096	1.706	12.486	0.043
68	2.157	1.767	12.425	0.044
70	2.217	1.827	12.365	0.045
72	2.268	1.878	12.314	0.047

74	2.318	1.928	12.264	0.048
76	2.369	1.979	12.213	0.049
78	2.429	2.039	12.153	0.051
80	2.469	2.079	12.113	0.052
82	2.520	2.130	12.062	0.053
84	2.570	2.180	12.012	0.055
86	2.621	2.231	11.961	0.056
88	2.661	2.271	11.921	0.057
90	2.712	2.322	11.870	0.058
92	2.752	2.362	11.830	0.060
94	2.803	2.413	11.779	0.061
96	2.843	2.453	11.739	0.062
98	2.883	2.493	11.699	0.064
100	2.924	2.534	11.658	0.065
110	3.116	2.726	11.466	0.071
120	3.277	2.887	11.305	0.078
130	3.418	3.028	11.164	0.084
140	3.539	3.149	11.043	0.091
150	3.661	3.271	10.921	0.097
160	3.812	3.422	10.770	0.104
170	3.933	3.543	10.649	0.110
180	4.064	3.674	10.518	0.117
190	4.186	3.796	10.396	0.123
200	4.317	3.927	10.265	0.130
210	4.408	4.018	10.174	0.136
220	4.519	4.129	10.063	0.143
230	4.620	4.230	9.962	0.149
240	4.721	4.331	9.861	0.156
250	4.821	4.431	9.761	0.162
260	4.892	4.502	9.690	0.169
270	4.983	4.593	9.599	0.175
280	5.054	4.664	9.528	0.182
290	5.134	4.744	9.448	0.188
300	5.215	4.825	9.367	0.195
310	5.286	4.896	9.296	0.201
320	5.346	4.956	9.236	0.208
330	5.417	5.027	9.165	0.214
340	5.488	5.098	9.094	0.221
350	5.558	5.168	9.024	0.227
360	5.639	5.249	8.943	0.234
370	5.680	5.290	8.902	0.240
380	5.750	5.360	8.832	0.247
390	5.811	5.421	8.771	0.253
400	5.871	5.481	8.711	0.260
410	5.942	5.552	8.640	0.266
420	5.982	5.592	8.600	0.273
430	6.033	5.643	8.549	0.279
440	6.083	5.693	8.499	0.286
450	6.134	5.744	8.448	0.292
460	6.194	5.804	8.388	0.299
470	6.245	5.855	8.337	0.305
480	6.285	5.895	8.297	0.312
490	6.326	5.936	8.256	0.318
500	6.406	6.016	8.176	0.325
510	6.437	6.047	8.145	0.331
520	6.477	6.087	8.105	0.338

530	6.527	6.137	8.055	0.344
540	6.578	6.188	8.004	0.351
550	6.649	6.259	7.933	0.357
560	6.679	6.289	7.903	0.364
570	6.719	6.329	7.863	0.370
580	6.750	6.360	7.832	0.377
590	6.800	6.410	7.782	0.383
600	6.861	6.471	7.721	0.390
610	6.881	6.491	7.701	0.396
620	6.911	6.521	7.671	0.403
630	6.941	6.551	7.641	0.409
640	6.972	6.582	7.610	0.416
650	7.012	6.622	7.570	0.422
660	7.073	6.683	7.509	0.429
670	7.093	6.703	7.489	0.435
680	7.123	6.733	7.459	0.442
690	7.153	6.763	7.429	0.448
700	7.184	6.794	7.398	0.455
710	7.214	6.824	7.368	0.461
720	7.234	6.844	7.348	0.468

LFP3P HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		03/03/2004
Start time		9:15AM
Stop date		
Stop time		
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	0.50
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LFP3P	Pata	460227	6192858	14.26	13.74		0.00	0.00	9.00	9.00	4.52	9.74
Obs	LFP3GF	Glenforslan	460229	6192854	14.62	13.72		4.40	0.49	9.00	NA	0.33	14.29
Obs	MAN1O	Upper Mannum	460222	6192856	14.80	13.71		6.92	0.77	9.00	NA	0.44	14.36
Obs	LFO3A	Monoman	460221	6192857	14.47	13.78		9.20	1.02	9.00	NA	4.63	9.84
Obs	LFO3P	Pata	460220	6192856	14.53	13.78		9.25	1.03	9.00	8.50	4.68	9.85
Obs	LFO3GF	Glenforslan	460221	6192857	14.59	13.78		10.97	1.22	9.00	NA	0.17	14.42
Obs	LFO3P_2	Pata	460242	6192861	14.06	13.65		14.90	1.66	9.00	NA	4.19	9.87

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LFP3P	17.50	26.50	9.00	-3.76	-12.76
Obs	LFP3GF	41.00	61.50	20.50	-27.28	-47.78
Obs	MAN1o	63.50	133.50	70.00	-49.79	-119.79
Obs	LFO3A	5.00	11.00	6.00	8.78	2.78
Obs	LFO3P	17.50	26.00	8.50	-3.72	-12.22
Obs	LFO3GF	41.00	61.50	20.50	-27.22	-47.72
Obs	LFO3P_2	17.50	26.00	8.50	-3.85	-12.35

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LFP3P	OH	17.50	27.00	9.50	175	NA	NA	NA	175
Obs	LFP3GF	OH	44.00	58.00	14.00	NA	NA	NA	NA	200
Obs	MAN1o	OH / SC?	65.50	90.00	24.50	NA	NA	NA	NA	100
Obs	LFO3A	SC	6.00	12.00	6.00	NA	NA	NA	NA	80
Obs	LFO3P	SC	20.00	26.00	6.00	NA	NA	NA	NA	80
Obs	LFO3GF	SC	39.00	45.00	6.00	NA	NA	NA	NA	80
Obs	LFO3P_2	OH	18.00	28.00	10.00	NA	NA	NA	NA	100

Note:

MAN1o estimated bottom to give aquifer thickness

MAN1o used to give aquifer thicknesses for production well and close wells

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	7.540	3.020	6.723	1.000	0.50	0.17	
2	8.690	4.170	5.573	2.000	0.50	0.12	
3	9.570	5.050	4.693	3.000	0.50	0.10	
4	10.160	5.640	4.103	4.000	0.50	0.09	
5	10.770	6.250	3.493	5.000	0.50	0.08	
6	11.420	6.900	2.843	6.000	0.50	0.07	
7	11.880	7.360	2.383	7.000	0.50	0.07	
8	12.360	7.840	1.903	8.000	0.50	0.06	
9	12.670	8.150	1.593	9.000	0.50	0.06	
10	13.070	8.550	1.193	10.000	0.50	0.06	
12	13.730	9.210	0.533	12.000	0.50	0.05	
14	14.180	9.660	0.083	14.000	0.50	0.05	
16	14.670	10.150	-0.407	16.000	0.50	0.05	
17				17.000			31388
18	15.080	10.560	-0.817	18.000	0.50	0.05	
20	15.320	10.800	-1.057	20.000	0.50	0.05	
22	15.530	11.010	-1.267	22.000	0.50	0.05	
24	15.730	11.210	-1.467	24.000	0.50	0.04	
26	15.970	11.450	-1.707	26.000	0.50	0.04	
28	16.120	11.600	-1.857	28.000	0.50	0.04	
30	16.250	11.730	-1.987	30.000	0.50	0.04	
35	16.630	12.110	-2.367	35.000	0.50	0.04	
40	16.840	12.320	-2.577	40.000	0.50	0.04	
45	17.010	12.490	-2.747	45.000	0.50	0.04	
50	17.190	12.670	-2.927	50.000	0.50	0.04	
55	17.350	12.830	-3.087	55.000	0.50	0.04	
60	17.490	12.970	-3.227	60.000	0.50	0.04	31453
70	17.550	13.030	-3.287	70.000	0.50	0.04	
80	17.550	13.030	-3.287	80.000	0.50	0.04	
90	17.555	13.035	-3.292	90.000	0.50	0.04	
120	17.740	13.220	-3.477	120.000	0.50	0.04	31388
140	18.040	13.520	-3.777	140.000	0.50	0.04	
160	18.330	13.810	-4.067	160.000	0.50	0.04	
180	18.460	13.940	-4.197	180.000	0.50	0.04	31323
200	18.565	14.045	-4.302	200.000	0.50	0.04	
220	18.610	14.090	-4.347	220.000	0.50	0.04	
240	18.655	14.135	-4.392	240.000	0.50	0.04	31453
260	18.715	14.195	-4.452	260.000	0.50	0.04	
280	18.860	14.340	-4.597	280.000	0.50	0.03	
300	19.140	14.620	-4.877	300.000	0.50	0.03	31388
350	19.290	14.770	-5.027	350.000	0.50	0.03	
360				360.000			31388
400	19.650	15.130	-5.387	400.000	0.50	0.03	
420				420.000			31258
450	19.635	15.115	-5.372	450.000	0.50	0.03	
480				480.000			31323
500	19.650	15.130	-5.387	500.000	0.50	0.03	
540				540.000			31323
550	20.320	15.800	-6.057	550.000	0.50	0.03	
600	20.340	15.820	-6.077	600.000	0.50	0.03	31323
650	20.380	15.860	-6.117	650.000	0.50	0.03	
660				660.000			31453
700	20.410	15.890	-6.147	700.000	0.50	0.03	
720	20.500	15.980	-6.237	720.000	0.50	0.03	31323

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
55	0.300	-0.030	14.324	2.841
78	0.290	-0.040	14.334	4.029
86	0.290	-0.040	14.334	4.442
96	0.290	-0.040	14.334	4.959
108	0.290	-0.040	14.334	5.579
130	0.285	-0.045	14.339	6.715
145	0.285	-0.045	14.339	7.490
164	0.285	-0.045	14.339	8.471
185	0.280	-0.050	14.344	9.556
203	0.275	-0.055	14.349	10.486
227	0.275	-0.055	14.349	11.725
245	0.275	-0.055	14.349	12.655
274	0.275	-0.055	14.349	14.153
290	0.275	-0.055	14.349	14.979
307	0.275	-0.055	14.349	15.857
356	0.270	-0.060	14.354	18.388
407	0.270	-0.060	14.354	21.023
456	0.270	-0.060	14.354	23.554
502	0.265	-0.065	14.359	25.930
550	0.265	-0.065	14.359	28.409
600	0.270	-0.060	14.354	30.992
659	0.280	-0.050	14.344	34.039
700	0.280	-0.050	14.344	36.157

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
7	0.440	0.000	14.360	0.146
15	0.435	-0.005	14.365	0.313
21	0.440	0.000	14.360	0.439
32	0.440	0.000	14.360	0.668
38	0.435	-0.005	14.365	0.794
48	0.435	-0.005	14.365	1.002
54	0.435	-0.005	14.365	1.128
62	0.435	-0.005	14.365	1.295
76	0.435	-0.005	14.365	1.587
85	0.435	-0.005	14.365	1.775
95	0.435	-0.005	14.365	1.984
107	0.430	-0.010	14.370	2.234
129	0.425	-0.015	14.375	2.694
145	0.430	-0.010	14.370	3.028
163	0.430	-0.010	14.370	3.404
225	0.430	-0.010	14.370	4.699
244	0.425	-0.015	14.375	5.095
273	0.420	-0.020	14.380	5.701
288	0.420	-0.020	14.380	6.014
306	0.420	-0.020	14.380	6.390
355	0.415	-0.025	14.385	7.413
407	0.400	-0.040	14.400	8.499
455	0.400	-0.040	14.400	9.502
502	0.400	-0.040	14.400	10.483
550	0.400	-0.040	14.400	11.486
603	0.400	-0.040	14.400	12.592
652	0.400	-0.040	14.400	13.616
700	0.400	-0.040	14.400	14.618
720	0.410	-0.030	14.390	15.036

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
8	4.620	-0.010	9.850	0.095
14	4.620	-0.010	9.850	0.165
21	4.620	-0.010	9.850	0.248
31	4.625	-0.005	9.845	0.366
39	4.625	-0.005	9.845	0.461
48	4.625	-0.005	9.845	0.567
53	4.625	-0.005	9.845	0.626
62	4.625	-0.005	9.845	0.733
76	4.630	0.000	9.840	0.898
84	4.630	0.000	9.840	0.992
94	4.630	0.000	9.840	1.111
106	4.630	0.000	9.840	1.252
128	4.630	0.000	9.840	1.512
144	4.625	-0.005	9.845	1.701
162	4.630	0.000	9.840	1.914
187	4.630	0.000	9.840	2.209
202	4.635	0.005	9.835	2.387
225	4.635	0.005	9.835	2.658
244	4.635	0.005	9.835	2.883
272	4.640	0.010	9.830	3.214
288	4.640	0.010	9.830	3.403
305	4.640	0.010	9.830	3.603
354	4.640	0.010	9.830	4.182
406	4.640	0.010	9.830	4.797
454	4.640	0.010	9.830	5.364
503	4.640	0.010	9.830	5.943
550	4.640	0.010	9.830	6.498
604	4.640	0.010	9.830	7.136
650	4.645	0.015	9.825	7.680
700	4.645	0.015	9.825	8.270
720	4.645	0.015	9.825	8.507

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	4.720	0.040	9.810	0.012
2	4.801	0.121	9.729	0.023
3	4.892	0.212	9.638	0.035
4	5.013	0.333	9.517	0.047
5	5.165	0.485	9.365	0.058
6	5.316	0.636	9.214	0.070
7	5.467	0.787	9.063	0.082
8	5.609	0.929	8.921	0.093
9	5.750	1.070	8.780	0.105
10	5.871	1.191	8.659	0.117
11	6.002	1.322	8.528	0.129
12	6.093	1.413	8.437	0.140
13	6.204	1.524	8.326	0.152
14	6.315	1.635	8.215	0.164
15	6.406	1.726	8.124	0.175
16	6.487	1.807	8.043	0.187
17	6.578	1.898	7.952	0.199
18	6.659	1.979	7.871	0.210
19	6.729	2.049	7.801	0.222
20	6.800	2.120	7.730	0.234
21	6.881	2.201	7.649	0.245
22	6.941	2.261	7.589	0.257
23	7.002	2.322	7.528	0.269
24	7.052	2.372	7.478	0.280
25	7.113	2.433	7.417	0.292
26	7.163	2.483	7.367	0.304
27	7.214	2.534	7.316	0.316
28	7.264	2.584	7.266	0.327
29	7.315	2.635	7.215	0.339
30	7.345	2.665	7.185	0.351
31	7.395	2.715	7.135	0.362
32	7.426	2.746	7.104	0.374
33	7.476	2.796	7.054	0.386
34	7.506	2.826	7.024	0.397
35	7.547	2.867	6.983	0.409
36	7.587	2.907	6.943	0.421
37	7.618	2.938	6.912	0.432
38	7.648	2.968	6.882	0.444
39	7.678	2.998	6.852	0.456
40	7.708	3.028	6.822	0.467
41	7.779	3.099	6.751	0.479
42	7.799	3.119	6.731	0.491
43	7.829	3.149	6.701	0.503
44	7.850	3.170	6.680	0.514
45	7.880	3.200	6.650	0.526
46	7.900	3.220	6.630	0.538
47	7.930	3.250	6.600	0.549
48	7.951	3.271	6.579	0.561
49	7.971	3.291	6.559	0.573
50	7.991	3.311	6.539	0.584
52	8.041	3.361	6.489	0.608
54	8.082	3.402	6.448	0.631
56	8.122	3.442	6.408	0.654
58	8.163	3.483	6.367	0.678

60	8.193	3.513	6.337	0.701
62	8.223	3.543	6.307	0.725
64	8.243	3.563	6.287	0.748
66	8.274	3.594	6.256	0.771
68	8.294	3.614	6.236	0.795
70	8.314	3.634	6.216	0.818
72	8.344	3.664	6.186	0.841
74	8.364	3.684	6.166	0.865
76	8.385	3.705	6.145	0.888
78	8.395	3.715	6.135	0.912
80	8.425	3.745	6.105	0.935
82	8.435	3.755	6.095	0.958
84	8.455	3.775	6.075	0.982
86	8.465	3.785	6.065	1.005
88	8.486	3.806	6.044	1.028
90	8.496	3.816	6.034	1.052
92	8.516	3.836	6.014	1.075
94	8.526	3.846	6.004	1.099
96	8.526	3.846	6.004	1.122
98	8.556	3.876	5.974	1.145
100	8.556	3.876	5.974	1.169
110	8.627	3.947	5.903	1.286
120	8.688	4.008	5.842	1.402
130	8.768	4.088	5.762	1.519
140	8.839	4.159	5.691	1.636
150	8.910	4.230	5.620	1.753
160	8.970	4.290	5.560	1.870
170	9.041	4.361	5.489	1.987
180	9.111	4.431	5.419	2.104
190	9.142	4.462	5.388	2.221
200	9.162	4.482	5.368	2.337
210	9.192	4.512	5.338	2.454
220	9.223	4.543	5.307	2.571
230	9.253	4.573	5.277	2.688
240	9.273	4.593	5.257	2.805
250	9.323	4.643	5.207	2.922
260	9.344	4.664	5.186	3.039
270	9.364	4.684	5.166	3.156
280	9.384	4.704	5.146	3.272
290	9.414	4.734	5.116	3.389
300	9.455	4.775	5.075	3.506
310	9.515	4.835	5.015	3.623
320	9.535	4.855	4.995	3.740
330	9.556	4.876	4.974	3.857
340	9.566	4.886	4.964	3.974
350	9.586	4.906	4.944	4.091
360	9.606	4.926	4.924	4.207
370	9.636	4.956	4.894	4.324
380	9.657	4.977	4.873	4.441
390	9.667	4.987	4.863	4.558
400	9.687	5.007	4.843	4.675
410	9.707	5.027	4.823	4.792
420	9.737	5.057	4.793	4.909
430	9.747	5.067	4.783	5.026
440	9.758	5.078	4.772	5.142
450	9.768	5.088	4.762	5.259

460	9.778	5.098	4.752	5.376
470	9.788	5.108	4.742	5.493
480	9.798	5.118	4.732	5.610
490	9.808	5.128	4.722	5.727
500	9.828	5.148	4.702	5.844
510	9.838	5.158	4.692	5.961
520	9.858	5.178	4.672	6.077
530	9.879	5.199	4.651	6.194
540	9.899	5.219	4.631	6.311
550	9.919	5.239	4.611	6.428
560	9.939	5.259	4.591	6.545
570	9.949	5.269	4.581	6.662
580	9.959	5.279	4.571	6.779
590	9.970	5.290	4.560	6.896
600	9.980	5.300	4.550	7.012
610	10.000	5.320	4.530	7.129
620	10.010	5.330	4.520	7.246
630	10.020	5.340	4.510	7.363
640	10.030	5.350	4.500	7.480
650	10.040	5.360	4.490	7.597
660	10.040	5.360	4.490	7.714
670	10.050	5.370	4.480	7.831
680	10.060	5.380	4.470	7.947
690	10.070	5.390	4.460	8.064
700	10.081	5.401	4.449	8.181
710	10.101	5.421	4.429	8.298
720	10.111	5.431	4.419	8.415

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
9	0.160	-0.010	14.430	0.075
13	0.165	-0.005	14.425	0.108
23	0.140	-0.030	14.450	0.191
31	0.140	-0.030	14.450	0.258
39	0.130	-0.040	14.460	0.324
47	0.130	-0.040	14.460	0.391
52	0.130	-0.040	14.460	0.432
61	0.125	-0.045	14.465	0.507
74	0.125	-0.045	14.465	0.615
83	0.125	-0.045	14.465	0.690
93	0.125	-0.045	14.465	0.773
104	0.125	-0.045	14.465	0.864
127	0.125	-0.045	14.465	1.055
143	0.120	-0.050	14.470	1.188
162	0.120	-0.050	14.470	1.346
186	0.120	-0.050	14.470	1.546
202	0.120	-0.050	14.470	1.679
224	0.110	-0.060	14.480	1.861
243	0.110	-0.060	14.480	2.019
271	0.110	-0.060	14.480	2.252
285	0.105	-0.065	14.485	2.368
304	0.100	-0.070	14.490	2.526
353	0.100	-0.070	14.490	2.933
405	0.100	-0.070	14.490	3.365
453	0.100	-0.070	14.490	3.764
504	0.100	-0.070	14.490	4.188
550	0.095	-0.075	14.495	4.570
605	0.100	-0.070	14.490	5.027
649	0.100	-0.070	14.490	5.393
700	0.110	-0.060	14.480	5.817
720	0.115	-0.055	14.475	5.983

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
2	4.200	0.010	9.862	0.009
3	4.231	0.041	9.831	0.014
4	4.272	0.082	9.790	0.018
5	4.313	0.123	9.749	0.023
6	4.364	0.174	9.698	0.027
7	4.415	0.225	9.647	0.032
8	4.476	0.286	9.586	0.036
9	4.537	0.347	9.525	0.041
10	4.588	0.398	9.474	0.045
11	4.639	0.449	9.423	0.050
12	4.690	0.500	9.372	0.054
13	4.721	0.531	9.341	0.059
14	4.772	0.582	9.290	0.063
15	4.813	0.623	9.249	0.068
16	4.844	0.654	9.218	0.072
17	4.874	0.684	9.188	0.077
18	4.925	0.735	9.137	0.081
19	4.976	0.786	9.086	0.086
20	5.017	0.827	9.045	0.090
21	5.068	0.878	8.994	0.095
22	5.109	0.919	8.953	0.099
23	5.160	0.970	8.902	0.104
24	5.191	1.001	8.871	0.108
25	5.232	1.042	8.830	0.113
26	5.273	1.083	8.789	0.117
27	5.303	1.113	8.759	0.122
28	5.344	1.154	8.718	0.126
29	5.385	1.195	8.677	0.131
30	5.405	1.215	8.657	0.135
31	5.436	1.246	8.626	0.140
32	5.477	1.287	8.585	0.144
33	5.497	1.307	8.565	0.149
34	5.528	1.338	8.534	0.153
35	5.558	1.368	8.504	0.158
36	5.589	1.399	8.473	0.162
37	5.610	1.420	8.452	0.167
38	5.650	1.460	8.412	0.171
39	5.671	1.481	8.391	0.176
40	5.691	1.501	8.371	0.180
41	5.712	1.522	8.350	0.185
42	5.732	1.542	8.330	0.189
43	5.753	1.563	8.309	0.194
44	5.783	1.593	8.279	0.198
45	5.804	1.614	8.258	0.203
46	5.834	1.644	8.228	0.207
47	5.844	1.654	8.218	0.212
48	5.865	1.675	8.197	0.216
49	5.885	1.695	8.177	0.221
50	5.895	1.705	8.167	0.225
52	5.936	1.746	8.126	0.234
54	5.977	1.787	8.085	0.243
56	6.008	1.818	8.054	0.252
58	6.038	1.848	8.024	0.261
60	6.079	1.889	7.983	0.270

62	6.110	1.920	7.952	0.279
64	6.130	1.940	7.932	0.288
66	6.161	1.971	7.901	0.297
68	6.181	1.991	7.881	0.306
70	6.212	2.022	7.850	0.315
72	6.232	2.042	7.830	0.324
74	6.253	2.063	7.809	0.333
76	6.273	2.083	7.789	0.342
78	6.294	2.104	7.768	0.351
80	6.314	2.124	7.748	0.360
82	6.324	2.134	7.738	0.369
84	6.345	2.155	7.717	0.378
86	6.365	2.175	7.697	0.387
88	6.375	2.185	7.687	0.396
90	6.396	2.206	7.666	0.405
92	6.406	2.216	7.656	0.414
94	6.427	2.237	7.635	0.423
96	6.437	2.247	7.625	0.432
98	6.447	2.257	7.615	0.441
100	6.467	2.277	7.595	0.450
110	6.529	2.339	7.533	0.495
120	6.590	2.400	7.472	0.541
130	6.651	2.461	7.411	0.586
140	6.702	2.512	7.360	0.631
150	6.764	2.574	7.298	0.676
160	6.815	2.625	7.247	0.721
170	6.866	2.676	7.196	0.766
180	6.917	2.727	7.145	0.811
190	6.958	2.768	7.104	0.856
200	6.988	2.798	7.074	0.901
210	7.029	2.839	7.033	0.946
220	7.060	2.870	7.002	0.991
230	7.090	2.900	6.972	1.036
240	7.121	2.931	6.941	1.081
250	7.152	2.962	6.910	1.126
260	7.172	2.982	6.890	1.171
270	7.203	3.013	6.859	1.216
280	7.223	3.033	6.839	1.261
290	7.244	3.054	6.818	1.306
300	7.274	3.084	6.788	1.351
310	7.295	3.105	6.767	1.396
320	7.325	3.135	6.737	1.441
330	7.346	3.156	6.716	1.486
340	7.356	3.166	6.706	1.531
350	7.376	3.186	6.686	1.577
360	7.386	3.196	6.676	1.622
370	7.407	3.217	6.655	1.667
380	7.427	3.237	6.635	1.712
390	7.438	3.248	6.624	1.757
400	7.458	3.268	6.604	1.802
410	7.468	3.278	6.594	1.847
420	7.489	3.299	6.573	1.892
430	7.499	3.309	6.563	1.937
440	7.499	3.309	6.563	1.982
450	7.509	3.319	6.553	2.027
460	7.519	3.329	6.543	2.072

470	7.519	3.329	6.543	2.117
480	7.529	3.339	6.533	2.162
490	7.529	3.339	6.533	2.207
500	7.540	3.350	6.522	2.252
510	7.550	3.360	6.512	2.297
520	7.560	3.370	6.502	2.342
530	7.570	3.380	6.492	2.387
540	7.581	3.391	6.481	2.432
550	7.591	3.401	6.471	2.477
560	7.601	3.411	6.461	2.522
570	7.611	3.421	6.451	2.567
580	7.621	3.431	6.441	2.612
590	7.621	3.431	6.441	2.658
600	7.632	3.442	6.430	2.703
610	7.632	3.442	6.430	2.748
620	7.642	3.452	6.420	2.793
630	7.652	3.462	6.410	2.838
640	7.652	3.462	6.410	2.883
650	7.662	3.472	6.400	2.928
660	7.662	3.472	6.400	2.973
670	7.662	3.472	6.400	3.018
680	7.672	3.482	6.390	3.063
690	7.683	3.493	6.379	3.108
700	7.683	3.493	6.379	3.153
710	7.693	3.503	6.369	3.198
720	7.703	3.513	6.359	3.243

LHO14P HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		09/03/2004
Start time		5:30PM
Stop date		
Stop time		
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	0.40
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Obs	LHO14P	Pata	461772	6188864	44.72	44.07		0.00	0.00	10.00	10.00	29.95	14.77
Obs	LHO14	Loxton Sands	461772	6188863	44.87	43.94		3.22	0.32	10.00	NA	25.82	19.06
Production	LHP14P	Pata	461794	6188858	44.28	43.98		23.40	2.34	10.00	NA	28.86	15.42

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Obs	LHO14P	51.00	61.00	10.00	-6.93	-16.93
Obs	LHO14	25.82	40.50	14.69	18.13	3.44
Production	LHP14P	51.00	61.00	10.00	-7.03	-17.03

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Obs	LHO14P	OH	53.00	61.00	8.00	100	NA	NA	NA	100
Obs	LHO14	SC	20.50	29.50	3.68	NA	NA	NA	NA	80
Production	LHP14P	OH	54.00	61.00	7.00	NA	NA	NA	NA	175

Note:

Observation well pumped in this test

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	35.510	5.560	9.211	1.000	0.40	0.07	
2	37.110	7.160	7.611	2.000	0.40	0.06	
3	38.450	8.500	6.271	3.000	0.40	0.05	
4	39.350	9.400	5.371	4.000	0.40	0.04	
5	40.370	10.420	4.351	5.000	0.40	0.04	16570
6	41.010	11.060	3.711	6.000	0.40	0.04	
7	41.510	11.560	3.211	7.000	0.40	0.03	
8	41.960	12.010	2.761	8.000	0.40	0.03	
9	42.270	12.320	2.451	9.000	0.40	0.03	
10	42.490	12.540	2.231	10.000	0.40	0.03	
12	42.860	12.910	1.861	12.000	0.40	0.03	
14	43.100	13.150	1.621	14.000	0.40	0.03	
16	43.430	13.480	1.291	16.000	0.40	0.03	
18	43.650	13.700	1.071	18.000	0.40	0.03	
20	43.810	13.860	0.911	20.000	0.40	0.03	
22	43.870	13.920	0.851	22.000	0.40	0.03	
24	43.990	14.040	0.731	24.000	0.40	0.03	
26	44.080	14.130	0.641	26.000	0.40	0.03	
28	44.170	14.220	0.551	28.000	0.40	0.03	
30	44.240	14.290	0.481	30.000	0.40	0.03	
35	44.385	14.435	0.336	35.000	0.40	0.03	
40	44.475	14.525	0.246	40.000	0.40	0.03	
45	44.560	14.610	0.161	45.000	0.40	0.03	
50	44.630	14.680	0.091	50.000	0.40	0.03	
55	44.685	14.735	0.036	55.000	0.40	0.03	
60	44.740	14.790	-0.019	60.000	0.40	0.03	16902
70	44.875	14.925	-0.154	70.000	0.40	0.03	
80	44.990	15.040	-0.269	80.000	0.40	0.03	
90	45.070	15.120	-0.349	90.000	0.40	0.03	
100	45.110	15.160	-0.389	100.000	0.40	0.03	
120	45.250	15.300	-0.529	120.000	0.40	0.03	16902
140	45.340	15.390	-0.619	140.000	0.40	0.03	
160	45.380	15.430	-0.659	160.000	0.40	0.03	
180	45.490	15.540	-0.769	180.000	0.40	0.03	16902
200	45.500	15.550	-0.779	200.000	0.40	0.03	
240				240.000			16902
250	45.700	15.750	-0.979	250.000	0.40	0.03	
300	45.860	15.910	-1.139	300.000	0.40	0.03	16963
350	45.960	16.010	-1.239	350.000	0.40	0.02	
360				360.000			16902
400	46.040	16.090	-1.319	400.000	0.40	0.02	
420				420.000			16902
450	46.100	16.150	-1.379	450.000	0.40	0.02	
480				480.000			16963
500	46.165	16.215	-1.444	500.000	0.40	0.02	
540				540.000			16963
550	46.215	16.265	-1.494	550.000	0.40	0.02	
600	46.370	16.420	-1.649	600.000	0.40	0.02	16963
650	46.090	16.140	-1.369	650.000	0.40	0.02	
660				660.000			17024
700	45.970	16.020	-1.249	700.000	0.40	0.02	
720	45.965	16.015	-1.244	720.000	0.40	0.02	17024

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
5	25.815	0.000	19.055	0.482
10	25.815	0.000	19.055	0.964
20	25.815	0.000	19.055	1.929
30	25.815	0.000	19.055	2.893
49	25.820	0.005	19.050	4.726
55	25.820	0.005	19.050	5.305
70	25.825	0.010	19.045	6.751
92	25.825	0.010	19.045	8.873
122	25.825	0.010	19.045	11.767
163	25.825	0.010	19.045	15.721
200	25.825	0.010	19.045	19.289
254	25.830	0.015	19.040	24.498
303	25.835	0.020	19.035	29.223
353	25.825	0.010	19.045	34.046
403	25.825	0.010	19.045	38.868
452	25.820	0.005	19.050	43.594
500	25.820	0.005	19.050	48.223
550	25.820	0.005	19.050	53.046
596	25.820	0.005	19.050	57.482
652	25.820	0.005	19.050	62.883
702	25.830	0.015	19.040	67.706
720	25.825	0.010	19.045	69.442

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
11	28.87	0.01	15.41	0.02
12	28.87	0.01	15.41	0.02
13	28.87	0.01	15.41	0.02
14	28.87	0.01	15.41	0.03
15	28.87	0.01	15.41	0.03
16	28.88	0.021	15.39	0.03
17	28.88	0.021	15.39	0.03
18	28.88	0.021	15.39	0.03
19	28.89	0.031	15.38	0.03
20	28.89	0.031	15.38	0.04
21	28.90	0.041	15.37	0.04
22	28.90	0.041	15.37	0.04
23	28.91	0.052	15.36	0.04
24	28.91	0.052	15.36	0.04
25	28.92	0.062	15.35	0.05
26	28.92	0.062	15.35	0.05
27	28.93	0.072	15.34	0.05
28	28.94	0.083	15.33	0.05
29	28.94	0.083	15.33	0.05
30	28.95	0.093	15.32	0.05
31	28.95	0.093	15.32	0.06
32	28.96	0.103	15.31	0.06
33	28.97	0.113	15.30	0.06
34	28.97	0.113	15.30	0.06
35	28.98	0.124	15.29	0.06
36	28.99	0.134	15.28	0.07
37	29.00	0.144	15.27	0.07
38	29.00	0.144	15.27	0.07
39	29.02	0.155	15.26	0.07
40	29.03	0.165	15.25	0.07
41	29.04	0.175	15.24	0.07
42	29.04	0.175	15.24	0.08
43	29.05	0.186	15.23	0.08
44	29.06	0.196	15.22	0.08
45	29.07	0.206	15.21	0.08
46	29.07	0.206	15.21	0.08
47	29.08	0.217	15.20	0.09
48	29.09	0.227	15.19	0.09
49	29.10	0.237	15.18	0.09
50	29.11	0.248	15.17	0.09
52	29.13	0.268	15.15	0.09
54	29.14	0.279	15.14	0.10
56	29.16	0.299	15.12	0.10
58	29.18	0.32	15.10	0.11
60	29.19	0.33	15.09	0.11
62	29.21	0.351	15.06	0.11
64	29.23	0.371	15.04	0.12
66	29.25	0.392	15.02	0.12
68	29.26	0.402	15.01	0.12
70	29.29	0.433	14.98	0.13
72	29.30	0.444	14.97	0.13
74	29.32	0.464	14.95	0.14
76	29.35	0.485	14.93	0.14
78	29.37	0.505	14.91	0.14

80	29.39	0.526	14.89	0.15
82	29.40	0.536	14.88	0.15
84	29.42	0.557	14.86	0.15
86	29.44	0.578	14.84	0.16
88	29.46	0.598	14.82	0.16
90	29.48	0.619	14.80	0.16
92	29.50	0.64	14.78	0.17
94	29.51	0.65	14.77	0.17
96	29.53	0.67	14.75	0.18
98	29.55	0.691	14.72	0.18
100	29.57	0.712	14.70	0.18
110	29.67	0.805	14.61	0.20
120	29.75	0.887	14.53	0.22
130	29.84	0.98	14.44	0.24
140	29.92	1.062	14.35	0.26
150	30.01	1.145	14.27	0.27
160	30.09	1.227	14.19	0.29
170	30.16	1.3	14.12	0.31
180	30.23	1.372	14.04	0.33
190	30.30	1.444	13.97	0.35
200	30.38	1.516	13.90	0.37
210	30.44	1.578	13.84	0.38
220	30.50	1.64	13.78	0.40
230	30.56	1.702	13.71	0.42
240	30.62	1.764	13.65	0.44
250	30.68	1.815	13.60	0.46
260	30.73	1.867	13.55	0.47
270	30.78	1.919	13.50	0.49
280	30.83	1.97	13.45	0.51
290	30.88	2.022	13.39	0.53
300	30.92	2.063	13.35	0.55
310	30.96	2.104	13.31	0.57
320	31.01	2.146	13.27	0.58
330	31.05	2.187	13.23	0.60
340	31.09	2.228	13.19	0.62
350	31.13	2.269	13.15	0.64
360	31.16	2.3	13.12	0.66
370	31.20	2.341	13.07	0.68
380	31.23	2.372	13.04	0.69
390	31.26	2.403	13.01	0.71
400	31.29	2.434	12.98	0.73
410	31.33	2.465	12.95	0.75
420	31.36	2.496	12.92	0.77
430	31.38	2.517	12.90	0.79
440	31.41	2.548	12.87	0.80
450	31.43	2.568	12.85	0.82
460	31.46	2.599	12.82	0.84
470	31.48	2.62	12.80	0.86
480	31.51	2.651	12.76	0.88
490	31.53	2.672	12.74	0.89
500	31.55	2.692	12.72	0.91
510	31.57	2.713	12.70	0.93
520	31.59	2.733	12.68	0.95
530	31.61	2.754	12.66	0.97
540	31.64	2.775	12.64	0.99
550	31.66	2.795	12.62	1.00

560	31.68	2.816	12.60	1.02
570	31.70	2.837	12.58	1.04
580	31.71	2.847	12.57	1.06
590	31.73	2.868	12.55	1.08
600	31.75	2.888	12.53	1.10
610	31.76	2.899	12.52	1.11
620	31.78	2.919	12.50	1.13
630	31.79	2.929	12.49	1.15
640	31.81	2.95	12.47	1.17
650	31.82	2.96	12.46	1.19
660	31.83	2.971	12.44	1.21
670	31.85	2.991	12.42	1.22
680	31.86	3.002	12.41	1.24
690	31.87	3.012	12.40	1.26
700	31.88	3.022	12.39	1.28
710	31.89	3.033	12.38	1.30
720	31.90	3.043	12.37	1.31

LHP1GF HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		08/11/2002
Start time		2:00PM
Stop date		11/11/2002
Stop time		5:51PM
Duration (minutes)		4489

Step	Duration (minutes)	Q (L/s)
1	4489	2.02
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP1GF	Glenforslan	457616	6187002	NA	16.58	NA	0.00	0.00	17.00	17.00	NA	NA
Obs	LHO40P	Pata	457625	6187043	14.83	13.42	North	42.00	2.47	17.00	NA	3.75	11.08
Obs	LHO40GF	Glenforslan	457625	6187045	15.08	15.15	North	44.00	2.59	17.00	NA	0.25	14.83
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP1GF	31.00	48.00	17.00	-14.42	-31.42
Obs	LHO40P	9.00	17.00	8.00	4.42	-3.58
Obs	LHO40GF	24.00	45.00	21.00	-8.85	-29.85
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP1GF	NA	35.00	48.00	13.00	NA	NA	NA	NA	NA
Obs	LHO40P	NA	11.50	16.00	4.50	NA	NA	NA	NA	NA
Obs	LHO40GF	NA	27.00	45.00	18.00	NA	NA	NA	NA	NA
Obs										
Obs										

Note:

No manual data provided

There is some confusion between start time and logger times due to daylight saving?

Unclear whether full production aquifer thickness has been drilled

Have not included all the construction details for these deep wells

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
2	3.751	0.001	11.079	0.001
3	3.752	0.002	11.078	0.002
4	3.752	0.002	11.078	0.002
5	3.754	0.004	11.076	0.003
6	3.755	0.005	11.075	0.003
7	3.759	0.009	11.071	0.004
8	3.761	0.011	11.069	0.005
9	3.761	0.011	11.069	0.005
10	3.763	0.013	11.067	0.006
11	3.765	0.015	11.065	0.006
12	3.767	0.017	11.063	0.007
13	3.769	0.019	11.061	0.007
14	3.771	0.021	11.059	0.008
15	3.774	0.024	11.056	0.009
16	3.775	0.025	11.055	0.009
17	3.777	0.027	11.053	0.010
18	3.779	0.029	11.051	0.010
19	3.781	0.031	11.049	0.011
20	3.783	0.033	11.047	0.011
21	3.784	0.034	11.046	0.012
22	3.786	0.036	11.044	0.012
23	3.787	0.037	11.043	0.013
24	3.789	0.039	11.041	0.014
25	3.790	0.040	11.040	0.014
26	3.791	0.041	11.039	0.015
27	3.793	0.043	11.037	0.015
28	3.794	0.044	11.036	0.016
29	3.795	0.045	11.035	0.016
30	3.796	0.046	11.034	0.017
31	3.797	0.047	11.033	0.018
32	3.797	0.047	11.033	0.018
33	3.799	0.049	11.031	0.019
34	3.799	0.049	11.031	0.019
35	3.800	0.050	11.030	0.020
36	3.801	0.051	11.029	0.020
37	3.801	0.051	11.029	0.021
38	3.801	0.051	11.029	0.022
39	3.801	0.051	11.029	0.022
40	3.802	0.052	11.028	0.023
41	3.803	0.053	11.027	0.023
42	3.803	0.053	11.027	0.024
43	3.804	0.054	11.026	0.024
44	3.804	0.054	11.026	0.025
45	3.804	0.054	11.026	0.026
46	3.804	0.054	11.026	0.026
47	3.804	0.054	11.026	0.027
48	3.805	0.055	11.025	0.027
49	3.805	0.055	11.025	0.028
50	3.805	0.055	11.025	0.028
52	3.805	0.055	11.025	0.029
54	3.805	0.055	11.025	0.031
56	3.805	0.055	11.025	0.032
58	3.805	0.055	11.025	0.033
60	3.805	0.055	11.025	0.034
62	3.805	0.055	11.025	0.035

64	3.805	0.055	11.025	0.036
66	3.804	0.054	11.026	0.037
68	3.804	0.054	11.026	0.039
70	3.806	0.056	11.024	0.040
72	3.804	0.054	11.026	0.041
74	3.803	0.053	11.027	0.042
76	3.803	0.053	11.027	0.043
78	3.802	0.052	11.028	0.044
80	3.804	0.054	11.026	0.045
82	3.802	0.052	11.028	0.046
84	3.802	0.052	11.028	0.048
86	3.802	0.052	11.028	0.049
88	3.803	0.053	11.027	0.050
90	3.803	0.053	11.027	0.051
92	3.802	0.052	11.028	0.052
94	3.802	0.052	11.028	0.053
96	3.802	0.052	11.028	0.054
98	3.802	0.052	11.028	0.056
100	3.800	0.050	11.030	0.057
110	3.798	0.048	11.032	0.062
120	3.797	0.047	11.033	0.068
130	3.796	0.046	11.034	0.074
140	3.795	0.045	11.035	0.079
150	3.793	0.043	11.037	0.085
160	3.792	0.042	11.038	0.091
170	3.794	0.044	11.036	0.096
180	3.791	0.041	11.039	0.102
190	3.791	0.041	11.039	0.108
200	3.791	0.041	11.039	0.113
210	3.789	0.039	11.041	0.119
220	3.790	0.040	11.040	0.125
230	3.787	0.037	11.043	0.130
240	3.786	0.036	11.044	0.136
250	3.785	0.035	11.045	0.142
260	3.784	0.034	11.046	0.147
270	3.783	0.033	11.047	0.153
280	3.781	0.031	11.049	0.159
290	3.781	0.031	11.049	0.164
300	3.782	0.032	11.048	0.170
310	3.780	0.030	11.050	0.176
320	3.780	0.030	11.050	0.181
330	3.780	0.030	11.050	0.187
340	3.777	0.027	11.053	0.193
350	3.778	0.028	11.052	0.198
360	3.777	0.027	11.053	0.204
370	3.775	0.025	11.055	0.210
380	3.776	0.026	11.054	0.215
390	3.775	0.025	11.055	0.221
400	3.775	0.025	11.055	0.227
410	3.774	0.024	11.056	0.232
420	3.774	0.024	11.056	0.238
430	3.775	0.025	11.055	0.244
440	3.775	0.025	11.055	0.249
450	3.775	0.025	11.055	0.255
460	3.775	0.025	11.055	0.261
470	3.775	0.025	11.055	0.266
480	3.774	0.024	11.056	0.272

490	3.774	0.024	11.056	0.278
500	3.775	0.025	11.055	0.283
510	3.772	0.022	11.058	0.289
520	3.772	0.022	11.058	0.295
530	3.773	0.023	11.057	0.300
540	3.775	0.025	11.055	0.306
550	3.773	0.023	11.057	0.312
560	3.773	0.023	11.057	0.317
570	3.775	0.025	11.055	0.323
580	3.776	0.026	11.054	0.329
590	3.774	0.024	11.056	0.334
600	3.776	0.026	11.054	0.340
610	3.776	0.026	11.054	0.346
620	3.775	0.025	11.055	0.351
630	3.775	0.025	11.055	0.357
640	3.776	0.026	11.054	0.363
650	3.778	0.028	11.052	0.368
660	3.778	0.028	11.052	0.374
670	3.779	0.029	11.051	0.380
680	3.777	0.027	11.053	0.385
690	3.779	0.029	11.051	0.391
700	3.777	0.027	11.053	0.397
710	3.779	0.029	11.051	0.402
720	3.780	0.030	11.050	0.408
730	3.777	0.027	11.053	0.414
740	3.777	0.027	11.053	0.420
750	3.778	0.028	11.052	0.425
760	3.778	0.028	11.052	0.431
770	3.779	0.029	11.051	0.437
780	3.780	0.030	11.050	0.442
790	3.778	0.028	11.052	0.448
800	3.779	0.029	11.051	0.454
810	3.780	0.030	11.050	0.459
820	3.779	0.029	11.051	0.465
830	3.780	0.030	11.050	0.471
840	3.779	0.029	11.051	0.476
850	3.780	0.030	11.050	0.482
860	3.778	0.028	11.052	0.488
870	3.780	0.030	11.050	0.493
880	3.777	0.027	11.053	0.499
890	3.777	0.027	11.053	0.505
900	3.777	0.027	11.053	0.510
910	3.779	0.029	11.051	0.516
920	3.777	0.027	11.053	0.522
930	3.778	0.028	11.052	0.527
940	3.777	0.027	11.053	0.533
950	3.777	0.027	11.053	0.539
960	3.777	0.027	11.053	0.544
970	3.779	0.029	11.051	0.550
980	3.777	0.027	11.053	0.556
990	3.777	0.027	11.053	0.561
1000	3.776	0.026	11.054	0.567
1100	3.777	0.027	11.053	0.624
1200	3.777	0.027	11.053	0.680
1300	3.773	0.023	11.057	0.737
1400	3.771	0.021	11.059	0.794
1500	3.770	0.020	11.060	0.850

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	0.251	0.001	14.829	0.001
2	0.255	0.005	14.825	0.001
3	0.263	0.013	14.817	0.002
4	0.275	0.025	14.805	0.002
5	0.292	0.042	14.788	0.003
6	0.313	0.063	14.767	0.003
7	0.337	0.087	14.743	0.004
8	0.365	0.115	14.715	0.004
9	0.395	0.145	14.685	0.005
10	0.428	0.178	14.652	0.005
11	0.462	0.212	14.618	0.006
12	0.497	0.247	14.583	0.006
13	0.534	0.284	14.546	0.007
14	0.573	0.323	14.507	0.007
15	0.610	0.360	14.470	0.008
16	0.649	0.399	14.431	0.008
17	0.688	0.438	14.392	0.009
18	0.728	0.478	14.352	0.009
19	0.766	0.516	14.314	0.010
20	0.805	0.555	14.275	0.010
21	0.843	0.593	14.237	0.011
22	0.878	0.628	14.202	0.011
23	0.916	0.666	14.164	0.012
24	0.953	0.703	14.127	0.012
25	0.990	0.740	14.090	0.013
26	1.026	0.776	14.054	0.013
27	1.061	0.811	14.019	0.014
28	1.096	0.846	13.984	0.014
29	1.130	0.880	13.950	0.015
30	1.164	0.914	13.916	0.015
31	1.195	0.945	13.885	0.016
32	1.228	0.978	13.852	0.017
33	1.259	1.009	13.821	0.017
34	1.290	1.040	13.790	0.018
35	1.321	1.071	13.759	0.018
36	1.350	1.100	13.730	0.019
37	1.377	1.127	13.703	0.019
38	1.407	1.157	13.673	0.020
39	1.437	1.187	13.643	0.020
40	1.465	1.215	13.615	0.021
41	1.491	1.241	13.589	0.021
42	1.518	1.268	13.562	0.022
43	1.544	1.294	13.536	0.022
44	1.570	1.320	13.510	0.023
45	1.595	1.345	13.485	0.023
46	1.619	1.369	13.461	0.024
47	1.645	1.395	13.435	0.024
48	1.669	1.419	13.411	0.025
49	1.693	1.443	13.387	0.025
50	1.717	1.467	13.363	0.026
52	1.763	1.513	13.317	0.027
54	1.808	1.558	13.272	0.028
56	1.852	1.602	13.228	0.029
58	1.894	1.644	13.186	0.030

60	1.934	1.684	13.146	0.031
62	1.975	1.725	13.105	0.032
64	2.013	1.763	13.067	0.033
66	2.051	1.801	13.029	0.034
68	2.087	1.837	12.993	0.035
70	2.124	1.874	12.956	0.036
72	2.159	1.909	12.921	0.037
74	2.194	1.944	12.886	0.038
76	2.228	1.978	12.852	0.039
78	2.260	2.010	12.820	0.040
80	2.292	2.042	12.788	0.041
82	2.325	2.075	12.755	0.042
84	2.356	2.106	12.724	0.043
86	2.385	2.135	12.695	0.044
88	2.414	2.164	12.666	0.045
90	2.444	2.194	12.636	0.046
92	2.473	2.223	12.607	0.048
94	2.500	2.250	12.580	0.049
96	2.527	2.277	12.553	0.050
98	2.553	2.303	12.527	0.051
100	2.579	2.329	12.501	0.052
110	2.705	2.455	12.375	0.057
120	2.821	2.571	12.259	0.062
130	2.929	2.679	12.151	0.067
140	3.031	2.781	12.049	0.072
150	3.126	2.876	11.954	0.077
160	3.216	2.966	11.864	0.083
170	3.301	3.051	11.779	0.088
180	3.381	3.131	11.699	0.093
190	3.458	3.208	11.622	0.098
200	3.532	3.282	11.548	0.103
210	3.601	3.351	11.479	0.108
220	3.669	3.419	11.411	0.114
230	3.735	3.485	11.345	0.119
240	3.797	3.547	11.283	0.124
250	3.857	3.607	11.223	0.129
260	3.914	3.664	11.166	0.134
270	3.972	3.722	11.108	0.139
280	4.026	3.776	11.054	0.145
290	4.078	3.828	11.002	0.150
300	4.129	3.879	10.951	0.155
310	4.178	3.928	10.902	0.160
320	4.227	3.977	10.853	0.165
330	4.273	4.023	10.807	0.170
340	4.318	4.068	10.762	0.176
350	4.361	4.111	10.719	0.181
360	4.403	4.153	10.677	0.186
370	4.444	4.194	10.636	0.191
380	4.484	4.234	10.596	0.196
390	4.524	4.274	10.556	0.201
400	4.562	4.312	10.518	0.207
410	4.600	4.350	10.480	0.212
420	4.637	4.387	10.443	0.217
430	4.673	4.423	10.407	0.222
440	4.708	4.458	10.372	0.227
450	4.742	4.492	10.338	0.232

460	4.776	4.526	10.304	0.238
470	4.809	4.559	10.271	0.243
480	4.841	4.591	10.239	0.248
490	4.873	4.623	10.207	0.253
500	4.904	4.654	10.176	0.258
510	4.935	4.685	10.145	0.263
520	4.965	4.715	10.115	0.269
530	4.994	4.744	10.086	0.274
540	5.022	4.772	10.058	0.279
550	5.050	4.800	10.030	0.284
560	5.078	4.828	10.002	0.289
570	5.105	4.855	9.975	0.294
580	5.131	4.881	9.949	0.300
590	5.158	4.908	9.922	0.305
600	5.184	4.934	9.896	0.310
610	5.209	4.959	9.871	0.315
620	5.233	4.983	9.847	0.320
630	5.257	5.007	9.823	0.325
640	5.281	5.031	9.799	0.331
650	5.304	5.054	9.776	0.336
660	5.327	5.077	9.753	0.341
670	5.349	5.099	9.731	0.346
680	5.372	5.122	9.708	0.351
690	5.393	5.143	9.687	0.356
700	5.415	5.165	9.665	0.362
710	5.437	5.187	9.643	0.367
720	5.459	5.209	9.621	0.372
730	5.480	5.230	9.600	0.377
740	5.502	5.252	9.578	0.382
750	5.523	5.273	9.557	0.387
760	5.543	5.293	9.537	0.393
770	5.564	5.314	9.516	0.398
780	5.583	5.333	9.497	0.403
790	5.603	5.353	9.477	0.408
800	5.622	5.372	9.458	0.413
810	5.641	5.391	9.439	0.418
820	5.661	5.411	9.419	0.424
830	5.679	5.429	9.401	0.429
840	5.698	5.448	9.382	0.434
850	5.716	5.466	9.364	0.439
860	5.734	5.484	9.346	0.444
870	5.752	5.502	9.328	0.449
880	5.769	5.519	9.311	0.455
890	5.786	5.536	9.294	0.460
900	5.804	5.554	9.276	0.465
910	5.820	5.570	9.260	0.470
920	5.836	5.586	9.244	0.475
930	5.853	5.603	9.227	0.480
940	5.868	5.618	9.212	0.486
950	5.884	5.634	9.196	0.491
960	5.900	5.650	9.180	0.496
970	5.914	5.664	9.166	0.501
980	5.930	5.680	9.150	0.506
990	5.944	5.694	9.136	0.511
1000	5.959	5.709	9.121	0.517
1100	6.095	5.845	8.985	0.568

1200	6.220	5.970	8.860	0.620
1300	6.333	6.083	8.747	0.671
1400	6.435	6.185	8.645	0.723
1500	6.527	6.277	8.553	0.775
1609	6.601	6.351	8.479	0.831
1729	6.698	6.448	8.382	0.893
1819	6.766	6.516	8.314	0.940
1909	6.830	6.580	8.250	0.986
2029	6.908	6.658	8.172	1.048
2119	6.961	6.711	8.119	1.095
2209	7.009	6.759	8.071	1.141
2329	7.072	6.822	8.008	1.203
2419	7.120	6.870	7.960	1.249
2509	7.166	6.916	7.914	1.296
2629	7.223	6.973	7.857	1.358
2719	7.269	7.019	7.811	1.404
2809	7.316	7.066	7.764	1.451
2929	7.360	7.110	7.720	1.513
3019	7.386	7.136	7.694	1.559
3109	7.413	7.163	7.667	1.606
3229	7.448	7.198	7.632	1.668
3319	7.471	7.221	7.609	1.714
3409	7.490	7.240	7.590	1.761
3529	7.514	7.264	7.566	1.823
3619	7.531	7.281	7.549	1.869
3709	7.550	7.300	7.530	1.916
3829	7.576	7.326	7.504	1.978
3919	7.595	7.345	7.485	2.024
4009	7.611	7.361	7.469	2.071
4129	7.628	7.378	7.452	2.133
4219	7.640	7.390	7.440	2.179
4309	7.649	7.399	7.431	2.226
4429	7.662	7.412	7.418	2.288

LHP42P HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		28/02/2004
Start time		7:20AM
Stop date		
Stop time		
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	0.40
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP42P	Pata	462601	6191310	31.64	31.42		0.00	0.00	8.50	8.50	14.12	17.52
Obs	LHO42	Loxton shells & sand	462614	6191312	32.05	31.45		12.86	1.51	8.50	NA	16.43	15.62
Obs	LHO42P	Pata	462622	6191312	31.96	31.33		20.76	2.44	8.50	NA	17.31	14.65
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP42P	41.00	49.50	8.50	-9.58	-18.08
Obs	LHO42	16.43	28.00	11.58	15.03	3.45
Obs	LHO42P	40.00	49.50	9.50	-8.67	-18.17
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP42P	OH	42.00	50.00	7.50	175	NA	NA	NA	175
Obs	LHO42	SC	16.00	22.00	5.57	NA	NA	NA	NA	80
Obs	LHO42P	OH	41.00	50.00	9.00	NA	NA	NA	NA	100
Obs										
Obs										

Note:

D based on well LHO42P

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	20.410	6.290	11.233	1.000	0.40	0.06	
2	21.610	7.490	10.033	2.000	0.40	0.05	
3	22.820	8.700	8.823	3.000	0.40	0.05	
4	23.490	9.370	8.153	4.000	0.40	0.04	
5	24.280	10.160	7.363	5.000	0.40	0.04	
6	24.890	10.770	6.753	6.000	0.40	0.04	
7	25.290	11.170	6.353	7.000	0.40	0.04	
8	25.890	11.770	5.753	8.000	0.40	0.03	31323
9	26.240	12.120	5.403	9.000	0.40	0.03	
10	26.600	12.480	5.043	10.000	0.40	0.03	
12	27.320	13.200	4.323	12.000	0.40	0.03	
14	27.980	13.860	3.663	14.000	0.40	0.03	
16	28.580	14.460	3.063	16.000	0.40	0.03	
18	29.070	14.950	2.573	18.000	0.40	0.03	
20	29.415	15.295	2.228	20.000	0.40	0.03	
22	29.700	15.580	1.943	22.000	0.40	0.03	
24	29.940	15.820	1.703	24.000	0.40	0.03	
26	30.065	15.945	1.578	26.000	0.40	0.03	
28	30.240	16.120	1.403	28.000	0.40	0.02	
30	30.385	16.265	1.258	30.000	0.40	0.02	
35	30.760	16.640	0.883	35.000	0.40	0.02	
40	31.000	16.880	0.643	40.000	0.40	0.02	
45	31.160	17.040	0.483	45.000	0.40	0.02	
50	31.360	17.240	0.283	50.000	0.40	0.02	
55	31.540	17.420	0.103	55.000	0.40	0.02	
60	31.650	17.530	-0.007	60.000	0.40	0.02	
70	31.780	17.660	-0.137	70.000	0.40	0.02	
80	31.950	17.830	-0.307	80.000	0.40	0.02	
90	32.020	17.900	-0.377	90.000	0.40	0.02	
100	32.165	18.045	-0.522	100.000	0.40	0.02	29102
120	32.450	18.330	-0.807	120.000	0.40	0.02	
140	32.520	18.400	-0.877	140.000	0.40	0.02	
160	32.610	18.490	-0.967	160.000	0.40	0.02	
180	32.840	18.720	-1.197	180.000	0.40	0.02	
200	33.080	18.960	-1.437	200.000	0.40	0.02	29166
220	33.120	19.000	-1.477	220.000	0.40	0.02	
240	33.300	19.180	-1.657	240.000	0.40	0.02	
260	33.375	19.255	-1.732	260.000	0.40	0.02	29102
280	33.420	19.300	-1.777	280.000	0.40	0.02	
300	33.495	19.375	-1.852	300.000	0.40	0.02	
320	33.370	19.250	-1.727	320.000	0.40	0.02	29166
340	33.390	19.270	-1.747	340.000	0.40	0.02	
360	33.280	19.160	-1.637	360.000	0.40	0.02	
380	33.265	19.145	-1.622	380.000	0.40	0.02	29102
400	33.370	19.250	-1.727	400.000	0.40	0.02	
420	33.600	19.480	-1.957	420.000	0.40	0.02	
440	33.595	19.475	-1.952	440.000	0.40	0.02	29102
460	33.710	19.590	-2.067	460.000	0.40	0.02	
480	33.780	19.660	-2.137	480.000	0.40	0.02	
500	33.830	19.710	-2.187	500.000	0.40	0.02	29166
550	33.910	19.790	-2.267	550.000	0.40	0.02	
560				560.000			29405
600	33.830	19.710	-2.187	600.000	0.40	0.02	29470
650	33.910	19.790	-2.267	650.000	0.40	0.02	
680				680.000			30032
700	34.160	20.040	-2.517	700.000	0.40	0.02	
720	33.880	19.760	-2.237	720.000	0.40	0.02	30143

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
5.00	16.425	0.000	15.623	0.030
10.00	16.425	0.000	15.623	0.060
20.00	16.425	0.000	15.623	0.121
30.00	16.425	0.000	15.623	0.181
40.00	16.425	0.000	15.623	0.242
50.00	16.425	0.000	15.623	0.302
60.00	16.425	0.000	15.623	0.363
70.00	16.420	-0.005	15.628	0.423
80.00	16.420	-0.005	15.628	0.484
90.00	16.420	-0.005	15.628	0.544
100.00	16.420	-0.005	15.628	0.605
120.00	16.420	-0.005	15.628	0.726
140.00	16.420	-0.005	15.628	0.847
160.00	16.420	-0.005	15.628	0.967
180.00	16.425	0.000	15.623	1.088
200.00	16.425	0.000	15.623	1.209
220.00	16.425	0.000	15.623	1.330
240.00	16.426	0.001	15.622	1.451
260.00	16.430	0.005	15.618	1.572
280.00	16.425	0.000	15.623	1.693
300.00	16.425	0.000	15.623	1.814
320.00	16.425	0.000	15.623	1.935
340.00	16.425	0.000	15.623	2.056
360.00	16.425	0.000	15.623	2.177
380.00	16.425	0.000	15.623	2.298
400.00	16.425	0.000	15.623	2.419
420.00	16.425	0.000	15.623	2.540
440.00	16.425	0.000	15.623	2.661
460.00	16.425	0.000	15.623	2.781
480.00	16.425	0.000	15.623	2.902
500.00	16.425	0.000	15.623	3.023
550.00	16.420	-0.005	15.628	3.326
600.00	16.425	0.000	15.623	3.628
650.00	16.425	0.000	15.623	3.930
700.00	16.425	0.000	15.623	4.233
720.00	16.425	0.000	15.623	4.354

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
6	17.331	0.021	14.631	0.014
7	17.362	0.052	14.600	0.016
8	17.393	0.083	14.569	0.019
9	17.423	0.113	14.539	0.021
10	17.454	0.144	14.508	0.023
11	17.496	0.186	14.466	0.026
12	17.527	0.217	14.435	0.028
13	17.568	0.258	14.394	0.030
14	17.599	0.289	14.363	0.032
15	17.640	0.330	14.322	0.035
16	17.671	0.361	14.291	0.037
17	17.692	0.382	14.270	0.039
18	17.723	0.413	14.239	0.042
19	17.754	0.444	14.208	0.044
20	17.784	0.474	14.178	0.046
21	17.815	0.505	14.147	0.049
22	17.836	0.526	14.126	0.051
23	17.867	0.557	14.095	0.053
24	17.898	0.588	14.064	0.056
25	17.929	0.619	14.033	0.058
26	17.960	0.650	14.002	0.060
27	17.991	0.681	13.971	0.063
28	18.022	0.712	13.940	0.065
29	18.053	0.743	13.909	0.067
30	18.084	0.774	13.878	0.070
31	18.104	0.794	13.858	0.072
32	18.176	0.866	13.786	0.074
33	18.197	0.887	13.765	0.077
34	18.218	0.908	13.744	0.079
35	18.238	0.928	13.724	0.081
36	18.269	0.959	13.693	0.084
37	18.290	0.980	13.672	0.086
38	18.311	1.001	13.651	0.088
39	18.331	1.021	13.631	0.090
40	18.352	1.042	13.610	0.093
41	18.372	1.062	13.590	0.095
42	18.393	1.083	13.569	0.097
43	18.414	1.104	13.548	0.100
44	18.434	1.124	13.528	0.102
45	18.455	1.145	13.507	0.104
46	18.476	1.166	13.486	0.107
47	18.496	1.186	13.466	0.109
48	18.517	1.207	13.445	0.111
49	18.537	1.227	13.425	0.114
50	18.568	1.258	13.394	0.116
52	18.599	1.289	13.363	0.121
54	18.641	1.331	13.321	0.125
56	18.672	1.362	13.290	0.130
58	18.723	1.413	13.239	0.135
60	18.754	1.444	13.208	0.139
62	18.775	1.465	13.187	0.144
64	18.806	1.496	13.156	0.148
66	18.837	1.527	13.125	0.153
68	18.857	1.547	13.105	0.158

70	18.888	1.578	13.074	0.162
72	18.909	1.599	13.053	0.167
74	18.940	1.630	13.022	0.172
76	18.960	1.650	13.002	0.176
78	18.981	1.671	12.981	0.181
80	19.012	1.702	12.950	0.186
82	19.033	1.723	12.929	0.190
84	19.053	1.743	12.909	0.195
86	19.084	1.774	12.878	0.200
88	19.105	1.795	12.857	0.204
90	19.125	1.815	12.837	0.209
92	19.146	1.836	12.816	0.213
94	19.167	1.857	12.795	0.218
96	19.177	1.867	12.785	0.223
98	19.198	1.888	12.764	0.227
100	19.218	1.908	12.744	0.232
110	19.311	2.001	12.651	0.255
120	19.394	2.084	12.568	0.278
130	19.476	2.166	12.486	0.302
140	19.548	2.238	12.414	0.325
150	19.610	2.300	12.352	0.348
160	19.662	2.352	12.300	0.371
170	19.713	2.403	12.249	0.394
180	19.755	2.445	12.207	0.418
190	19.806	2.496	12.156	0.441
200	19.847	2.537	12.115	0.464
210	19.899	2.589	12.063	0.487
220	19.930	2.620	12.032	0.510
230	19.971	2.661	11.991	0.534
240	20.002	2.692	11.960	0.557
250	20.043	2.733	11.919	0.580
260	20.074	2.764	11.888	0.603
270	20.105	2.795	11.857	0.626
280	20.136	2.826	11.826	0.650
290	20.157	2.847	11.805	0.673
300	20.188	2.878	11.774	0.696
310	20.209	2.899	11.753	0.719
320	20.229	2.919	11.733	0.742
330	20.250	2.940	11.712	0.766
340	20.270	2.960	11.692	0.789
350	20.291	2.981	11.671	0.812
360	20.301	2.991	11.661	0.835
370	20.322	3.012	11.640	0.859
380	20.332	3.022	11.630	0.882
390	20.343	3.033	11.619	0.905
400	20.353	3.043	11.609	0.928
410	20.374	3.064	11.588	0.951
420	20.394	3.084	11.568	0.975
430	20.415	3.105	11.547	0.998
440	20.435	3.125	11.527	1.021
450	20.456	3.146	11.506	1.044
460	20.466	3.156	11.496	1.067
470	20.487	3.177	11.475	1.091
480	20.508	3.198	11.454	1.114
490	20.518	3.208	11.444	1.137
500	20.539	3.229	11.423	1.160

510	20.549	3.239	11.413	1.183
520	20.570	3.260	11.392	1.207
530	20.580	3.270	11.382	1.230
540	20.600	3.290	11.362	1.253
550	20.611	3.301	11.351	1.276
560	20.621	3.311	11.341	1.299
570	20.631	3.321	11.331	1.323
580	20.642	3.332	11.320	1.346
590	20.652	3.342	11.310	1.369
600	20.662	3.352	11.300	1.392
610	20.673	3.363	11.289	1.415
620	20.683	3.373	11.279	1.439
630	20.693	3.383	11.269	1.462
640	20.704	3.394	11.258	1.485
650	20.714	3.404	11.248	1.508
660	20.724	3.414	11.238	1.531
670	20.735	3.425	11.227	1.555
680	20.735	3.425	11.227	1.578
690	20.745	3.435	11.217	1.601
700	20.766	3.456	11.196	1.624
710	20.776	3.466	11.186	1.647
720	20.776	3.466	11.186	1.671

LHP43P HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		21/12/2003
Start time		8:00PM
Stop date		
Stop time		
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	0.60
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP43P	Pata	462778	6189440	42.12	41.80		0.00	0.00	14.00	11.00	24.10	18.02
Obs	LHP13	Loxton shells & sand	462774	6189440	41.98	41.74		2.94	0.21	14.00	NA	NA	NA
Obs	LHO43P	Pata	462767	6189424	42.20	41.72		15.05	1.08	14.00	15.00	23.86	18.34
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP43P	47.00	61.00	14.00	-5.20	-19.20
Obs	LHP13	20.00	34.00	14.00	21.74	7.74
Obs	LHO43P	47.00	62.00	15.00	-5.28	-20.28
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP43P	OH	51.00	58.00	7.00	150	NA	NA	NA	150
Obs	LHP13	SC	32.00	34.00	2.00	NA	NA	NA	NA	175
Obs	LHO43P	OH	50.00	62.00	12.00	NA	NA	NA	NA	100
Obs										
Obs										

Note

Initial water level missing or obsevation well LHP13

D based on well LHO43P

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	r2/t	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	35.210	11.110	6.912	1.000	0.60	0.05	
2	35.880	11.780	6.242	2.000	0.60	0.05	
3	36.490	12.390	5.632	3.000	0.60	0.05	
4	37.030	12.930	5.092	4.000	0.60	0.05	
5	37.500	13.400	4.622	5.000	0.60	0.04	
6	38.000	13.900	4.122	6.000	0.60	0.04	
7	38.370	14.270	3.752	7.000	0.60	0.04	
8	38.740	14.640	3.382	8.000	0.60	0.04	
9	38.950	14.850	3.172	9.000	0.60	0.04	
10	39.200	15.100	2.922	10.000	0.60	0.04	
12	39.670	15.570	2.452	12.000	0.60	0.04	
14	40.030	15.930	2.092	14.000	0.60	0.04	
16	40.280	16.180	1.842	16.000	0.60	0.04	
18	40.460	16.360	1.662	18.000	0.60	0.04	
20	40.760	16.660	1.362	20.000	0.60	0.04	
22	40.910	16.810	1.212	22.000	0.60	0.04	
24	41.020	16.920	1.102	24.000	0.60	0.04	
26	41.060	16.960	1.062	26.000	0.60	0.04	
28	41.075	16.975	1.047	28.000	0.60	0.04	
30	41.140	17.040	0.982	30.000	0.60	0.04	
35	41.240	17.140	0.882	35.000	0.60	0.04	
40	41.300	17.200	0.822	40.000	0.60	0.03	
45	41.380	17.280	0.742	45.000	0.60	0.03	
50	41.440	17.340	0.682	50.000	0.60	0.03	
55	41.520	17.420	0.602	55.000	0.60	0.03	
60	41.620	17.520	0.502	60.000	0.60	0.03	
70	41.860	17.760	0.262	70.000	0.60	0.03	
80	42.090	17.990	0.032	80.000	0.60	0.03	
90	42.170	18.070	-0.048	90.000	0.60	0.03	
100	42.180	18.080	-0.058	100.000	0.60	0.03	
120	42.640	18.540	-0.518	120.000	0.60	0.03	
140	42.920	18.820	-0.798	140.000	0.60	0.03	
160	43.170	19.070	-1.048	160.000	0.60	0.03	
180	43.355	19.255	-1.233	180.000	0.60	0.03	
200	44.070	19.970	-1.948	200.000	0.60	0.03	
220	44.440	20.340	-2.318	220.000	0.60	0.03	
240	44.580	20.480	-2.458	240.000	0.60	0.03	
260	44.320	20.220	-2.198	260.000	0.60	0.03	
280	44.215	20.115	-2.093	280.000	0.60	0.03	
300	44.100	20.000	-1.978	300.000	0.60	0.03	
320	44.340	20.240	-2.218	320.000	0.60	0.03	
340	43.980	19.880	-1.858	340.000	0.60	0.03	
360	44.140	20.040	-2.018	360.000	0.60	0.03	
380	44.190	20.090	-2.068	380.000	0.60	0.03	
400	44.040	19.940	-1.918	400.000	0.60	0.03	
420	44.300	20.200	-2.178	420.000	0.60	0.03	
440	44.330	20.230	-2.208	440.000	0.60	0.03	
460	44.475	20.375	-2.353	460.000	0.60	0.03	
480	44.600	20.500	-2.478	480.000	0.60	0.03	
500	44.350	20.250	-2.228	500.000	0.60	0.03	
550	44.340	20.240	-2.218	550.000	0.60	0.03	
600	44.580	20.480	-2.458	600.000	0.60	0.03	
650	44.210	20.110	-2.088	650.000	0.60	0.03	

700	44.350	20.250	-2.228	700.000	0.60	0.03
720	44.450	20.350	-2.328	720.000	0.60	0.03

Salinity during development

Minutes	TDS (mg/L)
27	17509
57	19659
126	24826
179	25181
239	25181

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	r2/t
60	21.350	NA	NA	6.942
90	21.350	NA	NA	10.412
120	21.355	NA	NA	13.883
160	21.350	NA	NA	18.511
200	21.350	NA	NA	23.139
240	21.350	NA	NA	27.766
280	21.350	NA	NA	32.394
320	21.350	NA	NA	37.022
360	21.345	NA	NA	41.649
400	21.350	NA	NA	46.277
440	21.350	NA	NA	50.905
480	21.350	NA	NA	55.532
600	21.350	NA	NA	69.416

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	r2/t
1	23.860	0.000	18.336	0.004
2	23.880	0.020	18.316	0.009
3	23.930	0.070	18.266	0.013
4	23.990	0.130	18.206	0.018
5	24.070	0.210	18.126	0.022
6	24.140	0.280	18.056	0.026
7	24.205	0.345	17.991	0.031
8	24.280	0.420	17.916	0.035
9	24.340	0.480	17.856	0.040
10	24.410	0.550	17.786	0.044
12	24.540	0.680	17.656	0.053
14	24.650	0.790	17.546	0.062
16	24.750	0.890	17.446	0.071
18	24.850	0.990	17.346	0.079
20	24.935	1.075	17.261	0.088
22	25.010	1.150	17.186	0.097
24	25.080	1.220	17.116	0.106
26	25.175	1.315	17.021	0.115
28	25.215	1.355	16.981	0.124
30	25.280	1.420	16.916	0.132
35	25.410	1.550	16.786	0.155
40	25.520	1.660	16.676	0.177
45	25.610	1.750	16.586	0.199
50	25.690	1.830	16.506	0.221
55	25.765	1.905	16.431	0.243
60	25.840	1.980	16.356	0.265
70	25.960	2.100	16.236	0.309
80	26.070	2.210	16.126	0.353
90	26.170	2.310	16.026	0.397
100	26.250	2.390	15.946	0.441
120	26.410	2.550	15.786	0.530
140	26.550	2.690	15.646	0.618
160	26.670	2.810	15.526	0.706
180	26.780	2.920	15.416	0.795
200	26.890	3.030	15.306	0.883
220	27.020	3.160	15.176	0.971
240	27.120	3.260	15.076	1.060
260	27.190	3.330	15.006	1.148
280	27.235	3.375	14.961	1.236
300	27.270	3.410	14.926	1.324
320	27.320	3.460	14.876	1.413
340	27.360	3.500	14.836	1.501
360	27.380	3.520	14.816	1.589
380	27.430	3.570	14.766	1.678
400	27.460	3.600	14.736	1.766
420	27.500	3.640	14.696	1.854
440	27.540	3.680	14.656	1.943
460	27.570	3.710	14.626	2.031
480	27.670	3.810	14.526	2.119
500	27.760	3.900	14.436	2.207
550	27.860	4.000	14.336	2.428
600	27.910	4.050	14.286	2.649
650	27.945	4.085	14.251	2.870
700	27.985	4.125	14.211	3.090
720	28.020	4.160	14.176	3.179

LHP44 HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		

Start date		23/07/2004
Start time		9:35AM
Stop date		
Stop time		
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	1.90
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP44	Loxton shells & sand	462628	6191116	31.723	31.472		0.00	0.00	4.74	4.74	16.26	15.46
Obs	LHO44	Loxton shells & sand	462625	6191101	32.097	31.349		18.00	3.80	4.74	NA	15.79	16.31
Obs	LHO49	Loxton shells & sand	462622	6191086	32.055	31.285		30.00	6.33	4.74	NA	15.77	16.29
Obs	LHO50	Loxton shells & sand	462618	6191067	32.076	31.288		50.00	10.55	4.74	NA	15.74	16.34
Obs	LHO55	Loxton shells & sand	462608	6191018	31.864	31.409		100.00	21.10	4.74	NA	15.64	16.23

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP44	5.00	21.00	16.00	26.47	10.47
Obs	LHO44	5.00	21.00	16.00	26.35	10.35
Obs	LHO49	5.00	19.00	14.00	26.29	12.29
Obs	LHO50	5.00	19.00	14.00	26.29	12.29
Obs	LHO55	6.00	21.00	15.00	25.41	10.41

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP44	WS	17.00	22.00	4.00	174	0.60	0.5	8:16	175
Obs	LHO44	SC	17.00	22.00	4.00	80	NA	NA	NA	80
Obs	LHO49	SC	16.00	21.00	3.00	80	NA	NA	NA	80
Obs	LHO50	SC	17.00	20.00	2.00	80	NA	NA	NA	80
Obs	LHO55	SC	18.00	21.00	3.00	80	NA	NA	NA	80

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	17.910	1.650	13.813	1.00	1.90	1.152	
2	18.080	1.820	13.643	2.00	1.90	1.044	
3	18.230	1.970	13.493	3.00	1.90	0.964	
4	18.270	2.010	13.453	4.00	1.90	0.945	
5	18.270	2.010	13.453	5.00	1.90	0.945	
6	18.280	2.020	13.443	6.00	1.90	0.941	
7	18.285	2.025	13.438	7.00	1.90	0.938	
8	18.290	2.030	13.433	8.00	1.90	0.936	
9	18.300	2.040	13.423	9.00	1.90	0.931	
10	18.315	2.055	13.408	10.00	1.90	0.925	3184
12	18.340	2.080	13.383	12.00	1.90	0.913	
14	18.370	2.110	13.353	14.00	1.90	0.900	
16	18.410	2.150	13.313	16.00	1.90	0.884	
18	18.415	2.155	13.308	18.00	1.90	0.882	
20	18.430	2.170	13.293	20.00	1.90	0.876	
22	18.445	2.185	13.278	22.00	1.90	0.870	
24	18.445	2.185	13.278	24.00	1.90	0.870	
26	18.460	2.200	13.263	26.00	1.90	0.864	
28	18.470	2.210	13.253	28.00	1.90	0.860	
30	18.470	2.210	13.253	30.00	1.90	0.860	
35	18.570	2.310	13.153	35.00	1.90	0.823	
40	18.540	2.280	13.183	40.00	1.90	0.833	
45	18.525	2.265	13.198	45.00	1.90	0.839	
50	18.550	2.290	13.173	50.00	1.90	0.830	
55	18.600	2.340	13.123	55.00	1.90	0.812	
60	18.615	2.355	13.108	60.00	1.90	0.807	
70	18.645	2.385	13.078	70.00	1.90	0.797	
80	18.655	2.395	13.068	80.00	1.90	0.793	
90	18.660	2.400	13.063	90.00	1.90	0.792	
100	18.620	2.360	13.103	100.00	1.90	0.805	3511
120	18.680	2.420	13.043	120.00	1.90	0.785	
140	19.000	2.740	12.723	140.00	1.90	0.693	
160	19.080	2.820	12.643	160.00	1.90	0.674	
180	19.190	2.930	12.533	180.00	1.90	0.648	
200	19.195	2.935	12.528	200.00	1.90	0.647	3522
250	19.080	2.820	12.643	250.00	1.90	0.674	
300	19.060	2.800	12.663	300.00	1.90	0.679	3356
350	19.050	2.790	12.673	350.00	1.90	0.681	
400	19.125	2.865	12.598	400.00	1.90	0.663	3511
450	19.090	2.830	12.633	450.00	1.90	0.671	
500	19.095	2.835	12.628	500.00	1.90	0.670	3367
550	19.140	2.880	12.583	550.00	1.90	0.660	
600	19.090	2.830	12.633	600.00	1.90	0.671	3615
650	19.140	2.880	12.583	650.00	1.90	0.660	
700	19.180	2.920	12.543	700.00	1.90	0.651	
720	19.150	2.890	12.573	720.00	1.90	0.657	3661

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	15.805	0.015	16.292	0.00
3	15.820	0.030	16.277	0.01
5	15.830	0.040	16.267	0.02
7	15.840	0.050	16.257	0.02
9	15.850	0.060	16.247	0.03
11	15.855	0.065	16.242	0.03
13	15.855	0.065	16.242	0.04
15	15.860	0.070	16.237	0.05
17	15.870	0.080	16.227	0.05
19	15.870	0.080	16.227	0.06
21	15.870	0.080	16.227	0.06
24	15.875	0.085	16.222	0.07
26	15.880	0.090	16.217	0.08
28	15.880	0.090	16.217	0.09
30	15.885	0.095	16.212	0.09
35	15.890	0.100	16.207	0.11
40	15.895	0.105	16.202	0.12
45	15.895	0.105	16.202	0.14
50	15.900	0.110	16.197	0.15
55	15.905	0.115	16.192	0.17
60	15.910	0.120	16.187	0.19
70	15.920	0.130	16.177	0.22
80	15.920	0.130	16.177	0.25
90	15.930	0.140	16.167	0.28
100	15.935	0.145	16.162	0.31
120	15.945	0.155	16.152	0.37
141	15.960	0.170	16.137	0.44
160	15.970	0.180	16.127	0.49
180	15.975	0.185	16.122	0.56
200	15.985	0.195	16.112	0.62
250	15.990	0.200	16.107	0.77
300	16.000	0.210	16.097	0.93
351	16.005	0.215	16.092	1.08
401	16.020	0.230	16.077	1.24
451	16.025	0.235	16.072	1.39
501	16.035	0.245	16.062	1.55
551	16.040	0.250	16.057	1.70
601	16.050	0.260	16.047	1.85
650	16.055	0.265	16.042	2.01
700	16.060	0.270	16.037	2.16
720	16.060	0.270	16.037	2.22

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
2	15.765	0.000	16.290	0.00
4	15.770	0.005	16.285	0.00
6	15.770	0.005	16.285	0.01
8	15.770	0.005	16.285	0.01
10	15.775	0.010	16.280	0.01
12	15.775	0.010	16.280	0.01
14	15.780	0.015	16.275	0.02
16	15.780	0.015	16.275	0.02
18	15.785	0.020	16.270	0.02
20	15.785	0.020	16.270	0.02
22	15.785	0.020	16.270	0.02
25	15.785	0.020	16.270	0.03
27	15.790	0.025	16.265	0.03
29	15.790	0.025	16.265	0.03
31	15.790	0.025	16.265	0.03
36	15.790	0.025	16.265	0.04
41	15.790	0.025	16.265	0.05
46	15.790	0.025	16.265	0.05
51	15.795	0.030	16.260	0.06
56	15.795	0.030	16.260	0.06
61	15.795	0.030	16.260	0.07
71	15.800	0.035	16.255	0.08
80	15.800	0.035	16.255	0.09
91	15.805	0.040	16.250	0.10
101	15.810	0.045	16.245	0.11
121	15.820	0.055	16.235	0.13
142	15.820	0.055	16.235	0.16
162	15.820	0.055	16.235	0.18
181	15.825	0.060	16.230	0.20
201	15.825	0.060	16.230	0.22
251	15.830	0.065	16.225	0.28
301	15.835	0.070	16.220	0.33
352	15.840	0.075	16.215	0.39
402	15.845	0.080	16.210	0.45
452	15.850	0.085	16.205	0.50
502	15.850	0.085	16.205	0.56
552	15.855	0.090	16.200	0.61
602	15.860	0.095	16.195	0.67
651	15.865	0.100	16.190	0.72
701	15.870	0.105	16.185	0.78
721	15.870	0.105	16.185	0.80

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
12.5	15.740	0.000	16.336	0.01
23	15.740	0.000	16.336	0.01
32	15.740	0.000	16.336	0.01
42	15.740	0.000	16.336	0.02
53	15.735	-0.005	16.341	0.02
57	15.740	0.000	16.336	0.02
64	15.740	0.000	16.336	0.03
72	15.740	0.000	16.336	0.03
82	15.740	0.000	16.336	0.03
102	15.740	0.000	16.336	0.04
123	15.745	0.005	16.331	0.05
143	15.745	0.005	16.331	0.06
164	15.745	0.005	16.331	0.07
183	15.745	0.005	16.331	0.07
203	15.745	0.005	16.331	0.08
252	15.745	0.005	16.331	0.10
302	15.750	0.010	16.326	0.12
353	15.750	0.010	16.326	0.14
403	15.750	0.010	16.326	0.16
453	15.755	0.015	16.321	0.18
503	15.760	0.020	16.316	0.20
553	15.760	0.020	16.316	0.22
603	15.765	0.025	16.311	0.24
652	15.765	0.025	16.311	0.26
702	15.765	0.025	16.311	0.28
722	15.765	0.025	16.311	0.29

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
34	15.635	0.000	16.229	0.00
52	15.630	-0.005	16.234	0.01
62	15.630	-0.005	16.234	0.01
95	15.630	-0.005	16.234	0.01
124	15.630	-0.005	16.234	0.01
144	15.630	-0.005	16.234	0.01
165	15.625	-0.010	16.239	0.02
184	15.625	-0.010	16.239	0.02
204	15.625	-0.010	16.239	0.02
254	15.625	-0.010	16.239	0.03
303	15.625	-0.010	16.239	0.03
355	15.625	-0.010	16.239	0.04
405	15.625	-0.010	16.239	0.04
455	15.630	-0.005	16.234	0.05
504	15.630	-0.005	16.234	0.05
554	15.630	-0.005	16.234	0.06
604	15.635	0.000	16.229	0.06
653	15.635	0.000	16.229	0.07
723	15.635	0.000	16.229	0.07

LHP45 HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		

Start date		24/07/2004
Start time		08:20AM
Stop date		
Stop time		0:00AM
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	0.60
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP45	Loxton Sands	462296	6193040	26.662	26.047		0.00	0.00	10.08	9.48	6.52	20.14
Obs	LHO48	Loxton shells & sand	462296	6193025	26.646	26.190		15.00	1.52	9.89	9.89	6.11	20.54
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP45	4.00	16.60	12.60	22.05	9.45
Obs	LHO48	3.00	16.00	13.00	23.19	10.19
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP45	SC	13.00	16.00	3.00	175	0.60	0.5	16:30	175
Obs	LHO48	SC	13.00	16.00	3.00	80	NA	NA	NA	80
Obs										
Obs										
Obs										

Note:

Unclear whether full production aquifer thickness has been drilled or not

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	12.590	6.070	14.072	1.00	0.60	0.099	
2	12.400	5.880	14.262	2.00	0.60	0.102	
3	11.810	5.290	14.852	3.00	0.60	0.113	
4	11.510	4.990	15.152	4.00	0.60	0.120	
5	11.340	4.820	15.322	5.00	0.60	0.124	
6	11.160	4.640	15.502	6.00	0.60	0.129	
7	11.040	4.520	15.622	7.00	0.60	0.133	
8	10.980	4.460	15.682	8.00	0.60	0.135	
9	10.900	4.380	15.762	9.00	0.60	0.137	
10	10.840	4.320	15.822	10.00	0.60	0.139	
12	10.770	4.250	15.892	12.00	0.60	0.141	
14	10.750	4.230	15.912	14.00	0.60	0.142	
16	10.735	4.215	15.927	16.00	0.60	0.142	
18	10.750	4.230	15.912	18.00	0.60	0.142	
19				19.00			
20	10.715	4.195	15.947	20.00	0.60	0.143	
22	10.725	4.205	15.937	22.00	0.60	0.143	1951
24	10.730	4.210	15.932	24.00	0.60	0.143	
26	10.760	4.240	15.902	26.00	0.60	0.142	
28	10.745	4.225	15.917	28.00	0.60	0.142	
30	10.745	4.225	15.917	30.00	0.60	0.142	
35	10.710	4.190	15.952	35.00	0.60	0.143	
40	10.700	4.180	15.962	40.00	0.60	0.144	
45	10.700	4.180	15.962	45.00	0.60	0.144	
50	10.690	4.170	15.972	50.00	0.60	0.144	
55	10.740	4.220	15.922	55.00	0.60	0.142	
60	10.740	4.220	15.922	60.00	0.60	0.142	
70	10.690	4.170	15.972	70.00	0.60	0.144	
80	10.715	4.195	15.947	80.00	0.60	0.143	
90	10.720	4.200	15.942	90.00	0.60	0.143	
100	10.685	4.165	15.977	100.00	0.60	0.144	1951
120	10.680	4.160	15.982	120.00	0.60	0.144	
140	10.600	4.080	16.062	140.00	0.60	0.147	
160	10.670	4.150	15.992	160.00	0.60	0.145	
180	10.710	4.190	15.952	180.00	0.60	0.143	
200	10.620	4.100	16.042	200.00	0.60	0.146	1917
250	10.555	4.035	16.107	250.00	0.60	0.149	
300	10.600	4.080	16.062	300.00	0.60	0.147	1895
350	10.575	4.055	16.087	350.00	0.60	0.148	
400	10.440	3.920	16.222	400.00	0.60	0.153	1878
450	10.460	3.940	16.202	450.00	0.60	0.152	
500	10.500	3.980	16.162	500.00	0.60	0.151	
550	10.490	3.970	16.172	550.00	0.60	0.151	
600	10.450	3.930	16.212	600.00	0.60	0.153	1714
650	10.470	3.950	16.192	650.00	0.60	0.152	
700	10.470	3.950	16.192	700.00	0.60	0.152	
720	10.510	3.990	16.152	720.00	0.60	0.150	1832

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	6.130	0.020	20.516	0.00
2	6.147	0.037	20.499	0.01
3	6.140	0.030	20.506	0.01
4	6.135	0.025	20.511	0.02
5	6.135	0.025	20.511	0.02
6	6.135	0.025	20.511	0.03
7	6.140	0.030	20.506	0.03
8	6.140	0.030	20.506	0.04
9	6.140	0.030	20.506	0.04
10	6.140	0.030	20.506	0.04
12	6.140	0.030	20.506	0.05
14	6.140	0.030	20.506	0.06
16	6.140	0.030	20.506	0.07
18	6.140	0.030	20.506	0.08
20	6.140	0.030	20.506	0.09
22	6.140	0.030	20.506	0.10
24	6.140	0.030	20.506	0.11
26	6.140	0.030	20.506	0.12
28	6.145	0.035	20.501	0.12
30	6.145	0.035	20.501	0.13
35	6.145	0.035	20.501	0.16
40	6.150	0.040	20.496	0.18
45	6.150	0.040	20.496	0.20
50	6.150	0.040	20.496	0.22
55	6.155	0.045	20.491	0.24
60	6.155	0.045	20.491	0.27
70	6.160	0.050	20.486	0.31
80	6.160	0.050	20.486	0.36
90	6.160	0.050	20.486	0.40
100	6.160	0.050	20.486	0.44
120	6.160	0.050	20.486	0.53
140	6.165	0.055	20.481	0.62
160	6.165	0.055	20.481	0.71
180	6.165	0.055	20.481	0.80
200	6.170	0.060	20.476	0.89
250	6.170	0.060	20.476	1.11
301	6.170	0.060	20.476	1.34
351	6.170	0.060	20.476	1.56
401	6.170	0.060	20.476	1.78
451	6.175	0.065	20.471	2.00
501	6.180	0.070	20.466	2.23
551	6.180	0.070	20.466	2.45
601	6.180	0.070	20.466	2.67
651	6.185	0.075	20.461	2.89
701	6.185	0.075	20.461	3.12
720	6.185	0.075	20.461	3.20

LHP46 HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		

Start date		19/07/2004
Start time		8:30AM
Stop date		
Stop time		0:00AM
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	1.50
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP46	Loxton shells & sand	462611	6190613	36.128	35.748		0.00	0.00	5.02	4.52	19.98	16.15
Obs	LHO51	Loxton shells & sand	462608	6190628	36.409	35.884		16.00	3.19	5.02	NA	19.93	16.48
Obs	LHO53	Loxton shells & sand	462601	6190662	36.397	35.792		50.00	9.96	5.02	NA	20.02	16.38
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP46	7.00	25.00	18.00	28.75	10.75
Obs	LHO51	8.00	24.50	16.50	27.88	11.38
Obs	LHO53	8.00	24.00	16.00	27.79	11.79
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP46	WS	22.50	24.50	2.00	175	1.00	0.5	8:16	175
Obs	LHO51	SC	22.50	24.50	2.00	80	NA	NA	NA	80
Obs	LHO53	SC	22.50	24.50	2.00	80	NA	NA	NA	80
Obs										
Obs										

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	21.834	1.854	14.294	1.000	1.50	0.07	
2	21.823	1.843	14.305	2.000	1.50	0.07	
3	22.062	2.082	14.066	3.000	1.50	0.07	
4	22.528	2.548	13.600	4.000	1.50	0.07	
5	22.497	2.517	13.631	5.000	1.50	0.07	
6	22.497	2.517	13.631	6.000	1.50	0.07	
7	22.507	2.527	13.621	7.000	1.50	0.07	
8	22.507	2.527	13.621	8.000	1.50	0.07	
9	22.528	2.548	13.600	9.000	1.50	0.07	
10	22.538	2.558	13.590	10.000	1.50	0.07	
11	22.538	2.558	13.590	11.000	1.50	0.07	
12	22.548	2.568	13.580	12.000	1.50	0.07	
13	22.569	2.589	13.559	13.000	1.50	0.07	
14	22.569	2.589	13.559	14.000	1.50	0.07	6883
15	22.569	2.589	13.559	15.000	1.50	0.07	
16	22.590	2.610	13.538	16.000	1.50	0.07	
17	22.600	2.620	13.528	17.000	1.50	0.07	
18	22.610	2.630	13.518	18.000	1.50	0.07	
19	22.631	2.651	13.497	19.000	1.50	0.07	
20	22.631	2.651	13.497	20.000	1.50	0.07	
21	22.631	2.651	13.497	21.000	1.50	0.07	
22	22.641	2.661	13.487	22.000	1.50	0.07	
23	22.652	2.672	13.476	23.000	1.50	0.07	
24	22.662	2.682	13.466	24.000	1.50	0.07	
25	22.673	2.693	13.455	25.000	1.50	0.07	
26	22.662	2.682	13.466	26.000	1.50	0.07	
27	22.683	2.703	13.445	27.000	1.50	0.07	
28	22.683	2.703	13.445	28.000	1.50	0.07	
29	22.693	2.713	13.435	29.000	1.50	0.07	
30	22.673	2.693	13.455	30.000	1.50	0.07	
31	22.714	2.734	13.414	31.000	1.50	0.07	
32	22.714	2.734	13.414	32.000	1.50	0.07	
33	22.724	2.744	13.404	33.000	1.50	0.07	
34	22.714	2.734	13.414	34.000	1.50	0.07	
35	22.724	2.744	13.404	35.000	1.50	0.07	
36	22.735	2.755	13.393	36.000	1.50	0.07	
37	22.745	2.765	13.383	37.000	1.50	0.07	
38	22.745	2.765	13.383	38.000	1.50	0.07	
39	22.755	2.775	13.373	39.000	1.50	0.07	
40	22.776	2.796	13.352	40.000	1.50	0.07	
41	22.766	2.786	13.362	41.000	1.50	0.07	
42	22.766	2.786	13.362	42.000	1.50	0.07	
43	22.766	2.786	13.362	43.000	1.50	0.07	
44	22.776	2.796	13.352	44.000	1.50	0.07	
45	22.786	2.806	13.342	45.000	1.50	0.07	
46	22.776	2.796	13.352	46.000	1.50	0.07	
47	22.786	2.806	13.342	47.000	1.50	0.07	
48	22.786	2.806	13.342	48.000	1.50	0.07	
49	22.797	2.817	13.331	49.000	1.50	0.07	
50	22.797	2.817	13.331	50.000	1.50	0.07	
52	22.818	2.838	13.310	52.000	1.50	0.07	
54	22.807	2.827	13.321	54.000	1.50	0.07	
56	22.818	2.838	13.310	56.000	1.50	0.07	

58	22.838	2.858	13.290	58.000	1.50	0.07	
60	22.838	2.858	13.290	60.000	1.50	0.07	
62	22.849	2.869	13.279	62.000	1.50	0.07	
64	22.838	2.858	13.290	64.000	1.50	0.07	
66	22.859	2.879	13.269	66.000	1.50	0.07	
68	22.869	2.889	13.259	68.000	1.50	0.07	
70	22.859	2.879	13.269	70.000	1.50	0.07	
72	22.869	2.889	13.259	72.000	1.50	0.07	
74	22.880	2.900	13.248	74.000	1.50	0.07	
76	22.890	2.910	13.238	76.000	1.50	0.07	
78	22.869	2.889	13.259	78.000	1.50	0.07	
80	22.880	2.900	13.248	80.000	1.50	0.07	
82	22.900	2.920	13.228	82.000	1.50	0.07	
84	22.911	2.931	13.217	84.000	1.50	0.07	
86	22.911	2.931	13.217	86.000	1.50	0.07	
88	22.921	2.941	13.207	88.000	1.50	0.07	
90	22.931	2.951	13.197	90.000	1.50	0.07	
92	22.911	2.931	13.217	92.000	1.50	0.07	
94	22.921	2.941	13.207	94.000	1.50	0.07	
96	22.911	2.931	13.217	96.000	1.50	0.07	
98	22.931	2.951	13.197	98.000	1.50	0.07	
100	22.942	2.962	13.186	100.000	1.50	0.07	6642
110	22.952	2.972	13.176	110.000	1.50	0.07	
120	22.952	2.972	13.176	120.000	1.50	0.07	
130	22.963	2.983	13.165	130.000	1.50	0.07	
140	22.963	2.983	13.165	140.000	1.50	0.07	
150	23.004	3.024	13.124	150.000	1.50	0.07	
160	23.025	3.045	13.103	160.000	1.50	0.07	
170	23.035	3.055	13.093	170.000	1.50	0.07	
180	23.056	3.076	13.072	180.000	1.50	0.07	
190	23.045	3.065	13.083	190.000	1.50	0.07	
200	23.056	3.076	13.072	200.000	1.50	0.07	6378
210	23.076	3.096	13.052	210.000	1.50	0.07	
220	23.087	3.107	13.041	220.000	1.50	0.06	
230	23.087	3.107	13.041	230.000	1.50	0.06	
240	23.097	3.117	13.031	240.000	1.50	0.06	
250	23.128	3.148	13.000	250.000	1.50	0.06	
260	23.108	3.128	13.020	260.000	1.50	0.06	
270	23.097	3.117	13.031	270.000	1.50	0.06	
280	23.128	3.148	13.000	280.000	1.50	0.06	
290	23.139	3.159	12.989	290.000	1.50	0.06	
300	23.128	3.148	13.000	300.000	1.50	0.06	6389
310	23.149	3.169	12.979	310.000	1.50	0.06	
320	23.180	3.200	12.948	320.000	1.50	0.06	
330	23.170	3.190	12.958	330.000	1.50	0.06	
340	23.211	3.231	12.917	340.000	1.50	0.06	
350	23.201	3.221	12.927	350.000	1.50	0.06	
360	23.201	3.221	12.927	360.000	1.50	0.06	
370	23.232	3.252	12.896	370.000	1.50	0.06	
380	23.221	3.241	12.907	380.000	1.50	0.06	
390	23.221	3.241	12.907	390.000	1.50	0.06	
400	23.232	3.252	12.896	400.000	1.50	0.06	6412
410	23.242	3.262	12.886	410.000	1.50	0.06	
420	23.263	3.283	12.865	420.000	1.50	0.06	
430	23.252	3.272	12.876	430.000	1.50	0.06	
440	23.273	3.293	12.855	440.000	1.50	0.06	

450	23.273	3.293	12.855	450.000	1.50	0.06	
460	23.294	3.314	12.834	460.000	1.50	0.06	
470	23.294	3.314	12.834	470.000	1.50	0.06	
480	23.304	3.324	12.824	480.000	1.50	0.06	
490	23.325	3.345	12.803	490.000	1.50	0.06	
500	23.315	3.335	12.813	500.000	1.50	0.06	6291
510	23.325	3.345	12.803	510.000	1.50	0.06	
520	23.325	3.345	12.803	520.000	1.50	0.06	
530	23.346	3.366	12.782	530.000	1.50	0.06	
540	23.335	3.355	12.793	540.000	1.50	0.06	
550	23.335	3.355	12.793	550.000	1.50	0.06	
560	23.346	3.366	12.782	560.000	1.50	0.06	
570	23.366	3.386	12.762	570.000	1.50	0.06	
580	23.366	3.386	12.762	580.000	1.50	0.06	
590	23.366	3.386	12.762	590.000	1.50	0.06	
600	23.366	3.386	12.762	600.000	1.50	0.06	6194
610	23.397	3.417	12.731	610.000	1.50	0.06	
620	23.387	3.407	12.741	620.000	1.50	0.06	
630	23.397	3.417	12.731	630.000	1.50	0.06	
640	23.408	3.428	12.720	640.000	1.50	0.06	
650	23.429	3.449	12.699	650.000	1.50	0.06	
660	23.429	3.449	12.699	660.000	1.50	0.06	
670	23.429	3.449	12.699	670.000	1.50	0.06	
680	23.429	3.449	12.699	680.000	1.50	0.06	
690	23.418	3.438	12.710	690.000	1.50	0.06	
700	23.439	3.459	12.689	700.000	1.50	0.06	
710	23.449	3.469	12.679	710.000	1.50	0.06	
720	23.480	3.500	12.648	720.000	1.50	0.06	6211

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	19.960	0.035	16.449	0.004
2	19.970	0.045	16.439	0.008
3	19.980	0.055	16.429	0.012
4	20.000	0.075	16.409	0.016
5	20.010	0.085	16.399	0.020
6	20.020	0.095	16.389	0.023
7	20.020	0.095	16.389	0.027
8	20.025	0.100	16.384	0.031
9	20.030	0.105	16.379	0.035
10	20.035	0.110	16.374	0.039
12	20.040	0.115	16.369	0.047
14	20.045	0.120	16.364	0.055
16	20.050	0.125	16.359	0.063
18	20.050	0.125	16.359	0.070
20	20.055	0.130	16.354	0.078
22	20.060	0.135	16.349	0.086
24	20.065	0.140	16.344	0.094
26	20.070	0.145	16.339	0.102
28	20.070	0.145	16.339	0.109
30	20.075	0.150	16.334	0.117
35	20.085	0.160	16.324	0.137
40	20.090	0.165	16.319	0.156
45	20.100	0.175	16.309	0.176
50	20.105	0.180	16.304	0.195
55	20.110	0.185	16.299	0.215
60	20.115	0.190	16.294	0.234
70	20.120	0.195	16.289	0.273
80	20.125	0.200	16.284	0.313
90	20.130	0.205	16.279	0.352
100	20.135	0.210	16.274	0.391
121	20.140	0.215	16.269	0.473
141	20.140	0.215	16.269	0.551
161	20.145	0.220	16.264	0.629
181	20.150	0.225	16.259	0.707
201	20.150	0.225	16.259	0.785
251	20.160	0.235	16.249	0.980
301	20.170	0.245	16.239	1.176
352	20.180	0.255	16.229	1.375
401	20.190	0.265	16.219	1.566
451	20.195	0.270	16.214	1.762
501	20.205	0.280	16.204	1.957
551	20.210	0.285	16.199	2.152
600	20.220	0.295	16.189	2.344
650	20.230	0.305	16.179	2.539
700	20.235	0.310	16.174	2.734
720	20.235	0.310	16.174	2.813

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
11	20.010	-0.005	16.387	0.004
21	20.015	0.000	16.382	0.008
31	20.015	0.000	16.382	0.012
41	20.020	0.005	16.377	0.016
51	20.020	0.005	16.377	0.020
61	20.025	0.010	16.372	0.024
71	20.025	0.010	16.372	0.028
81	20.025	0.010	16.372	0.032
91	20.030	0.015	16.367	0.036
101	20.030	0.015	16.367	0.040
122	20.030	0.015	16.367	0.049
142	20.030	0.015	16.367	0.057
162	20.030	0.015	16.367	0.065
182	20.030	0.015	16.367	0.073
202	20.030	0.015	16.367	0.081
252	20.025	0.010	16.372	0.101
302	20.030	0.015	16.367	0.121
352	20.035	0.020	16.362	0.141
402	20.035	0.020	16.362	0.161
452	20.040	0.025	16.357	0.181
502	20.045	0.030	16.352	0.201
552	20.050	0.035	16.347	0.221
602	20.050	0.035	16.347	0.241
651	20.050	0.035	16.347	0.260
701	20.055	0.040	16.342	0.280
722	20.055	0.040	16.342	0.289

LHP47 HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		26/11/2004
Start time		9:00AM
Stop date		
Stop time		
Duration (minutes)		

Step	Duration (minutes)	Q (L/s)
1	108200	1.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP47	Loxton shells & sand	462629	6191121	31.748	31.505		0.00	0.00	4.93	4.93	16.07	15.68
Obs	LHO44	Loxton shells & sand	462625	6191101	32.097	31.349		18.00	3.65	4.93	NA	15.85	16.25
Obs	LHO49	Loxton shells & sand	462622	6191086	32.055	31.285		30.00	6.09	4.93	NA	15.77	16.29
Obs	LHO50	Loxton shells & sand	462618	6191067	32.076	31.288		50.00	10.14	4.93	NA	15.76	16.32
Obs	LHO55	Loxton shells & sand	462608	6191018	31.864	31.409		100.00	20.28	4.93	NA	15.69	16.18

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP47	5.00	21.00	16.00	26.51	10.51
Obs	LHO44	5.00	21.00	16.00	26.35	10.35
Obs	LHO49	5.00	19.00	14.00	26.29	12.29
Obs	LHO50	5.00	19.00	14.00	26.29	12.29
Obs	LHO55	6.00	21.00	15.00	25.41	10.41

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP47	WS	18.50	21.00	2.50	174	0.60	1.2	8:16	175
Obs	LHO44	SC	17.00	22.00	4.00	80	NA	NA	NA	80
Obs	LHO49	SC	16.00	21.00	3.00	80	NA	NA	NA	80
Obs	LHO50	SC	17.00	20.00	2.00	80	NA	NA	NA	80
Obs	LHO55	SC	18.00	21.00	3.00	80	NA	NA	NA	80

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	17.350	1.285	14.398	1.000	1.00	0.78	
2	17.700	1.635	14.048	2.000	1.00	0.61	
3	17.850	1.785	13.898	3.000	1.00	0.56	
4	17.915	1.850	13.833	4.000	1.00	0.54	
5	17.950	1.885	13.798	5.000	1.00	0.53	
6	17.965	1.900	13.783	6.000	1.00	0.53	
7	17.975	1.910	13.773	7.000	1.00	0.52	
8	17.980	1.915	13.768	8.000	1.00	0.52	
9	17.985	1.920	13.763	9.000	1.00	0.52	
10	17.990	1.925	13.758	10.000	1.00	0.52	
12	18.020	1.955	13.728	12.000	1.00	0.51	
14	18.035	1.970	13.713	14.000	1.00	0.51	
16	18.040	1.975	13.708	16.000	1.00	0.51	
18	18.050	1.985	13.698	18.000	1.00	0.50	
20	18.055	1.990	13.693	20.000	1.00	0.50	
22	18.060	1.995	13.688	22.000	1.00	0.50	
24	18.065	2.000	13.683	24.000	1.00	0.50	
26	18.070	2.005	13.678	26.000	1.00	0.50	
28	18.075	2.010	13.673	28.000	1.00	0.50	
30	18.080	2.015	13.668	30.000	1.00	0.50	
35	18.090	2.025	13.658	35.000	1.00	0.49	
40	18.100	2.035	13.648	40.000	1.00	0.49	
45	18.105	2.040	13.643	45.000	1.00	0.49	
50	18.110	2.045	13.638	50.000	1.00	0.49	
55	18.125	2.060	13.623	55.000	1.00	0.49	
60	18.130	2.065	13.618	60.000	1.00	0.48	
70	18.140	2.075	13.608	70.000	1.00	0.48	
80	18.150	2.085	13.598	80.000	1.00	0.48	
90	18.160	2.095	13.588	90.000	1.00	0.48	
100	18.170	2.105	13.578	100.000	1.00	0.48	
120	18.185	2.120	13.563	120.000	1.00	0.47	
140	18.195	2.130	13.553	140.000	1.00	0.47	
160	18.205	2.140	13.543	160.000	1.00	0.47	
180	18.210	2.145	13.538	180.000	1.00	0.47	
200	18.220	2.155	13.528	200.000	1.00	0.46	
250	18.230	2.165	13.518	250.000	1.00	0.46	
300	18.230	2.165	13.518	300.000	1.00	0.46	
350	18.240	2.175	13.508	350.000	1.00	0.46	
400	18.270	2.205	13.478	400.000	1.00	0.45	
450	18.270	2.205	13.478	450.000	1.00	0.45	
500	18.260	2.195	13.488	500.000	1.00	0.46	
1024							2813
1370	18.350	2.285	13.398	1370.000	1.00	0.44	
6120							2795
8880	18.260	2.195	13.488	8880.000	1.00	0.46	
12000							2773
15933	18.450	2.385	13.298	15933.000	1.00	0.42	
18000							2813
19020	18.500	2.435	13.248	19020.000	1.00	0.41	
20157	18.580	2.515	13.168	20157.000	1.00	0.40	
24000							2784
28949	18.575	2.510	13.173	28949.000	1.00	0.40	
30000							2824

34886	18.640	2.575	13.108	34886.000	1.00	0.39	
37547	18.835	2.770	12.913	37547.000	1.00	0.36	
57811	18.780	2.715	12.968	57811.000	1.00	0.37	
66474	18.630	2.565	13.118	66474.000	1.00	0.39	
77724	18.665	2.600	13.083	77724.000	1.00	0.38	
83100							3184
86515	18.600	2.535	13.148	86515.000	1.00	0.39	
96639	18.785	2.720	12.963	96639.000	1.00	0.37	
108201	18.650	2.585	13.098	108201.000	1.00	0.39	

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	15.860	0.010	16.237	0.003
2	15.860	0.010	16.237	0.006
3	15.860	0.010	16.237	0.009
4	15.860	0.010	16.237	0.012
5	15.860	0.010	16.237	0.015
6	15.865	0.015	16.232	0.019
7	15.865	0.015	16.232	0.022
8	15.865	0.015	16.232	0.025
9	15.865	0.015	16.232	0.028
10	15.870	0.020	16.227	0.031
12	15.870	0.020	16.227	0.037
14	15.870	0.020	16.227	0.043
16	15.870	0.020	16.227	0.049
18	15.872	0.022	16.225	0.056
20	15.872	0.022	16.225	0.062
22	15.875	0.025	16.222	0.068
24	15.875	0.025	16.222	0.074
26	15.878	0.028	16.219	0.080
28	15.880	0.030	16.217	0.086
30	15.880	0.030	16.217	0.093
35	15.882	0.032	16.215	0.108
40	15.885	0.035	16.212	0.123
45	15.885	0.035	16.212	0.139
50	15.885	0.035	16.212	0.154
55	15.890	0.040	16.207	0.170
60	15.890	0.040	16.207	0.185
70	15.895	0.045	16.202	0.216
80	15.895	0.045	16.202	0.247
90	15.900	0.050	16.197	0.278
100	15.900	0.050	16.197	0.309
120	15.905	0.055	16.192	0.370
140	15.910	0.060	16.187	0.432
160	15.910	0.060	16.187	0.494
180	15.915	0.065	16.182	0.556
200	15.920	0.070	16.177	0.617
250	15.925	0.075	16.172	0.772
300	15.930	0.080	16.167	0.926
350	15.940	0.090	16.157	1.080
400	15.945	0.095	16.152	1.235
450	15.950	0.100	16.147	1.389
500	15.955	0.105	16.142	1.543
1378	15.975	0.125	16.122	4.253
8882	16.045	0.195	16.052	27.414
15932	16.080	0.230	16.017	49.173
19025	16.110	0.260	15.987	58.719
20160	16.120	0.270	15.977	62.222
28951	16.150	0.300	15.947	89.355
34877	16.190	0.340	15.907	107.645
37549	16.200	0.350	15.897	115.892
57813	16.225	0.375	15.872	178.435
66477	16.190	0.340	15.907	205.176
77727	16.260	0.410	15.837	239.898
86517	16.210	0.360	15.887	267.028
96641	16.230	0.380	15.867	298.275
108206	16.255	0.405	15.842	333.969

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	15.770	0.000	16.285	0.001
2	15.770	0.000	16.285	0.002
3	15.770	0.000	16.285	0.003
4	15.770	0.000	16.285	0.004
5	15.770	0.000	16.285	0.006
6	15.770	0.000	16.285	0.007
7	15.770	0.000	16.285	0.008
8	15.770	0.000	16.285	0.009
9	15.770	0.000	16.285	0.010
10	15.770	0.000	16.285	0.011
12	15.770	0.000	16.285	0.013
14	15.775	0.005	16.280	0.016
16	15.775	0.005	16.280	0.018
18	15.775	0.005	16.280	0.020
20	15.775	0.005	16.280	0.022
22	15.775	0.005	16.280	0.024
24	15.775	0.005	16.280	0.027
26	15.775	0.005	16.280	0.029
28	15.775	0.005	16.280	0.031
30	15.775	0.005	16.280	0.033
35	15.780	0.010	16.275	0.039
40	15.780	0.010	16.275	0.044
45	15.780	0.010	16.275	0.050
50	15.780	0.010	16.275	0.056
55	15.780	0.010	16.275	0.061
60	15.780	0.010	16.275	0.067
70	15.780	0.010	16.275	0.078
80	15.780	0.010	16.275	0.089
90	15.785	0.015	16.270	0.100
100	15.785	0.015	16.270	0.111
120	15.785	0.015	16.270	0.133
140	15.790	0.020	16.265	0.156
160	15.790	0.020	16.265	0.178
180	15.790	0.020	16.265	0.200
200	15.795	0.025	16.260	0.222
250	15.795	0.025	16.260	0.278
300	15.800	0.030	16.255	0.333
350	15.800	0.030	16.255	0.389
400	15.805	0.035	16.250	0.444
450	15.810	0.040	16.245	0.500
500	15.810	0.040	16.245	0.556
1375	15.850	0.080	16.205	1.528
8886	15.915	0.145	16.140	9.873
15930	15.950	0.180	16.105	17.700
19026	15.965	0.195	16.090	21.140
20163	15.980	0.210	16.075	22.403
28952	16.010	0.240	16.045	32.169
34875	16.040	0.270	16.015	38.750
37553	16.045	0.275	16.010	41.726
57815	16.075	0.305	15.980	64.239
66479	16.055	0.285	16.000	73.866
77724	16.105	0.335	15.950	86.360
86519	16.080	0.310	15.975	96.132
96642	16.090	0.320	15.965	107.380
108206	16.110	0.340	15.945	120.229

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
11	15.755	0.000	16.321	0.004
21	15.755	0.000	16.321	0.008
32	15.755	0.000	16.321	0.013
46	15.755	0.000	16.321	0.018
61	15.755	0.000	16.321	0.024
91	15.760	0.005	16.316	0.036
123	15.760	0.005	16.316	0.049
161	15.760	0.005	16.316	0.064
181	15.760	0.005	16.316	0.072
201	15.760	0.005	16.316	0.080
251	15.760	0.005	16.316	0.100
301	15.760	0.005	16.316	0.120
351	15.760	0.005	16.316	0.140
401	15.760	0.005	16.316	0.160
451	15.760	0.005	16.316	0.180
501	15.760	0.005	16.316	0.200
1376	15.795	0.040	16.281	0.550
8888	15.840	0.085	16.236	3.555
15928	15.870	0.115	16.206	6.371
19027	15.880	0.125	16.196	7.611
20164	15.890	0.135	16.186	8.066
28954	15.920	0.165	16.156	11.582
34883	15.930	0.175	16.146	13.953
37554	15.940	0.185	16.136	15.022
57817	15.975	0.220	16.101	23.127
66481	15.965	0.210	16.111	26.592
77731	16.000	0.245	16.076	31.092
86521	15.995	0.240	16.081	34.608
96643	16.000	0.245	16.076	38.657
108209	16.020	0.265	16.056	43.284

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
15	15.685	0.000	16.179	0.002
33	15.685	0.000	16.179	0.003
47	15.685	0.000	16.179	0.005
62	15.685	0.000	16.179	0.006
92	15.685	0.000	16.179	0.009
125	15.685	0.000	16.179	0.013
162	15.680	-0.005	16.184	0.016
182	15.680	-0.005	16.184	0.018

LHP48 HEADER

DWLBC TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		

Start date		13/08/2004
Start time		8:40AM
Stop date		
Stop time		
Duration (minutes)		720

Step	Duration (minutes)	Q (L/s)
1	720	0.40
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LHP48	Loxton shells & sand	462249	6192041	32.722	32.413		0.00	0.00	4.93	3.93	19.07	13.66
Obs	LHO56	Loxton shells & sand	462241	6192046	32.77	32.281		10.00	2.03	4.93	NA	18.92	13.85
Obs	LHO57	Loxton shells & sand	462228	6192054	32.146	31.731		25.00	5.07	4.93	NA	18.37	13.78
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LHP48	6.00	24.00	18.00	26.41	8.41
Obs	LHO56	5.00	24.00	19.00	27.28	8.28
Obs	LHO57	5.00	24.00	19.00	26.73	7.73
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LHP48	WS	21.00	23.00	2.00	175	0.60	0.5	16:30	175
Obs	LHO56	SC	21.00	23.00	2.00	80	NA	NA	NA	80
Obs	LHO57	SC	21.00	23.00	2.00	80	NA	NA	NA	80
Obs										
Obs										

Note:

Unclear whether full production aqufier thickness has been drilled

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2	Q (L/s)	SC ((L/s)/m)	TDS (mg/L)
1	22.460	3.395	10.262	1.00	0.40	0.12	
2	21.750	2.685	11.020	2.00	0.40	0.15	
3	21.360	2.295	10.786	3.00	0.40	0.17	
4	21.215	2.150	-21.215	4.00	0.40	0.19	
5	21.100	2.035	-21.100	5.00	0.40	0.20	
6	21.010	1.945	-21.010	6.00	0.40	0.21	
7	20.960	1.895	-20.960	7.00	0.40	0.21	
8	20.940	1.875	-20.940	8.00	0.40	0.21	
9	20.930	1.865	-20.930	9.00	0.40	0.21	
10	20.920	1.855	-20.920	10.00	0.40	0.22	4699
12	20.915	1.850	-20.915	12.00	0.40	0.22	
14	20.940	1.875	-20.940	14.00	0.40	0.21	
16	20.920	1.855	-20.920	16.00	0.40	0.22	
18	20.910	1.845	-20.910	18.00	0.40	0.22	
20	20.920	1.855	-20.920	20.00	0.40	0.22	
22	20.925	1.860	-20.925	22.00	0.40	0.22	
24	20.925	1.860	-20.925	24.00	0.40	0.22	
26	20.925	1.860	-20.925	26.00	0.40	0.22	
28	20.925	1.860	-20.925	28.00	0.40	0.22	
30	20.920	1.855	-20.920	30.00	0.40	0.22	
35	20.935	1.870	-20.935	35.00	0.40	0.21	
40	20.930	1.865	-20.930	40.00	0.40	0.21	
45	20.930	1.865	-20.930	45.00	0.40	0.21	
50	20.950	1.885	-20.950	50.00	0.40	0.21	
55	20.930	1.865	-20.930	55.00	0.40	0.21	
60	20.925	1.860	-20.925	60.00	0.40	0.22	
70	20.930	1.865	-20.930	70.00	0.40	0.21	
80	20.915	1.850	-20.915	80.00	0.40	0.22	
90	20.920	1.855	-20.920	90.00	0.40	0.22	
100	20.935	1.870	-20.935	100.00	0.40	0.21	5994
120	20.950	1.885	-20.950	120.00	0.40	0.21	
140	20.900	1.835	-20.900	140.00	0.40	0.22	
160	20.900	1.835	-20.900	160.00	0.40	0.22	
180	20.895	1.830	-20.895	180.00	0.40	0.22	
200	20.890	1.825	-20.890	200.00	0.40	0.22	5891
250	20.895	1.830	-20.895	250.00	0.40	0.22	
300	20.890	1.825	-20.890	300.00	0.40	0.22	5817
350	20.885	1.820	-20.885	350.00	0.40	0.22	
400	20.885	1.820	-20.885	400.00	0.40	0.22	
450	20.870	1.805	-20.870	450.00	0.40	0.22	
500	20.850	1.785	-20.850	500.00	0.40	0.22	5737
550	20.830	1.765	-20.830	550.00	0.40	0.23	
600	20.830	1.765	-20.830	600.00	0.40	0.23	5714
650	20.840	1.775	-20.840	650.00	0.40	0.23	
700	20.830	1.765	-20.830	700.00	0.40	0.23	
720	20.840	1.775	-20.840	720.00	0.40	0.23	5731

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	18.925	0.005	13.845	0.010
3	18.930	0.010	13.216	0.030
5	18.935	0.015	-18.935	0.050
7	18.940	0.020	-18.940	0.070
9	18.940	0.020	-18.940	0.090
11	18.940	0.020	-18.940	0.110
13	18.940	0.020	-18.940	0.130
15	18.940	0.020	-18.940	0.150
17	18.940	0.020	-18.940	0.170
19	18.940	0.020	-18.940	0.190
21	18.945	0.025	-18.945	0.210
23	18.945	0.025	-18.945	0.230
25	18.945	0.025	-18.945	0.250
27	18.945	0.025	-18.945	0.270
29	18.945	0.025	-18.945	0.290
35	18.950	0.030	-18.950	0.350
40	18.950	0.030	-18.950	0.400
45	18.950	0.030	-18.950	0.450
50	18.950	0.030	-18.950	0.500
55	18.955	0.035	-18.955	0.550
60	18.955	0.035	-18.955	0.600
70	18.955	0.035	-18.955	0.700
80	18.960	0.040	-18.960	0.800
90	18.960	0.040	-18.960	0.900
100	18.965	0.045	-18.965	1.000
120	18.965	0.045	-18.965	1.200
140	18.965	0.045	-18.965	1.400
160	18.965	0.045	-18.965	1.600
180	18.970	0.050	-18.970	1.800
200	18.970	0.050	-18.970	2.000
250	18.970	0.050	-18.970	2.500
300	18.975	0.055	-18.975	3.000
350	18.980	0.060	-18.980	3.500
400	18.980	0.060	-18.980	4.000
450	18.980	0.060	-18.980	4.500
501	18.980	0.060	-18.980	5.010
551	18.980	0.060	-18.980	5.510
601	18.985	0.065	-18.985	6.010
651	18.985	0.065	-18.985	6.510
700	18.985	0.065	-18.985	7.000
720	18.985	0.065	-18.985	7.200

MANUAL DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
2	18.370	0.000	13.776	0.003
4	18.375	0.005	-18.375	0.006
6	18.375	0.005	-18.375	0.010
8	18.375	0.005	-18.375	0.013
10	18.375	0.005	-18.375	0.016
12	18.375	0.005	-18.375	0.019
14	18.375	0.005	-18.375	0.022
16	18.380	0.010	-18.380	0.026
18	18.380	0.010	-18.380	0.029
20	18.380	0.010	-18.380	0.032
22	18.380	0.010	-18.380	0.035
24	18.380	0.010	-18.380	0.038
26	18.380	0.010	-18.380	0.042
28	18.380	0.010	-18.380	0.045
30	18.380	0.010	-18.380	0.048
36	18.380	0.010	-18.380	0.058
41	18.380	0.010	-18.380	0.066
46	18.380	0.010	-18.380	0.074
51	18.380	0.010	-18.380	0.082
56	18.385	0.015	-18.385	0.090
61	18.385	0.015	-18.385	0.098
71	18.385	0.015	-18.385	0.114
81	18.385	0.015	-18.385	0.130
91	18.385	0.015	-18.385	0.146
100	18.385	0.015	-18.385	0.160
121	18.385	0.015	-18.385	0.194
141	18.385	0.015	-18.385	0.226
161	18.385	0.015	-18.385	0.258
181	18.385	0.015	-18.385	0.290
201	18.385	0.015	-18.385	0.322
251	18.385	0.015	-18.385	0.402
301	18.390	0.020	-18.390	0.482
351	18.390	0.020	-18.390	0.562
401	18.390	0.020	-18.390	0.642
451	18.395	0.025	-18.395	0.722
502	18.395	0.025	-18.395	0.803
552	18.395	0.025	-18.395	0.883
602	18.400	0.030	-18.400	0.963
652	18.400	0.030	-18.400	1.043
701	18.400	0.030	-18.400	1.122
721	18.400	0.030	-18.400	1.154

LPP1 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		28/10/2002
Start time		8:28AM
Stop date		
Stop time		
Duration (minutes)		390

Step	Duration (minutes)	Q (L/s)
1	390	2.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP1	Monoman	461373	6193688	14.01	13.49	NA	0.00	0.00	3.00	3.00	NA	NA
Obs	LPP2	Monoman	461355	6193643	14.08	13.49	NA	48.00	16.00	3.00	NA	3.69	10.39
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP1	8.00	11.00	3.00	5.49	2.49
Obs	LPP2	7.50	11.50	4.00	5.99	1.99
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP1	SC	6.50	12.00	3.00	150	NA	2.0	3 - 6 mm	150
Obs	LPP2	SC	7.00	12.00	4.00	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	3.690	0.001	10.387
3	3.718	0.029	10.359
4	3.751	0.062	10.326
5	3.778	0.089	10.299
6	3.801	0.112	10.276
7	3.821	0.132	10.256
8	3.838	0.149	10.239
9	3.852	0.163	10.225
10	3.866	0.177	10.211
11	3.878	0.189	10.199
12	3.887	0.198	10.190
13	3.896	0.207	10.181
14	3.902	0.213	10.175
15	3.909	0.220	10.168
16	3.916	0.227	10.161
17	3.923	0.234	10.154
18	3.928	0.239	10.149
19	3.933	0.244	10.144
20	3.938	0.249	10.139
21	3.942	0.253	10.135
22	3.945	0.256	10.132
23	3.949	0.260	10.128
24	3.953	0.264	10.124
25	3.956	0.267	10.121
26	3.959	0.270	10.118
27	3.962	0.273	10.115
28	3.964	0.275	10.113
29	3.966	0.277	10.111
30	3.967	0.278	10.110
31	3.969	0.280	10.108
32	3.971	0.282	10.106
33	3.972	0.283	10.105
34	3.974	0.285	10.103
35	3.976	0.287	10.101
36	3.977	0.288	10.100
37	3.978	0.289	10.099
38	3.980	0.291	10.097
39	3.983	0.294	10.094
40	3.984	0.295	10.093
41	3.986	0.297	10.091
42	3.988	0.299	10.089
43	3.989	0.300	10.088
44	3.989	0.300	10.088
45	3.990	0.301	10.087
46	3.991	0.302	10.086
47	3.992	0.303	10.085
48	3.992	0.303	10.085
49	3.994	0.305	10.083
50	3.994	0.305	10.083
52	3.996	0.307	10.081
54	3.998	0.309	10.079
56	4.000	0.311	10.077
58	4.000	0.311	10.077
60	4.001	0.312	10.076

62	4.002	0.313	10.075
64	4.001	0.312	10.076
66	4.002	0.313	10.075
68	4.002	0.313	10.075
70	4.003	0.314	10.074
72	4.003	0.314	10.074
74	4.004	0.315	10.073
76	4.007	0.318	10.070
78	4.008	0.319	10.069
80	4.008	0.319	10.069
82	4.009	0.320	10.068
84	4.009	0.320	10.068
86	4.009	0.320	10.068
88	4.010	0.321	10.067
90	4.010	0.321	10.067
92	4.011	0.322	10.066
94	4.012	0.323	10.065
96	4.012	0.323	10.065
98	4.012	0.323	10.065
100	4.013	0.324	10.064
110	4.012	0.323	10.065
120	4.015	0.326	10.062
130	4.016	0.327	10.061
140	4.020	0.331	10.057
150	4.021	0.332	10.056
160	4.022	0.333	10.055
170	4.024	0.335	10.053
180	4.023	0.334	10.054
190	4.024	0.335	10.053
200	4.027	0.338	10.050
210	4.025	0.336	10.052
220	4.029	0.340	10.048
230	4.031	0.342	10.046
240	4.031	0.342	10.046
250	4.031	0.342	10.046
260	4.035	0.346	10.042
270	4.033	0.344	10.044
280	4.034	0.345	10.043
290	4.033	0.344	10.044
300	4.037	0.348	10.040
310	4.037	0.348	10.040
320	4.039	0.350	10.038
330	4.039	0.350	10.038
340	4.040	0.351	10.037
350	4.041	0.352	10.036
360	4.042	0.353	10.035
370	4.043	0.354	10.034
380	4.044	0.355	10.033
390	4.044	0.355	10.033
391	4.032	0.343	10.045
392	3.993	0.304	10.084
393	3.958	0.269	10.119
394	3.931	0.242	10.146
395	3.909	0.220	10.168
396	3.892	0.203	10.185
397	3.877	0.188	10.200

398	3.865	0.176	10.212
399	3.852	0.163	10.225
400	3.843	0.154	10.234
401	3.834	0.145	10.243
402	3.825	0.136	10.252
403	3.819	0.130	10.258
404	3.812	0.123	10.265
405	3.805	0.116	10.272
406	3.799	0.110	10.278
407	3.794	0.105	10.283
408	3.790	0.101	10.287
409	3.785	0.096	10.292
410	3.781	0.092	10.296
411	3.777	0.088	10.300
412	3.773	0.084	10.304
413	3.770	0.081	10.307
414	3.767	0.078	10.310
415	3.764	0.075	10.313
416	3.762	0.073	10.315
417	3.759	0.070	10.318
418	3.757	0.068	10.320
419	3.755	0.066	10.322
420	3.752	0.063	10.325
421	3.750	0.061	10.327
422	3.748	0.059	10.329
423	3.744	0.055	10.333
424	3.745	0.056	10.332
425	3.743	0.054	10.334
426	3.742	0.053	10.335
427	3.740	0.051	10.337
428	3.740	0.051	10.337
429	3.738	0.049	10.339
430	3.737	0.048	10.340
431	3.736	0.047	10.341
432	3.734	0.045	10.343
433	3.734	0.045	10.343
434	3.730	0.041	10.347
435	3.729	0.040	10.348
436	3.729	0.040	10.348
437	3.728	0.039	10.349
438	3.727	0.038	10.350
439	3.726	0.037	10.351
440	3.726	0.037	10.351
442	3.724	0.035	10.353
444	3.725	0.036	10.352
446	3.724	0.035	10.353
448	3.722	0.033	10.355
450	3.722	0.033	10.355
452	3.721	0.032	10.356
454	3.719	0.030	10.358
456	3.719	0.030	10.358
458	3.719	0.030	10.358
460	3.716	0.027	10.361
462	3.715	0.026	10.362
464	3.714	0.025	10.363
466	3.713	0.024	10.364

LPP10 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		14/10/2002
Start time		8:49AM
Stop date		
Stop time		
Duration (minutes)		375

Step	Duration (minutes)	Q (L/s)
1	375	2.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP10	Monoman	459170	6187752	12.69	12.18	NA	0.00	0.00	2.00	2.00	NA	NA
Obs	LPP9	Monoman	459221	6187753	12.38	12.18	NA	50.00	25.00	2.00	NA	2.39	9.99
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP10	5.50	7.50	2.00	6.68	4.68
Obs	LPP9	5.00	8.00	3.00	7.18	4.18
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP10	SC	5.50	7.50	2.00	150	NA	2.0	3 - 6 mm	150
Obs	LPP9	SC	5.00	9.00	3.00	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	2.394	0.004	9.986
2	2.399	0.009	9.981
3	2.403	0.013	9.977
4	2.406	0.016	9.974
5	2.408	0.018	9.972
6	2.409	0.019	9.971
7	2.410	0.020	9.970
8	2.411	0.021	9.969
9	2.411	0.021	9.969
10	2.413	0.023	9.967
11	2.413	0.023	9.967
12	2.414	0.024	9.966
13	2.414	0.024	9.966
14	2.415	0.025	9.965
15	2.416	0.026	9.964
16	2.417	0.027	9.963
17	2.418	0.028	9.962
18	2.418	0.028	9.962
19	2.420	0.030	9.960
20	2.421	0.031	9.959
21	2.421	0.031	9.959
22	2.421	0.031	9.959
23	2.422	0.032	9.958
24	2.423	0.033	9.957
25	2.423	0.033	9.957
26	2.424	0.034	9.956
27	2.424	0.034	9.956
28	2.425	0.035	9.955
29	2.425	0.035	9.955
30	2.426	0.036	9.954
31	2.427	0.037	9.953
32	2.427	0.037	9.953
33	2.428	0.038	9.952
34	2.428	0.038	9.952
35	2.429	0.039	9.951
36	2.429	0.039	9.951
37	2.430	0.040	9.950
38	2.431	0.041	9.949
39	2.431	0.041	9.949
40	2.432	0.042	9.948
41	2.432	0.042	9.948
42	2.433	0.043	9.947
43	2.433	0.043	9.947
44	2.434	0.044	9.946
45	2.434	0.044	9.946
46	2.435	0.045	9.945
47	2.435	0.045	9.945
48	2.435	0.045	9.945
49	2.437	0.047	9.943
50	2.437	0.047	9.943
52	2.438	0.048	9.942
54	2.438	0.048	9.942
56	2.440	0.050	9.940
58	2.441	0.051	9.939

60	2.442	0.052	9.938
62	2.442	0.052	9.938
64	2.443	0.053	9.937
66	2.444	0.054	9.936
68	2.445	0.055	9.935
70	2.446	0.056	9.934
72	2.446	0.056	9.934
74	2.447	0.057	9.933
76	2.448	0.058	9.932
78	2.449	0.059	9.931
80	2.450	0.060	9.930
82	2.451	0.061	9.929
84	2.451	0.061	9.929
86	2.452	0.062	9.928
88	2.453	0.063	9.927
90	2.454	0.064	9.926
92	2.454	0.064	9.926
94	2.454	0.064	9.926
96	2.455	0.065	9.925
98	2.453	0.063	9.927
100	2.454	0.064	9.926
110	2.458	0.068	9.922
120	2.461	0.071	9.919
130	2.463	0.073	9.917
140	2.466	0.076	9.914
150	2.469	0.079	9.911
160	2.471	0.081	9.909
170	2.473	0.083	9.907
180	2.476	0.086	9.904
190	2.478	0.088	9.902
200	2.480	0.090	9.900
210	2.482	0.092	9.898
220	2.483	0.093	9.897
230	2.486	0.096	9.894
240	2.488	0.098	9.892
250	2.490	0.100	9.890
260	2.492	0.102	9.888
270	2.494	0.104	9.886
280	2.496	0.106	9.884
290	2.497	0.107	9.883
300	2.499	0.109	9.881
310	2.501	0.111	9.879
320	2.502	0.112	9.878
330	2.504	0.114	9.876
340	2.506	0.116	9.874
350	2.508	0.118	9.872
360	2.510	0.120	9.870
370	2.511	0.121	9.869
380	2.496	0.106	9.884
390	2.490	0.100	9.890
400	2.488	0.098	9.892

LPP2 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		29/10/2002
Start time		6:35AM
Stop date		
Stop time		
Duration (minutes)		501

Step	Duration (minutes)	Q (L/s)
1	501	2.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP2	Monoman	461355	6193643	14.08	13.49	NA	0.00	0.00	4.00	4.00	NA	NA
Obs	LPP1	Monoman	461373	6193688	14.01	13.49	NA	48.00	12.00	4.00	NA	3.57	10.44
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP2	7.50	11.50	4.00	5.99	1.99
Obs	LPP1	8.00	11.00	3.00	5.49	2.49
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP2	SC	7.00	12.00	4.00	150	NA	2.0	3 - 6 mm	150
Obs	LPP1	SC	6.50	12.00	3.00	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED DATA

Minutes	WL (m)	St (m)	Rwl (m)
3	3.600	0.028	10.410
4	3.628	0.056	10.382
5	3.650	0.078	10.360
6	3.668	0.096	10.342
7	3.684	0.112	10.326
8	3.698	0.126	10.312
9	3.709	0.137	10.301
10	3.720	0.148	10.290
11	3.729	0.157	10.281
12	3.737	0.165	10.273
13	3.745	0.173	10.265
14	3.751	0.179	10.259
15	3.757	0.185	10.253
16	3.763	0.191	10.247
17	3.768	0.196	10.242
18	3.773	0.201	10.237
19	3.778	0.206	10.232
20	3.782	0.210	10.228
21	3.785	0.213	10.225
22	3.788	0.216	10.222
23	3.792	0.220	10.218
24	3.794	0.222	10.216
25	3.798	0.226	10.212
26	3.800	0.228	10.210
27	3.802	0.230	10.208
28	3.805	0.233	10.205
29	3.807	0.235	10.203
30	3.810	0.238	10.200
31	3.812	0.240	10.198
32	3.813	0.241	10.197
33	3.814	0.242	10.196
34	3.814	0.242	10.196
35	3.816	0.244	10.194
36	3.817	0.245	10.193
37	3.819	0.247	10.191
38	3.822	0.250	10.188
39	3.823	0.251	10.187
40	3.824	0.252	10.186
41	3.825	0.253	10.185
42	3.827	0.255	10.183
43	3.829	0.257	10.181
44	3.829	0.257	10.181
45	3.830	0.258	10.180
46	3.831	0.259	10.179
47	3.832	0.260	10.178
48	3.833	0.261	10.177
49	3.834	0.262	10.176
50	3.835	0.263	10.175
52	3.834	0.262	10.176
54	3.838	0.266	10.172
56	3.839	0.267	10.171
58	3.838	0.266	10.172
60	3.840	0.268	10.170
62	3.841	0.269	10.169

64	3.844	0.272	10.166
66	3.846	0.274	10.164
68	3.847	0.275	10.163
70	3.845	0.273	10.165
72	3.846	0.274	10.164
74	3.847	0.275	10.163
76	3.850	0.278	10.160
78	3.851	0.279	10.159
80	3.851	0.279	10.159
82	3.852	0.280	10.158
84	3.853	0.281	10.157
86	3.854	0.282	10.156
88	3.855	0.283	10.155
90	3.855	0.283	10.155
92	3.855	0.283	10.155
94	3.857	0.285	10.153
96	3.857	0.285	10.153
98	3.858	0.286	10.152
100	3.858	0.286	10.152
110	3.861	0.289	10.149
120	3.862	0.290	10.148
130	3.864	0.292	10.146
140	3.868	0.296	10.142
150	3.870	0.298	10.140
160	3.871	0.299	10.139
170	3.873	0.301	10.137
180	3.874	0.302	10.136
190	3.876	0.304	10.134
200	3.878	0.306	10.132
210	3.879	0.307	10.131
220	3.880	0.308	10.130
230	3.882	0.310	10.128
240	3.882	0.310	10.128
250	3.884	0.312	10.126
260	3.883	0.311	10.127
270	3.887	0.315	10.123
280	3.885	0.313	10.125
290	3.887	0.315	10.123
300	3.889	0.317	10.121
310	3.887	0.315	10.123
320	3.888	0.316	10.122
330	3.889	0.317	10.121
340	3.892	0.320	10.118
350	3.892	0.320	10.118
360	3.893	0.321	10.117
370	3.892	0.320	10.118
380	3.892	0.320	10.118
390	3.893	0.321	10.117
400	3.896	0.324	10.114
410	3.894	0.322	10.116
420	3.896	0.324	10.114
430	3.897	0.325	10.113
440	3.898	0.326	10.112
450	3.899	0.327	10.111
460	3.899	0.327	10.111
470	3.899	0.327	10.111

480	3.899	0.327	10.111
490	3.899	0.327	10.111
500	3.902	0.330	10.108
510	3.865	0.293	10.145
511	3.829	0.257	10.181
512	3.802	0.230	10.208
513	3.780	0.208	10.230
514	3.761	0.189	10.249
515	3.745	0.173	10.265
516	3.731	0.159	10.279
517	3.720	0.148	10.290
518	3.708	0.136	10.302
519	3.699	0.127	10.311
520	3.691	0.119	10.319
521	3.680	0.108	10.330
522	3.673	0.101	10.337
523	3.668	0.096	10.342
524	3.663	0.091	10.347
525	3.659	0.087	10.351
526	3.653	0.081	10.357
527	3.649	0.077	10.361
528	3.645	0.073	10.365
529	3.641	0.069	10.369
530	3.637	0.065	10.373
531	3.633	0.061	10.377
532	3.628	0.056	10.382
533	3.625	0.053	10.385
534	3.623	0.051	10.387
535	3.621	0.049	10.389
536	3.617	0.045	10.393
537	3.616	0.044	10.394
538	3.613	0.041	10.397
539	3.612	0.040	10.398
540	3.609	0.037	10.401
541	3.608	0.036	10.402
542	3.606	0.034	10.404
543	3.605	0.033	10.405
544	3.602	0.030	10.408
545	3.602	0.030	10.408
546	3.600	0.028	10.410
547	3.599	0.027	10.411
548	3.597	0.025	10.413
549	3.596	0.024	10.414
550	3.595	0.023	10.415
551	3.594	0.022	10.416
552	3.593	0.021	10.417
553	3.592	0.020	10.418
554	3.590	0.018	10.420
555	3.589	0.017	10.421
556	3.589	0.017	10.421
557	3.589	0.017	10.421
558	3.589	0.017	10.421
559	3.588	0.016	10.422
560	3.588	0.016	10.422
561	3.585	0.013	10.425
563	3.584	0.012	10.426

565	3.582	0.010	10.428
567	3.581	0.009	10.429
569	3.582	0.010	10.428
570	3.581	0.009	10.429
571	3.579	0.007	10.431
573	3.578	0.006	10.432
575	3.579	0.007	10.431
577	3.579	0.007	10.431
579	3.578	0.006	10.432
580	3.578	0.006	10.432
581	3.575	0.003	10.435
583	3.575	0.003	10.435
585	3.574	0.002	10.436
587	3.573	0.001	10.437
589	3.573	0.001	10.437

LPP3 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		30/10/2002
Start time		6:30AM
Stop date		
Stop time		
Duration (minutes)		288

Step	Duration (minutes)	Q (L/s)
1	288	1.46
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP3	Monoman	461434	6192489	12.61	11.87	NA	0.00	0.00	5.50	5.50	NA	NA
Obs	LPP4	Monoman	461469	6192445	11.76	11.15	NA	56.00	10.18	5.50	NA	1.59	10.17
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP3	9.50	15.00	5.50	2.37	-3.13
Obs	LPP4	9.50	15.00	5.50	1.65	-3.85
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP3	SC	10.30	16.30	4.70	150	NA	2.0	3 - 6 mm	150
Obs	LPP4	SC	9.00	15.00	5.50	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED DATA

Minutes	WL (m)	St (m)	Rwl (m)
2	1.592	0.002	10.168
3	1.596	0.006	10.164
4	1.600	0.010	10.160
5	1.605	0.015	10.155
6	1.609	0.019	10.151
7	1.612	0.022	10.148
8	1.616	0.026	10.144
9	1.619	0.029	10.141
10	1.622	0.032	10.138
11	1.624	0.034	10.136
12	1.626	0.036	10.134
13	1.629	0.039	10.131
14	1.631	0.041	10.129
15	1.633	0.043	10.127
16	1.635	0.045	10.125
17	1.637	0.047	10.123
18	1.639	0.049	10.121
19	1.640	0.050	10.120
20	1.642	0.052	10.118
21	1.643	0.053	10.117
22	1.645	0.055	10.115
23	1.646	0.056	10.114
24	1.647	0.057	10.113
25	1.649	0.059	10.111
26	1.650	0.060	10.110
27	1.651	0.061	10.109
28	1.652	0.062	10.108
29	1.653	0.063	10.107
30	1.653	0.063	10.107
31	1.655	0.065	10.105
32	1.655	0.065	10.105
33	1.656	0.066	10.104
34	1.657	0.067	10.103
35	1.658	0.068	10.102
36	1.659	0.069	10.101
37	1.659	0.069	10.101
38	1.660	0.070	10.100
39	1.661	0.071	10.099
40	1.661	0.071	10.099
41	1.662	0.072	10.098
42	1.662	0.072	10.098
43	1.663	0.073	10.097
44	1.664	0.074	10.096
45	1.664	0.074	10.096
46	1.665	0.075	10.095
47	1.666	0.076	10.094
48	1.666	0.076	10.094
49	1.667	0.077	10.093
50	1.668	0.078	10.092
52	1.668	0.078	10.092
54	1.669	0.079	10.091
56	1.671	0.081	10.089
58	1.670	0.080	10.090
60	1.671	0.081	10.089

62	1.673	0.083	10.087
64	1.673	0.083	10.087
66	1.674	0.084	10.086
68	1.674	0.084	10.086
70	1.675	0.085	10.085
72	1.676	0.086	10.084
74	1.677	0.087	10.083
76	1.678	0.088	10.082
78	1.678	0.088	10.082
80	1.679	0.089	10.081
82	1.680	0.090	10.080
84	1.680	0.090	10.080
86	1.681	0.091	10.079
88	1.681	0.091	10.079
90	1.682	0.092	10.078
92	1.682	0.092	10.078
94	1.683	0.093	10.077
96	1.683	0.093	10.077
98	1.683	0.093	10.077
100	1.683	0.093	10.077
110	1.686	0.096	10.074
120	1.688	0.098	10.072
130	1.690	0.100	10.070
140	1.691	0.101	10.069
150	1.693	0.103	10.067
160	1.695	0.105	10.065
170	1.696	0.106	10.064
180	1.697	0.107	10.063
190	1.698	0.108	10.062
200	1.699	0.109	10.061
210	1.700	0.110	10.060
220	1.701	0.111	10.059
230	1.702	0.112	10.058
240	1.703	0.113	10.057
250	1.704	0.114	10.056
260	1.704	0.114	10.056
270	1.704	0.114	10.056
280	1.705	0.115	10.055

LPP4 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		28/10/2002
Start time		1:03PM
Stop date		
Stop time		
Duration (minutes)		223

Step	Duration (minutes)	Q (L/s)
1	223	1.46
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP4	Monoman	461469	6192445	11.76	11.15	NA	0.00	0.00	5.50	5.50	NA	NA
Obs	LPP3	Monoman	461434	6192489	12.61	11.87	NA	56.00	10.18	5.50	NA	2.56	10.05
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP4	9.50	15.00	5.50	1.65	-3.85
Obs	LPP3	9.50	15.00	5.50	2.37	-3.13
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP4	SC	9.00	15.00	5.50	150	NA	2.0	3 - 6 mm	150
Obs	LPP3	SC	10.30	16.30	4.70	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	2.568	0.004	10.042
2	2.573	0.009	10.037
3	2.577	0.013	10.033
4	2.581	0.017	10.029
5	2.584	0.020	10.026
6	2.587	0.023	10.023
7	2.590	0.026	10.020
8	2.593	0.029	10.017
9	2.596	0.032	10.014
10	2.597	0.033	10.013
11	2.600	0.036	10.010
12	2.602	0.038	10.008
13	2.603	0.039	10.007
14	2.605	0.041	10.005
15	2.607	0.043	10.003
16	2.608	0.044	10.002
17	2.609	0.045	10.001
18	2.611	0.047	9.999
19	2.612	0.048	9.998
20	2.614	0.050	9.996
21	2.615	0.051	9.995
22	2.617	0.053	9.993
23	2.618	0.054	9.992
24	2.620	0.056	9.990
25	2.621	0.057	9.989
26	2.621	0.057	9.989
27	2.623	0.059	9.987
28	2.623	0.059	9.987
29	2.625	0.061	9.985
30	2.625	0.061	9.985
31	2.626	0.062	9.984
32	2.627	0.063	9.983
33	2.628	0.064	9.982
34	2.628	0.064	9.982
35	2.629	0.065	9.981
36	2.630	0.066	9.980
37	2.631	0.067	9.979
38	2.631	0.067	9.979
39	2.632	0.068	9.978
40	2.632	0.068	9.978
41	2.633	0.069	9.977
42	2.634	0.070	9.976
43	2.635	0.071	9.975
44	2.635	0.071	9.975
45	2.636	0.072	9.974
46	2.636	0.072	9.974
47	2.636	0.072	9.974
48	2.637	0.073	9.973
49	2.637	0.073	9.973
50	2.638	0.074	9.972
52	2.639	0.075	9.971
54	2.640	0.076	9.970
56	2.640	0.076	9.970
58	2.641	0.077	9.969

60	2.642	0.078	9.968
62	2.643	0.079	9.967
64	2.644	0.080	9.966
66	2.645	0.081	9.965
68	2.645	0.081	9.965
70	2.646	0.082	9.964
72	2.646	0.082	9.964
74	2.647	0.083	9.963
76	2.647	0.083	9.963
78	2.648	0.084	9.962
80	2.648	0.084	9.962
82	2.649	0.085	9.961
84	2.649	0.085	9.961
86	2.650	0.086	9.960
88	2.650	0.086	9.960
90	2.650	0.086	9.960
92	2.651	0.087	9.959
94	2.652	0.088	9.958
96	2.651	0.087	9.959
98	2.653	0.089	9.957
100	2.653	0.089	9.957
110	2.655	0.091	9.955
120	2.656	0.092	9.954
130	2.658	0.094	9.952
140	2.659	0.095	9.951
150	2.660	0.096	9.950
160	2.661	0.097	9.949
170	2.661	0.097	9.949
180	2.662	0.098	9.948
190	2.663	0.099	9.947
200	2.664	0.100	9.946
210	2.665	0.101	9.945
220	2.665	0.101	9.945

LPP5 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		25/10/2002
Start time		9:22AM
Stop date		
Stop time		
Duration (minutes)		222

Step	Duration (minutes)	Q (L/s)
1	222	2.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP5	Monoman	462257	6190016.61	13.34	12.87	NA	0.00	0.00	5.00	5.00	NA	NA
Obs	LPP6	Monoman	462222	6189972.99	13.01	12.43	NA	56.00	11.20	5.00	NA	2.44	10.57
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP5	6.00	11.00	5.00	6.87	1.87
Obs	LPP6	5.00	11.00	6.00	7.43	1.43
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP5	SC	6.00	11.00	5.00	150	NA	2.0	3 - 6 mm	150
Obs	LPP6	SC	5.00	10.00	5.00	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	2.453	0.010	10.557
2	2.469	0.026	10.541
3	2.482	0.039	10.528
4	2.494	0.051	10.516
5	2.503	0.060	10.507
6	2.511	0.068	10.499
7	2.518	0.075	10.492
8	2.525	0.082	10.485
9	2.530	0.087	10.480
10	2.535	0.092	10.475
11	2.539	0.096	10.471
12	2.542	0.099	10.468
13	2.545	0.102	10.465
14	2.548	0.105	10.462
15	2.550	0.107	10.460
16	2.552	0.109	10.458
17	2.555	0.112	10.455
18	2.556	0.113	10.454
19	2.558	0.115	10.452
20	2.560	0.117	10.450
21	2.561	0.118	10.449
22	2.563	0.120	10.447
23	2.564	0.121	10.446
24	2.565	0.122	10.445
25	2.565	0.122	10.445
26	2.567	0.124	10.443
27	2.568	0.125	10.442
28	2.569	0.126	10.441
29	2.570	0.127	10.440
30	2.571	0.128	10.439
31	2.571	0.128	10.439
32	2.572	0.129	10.438
33	2.573	0.130	10.437
34	2.573	0.130	10.437
35	2.572	0.129	10.438
36	2.573	0.130	10.437
37	2.575	0.132	10.435
38	2.575	0.132	10.435
39	2.574	0.131	10.436
40	2.574	0.131	10.436
41	2.575	0.132	10.435
42	2.576	0.133	10.434
43	2.576	0.133	10.434
44	2.576	0.133	10.434
45	2.577	0.134	10.433
46	2.578	0.135	10.432
47	2.578	0.135	10.432
48	2.578	0.135	10.432
49	2.578	0.135	10.432
50	2.578	0.135	10.432
52	2.579	0.136	10.431
54	2.579	0.136	10.431
56	2.580	0.137	10.430
58	2.580	0.137	10.430

60	2.582	0.139	10.428
62	2.581	0.138	10.429
64	2.583	0.140	10.427
66	2.583	0.140	10.427
68	2.583	0.140	10.427
70	2.584	0.141	10.426
72	2.584	0.141	10.426
74	2.584	0.141	10.426
76	2.585	0.142	10.425
78	2.584	0.141	10.426
80	2.586	0.143	10.424
82	2.586	0.143	10.424
84	2.586	0.143	10.424
86	2.586	0.143	10.424
88	2.587	0.144	10.423
90	2.586	0.143	10.424
92	2.587	0.144	10.423
94	2.587	0.144	10.423
96	2.588	0.145	10.422
98	2.589	0.146	10.421
100	2.588	0.145	10.422
110	2.590	0.147	10.420
120	2.591	0.148	10.419
130	2.593	0.150	10.417
140	2.594	0.151	10.416
150	2.594	0.151	10.416
160	2.597	0.154	10.413
170	2.596	0.153	10.414
180	2.598	0.155	10.412
190	2.599	0.156	10.411
200	2.599	0.156	10.411
210	2.600	0.157	10.410
220	2.603	0.160	10.407
223	2.602	0.159	10.408
224	2.600	0.157	10.410
225	2.588	0.145	10.422
226	2.572	0.129	10.438
227	2.558	0.115	10.452
228	2.545	0.102	10.465
229	2.534	0.091	10.476
230	2.527	0.084	10.483
231	2.522	0.079	10.488
232	2.515	0.072	10.495
233	2.509	0.066	10.501
234	2.506	0.063	10.504
235	2.500	0.057	10.510
236	2.497	0.054	10.513
237	2.493	0.050	10.517
238	2.488	0.045	10.522

LPP6 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		27/10/2002
Start time		11:56AM
Stop date		
Stop time		
Duration (minutes)		284

Step	Duration (minutes)	Q (L/s)
1	284	2.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP6	Monoman	462222	6189972.99	13.01	12.43	NA	0.00	0.00	6.00	5.00	NA	NA
Obs	LPP5	Monoman	462257	6190016.61	13.34	12.87	NA	56.00	9.33	6.00	NA	2.83	10.51
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP6	5.00	11.00	6.00	7.43	1.43
Obs	LPP5	6.00	11.00	5.00	6.87	1.87
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP6	SC	5.00	10.00	5.00	150	NA	2.0	3 - 6 mm	150
Obs	LPP5	SC	6.00	11.00	5.00	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	2.844	0.013	10.496
2	2.860	0.029	10.480
3	2.876	0.045	10.464
4	2.887	0.056	10.453
5	2.897	0.066	10.443
6	2.906	0.075	10.434
7	2.912	0.081	10.428
8	2.918	0.087	10.422
9	2.923	0.092	10.417
10	2.927	0.096	10.413
11	2.931	0.100	10.409
12	2.935	0.104	10.405
13	2.938	0.107	10.402
14	2.940	0.109	10.400
15	2.943	0.112	10.397
16	2.946	0.115	10.394
17	2.947	0.116	10.393
18	2.948	0.117	10.392
19	2.950	0.119	10.390
20	2.953	0.122	10.387
21	2.954	0.123	10.386
22	2.957	0.126	10.383
23	2.956	0.125	10.384
24	2.957	0.126	10.383
25	2.959	0.128	10.381
26	2.960	0.129	10.380
27	2.962	0.131	10.378
28	2.961	0.130	10.379
29	2.964	0.133	10.376
30	2.965	0.134	10.375
31	2.966	0.135	10.374
32	2.969	0.138	10.371
33	2.970	0.139	10.370
34	2.968	0.137	10.372
35	2.969	0.138	10.371
36	2.969	0.138	10.371
37	2.970	0.139	10.370
38	2.971	0.140	10.369
39	2.972	0.141	10.368
40	2.972	0.141	10.368
41	2.973	0.142	10.367
42	2.973	0.142	10.367
43	2.973	0.142	10.367
44	2.976	0.145	10.364
45	2.975	0.144	10.365
46	2.974	0.143	10.366
47	2.976	0.145	10.364
48	2.979	0.148	10.361
49	2.978	0.147	10.362
50	2.979	0.148	10.361
52	2.981	0.150	10.359
54	2.980	0.149	10.360
56	2.981	0.150	10.359
58	2.983	0.152	10.357
60	2.985	0.154	10.355
62	2.986	0.155	10.354
64	2.986	0.155	10.354
66	2.986	0.155	10.354

68	2.988	0.157	10.352
70	2.988	0.157	10.352
72	2.987	0.156	10.353
74	2.986	0.155	10.354
76	2.987	0.156	10.353
78	2.988	0.157	10.352
80	2.989	0.158	10.351
82	2.990	0.159	10.350
84	2.990	0.159	10.350
86	2.992	0.161	10.348
88	2.990	0.159	10.350
90	2.990	0.159	10.350
92	2.991	0.160	10.349
94	2.992	0.161	10.348
96	2.994	0.163	10.346
98	2.995	0.164	10.345
100	2.995	0.164	10.345
110	2.996	0.165	10.344
120	2.998	0.167	10.342
130	3.002	0.171	10.338
140	3.004	0.173	10.336
150	3.003	0.172	10.337
160	3.005	0.174	10.335
170	3.009	0.178	10.331
180	3.010	0.179	10.330
190	3.013	0.182	10.327
200	3.010	0.179	10.330
210	3.014	0.183	10.326
220	3.016	0.185	10.324
230	3.017	0.186	10.323
240	3.019	0.188	10.321
250	3.019	0.188	10.321
260	3.019	0.188	10.321
270	3.022	0.191	10.318
280	3.023	0.192	10.317
286	3.006	0.175	10.334
287	2.990	0.159	10.350
288	2.977	0.146	10.363
289	2.965	0.134	10.375
290	2.955	0.124	10.385
291	2.945	0.114	10.395
292	2.938	0.107	10.402
293	2.931	0.100	10.409
294	2.927	0.096	10.413
295	2.922	0.091	10.418
296	2.918	0.087	10.422
297	2.916	0.085	10.424
298	2.912	0.081	10.428
299	2.908	0.077	10.432
300	2.905	0.074	10.435
301	2.903	0.072	10.437
302	2.900	0.069	10.440
303	2.898	0.067	10.442
304	2.896	0.065	10.444
305	2.894	0.063	10.446
306	2.892	0.061	10.448
307	2.891	0.060	10.449

LPP7 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		23/10/2002
Start time		9:07AM
Stop date		
Stop time		
Duration (minutes)		452

Step	Duration (minutes)	Q (L/s)
1	452	2.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP7	Monoman	461629	6189193.38	12.46	12.10	NA	0.00	0.00	3.70	3.50	NA	NA
Obs	LPP8	Monoman	461583	6189175.26	12.70	12.10	NA	50.00	13.51	3.70	NA	1.92	10.79
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP7	7.00	10.70	3.70	5.10	1.40
Obs	LPP8	6.00	10.75	4.75	6.10	1.35
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP7	SC	5.50	10.50	3.50	150	NA	2.0	3 - 6 mm	150
Obs	LPP8	SC	5.50	11.00	4.75	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED DATA

Minutes	WL (m)	St (m)	Rwl (m)
3	1.920	0.005	10.780
4	1.927	0.012	10.773
5	1.932	0.017	10.768
6	1.938	0.023	10.762
7	1.941	0.026	10.759
8	1.944	0.029	10.756
9	1.947	0.032	10.753
10	1.948	0.033	10.752
11	1.950	0.035	10.750
12	1.953	0.038	10.747
13	1.954	0.039	10.746
14	1.957	0.042	10.743
15	1.959	0.044	10.741
16	1.960	0.045	10.740
17	1.963	0.048	10.737
18	1.964	0.049	10.736
19	1.968	0.053	10.732
20	1.966	0.051	10.734
21	1.969	0.054	10.731
22	1.969	0.054	10.731
23	1.971	0.056	10.729
24	1.971	0.056	10.729
25	1.973	0.058	10.727
26	1.972	0.057	10.728
27	1.975	0.060	10.725
28	1.976	0.061	10.724
29	1.976	0.061	10.724
30	1.979	0.064	10.721
31	1.980	0.065	10.720
32	1.981	0.066	10.719
33	1.983	0.068	10.717
34	1.983	0.068	10.717
35	1.987	0.072	10.713
36	1.985	0.070	10.715
37	1.986	0.071	10.714
38	1.987	0.072	10.713
39	1.989	0.074	10.711
40	1.991	0.076	10.709
41	1.992	0.077	10.708
42	1.991	0.076	10.709
43	1.991	0.076	10.709
44	1.994	0.079	10.706
45	1.994	0.079	10.706
46	1.993	0.078	10.707
47	1.995	0.080	10.705
48	1.996	0.081	10.704
49	1.997	0.082	10.703
50	1.997	0.082	10.703
52	1.999	0.084	10.701
54	2.001	0.086	10.699
56	2.001	0.086	10.699
58	2.004	0.089	10.696
60	2.004	0.089	10.696
62	2.006	0.091	10.694

64	2.007	0.092	10.693
66	2.010	0.095	10.690
68	2.011	0.096	10.689
70	2.011	0.096	10.689
72	2.013	0.098	10.687
74	2.011	0.096	10.689
76	2.012	0.097	10.688
78	2.017	0.102	10.683
80	2.017	0.102	10.683
82	2.016	0.101	10.684
84	2.018	0.103	10.682
86	2.019	0.104	10.681
88	2.022	0.107	10.678
90	2.022	0.107	10.678
92	2.024	0.109	10.676
94	2.024	0.109	10.676
96	2.026	0.111	10.674
98	2.027	0.112	10.673
100	2.028	0.113	10.672
110	2.033	0.118	10.667
120	2.038	0.123	10.662
130	2.044	0.129	10.656
140	2.046	0.131	10.654
150	2.050	0.135	10.650
160	2.054	0.139	10.646
170	2.060	0.145	10.640
180	2.064	0.149	10.636
190	2.064	0.149	10.636
200	2.068	0.153	10.632
210	2.072	0.157	10.628
220	2.074	0.159	10.626
230	2.079	0.164	10.621
240	2.078	0.163	10.622
250	2.079	0.164	10.621
260	2.085	0.170	10.615
270	2.086	0.171	10.614
280	2.089	0.174	10.611
290	2.092	0.177	10.608
300	2.091	0.176	10.609
310	2.096	0.181	10.604
320	2.099	0.184	10.601
330	2.097	0.182	10.603
340	2.103	0.188	10.597
350	2.102	0.187	10.598
360	2.107	0.192	10.593
370	2.107	0.192	10.593
380	2.109	0.194	10.591
390	2.109	0.194	10.591
400	2.113	0.198	10.587
410	2.114	0.199	10.586
420	2.118	0.203	10.582
430	2.120	0.205	10.580
440	2.121	0.206	10.579
450	2.124	0.209	10.576

LPP8 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		24/10/2002
Start time		7:53AM
Stop date		
Stop time		
Duration (minutes)		439

Step	Duration (minutes)	Q (L/s)
1	439	2.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP8	Monoman	461583	6189175.26	12.70	12.10	NA	0.00	0.00	4.75	4.75	NA	NA
Obs	LPP7	Monoman	461629	6189193.38	12.46	12.10	NA	50.00	10.53	4.75	NA	1.78	10.68
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP8	6.00	10.75	4.75	6.10	1.35
Obs	LPP7	7.00	10.70	3.70	5.10	1.40
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP8	SC	5.50	11.00	4.75	150	NA	2.0	3 - 6 mm	150
Obs	LPP7	SC	5.50	10.50	3.50	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	1.790	0.010	10.670
2	1.797	0.017	10.663
3	1.800	0.020	10.660
4	1.805	0.025	10.655
5	1.809	0.029	10.651
6	1.815	0.035	10.645
7	1.818	0.038	10.642
8	1.821	0.041	10.639
9	1.825	0.045	10.635
10	1.827	0.047	10.633
11	1.829	0.049	10.631
12	1.831	0.051	10.629
13	1.833	0.053	10.627
14	1.834	0.054	10.626
15	1.836	0.056	10.624
16	1.838	0.058	10.622
17	1.840	0.060	10.620
18	1.842	0.062	10.618
19	1.843	0.063	10.617
20	1.845	0.065	10.615
21	1.847	0.067	10.613
22	1.848	0.068	10.612
23	1.849	0.069	10.611
24	1.851	0.071	10.609
25	1.852	0.072	10.608
26	1.854	0.074	10.606
27	1.855	0.075	10.605
28	1.856	0.076	10.604
29	1.857	0.077	10.603
30	1.858	0.078	10.602
31	1.859	0.079	10.601
32	1.860	0.080	10.600
33	1.861	0.081	10.599
34	1.862	0.082	10.598
35	1.865	0.085	10.595
36	1.867	0.087	10.593
37	1.867	0.087	10.593
38	1.869	0.089	10.591
39	1.869	0.089	10.591
40	1.870	0.090	10.590
41	1.871	0.091	10.589
42	1.872	0.092	10.588
43	1.873	0.093	10.587
44	1.873	0.093	10.587
45	1.875	0.095	10.585
46	1.877	0.097	10.583
47	1.876	0.096	10.584
48	1.877	0.097	10.583
49	1.876	0.096	10.584
50	1.877	0.097	10.583
52	1.878	0.098	10.582
54	1.882	0.102	10.578
56	1.884	0.104	10.576
58	1.885	0.105	10.575

60	1.887	0.107	10.573
62	1.888	0.108	10.572
64	1.890	0.110	10.570
66	1.891	0.111	10.569
68	1.893	0.113	10.567
70	1.894	0.114	10.566
72	1.893	0.113	10.567
74	1.895	0.115	10.565
76	1.895	0.115	10.565
78	1.896	0.116	10.564
80	1.898	0.118	10.562
82	1.900	0.120	10.560
84	1.901	0.121	10.559
86	1.904	0.124	10.556
88	1.903	0.123	10.557
90	1.903	0.123	10.557
92	1.906	0.126	10.554
94	1.905	0.125	10.555
96	1.909	0.129	10.551
98	1.907	0.127	10.553
100	1.910	0.130	10.550
110	1.917	0.137	10.543
120	1.918	0.138	10.542
130	1.925	0.145	10.535
140	1.929	0.149	10.531
150	1.931	0.151	10.529
160	1.938	0.158	10.522
170	1.940	0.160	10.520
180	1.944	0.164	10.516
190	1.945	0.165	10.515
200	1.951	0.171	10.509
210	1.954	0.174	10.506
220	1.957	0.177	10.503
230	1.957	0.177	10.503
240	1.962	0.182	10.498
250	1.965	0.185	10.495
260	1.968	0.188	10.492
270	1.971	0.191	10.489
280	1.972	0.192	10.488
290	1.974	0.194	10.486
300	1.980	0.200	10.480
310	1.979	0.199	10.481
320	1.983	0.203	10.477
330	1.984	0.204	10.476
340	1.986	0.206	10.474
350	1.989	0.209	10.471
360	1.990	0.210	10.470
370	1.994	0.214	10.466
380	1.996	0.216	10.464
390	1.997	0.217	10.463
400	1.998	0.218	10.462
410	1.999	0.219	10.461
420	2.004	0.224	10.456
430	2.005	0.225	10.455

LPP9 HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Extent of pumping influence		
Boundary conditions		

Start date		24/10/2002
Start time		8:03AM
Stop date		
Stop time		
Duration (minutes)		352

Step	Duration (minutes)	Q (L/s)
1	352	2.00
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	LPP9	Monoman	459221	6187753	12.38	12.18	NA	0.00	0.00	3.00	3.00	NA	NA
Obs	LPP10	Monoman	459170	6187752	12.69	12.18	NA	50.00	16.67	3.00	NA	2.77	9.92
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	LPP9	5.00	8.00	3.00	7.18	4.18
Obs	LPP10	5.50	7.50	2.00	6.68	4.68
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	LPP9	SC	5.00	9.00	3.00	150	NA	2.0	3 - 6 mm	150
Obs	LPP10	SC	5.50	7.50	2.00	150	NA	2.0	3 - 6 mm	150
Obs										
Obs										
Obs										

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	2.775	0.008	9.915
2	2.779	0.012	9.911
3	2.781	0.014	9.909
4	2.783	0.016	9.907
5	2.784	0.017	9.906
6	2.785	0.018	9.905
7	2.786	0.019	9.904
8	2.786	0.019	9.904
9	2.787	0.020	9.903
10	2.787	0.020	9.903
11	2.787	0.020	9.903
12	2.788	0.021	9.902
13	2.788	0.021	9.902
14	2.789	0.022	9.901
15	2.789	0.022	9.901
16	2.790	0.023	9.900
17	2.790	0.023	9.900
18	2.790	0.023	9.900
19	2.790	0.023	9.900
20	2.791	0.024	9.899
21	2.791	0.024	9.899
22	2.792	0.025	9.898
23	2.792	0.025	9.898
24	2.792	0.025	9.898
25	2.793	0.026	9.897
26	2.792	0.025	9.898
27	2.793	0.026	9.897
28	2.793	0.026	9.897
29	2.793	0.026	9.897
30	2.794	0.027	9.896
31	2.794	0.027	9.896
32	2.795	0.028	9.895
33	2.795	0.028	9.895
34	2.795	0.028	9.895
35	2.795	0.028	9.895
36	2.796	0.029	9.894
37	2.796	0.029	9.894
38	2.796	0.029	9.894
39	2.797	0.030	9.893
40	2.797	0.030	9.893
41	2.797	0.030	9.893
42	2.797	0.030	9.893
43	2.798	0.031	9.892
44	2.798	0.031	9.892
45	2.798	0.031	9.892
46	2.798	0.031	9.892
47	2.799	0.032	9.891
48	2.799	0.032	9.891
49	2.799	0.032	9.891
50	2.800	0.033	9.890
52	2.800	0.033	9.890
54	2.801	0.034	9.889
56	2.801	0.034	9.889
58	2.802	0.035	9.888

60	2.802	0.035	9.888
62	2.803	0.036	9.887
64	2.803	0.036	9.887
66	2.803	0.036	9.887
68	2.804	0.037	9.886
70	2.805	0.038	9.885
72	2.805	0.038	9.885
74	2.806	0.039	9.884
76	2.806	0.039	9.884
78	2.807	0.040	9.883
80	2.807	0.040	9.883
82	2.808	0.041	9.882
84	2.808	0.041	9.882
86	2.809	0.042	9.881
88	2.809	0.042	9.881
90	2.810	0.043	9.880
92	2.810	0.043	9.880
94	2.811	0.044	9.879
96	2.811	0.044	9.879
98	2.812	0.045	9.878
100	2.812	0.045	9.878
110	2.815	0.048	9.875
120	2.817	0.050	9.873
130	2.819	0.052	9.871
140	2.822	0.055	9.868
150	2.824	0.057	9.866
160	2.826	0.059	9.864
170	2.828	0.061	9.862
180	2.831	0.064	9.859
190	2.833	0.066	9.857
200	2.835	0.068	9.855
210	2.836	0.069	9.854
220	2.838	0.071	9.852
230	2.840	0.073	9.850
240	2.842	0.075	9.848
250	2.844	0.077	9.846
260	2.845	0.078	9.845
270	2.847	0.080	9.843
280	2.849	0.082	9.841
290	2.850	0.083	9.840
300	2.851	0.084	9.839
310	2.853	0.086	9.837
320	2.854	0.087	9.836
330	2.855	0.088	9.835
340	2.857	0.090	9.833
350	2.858	0.091	9.832

MAN5P HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		29/10/2002
Start time		1:00PM
Stop date		05/11/2002
Stop time		8:30AM
Duration (minutes)		9809

Step	Duration (minutes)	Q (L/s)
1	9809	7.37
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	MAN5P	Upper Mannum	461010	6188596	34.84	34.30	NA	0.00	0.00	50.00	26.00	NA	NA
Obs	MAN12O	Upper Mannum	461067	6188605	35.38	34.49	E	57.00	1.14	50.00	26.00	19.63	15.75
Obs													
Obs													
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	MAN5P	88.00	138.00	50.00	-53.70	-103.70
Obs	MAN12O	88.00	138.00	50.00	-53.51	-103.51
Obs						
Obs						
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	MAN5P	NA	92.00	114.00	22.00	NA	NA	NA	NA	NA
Obs	MAN12O	NA	91.50	114.00	22.50	NA	NA	NA	NA	NA
Obs										
Obs										
Obs										

Note:

There is some confusion between start time and logger times due to daylight saving?

No manual data provided

D based on well LHC1

there is a discrepancy in different documents regarding the casing depth of MAN5P

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)
1	19.637	0.010	15.743
2	19.667	0.040	15.713
3	19.724	0.097	15.656
4	19.793	0.166	15.587
5	19.865	0.238	15.515
6	19.937	0.310	15.443
7	20.007	0.380	15.373
8	20.074	0.447	15.306
9	20.137	0.510	15.243
10	20.198	0.571	15.182
11	20.254	0.627	15.126
12	20.307	0.680	15.073
13	20.357	0.730	15.023
14	20.404	0.777	14.976
15	20.447	0.820	14.933
16	20.489	0.862	14.891
17	20.529	0.902	14.851
18	20.566	0.939	14.814
19	20.601	0.974	14.779
20	20.634	1.007	14.746
21	20.668	1.041	14.712
22	20.701	1.074	14.679
23	20.729	1.102	14.651
24	20.758	1.131	14.622
25	20.788	1.161	14.592
26	20.813	1.186	14.567
27	20.836	1.209	14.544
28	20.862	1.235	14.518
29	20.887	1.260	14.493
30	20.908	1.281	14.472
31	20.930	1.303	14.450
32	20.952	1.325	14.428
33	20.972	1.345	14.408
34	20.993	1.366	14.387
35	21.012	1.385	14.368
36	21.031	1.404	14.349
37	21.048	1.421	14.332
38	21.066	1.439	14.314
39	21.083	1.456	14.297
40	21.102	1.475	14.278
41	21.116	1.489	14.264
42	21.135	1.508	14.245
43	21.150	1.523	14.230
44	21.162	1.535	14.218
45	21.179	1.552	14.201
46	21.195	1.568	14.185
47	21.208	1.581	14.172
48	21.220	1.593	14.160
49	21.234	1.607	14.146
50	21.247	1.620	14.133
52	21.274	1.647	14.106
54	21.297	1.670	14.083
56	21.321	1.694	14.059
58	21.343	1.716	14.037

60	21.365	1.738	14.015
62	21.387	1.760	13.993
64	21.409	1.782	13.971
66	21.427	1.800	13.953
68	21.447	1.820	13.933
70	21.464	1.837	13.916
72	21.483	1.856	13.897
74	21.502	1.875	13.878
76	21.518	1.891	13.862
78	21.535	1.908	13.845
80	21.550	1.923	13.830
82	21.565	1.938	13.815
84	21.579	1.952	13.801
86	21.598	1.971	13.782
88	21.610	1.983	13.770
90	21.624	1.997	13.756
92	21.637	2.010	13.743
94	21.650	2.023	13.730
96	21.664	2.037	13.716
98	21.676	2.049	13.704
100	21.689	2.062	13.691
110	21.747	2.120	13.633
120	21.801	2.174	13.579
130	21.853	2.226	13.527
140	21.895	2.268	13.485
150	21.939	2.312	13.441
160	21.978	2.351	13.402
170	22.016	2.389	13.364
180	22.051	2.424	13.329
190	22.086	2.459	13.294
200	22.116	2.489	13.264
210	22.147	2.520	13.233
220	22.176	2.549	13.204
230	22.204	2.577	13.176
240	22.230	2.603	13.150
250	22.257	2.630	13.123
260	22.282	2.655	13.098
270	22.308	2.681	13.072
280	22.330	2.703	13.050
290	22.356	2.729	13.024
300	22.376	2.749	13.004
310	22.397	2.770	12.983
320	22.416	2.789	12.964
330	22.437	2.810	12.943
340	22.457	2.830	12.923
350	22.477	2.850	12.903
360	22.496	2.869	12.884
370	22.515	2.888	12.865
380	22.532	2.905	12.848
390	22.549	2.922	12.831
400	22.566	2.939	12.814
410	22.584	2.957	12.796
420	22.600	2.973	12.780
430	22.616	2.989	12.764
440	22.633	3.006	12.747
450	22.647	3.020	12.733

460	22.661	3.034	12.719
470	22.676	3.049	12.704
480	22.688	3.061	12.692
490	22.704	3.077	12.676
500	22.719	3.092	12.661
510	22.733	3.106	12.647
520	22.747	3.120	12.633
530	22.759	3.132	12.621
540	22.773	3.146	12.607
550	22.786	3.159	12.594
560	22.799	3.172	12.581
570	22.810	3.183	12.570
580	22.822	3.195	12.558
590	22.833	3.206	12.547
600	22.843	3.216	12.537
610	22.853	3.226	12.527
620	22.864	3.237	12.516
630	22.876	3.249	12.504
640	22.887	3.260	12.493
650	22.898	3.271	12.482
660	22.909	3.282	12.471
670	22.922	3.295	12.458
680	22.933	3.306	12.447
690	22.942	3.315	12.438
700	22.953	3.326	12.427
710	22.963	3.336	12.417
720	22.971	3.344	12.409
730	22.982	3.355	12.398
740	22.991	3.364	12.389
750	23.001	3.374	12.379
760	23.010	3.383	12.370
770	23.019	3.392	12.361
780	23.027	3.400	12.353
790	23.037	3.410	12.343
800	23.046	3.419	12.334
810	23.054	3.427	12.326
820	23.063	3.436	12.317
830	23.071	3.444	12.309
840	23.080	3.453	12.300
850	23.089	3.462	12.291
860	23.097	3.470	12.283
870	23.106	3.479	12.274
880	23.114	3.487	12.266
890	23.122	3.495	12.258
900	23.130	3.503	12.250
910	23.138	3.511	12.242
920	23.146	3.519	12.234
930	23.154	3.527	12.226
940	23.162	3.535	12.218
950	23.171	3.544	12.209
960	23.179	3.552	12.201
970	23.186	3.559	12.194
980	23.194	3.567	12.186
990	23.201	3.574	12.179
1000	23.209	3.582	12.171
1100	23.286	3.659	12.094

1200	23.352	3.725	12.028
1300	23.411	3.784	11.969
1400	23.454	3.827	11.926
1500	23.472	3.845	11.908
1600	23.508	3.881	11.872
1700	23.550	3.923	11.830
1829	23.608	3.981	11.772
1919	23.649	4.022	11.731
2009	23.683	4.056	11.697
2129	23.719	4.092	11.661
2219	23.742	4.115	11.638
2309	23.765	4.138	11.615
2429	23.802	4.175	11.578
2519	23.834	4.207	11.546
2609	23.864	4.237	11.516
2729	23.896	4.269	11.484
2819	23.913	4.286	11.467
2909	23.927	4.300	11.453
3029	23.946	4.319	11.434
3119	23.964	4.337	11.416
3209	23.986	4.359	11.394
3329	24.020	4.393	11.360
3419	24.044	4.417	11.336
3509	24.060	4.433	11.320
3629	24.074	4.447	11.306
3719	24.085	4.458	11.295
3809	24.097	4.470	11.283
3929	24.122	4.495	11.258
4019	24.142	4.515	11.238
4109	24.085	4.458	11.295
4229	24.159	4.532	11.221
4319	24.161	4.534	11.219
4409	24.163	4.536	11.217
4529	24.168	4.541	11.212
4619	24.179	4.552	11.201
4709	24.194	4.567	11.186
4829	24.215	4.588	11.165
4919	24.224	4.597	11.156
5009	24.228	4.601	11.152
5129	24.231	4.604	11.149
5219	24.237	4.610	11.143
5309	24.248	4.621	11.132
5429	24.263	4.636	11.117
5519	24.277	4.650	11.103
5609	24.285	4.658	11.095
5729	24.288	4.661	11.092
5819	24.285	4.658	11.095
5909	24.299	4.672	11.081
6029	24.321	4.694	11.059
6119	24.336	4.709	11.044
6209	24.363	4.736	11.017
6329	24.387	4.760	10.993
6419	24.401	4.774	10.979
6509	24.406	4.779	10.974
6629	24.414	4.787	10.966
6719	24.425	4.798	10.955

6809	24.443	4.816	10.937
6929	24.466	4.839	10.914
7019	24.477	4.850	10.903
7109	24.487	4.860	10.893
7229	24.492	4.865	10.888
7319	24.492	4.865	10.888
7409	24.494	4.867	10.886
7529	24.505	4.878	10.875
7619	24.520	4.893	10.860
7709	24.539	4.912	10.841
7829	24.558	4.931	10.822
7919	24.566	4.939	10.814
8009	24.568	4.941	10.812
8129	24.572	4.945	10.808
8219	24.581	4.954	10.799
8309	24.594	4.967	10.786
8429	24.612	4.985	10.768
8519	24.622	4.995	10.758
8609	24.628	5.001	10.752
8729	24.629	5.002	10.751
8819	24.628	5.001	10.752
8909	24.631	5.004	10.749
9029	24.641	5.014	10.739
9119	24.652	5.025	10.728
9209	24.665	5.038	10.715
9329	24.673	5.046	10.707
9419	24.674	5.047	10.706
9509	24.674	5.047	10.706
9629	24.676	5.049	10.704
9719	24.688	5.061	10.692
9809	24.698	5.071	10.682

MAN8P HEADER

AWE TEST

Purpose		
Determine		
Hydraulic properties of aquifer		
Hydraulic properties of aquitard		

Start date		25/10/2002
Start time		2:00PM
Stop date		10/11/2002
Stop time		2:00PM
Duration (minutes)		9810

Step	Duration (minutes)	Q (L/s)
1	9810	7.30
2		
3		
4		
5		

Where			Units
St	=	drawdown	m
WL	=	water level below ref point	m
Iswl	=	initial standing water level below ref point	m
Rwl	=	reduced water level	m
Head	=	head above logger	m
Ihead	=	initial head above logger	m
Rel	=	reference elevation	m
Gel	=	ground elevation	m
r	=	radial distance from production well	m
Q	=	pumping rate	L/s
SC	=	specific capacity	(L/s)/m
L	=	production zone length	m
D	=	saturated production aquifer thickness at production well	m
b	=	for wells completed in production aquifer at r<1.5xD, length top saturated aquifer (based on production well) to bottom production zone (refer to aquifer bottom and production zone position to determine)	m

												Manual	
Well Type	Project No	Aquifer monitored	Easting	Northing	Rel (m)	Gel (m)	Direction	r (m)	[r] as multiple of D	D (m)	b (m)	Iswl (m)	Irswl (m)
Production	MAN8P	Upper Mannum	455291	6187291	36.33	35.75	NA	0.00	0.00	50.00	23.00	NA	NA
Obs	MAN11O	Upper Mannum	455287	6187352	36.41	35.55	N	61.00	1.22	50.00	24.00	NA	NA
Obs	LFO4umf	Glenforslan (Pata?)	455461	6187909	12.36	11.59	N	641.00	12.82	50.00	NA	NA	NA
Obs	MAN7O	Upper mannum	455581	6186439	48.37	47.26	SE	899.00	17.98	50.00	NA	NA	NA
Obs													

		Aquifer monitored				
Well Type	Project No	Depth Top (m)	Depth Bottom (m)	Thickness (m)	Elev top (m)	Elev Bottom (m)
Production	MAN8P	73.00	123.00	50.00	-37.25	-87.25
Obs	MAN11O	72.00	122.00	50.00	-36.45	-86.45
Obs	LFO4umf	20.50	48.00	27.50	-8.91	-36.41
Obs	MAN7O	79.00	129.00	50.00	-31.74	-81.74
Obs						

		Production zone								
Well Type	Project No	Type	From (m)	To (m)	L (m)	ID (mm)	Sump length (m)	Aperture (mm)	Gravel pack	Casing ID (mm)
Production	MAN8P	NA	74.00	96.00	22.00	NA	NA	NA	NA	NA
Obs	MAN11O	NA	77.00	96.00	19.00	NA	NA	NA	NA	NA
Obs	LFO4umf	SC	42.00	48.00	6.00	NA	NA	NA	NA	NA
Obs	MAN7O	NA	82.50	108.00	25.50	NA	NA	NA	NA	NA
Obs										

Note:

No manual data provided

There is discrepancy in the logger start time

D based on well LHC1

Iswl values not provided by AWE, Rwl not calculated

There is a discrepancy between project numbers and permit numbers between AWE data and SAGeodata for well LFO4umf

There is some confusion between start time and logger times due to daylight saving?

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
1	NA	0.011	NA	0.000
2	NA	0.046	NA	0.001
3	NA	0.097	NA	0.001
4	NA	0.152	NA	0.001
5	NA	0.206	NA	0.001
6	NA	0.257	NA	0.002
7	NA	0.306	NA	0.002
8	NA	0.349	NA	0.002
9	NA	0.389	NA	0.002
10	NA	0.426	NA	0.003
11	NA	0.460	NA	0.003
12	NA	0.491	NA	0.003
13	NA	0.523	NA	0.003
14	NA	0.550	NA	0.004
15	NA	0.575	NA	0.004
16	NA	0.600	NA	0.004
17	NA	0.624	NA	0.005
18	NA	0.645	NA	0.005
19	NA	0.666	NA	0.005
20	NA	0.687	NA	0.005
21	NA	0.707	NA	0.006
22	NA	0.724	NA	0.006
23	NA	0.741	NA	0.006
24	NA	0.759	NA	0.006
25	NA	0.775	NA	0.007
26	NA	0.791	NA	0.007
27	NA	0.806	NA	0.007
28	NA	0.822	NA	0.008
29	NA	0.834	NA	0.008
30	NA	0.850	NA	0.008
31	NA	0.860	NA	0.008
32	NA	0.875	NA	0.009
33	NA	0.887	NA	0.009
34	NA	0.900	NA	0.009
35	NA	0.912	NA	0.009
36	NA	0.923	NA	0.010
37	NA	0.934	NA	0.010
38	NA	0.945	NA	0.010
39	NA	0.956	NA	0.010
40	NA	0.965	NA	0.011
41	NA	0.975	NA	0.011
42	NA	0.986	NA	0.011
43	NA	0.995	NA	0.012
44	NA	1.004	NA	0.012
45	NA	1.013	NA	0.012
46	NA	1.023	NA	0.012
47	NA	1.032	NA	0.013
48	NA	1.040	NA	0.013
49	NA	1.048	NA	0.013
50	NA	1.056	NA	0.013
52	NA	1.071	NA	0.014
54	NA	1.086	NA	0.015
56	NA	1.102	NA	0.015
58	NA	1.116	NA	0.016

60	NA	1.130	NA	0.016
62	NA	1.141	NA	0.017
64	NA	1.156	NA	0.017
66	NA	1.167	NA	0.018
68	NA	1.180	NA	0.018
70	NA	1.193	NA	0.019
72	NA	1.203	NA	0.019
74	NA	1.213	NA	0.020
76	NA	1.225	NA	0.020
78	NA	1.235	NA	0.021
80	NA	1.246	NA	0.021
82	NA	1.255	NA	0.022
84	NA	1.266	NA	0.023
86	NA	1.277	NA	0.023
88	NA	1.285	NA	0.024
90	NA	1.294	NA	0.024
92	NA	1.302	NA	0.025
94	NA	1.310	NA	0.025
96	NA	1.320	NA	0.026
98	NA	1.328	NA	0.026
100	NA	1.336	NA	0.027
110	NA	1.377	NA	0.030
120	NA	1.413	NA	0.032
130	NA	1.445	NA	0.035
140	NA	1.478	NA	0.038
150	NA	1.507	NA	0.040
160	NA	1.533	NA	0.043
170	NA	1.559	NA	0.046
180	NA	1.583	NA	0.048
190	NA	1.606	NA	0.051
200	NA	1.628	NA	0.054
210	NA	1.649	NA	0.056
220	NA	1.668	NA	0.059
230	NA	1.687	NA	0.062
240	NA	1.705	NA	0.064
250	NA	1.722	NA	0.067
260	NA	1.740	NA	0.070
270	NA	1.757	NA	0.073
280	NA	1.771	NA	0.075
290	NA	1.788	NA	0.078
300	NA	1.802	NA	0.081
310	NA	1.817	NA	0.083
320	NA	1.832	NA	0.086
330	NA	1.845	NA	0.089
340	NA	1.860	NA	0.091
350	NA	1.873	NA	0.094
360	NA	1.886	NA	0.097
370	NA	1.899	NA	0.099
380	NA	1.911	NA	0.102
390	NA	1.924	NA	0.105
400	NA	1.935	NA	0.107
410	NA	1.947	NA	0.110
420	NA	1.958	NA	0.113
430	NA	1.969	NA	0.116
440	NA	1.979	NA	0.118
450	NA	1.991	NA	0.121

460	NA	2.001	NA	0.124
470	NA	2.010	NA	0.126
480	NA	2.020	NA	0.129
490	NA	2.030	NA	0.132
500	NA	2.039	NA	0.134
510	NA	2.047	NA	0.137
520	NA	2.057	NA	0.140
530	NA	2.065	NA	0.142
540	NA	2.075	NA	0.145
550	NA	2.083	NA	0.148
560	NA	2.091	NA	0.150
570	NA	2.099	NA	0.153
580	NA	2.107	NA	0.156
590	NA	2.115	NA	0.159
600	NA	2.123	NA	0.161
610	NA	2.130	NA	0.164
620	NA	2.137	NA	0.167
630	NA	2.145	NA	0.169
640	NA	2.151	NA	0.172
650	NA	2.159	NA	0.175
660	NA	2.166	NA	0.177
670	NA	2.173	NA	0.180
680	NA	2.179	NA	0.183
690	NA	2.186	NA	0.185
700	NA	2.193	NA	0.188
710	NA	2.199	NA	0.191
720	NA	2.204	NA	0.193
730	NA	2.210	NA	0.196
740	NA	2.216	NA	0.199
750	NA	2.222	NA	0.202
760	NA	2.228	NA	0.204
770	NA	2.234	NA	0.207
780	NA	2.240	NA	0.210
790	NA	2.246	NA	0.212
800	NA	2.253	NA	0.215
810	NA	2.258	NA	0.218
820	NA	2.264	NA	0.220
830	NA	2.270	NA	0.223
840	NA	2.275	NA	0.226
850	NA	2.281	NA	0.228
860	NA	2.286	NA	0.231
870	NA	2.292	NA	0.234
880	NA	2.297	NA	0.236
890	NA	2.302	NA	0.239
900	NA	2.308	NA	0.242
910	NA	2.312	NA	0.245
920	NA	2.318	NA	0.247
930	NA	2.323	NA	0.250
940	NA	2.329	NA	0.253
950	NA	2.334	NA	0.255
960	NA	2.339	NA	0.258
970	NA	2.344	NA	0.261
980	NA	2.349	NA	0.263
990	NA	2.354	NA	0.266
1000	NA	2.359	NA	0.269
1100	NA	2.404	NA	0.296

1200	NA	2.443	NA	0.322
1300	NA	2.474	NA	0.349
1400	NA	2.505	NA	0.376
1500	NA	2.530	NA	0.403
1600	NA	2.557	NA	0.430
1700	NA	2.583	NA	0.457
1800	NA	2.613	NA	0.484
1900	NA	2.640	NA	0.511
2000	NA	2.666	NA	0.537
2100	NA	2.688	NA	0.564
2200	NA	2.709	NA	0.591
2300	NA	2.731	NA	0.618
2400	NA	2.754	NA	0.645
2500	NA	2.775	NA	0.672
2600	NA	2.791	NA	0.699
2700	NA	2.804	NA	0.726
2800	NA	2.818	NA	0.752
2900	NA	2.830	NA	0.779
3000	NA	2.841	NA	0.806
3100	NA	2.855	NA	0.833
3200	NA	2.868	NA	0.860
3300	NA	2.881	NA	0.887
3400	NA	2.892	NA	0.914
3500	NA	2.905	NA	0.941
3600	NA	2.918	NA	0.967
3700	NA	2.930	NA	0.994
3800	NA	2.946	NA	1.021
3900	NA	2.961	NA	1.048
4000	NA	2.972	NA	1.075
4100	NA	2.979	NA	1.102
4200	NA	2.982	NA	1.129
4303	NA	2.986	NA	1.156
4423	NA	2.993	NA	1.189
4513	NA	2.999	NA	1.213
4603	NA	3.009	NA	1.237
4723	NA	3.019	NA	1.269
4813	NA	3.024	NA	1.293
4903	NA	3.028	NA	1.318
5023	NA	3.033	NA	1.350
5113	NA	3.041	NA	1.374
5203	NA	3.047	NA	1.398
5323	NA	3.060	NA	1.431
5413	NA	3.068	NA	1.455
5503	NA	3.074	NA	1.479
5623	NA	3.074	NA	1.511
5713	NA	3.072	NA	1.535
5803	NA	3.073	NA	1.560
5923	NA	3.078	NA	1.592
6013	NA	3.085	NA	1.616
6103	NA	3.093	NA	1.640
6223	NA	3.104	NA	1.672
6313	NA	3.109	NA	1.697
6403	NA	3.116	NA	1.721
6523	NA	3.125	NA	1.753
6613	NA	3.133	NA	1.777
6703	NA	3.146	NA	1.801

6823	NA	3.159	NA	1.834
6913	NA	3.170	NA	1.858
7003	NA	3.174	NA	1.882
7123	NA	3.179	NA	1.914
7213	NA	3.183	NA	1.938
7303	NA	3.193	NA	1.963
7423	NA	3.208	NA	1.995
7513	NA	3.221	NA	2.019
7603	NA	3.235	NA	2.043
7723	NA	3.243	NA	2.076
7813	NA	3.246	NA	2.100
7903	NA	3.246	NA	2.124
8023	NA	3.254	NA	2.156
8113	NA	3.263	NA	2.180
8203	NA	3.276	NA	2.205
8323	NA	3.138	NA	2.237
8413	NA	3.234	NA	2.261
8503	NA	3.270	NA	2.285
8623	NA	3.279	NA	2.317
8713	NA	3.283	NA	2.342
8803	NA	3.292	NA	2.366
8923	NA	3.306	NA	2.398
9013	NA	3.320	NA	2.422
9103	NA	3.330	NA	2.446
9223	NA	3.334	NA	2.479
9313	NA	3.333	NA	2.503
9403	NA	3.333	NA	2.527
9523	NA	3.340	NA	2.559
9613	NA	3.349	NA	2.583
9703	NA	3.359	NA	2.608

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
79	NA	0.001	NA	0.000
109	NA	0.006	NA	0.000
139	NA	0.004	NA	0.000
169	NA	0.007	NA	0.000
199	NA	0.007	NA	0.000
229	NA	0.007	NA	0.001
259	NA	0.008	NA	0.001
289	NA	0.009	NA	0.001
319	NA	0.011	NA	0.001
349	NA	0.012	NA	0.001
379	NA	0.015	NA	0.001
409	NA	0.016	NA	0.001
439	NA	0.019	NA	0.001
469	NA	0.020	NA	0.001
499	NA	0.021	NA	0.001
529	NA	0.022	NA	0.001
559	NA	0.024	NA	0.001
589	NA	0.025	NA	0.001
619	NA	0.026	NA	0.002
649	NA	0.026	NA	0.002
679	NA	0.027	NA	0.002
709	NA	0.028	NA	0.002
739	NA	0.028	NA	0.002
769	NA	0.028	NA	0.002
799	NA	0.029	NA	0.002
829	NA	0.031	NA	0.002
859	NA	0.032	NA	0.002
889	NA	0.032	NA	0.002
919	NA	0.034	NA	0.002
949	NA	0.036	NA	0.002
979	NA	0.038	NA	0.002
1009	NA	0.039	NA	0.002
1129	NA	0.045	NA	0.003
1219	NA	0.048	NA	0.003
1309	NA	0.048	NA	0.003
1429	NA	0.051	NA	0.003
1519	NA	0.052	NA	0.004
1609	NA	0.054	NA	0.004
1729	NA	0.061	NA	0.004
1819	NA	0.068	NA	0.004
1909	NA	0.075	NA	0.005
2029	NA	0.085	NA	0.005
2119	NA	0.090	NA	0.005
2209	NA	0.096	NA	0.005
2329	NA	0.104	NA	0.006
2419	NA	0.113	NA	0.006
2509	NA	0.118	NA	0.006
2629	NA	0.126	NA	0.006
2719	NA	0.129	NA	0.007
2809	NA	0.132	NA	0.007
2929	NA	0.135	NA	0.007
3019	NA	0.139	NA	0.007
3109	NA	0.145	NA	0.008
3229	NA	0.151	NA	0.008

3319	NA	0.156	NA	0.008
3409	NA	0.160	NA	0.008
3529	NA	0.168	NA	0.009
3619	NA	0.175	NA	0.009
3709	NA	0.180	NA	0.009
3829	NA	0.189	NA	0.009
3919	NA	0.197	NA	0.010
4009	NA	0.202	NA	0.010
4129	NA	0.204	NA	0.010
4219	NA	0.204	NA	0.010
4309	NA	0.206	NA	0.010
4429	NA	0.210	NA	0.011
4519	NA	0.214	NA	0.011
4609	NA	0.219	NA	0.011
4729	NA	0.224	NA	0.012
4819	NA	0.227	NA	0.012
4909	NA	0.229	NA	0.012
5029	NA	0.231	NA	0.012
5119	NA	0.236	NA	0.012
5209	NA	0.240	NA	0.013
5329	NA	0.249	NA	0.013
5419	NA	0.253	NA	0.013
5509	NA	0.256	NA	0.013
5629	NA	0.255	NA	0.014
5719	NA	0.255	NA	0.014
5809	NA	0.255	NA	0.014
5929	NA	0.259	NA	0.014
6019	NA	0.263	NA	0.015
6109	NA	0.268	NA	0.015
6229	NA	0.275	NA	0.015
6319	NA	0.279	NA	0.015
6409	NA	0.283	NA	0.016
6529	NA	0.288	NA	0.016
6619	NA	0.294	NA	0.016
6709	NA	0.303	NA	0.016
6829	NA	0.311	NA	0.017
6919	NA	0.318	NA	0.017
7009	NA	0.320	NA	0.017
7129	NA	0.323	NA	0.017
7219	NA	0.326	NA	0.018
7309	NA	0.332	NA	0.018
7429	NA	0.344	NA	0.018
7519	NA	0.355	NA	0.018
7609	NA	0.361	NA	0.019
7729	NA	0.366	NA	0.019
7819	NA	0.367	NA	0.019
7909	NA	0.367	NA	0.019
8029	NA	0.373	NA	0.020
8119	NA	0.379	NA	0.020
8209	NA	0.388	NA	0.020
8329	NA	0.397	NA	0.020
8419	NA	0.398	NA	0.020
8509	NA	0.397	NA	0.021
8629	NA	0.397	NA	0.021
8719	NA	0.397	NA	0.021
8809	NA	0.402	NA	0.021

8929	NA	0.411	NA	0.022
9019	NA	0.419	NA	0.022
9109	NA	0.425	NA	0.022
9229	NA	0.426	NA	0.022
9319	NA	0.425	NA	0.023
9409	NA	0.425	NA	0.023
9529	NA	0.429	NA	0.023
9619	NA	0.436	NA	0.023
9709	NA	0.443	NA	0.024
9829	NA	0.444	NA	0.024
9919	NA	0.440	NA	0.024
10009	NA	0.433	NA	0.024

STRIPPED LOGGER DATA

Minutes	WL (m)	St (m)	Rwl (m)	t/r2
33	NA	0.002	NA	0.000
63	NA	0.003	NA	0.000
93	NA	0.002	NA	0.000
123	NA	0.005	NA	0.000
153	NA	0.007	NA	0.000
183	NA	0.007	NA	0.000
213	NA	0.007	NA	0.000
243	NA	0.008	NA	0.000
273	NA	0.010	NA	0.000
303	NA	0.013	NA	0.000
333	NA	0.017	NA	0.000
363	NA	0.020	NA	0.000
393	NA	0.023	NA	0.000
423	NA	0.026	NA	0.001
453	NA	0.031	NA	0.001
483	NA	0.037	NA	0.001
513	NA	0.035	NA	0.001
543	NA	0.040	NA	0.001
573	NA	0.043	NA	0.001
603	NA	0.045	NA	0.001
633	NA	0.048	NA	0.001
663	NA	0.050	NA	0.001
693	NA	0.053	NA	0.001
723	NA	0.056	NA	0.001
753	NA	0.057	NA	0.001
783	NA	0.059	NA	0.001
813	NA	0.064	NA	0.001
843	NA	0.066	NA	0.001
873	NA	0.070	NA	0.001
903	NA	0.074	NA	0.001
933	NA	0.077	NA	0.001
963	NA	0.081	NA	0.001
993	NA	0.086	NA	0.001
1023	NA	0.090	NA	0.001
1113	NA	0.101	NA	0.001
1203	NA	0.107	NA	0.001
1323	NA	0.116	NA	0.002
1413	NA	0.120	NA	0.002
1503	NA	0.123	NA	0.002
1623	NA	0.131	NA	0.002
1713	NA	0.139	NA	0.002
1803	NA	0.151	NA	0.002
1923	NA	0.167	NA	0.002
2013	NA	0.180	NA	0.002
2103	NA	0.187	NA	0.003
2223	NA	0.198	NA	0.003
2313	NA	0.208	NA	0.003
2403	NA	0.220	NA	0.003
2523	NA	0.232	NA	0.003
2613	NA	0.237	NA	0.003
2703	NA	0.242	NA	0.003
2823	NA	0.248	NA	0.003
2913	NA	0.251	NA	0.004
3003	NA	0.254	NA	0.004

3123	NA	0.262	NA	0.004
3213	NA	0.269	NA	0.004
3303	NA	0.275	NA	0.004
3423	NA	0.282	NA	0.004
3513	NA	0.289	NA	0.004
3603	NA	0.295	NA	0.004
3723	NA	0.304	NA	0.005
3813	NA	0.314	NA	0.005
3903	NA	0.322	NA	0.005
4023	NA	0.331	NA	0.005
4113	NA	0.331	NA	0.005
4203	NA	0.329	NA	0.005
4323	NA	0.329	NA	0.005
4413	NA	0.331	NA	0.005
4503	NA	0.334	NA	0.006
4623	NA	0.340	NA	0.006
4713	NA	0.345	NA	0.006
4803	NA	0.347	NA	0.006
4923	NA	0.349	NA	0.006
5013	NA	0.349	NA	0.006
5103	NA	0.354	NA	0.006
5223	NA	0.358	NA	0.006
5313	NA	0.366	NA	0.007
5403	NA	0.372	NA	0.007
5523	NA	0.375	NA	0.007
5613	NA	0.371	NA	0.007
5703	NA	0.369	NA	0.007
5823	NA	0.365	NA	0.007
5913	NA	0.367	NA	0.007
6003	NA	0.371	NA	0.007
6123	NA	0.375	NA	0.008
6213	NA	0.383	NA	0.008
6303	NA	0.385	NA	0.008
6423	NA	0.392	NA	0.008
6513	NA	0.398	NA	0.008
6603	NA	0.404	NA	0.008
6723	NA	0.419	NA	0.008
6813	NA	0.427	NA	0.008
6903	NA	0.433	NA	0.009
7023	NA	0.436	NA	0.009
7113	NA	0.437	NA	0.009
7203	NA	0.440	NA	0.009
7323	NA	0.447	NA	0.009
7413	NA	0.459	NA	0.009
7503	NA	0.471	NA	0.009
7623	NA	0.485	NA	0.009
7713	NA	0.490	NA	0.010
7803	NA	0.491	NA	0.010
7923	NA	0.490	NA	0.010
8013	NA	0.496	NA	0.010
8103	NA	0.503	NA	0.010
8223	NA	0.518	NA	0.010
8313	NA	0.525	NA	0.010
8403	NA	0.527	NA	0.010
8523	NA	0.523	NA	0.011
8613	NA	0.521	NA	0.011

8703	NA	0.519	NA	0.011
8823	NA	0.525	NA	0.011
8913	NA	0.533	NA	0.011
9003	NA	0.544	NA	0.011
9123	NA	0.553	NA	0.011
9213	NA	0.552	NA	0.011
9303	NA	0.551	NA	0.012
9423	NA	0.549	NA	0.012
9513	NA	0.552	NA	0.012
9603	NA	0.561	NA	0.012
9723	NA	0.570	NA	0.012

Appendix 'C': Water Chemistry Reports

Loxton Investigation Aquifer Tests

Job ID	Report Number	Date Sampled
LHP42P	R070143	28/02/04
LFP3P	R070143	03/03/04
LFP11	R070143	04/03/04
LFP12	R070143	07/03/04
LFP3GF	R070143	09/03/04
LHO14P	R070143	10/03/04
LFP12_2	R070123	16/07/04
LHP46	R077123	19/07/04
LHP44	R077124	23/07/04
LHP45	R077124	24/07/04
LFP16_2	R076351	10/09/04

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Australian Water Quality Centre

ANALYTICAL REPORT

06-APR-2004

Report No : R070143
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740159 LOXTON AQUIFER (FEB/MAR 2004) - C190768
Job ID : 1137946 LOXTON SITE 5 - LHP42P
Sample Point : 1195
Date Sampled : 28-FEB-2004 19:20

Analysis	Component name	Result	Unit
General Data			
[0-01]	pH	7.1	pH UNITS
[5-01]	Total dissolved solids (by EC)	28000	mg/L
[16-01]	Conductivity	44300	uS/cm
[211-01]	Dissolved solids by calculation	31500	mg/L
Physical Characteristics			
[18-01]	Turbidity	24	NTU
Cations			
[520-01]	Calcium	321	mg/L
[555-01]	Magnesium	666	mg/L
[580-01]	Potassium	223	mg/L
[600-01]	Sodium	10000	mg/L
Anions			
[102-01]	Bicarbonate	649	mg/L
[104-02]	Chloride	16100	mg/L
[105-01]	Fluoride	1.8	mg/L
[110-31]	Sulphate	3800	mg/L
Nutrients			
[100-01]	Ammonia as N	0.868	mg/L
[108-01]	Filt Reactive Phosphorus as P	0.006	mg/L
[109-01]	Phosphorus - Total as P	0.054	mg/L
[112-01]	TKN as Nitrogen	1.23	mg/L
[161-01]	Nitrate + Nitrite as N	<0.005	mg/L
Metals			
[512-21]	Arsenic - Inorganic	0.007	mg/L
[513-21]	Arsenic - Soluble Inorganic	<0.002	mg/L
[545-01]	Iron - Total	1.63	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	532	mg/L
[200-01]	Langelier Index	0.74	-
[202-01]	Total hardness as CaCO3	3546	mg/L
[203-01]	Carbonate hardness as CaCO3	531.9	mg/L
[204-01]	Noncarbonate hardness as CaCO3	3014	mg/L
[207-01]	Free carbon dioxide	80.0	mg/L
[208-01]	Total chlorides as NaCl	26500	mg/L

Notes
1. The last figure of the result value is a significant figure.
2. Samples are analysed as received.
3. The code shown in [ ] refers to the AWQC analysis code.
4. # determination of this component is not covered by NATA Accreditation.

This laboratory is accredited by the National Association of Testing Authorities, Australia.
The Test(s) reported herein have been performed in accordance with its terms of accreditation.
This document shall not be reproduced except in full.
Accreditation No. 1115 Chemical Testing. Accreditation No. 1390 Biological Testing.

06-APR-2004

Report No : R070143

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	6200	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

Job :1137946 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1137946 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 12/03/04)

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Australian Water Quality Centre

ANALYTICAL REPORT

06-APR-2004

Report No : R070143
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740159 LOXTON AQUIFER (FEB/MAR 2004) - C190768
Job ID : 1137942 LOXTON SITE 1 - LFP3P
Sample Point : 1195
Date Sampled : 03-MAR-2004 21:15

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.0	pH UNITS
5-01]	Total dissolved solids (by EC)	30000	mg/L
[16-01]	Conductivity	46200	uS/cm
[211-01]	Dissolved solids by calculation	32600	mg/L
Physical Characteristics			
[18-01]	Turbidity	46	NTU
Cations			
[520-01]	Calcium	589	mg/L
[555-01]	Magnesium	635	mg/L
[580-01]	Potassium	114	mg/L
[600-01]	Sodium	10700	mg/L
Anions			
[102-01]	Bicarbonate	435	mg/L
[104-02]	Chloride	18100	mg/L
[105-01]	Fluoride	1.8	mg/L
[110-31]	Sulphate	2190	mg/L
Nutrients			
[100-01]	Ammonia as N	2.81	mg/L
[108-01]	Filt Reactive Phosphorus as P	0.036	mg/L
[109-01]	Phosphorus - Total as P	0.037	mg/L
2-01]	TKN as Nitrogen	3.43	mg/L
[161-01]	Nitrate + Nitrite as N	0.020	mg/L
Metals			
[512-21]	Arsenic - Inorganic	<0.002	mg/L
[513-21]	Arsenic - Soluble Inorganic	<0.002	mg/L
[545-01]	Iron - Total	3.36	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	356	mg/L
[200-01]	Langelier Index	0.72	-
[202-01]	Total hardness as CaCO3	4086	mg/L
[203-01]	Carbonate hardness as CaCO3	356.5	mg/L
[204-01]	Noncarbonate hardness as CaCO3	3729	mg/L
[207-01]	Free carbon dioxide	69.1	mg/L
[208-01]	Total chlorides as NaCl	29900	mg/L

Notes
1. The last figure of the result value is a significant figure.
2. Samples are analysed as received.
3. The code shown in [ ] refers to the AWQC analysis code.
4. # determination of this component is not covered by NATA Accreditation.

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INTERNATIONAL QUALITY MANAGEMENT SYSTEM

NATA

06-APR-2004

Report No : R070143

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	30	/mL
[460-05]	Heterotrophic Iron Bacteria	Detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

Job :1137942 Analysis :460-05
Microscopical examination of the sample showed high numbers of non-filamentous iron associated microorganisms.

Job :1137942 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 12/03/04)

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ANALYTICAL REPORT

06-APR-2004

Report No : R070143
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740159 LOXTON AQUIFER (FEB/MAR 2004) - C190768
Job ID : 1137944 LOXTON SITE 3 - LFP11
Sample Point : 1195
Date Sampled : 04-MAR-2004 20:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	6.9	pH UNITS
[-01]	Total dissolved solids (by EC)	33000	mg/L
[16-01]	Conductivity	50700	uS/cm
[211-01]	Dissolved solids by calculation	35900	mg/L
Physical Characteristics			
[18-01]	Turbidity	60	NTU
Cations			
[520-01]	Calcium	1030	mg/L
[555-01]	Magnesium	880	mg/L
[580-01]	Potassium	57.2	mg/L
[600-01]	Sodium	10600	mg/L
Anions			
[102-01]	Bicarbonate	448	mg/L
[104-02]	Chloride	19400	mg/L
[105-01]	Fluoride	0.32	mg/L
[110-31]	Sulphate	3720	mg/L
Nutrients			
[100-01]	Ammonia as N	0.581	mg/L
[108-01]	Filt Reactive Phosphorus as P	0.009	mg/L
[109-01]	Phosphorus - Total as P	0.530	mg/L
2-01]	TKN as Nitrogen	0.85	mg/L
[161-01]	Nitrate + Nitrite as N	<0.005	mg/L
Metals			
[512-21]	Arsenic - Inorganic	<0.002	mg/L
[513-21]	Arsenic - Soluble Inorganic	<0.002	mg/L
[545-01]	Iron - Total	5.67	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	367	mg/L
[200-01]	Langelier Index	0.88	-
[202-01]	Total hardness as CaCO3	6190	mg/L
[203-01]	Carbonate hardness as CaCO3	367.1	mg/L
[204-01]	Noncarbonate hardness as CaCO3	5823	mg/L
[207-01]	Free carbon dioxide	89.6	mg/L
[208-01]	Total chlorides as NaCl	31900	mg/L

Notes
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2. Samples are analysed as received.
3. The code shown in [ ] refers to the AWQC analysis code.
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INTERNATIONAL QUALITY MANAGEMENT SYSTEM ISO 9001 WATA CERTIFIED

NATA

06-APR-2004

Report No : R070143

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	110	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

Job :1137944 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1137944 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 12/03/04)

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Australian Water Quality Centre

ANALYTICAL REPORT

06-APR-2004

Report No : R070143
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740159 LOXTON AQUIFER (FEB/MAR 2004) - C190768
Job ID : 1137945 LOXTON SITE 4 - LFP 12
Sample Point : 1195
Date Sampled : 07-MAR-2004 14:30

Analysis	Component name	Result	Unit
General Data			
[-01]	pH	6.8	pH UNITS
[15-01]	Total dissolved solids (by EC)	40000	mg/L
[16-01]	Conductivity	59600	uS/cm
[211-01]	Dissolved solids by calculation	46600	mg/L
Physical Characteristics			
[18-01]	Turbidity	51	NTU
Cations			
[520-01]	Calcium	1780	mg/L
[555-01]	Magnesium	1350	mg/L
[580-01]	Potassium	40.6	mg/L
[600-01]	Sodium	16100	mg/L
Anions			
[102-01]	Bicarbonate	322	mg/L
[104-02]	Chloride	23600	mg/L
[105-01]	Fluoride	0.23	mg/L
[110-31]	Sulphate	3570	mg/L
Nutrients			
[100-01]	Ammonia as N	0.356	mg/L
[108-01]	Filt Reactive Phosphorus as P	0.009	mg/L
[09-01]	Phosphorus - Total as P	0.335	mg/L
[112-01]	TKN as Nitrogen	0.58	mg/L
[161-01]	Nitrate + Nitrite as N	<0.005	mg/L
Metals			
[512-21]	Arsenic - Inorganic	0.005	mg/L
[513-21]	Arsenic - Soluble Inorganic	<0.002	mg/L
[545-01]	Iron - Total	6.30	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	264	mg/L
[200-01]	Langelier Index	0.84	-
[202-01]	Total hardness as CaCO3	10030	mg/L
[203-01]	Carbonate hardness as CaCO3	263.9	mg/L
[204-01]	Noncarbonate hardness as CaCO3	9765	mg/L
[207-01]	Free carbon dioxide	88.9	mg/L
[208-01]	Total chlorides as NaCl	38900	mg/L

Notes
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INTERNATIONAL QUALITY MANAGEMENT SYSTEM

NATA

06-APR-2004

Report No : R070143

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	20	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

Job :1137945 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1137945 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 12/03/04)

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ANALYTICAL REPORT

06-APR-2004

Report No : R070143
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740159 LOXTON AQUIFER (FEB/MAR 2004) - C190768
Job ID : 1137943 LOXTON SITE 2 - LFP36F
Sample Point : 1195 LFP3GF
Date Sampled : 09-MAR-2004 01:30

Analysis	Component name	Result	Unit
General Data			
]-01]	pH	7.1	pH UNITS
[5-01]	Total dissolved solids (by EC)	23000	mg/L
[16-01]	Conductivity	37200	uS/cm
[211-01]	Dissolved solids by calculation	25500	mg/L
Physical Characteristics			
[18-01]	Turbidity	20	NTU
Cations			
[520-01]	Calcium	280	mg/L
[555-01]	Magnesium	348	mg/L
[580-01]	Potassium	131	mg/L
[600-01]	Sodium	8640	mg/L
Anions			
[102-01]	Bicarbonate	554	mg/L
[104-02]	Chloride	13800	mg/L
[105-01]	Fluoride	1.3	mg/L
[110-31]	Sulphate	1970	mg/L
Nutrients			
[100-01]	Ammonia as N	3.57	mg/L
[108-01]	Filt Reactive Phosphorus as P	0.005	mg/L
9-01]	Phosphorus - Total as P	0.030	mg/L
[12-01]	TKN as Nitrogen	4.12	mg/L
[161-01]	Nitrate + Nitrite as N	<0.005	mg/L
Metals			
[512-21]	Arsenic - Inorganic	<0.002	mg/L
[513-21]	Arsenic - Soluble Inorganic	<0.002	mg/L
[545-01]	Iron - Total	1.55	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	454	mg/L
[200-01]	Langelier Index	0.60	-
[202-01]	Total hardness as CaCO3	2135	mg/L
[203-01]	Carbonate hardness as CaCO3	454.0	mg/L
[204-01]	Noncarbonate hardness as CaCO3	1681	mg/L
[207-01]	Free carbon dioxide	68.3	mg/L
[208-01]	Total chlorides as NaCl	22800	mg/L

Notes
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06-APR-2004

Report No : R070143

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	300	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

Job :1137943 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1137943 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 12/03/04)

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ANALYTICAL REPORT

06-APR-2004

Report No : R070143
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740159 LOXTON AQUIFER (FEB/MAR 2004) - C190768
Job ID : 1137947 LOXTON SITE 6 - LHO14P
Sample Point : 1195
Date Sampled : 10-MAR-2004 05:30

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.4	pH UNITS
-01]	Total dissolved solids (by EC)	16000	mg/L
[16-01]	Conductivity	27000	uS/cm
[211-01]	Dissolved solids by calculation	18100	mg/L
Physical Characteristics			
[18-01]	Turbidity	18	NTU
Cations			
[520-01]	Calcium	158	mg/L
[555-01]	Magnesium	296	mg/L
[580-01]	Potassium	132	mg/L
[600-01]	Sodium	6380	mg/L
Anions			
[102-01]	Bicarbonate	701	mg/L
[104-02]	Chloride	8470	mg/L
[105-01]	Fluoride	1.8	mg/L
[110-31]	Sulphate	2360	mg/L
Nutrients			
[100-01]	Ammonia as N	0.840	mg/L
[108-01]	Filt Reactive Phosphorus as P	<0.005	mg/L
[109-01]	Phosphorus - Total as P	0.055	mg/L
2-01]	TKN as Nitrogen	1.15	mg/L
[161-01]	Nitrate + Nitrite as N	<0.005	mg/L
Metals			
[512-21]	Arsenic - Inorganic	0.008	mg/L
[513-21]	Arsenic - Soluble Inorganic	0.003	mg/L
[545-01]	Iron - Total	1.44	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	574	mg/L
[200-01]	Langelier Index	0.69	-
[202-01]	Total hardness as CaCO3	1615	mg/L
[203-01]	Carbonate hardness as CaCO3	574.5	mg/L
[204-01]	Noncarbonate hardness as CaCO3	1040	mg/L
[207-01]	Free carbon dioxide	49.7	mg/L
[208-01]	Total chlorides as NaCl	14000	mg/L

Notes
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INTERNATIONAL QUALITY MANAGEMENT SYSTEM

NATA

06-APR-2004

Report No : R070143

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	40	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

Job :1137947 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1137947 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 12/03/04)

Joanne Clark
Senior Technical Officer

Greg O'Neil
Team Ldr Inorganic Chemistry

Approved Signatory for Inorganic Chemistry

Approved Signatory for Microbiology

Vanessa Capurso
Technical Officer

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ANALYTICAL REPORT

26-OCT-2004

Report No : R077123
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740180 LOXTON PUMP TEST - C190611
Job ID : 1147150 LOXTON PUMP - LFP12_2
Sample Point : 11438
Date Sampled : 16-JUL-2004 14:30

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.3	pH UNITS
[15-01]	Total dissolved solids (by EC)	40000	mg/L
[-01]	Conductivity	59900	uS/cm
[211-01]	Dissolved solids by calculation	42300	mg/L
Physical Characteristics			
[18-01]	Turbidity	68	NTU
Cations			
[520-01]	Calcium	1770	mg/L
[555-01]	Magnesium	1300	mg/L
[580-01]	Potassium	33.8	mg/L
[600-01]	Sodium	12300	mg/L
Anions			
[102-01]	Bicarbonate	312	mg/L
[104-02]	Chloride	23000	mg/L
[105-01]	Fluoride	0.28	mg/L
[110-31]	Sulphate	3730	mg/L
Nutrients			
[108-01]	Filt Reactive Phosphorus as P	<0.005	mg/L
[109-01]	Phosphorus - Total as P	0.531	mg/L
[111-01]	Silica - Reactive	16	mg/L
[2-01]	TKN as Nitrogen	1.07	mg/L
[1-01]	Nitrate + Nitrite as N	<0.005	mg/L
[162-01]	Nitrate + Nitrite as NO3	0.02	mg/L
Metals			
[505-01]	Aluminium - Total	<0.200	mg/L
[510-61]	Arsenic - Total	0.004	mg/L
[545-01]	Iron - Total	9.06	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	256	mg/L
[200-01]	Langelier Index	1.31	-
[201-01]	Sodium adsorption ratio	54.2	-
[202-01]	Total hardness as CaCO3	9773	mg/L
[210-01]	Ion balance	0.09	%

Notes
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INTERNATIONAL QUALITY MANAGEMENT SYSTEM ISO 9001 NATA CERTIFIED

NATA

26-OCT-2004

Report No : R077123

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	<10	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

Job :1147150 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1147150 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 23/07/04)

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ANALYTICAL REPORT

26-OCT-2004

Report No : R077123
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740180 LOXTON PUMP TEST - C190611
Job ID : 1147149 LOXTON PUMP - LHP46
Sample Point : 11438
Date Sampled : 19-JUL-2004 20:30

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	8.0	pH UNITS
[-01]	Total dissolved solids (by EC)	6400	mg/L
[-6-01]	Conductivity	11200	uS/cm
[211-01]	Dissolved solids by calculation	7090	mg/L
Physical Characteristics			
[18-01]	Turbidity	0.16	NTU
Cations			
[520-01]	Calcium	40.6	mg/L
[555-01]	Magnesium	118	mg/L
[580-01]	Potassium	55.6	mg/L
[600-01]	Sodium	2340	mg/L
Anions			
[102-01]	Bicarbonate	817	mg/L
[104-02]	Chloride	2920	mg/L
[105-01]	Fluoride	1.2	mg/L
[110-31]	Sulphate	1210	mg/L
Nutrients			
[108-01]	Filt Reactive Phosphorus as P	<0.005	mg/L
[109-01]	Phosphorus - Total as P	0.018	mg/L
[111-01]	Silica - Reactive	16	mg/L
[-12-01]	TKN as Nitrogen	0.17	mg/L
[-61-01]	Nitrate + Nitrite as N	4.80	mg/L
[162-01]	Nitrate + Nitrite as NO3	21.3	mg/L
Metals			
[505-01]	Aluminium - Total	<0.020	mg/L
[510-61]	Arsenic - Total	0.001	mg/L
[545-01]	Iron - Total	<0.030	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	670	mg/L
[200-01]	Langelier Index	0.82	-
[201-01]	Sodium adsorption ratio	42.0	-
[202-01]	Total hardness as CaCO3	587.1	mg/L
[210-01]	Ion balance	-2.74	%

Notes
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2. Samples are analysed as received.
3. The code shown in [ ] refers to the AWQC analysis code.
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INTERNATIONAL QUALITY MANAGEMENT SYSTEM

NATA

26-OCT-2004

Report No : R077123

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	1100	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

:1147149 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1147149 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 23/07/04)

This report supersedes report : *R076912*

Roger Kennedy
Team Ldr Inorganic Chemistry
Approved Signatory for Inorganic Chemistry

Vanessa Capurso
Technical Officer
Approved Signatory for Microbiology

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ANALYTICAL REPORT

26-OCT-2004

Report No : R077124
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740181 LOXTON PUMP TEST - C190612
Job ID : 1147161 LOXTON PUMP - LHP44
Sample Point : 11438
Date Sampled : 23-JUL-2004 14:30

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
5-01]	Total dissolved solids (by EC)	3600	mg/L
.6-01]	Conductivity	6340	uS/cm
[211-01]	Dissolved solids by calculation	4140	mg/L
Physical Characteristics			
[18-01]	Turbidity	4.2	NTU
Cations			
[520-01]	Calcium	31.4	mg/L
[555-01]	Magnesium	66.7	mg/L
[580-01]	Potassium	35.5	mg/L
[600-01]	Sodium	1390	mg/L
Anions			
[102-01]	Bicarbonate	835	mg/L
[104-02]	Chloride	1500	mg/L
[105-01]	Fluoride	1.5	mg/L
[110-31]	Sulphate	693	mg/L
Nutrients			
[108-01]	Filt Reactive Phosphorus as P	<0.005	mg/L
[109-01]	Phosphorus - Total as P	0.017	mg/L
[111-01]	Silica - Reactive	15	mg/L
12-01]	TKN as Nitrogen	0.27	mg/L
..61-01]	Nitrate + Nitrite as N	5.88	mg/L
[162-01]	Nitrate + Nitrite as NO3	26.0	mg/L
Metals			
[505-01]	Aluminium - Total	0.167	mg/L
[510-61]	Arsenic - Total	<0.001	mg/L
[545-01]	Iron - Total	0.341	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	684	mg/L
[200-01]	Langelier Index	0.61	-
[201-01]	Sodium adsorption ratio	32.1	-
[202-01]	Total hardness as CaCO3	353.2	mg/L
[210-01]	Ion balance	-1.86	%

Notes
1. The last figure of the result value is a significant figure.
2. Samples are analysed as received.
3. The code shown in [ ] refers to the AWQC analysis code.
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QUALITY MANAGEMENT SYSTEM

NATA

Report No : R077124

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	1200	/mL
[460-05]	Heterotrophic Iron Bacteria	Detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

:1147161 Analysis :460-05
Microscopical examination of the sample showed low numbers of non-filamentous iron associated microorganisms

Job :1147161 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 26/07/04)

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ANALYTICAL REPORT

26-OCT-2004

Report No : R077124
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740181 LOXTON PUMP TEST - C190612
Job ID : 1147162 LOXTON PUMP - LHP45
Sample Point : 11438
Date Sampled : 24-JUL-2004 14:30

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	8.4	pH UNITS
[15-01]	Total dissolved solids (by EC)	1900	mg/L
[30-01]	Conductivity	3330	uS/cm
[211-01]	Dissolved solids by calculation	1960	mg/L
Physical Characteristics			
[18-01]	Turbidity	0.29	NTU
Cations			
[520-01]	Calcium	21.6	mg/L
[555-01]	Magnesium	31.5	mg/L
[580-01]	Potassium	19.7	mg/L
[600-01]	Sodium	681	mg/L
Anions			
[102-01]	Bicarbonate	561	mg/L
[104-02]	Chloride	573	mg/L
[105-01]	Fluoride	0.99	mg/L
[110-31]	Sulphate	344	mg/L
Nutrients			
[108-01]	Filt Reactive Phosphorus as P	<0.005	mg/L
[109-01]	Phosphorus - Total as P	0.017	mg/L
[111-01]	Silica - Reactive	12	mg/L
[112-01]	TKN as Nitrogen	0.31	mg/L
[161-01]	Nitrate + Nitrite as N	10.8	mg/L
[162-01]	Nitrate + Nitrite as NO3	47.6	mg/L
Metals			
[505-01]	Aluminium - Total	0.036	mg/L
[510-61]	Arsenic - Total	0.003	mg/L
[545-01]	Iron - Total	0.034	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	460	mg/L
[200-01]	Langelier Index	0.80	-
[201-01]	Sodium adsorption ratio	21.9	-
[202-01]	Total hardness as CaCO3	183.7	mg/L
[210-01]	Ion balance	0.66	%

Notes
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INTERNATIONAL QUALITY MANAGEMENT SYSTEM ISO 9001 NATA CERTIFIED

NATA

26-OCT-2004

Report No : R077124

Analysis	Component name	Result	Unit
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	960	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

Comments:

, :1147162 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1147162 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 26/07/04)

This report supersedes report : *R076911*

Roger Kennedy
Team Ldr Inorganic Chemistry
Approved Signatory for Inorganic Chemistry

Vanessa Capurso
Technical Officer
Approved Signatory for Microbiology

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Australian Water Quality Centre

ANALYTICAL REPORT

06-OCT-2004

Report No : R076351
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740192 C190620, LOXTON PUMP TEST
Job ID : 1150535 LOXTON FLOODPLAIN SITE 3 (LFP16_2)
Sample Point : 11438
Date Sampled : 10-SEP-2004 09:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.1	pH UNITS
[5-01]	Total dissolved solids (by EC)	33000	mg/L
[6-01]	Conductivity	50200	uS/cm
[211-01]	Dissolved solids by calculation	29700	mg/L
Physical Characteristics			
[18-01]	Turbidity	28	NTU
Cations			
[520-01]	Calcium	80.4	mg/L
[555-01]	Magnesium	92.1	mg/L
[580-01]	Potassium	7.5	mg/L
[600-01]	Sodium	11600	mg/L
Anions			
[102-01]	Bicarbonate	461	mg/L
[104-02]	Chloride	17300	mg/L
[105-01]	Fluoride	0.85	mg/L
[110-31]	Sulphate	451	mg/L
Nutrients			
[108-01]	Filt Reactive Phosphorus as P	<0.005	mg/L
[109-01]	Phosphorus - Total as P	0.381	mg/L
[111-01]	Silica - Reactive	19	mg/L
[12-01]	TKN as Nitrogen	1.21	mg/L
[31-01]	Nitrate + Nitrite as N	<0.005	mg/L
[162-01]	Nitrate + Nitrite as NO3	0.02	mg/L
Metals			
[505-01]	Aluminium - Total	<0.200	mg/L
[545-01]	Iron - Total	1.98	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	378	mg/L
[200-01]	Langelier Index	-0.04	-
[201-01]	Sodium adsorption ratio	209	-
[202-01]	Total hardness as CaCO3	580.3	mg/L
[210-01]	Ion balance	0.92	%
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	<10	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

Notes
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NATA

06-OCT-2004

Report No : R076351

Comments:

Job :1150535 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1150535 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory on 14/09/04)

Phil Thomas
Senior Chemist
Approved Signatory for Inorganic Chemistry

Dzung Bui
Development Chemist

Vanessa Capurso
Technical Officer
Approved Signatory for Microbiology

Appendix 'D': Water Chemistry Reports, Loxton LHP47 long-term constant rate test

Request Number	Report Number	Date Sampled
C190643	R078834	27/11/04
C190646	R079320	02/12/04
C190647	R079566	07/12/04
C190648	R079605	09/12/04
C190649	R079603	16/12/04
C190650	R079565	22/12/04
C194801	R079987	05/01/05
C194802	R080736	11/01/05
C194803	R080566	19/01/05
C194804	R080981	25/01/05
C194806	R080983	02/02/05
C194807	R081403	09/02/05
C194808	R082667	15/02/05
C194809	R081994	25/02/05
C194811	R082859	02/03/05
C194812	R082904	16/03/05
C194813	R083177	24/03/05
C194814	R084552	12/04/05

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ANALYTICAL REPORT

14-DEC-2004

Report No : R078834
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740219 LOXTON SITE 7 PUMP TEST - C190643
Job ID : 1155942 LOXTON SITE 7 LONG TERM TEST LHP 47
Sample Point : 11438
Date Sampled : 27-NOV-2004 08:05

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
[15-01]	Total dissolved solids (by EC)	3000	mg/L
[1]	Conductivity	5340	uS/cm
[-01]	Dissolved solids by calculation	3270	mg/L
Cations			
[520-01]	Calcium	30.1	mg/L
[555-01]	Magnesium	39.5	mg/L
[580-01]	Potassium	28.0	mg/L
[600-01]	Sodium	1090	mg/L
Anions			
[102-01]	Bicarbonate	829	mg/L
[104-02]	Chloride	1130	mg/L
[105-01]	Fluoride	6.6	mg/L
[110-31]	Sulphate	523	mg/L
Nutrients			
[111-01]	Silica - Reactive	17	mg/L
[161-01]	Nitrate + Nitrite as N	4.93	mg/L
[162-01]	Nitrate + Nitrite as NO3	21.8	mg/L
Metals			
[505-01]	Aluminium - Total	0.022	mg/L
[545-01]	Iron - Total	0.078	mg/L
[d Data			
[1 -01]	Alkalinity as calcium carbonate	679	mg/L
[200-01]	Langelier Index	0.63	-
[201-01]	Sodium adsorption ratio	30.8	-
[202-01]	Total hardness as CaCO3	237.6	mg/L
[210-01]	Ion balance	-3.91	%

Roger Kennedy
Team Ldr Inorganic Chemistry

Approved Signatory for Inorganic Chemistry

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ANALYTICAL REPORT

29-DEC-2004

Report No : R079320
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740221 LOXTON MURTHO PUMP TEST - C190646
Job ID : 1156565 LONG TERM PUMP TEST - LOXTON SITE 7 OBS # LHP47
Sample Point : 11438
Date Sampled : 02-DEC-2004 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.8	pH UNITS
[-01]	Total dissolved solids (by EC)	3400	mg/L
[-01]	Conductivity	6020	uS/cm
[211-01]	Dissolved solids by calculation	3640	mg/L
Cations			
[520-01]	Calcium	31.8	mg/L
[555-01]	Magnesium	54.7	mg/L
[580-01]	Potassium	33.0	mg/L
[600-01]	Sodium	1250	mg/L
Anions			
[102-01]	Bicarbonate	824	mg/L
[104-02]	Chloride	1280	mg/L
[105-01]	Fluoride	6.0	mg/L
[110-31]	Sulphate	560	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	5.10	mg/L
[162-01]	Nitrate + Nitrite as NO3	22.6	mg/L
Metals			
[505-01]	Aluminium - Total	0.052	mg/L
[-01]	Iron - Total	0.088	mg/L
ived Data			
[101-01]	Alkalinity as calcium carbonate	675	mg/L
[200-01]	Langelier Index	0.49	-
[201-01]	Sodium adsorption ratio	31.2	-
[202-01]	Total hardness as CaCO3	304.8	mg/L
[210-01]	Ion balance	-0.50	%

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ANALYTICAL REPORT

05-JAN-2005

Report No : R079566
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740222 C190647, LOXTON PUMP TEST
Job ID : 1156725 LOXTON SITE 7, OBS #LHP47
Sample Point : 11438
Date Sampled : 07-DEC-2004 11:25

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
[-01]	Total dissolved solids (by EC)	3500	mg/L
[-01]	Conductivity	6270	uS/cm
[211-01]	Dissolved solids by calculation	3720	mg/L
Cations			
[520-01]	Calcium	35.8	mg/L
[555-01]	Magnesium	66.2	mg/L
[580-01]	Potassium	38.7	mg/L
[600-01]	Sodium	1190	mg/L
Anions			
[102-01]	Bicarbonate	825	mg/L
[104-02]	Chloride	1440	mg/L
[105-01]	Fluoride	6.1	mg/L
[110-31]	Sulphate	525	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	5.34	mg/L
[162-01]	Nitrate + Nitrite as NO3	23.7	mg/L
Metals			
[505-01]	Aluminium - Total	0.051	mg/L
[5-01]	Iron - Total	0.221	mg/L
ived Data			
[101-01]	Alkalinity as calcium carbonate	676	mg/L
[200-01]	Langelier Index	0.67	-
[201-01]	Sodium adsorption ratio	27.2	-
[202-01]	Total hardness as CaCO3	362.0	mg/L
[210-01]	Ion balance	-4.56	%
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	300	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

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05-JAN-2005

Report No : R079566

Comments:

Job :1156725 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1156725 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory at 1300hrs on 08/12/04)

Roger Kennedy
Team Ldr Inorganic Chemistry

Approved Signatory for Inorganic Chemistry

Approved Signatory for Microbiology

Kerry Carabetta
Technical Officer

NATA Accredited Laboratory
No. 1115 Chemical Testing; No. 1390 Biological Testing
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ANALYTICAL REPORT

07-JAN-2005

Report No : R079605
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740224 LOXTON PUMP TEST - C190648
Job ID : 1156937 LOXTON SITE 7 OBS #LHP47
Sample Point : 11438
Date Sampled : 09-DEC-2004 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.8	pH UNITS
[15-01]	Total dissolved solids (by EC)	3700	mg/L
01]	Conductivity	6510	uS/cm
[, 1-01]	Dissolved solids by calculation	4070	mg/L
Cations			
[520-01]	Calcium	37.5	mg/L
[555-01]	Magnesium	71.6	mg/L
[580-01]	Potassium	34.7	mg/L
[600-01]	Sodium	1320	mg/L
Anions			
[102-01]	Bicarbonate	816	mg/L
[104-02]	Chloride	1530	mg/L
[105-01]	Fluoride	5.6	mg/L
[110-31]	Sulphate	652	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	6.24	mg/L
[162-01]	Nitrate + Nitrite as NO3	27.7	mg/L
Metals			
[505-01]	Aluminium - Total	0.123	mg/L
[545-01]	Iron - Total	0.134	mg/L
ed Data			
[1-01]	Alkalinity as calcium carbonate	669	mg/L
[200-01]	Langelier Index	0.53	-
[201-01]	Sodium adsorption ratio	29.1	-
[202-01]	Total hardness as CaCO3	388.4	mg/L
[210-01]	Ion balance	-3.59	%

Roger Kennedy
Tm Ldr Inorganic Chem

Approved Signatory for Inorganic Chemistry

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ANALYTICAL REPORT

07-JAN-2005

Report No : R079603
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740225 C190649 - LOXTON PUMP TEST SITE 7
Job ID : 1157563 LOXTON SITE 7 - OBS #LHP47
Sample Point : 11438
Date Sampled : 16-DEC-2004 11:55

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
[1]	Total dissolved solids (by EC)	3600	mg/L
[01]	Conductivity	6430	uS/cm
[211-01]	Dissolved solids by calculation	4000	mg/L
Cations			
[520-01]	Calcium	38.8	mg/L
[555-01]	Magnesium	77.7	mg/L
[580-01]	Potassium	36.1	mg/L
[600-01]	Sodium	1350	mg/L
Anions			
[102-01]	Bicarbonate	817	mg/L
[104-02]	Chloride	1400	mg/L
[105-01]	Fluoride	6.2	mg/L
[110-31]	Sulphate	672	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	5.62	mg/L
[162-01]	Nitrate + Nitrite as NO3	24.9	mg/L
Metals			
[505-01]	Aluminium - Total	0.099	mg/L
5-01]	Iron - Total	0.146	mg/L
Derived Data			
[101-01]	Alkalinity as calcium carbonate	670	mg/L
[200-01]	Langelier Index	0.73	-
[201-01]	Sodium adsorption ratio	28.8	-
[202-01]	Total hardness as CaCO3	416.7	mg/L
[210-01]	Ion balance	0.16	%
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	360	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	
[9378-01]	Microbiology Sample Comment	See comment	

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Notes
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2. Samples are analysed as received.
3. The code shown in [ ] refers to the AWQC analysis code.
4. # determination of this component is not covered by NATA Accreditation.

07-JAN-2005

Report No : R079603

Comments:

Job :1157563 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Job :1157563 Analysis :9378-01
Sample not received within 24 hours of collection (received in the laboratory at 1230hrs on 17/12/04)

Roger Kennedy
Tm Ldr Inorganic Chem

Approved Signatory for Inorganic Chemistry

Approved Signatory for Microbiology Kerry Carabetta
Technical Officer

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ANALYTICAL REPORT

05-JAN-2005

Report No : R079565
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740226 C190650 - LOXTON PUMP TEST SITE 7
Job ID : 1157950 LOXTON SITE 7 LONG TERM PUMP TEST OBS #LHP47
Sample Point : 11438
Date Sampled : 22-DEC-2004 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
[15-01]	Total dissolved solids (by EC)	3900	mg/L
)1]	Conductivity	6940	uS/cm
[211-01]	Dissolved solids by calculation	4260	mg/L
Cations			
[520-01]	Calcium	36.7	mg/L
[555-01]	Magnesium	76.0	mg/L
[580-01]	Potassium	38.5	mg/L
[600-01]	Sodium	1410	mg/L
Anions			
[102-01]	Bicarbonate	809	mg/L
[104-02]	Chloride	1590	mg/L
[105-01]	Fluoride	6.1	mg/L
[110-31]	Sulphate	690	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	5.72	mg/L
[162-01]	Nitrate + Nitrite as NO3	25.3	mg/L
Metals			
[505-01]	Aluminium - Total	0.545	mg/L
[545-01]	Iron - Total	0.084	mg/L
ved Data			
[101-01]	Alkalinity as calcium carbonate	663	mg/L
[200-01]	Langelier Index	0.70	-
[201-01]	Sodium adsorption ratio	30.6	-
[202-01]	Total hardness as CaCO3	404.4	mg/L
[210-01]	Ion balance	-1.84	%

Roger Kennedy
Team Ldr Inorganic Chemistry

Approved Signatory for Inorganic Chemistry

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2. Samples are analysed as received.
3. The code shown in [ ] refers to the AWQC analysis code.
4. # determination of this component is not covered by NATA Accreditation.

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ANALYTICAL REPORT

20-JAN-2005

Report No : R079987
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740229 C194801 - LOXTON PUMP TEST - SITE 7
Job ID : 1158469 LOXTON SITE 7 PUMP TEST OBS #LHP47
Sample Point : 11438
Date Sampled : 05-JAN-2005 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.8	pH UNITS
[15-01]	Total dissolved solids (by EC)	3900	mg/L
)1]	Conductivity	6940	uS/cm
[1-01]	Dissolved solids by calculation	4310	mg/L
Cations			
[520-01]	Calcium	38.0	mg/L
[555-01]	Magnesium	79.3	mg/L
[580-01]	Potassium	37.5	mg/L
[600-01]	Sodium	1410	mg/L
Anions			
[102-01]	Bicarbonate	814	mg/L
[104-02]	Chloride	1630	mg/L
[105-01]	Fluoride	5.8	mg/L
[110-31]	Sulphate	695	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	6.22	mg/L
[162-01]	Nitrate + Nitrite as NO3	27.6	mg/L
Metals			
[505-01]	Aluminium - Total	0.825	mg/L
[545-01]	Iron - Total	0.188	mg/L
red Data			
[1-01]	Alkalinity as calcium carbonate	667	mg/L
[200-01]	Langelier Index	0.60	-
[201-01]	Sodium adsorption ratio	29.8	-
[202-01]	Total hardness as CaCO3	421.3	mg/L
[210-01]	Ion balance	-2.77	%

Joanne Clark
Senior Technical Officer

Approved Signatory for Inorganic Chemistry

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Australian Water Quality Centre

ANALYTICAL REPORT

09-FEB-2005

Report No : R080736
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740230 C194802 - LOXTON PUMP TEST SITE 7
Job ID : 1158765 LOXTON SITE 7 PUMP TEST OBS #LHP47
Sample Point : 11438
Date Sampled : 11-JAN-2005 12:45

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.8	pH UNITS
[15-01]	Total dissolved solids (by EC)	3900	mg/L
01]	Conductivity	7010	uS/cm
[211-01]	Dissolved solids by calculation	4290	mg/L
Cations			
[520-01]	Calcium	41.3	mg/L
[555-01]	Magnesium	84.5	mg/L
[580-01]	Potassium	38.5	mg/L
[600-01]	Sodium	1520	mg/L
Anions			
[102-01]	Bicarbonate	818	mg/L
[104-02]	Chloride	1470	mg/L
[105-01]	Fluoride	6.1	mg/L
[110-31]	Sulphate	716	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	5.89	mg/L
[162-01]	Nitrate + Nitrite as NO3	26.1	mg/L
Metals			
[505-01]	Aluminium - Total	<0.020	mg/L
5-01]	Iron - Total	0.055	mg/L
ived Data			
[101-01]	Alkalinity as calcium carbonate	670	mg/L
[200-01]	Langelier Index	0.66	-
[201-01]	Sodium adsorption ratio	31.1	-
[202-01]	Total hardness as CaCO3	451.0	mg/L
[210-01]	Ion balance	3.67	%
Microbiological			
[460-01]	Heterotrophic Iron Bacteria	10	/mL
[460-05]	Heterotrophic Iron Bacteria	Not detected	

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CERTIFIED QUALITY MANAGEMENT SYSTEM ISO 9001

09-FEB-2005

Report No : R080736

Comments:

Job :1158765 Analysis :460-05
Microscopical examination of the sample did not detect iron associated microorganisms

Roger Kennedy
Tm Ldr Inorganic Chem

Approved Signatory for Inorganic Chemistry

Approved Signatory for Microbiology

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ANALYTICAL REPORT

04-FEB-2005

Report No : R080566
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740232 C194803 - LOXTON PUMP TEST SITE 7
Job ID : 1159477 LOXTON SITE 7 LONGTERM PUMP TEST OBS #LHP47
Sample Point : 11438
Date Sampled : 19-JAN-2005 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.8	pH UNITS
[15-01]	Total dissolved solids (by EC)	3900	mg/L
01]	Conductivity	7010	uS/cm
-01]	Dissolved solids by calculation	4360	mg/L
Cations			
[520-01]	Calcium	41.5	mg/L
[555-01]	Magnesium	84.6	mg/L
[580-01]	Potassium	38.5	mg/L
[600-01]	Sodium	1470	mg/L
Anions			
[102-01]	Bicarbonate	825	mg/L
[104-02]	Chloride	1600	mg/L
[105-01]	Fluoride	5.8	mg/L
[110-31]	Sulphate	700	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	6.20	mg/L
[162-01]	Nitrate + Nitrite as NO3	27.5	mg/L
Metals			
[505-01]	Aluminium - Total	0.101	mg/L
[545-01]	Iron - Total	0.080	mg/L
ved Data			
-01]	Alkalinity as calcium carbonate	676	mg/L
[200-01]	Langelier Index	0.61	-
[201-01]	Sodium adsorption ratio	30.2	-
[202-01]	Total hardness as CaCO3	452.0	mg/L
[210-01]	Ion balance	0.11	%

Joanne Clark
Senior Technical Officer

Greg O'Neil
Tm Ldr Inorganic Chemistry

Approved Signatory for Inorganic Chemistry

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ANALYTICAL REPORT

16-FEB-2005

Report No : R080981
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740233 LOXTON PUMP TEST SITE 7 - C194804
Job ID : 1159833 LOXTON SITE 7 LONGTERM PUMP TEST # LHP47
Sample Point : 11438
Date Sampled : 25-JAN-2005 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
[15-01]	Total dissolved solids (by EC)	4000	mg/L
01]	Conductivity	7030	uS/cm
[211-01]	Dissolved solids by calculation	4310	mg/L
Cations			
[520-01]	Calcium	40.8	mg/L
[555-01]	Magnesium	86.0	mg/L
[580-01]	Potassium	37.2	mg/L
[600-01]	Sodium	1480	mg/L
Anions			
[102-01]	Bicarbonate	803	mg/L
[104-02]	Chloride	1540	mg/L
[105-01]	Fluoride	6.2	mg/L
[110-31]	Sulphate	711	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	5.89	mg/L
[162-01]	Nitrate + Nitrite as NO3	26.1	mg/L
Metals			
[505-01]	Aluminium - Total	<0.020	mg/L
[545-01]	Iron - Total	0.042	mg/L
ved Data			
[101-01]	Alkalinity as calcium carbonate	658	mg/L
[200-01]	Langelier Index	0.66	-
[201-01]	Sodium adsorption ratio	30.2	-
[202-01]	Total hardness as CaCO3	456.2	mg/L
[210-01]	Ion balance	1.64	%

Roger Kennedy
Tm Ldr Inorganic Chem

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ANALYTICAL REPORT

16-FEB-2005

Report No : R080983
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740235 C194806 - LOXTON PUMP TEST SITE 7
Job ID : 1160268 LOXTON SITE 7 - LONGTERM PUMP TEST - BORE #LHP47
Sample Point : 11438
Date Sampled : 02-FEB-2005 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
[15-01]	Total dissolved solids (by EC)	3900	mg/L
01]	Conductivity	6990	uS/cm
[211-01]	Dissolved solids by calculation	4330	mg/L
Cations			
[520-01]	Calcium	39.6	mg/L
[555-01]	Magnesium	84.7	mg/L
[580-01]	Potassium	37.7	mg/L
[600-01]	Sodium	1470	mg/L
Anions			
[102-01]	Bicarbonate	811	mg/L
[104-02]	Chloride	1580	mg/L
[105-01]	Fluoride	5.5	mg/L
[110-31]	Sulphate	698	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	6.26	mg/L
[162-01]	Nitrate + Nitrite as NO3	27.7	mg/L
Metals			
[505-01]	Aluminium - Total	<0.020	mg/L
[5-01]	Iron - Total	0.070	mg/L
ived Data			
[101-01]	Alkalinity as calcium carbonate	665	mg/L
[200-01]	Langelier Index	0.65	-
[201-01]	Sodium adsorption ratio	30.2	-
[202-01]	Total hardness as CaCO3	447.5	mg/L
[210-01]	Ion balance	0.41	%

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Tm Ldr Inorganic Chem

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ANALYTICAL REPORT

25-FEB-2005

Report No : R081403
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740236 C194807 - LOXTON PUMP SITE 7
Job ID : 1160836 LOXTON SITE 7 PUMP TEST - BORE # LHP47
Sample Point : 11438
Date Sampled : 09-FEB-2005 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.7	pH UNITS
[15-01]	Total dissolved solids (by EC)	3900	mg/L
01]	Conductivity	6980	uS/cm
[211-01]	Dissolved solids by calculation	4310	mg/L
Cations			
[520-01]	Calcium	39.7	mg/L
[555-01]	Magnesium	81.6	mg/L
[580-01]	Potassium	38.0	mg/L
[600-01]	Sodium	1470	mg/L
Anions			
[102-01]	Bicarbonate	810	mg/L
[104-02]	Chloride	1570	mg/L
[105-01]	Fluoride	5.6	mg/L
[110-31]	Sulphate	698	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	6.24	mg/L
[162-01]	Nitrate + Nitrite as NO3	27.6	mg/L
Metals			
[505-01]	Aluminium - Total	0.056	mg/L
[545-01]	Iron - Total	0.062	mg/L
ived Data			
[101-01]	Alkalinity as calcium carbonate	664	mg/L
[200-01]	Langelier Index	0.49	-
[201-01]	Sodium adsorption ratio	30.6	-
[202-01]	Total hardness as CaCO3	435.4	mg/L
[210-01]	Ion balance	0.46	%

Roger Kennedy
Tm Ldr Inorganic Chem

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ANALYTICAL REPORT

04-APR-2005

Report No : R082667
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740237 C194808 - LOXTON PUMP TEST SITE 7
Job ID : 1161435 LOXTON SITE 7 PUMP TEST
Sample Point : 11438
Date Sampled : 15-FEB-2005 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
[-01]	Total dissolved solids (by EC)	4100	mg/L
[-01]	Conductivity	7190	uS/cm
[1-01]	Dissolved solids by calculation	4380	mg/L
Cations			
[520-01]	Calcium	38.9	mg/L
[555-01]	Magnesium	81.7	mg/L
[580-01]	Potassium	37.6	mg/L
[600-01]	Sodium	1490	mg/L
Anions			
[102-01]	Bicarbonate	807	mg/L
[104-02]	Chloride	1600	mg/L
[105-01]	Fluoride	5.8	mg/L
[110-31]	Sulphate	706	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	5.91	mg/L
[162-01]	Nitrate + Nitrite as NO3	26.2	mg/L
Metals			
[-05-01]	Aluminium - Total	0.050	mg/L
[-5-01]	Iron - Total	0.064	mg/L
rived Data			
[-01-01]	Alkalinity as calcium carbonate	661	mg/L
[200-01]	Langelier Index	0.64	-
[201-01]	Sodium adsorption ratio	31.2	-
[202-01]	Total hardness as CaCO3	433.7	mg/L
[210-01]	Ion balance	0.50	%

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Tm Ldr Inorganic Chem
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ANALYTICAL REPORT

14-MAR-2005

Report No : R081994
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740238 LOXTON PUMP SITE 7 - C194809
Job ID : 1162246 LOXTON SITE 7 LONGTERM PUMP TEST BORE # LH47
Sample Point : 11438
Date Sampled : 25-FEB-2005 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.8	pH UNITS
[15-01]	Total dissolved solids (by EC)	4100	mg/L
[1]	Conductivity	7350	uS/cm
[-01]	Dissolved solids by calculation	4500	mg/L
Cations			
[520-01]	Calcium	41.3	mg/L
[555-01]	Magnesium	87.5	mg/L
[580-01]	Potassium	39.3	mg/L
[600-01]	Sodium	1540	mg/L
Anions			
[102-01]	Bicarbonate	811	mg/L
[104-02]	Chloride	1660	mg/L
[105-01]	Fluoride	5.3	mg/L
[110-31]	Sulphate	711	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	6.14	mg/L
[162-01]	Nitrate + Nitrite as NO3	27.2	mg/L
Metals			
[505-01]	Aluminium - Total	<0.020	mg/L
[545-01]	Iron - Total	0.036	mg/L
Calculated Data			
[-01]	Alkalinity as calcium carbonate	665	mg/L
[200-01]	Langelier Index	0.58	-
[201-01]	Sodium adsorption ratio	31.1	-
[202-01]	Total hardness as CaCO3	463.3	mg/L
[210-01]	Ion balance	0.99	%

Roger Kennedy
Tm Ldr Inorganic Chem

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ANALYTICAL REPORT

06-APR-2005

Report No : R082859
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740240 LOXTON PUMP SITE 7 - C194811
Job ID : 1162548 LOXTON LONG TERM PUMP TEST BORE # LHP47
Sample Point : 11438
Date Sampled : 02-MAR-2005 00:00

Analysis	Component name	Result	Unit
General Data			
[-01]	pH	7.8	pH UNITS
[15-01]	Total dissolved solids (by EC)	4000	mg/L
[-01]	Conductivity	7160	uS/cm
[1-01]	Dissolved solids by calculation	4290	mg/L
Cations			
[520-01]	Calcium	39.8	mg/L
[555-01]	Magnesium	82.4	mg/L
[580-01]	Potassium	38.6	mg/L
[600-01]	Sodium	1460	mg/L
Anions			
[102-01]	Bicarbonate	813	mg/L
[104-02]	Chloride	1550	mg/L
[105-01]	Fluoride	5.1	mg/L
[110-31]	Sulphate	700	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	5.97	mg/L
[162-01]	Nitrate + Nitrite as NO3	26.4	mg/L
Metals			
[505-01]	Aluminium - Total	<0.020	mg/L
[545-01]	Iron - Total	0.032	mg/L
rived Data			
[1-01]	Alkalinity as calcium carbonate	666	mg/L
[200-01]	Langelier Index	0.61	-
[201-01]	Sodium adsorption ratio	30.4	-
[202-01]	Total hardness as CaCO3	438.5	mg/L
[210-01]	Ion balance	0.74	%

Roger Kennedy
Tm Ldr Inorganic Chem

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ANALYTICAL REPORT

08-APR-2005

Report No : R082904
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740241 LOXTON PUMP TEST SITE 7 - C194812
Job ID : 1163723 BORE # LHP47
Sample Point : 11438
Date Sampled : 16-MAR-2005 00:00

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
[15-01]	Total dissolved solids (by EC)	3800	mg/L
[3-01]	Conductivity	6730	uS/cm
[1-01]	Dissolved solids by calculation	4180	mg/L
Cations			
[520-01]	Calcium	39.9	mg/L
[555-01]	Magnesium	80.4	mg/L
[580-01]	Potassium	37.3	mg/L
[600-01]	Sodium	1390	mg/L
Anions			
[102-01]	Bicarbonate	810	mg/L
[104-02]	Chloride	1530	mg/L
[105-01]	Fluoride	5.3	mg/L
[110-31]	Sulphate	685	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	5.81	mg/L
[162-01]	Nitrate + Nitrite as NO3	25.8	mg/L
Metals			
[25-01]	Aluminium - Total	<0.020	mg/L
[545-01]	Iron - Total	<0.030	mg/L
rived Data			
[1-01]	Alkalinity as calcium carbonate	664	mg/L
[200-01]	Langelier Index	0.72	-
[201-01]	Sodium adsorption ratio	29.2	-
[202-01]	Total hardness as CaCO3	430.7	mg/L
[210-01]	Ion balance	-0.92	%

Roger Kennedy
Tm Ldr Inorganic Chem

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ANALYTICAL REPORT

14-APR-2005

Report No : R083177
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740242 LOXTON PUMP TEST SITE 7 - C194813
Job ID : 1164311 LOXTON PUMP LONG TERM PUMP TEST BORE # LHP47
Sample Point : 11438
Date Sampled : 24-MAR-2005 08:37

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.9	pH UNITS
5-01]	Total dissolved solids (by EC)	3700	mg/L
-01]	Conductivity	6650	uS/cm
1-01]	Dissolved solids by calculation	4130	mg/L
Cations			
[520-01]	Calcium	37.6	mg/L
[555-01]	Magnesium	76.3	mg/L
[580-01]	Potassium	36.3	mg/L
[600-01]	Sodium	1410	mg/L
Anions			
[102-01]	Bicarbonate	815	mg/L
[104-02]	Chloride	1480	mg/L
[105-01]	Fluoride	5.4	mg/L
[110-31]	Sulphate	667	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	6.09	mg/L
[162-01]	Nitrate + Nitrite as NO3	27.0	mg/L
Metals			
505-01]	Aluminium - Total	<0.200	mg/L
5-01]	Iron - Total	<0.300	mg/L
ived Data			
01-01]	Alkalinity as calcium carbonate	668	mg/L
[200-01]	Langelier Index	0.65	-
[201-01]	Sodium adsorption ratio	30.4	-
[202-01]	Total hardness as CaCO3	407.9	mg/L
[210-01]	Ion balance	0.59	%

Roger Kennedy
Tm Ldr Inorganic Chemistry

Approved Signatory for Inorganic Chemistry

NATA

Corporate Accreditation No. 1115
Chemical and Biological Testing
This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025

Notes
1. The last figure of the result value is a significant figure.
2. Samples are analysed as received.
3. The code shown in [ ] refers to the AWQC analysis code.
4. # determination of this component is not covered by NATA Accreditation.

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Australian Water Quality Centre

ANALYTICAL REPORT

23-MAY-2005

Report No : R084552
Account : 108874 DEPT WATER LAND BIODIV CONS- GENERAL- AWQC 187
Project : 1088740245 C194814 - LOXTON PUMP SITE 7
Job ID : 1165399 BORE #LHP47
Sample Point : 11438
Date Sampled : 12-APR-2005 15:30

Analysis	Component name	Result	Unit
General Data			
[10-01]	pH	7.7	pH UNITS
[15-01]	Total dissolved solids (by EC)	4400	mg/L
[16-01]	Conductivity	7710	uS/cm
1-01]	Dissolved solids by calculation	4860	mg/L
Cations			
[520-01]	Calcium	42.5	mg/L
[555-01]	Magnesium	92.1	mg/L
[580-01]	Potassium	40.6	mg/L
[600-01]	Sodium	1610	mg/L
Anions			
[102-01]	Bicarbonate	828	mg/L
[104-02]	Chloride	1850	mg/L
[105-01]	Fluoride	5.6	mg/L
[110-31]	Sulphate	801	mg/L
Nutrients			
[111-01]	Silica - Reactive	16	mg/L
[161-01]	Nitrate + Nitrite as N	6.24	mg/L
[162-01]	Nitrate + Nitrite as NO3	27.6	mg/L
Metals			
[505-01]	Aluminium - Total	0.030	mg/L
[545-01]	Iron - Total	0.132	mg/L
Derived Data			
1-01]	Alkalinity as calcium carbonate	679	mg/L
[200-01]	Langelier Index	0.56	-
[201-01]	Sodium adsorption ratio	31.8	-
[202-01]	Total hardness as CaCO3	485.3	mg/L
[210-01]	Ion balance	-1.46	%

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Notes
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ABN 69336525019

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