P-05-160

Supplement 1

August 2007

Oskarshamn site investigation

Difference flow logging of borehole KLX05

Subarea Laxemar

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Description

In the present supplement to SKB P-05-160 all groundwater head calculations have been redone on revised borehole elevation data (Z-coordinates).

The borehole coordinates that formed the basis for this revision of groundwater head data were retrieved from SKB Sicada 2007-03-07 EG154 (provided by SKB in file Krökdata_korrigerade_070307_KLX03-KLX29 utom KLX15, HLX13,15,26-28,32,36-38,43.xls) /Stenberg and Håkansson 2007/.

A slight displacement in the fracture frequency graph has also been fixed.

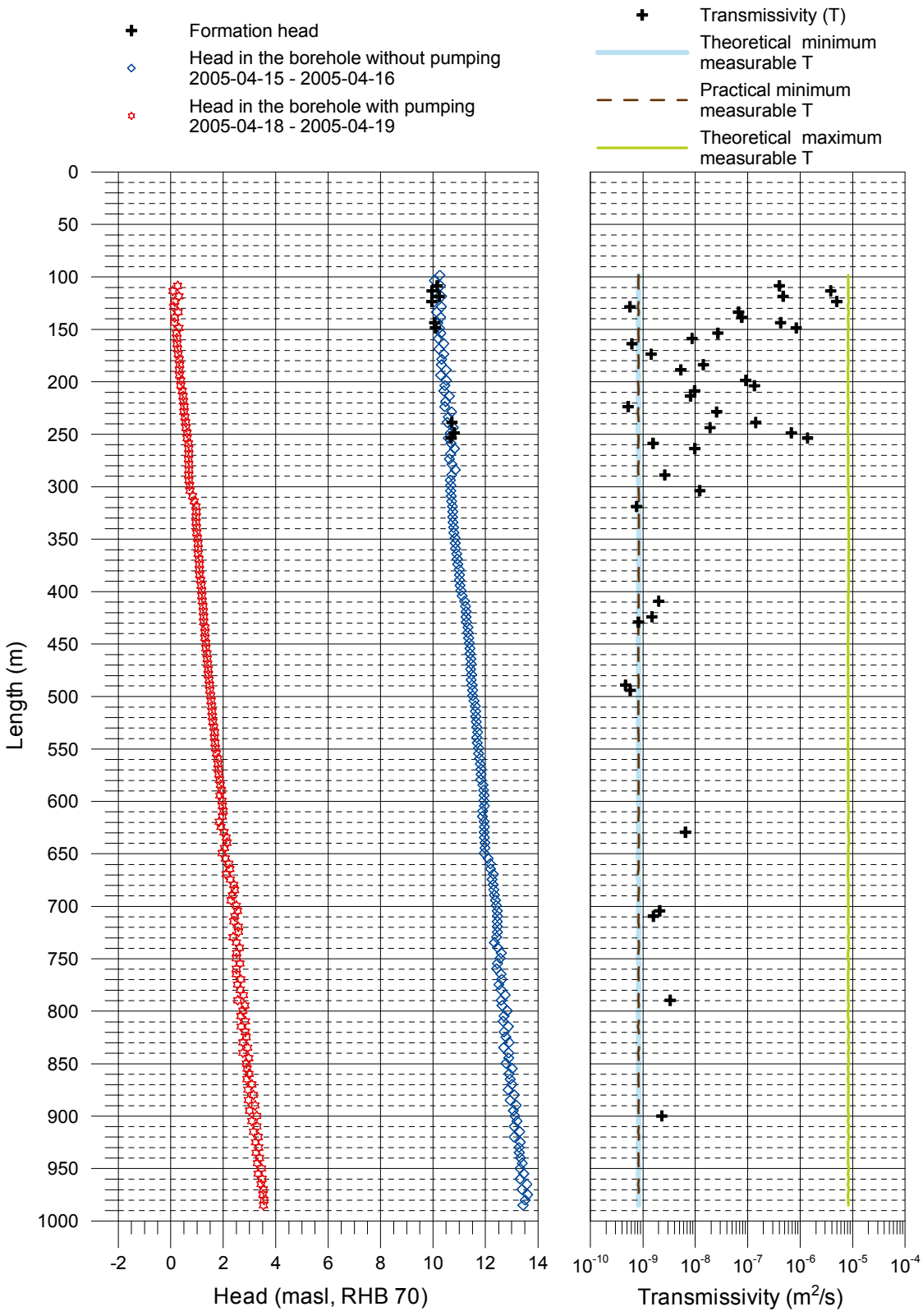
Specifically the following appendices are revised and included in this supplement:

Revised appendices	Appendix number
Transmissivity and head of 5 m sections	Appendix 4.2
Transmissivity and head of detected fractures	Appendix 5
Sequential flow logging	Appendix 7
Inferred flow anomalies from overlapping flow logging	Appendix 8
Plotted conductive fracture frequency	Appendix 11
Comparison between section transmissivity and fracture transmissivity	Appendix 12
Head in the borehole during flowlogging	Appendix 13.1
Air pressure, water level in borehole and pumping rate during flow logging	Appendix 13.2
Groundwater recovery after pumping	Appendix 13.3
Vertical flow along the borehole at 75 m	Appendix 13.4

Reference

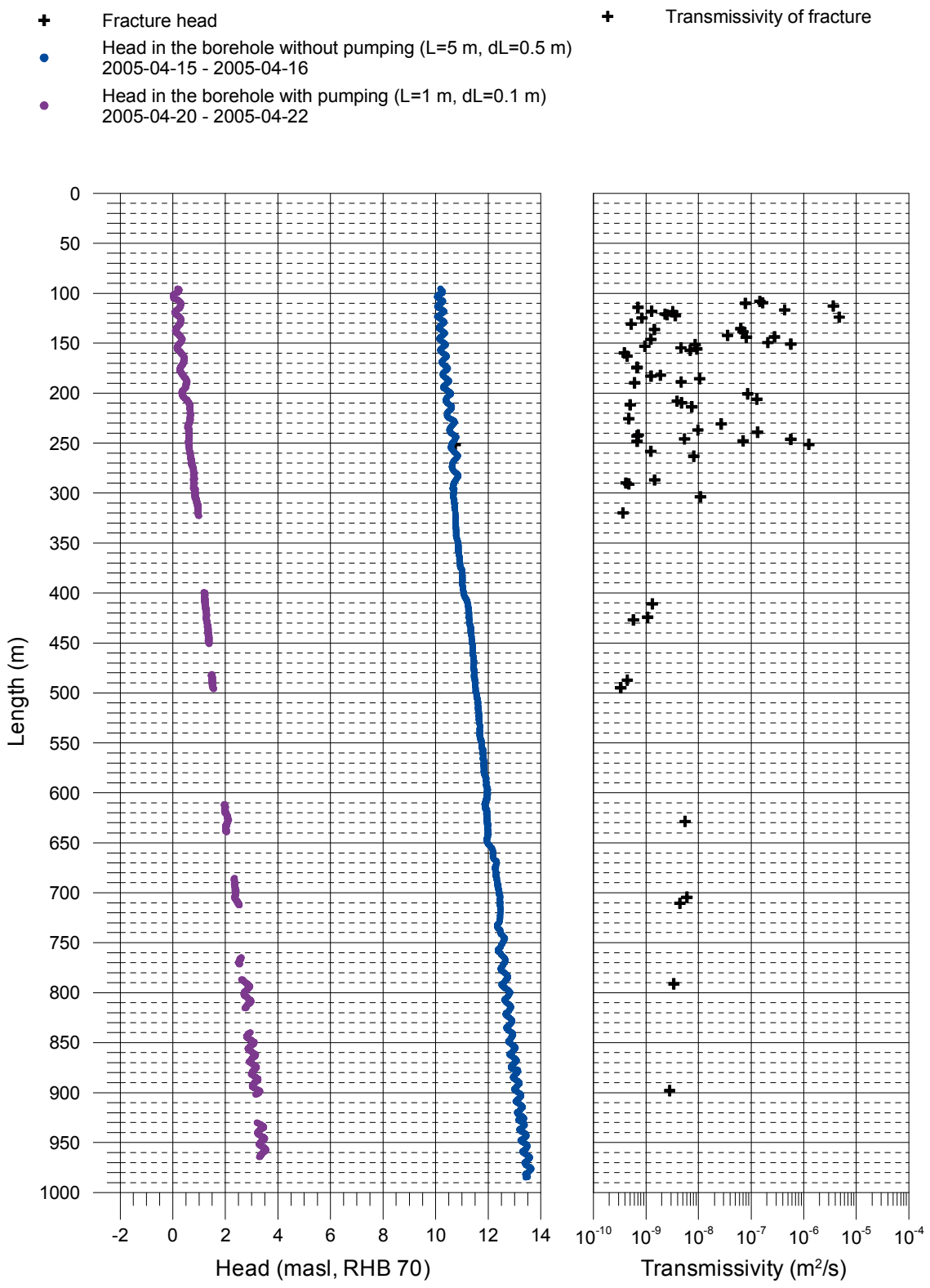
Stenberg L, Håkansson N, 2007. Revision of borehole deviation measurements in Oskarshamn. Svensk Kärnbränslehantering AB (in preparation).

Laxemar, borehole KLX05
Transmissivity and head of 5 m sections



Appendix 5

Laxemar, borehole KLX05
Transmissivity and head of detected fractures



Appendix 7

Difference flow logging – Sequential flow logging

Borehole ID	Secup L (m)	Seclow L (m)	L_w (m)	Q_0 (m^3/s)	dh_0 (m)	Q_1 (m^3/s)	dh_1 (m)	T_D (m^2/s)	h_i (m.a.s.l.)	Q-lower limit P (mL/h)	TD-measl$_{LT}$ (m^2/s)	TD-measl$_{LP}$ (m^2/s)	TD-measl$_U$ (m^2/s)	Comments
KLX05	95.91	100.91	5	–	10.26	–	0.25	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	100.93	105.93	5	–	10.05	–	0.03	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	105.95	110.95	5	–4.89E–08	10.28	4.00E–06	0.26	4.0E–07	10.2	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	110.96	115.96	5	–3.86E–07	10.06	3.83E–05	0.08	3.8E–06	10.0	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	115.98	120.98	5	–5.00E–08	10.33	4.72E–06	0.31	4.7E–07	10.2	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	121.00	126.00	5	–4.97E–07	10.05	4.92E–05	0.15	5.0E–06	9.9	30	8.3E–10	8.3E–10	8.4E–06	
KLX05	126.02	131.02	5	–	10.32	5.83E–09	0.11	5.7E–10	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	131.04	136.04	5	–	10.13	6.64E–07	0.28	6.7E–08	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	136.05	141.05	5	–	10.29	7.89E–07	0.15	7.7E–08	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	141.08	146.08	5	–5.33E–08	10.18	4.25E–06	0.14	4.2E–07	10.1	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	146.10	151.10	5	–1.25E–07	10.24	8.31E–06	0.31	8.4E–07	10.1	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	151.11	156.11	5	–	10.30	2.73E–07	0.22	2.7E–08	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	156.12	161.12	5	–	10.20	8.72E–08	0.23	8.7E–09	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	161.12	166.12	5	–	10.41	6.39E–09	0.24	6.2E–10	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	166.12	171.12	5	–	10.22	–	0.26	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	171.12	176.12	5	–	10.41	1.47E–08	0.28	1.4E–09	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	176.12	181.12	5	–	10.33	–	0.32	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	181.13	186.13	5	–	10.32	1.43E–07	0.34	1.4E–08	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	186.13	191.13	5	–	10.50	5.44E–08	0.32	5.3E–09	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	191.14	196.14	5	–	10.29	–	0.33	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	196.14	201.14	5	–	10.51	9.36E–07	0.38	9.1E–08	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	201.14	206.14	5	–	10.45	1.36E–06	0.38	1.3E–07	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	206.14	211.14	5	–	10.41	9.72E–08	0.44	9.6E–09	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	211.14	216.14	5	–	10.62	8.33E–08	0.47	8.1E–09	–	30	8.1E–10	8.1E–10	8.1E–06	

Borehole ID	Secup L (m)	Seclow L (m)	L_w (m)	Q_0 (m^3/s)	dh_0 (m)	Q_1 (m^3/s)	dh_1 (m)	T_D (m^2/s)	h_i (m.a.s.l.)	Q-lower limit P (mL/h)	TD-measl$_{LT}$ (m^2/s)	TD-measl$_{LP}$ (m^2/s)	TD-measl$_U$ (m^2/s)	Comments
KLX05	216.14	221.14	5	–	10.48	–	0.48	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	221.14	226.14	5	–	10.45	5.28E–09	0.51	5.3E–10	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	226.14	231.14	5	–	10.71	2.63E–07	0.50	2.5E–08	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	231.14	236.14	5	–	10.58	–	0.54	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	236.15	241.15	5	2.61E–08	10.54	1.45E–06	0.57	1.4E–07	10.7	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	241.15	246.15	5	–	10.77	1.96E–07	0.58	1.9E–08	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	246.15	251.15	5	9.28E–08	10.67	6.97E–06	0.62	6.8E–07	10.8	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	251.16	256.16	5	1.59E–07	10.58	1.40E–05	0.62	1.4E–06	10.7	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	256.17	261.17	5	–	10.69	1.58E–08	0.67	1.6E–09	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	261.19	266.19	5	–	10.82	1.00E–07	0.68	9.8E–09	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	266.21	271.21	5	–	10.67	–	0.69	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	271.23	276.23	5	–	10.62	–	0.67	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	276.25	281.25	5	–	10.72	–	0.69	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	281.26	286.26	5	–	10.85	–	0.69	–	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	286.28	291.28	5	–	10.71	2.67E–08	0.68	2.6E–09	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	291.30	296.30	5	–	10.66	–	0.69	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	296.33	301.33	5	–	10.68	–	0.72	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	301.36	306.36	5	–	10.67	1.22E–07	0.73	1.2E–08	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	306.37	311.37	5	–	10.70	–	0.83	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	311.36	316.36	5	–	10.71	–	0.89	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	316.37	321.37	5	–	10.74	7.50E–09	0.96	7.6E–10	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	321.38	326.38	5	–	10.75	–	0.97	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	326.38	331.38	5	–	10.75	–	0.96	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	331.39	336.39	5	–	10.76	–	0.96	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	336.40	341.40	5	–	10.78	–	0.98	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	341.40	346.40	5	–	10.79	–	0.99	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	346.41	351.41	5	–	10.84	–	1.02	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	351.42	356.42	5	–	10.85	–	1.04	–	–	30	8.4E–10	8.4E–10	8.4E–06	

Borehole ID	Secup L (m)	Seclow L (m)	L_w (m)	Q_0 (m^3/s)	dh_0 (m)	Q_1 (m^3/s)	dh_1 (m)	T_D (m^2/s)	h_i (m.a.s.l.)	Q-lower limit P (mL/h)	TD-measl$_{LT}$ (m^2/s)	TD-measl$_{LP}$ (m^2/s)	TD-measl$_U$ (m^2/s)	Comments
KLX05	356.42	361.42	5	–	10.86	–	1.04	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	361.43	366.43	5	–	10.90	–	1.04	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	366.44	371.44	5	–	10.92	–	1.08	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	371.45	376.45	5	–	10.94	–	1.09	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	376.47	381.47	5	–	11.00	–	1.09	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	381.48	386.48	5	–	11.01	–	1.10	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	386.50	391.50	5	–	11.01	–	1.14	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	391.51	396.51	5	–	11.03	–	1.16	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	396.53	401.53	5	–	11.06	–	1.18	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	401.53	406.53	5	–	11.11	–	1.18	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	406.54	411.54	5	–	11.20	2.03E–08	1.20	2.0E–09	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	411.54	416.54	5	–	11.24	–	1.23	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	416.55	421.55	5	–	11.26	–	1.24	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	421.55	426.55	5	–	11.26	1.50E–08	1.25	1.5E–09	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	426.55	431.55	5	–	11.27	8.33E–09	1.25	8.2E–10	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	431.56	436.56	5	–	11.33	–	1.30	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	436.56	441.56	5	–	11.33	–	1.30	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	441.57	446.57	5	–	11.36	–	1.30	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	446.57	451.57	5	–	11.38	–	1.34	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	451.57	456.57	5	–	11.41	–	1.34	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	456.58	461.58	5	–	11.41	–	1.38	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	461.58	466.58	5	–	11.44	–	1.39	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	466.58	471.58	5	–	11.45	–	1.41	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	471.58	476.58	5	–	11.43	–	1.43	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	476.59	481.59	5	–	11.47	–	1.43	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	481.59	486.59	5	–	11.45	–	1.46	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	486.59	491.59	5	–	11.49	4.72E–09	1.48	4.7E–10	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	491.60	496.60	5	–	11.51	5.83E–09	1.49	5.8E–10	–	30	8.2E–10	8.2E–10	8.2E–06	

Borehole ID	Secup L (m)	Seclow L (m)	L_w (m)	Q_0 (m^3/s)	dh_0 (m)	Q_1 (m^3/s)	dh_1 (m)	T_D (m^2/s)	h_i (m.a.s.l.)	Q-lower limit P (mL/h)	TD-measl$_{LT}$ (m^2/s)	TD-measl$_{LP}$ (m^2/s)	TD-measl$_U$ (m^2/s)	Comments
KLX05	496.60	501.60	5	–	11.51	–	1.52	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	501.61	506.61	5	–	11.56	–	1.54	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	506.63	511.63	5	–	11.61	–	1.56	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	511.64	516.64	5	–	11.62	–	1.57	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	516.64	521.64	5	–	11.63	–	1.58	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	521.65	526.65	5	–	11.65	–	1.60	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	526.66	531.66	5	–	11.67	–	1.64	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	531.67	536.67	5	–	11.70	–	1.67	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	536.67	541.67	5	–	11.67	–	1.66	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	541.68	546.68	5	–	11.69	–	1.69	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	546.69	551.69	5	–	11.74	–	1.70	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	551.70	556.70	5	–	11.74	–	1.74	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	556.71	561.71	5	–	11.78	–	1.79	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	561.71	566.71	5	–	11.80	–	1.80	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	566.72	571.72	5	–	11.83	–	1.82	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	571.73	576.73	5	–	11.83	–	1.83	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	576.74	581.74	5	–	11.82	–	1.86	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	581.75	586.75	5	–	11.90	–	1.89	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	586.75	591.75	5	–	11.93	–	1.93	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	591.76	596.76	5	–	11.95	–	1.87	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	596.78	601.78	5	–	11.94	–	1.95	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	601.80	606.80	5	–	11.96	–	1.97	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	606.82	611.82	5	–	11.89	–	2.00	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	611.84	616.84	5	–	11.88	–	1.97	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	616.84	621.84	5	–	11.95	–	1.85	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	621.84	626.84	5	–	11.96	–	1.91	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	626.85	631.85	5	–	11.95	6.50E–08	2.03	6.5E–09	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	631.84	636.84	5	–	11.96	–	2.11	–	–	30	8.4E–10	8.4E–10	8.4E–06	

Borehole ID	Secup L (m)	Seclow L (m)	L_w (m)	Q_0 (m^3/s)	dh_0 (m)	Q_1 (m^3/s)	dh_1 (m)	T_D (m^2/s)	h_i (m.a.s.l.)	Q-lower limit P (mL/h)	TD-measl$_{LT}$ (m^2/s)	TD-measl$_{LP}$ (m^2/s)	TD-measl$_U$ (m^2/s)	Comments
KLX05	636.84	641.84	5	–	11.98	–	2.14	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	641.85	646.85	5	–	11.98	–	2.05	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	646.85	651.85	5	–	11.95	–	1.96	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	651.85	656.85	5	–	12.10	–	2.08	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	656.85	661.85	5	–	12.18	–	2.21	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	661.85	666.85	5	–	12.19	–	2.25	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	666.85	671.85	5	–	12.30	–	2.11	–	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	671.84	676.84	5	–	12.25	–	2.27	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	676.84	681.84	5	–	12.29	–	2.40	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	681.83	686.83	5	–	12.31	–	2.43	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	686.83	691.83	5	–	12.34	–	2.35	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	691.82	696.82	5	–	12.38	–	2.30	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	696.82	701.82	5	–	12.41	–	2.50	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	701.82	706.82	5	–	12.45	2.08E–08	2.54	2.1E–09	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	706.83	711.83	5	–	12.45	1.61E–08	2.44	1.6E–09	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	711.85	716.85	5	–	12.45	–	2.40	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	716.87	721.87	5	–	12.45	–	2.57	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	721.89	726.89	5	–	12.45	–	2.58	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	726.91	731.91	5	–	12.42	–	2.38	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	731.93	736.93	5	–	12.34	–	2.50	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	736.95	741.95	5	–	12.46	–	2.62	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	741.98	746.98	5	–	12.60	–	2.51	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	747.00	752.00	5	–	12.56	–	2.50	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	752.02	757.02	5	–	12.46	–	2.64	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	757.04	762.04	5	–	12.42	–	2.50	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	762.06	767.06	5	–	12.59	–	2.50	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	767.06	772.06	5	–	12.62	–	2.67	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	772.06	777.06	5	–	12.51	–	2.54	–	–	30	8.3E–10	8.3E–10	8.3E–06	

Borehole ID	Secup L (m)	Seclow L (m)	L_w (m)	Q_0 (m^3/s)	dh_0 (m)	Q_1 (m^3/s)	dh_1 (m)	T_D (m^2/s)	h_i (m.a.s.l.)	Q-lower limit P (mL/h)	TD-measl$_{LT}$ (m^2/s)	TD-measl$_{LP}$ (m^2/s)	TD-measl$_U$ (m^2/s)	Comments
KLX05	777.07	782.07	5	–	12.59	–	2.65	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	782.07	787.07	5	–	12.75	–	2.77	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	787.07	792.07	5	–	12.60	3.36E–08	2.55	3.3E–09	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	792.07	797.07	5	–	12.63	–	2.82	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	797.09	802.09	5	–	12.83	–	2.75	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	802.10	807.10	5	–	12.71	–	2.67	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	807.11	812.11	5	–	12.67	–	2.84	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	812.12	817.12	5	–	12.87	–	2.68	–	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	817.13	822.13	5	–	12.71	–	2.84	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	822.14	827.14	5	–	12.78	–	2.88	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	827.15	832.15	5	–	12.90	–	2.75	–	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	832.16	837.16	5	–	12.69	–	2.93	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	837.17	842.17	5	–	12.88	–	2.75	–	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	842.18	847.18	5	–	12.89	–	2.97	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	847.20	852.20	5	–	12.78	–	2.88	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	852.21	857.21	5	–	13.02	–	2.91	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	857.22	862.22	5	–	12.90	–	2.98	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	862.23	867.23	5	–	12.94	–	2.90	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	867.24	872.24	5	–	13.01	–	3.09	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	872.25	877.25	5	–	12.86	–	2.94	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	877.25	882.25	5	–	13.10	–	3.15	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	882.26	887.26	5	–	12.94	–	2.96	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	887.27	892.27	5	–	13.17	–	3.21	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	892.28	897.28	5	–	13.06	–	3.00	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	897.29	902.29	5	–	13.12	2.28E–08	3.28	2.3E–09	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	902.30	907.30	5	–	13.20	–	3.09	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	907.30	912.30	5	–	13.09	–	3.29	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	912.31	917.31	5	–	13.31	–	3.15	–	–	30	8.1E–10	8.1E–10	8.1E–06	

Borehole ID	Secup L (m)	Seclow L (m)	L_w (m)	Q_0 (m^3/s)	dh_0 (m)	Q_1 (m^3/s)	dh_1 (m)	T_D (m^2/s)	h_i (m.a.s.l.)	Q-lower limit P (mL/h)	TD-measl$_{LT}$ (m^2/s)	TD-measl$_{LP}$ (m^2/s)	TD-measl$_U$ (m^2/s)	Comments
KLX05	917.32	922.32	5	–	13.09	–	3.34	–	–	30	8.5E–10	8.5E–10	8.5E–06	
KLX05	922.33	927.33	5	–	13.33	–	3.23	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	927.34	932.34	5	–	13.28	–	3.35	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	932.35	937.35	5	–	13.29	–	3.25	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	937.35	942.35	5	–	13.33	–	3.38	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	942.36	947.36	5	–	13.40	–	3.30	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	947.37	952.37	5	–	13.32	–	3.46	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	952.38	957.38	5	–	13.46	–	3.33	–	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	957.39	962.39	5	–	13.32	–	3.48	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	962.39	967.39	5	–	13.58	–	3.44	–	–	30	8.1E–10	8.1E–10	8.1E–06	
KLX05	967.40	972.40	5	–	13.38	–	3.52	–	–	30	8.4E–10	8.4E–10	8.4E–06	
KLX05	972.41	977.41	5	–	13.61	–	3.51	–	–	30	8.2E–10	8.2E–10	8.2E–06	
KLX05	977.42	982.42	5	–	13.51	–	3.55	–	–	30	8.3E–10	8.3E–10	8.3E–06	
KLX05	982.43	987.43	5	–	13.43	–	3.53	–	–	30	8.3E–10	8.3E–10	8.3E–06	

Appendix 8

PFL – Difference flow logging – Inferred flow anomalies from overlapping flow logging

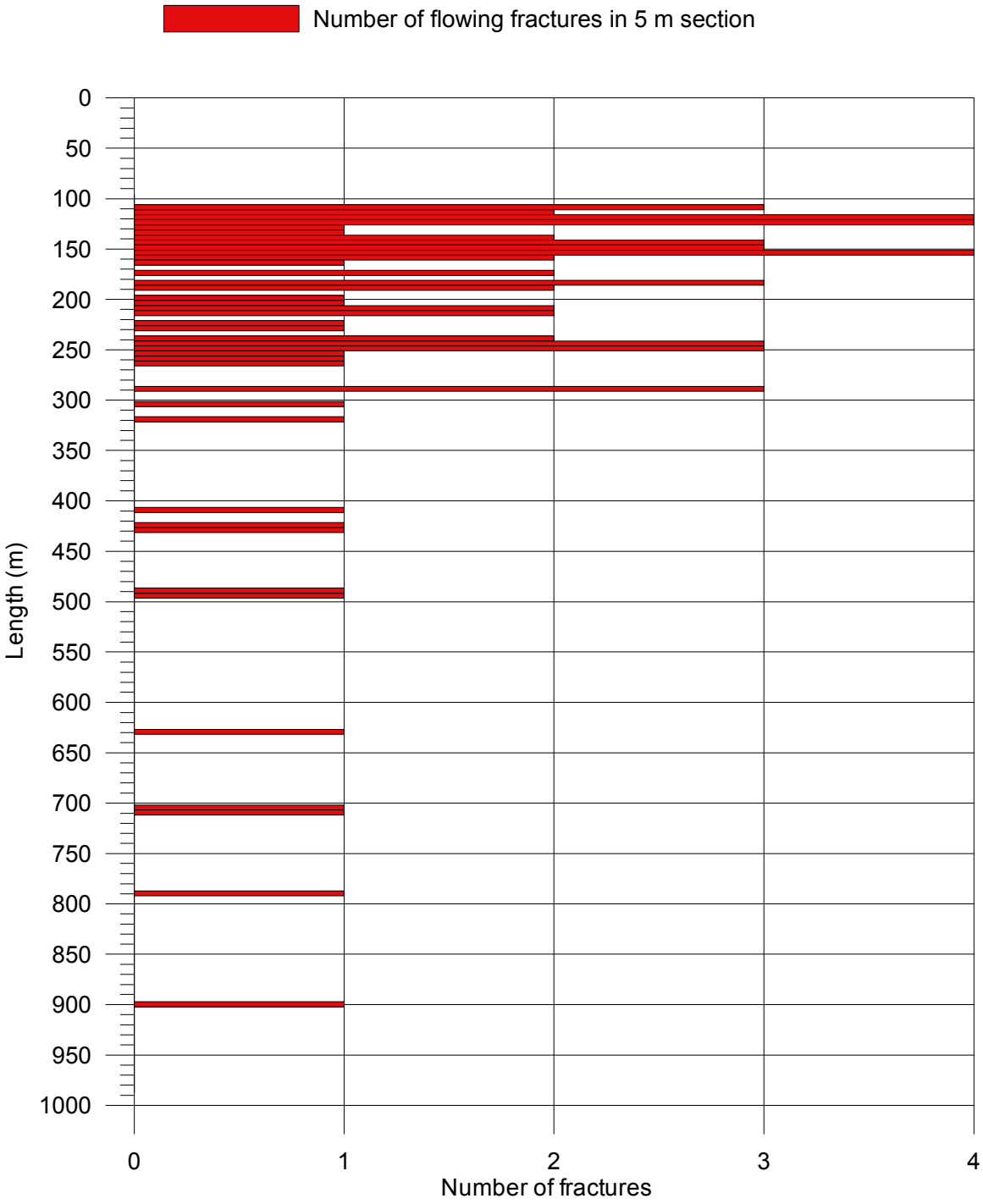
Borehole ID	Length to flow anom. L (m)	L_w (m)	dL (m)	Q_0 (m^3/s)	dh_0 (m)	Q_1 (m^3/s)	dh_1 (m)	T_D (m^2/s)	h_i (m.a.s.l.)	Comments
KLX05	108.2	1	0.1	–	10.29	1.50E–06	0.22	1.5E–07	–	
KLX05	109.5	1	0.1	–	10.23	1.67E–06	0.29	1.7E–07	–	
KLX05	110.2	1	0.1	–	10.20	7.78E–07	0.31	7.8E–08	–	
KLX05	112.8	1	0.1	–	10.06	3.61E–05	0.30	3.7E–06	–	
KLX05	114.2	1	0.1	–	10.09	6.94E–09	0.29	7.0E–10	–	*
KLX05	116.7	1	0.1	–	10.26	4.44E–06	0.17	4.4E–07	–	
KLX05	118.0	1	0.1	–	10.33	1.33E–08	0.10	1.3E–09	–	*
KLX05	118.5	1	0.1	–	10.33	3.33E–08	0.08	3.2E–09	–	
KLX05	120.9	1	0.1	–	10.19	2.33E–08	0.13	2.3E–09	–	
KLX05	121.6	1	0.1	–	10.16	2.56E–08	0.17	2.5E–09	–	
KLX05	122.5	1	0.1	–	10.11	3.61E–08	0.21	3.6E–09	–	
KLX05	124.0	1	0.1	–	10.10	4.72E–05	0.24	4.7E–06	–	
KLX05	124.9	1	0.1	–	10.13	8.33E–09	0.30	8.4E–10	–	*
KLX05	130.9	1	0.1	–	10.26	5.28E–09	0.27	5.2E–10	–	*
KLX05	135.6	1	0.1	–	10.13	6.39E–07	0.16	6.3E–08	–	
KLX05	136.4	1	0.1	–	10.18	1.47E–08	0.11	1.5E–09	–	*
KLX05	138.6	1	0.1	–	10.30	7.22E–07	0.13	7.0E–08	–	
KLX05	142.2	1	0.1	–	10.27	3.61E–07	0.25	3.6E–08	–	
KLX05	143.7	1	0.1	–	10.18	2.78E–06	0.31	2.8E–07	–	
KLX05	144.0	1	0.1	–	10.17	8.06E–07	0.31	8.1E–08	–	*
KLX05	146.1	1	0.1	–	10.14	1.22E–08	0.36	1.2E–09	–	
KLX05	149.4	1	0.1	–	10.30	2.11E–06	0.29	2.1E–07	–	
KLX05	150.9	1	0.1	–	10.37	5.83E–06	0.24	5.7E–07	–	
KLX05	151.6	1	0.1	–	10.39	8.89E–08	0.22	8.7E–09	–	
KLX05	153.2	1	0.1	–	10.33	9.72E–09	0.17	9.5E–10	–	
KLX05	154.6	1	0.1	–	10.24	4.72E–08	0.16	4.6E–09	–	
KLX05	155.8	1	0.1	–	10.20	9.44E–08	0.18	9.3E–09	–	
KLX05	157.2	1	0.1	–	10.17	6.94E–08	0.23	6.9E–09	–	
KLX05	159.8	1	0.1	–	10.26	3.89E–09	0.33	3.9E–10	–	*
KLX05	163.0	1	0.1	–	10.43	4.44E–09	0.42	4.4E–10	–	*
KLX05	174.0	1	0.1	–	10.43	6.94E–09	0.29	6.8E–10	–	*
KLX05	174.6	1	0.1	–	10.46	6.94E–09	0.28	6.8E–10	–	*
KLX05	182.1	1	0.1	–	10.27	1.89E–08	0.40	1.9E–09	–	
KLX05	183.0	1	0.1	–	10.30	1.25E–08	0.42	1.3E–09	–	
KLX05	185.5	1	0.1	–	10.42	1.06E–07	0.48	1.1E–08	–	
KLX05	188.8	1	0.1	–	10.50	4.72E–08	0.52	4.7E–09	–	
KLX05	189.6	1	0.1	–	10.46	6.11E–09	0.51	6.1E–10	–	*
KLX05	200.8	1	0.1	–	10.58	8.89E–07	0.35	8.6E–08	–	
KLX05	206.1	1	0.1	–	10.39	1.28E–06	0.49	1.3E–07	–	
KLX05	208.0	1	0.1	–	10.39	3.89E–08	0.57	3.9E–09	–	
KLX05	209.7	1	0.1	–	10.44	4.72E–08	0.60	4.8E–09	–	
KLX05	211.7	1	0.1	–	10.53	5.00E–09	0.64	5.0E–10	–	*

Borehole ID	Length to flow anom. L (m)	L_w (m)	dL (m)	Q_0 (m^3/s)	dh_0 (m)	Q_1 (m^3/s)	dh_1 (m)	T_D (m^2/s)	h_l (m.a.s.l.)	Comments
KLX05	213.6	1	0.1	–	10.62	7.50E–08	0.66	7.5E–09	–	
KLX05	225.6	1	0.1	–	10.57	4.72E–09	0.67	4.7E–10	–	*
KLX05	230.8	1	0.1	–	10.68	2.75E–07	0.60	2.7E–08	–	
KLX05	236.9	1	0.1	–	10.52	9.72E–08	0.63	9.7E–09	–	
KLX05	239.1	1	0.1	–	10.56	1.33E–06	0.62	1.3E–07	–	
KLX05	241.9	1	0.1	–	10.69	7.22E–09	0.64	7.1E–10	–	*
KLX05	242.9	1	0.1	–	10.74	6.94E–09	0.63	6.8E–10	–	*
KLX05	245.8	1	0.1	–	10.74	5.56E–08	0.61	5.4E–09	–	
KLX05	246.3	1	0.1	–	10.74	5.83E–06	0.60	5.7E–07	–	
KLX05	247.8	1	0.1	–	10.70	7.22E–07	0.59	7.1E–08	–	
KLX05	248.3	1	0.1	–	10.69	6.94E–09	0.58	6.8E–10	–	*
KLX05	251.3	1	0.1	1.58E–07	10.61	1.28E–05	0.62	1.3E–06	10.7	
KLX05	258.1	1	0.1	–	10.68	1.25E–08	0.63	1.2E–09	–	
KLX05	263.2	1	0.1	–	10.83	8.33E–08	0.67	8.1E–09	–	
KLX05	286.8	1	0.1	–	10.77	1.47E–08	0.78	1.5E–09	–	
KLX05	290.0	1	0.1	–	10.69	4.17E–09	0.77	4.2E–10	–	*
KLX05	290.9	1	0.1	–	10.69	4.72E–09	0.80	4.7E–10	–	*
KLX05	303.8	1	0.1	–	10.67	1.08E–07	0.86	1.1E–08	–	
KLX05	319.8	1	0.1	–	10.74	3.61E–09	0.98	3.7E–10	–	*
KLX05	410.9	1	0.1	–	11.23	1.33E–08	1.25	1.3E–09	–	
KLX05	424.2	1	0.1	–	11.26	1.08E–08	1.30	1.1E–09	–	
KLX05	426.9	1	0.1	–	11.29	5.83E–09	1.29	5.8E–10	–	*
KLX05	487.2	1	0.1	–	11.48	4.44E–09	1.52	4.4E–10	–	*
KLX05	494.8	1	0.1	–	11.52	3.33E–09	1.53	3.3E–10	–	*
KLX05	628.6	1	0.1	–	11.95	5.56E–08	2.09	5.6E–09	–	
KLX05	704.5	1	0.1	–	12.46	6.11E–08	2.36	6.0E–09	–	*
KLX05	710.6	1	0.1	–	12.45	4.44E–08	2.50	4.4E–09	–	
KLX05	791.1	1	0.1	–	12.55	3.33E–08	2.82	3.4E–09	–	
KLX05	898.0	1	0.1	–	13.03	2.78E–08	3.26	2.8E–09	–	*

* Uncertain = The flow rate is less than 30 mL/h or the flow anomalies are overlapping or they are unclear because of noise.

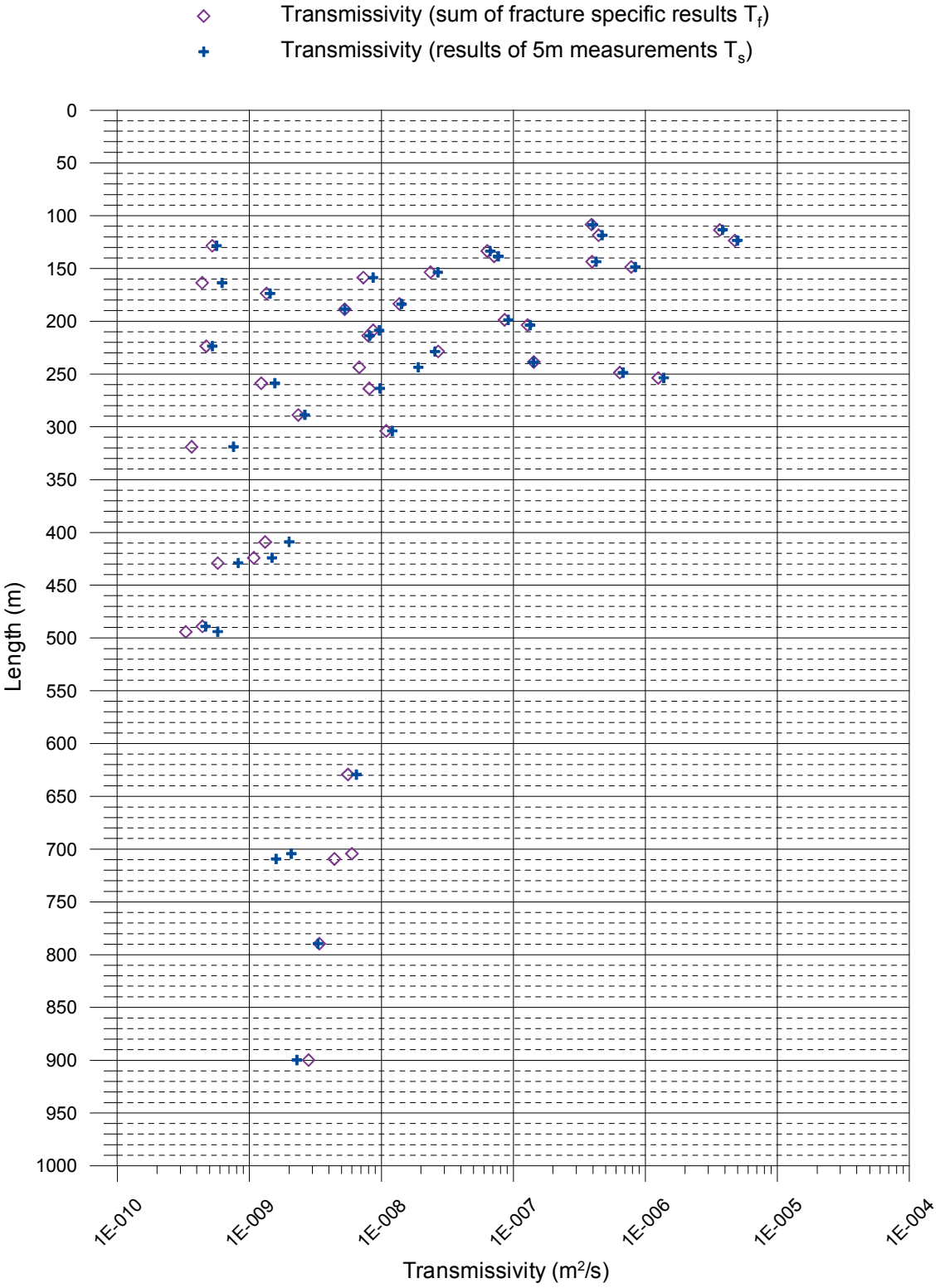
Appendix 11

Laxemar, borehole KLX05
Calculation of conductive fracture frequency



Appendix 12

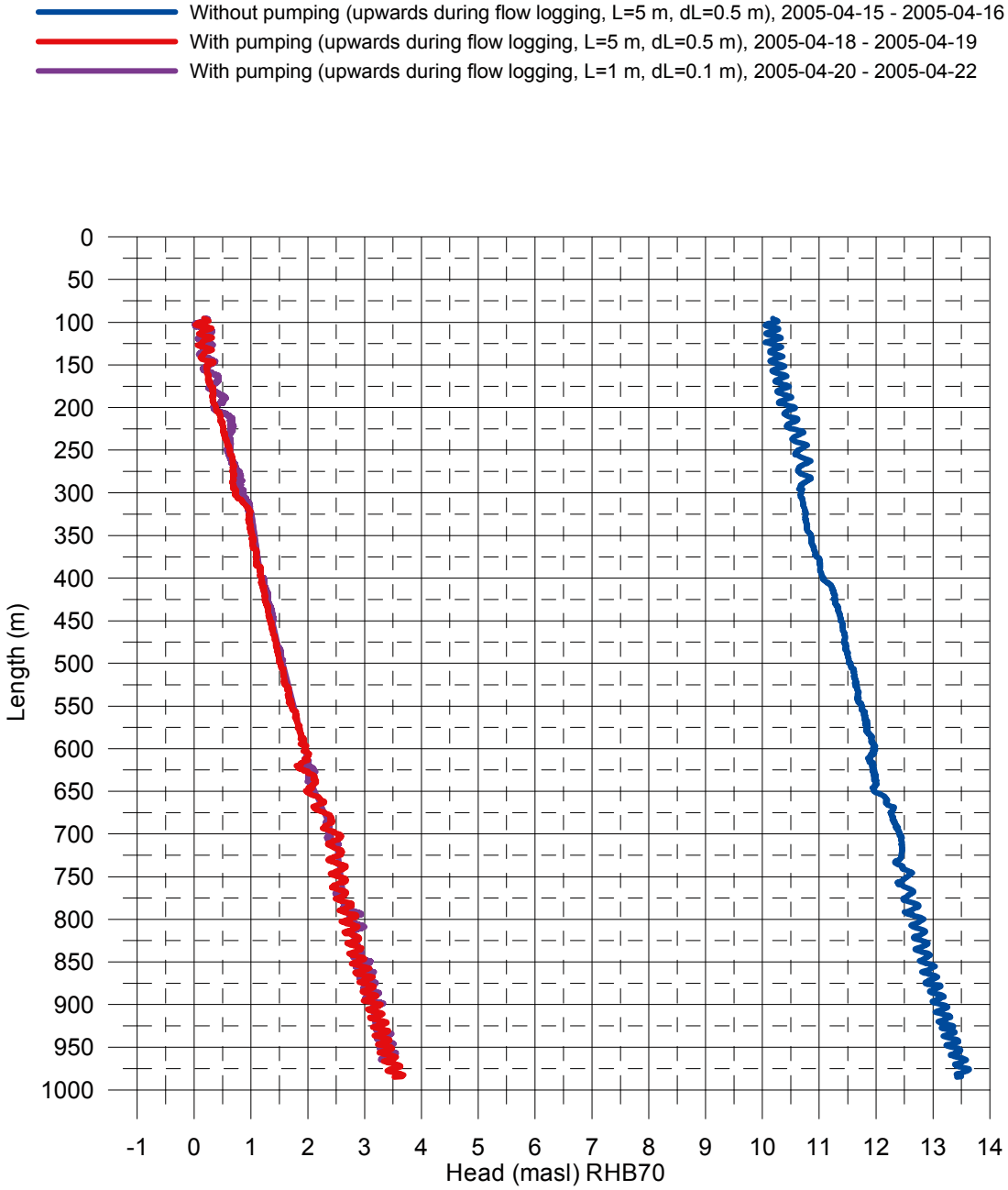
Laxemar, borehole KLX05
Comparison between section transmissivity and fracture transmissivity



Appendix 13.1

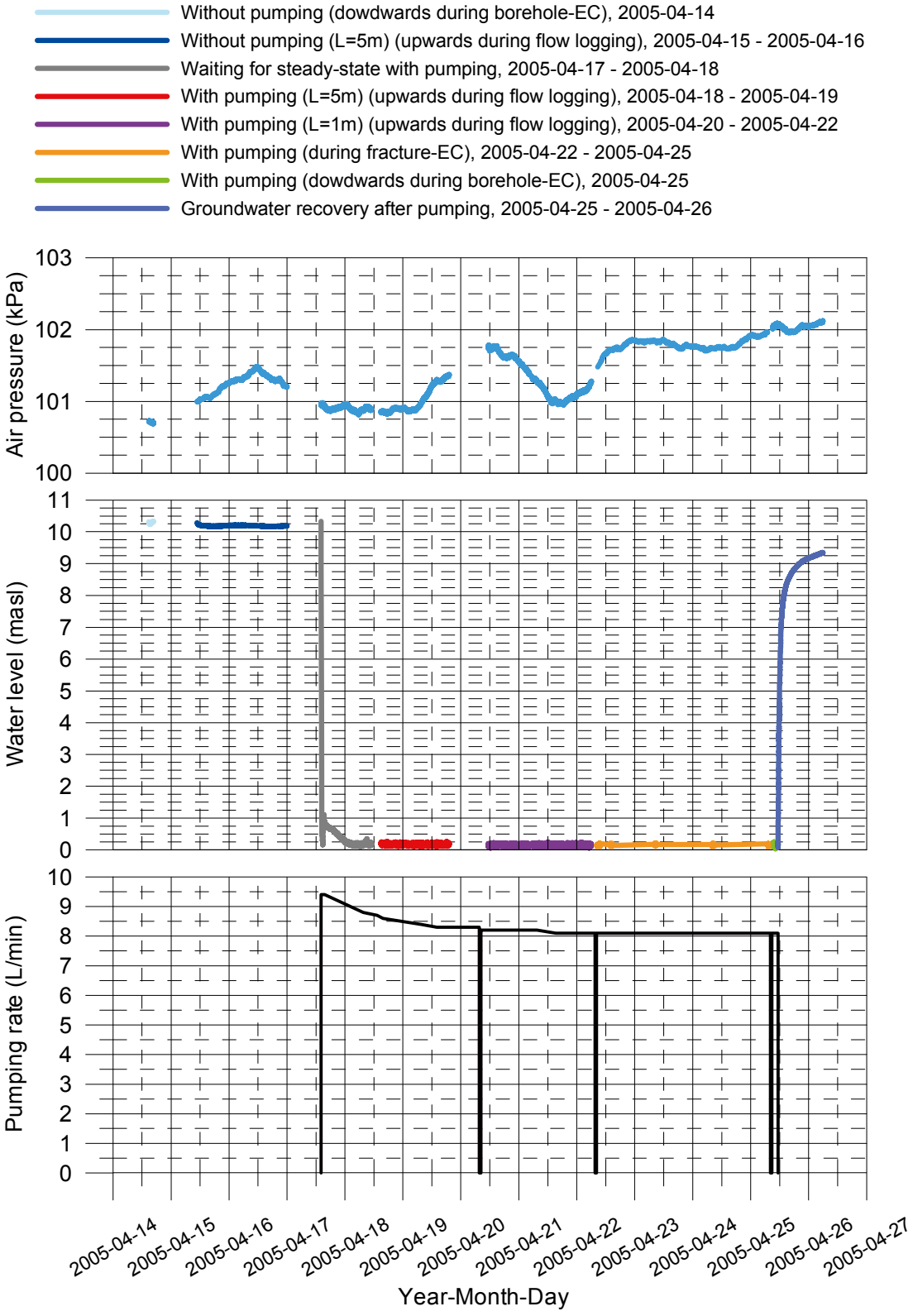
Laxemar, borehole KLX05
Head in the borehole during flow logging

Head(masl)= (Absolute pressure (Pa) - Airpressure (Pa) + Offset) /(1000 kg/m^3 * 9.80665 m/s^2) + Elevation (m)
Offset = 2460 Pa (Correction for absolut pressure sensor)



Appendix 13.2

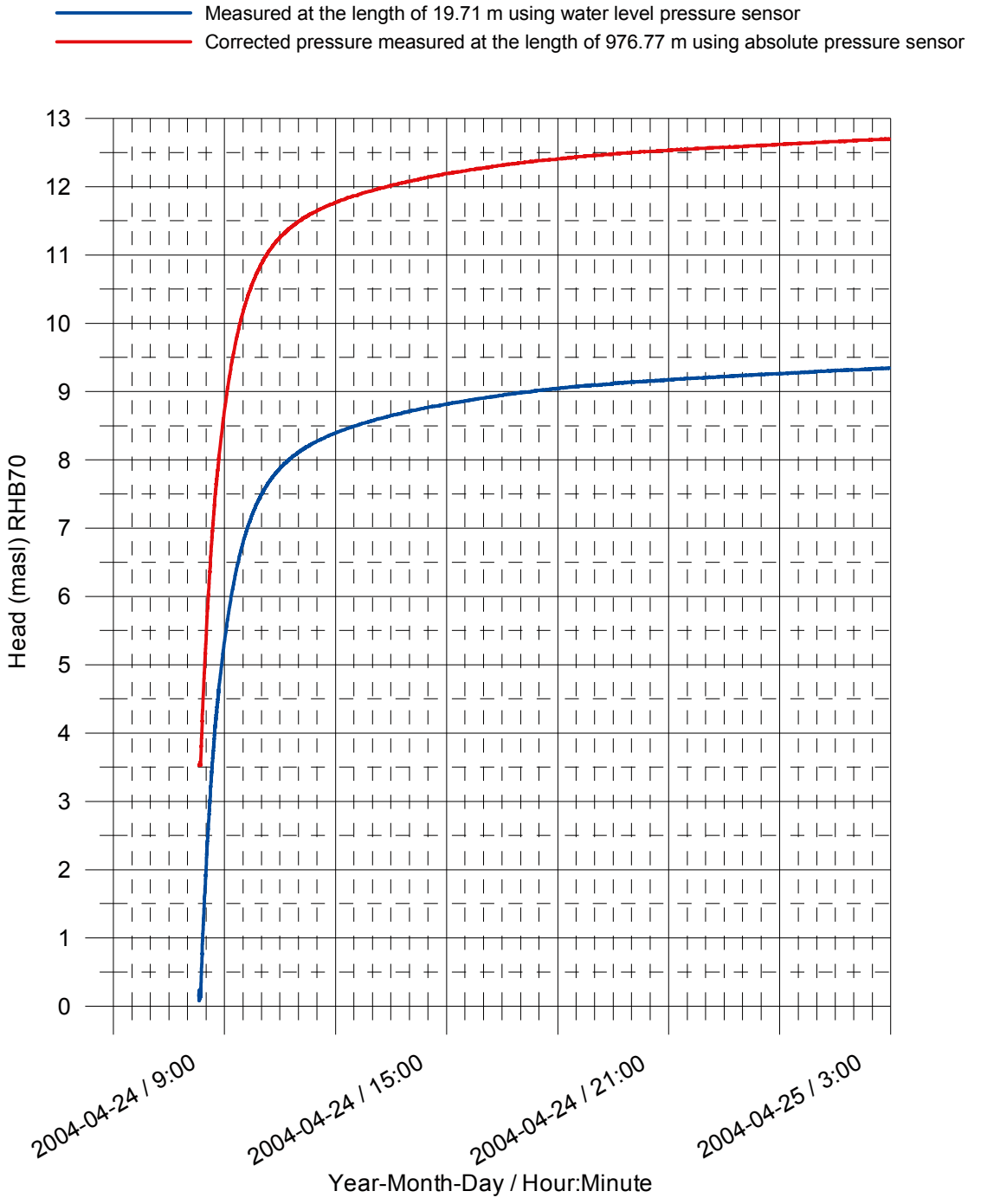
Laxemar, borehole KLX05
Air pressure, water level in the borehole and pumping rate during flow logging



Appendix 13.3

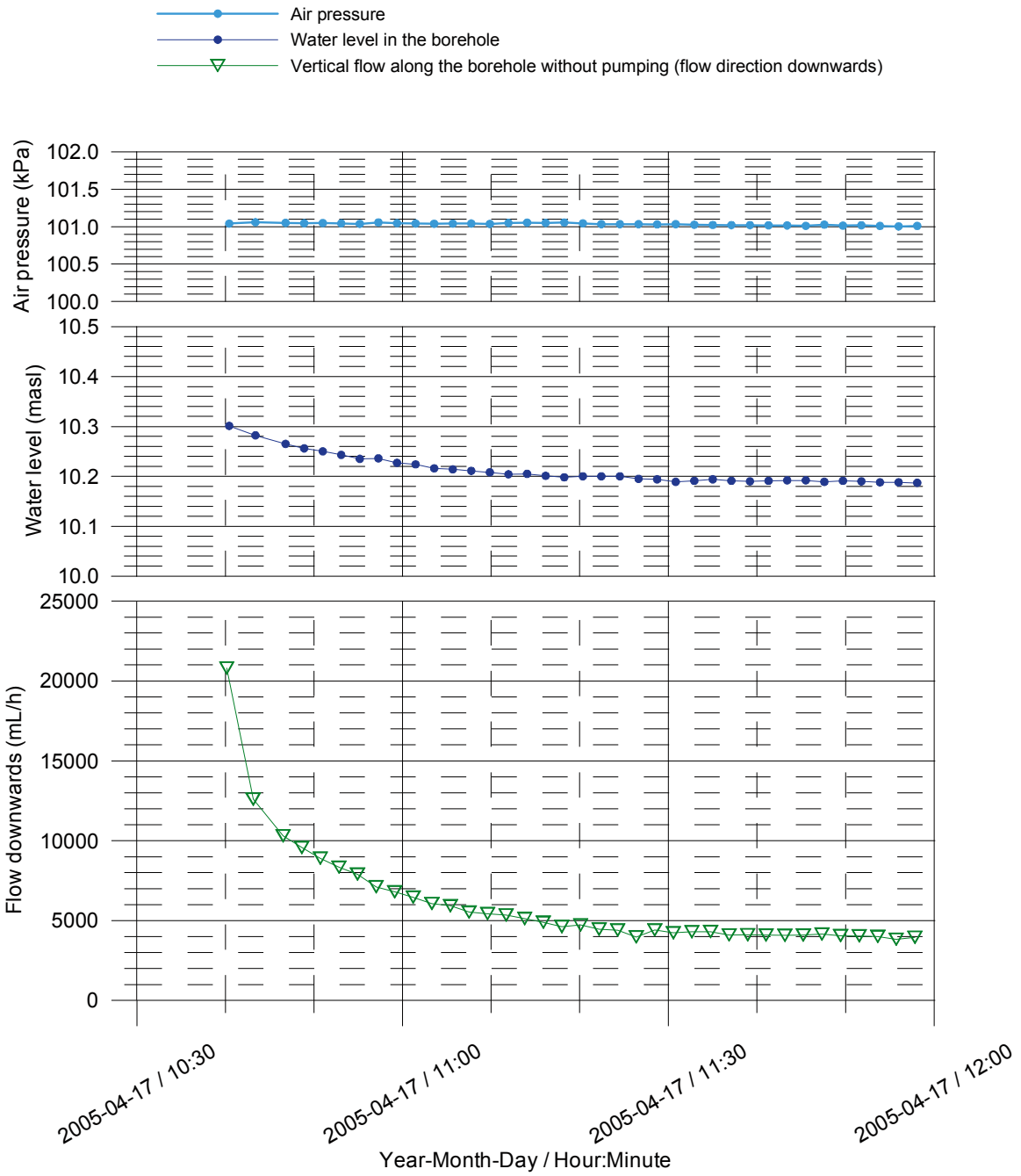
Laxemar, borehole KLX05
Groundwater recovery after pumping

Head(masl)= (Absolute pressure (Pa) - Airpressure (Pa) + Offset) /(1000 kg/m^3 * 9.80665 m/s^2) + Elevation (m)
Offset = 2460 Pa (Correction for absolut pressure sensor)



Appendix 13.4

Laxemar, borehole KLX05
Vertical flow along the borehole at the length of 75 m



CM Gruppen AB, Bromma, 2008