

Appendix 4. Schematics of regional transect sites.

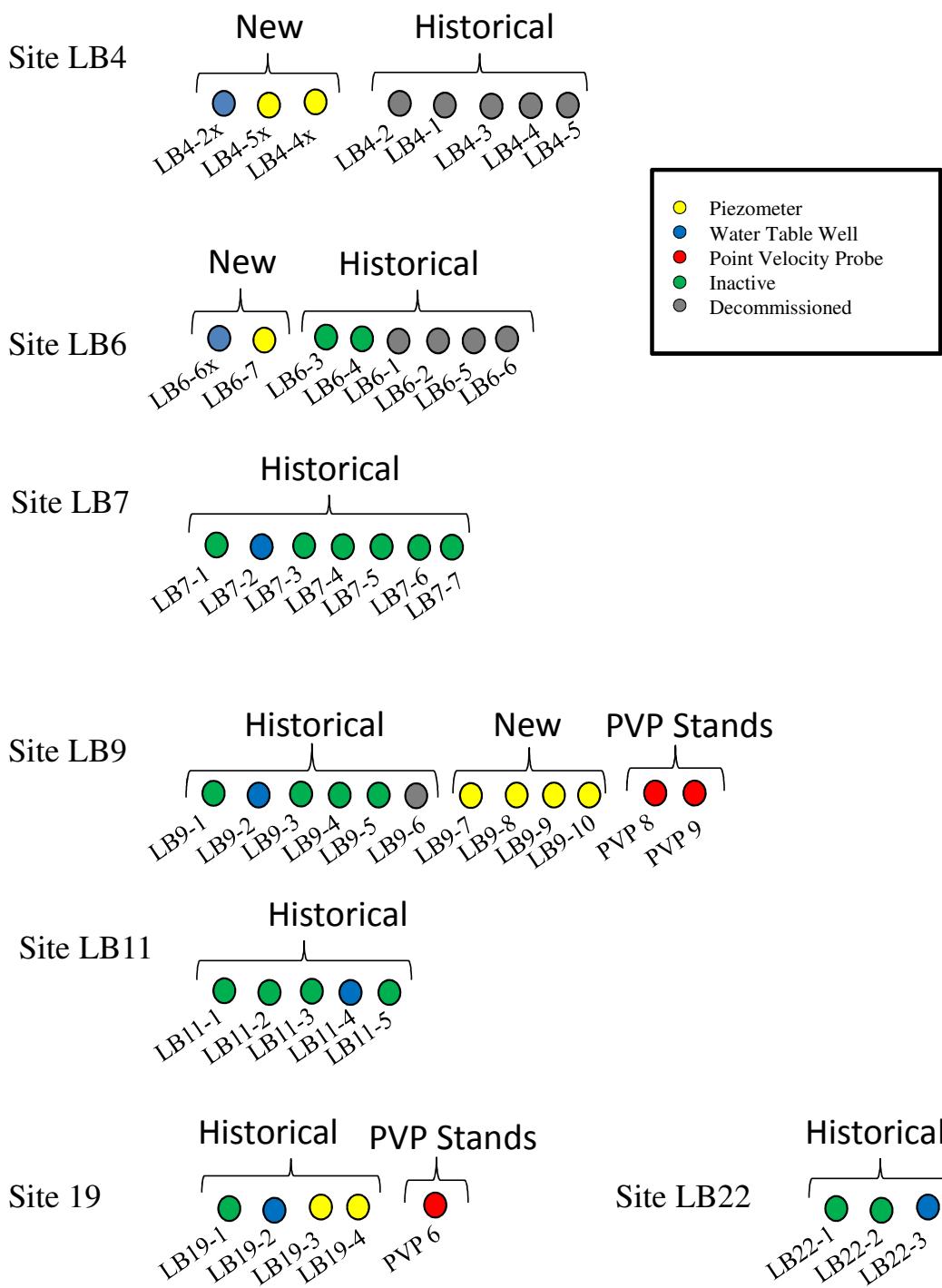


Figure A4.1. Location of groundwater instrumentation at the regional transect sites.
Historical wells were instrumented between 1994 and 1995, while new wells and point velocity probe stands (PVP) were instrumented during the current study between 2008 and 2011.

Appendix 5. Soil chemical parameters analyzed and methods used.

Parameter	Method	Method number ^z	Instrument	Reference	MMDL ^y
pH ^x	Saturated paste extract	IBSWAU-S01, -S02	Man-Tech, PC-Titrator	Janzen 1993	0.2
Electrical conductivity (EC) ^x	Saturated paste extract	IBSWAU-S01, -S03	Man-Tech, PC-Titrator	Janzen 1993	0.01 dSm ⁻¹
Sulphate (SO_4^{2-}) ^x	Saturated paste extract, Turbidimetric	IBSWAU-S01, -S07	HACH R/4000U Spectrophotometer	Janzen 1993, Rhoades 1982	0.13 mmol _c L ⁻¹
Carbonate (CO_3^{2-}) ^x	Saturated paste extract, Titration	IBSWAU-S01, -S08	Man-Tech, PC-Titrator	Janzen 1993, U.S. Salinity Laboratory Staff 1954	0.1 mmol _c L ⁻¹
Bicarbonate (HCO_3^-) ^x	Saturated paste extract, Titration	IBSWAU-S01, -S08	Man-Tech, PC-Titrator	Janzen 1993, U.S. Salinity Laboratory Staff 1954	0.1 mmol _c L ⁻¹
Chloride (Cl ⁻) ^x	Saturated paste extract, air-segmented CFA ^w	IBSWAU-S01, -S09, 783-86T	ASTORIA PACIFIC, flow injection	Janzen 1993, Rhoades 1982, Bran + Luebbe, Inc. 1986a	10 mg L ⁻¹ (PC-Titrator)
Nitrate nitrogen (NO_3^- -N) ^x	Saturated paste extract, air-segmented CFA ^w	IBSWAU-S01, -S10	ASTORIA PACIFIC, flow injection	Rhoades 1982, Bran + Luebbe, Inc. 1986b	0.10 mg L ⁻¹
Nitrite nitrogen (NO_2^- -N) ^x	Saturated paste extract, air-segmented CFA ^w	IBSWAU-S01, -S10	ASTORIA PACIFIC, flow injection	Rhoades 1982, Bran + Luebbe, Inc. 1986c	0.10 mg L ⁻¹
Phosphate phosphorus (PO_4^{3-} -P) ^x	Saturated paste extract, air-segmented CFA ^w	IBSWAU-S01, -S12	ASTORIA PACIFIC, flow injection	Rhoades 1982	0.10 mg L ⁻¹
Nitrate nitrogen (NO_3^- -N)	2M KCl extract (1:10), air-segmented CFA ^w	IBSWAU-S13	ASTORIA PACIFIC, flow injection	Janzen 1993, Bran + Luebbe, Inc. 1986b	0.10 mg L ⁻¹
Ammonium nitrogen (NH_4^+ -N)	2M KCl extract (1:10), Air-segmented CFA ^w	IBSWAU-S13	ASTORIA PACIFIC, flow injection	Janzen 1993, Bran + Luebbe, Inc. 1986d	0.10 mg L ⁻¹
Sodium (Na ⁺) ^x	Saturated paste extract, FEPM ^v	IBSWAU-S01, -S05	BWB XP Flame Photometer	Janzen 1993, Baker and Suhr 1982	0.50 mmol _c L ⁻¹
Potassium (K ⁺) ^x	Saturated paste extract, FEPM ^v	IBSWAU-S01, -S05	BWB XP Flame Photometer	Janzen 1993, Baker and Suhr 1982	0.10 mmol _c L ⁻¹
Calcium (Ca ²⁺) ^x	Saturated paste extract, FAAS ^u	IBSWAU-S01, -S04	UNICAM 989, AA Spectrometer	Janzen 1993, Baker and Suhr 1982	0.150 mmol _c L ⁻¹
Magnesium (Mg ²⁺) ^x	Saturated paste extract, FAAS ^u	IBSWAU-S01, -S04	UNICAM 989, AA Spectrometer	Janzen 1993, Baker and Suhr 1982	0.25 mmol _c L ⁻¹

Parameter	Method	Method number ^z	Instrument	Reference	MMDL ^y
Sodium adsorption ratio (SAR) ^x	Calculated: SAR = $[\text{Na}^+]/\{([\text{Ca}^{2+}]+[\text{Mg}^{2+}])/2\}^{1/2}$	IBSWAU-S01, -S06		Janzen 1993	
Texture classification ^x	Hydrometer method			Gee and Bauder 1979	

^z Irrigation Branch Soil and Water Assessment Unit (IBSWAU) soil analysis methods (Au and Kadijk 2005).

^y MMDL = minimum method detection limit.

^x Analysis carried out on soil samples collected during borehole drilling using cores collected at 1.5-cm and 0.3-cm (1 in) intervals.

^w Continuous flow analysis.

^v Flame emission photometric method.

^u Flame atomic absorption spectrometry.

Appendix 6. Groundwater sampling dates.

		Battersea area wells from 2009 to 2011.																													
Site	Well	2009						2010						2011																	
		Aug 10-11	Aug 17-18	Aug 31-Sept 1	Sep 14	Sep 28	Oct 12-13	Oct 26	Nov 9	Dec 6	Jan 26	Feb 22	Apr 6	Apr 19	May 3	May 17	May 31	Jun 14	Jul 12-13	Jul 19	Aug 9	Aug 23	Aug 30	Sept 13	Oct 4	Oct 18	Oct 25	Feb 14-15	Jun 13-16	Jul 4	Aug 22-24	Oct 18-19	Oct 23
LB2	LB2-1		x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
LB4	LB4-2x															x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
LB4	LB4-4x																							x	x	x	x	x	x	x	
LB4	LB4-5x																							x	x	x	x	x	x	x	
LB6	LB6-6x																							x	x	x	x	x	x	x	
LB6	LB6-7																							x	x	x	x	x	x	x	
LB7	LB7-2	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
LB9	LB9-2		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
LB9	LB9-8																						x	x	x	x	x	x	x		
LB11	LB11-4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
LB19	LB19-2																x	x	x	x	x	x	x	x	x	x	x	x			
LB19	LB19-3																						x	x	x	x	x	x			
LB22	LB22-3		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Field A	LB5a-1														x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Field A	LB5a-2															x		x	x	x	x	x	x	x	x	x	x	x			
Field A	LB5a-3														x		x	x	x	x	x	x	x	x	x	x	x	x			
Field A	LB5a-4														x		x	x	x	x	x	x	x	x	x	x	x	x			
Field A	LB5a-5														x		x	x	x	x	x	x	x	x	x	x	x	x			
Field A	LB5a-6														x		x	x	x	x	x	x	x	x	x	x	x	x			
Field A	LB5b-1																						x		x		x				
Field A	LB5c-1																						x		x	x	x				
Field A	LB5c-2																						x		x	x	x				
Field A	LB5d-1																						x				x				
Field A	LB5e-1																						x				x				
Field A	LB5e-2																						x				x				
Field A	LB5f-1																						x		x	x	x				
Field A	LB5f-2																						x		x	x	x				

		Battersea area wells from 2009 to 2011.																															
Site	Well	2009				2010								2011																			
		Aug 10-11	Aug 17-18	Aug 31-Sept 1	Sep 14	Sep 28	Oct 12-13	Oct 26	Nov 9	Dec 16	Jan 26	Feb 22	Apr 6	Apr 19	May 3	May 17	May 31	Jun 14	Jul 12-13	Jul 19	Aug 9	Aug 23	Aug 30	Sept 13	Oct 4	Oct 18	Oct 25	Nov 1	Feb 14-15	Jun 13-16	Jul 4	Aug 22-24	Oct 18-19	Oct 23
Field B	LB13-1												x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Field B	LB13-2												x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Field B	LB13-3												x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Field B	LB13-4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Field B	LB13-5															x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Field B	LB13b-1																								x	x	x	x	x	x	x	x	
Field B	LB13c-2																													x	x	x	x
Field B	LB13d-2																												x	x	x	x	x
Field B	LB18-1x																											x	x	x	x	x	
Field B	LB18-4																											x	x	x	x	x	
Field B	LB18-5																											x	x	x	x	x	
Field C	LB20-3															x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Field C	LB20-4														x																		
Field C	LB20-5														x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Field C	LB20-6														x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Field C	LB20-7														x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Field C	LB20a-1														x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Field C	LB20b-1																											x	x	x	x	x	
Field C	LB20b-2																											x	x	x	x	x	
Field C	LB20c-1																											x	x	x	x	x	
Field C	LB20d-1																											x	x	x	x	x	
Field C	LB20e-1																											x	x	x	x	x	
Field C	LB20e-2																											x	x	x	x	x	
Field D	LB21-1																											x	x	x	x	x	
Field D	LB21-2		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Field D	LB21a-1																											x	x	x	x	x	
Field D	LB21a-2																											x	x	x	x	x	
Field D	LB21b-1																											x	x	x	x	x	

		Battersea area wells from 2009 to 2011.																													
Site	Well	2009				2010								2011																	
		Aug 10-11	Aug 17-18	Aug 31-Sept 1	Sep 14	Sep 28	Oct 12-13	Oct 26	Nov 9	Dec 16	Jan 26	Feb 22	Apr 6	Apr 19	May 3	May 17	May 31	Jun 14	Jul 12-13	Jul 19	Aug 9	Aug 24	Aug 30	Sept 14	Oct 4	Oct 18	Oct 26	Nov 1	Feb 16	Jun 14	Aug 24	Aug 25	Oct 17
CFO-1	D-MW1														x		x		x		x	x			x	x		x	x		
CFO-1	D-MW2														x		x			x		x	x		x	x		x	x		
CFO-1	D-MW3														x		x		x		x	x		x	x		x	x			
CFO-1	D-P10-1														x		x		x		x	x	x		x	x		x	x		
CFO-1	D-P10-2														x		x		x		x		x	x		x	x		x	x	
CFO-1	D-MW4														x		x		x		x		x	x		x	x		x	x	
CFO-1	D-MW5														x		x		x		x	x	x		x	x		x	x		
CFO-1	D-MW6														x		x		x		x	x	x		x	x		x	x		
CFO-1	D-MW10a																								x	x		x	x		
CFO-1	D-P10-10b																								x	x		x	x		
CFO-1	D-P10-10c																								x	x		x	x		
CFO-1	D-MW11a																								x	x		x	x		
CFO-1	D-P10-11b																								x	x		x	x		
CFO-1	D-MW12a																								x	x		x	x		
CFO-1	D-P10-12b																								x	x		x	x		
CFO-1	D-MW13a																								x	x		x	x		
CFO-1	D-P10-13b																								x	x		x	x		
CFO-1	D-P10-13c																								x	x		x	x		
CFO-1	D-MW14a																								x	x		x	x		
CFO-1	D-P10-14b																								x	x		x	x		
CFO-1	D-P10-14c																								x	x		x	x		
CFO-1	D-MW15a																								x	x		x	x		
CFO-1	D-P10-15b																								x	x		x	x		
CFO-1	D-P10-15c																								x	x		x	x		
CFO-1	D-MW16a																								x	x		x	x		
CFO-1	D-P10-16b																								x	x		x	x		

Battersea area wells from 2009 to 2011.

CFO-3, -4, and -5 wells in central Alberta in 2010 and 2011.

Site	Well	2010							2011		
		Apr. 13	May 18	Jun. 22	Jul. 13	Aug. 17	Sept. 21	Oct. 18	Mar. 15	May 31	Aug. 16
CFO-3	A-C3	x		x	x	x	x			x	x
CFO-3	A-MW1	x	x	x	x	x	x		x	x	x
CFO-3	A-MW2	x	x	x	x	x	x	x	x	x	x
CFO-3	A-MW3	x	x	x	x	x	x	x	x	x	x
CFO-3	A-P08-16	x	x	x	x	x	x	x	x	x	x
CFO-3	A-P08-21	x	x	x	x	x	x	x		x	x
CFO-4	B-C4	x	x		x	x	x	x	x	x	x
CFO-4	B-MW1	x	x	x	x	x	x	x	x	x	x
CFO-4	B-MW2a			x	x	x	x	x	x	x	x
CFO-4	B-MW3	x	x	x	x	x	x	x	x	x	x
CFO-4	B-MW4a			x	x	x	x	x	x	x	x
CFO-4	B-P10-15e				x	x	x	x	x	x	x
CFO-4	B-P1-21e				x	x	x	x	x	x	x
CFO-4	B-P10-15w				x	x	x	x	x	x	x
CFO-4	B-P10-20w				x	x	x	x	x	x	x
CFO-5	C-C2		x	x		x	x	x	x	x	x
CFO-5	C-MW1	x	x	x	x	x	x	x	x	x	x
CFO-5	C-MW2	x	x	x	x	x	x	x	x	x	x
CFO-5	C-MW3	x	x	x	x	x	x	x	x	x	x
CFO-5	C-P08-14	x	x	x	x	x	x	x	x	x	x
CFO-5	C-P08-21	x			x	x	x	x	x	x	x

Appendix 7. Groundwater chemical parameters analyzed and methods used.

Groundwater chemical parameters analyzed and methods used during the historical (1994 to 2001).

Parameter	Method	Instrument	Reference	MDL ^z (mg L ⁻¹)
Nitrate nitrogen (NO ₃ ⁻ -N)	Hydrazine redcution	TRAACS 800	782-86T ^y	0.04
Nitrite nitrogen (NO ₂ ⁻ -N)	Diazotiazation	TRAACS 800	784-86T ^y	0.04
Ammonium nitrogen (NH ₄ ⁺ -N)	phenate method	TRAACS 800	780-86T ^y	0.04
Phosphate phosphorus (PO ₄ ³⁻ -P)	Ascorbic acid redcution	TRAACS 800	781-86T ^y	0.002
Dissolved phosphorus (DP)	Persulfate digestion	TRAACS 800	787-86T ^y	0.04
Total phosphorus (TP)	Persulfate digestion	TRAACS 800	787-86T ^y	0.01
Total Kjeldahl nitrogen (TKN)	Kjeldahl method	TRAACS 800	786-86T ^y	0.01
Chloride (Cl ⁻)		TRAACS 800	783-86T ^y	4
Sulphate (SO ₄ ²⁻)	Turbidimetric method	Milton Roy Spectronic 1001 Plus	Greenberg <i>et al.</i> 1992	4.1
Carbonate (CO ₃ ²⁻)	Acid titration	Man-Tech	Greenberg <i>et al.</i> 1992	1.73
Bicarbonate (HCO ₃ ⁻)	Acid titration	Man-Tech	Greenberg <i>et al.</i> 1992	1.73
Sodium (Na ⁺)	Flame photometer	IL 943	Greenberg <i>et al.</i> 1992	2.3
Potassium (K ⁺)	Flame photometer	IL 943	Greenberg <i>et al.</i> 1992	1.9
Calcium (Ca ²⁺)	Atomic absorption	UNICAM 989	Greenberg <i>et al.</i> 1992	0.9
Magnesium (Mg ²⁺)	Atomic absorption	UNICAM 989	Greenberg <i>et al.</i> 1992	0.9
Iron (Fe) ^x	Atomic Absorption	UNICAM 989	Greenberg <i>et al.</i> 1992	0.005
Manganese (Mn) ^x	Atomic absorption	UNICAM 989	Greenberg <i>et al.</i> 1992	0.01
Arsenic (As) ^x	Hydride method, Atomic absorption	UNICAM 989	Greenberg <i>et al.</i> 1992	0.0004

^z MDL: minimum detection limit.

^y TRAACS 800 method number is 86T (Techinicon Industrial method).

^x Analyzed as elemental metals (i.e., no valence charges).

Groundwater chemical parameters analyzed and methods used during the current study (2009 to 2011).

Parameter	Method	Method number	Instrument	Reference	MMDL ^z
pH	Electrometric	4500-H+ B.	Man-Tech, PC-Titrate	APHA ^y	-
Electrical conductance (EC)	Laboratory	2510 B.	Man-Tech, PC-Titrate	APHA ^y	-
Nitrate nitrogen (NO ₃ ⁻ -N)	Automated cadmium reduction	4500-NO3- F.	ASEORIA PACIFIC, Flow injection	APHA ^y	0.10 mg L ⁻¹
Nitrite nitrogen (NO ₂ ⁻ -N)	Automated cadmium reduction	4500-NO3- F.	ASEORIA PACIFIC, Flow injection	APHA ^y	0.10 mg L ⁻¹
Ammonia nitrogen (NH ₃ -N)	Automated phenate	4500-NH3 H.	ASEORIA PACIFIC, Flow injection	APHA ^y	0.10 mg L ⁻¹
Total dissolved nitrogen (TDN)	Pyrolysis and chemiluminescence detection	D-5176 - 08	SHIMADZU, TNM-1	ASTM ^x	0.5 mg L ⁻¹
Total nitrogen (TN)	Pyrolysis and chemiluminescence detection	D-5176 - 08	SHIMADZU, TNM-1	ASTM ^x	0.5 mg L ⁻¹
Phosphate phosphorus (PO ₄ ³⁺ -P)	Automated ascorbic acid reduction	4500-P F.	ASEORIA PACIFIC, Flow injection	APHA ^y	0.01 mg L ⁻¹
Total dissolved phosphorus (TDP)	Persulfate digestion, automated ascorbic acid reduction	4500-P B. F.	ASEORIA PACIFIC, Flow injection	APHA ^y	0.01 mg L ⁻¹
Total phosphorus (TP)	Persulfate digestion, automated ascorbic acid reduction	4500-P B. F.	ASEORIA PACIFIC, Flow injection	APHA ^y	0.01 mg L ⁻¹
Dissolved total carbon (D-TC)	Combustion-infrared	5310 B.	SHIMADZU, TOC-V _{CSH}	APHA ^y	5.0 mg L ⁻¹
Dissolved non-purgeable organic carbon (D-NPOC)	Combustion-infrared	5310 B.	SHIMADZU, TOC-V _{CSH}	APHA ^y	2.5 mg L ⁻¹
Dissolved inorganic carbon (D-IC)	Combustion-infrared	5310 B.	SHIMADZU, TOC-V _{CSH}	APHA ^y	5.0 mg L ⁻¹
Chloride (Cl ⁻)	Potentiometric	4500-Cl- D.	Man-Tech, PC-Titrate	APHA ^y	0.28 mol _c L ⁻¹
Sulphate (SO ₄ ²⁻)	Turbidimetric	4500-SO42- E.	HACK R/4000U Spectrophotometer	APHA ^y	0.13 mol _c L ⁻¹

^zMMDL: minimum measurable detection limit.

^y Standard Methods for the Examination of Water and Wastewater, 19th Edition (Eaton *et al.* 1995).

^x American Society for Testing and Materials Vol. 11.02 Water (II).

Groundwater chemical parameters analyzed and methods used during the current study (2009 to 2011) (continued).

Parameter	Method	Method number	Instrument	Reference	MMDL ^z
Carbonate as calcium carbonate (CO ₃ ²⁻ as CaCO ₃)	Titration	2320 B.	Man-Tech, PC-Titrator	APHA ^y	0.1 mol _c L ⁻¹
Bicarbonate as calcium carbonate (HCO ₃ ⁻ as CaCO ₃)	Titration	2320 B.	Man-Tech, PC-Titrator	APHA ^y	0.1 mol _c L ⁻¹
Sodium (Na ⁺)	Flame emission photometric	3500-Na D.	BWB XP Flame Photometer	APHA ^y	0.4 mmol _c L ⁻¹
Potassium (K ⁺)	Flame emission photometric	3500-K D.	BWB XP Flame Photometer	APHA ^y	0.1 mmol _c L ⁻¹
Calcium (Ca ²⁺)	Atomic absorption spectrometric	3500-Ca B.	UNICAM 989, AA Spectrometer	APHA ^y	0.15 mmol _c L ⁻¹
Magnesium (Mg ²⁺)	Atomic absorption spectrometric	3500-Mg B.	UNICAM 989, AA Spectrometer	APHA ^y	0.25 mmol _c L ⁻¹
Sodium adsorption ratio (SAR)	Calculated: SAR = [Na ⁺]/{([Ca ²⁺]+[Mg ²⁺])/2} ^{1/2}				

^z MMDL: minimum measurable detection limit.

^y Standard Methods for the Examination of Water and Wastewater, 19th Edition (Eaton *et al.* 1995).

^x American Society for Testing and Materials Vol. 11.02 Water (II).

Appendix 8. Groundwater elevations by water table well and piezometer.

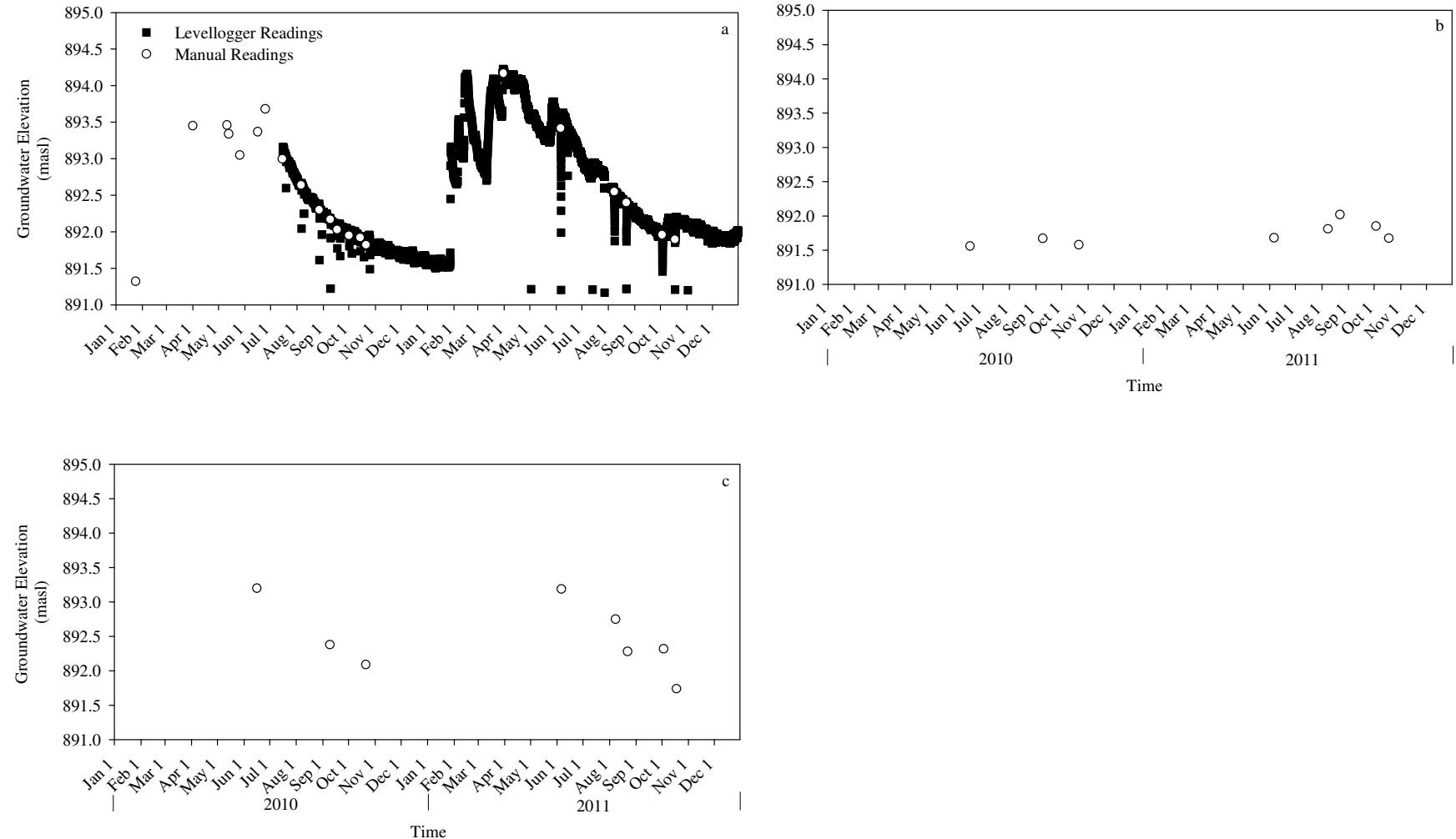


Figure A8-1. Groundwater elevations with time at (a) LB4-2x, (b) LB4-4x, and (c) LB4-5x.

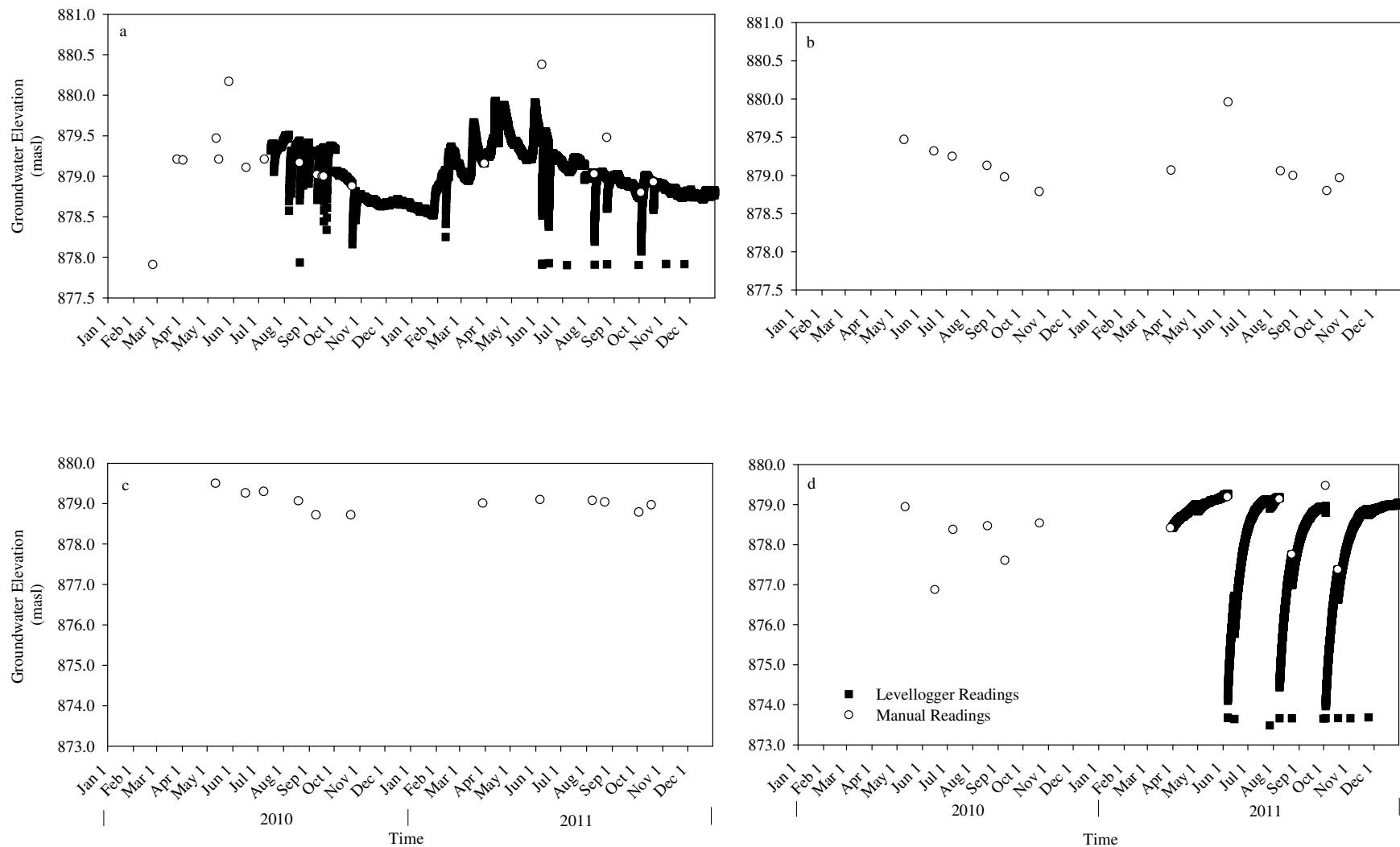


Figure A8-2. Groundwater elevations with time at (a) LB5a-1, (b) LB5a-2, (c) LB5a-3, and (d) LB5a-4.

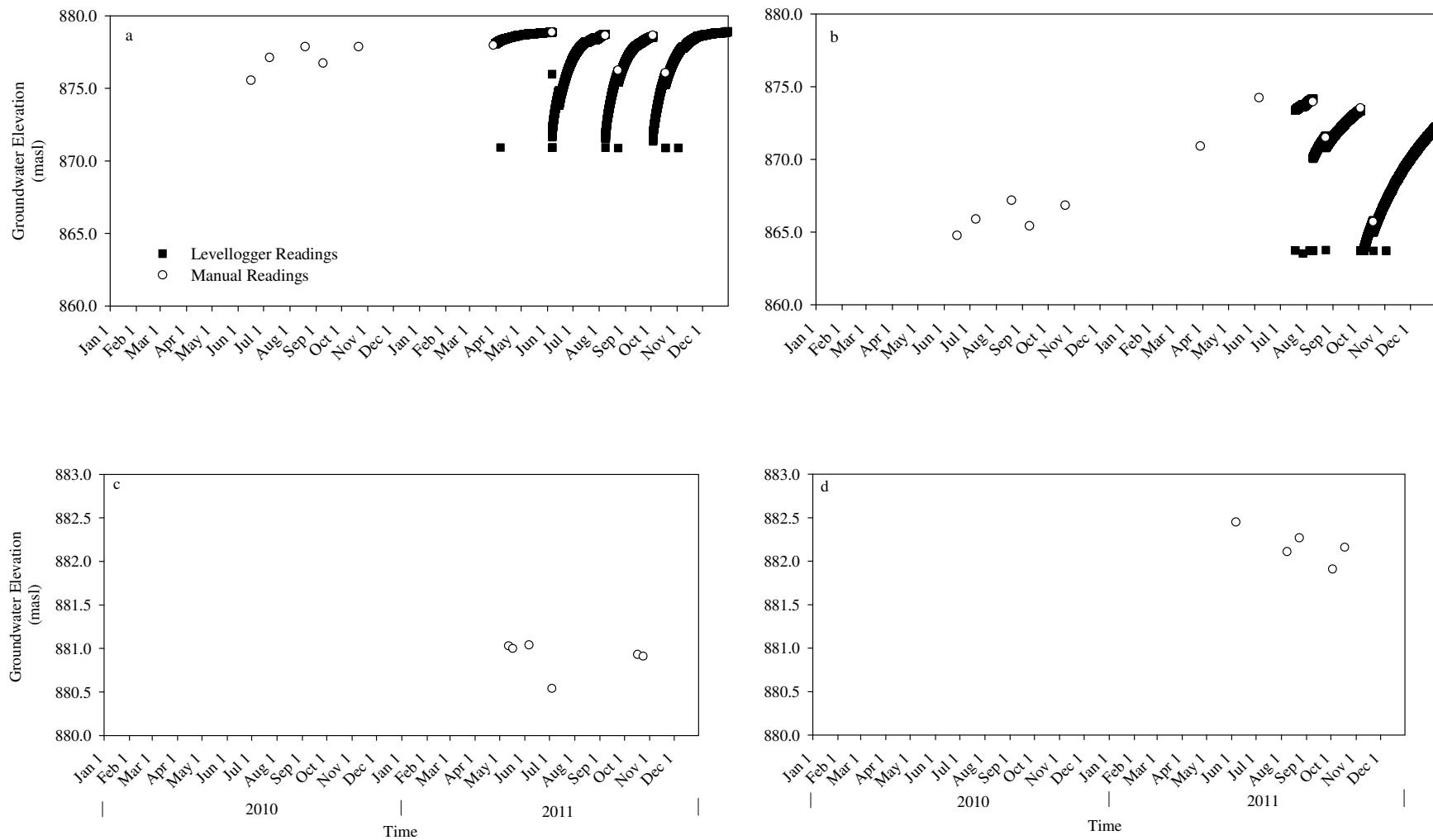


Figure A8-3. Groundwater elevations with time at (a) LB5a-5, (b) LB5a-6, (c) LB5b-1, and (d) LB5c-1.

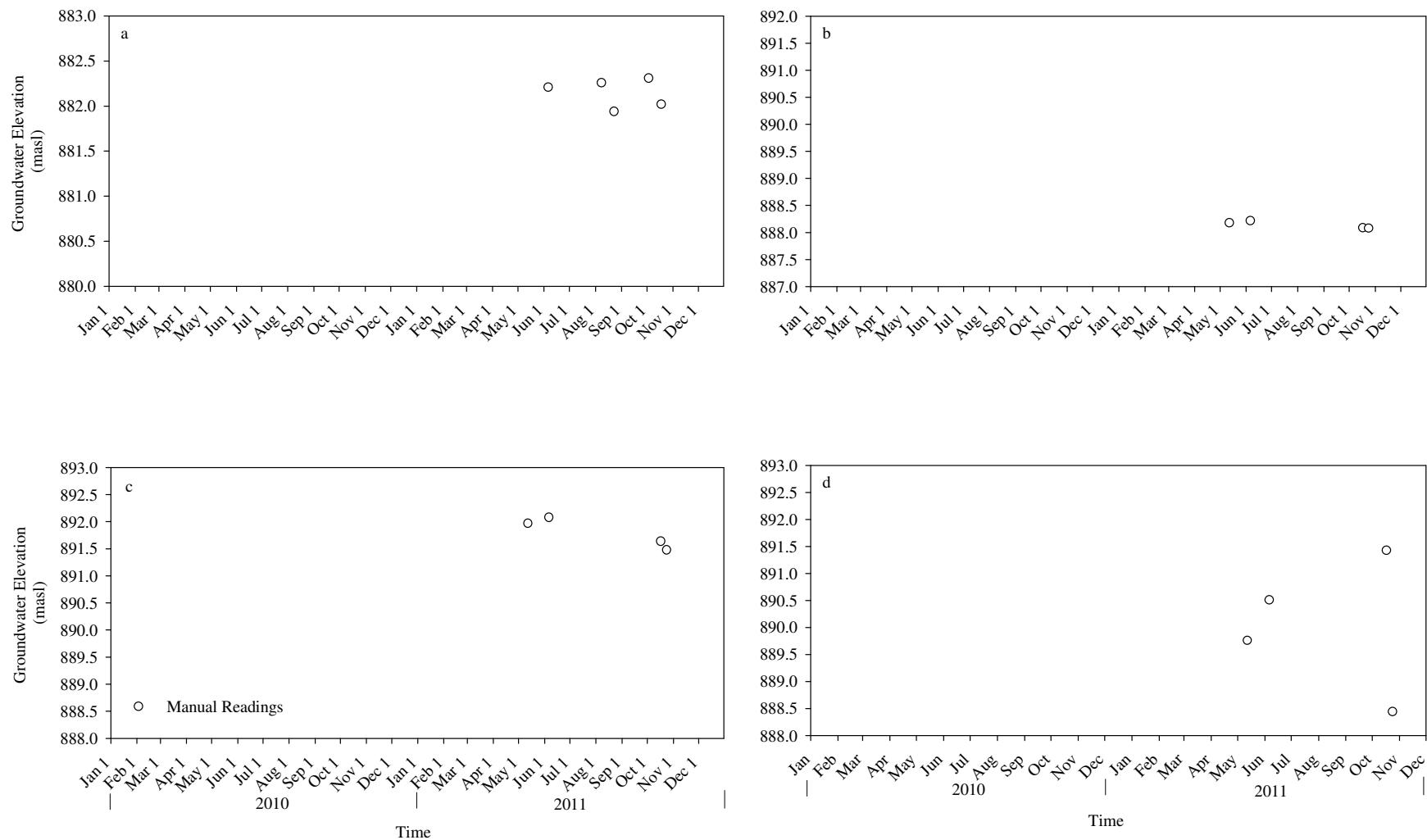


Figure A8-4. Groundwater elevations with time at (a) LB5c-2, (b) LB5d-1, (c) LB5e-1, and (d) LB5e-2.

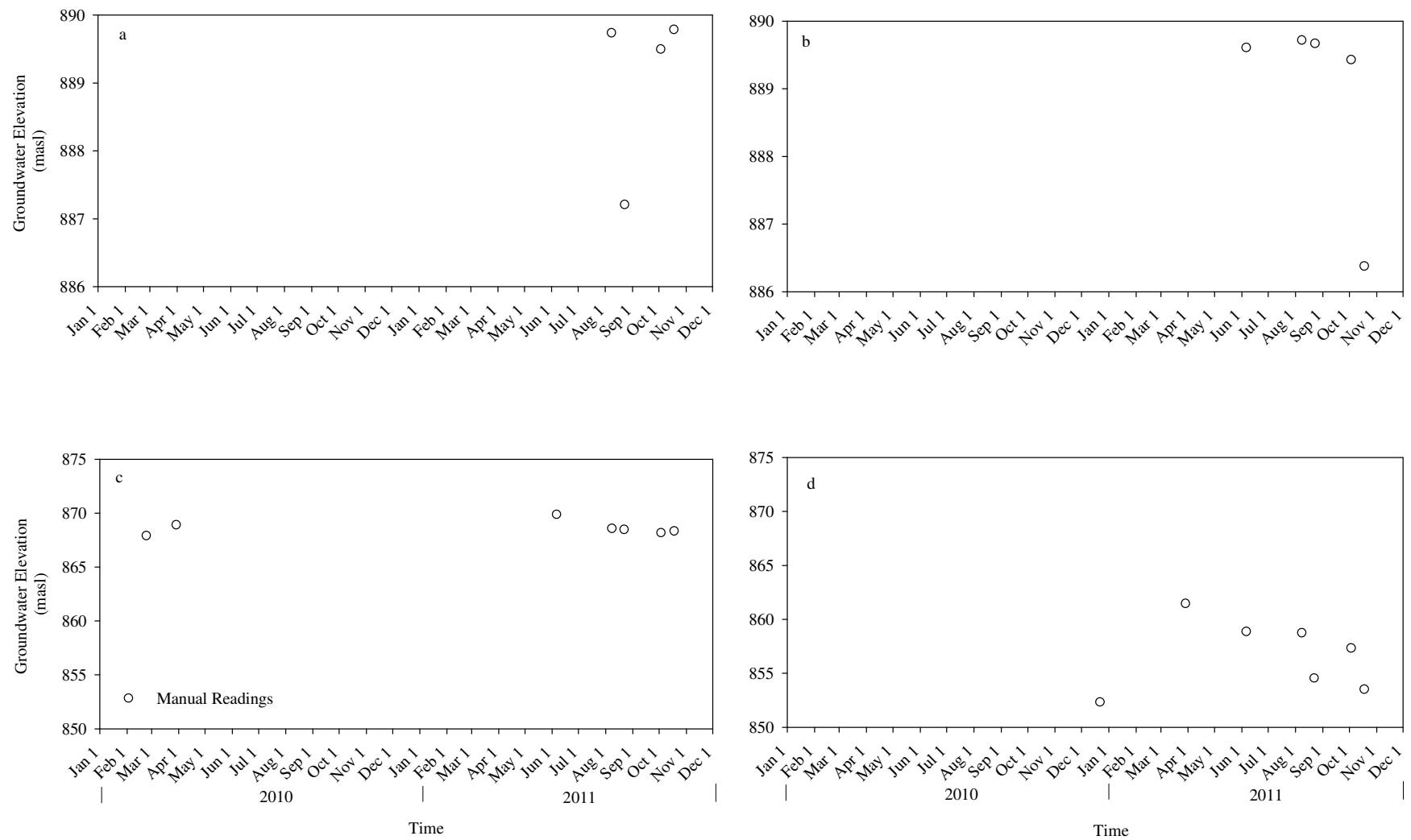


Figure A8-5. Groundwater elevations with time at (a) LB5f-1, (b) LB5f-2, (c) LB6-6x, and (d) LB6-7.

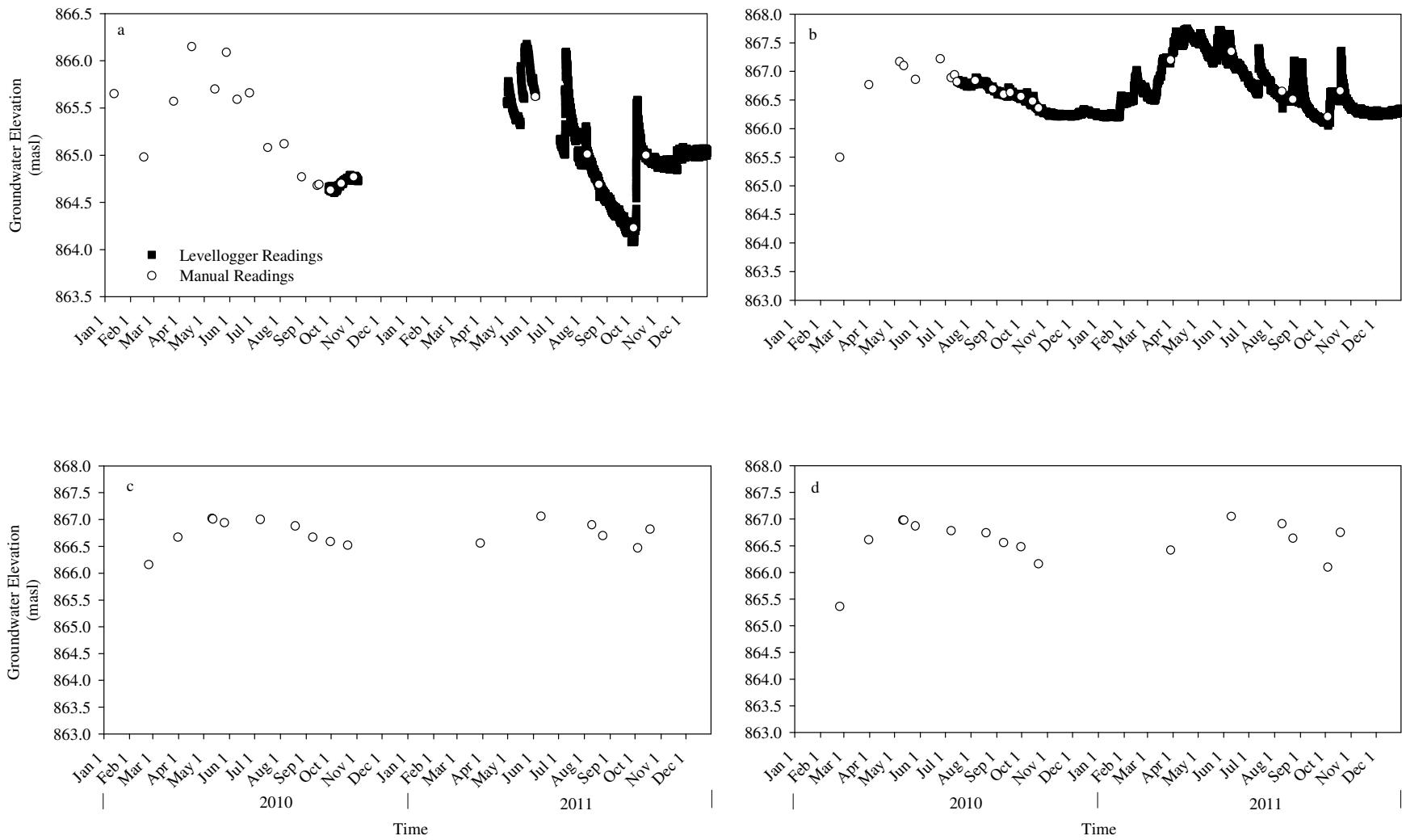


Figure A8-6. Groundwater elevations with time at (a) LB7-2, (b) LB8a-1, (c) LB8a-2, and (d) LB8a-3.

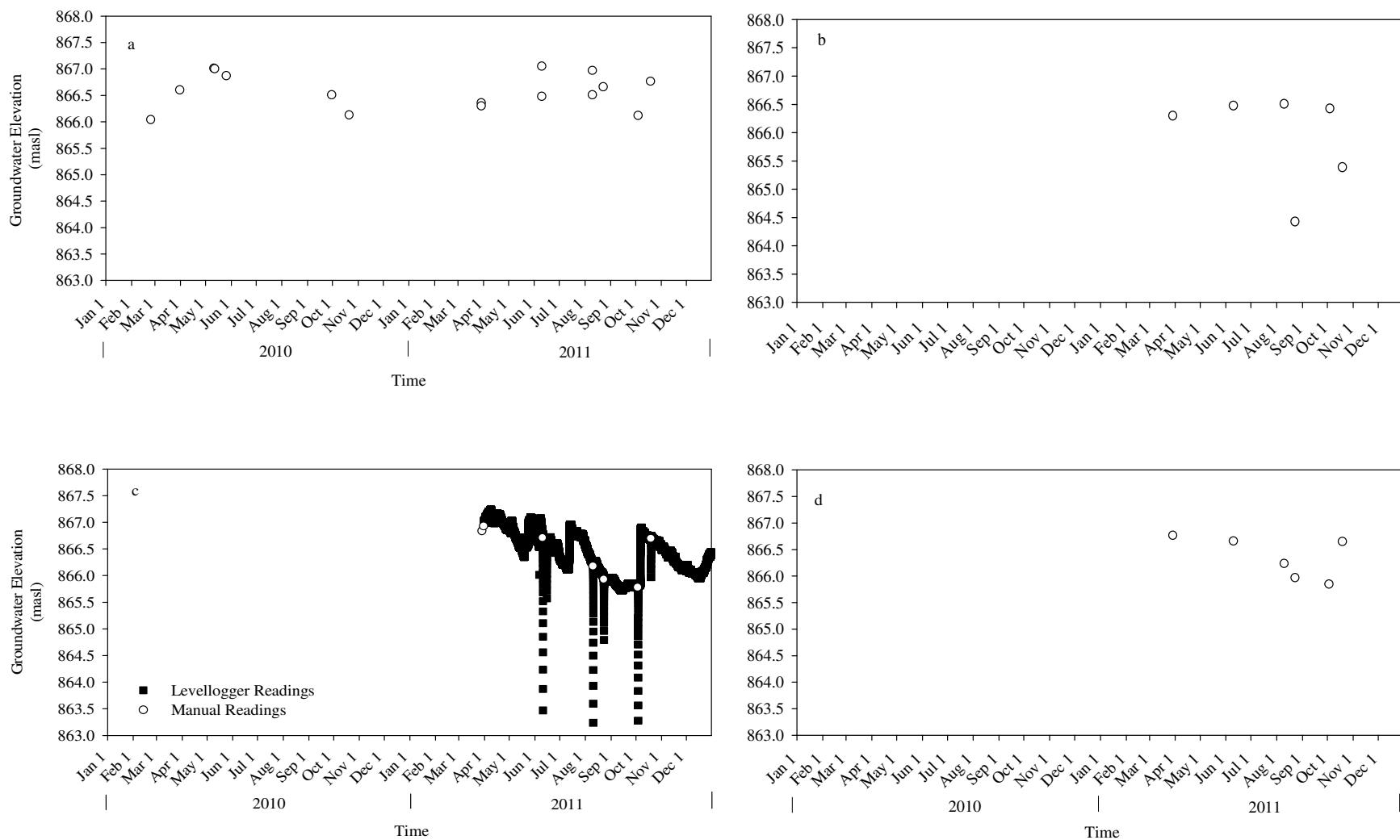


Figure A8-7. Groundwater elevations with time at (a) LB8a-4, (b) LB8a-5, (c) LB8a-6, and (d) LB8a-7.

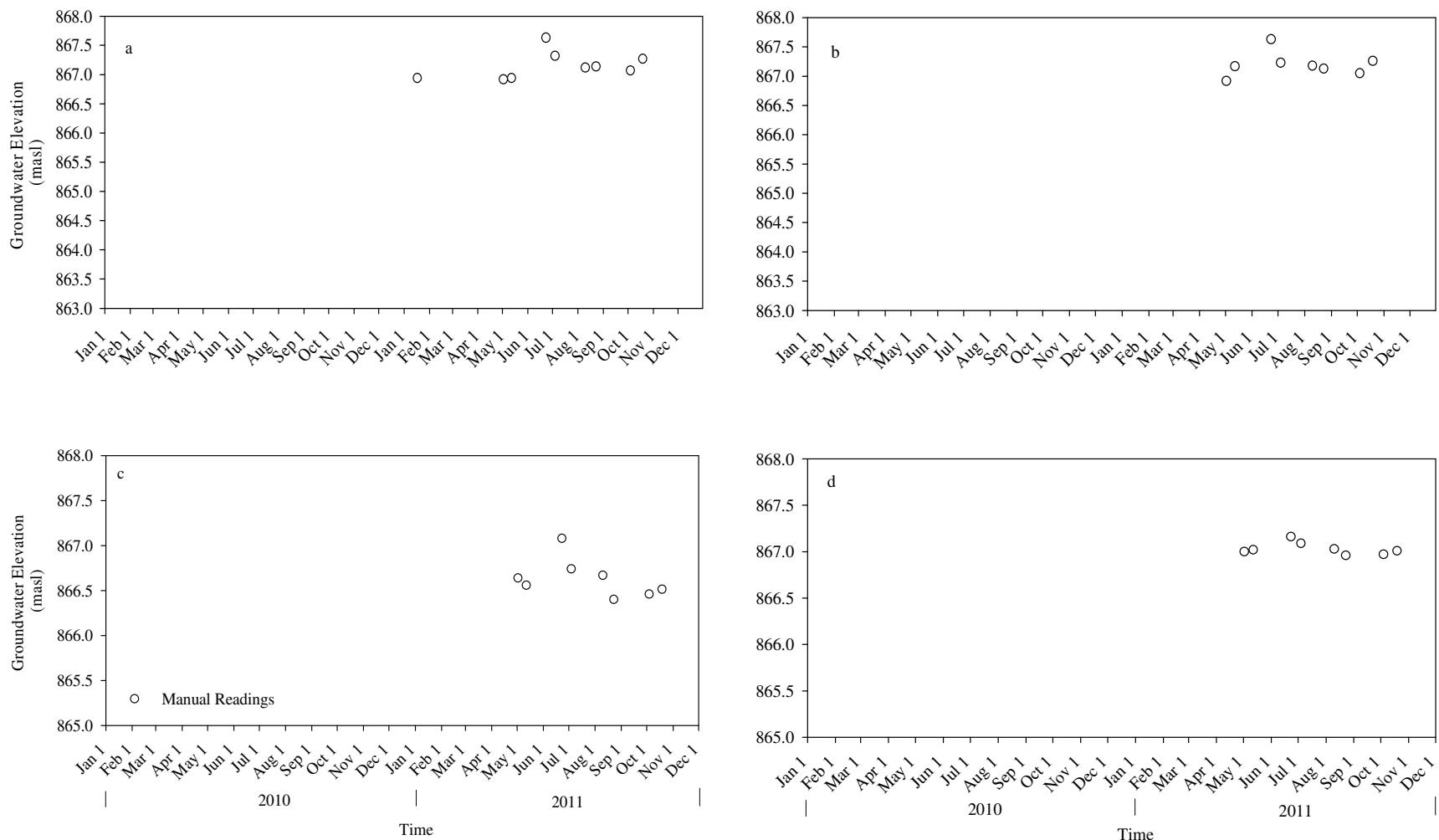


Figure A8-8. Groundwater elevations with time at (a) LB8a-8, (b) LB8a-9, (c) LB8a-10, (d) LB8a-12.

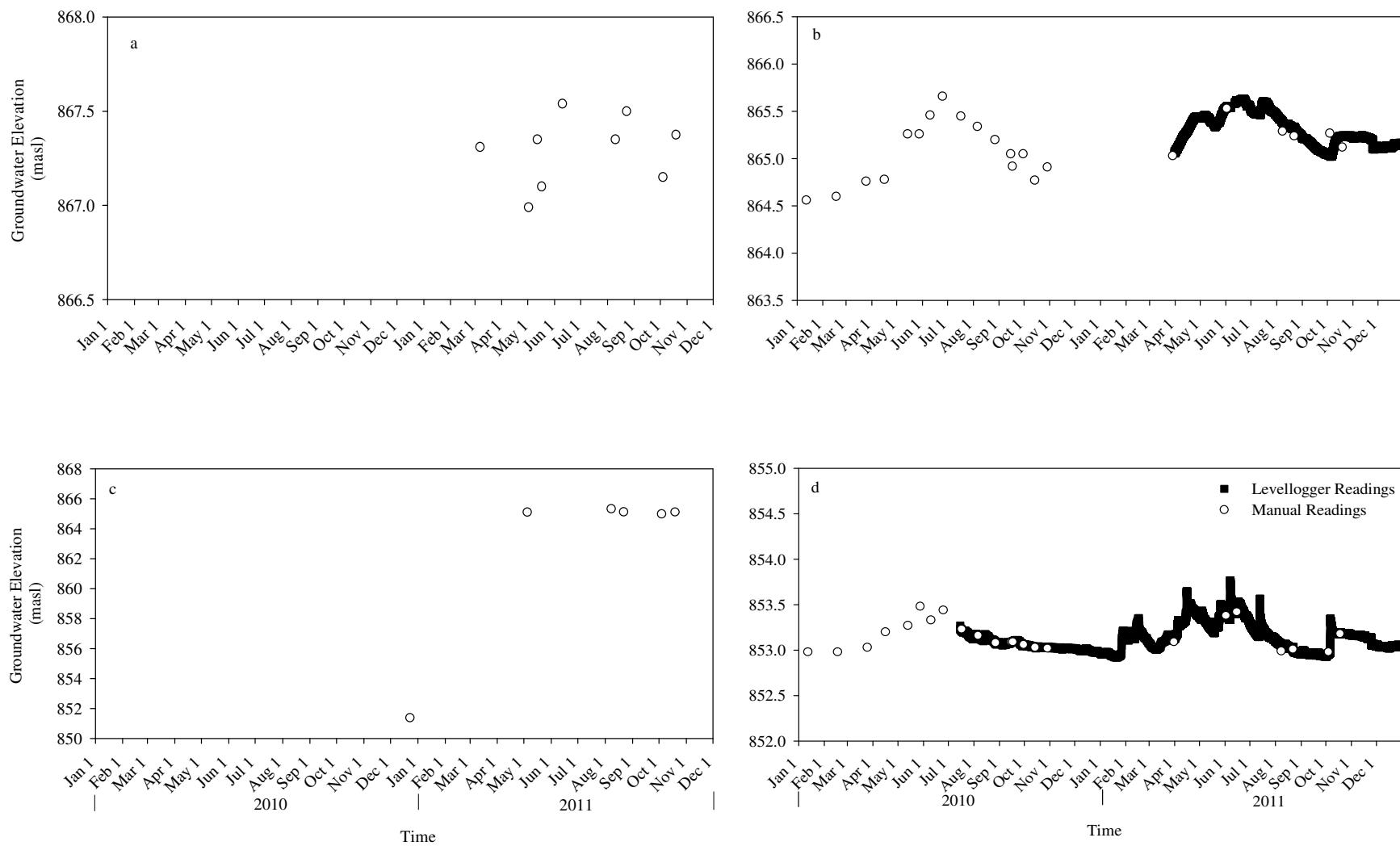


Figure A8-9. Groundwater elevations with time at (a) LB8a-13, (b) LB9-2, (c) LB9-8, and (d) LB11-4.

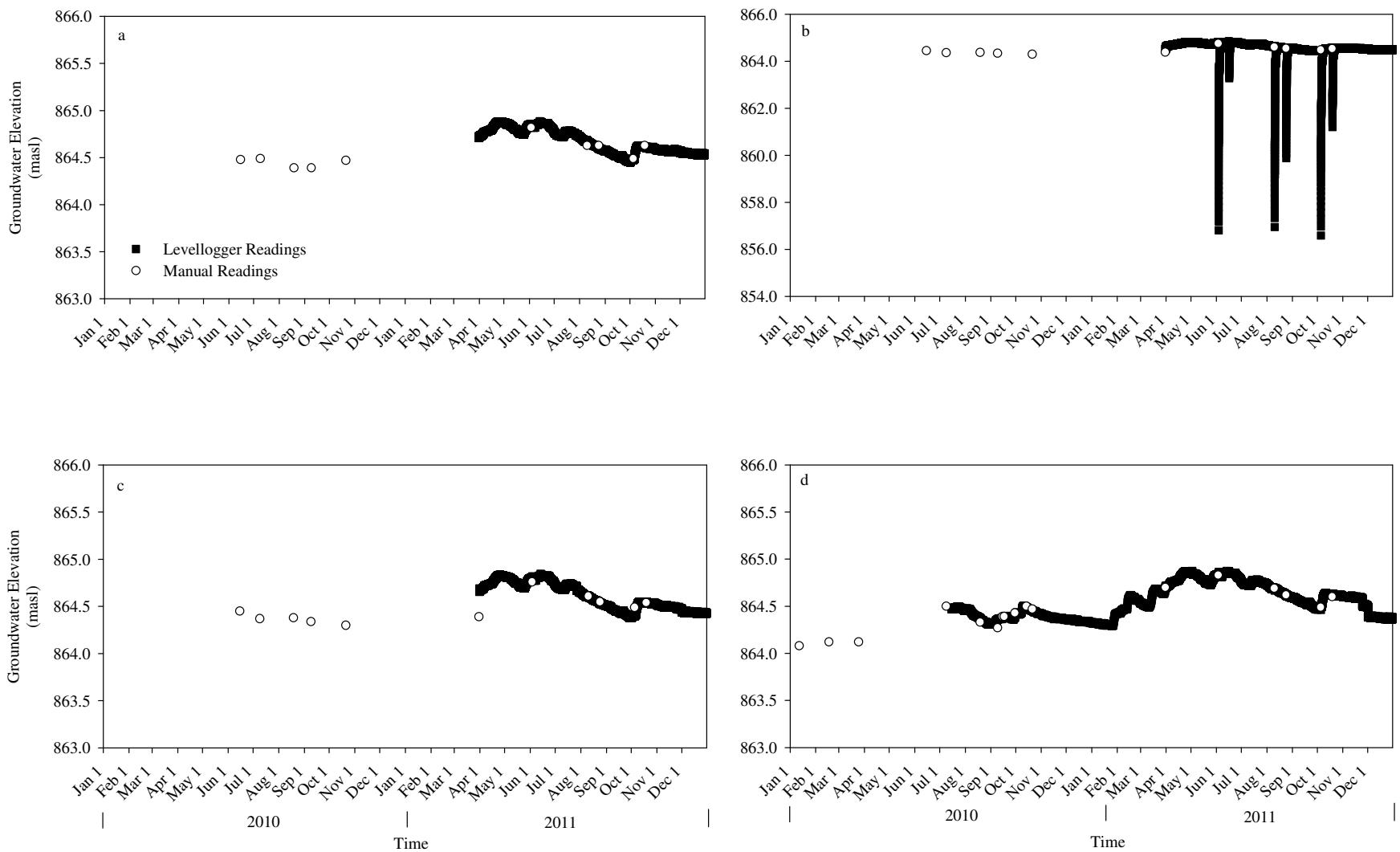


Figure A8-10. Groundwater elevations with time at (a) LB13-1, (b) LB13-2, (c) LB13-3, and (d) LB13-4.

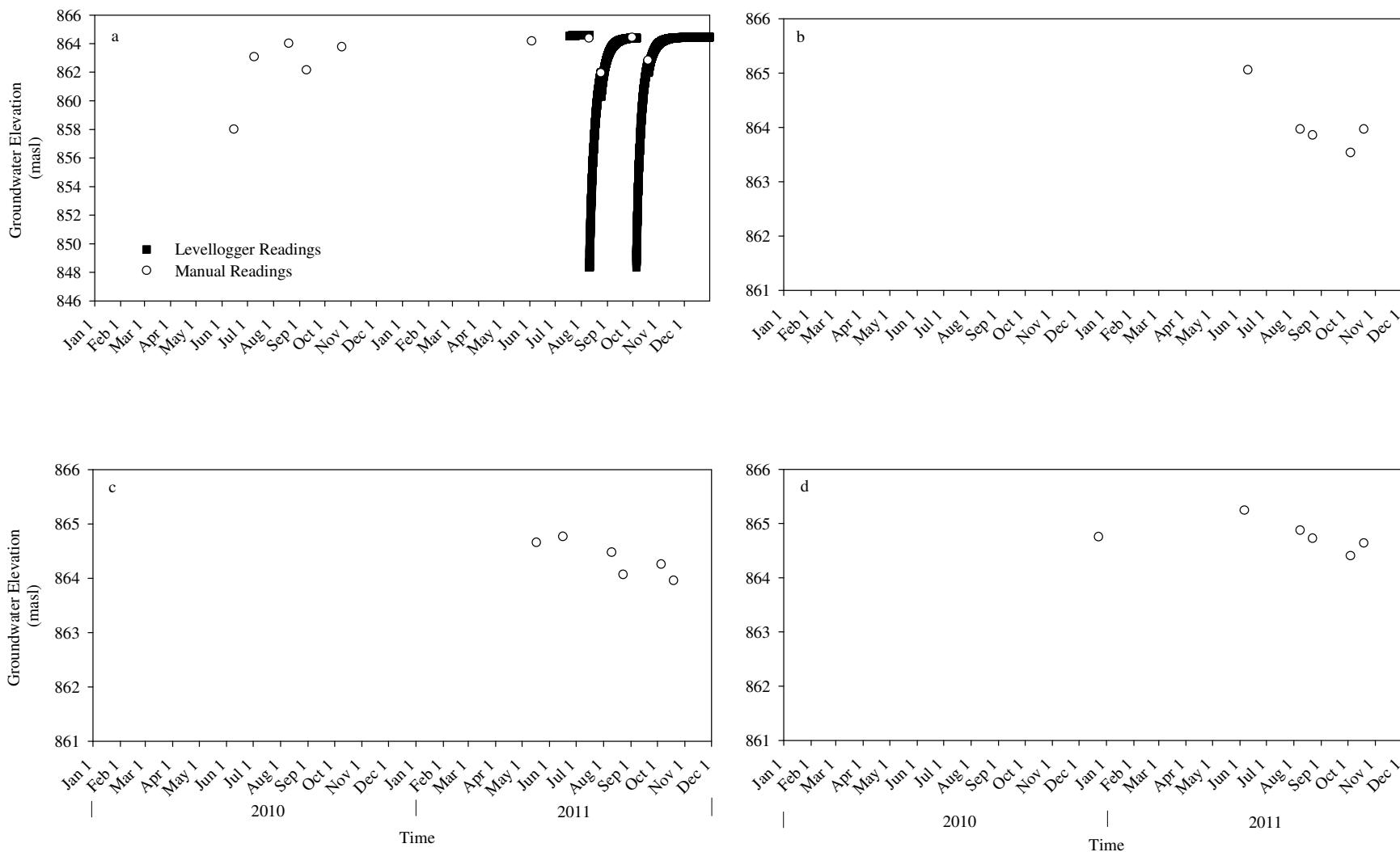


Figure A8-11. Groundwater elevations with time at (a) LB13-5, (b) LB13b-1, (c) LB13c-2, and (d) LB18-1x.

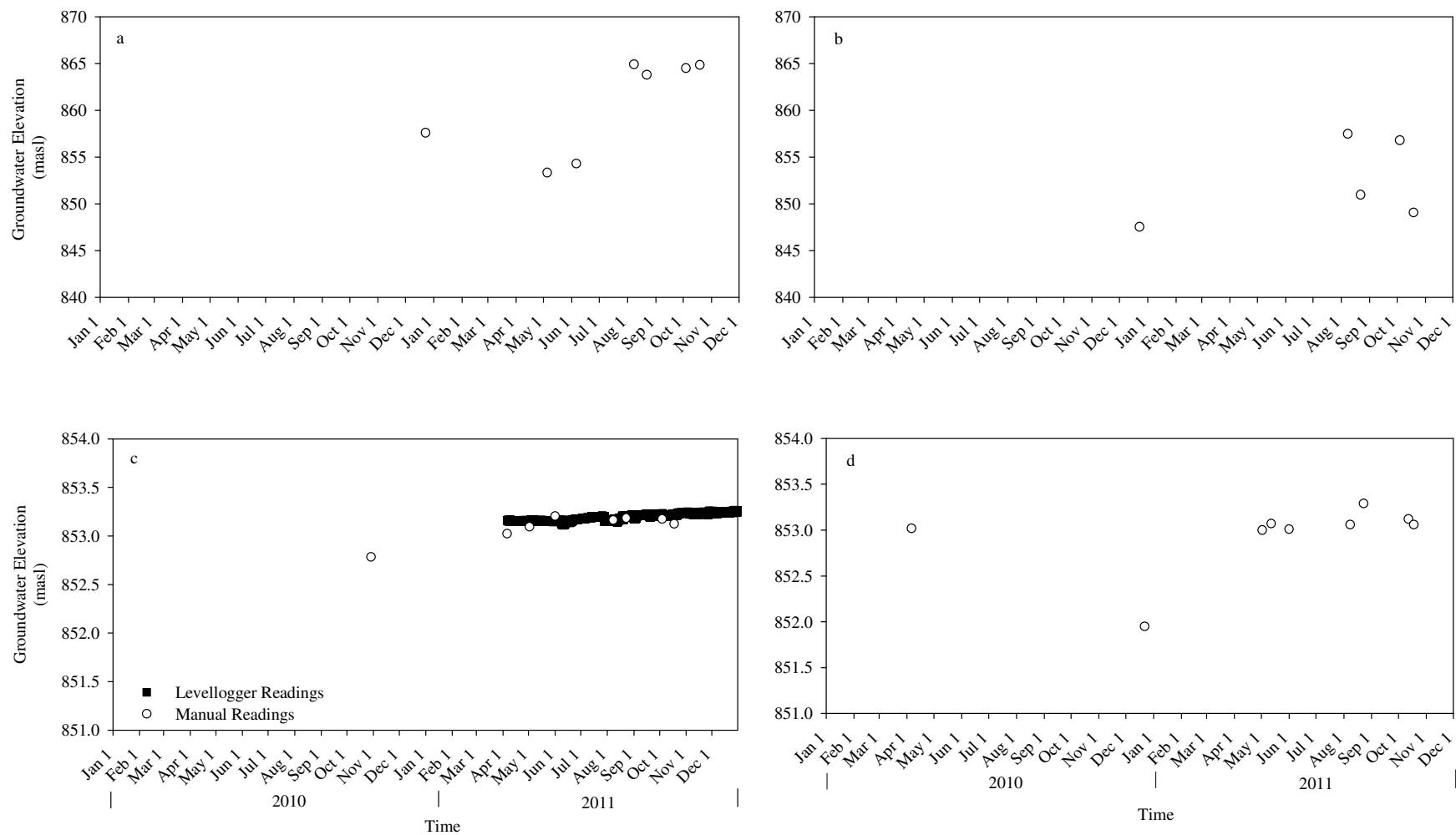


Figure A8-12. Groundwater elevations with time at (a)LB18-4, (b) LB18-5, (c) LB19-2, and (d) LB19-3.

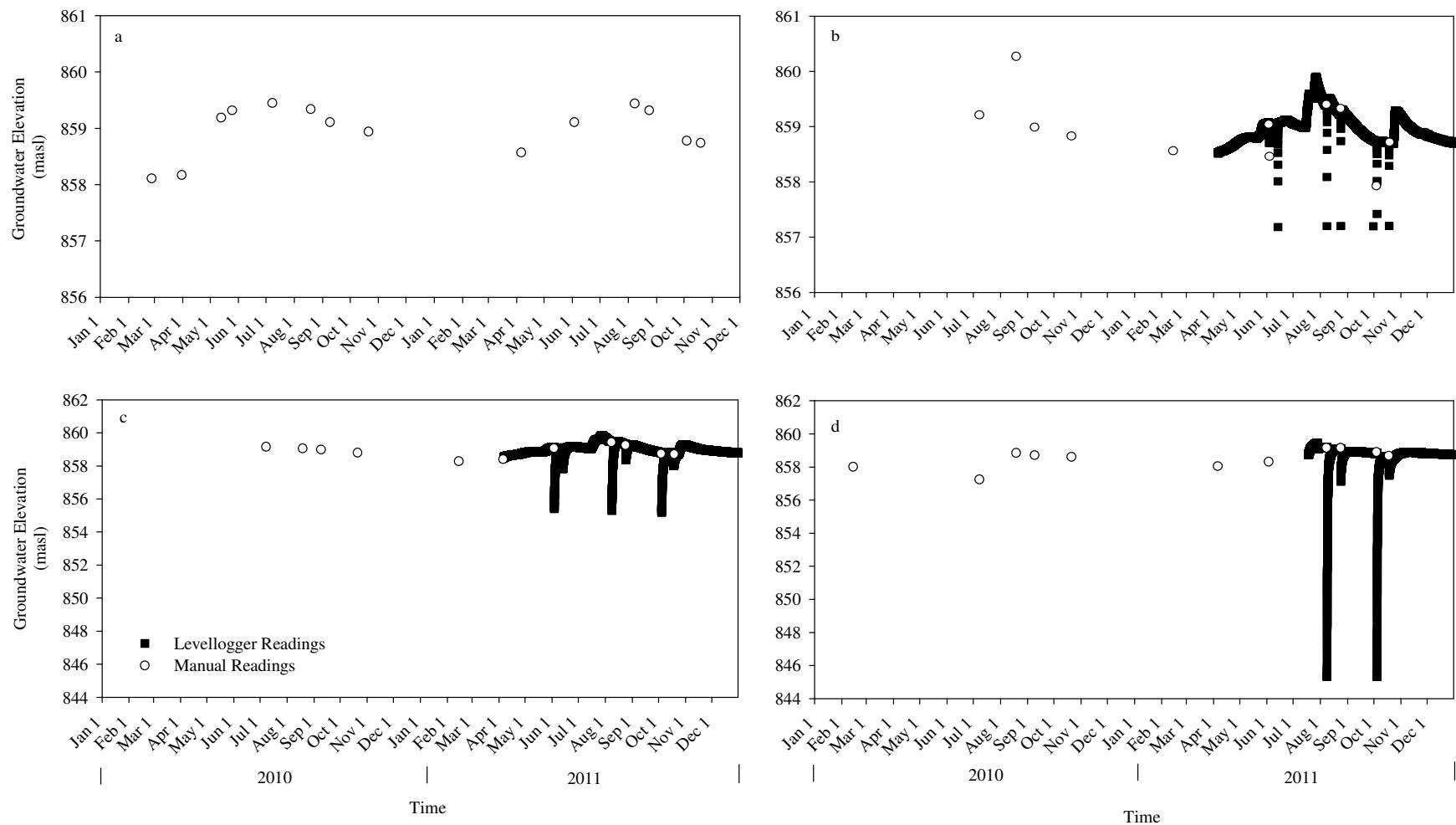


Figure A8-13. Groundwater elevations with time at (a) LB20-2, (b) LB20-5, (c) LB20-6, and (d) LB20-7.

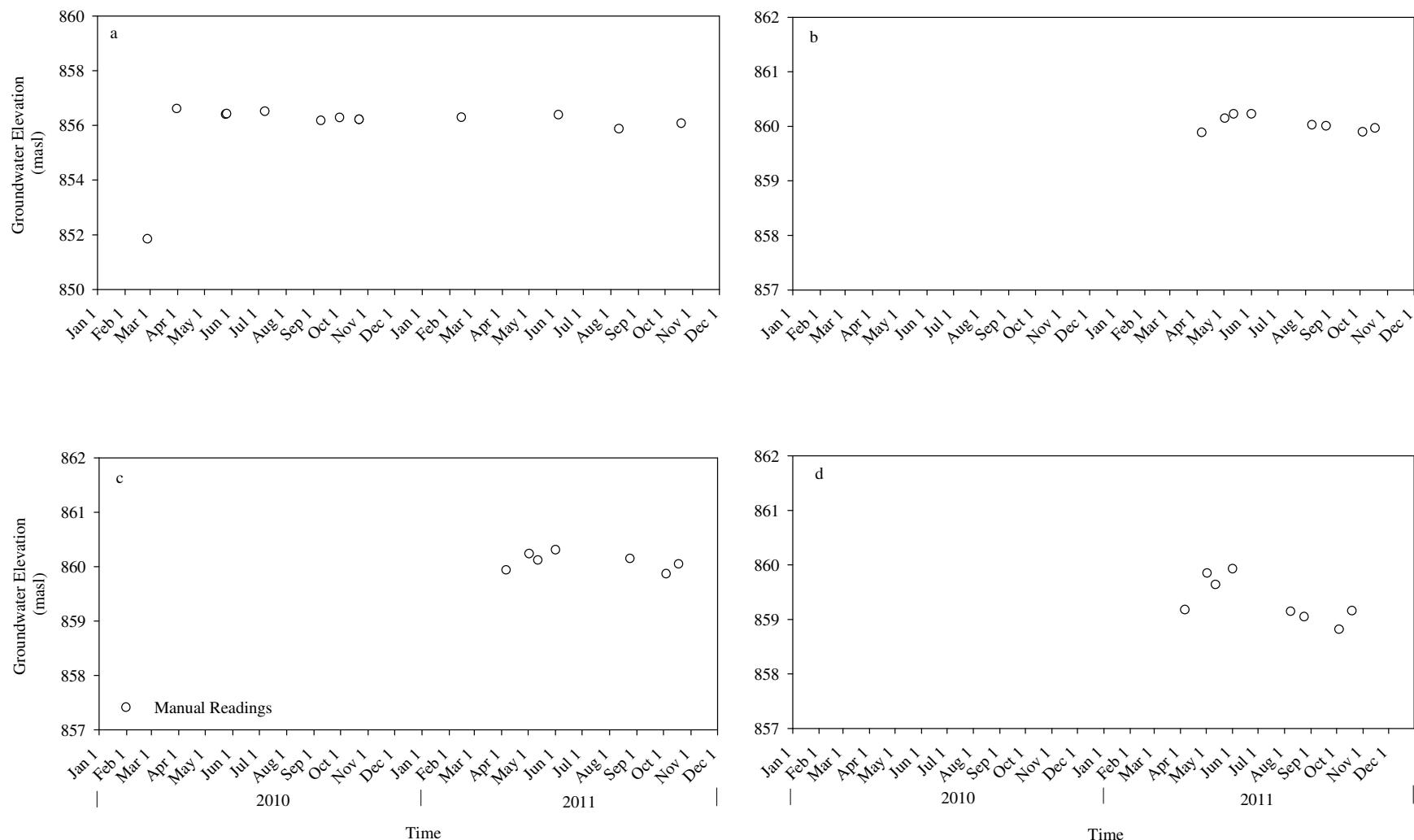


Figure A8-14. Groundwater elevations with time at (a) LB20a-1, (b) LB20b-1, (c) LB20b-2, and (d) LB20c-1.

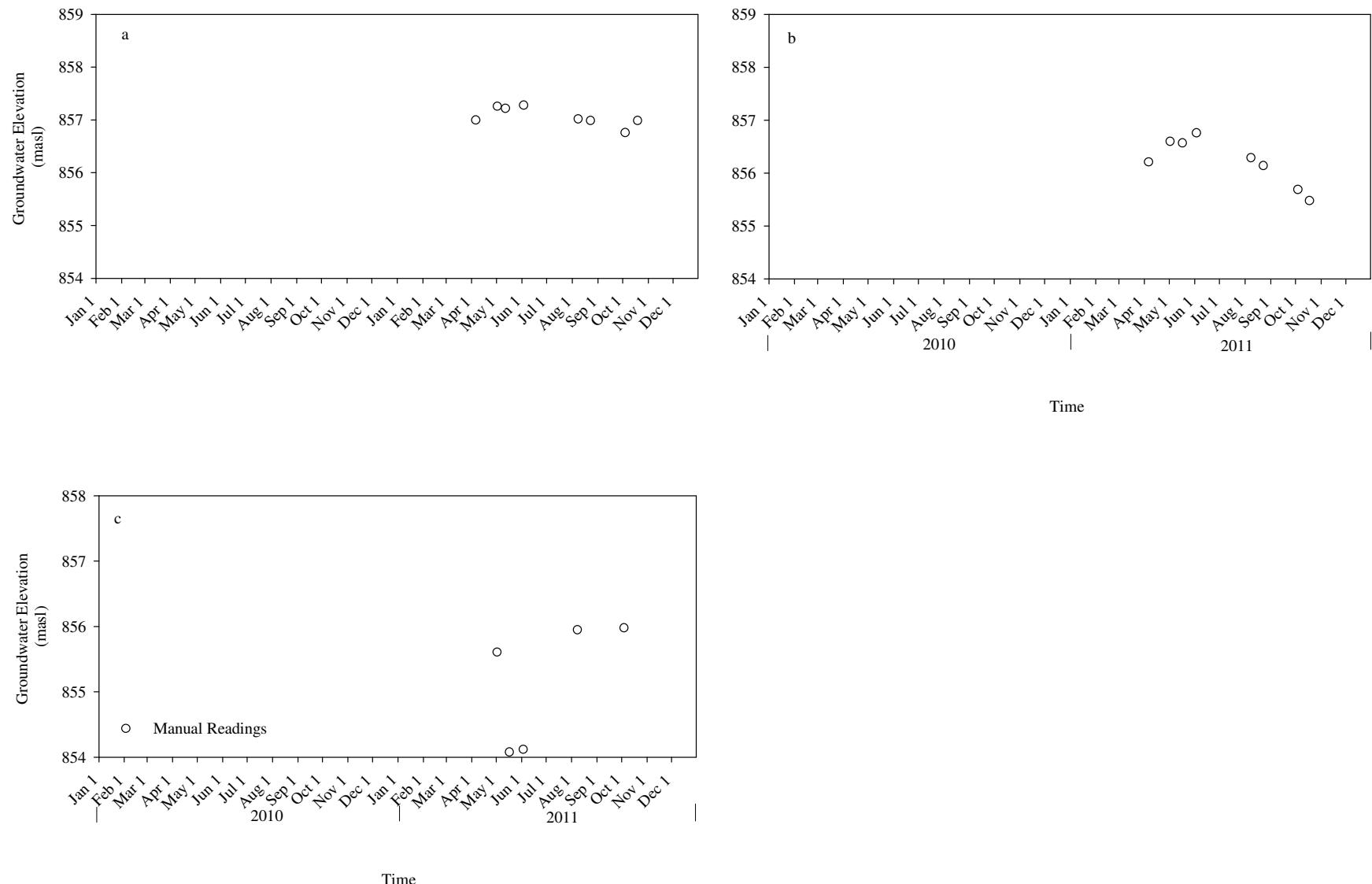


Figure A8-15. Groundwater elevations with time at (a) LB20d-1, (b) LB20e-1, and (c) LB20e-2.

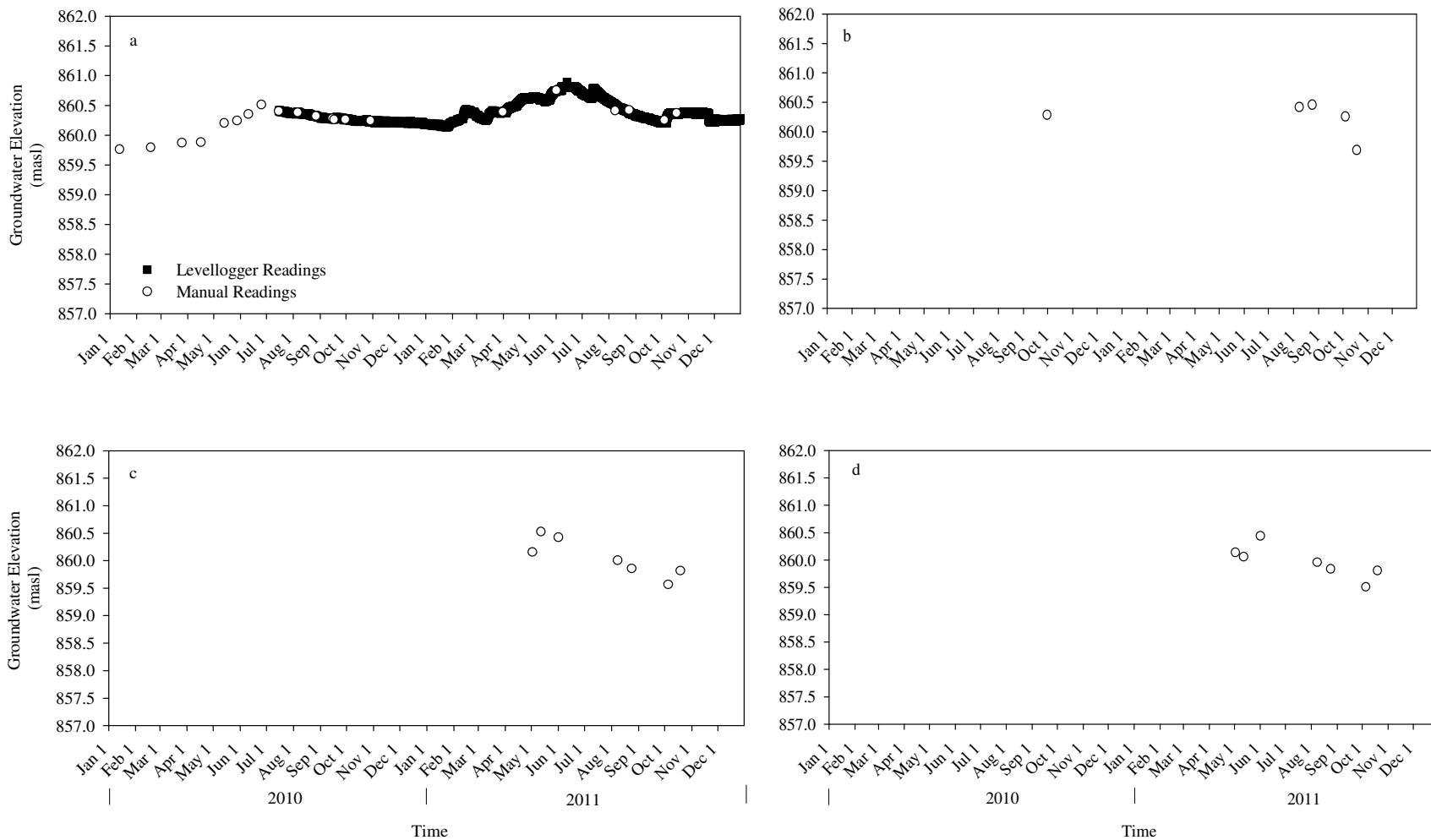


Figure A8-16. Groundwater elevations with time at (a) LB21-2, (b) LB21-3, (c) LB21a-1, and (d) LB21a-2.

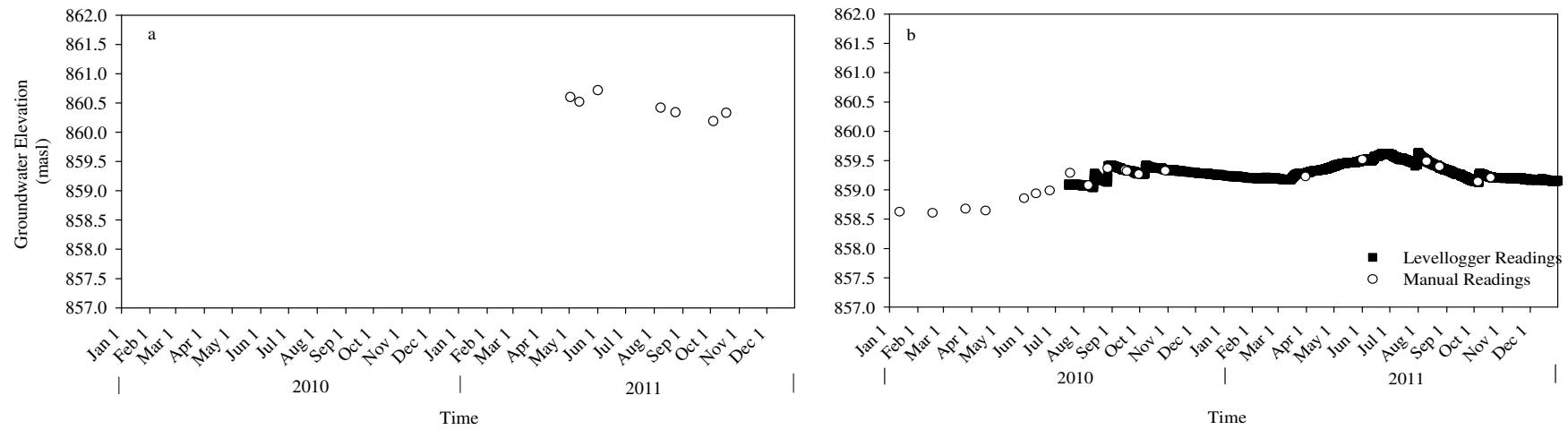


Figure A8-17. Groundwater elevations with time at (a) LB21b-1, (b) LB22-3.

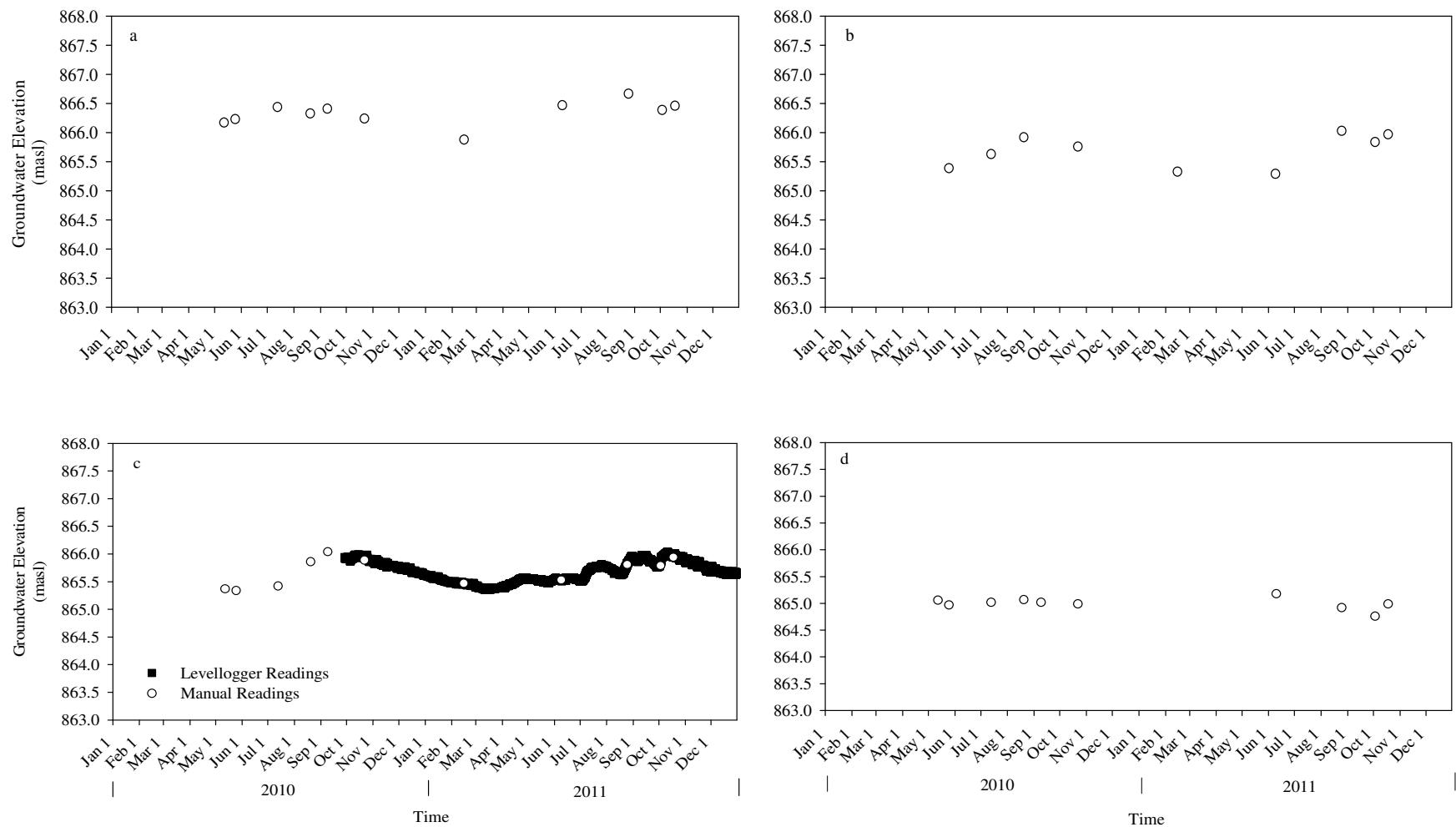


Figure A8-18. Groundwater elevations with time at (a) D-MW1, (b) D-MW2, (c) D-MW3, and (d) D-MW4.

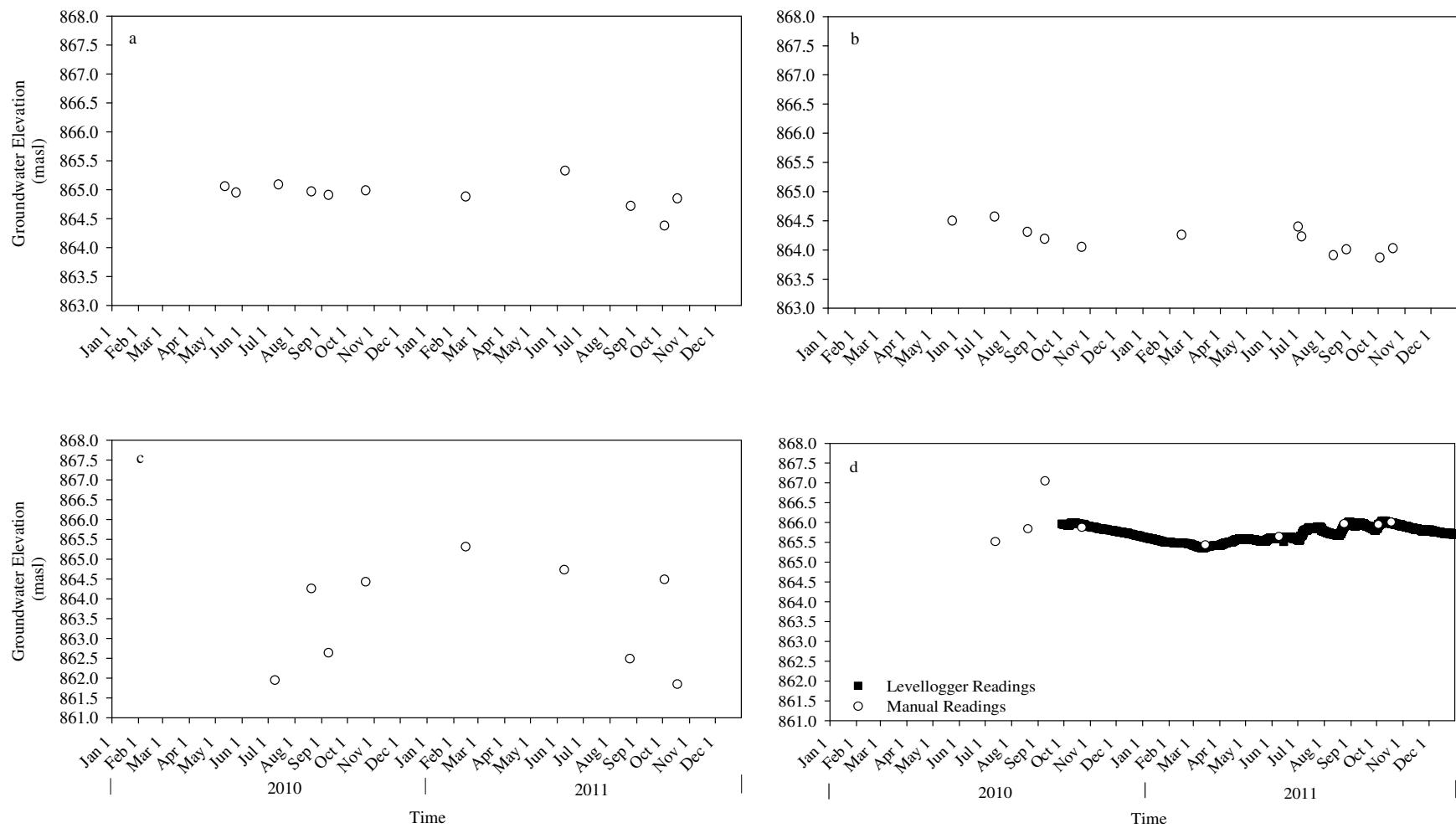


Figure A8-19. Groundwater elevations with time at (a) D-MW5, (b) D-MW6, (c) D-P10-1, and (d) D-P10-2.

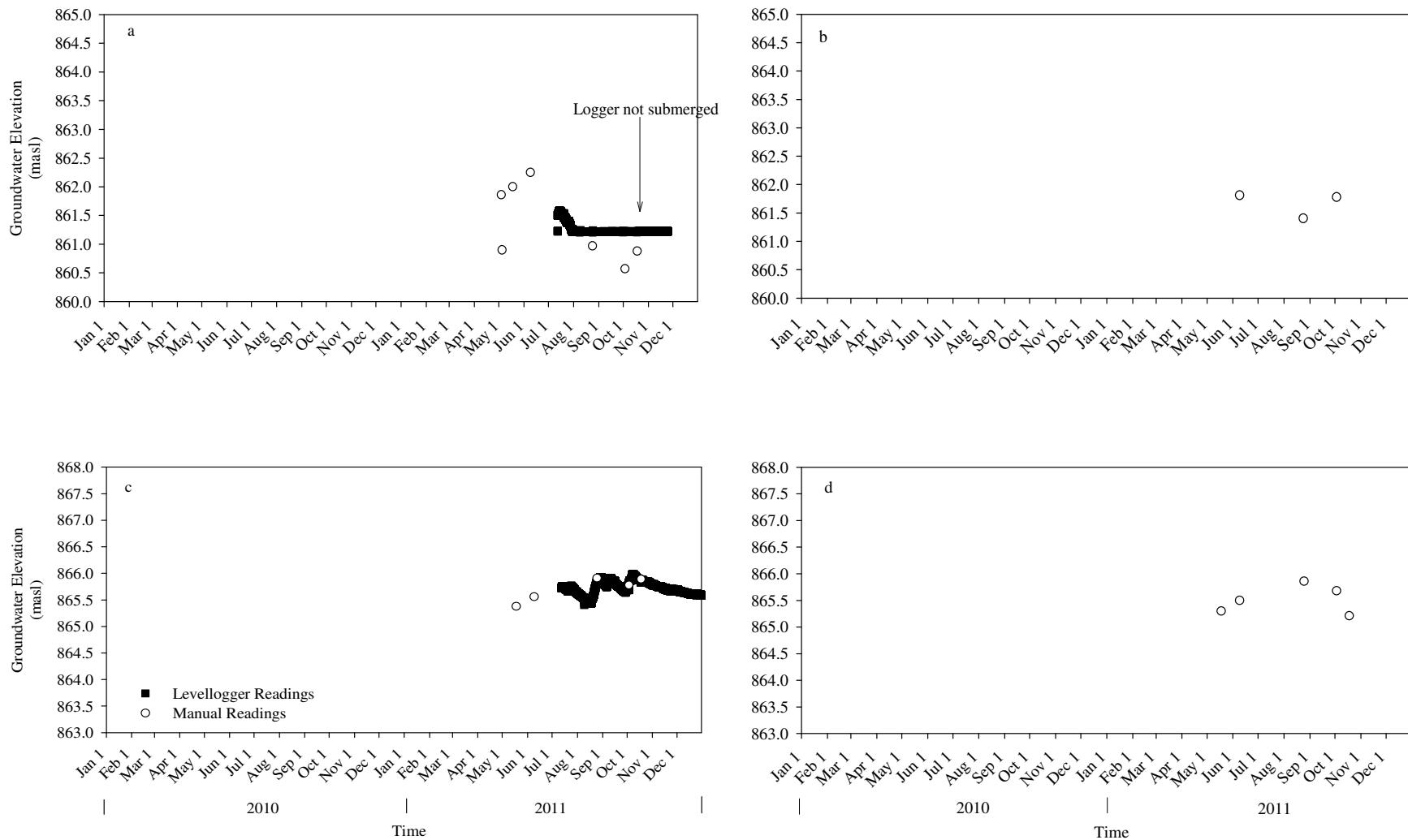


Figure A8-20. Groundwater elevations with time at (a) D-MW11a, (b) D-P11-11b, (c) D-MW12a, and (c) D-P11-12b.

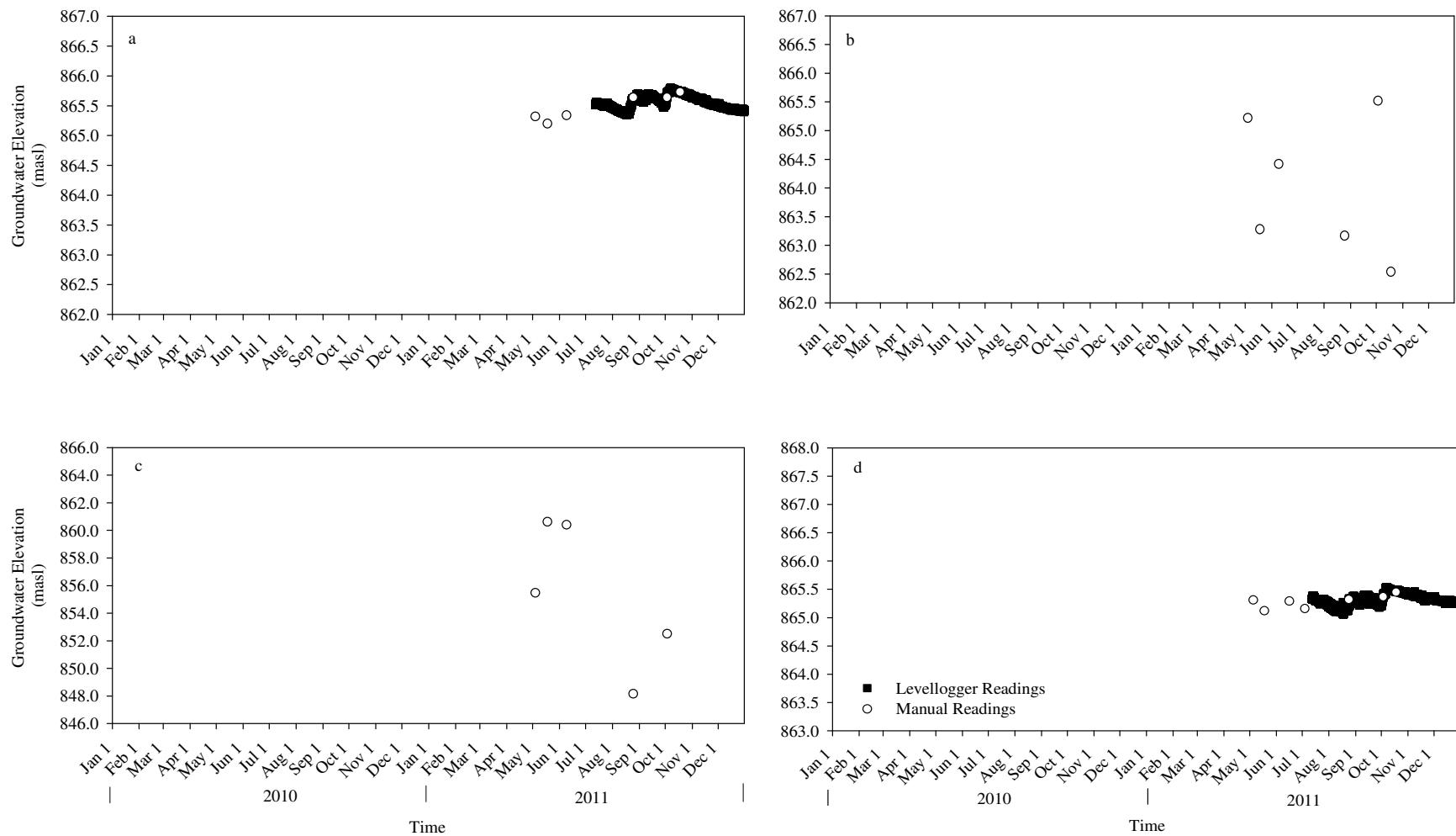


Figure A8-21. Groundwater elevations with time at (a) D-MW13a, (b) D-P11-13b, (c) D-P11-13c (note scale for groundwater elevation), and (d) D-MW14a.

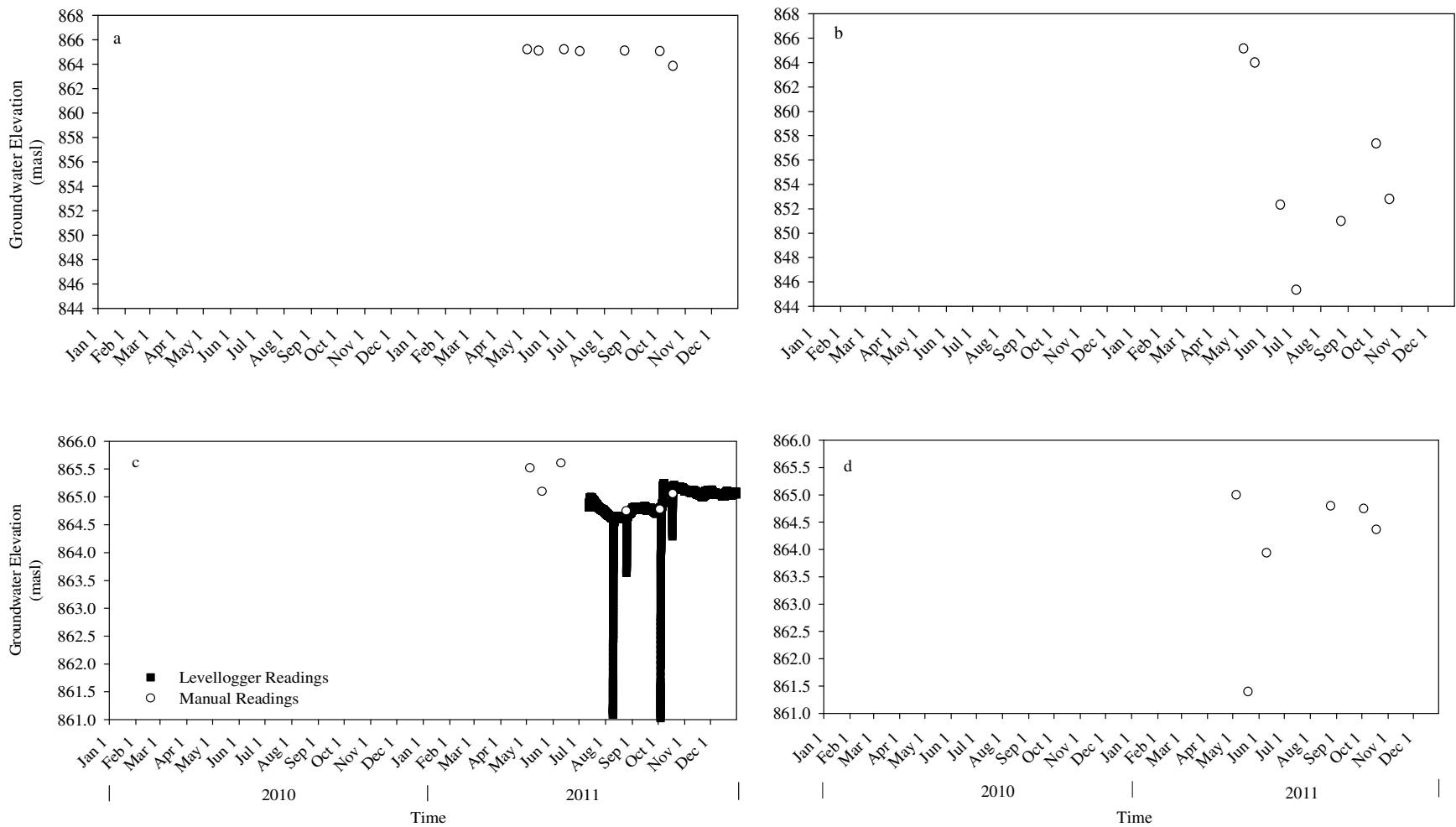


Figure A8-22. Groundwater elevations with time at (a) D-P11-14b, (b) D-P11-14c (note scale for groundwater elevation), (c) D-MW15a, and (d) D-P11-15b.

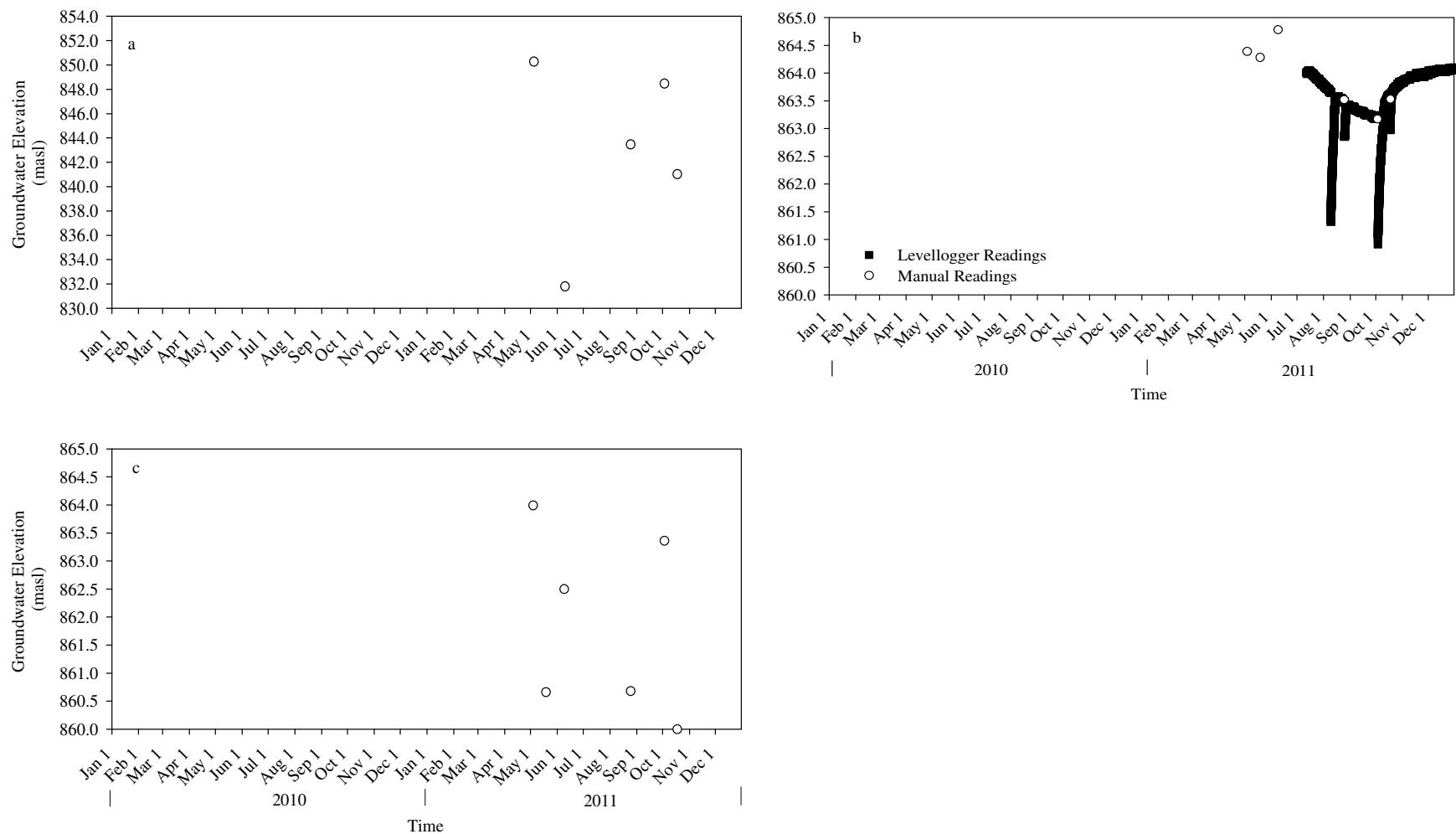


Figure A8-23. Groundwater elevations with time at (a) D-P11-15c (note scale for groundwater elevation), (b) D-MW16a, and (c) D-P11-16b.

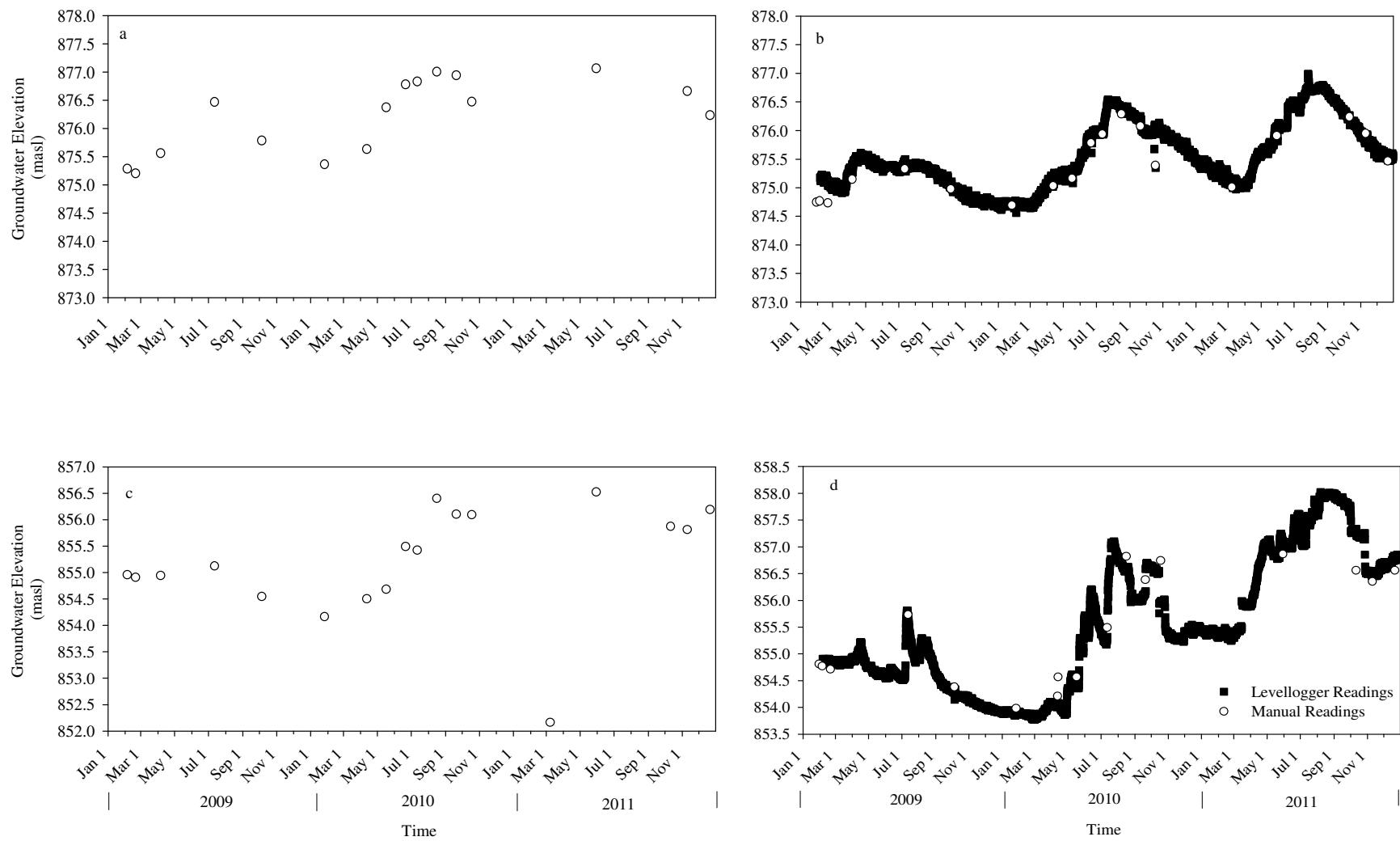


Figure A8-24. Groundwater levels at (a) A-MW-01, (b) A-MW-02, (c) A-MW-03, and (d) A-C-3.

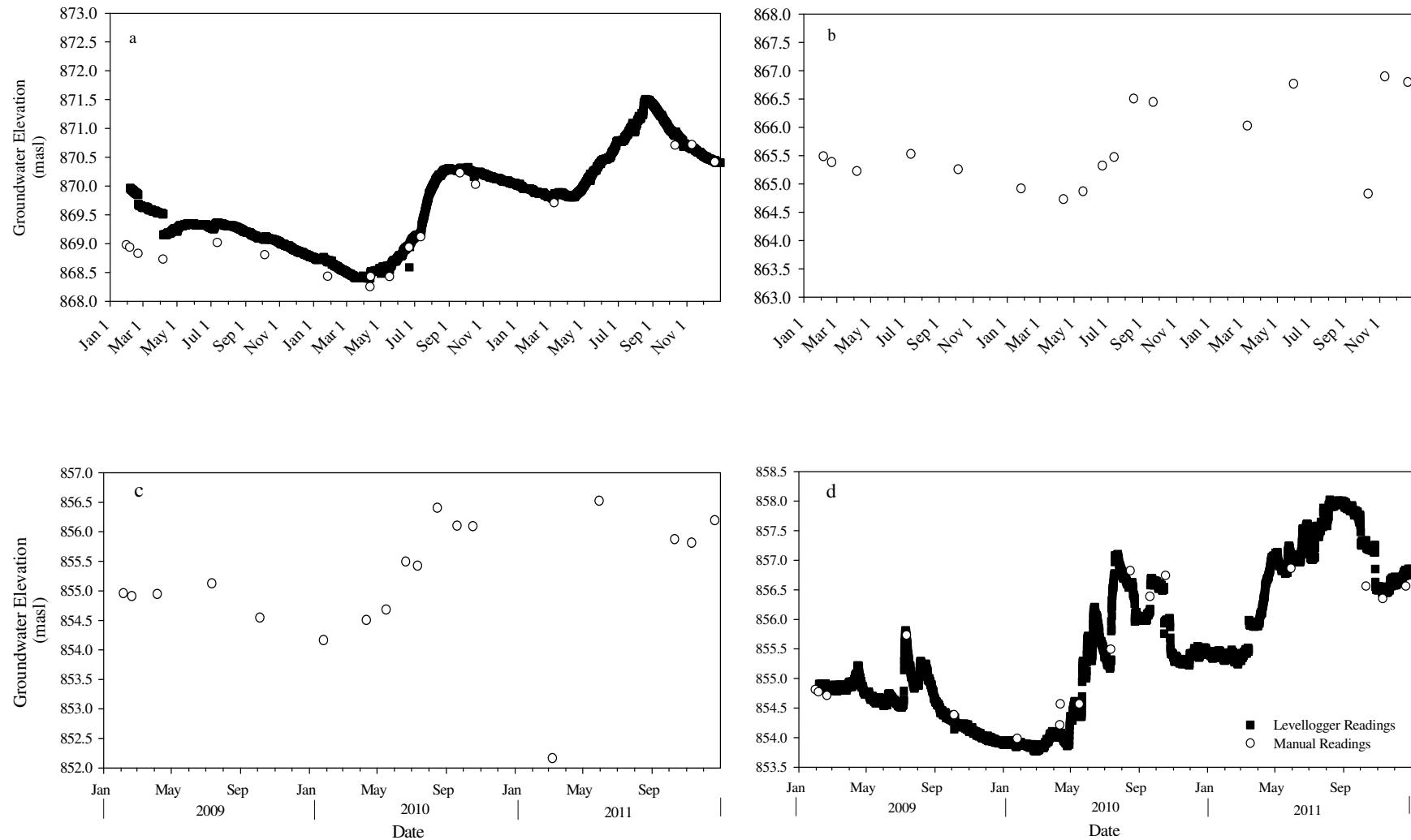


Figure A8-25. Groundwater levels at (a) A-P-08-16, (b) A-P-08-21, (c) B-MW-01, and (d) B-MW-03.

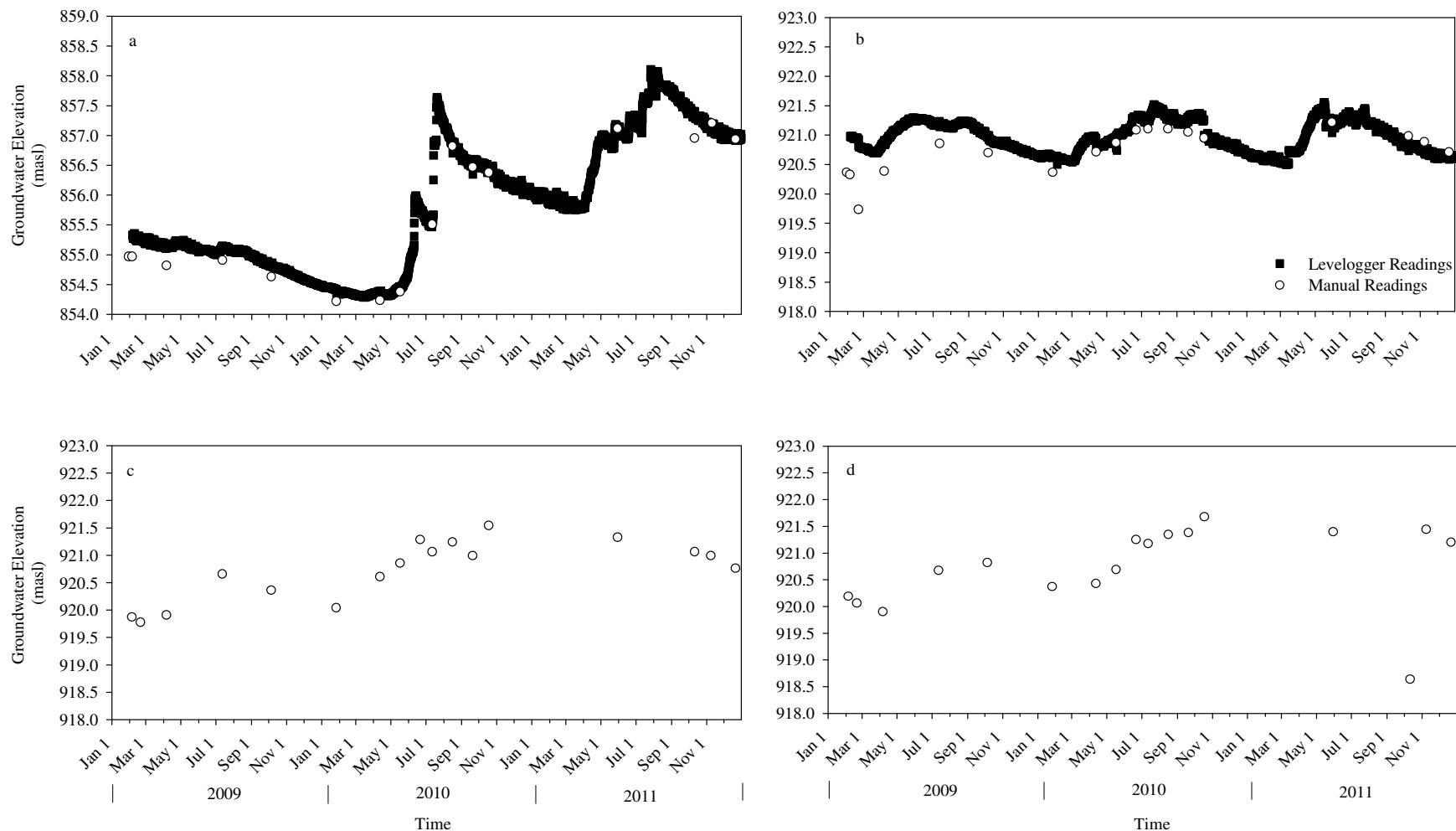


Figure A8-26. Groundwater levels at (a) B-C-4, (b) C-MW-01, (c) C-MW-02, and (d) C-MW-03.

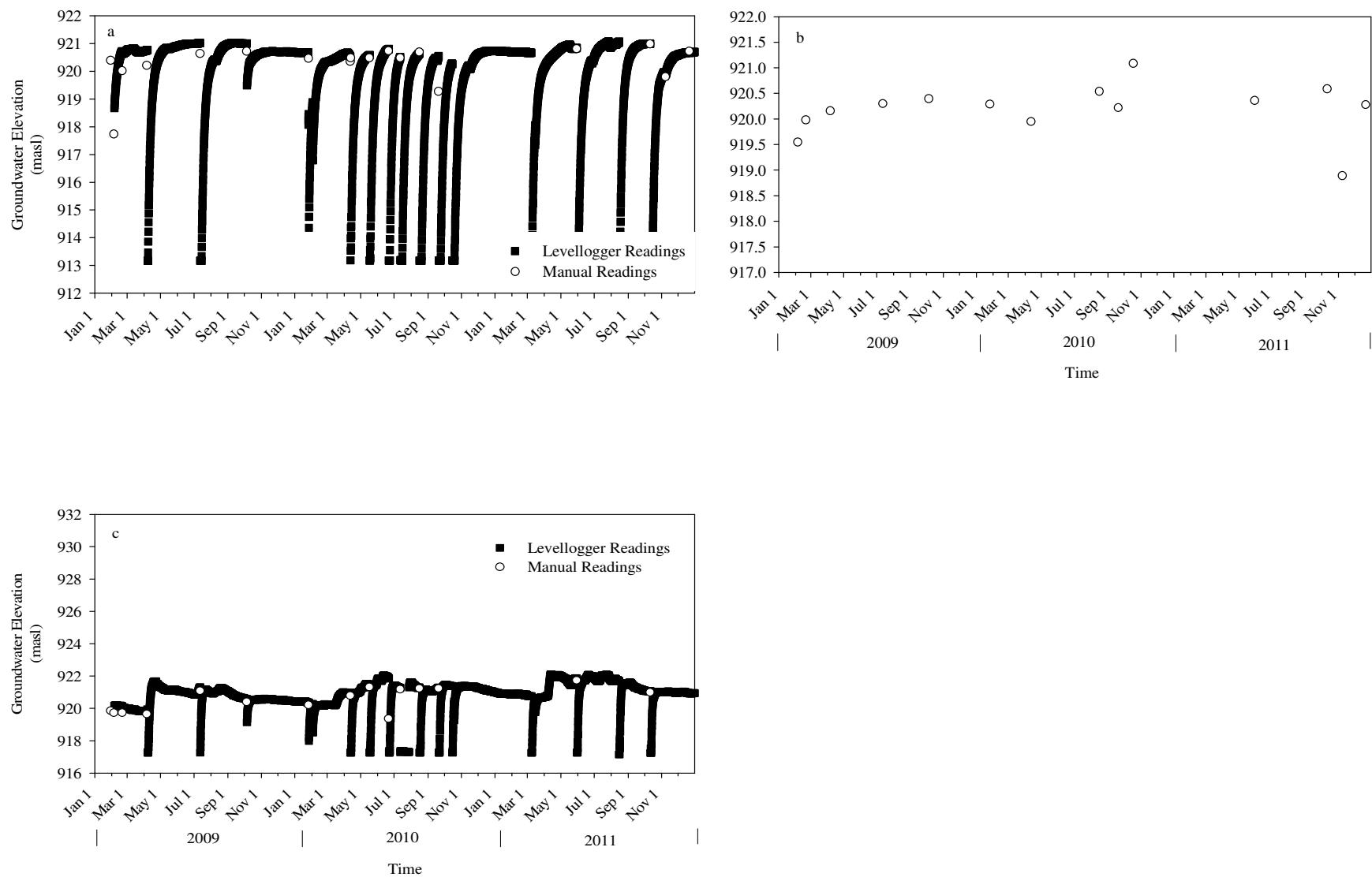


Figure A8-27. Groundwater levels at (a) C-P-08-14, (b) C-08-21, and C-C2 (c).

Appendix 9. Chemical parameters analyzed and methods used for liquid and solid manure samples.

Parameter	Method description	Reference	DL ^z
pH ^y	pH meter	Peters 2002 (p. 48)	0.1
Electrical conductivity (EC) ^y	Conductivity meter	Peters 2002 (p. 50)	10 µS cm ⁻¹
Total alkalinity (CaCO ₃) ^y	Titration	Carter 1993	5.0 mg L ⁻¹
Bicarbonate (HCO ₃ ⁻) ^y	Titration	Carter 1993	5.0 mg L ⁻¹
Hydroxide (OH ⁻) ^y	Titration	Carter 1993	5.0 mg L ⁻¹
Carbonate (CO ₃ ²⁻) ^y	Titration	Carter 1993	5.0 mg L ⁻¹
Dissolved organic carbon (DOC)	Carlo Erba high temp. combustion	Nelson and Sommers 1996	0.01%
Chloride (Cl ⁻) ^y	ICP-AES	Carter 1993	10 mg L ⁻¹
Total dissolved nitrogen (TDN) ^y	Analyzed as TN with pre-treat digestion, titration	Liao 1981	0.1 kg 1000 L ⁻¹
Nitrate + nitrite-N (NO ₃ ⁻ +NO ₂ ⁻ -N) ^y	Colorimetry	Carter 1993	0.02 mg L ⁻¹
Ammonia-N (NH ₃ -N) ^y	Colorimetry	Carter 1993	0.08 mg L ⁻¹
Total dissolved phosphorus (TDP) ^y	Analyzed as TP digestion, ICP	USEPA 1986	0.20 mg L ⁻¹
Orthophosphate (PO ₄ -P) ^y	Colorimetry	Carter 1993	0.50 mg L ⁻¹
Sulphur as sulphate (SO ₄ ²⁻ -S) ^y	ICP-AES	Carter 1993	30 mg L ⁻¹
Potassium (K ⁺) ^y	ICP-AES	Carter 1993	10 mg L ⁻¹
Sodium (Na ⁺) ^y	ICP-AES	Carter 1993	20 mg L ⁻¹
Calcium (Ca ²⁺) ^y	ICP-AES	Carter 1993	10 mg L ⁻¹
Magnesium (Mg ²⁺) ^y	ICP-AES	Carter 1993	10 mg L ⁻¹
Sodium adsorption ratio (SAR) ^y		APHA 3120B ^x	0.10 SAR
moisture ^w	Oven dried at 105°C overnight	Peters 2002 (p. 14)	0.10%
Total carbon (TC) ^w	Carlo Erba high temp. combustion	Nelson and Sommers 1996	0.1 kg 1000 L ⁻¹
Cl ⁻ ^w	CaSO ₄ extract (solid manure) or filtration (liquid manure), colorimetry	APHA 4110B ^x	0.1 kg 1000 L ⁻¹
Ammonium nitrogen (NH ₄ -N) ^w	2.0 M KCl extract, Auto-colorimetry	Peters 2002 (p. 28)	0.1 kg 1000 L ⁻¹
Total nitrogen (TN) ^w	Pre-treat, digestion, titration.	Liao 1981	0.1 kg 1000 L ⁻¹
Total phosphorus (TP) ^w	Digestion, ICP	USEPA 1986	0.02 kg 1000 L ⁻¹
Total potassium (TK) ^w	Digestion, ICP	USEPA 1986	0.02 kg 1000 L ⁻¹
Total calcium (TCa) ^w	Digestion, ICP-OES	Peters 2002 (p. 36)	0.01 kg 1000 L ⁻¹
Total magnesium (TMg) ^w	Digestion, ICP-OES	Peters 2002 (p. 36)	0.01 kg 1000 L ⁻¹
Total sodium (TNa) ^w	Digestion, ICP-OES	Peters 2002 (p. 36)	0.05 kg 1000 L ⁻¹
Total sulphur (TS) ^w	Digestion, ICP	USEPA 1986	0.02 kg 1000 L ⁻¹
Total copper (TCu) ^w	Digestion, ICP	Peters 2002 (p. 36)	0.1 mg 1000 L ⁻¹
Total iron (TFe) ^w	Digestion, ICP	Peters 2002 (p. 36)	0.1 mg 1000 L ⁻¹
Total manganese (TMn) ^w	Digestion, ICP	Peters 2002 (p. 36)	0.1 mg 1000 L ⁻¹
Total zinc (TZn) ^w	Digestion, ICP	Peters 2002 (p. 36)	0.1 mg 1000 L ⁻¹

^zDL: Detection Limit.

^y Analysis performed on aqueous fraction of filtered EMS or catch basin sample.

^x Greenberg *et al.* (1992).

^w Analysis performed on whole liquid (EMS or catch basin) or solid manure sample (no filtration).

Appendix 10. Groundwater analysis summary statistics (2009 to 2011).

Well	Statistic	TDS ^z	Ca ^{2+ z}	Mg ^{2+ z}	Na ^{+ z}	K ^{+ z}	SO ₄ ^{2- z}	Cl ^{- z}	HCO ₃ ^{- z}	CO ₃ ^{2- z}	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z
		(mg L ⁻¹)											
LB2-1	N	20	19	19	19	19	19	19	19	19	19	19	19
LB2-1	Min.	3155	481	341	392	11.7	2450	224.52	366.711	0	71.48	0.05	0.05
LB2-1	Max.	4448	525	394	469	14.5	3482	239.522	463.728	20.103	77.67	0.12	0.05
LB2-1	Median	4344	505	359	437	13.3	2663	234.021	425.898	0	74.55	0.05	0.05
LB2-1	Mean	4292	508	361	437	13.1	2736	233.568	427.889	1.058	74.34	0.06	0.05
LB2-1	S.D.	276	12	11	20	0.7	268	3.543	24.293	4.612	1.84	0.02	0.00
LB4-2x	N	12	12	12	12	12	12	12	12	12	12	12	12
LB4-2x	Min.	4552	473	584	333	13.3	3482	166.63	509.491	0	15.06	0.05	0.11
LB4-2x	Max.	7360	606	1002	906	34.4	4558	1096.30	649.219	0	143.96	0.27	0.42
LB4-2x	Median	7016	532	888	534	17.4	4093	838.476	622.677	0	93.90	0.05	0.25
LB4-2x	Mean	6603	533	840	544	20.3	4029	778.952	613.931	0	92.99	0.08	0.25
LB4-2x	S.D.	928	44	126	152	6.7	350	287.296	37.442	0	38.73	0.07	0.12
LB4-4x	N	4	4	4	4	4	4	4	4	4	4	4	4
LB4-4x	Min.	3008	712	281	168	12.1	1801	159.539	1218.51	0	52.19	0.05	0.35
LB4-4x	Max.	3059	759	300	184	13.3	1945	164.815	1256.95	0	66.45	0.31	2.00
LB4-4x	Median	3050	742	294	178	12.9	1894	161.312	1244.74	0	60.32	0.05	1.04
LB4-4x	Mean	3042	739	292	177	12.8	1884	161.745	1241.24	0	59.82	0.12	1.10
LB4-4x	S.D.	23	20	8	7	0.6	62	2.642	16.956	0	6.55	0.13	0.80
LB4-5x	N	4	4	4	4	4	4	4	4	4	4	4	4
LB4-5x	Min.	2957	572	262	253	13.3	1921	88.633	633.355	0	68.45	0.38	0.17
LB4-5x	Max.	3027	612	282	290	15.6	2173	181.616	665.084	0	80.06	1.24	3.49
LB4-5x	Median	2986	587	275	267	14.5	1964	175.493	646.779	0	76.35	0.54	0.70
LB4-5x	Mean	2989	589	274	269	14.5	2006	155.309	647.999	0	75.30	0.67	1.27
LB4-5x	S.D.	29	18	8	15	1.0	114	44.568	13.95	0	5.74	0.39	1.54
LB5-2	N	19	19	19	19	19	19	19	19	19	19	19	19
LB5-2	Min.	1210	251	135	31	2.0	1010	4.963	217.22	0	0.05	0.05	0.05
LB5-2	Max.	2490	541	306	92	12.5	2642	47.954	546.711	8.101	1.99	0.05	0.53
LB5-2	Median	2163	506	258	46	6.3	2113	20.652	471.66	0	0.35	0.05	0.16
LB5-2	Mean	1995	454	238	50	5.3	1927	21.63	408.138	0.426	0.61	0.05	0.18
LB5-2	S.D.	391	106	57	15	2.8	524	11.544	116.62	1.859	0.69	0.00	0.14
LB5a-1	N	14	14	14	14	14	14	14	14	14	14	14	14
LB5a-1	Min.	1830	309	183	166	2.0	1352	16.131	434.44	0	0.05	0.05	0.05
LB5a-1	Max.	3014	565	403	356	4.7	3024	74.452	706.575	0	0.22	0.05	0.05
LB5a-1	Median	2691	523	339	210	3.9	2453	20.247	656.236	0	0.05	0.05	0.05
LB5a-1	Mean	2666	506	332	222	3.4	2434	27.984	634.052	0	0.07	0.05	0.05
LB5a-1	S.D.	284	60	51	51	1.1	387	16.326	77.794	0	0.05	0.00	0.00
LB5a-2	N	8	8	8	8	8	8	8	8	8	8	8	8
LB5a-2	Min.	2528	490	228	198	2.0	2075	28.363	640.677	0	0.05	0.05	0.05
LB5a-2	Max.	2771	587	262	420	5.1	2476	92.178	743.185	0	0.05	0.05	0.15
LB5a-2	Median	2627	524	249	279	3.1	2236	38.363	705.355	0	0.05	0.05	0.05
LB5a-2	Mean	2642	531	247	289	3.3	2241	47.426	701.236	0	0.05	0.05	0.06
LB5a-2	S.D.	93	31	12	72	1.5	131	22.57	33.143	0	0.00	0.00	0.04
LB5a-3	N	8	8	8	8	8	8	8	8	8	8	8	8
LB5a-3	Min.	4192	454	294	524	8.2	2906	21.272	687.66	0	0.05	0.05	0.05
LB5a-3	Max.	4736	481	344	876	10.2	3336	39.654	750.507	0	0.05	0.05	0.05
LB5a-3	Median	4524	471	308	694	9.8	3200	29.92	724.27	0	0.05	0.05	0.05
LB5a-3	Mean	4463	467	317	677	9.4	3183	28.733	724.651	0	0.05	0.05	0.05
LB5a-3	S.D.	231	10	22	113	0.9	140	6.981	19.031	0	0.00	0.00	0.00
LB5a-4	N	8	8	8	8	8	8	8	8	8	8	8	8
LB5a-4	Min.	4264	465	189	609	12.9	2620	77.997	716.338	0	4.25	0.05	0.05
LB5a-4	Max.	5112	523	218	1095	16.0	3494	98.289	796.27	0	13.59	5.89	1.95
LB5a-4	Median	4560	499	211	783	14.1	2958	79.722	753.558	0	10.61	2.11	1.25
LB5a-4	Mean	4632	494	207	820	14.3	3019	82.622	758.592	0	9.32	2.49	1.04
LB5a-4	S.D.	322	20	11	148	1.0	305	7.157	30.808	0	3.34	2.29	0.77

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ^{2+ z}	Mg ^{2+ z}	Na ^{+ z}	K ^{+ z}	SO ₄ ^{2- z}	Cl ^{- z}	HCO ₃ ^{- z}	CO ₃ ^{2- z}	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
LB5a-5	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB5a-5	Min.	4880	560	242	575	15.6	2330	170.175	646.779	0	115.04	0.43	0.16	
LB5a-5	Max.	5592	849	273	1018	19.9	3122	209.019	859.727	0	197.86	24.06	3.96	
LB5a-5	Median	5096	600	257	731	17.8	2505	179.041	694.067	0	182.64	7.12	1.98	
LB5a-5	Mean	5167	627	259	767	17.7	2621	182.876	718.702	0	173.27	8.74	2.10	
LB5a-5	S.D.	292	92	11	139	1.3	297	13.756	74.855	0	27.95	8.03	1.11	
LB5a-6	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB5a-6	Min.	5344	545	274	839	23.5	3218	35.453	1344.20	0	0.05	0.05	9.86	
LB5a-6	Max.	6096	629	342	1182	30.5	3754	180.516	1501.01	0	0.17	0.05	10.83	
LB5a-6	Median	5452	577	306	966	27.0	3469	62.253	1412.85	0	0.05	0.05	10.36	
LB5a-6	Mean	5579	580	309	994	27.1	3500	79.071	1408.80	0	0.07	0.05	10.39	
LB5a-6	S.D.	296	29	21	112	2.4	201	50.059	50.521	0	0.04	0.00	0.35	
LB5b-1	N	2	2	2	2	2	2	2	2	2	2	2	2	2
LB5b-1	Min.	2438	454	290	168	2.0	1837	77.997	756.609	0	1.51	0.05	0.05	
LB5b-1	Max.	2496	463	297	214	4.3	1849	88.633	781.016	0	1.64	0.05	0.05	
LB5b-1	Median	2467	458	294	191	3.1	1843	83.315	768.812	0	1.58	0.05	0.05	
LB5b-1	Mean	2467	458	294	191	3.1	1843	83.315	768.812	0	1.58	0.05	0.05	
LB5b-1	S.D.	41	7	6	33	1.7	8	7.521	17.258	0	0.09	0.00	0.00	
LB5c-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB5c-1	Min.	2963	511	287	271	5.5	2233	35.453	573.558	0	0.05	0.05	0.05	
LB5c-1	Max.	4320	566	520	375	20.7	3434	120.541	1147.12	0	0.34	0.05	8.38	
LB5c-1	Median	2970	562	288	354	19.5	2257	38.999	1086.10	0	0.05	0.05	8.24	
LB5c-1	Mean	3418	546	365	333	15.2	2642	64.998	935.592	0	0.15	0.05	5.56	
LB5c-1	S.D.	782	31	135	55	8.5	686	48.135	315.011	0	0.17	0.00	4.77	
LB5c-2	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB5c-2	Min.	2944	504	284	260	5.5	2330	35.453	549.152	0	0.05	0.05	0.05	
LB5c-2	Max.	4440	554	533	368	18.8	3434	113.45	1110.51	0	0.50	0.05	8.54	
LB5c-2	Median	4008	506	506	301	6.6	3242	109.905	591.863	0	0.33	0.05	0.10	
LB5c-2	Mean	3797	521	441	310	10.3	3002	86.269	750.507	0	0.29	0.05	2.90	
LB5c-2	S.D.	770	29	136	55	7.4	590	44.044	312.499	0	0.23	0.00	4.89	
LB5d-1	N	2	2	2	2	2	2	2	2	2	2	2	2	2
LB5d-1	Min.	1958	447	195	94	2.0	1633	4.963	408.813	0	0.05	0.05	0.05	
LB5d-1	Max.	2061	499	202	106	2.0	1885	4.963	433.22	0	0.05	0.05	0.05	
LB5d-1	Median	2010	473	199	100	2.0	1759	4.963	421.016	0	0.05	0.05	0.05	
LB5d-1	Mean	2010	473	199	100	2.0	1759	4.963	421.016	0	0.05	0.05	0.05	
LB5d-1	S.D.	72	37	5	8	0.0	178	0	17.258	0	0.00	0.00	0.00	
LB5e-1	N	2	2	2	2	2	2	2	2	2	2	2	2	2
LB5e-1	Min.	2330	472	175	207	5.1	2053	38.999	396.61	0	0.05	0.05	0.05	
LB5e-1	Max.	4064	557	196	667	15.2	2474	109.905	890.846	0	0.30	0.05	0.05	
LB5e-1	Median	3197	515	185	437	10.2	2263	74.452	643.728	0	0.18	0.05	0.05	
LB5e-1	Mean	3197	515	185	437	10.2	2263	74.452	643.728	0	0.18	0.05	0.05	
LB5e-1	S.D.	1226	60	15	325	7.2	297	50.138	349.478	0	0.18	0.00	0.00	
LB5e-2	N	2	2	2	2	2	2	2	2	2	2	2	2	2
LB5e-2	Min.	1875	521	134	115	3.9	1729	14.181	366.101	0	0.05	0.05	0.05	
LB5e-2	Max.	3066	539	175	460	12.9	2245	99.269	854.236	0	0.12	0.05	0.05	
LB5e-2	Median	2470	530	155	287	8.4	1987	56.725	610.168	0	0.09	0.05	0.05	
LB5e-2	Mean	2470	530	155	287	8.4	1987	56.725	610.168	0	0.09	0.05	0.05	
LB5e-2	S.D.	842	13	29	244	6.4	365	60.166	345.163	0	0.05	0.00	0.00	
LB5f-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB5f-1	Min.	2963	511	219	391	13.3	2233	85.088	567.457	0	0.05	0.05	0.05	
LB5f-1	Max.	4120	513	222	678	15.2	2738	99.269	610.168	0	0.05	0.05	0.05	
LB5f-1	Median	3021	512	220	485	13.3	2498	88.633	591.863	0	0.05	0.05	0.05	
LB5f-1	Mean	3368	512	220	518	13.9	2490	90.997	589.83	0	0.05	0.05	0.05	
LB5f-1	S.D.	652	1	2	146	1.1	252	7.38	21.428	0	0.00	0.00	0.00	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
LB5f-2	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB5f-2	Min.	2643	536	289	207	9.0	2306	21.272	518.643	0	0.05	0.05	0.05	0.05
LB5f-2	Max.	2650	550	305	218	9.8	2474	24.817	555.253	0	0.05	0.05	0.15	
LB5f-2	Median	2650	548	292	216	9.8	2426	21.272	536.948	0	0.05	0.05	0.05	0.05
LB5f-2	Mean	2647	545	295	214	9.5	2402	22.454	536.948	0	0.05	0.05	0.08	
LB5f-2	S.D.	4	8	8	6	0.5	87	2.047	18.305	0	0.00	0.00	0.06	
LB6-6x	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB6-6x	Min.	666	100	67	51	3.9	235	4.963	427.118	0	0.99	0.05	0.05	0.05
LB6-6x	Max.	1818	395	186	94	4.7	1547	14.181	463.728	0	1.80	0.05	0.05	0.05
LB6-6x	Median	1408	295	149	80	4.3	1028	10.636	457.626	0	1.59	0.05	0.05	0.05
LB6-6x	Mean	1297	263	134	75	4.3	937	9.927	449.491	0	1.46	0.05	0.05	0.05
LB6-6x	S.D.	584	150	61	22	0.4	660	4.65	19.614	0	0.42	0.00	0.00	0.00
LB6-7	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB6-7	Min.	3117	470	155	575	15.6	2161	35.453	1183.73	0	0.05	0.05	1.65	
LB6-7	Max.	4632	567	183	862	18.8	2762	95.724	1208.13	0	0.10	0.05	2.10	
LB6-7	Median	4224	535	166	759	17.6	2438	53.18	1189.83	0	0.05	0.05	2.10	
LB6-7	Mean	3991	524	168	732	17.3	2454	61.452	1193.90	0	0.07	0.05	1.95	
LB6-7	S.D.	784	49	14	146	1.6	301	30.975	12.702	0	0.03	0.00	0.26	
LB7-2	N	25	25	25	25	25	25	25	25	25	25	25	25	25
LB7-2	Min.	922	129	66	53	20.3	378	30.733	367.932	0	0.05	0.05	0.05	
LB7-2	Max.	4080	541	475	296	59.4	3602	128.812	1019.59	42.006	8.59	0.16	0.57	
LB7-2	Median	2387	381	288	200	42.6	1812	56.215	738.304	0	2.51	0.05	0.05	
LB7-2	Mean	2479	366	296	186	40.8	1902	65.911	748.115	1.68	2.91	0.06	0.14	
LB7-2	S.D.	922	116	124	67	10.8	892	27.63	203.793	8.401	2.15	0.03	0.16	
LB8a-1	N	14	14	14	14	14	14	14	14	14	14	14	14	14
LB8a-1	Min.	6856	212	847	1081	5.5	5332	191.447	854.236	0	48.25	0.05	0.19	
LB8a-1	Max.	10544	333	1368	1915	9.4	9078	353.032	1253.29	26.104	108.80	3.60	1.33	
LB8a-1	Median	8732	266	1160	1453	7.6	7546	287.176	1126.98	0	79.97	0.55	0.58	
LB8a-1	Mean	8940	270	1174	1453	7.6	7539	287.448	1100.70	4.522	80.26	0.93	0.70	
LB8a-1	S.D.	1005	41	142	191	1.0	1006	47.557	116.368	8.379	18.94	1.06	0.42	
LB8a-2	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB8a-2	Min.	2778	495	267	269	5.5	2281	106.36	359.389	0	33.59	0.17	0.05	
LB8a-2	Max.	2944	605	295	290	6.3	2450	118.311	380.745	0	46.27	1.86	0.30	
LB8a-2	Median	2870	559	280	279	5.9	2427	110.858	373.423	0	39.43	0.61	0.14	
LB8a-2	Mean	2862	555	281	278	5.8	2406	110.914	371.974	0	39.90	0.79	0.16	
LB8a-2	S.D.	51	35	10	8	0.3	56	3.934	8.14	0	4.29	0.58	0.11	
LB8a-3	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB8a-3	Min.	4184	562	386	313	6.3	2882	113.41	421.016	0	43.28	0.05	0.05	
LB8a-3	Max.	4368	607	408	380	8.2	3175	134.722	477.762	0	60.00	1.82	0.38	
LB8a-3	Median	4216	583	396	360	7.4	3064	118.303	454.881	0	47.62	0.12	0.23	
LB8a-3	Mean	4256	585	395	356	7.3	3041	119.761	454.576	0	49.61	0.33	0.24	
LB8a-3	S.D.	73	14	8	21	0.6	110	7.066	20.718	0	5.30	0.61	0.11	
LB8a-4	N	5	5	5	5	5	5	5	5	5	5	5	5	5
LB8a-4	Min.	2336	417	334	57	14.9	1897	159.539	427.118	0	1.21	0.05	0.05	
LB8a-4	Max.	2592	459	378	71	19.9	2058	190.817	469.83	0	12.72	0.56	0.23	
LB8a-4	Median	2432	439	368	67	17.6	2008	166.63	451.525	0	10.79	0.05	0.17	
LB8a-4	Mean	2449	436	364	66	17.8	1990	172.177	448.962	0	9.51	0.15	0.14	
LB8a-4	S.D.	94	18	17	5	2.0	67	13.183	21.253	0	4.72	0.23	0.09	
LB8a-5	N	4	4	4	4	4	4	4	4	4	4	4	4	4
LB8a-5	Min.	902	145	37	159	6.6	307	4.963	616.27	0	0.05	0.05	0.57	
LB8a-5	Max.	1094	152	43	221	7.4	413	17.727	665.084	6.001	0.15	0.05	0.64	
LB8a-5	Median	995	148	40	185	6.6	361	12.409	649.829	0	0.09	0.05	0.59	
LB8a-5	Mean	997	149	40	187	6.8	361	11.877	645.253	1.5	0.09	0.05	0.60	
LB8a-5	S.D.	81	3	3	27	0.4	48	5.443	24.087	3	0.05	0.00	0.03	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
LB8a-6	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB8a-6	Min.	7480	274	992	943	11.7	6244	233.991	622.372	0	25.37	0.05	1.37	
LB8a-6	Max.	10464	463	1621	1391	15.2	8165	567.251	927.456	12.002	116.96	0.84	2.14	
LB8a-6	Median	8584	409	1217	1184	12.9	7205	336.805	744.406	0	51.33	0.05	1.80	
LB8a-6	Mean	8843	382	1276	1172	13.3	7205	379.349	764.744	4.001	64.55	0.31	1.77	
LB8a-6	S.D.	1509	97	319	224	1.8	961	170.655	153.556	6.929	47.21	0.46	0.39	
LB8a-7	N	3	3	3	3	3	3	3	3	3	3	3	3	
LB8a-7	Min.	2906	406	217	391	9.8	2209	155.994	469.83	0	0.05	0.05	0.69	
LB8a-7	Max.	3155	519	225	563	10.2	2666	166.63	500.338	0	0.05	0.05	0.80	
LB8a-7	Median	3085	486	222	529	10.2	2354	163.085	488.135	0	0.05	0.05	0.77	
LB8a-7	Mean	3049	470	221	494	10.0	2410	161.903	486.101	0	0.05	0.05	0.75	
LB8a-7	S.D.	129	58	4	91	0.2	233	5.416	15.356	0	0.00	0.00	0.06	
LB8a-8	N	3	3	3	3	3	3	3	3	3	3	3	3	
LB8a-8	Min.	787	177	42	55	4.7	468	17.727	298.983	0	0.05	0.05	0.25	
LB8a-8	Max.	2406	321	235	345	6.6	1789	102.814	475.931	0	31.10	0.34	0.43	
LB8a-8	Median	2246	301	213	303	6.3	1623	95.724	469.83	0	27.07	0.05	0.25	
LB8a-8	Mean	1813	266	163	234	5.9	1294	72.088	414.915	0	19.41	0.15	0.31	
LB8a-8	S.D.	892	78	106	157	1.0	720	47.212	100.446	0	16.88	0.17	0.10	
LB8a-9	N	3	3	3	3	3	3	3	3	3	3	3	3	
LB8a-9	Min.	1331	303	74	108	6.6	874	21.272	414.915	0	0.05	0.05	0.45	
LB8a-9	Max.	1434	361	80	115	7.0	1013	21.272	439.321	0	0.10	0.05	0.49	
LB8a-9	Median	1402	339	76	113	6.6	961	21.272	421.016	0	0.05	0.05	0.49	
LB8a-9	Mean	1389	334	77	112	6.8	949	21.272	425.084	0	0.07	0.05	0.48	
LB8a-9	S.D.	52	29	3	4	0.2	70	0	12.702	0	0.03	0.00	0.02	
LB8a-10	N	3	3	3	3	3	3	3	3	3	3	3	3	
LB8a-10	Min.	2950	492	318	216	23.1	1513	475.073	549.152	0	69.98	0.05	0.05	
LB8a-10	Max.	4488	590	389	253	25.0	1789	620.431	591.863	0	91.04	0.11	0.05	
LB8a-10	Median	4112	530	347	244	24.6	1585	545.979	549.152	0	80.35	0.05	0.05	
LB8a-10	Mean	3850	537	352	238	24.2	1629	547.161	563.389	0	80.46	0.07	0.05	
LB8a-10	S.D.	802	49	36	19	1.0	143	72.686	24.66	0	10.53	0.04	0.00	
LB8a-12	N	3	3	3	3	3	3	3	3	3	3	3	3	
LB8a-12	Min.	288	31	34	9	2.0	52	4.963	219.661	0	0.12	0.05	0.05	
LB8a-12	Max.	474	59	58	25	2.0	144	4.963	323.389	18.003	0.43	0.05	0.05	
LB8a-12	Median	307	34	37	11	2.0	52	4.963	219.661	15.002	0.22	0.05	0.05	
LB8a-12	Mean	356	42	43	15	2.0	83	4.963	254.237	11.002	0.26	0.05	0.05	
LB8a-12	S.D.	102	15	13	9	0.0	53	0	59.888	9.645	0.16	0.00	0.00	
LB8a-13	N	3	3	3	3	3	3	3	3	3	3	3	3	
LB8a-13	Min.	4504	457	423	467	4.3	2714	134.722	500.338	0	97.74	0.21	0.05	
LB8a-13	Max.	4776	499	460	480	4.7	2930	180.811	573.558	0	133.91	0.56	0.05	
LB8a-13	Median	4672	486	448	471	4.7	2810	170.175	512.542	0	118.04	0.46	0.05	
LB8a-13	Mean	4651	481	443	473	4.6	2818	161.903	528.813	0	116.56	0.41	0.05	
LB8a-13	S.D.	137	21	19	7	0.2	108	24.132	39.228	0	18.13	0.18	0.00	
LB9-2	N	26	25	25	25	25	25	25	25	25	25	25	25	
LB9-2	Min.	979	116	71	51	2.0	178	24.817	225.762	0	1.59	0.05	0.05	
LB9-2	Max.	1491	288	169	131	5.9	970	277.625	390.508	30.004	74.31	0.39	1.28	
LB9-2	Median	1402	153	150	70	3.9	283	237.021	355.118	0	66.94	0.05	0.05	
LB9-2	Mean	1352	157	142	72	3.5	307	220.252	349.529	2.952	59.83	0.08	0.13	
LB9-2	S.D.	120	30	24	16	1.2	145	51.857	34.681	7.703	18.81	0.09	0.26	
LB9-8	N	4	4	4	4	4	4	4	4	4	4	4	4	
LB9-8	Min.	883	148	40	62	4.7	446	17.727	292.881	0	0.05	0.05	0.05	
LB9-8	Max.	4584	359	482	471	7.0	2906	141.813	494.236	0	82.47	0.46	0.46	
LB9-8	Median	918	203	47	115	5.7	538	35.453	347.796	0	0.11	0.05	0.44	
LB9-8	Mean	1826	228	154	191	5.8	1107	57.611	370.677	0	20.69	0.15	0.35	
LB9-8	S.D.	1839	91	219	192	1.0	1200	58.569	95.1	0	41.19	0.21	0.20	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z
		(mg L ⁻¹)											
LB11-4	N	27	27	27	27	27	27	27	27	27	27	27	27
LB11-4	Min.	493	61	50	27	3.9	71	15.771	341.694	0	2.49	0.05	0.05
LB11-4	Max.	800	99	91	74	5.5	180	109.905	486.304	43.206	10.65	0.10	0.05
LB11-4	Median	538	70	56	31	4.7	85	17.902	385.626	6.001	7.00	0.05	0.05
LB11-4	Mean	556	72	57	33	4.6	93	24.342	394.53	8.957	6.73	0.05	0.05
LB11-4	S.D.	71	8	9	9	0.5	23	18.915	32.802	10.064	1.62	0.01	0.00
LB13-1	N	8	8	8	8	8	8	8	8	8	8	8	8
LB13-1	Min.	544	99	37	21	2.0	170	37.643	286.169	0	0.05	0.05	0.05
LB13-1	Max.	640	128	42	28	2.0	235	53.18	317.288	6.001	0.05	0.05	0.14
LB13-1	Median	592	115	38	26	2.0	189	41.709	300.508	0	0.05	0.05	0.12
LB13-1	Mean	595	116	39	26	2.0	191	44.051	301.347	1.913	0.05	0.05	0.11
LB13-1	S.D.	30	10	2	2	0.0	21	5.861	12.365	2.674	0.00	0.00	0.03
LB13-2	N	8	8	8	8	8	8	8	8	8	8	8	8
LB13-2	Min.	493	79	21	51	2.0	71	4.963	403.932	0	0.05	0.05	0.33
LB13-2	Max.	512	92	25	62	3.9	87	4.963	457.626	15.302	0.05	0.05	0.38
LB13-2	Median	502	88	24	60	2.0	85	4.963	442.067	0	0.05	0.05	0.35
LB13-2	Mean	502	87	24	58	2.2	82	4.963	437.872	3.863	0.05	0.05	0.35
LB13-2	S.D.	8	4	1	4	0.7	5	0	18.667	5.848	0.00	0.00	0.01
LB13-3	N	8	8	8	8	8	8	8	8	8	8	8	8
LB13-3	Min.	941	186	57	37	5.1	204	60.27	433.22	0	17.69	0.05	0.19
LB13-3	Max.	1146	247	72	76	6.6	264	81.937	610.168	1.5	68.56	2.45	1.06
LB13-3	Median	1037	222	67	45	5.9	246	69.904	519.864	0	37.02	0.05	0.30
LB13-3	Mean	1041	219	66	51	5.9	239	69.772	516.66	0.188	41.19	0.38	0.45
LB13-3	S.D.	84	25	6	14	0.5	24	8.11	51.154	0.53	16.39	0.84	0.31
LB13-4	N	31	31	31	31	31	31	31	31	31	31	31	31
LB13-4	Min.	493	63	52	30	2.0	66	4.963	305.694	0	5.41	0.05	0.05
LB13-4	Max.	1133	238	122	87	5.9	242	124.511	589.423	39.606	57.32	0.05	0.33
LB13-4	Median	838	81	83	51	3.9	98	91.178	474.101	4.201	15.40	0.05	0.05
LB13-4	Mean	811	84	90	50	3.2	103	89.237	459.122	8.537	21.77	0.05	0.06
LB13-4	S.D.	132	30	21	12	1.2	33	24.478	69.245	12.049	13.25	0.00	0.05
LB13-5	N	8	8	8	8	8	8	8	8	8	8	8	8
LB13-5	Min.	704	83	22	137	3.9	150	4.963	493.626	0	0.05	0.05	0.39
LB13-5	Max.	794	105	26	172	5.5	221	4.963	561.355	42.006	0.05	0.05	0.69
LB13-5	Median	752	93	25	143	4.9	199	4.963	532.982	0	0.05	0.05	0.58
LB13-5	Mean	748	94	25	149	4.8	195	4.963	526.804	7.539	0.05	0.05	0.56
LB13-5	S.D.	29	7	1	14	0.5	23	0	25.137	14.607	0.00	0.00	0.10
LB13b-1	N	3	3	3	3	3	3	3	3	3	3	3	3
LB13b-1	Min.	1830	176	198	212	6.3	399	166.63	1061.69	0	0.05	0.05	0.25
LB13b-1	Max.	1971	185	271	262	8.2	831	173.721	1336.27	0	0.55	0.05	0.49
LB13b-1	Median	1907	182	256	218	7.0	817	170.175	1086.10	0	0.05	0.05	0.38
LB13b-1	Mean	1903	181	242	231	7.2	682	170.175	1161.35	0	0.22	0.05	0.37
LB13b-1	S.D.	70	5	38	27	1.0	246	3.545	151.972	0	0.29	0.00	0.12
LB13c-2	N	2	2	2	2	2	2	2	2	2	2	2	2
LB13c-2	Min.	1158	171	54	205	5.1	572	35.453	524.745	0	0.05	0.05	0.33
LB13c-2	Max.	1280	182	57	228	5.5	668	38.999	524.745	0	0.05	0.05	0.36
LB13c-2	Median	1219	177	55	216	5.3	620	37.226	524.745	0	0.05	0.05	0.35
LB13c-2	Mean	1219	177	55	216	5.3	620	37.226	524.745	0	0.05	0.05	0.35
LB13c-2	S.D.	86	8	2	16	0.3	68	2.507	0	0	0.00	0.00	0.02
LB13d-2	N	3	3	3	3	3	3	3	3	3	3	3	3
LB13d-2	Min.	928	163	58	37	3.9	240	248.172	140.339	0	0.05	0.05	0.05
LB13d-2	Max.	992	172	65	51	4.7	281	265.899	158.644	0	0.05	0.05	0.05
LB13d-2	Median	960	171	59	39	3.9	271	262.354	146.44	0	0.05	0.05	0.05
LB13d-2	Mean	960	169	61	42	4.2	264	258.808	148.474	0	0.05	0.05	0.05
LB13d-2	S.D.	32	5	4	7	0.5	21	9.38	9.32	0	0.00	0.00	0.00

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
LB8a-13	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB8a-13	Min.	4504	457	423	467	4.3	2714	134.722	500.338	0	97.74	0.21	0.05	
LB8a-13	Max.	4776	499	460	480	4.7	2930	180.811	573.558	0	133.91	0.56	0.05	
LB8a-13	Median	4672	486	448	471	4.7	2810	170.175	512.542	0	118.04	0.46	0.05	
LB8a-13	Mean	4651	481	443	473	4.6	2818	161.903	528.813	0	116.56	0.41	0.05	
LB8a-13	S.D.	137	21	19	7	0.2	108	24.132	39.228	0	18.13	0.18	0.00	
LB9-2	N	26	25	25	25	25	25	25	25	25	25	25	25	25
LB9-2	Min.	979	116	71	51	2.0	178	24.817	225.762	0	1.59	0.05	0.05	
LB9-2	Max.	1491	288	169	131	5.9	970	277.625	390.508	30.004	74.31	0.39	1.28	
LB9-2	Median	1402	153	150	70	3.9	283	237.021	355.118	0	66.94	0.05	0.05	
LB9-2	Mean	1352	157	142	72	3.5	307	220.252	349.529	2.952	59.83	0.08	0.13	
LB9-2	S.D.	120	30	24	16	1.2	145	51.857	34.681	7.703	18.81	0.09	0.26	
LB9-8	N	4	4	4	4	4	4	4	4	4	4	4	4	4
LB9-8	Min.	883	148	40	62	4.7	446	17.727	292.881	0	0.05	0.05	0.05	
LB9-8	Max.	4584	359	482	471	7.0	2906	141.813	494.236	0	82.47	0.46	0.46	
LB9-8	Median	918	203	47	115	5.7	538	35.453	347.796	0	0.11	0.05	0.44	
LB9-8	Mean	1826	228	154	191	5.8	1107	57.611	370.677	0	20.69	0.15	0.35	
LB9-8	S.D.	1839	91	219	192	1.0	1200	58.569	95.1	0	41.19	0.21	0.20	
LB11-4	N	27	27	27	27	27	27	27	27	27	27	27	27	27
LB11-4	Min.	493	61	50	27	3.9	71	15.771	341.694	0	2.49	0.05	0.05	
LB11-4	Max.	800	99	91	74	5.5	180	109.905	486.304	43.206	10.65	0.10	0.05	
LB11-4	Median	538	70	56	31	4.7	85	17.902	385.626	6.001	7.00	0.05	0.05	
LB11-4	Mean	556	72	57	33	4.6	93	24.342	394.53	8.957	6.73	0.05	0.05	
LB11-4	S.D.	71	8	9	9	0.5	23	18.915	32.802	10.064	1.62	0.01	0.00	
LB13-1	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB13-1	Min.	544	99	37	21	2.0	170	37.643	286.169	0	0.05	0.05	0.05	
LB13-1	Max.	640	128	42	28	2.0	235	53.18	317.288	6.001	0.05	0.05	0.14	
LB13-1	Median	592	115	38	26	2.0	189	41.709	300.508	0	0.05	0.05	0.12	
LB13-1	Mean	595	116	39	26	2.0	191	44.051	301.347	1.913	0.05	0.05	0.11	
LB13-1	S.D.	30	10	2	2	0.0	21	5.861	12.365	2.674	0.00	0.00	0.03	
LB13-2	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB13-2	Min.	493	79	21	51	2.0	71	4.963	403.932	0	0.05	0.05	0.33	
LB13-2	Max.	512	92	25	62	3.9	87	4.963	457.626	15.302	0.05	0.05	0.38	
LB13-2	Median	502	88	24	60	2.0	85	4.963	442.067	0	0.05	0.05	0.35	
LB13-2	Mean	502	87	24	58	2.2	82	4.963	437.872	3.863	0.05	0.05	0.35	
LB13-2	S.D.	8	4	1	4	0.7	5	0	18.667	5.848	0.00	0.00	0.01	
LB13-3	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB13-3	Min.	941	186	57	37	5.1	204	60.27	433.22	0	17.69	0.05	0.19	
LB13-3	Max.	1146	247	72	76	6.6	264	81.937	610.168	1.5	68.56	2.45	1.06	
LB13-3	Median	1037	222	67	45	5.9	246	69.904	519.864	0	37.02	0.05	0.30	
LB13-3	Mean	1041	219	66	51	5.9	239	69.772	516.66	0.188	41.19	0.38	0.45	
LB13-3	S.D.	84	25	6	14	0.5	24	8.11	51.154	0.53	16.39	0.84	0.31	
LB13-4	N	31	31	31	31	31	31	31	31	31	31	31	31	31
LB13-4	Min.	493	63	52	30	2.0	66	4.963	305.694	0	5.41	0.05	0.05	
LB13-4	Max.	1133	238	122	87	5.9	242	124.511	589.423	39.606	57.32	0.05	0.33	
LB13-4	Median	838	81	83	51	3.9	98	91.178	474.101	4.201	15.40	0.05	0.05	
LB13-4	Mean	811	84	90	50	3.2	103	89.237	459.122	8.537	21.77	0.05	0.06	
LB13-4	S.D.	132	30	21	12	1.2	33	24.478	69.245	12.049	13.25	0.00	0.05	
LB13-5	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB13-5	Min.	704	83	22	137	3.9	150	4.963	493.626	0	0.05	0.05	0.39	
LB13-5	Max.	794	105	26	172	5.5	221	4.963	561.355	42.006	0.05	0.05	0.69	
LB13-5	Median	752	93	25	143	4.9	199	4.963	532.982	0	0.05	0.05	0.58	
LB13-5	Mean	748	94	25	149	4.8	195	4.963	526.804	7.539	0.05	0.05	0.56	
LB13-5	S.D.	29	7	1	14	0.5	23	0	25.137	14.607	0.00	0.00	0.10	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
LB13b-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB13b-1	Min.	1830	176	198	212	6.3	399	166.63	1061.69	0	0.05	0.05	0.25	
LB13b-1	Max.	1971	185	271	262	8.2	831	173.721	1336.27	0	0.55	0.05	0.49	
LB13b-1	Median	1907	182	256	218	7.0	817	170.175	1086.10	0	0.05	0.05	0.38	
LB13b-1	Mean	1903	181	242	231	7.2	682	170.175	1161.35	0	0.22	0.05	0.37	
LB13b-1	S.D.	70	5	38	27	1.0	246	3.545	151.972	0	0.29	0.00	0.12	
LB13c-2	N	2	2	2	2	2	2	2	2	2	2	2	2	
LB13c-2	Min.	1158	171	54	205	5.1	572	35.453	524.745	0	0.05	0.05	0.33	
LB13c-2	Max.	1280	182	57	228	5.5	668	38.999	524.745	0	0.05	0.05	0.36	
LB13c-2	Median	1219	177	55	216	5.3	620	37.226	524.745	0	0.05	0.05	0.35	
LB13c-2	Mean	1219	177	55	216	5.3	620	37.226	524.745	0	0.05	0.05	0.35	
LB13c-2	S.D.	86	8	2	16	0.3	68	2.507	0	0	0.00	0.00	0.02	
LB13d-2	N	3	3	3	3	3	3	3	3	3	3	3	3	
LB13d-2	Min.	928	163	58	37	3.9	240	248.172	140.339	0	0.05	0.05	0.05	
LB13d-2	Max.	992	172	65	51	4.7	281	265.899	158.644	0	0.05	0.05	0.05	
LB13d-2	Median	960	171	59	39	3.9	271	262.354	146.44	0	0.05	0.05	0.05	
LB13d-2	Mean	960	169	61	42	4.2	264	258.808	148.474	0	0.05	0.05	0.05	
LB13d-2	S.D.	32	5	4	7	0.5	21	9.38	9.32	0	0.00	0.00	0.00	
LB18-1x	N	3	3	3	3	3	3	3	3	3	3	3	3	
LB18-1x	Min.	1254	112	118	175	2.0	567	46.089	421.016	0	39.62	0.05	0.05	
LB18-1x	Max.	1523	141	156	202	2.0	605	56.725	463.728	3	82.40	0.05	0.05	
LB18-1x	Median	1376	134	122	195	2.0	587	53.18	445.423	0	52.59	0.05	0.05	
LB18-1x	Mean	1385	129	132	191	2.0	586	51.998	443.389	1	58.20	0.05	0.05	
LB18-1x	S.D.	135	15	21	14	0.0	19	5.416	21.428	1,732	21.94	0.00	0.00	
LB18-4	N	4	4	4	4	4	4	4	4	4	4	4	4	
LB18-4	Min.	486	78	27	55	5.1	83	10.636	408.813	0	0.05	0.05	0.19	
LB18-4	Max.	1792	164	42	506	5.9	1037	49.634	622.372	6,001	0.05	0.05	0.59	
LB18-4	Median	1392	138	31	377	5.5	668	28.363	591.863	0	0.05	0.05	0.50	
LB18-4	Mean	1266	129	33	329	5.5	614	29.249	553.728	1.5	0.05	0.05	0.45	
LB18-4	S.D.	565	38	7	195	0.5	401	16.972	97.802	3	0.00	0.00	0.18	
LB18-5	N	4	4	4	4	4	4	4	4	4	4	4	4	
LB18-5	Min.	634	70	29	124	5.9	124	10.636	482.033	0	0.05	0.05	0.38	
LB18-5	Max.	1107	129	38	246	7.8	365	21.272	719.999	9,001	1.51	0.14	0.75	
LB18-5	Median	1053	123	36	237	7.2	352	17.727	713.897	0	0.05	0.05	0.72	
LB18-5	Mean	962	111	35	211	7.0	298	16.84	657.457	2.25	0.42	0.07	0.64	
LB18-5	S.D.	220	28	4	58	0.8	117	4.461	117.09	4,501	0.73	0.05	0.17	
LB19-2	N	10	10	10	10	10	10	10	10	10	10	10	10	
LB19-2	Min.	262	37	17	17	2.0	64	4.963	156.813	0	0.13	0.05	0.05	
LB19-2	Max.	525	75	53	21	2.0	75	35.423	341.694	14,702	17.49	0.05	0.32	
LB19-2	Median	506	69	52	19	2.0	71	31.488	313.322	3.15	16.19	0.05	0.05	
LB19-2	Mean	481	65	48	19	2.0	70	26.358	296.542	4,501	14.58	0.05	0.09	
LB19-2	S.D.	79	11	11	1	0.0	4	9.252	52.288	5,121	5.20	0.00	0.10	
LB19-3	N	3	3	3	3	3	3	3	3	3	3	3	3	
LB19-3	Min.	346	61	17	23	2.0	39	4.963	305.084	0	0.20	0.05	0.05	
LB19-3	Max.	608	86	34	83	2.0	159	17.727	445.423	6,001	3.83	0.21	0.29	
LB19-3	Median	435	79	28	30	2.0	94	10.636	311.186	0	0.48	0.05	0.05	
LB19-3	Mean	463	75	26	45	2.0	97	11.109	353.898	2	1.50	0.10	0.13	
LB19-3	S.D.	133	13	8	33	0.0	60	6.395	79.322	3,465	2.02	0.09	0.14	
LB20-3	N	9	9	9	9	9	9	9	9	9	9	9	9	
LB20-3	Min.	1094	196	81	83	5.1	600	29.733	430.169	0	0.22	0.05	0.05	
LB20-3	Max.	2042	330	148	363	8.2	1230	134.722	823.727	0	4.15	0.05	0.21	
LB20-3	Median	1818	216	109	329	6.6	998	85.088	725.49	0	1.54	0.05	0.05	
LB20-3	Mean	1786	249	117	291	6.5	996	91.319	682.236	0	2.04	0.05	0.07	
LB20-3	S.D.	281	55	24	87	0.9	189	32.706	119.931	0	1.46	0.00	0.05	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
LB20-4	N	1	1	1	1	1	1	1	1	1	1	1	1	1
LB20-4	Min.	1702	206	136	289	5.9	986	84.648	633.355	0	3.32	0.05	0.11	
LB20-4	Max.	1702	206	136	289	5.9	986	84.648	633.355	0	3.32	0.05	0.11	
LB20-4	Median	1702	206	136	289	5.9	986	84.648	633.355	0	3.32	0.05	0.11	
LB20-4	Mean	1702	206	136	289	5.9	986	84.648	633.355	0	3.32	0.05	0.11	
LB20-4	S.D.	.	.	.	.	.	.	.	.	.	.	.	.	.
LB20-5	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB20-5	Min.	1638	203	128	244	5.1	887	81.542	541.219	0	0.39	0.05	0.05	
LB20-5	Max.	2022	248	167	345	6.3	1248	120.541	842.032	18.303	3.57	0.32	0.71	
LB20-5	Median	1805	214	141	291	6.1	1009	97.559	644.948	0	1.84	0.05	0.15	
LB20-5	Mean	1828	218	145	293	5.9	1023	98.335	679.194	4.126	1.86	0.11	0.22	
LB20-5	S.D.	151	15	15	37	0.5	111	13.192	139.572	7.7	1.16	0.10	0.21	
LB20-6	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB20-6	Min.	346	65	17	18	2.0	29	4.963	302.033	0	0.05	0.05	0.20	
LB20-6	Max.	365	74	19	33	2.0	51	4.963	353.898	9.601	0.05	0.05	0.24	
LB20-6	Median	352	67	18	28	2.0	30	4.963	335.288	1.5	0.05	0.05	0.23	
LB20-6	Mean	352	67	18	28	2.0	33	4.963	330.025	3.451	0.05	0.05	0.23	
LB20-6	S.D.	7	3	1	4	0.0	7	0	17.758	4.191	0.00	0.00	0.02	
LB20-7	N	8	8	8	8	8	8	8	8	8	8	8	8	8
LB20-7	Min.	339	53	11	26	2.0	29	4.963	297.152	0	0.05	0.05	0.24	
LB20-7	Max.	659	65	19	185	4.3	171	4.963	457.626	8.401	0.05	0.05	0.42	
LB20-7	Median	506	59	14	112	3.9	80	4.963	453.355	0	0.05	0.05	0.38	
LB20-7	Mean	515	60	14	110	3.3	90	4.963	426.279	1.05	0.05	0.05	0.36	
LB20-7	S.D.	94	4	2	47	1.1	45	0	55.742	2.97	0.00	0.00	0.06	
LB20a-1	N	12	12	12	12	12	12	12	12	12	12	12	12	12
LB20a-1	Min.	1037	176	73	71	5.1	567	29.043	367.321	0	0.05	0.05	0.05	
LB20a-1	Max.	1229	264	95	92	5.9	783	49.634	427.728	6.901	0.56	0.05	0.27	
LB20a-1	Median	1069	200	83	79	5.5	616	33.303	402.711	0	0.24	0.05	0.19	
LB20a-1	Mean	1094	207	83	79	5.4	646	35.089	404.084	0.575	0.23	0.05	0.17	
LB20a-1	S.D.	64	25	6	6	0.3	76	5.967	16.541	1.992	0.16	0.00	0.07	
LB20b-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB20b-1	Min.	493	92	26	46	2.0	61	4.963	463.728	0	0.05	0.05	0.05	
LB20b-1	Max.	1530	187	176	69	3.9	264	269.444	561.355	0	114.97	0.05	0.31	
LB20b-1	Median	1478	182	173	64	2.0	257	163.085	543.05	0	107.29	0.05	0.05	
LB20b-1	Mean	1167	154	125	60	2.6	194	145.831	522.711	0	74.10	0.05	0.14	
LB20b-1	S.D.	584	53	86	12	1.1	115	133.082	51.894	0	64.25	0.00	0.15	
LB20b-2	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB20b-2	Min.	493	91	26	41	2.0	62	4.963	457.626	0	0.05	0.05	0.05	
LB20b-2	Max.	1581	194	185	74	2.0	288	134.722	555.253	0	122.40	0.05	0.30	
LB20b-2	Median	499	93	28	51	2.0	85	4.963	463.728	0	0.16	0.05	0.25	
LB20b-2	Mean	858	126	79	55	2.0	145	48.216	492.203	0	40.87	0.05	0.20	
LB20b-2	S.D.	626	59	91	17	0.0	124	74.916	54.689	0	70.61	0.00	0.13	
LB20c-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB20c-1	Min.	909	52	122	83	9.4	163	31.908	762.711	0	1.49	0.05	0.05	
LB20c-1	Max.	1101	59	173	106	12.1	259	70.906	860.338	45.007	3.18	0.05	0.05	
LB20c-1	Median	1043	56	158	90	10.9	188	35.453	842.032	15.002	2.94	0.05	0.05	
LB20c-1	Mean	1018	56	151	93	10.8	204	46.089	821.694	20.003	2.54	0.05	0.05	
LB20c-1	S.D.	99	4	27	12	1.4	50	21.565	51.894	22.916	0.91	0.00	0.00	
LB20d-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB20d-1	Min.	877	100	79	90	4.3	329	49.634	433.22	0	0.96	0.05	0.05	
LB20d-1	Max.	1037	126	113	110	4.7	439	67.361	536.948	0	1.73	0.05	0.05	
LB20d-1	Median	992	113	102	94	4.3	439	60.27	530.847	0	1.27	0.05	0.05	
LB20d-1	Mean	969	113	98	98	4.4	403	59.089	500.338	0	1.32	0.05	0.05	
LB20d-1	S.D.	83	13	17	11	0.2	64	8.922	58.206	0	0.39	0.00	0.00	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
LB20e-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB20e-1	Min.	1094	124	127	106	6.6	596	28.363	506.44	0	3.49	0.05	0.05	0.05
LB20e-1	Max.	2323	387	220	223	13.3	1479	198.538	536.948	0	44.90	0.05	0.10	0.05
LB20e-1	Median	1594	218	133	191	11.3	913	70.906	530.847	0	5.09	0.05	0.05	0.05
LB20e-1	Mean	1670	243	160	173	10.4	996	99.269	524.745	0	17.83	0.05	0.07	0.07
LB20e-1	S.D.	618	133	52	61	3.4	448	88.562	16.144	0	23.46	0.00	0.03	0.03
LB20e-2	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB20e-2	Min.	2464	358	111	437	9.8	1691	35.453	658.982	0	0.05	0.05	0.96	0.96
LB20e-2	Max.	2931	387	126	724	12.9	2281	53.18	756.609	0	0.05	0.05	1.06	1.06
LB20e-2	Median	2598	360	113	598	11.3	2017	38.999	719.999	0	0.05	0.05	1.02	1.02
LB20e-2	Mean	2665	368	116	586	11.3	1997	42.544	711.863	0	0.05	0.05	1.01	1.01
LB20e-2	S.D.	241	16	8	144	1.6	296	9.38	49.319	0	0.00	0.00	0.05	0.05
LB21-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB21-1	Min.	467	76	20	62	2.0	53	4.963	445.423	0	0.16	0.05	0.32	0.32
LB21-1	Max.	480	78	21	69	3.9	58	4.963	451.525	6.001	0.37	0.05	0.67	0.67
LB21-1	Median	474	76	20	67	2.0	54	4.963	451.525	0	0.26	0.05	0.35	0.35
LB21-1	Mean	474	77	20	66	2.6	55	4.963	449.491	2	0.26	0.05	0.45	0.45
LB21-1	S.D.	6	1	1	4	1.1	2	0	3.523	3.465	0.11	0.00	0.19	0.19
LB21-2	N	25	25	25	25	25	25	25	25	25	25	25	25	25
LB21-2	Min.	422	91	20	5	2.0	20	17.727	232.474	0	8.65	0.05	0.05	0.05
LB21-2	Max.	486	112	33	11	2.0	76	33.333	353.898	29.104	24.56	0.67	0.19	0.19
LB21-2	Median	461	100	23	5	2.0	34	24.212	266.033	0	19.92	0.05	0.05	0.05
LB21-2	Mean	457	100	25	5	2.0	39	24.595	272.355	2.52	19.04	0.08	0.07	0.07
LB21-2	S.D.	16	6	4	2	0.0	17	4.298	34.072	6.203	4.42	0.13	0.04	0.04
LB21a-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB21a-1	Min.	1382	99	182	97	2.0	427	28.363	634.575	0	52.33	0.05	0.05	0.05
LB21a-1	Max.	1901	155	230	400	2.0	1076	99.269	634.575	18.003	81.38	0.05	0.05	0.05
LB21a-1	Median	1894	136	185	225	2.0	802	63.816	634.575	0	71.51	0.05	0.05	0.05
LB21a-1	Mean	1726	130	199	241	2.0	769	63.816	634.575	6.001	68.41	0.05	0.05	0.05
LB21a-1	S.D.	297	28	27	152	0.0	326	35.453	0	10.394	14.77	0.00	0.00	0.00
LB21a-2	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB21a-2	Min.	1523	230	95	225	5.5	1047	31.908	451.525	0	0.05	0.05	0.31	0.31
LB21a-2	Max.	1594	247	100	253	6.3	1124	35.453	475.931	0	0.05	0.05	0.37	0.37
LB21a-2	Median	1523	243	99	232	5.9	1047	31.908	463.728	0	0.05	0.05	0.31	0.31
LB21a-2	Mean	1547	240	98	237	5.9	1073	33.09	463.728	0	0.05	0.05	0.33	0.33
LB21a-2	S.D.	41	9	3	14	0.4	44	2.047	12.203	0	0.00	0.00	0.04	0.04
LB21b-1	N	3	3	3	3	3	3	3	3	3	3	3	3	3
LB21b-1	Min.	666	107	60	14	2.0	85	14.181	341.694	0	36.04	0.05	0.05	0.05
LB21b-1	Max.	717	132	63	18	2.0	92	42.544	402.711	6.001	47.12	0.05	0.05	0.05
LB21b-1	Median	666	118	61	16	2.0	86	21.272	359.999	0	42.63	0.05	0.05	0.05
LB21b-1	Mean	683	119	62	16	2.0	88	25.999	368.135	2	41.93	0.05	0.05	0.05
LB21b-1	S.D.	30	13	2	2	0.0	4	14.76	31.311	3.465	5.57	0.00	0.00	0.00
LB22-3	N	25	25	25	25	25	25	25	25	25	25	25	25	25
LB22-3	Min.	582	110	45	27	2.0	132	4.963	303.254	0	0.05	0.05	0.05	0.05
LB22-3	Max.	966	211	74	41	5.5	543	21.272	530.847	25.204	21.46	0.47	0.42	0.42
LB22-3	Median	870	184	67	29	4.7	412	4.963	362.44	0	18.14	0.05	0.05	0.05
LB22-3	Mean	856	180	65	30	4.4	402	7.866	377.768	1.62	15.57	0.09	0.09	0.09
LB22-3	S.D.	91	25	7	3	0.8	108	4.808	58.29	5.2	6.47	0.10	0.10	0.10
D-MW1	N	8	8	8	8	8	8	8	8	8	8	8	8	8
D-MW1	Min.	422	64	35	34	2.0	113	10.636	292.881	0	1.79	0.05	0.05	0.05
D-MW1	Max.	1075	165	100	113	5.9	366	144.213	543.05	14.102	12.58	0.05	0.05	0.05
D-MW1	Median	909	127	74	76	3.5	272	76.224	470.745	0	5.90	0.05	0.05	0.05
D-MW1	Mean	861	123	75	72	3.8	269	75.146	448.398	1.875	6.27	0.05	0.05	0.05
D-MW1	S.D.	208	30	20	25	1.9	79	42.45	82.728	4.95	3.60	0.00	0.00	0.00

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
D-MW2	N	7	7	7	7	7	7	7	7	7	7	7	7	7
D-MW2	Min.	1152	113	65	129	2.0	132	301.352	317.288	0	0.25	0.05	0.05	
D-MW2	Max.	2381	305	171	366	5.1	913	726.791	408.203	5.701	3.55	0.12	0.05	
D-MW2	Median	1594	150	84	234	4.7	243	421.893	378.304	0	2.49	0.05	0.05	
D-MW2	Mean	1659	178	101	237	4.2	382	482.479	370.285	0.814	2.05	0.07	0.05	
D-MW2	S.D.	470	67	37	81	1.1	300	178.086	35.937	2.155	1.28	0.03	0.00	
D-MW3	N	8	8	8	8	8	8	8	8	8	8	8	8	8
D-MW3	Min.	6088	131	270	368	680.3	14	828.675	3410.84	0	0.05	0.05	226.60	
D-MW3	Max.	7456	204	359	526	1079.1	452	1108.70	4698.30	0	3.78	1.28	425.50	
D-MW3	Median	6996	170	344	424	781.0	73	1010.42	3941.69	0	0.05	0.05	323.80	
D-MW3	Mean	6938	170	328	427	806.2	165	999.878	3987.07	0	0.81	0.32	319.25	
D-MW3	S.D.	393	27	34	52	117.6	178	95.933	429.346	0	1.44	0.45	64.91	
D-P10-1	N	8	8	8	8	8	8	8	8	8	8	8	8	8
D-P10-1	Min.	1293	308	84	76	5.9	878	4.963	444.813	0	0.05	0.05	0.69	
D-P10-1	Max.	1350	325	93	87	10.9	941	4.963	491.796	6.001	0.05	0.05	0.85	
D-P10-1	Median	1331	318	89	85	7.2	900	4.963	460.677	0	0.05	0.05	0.77	
D-P10-1	Mean	1329	317	89	83	7.9	909	4.963	462.431	0.75	0.05	0.05	0.77	
D-P10-1	S.D.	20	5	3	3	1.9	24	0	15.131	2.122	0.00	0.00	0.06	
D-P10-2	N	8	8	8	8	8	8	8	8	8	8	8	8	8
D-P10-2	Min.	902	148	60	51	38.7	76	60.27	689.49	0	9.99	0.05	0.12	
D-P10-2	Max.	1069	178	69	87	63.3	179	95.724	750.507	0	22.23	0.49	2.84	
D-P10-2	Median	1011	164	65	71	54.5	122	78.067	726.1	0	17.08	0.10	0.50	
D-P10-2	Mean	1004	163	65	71	52.1	119	76.952	724.117	0	16.49	0.16	0.95	
D-P10-2	S.D.	56	9	3	16	9.9	35	12.029	21.025	0	3.92	0.15	1.00	
D-MW4	N	7	7	7	7	7	7	7	7	7	7	7	7	7
D-MW4	Min.	454	61	53	20	2.0	39	26.102	332.542	0	0.05	0.05	0.05	
D-MW4	Max.	538	73	64	23	4.7	48	46.089	445.423	29.704	0.05	0.05	0.05	
D-MW4	Median	499	64	56	20	2.0	41	42.544	418.576	7.501	0.05	0.05	0.05	
D-MW4	Mean	496	65	57	21	2.7	42	37.467	403.932	7.93	0.05	0.05	0.05	
D-MW4	S.D.	30	4	4	1	1.2	3	8.091	40.199	10.536	0.00	0.00	0.00	
D-MW5	N	8	8	8	8	8	8	8	8	8	8	8	8	8
D-MW5	Min.	2470	423	295	216	4.7	2166	24.817	518.643	0	0.75	0.05	0.05	
D-MW5	Max.	2771	482	357	271	8.6	2690	28.363	567.457	0	1.23	0.24	0.29	
D-MW5	Median	2621	453	331	230	5.1	2318	26.857	547.321	0	0.96	0.05	0.16	
D-MW5	Mean	2628	454	328	235	5.6	2375	26.476	546.406	0	0.95	0.08	0.16	
D-MW5	S.D.	94	20	18	17	1.3	171	1.467	15.814	0	0.16	0.07	0.11	
D-MW6	N	8	8	8	8	8	8	8	8	8	8	8	8	8
D-MW6	Min.	2803	463	280	200	54.0	1631	354.532	713.897	0	0.05	0.05	3.46	
D-MW6	Max.	2944	506	305	214	101.7	1873	400.236	805.422	0	0.05	0.05	7.78	
D-MW6	Median	2845	499	297	204	84.6	1811	389.36	750.202	0	0.05	0.05	4.24	
D-MW6	Mean	2864	495	294	206	79.5	1789	381.337	753.787	0	0.05	0.05	4.60	
D-MW6	S.D.	52	14	9	5	20.6	78	17.102	27.565	0	0.00	0.00	1.37	
D-MW10a	N	3	3	3	3	3	3	3	3	3	3	3	3	3
D-MW10a	Min.	10056	447	1773	1035	9.8	9414	237.536	701.694	0	0.05	0.05	0.26	
D-MW10a	Max.	10240	494	1810	1264	10.2	9798	237.536	719.999	0	0.71	0.05	0.42	
D-MW10a	Median	10064	473	1777	1115	9.8	9606	237.536	713.897	0	0.05	0.05	0.33	
D-MW10a	Mean	10120	472	1786	1138	9.9	9606	237.536	711.863	0	0.27	0.05	0.34	
D-MW10a	S.D.	104	23	20	117	0.2	192	0	9.32	0	0.38	0.00	0.08	
D-P11-10b	N	3	3	3	3	3	3	3	3	3	3	3	3	3
D-P11-10b	Min.	1344	263	95	122	5.9	817	42.544	384.406	0	0.05	0.05	0.05	
D-P11-10b	Max.	2886	463	179	529	9.0	2378	56.725	683.389	0	7.07	0.39	0.59	
D-P11-10b	Median	2842	459	168	448	8.2	2306	42.544	671.185	0	0.45	0.05	0.46	
D-P11-10b	Mean	2357	395	147	366	7.7	1833	47.271	579.66	0	2.52	0.16	0.37	
D-P11-10b	S.D.	878	115	46	215	1.6	881	8.188	169.205	0	3.94	0.20	0.28	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
D-P11-10c	N	3	3	3	3	3	3	3	3	3	3	3	3	3
D-P11-10c	Min.	2298	512	174	223	10.2	1873	14.181	604.067	0	0.05	0.05	0.80	
D-P11-10c	Max.	2381	528	180	260	11.7	1993	17.727	604.067	0	0.05	0.05	0.90	
D-P11-10c	Median	2374	519	179	232	10.6	1897	14.181	604.067	0	0.05	0.05	0.86	
D-P11-10c	Mean	2351	520	177	238	10.8	1921	15.363	604.067	0	0.05	0.05	0.85	
D-P11-10c	S.D.	46	8	3	19	0.8	64	2.047	0	0	0.00	0.00	0.05	
D-MW11a	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-MW11a	Min.	4432	437	493	285	7.8	2414	372.259	683.389	0	10.32	0.05	0.05	
D-MW11a	Max.	5096	471	628	368	9.4	3578	485.709	781.016	0	19.92	0.11	0.13	
D-MW11a	Median	4440	460	496	356	7.8	2450	482.164	713.897	0	17.50	0.05	0.11	
D-MW11a	Mean	4656	456	539	336	8.3	2814	446.71	726.1	0	15.91	0.07	0.10	
D-MW11a	S.D.	381	17	77	45	0.9	662	64.501	49.944	0	4.99	0.04	0.04	
D-P11-11b	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-P11-11b	Min.	2067	414	130	248	7.0	1518	17.727	616.27	0	0.05	0.05	1.10	
D-P11-11b	Max.	2093	428	132	267	8.2	1652	21.272	634.575	0	0.05	0.05	1.26	
D-P11-11b	Median	2080	420	130	253	7.0	1595	17.727	628.474	0	0.05	0.05	1.15	
D-P11-11b	Mean	2080	421	131	256	7.4	1588	18.908	626.44	0	0.05	0.05	1.17	
D-P11-11b	S.D.	13	7	1	10	0.7	67	2.047	9.32	0	0.00	0.00	0.08	
D-MW12a	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-MW12a	Min.	1037	205	86	44	2.0	504	88.633	402.711	0	2.31	0.05	0.05	
D-MW12a	Max.	1107	225	95	51	2.0	514	88.633	451.525	0	3.00	0.18	0.23	
D-MW12a	Median	1101	221	89	46	2.0	509	88.633	421.016	0	2.75	0.05	0.05	
D-MW12a	Mean	1082	217	90	47	2.0	509	88.633	425.084	0	2.69	0.09	0.11	
D-MW12a	S.D.	39	11	5	4	0.0	5	0	24.66	0	0.35	0.08	0.10	
D-P11-12b	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-P11-12b	Min.	1728	352	117	140	2.0	961	99.269	482.033	0	1.51	0.05	0.15	
D-P11-12b	Max.	2010	387	119	294	3.9	1412	141.813	488.135	0	3.93	0.05	0.36	
D-P11-12b	Median	1728	352	118	159	2.0	1210	113.45	488.135	0	2.97	0.05	0.19	
D-P11-12b	Mean	1822	364	118	198	2.6	1194	118.177	486.101	0	2.80	0.05	0.23	
D-P11-12b	S.D.	163	20	1	84	1.1	226	21.662	3.523	0	1.22	0.00	0.11	
D-MW13a	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-MW13a	Min.	704	84	40	41	95.4	143	38.999	463.728	0	2.46	0.05	0.14	
D-MW13a	Max.	1082	127	57	69	152.9	214	74.452	689.49	0	10.83	0.58	0.60	
D-MW13a	Median	864	103	45	51	133.3	159	38.999	591.863	0	3.10	0.11	0.31	
D-MW13a	Mean	883	105	48	54	127.2	172	50.816	581.694	0	5.46	0.25	0.35	
D-MW13a	S.D.	190	22	9	14	29.2	37	20.469	113.224	0	4.66	0.29	0.23	
D-P11-13b	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-P11-13b	Min.	1446	278	82	161	14.9	961	17.727	439.321	0	0.05	0.05	0.55	
D-P11-13b	Max.	1504	286	88	182	27.4	1028	21.272	445.423	0	0.05	0.05	0.63	
D-P11-13b	Median	1504	283	87	175	18.0	989	21.272	445.423	0	0.05	0.05	0.62	
D-P11-13b	Mean	1485	282	86	172	20.1	993	20.09	443.389	0	0.05	0.05	0.60	
D-P11-13b	S.D.	33	4	3	11	6.5	34	2.047	3.523	0	0.00	0.00	0.04	
D-P11-13c	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-P11-13c	Min.	1830	267	84	322	12.9	1095	49.634	671.185	0	0.05	0.05	1.00	
D-P11-13c	Max.	1978	316	101	359	18.8	1306	74.452	689.49	0	0.94	0.05	1.07	
D-P11-13c	Median	1933	289	94	345	14.1	1189	56.725	671.185	0	0.25	0.05	1.03	
D-P11-13c	Mean	1914	290	93	342	15.2	1197	60.27	677.287	0	0.41	0.05	1.03	
D-P11-13c	S.D.	75	24	8	19	3.1	106	12.783	10.568	0	0.47	0.00	0.04	
D-MW14a	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-MW14a	Min.	544	106	40	23	2.0	105	4.963	463.728	0	0.05	0.05	0.18	
D-MW14a	Max.	653	127	47	39	3.9	190	4.963	488.135	0	0.05	0.05	0.26	
D-MW14a	Median	570	109	43	25	2.0	127	4.963	475.931	0	0.05	0.05	0.25	
D-MW14a	Mean	589	114	43	29	2.6	140	4.963	475.931	0	0.05	0.05	0.23	
D-MW14a	S.D.	57	11	4	9	1.1	44	0	12.203	0	0.00	0.00	0.04	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
D-P11-14b	N	3	3	3	3	3	3	3	3	3	3	3	3	3
D-P11-14b	Min.	1766	424	125	136	6.6	1479	4.963	451.525	0	0.05	0.05	0.74	
D-P11-14b	Max.	1933	465	134	189	7.4	1662	14.181	475.931	0	0.05	0.05	0.94	
D-P11-14b	Median	1862	448	128	136	6.6	1527	10.636	463.728	0	0.05	0.05	0.89	
D-P11-14b	Mean	1854	446	129	153	6.9	1556	9.927	463.728	0	0.05	0.05	0.86	
D-P11-14b	S.D.	84	21	4	31	0.5	95	4.65	12.203	0	0.00	0.00	0.10	
D-P11-14c	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-P11-14c	Min.	1229	162	52	223	7.8	576	14.181	616.27	0	0.05	0.05	0.57	
D-P11-14c	Max.	1293	173	56	253	9.0	648	17.727	658.982	6.001	0.05	0.05	0.78	
D-P11-14c	Median	1254	172	54	234	8.6	591	14.181	652.88	0	0.05	0.05	0.65	
D-P11-14c	Mean	1259	169	54	237	8.5	605	15.363	642.711	2	0.05	0.05	0.67	
D-P11-14c	S.D.	32	6	2	15	0.6	38	2.047	23.101	3.465	0.00	0.00	0.11	
D-MW15a	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-MW15a	Min.	723	112	67	51	2.0	88	14.181	689.49	0	0.05	0.05	0.05	
D-MW15a	Max.	762	124	71	55	2.0	115	14.181	701.694	3	0.05	0.05	0.05	
D-MW15a	Median	730	119	70	53	2.0	106	14.181	695.592	0	0.05	0.05	0.05	
D-MW15a	Mean	738	118	69	53	2.0	103	14.181	695.592	1	0.05	0.05	0.05	
D-MW15a	S.D.	21	6	2	2	0.0	14	0	6.102	1.732	0.00	0.00	0.00	
D-P11-15b	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-P11-15b	Min.	1664	427	125	99	6.3	1374	4.963	475.931	0	0.05	0.05	0.65	
D-P11-15b	Max.	1952	445	131	193	6.6	1614	10.636	488.135	0	0.05	0.05	0.76	
D-P11-15b	Median	1830	440	126	143	6.6	1405	4.963	482.033	0	0.05	0.05	0.68	
D-P11-15b	Mean	1815	438	127	145	6.5	1464	6.854	482.033	0	0.05	0.05	0.70	
D-P11-15b	S.D.	145	10	3	47	0.2	131	3.275	6.102	0	0.00	0.00	0.06	
D-P11-15c	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-P11-15c	Min.	1875	265	76	402	9.4	1230	49.634	665.084	0	0.05	0.05	0.40	
D-P11-15c	Max.	2214	327	98	460	9.4	1431	85.088	738.304	0	0.05	0.05	0.81	
D-P11-15c	Median	2214	316	95	409	9.4	1381	81.542	683.389	0	0.05	0.05	0.43	
D-P11-15c	Mean	2101	303	90	424	9.4	1347	72.088	695.592	0	0.05	0.05	0.55	
D-P11-15c	S.D.	196	33	12	31	0.0	105	19.526	38.105	0	0.00	0.00	0.23	
D-MW16a	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-MW16a	Min.	5080	483	478	621	8.6	3867	70.906	585.762	0	0.12	0.05	0.11	
D-MW16a	Max.	5160	489	505	713	9.8	4155	74.452	640.677	0	0.20	0.05	0.19	
D-MW16a	Median	5080	488	483	713	8.6	3891	70.906	622.372	0	0.13	0.05	0.13	
D-MW16a	Mean	5107	487	489	682	9.0	3971	72.088	616.27	0	0.15	0.05	0.14	
D-MW16a	S.D.	46	3	14	53	0.7	160	2.047	27.961	0	0.04	0.00	0.04	
D-P11-16b	N	3	3	3	3	3	3	3	3	3	3	3	3	
D-P11-16b	Min.	1869	317	93	299	5.9	1249	35.453	555.253	0	0.05	0.05	0.74	
D-P11-16b	Max.	1882	320	94	347	7.0	1345	38.999	567.457	0	0.05	0.05	0.76	
D-P11-16b	Median	1875	320	94	306	5.9	1261	35.453	561.355	0	0.05	0.05	0.76	
D-P11-16b	Mean	1875	319	94	317	6.3	1285	36.635	561.355	0	0.05	0.05	0.75	
D-P11-16b	S.D.	6	2	1	26	0.7	52	2.047	6.102	0	0.00	0.00	0.01	
A-MW1	N	10	10	10	10	10	10	10	10	10	10	10	10	
A-MW1	Min.	1235	263	62	63	4.7	261	72.337	637.626	0	8.50	0.05	0.05	
A-MW1	Max.	1587	354	88	156	10.6	420	167.515	1037.29	0	49.88	1.52	0.18	
A-MW1	Median	1395	311	75	133	6.5	317	101.042	930.507	0	29.07	0.05	0.05	
A-MW1	Mean	1410	309	73	121	6.6	320	111.214	893.958	0	29.73	0.20	0.06	
A-MW1	S.D.	109	28	8	32	1.9	43	31.597	139.74	0	15.19	0.46	0.04	
A-MW2	N	11	11	11	11	11	11	11	11	11	11	11	11	
A-MW2	Min.	1043	226	60	14	2.0	65	193.918	506.44	0	11.12	0.05	0.05	
A-MW2	Max.	1344	270	69	71	4.7	156	365.168	585.762	0	21.56	0.05	0.05	
A-MW2	Median	1133	247	65	25	3.9	76	240.922	549.152	0	14.47	0.05	0.05	
A-MW2	Mean	1138	250	64	32	3.9	87	252.636	551.87	0	14.90	0.05	0.05	
A-MW2	S.D.	84	13	3	20	0.7	27	45.423	24.606	0	2.67	0.00	0.00	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
A-MW3	N	12	12	12	12	12	12	12	12	12	12	12	12	12
A-MW3	Min.	1363	310	75	16	4.3	68	152.414	666.914	0	0.05	0.05	0.05	0.05
A-MW3	Max.	2144	504	176	76	5.9	322	478.618	1613.90	0	45.95	0.05	0.55	
A-MW3	Median	1744	385	127	39	5.1	143	406.237	993.354	0	1.52	0.05	0.12	0.12
A-MW3	Mean	1804	412	130	40	5.1	163	388.873	1106.08	0	5.40	0.05	0.15	
A-MW3	S.D.	230	67	29	18	0.5	71	84.569	310.311	0	12.89	0.00	0.13	
A-P08-16	N	11	11	11	11	11	11	11	11	11	11	11	11	11
A-P08-16	Min.	506	82	36	37	2.0	37	4.963	500.338	0	0.05	0.05	0.30	
A-P08-16	Max.	531	92	40	50	2.0	50	4.963	543.05	7.201	0.17	0.05	0.51	
A-P08-16	Median	518	85	39	46	2.0	39	4.963	525.965	0	0.05	0.05	0.45	
A-P08-16	Mean	518	85	39	45	2.0	40	4.963	525.632	0.655	0.09	0.05	0.43	
A-P08-16	S.D.	7	3	1	4	0.0	4	0	11.998	2.171	0.05	0.00	0.07	
A-P08-21	N	10	10	10	10	10	10	10	10	10	10	10	10	10
A-P08-21	Min.	640	39	13	172	2.0	110	4.963	464.948	6.301	0.05	0.05	0.53	
A-P08-21	Max.	672	43	16	198	2.0	151	4.963	530.236	29.404	0.05	0.05	0.60	
A-P08-21	Median	653	40	14	193	2.0	132	4.963	505.219	15.302	0.05	0.05	0.58	
A-P08-21	Mean	653	40	15	189	2.0	130	4.963	505.342	16.592	0.05	0.05	0.57	
A-P08-21	S.D.	10	1	1	9	0.0	10	0	17.983	8.542	0.00	0.00	0.02	
A-C3	N	7	7	7	7	7	7	7	7	7	7	7	7	7
A-C3	Min.	397	107	21	4	2.0	16	4.963	377.084	0	0.32	0.05	0.05	
A-C3	Max.	1037	188	40	117	2.0	171	92.178	408.813	0	70.98	0.05	0.05	
A-C3	Median	512	123	25	22	2.0	78	16.281	396.61	0	4.59	0.05	0.05	
A-C3	Mean	659	140	28	48	2.0	91	39.358	394.866	0	24.37	0.05	0.05	
A-C3	S.D.	277	33	7	49	0.0	63	38.684	10.653	0	29.28	0.00	0.00	
B-MW1	N	11	11	11	11	11	11	11	11	11	11	11	11	11
B-MW1	Min.	954	175	68	60	2.0	132	120.541	658.982	0	1.09	0.05	0.05	
B-MW1	Max.	2515	487	196	103	5.5	226	770.77	1238.03	0	9.60	0.05	0.05	
B-MW1	Median	2214	421	174	98	5.1	154	591.053	1145.29	0	2.83	0.05	0.05	
B-MW1	Mean	2001	391	157	91	4.4	167	510.795	1077.28	0	3.83	0.05	0.05	
B-MW1	S.D.	538	109	44	15	1.3	34	232.873	197.903	0	2.93	0.00	0.00	
B-MW2a	N	8	8	8	8	8	8	8	8	8	8	8	8	8
B-MW2a	Min.	1830	300	138	120	4.3	55	365.333	1165.42	0	0.05	0.05	0.05	
B-MW2a	Max.	2227	388	177	149	5.1	195	570.797	1354.57	0	3.57	0.10	0.14	
B-MW2a	Median	1994	362	150	130	4.7	128	462.742	1242.91	0	0.87	0.05	0.08	
B-MW2a	Mean	2009	353	153	131	4.7	131	469.129	1245.05	0	1.28	0.06	0.09	
B-MW2a	S.D.	162	34	15	9	0.3	43	79.16	60.507	0	1.27	0.02	0.04	
B-MW3	N	11	11	11	11	11	11	11	11	11	11	11	11	11
B-MW3	Min.	1094	196	58	69	2.0	80	141.813	604.067	0	0.13	0.05	0.05	
B-MW3	Max.	1837	371	165	105	5.5	229	342.031	1166.03	0	41.77	0.42	0.23	
B-MW3	Median	1523	285	119	87	2.0	147	240.722	887.185	0	17.97	0.05	0.05	
B-MW3	Mean	1476	278	115	86	2.6	150	234.993	915.641	0	21.32	0.08	0.07	
B-MW3	S.D.	267	59	31	11	1.2	43	65.644	189.5	0	12.35	0.11	0.05	
B-MW4a	N	8	8	8	8	8	8	8	8	8	8	8	8	8
B-MW4a	Min.	851	144	56	60	2.0	100	92.178	567.457	0	14.03	0.05	0.05	
B-MW4a	Max.	1619	309	122	90	5.5	179	319.729	766.982	0	36.53	0.05	0.05	
B-MW4a	Median	1222	221	85	80	2.0	147	198.345	689.185	0	25.06	0.05	0.05	
B-MW4a	Mean	1259	231	89	78	2.6	148	209.94	680.719	0	25.56	0.05	0.05	
B-MW4a	S.D.	236	52	20	9	1.3	24	69.861	63.349	0	7.59	0.00	0.00	
B-P10-15w	N	6	6	6	6	6	6	6	6	6	6	6	6	6
B-P10-15w	Min.	538	80	34	52	2.0	82	4.963	492.406	0	0.05	0.05	0.15	
B-P10-15w	Max.	557	86	41	62	2.0	92	4.963	518.643	2.1	0.05	0.05	0.18	
B-P10-15w	Median	544	86	37	57	2.0	87	4.963	507.355	0	0.05	0.05	0.16	
B-P10-15w	Mean	546	85	38	57	2.0	87	4.963	506.135	0.35	0.05	0.05	0.16	
B-P10-15w	S.D.	10	2	3	4	0.0	4	0	9.474	0.857	0.00	0.00	0.01	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z	
		(mg L ⁻¹)												
B-P10-20w	N	6	6	6	6	6	6	6	6	6	6	6	6	6
B-P10-20w	Min.	499	76	31	52	2.0	60	4.963	471.66	0	0.05	0.05	0.16	
B-P10-20w	Max.	518	81	33	66	2.0	68	4.963	500.338	3	0.05	0.05	0.18	
B-P10-20w	Median	506	78	32	59	2.0	66	4.963	485.389	0	0.05	0.05	0.17	
B-P10-20w	Mean	507	79	32	58	2.0	65	4.963	485.592	0.5	0.05	0.05	0.17	
B-P10-20w	S.D.	7	2	1	5	0.0	3	0	10.801	1.225	0.00	0.00	0.01	
B-P10-15e	N	7	7	7	7	7	7	7	7	7	7	7	7	
B-P10-15e	Min.	467	66	30	52	2.0	47	4.963	454.576	0	0.05	0.05	0.12	
B-P10-15e	Max.	486	72	32	62	2.0	56	4.963	482.033	6.001	0.05	0.05	0.23	
B-P10-15e	Median	480	71	31	58	2.0	54	4.963	467.999	0	0.05	0.05	0.20	
B-P10-15e	Mean	479	70	31	58	2.0	53	4.963	466.953	0.857	0.05	0.05	0.19	
B-P10-15e	S.D.	8	2	1	4	0.0	3	0	8.641	2.268	0.00	0.00	0.04	
B-P10-21e	N	7	7	7	7	7	7	7	7	7	7	7	7	
B-P10-21e	Min.	563	86	37	57	2.0	85	10.636	512.542	0	0.05	0.05	0.14	
B-P10-21e	Max.	627	99	42	67	2.0	93	26.012	525.355	0	0.21	0.05	0.17	
B-P10-21e	Median	576	92	39	64	2.0	88	17.727	522.304	0	0.12	0.05	0.16	
B-P10-21e	Mean	593	93	39	63	2.0	89	19.227	519.951	0	0.11	0.05	0.16	
B-P10-21e	S.D.	28	5	2	3	0.0	3	6.618	5.729	0	0.06	0.00	0.01	
B-C4	N	10	10	10	10	10	10	10	10	10	10	10	10	
B-C4	Min.	512	96	38	26	2.0	73	4.963	446.033	0	0.05	0.05	0.05	
B-C4	Max.	563	110	44	36	2.0	79	17.727	524.745	6.001	0.78	0.05	0.05	
B-C4	Median	525	100	39	32	2.0	74	4.963	488.135	0	0.30	0.05	0.05	
B-C4	Mean	533	101	39	32	2.0	75	7.849	484.413	0.6	0.33	0.05	0.05	
B-C4	S.D.	18	4	2	3	0.0	2	4.852	26.077	1.898	0.20	0.00	0.00	
C-MW1	N	11	11	11	11	11	11	11	11	11	11	11	11	
C-MW1	Min.	2266	330	153	127	2.0	16	877.179	685.829	0	0.05	0.05	0.21	
C-MW1	Max.	2451	381	178	179	3.9	39	943.055	781.016	0	0.05	0.05	0.43	
C-MW1	Median	2374	355	167	147	3.9	30	908.682	761.49	0	0.05	0.05	0.34	
C-MW1	Mean	2378	355	165	152	3.0	30	909.582	744.516	0	0.05	0.05	0.34	
C-MW1	S.D.	65	13	7	18	1.0	7	24.086	33.394	0	0.00	0.00	0.07	
C-MW2	N	11	11	11	11	11	11	11	11	11	11	11	11	
C-MW2	Min.	416	86	25	16	2.0	14	4.963	405.762	0	0.05	0.05	0.16	
C-MW2	Max.	896	188	49	46	4.7	33	237.536	474.101	0	9.38	0.25	0.21	
C-MW2	Median	659	143	38	23	4.3	17	122.511	433.83	0	0.19	0.05	0.18	
C-MW2	Mean	645	137	37	25	3.6	18	108.252	433.386	0	1.96	0.07	0.18	
C-MW2	S.D.	193	39	10	8	1.1	5	87.173	19.847	0	3.15	0.06	0.01	
C-MW3	N	11	11	11	11	11	11	11	11	11	11	11	11	
C-MW3	Min.	704	114	33	87	2.0	70	46.784	554.643	0	0.05	0.05	0.05	
C-MW3	Max.	1510	280	119	105	6.6	214	428.984	939.659	4.801	25.18	0.05	0.29	
C-MW3	Median	1178	203	59	99	5.9	81	230.446	600.406	0	0.18	0.05	0.25	
C-MW3	Mean	1123	195	59	98	5.5	93	240.894	623.481	0.436	2.44	0.05	0.22	
C-MW3	S.D.	279	56	24	5	1.3	41	131.475	106.569	1.447	7.54	0.00	0.07	
C-P08-14	N	11	11	11	11	11	11	11	11	11	11	11	11	
C-P08-14	Min.	1318	109	28	340	5.5	587	4.963	640.677	0	0.05	0.05	0.69	
C-P08-14	Max.	1587	126	33	443	7.0	722	13.851	800.541	27.004	0.05	0.05	0.92	
C-P08-14	Median	1389	118	30	386	5.9	654	4.963	693.151	0	0.05	0.05	0.83	
C-P08-14	Mean	1412	116	30	386	5.9	653	6.786	703.136	3.491	0.05	0.05	0.81	
C-P08-14	S.D.	78	6	2	30	0.5	37	3.247	40.61	8.214	0.00	0.00	0.06	
C-P08-21	N	8	8	8	8	8	8	8	8	8	8	8	8	
C-P08-21	Min.	1440	97	23	392	4.7	682	4.963	713.897	0	0.05	0.05	0.85	
C-P08-21	Max.	1517	102	26	462	5.9	753	4.963	756.609	12.002	0.05	0.05	0.92	
C-P08-21	Median	1482	100	25	435	5.3	699	4.963	735.863	4.951	0.05	0.05	0.90	
C-P08-21	Mean	1478	100	25	433	5.3	703	4.963	734.719	4.988	0.05	0.05	0.89	
C-P08-21	S.D.	25	2	1	24	0.4	23	0	14.718	5.069	0.00	0.00	0.02	

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Well	Statistic	TDS ^z	Ca ²⁺ ^z	Mg ²⁺ ^z	Na ⁺ ^z	K ⁺ ^z	SO ₄ ²⁻ ^z	Cl ⁻ ^z	HCO ₃ ⁻ ^z	CO ₃ ²⁻ ^z	NO ₃ ⁻ -N ^z	NO ₂ ⁻ -N ^z	NH ₃ -N ^z
		(mg L ⁻¹)											
C-C2	N	9	9	9	9	9	9	9	9	9	9	9	9
C-C2	Min.	538	72	25	63	2.0	75	35.953	358.779	0	0.05	0.05	0.05
C-C2	Max.	563	80	31	87	3.9	97	49.634	421.016	9.901	0.30	0.05	0.05
C-C2	Median	550	76	28	78	2.0	83	43.884	391.118	3	0.13	0.05	0.05
C-C2	Mean	553	76	28	75	2.2	86	44.555	391.999	3.267	0.13	0.05	0.05
C-C2	S.D.	9	3	2	7	0.7	8	4.488	17.288	3.882	0.08	0.00	0.00

^z Total dissolved solids (TDS), calcium (Ca²⁺), magnesium (Mg²⁺), sodium (Na⁺), potassium (K⁺), sulphate (SO₄²⁻), chloride (Cl⁻) bicarbonate (HCO₃⁻), carbonate (CO₃²⁻), nitrate nitrogen (NO₃⁻-N), nitrite nitrogen (NO₂⁻-N), and ammonia nitrogen (NH₃-N).

Appendix 11. Vertical hydraulic gradients for nested wells instrumented at field-transect sites.

Field site	Date	Well pair	Average vertical hydraulic gradient (m m^{-1})	Direction of vertical groundwater movement
Field A	29-Mar-11	LB5a-1 - LB5a-3	0.132	Downward
Field A	29-Mar-11	LB5a-1 - LB5a-4	0.166	Downward
Field A	29-Mar-11	LB5a-1 - LB5a-5	0.157	Downward
Field A	29-Mar-11	LB5a-1 - LB5a-6	0.470	Downward
Field A	29-Mar-11	LB5a-3 - LB5a-4	0.197	Downward
Field A	29-Mar-11	LB5a-3 - LB5a-5	0.170	Downward
Field A	29-Mar-11	LB5a-3 - LB5a-6	0.407	Downward
Field A	29-Mar-11	LB5a-4 - LB5a-5	0.118	Downward
Field A	29-Mar-11	LB5a-4 - LB5a-6	0.465	Downward
Field A	29-Mar-11	LB5a-5 - LB5a-6	0.569	Downward
Field A	6-Jun-11	LB5a-1 - LB5a-3	1.015	Downward
Field A	6-Jun-11	LB5a-1 - LB5a-4	0.246	Downward
Field A	6-Jun-11	LB5a-1 - LB5a-5	0.189	Downward
Field A	6-Jun-11	LB5a-1 - LB5a-6	0.341	Downward
Field A	6-Jun-11	LB5a-3 - LB5a-4	-0.033	Upward
Field A	6-Jun-11	LB5a-3 - LB5a-5	0.036	Downward
Field A	6-Jun-11	LB5a-3 - LB5a-6	0.244	Downward
Field A	6-Jun-11	LB5a-4 - LB5a-5	0.086	Downward
Field A	6-Jun-11	LB5a-4 - LB5a-6	0.307	Downward
Field A	6-Jun-11	LB5a-5 - LB5a-6	0.374	Downward
Field A	6-Jun-11	LB5c-1 - LB5c-2	0.034	Downward
Field A	6-Jun-11	LB5e-1 - LB5e-2	0.265	Downward
Field A	6-Jun-11	LB5f-1 - LB5f-2	0.083	Downward
Field A	8-Aug-11	LB5a-1 - LB5a-3	-0.045	Upward
Field A	8-Aug-11	LB5a-1 - LB5a-4	-0.025	Upward
Field A	8-Aug-11	LB5a-1 - LB5a-5	0.050	Downward
Field A	8-Aug-11	LB5a-1 - LB5a-6	0.289	Downward
Field A	8-Aug-11	LB5a-3 - LB5a-4	-0.020	Upward
Field A	8-Aug-11	LB5a-3 - LB5a-5	0.069	Downward
Field A	8-Aug-11	LB5a-3 - LB5a-6	0.257	Downward
Field A	8-Aug-11	LB5a-4 - LB5a-5	0.129	Downward
Field A	8-Aug-11	LB5a-4 - LB5a-6	0.320	Downward
Field A	8-Aug-11	LB5a-5 - LB5a-6	0.378	Downward
Field A	8-Aug-11	LB5c-1 - LB5c-2	-0.022	Upward
Field A	8-Aug-11	LB5f-1 - LB5f-2	0.004	Downward
Field A	3-Oct-11	LB5a-1 - LB5a-3	0.009	Downward
Field A	3-Oct-11	LB5a-1 - LB5a-4	-0.158	Upward
Field A	3-Oct-11	LB5a-1 - LB5a-5	0.019	Downward
Field A	3-Oct-11	LB5a-1 - LB5a-6	0.303	Downward
Field A	3-Oct-11	LB5a-3 - LB5a-4	-0.230	Upward
Field A	3-Oct-11	LB5a-3 - LB5a-5	0.022	Downward
Field A	3-Oct-11	LB5a-3 - LB5a-6	0.264	Downward
Field A	3-Oct-11	LB5a-4 - LB5a-5	0.220	Downward
Field A	3-Oct-11	LB5a-4 - LB5a-6	0.368	Downward
Field A	3-Oct-11	LB5a-5 - LB5a-6	0.413	Downward
Field A	3-Oct-11	LB5c-1 - LB5c-2	-0.058	Upward
Field A	17-Oct-11	LB5e-1 - LB5e-2	0.036	Downward
Field A	3-Oct-11	LB5f-1 - LB5f-2	0.013	Downward

Field site	Date	Well pair	Average vertical hydraulic gradient (m m ⁻¹)	Direction of vertical groundwater movement
Field B	3-Jun-11	LB13-1 - LB13-2	0.022	Downward
Field B	3-Jun-11	LB13-1 - LB13-3	-0.003	Upward
Field B	3-Jun-11	LB13-1 - LB13-4	0.002	Downward
Field B	3-Jun-11	LB13-1 - LB13-5	0.055	Downward
Field B	3-Jun-11	LB13-2 - LB13-3	0.008	Downward
Field B	3-Jun-11	LB13-2 - LB13-4	0.008	Downward
Field B	3-Jun-11	LB13-2 - LB13-5	0.053	Downward
Field B	3-Jun-11	LB13-3 - LB13-4	0.007	Downward
Field B	3-Jun-11	LB13-3 - LB13-5	0.034	Downward
Field B	3-Jun-11	LB13-4 - LB13-5	0.030	Downward
Field B	10-Aug-11	LB13-1 - LB13-2	0.007	Downward
Field B	10-Aug-11	LB13-1 - LB13-3	0.018	Downward
Field B	10-Aug-11	LB13-1 - LB13-4	0.010	Downward
Field B	10-Aug-11	LB13-1 - LB13-5	0.021	Downward
Field B	10-Aug-11	LB13-2 - LB13-3	0.013	Downward
Field B	10-Aug-11	LB13-2 - LB13-4	0.009	Downward
Field B	10-Aug-11	LB13-2 - LB13-5	0.020	Downward
Field B	10-Aug-11	LB13-3 - LB13-4	0.000	Downward
Field B	10-Aug-11	LB13-3 - LB13-5	0.016	Downward
Field B	10-Aug-11	LB13-4 - LB13-5	0.014	Downward
Field B	8-Aug-11	LB18-1x - LB18-4	-0.007	Upward
Field B	8-Aug-11	LB18-1x - LB18-5	0.433	Downward
Field B	8-Aug-11	LB18-4 - LB18-5	0.742	Downward
Field B	30-Sep-11	LB13-2 - LB13-3	-0.002	Upward
Field B	30-Sep-11	LB13-2 - LB13-4	0.000	Downward
Field B	30-Sep-11	LB13-2 - LB13-5	0.004	Downward
Field B	30-Sep-11	LB13-3 - LB13-4	0.004	Downward
Field B	30-Sep-11	LB13-3 - LB13-5	0.002	Downward
Field B	30-Sep-11	LB13-4 - LB13-5	0.002	Downward
Field B	5-Oct-11	LB13-1 - LB13-2	0.000	Downward
Field B	5-Oct-11	LB13-1 - LB13-3	-0.003	Upward
Field B	5-Oct-11	LB13-1 - LB13-4	0.000	Downward
Field B	5-Oct-11	LB13-1 - LB13-5	0.003	Downward
Field B	4-Oct-11	LB18-1x - LB18-4	-0.015	Upward
Field B	4-Oct-11	LB18-1x - LB18-5	0.449	Downward
Field B	4-Oct-11	LB18-4 - LB18-5	0.768	Downward

Field site	Date	Well pair	Average vertical hydraulic gradient (m m ⁻¹)	Direction of vertical groundwater movement
Field C	3-Jun-11	LB20-2 - LB20-4	n/a ^z	n/a
Field C	3-Jun-11	LB20-2 - LB20-5	0.002	Downward
Field C	3-Jun-11	LB20-2 - LB20-6	0.016	Downward
Field C	3-Jun-11	LB20-2 - LB20-7	0.051	Downward
Field C	3-Jun-11	LB20-4 - LB20-5	n/a	n/a
Field C	3-Jun-11	LB20-4 - LB20-6	n/a	n/a
Field C	3-Jun-11	LB20-4 - LB20-7	n/a	n/a
Field C	3-Jun-11	LB20-5 - LB20-6	-0.010	Upward
Field C	3-Jun-11	LB20-5 - LB20-7	0.039	Downward
Field C	3-Jun-11	LB20-6 - LB20-7	0.048	Downward
Field C	1-Jun-11	LB20b-1 - LB20b-2	-0.016	Upward
Field C	3-Jun-11	LB20e-1 - LB20e-2	0.474	Downward
Field D	1-Jun-11	LB21a-1 - LB21a-2	-0.002	Upward
Field C	8-Aug-11	LB20-2 - LB20-4	n/a	n/a
Field C	8-Aug-11	LB20-2 - LB20-5	-0.004	Upward
Field C	8-Aug-11	LB20-2 - LB20-6	0.004	Downward
Field C	8-Aug-11	LB20-2 - LB20-7	0.018	Downward
Field C	8-Aug-11	LB20-4 - LB20-5	n/a	n/a
Field C	8-Aug-11	LB20-4 - LB20-6	n/a	n/a
Field C	8-Aug-11	LB20-4 - LB20-7	n/a	n/a
Field C	8-Aug-11	LB20-5 - LB20-6	-0.010	Upward
Field C	8-Aug-11	LB20-5 - LB20-7	0.013	Downward
Field C	8-Aug-11	LB20-6 - LB20-7	0.017	Downward
Field C	8-Aug-11	LB20e-1 - LB20e-2	0.062	Downward
Field D	8-Aug-11	LB21a-1 - LB21a-2	0.009	Downward
Field C	4-Oct-11	LB20-2 - LB20-4	n/a	n/a
Field C	4-Oct-11	LB20-2 - LB20-5	0.222	Downward
Field C	4-Oct-11	LB20-2 - LB20-6	0.017	Downward
Field C	4-Oct-11	LB20-2 - LB20-7	-0.008	Upward
Field C	4-Oct-11	LB20-4 - LB20-5	n/a	n/a
Field C	4-Oct-11	LB20-4 - LB20-6	n/a	n/a
Field C	4-Oct-11	LB20-4 - LB20-7	n/a	n/a
Field C	4-Oct-11	LB20-5 - LB20-6	-0.271	Upward
Field C	4-Oct-11	LB20-5 - LB20-7	-0.052	Upward
Field C	4-Oct-11	LB20-6 - LB20-7	-0.010	Upward
Field C	4-Oct-11	LB20b-1 - LB20b-2	0.006	Downward
Field C	4-Oct-11	LB20e-1 - LB20e-2	-0.055	Upward
Field D	5-Oct-11	LB21a-1 - LB21a-2	0.011	Downward

^z n/a = not available.