Appendix F

Fieldsheets and Calibration Certificates

ANZ

FQM - NAPL and Groundwater Level Gauging Record

Q4AN(EV)-414-FM1

Project Name:	Project SAM	Project Location:	Weipa	PM Name:	James Peachey
Project Number:	60588844	Client:	Weipa RTA	Fieldwork Staff Name:	Luke McIver

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
AHEQ MW10	22/11/18	08:56	--	-	11.916		-	15.60		
AHEQ MW06	22/11/18	09:47	-	-	10.706		-	15.55		Roots in well - Waterra tubing in well
AHEQ MW08	22/11/18	09:59	-	-	9.650		-	15.67		.6m stick up
AHEQ MW09	22/11/18	10:14	-	-	10.923		-	12.62		.6m stick up
AHEQ MW03	22/11/18	10:34	-	-	13.858		-	18.32		Waterra tubing was stuck in well
AHEQ MW05	22/11/18	11:39	-	-	12.439		-	13.53		.6 stick up - Waterra tubing in well
AHEQ MW04	23/11/18	08:41	-	-	12.998		-	16.19		Roots - waterra tubing - H/C odour
EWHEQ MW01	23/11/18	12:25	-	-	7.730		-	10.75		waterra tube - gatic.
EWHEQ MW02	23/11/18	12:42	-	-	8.056		-	10.58		Standpipe - waterra tubing.
EWHEQ MW06	23/11/18	12:53	-	-	3.838		-	10.84		Standpipe - .6m SU.
EWHEQ MW07	23/11/18	15:11	-	-	7.582		-	11.20		Gatic - .15 below GL
ALF MW06	24/11/18	07:00	-	-	8.925		-	12.41		standpipe
AFD MW03	24/11/18	07:10	-	-	9.960		-	12.18		Standpipe - sand in bottom. SU - 0.61m
ALF MW07	24/11/18	07:37	-	-	10.865		-	12.46		Standpipe SU -0.6!
AFD MW06	24/11/18	08:13	-	-	10.596			12.67		
AFD MW02	24/11/18	08:01		-	9.998 - clay/silty		-	9.95		Thick clay in well - wet sampling
AFD MW05	24/11/18	07:40		damaged - photos						
AFD MW01	-	-								No access - in viva area.

MW02

Measurement Equipment

Make & Model:	Solinst 30m IT	Supplier:	Airmet
Serial No.:	PB/LM3/30m	Calibration Report Provided?	Yes

Notes/Comments

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) metres below top of casing

Approval and Distribution

Fieldwork Staff Signature — Date: 24/11/2018

Project Manager Signature — Date

Distribution: Project Central File

COM

ANZ

FQM - NAPL and Groundwater Level Gauging Record

Q4AN(EV)-414-FM1

Project Name:	Project SAM	Project Location:	Weipa	PM Name:	James Peachey
Project Number:	60588844	Client:	Weipa RTA	Fieldwork Staff Name:	Luke McIver

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition; odour, NAPL colour and viscosity)
LPI MW31	24/11/18	14:05	-	-	5.116		-	9.70		
LPI MW24	24/11/18	14:15	-	-	8.606		-	11.20		MW24 in construction area; dipped mw
LPI MW34	24/11/18	15:03	-	-	8.885		-	9.50		Roots; slight HC odour, multiple damaged
LPI MW17	24/11/18	15:15	-	-	7.715		-	10.43		obstructed - probably won't get steel to bump in
CAP MW32										
CAP MW31										
LPI MW33	24/11/18	15:30		-	5.030		-	8.47		Some sand in bottom of well
LPI MW29	24/11/18	15:42	-	-	7.672		-	12.20		SH - .64 BGL
LPI MW28	24/11/18	15:51	-	-	7.490		-	12.46		SH - .77 BGL
LPI MW26	24/11/18	15:58	-	-	8.211		-	12.53		SH - .70 BGL
LPI MW27	24/11/18	16:09	-	-	7.391		-	12.53		SH - .78 BGL
LPI MW25	24/11/18	16:28	-	-	8.324		-	12.07		Ratio: -0.05 BGL
LPI MW24	24/11/18	16:36	-	-	8.313		-	12.66		SH - .66 BGL

Probably obstructed

Instrument Description			
Make & Model:	Solinst 111 122	Supplier:	Simmet.
Serial No.:	122 30m PB/LM13/30m	Calibration Report Provided?	Yes

Notes/Comments

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

Approval and Distribution

Fieldwork Staff Signature — Date: 24/11/2018

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - NAPL and Groundwater Level Gauging Record

A DM

Q4AN(EV)-414-FM1

Project Name:	Project SRM	**Project Location:**	KIA - Wairau	**PM Name:**	C. Jacob.
Project Number:	60588844	**Client:**	KIA	**Fieldwork Staff Name:**	C. Mueller.

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
KWW MW05	15/11	0712	-	-	7.434	-	-	8.93	-	
KWW MW04	15/11	0823	-	-	7.001	-	-	8.80	-	
KWW MW03	15/11	0926	-	-	6.879	-	-	9.04	-	
KWW MW02	15/11	1028	-	-	5.237	-	-	10.63	-	
KWW MW01	15/11	1257	-	-	7.416	-	-	8.78	-	
KWW MW08	15/11	1430	-	-	8.959	-	-	12.00	-	
KWW MW07	15/11	1600	-	-	5.637	-	-	11.14	-	
KWW MW06	15/11	0647	-	-	7.469	-	-	9.61	-	
ASB MW21	22/11	0723	-	-	11.464	-	-	13.78	-	tube in well
AHED MW11	22/11	0733	-	-	10.444	-	-	15.50	-	Brown sed on probe
AHED MW09	22/11	0742	-	-	10.586	-	-	15.78	-	
ASB MW08	22/11	0800	-	-	13.705	-	-	19.24	-	Tube in well. Brown sed on probe
AHED MW01	22/11	0825	-	-	DRY	-	-	12.42	-	" "
ASB MW10	22/11	0852	-	-	13.874	-	-	19.28	-	" "
ASB MW22	22/11	1157	-	-	13.172	-	-	20.56	-	" " Sed on probe.
EWHED MW09	23/11	1212	-	-	9.457	-	-	11.02	-	
EWHED MW05	23/11	1216	-	-	9.431	-	-	12.55	-	
EWHED MW03	23/11	1223	-	-	6.733	-	-	9.30	-	
EWHED MW04	23/11	1242	-	-	7.333	-	-	10.68	-	

Measurements Equipment

Make & Model:		**Supplier:**	
Serial No.:		**Calibration Report Provided?**	

Notes/Comments

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

Approval and Distribution

Fieldwork Staff Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - NAPL and Groundwater Level Gauging Record

Q4AN(EV)-414-FM1

Project Name:		Project Location:		PM Name:	
Project Number:		Client:		Fieldwork Staff Name:	

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
AP MW02	24-11-18	0635	-	-	8.379	-	-	11.60	-	
AP MW01	"	0645			9.239	-	-	11.62	-	
SA005	"	[illegible]	-	-	[illegible]	-	-	[illegible]	-	in locked compound - see photo
SA004	"	0701			DRY			12.00		tubing in well
SA026	"	0713						09.92		in locked compound - see photo
ALF MW03	"	0719	-	-	[illegible] DRY	-	-	[illegible]	-	tubing in well, no cap
ALF MW08	"	0743	-	-	10.218	-		11.820	-	[illegible] Ant nest in well
ALF MW12	"	0800	-	-	DRY	-	-	09.18	-	[illegible] tubing in well, rocks on top see photo.
ALF MW04	"	0811	-		10.016	-	-	12.10	-	
LPI MW11	"									in locked compound see photo
LPI MW07	"		-	-	7.170	-	-	9.54	-	Cable tie marker, tubing in well. See original + Sivan file data.
LPI MW21	"		-	-	7.893	-	-	10.03	-	
ELN MW30	26-11-18	0630	-	-	9.430	-	-	10.84	-	tubing in well
ELN MW04	"	0639	-	-	9.371	-	-	10.33	-	" "
ELN MW10	"	0647	-	-	5.982	-	-	10.85	-	
ELN MW09	"	0654	-	-	6.583	-	-	10.56	-	
ELN MW29	"	0659	-	-	5.833	-	-	9.44	-	
ELN MW28	"	0704	-	-	6.406	-	-	10.78	-	
ELS MW18	"	0712	-	-	6.757	-	-	11.86	-	tubing in well
ELN MW07	"	0720	-	-	7.285	-	-	10.63	-	" "

Water Quality Equipment			
Make & Model:		Supplier:	
Serial No.:		Calibration Report Provided?	

Abbreviations: (PID) - photo ionisation detector, (ppm) - parts per million, (LNAPL) - light non-aqueous phase liquids, (DNAPL) - dense light non-aqueous phase liquid, (mBTOC) - metres below top of casing

Approval and Distribution

Fieldwork Staff Signature Date

Project Manager Signature Date

Distribution: Project Central File

ANZ

FQM - NAPL and Groundwater Level Gauging Record

A DM

Q4AN(EV)-414-FM1

Project Name:		Project Location:		PM Name:	
Project Number:		Client:		Fieldwork Staff Name:	

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
ELN MW06	26-11-15	0731	-	-	7.149	-	-	10.27	-	tubing in well
ELL MW32	"	0744			6.849			9.86		
ELL MW28	"	0736	-	-	DRY	-	-	4.90	-	
ELS MW19	"	0811	-	-	4.462	-	-	10.01	-	Strong HC odour, tubing in well
ELS MW21	"	0758	-	-	DRY	-	-	4.71	-	
ELS MW25	"	0820								In locked Compound, Padlock

Measurement Equipment

Make & Model:		Supplier:	
Serial No.:		Calibration Report Provided?	

Notes/Comments

(PID) - photo ionisation detector, (ppm) - parts per million, (LNAPL) - light non-aqueous phase liquids, (DNAPL) - dense light non-aqueous phase liquid, (mBTOC) - metres below top of casing

Approval and Distribution

Fieldwork Staff Signature Date

Project Manager Signature Date

Distribution: Project Central File

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ANZ

FQM - NAPL and Groundwater Level Gauging Record

Q4AN(EV)-414-FM1

Project Name:	Project SAM	Project Location:	Weipa	PM Name:	James Peachey
Project Number:	60588844	Client:	Weipa RTA	Fieldwork Staff Name:	Luke McIver

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Gauging Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
EWHEQ MW04	22/02	08:56	—	—	1.203		—	11.19		
EWHEQ MW06		09:05			3.523			10.81		
EWHEQ MW01		09:18			1.450					
EWHEQ MW08		09:38			4.304			12.52		
EWHEQ MW09		09:51			4.340			11.02		
APMW02		10:08			5.550			11.47		
APMW01		10:44			5.269			11.54		
AFD MW22		11:01			7.765			9.96		
AFD MW36		11:07			7.713			12.57		
AFD MW35										CSG bent. @ surface.
ALF MW04		11:17			7.034			11.99		
ALM MW02		11:21			7.715			9.86		
ALF MW01		11:26			6.991			11.72		
ALF MW03		11:36			6.920			11.90		
ALF MW07		12:00			7.652			12.44		
ALF MW06		12:20			6.840			12.37		
ADF MW37		12:32			7.670			12.15		
SA009		12:45			7.496			11.87		
AHEQ MW11		13:50			2.765			15.81		
AHEQ MW09		14:00	↓	↓	3.010		↓	15.60		

Equipment Description

Make & Model:		Supplier:	Airmet
Serial No.:		Calibration Report Provided?	yes

Data Abbreviations

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

Approval and Distribution

Fieldwork Staff Signature — Date: 23/02/19.

Project Manager Signature — Date

Distribution: Project Central File

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ANZ

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FQM - NAPL and Groundwater Level Gauging Record

Q4AN(EV)-414-FM1

Project Name:	Project SAM	Project Location:	Weipa	PM Name:	James Peachey
Project Number:	605888 44	Client:	Weipa RTA	Fieldwork Staff Name:	Luke McIver

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
AHEQ MW07		15:15			2.726			12.62		
AHEQ MW08		15:22			1.511			15.49		
AHEQ MW10		15:36			4.177			15.64		
AHEQ MW02		16:20			5.743			24.70		
ASB MW08		16:40			6.974			19.19		
ASB MW10		16:50			6.915			19.31		
ASB MW21	↓	17:00			3.745			13.67		
LPI MW31	23/02	10:29			3.975			9.68		
LPI MW30		10:37			3.425			8.44		
LPI MW29		10:40			5.400			12.22		
LPI MW28		10:46			3.974			12.68		
LPI MW19		10:57			7.195			11.68		
LPI MW05		11:03			7.151			10.58		
LPI MW04		11:07			7.404			9.12		
LPI MW17		11:15			5.661			9.43		
LPI MW21		11:22			5.025			8.95		
LPI MW26		11:35			4.981			12.54		
LPI MW27		11:31			3.760			12.51		
LPI MW25		11:40			3.453			12.06		
LPI MW32	↓	11:45	↓	↓	4.075	↓	↓	12.66	↓	Previously LPI MW24

Water Interface Probe Details

Make & Model:		Supplier:	Airmet
Serial No.:		Calibration Report Provided?	Yes

Notes/Comments

(PID) - photo ionisation detector, (ppm) - parts per million, (LNAPL) - light non-aqueous phase liquids, (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

Approval and Distribution

Fieldwork Staff Signature — Date: 23/02/19

Project Manager Signature — Date

Distribution: Project Central File

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ANZ

FQM - NAPL and Groundwater Level Gauging Record

Project Name:	Project SAM	**Project Location:**	605888844	**PM Name:**	James Peachey
Project Number:	605888844	**Client:**	Welpa RTA	**Fieldwork Staff Name:**	Luke McIver

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
ELL MW28	23/02	12:40	-	-	4.260	-	-	6.70	-	
ELL MW29		12:50			5.460			9.68		
ELL MW32		12:55			5.136			10.82		
ELN MW07		12:59			5.416			10.60		
ELS MW19		13:08			3.335			10.00		
ELS MW21		13:15			4.120			8.77		
ELS MW23		13:21			4.880			10.73		
ELS MW29		13:26			4.046			9.43		
ELN MW10		13:32			3.985			10.83		
ELN MW09	↓	13:40	↓	↓	4.523	↓	↓	10.90	↓	
		End of Record								

Equipment Information

Make & Model:		**Supplier:**	Airmet
Serial No.:		**Calibration Report Provided?**	Yes

Notes / Comments

(PID) - photo ionisation detector, (ppm) - parts per million, (LNAPL) - light non-aqueous phase liquids, (DNAPL) - dense light non-aqueous phase liquid, (mBTOC) - metres below top of casing

Approval and Distribution

Fieldwork Staff Signature — Date: 23/02/19

Project Manager Signature — Date

Distribution: Project Central File

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ANZ

FQM - NAPL and Groundwater Level Gauging Record

Q4AN(EV)-414-FM1

Project Name:	PROJECT SAM	Project Location:	KIWI	PM Name:	J. PEACHEY
Project Number:	605858-44	Client:	RTA	Fieldwork Staff Name:	G MILLER

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
ELSMW28	19-2-19	1462	-	-	4.131	-	-	5.196	-	-
ELSMW21	"	1414	-	-	4.116	-	-	8.790	-	-
LANDFILL BERM										
MB3	21-2-19	0839	-	-	3.269	-		4.540	-	
MB8	21-2-19	0856	-	-	[illegible] 2.752	-		6.14	-	logger in well
MB7	"	0902	-	-	2.559	-	-	6.40	-	" "
MB1K	"	0914	-	-	3.699	-	-	6.23	-	" "
MB6	"	Destroyed	-	-	---	-	-	---	-	unable to open - phase
MB13	"	0931	-	-	2.003	-	-	6.07	-	logger in well
MB2	21-2-19	0840	-	-	2.922	-	-	3.240	-	logger in well
MB5	21-2-19	1052	-	-	2.291	-	-	6.310	-	" "
MB4	[illegible]	[illegible]	-	-	2.020	-	-	6.520	-	-
LANDFILL										
LMMW1	21-2-19	1619								
LMP	Destroyed									
LMP	Destroyed									
FARMS LANDING										
ELS-MW25	22/2	0830	-	-	1.899	-	-	4.310	-	-
AIRPORT										
ALF MW01	22/2	1241	-	-	1.714	-	-	4.36	-	

Measurement Equipment

Make & Model:		Supplier:	
Serial No.:		Calibration Report Provided?	

Notes/Comments

(PID) - photo ionisation detector, (ppm) - parts per million, (LNAPL) - light non-aqueous phase liquids, (DNAPL) - dense light non-aqueous phase liquid, (mBTOC) - metres below top of casing

Approval and Distribution

Fieldwork Staff Signature Date

Project Manager Signature Date

Distribution: Project Central File

ANZ

FQM - NAPL and Groundwater Level Gauging Record

Q4AN(EV)-414-FM1

Project Name:	PROJECT 2AM	**Project Location:**	Werribee Farm Lot 1 Hoffman	**PM Name:**	J. Peachey
Project Number:	60555554	**Client:**	RTM	**Fieldwork Staff Name:**	G. Mitchell

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
LPM MW13	22-2-19	15:50	-	-	7.246	-	-	10.72	-	Seeal flea at top since v. 2.1
LPM MW1	22-2-19		-	-		-	-		-	inside compound
LPM MW12	22-2-19	16:30	-	-	7.264	-	-	11.55	-	damaged - pump won't go in
LPM MW33	22-2-19	16:38	-	-	7.466	-	-	12.30	-	

Instrument Used (Brief)

Make & Model:		**Supplier:**	
Serial No.:		**Calibration Report Provided?**	

Abbreviations

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

Approval and Distribution

Fieldwork Staff Signature Date

Project Manager Signature Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	Porter Sam	**Project Number:**	60588844	**PM Name:**	Carina Jakobi	**Bore ID:**	RWM MW05
Client:	RTA Weipa	**Project Location:**	RTA Weipa	**Fieldwork Staff:**	G. Mueller	**Sample Date:**	18-11-18

Well Development or Well Sampling Event? (circle)

Sensitive Bore Information

Date of GW Level:	18-11-18
Depth to GW (m-pvc):	7.434
Bore Depth (m-pvc):	8.93
Depth to Product (m-pvc):	–
Product Thickness (m):	–
Calculated bore volume (L):	

Bore Radius (mm):	25
Screen interval (m):	
Casing Radius (mm):	25
Cover Type (gatic/stick up):	
Bore Locked (YES/NO):	
Key Type (if applicable):	–
Includes/ excludes bore annulus (circle)	

Parameter Info

Chem Kit Serial No.:	11K100623
Chem Kit Model:	7SIPROPLUS
Corrected Redox:	Y / (N)
(The correction to apply is probe dependent)	
Parameter method:	☐ Downhole ☑ Retrieved

Decontamination

- ☑ Decontaminated
- ☐ Dedicated
- ☑ Disposable
- ☐ Other (specify)

Sampling Method

- ☑ Low Flow Pump rate: 2.33 — Intake depth: 8.5m
- ☐ Bailer ☐ Hydrasleeve
- ☐ Peristaltic Pump ☐ Waterra
- ☐ Other (specify): Bladder

purge volumes removed:

Total purged volume (L):

Hydrasleeve Info

Hydrasleeve Size:	
Hydrasleeve Type:	
Sampling Depth (m-pvc):	
Hydrasleeve install time:	
Sampling Start Time:	

Monitoring sequence followed (number in order):

- Gauging
- Hydrasleeve in
- Hydrasleeve out
- Parameters

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0734	0.25	7.58	10:35	2.36	145.5	6.43	94.1	29.2	Clear, increased pump speed.
0737	0.50	7.58	12:35	1.73	55.5	4.69	159.3	29.7	" "
0740	1.00	7.58	"	2.02	85.5	4.46	170.0	29.5	" " no odour.
0743	1.50	7.58	"	1.80	85.7	4.45	175.0	29.8	" "
0746	2.00	7.58	"	1.55	55.3	4.42	177.8	29.8	" "
0750	2.50	7.58	"	1.84	85.5	4.36	178.9	29.9	" "
0753	3.00	7.58	"	1.86	85.4	4.36	179.3	30.0	" "
0756	3.50	7.58	"	1.87	85.1	4.34	179.7	29.9	" "
SAMPLED.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:

Field Filtered:	Unfiltered:
	DRPS 250ML

Bottles Collected

	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)
	x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic

QA/QC Information

N/A

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Start WL 7.58m. time. 0732

End 7.58m

Approval and Distribution

Fieldwork Staff Signature — Date

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Project Name:	Protocol Sam	Project Number:	60535544	PM Name:	Laura Jakob
Client:	RTA Wagga	Project Location:	RTA Wagga - Rail	Fieldwork Staff:	C. Mewett

Bore ID: RWW MW6

Sample Date: 18-11-15

Well Development or Well Sampling Event? (circle)

General Bore Information

Date of GW Level:	18-11-15
Depth to GW (m-pvc):	7.00
Bore Depth (m-pvc):	8.50
Depth to Product (m-pvc):	—
Product Thickness (m):	—
Calculated bore volume (L):	

Bore Radius (mm):	25
Screen Interval (m):	
Casing Radius (mm):	25
Cover Type (gatic/stick up):	
Bore Locked (YES/NO):	
Key Type (if applicable):	
Includes/ excludes bore annulus (circle)	

Parameter Info

Chem Kit Serial No.:	11K100623
Chem Kit Model:	YSI ProPlus
Corrected Redox:	Y / (N)
(The correction to apply is probe dependent)	
Parameter method:	☐ Downhole ☑ Retrieved

Decontamination

- ☑ Decontaminated
- ☐ Dedicated
- ☐ Disposable
- ☐ Other (specify)

Sampling Method

- ☑ Low Flow Pump rate: 12.35 — Intake depth: 8m
- ☐ Bailer ☐ Hydrasleeve
- ☐ Peristaltic Pump ☐ Waterra
- ☑ Other (specify): Bladder

Hydrasleeve Info

Hydrasleeve Size:	Monitoring sequence followed (number in order):
Hydrasleeve Type:	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve Install time:	Hydrasleeve out
Sampling Start Time:	Parameters

# of purge volumes removed:

Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0837	0.25	7.009	12.35	1.87	145.8	4.71	101.1	30.6	Clear, no odour
0842	0.50	7.009	" "	1.55	125.1	4.52	51.1	30.1	" "
0847	1.00	7.009	" "	1.88	115.6	4.55	123.7	30.2	" "
0850	1.50	7.009	" "	1.95	112.6	4.36	143.90	30.2	" "
0855	2.00	7.009	" "	1.99	112.4	4.37	150.4	30.2	" "
0856	2.50	7.009	" "	3.13	111.5	4.38	153.4	30.2	" "
0859	3.0	7.009	" "	2.00	110.9	4.28	160.0	30.3	" "
0903	3.5	7.009	" "	2.07	110.2	4.28	163.7	30.2	" "
0906	4.0	7.009	" "	2.03	109.9	4.29	164.5	30.3	" "
SAMPLED									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sample Info

Field Filtered:	Unfiltered:
	PFAS 250ml

Bottle & Container

	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)
	x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic

Analyte Information

N/A

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

WL Start 7.009 end 7.009

time 0838

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

FQM - Groundwater Sampling and Purging Record

Project Name:	Project 5BM	Project Number:	60355941	PM Name:	Carina Jakobi	Bore ID:	RWM - MW104
Client:	RTA Weipa	Project Location:	RTA - Weipa	Fieldwork Staff:	C. Mueller	Sample Date:	15-11-18
						Well Development or Well Sampling Event? (circle)	

Bore/In-Bore Information

Date of GW Level:	15-11-18	Bore Radius (mm):	25
Depth to GW (m-pvc):	6.579	Screen Interval (m):	2
Bore Depth (m-pvc):	9.09	Casing Radius (mm):	25
Depth to Product (m-pvc):	–	Cover Type (gatic/stick up):	
Product Thickness (m):	–	Bore Locked (YES/NO):	
		Key Type (if applicable):	–

Parameter Info

Chem Kit Serial No.: 11K100623

Chem Kit Model: YSI ProMulti

Corrected Redox: Y (N)

(The correction to apply is probe dependent)

Parameter method: ☐ Downhole ☑ Retrieved

Decontamination

☑ Decontaminated
☑ Dedicated
☑ Disposable
☐ Other (specify)

Sampling Method

☑ Low Flow Pump rate: 12.33 Intake depth: 8M

☐ Bailer ☐ Hydrasleeve

☐ Peristaltic Pump ☐ Waterra

☐ Other (specify)

Bladder

Hydrasleeve Info

Hydrasleeve Size:	Monitoring sequence followed (number in order):
Hydrasleeve Type:	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve Install time:	Hydrasleeve out
Sampling Start Time:	Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0935	0.25	7.02	2.33	1.15	94.1	4.63	145.2	31.3	Clear, no odour.
0939	0.50	7.03	" "	1.11	91.8	4.43	149.5	30.9	" "
0942	1.00	7.03	" "	1.12	91.2	4.34	151.3	30.7	" "
0945	1.50	7.03	" "	1.17	91.0	4.27	153.5	30.5	" "
0948	2.00	7.03	" "	1.17	90.8	4.18	155.7	30.8	" "
0952	2.50	7.03	" "	1.19	90.1	4.16	156.7	30.7	" "
0955	3.00	7.03	" "	1.20	89.8	4.13	159.5	30.8	" "
0958	3.50	7.03	" "	1.25	90.0	4.12	160.8	30.8	" "
SAMPLED									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analyte Sample(s)

Field Filtered:	Unfiltered:
	PFAS 250ML

Bottles Collected

x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)
x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic

QA/QC Information

N/A

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

WL start 7.03

time 0934

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Project Name:	Projects.com	Project Number:	605585544	PM Name:	Carina Jakobs
Client:	RTA Wells	Project Location:	RTA Wells	Fieldwork Staff:	C. Mueller

Bore ID: RNW - MW02

Sample Date: 16 - 11 - 16

Well Development or Well Sampling Event? (circle)

General Bore Information

Date of GW Level: 18 - 11 - 15	Bore Radius (mm): 25	Chem Kit Serial No.: 11K00623	Decontaminated
Depth to GW (m-pvc): 8.237	Screen Interval (m):	Chem Kit Model: VSI 100 pH/S	Dedicated
Bore Depth (m-pvc): 10.64	Casing Radius (mm): 25	Corrected Redox: Y / (N)	Disposable
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	Other (specify)
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: Downhole / Retrieved	
	Key Type (if applicable): -		

Sampling Method

Low Flow Pump rate: 12.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Intake depth: 9.4m	Hydrasleeve Type:	Gauging
Bailer / Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Peristaltic Pump / Waterra	Hydrasleeve Install time:	Hydrasleeve out
Other (specify)	Sampling Start Time:	Parameters
Bladder		

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10:45	0.5	8.39	12:35	1.36	90.3	4.07	150.7	31.4	Very Slight Turbidity, no odour
10:48	1.0	8.39	12:35	1.20	90.4	3.47	184.1	31.7	"
10:51	1.5	8.39	12:35	1.15	90.5	3.49	177.1	31.7	"
10:54	2.0	8.39	12:35	0.91	90.4	3.74	167.4	31.4	Cleared.
10:57	2.5	8.39	12:35	0.83	89.6	3.67	166.0	31.2	"
11:00	3.0	8.39	12:35	0.79	89.3	3.68	162.9	30.9	"
11:03	3.5	8.39	12:35	0.76	89.7	3.71	155.1	31.2	"
11:06	4.0	8.39	12:35	0.79	90.0	3.72	158.7	31.2	"
SAMPLED									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for

Field Filtered: | Unfiltered: 1x250mL DRO

Bottles Collected

x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	
x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	

Analytes Information

N/A

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Stat WL 8.39m TMD 40

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | Distribution: Project Central File

AE DM

ANZ

Q4AN(EV)-405-FM1

FQM - Groundwater Sampling and Purging Record

						Bore ID:	RWM-MW01
Project Name:	Rozelle Farm	Project Number:	60555544	PM Name:	Cyrina Jakobi	Sample Date:	15-11-15
Client:	RTA Waipa	Project Location:	RTA - Waipa, Te Awamutu	Fieldwork Staff:	C. Mueller	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 15-11-15	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☐ Low Flow Pump rate: 12:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.416	Screen interval (m):	Chem Kit Model: YSI ProPlus	☐ Dedicated	Intake depth: 8.2	Hydrasleeve Type:	
Bore Depth (m-pvc): 8.78	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): —	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): —	Bore Locked (YES/NO)	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved		Bladder		Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1312	0.25	7.56	12:35	2.19	80.5	4.75	131.4	33.1	Clear, no odour
1317	0.50	7.56	" "	1.61	70.9	3.96	161.1	31.4	" "
1322	1.00	7.56	" "	1.73	69.7	3.43	185.1	31.3	" "
1327	1.50	7.56	" "	1.79	69.2	3.45	179.4	31.1	" "
1332	2.00	7.56	" "	1.51	69.0	3.52	175.5	31.1	" "
1337	2.50	7.56	" "	1.49	68.9	3.59	172.3	31.0	" "
1342	3.00	7.56	" "	1.52	68.6	3.61	168.6	30.7	" "
1347	3.50	7.56	" "	1.53	68.8	3.63	167.6	31.0	" "
1352	4.00	7.56	" "	1.53	68.6	3.75	164.4	30.7	" "
1357	4.50	7.56	" "	1.60	68.4	3.69	164.5	30.7	" "
1402	5.00	7.56	" "	1.65	68.3	3.74	161.3	30.6	
SAMPLED									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	Start WL 7.56m. time 1309.

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Project Name:	Project Sam	**Project Number:**	605555524	**PM Name:**	Cara	**Bore ID:**	RMW-MW07
Client:	RTA Weipa	**Project Location:**	RTA WEIPA - Qal	**Fieldwork Staff:**	C. Mueller	**Sample Date:**	15-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information

Date of GW Level: 15-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	Pre-Contamination: ☑ Decontaminated
Depth to GW (m-pvc): 8.957	Screen Interval (m):	Chem Kit Model: YSI Pro PLUS	☑ Dedicated
Bore Depth (m-pvc): 12.00	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☐ Disposable
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)
Product Thickness (m):	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole ☑ Retrieved	
	Key Type (if applicable):		

Sampling Method

☑ Low Flow Pump rate: 12:35
Intake depth: 10.5
☐ Bailer ☐ Hydrasleeve
☐ Peristaltic Pump ☐ Waterra
☐ Other (specify)
Bladder

Hydrasleeve Info

Hydrasleeve Size:	Monitoring sequence followed (number in order):
Hydrasleeve Type:	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve install time:	Hydrasleeve out
Sampling Start Time:	Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1457	0.25	9.01	12:35	2.92	87.2	4.66	144.3	32.9	turbid, light brown.
1500	0.50	9.01	" "	2.40	81.5	4.07	148.0	31.6	" "
1503	1.00	9.01	" "	2.27	81.6	3.86	157.3	31.5	" " pinkish brown
1508	1.50	9.01	" "	2.17	80.2	3.90	148.9	31.3	" "
1513	2.00	9.01	" "	2.20	81.1	3.93	145.7	31.3	" "
1518	2.50	9.01	" "	2.08	80.5	3.96	142.6	31.1	" "
1523	3.00	9.01	" "	2.15	80.3	3.96	141.1	31.2	" "
1528	3.50	9.01	" "	2.05	80.3	3.97	140.8	31.1	" "
SAMPLED									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:

Field Filtered: | **Unfiltered:** 1 - 250mL PTHS

Bottle Information

	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)
	x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic

QA/QC Information

N/A

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Start WL 9.01m.
time 1454

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | **Distribution:** Project Central File

ANZ

Q4AN(EV)-405-FM1

FQM - Groundwater Sampling and Purging Record

Project Name:	Project Sam	Project Number:	605585544	PM Name:	Corina
Client:	RTA Weipa	Project Location:	RTA Weipa - Near	Fieldwork Staff:	C Newell

Bore ID: MWW-MW07

Sample Date: 18-11-18

Well Development or Well Sampling Event? (circle)

General Bore Information

Date of GW Level:	18-11-18
Depth to GW (m-pvc):	5.637
Bore Depth (m-pvc):	11.14
Depth to Product (m-pvc):	—
Product Thickness (m):	—
Bore Radius (mm):	25
Screen Interval (m):	
Casing Radius (mm):	25
Cover Type (gatic/stick up):	
Bore Locked (YES/NO):	
Key Type (if applicable):	

Parameters Info

Chem Kit Serial No.: 11K100625

Chem Kit Model: YSI Pro Plus

Corrected Redox: Y / (N)

(The correction to apply is probe dependent)

Parameter method: ☐ Downhole ☑ Retrieved

Decontamination

☐ Decontaminated
☐ Dedicated
☑ Disposable
☐ Other (specify)

Sampling Method

☐ Low Flow Pump rate: 12.35
intake depth: 10m

☐ Bailer ☐ Hydrasleeve

☐ Peristaltic Pump ☐ Waterra

☐ Other (specify)

Bladder

Hydrasleeve Info

Hydrasleeve Size:	
Hydrasleeve Type:	
Sampling Depth (m-pvc):	
Hydrasleeve Install time:	
Sampling Start Time:	

Monitoring sequence followed (number in order):

Gauging

Hydrasleeve in

Hydrasleeve out

Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1638	0.25	5.69	12.35	3.30	164.0	5.28	108.6	33.7	Very humid, slight odour
1641	0.5	5.69	"	1.07	174.3	5.44	104.8	31.3	" "
1646	1.0	5.69	"	0.79	186.2	5.24	112.6	31.1	" "
1651	1.5	5.69	"	0.70	180.5	5.25	110.9	31.1	" "
1656	2.0	5.69	"	0.74	179.6	5.37	100.1	30.9	" "
1701	2.5	5.69	"	0.77	136.8	5.28	94.1	30.6	" "
1706	3.0	5.69	"	0.60	128.3	5.13	96.9	30.5	Cleany
1711	3.5	5.69	"	0.72	124.8	5.10	97.1	30.5	clear
1716	4.0	5.69	"	0.73	122.1	5.08	95.1	30.7	"
SAMPLED.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for

Field Filtered:

Unfiltered: 1x PFAS 250mL

Bottles Collected

x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)
x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic

QA/QC Information

N/A

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc:

WL Start 5.69m

time 1616

no water at ~45 mins, filled MWW-MW07 bottles sited. Cleaned and dropped back to 8m. Restart @ 1634

Approval and Distribution

Fieldwork Staff Signature — Date: 18/11/18

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Project Name:	Protech Jem	**Project Number:**	60585544	**PM Name:**	C. Jakob
Client:	RTA Wagga	**Project Location:**	RTA Wagga - Rail	**Fieldwork Staff:**	C. Mueller

Bore ID: RAW - MW06

Sample Date: 19-11-18

Well Development or Well Sampling Event? (circle)

General Bore Information

Date of GW Level:	19-11-18
Depth to GW (m-pvc):	7.469
Bore Depth (m-pvc):	9.61
Depth to Product (m-pvc):	—
Product Thickness (m):	—
Calculated bore volume (L):	

Bore Radius (mm):	25
Screen Interval (m):	
Casing Radius (mm):	25
Cover Type (gatic/stick up):	
Bore Locked (YES/NO):	
Key Type (if applicable):	
Includes/ excludes bore annulus (circle)	

Parameter Meter

Chem Kit Serial No.:	11500623
Chem Kit Model:	YSI PROPLUS
Corrected Redox:	Y (N)
(The correction to apply is probe dependent)	
Parameter method:	☐ Downhole ☑ Retrieved

Decontamination

- ☑ Decontaminated
- ☑ Dedicated
- ☑ Disposable
- ☐ Other (specify)

Sampling Method

- ☑ Low Flow Pump rate
- Intake depth: 5.5
- ☐ Bailer ☐ Hydrasleeve
- ☐ Peristaltic Pump ☐ Waterra
- ☑ Other (specify)
- Bladder

Hydrasleeve (if)

Hydrasleeve Size:	Monitoring sequence followed (number in order):
Hydrasleeve Type:	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve Install time:	Hydrasleeve out
Sampling Start Time:	Parameters

# of purge volumes removed:

Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0732	0.25	7.49	12.35	2.22	460.4	6.34	64.0	28.8	Slight turbidity, light brown
0737	0.50	7.49	" "	0.91	444.8	6.25	59.8	28.9	" "
0742	1.00	7.49	" "	0.87	396.7	6.12	59.5	28.9	" "
0747	1.50	7.49	" "	0.66	343.7	5.98	61.5	28.9	" "
0752	2.00	7.49	" "	0.71	325.4	5.98	64.3	28.9	" "
0757	2.50	7.49	" "	0.61	310.2	5.83	65.0	29.0	Cleared
0802	3.00	7.49	" "	0.59	284.6	5.72	66.0	29.2	" "
0807	3.50	7.49	" "	0.54	278.2	5.70	65.5	29.2	" "
0813	4.00	7.49	" "	0.49	257.2	5.60	66.7	29.2	" "
0817	4.50	7.49	" "	0.53	251.1	5.57	67.7	29.5	" "
0822	5.00	7.49	" "	0.48	249.3	5.57	67.4	29.4	" "
Sampled.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:

Field Filtered:	Unfiltered:
	1x 250mL APHS

Bottles Collected

x 40 mL Vial (HCl)		x 60 mL Ferrous	x 60 mL metals (HNO_3)
x 40 mL Vial (H_2SO_4)		x 100 mL Amber	x 250 mL Plastic

Other Information

N/A

Project Requirements

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Start WL 7.49m
time 0705

PUMP clogged - had to pull up + clean
Restarted @ 0730

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

ANZ

Q4AN(EV)-405-FM1

FQM - Groundwater Sampling and Purging Record

Project Name:	Project Sam	Project Number:	605555440	PM Name:	C. JAKOBI	Bore ID:	ASR MW22
Client:	RTA Weipa	Project Location:	Weipa AREA	Fieldwork Staff:	G. MUELLER	Sample Date:	22-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information

Date of GW Level: 22-11-18	Bore Radius (mm): 25	Chem Kit Serial No.:	Decontaminated
Depth to GW (m-pvc): 13.172	Screen Interval (m):	Chem Kit Model: YSI ProPlus	Dedicated
Bore Depth (m-pvc): 20.56	Casing Radius (mm): 25	Corrected Redox: Y / N	Disposable
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	Other (specify)
Product Thickness (m): –	Bore Locked YES/NO:	Parameter method: Downhole / Retrieved	
	Key Type (if applicable): Padlock		

Sampling Method

Low Flow Pump rate:

Intake depth: 16M

Bailer / Hydrasleeve

Peristaltic Pump / Waterra

Other (specify) BLADDER

Hydrasleeve Info

Hydrasleeve Size:	Monitoring sequence followed (number in order):
Hydrasleeve Type:	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve Install time:	Hydrasleeve out
Sampling Start Time:	Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1210	0.25	13.39	15.35	2.55	171.0	5.36	26.6	32.3	Very Slight turbidity.
1215	0.50	13.39	"	6.88	125.5	4.65	39.1	30.4	
1225	1.50	13.39	"	6.05	117.4	4.71	37.4	30.6	
1230	2.00	13.39	"	6.36	122.1	4.47	41.7	29.8	clearing
1235	2.50	13.39	"	6.35	122.4	4.26	49.5	29.6	
1240	3.00	13.39	"	6.53	122.1	4.09	49.0	29.6	cleared
1245	3.50	13.39	"	7.52	121.4	4.47	35.6	30.0	
1250	4.00	13.39	"	7.58	120.6	4.46	36.6	30.1	
1255	4.50	13.39	"	7.22	122.5	4.44	39.9	30.0	
Sampled									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for

Field Filtered: | Unfiltered: PFAS 250ML

Bottles Collected

	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)
	x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic

QA/QC Information

QC113 Gm

QC2136Gm

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Start W2 13.39

time 1205

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

						Bore ID:	ASB MW10
Project Name:	PROJECT SAM	Project Number:	605[illegible]44	PM Name:	L JAKOBI	Sample Date:	22-11-18
Client:	RTA	Project Location:	RTA - AHEQ	Fieldwork Staff:	C MIZZLED	Well Development or Well Sampling Event? (circle)	

General Bore Information

Date of GW Level: 22-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K1064723	Decontaminated: ☑
Depth to GW (m-pvc): 13.874	Screen Interval (m):	Chem Kit Model: YSI ProPlus	Dedicated: ☑
Bore Depth (m-pvc): 19.28	Casing Radius (mm): 25	Corrected Redox: Y / (N)	Disposable: ☐
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	Other (specify):
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: ☐ Downhole ☑ Retrieved	
	Key Type (if applicable): ---		

Sampling Method

☑ Low Flow Pump rate: 5.35	Intake depth: 18m	
☐ Bailer	☐ Hydrasleeve	
☐ Peristaltic Pump	☐ Waterra	
☑ Other (specify) bladder		

Hydrasleeve Info

Hydrasleeve Size:	Monitoring sequence followed (number in order):
Hydrasleeve Type	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve Install time:	Hydrasleeve out
Sampling Start Time:	Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1423	0.25	13.90	5:35	1.75	156.4	4.58	26.9	36.0	Slight hydrocarbon
1428	0.50	13.90	"	0.64	145.5	4.47	15.9	35.1	" "
1433	1.00	13.90	"	0.39	145.9	4.44	12.5	35.1	" "
1438	1.50	13.90	"	0.24	146.1	4.43	10.6	34.9	" "
1443	2.00	13.90	"	0.27	145.3	4.45	8.0	34.6	" "
1448	2.50	13.90	"	0.24	145.2	4.40	10.8	34.5	" "
1453	3.00	13.90	"	0.17	144.8	4.41	11.4	34.4	" "
Sampled									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for

Field Filtered:	Unfiltered:
	1x 250mL PFAS

Bottles Supplied:

x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)
x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic

Analyte Information

N/A

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Stable WL 13.90m

Time 1409

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Checker Name and Signature _____ Date _____

Project Manager Signature _____ Date _____ Distribution: Project Central File

ANZ

Q4AN(EV)-405-FM1

FQM - Groundwater Sampling and Purging Record

Project Name:	Project Sam	Project Number:	60555844	PM Name:	C. Jacobi	Bore ID:	ASB - MW05
Client:	BTA	Project Location:	WA - AMEQ	Fieldwork Staff:	G. Mueller	Sample Date:	22-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 22-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☐ Low Flow Pump rate: 10.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 13.708	Screen Interval (m):	Chem Kit Model: YSI ProPlus	☐ Dedicated	Intake depth: 17m	Hydrasleeve Type:	
Bore Depth (m-pvc): 19.24	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify) Bladder	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): –	☐ Retrieved				Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1543	0.25	13.77	10:35	3.60	369.9	5.38	-16.3	34.7	Clear.
1546	0.50	13.77	"	3.10	337.9	5.23	-4.4	32.0	"
1549	0.75	13.77	"	3.00	334.5	5.05	6.3	31.6	"
1554	1.00	13.77	"	2.48	338.5	4.58	32.0	31.3	"
1559	1.25	13.77	"	2.52	340.3	4.53	34.9	31.2	"
1604	1.50	13.77	"	2.48	340.8	4.56	32.9	31.2	"
1609	2.00	13.77	"	2.44	342.0	4.58	31.4	31.2	"
Sampled.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	11 PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Start WL 13.77
									Start time 1535

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

						Bore ID:	AHEQ MW05
Project Name:	Project Sam	Project Number:	605858844	PM Name:	C. Jakob.	Sample Date:	22-11-18
Client:	RTA	Project Location:	RTA Weir - AHEQ	Fieldwork Staff:	C. Mella	Well Development or Well Sampling Event? (circle)	

General Bore Information		Field Meter Info		Decontamination		Sampling Method		Hydrasleeve Info	
Date of GW Level: 22-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K00623		✓ Decontaminated		✓ Low Flow Pump rate: 15 ss		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 10.586	Screen Interval (m):	Chem Kit Model: YSI pro plus		Dedicated		Intake depth: 13.5		Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 15.78	Casing Radius (mm): 25	Corrected Redox: Y / (N)		Disposable		Bailer / Hydrasleeve		Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)		Other (specify)		Peristaltic Pump / Waterra		Hydrasleeve install time:	Hydrasleeve out
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: Downhole / ✓ Retrieved				✓ Other (specify) Bladder		Sampling Start Time:	Parameters
	Key Type (if applicable): -								
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:				Total purged volume (L):			

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1650	0.25	10.62	15:35	5.44	119.1	4.96	84	31.3	Turbid, red Brown
1653	0.50	10.62	15:35	6.22	112.5	4.90	14.3	30.8	" "
1656	1.00	10.62	"	6.76	65.7	4.72	23.5	30.6	" "
1659	1.50	10.62	"	7.05	110.9	4.51	38.0	30.4	" "
1702	2.00	10.62	"	6.90	111.3	4.49	40.8	30.4	" "
1705	2.50	10.62	"	6.22	111.5	4.49	41.1	30.3	" "
Sample.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected				Bottle Information	Field Comments
Field Filtered:	Unfiltered: PFAS 250mL	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QC rinsate PFAS sample
		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

WL Start 10.62
time 1649

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Checker Name and Signature _____ Date _____

Project Manager Signature _____ Date _____ Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	AHEQ MW11
Project Name:	PROJECT SAM	Project Number:	60585541	PM Name:	C. JAKOB	Sample Date:	23-11-18
Client:	RTA.	Project Location:	RTA-WEIPA-AHEQ	Fieldwork Staff:	C. MUELLER	Well Development or Well Sampling Event? (circle)	

General bore information		Parameter info	Decontamination	Sampling Method	Hydrasleeve info	
Date of GW Level: 22-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☒ Decontaminated	☒ Low Flow Pump rate: 10.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 10.444	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 13m	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 15.50	Casing Radius (mm): 25	Corrected Redox: Y / N	☒ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): -	Cover Type (gatic/stick up)	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m): -	Bore Locked (YES/NO)	Parameter method: ☐ Downhole ☒ Retrieved		☒ Other (specify) BLADDER.	Sampling Start Time:	Parameters
	Key Type (if applicable): -					

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0649	0.25	10.46	10:35	3.52	97.6	5.32	-9.5	29.5	
0652	0.50	10.46	"	2.99	93.6	4.58	40.2	29.7	Slight turbidity, red-brown
0655	1.00	10.46	"	2.21	93.8	4.47	41.1	29.8	" "
0658	1.50	10.46	"	2.23	94.3	4.44	42.9	29.8	" "
0701	2.00	10.46	"	2.10	94.4	4.45	42.7	29.8	" "
Sample									
Acceptable Parameter Range:			± 10%	± 3%		± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered: 1x PFAS 250ML		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
			x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Start WL 10.46
									time 0645

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | Distribution: Project Central File

A: DM

Q4AN(EV)-405-FM1

ANZ

FQM - Groundwater Sampling and Purging Record

Project Name:	PROJECT SAM	**Project Number:**	60558844	**PM Name:**	C. JAKOBI	**Bore ID:**	ASB MW21
Client:	[redacted] RTA NEIPA	**Project Location:**	RTA-NEIPA-AH20	**Fieldwork Staff:**	C MUELLER	**Sample Date:**	22-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 22-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K000623	☑ Decontaminated	☑ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 10.464	Screen Interval (m):	Chem Kit Model: YSI PROPLUS	☐ Dedicated	Intake depth: 13.5	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 13.78	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): –	Cover Type (gatic/stick up)	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m): –	Bore Locked (YES/NO)	**Parameter method:** ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Parameters
	Key Type (if applicable): –	☑ Retrieved				
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0739	0.25	11.46	10:35	2.45	115.1	4.54	33.8	30.7	v. Slight turbidity, Light Brown
0742	0.50	11.46	"	0.78	114.7	4.30	47.4	30.5	Clear
0745	1.00	11.46	"	0.65	114.8	4.33	46.0	30.4	"
0748	1.50	11.46	"	0.65	115.0	4.32	45.4	30.5	"
0751	2.00	11.46	"	0.62	115.1	4.30	46.3	30.4	
0754	2.50	11.46	"	0.59	115.1	4.30	45.6	30.4	
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled For:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	**Unfiltered:** 1x 250ML PFAS	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic			WL Stick 11.46
									tml

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Checker Name and Signature _____ Date _____

Project Manager Signature _____ Date _____ **Distribution:** Project Central File

A. OM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	ENMEQ - MW04
Project Name:	PROJECT SAM	Project Number:	60555844	PM Name:	C. JAKOBI	Sample Date:	23-11-18
Client:		Project Location:		Fieldwork Staff:	C. MUELLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 23-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 115100623	☑ Decontaminated	☑ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.333	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 9m	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.68	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES) / NO:	Parameter method: ☐ Downhole ☑ Retrieved		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): redlock				✓	Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1300	0.25	7.34	10:35	1.60	32.0	5.20	0.2	30.8	Clear,
1303	0.50	7.34	10:35	0.42	25.7	4.19	0.47	30.0	"
1306	1.00	7.34	"	0.51	24.2	3.60	79.5	30.0	"
1309	1.50	7.34	"	0.51	24.0	3.35	87.2	29.7	"
1312	2.00	7.34	"	0.55	23.6	3.32	85.0	29.7	"
1315	2.50	7.34	"	0.65	23.4	3.38	80.2	29.7	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analyte/ Sample Info	Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x 1LTAS 250mL	x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	WL Start 7.34m
								TIME 1255

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Checker Name and Signature _____ Date _____

Project Manager Signature _____ Date _____ Distribution: Project Central File

ANZ

Q4AN(EV)-405-FM1

FQM - Groundwater Sampling and Purging Record

(WHICH MW?)

Project Name:	PROJECT SAM	Project Number:	[illegible]	PM Name:	C. JAKOBI	Bore ID:	[illegible]
Client:	RTA	Project Location:	RTA WEIPA SITES	Fieldwork Staff:	C. MCCLUCK	Sample Date:	23-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 23-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☒ Low Flow Pump rate: 10.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 9.431	Screen Interval (m):	Chem Kit Model: YSI PROQUATTRO	☐ Dedicated	Intake depth: 10m	Hydrasleeve Type:	
Bore Depth (m-pvc): 17.55	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO)	Parameter method: ☐ Downhole		☐ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1404	0.25	9.45	10:35	5.66	38.7	4.83	-8.7	32.7	
1410	1.00	9.45	"	4.47	36.3	4.31	-1.8	30.8	Clear
1413	1.50	9.45	"	4.56	37.4	4.22	3.4	32.5	"
1416	2.00	9.45	"	5.05	36.3	4.29	0.3	30.8	"
1419	2.50	9.45	"	5.05	36.0	4.30	-2.2	30.5	"
1422	3.00	9.45	"	5.01	35.9	4.27	0.8	30.5	"
1425	3.50	9.45	"	5.03	36.0	4.00	12.2	30.5	"
1428	4.00	9.45	"	5.09	36.0	4.02	11.8	30.5	"
1431	4.50	9.45	"	4.83	36.0	4.02	11.1	30.4	"
[illegible]	[illegible]								
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected						Quality Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QC120	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x PAH 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	QC220	WL Stable: 9.45
									hand 1400

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	**Project Number:**	60588844	**PM Name:**	C. JAKOBI	**Bore ID:**	ELWHEQ MW05
Client:	LTA.	**Project Location:**	ETAWEHPA ELWHEQ	**Fieldwork Staff:**	C. MUELLER	**Sample Date:**	23-11-15
							Well Development or Well Sampling Event? (circle)

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level:	Bore Radius (mm): 25	Chem Kit Serial No.: IIK100623	☑ Decontaminated	☑ Low Flow Pump rate: 13.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 6.733	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☑ Dedicated	Intake depth: 8m	Hydrasleeve Type:	
Bore Depth (m-pvc): 9.30	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): PADLOCK	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1511	0.25	6.74	10:35	2.01	18.4	4.28	6.9	31.6	very turbid, light brown
1514	0.50	6.74	"	0.78	27.5	4.30	16.3	30.4	" "
1517	1.00	6.74	"	0.59	27.3	4.12	26.4	30.0	" "
1520	1.50	6.74	"	0.54	27.5	4.00	31.7	30.1	" "
1523	2.00	6.74	"	0.46	27.5	3.90	34.4	30.0	cleaning
1526	2.50	6.74	"	0.46	27.6	3.90	34.8	30.0	"
1529	3.00	6.74	"	0.51	27.6	3.85	35.5	30.1	cleared.
1532	3.50	6.74	"	0.50	27.7	3.87	37.3	30.0	" "
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc
	1x PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	Start WL 6.74m
									Time 1507

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | Distribution: Project Central File

FQM - Groundwater Sampling and Purging Record

Project Name:	PROJECT SAM	Project Number:	605555514	PM Name:	C. JAKOB	Bore ID:	EA WEPA MW 09
Client:	RTA WEIPA	Project Location:	RTA WEIPA OWNED	Fieldwork Staff:	C. MUELLER	Sample Date:	23-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 23/11/18	Bore Radius (mm): 25	Chem Kit Serial No.: IIK100623	☑ Decontaminated	☑ Low Flow Pump rate: 10.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 9.457	Screen Interval (m):	Chem Kit Model: YSI PRO PLS	☑ Dedicated	Intake depth: 10.5	Hydrasleeve Type:	
Bore Depth (m-pvc): 11.02	Casing Radius (mm): 25	Corrected Redox: Y (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): —	☑ Retrieved				Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1611	0.25	10.48	10.35	1.91	26.5	3.98	39.9	30.5	
1614	0.50	10.48	"	1.75	26.0	3.79	35.4	29.8	
1617	1.00	10.48	"	1.74	25.9	3.75	40.7	29.9	Clear.
1620	1.50	10.48	"	1.67	25.8	3.49	41.7	29.5	"
1623	2.00	10.48	"	1.64	25.7	3.55	42.7	29.4	"
1626	2.50	10.48	"	1.58	25.6	3.60	37.0	29.4	"
1629	3.00	10.48	"	1.61	25.6	3.62	35.2	29.4	"
1632	3.50	10.48	"	1.62	25.5	3.65	33.5	29.4	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled/Note		Bottles Collected						Bottle Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	Start WL 10.48
									time 1605

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | Distribution: Project Central File

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	ALF MW07
Project Name:	PROJECT SAM	Project Number:	60588844	PM Name:	C. JAKOBI	Sample Date:	24/11/15
Client:	RTA WOPA	Project Location:	RTA WERN AP	Fieldwork Staff:	G. MUELLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level:	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☑ Low Flow Pump rate: 10.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 10.016	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 11.50	Hydrasleeve Type:	
Bore Depth (m-pvc): 12.10	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): –	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0845	0.25	10.04	10.35	5.20	49.5	5.32	-19.3	33.0	Clear,
0850	1.00	10.04	"	4.61	34.2	4.63	6.5	31.4	"
0853	1.50	10.04	"	4.42	33.8	4.62	8.0	31.3	"
0856	2.00	10.04	"	4.80	33.7	4.55	12.2	31.3	"
0859	2.50	10.04	"	4.46	33.6	4.62	11.7	31.3	"
0902	3.00	10.04	"	4.97	33.2	4.62	15.3	31.3	"
0905	3.50	10.04	"	4.87	32.1	4.60	10.9	31.5	"
0908	4.00	10.04	"	4.85	32.0	4.60	9.8	31.5	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x 250mL PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	Start WL 10.04
									time 0841

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Checker Name and Signature _____ Date _____

Project Manager Signature _____ Date _____ Distribution: Project Central File

AE JM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	**Project Number:**	60555544	**PM Name:**	C. JAKOBI	**Bore ID:**	ALF-MW01
Client:	RTA	**Project Location:**	RTA WETPA	**Fieldwork Staff:**	C. MUELLER	**Sample Date:**	24-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sample Information	Hydrasleeve Info	
Date of GW Level: 24-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: HK100623	☑ Decontaminated	☑ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 10.218	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☑ Dedicated	Intake depth: 11.00	Hydrasleeve Type:	
Bore Depth (m-pvc): 11.520	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): —	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve in
Product Thickness (m): —	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): —	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0955	0.25	10.22	10:35	3.17	25.6	4.48	95	34.0	Clear.
0958	0.50	10.22	10:35	2.72	19.7	4.09	0.7	32.2	"
1001	1.00	10.22	"	2.50	19.2	4.04	1.1	31.8	"
1004	1.50	10.22	"	2.49	19.0	3.91	8.1	31.9	"
1007	2.00	10.22	"	2.57	19.2	3.90	14.0	31.8	"
1010	2.50	10.22	"	2.54	19.0	3.90	10.6	31.7	
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected				Cycle Information	Field Comments
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1 x 250mL PFAS		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		Start WL 10.22
						N/A	time 0951

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Project Name:	PROJECT SAM	Project Number:	60588844	PM Name:	C. JAKOBI	Bore ID:	AP MW02
Client:	KTA	Project Location:	KTA - AP	Fieldwork Staff:	G. MUELLER	Sample Date:	24-11-18

Well Development or Well Sampling Event? (circle)

General Bore Information

Date of GW Level: 24-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 16100623	Decontaminated
Depth to GW (m-pvc): 8.39	Screen Interval (m):	Chem Kit Model: YSI Pro Plus	Dedicated
Bore Depth (m-pvc): 11.60	Casing Radius (mm): 25	Corrected Redox: Y / (N)	Disposable
Depth to Product (m-pvc): —	Cover Type: (gatic/concrete)	(The correction to apply is probe dependent)	Other (specify)
Product Thickness (m): —	Bore Locked (YES/NO):	Parameter method: Downhole / Retrieved	
	Key Type (if applicable): —		

Sampling Method

Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Intake depth: 10M	Hydrasleeve Type:	Gauging
Bailer / Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Peristaltic Pump / Waterra	Hydrasleeve Install time:	Hydrasleeve out
Other (specify) BLADDER	Sampling Start Time:	Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1147	0.25	8.54	10:35	6.21	25.9	4.17	8.6	33.6	Clear
1150	0.50	8.54	"	6.08	24.5	3.82	12.2	32.7	"
1153	1.00	8.54	"	5.91	24.1	3.61	21.7	32.5	"
1156	1.50	8.54	"	5.99	24.0	3.58	28.9	32.2	"
1159	2.00	8.54	"	5.82	23.9	3.55	31.3	32.2	"
1202	2.50	8.54	"	5.88	23.9	3.59	23.5	32.2	"
1205	3.00	8.54	"	5.87	24.0	3.60	25.9	32.2	"
1208	3.50	8.54	"	5.98	23.9	3.64	26.0	32.3	"
1211	4.00	8.54	"	6.06	23.9	3.65	24.0	32.2	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:

Field Filtered: | Unfiltered: PFAS 250mL

Bottles Collected

x 40 mL Vial (HCl)		x 60 mL Ferrous	x 60 mL metals (HNO_3)
x 40 mL Vial (H_2SO_4)		x 100 mL Amber	x 250 mL Plastic

QA/QC Information

QC121
QC221

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Start WL 8.54
time 1142

Labelled QC3 on it.

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Project Name:	PROJECT SAM	**Project Number:**	60555544	**PM Name:**	C JAKOBI
Client:	RTA	**Project Location:**	RTA AP	**Fieldwork Staff:**	C MUELLER

Bore ID: AP MW01
Sample Date: 24-11-18
Well Development or Well Sampling Event? (circle)

Standing Water Information

Date of GW Level: 24-11-18	Bore Radius (mm): 25
Depth to GW (m-pvc): 9.239	Screen Interval (m):
Bore Depth (m-pvc): 11.62	Casing Radius (mm): 25
Depth to Product (m-pvc): –	Cover Type (gatic/concrete):
Product Thickness (m):	Bore Locked (YES/NO):
	Key Type (if applicable): –
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)

Pre-mobilisation

Chem Kit Serial No.: 11K10623
Chem Kit Model: YSI PRO PLUS
Corrected Redox: Y / (N)
(The correction to apply is probe dependent)
Parameter method: Downhole / Retrieved

Decontamination

Decontaminated
Dedicated
Disposable
Other (specify)

Sampling Method

Low Flow Pump rate: 10.35
Intake depth: 10m
Bailer / Hydrasleeve
Peristaltic Pump / Waterra
Other (specify) BLADDER

Hydrasleeve Details

Hydrasleeve Size:	Monitoring sequence followed (number in order):
Hydrasleeve Type:	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve Install time:	Hydrasleeve out
Sampling Start Time:	Parameters

purge volumes removed:
Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1304	0.25	9.34	10.35	6.21	31.6	4.53	1.7	34.0	Clear.
1307	0.50	9.34	"	5.45	25.4	4.19	2.5	32.7	"
1310	1.00	9.34	"	5.75	25.2	4.18	4.5	32.4	"
1313	1.50	9.34	"	5.78	25.1	4.03	6.2	32.2	"
1316	2.00	9.34	"	5.82	25.0	4.00	12.5	32.0	"
1319	2.50	9.34	"	5.76	24.9	3.98	14.1	32.0	"
1322	3.00	9.34	"	5.85	24.9	3.98	11.6	32.0	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for

Field Filtered:
Unfiltered: PFAS 250mL

Bottles Collected

x 40 mL Vial (HCl)		x 60 mL Ferrous	x 60 mL metals (HNO_3)
x 40 mL Vial (H_2SO_4)		x 100 mL Amber	x 250 mL Plastic

eWells Information

N/A

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Start WL 9.34
Time 1259

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

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FQM - Groundwater Sampling and Purging Record

Project Name:	PROJECT SAM	Project Number:	60585544	PM Name:	C. JAKOBI	Bore ID:	EPI MW50
Client:	RTA	Project Location:	RTA WEIPA LP	Fieldwork Staff:	G. MUELLER	Sample Date:	25/11/13
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24/11/13	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☑ Low Flow Pump rate: 15:30	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 5.030	Screen Interval (m): 6-12	Chem Kit Model: YSI ProPlus	☐ Dedicated	Intake depth: 7m	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 5.47	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): —	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m): —	Bore Locked (YES/NO)	Parameter method: ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Parameters
	Key Type (if applicable): —	☑ Retrieved				
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0709	0.25	5.07m	10:35	6.33	77.1	5.21	-5.8	31.1	Clear.
0712	0.50	5.07m	10:35	6.80	76.0	4.64	13.6	31.1	"
0715	1.00	5.07m	"	6.43	75.9	4.41	16.3	31.3	"
0718	1.50	5.07m	"	6.73	75.6	4.45	22.1	31.2	"
0721	2.00	"	"	6.56	75.6	4.56	23.6	31.2	"
0724	2.50	5.07m	"	6.83	75.7	4.56	29.2	31.2	"
0727	3.00	5.07m	"	6.83	75.7	4.57	27.0	31.2	
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity mater)

Analytes Sampled for		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered: 1x PFAS 250mL	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic			Start WL 5.07m time 0707
									End WL 5.07m time 0733

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	LPI MW19
Project Name:	PROJECT SAM	Project Number:	605855 44	PM Name:	C. JAKOBI	Sample Date:	25 11-18
Client:	RTA	Project Location:	RTA WEIPA LF	Fieldwork Staff:	C. MUELLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Sample Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 1K100623	☑ Decontaminated	☑ Low Flow Pump rate: 10.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 8.606	Screen Interval (m):	Chem Kit Model: YSI PROPLUS	☐ Dedicated	Intake depth: 10m	Hydrasleeve Type:	
Bore Depth (m-pvc): 11.2	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) IS LAMOER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0809	0.25	8.63	10.35	6.03	855.2	4.60	139	29.9	Slightly turbid, light brown
0812	0.50	8.63	"	4.31	850	4.54	158	30.1	"
0815	1.00	8.63	"	3.95	850	4.51	16.6	30.2	"
0818	1.50	8.63	"	4.16	851	4.51	14.4	30.2	Cleary
0821	2.00	8.63	"	3.88	85.2	4.52	17.4	30.3	
0824	2.50	8.63	"	4.17	854	4.53	18.4	30.4	
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Preferred:				QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250mL		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	N/A	WL Start 8.63 time 0806
							End WL 8.63 time 0829

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Project Manager Signature _____ Date _____ Distribution: Project Central File

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	LPI MW07
Project Name:	PROJECT SAM	Project Number:	605555544	PM Name:	C. JAKOBI	Sample Date:	25-11-18
Client:	RTA	Project Location:	RTA WEIPA LP	Fieldwork Staff:	C. MUELLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☑ Decontaminated	☑ Low Flow Pump rate: 15:30	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.170	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 8m	Hydrasleeve Type:	
Bore Depth (m-pvc): 9.54	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type: Gatic/~~Key~~ Type	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO)	Parameter method: ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): –	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0936	0.25	7.17	10.35	0.71	212.4	5.45	-140.1	34.1	
0939	0.50	7.17	10:35	0.21	210.4	5.44	-140.1	33.1	Clear.
0942	1.00	7.17	10:35	0.13	207.3	5.50	-139.1	32.8	"
0945	1.50	7.17	"	0.12	204.4	5.54	-138.3	32.8	"
0948	2.00	7.17	"	0.15	200.7	5.46	-131.7	32.8	"
0951	2.50	7.17	"	0.11	198.4	5.45	-127.8	32.9	
0954	3.00	7.17	"	0.11	195.1	5.44	-126.5	32.9	
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x PFAS 250ml		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	WL Start 7.17 tme 0933 end WL 7.17 tme 0958

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	LP1 Mw21
Project Name:	PROJECT SAM	Project Number:	605555/44	PM Name:	C. JAKOBI	Sample Date:	25-11-18
Client:	RTA	Project Location:	RTA WERA LP	Fieldwork Staff:	C. MUELLER	Well Development or Well Sampling Event? (circle)	

Standard Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Settings	
Date of GW Level: 14-11-18	Bore Radius (mm): 75	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☐ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.893	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 8.5	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.03	Casing Radius (mm): 75	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): —	Cover Type: (gatic) / stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): —	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): —	☐ Retrieved			/	Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1030	0.25	8.03	10:35	457	998	5.50	-6.6	34.2	
1033	0.50	8.03	10:35	1.85	890	4.95	1.1	32.7	Clear
1036	1.00	8.03	10:35	1.65	86.5	4.92	-1.6	32.0	"
1039	1.50	8.03	10:35	1.56	85.9	4.85	-2.8	31.9	"
1042	2.00	8.03	10:35	1.48	85.3	4.70	-0.3	31.9	"
1045	2.50	8.03	10:35	1.50	85.4	4.70	0.0	31.9	"
1048	3.00	8.03	10:35	1.18	85.6	4.70	-0.5	31.8	"
SAMPLE									
Acceptable Parameter Range:			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)	

Analytes Sampled for:		Bottles collected:						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x PFAS 250ml		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	Start WL 8.03m time 1027 End WL 8.03m time 1054.

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Fieldwork Staff Signature	Date	Checker Name and Signature	Date
Project Manager Signature	Date	Distribution: Project Central File	

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	**Project Number:**	60558544	**PM Name:**	C. JAKOBI	**Bore ID:**	LP1 MW26
Client:	RTA	**Project Location:**	RTA WEIPA LP	**Fieldwork Staff:**	C. MUELLER	**Sample Date:**	25-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☑ Decontaminated	☑ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 8.20 BROKEN 21	Screen Interval (m): 6 - 12m	Chem Kit Model: YSI PRO PLUS	☑ Dedicated	Intake depth: 10m	Hydrasleeve Type:	
Bore Depth (m-pvc): 12.53	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1131	0.25	8.20	10.35	3.50	79.4	5.01	-4.0	31.8	Clear.
1134	0.50	8.20	"	2.57	76.5	4.65	-6.7	30.7	Slight turbidity
1137	1.00	8.20	"	2.63	76.1	4.54	-6.4	30.5	"
1140	1.50	8.20	"	2.64	76.0	4.27	-4.4	30.5	"
1143	2.00	8.20	"	2.65	75.9	4.17	11.5	30.4	"
1146	2.50	8.20	"	2.56	75.9	4.16	11.1	30.4	"
1149	3.00	8.20	"	2.61	75.8	4.20	8.2	30.4	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QL123 QL223	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Start WL 8.20
									time 1125

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	LP1 MW17
Project Name:	PROJECT SAM	**Project Number:**	605855544	**PM Name:**	C JAKOBI	**Sample Date:**	25-11-18
Client:	RTA WEIPA	**Project Location:**	RTA WEIPA - LP	**Fieldwork Staff:**	G MUELLER	**Well Development or Well Sampling Event? (circle)**	

Sentinel Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve only	
Date of GW Level: 25-11-18	Bore Radius (mm): 75	Chem Kit Serial No.: 11862623	☐ Decontaminated	☐ Low Flow Pump rate: 10:35	Hydrasleeve Size:	**Monitoring sequence followed (number in order):**
Depth to GW (m-pvc): 7.30	Screen Interval (m): 6 - 12	Chem Kit Model: YSI Pro PLUS	☐ Dedicated	Intake depth: 10m	Hydrasleeve Type:	
Bore Depth (m-pvc): 12.53	Casing Radius (mm): 25	**Corrected Redox:** Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole ☐ Retrieved		☐ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):					Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1238	0.25	7.30	10:35	3.84	112.5	4.53	6.2	31.6	turbid, light grey-brown
1241	0.50	7.30	10.35	4.08	59.6	4.02	17.4	30.8	"
1244	1.00	7.30	10:35	2.88	109.6	4.22	2.9	30.2	"
1247	1.50	7.30	10:35	2.68	109.9	4.16	7.6	30.0	"
1250	2.00	7.30	"	2.69	109.9	3.95	17.9	30.0	"
1253	2.50	7.30	"	2.62	109.5	3.93	19.8	30.0	clearing
1256	3.00	7.30	"	2.61	109.0	3.97	17.9	30.0	"
1259	3.50	7.30	"	2.44	108.5	4.00	14.1	29.9	"
1302	4.00	7.30	"	2.33	108.9	4.00.	13.4	29.9	
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles collected						Device information	Field Comments
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
PFAS 250mL			x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic		Start WL 7.30m time 1232 End WL 7.30 m 1307

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Project Manager Signature	**Date**	**Distribution:** Project Central File	

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	**Project Number:**	605588844	**PM Name:**	C. JAKOBI	**Bore ID:**	LP1 MW28
Client:	RTA	**Project Location:**	RTA WEIPA LP	**Fieldwork Staff:**	G. MUELLER	**Sample Date:**	25-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☑ Low Flow Pump rate: 10 55	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.324	Screen Interval (m): 9-12	Chem Kit Model: YSI PRO PLUS	☑ Dedicated	Intake depth: 10m	Hydrasleeve Type:	
Bore Depth (m-pvc): 12.07	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): —	Cover Type: (gatic) / pot-up	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): —	Bore Locked (YES/NO)	**Parameter method:** ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): —	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1353	0-25	7.58	10:35	3.01	212.6	5.79	-3.8	32.2	Adjusted pump
1356	0-50	7.65	10:55	2.38	218.8	5.80	-5.5	31.9	Nrbid, White, adjusted pump
1403	1.00	7.65	10:60	2.11	237.9	6.12	-17.1	31.9	" "
1408	1.50	7.65	10:60	2.15	238.9	6.17	-20.8	31.8	" "
1413	2.00	7.66	"	2.27	235.2	6.12	-20.4	31.8	" "
1418	2.50	7.66	"	2.31	227.2	6.03	-20.0	31.8	" "
1423	3.00	7.66	"	2.14	220.0	6.00	-19.4	31.7	" "
1426	3.50	7.66	"	2.33	214.3	5.99	-20.8	31.8	" "
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	ADS PFAS 250mL	x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic			WL Start 7.40
									time 1351

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Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

A: DM

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Q4AN(EV)-405-FM1

FQM - Groundwater Sampling and Purging Record

						Bore ID:	LP1 MW24
Project Name:	PROJECT SAM	Project Number:	60555544	PM Name:	C. JAKOBI	Sample Date:	25/11/18
Client:	RTA WEIPA	Project Location:	RTA-WEIPA-LP	Fieldwork Staff:	C. MUELLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Events	
Date of GW Level: 24-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	Decontaminated	Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 8.313	Screen Interval (m): 6 - 12	Chem Kit Model: YSI Pro Plus	Dedicated	Intake depth: 9.5	Hydrasleeve Type:	
Bore Depth (m-pvc): 12.66	Casing Radius (mm): 25	Corrected Redox: Y / (N)	Disposable	Bailer / Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up)	(The correction to apply is probe dependent)	Other (specify)	Peristaltic Pump / Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO)	Parameter method: Downhole		Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1538	0.25	8.34	10:35	2.35	127.1	5.32	-22.9	32.4	Slightly turbid, white.
1541	0.50	8.34	"	1.50	119.4	4.67	-13.0	31.2	" "
1544	1.00	8.34	"	1.40	118.8	4.50	-4.8	30.8	" "
1547	1.50	8.34	"	1.32	118.5	4.20	8.2	30.7	" "
1550	2.00	8.34	"	1.24	118.4	4.12	12.2	30.7	" "
1553	2.50	8.34	"	1.26	118.4	4.11	12.1	30.6	
1556	3.00	8.34	"	1.19	118.5	4.16	7.5	30.6	
SAMPLE									
Acceptable Parameter Range:			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected						Waste Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic		SWL Start 8.34m
									time 1534

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Checker Name and Signature _____ Date _____

Project Manager Signature _____ Date _____ Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	**Project Number:**	605588544	**PM Name:**	C. JAKOBI	**Bore ID:**	LP1 MW28
Client:	RTA WEIPA	**Project Location:**	RTA WEIPA - LP	**Fieldwork Staff:**	G. MIELOR	**Sample Date:**	25-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☑ Decontaminated	☑ Low Flow Pump rate: 10:50	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.400	Screen Interval (m):	Chem Kit Model: YSI PROBUS	☐ Dedicated	Intake depth: 10m.	Hydrasleeve Type:	
Bore Depth (m-pvc): 12.46	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): —	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): —	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): —	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1634	0.25	7.45	10:35	5.14	70.8	5.61	-14.6	33.2	DO high due to Oxygenation while charging bladder on Sea Relay Command ↓ drain line
1637	0.5	7.45	"	4.49	67.4	5.08	-14.1	32.5	very turbid. light grey
1640	1.00	7.46	"	5.05	67.0	5.04	-9.4	32.6	"
1643	1.50	7.48	"	6.27	64.4	5.04	-7.0	31.9	adjusted pump
1646	2.00	7.48	10:50	6.24	64.0	5.00	-5.3	31.8	"
1649	2.50	7.48	10:50	6.44	63.4	5.00	-6.2	31.9	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	WL Start 7.37 m Time 1625 had to pull Pump out of bore to burst bladder restarted at 1630 End WL 7.45 Time 1655

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

AE JM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	LPI - MW29
Project Name:	PROJECT SAM	**Project Number:**	60588844	**PM Name:**	C. JACOBI	**Sample Date:**	25-11-18
Client:	RTA	**Project Location:**	RTA WERRIBEE LF	**Fieldwork Staff:**	C. MUELLER	**Well Development or Well Sampling Event? (circle)**	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 1K100623	☑ Decontaminated	☑ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.692	Screen Interval (m): 6-12.	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 9m	Hydrasleeve Type:	
Bore Depth (m-pvc): 12.2	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO)	**Parameter method:** ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): -	☐ Retrieved				Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1723	0.25	7.73	10:35	4.20	71.2	4.90	1.0	32.1	turbid, white
1726	0.50	7.73	10:35	3.64	69.3	4.59	2.3	31.5	" "
1729	1.00	7.73	10:35	3.56	68.8	4.60	-1.5	31.4	" "
1732	1.50	7.73	10:35	3.61	68.2	4.60	-2.0	31.4	" "
1735	2.00	7.73	10:35	3.59	67.7	4.55	-1.0	31.4	" "
SAMPLE									
Acceptable Parameter Range:			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						e-Weo Information	Field Comments
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic		Wl Start 7.73
	250mL							N/A	time 1720

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
Project Manager Signature	Date	Distribution: Project Central File	

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	**Project Number:**	60588544	**PM Name:**	C. JAKOBI	**Bore ID:**	ELN-MW30
Client:	RTA	**Project Location:**	KIBWEZO - EL	**Fieldwork Staff:**	C. MUELLER	**Sample Date:**	26-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100625	☐ Decontaminated	☐ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 9.430	Screen Interval (m):	Chem Kit Model: YSI PROPLUS	☐ Dedicated	Intake depth: 10.5m	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.540	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/Stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): –	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10:53	0.25	9.04	10:35	1.46	74.5	4.47	-3.8	31.0	Clear
1056	0.50	9.04	"	0.46	72.3	3.44	30.1	30.3	"
1059	1.00	9.04	"	0.45	72.3	3.41	31.4	30.3	"
1102	1.50	9.04	"	0.48	72.2	3.46	26.5	30.3	"
1105	2.00	9.04	"	0.45	72.0	3.59	20.7	30.2	"
1108	2.50	9.04	"	0.44	71.9	3.74	12.6	30.2	"
1111	3.00	9.04	"	0.45	71.8	3.75	10.6	30.2	" Very light Sheen
1114	3.50	9.04	"	0.37	71.9	3.80	6.2	30.2	"
1117	4.00	9.04	"	0.46	71.8	3.91	4.0	30.2	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered: 1x PFAS 250ml	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic			Start WL 9.04m time 1051 pH Still variable, bump tested probe in pH solution and reading correctly. Sampled as all other parameters stable

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Checker Name and Signature _____ Date _____

Project Manager Signature _____ Date _____ Distribution: Project Central File

AE JM

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	ELN - MW304
Project Name:	PROJECT SAM	**Project Number:**	605585 44	**PM Name:**	C JAKOBI	**Sample Date:**	26-11-18
Client:	RTA	**Project Location:**	RTA NEPM EL	**Fieldwork Staff:**	C MUELLER	**Well Development or Well Sampling Event? (circle)**	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☑ Decontaminated	☐ Low Flow Pump rate: 10.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 9.371	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☑ Dedicated	Intake depth: 10m	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.33	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up)	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): padlock	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1203	0.25	9.38	10:35	2.24	955	5.25	80	33.4	clear.
1206	0.50	9.38	"	1.25	84.8	4.44	26.4	32.1	"
1209	1.00	9.38	"	1.18	832	4.32	28.3	31.8	"
1212	1.50	9.38	"	1.16	824	4.31	19.3	31.6	"
1215	2.00	9.38	"	1.13	820	4.33	15.1	31.5	" HC Sheen.
1218	2.50	9.38	"	1.13	81.8	4.35	12.1	31.4	"
1221	3.00	9.38	"	0.96	81.6	4.35	8.8	31.4	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sample Info		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250ML		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		WL Start 9.38
									time 11:59

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
Project Manager Signature	**Date**	**Distribution:** Project Central File	

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FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	**Project Number:**	60555544	**PM Name:**	C.JAKOBI	**Bore ID:**	ELN - MW10
Client:	RTA	**Project Location:**	RTA-WERA-EL	**Fieldwork Staff:**	C MUELLER	**Sample Date:**	26-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☑ Decontaminated	☑ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 5.982	Screen Interval (m): 4.9-10.9	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 7.5 m	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 10.85	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc):	Cover Type (gatic) stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m): –	Bore Locked (YES) NO):	**Parameter method:** ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Parameters
	Key Type (if applicable): –	☑ Retrieved				
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1311	0.25	6.14	10:35	4.89	39.8	5.09	-3.3	33.4	clear
1314	0.50	6.14	"	4.18	36.9	4.42	12.2	31.4	"
1317	1.00	6.14	"	4.10	36.6	4.50	6.1	31.0	"
1320	1.50	6.14	"	4.07	36.6	4.31	14.8	30.9	"
1323	2.00	6.14	"	4.15	35.4	4.33	15.6	30.7	"
1326	2.50	6.14	"	4.22	34.7	4.31	16.1	30.8	"
1329	3.00	6.14	"	4.11	34.1	4.32	12.7	30.7	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for	Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	x 250 mL Plastic	QC124	Start WL 6.14m
							QC224	time 1309

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	EIN-MW09
Project Name:	PROJECT SAM	Project Number:	605355544	PM Name:	C JAKOBI	Sample Date:	26-11-18
Client:	RTA	Project Location:	RTA NEPEAN - EL	Fieldwork Staff:	G MUELLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☒ Decontaminated	☐ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 6.583	Screen Interval (m): 5.7-10.7	Chem Kit Model: YSI PROPLUS	☒ Dedicated	Intake depth: 8m	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.56	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO)	Parameter method: ☐ Downhole		☒ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): –	☒ Retrieved				Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1411	0.25	6.72	10:35	2.61	733	4.94	-13.1	32.3	Clear.
1414	0.50	6.72	"	1.62	679	4.47	-6.2	30.8	"
1417	1.00	6.72	"	1.60	66.7	4.46	-3.5	30.3	"
1420	1.50	6.72	"	1.48	66.4	4.25	8.5	30.2	"
1423	2.00	6.72	"	1.39	66.0	4.28	4.6	30.1	"
1426	2.50	6.72	"	1.44	65.5	4.33	-3.1	30.1	"
1429	3.00	6.72	"	1.40	65.2	4.48	-6.2	30.0	" hydrocarbon sheen
1432	3.50	6.72	"	1.34	65.1	4.49	-8.7	30.0	"
1435	4.00	6.72	"	1.18	64.2	4.51	-10.3	30.00	"
1438	4.50	6.72	"	1.30	63.7	4.52	-10.9	30.0	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic	N/A	WL Start 6.72
									time 1408

Approval and Distribution

Fieldwork Staff Signature ____ Date ____ Checker Name and Signature ____ Date ____

Project Manager Signature ____ Date ____ Distribution: Project Central File

A: DM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	Project SAM	**Project Number:**	60555844	**PM Name:**	C. JAKOBI	**Bore ID:**	ELS MW29
Client:	UTA	**Project Location:**	RTP WEIPA - EL	**Fieldwork Staff:**	C. MUELLER	**Sample Date:**	26-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☑ Decontaminated	☑ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 5.833	Screen Interval (m): 2.5-8.8	Chem Kit Model: YSI PRO PLUS	☑ Dedicated	Intake depth: 7m	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 9.44	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): -	Cover Type (gatic/stick up)	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m): -	Bore Locked (YES/NO)	Parameter method: ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Parameters
	Key Type (if applicable): -	☑ Retrieved				

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1528	0.25	5.82	10:35	6.10	849	5.20	-14.5	33.0	turbid, brown
1531	0.50	5.82	"	3.65	77.3	4.95	-12.5	31.0	"
1534	1.00	5.82	"	3.55	75.6	4.91	-11.5	30.6	"
1537	1.50	5.82	"	3.65	74.7	4.91	-10.9	30.6	"
1540	2.00	5.82	"	3.54	72.6	4.74	-4.1	30.3	"
1543	2.50	5.82	"	3.46	71.7	4.74	-3.6	30.5	Cleared
1546	3.00	5.82	"	3.62	70.7	4.74	-4.1	30.4	"
1549	3.50	5.82		3.62	69.0	4.72	-5.1	30.4	
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Start WL 5.82
									time 1527

Approval and Distribution

Fieldwork Staff Signature | Date | Checker Name and Signature | Date

Project Manager Signature | Date | Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	FLS - MW23
Project Name:	PROJECT SAM	Project Number:	605558449	PM Name:	C. JAKOBI	Sample Date:	26-11-18
Client:	BTA	Project Location:	BTA NEPA - EL	Fieldwork Staff:	C MUELLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K00623	☒ Decontaminated	☒ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 6.406	Screen Interval (m): 5.8 - 10.3	Chem Kit Model: YSI PRO PLUS	☒ Dedicated	Intake depth: 7.5	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.78	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☒ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☒ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): -	☒ Retrieved				Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1622	0.25	6.40	10:35	2.33	113.1	5.29	-13.5	30.4	Slightly turbid. no
1625	0.50	6.40	10:35	2.04	115.3	5.26	-17.4	29.8	"
1628	1.00	6.40	"	1.97	114.3	5.26	-18.1	29.8	"
1631	1.50	6.40	"	2.06	112.4	5.11	-10.3	29.8	"
1634	2.00	6.40	"	2.05	108.5	5.01	-9.5	29.8	Cleared.
1637	2.50	6.40	"	2.11	105.4	5.02	-10.4	29.7	"
1640	3.00	6.40	"	2.10	101.8	5.02	-11.8	29.7	"
SAMPLED.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected:						QA/QC Information:	Field Comments:
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x PPPS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic	N/A.	Start wl 6.40 and 1618

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
Project Manager Signature	Date	Distribution: Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	**Project Number:**	605[illegible]44	**PM Name:**	C. JAKOBI	**Bore ID:**	ELS MW18
Client:	RTA	**Project Location:**	RTA-WEIPA-EL	**Fieldwork Staff:**	G. MUELLER	**Sample Date:**	27-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: #11K100623	☐ Decontaminated	☐ Low Flow Pump rate: 0.55	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 6.757	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 9m	Hydrasleeve Type:	
Bore Depth (m-pvc): 11.86	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole		☐ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Radial	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1036	0.25	6.89.	10:35	2.41	99.8	4.68	27.4	32.5	Clear.
1039	0.50	6.89.	"	1.72	98.9	4.57	31.2	31.8	"
1042	1.00	6.89	"	1.55	98.4	4.51	25.1	31.7	"
1045	1.50	6.89.	"	1.69	98.2	4.48	25.4	31.7	"
1048	2.00	6.89	"	1.82	98.1	4.46	24.1	31.7	"
1051	2.50	6.89	"	1.77	98.0	4.46	19.3	31.7	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						VOC Information	Field Comments
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	N/A	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		NL Stat 6.89 time 1031

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — **Distribution:** Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	ELN MW07
Project Name:	PROJECT SAM	**Project Number:**	605588544	**PM Name:**	C. JAKOBI	**Sample Date:**	27-11-18
Client:	RTA	**Project Location:**	RTA-LIDA-EL	**Fieldwork Staff:**	G MUELLER	**Well Development or Well Sampling Event?** (circle)	

General Bore Information		Parameter Info	Decon Information	Sampling Method	Hydrasleeve Info	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☐ Low Flow Pump rate: 10.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.295	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 9m	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.63	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Parlux	☐ Retneved		BLADDER	-	Parameters

Calculated bore volume (L)	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0933	0.25	7.60m	10:35	1.21	177.6	5.38	-59.2	31.6	Clear
0936	0.50	7.60m	"	0.20	175.4	5.41	-63.8	30.9	"
0939	1.00	7.60m	"	0.18	175.5	5.32	-56.5	30.9	"
0942	1.50	7.00m	"	0.10	175.6	5.30	-57.2	30.8	"
0945	2.00	7.60m	"	0.13	175.9	5.30	-58.6	30.8	" heavy hr Shan
0948	2.50	7.60m	"	0.12	176.5	5.35	-61.0	30.8	
Sample									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for	Bottles Collected						Sample Information	Field Comments
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)		x 60 mL Ferrous	x 60 mL metals (HNO_3)	QC 125	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS 250ML		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	x 250 mL Plastic	QC 225	Stat WL 7.60m
								TIME 0929

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
Project Manager Signature	**Date**	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	Project Number:	60585546	PM Name:	C. JAKOBI	Bore ID:	ELL - MW32
Client:	RTA	Project Location:	RTA-WEIPA-QL	Fieldwork Staff:	C.MUELLER	Sample Date:	27-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☐ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 6.849	Screen Interval (m):	Chem Kit Model: 9Si PROPLUS	☐ Dedicated	Intake depth: 8.5	Hydrasleeve Type:	
Bore Depth (m-pvc): 9.86	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up)	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO)	Parameter method: ☐ Downhole		☐ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): –	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0827	0.25	6.83	10:35	0.97	147.1		20.3	31.7	
0830	0.50	6.83	"	0.28	148.6	4.88	12.7	31.2	Clear.
0833	1.00	6.83	"	0.22	149.9	4.88	7.1	31.3	"
0836	1.50	6.83	"	0.21	150.7	4.91	5.3	31.3	"
0839	2.00	6.83	"	0.18	150.8	4.91		31.4	"
0842	2.50	6.83	"	0.17	150.8	4.91	-2.8	31.3	Light Sheen.
0845	3.00	6.83	"	0.14	150.4	4.90	-4.6	31.3	
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	WL Stab 6.83 hML 08:25

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Checker Name and Signature _____ Date _____

Project Manager Signature _____ Date _____ Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	ELN MW06
Project Name:	PROJECT SAM	Project Number:	605855544	PM Name:	C. JAKOBI	Sample Date:	27-11-15.
Client:	RTA	Project Location:	RTA WEIPA - EL	Fieldwork Staff:	G MUELLER.	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 26-11-2015	Bore Radius (mm): 25	Chem Kit Serial No.: 11K100623	☐ Decontaminated	☐ Low Flow Pump rate: 10:35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.149	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☑ Dedicated	Intake depth: 8.5m	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.27	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up)	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Padlock	☐ Retrieved				Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0730	0.25	7.39	10:35	2.70	131.8	Bubbles	20.5	30.7	clear
0733	0.50	7.37	10:35	0.90	104.8	4.66	49.2	30.4	"
0736	1.00	7.37	10:35	0.89	103.7	4.58	55.5	30.4	"
0739	1.50	7.37	"	0.71	103.5	4.48	57.8	30.4	"
0742	2.00	7.37	"	0.73	103.0	4.47	55.9	30.3	"
0745	2.50	7.37	"	0.76	102.9	4.47	54.5	30.4	"
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						Cooler Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		WL Stick 7.37
	250ML							N/A	time 0727

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
Project Manager Signature	Date	Distribution: Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PROJECT SAM	Project Number:	605555544	PM Name:	C. JAKOBI	Bore ID:	ELS MW19
Client:	RTA	Project Location:	RTA-WEPA-EL	Fieldwork Staff:	C. MUELLER.	Sample Date:	27-11-18
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level: 26-11-18	Bore Radius (mm): 25	Chem Kit Serial No.: (1K 06623	☐ Decontaminated	☐ Low Flow Pump rate: 10.35	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 4.462	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 9m	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.04	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): —	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): —	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): padlock	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0626	0.25	4.72	10:35	1.47	2042	5.79	-124.3	30.8	
0629	0.50	4.72	"	0.23	3393	5.97	-155.7	30.8	Slightly turbid, brown.
0632	1.00	4.72	"	0.17	3283	6.01	-163.9	30.0	"
0635	1.50	4.72	"	0.11	2920	6.06	-174.2	30.8	Cloudy
0638	2.00	4.72	"	0.07	2410	6.09	-180.9	30.9	Clear, [redacted] Sheen.
0641	2.50	4.72	"	0.04	2053	6.10	-187.9	30.9	"
0644	3.00	4.72	"	0.06	2059	6.10	-188.4	30.9	" HC odour noted at end of purge
SAMPLE									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x250mL PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	N/A	WL Start 4.72 time 0623

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Checker Name and Signature _____ Date _____

Project Manager Signature _____ Date _____ Distribution: Project Central File

27 Drinking Water Not tracked

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	
Project Name:		**Project Number:**		**PM Name:**		**Sample Date:**	
Client:		**Project Location:**		**Fieldwork Staff:**		**Well Development or Well Sampling Event? (circle)**	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	**Monitoring sequence followed (number in order):**
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	**Corrected Redox:** Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
SA26 1212	~10			6.57	29.7	4.96	23.7	30.7	Airport Supply
SA005 1220	~10			3.60	34.3	4.79	[illegible]5.2	29.6	Used for rinse
N09710 1226	~10			3.02	27.4	4.25	68.3	29.7	" "
27 1233	~10			6.38	30.8	4.36	44.2	28.7	Drinking Supply
SA15 1354	~30L	-	-	1.57	193.1	5.53	-121.1	35.5	
SA12 1401	~20L	-	-	3.39	114.5	4.81	26.5	30.3	
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						Weather Information	Field Comments
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
			x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		

Approval and Distribution

Fieldwork Staff Signature	**Date**	**Checker Name and Signature**	**Date**
Project Manager Signature	**Date**	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	Project SAM	**Project Number:**	60588844	**PM Name:**	James Peachey	**Bore ID:**	AHEQ MW10
Client:		**Project Location:**	Weipa	**Fieldwork Staff:**	Luke McIver	**Sample Date:**	22/11/18

Well Development or Well Sampling Event? (circle)

General Bore Information

Date of GW Level: 22/11/18	Bore Radius (mm): 62.5	Depth to GW (m-pvc): 11.916	Screen Interval (m): 9 - 15m
Bore Depth (m-pvc): 15.60	Casing Radius (mm): 25	Depth to Product (m-pvc): –	Cover Type (~~gatic~~/stick up):
Product Thickness (m): –	Bore Locked (~~YES~~/NO):		Key Type (if applicable):
Calculated bore volume (L): 7.36	~~Includes~~/excludes bore annulus (circle)		

Parameter Info

Chem Kit Serial No.: 29K101342

Chem Kit Model: YSI PRO PLUS

Corrected Redox: Y / (N)

(The correction to apply is probe dependent)

Parameter method: ☐ Downhole ☑ Retrieved

Decontamination

☑ Decontaminated
☐ Dedicated
☑ Disposable
☐ Other (specify)

Sampling Method

☑ **Low Flow Pump rate:** 10/20
Intake depth: 15.6
☐ Bailer ☐ Hydrasleeve
☐ Peristaltic Pump ☐ Waterra
☐ Other (specify)

Hydrasleeve Info

Hydrasleeve Size:	**Monitoring sequence followed (number in order):**
Hydrasleeve Type:	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve Install time:	Hydrasleeve out
Sampling Start Time:	Parameters

# of purge volumes removed: 0

Total purged volume (L): 3.6L

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or ~~mg/L~~)	E.C. (~~mS/cm~~ or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
~~13:34~~	0	11.91	20/20	–	–	–	–	–	Water to surface in one cycle
12:56	0	11.91	20/20	–	–	–	–	–	#
5/15 12:59	0	11.91	20/20	–	–	–	–	–	Redtech pump popping RED bladders. Reduce cycle rates.
12:42	0	11.91	5/15	–	–	–	–	–	
12:45	0	11.91	5/15	–	–	–	–	–	#
0/20 12:48	0.6	11.91	10/20	4.27	121.2	5.42	~~184.58~~	33.0	Nil; orange-rd; high turb
12:51	1.2	11.91	10/20	3.75	120.7	5.24	2.4	33.5	" " "
12:54	1.8	11.91	10/20	3.74	120.6	5.27	2.4	33.3	" " "
12:57	2.4	11.91	10/20	3.75	120.1	5.25	3.2	33.0	" " "
13:00	3.0	11.91	10/20	3.71	120.3	5.23	3.7	33.0	Nil; slightly o/; med turb
13:03	3.6	11.91	10/20	3.77	119.9	5.20	6.2	33.0	" clear. "
			– Sampled		End of Record				
Acceptable Parameter Range:				± 10%	±3%	±0.05	± 10 mV	±0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for

Field Filtered: **Unfiltered:** PFAS Super Trace

Bottles Collected

	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)
	x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic
6					

QA/QC Information

Field Comments

Bore volume calculation, bore condition, rate of tubing, redox correction etc.

$BV_{(dry)} = 2 \times (15.60 - 11.92)$

$= 7.36L$

Approval and Distribution

Fieldwork Staff Signature — Date: 22/11/18

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	AMEC MW05
Project Name:	Project SAM	**Project Number:**	60588844	**PM Name:**	James Peachey	**Sample Date:**	22/11/2018
Client:		**Project Location:**	Welpa	**Fieldwork Staff:**	Luke McIver	~~Well Development or~~ **Well Sampling Event? (circle)**	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 22/11/18	Bore Radius (mm): –	Chem Kit Serial No.: 01K10342	☑ Decontaminated	☑ Low Flow Pump rate: 10/20	Hydrasleeve Size:	**Monitoring sequence followed (number in order):**
Depth to GW (m-pvc): 10.439	Screen Interval (m): –	Chem Kit Model: YSI Pro Plus	☐ Dedicated	Intake depth: 12.0	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 13.33	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): –	Cover Type ~~(gatic/stick up)~~:	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m): –	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable): Key	☐ Retrieved				
Calculated bore volume (L): 5.8	Includes/ excludes bore annulus (circle)	# purge volumes removed: 1		Total purged volume (L): 6.0		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or ~~mg/L~~)	E.C. (mS/cm or ~~µS/cm~~)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10:20									
13:45	0	10.46	10/20	–	–	–	–	–	13:47 - fluid to surface.
13:48	0.6	10.46	↓	1.24	351.9	4.75	17.4	32.1	no odour ; clear ; med turb.
13:51	1.2	10.46		1.45	350.9	4.78	19.0	32.2	" " "
13:54	1.8	10.46		1.60	350.3	4.79	18.5	32.4	" " "
13:57	2.4	10.46		1.70	350.5	4.88	18.2	32.4	" " "
14:00	3.0	10.46		1.92	350.7	4.88	19.3	32.4	" " "
14:05	3.6	10.46		2.09	350.7	4.83	19.3	32.3	" " "
14:06	4.2	10.46		2.31	344.9	4.83	20.6	32.2	" " "
14:09	4.8	10.46		1.92	345.2	4.88	20.4	32.2	" " "
14:12	5.4	10.46		1.94	345.0	4.88	20.4	32.4	" " "
14:15	6.0	10.46	↓	1.95	345.1	4.84	19.8	32.3	" " "
				Sampled - End of Record :-					
Acceptable Parameter Range:				±10%	±3%	±0.05	±10 mV	±0.2 °C	±10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						Other Information	Field Comments
Field Filtered:	**Unfiltered:**								Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		$BV_{(L)} = \frac{1}{2} \times (13.33 - 10.44)$
	Super Mucc		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic		$= 5.78$ L.

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	22/11/18		
Project Manager Signature	**Date**	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	Project SAM	**Project Number:**	60588844	**PM Name:**	James Peachey	**Bore ID:**	AHEQ MW06
Client:		**Project Location:**	Weipa	**Fieldwork Staff:**	Luke McIver	**Sample Date:**	22/11/18

Well Development or Well Sampling Event? (circle)

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 22/11/18	Bore Radius (mm): –	Chem Kit Serial No.: 09K101342	☑ Decontaminated	☑ Low Flow Pump rate: 10/20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 10.706	Screen Interval (m): –	Chem Kit Model: 451 Pro Plus	☑ Dedicated	Intake depth: 12.0	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 13.55	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): –	Cover Type ~~(gatic/stick up)~~:	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve out
Product Thickness (m): –	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable): Key	☑ Retrieved				
Calculated bore volume (L): 5.28	~~Includes~~/ excludes bore annulus (circle)	# purge volumes removed: 0		Total purged volume (L): 3.0		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or ~~mg/L~~)	E.C. (~~mS/cm~~ or uS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10/20									
15:06	0	10.72	10/20	–	–	–	–	–	15:08 water to surface.
15:09	0.6	10.72		2.60	127.8	5.37	-4.1	29.5	no odour, clear, med turb
15:12	1.2	10.72		2.31	127.6	5.37	-3.9	29.3	" " "
15:15	1.8	10.72		2.27	127.1	5.37	-4.2	29.3	" " "
15:18	2.4	10.72		2.31	127.2	5.37	-4.1	29.3	" " "
15:21	3.0	10.72		2.55	126.9	5.37	-4.0	29.5	" " "
			Sampled - End of Record						
		✓							
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QC118 - 181122	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS Super trace		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	QC2 18	181122 $BV_{(day)} = 2 \times (13.35 - 10.71)$ $= 5.28$ L.

Approval and Distribution

Fieldwork Staff Signature	22/11/2018 Date	Checker Name and Signature	Date
Project Manager Signature	Date	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	AHEQ MW08
Project Name:	Project SAM	Project Number:	60588844	PM Name:	James Peachey	Sample Date:	22/11/18
Client:		Project Location:	Weipa	Fieldwork Staff:	Luke McIver	Well Development or Well ~~Sampling Event~~? (circle)	

Standing Water Level Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve	
Date of GW Level: 22/11/18	Bore Radius (mm): 62.5	Chem Kit Serial No.: 09K101348	☑ Decontaminated	☑ Low Flow Pump rate: 10/20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 9.650	Screen Interval (m): 15-09	Chem Kit Model: YSI Pro Plus	☐ Dedicated	Intake depth: 12.0	Hydrasleeve Type:	
Bore Depth (m-pvc): 15.67	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (~~gatic~~/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (~~YES~~/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
16:09	0.6	9.67	10/20	–	–	–	–	–	16:11 - water to surface
16:12	1.2	9.67		2.11	121.5	4.98	10.9	31.1	no odour ; grey - milky wh ; high turb
16:15	1.8	9.67		2.04	121.1	4.99	10.5	31.1	" ; faint rd - milky ; med turb
16:18	2.4	9.67		1.84	121.0	5.00	10.1	30.8	" ; clear - milky ; med turb
16:21	3.0	9.67		1.89	120.6	4.99	10.4	31.1	" clear ; low turb
16:24	3.6	9.67		1.97	120.9	4.98	10.9	31.0	" " "
16:27	4.2	9.67	↓	1.92	120.8	4.98	11.3	30.9	" " "
			Sampled - End of Record						
		✓							
Acceptable Parameter Range:				±10%	±3%	±0.05	±10 mV	±0.2 °C	±10% turbidity (if using a turbidity meter)

Analytes - Sample Kit	Bottles - Collected	Water Information	Field Comments
Field Filtered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
Unfiltered: PFAS & Suptrace	x 40 mL Vial (H_2SO_4)	x 100 mL Amber	1 x 250 mL Plastic	BV (dry) = 2 × (15.67 - 9.65) = 12.04 L

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	22/11/18		
Project Manager Signature	**Date**	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	AHEQ MW07
Project Name:	Project SAM	Project Number:	60588844	PM Name:	James Peachey	Sample Date:	22/11/18
Client:	Weipa RTA	Project Location:	Weipa	Fieldwork Staff:	Luke McIver	~~Well Development or Well Sampling Event?~~ (circle)	

General Bore Information			Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level:	22/11/18	Bore Radius (mm): 62.5	Chem Kit Serial No.: 09K101342	☑ Decontaminated	☑ Low Flow Pump rate: 10/30	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	10.923	Screen Interval (m): 9 - 12	Chem Kit Model: Usi Fta Plus	☑ Dedicated	Intake depth: 12.0	Hydrasleeve Type:	
Bore Depth (m-pvc):	12.62	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	–	Cover Type ~~(gatic~~/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	–	Bore Locked ~~PTES~~/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
		Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L): 3.4		~~Actuales~~/ excludes bore annulus (circle)	# purge volumes removed: 1		Total purged volume (L): 3.5		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10/30 17:10	0	10.88	10/30	—	—	—	—	—	17:11 water to surface. Slowed pump to 10/30
17:13	0.5	10.83		3.08	212.2	4.97	16.8	30.2	no odour; clear; low turb
17:16	1.0	10.85		3.17	214.9	4.95	16.9	30.2	" " "
17:19	1.5	10.87		3.12	214.9	4.95	17.1	30.2	" " "
17:22	2.0	10.87		3.15	217.0	4.93	17.6	30.2	" " "
17:25	2.5	10.87		3.03	219.3	4.91	18.6	30.1	" " "
17:28	3.0	10.87		2.91	220.4	4.90	19.4	30.1	" " "
17:31	3.5	10.87	↓	2.94	221.1	4.90	19.7	30.1	" " "
			Sampled - End of Record						
		✓							
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS Supertrace.		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic		$BV_{(dry)} = 2 \times (12.62 - 10.923)$
									$= 3.4L$

Approval and Distribution

Fieldwork Staff Signature	22/11/18 Date	Checker Name and Signature	Date
Project Manager Signature	Date	Distribution: Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	AMEC MW05
Project Name:	Project SAM	**Project Number:**	60588844	**PM Name:**	James Peachey	**Sample Date:**	23/11/18
Client:	Welpa RTA	**Project Location:**	Welpa	**Fieldwork Staff:**	Luke McIver	~~Well Development~~ or Well Sampling Event? (circle)	

Control Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 22/11/18	Bore Radius (mm): 62.5	Chem Kit Serial No.: 07K101342	☒ Decontaminated	☒ Low Flow Pump rate: 10/20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 13.235	Screen Interval (m): –	Chem Kit Model: YSI Pro Plus	☒ Dedicated	Intake depth: 15.0	Hydrasleeve Type:	
Bore Depth (m-pvc): 18.32	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☒ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type ~~(static~~/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/~~NO~~):	**Parameter method:** ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Key	☒ Retrieved				Parameters
Calculated bore volume (L): 10.14	~~Includes~~/ excludes bore annulus (circle)	# purge volumes removed: 0		Total purged volume (L): 3.6		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or (mg/L))	E.C. (mS/cm or (µS/cm))	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
07:26	0	13.24	10/20	–	–	–	–	–	07:30 - water to surface
07:31	0.6	13.24	↑	1.93	197.0	4.87	-47.7	29.1	no odour. cream mod turb
07:34	1.2	13.24		1.98	194.5	4.76	-30.3	29.2	〃 〃 〃
07:37	1.8	13.24		1.80	194.1	4.74	-7.5	29.4	〃 〃 〃
07:40	2.4	13.24		1.90	193.9	4.75	-2.3	29.4	〃 〃 〃
07:43	3.0	13.24		1.84	194.1	4.75	1.6	29.4	〃 〃 〃 - low turb
07:46	3.6	13.24	↓	1.87	193.7	4.76	7.2	29.5	〃 〃 〃
			Sampled - End of Record.						
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled For		Bottles Collected						Quality Info	Field Comments
Field Filtered:	**Unfiltered:** PFAS Super trace		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, pore condition, fate of tubing, redox correction etc.
			x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic		BV (dry) = 2 x (18.32 - 13.235)
									= 10.14 L

Approval and Distribution

Fieldwork Staff Signature	Date: 23/11/18	Checker Name and Signature	Date
Project Manager Signature	Date	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	Project SAM	**Project Number:**	60588844	**PM Name:**	James Peachey	**Bore ID:**	AMEQ MW04
Client:	RTA Weipa	**Project Location:**	Weipa	**Fieldwork Staff:**	Luke McIver	**Sample Date:**	23/11/18

General Bore Information

Date of GW Level:	23/11/18	Bore Radius (mm):	62.5
Depth to GW (m-pvc):	12.998	Screen Interval (m):	–
Bore Depth (m-pvc):	16.19	Casing Radius (mm):	75
Depth to Product (m-pvc):	–	Cover Type (gatic/~~stick up~~):	
Product Thickness (m):	–	Bore Locked (YES/~~NO~~):	
		Key Type (if applicable):	Allen
Calculated bore volume (L):	6.4	~~Includes~~/ excludes bore annulus (circle)	# purge volumes removed: 0

Parameter Info

Chem Kit Serial No.: 89K101342

Chem Kit Model: YSI Pro Plus

Corrected Redox: Y / (N)

(The correction to apply is probe dependent)

Parameter method: ☐ Downhole ☑ Retrieved

Decontamination

☑ Decontaminated
☐ Dedicated
☑ Disposable
☐ Other (specify)

Sampling Method

☑ **Low Flow** Pump rate: 10 | 20
Intake depth: 15.0
☐ Bailer ☐ Hydrasleeve
☐ Peristaltic Pump ☐ Waterra
☐ Other (specify)

Total purged volume (L): 4.2

Hydrasleeve Info

Hydrasleeve Size:	**Monitoring sequence followed (number in order)**
Hydrasleeve Type:	
Sampling Depth (m-pvc):	Gauging
Hydrasleeve Install time:	Hydrasleeve in
Sampling Start Time:	Hydrasleeve out
	Parameters

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or ~~mg/L~~)	E.C. (mS/cm or ~~µS/cm~~)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
09:03	0	13.00	10 | 20	0.67	600	6.35	-166.3	–	water to surface 09:05
09:06	0.6	13.00	↓	↓	↓	↓	↓	31.7	HC odour pl gr - clear; med turb
09:09	1.2	13.00		0.35	600	6.34	-174.3	31.7	" " "
09:12	1.8	13.00		0.83	598	6.37	-188.4	31.7	" " "
09:15	2.4	13.00		0.89	597	6.38	-198.6	31.7	" " "
09:18	3.0	13:00		0.99	596	6.38	-204.6	31.8	" " "
09:21	3.6	13:00		0.99	595	6.38	-206.0	31.8	" becoming clear "
09:24	4.2	13:00	↓	1.04	595	6.38	-207.5	31.8	" " "
		- Sampled - End of Record.							
		✓							
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for

Field Filtered:

Unfiltered: PFAS Super Trace

Bottles Collected

	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)
	x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic

QA/QC Information

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Bv(dry) = 2 × (16.19 − 12.99)

= 6.4 L.

Approval and Distribution

Fieldwork Staff Signature — Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	AFD MW36
Project Name:	Project SAM	**Project Number:**	60588844	**PM Name:**	James Peachey	**Sample Date:**	24/11/18
Client:		**Project Location:**	Weipa	**Fieldwork Staff:**	Luke McIver	**Well Development or Well Sampling Event? (circle)**	

General Bore Information		Equipment Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24/11/18	Bore Radius (mm): —	Chem Kit Serial No.: 09K1013H2	☑ Decontaminated	☑ Low Flow Pump rate: 10 | 20	Hydrasleeve Size:	**Monitoring sequence followed (number in order):**
Depth to GW (m-pvc): 10.596	Screen Interval (m): —	Chem Kit Model: YSI Pro Plus	☐ Dedicated	Intake depth: 11.5	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 12.67	Casing Radius (mm): 25mm	**Corrected Redox:** Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): —	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve out
Product Thickness (m): —	Bore Locked: (YES) NO	**Parameter method:** ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable): —	☑ Retrieved				

Calculated bore volume (L): 4.14 — Includes/ excludes bore annulus (circle) — # purge volumes removed: 0 — Total purged volume (L): 3.6

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
08:44	0	10.60	10 | 20	7.23	27.3	4.66	18.9	30.6	Water to surface @ 08:45
08:47	0.6	10.60	10 | 20	7.25	27.3	4.65	20.0	30.4	No odour; clear; med turb.
08:50	1.2	↓	10 | 20	↓	↓	↓	↓	↓	〃 〃 〃
08:53	1.8	10.60		6.67	27.7	4.63	29.9	30.2	〃 〃 〃
08:56	2.4	10.60		6.98	27.9	4.63	38.1	30.2	〃 〃 〃
08:59	3.0	10.60		6.77	27.9	4.62	40.6	30.2	〃 〃 〃
09:02	3.6	10.60	↓	6.92	28.2	4.61	42.5	30.2	〃 〃 〃
			Sampled - End of Record						
		✓							
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled For:		Bottles Collected:					Water Information:
Field Filtered:	**Unfiltered:**		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)
✓	PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic
	Superfuse						

Field Comments:

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

BV (dry) = 2 × (12.67 − 10.60)

= 4.14 L

Approval and Distribution

Fieldwork Staff Signature	24/11/2018 Date	Checker Name and Signature	Date
Project Manager Signature	Date	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	ALF MW307
Project Name:	Project SAM	Project Number:	60588844	PM Name:	James Peachey	Sample Date:	24/11/18
Client:		Project Location:	Weipa	Fieldwork Staff:	Luke McIver	~~Well Development~~ or Well Sampling Event? (circle)	

General Bore Information			Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24/11/18	Bore Radius (mm): 62.5mm		Chem Kit Serial No. 09K101342	☑ Decontaminated	☑ Low Flow Pump rate: 10/20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 10.865	Screen Interval (m): 6-12		Chem Kit Model: YSI Pro (Rev)	☑ Dedicated	Intake depth: 11.5	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 12.46	Casing Radius (mm): 25mm		Corrected Redox: Y / N	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): -	Cover Type (~~gatic~~/stick up):		(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m): -	Bore Locked (~~YES~~/NO):		Parameter method: ☐ Downhole ☑ Retrieved		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable):						
Calculated bore volume (L): 3.2	~~Include?~~ excludes bore annulus (circle)		# purge volumes removed: 0		Total purged volume (L): 3.6		

Water Quality Parameters									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or ~~mg/L~~)	E.C. (~~mS/cm~~ or ~~µS/cm~~)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10:12	0	10.87	10/20	-	-	-	-	-	10:13 water to surface
10:15	0.6	10.87	↓	6.80	22.5	4.43	72.2	30.6	No odour; clear; Med turb.
10:18	1.2	10.87	↓	5.83	22.4	4.44	73.7	30.6	" " "
10:21	1.8	10.87	↓	5.85	22.3	4.44	75.5	30.7	" " "
10:24	2.4	10.87	↓	5.87	22.2	4.44	75.5	30.5	" " "
10:27	3.0	10.87	↓	6.60	22.2	4.45	74.2	30.4	" " "
10:30	3.6	10.87	✓	5.86	22.3	4.47	73.9	30.6	" " "
			Sampled - End of Record						
		✓						✓	
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic		Recal DO
	SuperTrace								BV (drug) = 2L x (12.46 - 10.86)
									= 3.2L

Approval and Distribution

Fieldwork Staff Signature — Date: 24/11/18

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	MW06
Project Name:	Project SAM	Project Number:	60588844	PM Name:	James Peachey	Sample Date:	24/11/18
Client:	BTA Weipa	Project Location:	Weipa	Fieldwork Staff:	Luke McIver	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info		Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24/11/18	Bore Radius (mm): 62.5	Chem Kit Serial No.: 09K101342		☑ Decontaminated	☑ Low Flow Pump rate: 10/20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 8.925	Screen Interval (m): 6 - 12	Chem Kit Model: YSI Pro Plus		☐ Dedicated	Intake depth: 10.6	Hydrasleeve Type:	
Bore Depth (m-pvc): 12.41	Casing Radius (mm): 25	Corrected Redox: Y / (N)		☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)		☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: ☐ Downhole			☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved					Parameters
Calculated bore volume (L): 6.96	Includes/ excludes bore annulus (circle)	# purge volumes removed: 0			Total purged volume (L): 4.2		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
11:18	0	8.93	10/20	—	—	—	—	—	11:19 - water to surface
11:21	6.6	8.93		7.69	20.0	4.31	45.3	31.3	no odour, clear, low turb.
11:24	1.2	8.93		6.75	16.6	4.34	46.8	31.2	" " "
11:27	1.8	8.93		6.80	20.7	4.35	50.2	31.2	" " "
11:30	2.4	8.93		6.80	28.9	4.38	49.2	31.3	" " "
11:33	3.0	8.93		6.61	28.7	4.38	53.2	31.3	" " "
11:36	3.6	8.93		6.18	29.1	4.38	55.7	31.2	" " "
11:39	4.2	8.93	↓	6.22	29.1	4.37	56.2	31.1	" " "
			Sampled - End of Recess						
		✓							
Acceptable Parameter Range:				(±10%)	(±3%)	(±0.05)	(±10 mV)	(±0.2 °C)	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for	Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered: PFAS Supertrace	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QC122 - 181124	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	QC222 - 181124	BV(dry): 2 x (12.41 - 8.93) = 6.96L

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	24/11/18		
Project Manager Signature	**Date**	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	AFD MW37
Project Name:	Project SAM	Project Number:	60588844	PM Name:	James Peachey	Sample Date:	24/11/18
Client:	RTA Weipa	Project Location:	Weipa	Fieldwork Staff:	Luke McIver	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24/11/18	Bore Radius (mm): 62.5	Chem Kit Serial No.: 09K10342	☐ Decontaminated	☑ Low Flow Pump rate: 10/20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 9.960	Screen Interval (m): 6-12	Chem Kit Model: YSI Pro Plus	☑ Dedicated	Intake depth: 11.0	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 12.46	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve out
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: ☐ Downhole ☑ Retrieved		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable): -					
Calculated bore volume (L): 5	Includes/excludes bore annulus (circle)	# purge volumes removed: 0		Total purged volume (L): 3.0L		

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
12:22	0	9.97	10/20	-	-	-	-	-	12:23 - water to surface.
12:25	0.6	9.97	↓	3.24	25.2	4.80	18.7	31.2	No odour; clear; low-med turb
12:28	1.2	9.97		3.32	26.0	4.75	19.0	30.9	" " "
12:31	1.8	9.97		3.31	26.8	4.74	19.5	31.0	" " "
12:34	2.4	9.97		3.33	27.6	4.72	18.9	30.9	" " "
12:37	3.0	9.97	↓	3.28	28.0	4.71	19.2	30.8	" " "
			Sampled - End of Record						
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 40 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:								Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS Superstrace	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)			3V (avg) = 2 x (12.46 - 9.96)
		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic			= 5L

Approval and Distribution

Fieldwork Staff Signature — Date: 24/11/18

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

Q4AN(EV)-405-FM1

FQM - Groundwater Sampling and Purging Record

Project Name:	Project SAM	**Project Number:**	60588844	**PM Name:**	James Peachey	**Bore ID:**	EWHES MW07
Client:	Weipa RTA	**Project Location:**	Weipa	**Fieldwork Staff:**	Luke McIver	**Sample Date:**	23/11/18

~~Well Development~~ or Well Sampling Event? (circle)

General Bore Information

Date of GW Level:	23/11/18	Bore Radius (mm):	62.5
Depth to GW (m-pvc):	7.568	Screen Interval (m):	5 – 11
Bore Depth (m-pvc):	11.20	Casing Radius (mm):	25
Depth to Product (m-pvc):	–	Cover Type (gatic/~~stick up~~):	
Product Thickness (m):	–	Bore Locked (YES/NO):	
		Key Type (if applicable):	Allen

Reference Info

Chem Kit Serial No.: 09K101342

Chem Kit Model: YSI Pro Plus

Corrected Redox: (Y) / N

(The correction to apply is probe dependent)

Parameter method: ☐ Downhole ☑ Retrieved

Decontamination

☐ Decontaminated
☐ Dedicated
☑ Disposable
☐ Other (specify)

Sampling Method

☑ Low Flow Pump rate: 10/20
Intake depth: 10.6
☐ Bailer ☐ Hydrasleeve
☐ Peristaltic Pump ☐ Waterra
☐ Other (specify)

Hydrasleeve Info

Hydrasleeve Size:	
Hydrasleeve Type:	
Sampling Depth (m-pvc):	
Hydrasleeve Install time:	
Sampling Start Time:	

Monitoring sequence followed (number in order):

Gauging
Hydrasleeve in
Hydrasleeve out
Parameters

Calculated bore volume (L): 7.76 ~~(including)~~ excludes bore annulus (circle)

purge volumes removed: 0

Total purged volume (L): 3.6

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
13:30	0	7.57	10/20	—	—	—	—	—	13:3 – water to system
13:33	0.6	7.57		6.04	20.4	6.51	41.4	30.4	no odour ; clear ; low turb
13:36	1.2	7.57		6.18	20.5	5.06	45.5	30.2	" " "
13:39	1.8	7.57		6.12	20.6	4.99	48.4	30.2	" " "
13:42	2.4	7.57		6.08	20.2	4.96	53.2	30.1	" " "
13:45	3.0	7.57		6.00	20.1	4.96	54.3	30.1	" " "
13:48	3.6	7.57	✓	6.05	20.1	4.96	55.6	30.1	" " "
				Sampled - End of Record					
		✓							
Acceptable Parameter Range:				± 10%	± 3%	(± 0.05)	(± 10 mV)	(± 0.2 °C)	±10% turbidity (if using a turbidity meter)

Analytes - Sample Bore

Field Filtered:

Unfiltered: PFAS Suite + trace

Bottles Collected

	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)
	x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic

QA/QC Information

QC1 – 181123

QC2 – 181123

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

BV (dry) = 2 × (11.20 – 7.57)

= 7.26L

Approval and Distribution

Fieldwork Staff Signature — Date: 23/11/18

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	RWHES MW06
Project Name:	Project SAM	Project Number:	60588844	PM Name:	James Peachey	Sample Date:	23/11/18
Client:	RTA Weipa	Project Location:	Weipa	Fieldwork Staff:	Luke McIver	~~Well Development or~~ Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 23/11/18	Bore Radius (mm): 62.5	Chem Kit Serial No.: 09K101342	☑ Decontaminated	☑ Low Flow Pump rate: 10 | 20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 8.835	Screen Interval (m): 4.5 - 10.5	Chem Kit Model: YSI Pro Plus	☑ Dedicated	Intake depth: 9.5	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 10.84	Casing Radius (mm): 75	Corrected Redox: Y / (N/A)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): –	Cover Type (~~gatic~~/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m): –	Bore Locked (~~YES~~/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable):	☑ Retrieved			:	
Calculated bore volume (L): 4	~~Includes~~/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L): 4.2		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
14:36	0	8.84	10 | 20	–	–	–	–	–	14:38 - water to surface.
14:39	0.6	8.84		5.20	16.1	5.31	9.6	31.8	No odour; clear; med turb.
14:42	1.2	8.84		4.41	21.4	4.95	31.4	31.0	" " "
14:45	1.8	8.84		4.72	21.4	4.89	38.8	30.8	" " "
14:48	2.4	8.84		4.75	20.9	4.89	44.7	30.5	" " "
14:51	3.0	8.84		4.80	20.6	4.82	47.3	30.3	" " "
14:54	3.6	8.84		4.90	20.4	4.80	47.8	30.4	" " "
14:57	4.2	8.84	↓	4.83	20.1	4.82	49.3	30.5	" " "
			- Sampled		- End of Record				
		✓							
Acceptable Parameter Range:				(± 10%)	(± 3%)	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected						QA/QC Information
Field Filtered:	Unfiltered: PFAS Suppt Hard	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		
		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic		

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

BV (avg) = 2 x (10.84 - 8.84)
= 4L

Approval and Distribution

Fieldwork Staff Signature — Date: 23/11/18 — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

ANZ

Q4AN(EV)-405-FM1

FQM - Groundwater Sampling and Purging Record

Project Name:	Project SAM	**Project Number:**	60588844	**PM Name:**	James Peachey	**Bore ID:**	TWHEG MW02
Client:	Weipa RTA	**Project Location:**	Weipa	**Fieldwork Staff:**	Luke McIver	**Sample Date:**	23/11/18

Well Development or Well Sampling Event? (circle)

General Bore Information

Date of GW Level:	23/11/18	Bore Radius (mm):	-
Depth to GW (m-pvc):	8.036	Screen Interval (m):	-
Bore Depth (m-pvc):	10.58	Casing Radius (mm):	25
Depth to Product (m-pvc):	-	Cover Type (gatic/stick up):	
Product Thickness (m):	-	Bore Locked (YES/NO):	
		Key Type (if applicable):	Key

Parameter Info

Chem Kit Serial No.: ORION(242)

Chem Kit Model: YSI Pro Plus

Corrected Redox: Y / (N)

(The correction to apply is probe dependent)

Parameter method: ☐ Downhole ☑ Retrieved

Decontamination

☑ Decontaminated

☑ Dedicated

☑ Disposable

☐ Other (specify)

Sampling Method

☑ Low Flow Pump rate: 10/20

Intake depth: 9.5

☐ Bailer ☐ Hydrasleeve

☐ Peristaltic Pump ☐ Waterra

☐ Other (specify)

Hydrasleeve Info

Hydrasleeve Size:	Monitoring sequence followed (number in order):
Hydrasleeve Type:	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve install time:	Hydrasleeve out
Sampling Start Time:	Parameters

Calculated bore volume (L): 5.1 Includes/excludes bore annulus (circle) # purge volumes removed: 0 Total purged volume (L): 3.0

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10/20									
15:26	0	8.04	10/20	-	-	-	-	-	Water to surface @ 15:27.
15:29	0.6	8.04	|	5.23	21.8	4.69	41.4	30.1	No odour, clear, low turb
15:32	1.2	8.04	|	5.22	21.8	4.69	43.0	30.0	" " "
15:35	1.8	8.04	|	5.28	21.8	4.69	47.0	30.0	" " "
15:38	2.4	8.04	|	5.29	21.8	4.69	49.2	29.9	" " "
15:41	3.0	8.04	↓	5.22	21.9	4.69	51.5	29.8	" " "
			— Sampled		End	of Record.			
		✓							
Acceptable Parameter Range:				±10%	±3%	±0.05	±10 mV	±0.2 °C	±10% turbidity (if using a turbidity meter)

Analytes Sampled for:

Field Filtered:

Unfiltered: PFAS SuperTrace

Bottles Collected

	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)
	x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic

QA/QC Information

Field Comments

Bore volume calculation, bore condition, fate of tubing, recox correction etc.

BV (dry) = 2 x (10.58 - 8.03)

= 5.1 L

Approval and Distribution

Fieldwork Staff Signature	23/11/18 Date	Checker Name and Signature	Date
Project Manager Signature	Date	Distribution: Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	Project SAM	**Project Number:**	60588844	**PM Name:**	James Peachey	**Bore ID:**	EWHER MW01
Client:	RTA Weipa	**Project Location:**	Weipa	**Fieldwork Staff:**	Luke McIver	**Sample Date:**	23/11/18
						~~Well Development~~ or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 23/11/18	Bore Radius (mm): -	Chem Kit Serial No.: 09K101342	☑ Decontaminated	☑ Low Flow Pump rate: 10/20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.730	Screen Interval (m): -	Chem Kit Model: YSI Pro Plus	☑ Dedicated	Intake depth: 9.0	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.75	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/~~stick up~~):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/~~NO~~):	**Parameter method:** ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Allen.	☑ Retrieved				Parameters
Calculated bore volume (L): 6.04	~~Includes~~/ excludes bore annulus (circle)	# purge volumes removed: 0		Total purged volume (L): 3.6		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
~~16:11~~	0	7.74	10/20	-	-	-	-	-	16:11 - water to surface
16:14	0.6	7.74	|	4.08	21.7	4.58	49.9	30.0	No odour; clear; low turb
16:17	1.2	7.74	|	4.07	21.7	4.58	49.5	29.8	" " "
16:20	1.8	7.74	|	4.06	21.6	4.59	50.9	29.8	" " "
16:23	2.4	7.74	|	3.90	21.4	4.60	53.1	29.4	" " "
16:26	3.0	7.74	|	3.91	21.4	4.60	53.1	29.4	" " "
16:29	3.6	7.74	✓	4.07	21.4	4.60	54.1	29.4	" " "
			Sampled - End of Record.						
		✓							
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	**Unfiltered:**								Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)			$BV_{(avg)} = 2 \times (10.75 - 7.73)$
	Supertrace	x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic			$= 6.04L$

Approval and Distribution

Fieldwork Staff Signature	23/11/18 Date	Checker Name and Signature	Date
Project Manager Signature	Date	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	LSI MW21
Project Name:	Project SAM	Project Number:	60588844	PM Name:	James Peachey	Sample Date:	24/11/18
Client:		Project Location:	Weipa	Fieldwork Staff:	Luke McIver	~~Well Development or~~ Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 24/11/18	Bore Radius (mm): 62.5	Chem Kit Serial No. 09K10F342	☑ Decontaminated	☑ Low Flow Pump rate: 10 | 20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 5.116	Screen Interval (m):	Chem Kit Model: HS1 P20 Plus	☐ Dedicated	Intake depth: 7.5	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 9.70	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): -	Cover Type ~~(gatic~~/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m): -	Bore Locked ~~(YES~~/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable):	☑ Retrieved				
Calculated bore volume (L): 9.16	~~Includes~~/ excludes bore annulus (circle)	# purge volumes removed: 0		Total purged volume (L): 5.4		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
17:17	0	5.12	10/20	-	-	-	-	-	17:18 - water to surface
17:20	0.6	5.12		2.27	171.7	5.51	-50.1	29.9	No odour; cloudy wh-pr; high turb.
17:23	1.2	5.12		2.33	155.5	5.42	-43.9	29.8	" " "
17:26	1.8	5.12		2.31	134.4	5.31	-38.9	29.8	" cloudy wh-clear; "
17:29	2.4	5.12		2.35	119.4	5.25	-36.8	29.8	" " " "
17:32	3.0	5.12		2.37	115.5	5.22	-34.1	29.7	" " " "
17:35	3.6	5.12		2.40	112.1	5.20	-31.2	29.7	" ; clear ; med-high turb
17:38	4.2	5.12		2.42	109.4	5.17	-29.2	29.7	" " "
17:41	4.8	5.12		2.51	107.7	5.15	-27.9	29.7	" " " med turb.
17:44	5.4	5.12		2.57	106.7	5.13	-26.5	29.7	
				Sampled - End of Record.					
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected					Additional Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic	BV (dry) = 2x(9.70 - 5.12)
	Super track							= 9.16L

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	24/11/18		

Project Manager Signature — Date

Distribution: Project Central File

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AECOM

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	~~Geogeng WTP~~ Project SAP	Project Number:	~~60538267~~ 60538314	PM Name:	~~Mick Davison~~ James Pe	Bore ID:	APD MW12
Client:	~~CGN Water~~ Veida RT	Project Location:	~~Geogeng WTP~~	Fieldwork Staff:	Luke McIver	Sample Date:	19/02/19
						~~Well Development~~ or Well Sampling Event? (circle)	

General Bore Information		Parameter Info		Decontamination		Sampling Method		Hydrasleeve Info	
Date of GW Level: 19/02/19	Bore ~~Radius~~ (mm): –	Chem Kit Serial No. JK160623		☑ Decontaminated		☑ Low Flow Pump rate: 125ml/m		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.823	Screen Interval (m): –	Chem Kit Model: 931 Pro Plus		☐ Dedicated		Intake depth: 9.5		Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 9.98	Casing ~~Radius~~ (mm): 50	Corrected Redox: Y / (N)		☐ Disposable		☐ Bailer ☐ Hydrasleeve		Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): –	Cover Type (~~gatic~~/stick up):	(The correction to apply is probe dependent)		☐ Other (specify)		☐ Peristaltic Pump ☐ Waterra		Hydrasleeve install time:	Hydrasleeve out
Product Thickness (m): –	Bore Locked (YES/~~NO~~):	Parameter method: ☐ Downhole				☐ Other (specify)		Sampling Start Time:	Parameters
	Key Type (if applicable):	☑ Retrieved							
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:				Total purged volume (L):			

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10/10									
11:50	0	7.87	~~250~~ml	–	–	–	–	–	12:51 - fluid to surface
12:53	0.7	7.87		5.90	79.2	8.27	32.6	32.2	No odour, brown, high turb.
12:56	1.4	7.87		5.84	59.6	6.97	92.2	31.7	" " "
12:59	2.0	7.87		4.84	49.4	6.12	110.3	31.3	" " "
13:02	2.7	7.87		4.88	39.3	5.68	123.6	31.0	" " "
13:05	3.4	7.87		4.90	39.2	5.32	131.6	31.0	" " "
13:08	4.0	7.87		4.90	37.7	5.21	132.5	31.0	" " "
13:11	4.7	7.87	↓	4.84	36.7	5.10	139.4	31.0	" " med turb.
		Sampled - End of Record							
Acceptable Parameter Range:				(± 10%)	(± 5%)	±0.05	(± 15 mV)	(±0.2 °C)	± 10% turbidity (if using a turbidity meter)

Analytes Sampled For:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QC300_190219 (pump)	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
–	PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		SWL (dry) = (9.98 - 7.87) x 2.
		1	x 250 PFAS						= 4.22

Approval and Distribution

Fieldwork Staff Signature — Date: 19/02/19. — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project SAM

Project Name:	~~Seleconin 21 PFAS~~	Project Number:	~~60532072~~ 60588844	PM Name:	~~Rick Davison~~ J. Roche	Bore ID:	~~MW~~ MW5
Client:	~~SLR~~ Werribee RIA	Project Location:	Werribee	Fieldwork Staff:	LM/~~AF~~ ALF	Sample Date:	19/02/19
						~~Well Development or~~ Well Sampling Event? (circle)	

Groundwater Parameter Information		Equipment Information		Sample Information		Purge/Sampling Info	
Date of GW Level: 19/02/19	Bore Radius (mm): -	Chem Kit Serial No.: 19A0067223	☑ Decontaminated	☑ Low Flow Pump rate: 225ml/m		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.015	Screen Interval (m): -	Chem Kit Model: YSI ProPlus	☑ Dedicated	Intake depth: 9.78		Hydrasleeve Type:	
Bore Depth (m-pvc): 11.90	Casing ~~Radius~~ (mm): 50	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailor ☐ Hydrasleeve		Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (~~gatic~~/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra		Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (~~YES~~/NO):	Parameter method: ☐ Downhole		☐ Other (specify)		Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): -	☑ Retrieved					Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):			

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (~~ppm or~~ mg/L)	E.C. (~~mS/cm or~~ µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
14:15	0	7.02	225ml/m	-	-	-	-	-	14:15 - Fluid to surface.
14:18	0.7	7.02		4.48	45.6	4.95	161.6	31.9	No odour; clear med turb.
14:21	1.4	7.02		3.96	45.8	4.63	179.4	31.8	" " "
14:24	2.0	7.02		4.85	46.2	4.58	182.4	32.3	" " "
14:27	2.7	7.02		4.61	45.8	4.56	183.6	32.3	" " "
14:30	3.4	7.02		4.57	43.6	4.54	182.5	31.8	" " "
14:33	4.0	7.02		4.55	43.0	4.50	183.7	31.6	" " "
14:36	4.7	7.02	↓	4.53	42.6	4.50	183.1	31.5	" " "
		Sampled - End of Record							
Acceptable Parameter Range:				± 10%	±3%	±0.05	±10 mV	± 0.2 °C	±10% turbidity (if using a turbidity meter)

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Analytes Sampled for:		Bottles Collected:						Observations	Field Remarks
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
-	PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		BV (avg) = (11.90 - 7.02) x 2.
		1	x250 PFAS						= 9.8L.
									Waterra tubing in well on arrival.

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
Project Manager Signature	Date	Distribution: Project Central File	

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project SAM

Project Name:	~~Belconnen 21 PFAS~~	Project Number:	~~60562072~~ 605382.14	PM Name:	~~Dion Davison~~ James Pa	Bore ID:	ELS mw21
Client:	~~SLR~~ Weipa RTA	Project Location:	W2409	Fieldwork Staff:	LM/~~AF~~	Sample Date:	19/02/19
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 19/02/19	Bore ~~Radius~~ (mm): -	Chem Kit Serial No.: 15K1006123	☑ Decontaminated	☑ Low Flow Pump rate: 225ml/m	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 3.95	Screen Interval (m): -	Chem Kit Model: YSI Pro Plus	☑ Dedicated	Intake depth: 7.41	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc): 8.77	Casing ~~Radius~~ (mm): 50	Corrected Redox: Y / ~~N~~	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc): -	Cover Type (gatic/~~stick up~~):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve out
Product Thickness (m): -	Bore Locked (YES/~~NO~~):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable): Ryans	☑ Retrieved				
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (~~ppm or~~ mg/L)	E.C. (~~mS/cm or~~ µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
16:16	0	3.95	225ml/m	-	-	-	-	-	16:11 - fluid to surface.
16:13	0.68	3.95		2.01	164.9	4.77	155.5	31.8	No odour ; milky brown, high turb
16:16	1.4	3.95		2.11	156.6	4.73	159.1	30.9	" " "
16:19	2.0	3.95		1.95	151.7	4.73	159.0	30.8	" " "
16:22	2.7	3.95		1.84	144.4	4.76	157.6	30.7	" " "
16:25	3.4	3.95		1.80	138.8	4.77	156.7	30.7	" ; clear "
16:28	4.0	3.95	↓	1.82	131.9	4.74	157.5	30.6	" " "
			Sampled - End of Record.						
Acceptable Parameter Range:				±10%	±3%	±0.05	±10 mV	±0.2 °C	± 10% turbidity (if using a turbidity meter)

6/20

Analytes Sampled for:		Bottles Collected:						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
-	PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Bv (dry) = (8.77 - 3.96) x 2.
		1	x 125 PFAS						= 9.6L
									Waterra tubing in well on arrival

Approval and Distribution

Fieldwork Staff Signature — Date: 19/02/19

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

FQM - Groundwater Sampling and Purging Record

Project SAM — Jeremy Foote

Project Name: ~~Sebastian 2 PFAS~~		Project Number: ~~60532872~~ 60582440		PM Name: ~~Nick Dawson~~		Bore ID:	BLL MW28
Client: ~~SLA~~ NOHA RTA		Project Location:	WA	Fieldwork Staff: LM/~~AF~~		Sample Date:	19/02/19
						Well Development or Well Sampling Event? (circle)	

General Bore Information

Date of GW Level: 19/02/19	Bore Radius (mm): –	Chem Kit Serial No.:	
Depth to GW (m-pvc): 4.116	Screen Interval (m): –	Chem Kit Model: YSI Pro Plus	
Bore Depth (m-pvc): 6.85	Casing ~~Radius~~ (mm): 50	**Corrected Redox:** Y / (N)	
Depth to Product (m-pvc): –	Cover Type (~~gatic~~/stick up):	(The correction to apply is probe dependent)	
Product Thickness (m): –	Bore Locked ~~(YES~~/NO):	**Parameter method:** ☐ Downhole ☑ Retrieved	
	Key Type (if applicable): –		

Decontamination

- ☑ Decontaminated
- ☑ Dedicated
- ☑ Disposable
- ☐ Other (specify)

Sampling Method

- ☑ **Low Flow** Pump rate:
- Intake depth:
- ☐ Bailer ☐ Hydrasleeve
- ☐ Peristaltic Pump ☐ Waterra
- ☐ Other (specify)

Hydrasleeve (if used)

Hydrasleeve Size:	**Monitoring sequence followed (number in order):**
Hydrasleeve Type:	Gauging
Sampling Depth (m-pvc):	Hydrasleeve in
Hydrasleeve Install time:	Hydrasleeve out
Sampling Start Time:	Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water quality parameters

Time	Cumulative Vol Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
		# Blocked @ 0.8m below stickup							
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for

Field Filtered: | **Unfiltered:**

Bottles collected

x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)
x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic

Equipment Information

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Approval and Distribution

Fieldwork Staff Signature | Date: 19/02/19. | Checker Name and Signature | Date

Project Manager Signature | Date

Distribution: Project Central File

A: DM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	MB18
Project Name:	Project 2019	Project Number:	605588644	PM Name:	J. Peachey	Sample Date:	21/2/19
Client:	ENAL	Project Location:	Evans Head + north	Fieldwork Staff:	L. Mueller	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level: 21-2-19	Bore Radius (mm): 25	Chem Kit Serial No.: YSI PRO PLUS	☑ Decontaminated	☑ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 3.679	Screen Interval (m):	Chem Kit Model: 12D/01323	☐ Dedicated	Intake depth: 5m	Hydrasleeve Type:	
Bore Depth (m-pvc): 6.23	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Padlock	☑ Retrieved		BLADDER		Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1228	0.75	3.72	15.25	5.73	131.9	5.67	-25.1	29.1	Clear, no odour
1231	1.25	3.73	"	5.25	122.3	5.64	-20.6	29.0	" "
1234	2.00	3.73	"	4.87	119.6	5.61	-17.7	29.0	" "
1237	3.00	3.73	"	4.50	114.4	5.59	-15.6	28.9	" "
1240	4.00	3.73	"	4.09	111.2	5.55	-12.3	28.9	" "
1243	5.00	3.73	"	4.08	104.3	5.57	-10.1	28.9	" "
SAMPLED									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x PFAS 250 mL	x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic			Start time 1225 WL 3.73
									End time 1247 WL 3.73

Approval and Distribution

Fieldwork Staff Signature — Date: 21/2/19

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	MB13
Project Name:	Project Sam	Project Number:	60588544	PM Name:	J. Peachey	Sample Date:	21-2-19
Client:	RTAW	Project Location:	Eveleigh, Leach	Fieldwork Staff:	C. Mivelle	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 21-2-19	Bore Radius (mm): 25mm	Chem Kit Serial No.: YSI PCaPlus	☐ Decontaminated	☑ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 2.003	Screen Interval (m): -	Chem Kit Model: 12D10323	☑ Dedicated	Intake depth: 4.00	Hydrasleeve Type:	
Bore Depth (m-pvc): 6.07	Casing Radius (mm): 25mm	Corrected Redox: Y (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Padlock	☑ Retrieved				Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate 20:15	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1009	0.25	2.00	[illegible]	-	82.9	3.36	41.4	31.4	DO probe not ready.
1012	1.00	2.00	"	1.73	74.3	5.11	42.3	30.4	Clear, no odour
1015	1.50	2.00	"	1.86	63.2	5.12	46.7	30.4	" "
1018	2.00	2.00	"	2.03	59.2	5.12	45.3	30.4	" "
1021	2.50	2.00	"	1.89	57.2	5.12	51.6	30.4	" "
1024	3.00	2.00	"	1.89	62.8	5.12	51.5	30.4	
1027	SAMPLED.								
Acceptable Parameter Range:			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected:						Chain of Custody Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x250mL READ.		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Start time - 1008 WL - 1.998. DO Probe not ready. End time - 1027 WL - 2.00

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	21-2-19		

Project Manager Signature	Date	Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	~~MB1~~ MB5
Project Name:	Project Sam	Project Number:	60558844	PM Name:	J. Reilley	Sample Date:	22-02-2019
Client:	RTAW	Project Location:	EVANS LANDING LANDFILL	Fieldwork Staff:	C. MILLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 22-2-19	Bore Radius (mm): 25	Chem Kit Serial No.: 12D101523	☒ Decontaminated	☒ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): ~~2.02~~	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 4.5	Hydrasleeve Type:	
Bore Depth (m-pvc): ~~6.30~~	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☒ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☒ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Ranlock	☒ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0735	0.25	2.02	10.25	5.98	58.0	5.85	-64.2	28.3	
0738	1.00	2.02	"	3.19	54.3	5.20	-32.2	28.3	Clear, no odour
0741	2.00	2.02	"	3.19	54.3	4.95	-18.8	28.3	" "
0744	3.00	2.02	"	3.11	54.3	4.88	-19.2	28.3	" "
0747	4.00	2.02	"	3.15	54.3	4.89	-19.4	28.3	" "
0750	5.00	2.02	"	2.84	54.3	4.87	-19.8	28.3	" "
SAMPLED									
Acceptable Parameter Range:			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QC104	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x250mL PFAS.		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	QC204	Start time 0734 WL 2.02
									End time 0757 WL 2.02.

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
21-2-19			
Project Manager Signature	**Date**	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	MB5
Project Name:	60588544	Project Number:	PROJECT SAM	PM Name:	J. PEACHEY	Sample Date:	21-2-2019
Client:	RTA2	Project Location:		Fieldwork Staff:	C. MUELLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 21-2-2019	Bore Radius (mm): 25	Chem Kit Serial No.: 12D10323	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 2.75	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 4.5	Hydrasleeve Type:	
Bore Depth (m-pvc): 6.15	Casing Radius (mm): 75	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Medium	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L)		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
	BORE OBSTRUCTED - UNABLE TO GET PUMP BELOW 3.5m bTOC								
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles collected						PACE Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Start time WL
									End time WL

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
Project Manager Signature	Date	Distribution: Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	MB7
Project Name:	PROJECT SAM	Project Number:	60555544	PM Name:	J. Peachey	Sample Date:	21-2-2019
Client:	RTIO	Project Location:	Evans Lookout Road	Fieldwork Staff:	C Jakeman	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 21-2-2019	Bore Radius (mm): 25	Chem Kit Serial No.: LD1611323	☑ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 2.559	Screen Interval (m):	Chem Kit Model: YSI PROPLUS	☐ Dedicated	Intake depth: 5.5.	Hydrasleeve Type:	
Bore Depth (m-pvc): 6.40	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☒ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): Padlock	☒ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1322	0.25	2.91	10.25	3.25	199.5	4.89	44.1	31.6	Clear, no odour
1325	1.00	2.91	10.25	3.02	197.2	4.81	57.3	31.3	" "
1328	2.00	2.91	"	2.93	196.9	4.76	79.4	31.3	
1331	3.00	2.91	"	2.87	196.4	4.75	83.7	31.3	" "
1334	4.00	2.91	"	3.01	195.6	4.75	83.5	31.3	" "
1337	5.00	2.91	"	3.15	195.3	4.73	81.6	31.3	" "
SAMPLED									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles collected:						QA/QC Information:	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x PFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Start WL - 2.91 Time 1320
									End WL Time.

Approval and Distribution

Fieldwork Staff Signature — Date: 21-2-2019

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	Pre-fire scan	**Project Number:**	60555044	**PM Name:**	J Peachey
Client:	ATAW	**Project Location:**	Evans K, L, M & AKA	**Fieldwork Staff:**	A. McElle

Bore ID: 085
Sample Date: 21-2-19
Well Development or Well Sampling Event? (circle)

General Bore Information		Parameter(s)	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 21-2-19	Bore Radius (mm): 25	Chem Kit Serial No.: VSI QUICK PLUS	DT Decontaminated	Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 2.297	Screen Interval (m):	Chem Kit Model: 120 10 222	DE Dedicated	Intake depth: 4m	Hydrasleeve Type:	
Bore Depth (m-pvc): 6.310	Casing Radius (mm): 25	Corrected Redox: Y / (N)	DI Disposable	BA Bailer HS Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): -	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	DO Other (specify)	PP Peristaltic Pump WA Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): -	Bore Locked (YES/NO):	Parameter method: DH Downhole		OT Other (specify) RUNNER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): 22 mm	DT Retrieved				Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1119	0.25	2.33	10.25	0.23	81.3	6.00	-20.6	31.0	Clear, no odour.
1122	1.00	2.33	"	0.29	92.3	6.00	-20.5	30.8	"
1125	2.00	2.33	"	0.23	80.2	5.97	-16.0	30.8	"
1128	3.00	2.32	"	0.25	84.6	6.00	-17.9	30.8	"
1131	4.00	2.33	"	0.24	92.4	6.02	-20.4	30.9	"
1134	5.00	2.33	"	0.21	98.2	6.02	-22.6	31.0	
SAMPLED									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QC 103	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1x 250mL PFAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	QC 104	Start time: 1118 WL: 2.33
									End time: 1140 WL: 2.33

Approval and Distribution

Fieldwork Staff Signature — 21-2-19 Date — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

7300 ppm

A: JM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	Pro Iron 3.0m	**Project Number:**	60558441	**PM Name:**	J. Peachey	**Bore ID:**	MW33 LPW -
Client:	RTIO	**Project Location:**	Weipa Iron Ore Lease	**Fieldwork Staff:**	L. Mueller	**Sample Date:**	22-2-19
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 22-2-19.	Bore Radius (mm): 75	Chem Kit Serial No.: 120101223	☐ Decontaminated	☑ Low Flow Pump rate: 15.20	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.84/7.46	Screen Interval (m):	Chem Kit Model: YSI PROPLUS	☐ Dedicated	Intake depth 8.5	Hydrasleeve Type:	
Bore Depth (m-pvc): 10.98/12.32	Casing Radius (mm): 75	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved		RL PUMP		Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1655	0.25	7.47	15 20	3.45	78.5	5.51	-82.7	30.0	clear, no odour.
1702	1.00	7.47	"	3.10	76.7	5.20	-61.7	29.7	"
1705	2.00	7.47	"	3.13	75.7	5.04	-61.2	29.6	"
1708	3.00	7.47	"	3.40	75.3	5.04	-56.1	29.6	"
1711	4.00	7.47	"	3.38	75.2	5.04	-57.1	29.5	"
1714	5.00	7.47	"	3.20	75.0	5.05	-56.1	29.5	"
1717	6.00	7.47	"	3.44	74.8	5.05	-54.6	29.5	"
SAMPLED.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	Q4302	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	VTAS		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Start Time: 1655
	250 mL								WL: 7.47
									End Time:
									WL:

Approval and Distribution

Fieldwork Staff Signature — Date: 22-2-19 — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

Pump won't make below this 30kPa - instructions

AE JM

Q4AN(EV)-405-FM1

						Bore ID:	ALF MW62
Project Name:	PROJECT SAM	Project Number:	605555744	PM Name:	J PLANCHE	Sample Date:	22-2-19
Client:	RTAN	Project Location:	AIRPORT	Fieldwork Staff:	C MILLER	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 22-2-19	Bore Radius (mm): 25	Chem Kit Serial No.: 1200313	☐ Decontaminated	☑ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 7.714	Screen Interval (m):	Chem Kit Model: YSI PROPLUS	☐ Dedicated	Intake depth: 8.5	Hydrasleeve Type:	
Bore Depth (m-pvc): 9.36	Casing Radius (mm): 25	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): —	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): —	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): —	☑ Retrieved		BLADDER		Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
1306	0.75	7.75	15.20	5.24	106.9	5.46	-66.6	31.6	
1309	1.00	"	"	5.24	104.9	5.32	-68.2	30.6	turbid, white, no odour.
1312	2.00	"	"	5.67	105.7	5.35	-51.1	30.0	" "
1315	3.00	"	"	5.48	108.9	5.32	-91.1	30.0	" "
1318	4.00	"	"	4.88	111.6	5.38	-94.2	30.2	Clearing.
1321	5.00	"	"	5.10	113.9	5.82	-94.5	30.0	"
1324	6.00	"	"	5.19	114.8	5.85	-96.4	29.9	"
1327	7.00	"	"	5.00	117.5	5.87	-97.4	30.0	"
1330	8.00	"	"	5.44	120.4	5.91	-98.5	30.0	Cleared.
1333	9.00	"	"	5.51	122.6	5.90	-100.4	30.0	"
SAMPLED.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled For		Bottles Collected						Basics Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	1xPFAS 250mL		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		Start time 1304 pH 7.75
									End time 1337 pH 7.75

Approval and Distribution

Fieldwork Staff Signature	Date	Checker Name and Signature	Date
	22/2/19		
Project Manager Signature	**Date**	**Distribution:** Project Central File	

ANZ

FQM - Groundwater Sampling and Purging Record

AE DM

Q4AN(EV)-405-FM1

Project Name:	PKO KCL SAMP	**Project Number:**	605553944	**PM Name:**	J PEACHEY	**Bore ID:**	ELS MW25
Client:	KTAN	**Project Location:**	EVANS LANDING	**Fieldwork Staff:**	G. MUELLER	**Sample Date:**	22-2-19

Well Development or Well Sampling Event? (circle)

General Bore Information		Parameter Info	Decontamination	Sampling Method	Hydrasleeve Info	
Date of GW Level: 22.2.19	Bore Radius (mm): 25	Chem Kit Serial No.: 20191323	☒ Decontaminated	☒ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc): 1.899	Screen Interval (m):	Chem Kit Model: YSI PRO PLUS	☐ Dedicated	Intake depth: 3m.	Hydrasleeve Type:	
Bore Depth (m-pvc): 4.310	Casing Radius (mm): 25	**Corrected Redox:** Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc): –	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m): –	Bore Locked (YES/NO):	**Parameter method:** ☐ Downhole		☒ Other (specify) BLADDER	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable): –	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
0853	0.5	1.23	0.25	2.16	422.4	5.02	-30.9	31.1	Clear, no odour.
0856	1.5	1.23	"	2.42	418.1	5.02	-23.2	31.1	" "
0901	2.50	1.23	"	2.13	418.3	5.02	-22.6	31.2	" "
0904	3.50	1.23	"	2.48	418.7	5.02	-23.6	31.2	" "
0907	4.50	1.23	"	2.03	419.0	5.02	-23.8	31.2	" "
SAMPLED.									
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)			Bore volume calculation, bore condition, fate of tubing, redox correction etc:
	1x 250mL PFAS	x 40 mL Vial (H_2SO_4)		x 100 mL Amber	1	x 250 mL Plastic			Start WL 1.23 (top of gatic) time. 0853. End WL 1.23 time 0911

Approval and Distribution

Fieldwork Staff Signature — Date: 22/2/19. — Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

ANZ Surface Water

FQM - ~~Sediment~~ Sampling Record

Q4AN(EV)-301-FM1

Project Name:	Project Sam	Project Number:	605888	PM Name:	C. Jarosh	Sample Date:	21.11.18
Client:	RTIO	Project Location	Weipa	Fieldwork Staff:	C. Mueller	Page	of

Sampling Information			
Sample Method:		Weather Conditions AM:	Fine 31.1°C
Geo Ref. Sys.:		Weather Conditions PM:	
Comments:			

Tide Information				
Tide	Time	Height	Time	Height
High Tide				
Low Tide				

Sampling Information

Sample Location	Time	Latitude	Longitude	Sample ID	~~Water Depth~~ Tide	Sample depth (m bgl)	Type, colour/mottling, plasticity/particle size, secondary/minor components	Biota	Shell Presence	Organic Content	Odour	Other Comments (e.g. foreign material, veneers, strata, biota)
								EC	pH	ORP	DO	Temp
EMB/EV/OSB	0855				low			62657	6.65	11.1	4.17	30.3
EMB/EV/OSX	0905	-12.6665	141.8442		low			63072	7.74	-22.8	3.53	29.8
EMB/EV/OSA	0924	-12.6658	141.85[illegible]		low			63818	8.22	-37.7	3.74	30.2
EMB/EV/NSA	0931				low			63607	8.26	-41.4	3.36	30.1
EMB/LP/OSX	0943	-12.6694	141.8615		low			64468	8.26	-44.6	2.99	30.4
EMB/LP/OSB	0952	-12.6727	141.8588		low			64580	8.27	-49.8	3.00	30.1
EMB/LP/OSA	1005	-12.6755	141.8741		low			64199	8.25	-50.5	3.12	30.2
								61605	8.14	-69.9	4.89	33.3
EMB/EV/NSA	1541	-12.6647	141.8502		high							
EMB/EV/OSA	1546	-12.6633	141.8506		"			63994	8.32	-63.2	4.54	30.9
EMB/LP/OSA		-12.6756	141.8743		"			64555	8.31	-62.5	3.90	31.0
EMB/LP/OSB	1601	-12.6727	141.8587		"			64537	8.34	-64.5	4.11	30.5
EMB/LP/OSX	1614	-12.6655	141.8617		"			63175	8.36	-62.5	3.89	30.4
EMB/EV/OSB	1623	-12.6655	141.8476		"			63106	8.36	-63.3	4.51	30.4
EMB/EV/OSC	1631	-12.6662	141.8447		"			63254	8.37	-64.0	3.66	30.5

Approval and Distribution

Fieldwork Staff Signature — Date — Project Manager Signature — Date

Distribution: Project Central File

clear

AECOM

980;#Australia and New Zealand|697d86cf-fe11-442d-88ec-d49b1fe3f92a

Surface Water Field Sheet

Q4AN(EV)-332-FM57

Client: Weipa RTA **Project No:** 60588844 **Sampled by:** Luke McIver

Date collected: 23/02/2019 **Collection Start Time:** 07:30 **Collection Stop Time:** 16:00

Site	Time	Flow	Colour	Odour	Turbidity	pH	EC (µS/cm)	Temp (°C)	Total Cl (mg/L)	Free Cl (mg/L)	Bottles	Comments
EMB/LP/NSA_high	07:42	High	brown	nil	high	7.00	37559	29.5	80.2	4.04	PFAS x2	
EMB/LP/NSB_high	08:02	high	brown	nil	high	7.59	40572	30.6	46.5	3.59	"	
EMB/LP/NSC_high	08:20	high	clear	nil	high	8.00	42414	31.2	32.3	4.18	"	
EMB/EV/NSA_high	08:40	high	clear cloudy wh	Nil	high	7.99	41198	31.1	28.0	3.34	"	
EMB/EV/NSB_High	09:02	high	clear cloudy wh	Nil	high	7.98	41020	31.3	28.6	5.92	"	QA/QC 3
EMB/EV/NSC_High	09:20	high	clear cloudy wh	Nil	high	8.11	41883	31.4	26.2	6.12	"	
EMB/LP/NSA_low	14:17	low	clear cloudy	Nil	high	8.30	38106	32.6	23.1	7.52	"	
EMB/LP/NSB_low	14:35	low	brown cloudy	Nil	high	8.05	35716	33.1	18.0	6.96	"	
EMB/LP/NSC_low	14:51	low	brown cloudy	Nil	high	8.11	36179	33.1	18.1	6.80	"	
EMB/EV/NSA_low	15:04	low	brown cloudy	Nil	high	8.08	37163	32.4	28.4	6.74	"	
EMB/EV/NSB_low	15:19	low	brown cloudy	Nil	high	8.09	38335	32.5	28.6	6.80	"	
EMB/EV/NSC_low	15:27	low	brown cloudy	Nil	high	8.18	39300	33.0	29.1	7.32	"	QA/QC 3
			End of Record									

Turbidity: C – Clear and not turbid, ST – Slightly Turbid T – Turbid VT – Very Turbid

AECOM

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Surface Water Field Sheet

Q4AN(EV)-332-FM57

Client: RTAW **Project No:** 60588844 **Sampled by:** G. Mueller, L. McIver

Date collected: 19-2-19. **Collection Start Time:** **Collection Stop Time:**

Site	Time	Flow	Colour	Odour	~~Turbidity~~ ORP (mV)	pH	EC (µS/cm)	Temp (°C)	~~Total Cl (mg/L)~~ DO (mg/L)	Free Cl (mg/L)	Bottles	Comments
SW/BEN/DOS	0812		light brown	N/A	34.4	7.76	3870	28.1	6.22		1x 8FAS	
PR/EWM/WP	0910		red brown	—	28.2	7.33	166.9	29.1	5.30		" "	Slight HC odour
PR/EWM/WP/DOS	0921		L. brown	—	[illegible]	6.53	72.2	27.0	0.75		" "	
PR/AMD/DOS	0747		red brown		-33.5	6.10	282.x	29.2	4.15		" "	Slight S odour.
EMB/EV/OSA-High	0734				191.4	6.29	2309	29.4	4.35	-12.665	3, 141.8499	
EMB/EV/OSB-High	0739				136.6	7.33	2184	30.0	—	-12.6657, 141.8477		
EMB/EV/OSC-High	0743				116.2	7.66	374.8	30.3	4.30	-12.665, 141.8452		
EMB/LP/OSC-High	0749				103.1	7.80	213.4	30.2	3.68	-12.6658, 141.8625		
EMB/LP/OSB-High	0756				96.1	7.85	155.8	30.3	4.82	-12.6731, 141.8682		
EMB/LP/OSA-High	0800				88.4	7.85	158.5	29.9	—	-12.6766, 141.8737		
EMB/EV/OSA-Low	1346				77.1	7.07	39203	32.6	4.59			
EMB/EV/OSB-Low	1351				67.1	7.53	39000	31.6	4.94			
EMB/EV/OSC_Low	1355				65.3	7.74	39058	31.5	4.65			
EMB/LP/OSC_Low	1401				64.3	7.79	38331	31.6	5.11			
EMB/LP/OSB_Low	1410				64.5	7.81	37829	21.7	4.32			
EMB/LP/OSA-Low	1416				67.0	7.82	36837	31.4	4.44			

QC 107 & 207

Turbidity: C – Clear and not turbid. ST – Slightly Turbid T – Turbid VT – Very Turbid

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Surface Water Field Sheet

Q4AN(EV)-332-FM57

Client: Weipa RTA **Project No:** 60588844 **Sampled by:** Luke McNee.

Date collected: Multiple **Collection Start Time:** **Collection Stop Time:**

Site	Time	Flow	Colour	Odour	Turbidity	pH	EC (µS/cm)	Temp (°C)	~~Total~~ Cl ORP (mg/L)	~~Free Cl~~ (mg/L) DO	Bottles	Comments
SW/BEN/MD	09:50	Slow	br/rd	No odour	high	6.17	447.1	29.4	90.9	1.44	PFAS	-12.688931/141.923680
		Sed sample		Sandy Clay; brown high OC & SR red gravels. 10cm below WL								
SW/BEN/UPS	10:22	med	clear	No odour	Low	5.03	32.1	29.0	155.2	2.90	PFAS	-12.680303/141.942944
		Sed sample		Clay; red; some OC.								10 cm below WL
PR/AND/WS/DOS	16:49	None	br/rd	mn/HC	high	6.23	334.8	34.8	-16.3	0.73	PFAS	-12.542362/141.830281
		Sed sample		Clay; red; some OC								
		End of Record.										

Turbidity: C – Clear and not turbid, ST – Slightly Turbid T – Turbid VT – Very Turbid

ANZ

FQM - Sediment Sampling Record

Q4AN(EV)-301-FM1

Project Name:	50m	**Project Number:**	60558544	**PM Name:**	J. Peachey	**Sample Date:**	22/11/16
Client:	RTAW	**Project Location:**	RTAW	**Fieldwork Staff:**	C. Mueller	**Page**	of

General Information			
Sample Method:		**Weather Conditions AM:**	
Geo Ref. Sys.:		**Weather Conditions PM:**	
Comments:			

Tide Information

Tide	Time	Height	Time	Height
High Tide				
Low Tide				

Sampling Information

EC pH ORP DO

Sample Location	Time	Latitude	Longitude	Sample ID	Water Depth	Sample depth (m bgl)	Type, colour/mottling, plasticity/particle size, secondary/minor components	Biota °C	Shell Presence	Organic Content	Odour	Other Comments (e.g. foreign material, veneers, strata, biota)
AHEQ	0841			BR/AND/INS			Qc 114-214	30.7	1043	6.29	-251.5	0.27
AHEQ	08			BR/AND/INS/DOS								

Approval and Distribution

Fieldwork Staff Signature _____ Date _____ Project Manager Signature _____ Date _____

Distribution: Project Central File

ANZ

FQM - Sediment Sampling Record

AECOM

Q4AN(EV)-301-FM1

Project Name:	Project SAM	Project Number:	60588844	PM Name:	James Peachey	Sample Date:	23/02/19
Client:	Weipa RTA	Project Location	Weipa	Fieldwork Staff:	Luke Marel	Page	1 of 1

Sample Information			
Sample Method:	Pole	Weather Conditions AM:	
Geo Ref. Sys.:		Weather Conditions PM:	Cloudy
Comments:			

Tide Information				
Tide	Time	Height	Time	Height
High Tide	8:42AM	2.6m		
Low Tide	2:14 PM	0.9m		

Sample Location	Time	Latitude	Longitude	Sample ID	Water Depth	Sample depth (m bgl)	Type, colour/mottling, plasticity/particle size, secondary/minor components	Biota	Shell Presence	Organic Content	Odour	Other Comments (e.g. foreign material, veneers, strata, biota)
EMB/LP/NSA	07:42	-12.673144	141.872973	EMB/LP/NSA	High	10cm	0	Sandy GRAVEL, rd; round	-	-	-	Nil	
EMB/LP/NSB	08:02	-12.669391	141.867835	EMB/LP/NSB	High	10cm	5cm	Gravelly SAND, white, m-c	-	-	-	Nil	
EMB/LP/NSC	08:20	-12.666467	141.861694	EMB/LP/NSC	High	10cm	5cm	Gravelly SAND, white, m-c	-	-	-	Nil	Duplicate layer of P
EMB/EV/NSA	08:40	-12.661353	141.850141	EMB/EV/NSA	High	10cm	0	Gravelly SAND, wh-gy, m-c	-	-	-	Nil	"
EMB/EV/NSB	09:02	-12.6649005	141.847259	EMB/EV/NSB	High	10cm	5cm	Gravelly SAND, gn-brn, m-c	-	✓	-	Nil	"
EMB/EV/NSC	09:26	-12.6657269	141.844515	EMB/EV/NSC	High	10cm	5cm	Gravelly SAND, grn, m-c	-	✓	-	Nil	QC105 & QC106
EMB/ES/NSA	14:17			EMB/ES/NSA	High	10cm	0	Sandy GRAVEL, rd; boulders	-	-	-	Nil, Pk	
			End of Record										

Approval and Distribution			
Fieldwork Staff Signature	23/02/19 Date	Project Manager Signature	Date
Distribution: Project Central File			

ANZ

FQM - Sediment Sampling Record

Q4AN(EV)-301-FM1

Project Name:	PROJECT SAM	**Project Number:**	605888 44	**PM Name:**	J. PEACHEY	**Sample Date:**	14-2-19
Client:	RTAW	**Project Location**	Weipa.	**Fieldwork Staff:**	C. MUELLER L MCIVER	Page	of

General Information

Sample Method:		**Weather Conditions AM:**	19° - Fine.
Geo Ref. Sys.:	Google Maps	**Weather Conditions PM:**	
Comments:			

Tide Information

Tide	Time	Height	Time	Height
High Tide				
Low Tide				

Sample Information

Sample Location	Time	Latitude	Longitude	Sample ID	Water Depth (M)	Sample depth (m bgl)	Type, colour/mottling, plasticity/particle size, secondary/minor components	Biota	Shell Presence	Organic Content	Odour	Other Comments (e.g. foreign material, veneers, strata, biota)
SW/BEN/DUP	0812	-12.706157	141.913256	SW/BEN/DUP	0.10	0.10	Gravel, rounded/Sandy	-	-	-	-	
PR/EWM/02	0844	-12.6663	141.9351	PR/EWM/02	-	0.10	Gravelly Clay some sand	-	-	some	-	leaf litter.
PR/BEN/MW9	0910	-12.6664	141.9354	PR/EWM/MW9	0.10	0.10	Clayey Sand	-	-	-	Yes -	H/C/Sulfur.
PR/EWM/MW10	0910921	-12.6647	141.9350	PR/EWM/MW10	DUP 0.05	0.10	Silty Clay, some sand	-	-	-	N/A	

Approval and Distribution

Fieldwork Staff Signature — Date — Project Manager Signature — Date

Distribution: Project Central File

Gas Detection Air Sampling & Monitoring Environmental & Water Quality Monitoring

airmet

Air-Met Scientific Pty Ltd

ABN 73 006 849 949

Ph 1300 137 067

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus

Serial No. 09K101342

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
	Seal	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. Conductivity	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper	✓	
	Settings	✓	
Software	Version	✓	
Data logger	Operation	✓	
Download	Operation	✓	
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00	NIST	320613	pH 7.00
2. pH 4.00		pH 4.00	NIST	307927	pH 4.00
3. mV		240mV	NIST	320831/321773	240mV
4. EC		2.76mS	NIST	304153	2.76mS
6. D.O		0 ppm	NIST	5928	0 ppm
7. Temp		24.oC	NIST	MultiTherm 09000528	24.oC

Calibrated by: Liji Cherian

Calibration date: 02-Nov-18

Next calibration due: 01-May-19

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Project SAM	**Project Number:**	60588844
Project Location:	Weipa	**Client:**	Weipa RTA
PM Name:	James Peachey	**Fieldwork Staff Name:**	Luke McIver

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Airmet
Make and Model:	YSI Pro Plus
Serial Number:	09K101342

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	22/11/18				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	~~ppm~~ ORP	ppm
Calibration Standard Concentration:	4.00	7.00	2766	240	100 %
Calibration Reading:	3.88	6.86	2683	235.9	117.0 %
Calibration Temperature:	25.8	25.9	25.8	25.7	25.8

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature

12/11/2018

Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Project SAM	**Project Number:**	60588844
Project Location:	Weipa	**Client:**	Weipa RTA
PM Name:	James Peachey	**Fieldwork Staff Name:**	Luke McIver

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Aquaread
Make and Model:	YSI Pro Plus
Serial Number:	09K101342

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	23/11/18 06:55				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	100ppm%	ppm
Calibration Standard Concentration:	4.00	7.00	~~12880~~ 2760	100 %	
Calibration Reading:	4.02	6.97	2807	127 %	
Calibration Temperature:	26.5	26.7	26.8	27.1	

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:				100 %	
Bump Test Reading:				74.6 %	
Bump Test Temperature:				37.7	

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

ORP -140 - 235.5 -26.4.
Recal 100% DO @ 156 due to V. high readings at EWHEQ MW07.

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature

23/11/18
Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Project SAM	**Project Number:**	60588844
Project Location:	Weipa	**Client:**	Weipa RTA
PM Name:	James Peachey	**Fieldwork Staff Name:**	Luke McIver

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Aimex
Make and Model:	YSI Pro Plus
Serial Number:	09K101342

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	24/11/18 09.58				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.09	12760	100	
Calibration Reading:	4.13	7.09	12803	112.5	
Calibration Temperature:	34.5	34.3	34.0	35.8	

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

ORP -140 -225.0 -34.8°C

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature

24/11/2018
Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	60588844	**Project Number:**	Project YAM
Project Location:	Weipa	**Client:**	Weipa PTA
PM Name:	James Reading	**Fieldwork Staff Name:**	Kiko MG/RJ

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Aimer.
Make and Model:	YSI Pro Plus
Serial Number:	19K100123

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time: 20/02/19					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.00	1413 ~~1~~		100 %
Calibration Reading:	4.09	7.02	1375		95.9 %
Calibration Temperature:	21.2°C	21.2°C	21.2°C		21.7°C

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature	**Date** 20/02/2019

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Project SAM	**Project Number:**	60588584
Project Location:	Weipa	**Client:**	Weipa RTA
PM Name:	James Peachey	**Fieldwork Staff Name:**	Luke McKew

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AES
Make and Model:	YSI Pro Plus
Serial Number:	11K100623

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time: 21/02/19

Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.00	1413		100%
Calibration Reading:	3.96	6.87	1424		98.4%
Calibration Temperature:	21.6°C	21.5°C	21.5°C		22.2°C

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:

Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature	Date
	21/02/19.

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Project SAM	**Project Number:**	60588846
Project Location:	Wodonga	**Client:**	Wodonga RTA
PM Name:	James Peachey	**Fieldwork Staff Name:**	Jake McGuire

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Airmet
Make and Model:	YSI Pro Plus
Serial Number:	18K100

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time: 23/02/19 07:12.					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.00	1413		100%
Calibration Reading:	4.02	7.02	1423		89
Calibration Temperature:	21.3°C	21.3°C	21.3°C		22.2

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

ORP

240 mV

248.5

14.6 °C

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature

23/02/19
Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Project Sam	**Project Number:**	60585544
Project Location:	Weipa.	**Client:**	RTA Weipa
PM Name:	L. Jakeb.	**Fieldwork Staff Name:**	G. Mueller

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Airmet — Baro 756.5mm/Hg
Make and Model:	YSI Pro Plus
Serial Number:	11K100623

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	21-11-18				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	~~ppm~~ mV	100% ~~ppm~~
Calibration Standard Concentration:	4.01	7.00	2760	229	100
Calibration Reading:	3.63	6.84	2502	341	96%
Calibration Temperature:	25.8	25.4	25.4	25.9	24.3

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	24-11-18				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ORP ~~ppm~~ mV	% ~~ppm~~
Calibration Standard Concentration:	4.01	7	2760	229	100
Bump Test Reading:	3.83	6.89	2652	280	98%
Bump Test Temperature:	25.0	25.2	25.0	25.1	24.8

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided:

N/A (21/11/18)

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature — 21/11/18 Date

Distribution: Project Central File

24/11/18.

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Project Sam	**Project Number:**	60588844
Project Location:	Wagga	**Client:**	RTA Wagga
PM Name:	C. Jakobi	**Fieldwork Staff Name:**	G. Mullen

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Aimex
Make and Model:	YSI Pro Plus
Serial Number:	17K100623

bad 756.9 (22/11)
756.8 (23/11)

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	22-11-18 0627.				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	~~ORP ppm~~ mV	~~%~~ ~~ppm~~
Calibration Standard Concentration:	4.01	7.00	2760	229 (231)	Barometric
Calibration Reading:	4.37	6.83	2740	~~235~~ 235	100
Calibration Temperature:	25.7	26.0	25.90	25.8	25.8

ONGOING CHECKS

~~**BUMP TEST WITH CALIBRATION SOLUTION**~~ Cal. bracket

Date and Time:	23/11/18 0908				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	~~ORP ppm~~ mV	ppm
Calibration Standard Concentration:	4.01	7.00	~~2760~~ 3024	229	
Bump Test Reading:	4.10	6.92	3082	221.6	
Bump Test Temperature:	30 °C	30.0	29.9	30.3	29.2

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature

22/11/18
Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Nozell San	**Project Number:**	60555844
Project Location:	RTA	**Client:**	RTA
PM Name:	C. Jakosta	**Fieldwork Staff Name:**	C. Mueller

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Aromet Bam 755.4 mm/hr
Make and Model:	YSI Pro Plus
Serial Number:	17E100623

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	25-11-18				
Parameter	Acidity		Conductivity	ORP	Dissolved Oxygen
Units	pH	pH	µS/cm	mV ~~ppm~~	% ~~ppm~~
Calibration Standard Concentration:	4.01	7.00	3234	210.6	100
Calibration Reading:	4.03	6.95	3334	216.4	100.3
Calibration Temperature:	35.0	34.5	34.1	35.2	28.2

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff

Fieldwork Staff Signature _____ Date _____

Distribution: Project Central File

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	Pro ject 4am	**Project Number:**	60588844
Project Location:	RMW - 122.09	**Client:**	RTA
PM Name:	T Peachey	**Fieldwork Staff Name:**	G Mueller

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	AIRMET
Make and Model:	15 i PRO PLUS
Serial Number:	12D101323

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS BARO: 756.4mm/Hg

Date and Time:	21-2-19 0730				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	~~µ~~S/cm	ppm	~~ppm~~ ORP mV
Calibration Standard Concentration:	4.00	7.00	~~1~~ 1305	100%	262.0
Calibration Reading:	4.06	7.01	698	94.0%	377.2
Calibration Temperature:	21.2	21.0	20.9	18.6	10.0

PRECISION CHECKS - COMPLETED

BUMP TEST WITH CALIBRATION SOLUTION Bare 754.9mm/Hg

Date and Time:	21-2-19 1600.				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	~~ppm~~ %	~~ppm~~ ORP mV
Calibration Standard Concentration:	4.00	7.00	55.2	100%	262
Bump Test Reading:	3.91	6.99	54.7	102.2%	286.7
Bump Test Temperature:	24.6	21.9	21.7	21.0	10.3

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

N/A - 21-2-19 (am)

N/A - 21-2-19 (pm)

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature — 21/2/19 (am) Date

Distribution: Project Central File

21/2/19 (pm)

Appendix G

Surveying Report

ObjectID	BORE ID	EASTING	NORTHING	GNSS ELEVATION	GNSS GROUND LEVEL
1	AHEQ MW07	589855.06600000	8613140.42500000	12.570	12.089
2	AHEQ MW08	589740.03000000	8613029.82600000	10.755	9.972
3	AHEQ MW09	590321.65000000	8613030.46200000	12.241	11.610
4	AHEQ MW10	589764.74700000	8612754.15800000	12.751	12.202
5	AHEQ MW11	590447.51500000	8613150.88800000	12.326	11.612
6	ELS MW28	592133.63800000	8599952.71500000	6.743	6.242
7	ELS MW29	592093.61600000	8600015.13900000	6.104	5.458
8	ELN MW09	592008.29200000	8600051.05300000	6.782	6.923
9	ELN MW10	592116.21600000	8600064.12400000	6.232	6.378
10	LPI MW25	594347.93700000	8599943.16200000	8.155	8.207
11	LPI MW26	594408.84500000	8599740.14800000	9.731	9.190
12	LPI MW27	594334.44100000	8599852.35100000	8.097	7.372
13	LPI MW28	594158.47800000	8599917.95300000	8.040	7.331
14	LPI MW29	594094.31300000	8599757.50900000	8.281	7.711
15	LPI MW30	594023.07900000	8599606.21500000	5.581	5.141
16	LPI MW31	594308.59000000	8599246.04500000	5.600	5.140
17	LPI MW32	594362.88200000	8600009.03200000	9.041	8.410
18	RWW MW06	593695.38600000	8600691.73600000	8.723	8.162
19	RWW MW07	593499.11700000	8600491.77800000	6.524	5.975
20	RWW MW08	593743.60800000	8600455.19300000	10.029	9.388
21	ALF MW06	598847.95400000	8596823.62200000	13.309	12.739
22	ALF MW07	599085.35300000	8598095.26800000	17.729	17.198
23	AFD MW37	599671.12000000	8597014.13500000	16.016	15.409
24	AP MW01	599285.25000000	8598939.90300000	16.825	16.918
25	AP MW02	600967.55900000	8597694.74300000	17.722	17.845
26	EW HEQ MW06	601584.15600000	8599842.70300000	20.983	20.464
27	EW HEQ MW07	601719.34900000	8599930.83500000	20.089	20.333
28	EW HEQ MW08	601548.71500000	8599499.39100000	21.075	20.337
29	EW HEQ MW09	601409.36000000	8599501.69700000	20.930	20.420

Appendix H

Slug Test Results

WELL ID: AHEQ_MW11_Rising Head Test 1

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

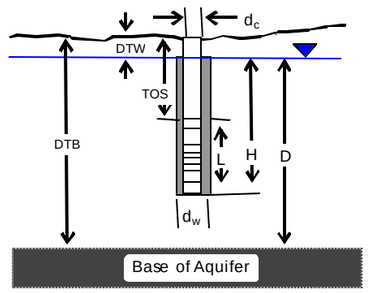
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	6 Meter
Depths to:	
water level (DTW)	2.65 Meter
top of screen (TOS)	9 Meter
Base of Aquifer (DTB)	15 Meter
Annular Fill:	
across screen --	Fine Sand
above screen --	Bentonite
Aquifer Material --	Medium Sand

COMPUTED

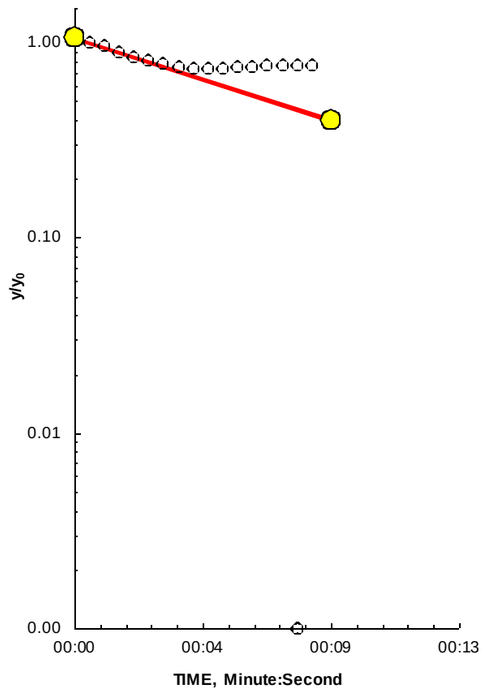
L_{wetted}	6 Meter
D =	12.35 Meter
H =	12.35 Meter
L/r_w =	96.00
$y_{0\text{-DISPLACEMENT}}$ =	0.38 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	4.156
ln(Re/rw) =	3.978
Re =	10.96 Meter
Slope =	0.048510337 $\log_{10}$/sec
$t_{90\%}$ recovery =	21 sec

Input is consistent.

K =	2 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:12:05.5	2.56
2	0:12:06.0	2.58
3	0:12:06.5	2.60
4	0:12:07.0	2.62
5	0:12:07.5	2.63
6	0:12:08.0	2.65
7	0:12:08.5	2.65
8	0:12:09.0	2.66
9	0:12:09.5	2.66
10	0:12:10.0	2.66
11	0:12:10.5	2.66
12	0:12:11.0	2.65
13	0:12:11.5	2.65
14	0:12:12.0	2.65
15	0:12:12.5	2.65
16	0:12:13.0	2.65

K= 2 is less than likely minimum of 6.09 for Medium Sand

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: AHEQ_MW11_Rising Head

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

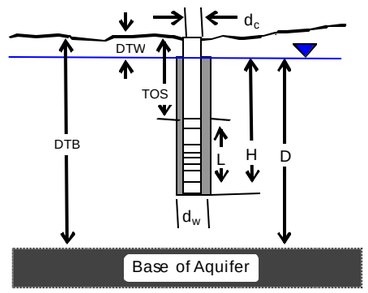
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	6 Meter
Depths to:	
water level (DTW)	2.65 Meter
top of screen (TOS)	9 Meter
Base of Aquifer (DTB)	15 Meter
Annular Fill:	
across screen --	Fine Sand
above screen --	Bentonite
Aquifer Material --	Medium Sand

COMPUTED

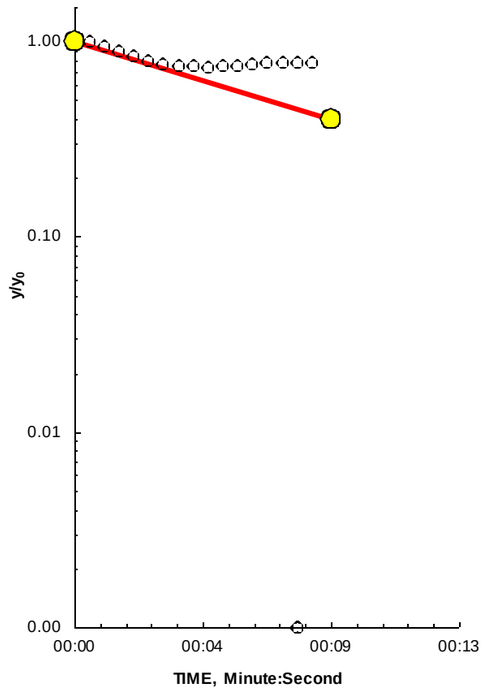
L_{wetted}	6 Meter
D =	12.35 Meter
H =	12.35 Meter
L/r_w =	96.00
$y_{0\text{-DISPLACEMENT}}$ =	0.38 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	4.156
ln(Re/rw) =	3.978
Re =	10.96 Meter
Slope =	0.046057871 $\log_{10}$/sec
$t_{90\%}$ recovery =	22 sec

Input is consistent.

K =	2 Meter/Day



Adjust slope of line to estimate K



Reduced Data

Entry	Time, Hr:Min:Sec	Water Level
1	0:00:00.0	2.56
2	0:00:00.5	2.58
3	0:00:01.0	2.61
4	0:00:01.5	2.62
5	0:00:02.0	2.64
6	0:00:02.5	2.65
7	0:00:03.0	2.66
8	0:00:03.5	2.66
9	0:00:04.0	2.66
10	0:00:04.5	2.66
11	0:00:05.0	2.65
12	0:00:05.5	2.65
13	0:00:06.0	2.65
14	0:00:06.5	2.65
15	0:00:07.0	2.65

K= 1.9 is less than likely minimum of 6.09 for Medium Sand

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: AHEQ_MW11_Rising Head Test 3

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

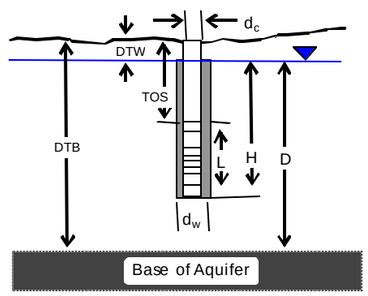
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	6 Meter
Depths to:	
water level (DTW)	2.65 Meter
top of screen (TOS)	9 Meter
Base of Aquifer (DTB)	15 Meter
Annular Fill:	
across screen -- Fine Sand	
above screen -- Bentonite	
Aquifer Material -- Medium Sand	

COMPUTED

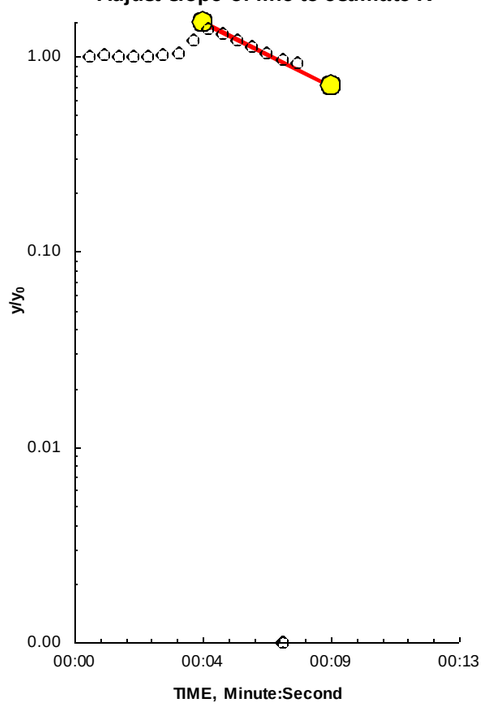
L_{wetted}	6 Meter
D =	12.35 Meter
H =	12.35 Meter
L/r_w =	96.00
$y_{0\text{-DISPLACEMENT}}$ =	0.29 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	4.156
ln(Re/rw) =	3.978
Re =	10.96 Meter
Slope =	0.076618801 $\log_{10}$/sec
$t_{90\%}$ recovery =	13 sec

Input is consistent.

K =	3 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:24:00.0	2.65
2	0:24:00.5	2.65
3	0:24:01.0	2.65
4	0:24:01.5	2.65
5	0:24:02.0	2.65
6	0:24:02.5	2.65
7	0:24:03.0	2.64
8	0:24:03.5	2.59
9	0:24:04.0	2.54
10	0:24:04.5	2.56
11	0:24:05.0	2.59
12	0:24:05.5	2.62
13	0:24:06.0	2.64
14	0:24:06.5	2.66
15	0:24:07.0	2.67

K= 3.2 is less than likely minimum of 6.09 for Medium Sand

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: LPI_MW26_Rising Head Test 1

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

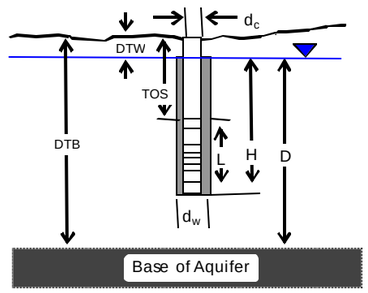
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	6 Meter
Depths to:	
water level (DTW)	4.914 Meter
top of screen (TOS)	6 Meter
Base of Aquifer (DTB)	12 Meter
Annular Fill:	
across screen -- Fine Sand	
above screen -- Bentonite	
Aquifer Material -- Medium Sand	

COMPUTED

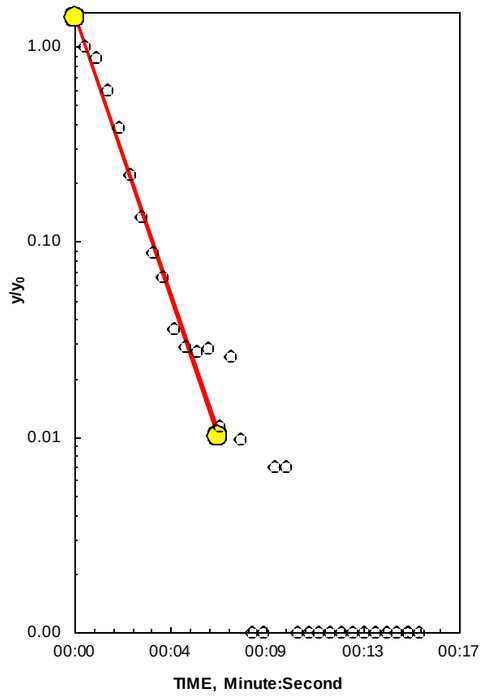
L_{wetted}	6 Meter
D =	7.086 Meter
H =	7.086 Meter
L/r_w =	96.00
$y_{0\text{-DISPLACEMENT}}$ =	0.09 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	4.156
ln(Re/rw) =	3.626
Re =	7.70 Meter
Slope =	0.333415367 $\log_{10}$/sec
$t_{90\%}$ recovery =	3 sec

Input is consistent.

K = 13 Meter/Day



Adjust slope of line to estimate K



Reduced Data

Entry	Time, Hr:Min:Sec	Water Level
1	0:00:00.0	4.82
2	0:00:00.5	4.83
3	0:00:01.0	4.85
4	0:00:01.5	4.87
5	0:00:02.0	4.89
6	0:00:02.5	4.90
7	0:00:03.0	4.90
8	0:00:03.5	4.90
9	0:00:04.0	4.91
10	0:00:04.5	4.91
11	0:00:05.0	4.91
12	0:00:05.5	4.91
13	0:00:06.0	4.91
14	0:00:06.5	4.91
15	0:00:07.0	4.91
16	0:00:07.5	4.91
17	0:00:08.0	4.91
18	0:00:08.5	4.91
19	0:00:09.0	4.91
20	0:00:09.5	4.91
21	0:00:10.0	4.91
22	0:00:10.5	4.91
23	0:00:11.0	4.91
24	0:00:11.5	4.91
25	0:00:12.0	4.91
26	0:00:12.5	4.91
27	0:00:13.0	4.91
28	0:00:13.5	4.91
29	0:00:14.0	4.91
30	0:00:14.5	4.91

REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: LPI_MW26_Rising Head

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

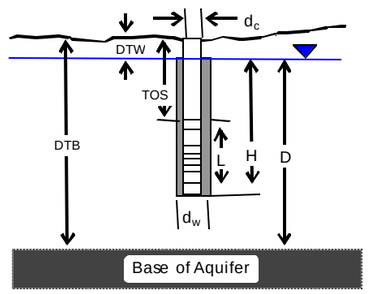
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	6 Meter
Depths to:	
water level (DTW)	4.914 Meter
top of screen (TOS)	6 Meter
Base of Aquifer (DTB)	12 Meter
Annular Fill:	
across screen -- Fine Sand	
above screen -- Bentonite	
Aquifer Material -- Medium Sand	

COMPUTED

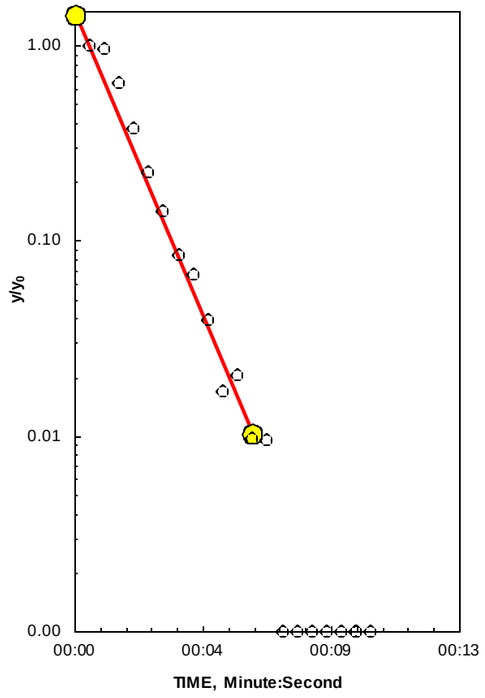
L_{wetted}	6 Meter
D =	7.086 Meter
H =	7.086 Meter
L/r_w =	96.00
$y_{0\text{-DISPLACEMENT}}$ =	0.13 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	4.156
ln(Re/rw) =	3.626
Re =	7.70 Meter
Slope =	0.359991954 $\log_{10}$/sec
$t_{90\%}$ recovery =	3 sec

Input is consistent.

K =	14 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	4.78
2	0:00:00.5	4.79
3	0:00:01.0	4.83
4	0:00:01.5	4.86
5	0:00:02.0	4.88
6	0:00:02.5	4.89
7	0:00:03.0	4.90
8	0:00:03.5	4.90
9	0:00:04.0	4.91
10	0:00:04.5	4.91
11	0:00:05.0	4.91
12	0:00:05.5	4.91
13	0:00:06.0	4.91
14	0:00:06.5	4.91
15	0:00:07.0	4.91
16	0:00:07.5	4.91
17	0:00:08.0	4.91
18	0:00:08.5	4.91
19	0:00:09.0	4.91

REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: LPI_MW26_Rising Head Test 3

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

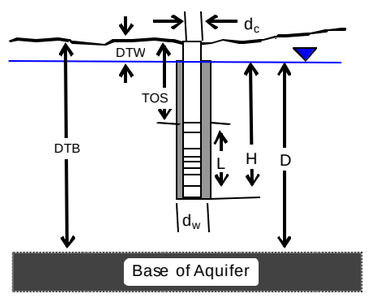
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	6 Meter
Depths to:	
water level (DTW)	4.914 Meter
top of screen (TOS)	6 Meter
Base of Aquifer (DTB)	12 Meter
Annular Fill:	
across screen --	Fine Sand
above screen --	Bentonite
Aquifer Material --	Medium Sand

COMPUTED

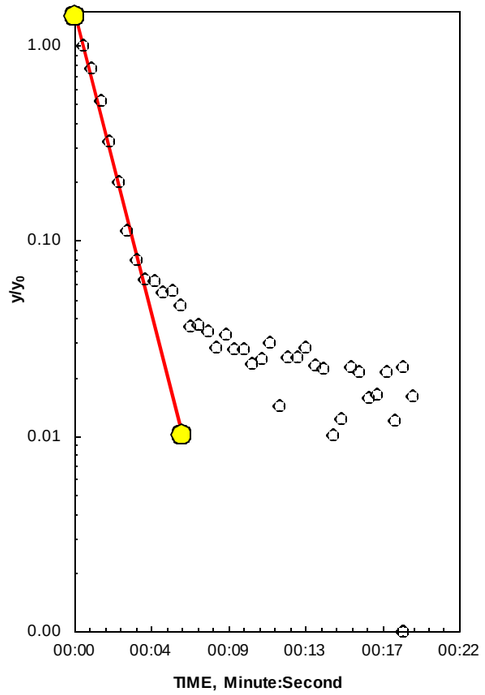
L_{wetted}	6 Meter
D =	7.086 Meter
H =	7.086 Meter
L/r_w =	96.00
$y_{0\text{-DISPLACEMENT}}$ =	0.13 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	4.156
ln(Re/rw) =	3.626
Re =	7.70 Meter
Slope =	0.357402084 $\log_{10}$/sec
$t_{90\%}$ recovery =	3 sec

Input is consistent.

K = 13 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	4.78
2	0:00:00.5	4.81
3	0:00:01.0	4.84
4	0:00:01.5	4.87
5	0:00:02.0	4.88
6	0:00:02.5	4.90
7	0:00:03.0	4.90
8	0:00:03.5	4.90
9	0:00:04.0	4.90
10	0:00:04.5	4.90
11	0:00:05.0	4.90
12	0:00:05.5	4.90
13	0:00:06.0	4.91
14	0:00:06.5	4.91
15	0:00:07.0	4.91
16	0:00:07.5	4.91
17	0:00:08.0	4.91
18	0:00:08.5	4.91
19	0:00:09.0	4.91
20	0:00:09.5	4.91
21	0:00:10.0	4.91
22	0:00:10.5	4.91
23	0:00:11.0	4.91
24	0:00:11.5	4.91
25	0:00:12.0	4.91
26	0:00:12.5	4.91
27	0:00:13.0	4.91
28	0:00:13.5	4.91
29	0:00:14.0	4.91
30	0:00:14.5	4.91
31	0:00:15.0	4.91
32	0:00:15.5	4.91
33	0:00:16.0	4.91
34	0:00:16.5	4.91
35	0:00:17.0	4.91
36	0:00:17.5	4.91
37	0:00:18.0	4.91

REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: LPI_MW26_Rising Head Test 3

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

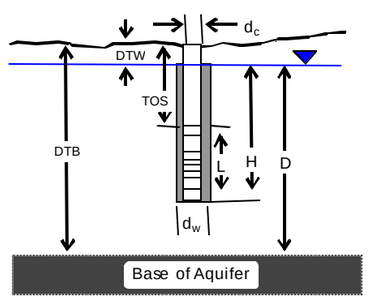
Construction:		
Casing dia. (d_c)	0.05	Meter
Annulus dia. (d_w)	0.125	Meter
Screen Length (L)	6	Meter
Depths to:		
water level (DTW)	4.914	Meter
top of screen (TOS)	6	Meter
Base of Aquifer (DTB)	12	Meter
Annular Fill:		
across screen --	Fine Sand	
above screen --	Bentonite	
Aquifer Material --	Medium Sand	

COMPUTED

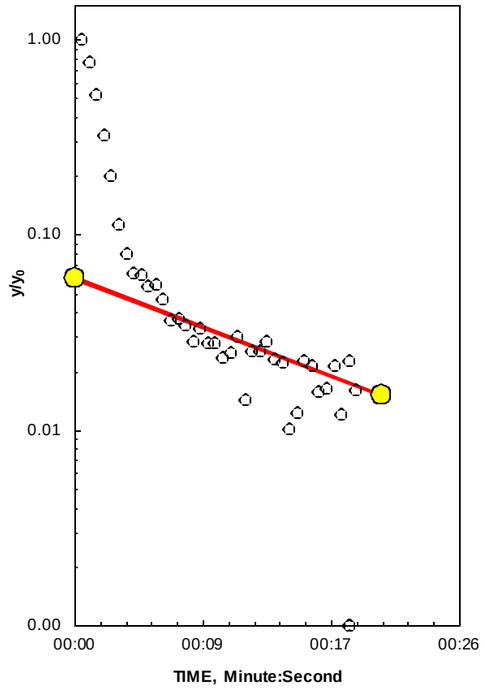
L_{wetted}	6	Meter
D =	7.086	Meter
H =	7.086	Meter
L/r_w =	96.00	
$y_{0\text{-DISPLACEMENT}}$ =	0.13	Meter
$y_{0\text{-SLUG}}$ =	0.51	Meter
From look-up table using L/r_w		
Fully penetrate C =	4.156	
ln(Re/rw) =	3.626	
Re =	7.70	Meter
Slope =	0.029095144	log_{10}/sec
$t_{90\%}$ recovery =	34	sec

Input is consistent.

K =	1 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	4.78
2	0:00:00.5	4.81
3	0:00:01.0	4.84
4	0:00:01.5	4.87
5	0:00:02.0	4.88
6	0:00:02.5	4.90
7	0:00:03.0	4.90
8	0:00:03.5	4.90
9	0:00:04.0	4.90
10	0:00:04.5	4.90
11	0:00:05.0	4.90
12	0:00:05.5	4.90
13	0:00:06.0	4.91
14	0:00:06.5	4.91
15	0:00:07.0	4.91
16	0:00:07.5	4.91
17	0:00:08.0	4.91
18	0:00:08.5	4.91
19	0:00:09.0	4.91
20	0:00:09.5	4.91
21	0:00:10.0	4.91
22	0:00:10.5	4.91
23	0:00:11.0	4.91
24	0:00:11.5	4.91
25	0:00:12.0	4.91
26	0:00:12.5	4.91
27	0:00:13.0	4.91
28	0:00:13.5	4.91
29	0:00:14.0	4.91
30	0:00:14.5	4.91
31	0:00:15.0	4.91
32	0:00:15.5	4.91
33	0:00:16.0	4.91
34	0:00:16.5	4.91
35	0:00:17.0	4.91
36	0:00:17.5	4.91
37	0:00:18.0	4.91

K= 1.1 is less than likely minimum of 6.09 for Medium Sand

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: LPI_MW31_Rising Head Test 1

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

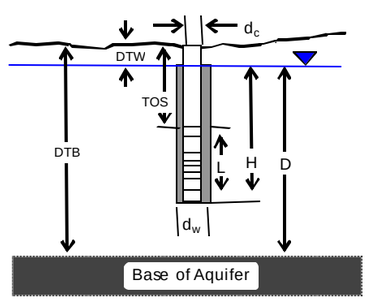
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	4 Meter
Depths to:	
water level (DTW)	3.93 Meter
top of screen (TOS)	5 Meter
Base of Aquifer (DTB)	9 Meter
Annular Fill:	
across screen -- Fine Sand	
above screen -- Bentonite	
Aquifer Material -- Medium Sand	

COMPUTED

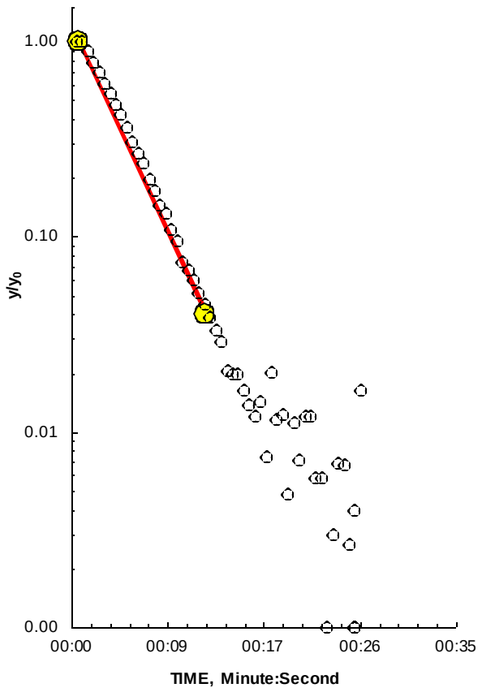
L_{wetted}	4 Meter
D =	5.07 Meter
H =	5.07 Meter
L/r_w =	64.00
$y_{0\text{-DISPLACEMENT}}$ =	0.16 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	3.196
ln(Re/rw) =	3.332
Re =	5.74 Meter
Slope =	0.122574706 $\log_{10}$/sec
$t_{90\%}$ recovery =	8 sec

Input is consistent.

K = 6 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	4.57
2	0:00:00.5	4.57
3	0:00:01.0	4.59
4	0:00:01.5	4.61
5	0:00:02.0	4.62
6	0:00:02.5	4.63
7	0:00:03.0	4.64
8	0:00:03.5	4.66
9	0:00:04.0	4.66
10	0:00:04.5	4.67
11	0:00:05.0	4.68
12	0:00:05.5	4.69
13	0:00:06.0	4.69
14	0:00:06.5	4.70
15	0:00:07.0	4.70
16	0:00:07.5	4.71
17	0:00:08.0	4.71
18	0:00:08.5	4.71
19	0:00:09.0	4.71
20	0:00:09.5	4.72
21	0:00:10.0	4.72
22	0:00:10.5	4.72
23	0:00:11.0	4.72
24	0:00:11.5	4.72
25	0:00:12.0	4.72
26	0:00:12.5	4.72
27	0:00:13.0	4.73
28	0:00:13.5	4.73
29	0:00:14.0	4.73
30	0:00:14.5	4.73
31	0:00:15.0	4.73
32	0:00:15.5	4.73
33	0:00:16.0	4.73
34	0:00:16.5	4.73
35	0:00:17.0	4.73
36	0:00:17.5	4.73
37	0:00:18.0	4.73
38	0:00:18.5	4.73
39	0:00:19.0	4.73
40	0:00:19.5	4.73
41	0:00:20.0	4.73
42	0:00:20.5	4.73
43	0:00:21.0	4.73
44	0:00:21.5	4.73
45	0:00:22.0	4.73

REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: LPI_MW31_Rising Head Test 2

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

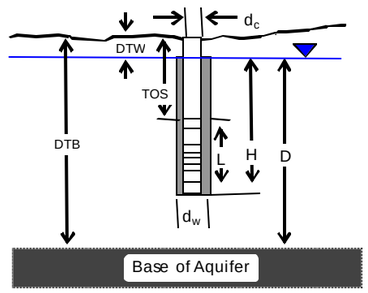
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	4 Meter
Depths to:	
water level (DTW)	3.93 Meter
top of screen (TOS)	5 Meter
Base of Aquifer (DTB)	9 Meter
Annular Fill:	
across screen --	Fine Sand
above screen --	Bentonite
Aquifer Material --	Medium Sand

COMPUTED

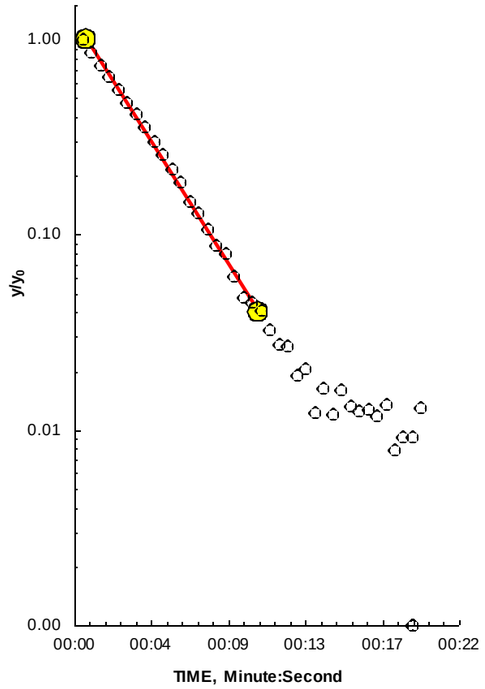
L_{wetted}	4 Meter
D =	5.07 Meter
H =	5.07 Meter
L/r_w =	64.00
$y_{0\text{-DISPLACEMENT}}$ =	0.16 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	3.196
ln(Re/rw) =	3.332
Re =	5.74 Meter
Slope =	0.144463047 $\log_{10}$/sec
$t_{90\%}$ recovery =	7 sec

Input is consistent.

K = 8 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	4.57
2	0:00:00.5	4.59
3	0:00:01.0	4.61
4	0:00:01.5	4.63
5	0:00:02.0	4.64
6	0:00:02.5	4.65
7	0:00:03.0	4.66
8	0:00:03.5	4.67
9	0:00:04.0	4.68
10	0:00:04.5	4.69
11	0:00:05.0	4.70
12	0:00:05.5	4.70
13	0:00:06.0	4.71
14	0:00:06.5	4.71
15	0:00:07.0	4.71
16	0:00:07.5	4.72
17	0:00:08.0	4.72
18	0:00:08.5	4.72
19	0:00:09.0	4.72
20	0:00:09.5	4.72
21	0:00:10.0	4.72
22	0:00:10.5	4.72
23	0:00:11.0	4.73
24	0:00:11.5	4.73
25	0:00:12.0	4.73
26	0:00:12.5	4.73
27	0:00:13.0	4.73
28	0:00:13.5	4.73
29	0:00:14.0	4.73
30	0:00:14.5	4.73
31	0:00:15.0	4.73
32	0:00:15.5	4.73
33	0:00:16.0	4.73
34	0:00:16.5	4.73
35	0:00:17.0	4.73
36	0:00:17.5	4.73
37	0:00:18.0	4.73
38	0:00:18.5	4.73

REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: LPI_MW31_Rising Head 3

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

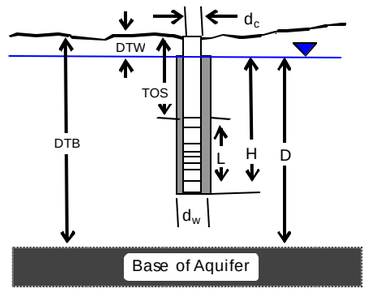
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	4 Meter
Depths to:	
water level (DTW)	3.93 Meter
top of screen (TOS)	5 Meter
Base of Aquifer (DTB)	9 Meter
Annular Fill:	
across screen --	Fine Sand
above screen --	Bentonite
Aquifer Material --	Medium Sand

COMPUTED

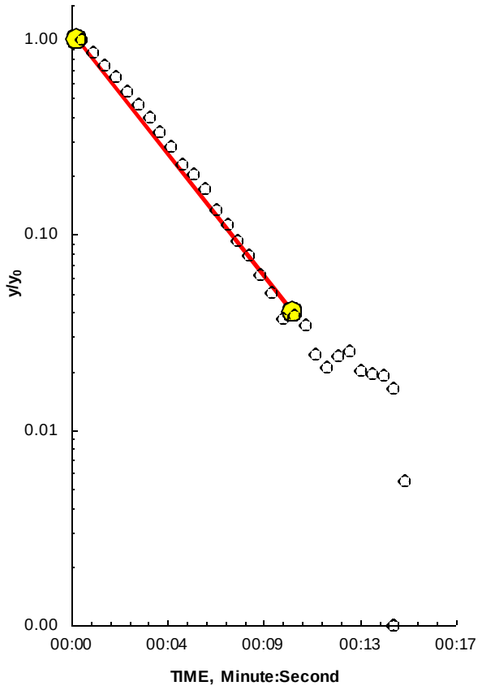
L_{wetted}	4 Meter
D =	5.07 Meter
H =	5.07 Meter
L/r_w =	64.00
$y_{0\text{-DISPLACEMENT}}$ =	0.15 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	3.196
ln(Re/rw) =	3.332
Re =	5.74 Meter
Slope =	0.144463047 $\log_{10}$/sec
$t_{90\%}$ recovery =	7 sec

Input is consistent.

K =	8 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.5	4.58
2	0:00:01.0	4.60
3	0:00:01.5	4.62
4	0:00:02.0	4.64
5	0:00:02.5	4.65
6	0:00:03.0	4.66
7	0:00:03.5	4.67
8	0:00:04.0	4.68
9	0:00:04.5	4.69
10	0:00:05.0	4.70
11	0:00:05.5	4.70
12	0:00:06.0	4.70
13	0:00:06.5	4.71
14	0:00:07.0	4.71
15	0:00:07.5	4.72
16	0:00:08.0	4.72
17	0:00:08.5	4.72
18	0:00:09.0	4.72
19	0:00:09.5	4.72
20	0:00:10.0	4.72
21	0:00:10.5	4.72
22	0:00:11.0	4.73
23	0:00:11.5	4.73
24	0:00:12.0	4.73
25	0:00:12.5	4.73
26	0:00:13.0	4.73
27	0:00:13.5	4.73
28	0:00:14.0	4.73
29	0:00:14.5	4.73
30	0:00:15.0	4.73

WELL ID: RWW_MW06_Test 1 Rising Head

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

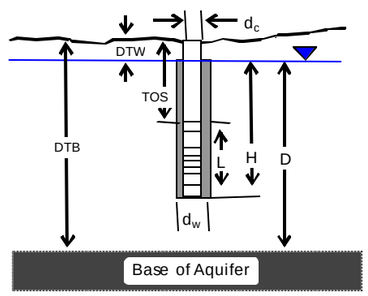
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	5 Meter
Depths to:	
water level (DTW)	2.94 Meter
top of screen (TOS)	4 Meter
Base of Aquifer (DTB)	9 Meter
Annular Fill:	
across screen --	Fine Sand
above screen --	Bentonite
Aquifer Material --	Medium Sand

COMPUTED

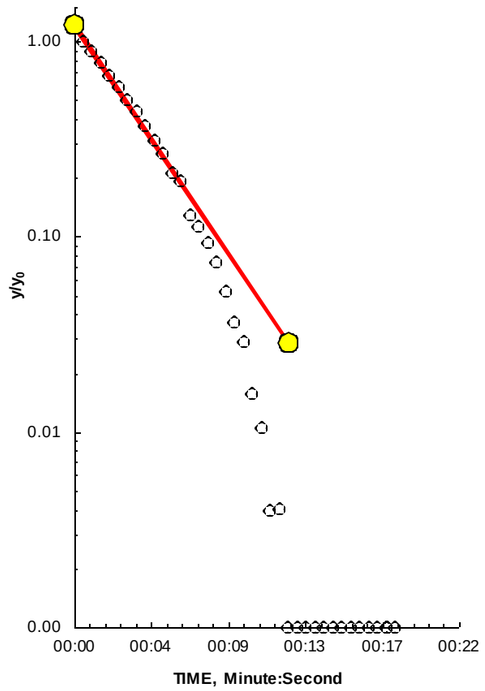
L_{wetted}	5 Meter
D =	6.06 Meter
H =	6.06 Meter
L/r_w =	80.00
$y_{0\text{-DISPLACEMENT}}$ =	0.09 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	3.710
ln(Re/rw) =	3.486
Re =	6.70 Meter
Slope =	0.134922554 $\log_{10}$/sec
$t_{90\%}$ recovery =	7 sec

Input is consistent.

K =	6 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:16:22.5	2.85
2	0:16:23.0	2.86
3	0:16:23.5	2.87
4	0:16:24.0	2.88
5	0:16:24.5	2.89
6	0:16:25.0	2.89
7	0:16:25.5	2.90
8	0:16:26.0	2.91
9	0:16:26.5	2.91
10	0:16:27.0	2.92
11	0:16:27.5	2.92
12	0:16:28.0	2.92
13	0:16:28.5	2.93
14	0:16:29.0	2.93
15	0:16:29.5	2.93
16	0:16:30.0	2.93
17	0:16:30.5	2.94
18	0:16:31.0	2.94
19	0:16:31.5	2.94
20	0:16:32.0	2.94
21	0:16:32.5	2.94
22	0:16:33.0	2.94
23	0:16:33.5	2.94
24	0:16:34.0	2.94
25	0:16:34.5	2.94
26	0:16:35.0	2.94
27	0:16:35.5	2.94
28	0:16:36.0	2.94
29	0:16:36.5	2.94
30	0:16:37.0	2.94
31	0:16:37.5	2.94
32	0:16:38.0	2.94
33	0:16:38.5	2.94
34	0:16:39.0	2.94
35	0:16:39.5	2.94
36	0:16:40.0	2.94

K= 5.8 is less than likely minimum of 6.09 for Medium Sand

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: RWW_MW06_Rising Head Test 1

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

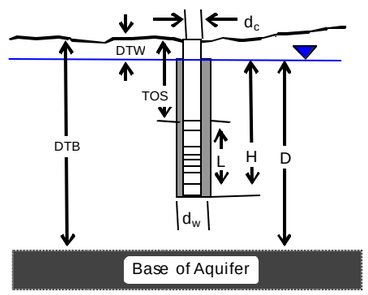
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	5 Meter
Depths to:	
water level (DTW)	2.94 Meter
top of screen (TOS)	4 Meter
Base of Aquifer (DTB)	9 Meter
Annular Fill:	
across screen -- Fine Sand	
above screen -- Bentonite	
Aquifer Material -- Medium Sand	

COMPUTED

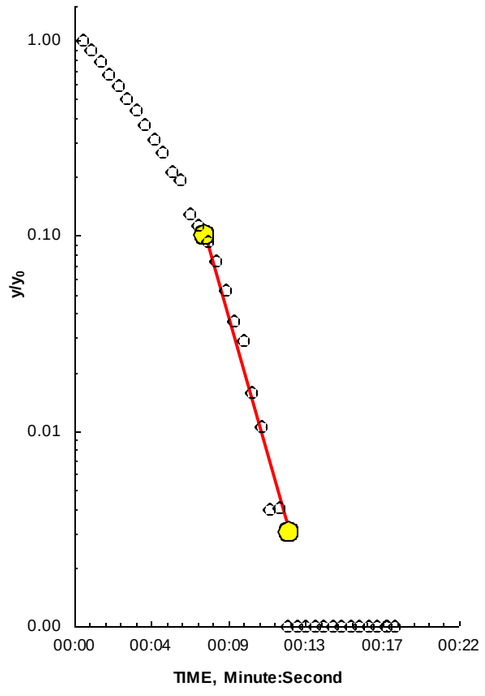
L_{wetted}	5 Meter
D =	6.06 Meter
H =	6.06 Meter
L/r_w =	80.00
$y_{0\text{-DISPLACEMENT}}$ =	0.09 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	3.710
ln(Re/rw) =	3.486
Re =	6.70 Meter
Slope =	0.320471116 $\log_{10}$/sec
$t_{90\%}$ recovery =	3 sec

Input is consistent.

K = 14 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:16:22.5	2.85
2	0:16:23.0	2.86
3	0:16:23.5	2.87
4	0:16:24.0	2.88
5	0:16:24.5	2.89
6	0:16:25.0	2.89
7	0:16:25.5	2.90
8	0:16:26.0	2.91
9	0:16:26.5	2.91
10	0:16:27.0	2.92
11	0:16:27.5	2.92
12	0:16:28.0	2.92
13	0:16:28.5	2.93
14	0:16:29.0	2.93
15	0:16:29.5	2.93
16	0:16:30.0	2.93
17	0:16:30.5	2.94
18	0:16:31.0	2.94
19	0:16:31.5	2.94
20	0:16:32.0	2.94
21	0:16:32.5	2.94
22	0:16:33.0	2.94
23	0:16:33.5	2.94
24	0:16:34.0	2.94
25	0:16:34.5	2.94
26	0:16:35.0	2.94
27	0:16:35.5	2.94
28	0:16:36.0	2.94
29	0:16:36.5	2.94
30	0:16:37.0	2.94
31	0:16:37.5	2.94
32	0:16:38.0	2.94
33	0:16:38.5	2.94
34	0:16:39.0	2.94
35	0:16:39.5	2.94
36	0:16:40.0	2.94

REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: RWW_MW06_Rising Head Test 2

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

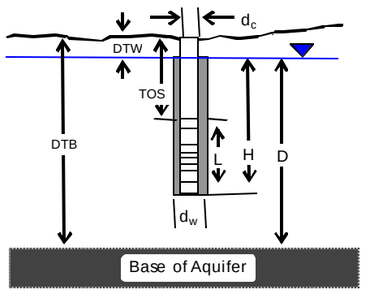
Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	5 Meter
Depths to:	
water level (DTW)	2.94 Meter
top of screen (TOS)	4 Meter
Base of Aquifer (DTB)	9 Meter
Annular Fill:	
across screen -- Fine Sand	
above screen -- Bentonite	
Aquifer Material -- Medium Sand	

COMPUTED

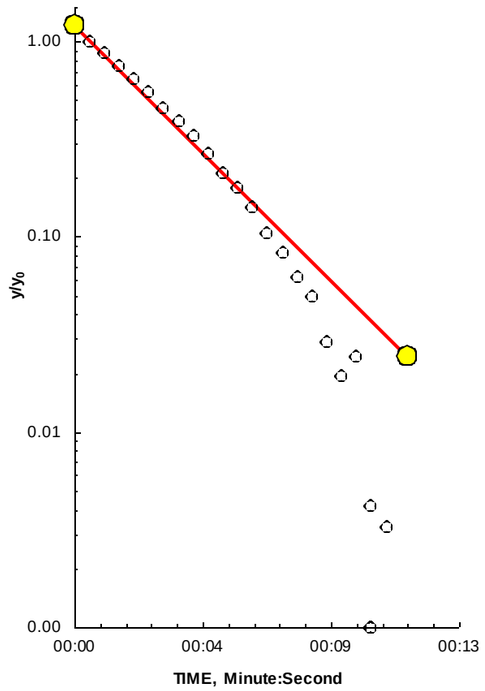
L_{wetted}	5 Meter
D =	6.06 Meter
H =	6.06 Meter
L/r_w =	80.00
$y_{0\text{-DISPLACEMENT}}$ =	0.09 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter
From look-up table using L/r_w	
Fully penetrate C =	3.710
ln(Re/rw) =	3.486
Re =	6.70 Meter
Slope =	0.151261574 $\log_{10}$/sec
$t_{90\%}$ recovery =	7 sec

Input is consistent.

K =	7 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	2.85
2	0:00:00.5	2.86
3	0:00:01.0	2.87
4	0:00:01.5	2.88
5	0:00:02.0	2.89
6	0:00:02.5	2.90
7	0:00:03.0	2.91
8	0:00:03.5	2.91
9	0:00:04.0	2.92
10	0:00:04.5	2.92
11	0:00:05.0	2.92
12	0:00:05.5	2.93
13	0:00:06.0	2.93
14	0:00:06.5	2.93
15	0:00:07.0	2.93
16	0:00:07.5	2.94
17	0:00:08.0	2.94
18	0:00:08.5	2.94
19	0:00:09.0	2.94
20	0:00:09.5	2.94

REMARKS: Bouwer and Rice analysis of slug test, WRR 1976

WELL ID: RWW_MW06_Rising Head Test 2

Local ID: Rising Head
Date: 20/12/2018
Time: 15:28

INPUT

Construction:	
Casing dia. (d_c)	0.05 Meter
Annulus dia. (d_w)	0.125 Meter
Screen Length (L)	5 Meter
Depths to:	
water level (DTW)	2.94 Meter
top of screen (TOS)	4 Meter
Base of Aquifer (DTB)	9 Meter
Annular Fill:	
across screen --	Fine Sand
above screen --	Bentonite
Aquifer Material --	Medium Sand

COMPUTED

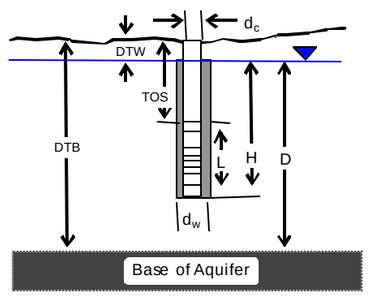
L_{wetted}	5 Meter
D =	6.06 Meter
H =	6.06 Meter
L/r_w =	80.00
$y_{0\text{-DISPLACEMENT}}$ =	0.09 Meter
$y_{0\text{-SLUG}}$ =	0.51 Meter

From look-up table using L/r_w

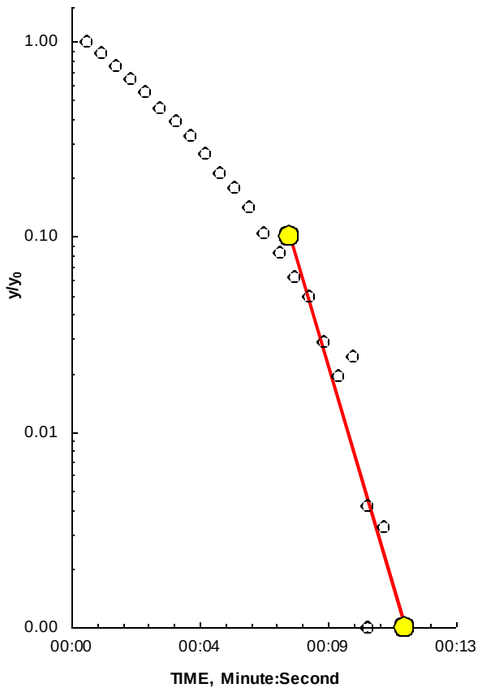
Fully penetrate C =	3.710
ln(Re/rw) =	3.486
Re =	6.70 Meter
Slope =	0.514403292 $\log_{10}$/sec
$t_{90\%}$ recovery =	2 sec

Input is consistent.

K = 22 Meter/Day



Adjust slope of line to estimate K



Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	2.85
2	0:00:00.5	2.86
3	0:00:01.0	2.87
4	0:00:01.5	2.88
5	0:00:02.0	2.89
6	0:00:02.5	2.90
7	0:00:03.0	2.91
8	0:00:03.5	2.91
9	0:00:04.0	2.92
10	0:00:04.5	2.92
11	0:00:05.0	2.92
12	0:00:05.5	2.93
13	0:00:06.0	2.93
14	0:00:06.5	2.93
15	0:00:07.0	2.93
16	0:00:07.5	2.94
17	0:00:08.0	2.94
18	0:00:08.5	2.94
19	0:00:09.0	2.94
20	0:00:09.5	2.94

K= 22 is greater than likely maximum of 21.3 for Medium Sand

REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Appendix I

Analytical Data Validation

Data Quality Objectives and Quality Assurance / Quality Control (QA/QC)

I1.1 Data Quality Objectives

The amended National Environmental Protection Measure (NEPM, Schedule B [2]) Guideline on Site Characterisation (2013) specifies that the nature and quality of the data produced in an investigation will be determined by the data quality objectives (DQOs). As referenced by the NEPM, the DQO process is detailed in the United States Environmental Protection Agency (US EPA) *Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4: EPA/240/B-06/001), February 2006.*

The US EPA defines the process as *'a strategic planning approach based on the Scientific Method that is used to prepare for a data collection activity. It provides a systematic procedure for defining the criteria that a data collection design should satisfy, including when to collect samples, where to collect samples, the tolerable level of decision errors for the study, and how many samples to collect'.*

The process of establishing appropriate DQOs is defined by the US EPA according to the following seven steps:

Step	Data Quality Objective
1	***State the problem*** – define the problem to be addressed, identify the planning team, examine budget and schedule.
2	***Identify the decision*** – outline the decision, the study question and alternative actions.
3	***Identify inputs to the decision*** – present parameters and inputs for decision, including information sources, basis for trigger/guideline levels, sampling and analysis methodology, etc.
4	***Define the study boundaries*** – present spatial and temporal limits for study, sample characteristics and decision-making units.
5	***Develop a decision rule*** – define a statistical parameter, specify trigger/guideline levels and develop argument for action.
6	***Specify limits on decision errors*** – set acceptable limits for decision errors relative to potential consequences such as health, budget, social or environmental impacts.
7	***Optimise the design for obtaining data*** – develop an effective sampling and analysis plan that meets resource and performance criteria.

The approach adopted relative to the seven steps presented above is discussed below. This methodology was adopted in developing the proposed fieldwork program.

I1.1.1 Step 1 - State the Problem to be Resolved

During preliminary investigations, PFAS concentrations have been identified in soil, surface water, groundwater and potable water across mining lease ML 7024. Review of the conceptual site model identified a number of complete and potentially complete source – pathway - receptor linkages for the six primary source areas identified during the preliminary works. The concentrations reported may represent an unacceptable risk to human health and/or the surrounding environment. The extent of contamination requires further characterisation to enable an assessment of these risks and to better define which pathways are complete.

Following review of this DSI development of strategies to remove, manage or mitigate remaining unacceptable risks will be completed.

Review of the preliminary investigation identified the following data gaps:

- Limited understanding of the lateral and vertical extent of PFAS in soil across the six primary source areas;

- Limited understanding of the nature and extent of PFAS in groundwater, and the quality of groundwater sourced from existing abstraction bores and its suitability for facility uses and potable supply; and
- Uncertainty regarding the extent of PFAS impact in sediment and surface waters of the receiving environment.

PFAS comprise a large group of compounds and are considered as "*emerging contaminants*". The information available on some of these compounds is limited, and research into their toxicity and behaviour is ongoing.

I1.1.2 Step 2 - Identify the Goal of the Study

The goal of the study is to obtain sufficient information to characterise the extent of the previously identified PFAS impact within the six primary source areas. These data are being used to improve the conceptual understanding of the distribution of PFAS impacts and refine the conceptual site model. The information will be used to inform if management strategies are required to manage potential risks associated with PFAS impacts.

I1.1.3 Step 3 - Identify Information Inputs

The following inputs were considered in addressing the goals of this study:

- Detailed review of previous investigations completed within the study area;
- Regulatory guidance as outlined in **Section 2.3** and any further correspondence from DES;
- Tier 1 health and ecological investigation and screening levels of each protected beneficial use applicable within the boundary of the investigation area and the respective receiving environment;
- Quantitative site characterisation data including: visual observations and field measurements made during intrusive investigations, laboratory analytical data from field samples (soil, sediment, groundwater and surface water), analytical data comparisons with screening criteria appropriate for the land use;
- Hydrogeological and hydrological data across the investigation area including gradient and flow direction;
- Publicly available information including aerial photographs, topographical, geological and soils maps;
- Review of environmental receptors; and
- Any additional relevant information provided by RTAW.

I1.1.4 Step 4 - Define the Boundaries of the Study

The spatial boundaries applied for data collection and decision making are shown in the figures in **Appendix A**.

The vertical extent of the investigation is the depth to the shallow aquifer system beneath the investigation areas (anticipated at 15 mbgl).

Temporal boundaries were limited to the proposed fieldwork timeframes and were between November 2018 and February 2019.

I1.1.5 Step 5 - Develop the Analytical Approach

The analytical approach is outlined in **Section 5.4** and includes:

- Samples of soil, groundwater, surface water and sediment were analysed for PFAS;
- Results of the DSI were initially be compared against Tier 1 screening criteria and a preliminary Tier 1 risk assessment was undertaken;
- Selected samples were analysed for Australian Standard Leaching Procedure (ASLP) and PFAS with Total Oxidisable Precursor Assay (TOPA) analysis based on the results of the initial analysis results;

- ASLP was conducted to assess the leachability of PFAS under natural rainfall conditions; and
- TOPA analysis was undertaken to investigate the potential presence of precursor compounds at each source area investigated.

The decision rules pertaining to the data obtained during the DSI are as follows:

- If the laboratory quality assurance/quality control data are within the acceptable ranges, the data will be considered suitable for use;
- If the COPC are reported above the laboratory LOR or risk-based screening levels in one or more samples, then it will be considered whether further assessment or management measures are required; and
- If the COPC are reported below the laboratory detection limit in the samples applicable to a specific pathway, then it will be considered that the current data set does not provide evidence of a potential complete source-pathway-receptor linkage and therefore inclusion of that pathway in the risk assessment may not be required. Note that such decisions will also consider temporal and other data and will not rely solely on results in isolation.

The decision on the acceptance of the analytical data will be made on the basis of the Data Quality Indicators (DQIs) as follows:

- **precision:** a quantitative measure of the variability (or reproducibility) of data;
- **accuracy**: a quantitative measure of the closeness of reported data to the “true” value;
- **representativeness**: the confidence (expressed qualitatively) that data are representative of each media present in the Investigation Area;
- **completeness**: a measure of the amount of useable data from a data collection activity; and
- **comparability**: the confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.

Precision

Suitable criteria and/or performance indicators for assessment of precision include:

- performance of intra-laboratory duplicate sample sets through calculation of relative percentage differences (RPDs); and
- performance of inter-laboratory duplicate sample sets through calculation of RPDs; and

The RPDs will be assessed as acceptable if less than or equal to 30% as per the NEPM Schedule B3. Where the result shows greater than 30% difference a review of the cause will be conducted (NEPM, 2013). It is noted that RPDs that exceed this range may be considered acceptable where:

- results are less than 10 times the LOR (no limit);
- results are less than 20 times the LOR and the RPD is less than 50%; and
- heterogeneous materials are encountered.

Accuracy (Bias)

The closeness of the reported data to the “true” value is assessed through review of the performance of:

- method blanks, which are analysed for the analytes targeted in the primary samples;
- matrix spikes and surrogate recoveries; and
- laboratory control samples.

Representativeness

To ensure the data produced by the laboratory is representative of conditions encountered in the field, the following steps are taken by the laboratory and subsequently reviewed by AECOM:

- blank samples will be run in parallel with field samples to confirm there are no unacceptable instances of laboratory cross contamination;
- review of RPD values for field and laboratory duplicates to provide an indication that the samples are generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities; and
- the appropriateness of collection methodologies, handling, storage and preservation techniques will be assessed to ensure/confirm there was minimal opportunity for sample interference or degradation.

Completeness

In validating the degree of completeness of the analytical data sets acquired the following is considered:

- whether standard operating procedures (SOPs) for sampling protocols have been adhered to;
- copies of all chain of custody (COC) documentation are reviewed and presented.

It can therefore be considered whether the proportion of “useable data” generated in the data collection activities is sufficient for the purposes of assessing the problem as stated in Step 1 above.

Comparability

Given that assessment data can comprise several data sets from separate sampling episodes, issues of comparability between data sets are reduced through adherence to SOPs and regulator endorsed or made guidelines and standards on each data gathering activity.

In addition, the data will be collected by experienced AECOM field staff and National Association of Testing Authorities accredited laboratories will be employed in all laboratory programs for soil, sediment and water analysis.

I1.1.6 Step 6 - Specify Performance or Acceptance Criteria

Specific limits for this project are in accordance with the appropriate guidance made or endorsed by state and national regulations, appropriate indicators of data quality, and standard procedures for field sampling and handling.

This step also examines the certainty of conclusive statements based on the available new site data collected. This should include the following points to quantify tolerable limits:

- a decision can be made based on a certainty assumption of 95% confidence in any given data set. A limit on the decision error will be 5% that a conclusive statement may be a false positive or false negative.
- a decision error in the context of the decision rule presented above would lead to either underestimation or overestimation of the risk level associated with a particular sampling area.

Sampling errors may occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the site. To address this, the SAQP outlined minimum numbers of samples proposed to be collected from each media.

Measurement errors can occur during sample collection, handling, preparation, analysis and data reduction. To address this, the following measures are proposed:

- sufficient sample mass was collected to facilitate analysis reported to standard laboratory detections limits. Collection of insufficient sample mass would result in raised detection limits;
- field staff followed a standard procedure when collecting samples, including decontamination of tools, removal of adhered soil to avoid false positives in results, and use of appropriate sample containers and preservation methods;
- laboratories followed a standard procedure when preparing samples for analysis and undertaking analysis; and

- laboratories to report quality assurance / quality control data for comparison with the DQIs established for the project.

I1.1.7 Step 7 - Optimise the Design for Obtaining Data

The methodology presented in this report is designed to meet the objectives described in **Section 1.2** and to achieve the nominated DQOs. Optimisation of the data collection process was achieved by:

- working closely with the analytical laboratories and sampling equipment suppliers to ensure that appropriate procedures and processes are developed and implemented prior to and during the fieldwork, to ensure that sample handling, and transport to and processing by, the analytical laboratories is as smooth as possible; and
- conducting sampling according to AECOM SOPs for the type of sampling being conducted (i.e. groundwater monitoring well sampling versus landholder bore water sampling).

I1.2 Assessment of Data Quality

The quality of data collected as part of this investigation is assessed on a range of factors including:

- documentation and data completeness; and
- data quality – comparability, representativeness, and precision and accuracy for sampling and analysis.

Assessment criteria for data quality indicators for samples are listed below in Table 1.

Table 1 Acceptance criteria for data quality indicators in laboratory analysis

Data Quality Indicator	Acceptance Criteria
Rinsate Blanks	Less than the laboratory LOR
Intra laboratory field duplicates (1) (3)	RPD less than ± 30 – 50 % (where results > 10 x LOR) (2)
Laboratory Duplicates (1) (2) (3)	RPDs less than: • 20 % for high level laboratory duplicates (i.e. >20 x LOR) • 50 % for medium level laboratory duplicates (i.e. 10 to 20 x LOR)
Matrix Spikes (3) (4)	Recoveries between 70 -130 % of the theoretical recovery or as nominated in the laboratory's QC report
Method Blanks	Less than the laboratory LOR
Laboratory Control Samples (5)	Recoveries between laboratory specified range for each analyte / analytical suite.
Surrogate Spikes	Recoveries for surrogates are test dependent and are based on USEPA Method SW846. Control limits are dynamic and vary for individual tests but are within the criteria described in USEPA Method SW846.

Notes:

1. Potential exceptions to this criterion may occur where sample variation or heterogeneity, rather than poor laboratory performance, is accountable for the poor reproducibility, or where the results are close to the LOR. This typical RPD range is obtained from AS 4482.1-2005 guide to the investigation and sampling of sites with potentially contaminated soil.
2. If the results are close to the LOR, then higher results will be accepted.
3. Criteria for sample duplicate and matrix spike results assume no sample heterogeneity. If samples are found to be heterogeneous with respect to a particular analyte the above criteria does not apply.
4. Assumes that samples are homogeneous and the background analyte level is less than 20 % of the spike level (refer to USEPA Method 8000B). Note that there is no requirement for matrix spikes to pass, as certain matrices may preclude recovery of spiked compounds. In this case, data will be accepted if lab control sample data meets the acceptance criteria.
5. 5.80 % of the compounds tested must fall within the control limits. Control limits are dynamic and vary for individual tests as per USEPA Method 8000B.
6. Decision errors may include collecting samples that are not representative of the contamination status of the material and/or analytical errors.

I1.3 Field QA/QC Data Assessment

I1.3.1 General

All work completed as part of this Detailed Site Investigation was conducted in accordance with standard AECOM environmental sampling protocols. The essential elements of the QA/QC program are presented in the Table 2.

Table 2 Essential elements of the field QA/QC program

Action	Description
Use of experienced personnel	Fieldwork was undertaken by trained AECOM personnel with previous experience in contaminated site assessment, field sampling techniques and health and safety procedures.
Record keeping	Date, field personnel details, observations and findings of field activities. Recording of sample description and collection details on standard AECOM field sheets.
Sample collection	New nitrile gloves were worn during soil and water sampling and were replaced between each sample collection.
Sample labelling	A unique sample number was used for each sample to specify the sample origin (Sample location ID and date), preservation standards and analytical requirements.
Chain of custody	Standard AECOM COC procedures were adopted for sample transfers. COC documentation included sample numbers; date of sampling / collection; analyses required; and release and receipt of parties accepting sample custody.
Sample storage	Samples were collected in appropriate sample containers supplied by the analytical laboratory. Samples were placed in cool storage on ice prior to transfer to the laboratory.
Decontamination	All equipment used in the sampling process was decontaminated using deionised water prior to mobilisation and between sampling locations to reduce the risks of cross contamination.

In addition to the primary samples, quality control field duplicate samples were collected to assess aspects of field protocols and laboratory performance and to classify the validity of the laboratory data. Field duplicates were collected in general accordance with AS 4482.1-2005 guide to the investigation and sampling of sites with potentially contaminated soil (Standards Australia 2005).

I1.3.2 Handling and Sample Preservation

The laboratories reported that all samples were received in appropriately pre-treated and preserved containers. Due to the nature of the compounds selected for analysis, the laboratory indicated chilling of the samples was not necessary. Therefore, ice was not used to keep samples cool during transit to the laboratory.

I1.3.3 Frequency of Field Quality Control Samples

Field duplicate samples (intra-laboratory duplicates) and field triplicate samples (inter-laboratory duplicates) were collected and labelled so that they could not be linked to their respective primary samples.

Field duplicate and triplicate samples were collected at a rate of 1 duplicate / triplicate pair per 10 primary samples (10 %) in accordance with the NEMP (HEPA, 2018). These samples were prepared in the field by equally splitting the primary field samples.. Overall, the number of quality control samples meets the 10% target (initial total of 277 samples with 29 quality control samples). Some additional soil samples (20) were subsequently analysed, which increased the total number of samples, however, no additional quality control samples were analysed.

I1.3.4 Relative Percentage Difference (RPD) Calculations

A RPD analysis of primary and duplicate / triplicate samples is used to measure the representativeness and/or precision of duplicate samples. The RPD is calculated from the

absolute difference between results of the duplicate pair divided by the mean value of the duplicate pair.

$$RPD\ (\%)\ =\ 100\ x\ (D1 - D2)\ /\ ((D1 + D2)\ /\ 2)$$

$$Where: D1\ =\ primary\ sample\ analysis, D2\ =\ duplicate\ sample\ analysis$$

AS 4482.1-2005 states that the typical RPD expected from acceptable field duplicates is < ± 30 – 50 % of the mean concentration of the analyte, where the results are greater than ten times the LOR.

The acceptable ranges adopted are:

- unlimited for laboratory duplicates between 0 - 10 x LOR;
- 50 % for laboratory duplicates between 10 - 30 x LOR;
- 30 % for laboratory duplicates greater than 30 x LOR;
- where concentrations for either the primary or the duplicate / triplicate sample are reported below LOR RPD calculations are not possible.

The RPD results for soil samples are provided in **Table I1**. All samples were within the RPD ranges stipulated, with the exception of triplicate sample QC201_181105 (primary sample LPI_MW27_0.0-0.1). The RPD value for PFOS in this sample was calculated at 69 % which exceeds the acceptable criteria stipulated. Concentrations of PFOS in both the primary and triplicate samples are below the investigation criteria by one order of magnitude, indicating that this variance does not influence the outcome of the report. The differences in concentrations are considered to be due to sample heterogeneity.

The RPD results for sediment samples are provided in **Table I2**. No RPD non-conformances were identified in the data.

The RPD results for groundwater samples are provided in **Table I3** with the RPD non-conformances summarised in Table 3.

Table 3 Summary of PFAS RPD non-conformances – groundwater

Primary Sample ID	QC sample ID	Type	6:2 FTS	PFPeA	PFOS	PFHpA	PFHxA	PFHxS
			RPD (%)					
ASB_MW22_20181122	QC213_181122_GM	Triplicate	45					
AHEQ_MW06_181122	QC118_181122	Duplicate		52		41	40	
	QC218_181122	Triplicate		95	61		101	54
MB5_190221	QC203_190221	Triplicate			32			
EWHEQ_MW08_181123	QC120_181123	Duplicate	43					
	QC220_181123	Triplicate	70					46
LPI_MW26_181125	QC223_181125	Triplicate	41					
ELN_MW10_181126	QC224_181126	Triplicate	36					
ELN_MW07_181127	QC225_181127	Triplicate			32			35

The RPD values for the groundwater samples were within the accepted criteria with the exception of the nine exceedances highlighted in the table above. The RPD results are not considered to impact the interpretation for this investigation but do demonstrate that differences in laboratory analysis and extraction methods in groundwater samples should be considered in assessing the contamination status of the investigation area. At select locations, the high RPDs may be related to low detected concentrations at or near the limit of reporting. It is noted that in

most instances the QC sample result were within the same order of magnitude as the primary sample. Where this was not the case, the primary and QC results both reported the presence of impact, with no result altering the outcome of this investigation.

The RPD results for groundwater samples are provided in **Table I4** with the RPD non-conformances for water samples are summarised in Table 4.

Table 4 Summary of PFAS RPD non-conformances - surface water

Primary Sample ID	QC sample ID	Type	PFOS	PFHxA
			RPD (%)	
PR/AND/WS_20181123	QC214_20181123	Triplicate		52
EMB/EV/NSC_Low_190223	QC106_190223	Duplicate	171	

In the case of sample EMB/EV/NSC_Low_190223 results for both the primary and duplicate were close to LOR suggesting that variance may be a result of sample heterogeneity. Results for sample PR/AND/WS_20181123 and the associated triplicate were within the same order of magnitude, and therefore variance reported does not change the outcome of this investigation.

I1.3.5 Rinsate Blank Samples

Rinsate blanks were collected from sampling equipment which was decontaminated and re-used by passing laboratory supplied deionised water over the sampling equipment following decontamination procedures. The analytical results for the rinsate samples are presented in **Table I4**. Of the 27 rinsate samples obtained, only two returned results above LOR. In these two instances concentrations of PFHxS, PFOS and 6:2 FTS were within the same order of magnitude as the laboratory LOR.

This indicates that field decontamination procedures were adequate, and the data were considered acceptable for intended use. In the unlikely event that some cross-contamination may have occurred during the sampling, the impact of such event is considered negligible for the outcomes of the assessment process.

I1.4 Laboratory QA/QC

The laboratories used in the investigation (ALS for primary and duplicate samples and NMI for triplicate samples) are National Association of Testing Authorities (NATA) approved for the analyses required. Quality assurance procedures adopted by the analytical laboratories included analysis of blanks, duplicates, laboratory control samples and matrix spikes.

The different types of laboratory QC samples and select batches where one or more laboratory control samples were outside the limits are discussed below.

I1.4.1 Extraction and Analysis Holding Time

All samples were received and extracted within the recommended holding times with the exception of the analysis time outliers summarised in Table 5.

Table 5 Analysis holding time outliers

Lab Report	Sample ID	Analyte	Days Overdue
ES1834520	QC101_181105	Moisture content	2
ES1835146	AHEQ MW07_0.4-0.5 AHEQ MW08_0.4-0.5 AHEQ MW08_1.4-1.5 AHEQ MW10_0.9-1.0 AHEQ MW10_2.9-3.0 AHEQ MW11_0.9-1.0		2
	AHEQ MW11_2.9-3.0		1
ES1834518	LPI_MW25_1.9-2.0 LPI_MW27_0.0-0.1 LPI_MW25_5.9-6.0		2
	LPI_MW24_1.4-1.5 LPI_MW24_2.9-3.0 LPI_MW26_0.9-1.0 LPI_MW26_1.4-1.5 LPI_MW27_1.4-1.5 LPI_MW28_0.0-0.1 LPI_MW29_0.4-0.5 LPI_MW29_1.4-1.5		1
ES1835646	PR/EWM/WP/DOS_0.0 PR/EWM/02		9
ES1838930	AHEQ_SS04_0.1 RWW_SS02_0.2 AHEQ_SS06_0.2 AHEQ_SS07_0.1 AHEQ_SS05_0.2		29
	ELN_MW10_0.4-0.5		28
	LP_SS03_0.2		27
	LP_SS07_0.2 LP_SS07_0.1 LP_SS05_0.1		26
	EWHEQ_SS02_0.1 EWHEQ_SS01_0.2 EWHEQ_SS03_0.2 EWHEQ_SS08_0.1		24

All of the analysis holding time errors were for moisture content, therefore these outliers do not affect the outcome of this report.

I1.4.2 Method Blanks

The quality control term *method blank* refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC type is to monitor potential laboratory contamination. All the laboratory blanks were within the DQO limits for this investigation. Method blank concentrations were not detected above the LOR for all analytes.

I1.4.3 Laboratory Control Sample (LCS)

The quality control term *laboratory control sample* (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Accepted frequency of LCS samples is 1 in 20. No LCS outliers were identified in any of the 10 batches analysed.

I1.4.4 Laboratory Duplicates

The quality control term *laboratory duplicate* refers to an intra-laboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity. RPDs are used to assess precision. Frequency of laboratory duplicate samples 1 in 10.

The RPDs for laboratory duplicate samples were within the limits for all analytes.

I1.4.5 Matrix Spikes

The quality control term *matrix spike* (MS) refers to an intra-laboratory split sample spiked with a representative set of target analytes. The purpose of this QC type is to monitor potential matrix effects on analyte recoveries. The samples undergo the same extraction and analysis procedures and the results are used to assess the method precision and bias. Spike recoveries are reported as a percent recovery. Frequency of MS samples is 1 in 20. MS outliers are as follows:

- ES1834520
  - Soil - PFOS
  - Water – PFOS, PFHxS, PFPeA, PFHxA, 6:2 FTS
- ES1835146
  - Soil – PFOS, 6:2 FTS
- ES1836405
  - Soil – 6:2 FTS
- ES1835646
  - Soil – 10:2 FTS
  - Water – PFOS, PFHxS, PFPeA, PFHxA, PFHpA, 6:2 FTS
- EB1904920
  - Water – PFOS, PFPeA, PFHxA, 6:2 FTS

In all instances, non-conformances are a result of sample background levels being greater than four times the spike level, therefore MS recoveries could not be determined. These outliers are not deemed significant, and data are considered acceptable for use.

I1.4.6 Surrogate Spikes

The quality control term *surrogate spike* (SS) refers to a compound added to a sample aliquot in known amounts before extraction and analysis. The compound should be similar in composition and behaviour to the target analyte but not naturally occurring in the sample. A surrogate is used to monitor the method performance for analysis of compounds. Spike recoveries are reported as a percent recovery. The following batches reported SS recoveries outside the limits for select analytes in:

- ES1835646 – 13C8 PFOA (PR/AND/WS and QC114_20181123)

Surrogate recoveries in these samples were lower than the DQO due to sample matrix interferences, confirmed by reanalysis. These non-conformances are not considered significant.

I1.4.7 Frequency of Laboratory QC samples

The laboratory reported a sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision for all batches submitted.

I1.5 Conclusions

While non-conformances with the laboratory QA/QC have been identified, they are not considered to adversely impact the purpose of the investigation. It is concluded that, for the purposes of this investigation, the data are suitable for interpretation and acceptable for use in this assessment.

			Chemical Group	Perfluoroalkyl Sulfonic Acids							Perfluoroalkyl Carboxylic Acids											
			Chemical Name	PFBA	PFBS	PFPeS	PFHpS	PFHxS	PFOS	PFDS	PFOA	PFPeA	PFTeDA	PFTrDA	PFDcA	PFHpA	PFHxA	PFDoDA	PFNA	PFUnA	FOSA	MeFOSE
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg
			LOR	0.001 : 0.002 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.002 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.002 (Interlab)	0.0005 : 0.002 (Interlab)	0.0002 : 0.002 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.002 (Interlab)	0.0002 : 0.001 (Interlab)	0.0002 : 0.002 (Interlab)	0.0002 : 0.001 (Interlab)	0.5 : 5 (Interlab)
Lab Report	**Sample ID**	**Date Sampled**	**Sample Type**																			
ES1834518	LPI_MW27	5/11/2018	Primary	<0.001	<0.0002	<0.0002	<0.0002	**0.0006**	**0.0181**	**0.0007**	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
ES1834520	QC101_181105	5/11/2018	Duplicate	<0.001	<0.0002	<0.0002	<0.0002	**0.0012**	**0.0281**	**0.001**	0.0003	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.5
			RPD	0	0	0	0	67	43	35	0	0	0	0	0	0	0	0	0	0	0	0
RN1215247	QC201_181105	5/11/2018	Triplicate	<0.002	<0.001	<0.001	<0.001	<0.001	**0.037**	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5
			RPD	0	0	0	0	0	**69**	0	0	0	0	0	0	0	0	0	0	0	0	0
ES1834518	LPI_MW28	6/11/2018	Primary	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
ES1834520	QC102_181106	8/11/2018	Duplicate	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RN1215247	QC202_181106	6/11/2018	Triplicate	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ES1834518	EWHEQ_MW08	9/11/2018	Primary	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
ES1834520	QC103_181108	8/11/2018	Duplicate	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RN1215247	QC203_181108	9/11/2018	Triplicate	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ES1835147	ELN_SS02_0.1	16/11/2018	Primary	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	**0.0004**	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
ES1835147	QC106_20181116	16/11/2018	Duplicate	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	**0.0002**	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
			RPD	0	0	0	0	0	**67**	0	0	0	0	0	0	0	0	0	0	0	0	0
RN1215916	QC206_20181116	16/11/2018	Triplicate	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ES1835147	LP SS03_0.1	16/11/2018	Primary	**<0.001**	**0.0003**	**0.0002**	**0.0003**	**0.003**	**0.05**	**0.0009**	**0.0012**	**0.0005**	<0.0005	<0.0002	<0.0002	**0.0006**	**0.0006**	<0.0002	0.0004	<0.0002	<0.0002	<0.5
RN1215916	QC207_20181117	16/11/2018	Duplicate	<0.002	<0.001	<0.001	<0.001	**0.0019**	**0.046**	<0.001	**0.001**	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5
			RPD	0	0	0	0	45	8	0	18	0	0	0	0	0	0	0	0	0	0	0
ES1835146	AP_MW01_9.1-9.2	17/11/2018	Primary	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
EB1904914	QC108_181117	17/11/2018	Duplicate	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RN1215916	QC208_20181117	17/11/2018	Triplicate	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ES1835147	AP_SS07_0.1	17/11/2018	Primary	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
ES1835147	QC109_181117	17/11/2018	Duplicate	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RN1215916	QC209_20181118	17/11/2018	Triplicate	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ES1835146	AHEQ_MW09_12.1-1	18/11/2018	Primary	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
ES1835147	QC110_181118	18/11/2018	Duplicate	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RN1215916	QC210_20181118	18/11/2018	Triplicate	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5
			RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

			Chemical Group	Perfluoroalkyl Sulfonamides					(n:2)FtS Acids			
			Chemical Name	MeFOSA	EtFOSE	EtFOSA	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			LOR	0.0005 : 0.002 (Interlab)	0.0005 : 0.005 (Interlab)	0.0005 : 0.002 (Interlab)	0.0002 : 0.002 (Interlab)	0.0002 : 0.002 (Interlab)	0.0005 : 0.001 (Interlab)	0.0005 : 0.001 (Interlab)	0.0005 : 0.001 (Interlab)	0.0005 : 0.002 (Interlab)
Lab Report	**Sample ID**	**Date Sampled**	**Sample Type**									
ES1834518	LPI_MW27	5/11/2018	Primary	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
ES1834520	QC101_181105	5/11/2018	Duplicate	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
			RPD	0	0	0	0	0	0	0	0	0
RN1215247	QC201_181105	5/11/2018	Triplicate	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
			RPD	0	0	0	0	0	0	0	0	0
ES1834518	LPI_MW28	6/11/2018	Primary	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
ES1834520	QC102_181106	8/11/2018	Duplicate	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
			RPD	0	0	0	0	0	0	0	0	0
RN1215247	QC202_181106	6/11/2018	Triplicate	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
			RPD	0	0	0	0	0	0	0	0	0
ES1834518	EWHEQ_MW08	9/11/2018	Primary	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
ES1834520	QC103_181108	8/11/2018	Duplicate	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
			RPD	0	0	0	0	0	0	0	0	0
RN1215247	QC203_181108	9/11/2018	Triplicate	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
			RPD	0	0	0	0	0	0	0	0	0
ES1835147	ELN_SS02_0.1	16/11/2018	Primary	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
ES1835147	QC106_20181116	16/11/2018	Duplicate	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
			RPD	0	0	0	0	0	0	0	0	0
RN1215916	QC206_20181116	16/11/2018	Triplicate	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
			RPD	0	0	0	0	0	0	0	0	0
ES1835147	LP SS03_0.1	16/11/2018	Primary	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
RN1215916	QC207_20181117	16/11/2018	Duplicate	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
			RPD	0	0	0	0	0	0	0	0	0
ES1835146	AP_MW01_9.1-9.2	17/11/2018	Primary	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
EB1904914	QC108_181117	17/11/2018	Duplicate	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
			RPD	0	0	0	0	0	0	0	0	0
RN1215916	QC208_20181117	17/11/2018	Triplicate	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
			RPD	0	0	0	0	0	0	0	0	0
ES1835147	AP_SS07_0.1	17/11/2018	Primary	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
ES1835147	QC109_181117	17/11/2018	Duplicate	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
			RPD	0	0	0	0	0	0	0	0	0
RN1215916	QC209_20181118	17/11/2018	Triplicate	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
			RPD	0	0	0	0	0	0	0	0	0
ES1835146	AHEQ_MW09_12.1-1	18/11/2018	Primary	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
ES1835147	QC110_181118	18/11/2018	Duplicate	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
			RPD	0	0	0	0	0	0	0	0	0
RN1215916	QC210_20181118	18/11/2018	Triplicate	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
			RPD	0	0	0	0	0	0	0	0	0

		Group	Perfluoroalkyl Sulfonic Acids							Perfluoroalkyl Carboxylic Acids										Perfluoroalkyl Sulfonamides							(n:2)FtS Acids			
		Chemical Name	PFBA	PFBS	PFPeS	PFHpS	PFHxS	PFOS	PFDS	PFOA	PFPeA	PFTeDA	PFTrDA	PFDcA	PFHpA	PFHxA	PFDoDA	PFNA	PFUnA	FOSA	MeFOSE	MeFOSA	EtFOSE	EtFOSA	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS
		Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	UG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		LOR	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.5	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005
Sample ID	**Date**	**Type**																												
EMB/EV/NSC_0.0	21/11/2018	Primary	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
QC115_181121	21/11/2018	Duplicate	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
		RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC215_181121	21/11/2018	Triplicate	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
		RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EMB/EV/NSB_High	23/02/2019	Primary	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
QC108_190223	23/02/2019	Duplicate	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	**0.0003**	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.5	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
		RPD	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC208_190223	23/02/2019	Triplicate	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<5	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002
		RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table I3 Groundwater QAQC

		Group	Perfluoroalkyl Sulfonic Acids							Perfluoroalkyl Carboxylic Acids										Perfluoroalkyl Sulfonamides						
		Chemical Name	PFBA	PFBS	PFPeS	PFHpS	PFHxS	PFOS	PFDS	PFOA	PFPeA	PFTeDA	PFTrDA	PFDcA	PFHpA	PFHxA	PFDoDA	PFNA	PFUnA	FOSA	MeFOSE	MeFOSA	EtFOSE	EtFOSA	MeFOSAA	EtFOSAA
		Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L
		LOR	0.002 : 0.005	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.002	0.0005 : 0.002	0.0005 : 0.002	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.001 : 0.005	0.001 : 0.005	0.001 : 0.005	0.001 : 0.005	0.0005 : 0.002	0.0005 : 0.002
Sample ID	**Date**	**Sample Type**																								
ASB_MW22_20181122	22/11/2018	Primary	<0.002	<0.0005	<0.0005	<0.0005	**0.0014**	**0.005**	<0.0005	**0.0005**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0008**	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC113_181122	22/11/2018	Duplicate	<0.002	<0.0005	<0.0005	<0.0005	**0.0012**	**0.0045**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	**0.0007**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	0	0	0	0	15	11	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0
QC213_181122_GM	22/11/2018	Triplicate	<0.005	<0.001	<0.001	<0.001	<0.001	**0.0035**	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
		RPD	0	0	0	0	33	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AHEQ_MW06_181122	22/11/2018	Primary	**0.02**	**0.0133**	**0.0089**	**0.0022**	**0.0729**	**0.0999**	<0.0005	**0.0081**	**0.185**	<0.0005	<0.0005	<0.0005	**0.0491**	**0.133**	<0.0005	**0.0008**	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC118_181122	22/11/2018	Duplicate	**0.014**	**0.0119**	**0.01**	**0.0024**	**0.0664**	**0.0978**	<0.0005	**0.0074**	**0.109**	<0.0005	<0.0005	<0.0005	**0.0323**	**0.0889**	<0.0005	**0.0007**	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	35	11	12	9	9	2	0	9	52	0	0	0	41	40	0	13	0	0	0	0	0	0	0	0
QC218_181122	22/11/2018	Triplicate	**0.024**	**0.0055**	**0.0049**	**0.0013**	**0.042**	**0.053**	<0.001	**0.0039**	**0.066**	<0.002	<0.002	<0.001	**0.02**	**0.044**	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
		RPD	18	83	58	51	54	61	0	70	95	0	0	0	84	101	0	0	0	0	0	0	0	0	0	0
EWHEQ_MW07_181123	23/11/2018	Primary	<0.002	**0.0051**	**0.001**	<0.0005	**0.0086**	**0.0054**	<0.0005	**0.0006**	**0.0012**	<0.0005	<0.0005	<0.0005	<0.0005	**0.0022**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC119_181123	23/11/2018	Duplicate	<0.002	**0.0059**	**0.0009**	**0.0005**	**0.0081**	**0.0049**	<0.0005	**0.0006**	**0.0013**	<0.0005	<0.0005	<0.0005	<0.0005	**0.002**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	0	15	11	0	6	10	0	0	8	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0
QC219_181123	23/11/2018	Triplicate	<0.005	<0.001	<0.001	<0.001	**0.0051**	**0.003**	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	**0.0018**	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
		RPD	0	134	0	0	51	57	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0
EWHEQ_MW08_181123	23/11/2018	Primary	**0.008**	**0.0109**	**0.0073**	**0.0019**	**0.059**	**0.0139**	<0.0005	**0.0009**	**0.0026**	<0.0005	<0.0005	<0.0005	**0.0011**	**0.0033**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC120_181123	23/11/2018	Duplicate	<0.002	**0.0086**	**0.0068**	**0.0018**	**0.0518**	**0.014**	<0.0005	**0.0009**	**0.0018**	<0.0005	<0.0005	<0.0005	**0.001**	**0.0035**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	120	24	7	5	13	1	0	0	36	0	0	0	10	6	0	0	0	0	0	0	0	0	0	0
QC220_181123	23/11/2018	Triplicate	<0.005	**0.0061**	**0.0048**	<0.001	**0.037**	**0.0083**	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	**0.0027**	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
		RPD	46	56	41	62	46	50	0	0	26	0	0	0	10	20	0	0	0	0	0	0	0	0	0	0
AP_MW02_181124	24/11/2018	Primary	<0.002	**0.0007**	<0.0005	<0.0005	**0.0055**	**0.0078**	<0.0005	**0.0006**	**0.0008**	<0.0005	<0.0005	<0.0005	**0.0006**	**0.0014**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC121_181124	24/11/2018	Duplicate	<0.002	**0.0006**	<0.0005	<0.0005	**0.0053**	**0.0078**	<0.0005	**0.0006**	**0.0007**	<0.0005	<0.0005	<0.0005	**0.0006**	**0.0013**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	0	15	0	0	4	0	0	0	13	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0
QC221_181124	24/11/2018	Triplicate	<0.005	<0.001	<0.001	<0.001	**0.0033**	**0.005**	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	**0.0011**	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
		RPD	0	0	0	0	50	44	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0
ALF_MW06_181124	24/11/2018	Primary	<0.002	**0.001**	**0.0007**	<0.0005	**0.0092**	**0.0057**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC122_181124	24/11/2018	Duplicate	<0.002	**0.0005**	**0.0005**	<0.0005	**0.0074**	**0.0056**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	0	67	33	0	22	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC222_181124	24/11/2018	Triplicate	<0.005	<0.001	<0.001	<0.001	**0.0046**	**0.0035**	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
		RPD	0	0	0	0	67	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LPI_MW26_181125	25/11/2018	Primary	<0.002	<0.005	**0.0005**	<0.0005	**0.0032**	**0.0031**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC123_181125	25/11/2018	Duplicate	<0.002	<0.005	**0.0005**	<0.0005	**0.0031**	**0.0032**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC223_181125	25/11/2018	Triplicate	<0.005	<0.001	<0.001	<0.001	**0.0022**	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
		RPD	0	0	0	0	37	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELN_MW10_181126	26/11/2018	Primary	<0.002	<0.005	**0.0007**	<0.0005	**0.0089**	**0.0188**	<0.0005	<0.0005	**0.0009**	<0.0005	<0.0005	<0.0005	<0.0005	**0.0008**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC124_181126	26/11/2018	Duplicate	<0.002	<0.005	**0.0007**	<0.0005	**0.009**	**0.018**	<0.0005	<0.0005	**0.0009**	<0.0005	<0.0005	<0.0005	<0.0005	**0.0009**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	0	0	0	0	1	4	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0
QC224_181126	26/11/2018	Triplicate	<0.005	<0.001	<0.001	<0.001	**0.0066**	**0.013**	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
		RPD	0	0	0	0	30	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ELN_MW07_181127	27/11/2018	Primary	**0.011**	**0.0021**	**0.0035**	<0.0005	**0.0642**	**0.113**	<0.0005	**0.0068**	**0.0128**	<0.0005	<0.0005	<0.0005	**0.007**	**0.0096**	<0.0005	**0.0005**	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC125_181127	27/11/2018	Duplicate	**0.009**	**0.0021**	**0.0036**	**0.0008**	**0.0649**	**0.114**	<0.0005	**0.0072**	**0.0128**	<0.0005	<0.0005	<0.0005	**0.0072**	**0.0098**	<0.0005	**0.0005**	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	20	0	3	46	1	1	0	6	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0
QC225_181127	27/11/2018	Triplicate	**0.015**	0.002	**0.0021**	<0.001	**0.045**	**0.082**	<0.001	**0.0048**	**0.011**	<0.002	<0.002	<0.001	**0.0054**	**0.0084**	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002
		RPD	31	5	50	0	35	32	0	34	15	0	0	0	26	13	0	0	0	0	0	0	0	0	0	0
SA026_190219	19/02/2019	Primary	<0.002	**0.0032**	**0.0028**	**0.0012**	**0.0123**	**0.0127**	<0.0005	**0.0011**	<0.0005	<0.0005	<0.0005	<0.0005	**0.0008**	**0.0029**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC100_190219	19/02/2019	Duplicate	<0.002	**0.0038**	**0.0031**	**0.0013**	**0.0138**	**0.0135**	<0.0005	**0.0012**	<0.0005	<0.0005	<0.0005	<0.0005	**0.0009**	**0.0034**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	0	17	10	8	11	6	0	9	0	0	0	0	12	16	0	0	0	0	0	0	0	0	0	0
QC200_190219	19/02/2019	Triplicate	<0.005	<0.001	**0.0024**	<0.001	**0.013**	**0.015**	<0.001	**0.0011**	<0.002	<0.002	<0.002	<0.001	<0.001	**0.0026**	<0.001	<0.001	<0.001	<0.001	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002
		RPD	0	105	15	18	6	17	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0
SA350_190221	21/02/2019	Primary	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC101_190221	21/02/2019	Duplicate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC201_190221	21/02/2019	Triplicate	<0.005	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002
		RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MB5_190221	21/02/2019	Primary	<0.002	**0.02**	**0.0066**	**0.0051**	**0.0517**	**0.203**	<0.0005	**0.0373**	**0.0067**	<0.0005	<0.0005	**0.0007**	**0.0101**	**0.0125**	<0.0005	**0.0016**	<0.0005	**0.0006**	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC103_190221	21/02/2019	Duplicate	**0.004**	**0.0201**	**0.0068**	**0.0054**	**0.0455**	**0.215**	<0.0005	**0.0318**	**0.0072**	<0.0005	<0.0005	**0.0006**	**0.0102**	**0.0126**	<0.0005	**0.0015**	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	67	0	3	6	13	6	0	16	7	0	0	15	1	1	0	6	0	18	0	0	0	0	0	0
QC203_190221	21/02/2019	Triplicate	**0.02**	**0.0087**	**0.0051**	**0.0036**	0.044	**0.28**	<0.001	**0.033**	**0.0068**	<0.002	<0.002	<0.001	**0.0086**	**0.01**	<0.001	**0.0014**	<0.001	<0.001	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002
		RPD	164	79	26	34	16	32	0	12	1	0	0	0	16	22	0	13	0	0	0	0	0	0	0	0
MB9_190222	22/02/2019	Primary	<0.002	**0.0029**	**0.0013**	**0.0007**	**0.0108**	**0.0144**	<0.0005	**0.0077**	**0.0009**	<0.0005	<0.0005	<0.0005	**0.0018**	**0.003**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
QC104_190222	22/02/2019	Duplicate	<0.002	**0.0031**	**0.0014**	**0.0007**	**0.0119**	**0.0156**	<0.0005	**0.0082**	**0.0008**	<0.0005	<0.0005	<0.0005	**0.0018**	**0.0029**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
		RPD	0	7	7	0	10	8	0	6	12	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
QC204_190222	22/02/2019	Triplicate	<0.005	**0.002**	**0.0011**	<0.001	**0.011**	**0.018**	<0.001	**0.0061**	<0.002	<0.002	<0.002	<0.001	**0.0011**	**0.0024**	<0.001	<0.001	<0.001	<0.001	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002
		RPD	0	37	17	0	2	22	0	23	0	0	0	0	48	22	0	0	0	0	0	0	0	0	0	0

Table I3 Groundwater QAQC

		Group	(n:2)FtS Acids			
		Chemical Name	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS
		Unit	ug/L	µg/L	µg/L	µg/L
		LOR	0.001	0.001	0.001	0.001
Sample ID	Date	Sample Type				
ASB_MW22_20181122	22/11/2018	Primary	<0.001	**0.299**	<0.001	<0.001
QC113_181122	22/11/2018	Duplicate	<0.001	**0.226**	<0.001	<0.001
		RPD	0	28	0	0
QC213_181122_GM	22/11/2018	Triplicate	<0.001	**0.19**	<0.001	<0.001
		RPD	0	45	0	0
AHEQ_MW06_181122	22/11/2018	Primary	<0.001	**0.019**	<0.001	<0.001
QC118_181122	22/11/2018	Duplicate	<0.001	**0.02**	<0.001	<0.001
		RPD	0	5	0	0
QC218_181122	22/11/2018	Triplicate	<0.001	**0.0089**	<0.001	<0.001
		RPD	0	72	0	0
EWHEQ_MW07_181123	23/11/2018	Primary	<0.001	**0.009**	<0.001	<0.001
QC119_181123	23/11/2018	Duplicate	<0.001	**0.008**	<0.001	<0.001
		RPD	0	12	0	0
QC219_181123	23/11/2018	Triplicate	<0.001	**0.0062**	<0.001	<0.001
		RPD	0	37	0	0
EWHEQ_MW08_181123	23/11/2018	Primary	<0.001	**0.168**	<0.001	<0.001
QC120_181123	23/11/2018	Duplicate	<0.001	**0.108**	<0.001	<0.001
		RPD	0	43	0	0
QC220_181123	23/11/2018	Triplicate	<0.001	**0.081**	<0.001	<0.001
		RPD	0	70	0	0
AP_MW02_181124	24/11/2018	Primary	<0.001	**0.023**	<0.001	<0.001
QC121_181124	24/11/2018	Duplicate	<0.001	**0.022**	<0.001	<0.001
		RPD	0	4	0	0
QC221_181124	24/11/2018	Triplicate	<0.001	**0.018**	<0.001	<0.001
		RPD	0	24	0	0
ALF_MW06_181124	24/11/2018	Primary	<0.001	<0.001	<0.001	<0.001
QC122_181124	24/11/2018	Duplicate	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0
QC222_181124	24/11/2018	Triplicate	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0
LPI_MW26_181125	25/11/2018	Primary	<0.001	**0.077**	<0.001	<0.001
QC123_181125	25/11/2018	Duplicate	<0.001	**0.078**	<0.001	<0.001
		RPD	0	1	0	0
QC223_181125	25/11/2018	Triplicate	<0.001	**0.051**	<0.001	<0.001
		RPD	0	41	0	0
ELN_MW10_181126	26/11/2018	Primary	<0.001	**0.094**	<0.001	<0.001
QC124_181126	26/11/2018	Duplicate	<0.001	**0.092**	<0.001	<0.001
		RPD	0	2	0	0
QC224_181126	26/11/2018	Triplicate	<0.001	**0.065**	<0.001	<0.001
		RPD	0	36	0	0
ELN_MW07_181127	27/11/2018	Primary	<0.001	**0.01**	<0.001	<0.001
QC125_181127	27/11/2018	Duplicate	<0.001	**0.01**	<0.001	<0.001
		RPD	0	0	0	0
QC225_181127	27/11/2018	Triplicate	<0.001	**0.006**	<0.001	<0.001
		RPD	0	50	0	0
SA026_190219	19/02/2019	Primary	<0.001	<0.001	<0.001	<0.001
QC100_190219	19/02/2019	Duplicate	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0
QC200_190219	19/02/2019	Triplicate	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0
SA350_190221	21/02/2019	Primary	<0.001	<0.001	<0.001	<0.001
QC101_190221	21/02/2019	Duplicate	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0
QC201_190221	21/02/2019	Triplicate	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0
MB5_190221	21/02/2019	Primary	<0.001	**0.002**	<0.001	<0.001
QC103_190221	21/02/2019	Duplicate	<0.001	**0.002**	<0.001	<0.001
		RPD	0	0	0	0
QC203_190221	21/02/2019	Triplicate	<0.001	**0.0025**	<0.001	<0.001
		RPD	0	22	0	0
MB9_190222	22/02/2019	Primary	<0.001	<0.001	<0.001	<0.001
QC104_190222	22/02/2019	Duplicate	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0
QC204_190222	22/02/2019	Triplicate	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0

Table I4 Surface Water QAQC

		Group	Perfluoroalkyl Sulfonic Acids							Perfluoroalkyl Carboxylic Acids										Perfluoroalkyl Sulfonamides							(n:2)FtS Acids			
		Chemical Name	PFBA	PFBS	PFPeS	PFHpS	PFHxS	PFOS	PFDS	PFOA	PFPeA	PFTeDA	PFTrDA	PFDcA	PFHpA	PFHxA	PFDoDA	PFNA	PFUnA	FOSA	MeFOSE	MeFOSA	EtFOSE	EtFOSA	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS
		Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	µg/L	µg/L
		LOR	0.002 : 0.005 : 0.01	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0003: 0.002	0.0005 : 0.001	0.0005 : 0.001	0.0005	0.0005 : 0.002	0.0005 : 0.002	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.0005 : 0.001	0.001 : 0.005	0.001 : 0.005	0.001 : 0.005	0.001 : 0.005	0.0005 : 0.002	0.0005 : 0.002	0.001	0.001	0.001	0.001
Sample ID	**Date**	**Type**																												
PR/AND/WS	23/11/2018	Primary	<0.002	<0.0005	<0.0005	<0.0005	**0.015**	**0.0306**	<0.0005	**0.0072**	**0.015**	<0.0005	<0.0005	**0.0013**	**0.0076**	**0.0562**	<0.0005	**0.0007**	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	**0.859**	**0.047**	**0.003**
QC114_20181123	23/11/2018	Duplicate	<0.002	<0.0005	<0.0005	<0.0005	**0.0156**	**0.0302**	<0.0005	**0.0073**	**0.014**	<0.0005	<0.0005	**0.001**	**0.0084**	**0.0574**	<0.0005	**0.0005**	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	**0.883**	**0.045**	**0.002**
		RPD	0	0	0	0	4	1	0	1	7	0	0	26	10	2	0	33	0	0	0	0	0	0	0	0	0	3	4	40
QC214_181123	23/11/2018	Triplicate	<0.01	<0.01	<0.001	<0.001	**0.0062**	**0.02**	<0.001	**0.005**	**0.024**	<0.002	<0.002	**0.001**	**0.0045**	**0.033**	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.001	0.95	**0.028**	<0.001
		RPD	0	0	0	0	83	42	0	36	46	0	0	26	51	**52**	0	0	0	0	0	0	0	0	0	0	0	10	51	100
EMB/EV/NSC_Low	21/11/2018	Primary	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
QC116_181121	21/11/2018	Duplicate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC216_181121	21/11/2018	Triplicate	**0.0062**	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001
		RPD	102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EMB/EV/NSB_High	21/11/2018	Primary	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
QC117_181121	21/11/2018	Duplicate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC217_181121	21/11/2018	Triplicate	**0.0082**	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001
		RPD	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EMB/EV/NSB_High	23/02/2019	Primary	<0.002	<0.0005	<0.0005	<0.0005	**0.0015**	**0.0022**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
QC105_190223	23/02/2019	Duplicate	<0.002	<0.0005	<0.0005	<0.0005	**0.0015**	**0.002**	<0.0005	<0.0005	**0.0005**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC205_190223	23/02/2019	Triplicate	<0.005	<0.001	<0.001	<0.001	**0.0016**	**0.0021**	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EMB/EV/NSC_Low	23/02/2019	Primary	<0.002	<0.0005	<0.0005	<0.0005	**0.0008**	**0.0039**	<0.0005	<0.0005	**0.0007**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
QC106_190223	23/02/2019	Duplicate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0	46	**171**	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC206_190223	23/02/2019	Triplicate	<0.005	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0	0	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EMB/EV/OSA_Low	23/02/2019	Primary	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
QC107_190223	23/02/2019	Duplicate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC207_190223	23/02/2019	Triplicate	<0.005	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.002	<0.005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001
		RPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

			Group	Perfluoroalkyl Sulfonic Acids							Perfluoroalkyl Carboxylic Acids									
			Chemical Name	PFBA	PFBS	PFPeS	PFHpS	PFHxS	PFOS	PFDS	PFOA	PFPeA	PFTeDA	PFTrDA	PFDcA	PFHpA	PFHxA	PFDoDA	PFNA	PFUnA
			Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			LOR	0.002	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Lab Report	**Sample ID**	**Date**	**Type**																	
ES1833769	SA37	9/11/2018	Blank	<0.002	<0.0005	<0.0005	<0.0005	**0.0008**	**0.001**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1834520	QC301_181105	5/11/2018	Rinsate	<0.1	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
ES1834520	QC302_181106	6/11/2018	Rinsate	<0.1	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
ES1834520	QC303_181107	7/11/2018	Rinsate	<0.1	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
ES1834520	QC304_181108	8/11/2018	Rinsate	<0.1	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
ES1834520	QC305_181109	9/11/2018	Rinsate	<0.1	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
ES1834520	QC306_181110	10/11/2018	Rinsate	<0.1	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
ES1835147	QC307_181111	11/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835147	QC308_181112	12/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835147	QC309_181115	15/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835147	QC310_181118	18/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835147	QC311_181119 GM	19/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835147	QC311_181119 LM	19/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835646	QC312_20181120_GM	20/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835646	QC312_181120LM	20/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	**0.0006**	**0.0005**	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835646	QC313_181121LM	21/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835646	QC314_181122_GM	22/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835646	QC314_181122 LM	22/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835646	QC315_181123_GM	23/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835646	QC315_181123LM	23/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835646	QC316_181124_GM	24/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1835646	QC316_181124_LM	24/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1836405	QC317_181125	25/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1836405	QC318_181126	26/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
ES1836405	QC319_181127	27/11/2018	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EB1904924	QC300_190219	19/02/2019	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EB1904924	QC301_20190221	21/02/2019	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EB1904924	QC302_190222	22/02/2019	Rinsate	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

			Group	Perfluoroalkyl Sulfonamides							(n:2)FtS Acids				PFAS Sums	
			Chemical Name	FOSA	MeFOSE	MeFOSA	EtFOSE	EtFOSA	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Sum (PFHxS + P	Sum of PFAS
			Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			LOR	0.0005	0.001	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0003	0.0003
Lab Report	**Sample ID**	**Date**	**Type**													
ES1833769	SA37	9/11/2018	Blank	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	**0.0018**	**0.0018**
ES1834520	QC301_181105	5/11/2018	Rinsate	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
ES1834520	QC302_181106	6/11/2018	Rinsate	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
ES1834520	QC303_181107	7/11/2018	Rinsate	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
ES1834520	QC304_181108	8/11/2018	Rinsate	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
ES1834520	QC305_181109	9/11/2018	Rinsate	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
ES1834520	QC306_181110	10/11/2018	Rinsate	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
ES1835147	QC307_181111	11/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835147	QC308_181112	12/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835147	QC309_181115	15/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835147	QC310_181118	18/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835147	QC311_181119 GM	19/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835147	QC311_181119 LM	19/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	**0.003**	<0.001	<0.001	<0.0003	**0.003**
ES1835646	QC312_20181120_GM	20/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835646	QC312_181120LM	20/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	**0.0011**	**0.0011**
ES1835646	QC313_181121LM	21/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835646	QC314_181122_GM	22/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835646	QC314_181122 LM	22/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835646	QC315_181123_GM	23/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835646	QC315_181123LM	23/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835646	QC316_181124_GM	24/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1835646	QC316_181124_LM	24/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1836405	QC317_181125	25/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1836405	QC318_181126	26/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
ES1836405	QC319_181127	27/11/2018	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
EB1904924	QC300_190219	19/02/2019	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
EB1904924	QC301_20190221	21/02/2019	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003
EB1904924	QC302_190222	22/02/2019	Rinsate	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003	<0.0003