

APPENDIX B



CHAIN OF CUSTODY

ALS Laboratory Please Tick

LABORATORY 21 Burns Road, Burnside SA 5065
Ph: 08 8330 0800 E: info@alslab.com
CARRISMAN 21st Street, Sturt SA 5040
Ph: 08 8243 7222 E: samples@alslab.com
DOLARSTONE 46 Colmanish Drive, Chichester QLD 4660
Ph: 07 4471 8500 E: glasgow@alslab.com

LABORATORY 24 Westall Road, Springvale VIC 3171
Ph: 03 8548 9600 E: samples@alslab.com
LABORATORY 125 Sydney Road, Melbourne VIC 3000
Ph: 03 8372 6735 E: mudgee@alslab.com

LABORATORY 4555 Mainland Road, Weyfield VIC 3044
Ph: 03 4014 2500 E: samples@alslab.com
LABORATORY 4113 Geary Place, North Melbourne VIC 3041
Ph: 03 4423 2003 E: rover@alslab.com
LABORATORY 10 Macquarie Street, Melbourne VIC 3000
Ph: 03 9228 7655 E: samples@alslab.com

LABORATORY 227-229 Woodpark Road, Springvale VIC 3174
Ph: 02 8764 8555 E: samples@alslab.com
LABORATORY 14-15 Dandenong Court, Dandenong VIC 3175
Ph: 07 4756 0800 E: melbourne@alslab.com
LABORATORY 59 Kearsy Street, Wollongong NSW 2500
Ph: 02 422 3125 E: wollongong@alslab.com

CLIENT: *Of Formation*

OFFICE:

PROJECT:

PROJECT NO.:

ALS QUOTE NO.:

TURNAROUND REQUIREMENTS: ☐ Standard TAT (list due date):
☐ Non Standard or urgent TAT (list due date):

FOR LABORATORY USE ONLY (circle)

Yes No N/A

ORDER NUMBER:

PURCHASE ORDER NO.:

COUNTRY OF ORIGIN:

COC SEQUENCE NUMBER (circle)

Free ice / frozen ice holds present upon receipt?

Yes No N/A

PROJECT MANAGER: *Josh Graham*

CONTACT PH: *0418 439 923*

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

SAMPLER: *M. Mass - South East Environmental*

SAMPLER MOBILE: *0411912775*

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

COC Email to ALS? (YES / NO)

EDD FORMAT (or default):

DATE/TIME:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

Email Reports to (will default to PM if no other addresses are listed): *Josh@offformation.com.au*

DATE/TIME:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

Email Invoice to (will default to PM if no other addresses are listed): *Josh@offformation.com.au*

DATE/TIME:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: *Please email: dino@earth2water.com.au*

(results)

ALS USE ONLY

SAMPLE DETAILS

CONTAINER INFORMATION

ANALYSIS REQUIRED INCLUDING SUITES (NB: Suite Codes must be listed to attract suite price)

Additional Information

LAB ID

SAMPLE ID

DATE / TIME

MATRIX

TYPE & PRESERVATIVE
(refer to codes below)

TOTAL BOTTLES

PH, EC, TDS, Major Ions

Oil + Grease

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

1 Pit 5

5/8/20 9.10am

P

1

1

1

2 Pit 4 MW2

5/8/20 9.35am

P

1

1

1

3 Pit 4 MW3

5/8/20 9.55am

P

1

1

1

4 Pit 4 MW1

5/8/20 10.25am

P

1

1

1

5 4378 ONE PC3

5/8/20 10.55am

P

1

1

1

6 PC167 MW1

5/8/20 12pm

P

1

1

1

TOTAL

12

6

6

Environmental Division
Sydney
Work Order Reference
ES2027160



Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AP = Air-tight Unpreserved Plastic, V = VOA Vial HCl Preserved, VB = VOA Vial Sodium Bisulfate Preserved, VS = VOA Vial Sulfuric Preserved, AV = Air-tight Unpreserved Vial SG = Sulfuric Preserved Amber Glass, H = HCl Preserved Plastic, HS = HCl Preserved Speciation bottle, SP = Sulfuric Preserved Plastic, F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottle, ST = Sterile Bottle, AS = Plastic Bag for Acid Samples, Scale B = Unpreserved Bag, U = Liquid bottle Preserved Bottle, SIT = Sterile Sodium Thiosulfate Preserved Bottle.



CHAIN OF CUSTODY

ALS Laboratory, please tick →

LABORATORY: 111 Rona Road, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au
LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au
LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au

LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au
LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au
LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au

LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au
LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au
LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au

LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au
LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au
LABORATORY: 2/41 Street, Bayside NSW 1500
Ph: 02 8360 0600 E: als@alslab.com.au

CLIENT: PF Formation

OFFICE: PF Formation

PROJECT: PF Formation

ORDER NUMBER: PF Formation

PROJECT MANAGER: Josh Graham

SAMPLER: M. Mess, South East Environmental

COC Emitted to ALS? (YES / NO)

Email Reports to (will default to PM if no other addresses are listed): josh@pfformation.com.au

Email Invoice to (will default to PM if no other addresses are listed): josh@pfformation.com.au

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please email dina@earth2water.com.au

TURNAROUND REQUIREMENTS: ☐ Standard TAT (list due date): ☐ Non Standard or urgent TAT (list due date):

ALSO QUOTE NO.: ☐ Standard TAT (list due date): ☐ Non Standard or urgent TAT (list due date):

COC SEQUENCE NUMBER (circle)

RECEIVED BY: ☐ Custody Seal intact? ☐ Free ice / frozen ice bricks present upon receipt? ☐ Random Sample Temperature on Receipt? ☐ Other comment:

RECEIVED BY: ☐ DATE/TIME: ☐

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(s) Water(W)	CONTAINER INFORMATION	ANALYSIS REQUIRED INCLUDING SUITES (NB: Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (fine filtered bottle required).	Additional Information
--------------	---	-----------------------	---	------------------------

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	PH, EC, TDS Major Ions oil + Grease	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
--------	-----------	-------------	--------	---	---------------	---	--

7	PF167MW45	5/8/2020 2pm	P		1		
---	-----------	--------------	---	--	---	--	--

7	PF167MW45	5/8/2020 2pm	VB		1		
---	-----------	--------------	----	--	---	--	--

8	PF167MW40	5/8/2020 2:10pm	P		1		
---	-----------	-----------------	---	--	---	--	--

8	PF167MW40	5/8/20 2:10pm	VB		1		
---	-----------	---------------	----	--	---	--	--

9	PF166MW30	5/8/20 2:25pm	P		1		
---	-----------	---------------	---	--	---	--	--

9	PF166MW30	5/8/20 2:25pm	VB		1		
---	-----------	---------------	----	--	---	--	--

10	PF166MW25	5/8/20 2:40pm	P		1		
----	-----------	---------------	---	--	---	--	--

10	PF166MW25	5/8/20 2:40pm	VB		1		
----	-----------	---------------	----	--	---	--	--

11	PF166MW20	5/8/20 3pm	P		1		
----	-----------	------------	---	--	---	--	--

11	PF166MW20	5/8/20 3pm	VB		1		
----	-----------	------------	----	--	---	--	--

TOTAL	10	5	5				
-------	----	---	---	--	--	--	--

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, SH = Sodium Hydroxide/Ca Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, AB = Air-tight Unpreserved Plastic
V = VOA Vial HCl Preserved, VB = VOA Vial Sodium Bisulfate Preserved, VS = VOA Vial Sulfuric Preserved, AV = Air-tight Unpreserved Vial, SA = Sulfuric Preserved Amber Glass, H = HCl Preserved Plastic, HS = HCl Preserved Specimen Bottle, SP = Sulfuric Preserved Plastic, F = Formic Acid Preserved Glass
Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottle, ST = Sterile Bottle, AS = Plastic Bag for Acid Sulphate Solids, B = Unpreserved Bag, LI = Liquid Iodine Preserved Bottle, STT = Sterile Sodium Thiosulfate Preserved Bottle



CHAIN OF CUSTODY

ALS Laboratory: please tick →

LABORATORY 1: 10000 North Tustin Ave, Suite 1000
Ft. 02 949 6000 E: info@alslab.com
LABORATORY 2: 2300 S. Street, Suite 100, D. 4033
Ft. 02 724 7222 E: samples@alslab.com
LABORATORY 3: 4800 Colton Ave, Suite 100, Colton, CA 95701
Ft. 02 747 1000 E: samples@alslab.com

LABORATORY 4: 10000 North Tustin Ave, Suite 1000
Ft. 02 949 6000 E: info@alslab.com
LABORATORY 5: 2300 S. Street, Suite 100, D. 4033
Ft. 02 724 7222 E: samples@alslab.com
LABORATORY 6: 4800 Colton Ave, Suite 100, Colton, CA 95701
Ft. 02 747 1000 E: samples@alslab.com

LABORATORY 7: 10000 North Tustin Ave, Suite 1000
Ft. 02 949 6000 E: info@alslab.com
LABORATORY 8: 2300 S. Street, Suite 100, D. 4033
Ft. 02 724 7222 E: samples@alslab.com
LABORATORY 9: 4800 Colton Ave, Suite 100, Colton, CA 95701
Ft. 02 747 1000 E: samples@alslab.com

LABORATORY 10: 10000 North Tustin Ave, Suite 1000
Ft. 02 949 6000 E: info@alslab.com
LABORATORY 11: 2300 S. Street, Suite 100, D. 4033
Ft. 02 724 7222 E: samples@alslab.com
LABORATORY 12: 4800 Colton Ave, Suite 100, Colton, CA 95701
Ft. 02 747 1000 E: samples@alslab.com

CLIENT: *PF formation*

OFFICE:

PROJECT:

PROJECT NO.:

PURCHASE ORDER NO.:

CONTACT PH: *0418 439 423*

CONTACT MOBILE: *0418 12 775*

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

TURAROUND REQUIREMENTS: ☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:

COUNTRY OF ORIGIN:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

FOR LABORATORY USE ONLY (Circle)
Catalytic Seal Intact? Yes No
Free Ice / frozen Ice Intact present upon receipt? Yes No
Random Sample Temperature on Receipt: °C
Other comment:
RELINQUISHED BY:
DATE/TIME:
RECEIVED BY:
DATE/TIME:

CONTAINER INFORMATION

Where Media are required, specify Total (unfrozen bottles required) or Dissolved (frozen bottles required).

ANALYSIS REQUIRED INCLUDING SUITES (NB: Suite Codes must be listed to attract suite price)

PH, EC, TDS
major ions
oil + Grease

TOTAL BOTTLES

TYPE & PRESERVATIVE (refer to codes below)

MATRIX

DATE / TIME

SAMPLE ID

LAB ID

ALS USE ONLY

SAMPLE DETAILS

MATRIX: Solid(S) Water(W)

DATE / TIME

SAMPLE ID

LAB ID

ALS USE ONLY

SAMPLE DETAILS

MATRIX: Solid(S) Water(W)

DATE / TIME

SAMPLE ID

LAB ID

ALS USE ONLY

SAMPLE DETAILS

MATRIX: Solid(S) Water(W)

DATE / TIME

SAMPLE ID

LAB ID

ALS USE ONLY

SAMPLE DETAILS

MATRIX: Solid(S) Water(W)

DATE / TIME

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

CERTIFICATE OF ANALYSIS

Work Order	: ES2027160	Page	: 1 of 6
Amendment	: 1		
Client	: PF FORMATION	Laboratory	: Environmental Division Sydney
Contact	: Josh	Contact	: Customer Services ES
Address	: 1 Patrica Fay Drive Maroota 2756	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ---	Telephone	: +61-2-8784 8555
Project	: ---	Date Samples Received	: 05-Aug-2020 16:45
Order number	: ---	Date Analysis Commenced	: 06-Aug-2020
C-O-C number	: ---	Issue Date	: 25-Aug-2020 11:34
Sampler	: M. Mass_South East Environmental		
Site	: ---		
Quote number	: ---		
No. of samples received	: 17		
No. of samples analysed	: 17		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Senior Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- TDS by method EA-015 may bias high for various samples due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Amendment (25/08/2020): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from <<NAME>> on <<DATE>>. All analysis results are as per the previous report.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	PFL3MW2	Pit 4 MW2	Pit 4 MW3	Pit 4 MW1	4378 ONR PF3
Client sampling date / time					05-Aug-2020 09:10	05-Aug-2020 09:35	05-Aug-2020 09:55	05-Aug-2020 10:25	05-Aug-2020 10:55
Compound	CAS Number	LOR	Unit		ES2027160-001	ES2027160-002	ES2027160-003	ES2027160-004	ES2027160-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		4.75	5.33	4.44	4.34	4.29
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		212	252	167	145	221
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		127	162	95	88	191
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		1	5	<1	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L		1	5	<1	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		2	13	2	4	9
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		51	59	40	35	51
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	4	<1	<1	2
Magnesium	7439-95-4	1	mg/L		3	5	2	2	4
Sodium	7440-23-5	1	mg/L		24	35	18	18	26
Potassium	7440-09-7	1	mg/L		1	2	<1	2	<1
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		1.50	2.03	1.17	1.07	1.63
∅ Total Cations	----	0.01	meq/L		1.32	2.18	0.95	1.00	1.56
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				PF167MW1	PF167MW4S	PF167MW4D	PF166MW3D	PF166MW2S
Client sampling date / time				05-Aug-2020 12:00	05-Aug-2020 14:00	05-Aug-2020 14:10	05-Aug-2020 14:25	05-Aug-2020 14:40
Compound	CAS Number	LOR	Unit	ES2027160-006	ES2027160-007	ES2027160-008	ES2027160-009	ES2027160-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.28	5.65	5.73	4.75	4.77
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	160	76	152	164	67
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	112	60	110	103	66
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	8	11	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L	<1	8	11	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	21	7	2	2	2
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	27	12	19	36	15
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	3	<1	3	<1	1
Magnesium	7439-95-4	1	mg/L	3	2	3	2	1
Sodium	7440-23-5	1	mg/L	16	8	21	21	8
Potassium	7440-09-7	1	mg/L	3	1	<1	<1	<1
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	1.20	0.64	0.80	1.06	0.46
∅ Total Cations	----	0.01	meq/L	1.17	0.54	1.31	1.08	0.48
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	PF166MW2D	4378 ONR PF2	4378 ONR PF4	4378 ONR PF1	PFL HITCH MW1
Client sampling date / time					05-Aug-2020 15:00	05-Aug-2020 12:30	05-Aug-2020 12:40	05-Aug-2020 12:50	05-Aug-2020 13:10
Compound	CAS Number	LOR	Unit		ES2027160-011	ES2027160-012	ES2027160-013	ES2027160-014	ES2027160-015
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.18	4.90	6.10	4.79	5.16
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		137	55	140	64	271
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		96	57	1130	28	160
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		3	<1	34	<1	2
Total Alkalinity as CaCO3	----	1	mg/L		3	<1	34	<1	2
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		1	3	3	<1	5
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		31	9	21	11	64
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		2	<1	2	1	2
Magnesium	7439-95-4	1	mg/L		2	<1	<1	<1	4
Sodium	7440-23-5	1	mg/L		18	8	31	5	34
Potassium	7440-09-7	1	mg/L		1	<1	1	1	<1
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		0.96	0.32	1.33	0.31	1.95
∅ Total Cations	----	0.01	meq/L		1.07	0.35	1.47	0.29	1.91
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	PFF 166 MW1	PF214 MW1	----	----	----
Client sampling date / time					05-Aug-2020 13:25	05-Aug-2020 13:45	----	----	----
Compound	CAS Number	LOR	Unit		ES2027160-016	ES2027160-017	-----	-----	-----
				Result	Result		----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		4.99	4.36	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		195	206	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		247	131	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		2	<1	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		2	<1	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		2	<1	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		43	42	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	<1	----	----	----
Magnesium	7439-95-4	1	mg/L		5	7	----	----	----
Sodium	7440-23-5	1	mg/L		21	18	----	----	----
Potassium	7440-09-7	1	mg/L		2	1	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		1.29	1.18	----	----	----
∅ Total Cations	----	0.01	meq/L		1.38	1.38	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		13	<5	----	----	----

[illegible]

Laboratory Analyses

- 1 Oil & Grease ✓
2 Ph, EC, TDS,
3 Ca, Mg, Na, K, Cl, HCO₃, SO₄

~~water sample not filtered~~

QA tests

Environmental Division
Sydney
Work Order Reference
ES2029262



Telephone : + 61-2-8784 8555

RECEIVED BY

DATE: 20/8/20	
TIME: 10:00	
DATE:	
TIME:	

NAME: FMZ
OF: MS
NAME: _____
OF: _____

RELIQUISHED BY:

DATE: Aug 2008 2008.22
TIME: _____
DATE: _____
TIME: _____

NAME: Dino Parisotto
OF: Earth2Water
NAME:
OF:

CERTIFICATE OF ANALYSIS

Work Order : **ES2029262**
Client : **EARTH2WATER PTY LTD**
Contact : **MR DINO PARISOTTO**
Address : **175 FERN ST**
GERRINGONG NSW 2534
Telephone : **----**
Project : **----**
Order number : **E@W-224A**
C-O-C number : **----**
Sampler : **DINO PARISOTTO, ELLEN SWANSON**
Site : **Maroota**
Quote number : **EN/222 - MOD**
No. of samples received : **3**
No. of samples analysed : **3**

Page : 1 of 3
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 20-Aug-2020 10:00
Date Analysis Commenced : 20-Aug-2020
Issue Date : 26-Aug-2020 14:01



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ashesh Patel	Senior Chemist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	CWD	Pit 4 MW-1	DUP-01	----	----
Client sampling date / time					19-Aug-2020 00:00	19-Aug-2020 00:00	19-Aug-2020 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2029262-001	ES2029262-002	ES2029262-003	-----	-----
					Result	Result	Result	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	----	----	----
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		3	4	----	----	----
Total Alkalinity as CaCO ₃	----	1	mg/L		3	4	----	----	----
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		8	6	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		25	34	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		3	<1	----	----	----
Magnesium	7439-95-4	1	mg/L		2	2	----	----	----
Sodium	7440-23-5	1	mg/L		11	17	----	----	----
Potassium	7440-09-7	1	mg/L		3	2	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		0.93	1.16	----	----	----
∅ Total Cations	----	0.01	meq/L		0.87	0.96	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	----	----



CHAIN OF CUSTODY

ALS Laboratory: please tick →

CADELAIDE 21 Burma Road Bowral SA 5095
Ph: 08 8399 0800 E: als.adelaide@alsglobal.com
CROISSANCE 2 Bym Street Stirling QLD 4053
Ph: 07 3243 7222 E: samples.croissance@alsglobal.com
GLADSTONE 46 Callimondah Drive Clinton QLD 4680
Ph: 07 7471 3600 E: gladstone@alsglobal.com

DMACKAY 78 Johnston Road Mackay QLD 4740
Ph: 07 4944 0177 E: dmackay@alsglobal.com

DMELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9800 E: samples.melbourne@alsglobal.com
LWADGEE 1239 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee@alsglobal.com

ENNEWCASTLE 2/555 Warfield Road Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
ENNEWCASTLE 4/13 Quarry Place North Nowra NSW 2541
Ph: 02 4423 7053 E: nowra@alsglobal.com

SPERTH 10 Rod Way Malaga WA 6180
Ph: 08 9260 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
UTOWNSVILLE 1/15 Deema Court Ryde QLD 4815
Ph: 07 4796 6600 E: townsville@alsglobal.com
WOLLONGONG 99 Kerry Street Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: PF Formation

OFFICE: PROJECT NO.: PURCHASE ORDER NO.: PROJECT MANAGER: Josh Graham

ORDER NUMBER: CONTACT PH: 0418 439 923

SAMPLER: m.uss-south-east Environmental

COC Enrolled to ALS? (YES / NO) SAMPLER MOBILE: 041812775

ADD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): josh@information.com.au

Email Invoice to (will default to PM if no other addresses are listed): josh@information.com.au

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: please email a copy of results to Dino Parisotto at dino@earth2water.com.au

TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

ALS QUOTE NO.: COUNTRY OF ORIGIN:

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No

Free ice / frozen ice bricks present upon receipt? Yes No

Random Sample Temperature on Receipt °C

Other comment:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: DATE/TIME:

ANALYSIS REQUIRED including SUITES (NB: Suite Codes must be listed to attract bulk price)

Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Environmental Division

Sydney

Work Order Reference

ES2030326

Telephone : + 61-2-8784 8555

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

Barcode

TOTAL

TOTAL

TOTAL

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Ca Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic

V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Plastic; SP = Sulfuric Preserved Plastic

Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Substrate Solts; B = Unpreserved Bag; U = Lugsol Iodine Preserved Bottle; STI = Sterile Sodium Thiosulfate Preserved Bottle

CERTIFICATE OF ANALYSIS

Work Order : **ES2030326**
Client : **PF FORMATION**
Contact : Josh
Address : 1 Patrica Fay Drive
 Maroota 2756
Telephone : ----
Project : ----
Order number : ----
C-O-C number : ----
Sampler : M.Mass-South East Environmental
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 2
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 28-Aug-2020 12:45
Date Analysis Commenced : 01-Sep-2020
Issue Date : 02-Sep-2020 13:59



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ashesh Patel	Senior Chemist	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting
 ø = ALS is not NATA accredited for these tests.
 ~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				PFF166 MW1	----	----	----	----
Client sampling date / time				28-Aug-2020 11:10	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2030326-001	-----	-----	-----	-----
				Result	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order	: ES2027287	Page	: 1 of 3
Amendment	: 1		
Client	: PF FORMATION	Laboratory	: Environmental Division Sydney
Contact	: Josh	Contact	: Customer Services ES
Address	: 1 Patrica Fay Drive Maroota 2756	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: ----	Date Samples Received	: 06-Aug-2020 14:04
Order number	: ----	Date Analysis Commenced	: 07-Aug-2020
C-O-C number	: ----	Issue Date	: 25-Aug-2020 11:32
Sampler	: M.MASS-SOUTH EAST ENVIRONMENTAL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Amendment (25/08/2020): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from <<NAME>> on <<DATE>>. All analysis results are as per the previous report.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	P167Dam	Hitchcock Dam1 (CWD)	Lot 198 BH1	Lot 198 BH03	----
Client sampling date / time					06-Aug-2020 11:00	06-Aug-2020 10:50	06-Aug-2020 10:25	06-Aug-2020 11:20	----
Compound	CAS Number	LOR	Unit		ES2027287-001	ES2027287-002	ES2027287-003	ES2027287-004	-----
					Result	Result	Result	Result	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.38	5.43	5.03	6.17	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		176	113	192	185	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		119	76	121	118	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	<5	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		<1	<1	<1	17	----
Total Alkalinity as CaCO3	----	1	mg/L		<1	<1	<1	17	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		8	8	8	4	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		36	21	36	36	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		2	3	2	2	----
Magnesium	7439-95-4	1	mg/L		4	2	3	5	----
Sodium	7440-23-5	1	mg/L		22	13	23	25	----
Potassium	7440-09-7	1	mg/L		3	3	2	2	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		1.18	0.76	1.18	1.44	----
∅ Total Cations	----	0.01	meq/L		1.46	0.96	1.40	1.65	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	10	<5	<5	----

Surface Water Monitoring

PF Formation - Maroota Quarries



1 Patricia Fay Drive Ph 45668314
Maroota NSW 2756

Location - Hitchcocks Road

Time of collection (date/time)				Weather conditions (hot/cold/dry/windy/raining)	
13/12/2019 12.30pm				Cloudy, warm, no wind	
Stream bank (rocky/sandy/muddy)				Climate 3mths preceeding (rainfall/drought/extremes)	
Mossy				Drought.	
Water flow rate (fast/slow/none)				Stream depth (mm, cm or m)	
Slow				1cm - 20cm	
Water clarity (turbidity, sheen)				Stream width (mm, cm or m)	
Clear				40cm-1m	
Stream condition (erosion, polutants)				Other observations Sydney Crayfish <i>Euastacus australasiensis</i> observed in pool. Approximately 12cm in length.	
Vegetated/mossy					
Field tests	pH	EC	TDS	Temp C°	
	4.28	0.17mS	90ppm	17.2	

Site photo



Sample collected by - Melissa Mass/South East Environmental

Signed *Melissa Mass*



Surface Water Monitoring

PF Formation - Maroota Quarries

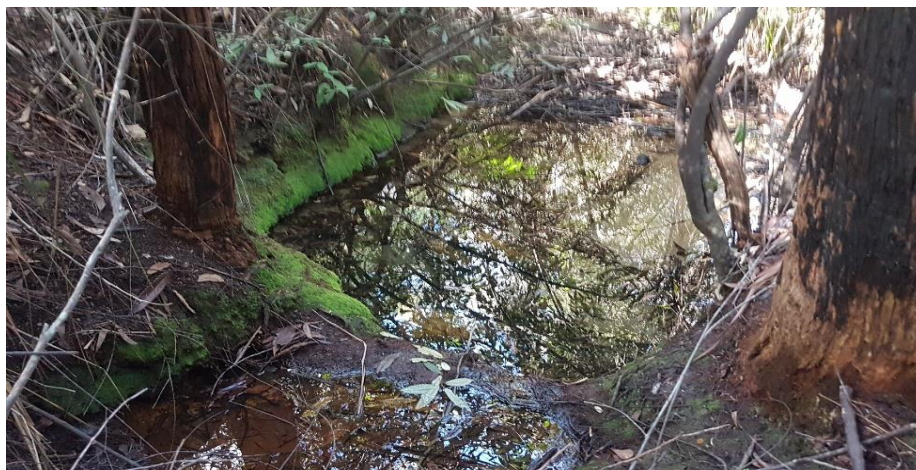


1 Patricia Fay Drive Ph 45668314
Maroota NSW 2756

Location - Hitchcocks Road

Time of collection (date/time)				Weather conditions (hot/cold/dry/windy/raining)	
23/06/2020 12.10pm				Cool, calm, dry	
Stream bank (rocky/sandy/muddy)				Climate 3mths preceeding (rainfall/drought/extremes)	
Sandy				Near normal	
Water flow rate (fast/slow/none)				Stream depth (mm, cm or m)	
Slow				1cm - 50cm	
Water clarity (turbidity, sheen)				Stream width (mm, cm or m)	
Clear				50cm-2m	
Stream condition (erosion, polutants)				Other observations	
Vegetated/mossy				Leaf litter build up	
Field tests	pH	EC	TDS	Temp C°	
	4.91	0.19mS	100ppm	12.8	

Site photo



Sample collected by - Melissa Mass/South East Environmental
Signed *Melissa Mass*

Surface Water Monitoring

PF Formation - Maroota Quarries



1 Patricia Fay Drive Ph 45668314
Maroota NSW 2756

Location - Hitchcocks Road

Time of collection (date/time)23/03/2020 12.15am				Weather conditions (hot/cold/dry/windy/raining)Cloudy, warm, no wind	
Stream bank (rocky/sandy/muddy)Sand/Rock				Climate 3mths preceeding (rainfall/drought/extremes)Rainfall - <300mm in Feb	
Water flow rate (fast/slow/none)Slow				Stream depth (mm, cm or m)1cm - 50cm	
Water clarity (turbidity, sheen)Clear				Stream width (mm, cm or m)50cm-2m	
Stream condition (erosion, polutants)Vegetated/mossy				Other observations	
Field tests	pH	EC	TDS	Temp C°	
	5.72	0.15mS	80ppm	18.4	

Site photo



Sample collected by - Melissa Mass/South East Environmental

Surface Water Monitoring

PF Formation - Maroota Quarries



1 Patricia Fay Drive Ph 45668314
Maroota NSW 2756

Location - Hitchcocks Road

Time of collection (date/time)				Weather conditions (hot/cold/dry/windy/raining)	
2/09/2019 12.45pm				Sunny with breeze	
Stream bank (rocky/sandy/muddy)				Climate 3mths preceeding (rainfall/drought/extremes)	
Mossy				Drought. First rainfall 1 week prior to collection	
Water flow rate (fast/slow/none)				Stream depth (mm, cm or m)	
Slow				1cm - 40cm	
Water clarity (turbidity, sheen)				Stream width (mm, cm or m)	
Clear				1m-1.5m	
Stream condition (erosion, polutants)				Other observations	
Vegetated/mossy					
Field tests	pH	EC	TDS	Temp C°	
	4.32	0.23mS	110ppm	12.9	

Site photo



Sample collected by - Melissa Mass/South East Environmental
Signed *Melissa Mass*

Surface Water Monitoring

PF Formation - Maroota Quarries



1 Patricia Fay Drive Ph 45668314
Maroota NSW 2756

Location - Hitchcocks Road

Time of collection (date/time)				Weather conditions (hot/cold/dry/windy/raining)	
30/06/2020 9.20am				Cool, calm, foggy	
Stream bank (rocky/sandy/muddy)				Climate 3mths preceeding (rainfall/drought/extremes)	
Sandy				Near normal	
Water flow rate (fast/slow/none)				Stream depth (mm, cm or m)	
Slow				1cm - 50cm	
Water clarity (turbidity, sheen)				Stream width (mm, cm or m)	
Clear				50cm-2m	
Stream condition (erosion, polutants)				Other observations	
Vegetated/mossy				Leaf litter build up	
Field tests	pH	EC	TDS	Temp C°	
	4.83	0.20mS	100ppm	12.4	

Site photo



Sample collected by - Melissa Mass/South East Environmental
Signed *Melissa Mass*

Surface Water Monitoring

PF Formation - Maroota Quarries



1 Patricia Fay Drive Ph 45668314
Maroota NSW 2756

Location - Lot 198

Time of collection (date/time)				Weather conditions (hot/cold/dry/windy/raining)			
23/03/2020 8.55am				Cloudy, cool, no wind			
Stream bank (rocky/sandy/muddy)				Climate 3mths preceeding (rainfall/drought/extremes)			
Rock				Rainfall - <300mm in Feb			
Water flow rate (fast/slow/none)				Stream depth (mm, cm or m)			
Medium				1cm-10cm			
Water clarity (turbidity, sheen)				Stream width (mm, cm or m)			
Sheen on surface				60cm - 80cm			
Stream condition (erosion, polutants)				Other observations			
Vegetated on banks							
Field tests	pH	EC	TDS	Temp C°			
	6.26	0.13mS	70ppm	18.2			

Site photo



Sample collected by - Melissa Mass/South East Environmental
Signed *Melissa Mass*

Surface Water Monitoring

PF Formation - Maroota Quarries



1 Patricia Fay Drive Ph 45668314
Maroota NSW 2756

Location - Lot 198

Time of collection (date/time)				Weather conditions (hot/cold/dry/windy/raining)			
30/06/2020 9am				Cool, calm, foggy			
Stream bank (rocky/sandy/muddy)				Climate 3mths preceeding (rainfall/drought/extremes)			
Sandy				Near normal			
Water flow rate (fast/slow/none)				Stream depth (mm, cm or m)			
Moderate				5cm-50cm			
Water clarity (turbidity, sheen)				Stream width (mm, cm or m)			
Clear				50cm-2m			
Stream condition (erosion, polutants)				Other observations			
Vegetated on banks				Frogs calling			
Field tests	pH	EC	TDS	Temp C°			
	6.19	0.18mS	90ppm	11.6			

Site photo



Sample collected by - Melissa Mass/South East Environmental
Signed *Melissa Mass*

Surface Water Monitoring

PF Formation - Maroota Quarries



1 Patricia Fay Drive Ph 45668314
Maroota NSW 2756

Location - Lot 198

Time of collection (date/time)				Weather conditions (hot/cold/dry/windy/raining)	
13/12/2019 9.30am				Cloudy, warm, no wind	
Stream bank (rocky/sandy/muddy)				Climate 3mths preceeding (rainfall/drought/extremes)	
Sandy/pepples				Drought.	
Water flow rate (fast/slow/none)				Stream depth (mm, cm or m)	
Slow				1cm-10cm	
Water clarity (turbidity, sheen)				Stream width (mm, cm or m)	
Clear				20cm	
Stream condition (erosion, polutants)				Other observations	
Vegetated					
Field tests	pH	EC	TDS	Temp C°	
	5.8	0.21mS	100ppm	17.2	

Site photo



Sample collected by - Melissa Mass/South East Environmental
Signed *Melissa Mass*

Surface Water Monitoring

PF Formation - Maroota Quarries



1 Patricia Fay Drive Ph 45668314
Maroota NSW 2756

Location - Lot 198

Time of collection (date/time)				Weather conditions (hot/cold/dry/windy/raining)	
23/06/2020 8.45am				Cool, calm, dry	
Stream bank (rocky/sandy/muddy)				Climate 3mths preceeding (rainfall/drought/extremes)	
Sandy				Near normal	
Water flow rate (fast/slow/none)				Stream depth (mm, cm or m)	
Moderate				5cm-50cm	
Water clarity (turbidity, sheen)				Stream width (mm, cm or m)	
Clear				50cm-2m	
Stream condition (erosion, polutants)				Other observations	
Vegetated on banks				Frogs calling	
Field tests	pH	EC	TDS	Temp C°	
	6.12	0.19mS	90ppm	10.8	

Site photo



Sample collected by - Melissa Mass/South East Environmental
Signed *Melissa Mass*

APPENDIX C

P.F.FORMATION
Bore PF167MW1 Groundwater Monitoring Data

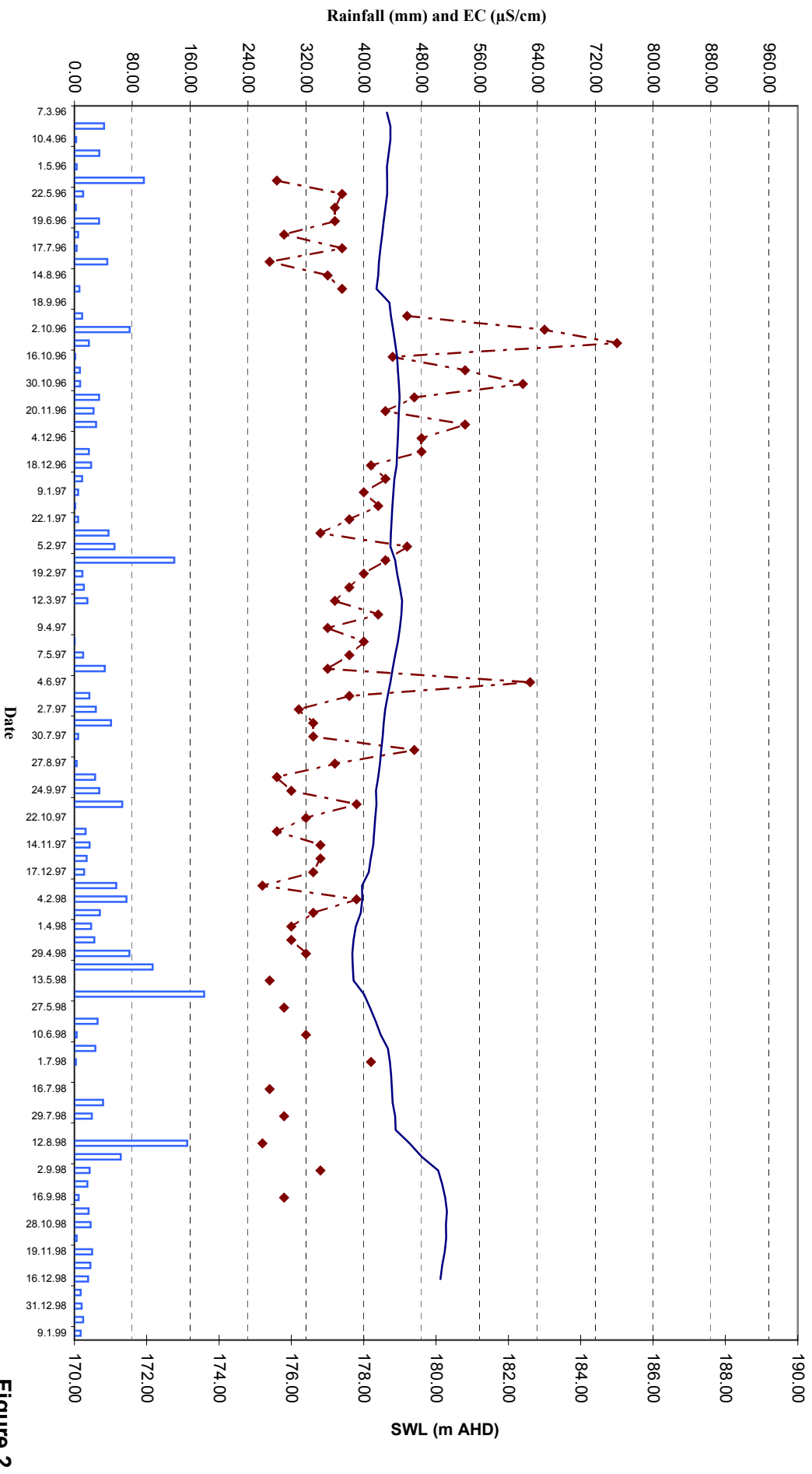


Figure 2



PF FORMATION
Bore PF167MW1 Groundwater Monitoring Data

— Rainfall, mm
— Water level m AHD

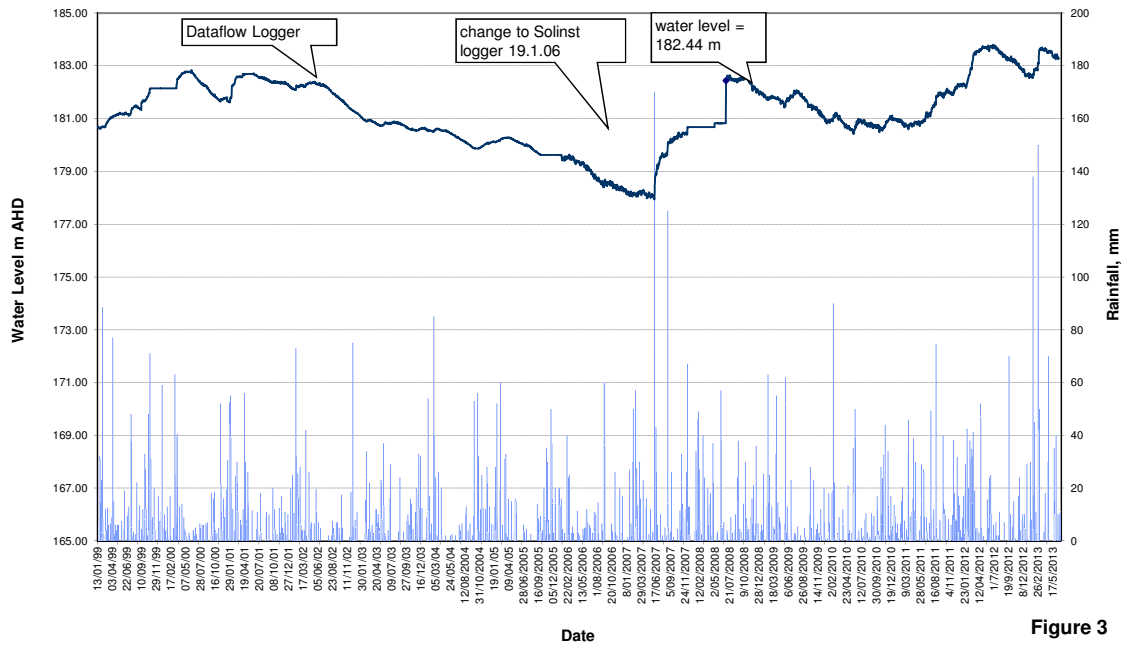


Figure 3

PF FORMATION PF166MW1 Groundwater Monitoring Data

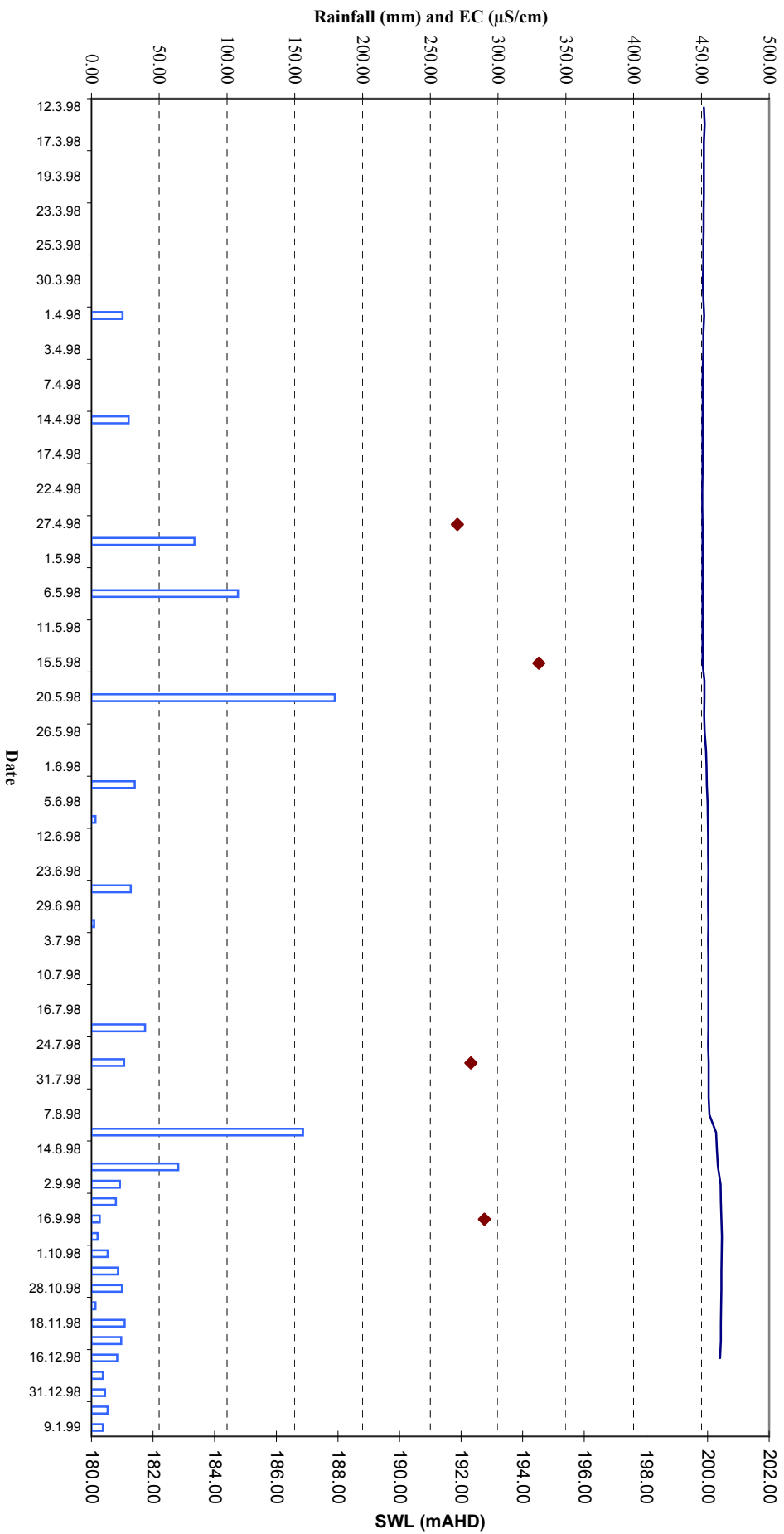


Figure 4



PF FORMATION
Bore PF166MW1 Groundwater Monitoring Data

— Rainfall, mm
— Water Level m AHD

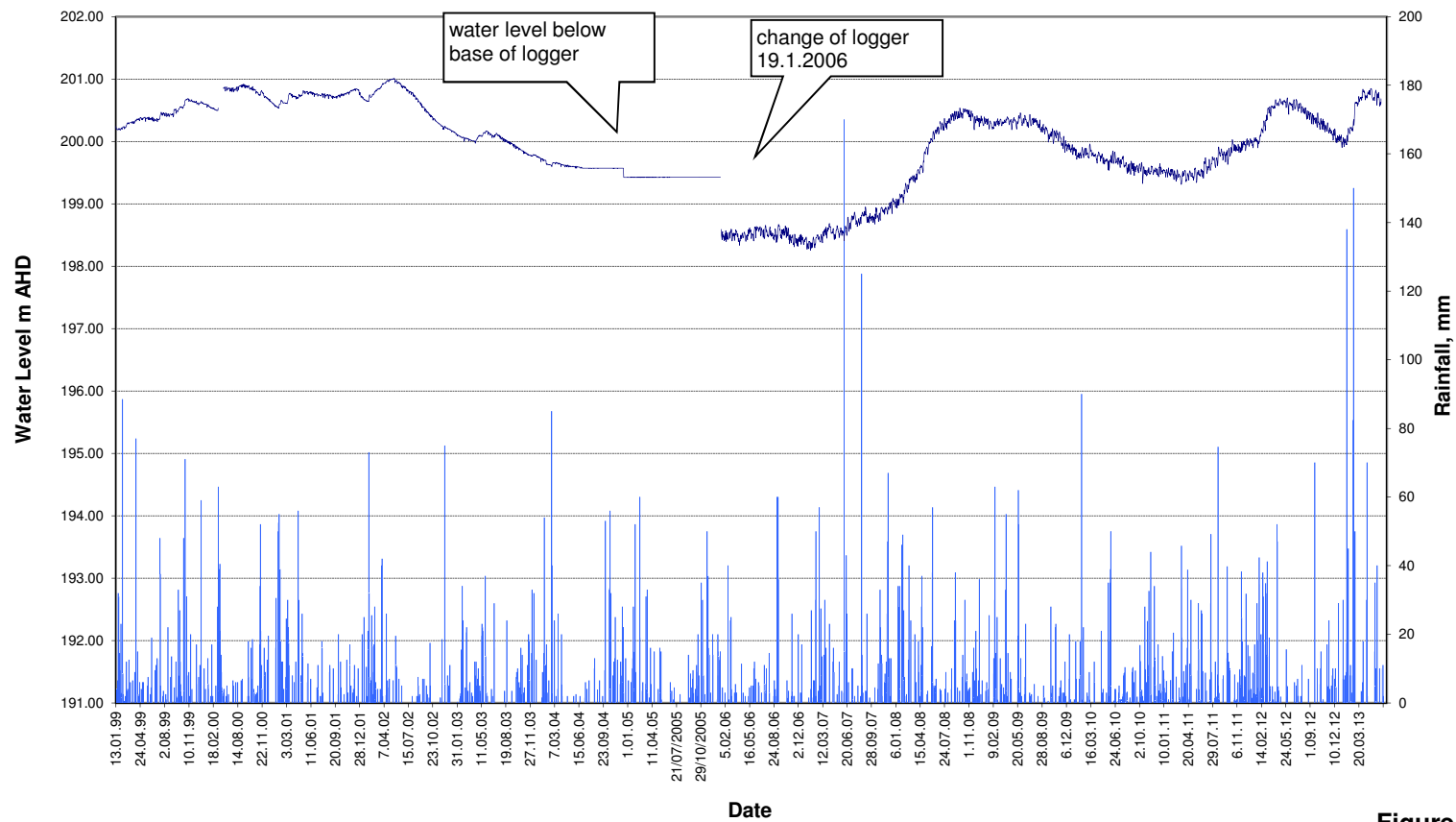


Figure 5

PF FORMATION Bore PFP214MW1 Groundwater Monitoring Data

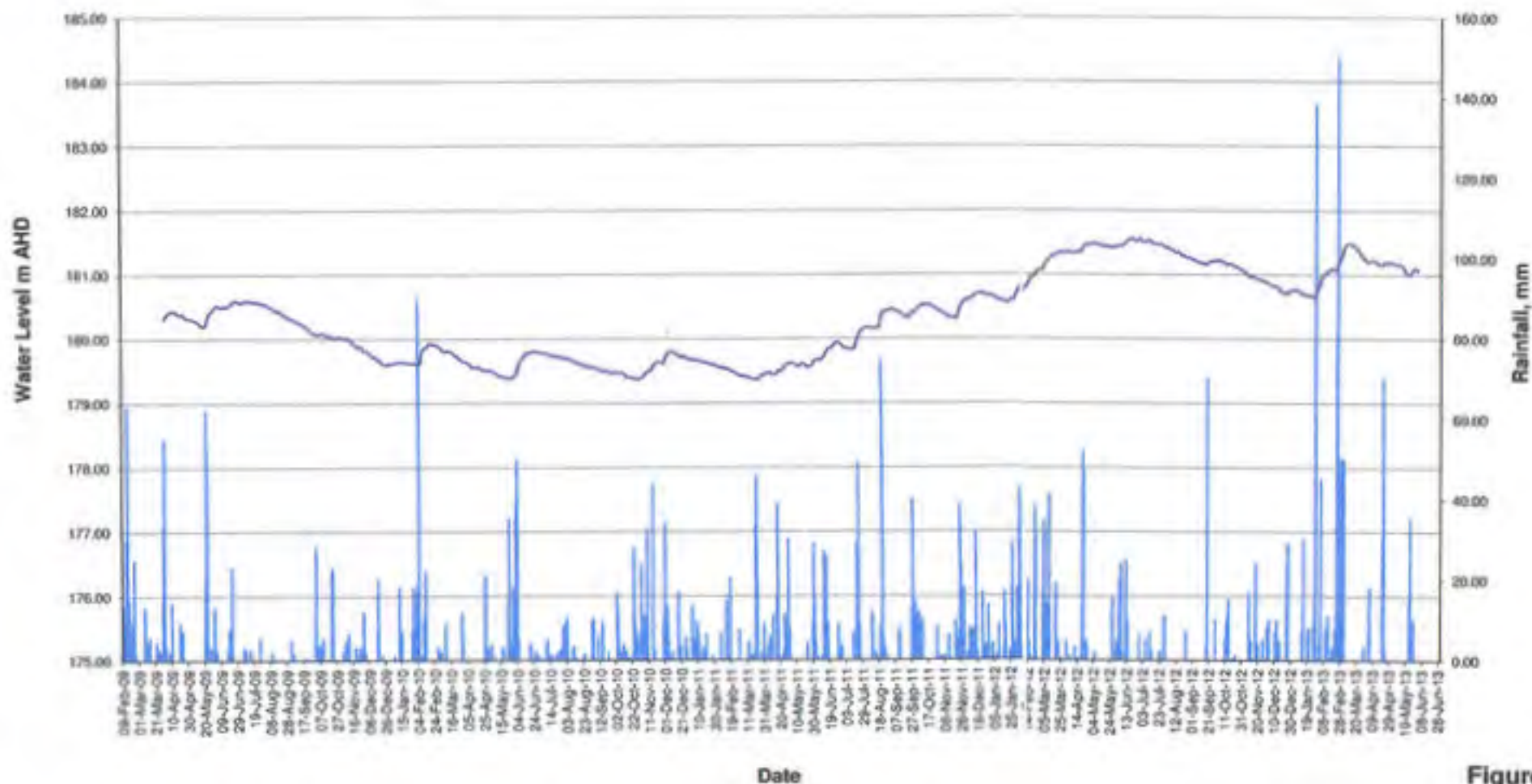
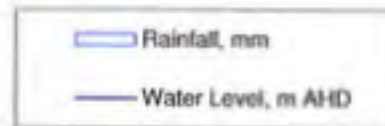


Figure 6



PF FORMATION
Bore PFL2HitchMW1 Groundwater Monitoring Data

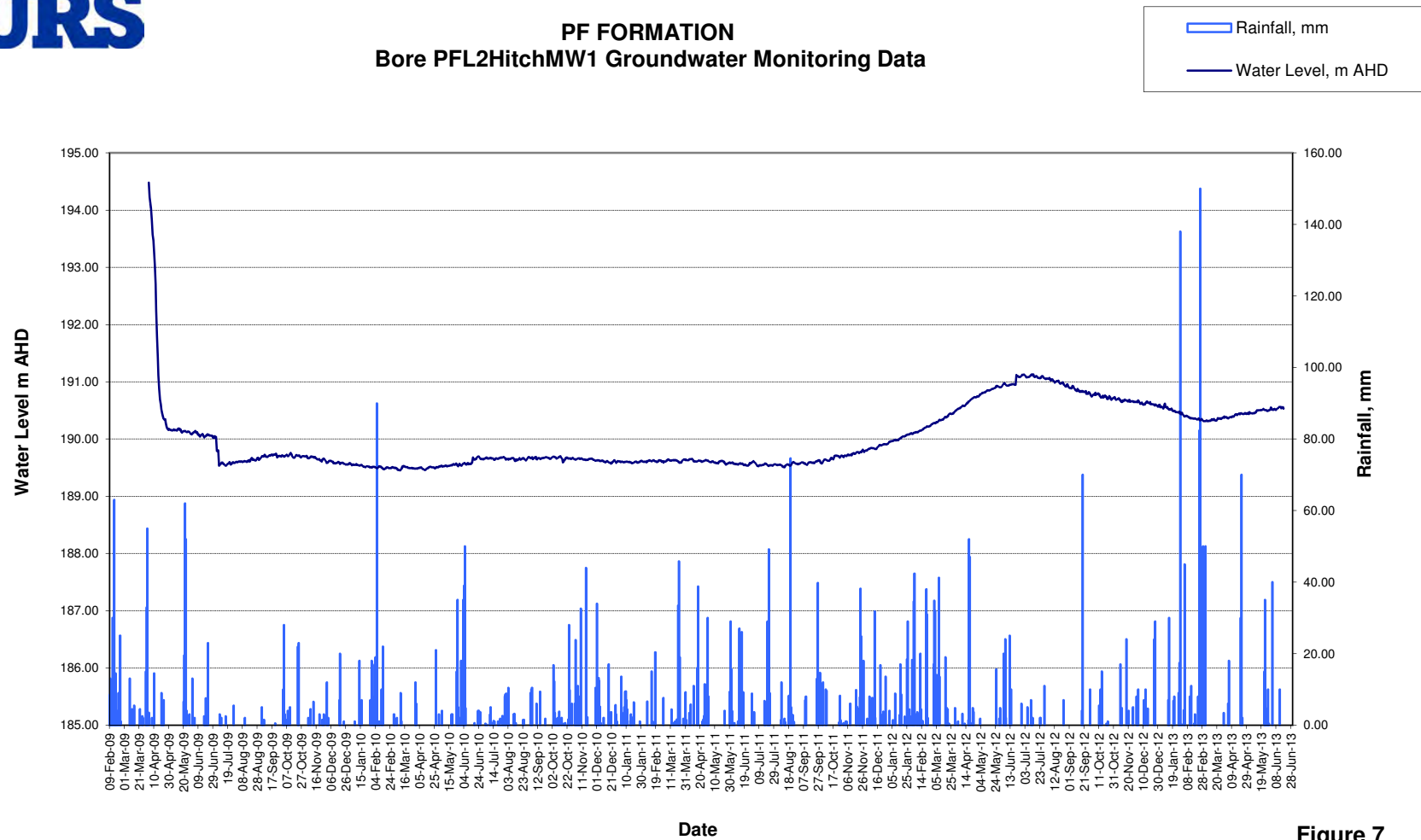


Figure 7



PF FORMATION
PF167DAM, Licence No. 10BL157308, Groundwater Monitoring Data

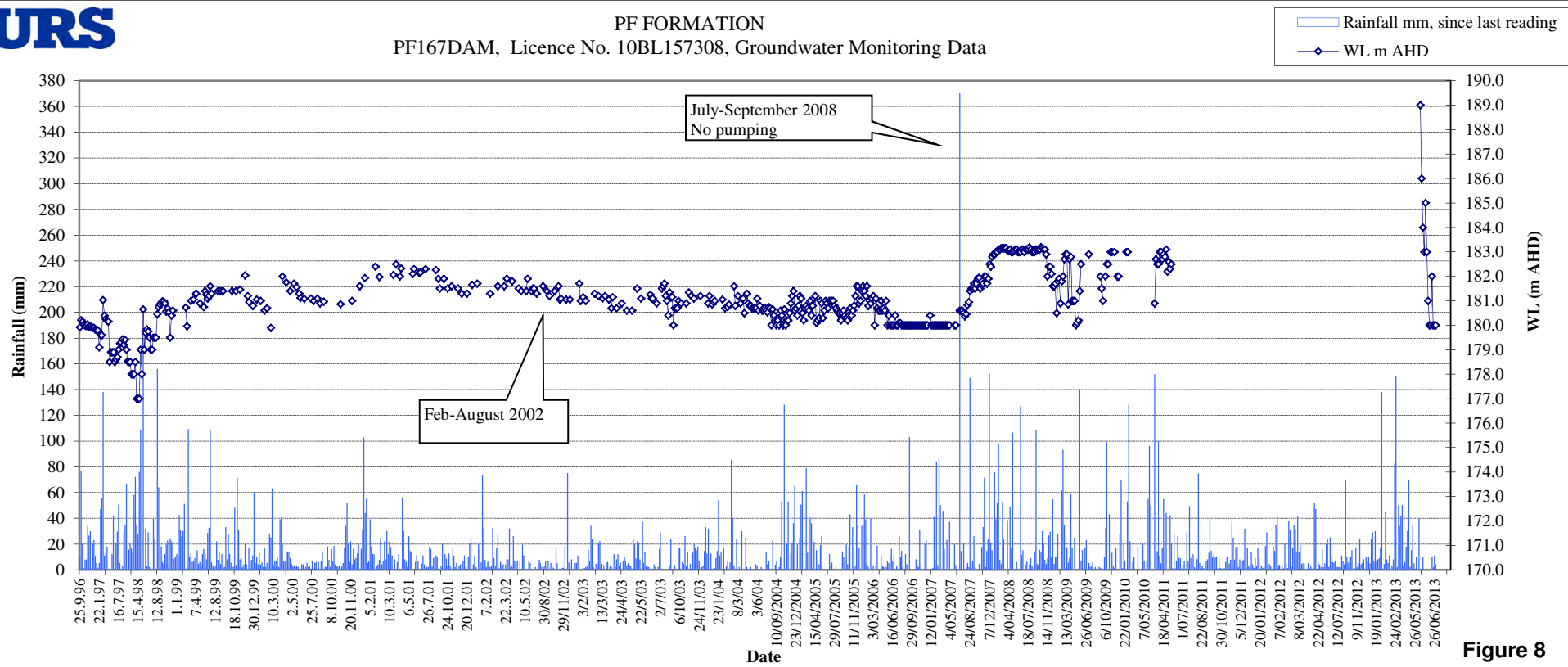


Figure 8



PF FORMATION PF167DAM Monthly Pumpage Records

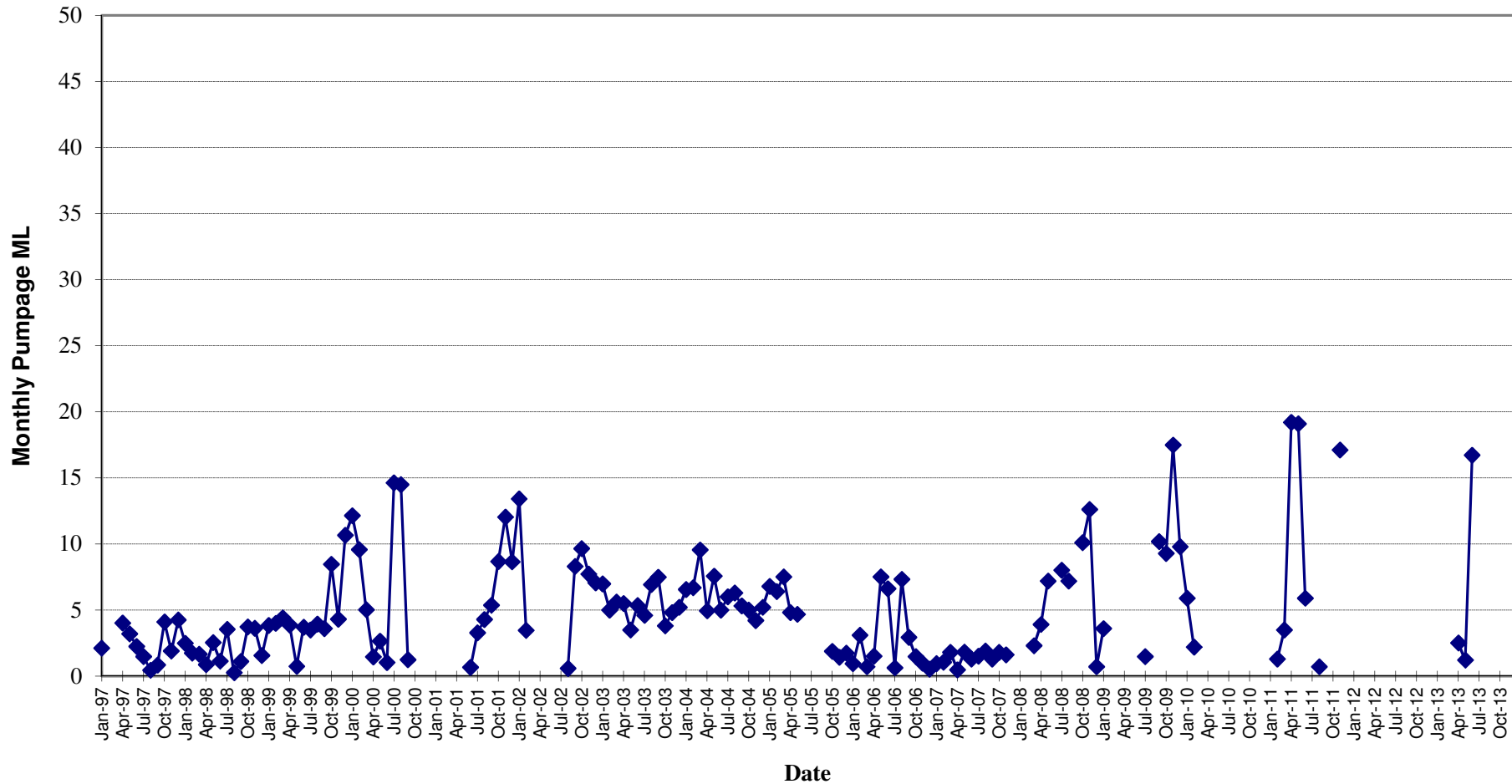


Figure 9

APPENDIX D

GROUNDWATER MONITORING WELL

PROJECT : Maroota- Hitchcock Rd		JOB NO: E2W-0238 Earth2Water Pty Ltd	
LOCATION: PF166MW-2s		DATE STARTED: 16/05/2017	
SUPERVISOR: Dino Parisotto (Lic DL1977)		DATE COMPLETED: 16/05/2017	
Contractor: TerraTest Pty Ltd		Method: SFA 125 mm diam	
Rig: Hydrapower Scout		Depth: 8.5 m	R.L. Ground (m):
Datum: Ground level		Water Level: approx 4 mbgl	R.L. WL (m):
Well ID: MW-2s			
Lithological Log	Comments	Depth (m)	Bore Construction Details
<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> <p>Maroota Sands Outcrop- rehab area</p> <p>0 - 4 m Sandy Clay (fill): medium brown firm, moist, slightly plastic some quartz pebbles</p> <p>4- 5.5 m Sand: light grey, some silt & granules, loose, saturated/wet (palaeochannel)</p> <p>5.5- 8.5m Sandy Clay: med brown, stiff plastic, moist</p> <p>8.5 m End of Borehole (target depth- sandy clay)</p> </div> <div style="width: 10%; text-align: center;"> <p>ingress</p> </div> <div style="width: 40%;"> <p>Monument- steel PVC/50mm stick-up (+0.65m)</p> <p>cement plug around PVC sleeve</p> <p>drill cuttings & bentonite</p> <p>50mm PVC class 18 Casing ('+0.65m to 4.9m)</p> <p>Bentonite seal (2- 4.2m)</p> <p>4.2 - 8 m Gravel pack (2mm)</p> <p>4.9- 7.9m, 50mm PVC cl 18 screen 0.45mm aperture, screw coupling</p> <p>PVC end cap at 7.9 m</p> </div> </div>			
		0	
		1.0	
		2.0	
		3.0	
		4.0	
		5.0	
		6.0	
		7.0	
		8.0	
		9.0	
		10.0	
		11.0	

GROUNDWATER MONITORING WELL

PROJECT :	Maroota- Hitchcock Rd	JOB NO:	E2W-0238 Earth2Water Pty Ltd
LOCATION:	PF166MW-2D	DATE STARTED:	16/05/2017
SUPERVISOR:	Dino Parisotto (Lic DL1977)	DATE COMPLETED:	17/05/2017
Contractor: TerraTest Pty Ltd	Method:	SFA 125 mm diam to 11m , RAB from 11-30m (100mm diam)	
Rig: Hydrapower Scout	Depth:	29.4 m	R.L. Ground (m):
Datum: Ground level	Water Level: approx 25 mbgl		R.L. WL (m):

Well ID: MW-2D

Lithological Log	Comments	Depth (m)	Bore Construction Details
Maroota Sands Outcrop- rehab area			Monument- steel PVC/50mm stick-up (+0.6m)
0 - 4 m Sandy Clay (fill): medium brown firm, moist, slightly plastic some quartz pebbles		0	cement plug around PVC sleeve
3.5- 5.7m Sand: light brown, some silt & granules, loose, saturated/wet (palaeochannel)	ingress	2.5	drill cuttings & bentonite
5.7-6.3 m Hard band (iron stone)		5.0	50mm PVC class 18 Casing ('+0.6m to 26.4m)
6.3- 9.5m Sandy Clay: med brown, stiff plastic, moist		7.5	
9.5-29.4m Sandstone/Siltstone (soft); light grey fine grained, clay matrix, moist weathered	11m RAB	10.0	
dusty drill cuttings- light grey		12.5	
moderately hard siltstone/sandstone		15.0	
		17.5	
moderately hard siltstone/sandstone		20.0	
light grey, clay matrix		22.5	Bentonite seal (23- 29.4m)
	minor ingress <0.01 L/sec	25.0	25 -29.4m Gravel pack (2mm)
		27.5	26.4- 29.4m, 50mm PVC cl 18 screen 0.45mm aperture, screw coupling
29.4 m End of Borehole (target depth- hard sandstone/siltstone)		30.0	PVC end cap at 29.4m

GROUNDWATER MONITORING WELL

PROJECT :		Maroota- Hitchcock Rd		JOB NO:		E2W-0238 Earth2Water Pty Ltd	
LOCATION:		PF167MW-3D		DATE STARTED:		17/05/2017	
SUPERVISOR:		Dino Parisotto (Lic DL1977)		DATE COMPLETED:		17/05/2017	
Contractor: TerraTest Pty Ltd		Method:		SFA 125 mm diam to 3m , RAB from 3-23m (100mm diam)			
Rig: Hydrapower Scout		Depth:		23 m		R.L. Ground (m):	
Datum: Ground level		Water Level: approx 14 mbgl				R.L. WL (m):	

Well ID: MW-3D			
Lithological Log	Comments	Depth (m)	Bore Construction Details
Maroota Sands & Sandstone (extraction pit)			Monument- steel PVC/50mm stick-up (+0.75m)
0 to 23m Sandstone/Siltstone (soft): light grey fine grained, weathered, clay matrix slight moisture	SFA	0	cement plug around PVC sleeve
hard light grey sandstone- dry	3m RAB	1.5	
dusty drill cuttings- light grey		3.0	drill cuttings & bentonite
		4.5	50mm PVC class 18 Casing ('+0.75m to 20m)
		6.0	
		7.5	
		9.0	
		10.5	
moderately hard siltstone/sandstone		12.0	
		13.5	
		15.0	
		16.5	Bentonite seal (16- 18.6m)
dusty drill cuttings- light grey		18.0	
moderately hard siltstone/sandstone		19.5	
		21.0	20 - 23 m, 50mm PVC cl 18 screen 0.45mm aperture, screw coupling
dusty drill cuttings- light grey		22.5	18.6- 23m Gravel pack (2mm)
	dry	24.0	PVC end cap at 23 m
23 m End of Borehole (target depth- moderate hard sandstone)		25.5	

GROUNDWATER MONITORING WELL

PROJECT : Maroota- Hitchcock Rd		JOB NO: E2W-0238 Earth2Water Pty Ltd	
LOCATION: PF167MW-4s		DATE STARTED: 18/05/2017	
SUPERVISOR: Dino Parisotto (Lic DL1977)		DATE COMPLETED: 18/05/2017	
Contractor: TerraTest Pty Ltd		Method: SFA 125 mm diam	
Rig: Hydrapower Scout		Depth: 8 m	
Datum: Ground level		R.L. Ground (m):	
		R.L. WL (m):	
Well ID: MW-4s			
Lithological Log	Comments	Depth (m)	Bore Construction Details
<div><div><div>Maroota Sands Outcrop- near Por167 Dam</div><div>0 - 2 m Sandy Silty Clay: medium brown firm, moist, uniform, slightly plastic</div><div>2- 3.5 m Sandy Clay: med brown/red brown firm-stiff, moist, uniform, slightly plastic</div><div>3.5-7.1m Sandy Silt: med brown, some clay (10%) & minor pebbles, firm, moist.</div><div>7.1- 8 m Sandstone/Siltstone (soft); light grey fine grained, clay matrix, moist weathered</div><div>8 m End of Borehole (target depth- moderate hard sandstone)</div></div><div>minor ingress</div><div><div>Monument- steel PVC/50mm stick-up (+0.5m)</div><div>cement plug around PVC sleeve</div><div>drill cuttings & bentonite</div><div>50mm PVC class 18 Casing (+0.5m to 6.4m)</div><div>Bentonite seal (2- 4m)</div><div>4 - 8 m Gravel pack (2mm)</div><div>5 - 8 m, 50mm PVC cl 18 screen 0.45mm aperture, screw coupling</div><div>PVC end cap at 8 m</div></div></div>			

GROUNDWATER MONITORING WELL

PROJECT :	Maroota- Hitchcock Rd	JOB NO:	E2W-0238 Earth2Water Pty Ltd
LOCATION:	PF167MW-4D	DATE STARTED:	18/05/2017
SUPERVISOR:	Dino Parisotto (Lic DL1977)	DATE COMPLETED:	18/05/2017
Contractor: TerraTest Pty Ltd	Method:	SFA 125 mm diam	
Rig: Hydrapower Scout	Depth:	15.5 m	R.L. Ground (m):
Datum: Ground level	Water Level: approx 8.5 mbgl		R.L. WL (m):

Well ID: MW-4D

Lithological Log	Comments	Depth (m)	Bore Construction Details
Maroota Sands Outcrop- near Por167 Dam			Monument- steel PVC/50mm stick-up (+0.5m)
0 - 2 m Sandy Silty Clay: medium brown firm, moist, uniform, slightly plastic		0	cement plug around PVC sleeve
2- 3.5 m Sandy Clay: med brown/red brown firm-stiff, moist, uniform, slightly plastic		1.0	
		2.0	drill cuttings & bentonite
		3.0	50mm PVC class 18 Casing ('+0.5m to 12.5m)
3.5-7.1m Sandy Silt: med brown, some clay (10%) & minor pebbles, firm, moist.		4.0	
		5.0	
		6.0	
		7.0	
7.1-15.5 m Sandstone/Siltstone (soft); light grey fine grained, clay matrix, moist weathered		8.0	
	minor ingress	9.0	Bentonite seal (9.4- 11.4m)
muddy drill cutting returns		10.0	
		11.0	
		12.0	12.5 - 15.5m, 50mm PVC cl 18 screen 0.45mm aperture, screw coupling
		13.0	
		14.0	11.4-15.5m Gravel pack (2mm)
		15.0	PVC end cap at 15.5 m
15.5 m End of Borehole (target depth- moderate hard sandstone)		16.0	
		17.0	

GROUNDWATER MONITORING WELL

PROJECT : Maroota- Hitchcock Rd		JOB NO: E2W-0238 Earth2Water Pty Ltd	
LOCATION: PF166MW-5D		DATE STARTED: 18/05/2017	
SUPERVISOR: Dino Parisotto (Lic DL1977)		DATE COMPLETED: 18/05/2017	
Contractor: TerraTest Pty Ltd		Method: SFA 125 mm diam	
Rig: Hydrapower Scout		Depth: 9.5 m	
Datum: Ground level		R.L. Ground (m):	
		Water Level: approx 3 mbgl	
		R.L. WL (m):	
Well ID: MW-5D			
Lithological Log	Comments	Depth (m)	Bore Construction Details
Sandstone Outcrop- near Silt Pond			Monument- steel PVC/50mm stick-up (+0.5m)
0 to 9.5m Sandstone/Siltstone (soft): light grey fine grained, weathered, clay matrix moist		0	cement plug around PVC sleeve
		1.0	
		2.0	50mm PVC class 18 Casing ('+0.5m to 6.4m)
		3.0	drill cuttings & bentonite
becoming very moist		4.0	Bentonite seal (3.5- 5.5m)
hardness increasing		5.0	
		6.0	
moderately hard siltstone/sandstone light grey, clay matrix muddy drill cutting returns	minor ingress	7.0	6.4 - 9.4 m, 50mm PVC cl 18 screen 0.45mm aperture, screw coupling
		8.0	5.5-9.4 m Gravel pack (2mm)
		9.0	
9.5m End of Borehole (target depth- moderate hard sandstone)		10.0	PVC end cap at 9.4 m
		11.0	