



EPA ENVIRONMENTAL MONITORING

MANDATORY MONITORING												
EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	Volume	Pollutant					
Point 1	Volume monitoring. Effluent quality monitoring.	Volume monitoring. Effluent quality monitoring.	Volume: flowmeter & cont. logger. Quality: effluent sample.	Inflow to evaporation ponds "EPA 19" on site map.	Test		BOD	COD	EC	N (total)	pH	P (total)
					unit of measure	kilolitres	mg/L	mg/L	µs/cm	mg/L	pH	mg/L
					frequency	continuous during discharge					every 6 months	SAR
Point 2	Discharge to utilisation area. Volume monitoring. Effluent quality monitoring.	Discharge to utilisation area. Volume monitoring. Effluent quality monitoring.	Volume: flowmeter. Quality: effluent sample.	Outflow from evaporation ponds "EPA 20" on site map.	Test		BOD	COD	EC	N (total)	pH	P (total)
					unit of measure	kilolitres	mg/L	mg/L	µs/cm	mg/L	pH	mg/L
					frequency	continuous during discharge					every 6 months	SAR
Point 3	Soil quality monitoring		Soil sample.	Soil control point "EPA 12" on site map.	Test		EC	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Nitrate
					unit of measure	µs/cm	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	mg/kg	mg/kg
					frequency						yearly	pH
Point 4	Soil quality monitoring		Soil sample.	Soil control point "EPA 14" on site map.	Test		EC	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Nitrate
					unit of measure	µs/cm	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	mg/kg	mg/kg
					frequency						yearly	pH
Point 5	Soil quality monitoring		Soil sample.	Soil control point "EPA 16" on site map.	Test		EC	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Nitrate
					unit of measure	µs/cm	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	mg/kg	mg/kg
					frequency						yearly	pH
Point 6	Soil quality monitoring		Soil sample.	Soil control point "EPA 24" on site map.	Test		EC	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Nitrate
					unit of measure	µs/cm	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	cmol(+)/kg	mg/kg	mg/kg
					frequency						yearly	pH
					sampling method							composite sample

EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	Pollutant												
						EC μs/cm	Exch. Ca cmol(+)/kg	Exch. Mg cmol(+)/kg	Exch. K cmol(+)/kg	Exch. Na cmol(+)/kg	Nitrate mg/kg	N (total) mg/kg	pH	P (total) mg/kg	K	SAR	P sorption capacity mg/kg	
Point 11	Soil quality monitoring		Soil sample.	Soil control point "EPA 25" on site map.	Test unit of measure frequency sampling method								yearly					spec. freq 1 composite sample

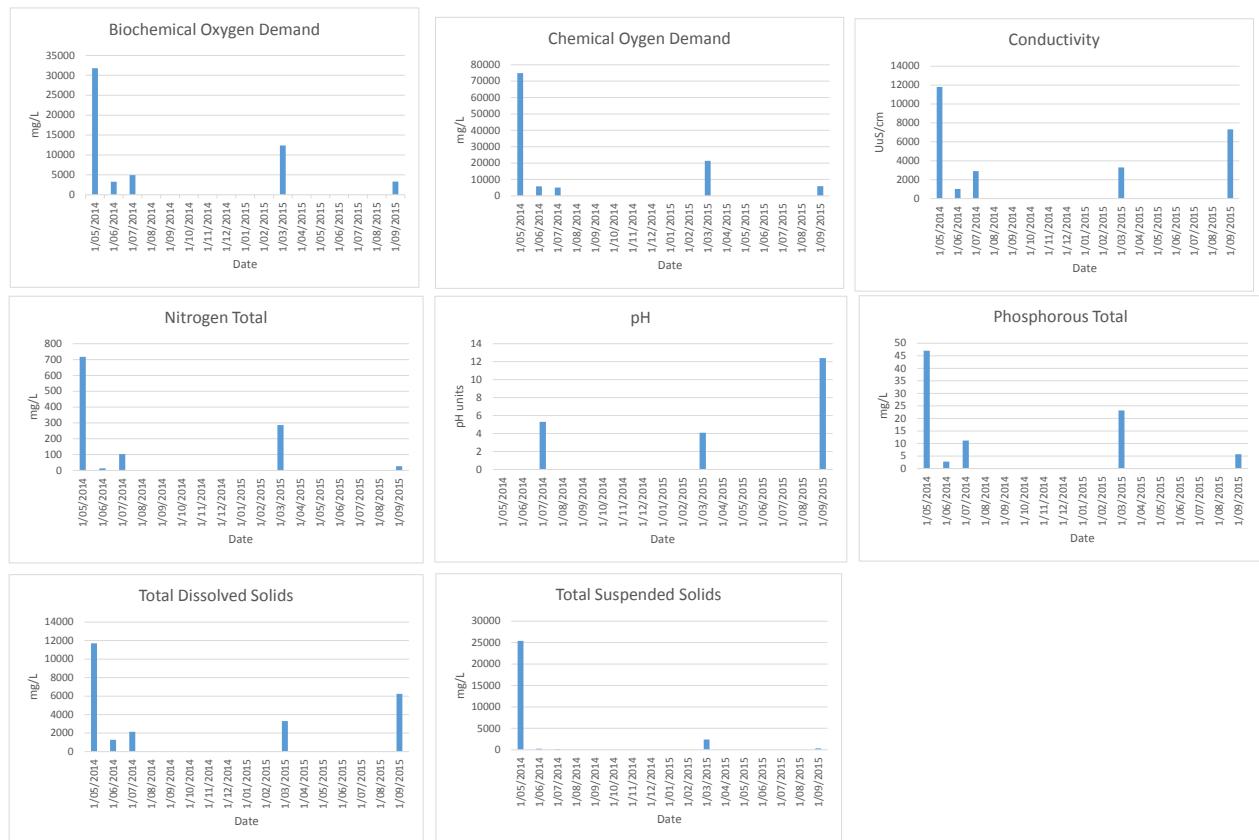
EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	<u>Standing Water Level</u>	Pollutant												
							ammonia mg/L	Ca mg/L	EC μs/cm	Mg mg/L	Nitrate N mg/L	N (total) mg/L	pH	P (total) mg/L	K	Na			
Point 7	Groundwater quality monitoring. Standing water level monitoring		Groundwater sample.	Soil control point "EPA 3" on site map.	Test unit of measure frequency sampling method	metres every 6 months inspection							yearly					representative sample	

EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	<u>Standing Water Level</u>	Pollutant												
							ammonia mg/L	Ca mg/L	EC μs/cm	Mg mg/L	Nitrate N mg/L	N (total) mg/L	pH	P (total) mg/L	K	Na			
Point 8	Groundwater quality monitoring. Standing water level monitoring		Groundwater sample.	Soil control point "EPA 4" on site map.	Test unit of measure frequency sampling method	metres every 6 months inspection							yearly					representative sample	

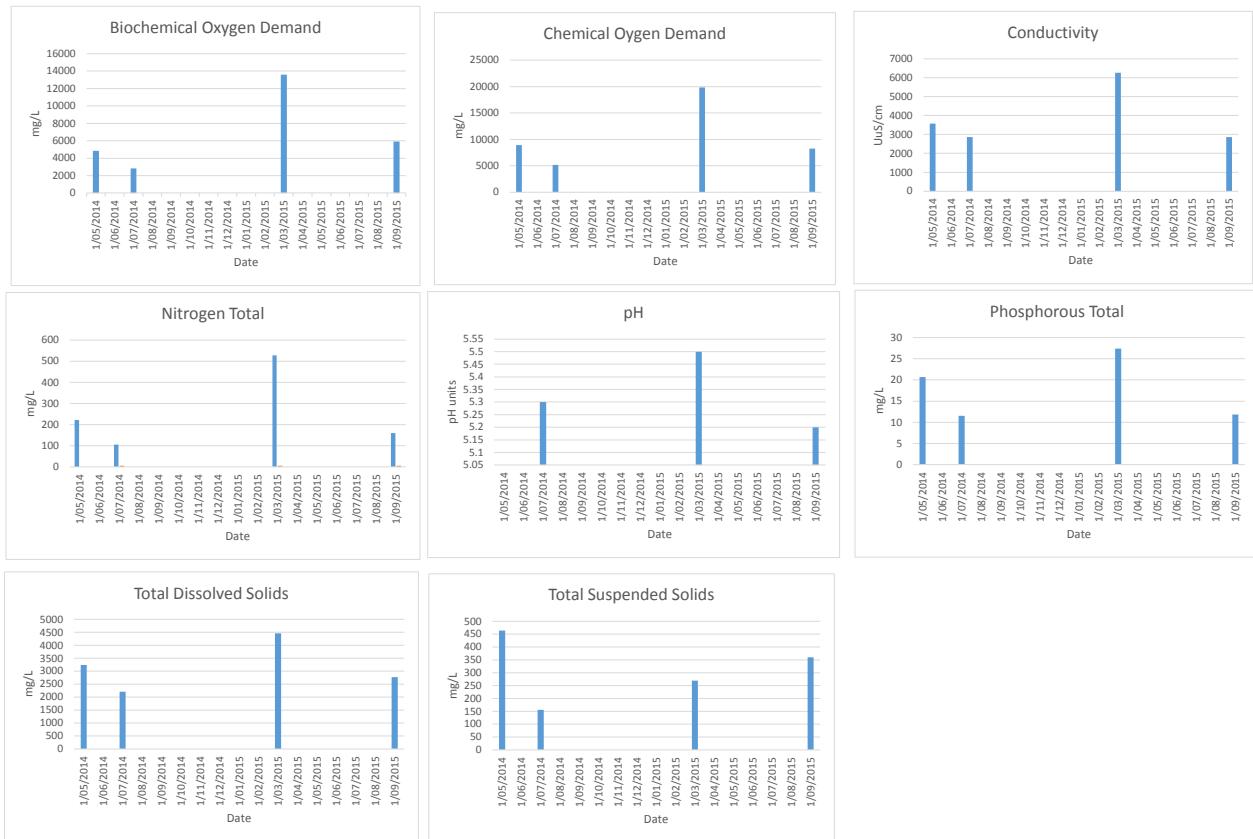
EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	<u>Standing Water Level</u>	Pollutant												
							ammonia mg/L	Ca mg/L	EC μs/cm	Mg mg/L	Nitrate N mg/L	N (total) mg/L	pH	P (total) mg/L	K	Na			
Point 9	Groundwater quality monitoring. Standing water level monitoring		Groundwater sample.	Soil control point "EPA 5" on site map.	Test unit of measure frequency sampling method	metres every 6 months inspection							yearly					representative sample	

EPA Identification point number	Type of Monitoring Point	Type of Discharge Point	How Monitored	Location Description	Detail	<u>Standing Water Level</u>	Pollutant												
							ammonia mg/L	Ca mg/L	EC μs/cm	Mg mg/L	Nitrate N mg/L	N (total) mg/L	pH	P (total) mg/L	K	Na			
Point 10	Groundwater quality monitoring. Standing water level monitoring		Groundwater sample.	Soil control point "EPA 2" on site map.	Test unit of measure frequency sampling method	metres every 6 months inspection							yearly					representative sample	

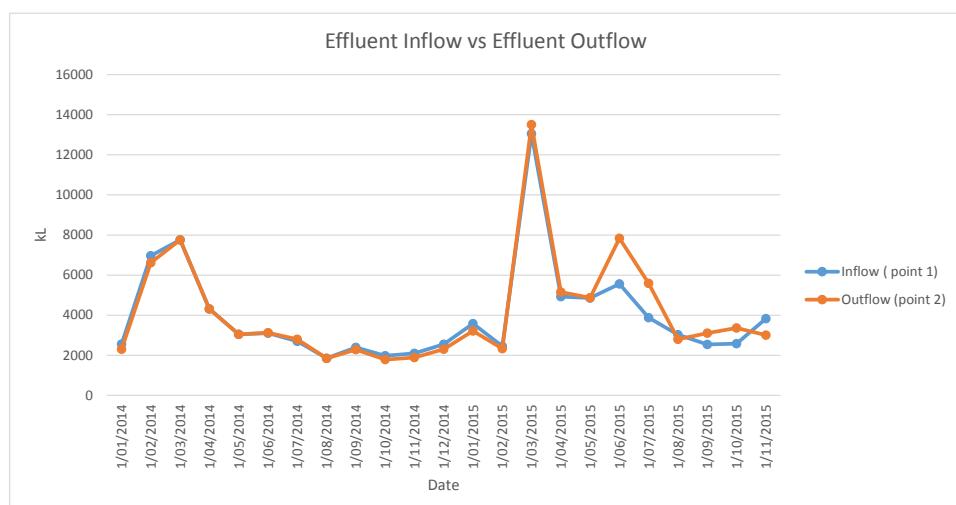
type	test	units	Date				
			14/05/2014	14/06/2014	14/07/2014	15/03/2015	22/09/2015
quality monitoring	BOD	mg/L	31800	3260	4950	12400	3320
quality monitoring	COD	mg/L	74900	5820	5060	21400	5850
quality monitoring	EC	µS/cm	11800	1020	2900	3290	7330
quality monitoring	N (total)	mg/L	717	13	103	286	27
quality monitoring	pH	pH	n/a	n/a	5.3	4.1	12.4
quality monitoring	P (total)	mg/L	47	2.8	11.2	23.2	5.69
quality monitoring	SAR	<1		2	2	1	2
quality monitoring	TDS	mg/L	11700	1280	2140	3310	6250
quality monitoring	TSS	mg/L	25400	254	144	2410	322



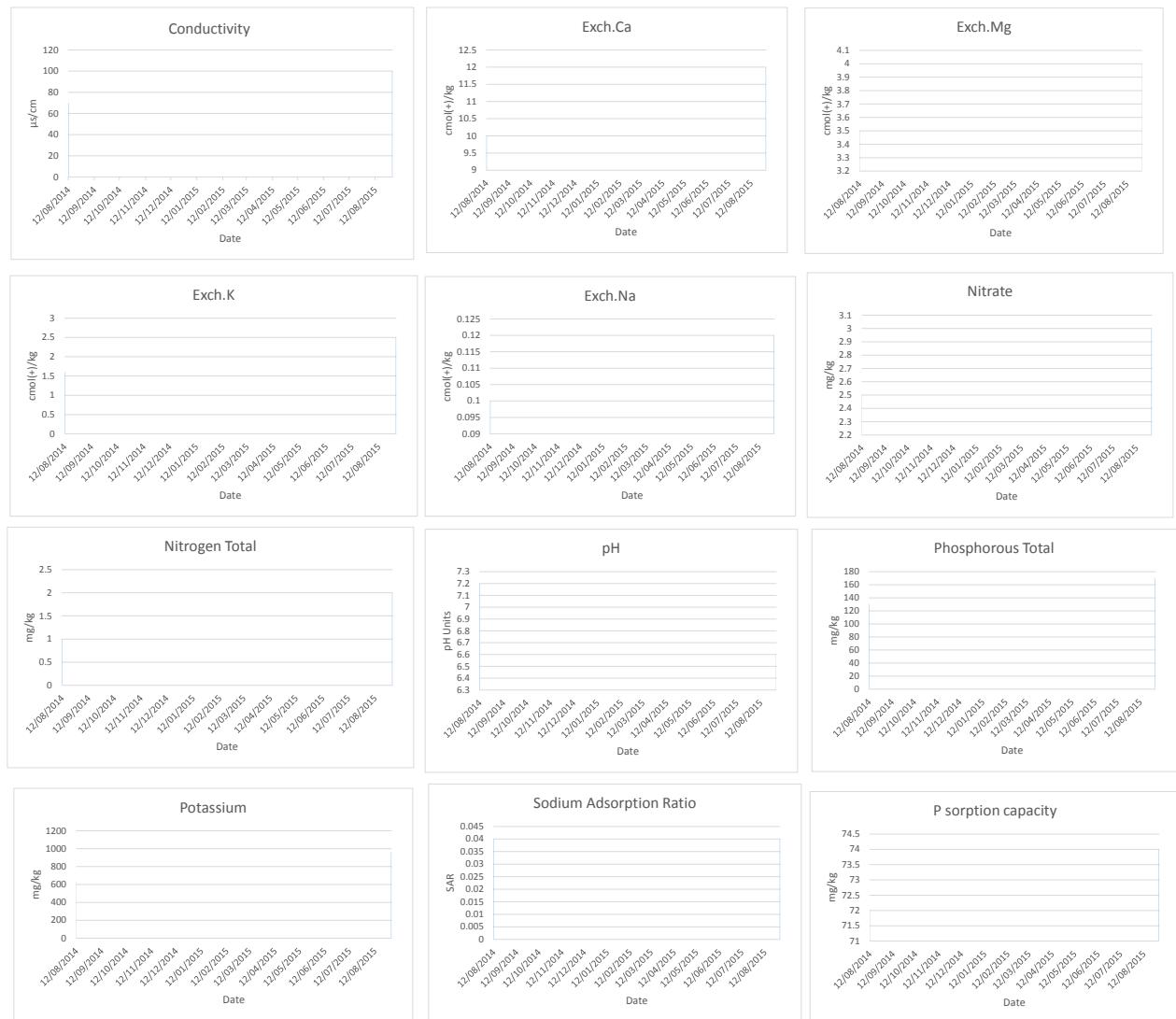
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			14/05/2014	14/07/2014	15/08/2015	22/09/2015
quality monitoring	BOD	mg/L	4830	2820	13600	5920
quality monitoring	COD	mg/L	8540	5160	19800	8260
quality monitoring	EC	µS/cm	3580	2870	6260	2860
quality monitoring	N (total)	mg/L	221	105	527	159
quality monitoring	pH	pH		5.3	5.5	5.2
quality monitoring	P (total)	mg/L	20.7	11.5	27.4	11.8
quality monitoring	SAR		1	2	1	1
quality monitoring	TDS	mg/L	3240	2210	4460	2770
quality monitoring	TSS	mg/L	464	156	269	360



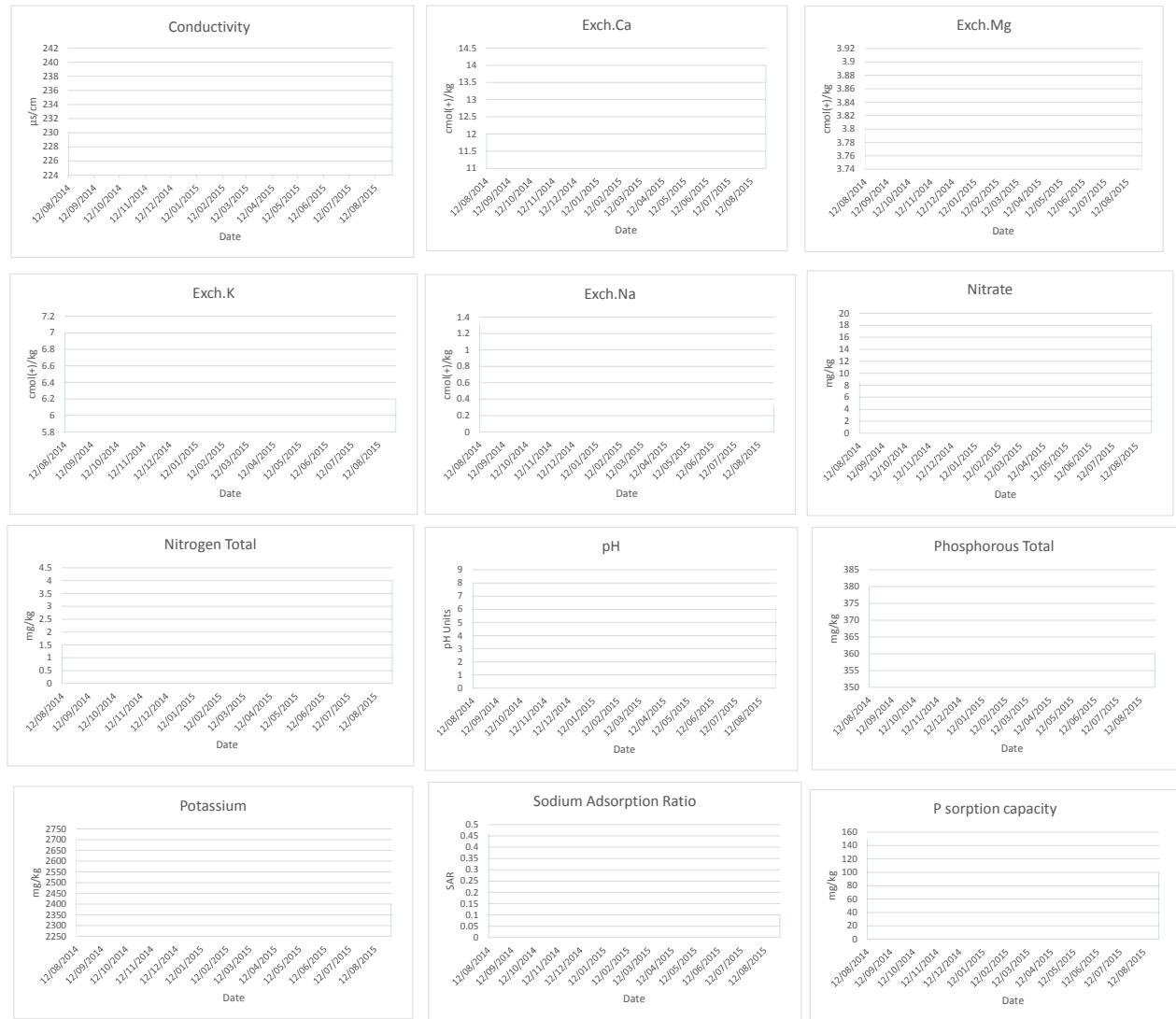
Date	Inflow (point 1)	Outflow (point 2)
27/01/2014	2566	2309
24/02/2014	6970	6622
31/03/2014	7760	7760
28/04/2014	4315	4316
26/05/2014	3043	3044
30/06/2014	3110	3122
28/07/2014	2698	2798
25/08/2014	1854	1854
29/09/2014	2391	2290
27/10/2014	1979	1787
24/11/2014	2100	1890
29/12/2014	2554	2300
26/01/2015	3578	3220
23/02/2015	2451	2330
30/03/2015	13047	13503
27/04/2015	4927	5155
25/05/2015	4858	4865
29/06/2015	5558	7839
27/07/2015	3882	5593
31/08/2015	3027	2800
28/09/2015	2543	3110
26/10/2015	2584	3360
30/11/2015	3826	3010



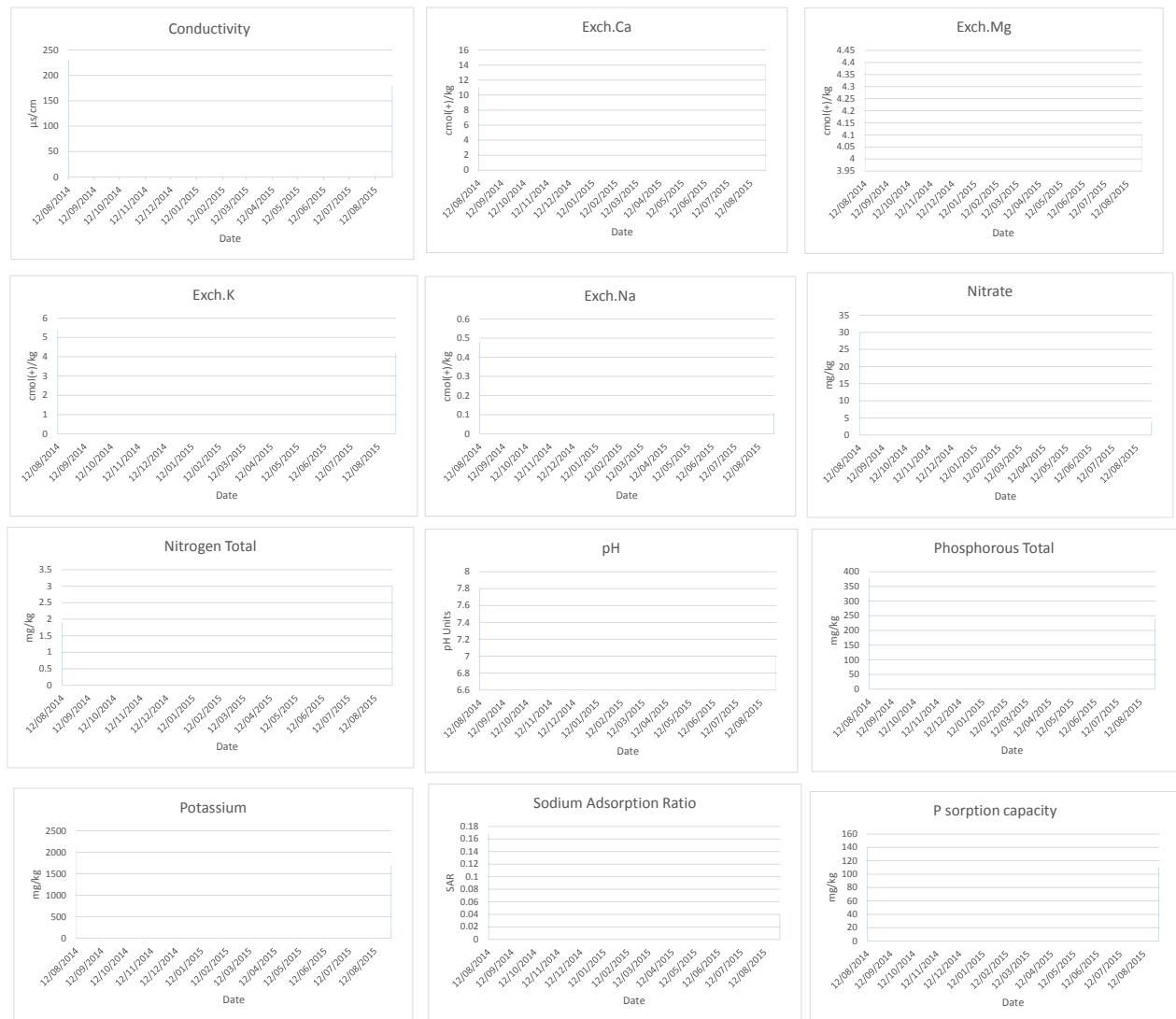
type	test	units	Date									
			12/08/2014	1/09/2015								
quality monitoring	EC	µS/cm	70	100								
quality monitoring	Exch. Ca	cmol(+) /kg	10	12								
quality monitoring	Exch. Mg	cmol(+) /kg	3.5	4								
quality monitoring	Exch. K	cmol(+) /kg	1.6	2.5								
quality monitoring	Exch. Na	cmol(+) /kg	0.1	0.12								
quality monitoring	Nitrate	mg/kg	2.5	3								
quality monitoring	N (total)	mg/kg	1	2								
quality monitoring	pH	pH	7.2	6.6								
quality monitoring	P (total)	mg/kg	130	170								
quality monitoring	K	mg/kg	640	960								
quality monitoring	SAR	SAR	0.04	0.04								
quality monitoring	P sorption capacity	mg/kg	72	74								



type	test	units	Date									
			12/08/2014	1/09/2015								
quality monitoring	EC	$\mu\text{s}/\text{cm}$	230	240								
quality monitoring	Exch. Ca	$\text{cmol}(\text{+})/\text{kg}$	12	14								
quality monitoring	Exch. Mg	$\text{cmol}(\text{+})/\text{kg}$	3.8	3.9								
quality monitoring	Exch. K	$\text{cmol}(\text{+})/\text{kg}$	7	6.2								
quality monitoring	Exch. Na	$\text{cmol}(\text{-})/\text{kg}$	1.3	0.31								
quality monitoring	Nitrate	mg/kg	8.5	18								
quality monitoring	N (total)	mg/kg	1.5	4								
quality monitoring	pH	pH	7.9	6.2								
quality monitoring	P (total)	mg/kg	380	360								
quality monitoring	K	mg/kg	2700	2400								
quality monitoring	SAR	SAR	0.46	0.1								
quality monitoring	P sorption capacity	mg/kg	150	100								



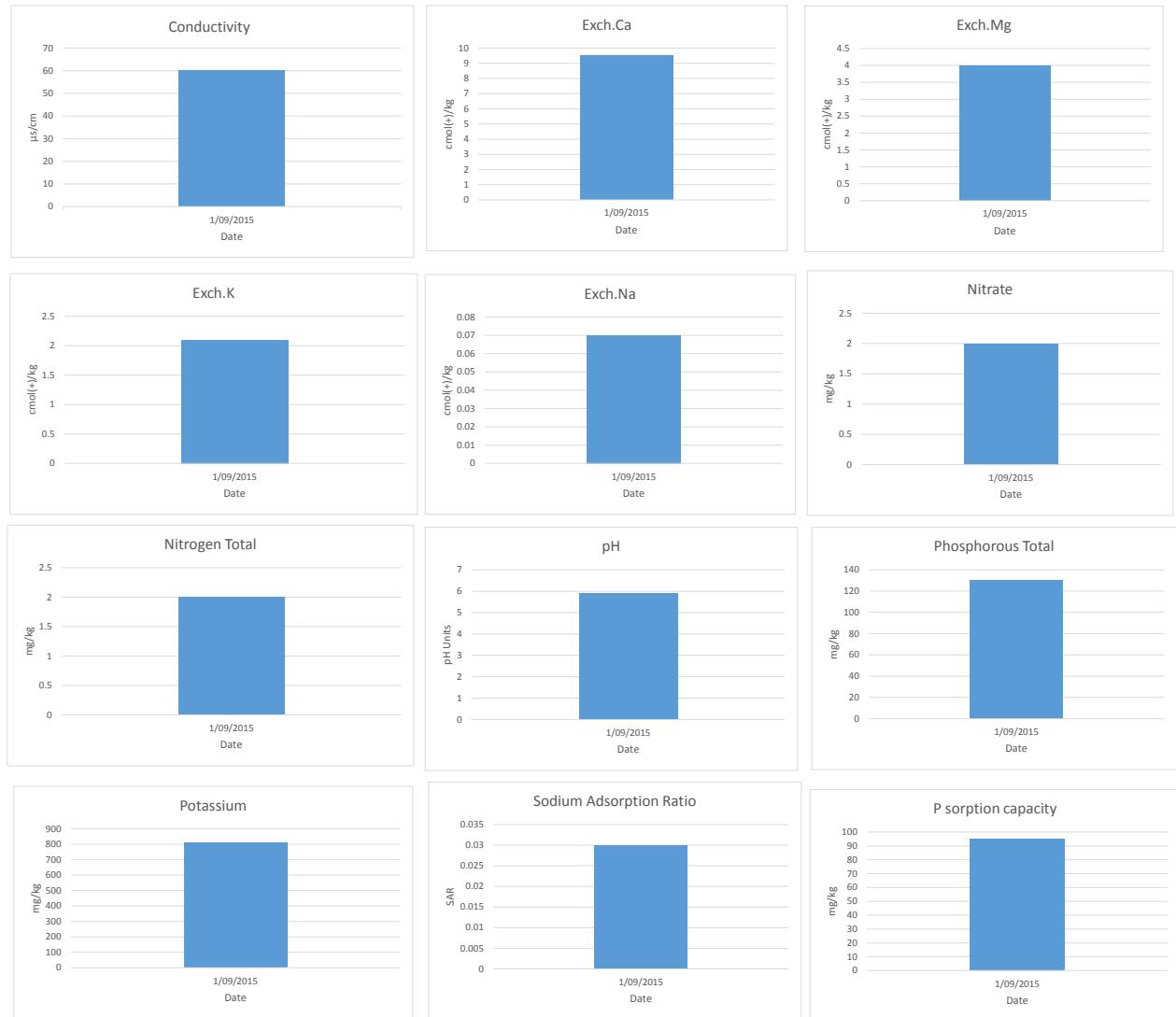
type	test	units	Date									
			12/08/2014	1/09/2015								
quality monitoring	EC	µS/cm	230	180								
quality monitoring	Exch. Ca	cmol(+) /kg	11	14								
quality monitoring	Exch. Mg	cmol(+) /kg	4.4	4.1								
quality monitoring	Exch. K	cmol(+) /kg	5.4	4.2								
quality monitoring	Exch. Na	cmol(+) /kg	0.48	0.11								
quality monitoring	Nitrate	mg/kg	30	4								
quality monitoring	N (total)	mg/kg	1.9	3								
quality monitoring	pH	pH	7.8	7								
quality monitoring	P (total)	mg/kg	380	240								
quality monitoring	K	mg/kg	2100	1700								
quality monitoring	SAR	SAR	0.17	0.04								
quality monitoring	P sorption capacity	mg/kg	140	110								



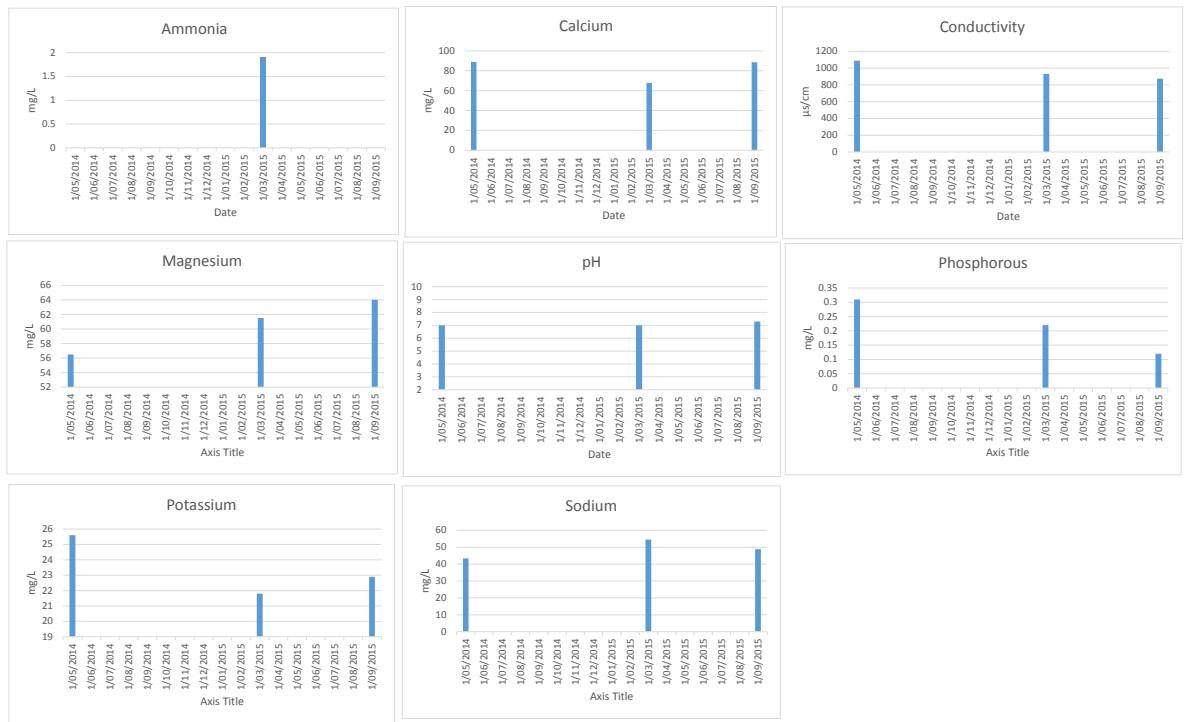
type	test	units	Date									
			12/08/2014	1/09/2015								
quality monitoring	EC	µS/cm	680	170								
quality monitoring	Exch. Ca	cmol(+) /kg	16	11								
quality monitoring	Exch. Mg	cmol(+) /kg	2.6	1.6								
quality monitoring	Exch. K	cmol(+) /kg	5	5.3								
quality monitoring	Exch. Na	cmol(+) /kg	0.57	0.11								
quality monitoring	Nitrate	mg/kg	5.2	5								
quality monitoring	N (total)	mg/kg	1.6	3								
quality monitoring	pH	pH	7.4	6.4								
quality monitoring	P (total)	mg/kg	290	370								
quality monitoring	K	mg/kg	21	2100								
quality monitoring	SAR	SAR	0.18	0.04								
quality monitoring	P sorption capacity	mg/kg	140	150								



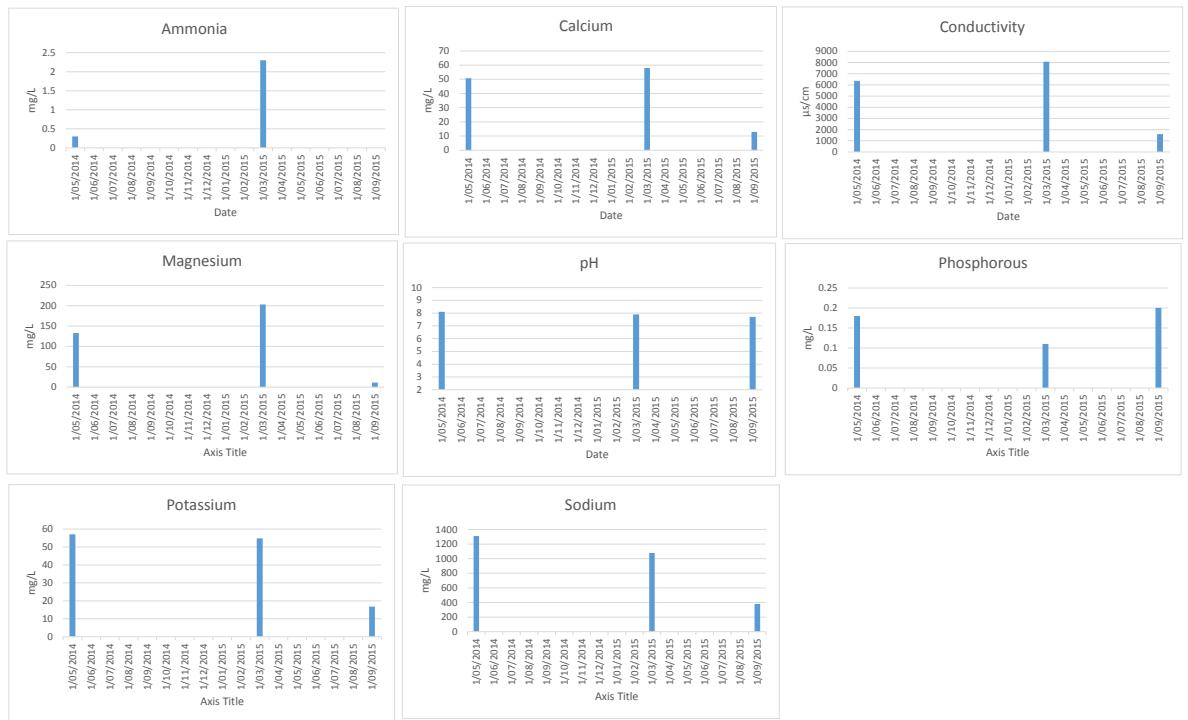
type	test	units	Date
quality monitoring	EC	$\mu\text{s}/\text{cm}$	60
quality monitoring	Exch. Ca	$\text{cmol}(+)/\text{kg}$	9.5
quality monitoring	Exch. Mg	$\text{cmol}(+)/\text{kg}$	4
quality monitoring	Exch. K	$\text{cmol}(+)/\text{kg}$	2.1
quality monitoring	Exch. Na	$\text{cmol}(+)/\text{kg}$	0.07
quality monitoring	Nitrate	mg/kg	2
quality monitoring	N (total)	mg/kg	2
quality monitoring	pH	pH	5.9
quality monitoring	P (total)	mg/kg	130
quality monitoring	K	mg/kg	810
quality monitoring	SAR	SAR	0.03
quality monitoring	P sorption capacity	mg/kg	95



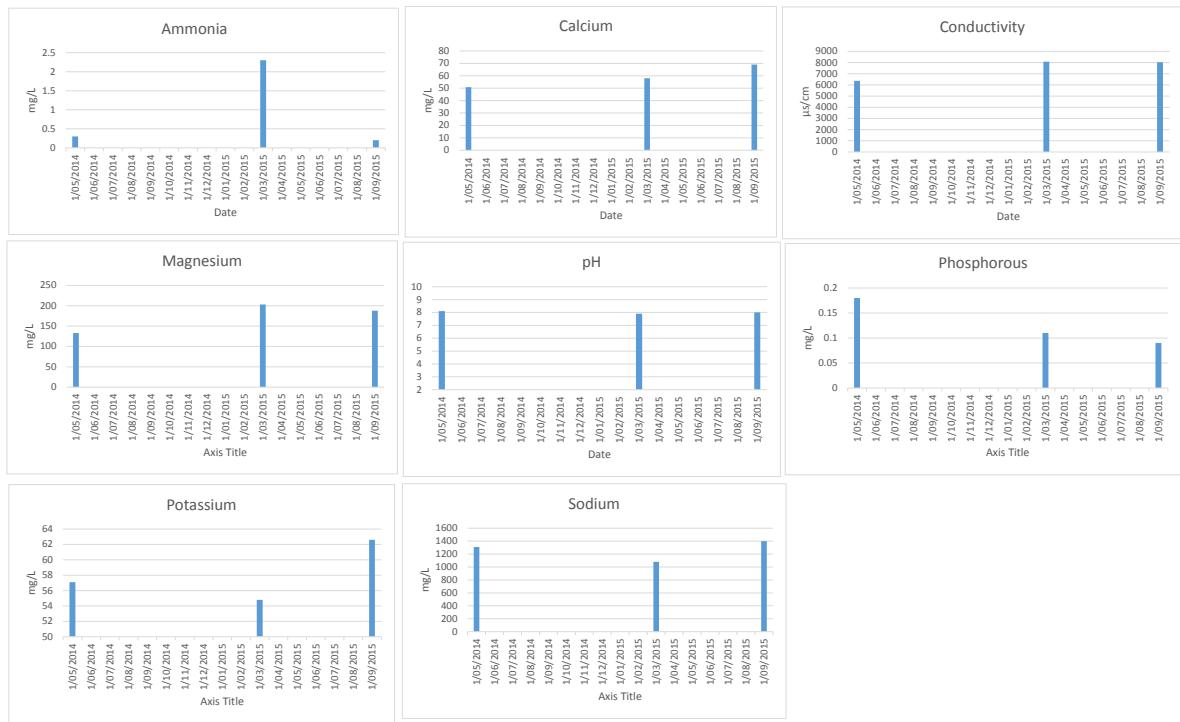
type	test	units	Date		
			2/05/2014	22/09/2014	11/03/2015
quality monitoring	ammonia	mg/L	<0.2	1.9	<0.2
quality monitoring	Ca	mg/L	89.1	67.9	88.6
quality monitoring	EC	µS/cm	1090	931	874
quality monitoring	Mg	mg/L	56.5	61.5	64
quality monitoring	N(nitrate)	mg/L	<0.5	<1	<0.5
quality monitoring	N(total)	mg/L	2	<2	2
quality monitoring	pH	pH	7	7	7.3
quality monitoring	P	mg/L	0.31	0.22	0.12
quality monitoring	K	mg/L	25.6	21.8	22.9
quality monitoring	Na	mg/L	43.4	54.6	48.9



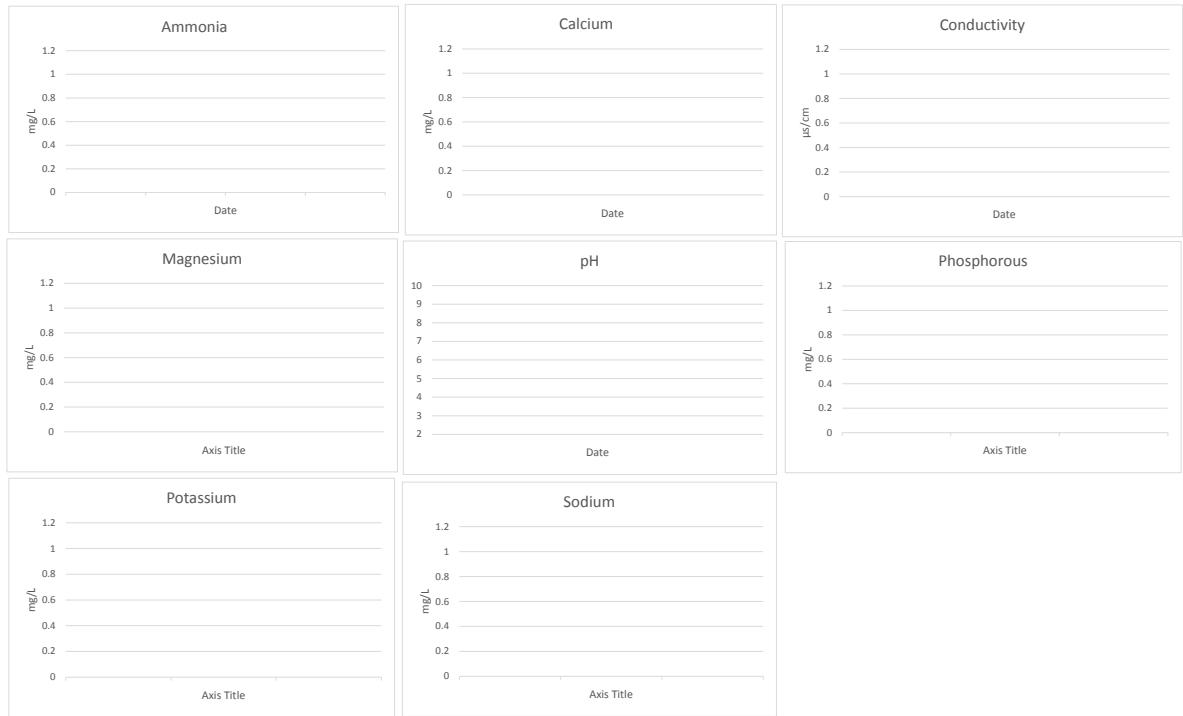
type	test	units	Date		
			1/05/2014	2/06/2014	3/07/2014
quality monitoring	ammonia	mg/L	0.3	2.3	<0.2
quality monitoring	Ca	mg/L	50.8	58	12.9
quality monitoring	EC	µS/cm	6370	8080	1600
quality monitoring	Mg	mg/L	133	203	11.4
quality monitoring	N(nitrate)	mg/L	<0.5	<1.0	<0.5
quality monitoring	N(total)	mg/L	2	<2	2
quality monitoring	pH	pH	8.1	7.9	7.7
quality monitoring	P	mg/L	0.18	0.11	0.2
quality monitoring	K	mg/L	57.1	54.8	16.8
quality monitoring	Na	mg/L	1310	1080	380



type	test	units	Date		
			1/05/2014	2/06/2014	3/07/2014
quality monitoring	ammonia	mg/L	0.3	2.3	0.2
quality monitoring	Ca	mg/L	50.8	58	69
quality monitoring	EC	µS/cm	6370	8080	8030
quality monitoring	Mg	mg/L	133	203	188
quality monitoring	N(nitrate)	mg/L	<0.5	<1	<0.5
quality monitoring	N(total)	mg/L	2	<2	<2
quality monitoring	pH	pH	8.1	7.9	8
quality monitoring	P	mg/L	0.18	0.11	0.09
quality monitoring	K	mg/L	57.1	54.8	62.6
quality monitoring	Na	mg/L	1310	1080	1400



Date		
type	test	units
quality monitoring	ammonia	mg/L
quality monitoring	Ca	mg/L
quality monitoring	EC	µS/cm
quality monitoring	Mg	mg/L
quality monitoring	N(nitrate)	mg/L
quality monitoring	N(total)	mg/L
quality monitoring	pH	pH
quality monitoring	P	mg/L
quality monitoring	K	mg/L
quality monitoring	Na	mg/L



EPA ENVIRONMENTAL MONITORING

Type of Monitoring Point	How Monitored	Location Description	Frequency
Odour	Odour Intensity and Descriptor Sheet; observation.	Boundary of evaporation ponds "EPA 21" & "EPA 22" on site map.	Daily (working days)

Type of Monitoring Point	How Monitored	Location Description	Frequency
Weather conditions other than rainfall - temperature, wind speed, wind direction, humidity	Handheld weather meter	Boundary of evaporation ponds "EPA 21" & "EPA 22" on site map.	Daily (working days)

Type of Monitoring Point	How Monitored	Location Description	Frequency
Rainfall	Rain gauge	Boundary of evaporation ponds "EPA 21" & "EPA 22" on site map.	Daily (working days)

Type of Monitoring Point	How Monitored	Location Description	Frequency
Biosolids Cake	Biosolids sample, laboratory analysis	Evaporation ponds sludge	As required

Test Type	EPA Reference Points	Frequency of Monitoring	Next Sample Date
Soil quality monitoring	3, 4, 5, 6, 11	Annual	1/09/2016
Groundwater quality monitoring	7, 8, 9, 10	Annual	11/03/2016
Groundwater standing level	7, 8, 9, 10	6 monthly	16/03/2016
Effluent quality monitoring: inflow and outflow	1, 2	6 monthly	15/03/2016
Effluent volume monitoring: inflow and outflow	1,2	Monthly	28/10/2015