

Final Environmental ReportPeriod Ending: 15th April 2009

Compiled By: Siobhán Quinn & Aoife Reynolds

Approved By: Tony Doyle

1 Monitoring Data

1.1 Monitoring Equipment

Axonics	– Axonics plant operated as required during the reporting period.
PO ₄	– The PO ₄ analyser was operational during the reporting period. – The composite sampler was in place to cover any shortfalls in the PO ₄ analyser.
TSS	– The TSS analyser was operational during the reporting period. – The composite sampler was in place to cover any shortfalls in the TSS analyser.
Composite	– The composite sampler was operational during the reporting period. – Where there is loss of continuous monitoring data due to instrument faults or other issues composite sample data is provided on the graphs. – The sample was contaminated with algae on the 14/04/2009 which prevented analysis being undertaken.
Noise	– There is a single noise monitoring location currently being used – N1.
Vibration	– There is a single vibration monitoring location currently being used – V1.
Sondes	– The results are displayed graphically. ○ Any unusual values are explained on the relevant graph. ○ Material or peat lodged in the probe at SP1 during the reporting period.
Weather Station	– The data used for this reporting period was taken from the on-site meteorological station.
Weirs	– Weirs were operational during the reporting period.

1.2 Rainfall Data

02/04/2009	0.000	09/04/2009	16.400
03/04/2009	2.800	10/04/2009	2.000
04/04/2009	4.700	11/04/2009	4.400
05/04/2009	0.000	12/04/2009	0.200
06/04/2009	6.600	13/04/2009	7.200
07/04/2009	16.200	14/04/2009	0.200
08/04/2009	3.800	15/04/2009	1.200
Total Rainfall 65.700mm			

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1.3 Summary

Environment	Comments
Surface Water	There were no exceedances during the reporting period.
Groundwater	The groundwater data (Sonde) is within anticipated ranges.
Dust	Dust results are all within limits.
Weather	There was a total of 65.70mm of rainfall during the reporting period, with a temperature range of 1.2°C to 14.8 °C.
Noise	All noise levels were within the set limits. Where values were affected by high wind speeds it is indicated on the table.
Vibration	No vibration exceedances were recorded during the reporting period, based on available results.

Note: All laboratory data generated on site should be considered indicative only.

2 Environmental Exceedances / Incidents / Complaints

No exceedances during the reporting period.

Surface Water Monitoring Record Sheet: Accredited Laboratory Results

	Date	Cond.	Temp	Turbidity	DO	pH	TSS	Ortho-phosphate as P	Nitrate as N	Nitrate as NO ₃	Total Phosphorus as P	Ammonia as NH ₃ -N	Nitrite as NO ₂	Aluminium (dissolved)	Aluminium (total)	Phosphate as PO ₄ -P	TDS
		µS/cm	°C	NTU	% Sat	pH units	mg l ⁻¹	µg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	µg l ⁻¹	µg l ⁻¹	mg l ⁻¹	mg l ⁻¹
Action Limits		400		150		<3.5 or >7.5	25	40	1.5	4.0		0.2	0.025	100	135		
Target Limits		500		200		<3 or >8	35	70	2.6	6.0		0.5	0.05	150	200		
SP1	02/04/2009	350		5.6		7.5	4.0	<10		<0.44	<0.01	0.007	<0.017	41	178	<0.03	168
SP3	02/04/2009	355		1.1		7.1	<2.0	<10		<0.44	<0.01	0.011	<0.017	<20	87	<0.03	170
SP1	07/04/2009	349		2.1		7.4	2.0	<10		0.64	0.01	0.021	<0.017	24	68	<0.03	156
SP3	07/04/2009	362		3.4		7.1	<2.0	<10		0.82	0.045	0.030	<0.017	<20	87	<0.03	169
SP1	15/04/2009	261		3.2		7.0	<2.0	<10		<0.44	0.03	<0.005	0.018	46	126	<0.03	139
SP3	15/04/2009	296		1.7		6.6	<2.0	<10		1.11	0.01	<0.005	0.021	22	102	<0.03	160
Additional Monitoring																	
D22	07/04/2009	271		3.1		6.7	<2.0	31		2.89	0.05	0.033	<0.017	29	39	0.10	130
D62	07/04/2009	198		0.6		4.3	<2.0	<10		<0.44	0.02	0.026	<0.017	29	53	<0.03	98
Axonics Monitoring																	
Pre Axonics	02/04/2009	337		36.4		7.2	156.0	<10		0.69	0.03	0.107	0.019	88	1270	<0.03	162
Post Axonics	02/04/2009	352		0.8		6.5	<2.0	<10		0.53	<0.01	0.016	0.025	21	114	<0.03	169
Pre Axonics	07/04/2009	365		27.6		7.1	408.0	<10		1.94	0.07	0.013	<0.017	28	806	<0.03	175
Post Axonics	07/04/2009	383		2.1		6.4	4.0	<10		1.16	0.01	<0.005	<0.017	<20	95	<0.03	183
Pre Axonics	15/04/2009	295		84.6		7.1	112.0	<10		1.49	0.08	<0.005	0.028	39	1422	<0.03	154
Post Axonics	15/04/2009	309		1.2		6.6	<2.0	<10		1.91	0.01	<0.005	0.038	<20	336	<0.03	163

I.P. = In Progress

< LOD = Below Limit of Detection

> LOD = Above Limit of Detection

On site laboratory results included in Appendix 1

Grey shaded areas denote parameters that cannot or were not analysed on-site or the lab.

Groundwater Monitoring Record Sheet																									
Location	Date	DO	Temp	Cond.	pH	TDS	BOD	TSS	Total Hardness	Nitrite as NO ₂	Nitrate as NO ₃	Phosphate as PO ₄	Arsenic	Mercury	Lead	Aluminium (total)	Zinc	Chromium	Copper	Cadmium	Iron	Tin	Ammonia	Aluminium, dissolved	Manganese, total
		% Sat	°C	uS/cm	pH units	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg/l CaCO3	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	ug l ⁻¹	mg l ⁻¹	ug l ⁻¹	ug l ⁻¹
MP 1	04/03/2009	15.0	11.2	332	5.8	157	28	4	61.6	<0.017	<0.44	1.896	7.0	<0.05	<0.5	32	6	0.7	<1	<0.5	3433	<0.5	2.47	<20	1103
MP 2	02/04/2009	16.0	9.7	239	5.6	118	3	467	50.7	0.022	<0.44	0.507	1.0	<0.05	9.0	3325	82	5.0	12	<0.5	15530	0.8	3.49	218	351
MP 3	02/04/2009	15.0	11.2	362	5.9	173	10	136	63.2	<0.017	<0.44	2.024	7.0	<0.05	3.0	1684	50	3.0	4	<0.5	33690	0.8	3.31	129	507
MP 4	04/03/2009	15.0	10.5	449	5.9	216	1	534	68.1	<0.017	<0.44	0.496	3.0	<0.05	8.0	2273	44	6.0	12	<0.5	87650	4.0	0.48	23	2618
MP 5	02/04/2009	14.0	10.6	249	5.5	120	11	194	92.2	<0.017	<0.44	1.458	1.0	<0.05	2.0	1351	30	4.0	4	<0.5	13200	1.0	2.39	303	301
MP 6	02/04/2009	10.0	10.1	469	6.2	225	5	18	61.6	<0.017	<0.44	0.385	12.0	<0.05	2.0	<20	11	<0.5	<1	<0.5	12660	1.0	2.07	<20	1655
MP 7	04/03/2009	12.0	11.0	365	5.8	175	20	6	57.9	<0.017	<0.44	0.725	<0.5	<0.05	<0.5	<20	34	1.1	<1	<0.5	967	<0.5	3.10	<20	799
MP 10a	02/04/2009	11.0	11.0	425	5.7	204	<1	184	131.8	<0.017	<0.44	0.245	4.0	<0.05	15.0	1493	67	4.0	11	<0.5	21860	1.0	0.54	<20	5303
MP 11	02/04/2009	19.0	11.0	208	5.4	102	<1	2	28.7	0.020	<0.44	0.048	<0.5	<0.05	12.0	91	28	<0.5	2	<0.5	324	<0.5	0.03	23	1469

Determinant Results							
	Date Positioned	Date Removed	Ref. Number	Date Dispatched	Date Returned	Weight (mg/m ² /day)	Comments
Target (Consent) Limit: 350 mg m² d⁻¹ on as a 30 day average							
D1	24/10/2008	21/11/2008	191474	21/11/2008	27/11/2008	174	
D2	24/10/2008	21/11/2008	191475	21/11/2008	27/11/2008	167	
D3	24/10/2008	21/11/2008	191476	21/11/2008	27/11/2008	171	
D4	24/10/2008	21/11/2008	191477	21/11/2008	27/11/2008	180	
D1	21/11/2008	22/12/2008	194862	22/12/2008	05/01/2009	172	
D2	21/11/2008	22/12/2008	194863	22/12/2008	05/01/2009	37	
D3	21/11/2008	22/12/2008	194864	22/12/2008	05/01/2009	144	
D4	21/11/2008	22/12/2008	194865	22/12/2008	05/01/2009	39	
D1	22/12/2009	22/01/2009	197095	22/01/2009	28/01/2009	295	
D2	22/12/2009	22/01/2009	197096	22/01/2009	28/01/2009	324	
D3	22/12/2009	22/01/2009	197097	22/01/2009	28/01/2009	261	
D4	22/12/2009	22/01/2009	197098	22/01/2009	28/01/2009	324	
D1	22/01/2009	20/02/2009	199883	20/02/2009	23/02/2009	106	
D2	22/01/2009	20/02/2009	199884	20/02/2009	23/02/2009	117	
D3	22/01/2009	20/02/2009	199885	20/02/2009	23/02/2009	109	
D4	22/01/2009	20/02/2009	199886	20/02/2009	23/02/2009	110	
D1	20/02/2009	20/03/2009	207133	20/03/2009	25/03/2009	169	
D2	20/02/2009	20/03/2009	207134	20/03/2009	25/03/2009	162	
D3	20/02/2009	20/03/2009	207135	20/03/2009	25/03/2009	174	
D4	20/02/2009	20/03/2009	207136	20/03/2009	25/03/2009	183	
D1	20/03/2009	20/04/2009	210632	20/04/2009	29/04/2009	146	
D2	20/03/2009	20/04/2009	210633	20/04/2009	29/04/2009	101	
D3	20/03/2009	20/04/2009	210635	20/04/2009	29/04/2009	117	
D4	20/03/2009	20/04/2009	210636	20/04/2009	29/04/2009	115	
NDP = No Determination Possible							
Monitoring Points are numbered clockwise through the Cardinal Marks (N, E, S, W)							
Monitoring Results will be presented monthly							

Monitoring Points are numbered clockwise through the Cardinal Marks (N, E, S, W)
Monitoring Results will be presented monthly

Day Time Noise Monitoring Record Sheet

Determinant Results

Location	Air Temp. (Min)	Air Temp. (Max)	Start Date	Time	Duration	Serial No.	Wind		Results dB			*Comments
							Speed (m/s)*	Direction (Degrees)	L _{Aeq}	L _{Amax}	L _{Amin}	
Action Limit									60			
Target Limit									65			
N1	3.1	9.0	02/04/2009	08:00:00	14:00:00	2539533	3.4	184.2	53.7	80.7	40.3	
N1	5.2	8.7	03/04/2009	08:00:00	14:00:00	2539533	2.9	204.0	52.7	78.1	40.5	
N1	5.5	8.1	04/04/2009	08:00:00	14:00:00	2539533	4.8	254.7	52.9	95.0	41.0	
N1	6.2	8.6	05/04/2009	08:00:00	14:00:00	2539533	5.6	177.8	53.0	78.5	39.4	Values impacted by wind speed
N1	5.1	7.6	06/04/2009	08:00:00	14:00:00	2539533	7.8	164.7	57.3	80.2	44.4	Values impacted by wind speed
N1	4.5	7.0	07/04/2009	08:00:00	14:00:00	2539533	4.6	227.7	52.7	77.4	42.2	
N1	6.3	8.4	08/04/2009	08:00:00	14:00:00	2539533	4.4	244.2	51.7	84.9	39.6	
N1	5.2	7.8	09/04/2009	08:00:00	14:00:00	2539533	4.0	199.4	55.6	49.6	48.8	
N1	3.0	5.5	10/04/2009	08:00:00	14:00:00	2539533	2.6	217.1	50.2	71.6	42.7	
N1	3.2	7.0	11/04/2009	08:00:00	14:00:00	2539533	2.6	228.7	48.6	73.1	41.1	
N1	1.2	7.6	12/04/2009	08:00:00	14:00:00	2539533	2.7	179.5	49.1	87.2	33.2	
N1	6.8	9.1	13/04/2009	08:00:00	14:00:00	2539533	3.4	163.5	47.9	74.4	30.1	
N1	4.8	9.2	14/04/2009	08:00:00	14:00:00	2539533	2.2	131.1	50.5	80.2	33.8	
N1	4.2	8.1	15/04/2009	08:00:00	14:00:00	2539533	2.4	76.3	50.7	85.1	35.5	

* Wind speeds in excess of 5 m/s negatively impact noise readings (as per EPA Guidance Note on Noise Measurement).

Night Time Noise Monitoring Record Sheet

Determinant Results

Location	Air Temp. (Min)	Air Temp. (Max)	Start Date	Time	Duration	Serial No.	Wind		Results dB			*Comments
							Speed (m/s)*	Direction (Degrees)	L _{Aeq}	L _{Amax}	L _{Amin}	
Action Limit									50			
Target Limit									55			
N1	3.1	9.0	02/04/2009	22:00:00	10:00:00	2539533	3.4	184.2	50.9	81.2	41.2	
N1	5.2	8.7	03/04/2009	22:00:00	10:00:00	2539533	2.9	204.0	50.9	70.4	42.1	
N1	5.5	8.1	04/04/2009	22:00:00	10:00:00	2539533	4.8	254.7	50.3	79.1	39.9	
N1	6.2	8.6	05/04/2009	22:00:00	10:00:00	2539533	5.6	177.8	53.2	86.0	42.1	Values impacted by wind speed
N1	5.1	7.6	06/04/2009	22:00:00	10:00:00	2539533	7.8	164.7	49.0	78.8	42.4	Values impacted by wind speed
N1	4.5	7.0	07/04/2009	22:00:00	10:00:00	2539533	4.6	227.7	50.2	68.6	44.9	
N1	6.3	8.4	08/04/2009	22:00:00	10:00:00	2539533	4.4	244.2	52.6	73.9	42.8	
N1	5.2	7.8	09/04/2009	22:00:00	10:00:00	2539533	4.0	199.4	49.4	75.6	44.5	
N1	3.0	5.5	10/04/2009	22:00:00	10:00:00	2539533	2.6	217.1	47.5	73.4	38.2	
N1	3.2	7.0	11/04/2009	22:00:00	10:00:00	2539533	2.6	228.7	45.8	73.8	38.5	
N1	1.2	7.6	12/04/2009	22:00:00	10:00:00	2539533	2.7	179.5	46.5	68.8	32.6	
N1	6.8	9.1	13/04/2009	22:00:00	10:00:00	2539533	3.4	163.5	45.6	72.6	35.5	
N1	4.8	9.2	14/04/2009	22:00:00	10:00:00	2539533	2.2	131.1	43.8	65.4	32.5	
N1	4.2	8.1	15/04/2009	22:00:00	10:00:00	2539533	2.4	76.3	48.4	73.4	35.7	

* Wind speeds in excess of 5 m/s negatively impact noise readings (as per EPA Guidance Note on Noise Measurement).

Flow Weir Record Sheet**Determinant Results**

Date	SP1			SP3		
	Max (l/s)	Min (l/s)	Avg (l/s)	Max (l/s)	Min (l/s)	Avg (l/s)
02/04/2009	-0.02	-0.03	-0.02	1.16	-0.63	0.48
03/04/2009	-0.01	-0.03	-0.02	2.91	-0.38	1.11
04/04/2009	-0.01	-0.02	-0.02	3.87	1.58	2.94
05/04/2009	-0.02	-0.02	-0.02	2.21	1.30	1.77
06/04/2009	-0.02	-0.02	-0.02	2.38	1.30	1.73
07/04/2009	3.50	-0.02	0.30	15.44	-0.03	2.91
08/04/2009	0.41	-0.01	0.01	7.47	0.20	3.84
09/04/2009	3.50	-0.01	0.55	17.06	4.07	9.56
10/04/2009	0.23	-0.01	0.01	10.94	2.56	5.80
11/04/2009	-0.01	-0.01	-0.01	5.13	1.89	4.20
12/04/2009	-0.01	-0.02	-0.01	3.67	0.28	2.97
13/04/2009	-0.01	-0.02	-0.01	7.23	-0.28	2.94
14/04/2009	-0.01	-0.02	-0.01	6.03	0.90	3.59
15/04/2009	-0.02	-0.02	-0.02	3.10	0.20	2.38

Note: Negative values indicate low flow conditions.

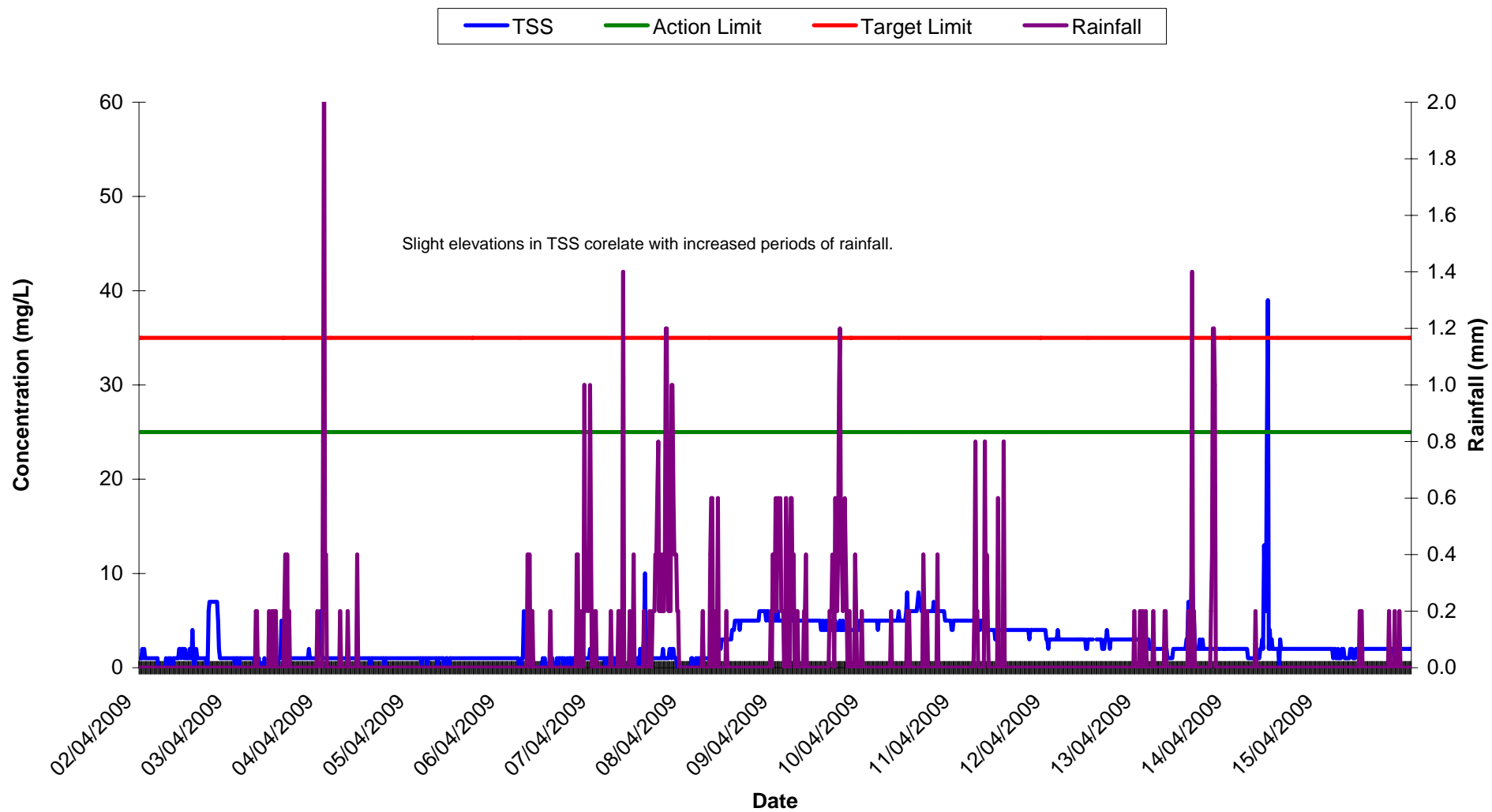
Vibration Monitoring Record Sheet

Determinant Results	
1. Demographics	Age, Gender, Education, Income, Employment Status
2. Attitudes	Attitudes Toward the Environment, Attitudes Toward Recycling, Attitudes Toward Sustainability
3. Beliefs	Beliefs About Climate Change, Beliefs About Recycling's Impact, Beliefs About Sustainability's Importance
4. Norms	Perceived Social Norms, Descriptive Norms, Injunctive Norms
5. Facilitating Conditions	Availability of Recycling Bins, Accessibility of Recycling Programs, Knowledge of Recycling Rules
6. Barriers	Lack of Time, Lack of Information, Lack of Motivation, Lack of Resources
7. Interventions	Educational Programs, Incentives, Regulations, Community Initiatives
8. Outcomes	Recycling Rates, Sustainability Scores, Environmental Impact Reduction

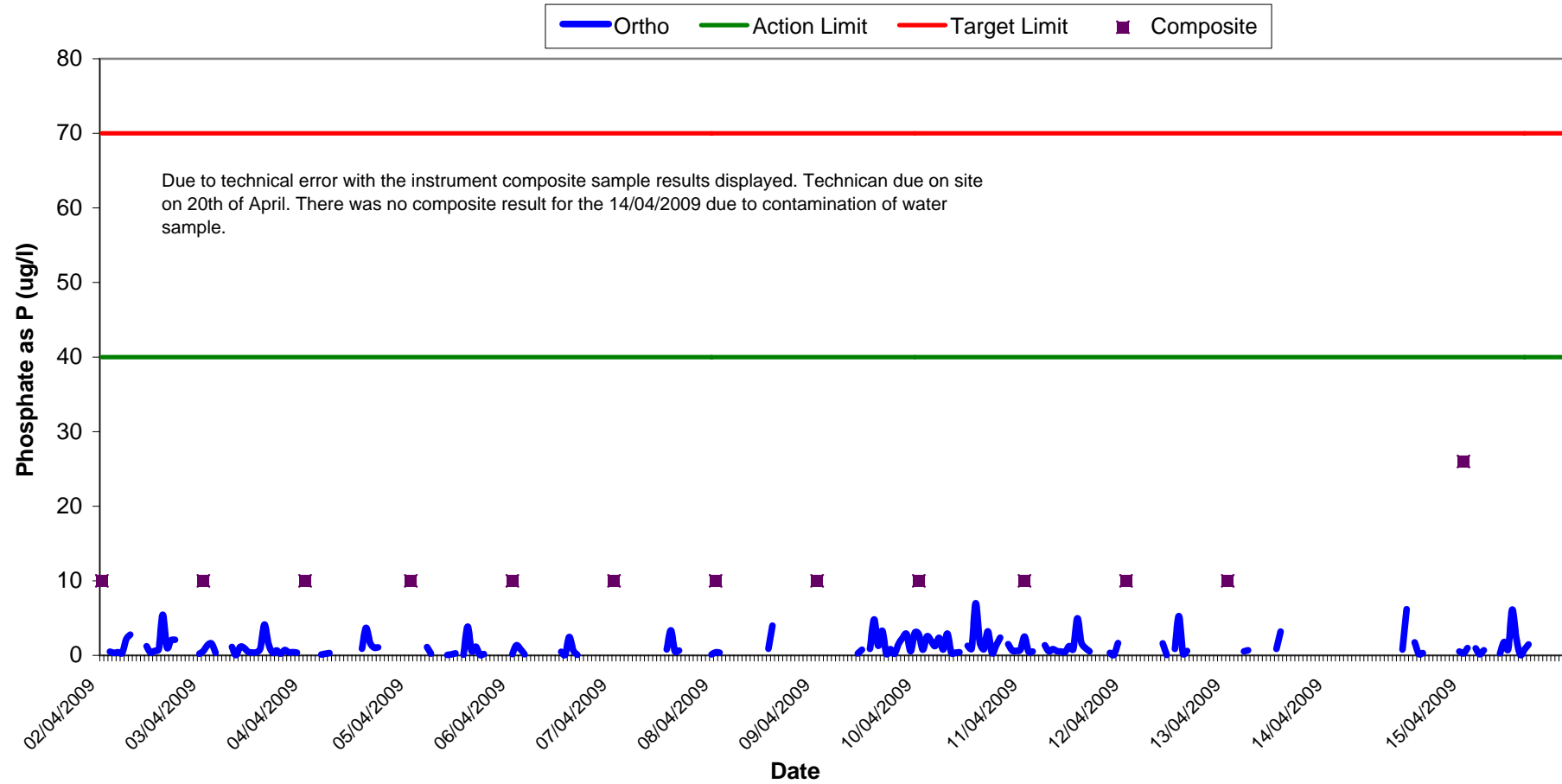
[illegible]

Vibration meter located at V1.

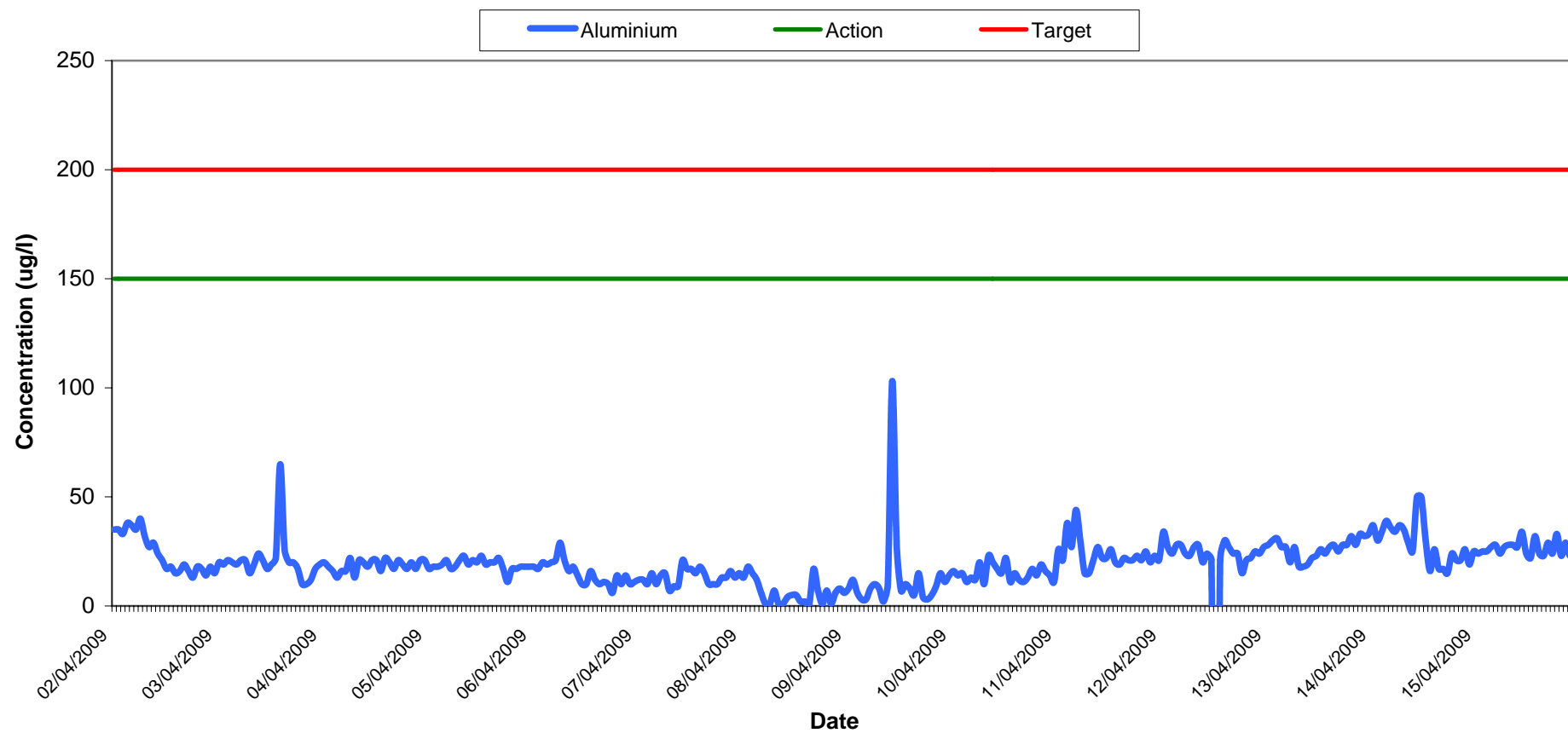
Total Suspended Solids at SP1 Week 14-15



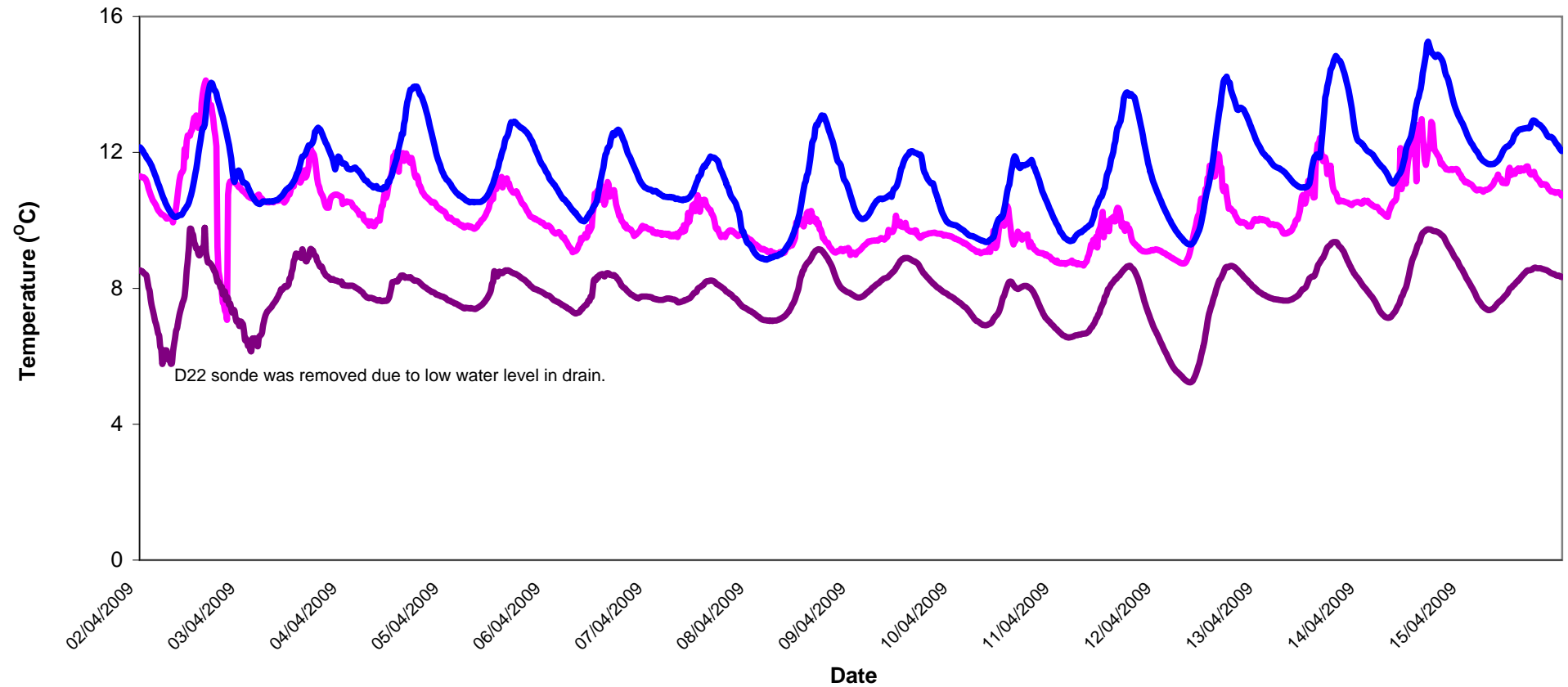
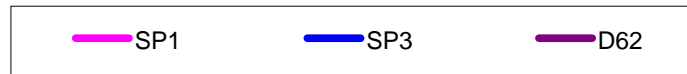
Orthophosphate Results at SP1 Wk 14-15



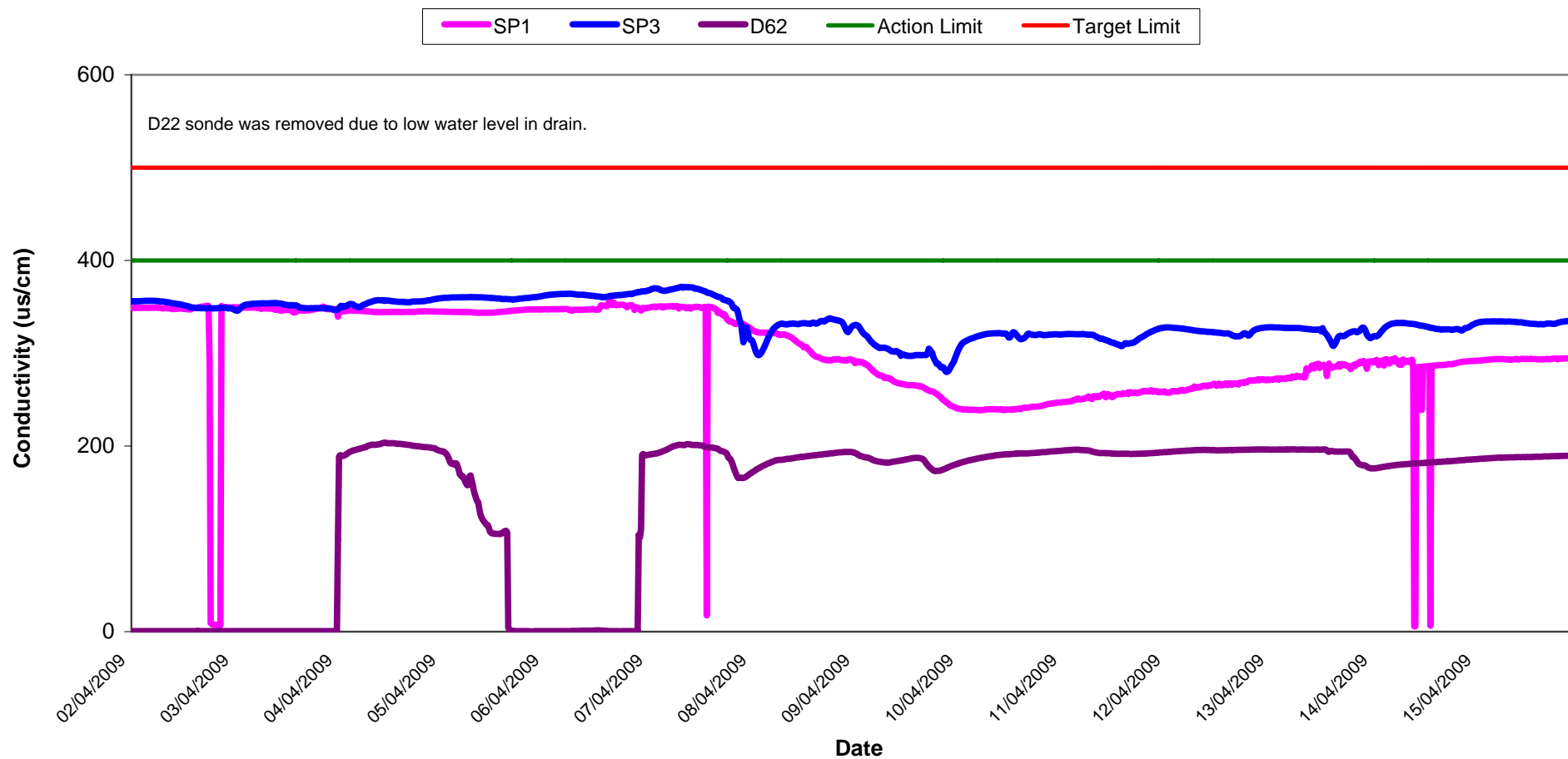
Aluminium Concentration at SP1 Wk 14-15



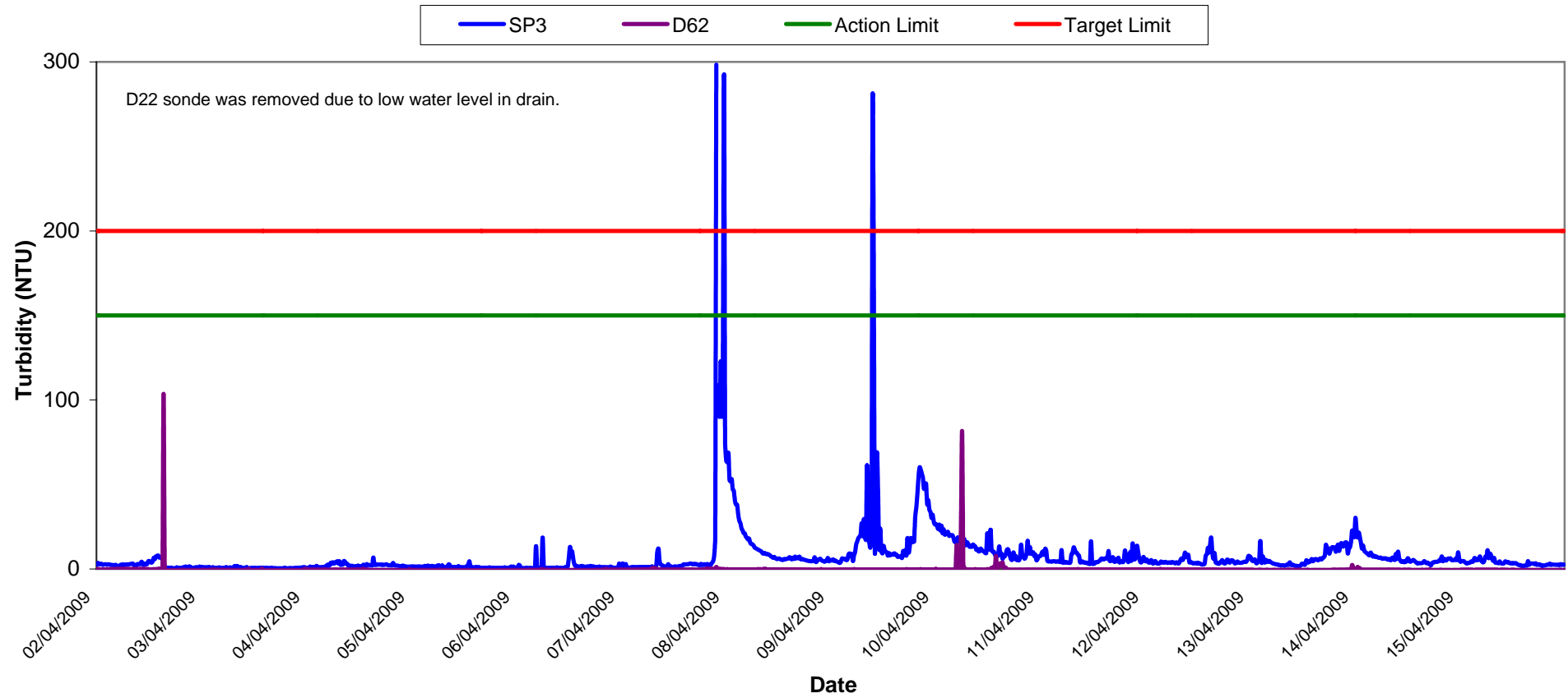
Temperature - Surface Waters Wk 14-15



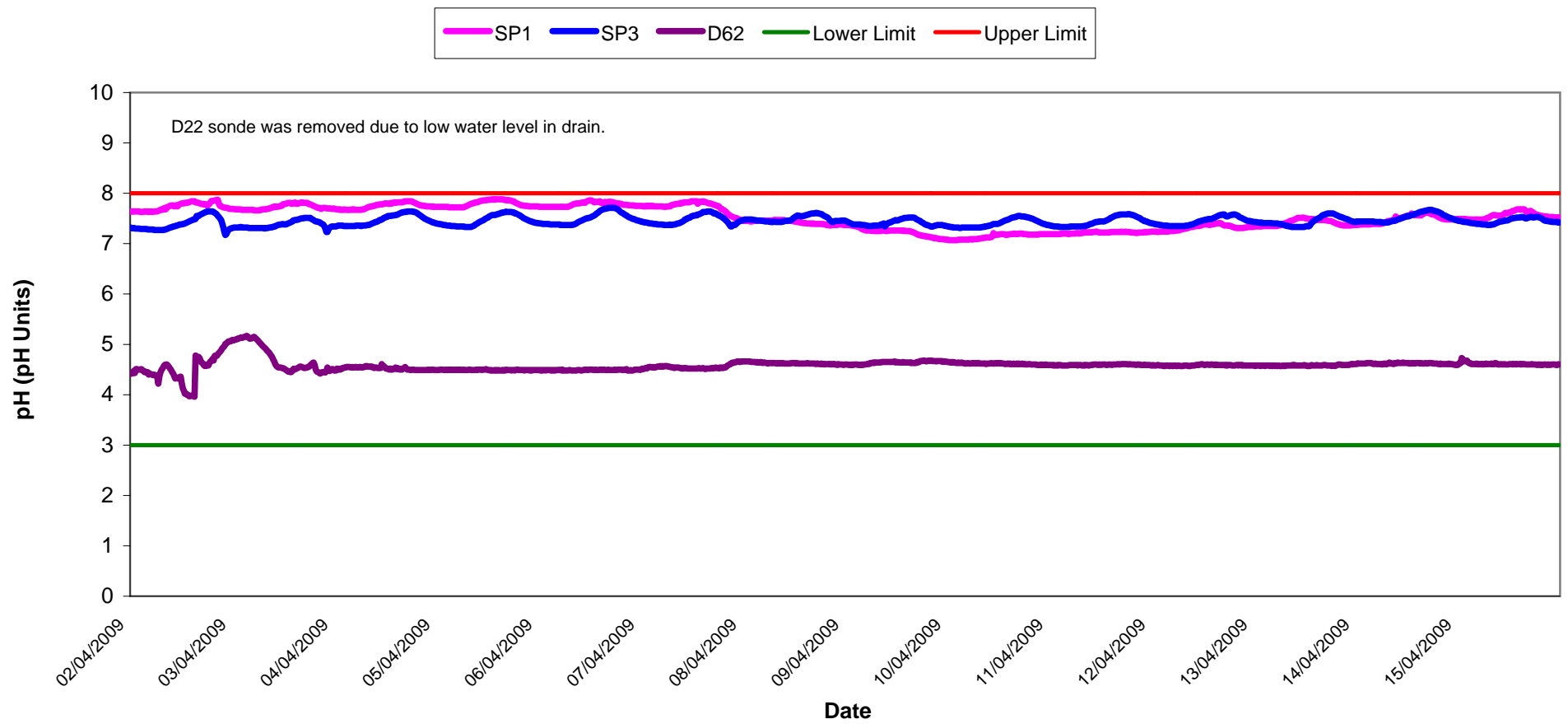
Conductivity - Surface Waters, Wk 14-15



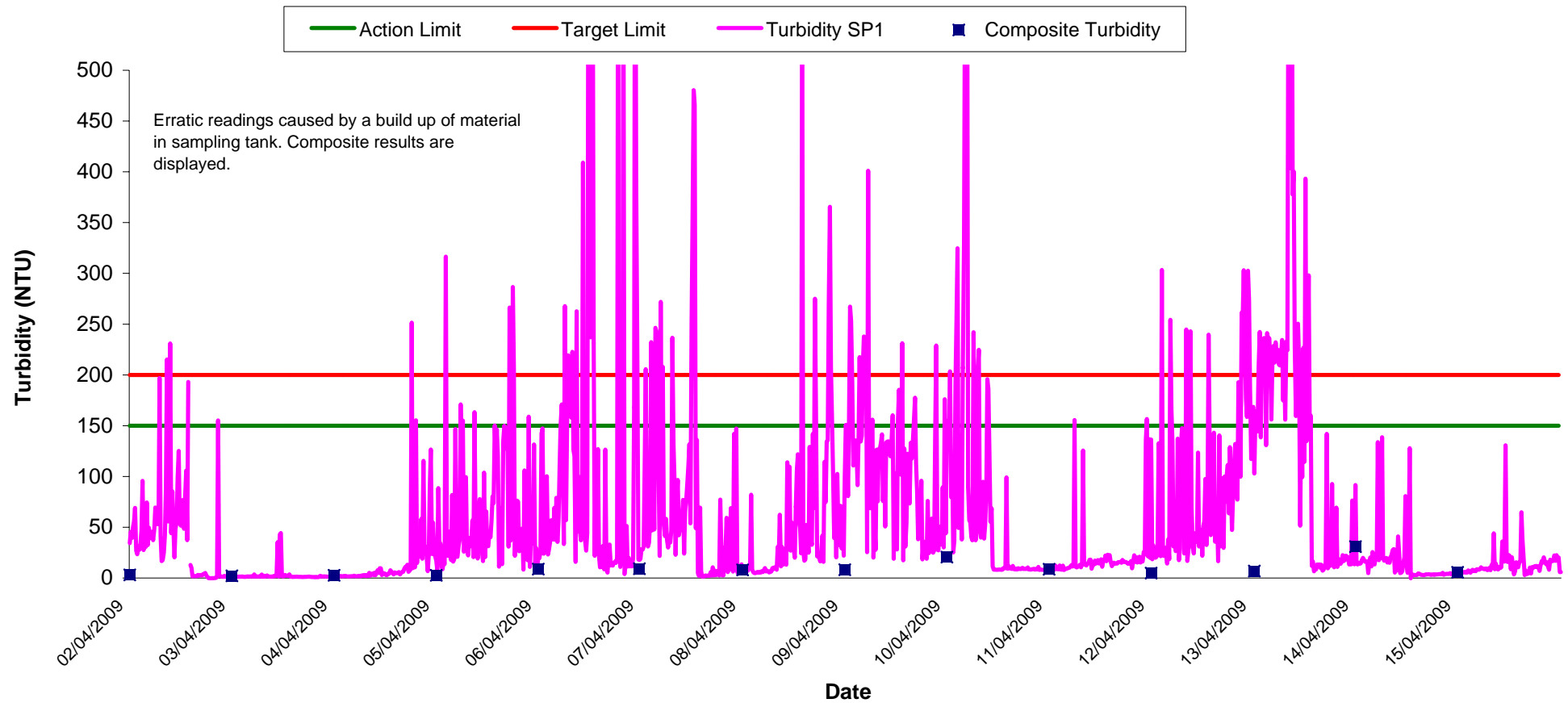
Turbidity - Surface Waters Wk 14-15



pH - Surface Waters Wk 14-15

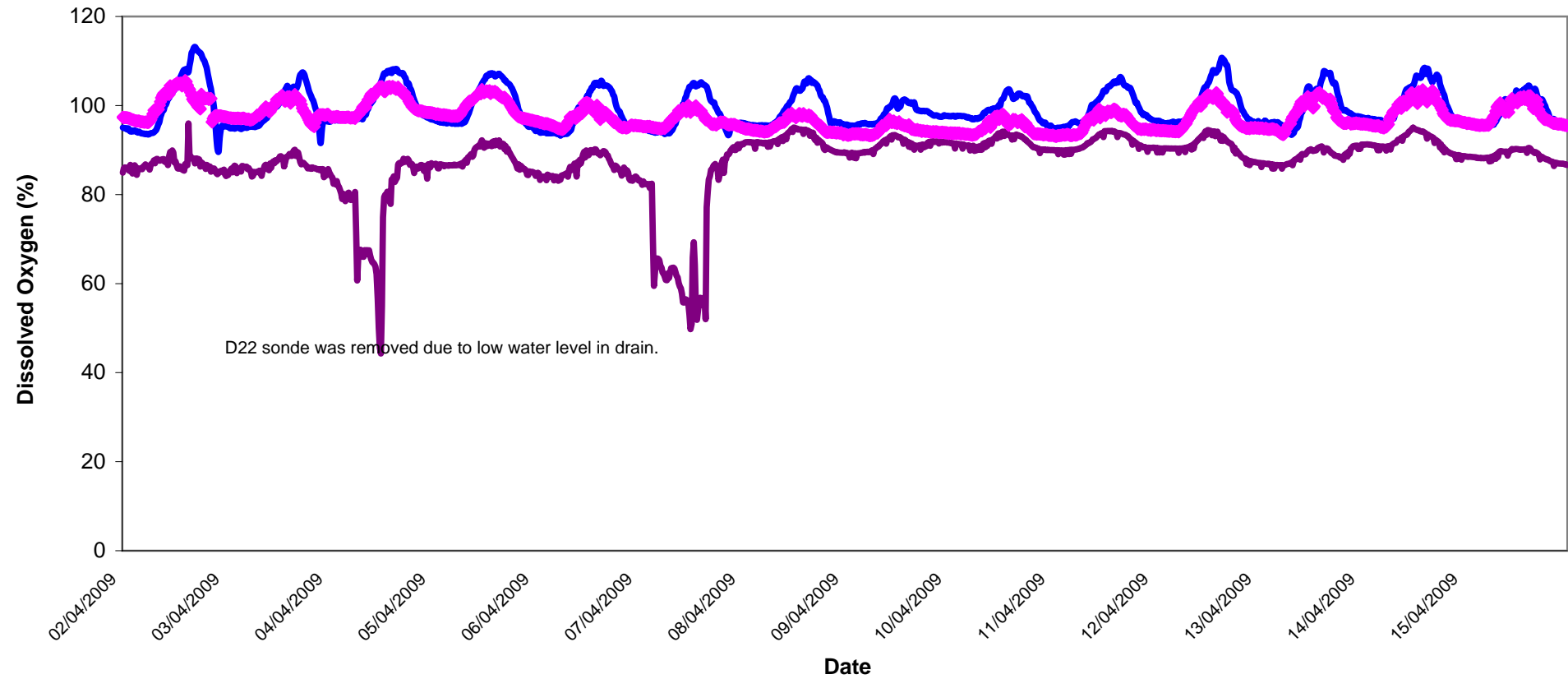


Turbidity - Surface Waters @ SP1, Wk 14-15

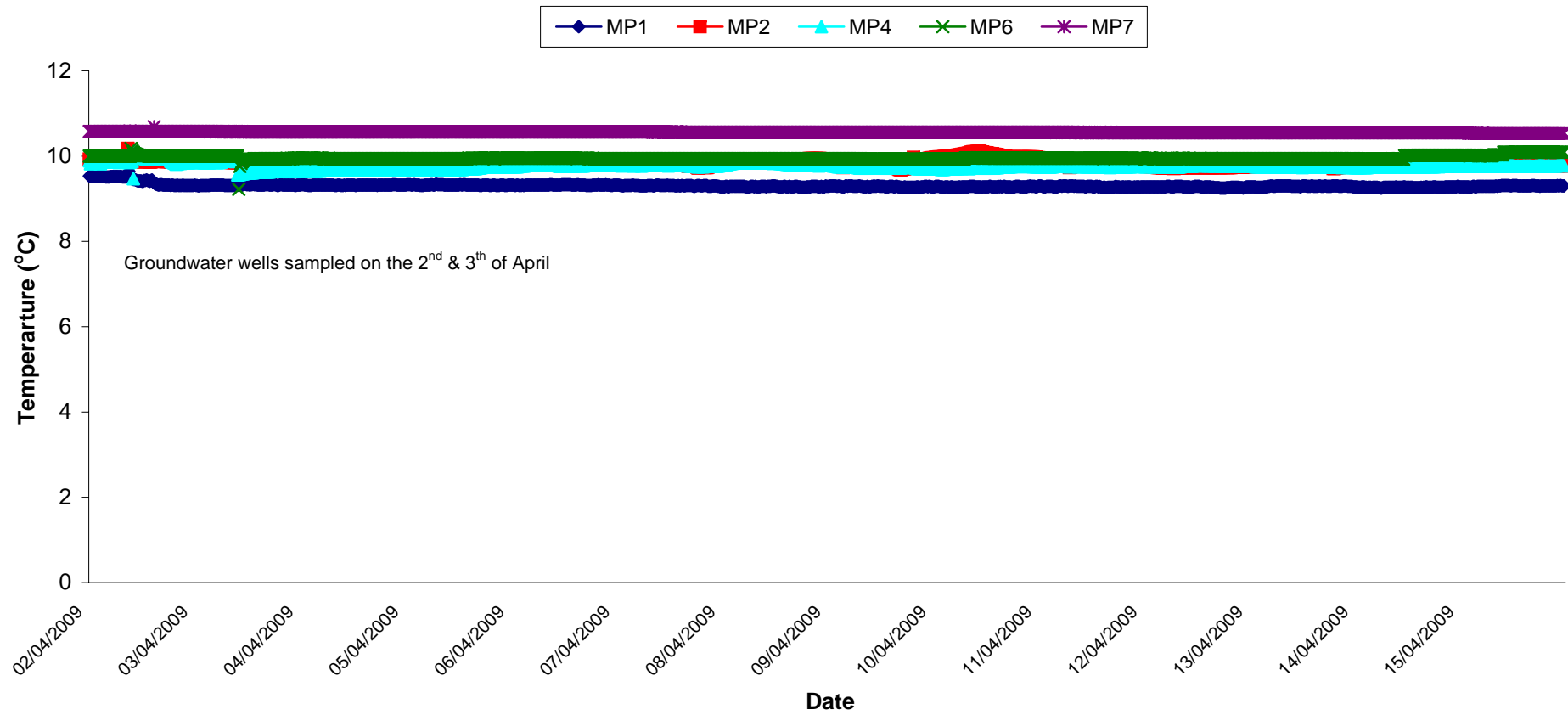


Dissolved Oxygen - Surface Waters, Wk 14-15

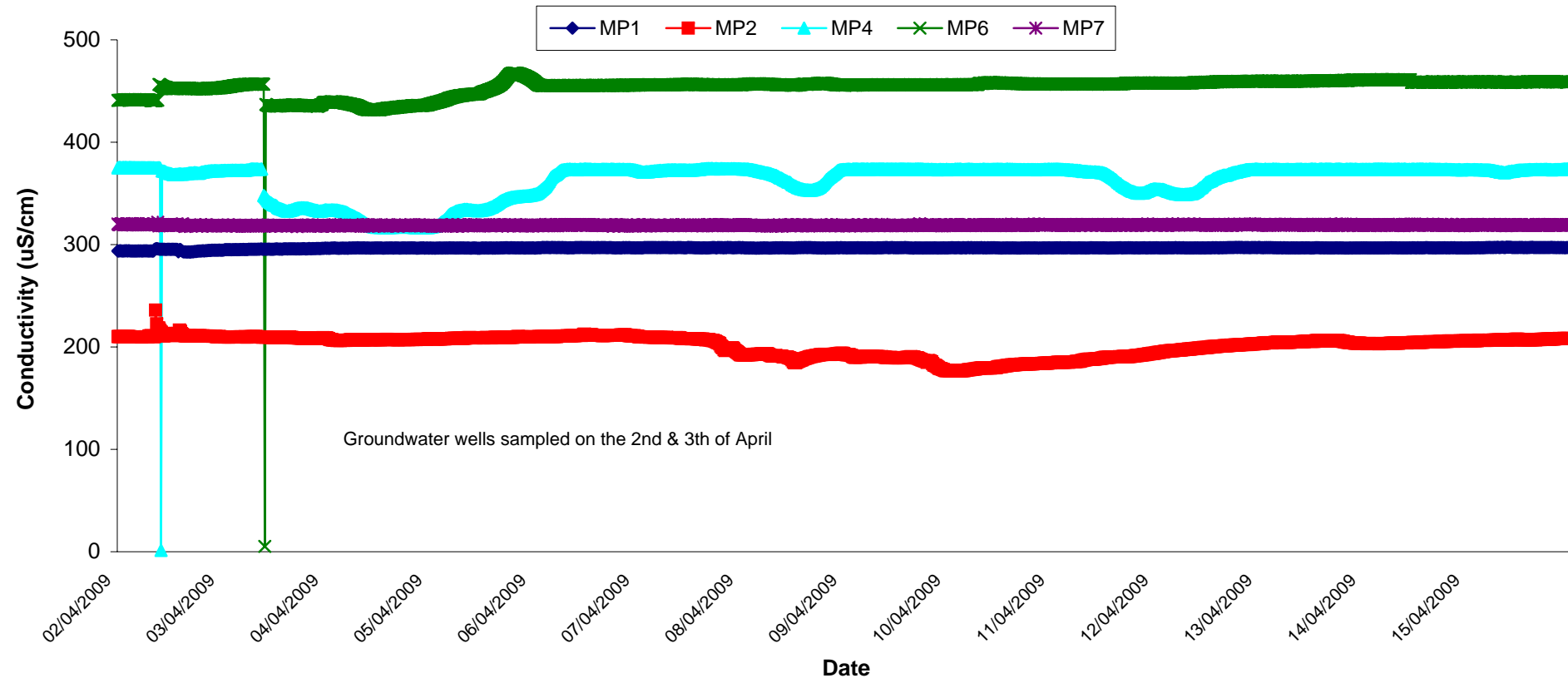
SP1 SP3 D62



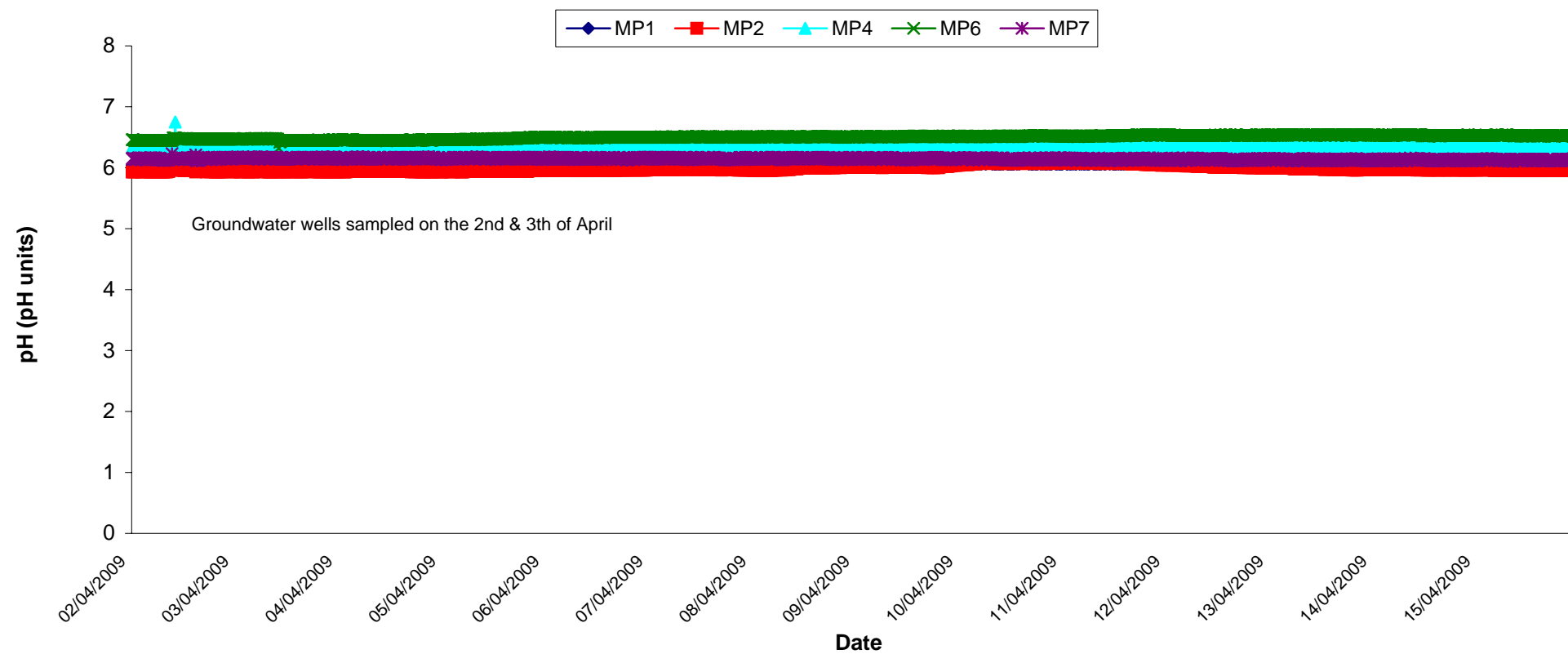
Temperature - Groundwaters Wk 14-15



Conductivity - Groundwaters Wk 14-15



pH - Groundwaters Wk 14-15



Appendix 1

Appendix 1: Surface Water Monitoring Record Sheet- Onsite Monitoring

	Date	Cond. µS/cm	Temp °C	Turbidity NTU	DO % Sat	pH	TSS mg l ⁻¹	Ortho-phosphate as P µg l ⁻¹	Nitrate as N mg l ⁻¹	Nitrate as NO ₃ mg l ⁻¹	Total Phosphorus as P mg l ⁻¹	Ammonia as NH ₃ -N mg l ⁻¹	Nitrite as NO ₂ mg/l	Aluminium (dissolved) ug/l	Aluminium (total) ug/l	Phosphate as PO ₄ mg/l	Total dissolved solids mg/l
Settlement Pond Monitoring																	
SP1	02/04/2009	339	10.6	12.8	98.5	7.3			0.1			<LOD		23	119	0.10	236
SP1	03/04/2009	357	10.9	4.5	90.1	7.4			0.3			0.04		<LOD	143	0.08	236
SP1	06/04/2009	352	10.2	3.8	90.1	7.1			0.4			0.06		<LOD	117	0.04	227
SP1	07/04/2009	364	10.2	5.5	98.7	7.1			<LOD			0.81		30	93	<LOD	251
SP1	08/04/2009	327	10.3	9.5	89.9	6.9			<LOD			<LOD		<LOD	59	0.05	214
SP1	09/04/2009	278	11.4	14.8	90.9	6.4			<LOD			0.06		<LOD	52	0.69	180
SP1	10/04/2009	237	10.0	9.6	97.4	6.8			<LOD			<LOD		47	177	<LOD	118
SP1	14/04/2009	291	13.1	7.2	96.9	6.6			0.1			0.09		38	167	0.02	214
SP1	15/04/2009	261	11.2	3.2	99.5	7.0			<LOD			<LOD		46	126	<0.03	139
SP3	02/04/2009	348	10.4	7.4	91.4	7.2			0.2			0.01		<LOD		0.06	229
SP3	03/04/2009	363	11.2	3.2	90.2	7.2			0.8			0.06		<LOD		0.02	240
SP3	06/04/2009	372	9.3	3.1	89.6	7.1			0.6			0.07		<LOD		0.04	251
SP3	07/04/2009	356	10.6	6.4	99.0	6.8			0.2			0.08		<LOD		<LOD	241
SP3	08/04/2009	340	10.0	14.4	93.1	6.6			0.2			<LOD		24		0.05	221
SP3	09/04/2009	306	11.6	25.5	95.7	6.7			0.1			0.45		43		0.06	200
SP3	10/04/2009	326	10.1	6.9	99.5	7.0			1.0			0.01		25		<LOD	155
SP3	14/04/2009	328	14.7	5.0	100.3	6.7			0.1			0.10		53		0.03	237
SP3	15/04/2009	296	12.1	1.7	101.2	6.6			1.1			<LOD		22		<LOD	160
Additional Monitoring																	
D22	02/04/2009	300	7.0	6.6	90.3	6.6			<LOD			0.60		<LOD		0.03	197
D62	02/04/2009	204	5.8	2.3	87.7	5.3			0.3			>LOD		<LOD		0.05	122
D22	07/04/2009	282		4.3	76.9	6.3			0.6			0.03		<LOD		0.07	186
D62	07/04/2009	204	7.7	2.3	63.6	5.6			<LOD			0.12		30		0.03	121
Axonics Monitoring																	
Pre	02/04/2009	344		176.0		7.7			<LOD			0.43		450		0.03	225
Post	02/04/2009	363		2.6		6.7			0.2			<LOD		<LOD	232	<LOD	235
Pre	03/04/2009	351		302.0		7.1			<LOD			1.42		676		<LOD	232
Post	03/04/2009	367		3.4		6.8			0.2			0.08		<LOD	278	0.03	243
Pre	06/04/2009	369		319.0		7.4			<LOD			2.07		727		<LOD	335
Post	06/04/2009	367		2.8		6.6			0.3			0.09		<LOD	246	0.02	237
Pre	07/04/2009	366		272.0		6.7			<LOD			0.23		153		<LOD	247
Post	07/04/2009	392		2.8		6.4			0.1			0.09		<LOD	281	0.08	256
Pre	08/04/2009	357		>LOD		6.5			<LOD			0.36		>LOD		0.26	232
Post	08/04/2009	393		8.0		6.4			0.6			0.01		<LOD	310	0.04	254
Pre	09/04/2009	307		>LOD		6.8			<LOD			2.08		>LOD		0.51	201
Post	09/04/2009	329		6.0		6.5			0.5			0.01		<LOD	456	0.02	213
Pre	10/04/2009	322		110.0		6.0			1.3			0.33		25		<LOD	150
Post	10/04/2009	347		2.1		6.4			1.7			0.01		<LOD	198	<LOD	167
Pre	14/04/2009	331		24.6		6.5			1.1			0.94		>LOD		0.01	238
Post	14/04/2009	345		5.3		6.4			0.5			0.06		39	>LOD	0.02	246
Pre	15/04/2009	295		84.6		7.1			1.4			<LOD		39		<LOD	154
Post	15/04/2009	309		1.2		6.6			1.9			<LOD		<LOD	336	<LOD	163

Grey shaded areas denote parameters that cannot or were not analysed on-site.

■ = Indicative Only

≤ LOD = Below Limit of Detection

< LOD = Below Limit of Detection
> LOD = Above Limit of Detection