

Final Environmental Report	Period Ending: 16 th September 2009
Compiled By: Siobhán Quinn, Aoife Reynolds & Catriona King	
Approved By: Tony Doyle	

1 Monitoring Data

1.1 Monitoring Equipment

Axonics	– The Axonic's plant was operational 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.
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.
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.
Weather Station	– The data used for this reporting period was taken from the on-site meteorological station.
Weirs	– SP3 weir was operational for the reporting period. – No data from SP1 weir is available for the reporting period. The instrument was corrupted due to a leakage from the battery power source. Problem has been rectified.

1.2 Rainfall Data

03/09/2009	5.0	10/09/2009	0.0
04/09/2009	3.5	11/09/2009	0.2
05/09/2009	0.2	12/09/2009	0.2
06/09/2009	8.2	13/09/2009	0.2
07/09/2009	3.1	14/09/2009	0.2
08/09/2009	11.3	15/09/2009	0.8
09/09/2009	0.2	16/09/2009	0.0
Total Rainfall 33.1mm			

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1.3 Summary

Environment	Comments
Surface Water	There were no exceedances during the reporting period.
Axonic's Plant	On the 3 rd of September there was a elevated result of 506µg/L. The modifications in the plant were undertaken at this time and this is shown in the following two results taken the weeks after.
Groundwater	The groundwater data (Sonde) is within anticipated ranges.
Dust	Dust results within anticipated range.
Weather	There was a total of 33.1mm of rainfall during the reporting period, with a temperature range of 4.0°C to 21.6°C.
Noise	All noise levels were within the set limits. Wind speeds are given as a daily average. Should an issue arise a more in depth analysis of the specific time period will be undertaken. Night time noise limits recorded on the 7 th September were 56.1dB (LAeq). This exceeds the limit set at 55dB. Analysis of wind speeds specific to the time period indicates average wind speeds of 8.5m/s. EPA guidance states that wind speeds over 5m/s negatively impact noise readings.
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.

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	03/09/2009	16.0	11.8	331	5.8	159	22	12	74	<0.017	<0.44	1.62	5.0	<0.05	<0.5	72	44	<0.5	2.0	<0.5	24570	5.0	1.9	<20	791
MP 2	03/09/2009	16.0	12.1	256	6.0	123	<1	197	81	<0.017	0.56	0.37	1.0	<0.05	2.0	1323	39	2.0	5.0	<0.5	11970	3.0	1.4	48	231
MP 3	03/09/2009	24.0	12.0	377	5.8	181	15	159	77	<0.017	<0.44	1.63	4.0	<0.05	2.0	1268	27	2.0	3.0	<0.5	16430	2.0	2.1	128	307
MP 4	03/09/2009	16.0	11.2	448	5.9	214	16	251	84	<0.017	<0.44	0.28	2.0	<0.05	4.0	2448	26	4.0	8.0	<0.5	69560	1.0	0.3	<20	1851
MP 5	03/09/2009	17.0	12.6	305	5.9	146	<1	100	93	<0.017	<0.44	0.24	1.0	<0.05	4.0	939	43	3.0	7.0	<0.5	9525	2.0	2.1	64	279
MP 6	03/09/2009	13.0	11.5	471	6.1	227	13	29	118	<0.017	<0.44	0.88	8.0	<0.05	<0.5	32	18	<0.5	<1.0	<0.5	45030	1.0	1.5	<20	1476
MP 7	03/09/2009	19.0	12.4	365	5.9	173	21	43	74	<0.017	<0.44	0.68	<0.5	<0.05	1.0	124	18	1.0	2.0	<0.5	35420	1.0	2.3	<20	628
MP 10a	03/09/2009	35.0	11.6	376	5.7	180	4	114	128	<0.017	<0.44	<0.03	<0.5	<0.05	1.0	291	24	<0.5	2.0	<0.5	6854	<0.5	0.4	<20	3035
MP 11	03/09/2009	16.0	11.8	219	5.5	107	4	22	34	<0.017	<0.44	0.05	<0.5	<0.05	2.0	37	10	<0.5	<1.0	<0.5	5798	<0.5	0.0	<20	1256
Graphs provided for MP1, MP2,MP4, MP6 and MP7: Temperature, Conductivity, and pH.																									

Graphs provided for MP1, MP2,MP4, MP6 and MP7: Temperature, Conductivity, and pH.

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	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	
D1	20/04/2009	20/05/2009	214041	20/05/2009	25/05/2009	101	
D2	20/04/2009	20/05/2009	214042	20/05/2009	25/05/2009	98	
D3	20/04/2009	20/05/2009	214043	20/05/2009	25/05/2009	88	
D4	20/04/2009	20/05/2009	214044	20/05/2009	25/05/2009	98	
D1	20/05/2009	19/06/2009	217837	22/06/2009	22/06/2009	177	
D2	20/05/2009	19/06/2009	217839	22/06/2009	22/06/2009	114	
D3	20/05/2009	19/06/2009	217840	22/06/2009	22/06/2009	167	
D4	20/05/2009	19/06/2009	217841	22/06/2009	22/06/2009	167	
D1	19/06/2009	20/07/2009	221803	20/07/2009	21/07/2009	103	
D2	19/06/2009	20/07/2009	221804	20/07/2009	21/07/2009	69	
D3	19/06/2009	20/07/2009	221805	20/07/2009	21/07/2009	121	
D4	19/06/2009	20/07/2009	221806	20/07/2009	21/07/2009	47	
D1	20/07/2009	20/08/2009	226228	21/08/2009	26/08/2009	54	
D2	20/07/2009	20/08/2009	226229	21/08/2009	26/08/2009	276	Algae present in sample
D3	20/07/2009	20/08/2009	226230	21/08/2009	26/08/2009	110	
D4	20/07/2009	20/08/2009	226231	21/08/2009	26/08/2009	106	
D1	20/08/2009	20/09/2009	230950	21/09/2009	26/09/2009	127	
D2	20/08/2009	20/09/2009	230951	21/09/2009	26/09/2009	89	
D3	20/08/2009	20/09/2009	230952	21/09/2009	26/09/2009	69	
D4	20/08/2009	20/09/2009	230953	21/09/2009	26/09/2009	93	
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	10.1	13.8	03/09/2009	08:00:00	14:00:00	2539533	4.7	296.7	51.6	65.8	46.2	
N1	10.2	14.7	04/09/2009	08:00:00	14:00:00	2539533	5.4	286.6	51.6	82.4	43.5	
N1	11.7	15.1	05/09/2009	08:00:00	14:00:00	2539533	4.9	234.9	51.8	67.9	43.5	
N1	11.3	15.4	06/09/2009	08:00:00	14:00:00	2539533	4.7	190.5	52.3	72.5	45.4	
N1	9.5	16.6	07/09/2009	08:00:00	14:00:00	2539533	4.4	199.7	52.9	77.0	43.1	
N1	11.8	16.4	08/09/2009	08:00:00	14:00:00	2539533	6.8	236.5	53.0	72.2	43.9	
N1	9.3	16.4	09/09/2009	08:00:00	14:00:00	2539533	2.4	247.8	51.2	78.0	43.2	
N1	6.5	17.5	10/09/2009	08:00:00	14:00:00	2539533	1.1	195.5	50.8	69.3	42.4	
N1	4.0	20.6	11/09/2009	08:00:00	14:00:00	2539533	1.2	269.6	51.0	65.9	42.7	
N1	4.6	20.3	12/09/2009	08:00:00	14:00:00	2539533	1.0	209.4	50.6	79.6	42.0	
N1	5.6	18.6	13/09/2009	08:00:00	14:00:00	2539533	1.1	241.3	49.9	65.5	41.6	
N1	6.9	21.6	14/09/2009	08:00:00	14:00:00	2539533	1.2	238.2	50.3	67.6	41.3	
N1	11.1	15.1	15/09/2009	08:00:00	14:00:00	2539533	2.5	177.0	51.3	71.6	41.6	
N1	6.2	14.5	16/09/2009	08:00:00	14:00:00	2539533	2.1	79.6	51.3	72.8	40.9	

* 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

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	10.1	13.8	03/09/2009	22:00:00	10:00:00	2539533	4.7	296.7	51.0	71.0	45.8	
N1	10.2	14.7	04/09/2009	22:00:00	10:00:00	2539533	5.4	286.6	50.9	66.2	45.6	
N1	11.7	15.1	05/09/2009	22:00:00	10:00:00	2539533	4.9	234.9	50.0	70.3	42.2	
N1	11.3	15.4	06/09/2009	22:00:00	10:00:00	2539533	4.7	190.5	51.3	65.6	45.0	
N1	9.5	16.6	07/09/2009	22:00:00	10:00:00	2539533	4.4	199.7	56.1	79.9	48.2	See note below
N1	11.8	16.4	08/09/2009	22:00:00	10:00:00	2539533	6.8	236.5	50.9	61.5	45.3	
N1	9.3	16.4	09/09/2009	22:00:00	10:00:00	2539533	2.4	247.8	50.3	66.5	44.3	
N1	6.5	17.5	10/09/2009	22:00:00	10:00:00	2539533	1.1	195.5	50.3	63.8	43.1	
N1	4.0	20.6	11/09/2009	22:00:00	10:00:00	2539533	1.2	269.6	49.6	66.0	42.6	
N1	4.6	20.3	12/09/2009	22:00:00	10:00:00	2539533	1.0	209.4	49.6	66.6	42.6	
N1	5.6	18.6	13/09/2009	22:00:00	10:00:00	2539533	1.1	241.3	49.8	69.9	41.7	
N1	6.9	21.6	14/09/2009	22:00:00	10:00:00	2539533	1.2	238.2	49.2	63.6	41.0	
N1	11.1	15.1	15/09/2009	22:00:00	10:00:00	2539533	2.5	177.0	49.5	63.5	41.2	
N1	6.2	14.5	16/09/2009	22:00:00	10:00:00	2539533	2.1	79.6	49.8	67.1	40.6	

Average wind speeds specifically to the time period (22:00:00-08:00:00) were 8.5m/s and the average gusts throughout the time period were 16.0m/s. Therefore results impacted by wind speeds.

* 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)
03/09/2009	—	—	—	12.98	9.02	10.72
04/09/2009	—	—	—	11.80	6.03	9.95
05/09/2009	—	—	—	9.83	1.30	7.12
06/09/2009	—	—	—	8.23	1.16	5.68
07/09/2009	—	—	—	15.13	6.26	8.15
08/09/2009	—	—	—	23.29	2.91	11.08
09/09/2009	—	—	—	8.75	1.16	5.73
10/09/2009	—	—	—	9.28	2.91	6.45
11/09/2009	—	—	—	9.83	4.07	8.28
12/09/2009	—	—	—	9.83	3.47	8.54
13/09/2009	—	—	—	9.83	6.98	9.19
14/09/2009	—	—	—	7.47	4.91	6.15
15/09/2009	—	—	—	7.73	3.47	6.08
16/09/2009	—	—	—	7.47	5.80	7.17
Note: Negative values indicate low flow conditions.						

No values for SP1 weir due to instrument failure

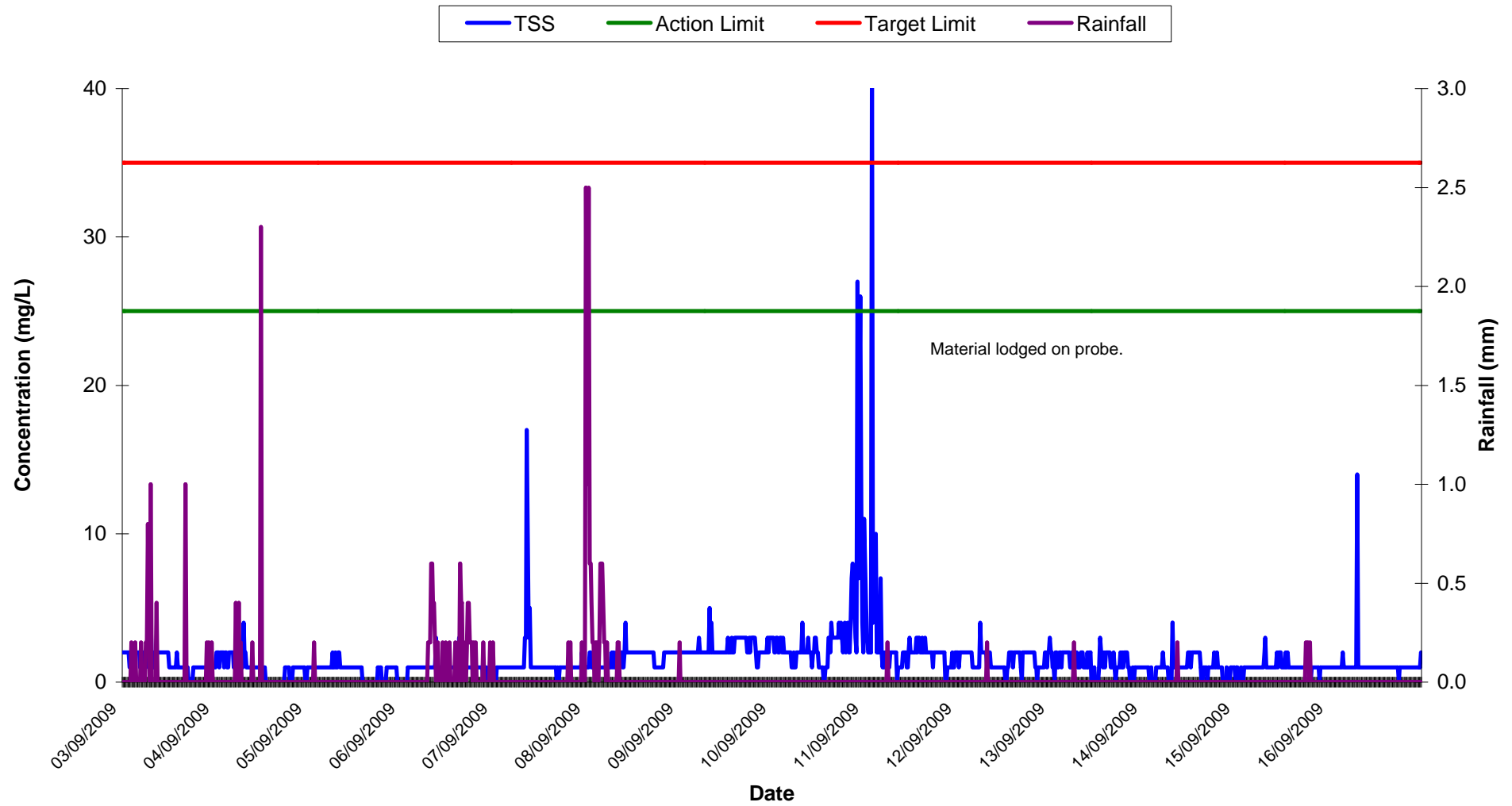
Vibration Monitoring Record Sheet

Determinant Results	
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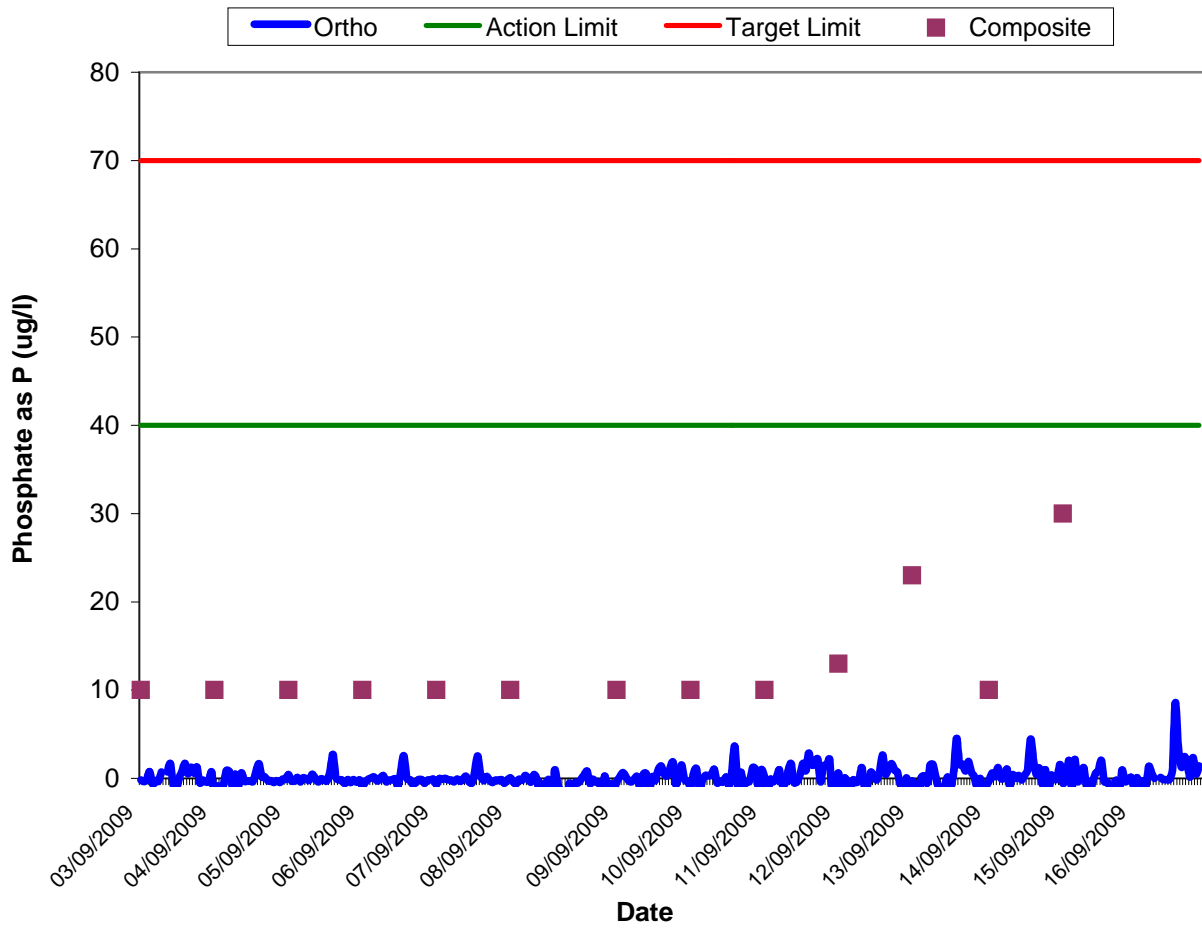
[illegible]

Vibration meter located at V1.

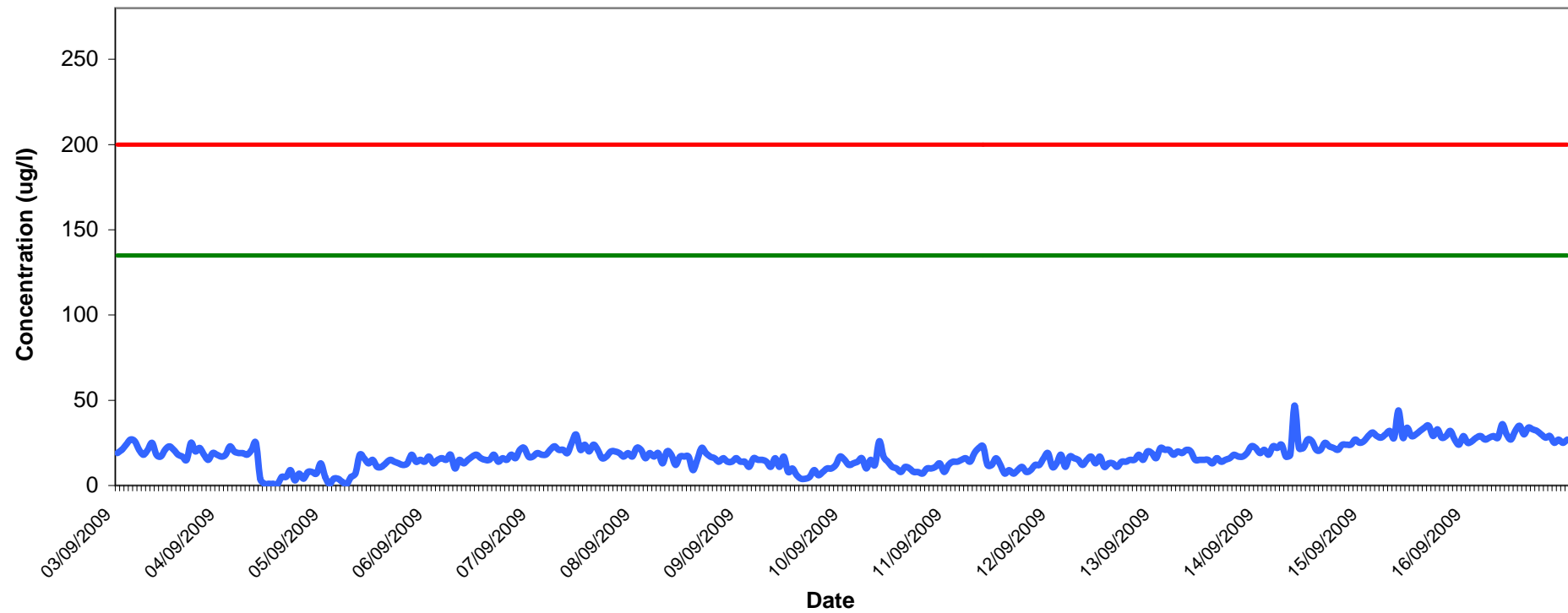
Total Suspended Solids at SP1 Week 36-37



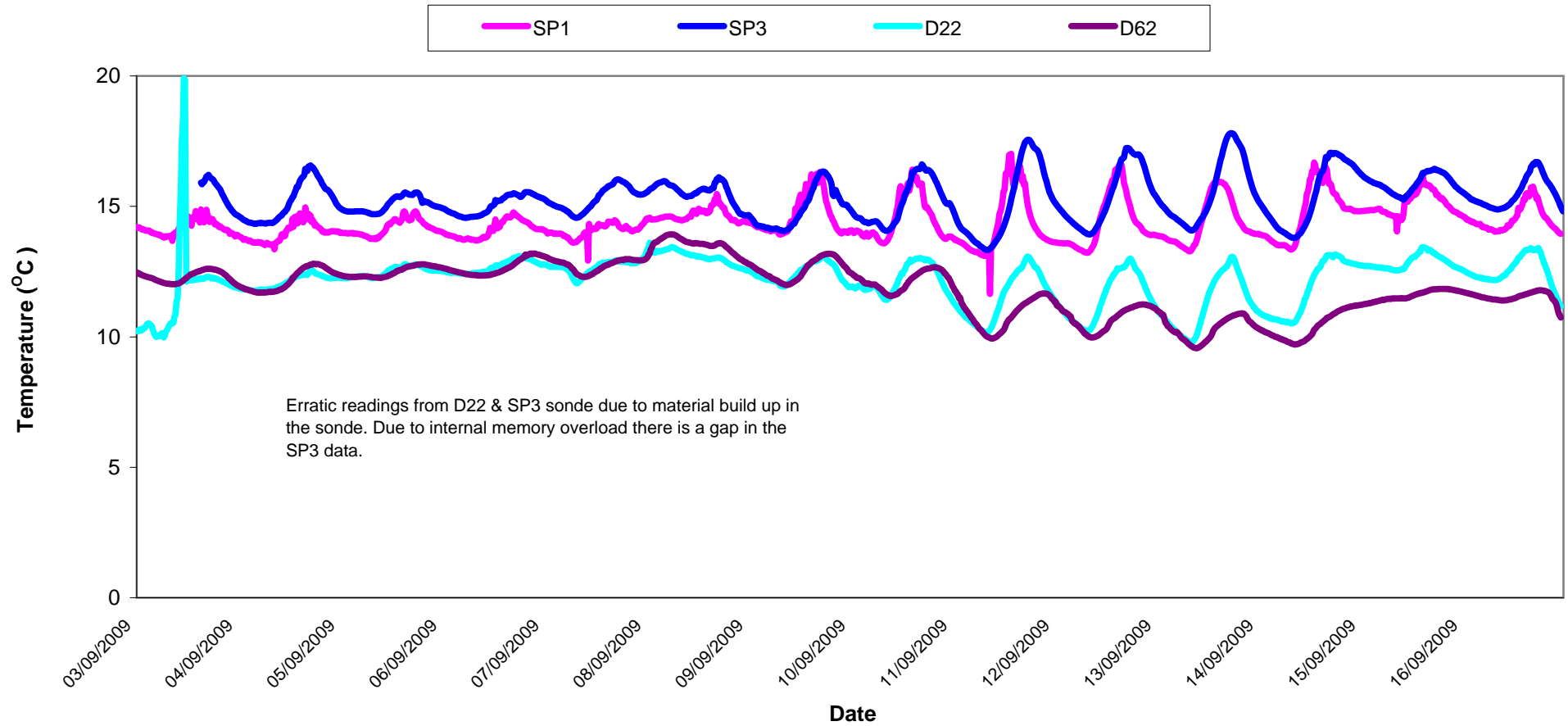
Orthophosphate Results at SP1 Wk 36-37



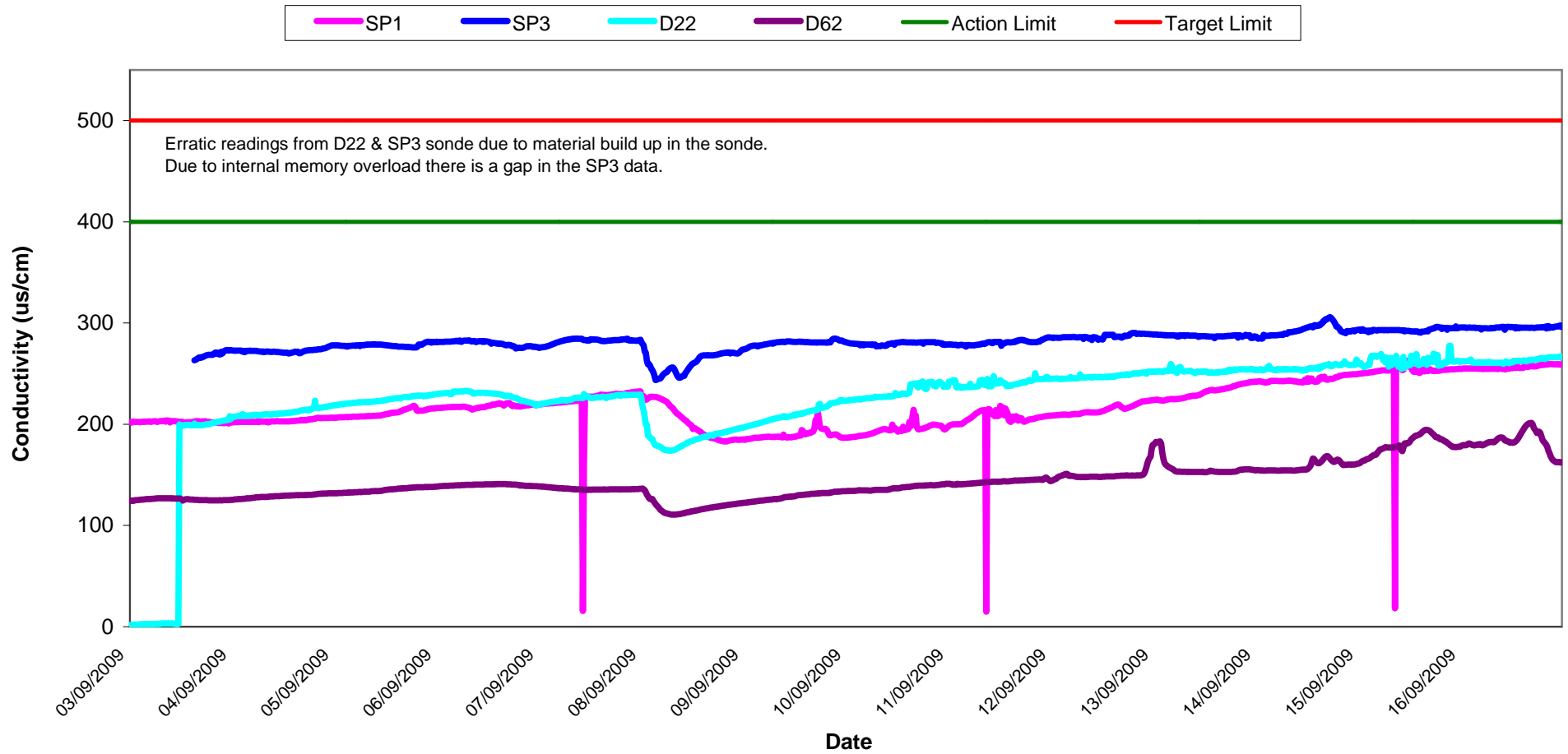
**Aluminium Concentration at SP1
Wk 36-37**



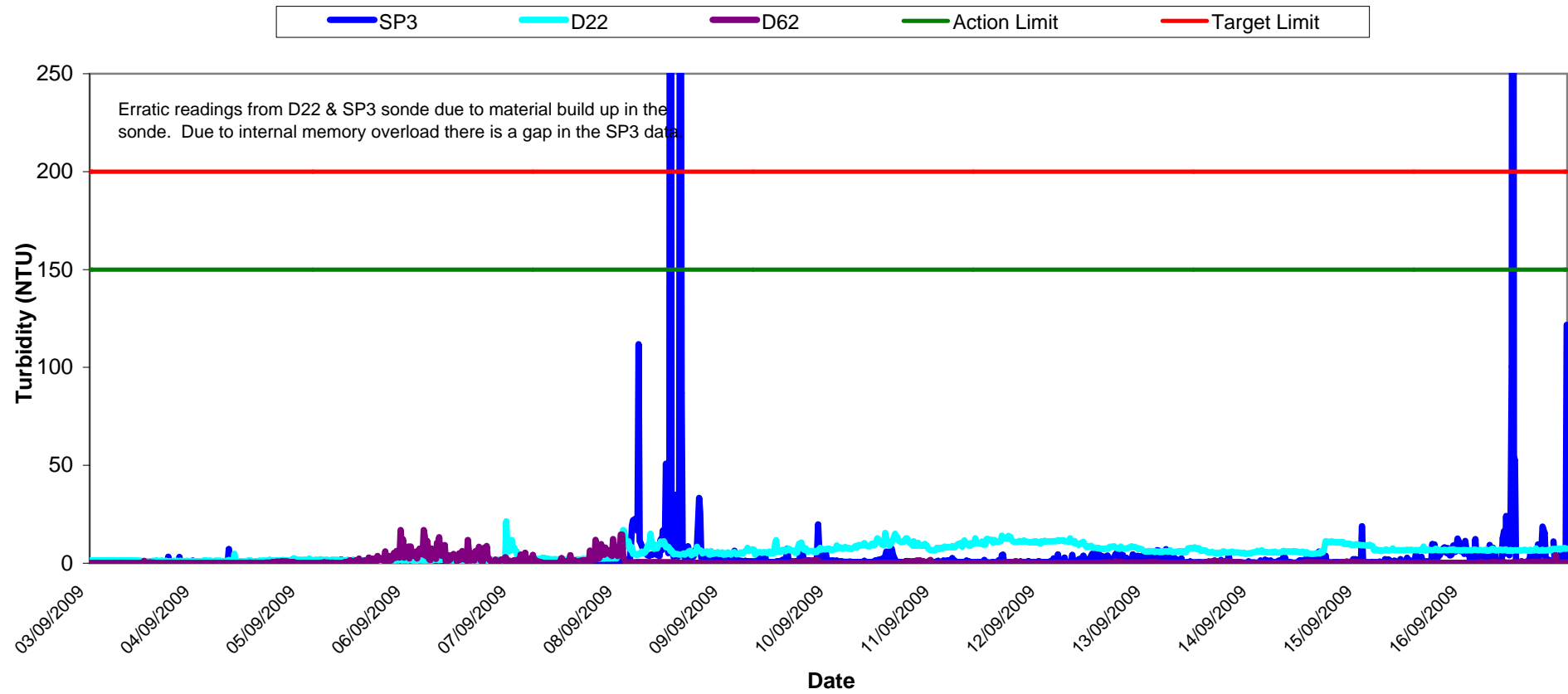
Temperature - Surface Waters Wk 36-37



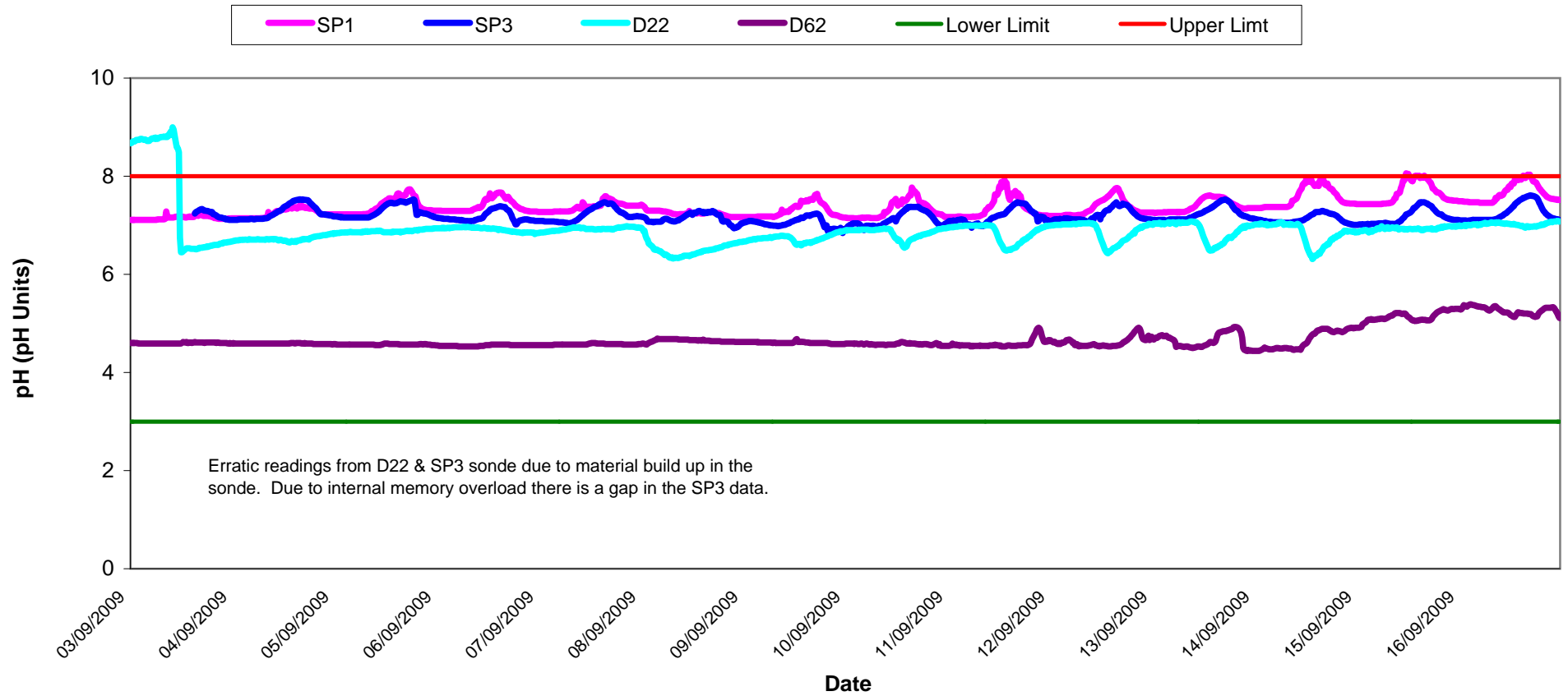
Conductivity - Surface Waters, Wk 36-37



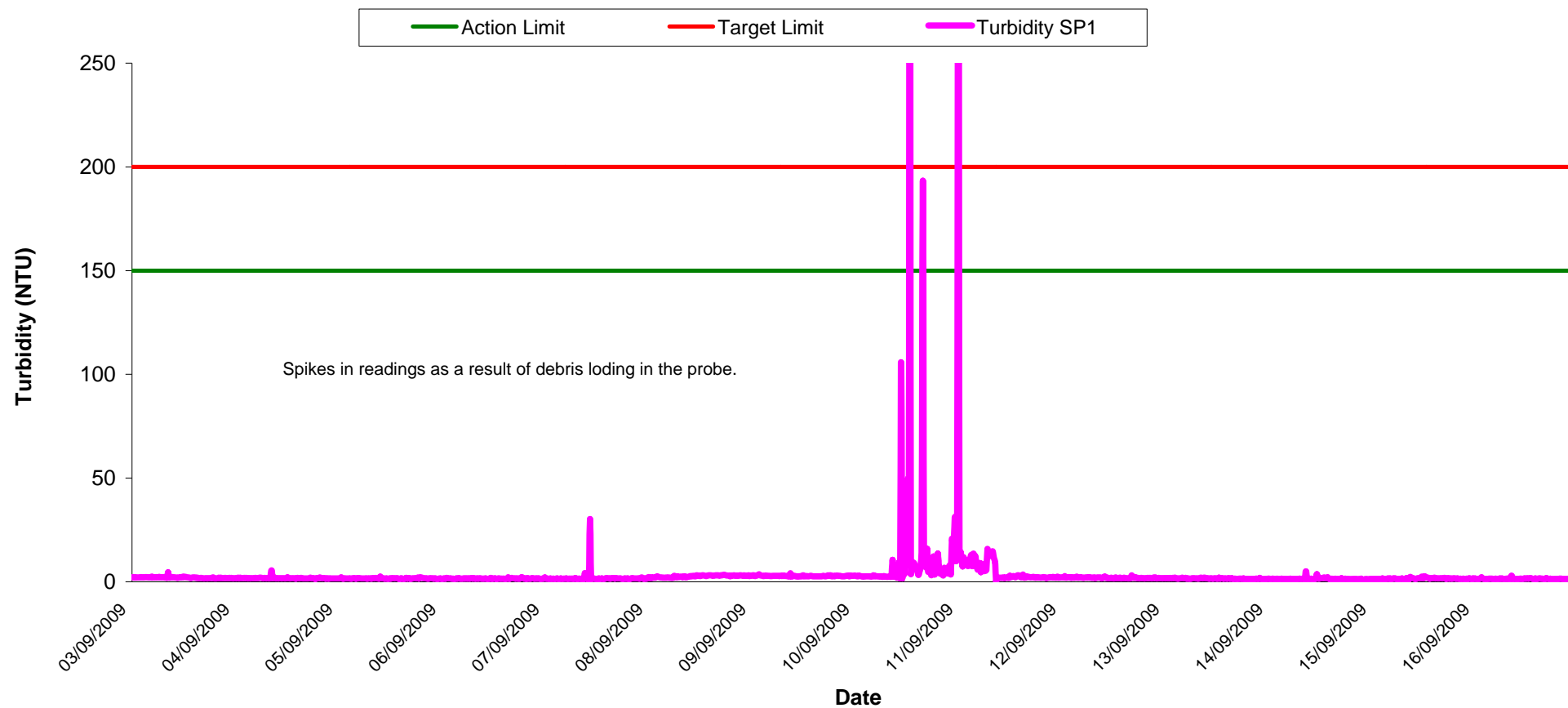
Turbidity - Surface Waters Wk 36-37



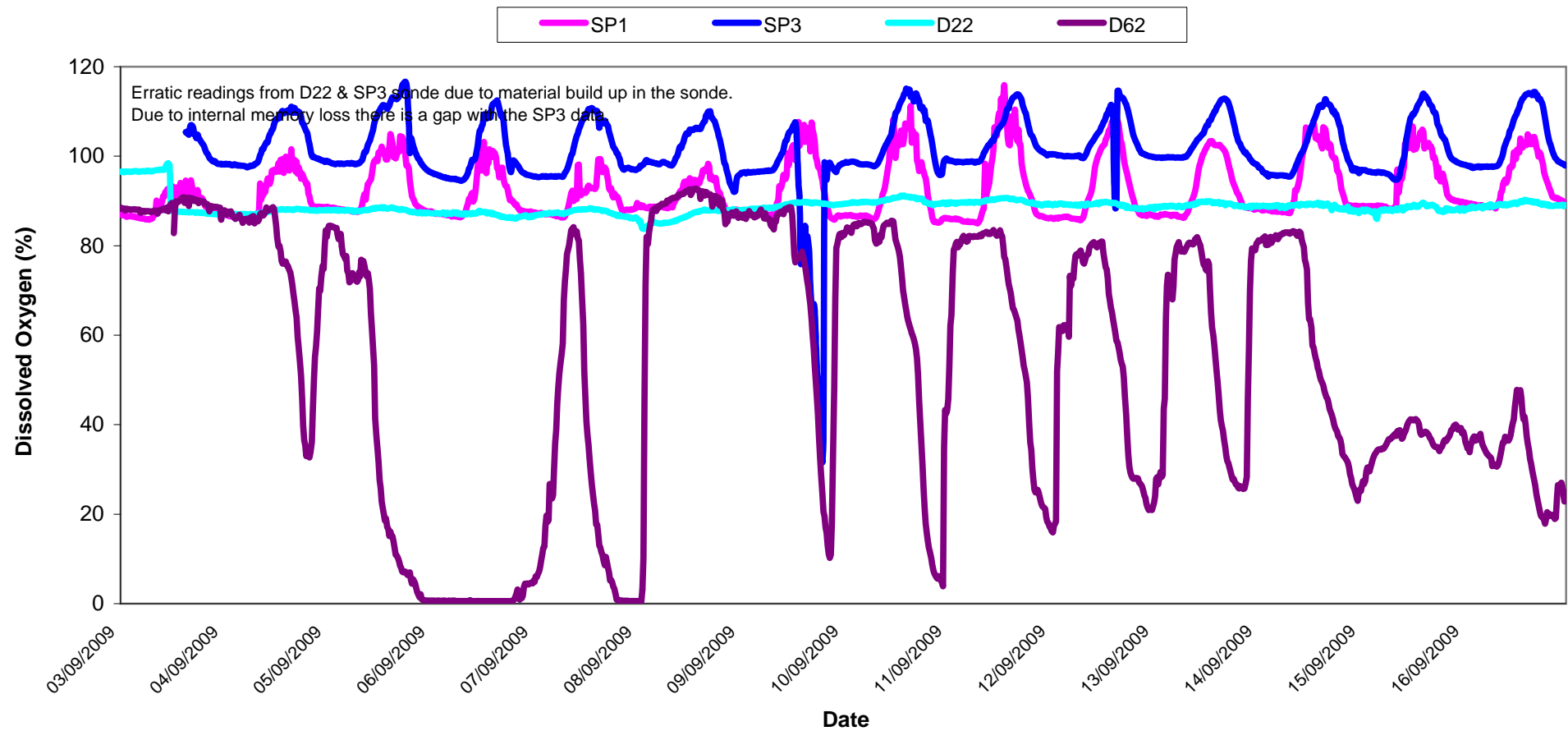
pH - Surface Waters Wk 36-37



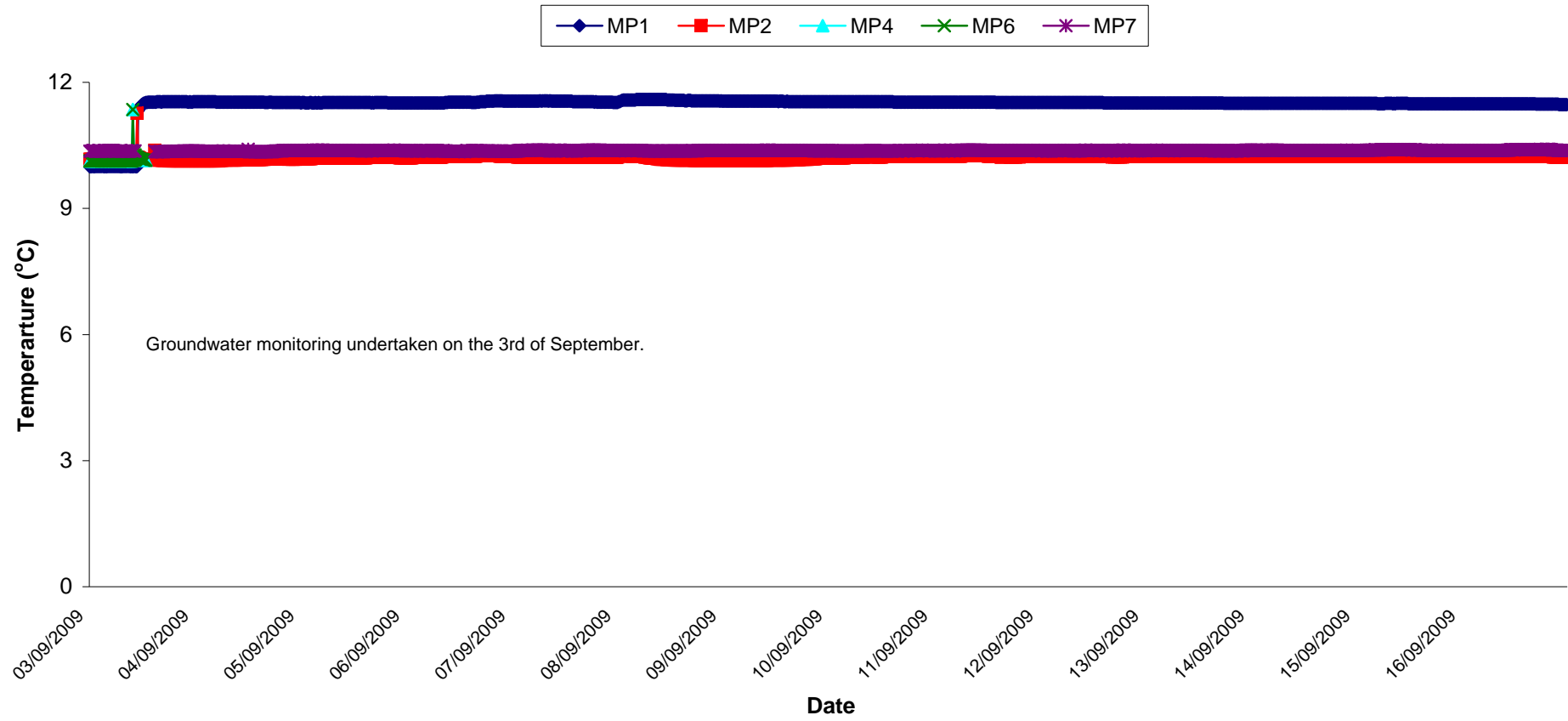
Turbidity - Surface Waters @ SP1, Wk 36-37



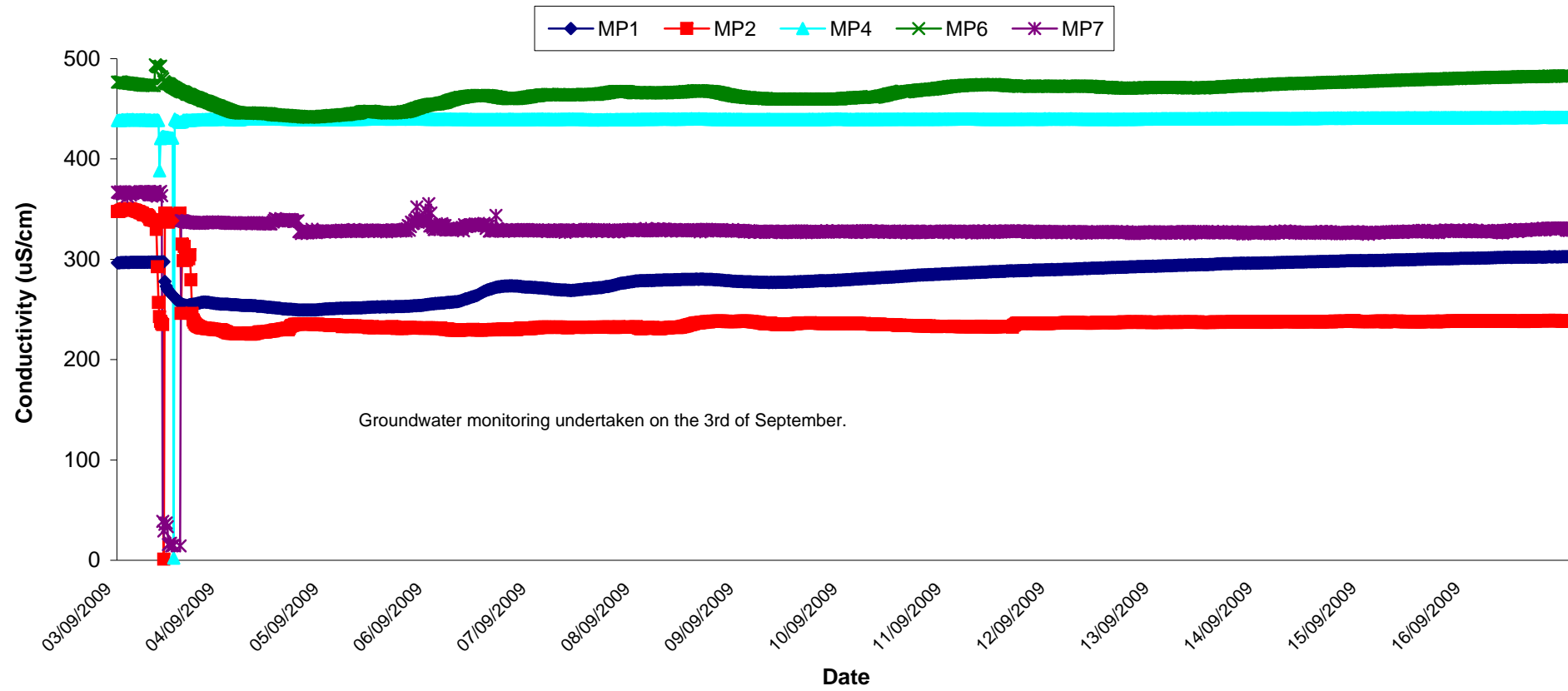
Dissolved Oxygen - Surface Waters, Wk 36-37



Temperature - Groundwaters Wk 36-37

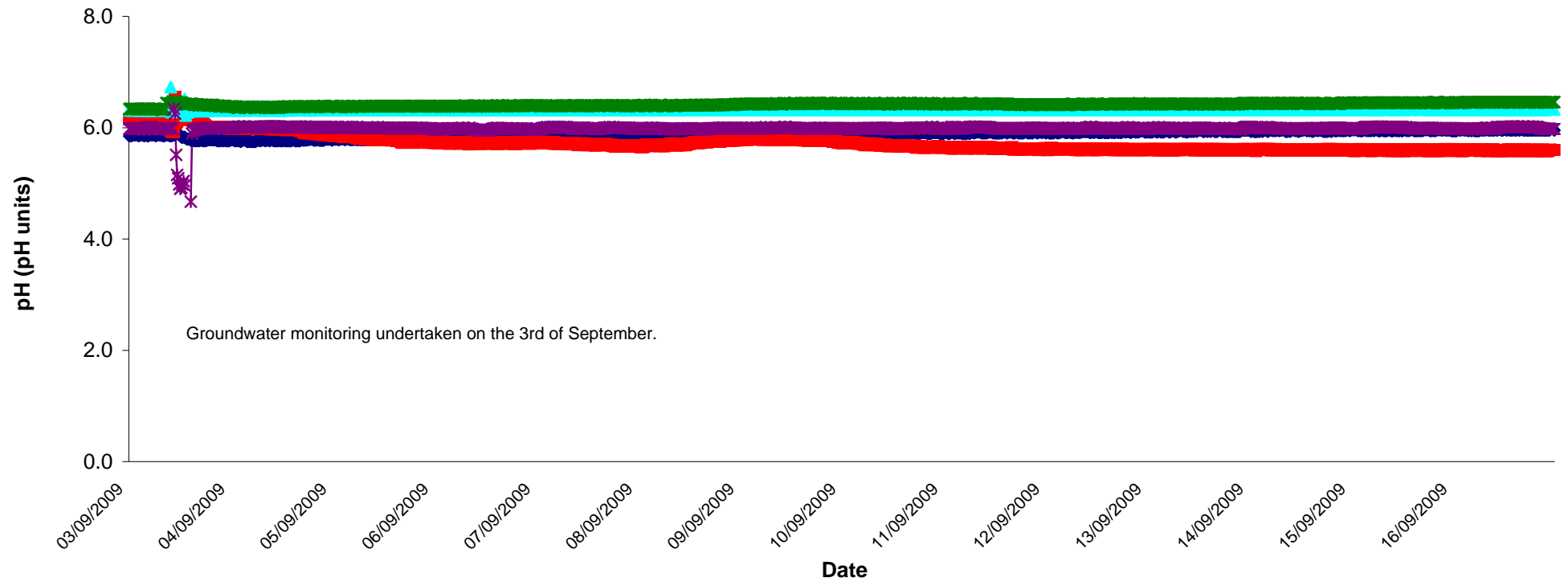


Conductivity - Groundwaters Wk 36-37



pH - Groundwaters Wk 36-37

MP1 MP2 MP4 MP6 MP7



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	03/09/2009	243	14.8	7.1	94.0	6.7			<LOD			0.0		60	145	0.65	161
SP1	04/09/2009	244	14.2	5.4	90.7	6.4			<LOD			0.0		53	114	0.23	158
SP1	07/09/2009	249	14.4	7.3	93.5	6.2			<LOD			<LOD		72	98	0.15	167
SP1	08/09/2009	259	15.0	9.0	92.8	6.4			<LOD			0.1		53	109	0.17	177
SP1	09/09/2009	253	14.9	11.2	96.7	6.5			<LOD			0.2		73	108	0.60	154
SP1	10/09/2009	215	14.5	11.2	98.8	6.4			<LOD			0.0		63	80	<LOD	143
SP1	11/09/2009	241	13.4	13.8	90.4	6.6			<LOD			0.4		46	80	1.08	164
SP1	14/09/2009	292	13.9	6.6	91.4	6.4			<LOD			0.0		35	102	0.47	204
SP1	15/09/2009	293	15.5	8.1	101.5	6.6			0.2			0.1		36	67	0.12	208
SP1	16/09/2009	290	14.1	5.1	92.5	6.5			0.3			0.0		<LOD	107	0.48	199
SP3	03/09/2009	298	14.6	6.4	93.6	6.5			0.3			0.2		57		0.20	196
SP3	04/09/2009	289	14.6	4.2	94.1	6.8			0.3			0.0		46		0.05	189
SP3	07/09/2009	283	14.9	6.3	94.2	6.5			0.1			0.1		46		0.03	191
SP3	08/09/2009	289	15.5	16.1	95.5	6.7			<LOD			0.2		68		0.31	196
SP3	09/09/2009	284	14.5	7.1	96.7	6.5			<LOD			1.8		44		0.02	192
SP3	10/09/2009	277	14.3	5.6	103.0	6.4			0.3			0.0		62		<LOD	186
SP3	11/09/2009	280	13.6	3.9	94.1	6.7			0.6			0.1		17		0.05	191
SP3	14/09/2009	297	13.7	2.7	90.5	6.7			0.4			0.1		26		0.03	201
SP3	15/09/2009	293	15.5	3.0	102.1	6.6			0.2			0.2		<LOD		0.08	201
SP3	16/09/2009	301	14.8	4.5	94.0	6.6			<LOD			0.0		<LOD		0.07	204
Additional Monitoring																	
D22	03/09/2009	124	12.9	9.8	87.8	6.2			<LOD			0.0		66		0.10	76
D22	11/09/2009	254	12.2	10.2	89.6	7.0			<LOD			0.5		36		0.06	173
D62	03/09/2009	313	12.2	3.4	89.5	6.8			0.3			0.2		67		0.09	205
D62	11/09/2009	171	11.0	5.6	81.7	5.0			0.5			0.9		37		0.04	99
Axonics Monitoring																	
Pre	03/09/2009	277		97.7		7.3			<LOD			0.2		109		0.02	181
Post	03/09/2009	298		8.1		6.8			0.6			0.5		44	437	0.03	195
Pre	04/09/2009	281		90.0		7.0			<LOD			<LOD		103		0.03	184
Post	04/09/2009	297		6.1		6.4			0.2			0.0		53	428	<LOD	204
Pre	07/09/2009	271		89.7		7.1			<LOD			0.4		192		<LOD	183
Post	07/09/2009	290		9.3		6.4			0.2			0.1		45	415	<LOD	197
Pre	08/09/2009	262		96.1		6.8			<LOD			1.0		75		0.06	177
Post	08/09/2009	282		16.2		6.4			0.1			<LOD		41	494	0.05	194
Pre	09/09/2009	265		99.0		6.9			<LOD			0.4		101		0.03	180
Post	09/09/2009	286		11.4		6.9			0.2			2.0		40	432	0.05	195
Pre	10/09/2009	269		88.8		6.8			<LOD			0.1		284		<LOD	181
Post	10/09/2009	283		12.8		6.9			0.2			>LOD		55	565	<LOD	190
Pre	11/09/2009	267		96.9		7.0			<LOD			2.5		69		0.03	181
Post	11/09/2009	285		10.8		7.0			0.4			0.4		13	369	0.03	194
Pre	14/09/2009	280		72.0		7.0			<LOD			0.2		36		0.04	190
Post	14/09/2009	310		12.2		5.5			0.1			0.2		379	>LOD	0.03	209
Pre	15/09/2009	287		60.5		7.0			<LOD			0.3		61		0.03	196
Post	15/09/2009	305		5.3		6.9			0.1			0.3		<LOD	422	0.02	207
Pre	16/09/2009	296		50.8		7.0			<LOD			0.2		108		0.01	200
Post	16/09/2009	306		5.8		6.7			0.3			0.1		<LOD	499	0.04	211
Grey shaded areas denote parameters that cannot or were not analysed on-site.																	
= Indicative Only																	
< LOD	= Below Limit of Detection																
> LOD	= Above Limit of Detection																