

Final Environmental ReportPeriod Ending: 31st January 2010

Compiled By: 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.
PO4	– 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	– Weirs were operational during the reporting period.

1.2 Rainfall Data

21/01/2010	10.80	27/01/2010	0.80
22/01/2010	0.60	28/01/2010	4.40
23/01/2010	0.20	29/01/2010	8.80
24/01/2010	1.60	30/01/2010	1.60
25/01/2010	0.00	31/01/2010	3.60
26/01/2010	0.00		
Total Rainfall 32.4mm			

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1.3 Summary

Environment	Comments
Surface Water	SP3 sonde data is not available due to a corruption of the data as a result of condensate entering data logger.
Groundwater	The groundwater data (Sonde) is within anticipated ranges.
Dust	Awaiting dust results.
Weather	There was a total of 32.4mm of rainfall during the reporting period, with a temperature range of -2.9°C to 9.9°C.
Noise	Noise meter mal-functioned during the reporting period. Some data is currently not available, technical assistance is currently being sought.
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 / Complaint

Date and Time	28 th January 2010
Location	Conductivity Exceedance at SP1
Nature of Incident	A value of 504µS/cm was recorded for conductivity at SP1 on the 28 th January 2010. This value is marginally in exceedance of the site discharge limit for conductivity of 500µS/cm. The increase in conductivity is attributed to the use of salt on the site walkways and some of the roads during the period of cold and freezing weather.
Actions Taken	<ul style="list-style-type: none"> The application of salt on the walkways and certain roads ceased when the weather conditions improved. The application of salt is only used in extreme cold conditions and is closely monitored and supervised. In areas where salt was applied, the road-sweeper has swept the areas to remove residual salt left on the surfaces.
Category	Environmental Exceedance
Status	Closed

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	4.00		0.20	0.025	100	135		
Target Limits		500		200		<3 or >8	35	70	2.6	6.00		0.50	0.05	150	200		
SP1	28/01/2010	504		1.9		7.3	3	<10		0.94	0.04	<0.005	<0.017	45	160	<0.03	265
SP3	28/01/2010	507		0.1		7.3	2	<10		1.25	0.02	<0.005	<0.017	27	180	<0.03	261
Axonics Monitoring																	
Pre Axonics	28/01/2010	486		10.7		7.2	260	<10		1.21	0.05	0.026	<0.017	<20	30990	<0.03	251
Post Axonics	28/01/2010	497		0.7		6.9	2	<10		1.19	0.02	0.054	<0.017	96	347	<0.03	257
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 CaCO ₃	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	14/01/2010	30.0	8.7	299	6.0	156	4	<2	62	<0.017	<0.44	1.25	<0.5	<0.05	10	1113	32	2.0	5	<0.5	7440	6	1.99	91	209
MP 2	14/01/2010	26.0	6.4	225	5.8	119	<1	328	66	<0.017	<0.44	0.34	2.0	<0.05	9	737	30	1.0	3	<0.5	2182	5	1.89	311	180
MP 3	14/01/2010	23.0	9.5	389	5.6	201	14	22	70	<0.017	<0.44	1.17	2.0	<0.05	12	2265	27	5.0	6	<0.5	11820	3	2.45	<20	2137
MP 4	14/01/2010	18.0	9.5	419	6.0	217	4	106	70	<0.017	<0.44	0.31	2.0	<0.05	9	1550	27	5.0	5	<0.5	80200	2	0.35	90	2109
MP 5	14/01/2010	9.0	8.4	330	5.9	168	23	31	96	<0.017	<0.44	0.35	0.9	<0.05	11	635	48	3.0	5	<0.5	27590	2	2.28	<20	467
MP 6	14/01/2010	101.0	5.4	448	6.3	233	7	9	97	<0.017	<0.44	1.50	10.0	<0.05	12	27	20	<0.5	<1	<0.5	30060	3	0.69	<20	1311
MP 7	14/01/2010	21.0	9.6	330	6.0	170	11	20	66	<0.017	<0.44	0.68	<0.5	<0.05	12	87	22	0.7	8	<0.5	10510	2	2.39	<20	651
MP 10a	14/01/2010	10.0	8.2	337	5.6	174	<1	66	95	<0.017	<0.44	<0.03	2.0	<0.05	12	771	36	2.0	7	<0.5	5955	1	0.47	<20	4274
MP 11	14/01/2010	24.0	8.7	195	5.4	102	<1	4	27	<0.017	<0.44	0.05	0.6	<0.05	9	92	26	1.0	8	<0.5	452	1	0.02	<20	718

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

Dust Monitoring Record Sheet							
Determinant Results							
	Date Positioned	Date Removed	Ref. Number	Date Dispatched	Date Returned	Weight (mg/m ² /day)	Comments
Target (Consent) Limit:		350 mg m⁻² d⁻¹ on as a 30 day average					
D1	22/12/2009	20/01/2010					No result due to storm damage
D2	22/12/2009	20/01/2010					No result due to storm damage
D3	22/12/2009	20/01/2010	245890	20/01/2010	22/01/2010	174	
D4	22/12/2009	20/01/2010	245891	20/01/2010	22/01/2010	172	
D1	20/01/2010	19/02/2010	250052	19/02/2010	22/02/2010	30	
D2	20/01/2010	19/02/2010	250053	19/02/2010	22/02/2010	26	
D3	20/01/2010	19/02/2010	250054	19/02/2010	22/02/2010	17	
D4	20/01/2010	19/02/2010	250055	19/02/2010	22/02/2010	20	
NDP = No Determination Possible							
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	3.4	9.9	21/01/2010	08:00:00	14:00:00	2539533	7.5	157.5				Meter malfunctioned during the reporting period. Technical assistance is being sought.
N1	0.2	9.3	22/01/2010	08:00:00	14:00:00	2539533	1.4	205.0				
N1	-2.9	8.6	23/01/2010	08:00:00	14:00:00	2539533	0.4	176.4	41.2	66.2	30.0	
N1	-1.5	5.6	24/01/2010	08:00:00	14:00:00	2539533	1.2	186.1	46.3	59.1	30.0	
N1	0.7	6.6	25/01/2010	08:00:00	14:00:00	2539533	1.9	162.8	47.8	67.7	34.7	
N1	2.5	7.9	26/01/2010	08:00:00	14:00:00	2539533	2.5	194.1	46.8	60.1	30.0	
N1	6.7	9.8	27/01/2010	08:00:00	14:00:00	2539533	4.3	287.1	46.0	64.3	30.0	
N1	5.8	8.6	28/01/2010	08:00:00	14:00:00	2539533	4.3	301.2	43.8	58.9	30.0	
N1	3.0	8.1	29/01/2010	08:00:00	14:00:00	2539533	5.8	317.4	43.0	63.1	30.0	
N1	-0.1	5.1	30/01/2010	08:00:00	14:00:00	2539533	1.1	229.7	46.3	61.0	30.0	
N1	-0.9	5.7	31/01/2010	08:00:00	14:00:00	2539533	1.8	234.2	47.4	59.7	30.0	

* 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		Serial No.	Wind		Results dB			*Comments
							Speed (m/s)*	Direction (Degrees)	L _{Aeq}	L _{Amax}	L _{Amin}	
Action Limit									50			
Target Limit									55			
N1	3.4	9.9	21/01/2010	22:00:00	10:00:00	2539533	7.5	157.5				Meter malfunctioned during the reporting period Technical assistance is being sought.
N1	0.2	9.3	22/01/2010	22:00:00	10:00:00	2539533	1.4	205.0	39.2	66.2	30.0	
N1	-2.9	8.6	23/01/2010	22:00:00	10:00:00	2539533	0.4	176.4	37.9	54.8	30.0	
N1	-1.5	5.6	24/01/2010	22:00:00	10:00:00	2539533	1.2	186.1	35.7	45.5	30.0	
N1	0.7	6.6	25/01/2010	22:00:00	10:00:00	2539533	1.9	162.8	46.2	61.5	30.0	
N1	2.5	7.9	26/01/2010	22:00:00	10:00:00	2539533	2.5	194.1	31.4	50.8	30.0	
N1	6.7	9.8	27/01/2010	22:00:00	10:00:00	2539533	4.3	287.1	31.4	50.8	30.0	
N1	5.8	8.6	28/01/2010	22:00:00	10:00:00	2539533	4.3	301.2	45.0	52.1	30.0	
N1	3.0	8.1	29/01/2010	22:00:00	10:00:00	2539533	5.8	317.4	45.4	61.6	30.0	
N1	-0.1	5.1	30/01/2010	22:00:00	10:00:00	2539533	1.1	229.7	44.9	58.2	42.7	
N1	-0.9	5.7	31/01/2010	22:00:00	10:00:00	2539533	1.8	234.2	47.6	61.4	44.4	

* 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)
21/01/2010	0.16	0.35	0.22	0.12	0.05	0.07
22/01/2010	0.16	0.25	0.20	0.07	0.05	0.07
23/01/2010	0.18	0.10	0.12	0.06	0.05	0.57
24/01/2010	0.10	0.09	0.12	0.07	0.06	0.06
25/01/2010	0.15	0.09	0.14	0.06	0.04	0.06
26/01/2010	0.15	0.12	0.14	0.06	0.03	0.05
27/01/2010	0.16	0.14	0.15	0.07	0.06	0.06
28/01/2010	0.22	0.14	0.15	0.07	0.06	0.63
29/01/2010	0.25	0.17	0.20	0.09	0.05	0.68
30/01/2010	0.19	0.17	0.18	0.07	0.06	0.07
31/01/2010	0.17	0.16	0.17	0.07	0.06	0.06

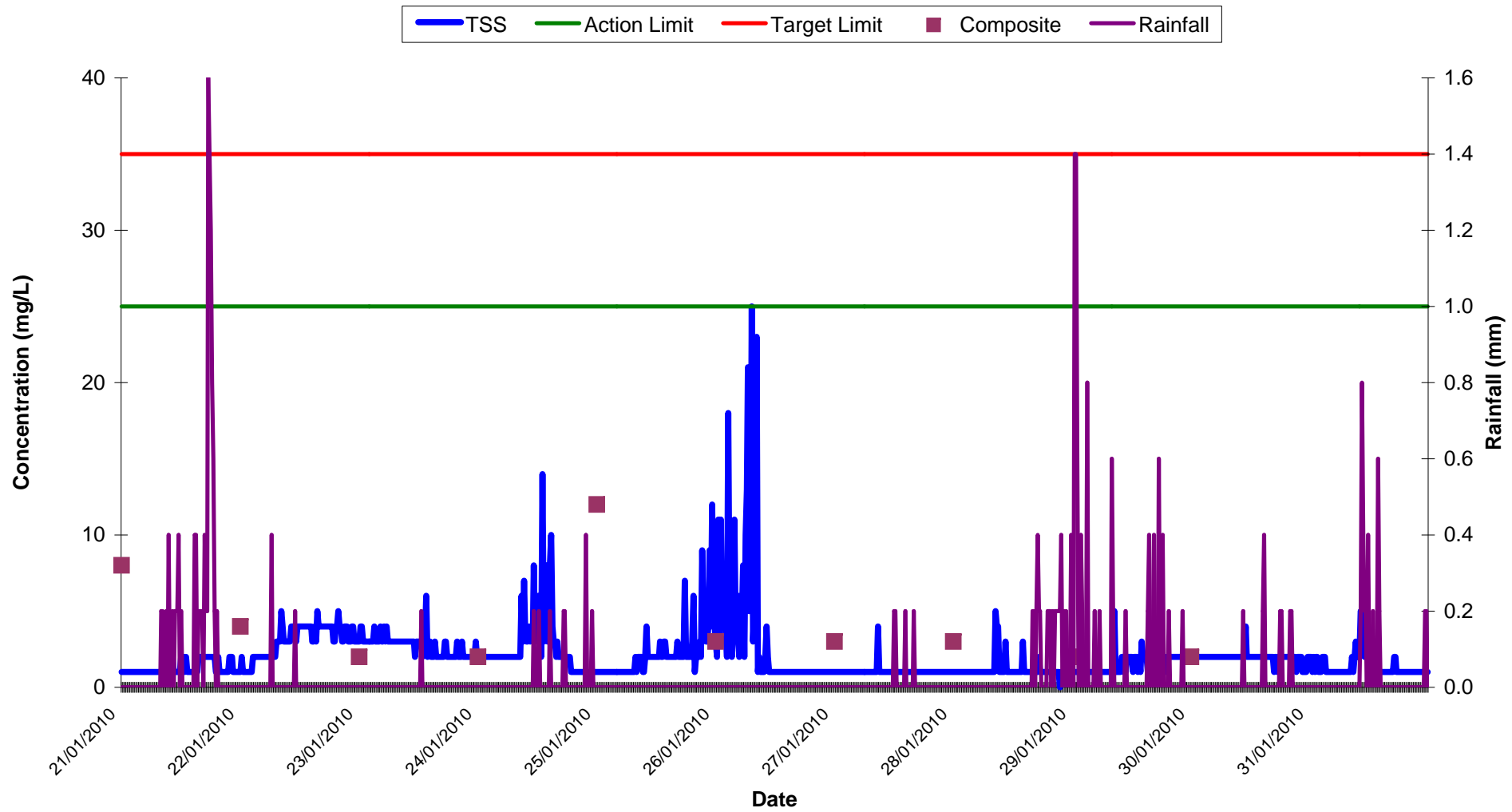
Note: Negative values indicate low flow conditions.

Vibration Monitoring Record Sheet**Determinant Results**

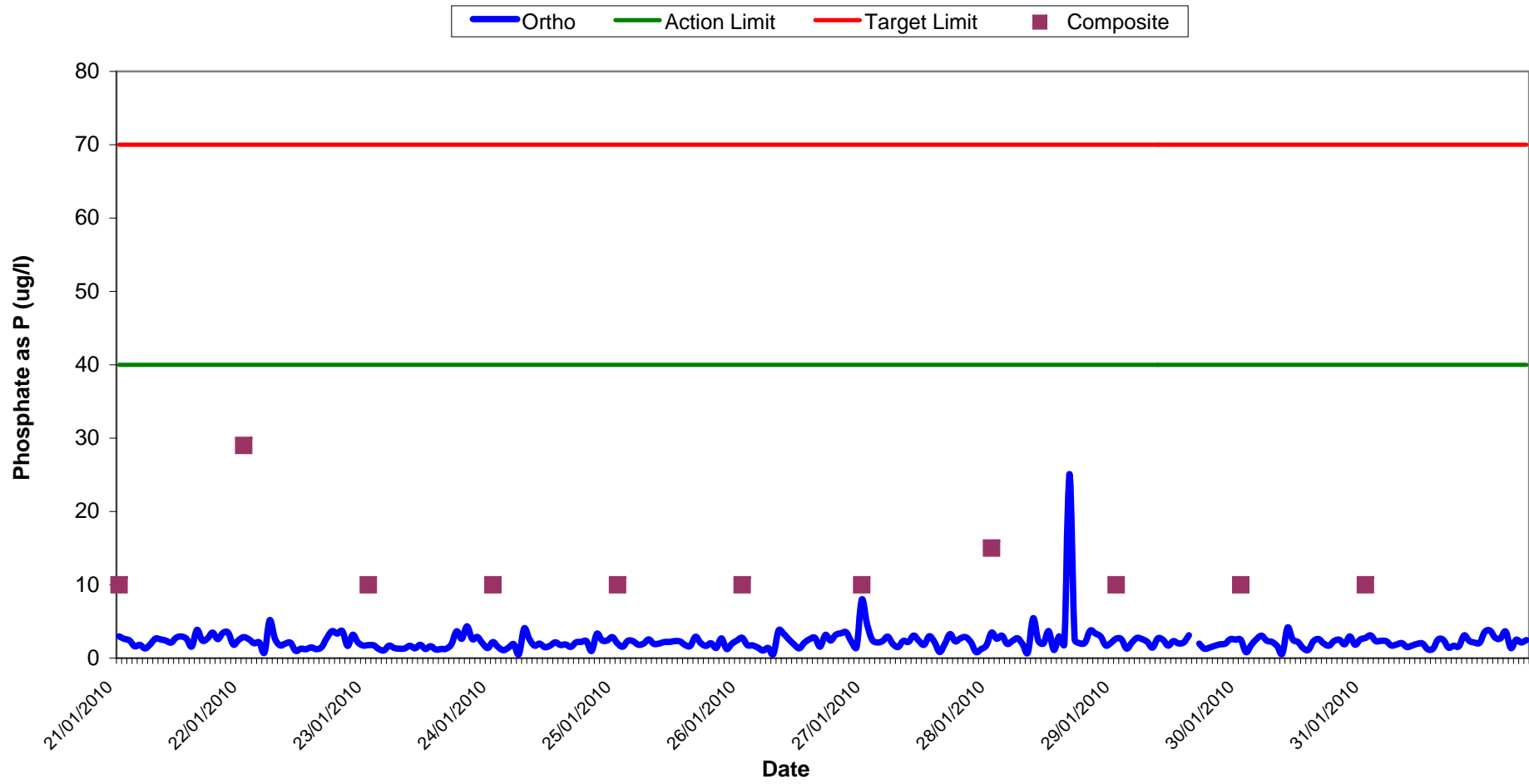
Location	Date Positioned	Date Removed	Event Date	Event Time	Peak Vector Sum	Tran PPV	Vert PPV	Long PPV	Comments
V1	21-Jan-10			11:30					Monitor Started
			28-Feb-10	17:55	3.34	1.65	1.40	2.54	Sensor Check
		01-Feb-10		11:43					Monitor Stopped

Vibration meter located at V1.

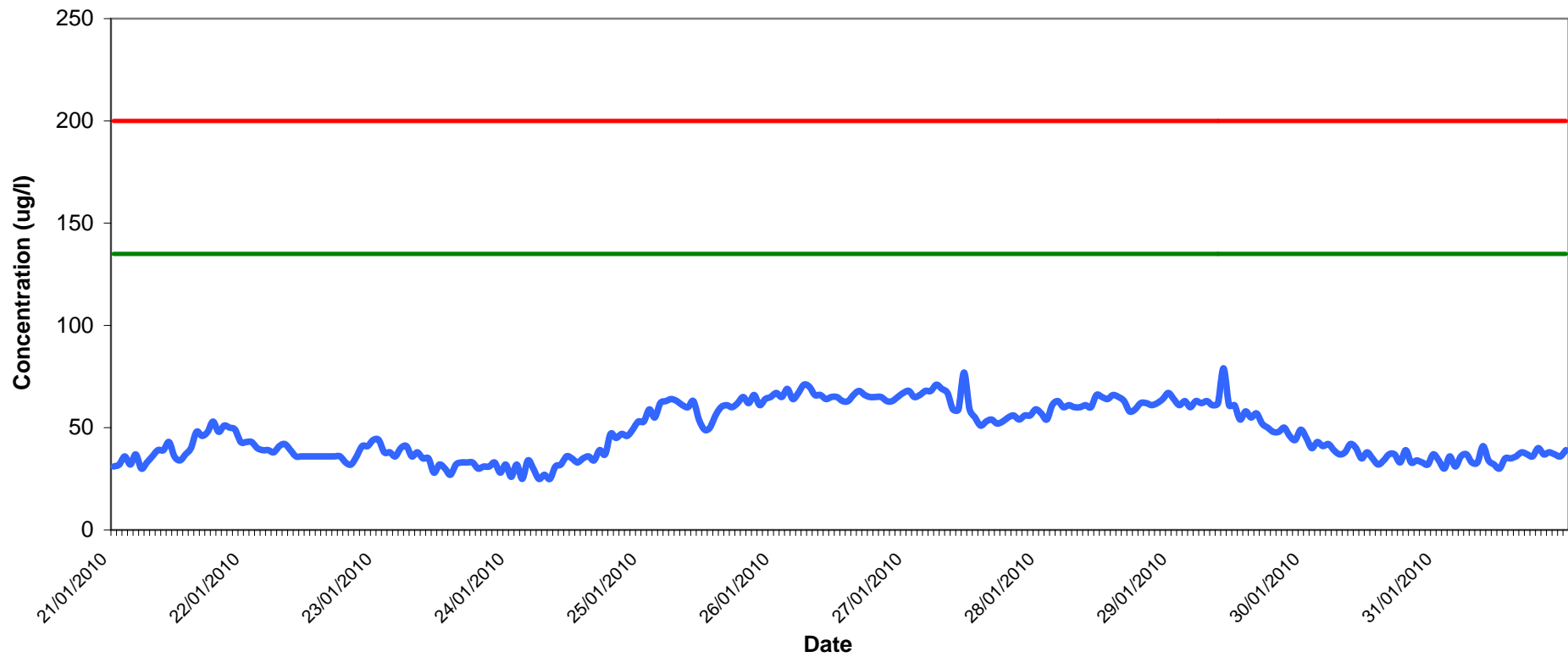
Total Suspended Solids at SP1 Week 04-05



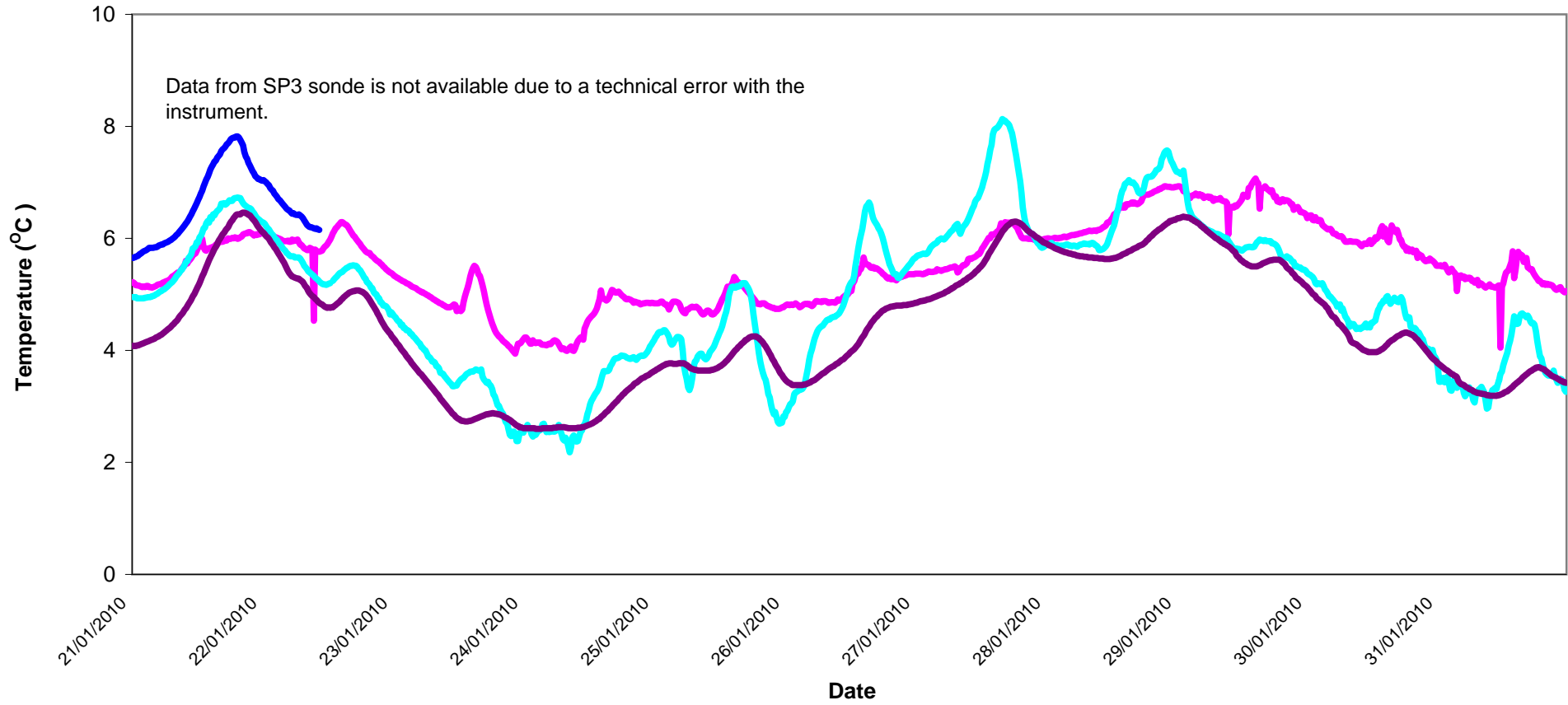
Orthophosphate Results at SP1 Wk 04-05



Aluminium Concentration at SP1 Wk 04-05

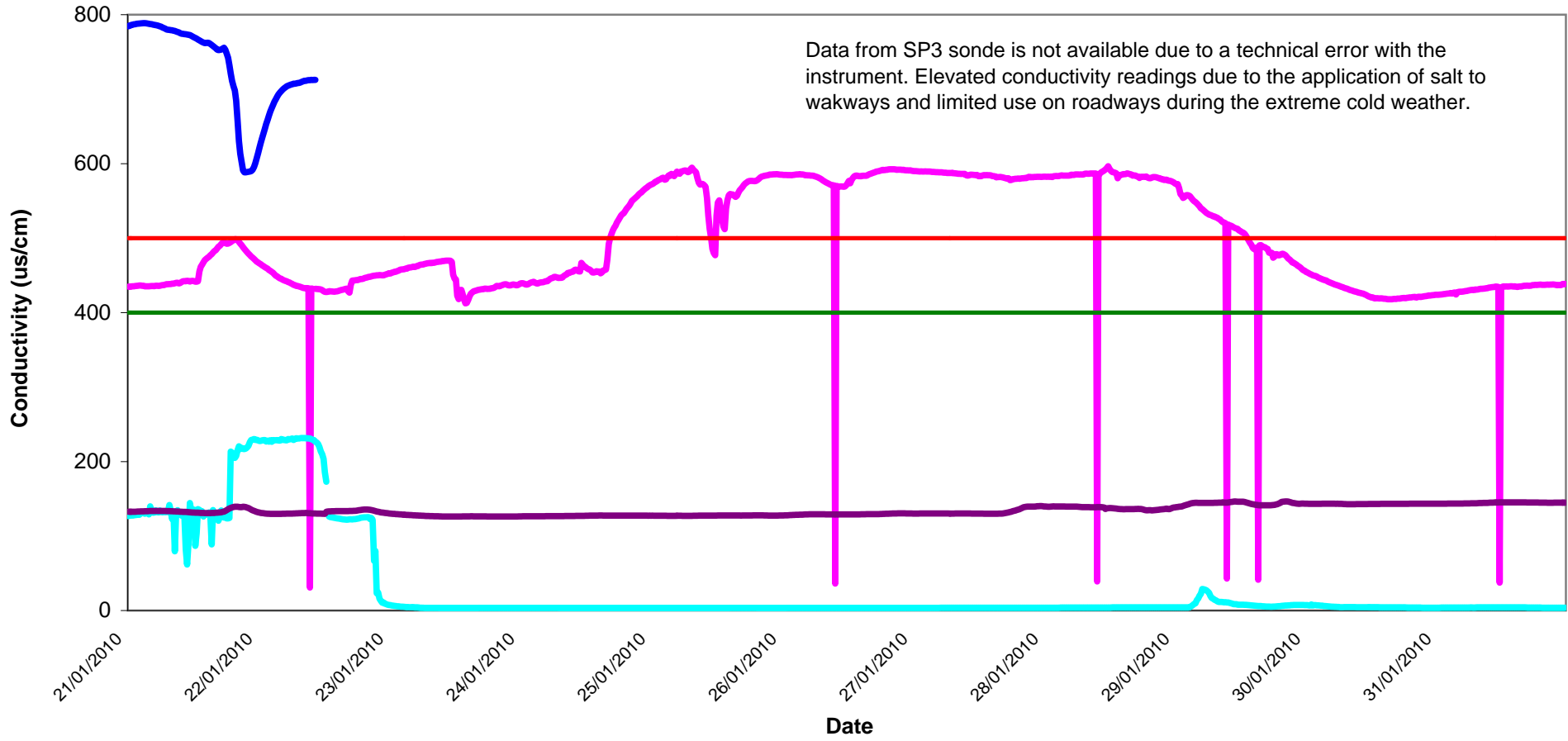


Temperature - Surface Waters Wk 04-05

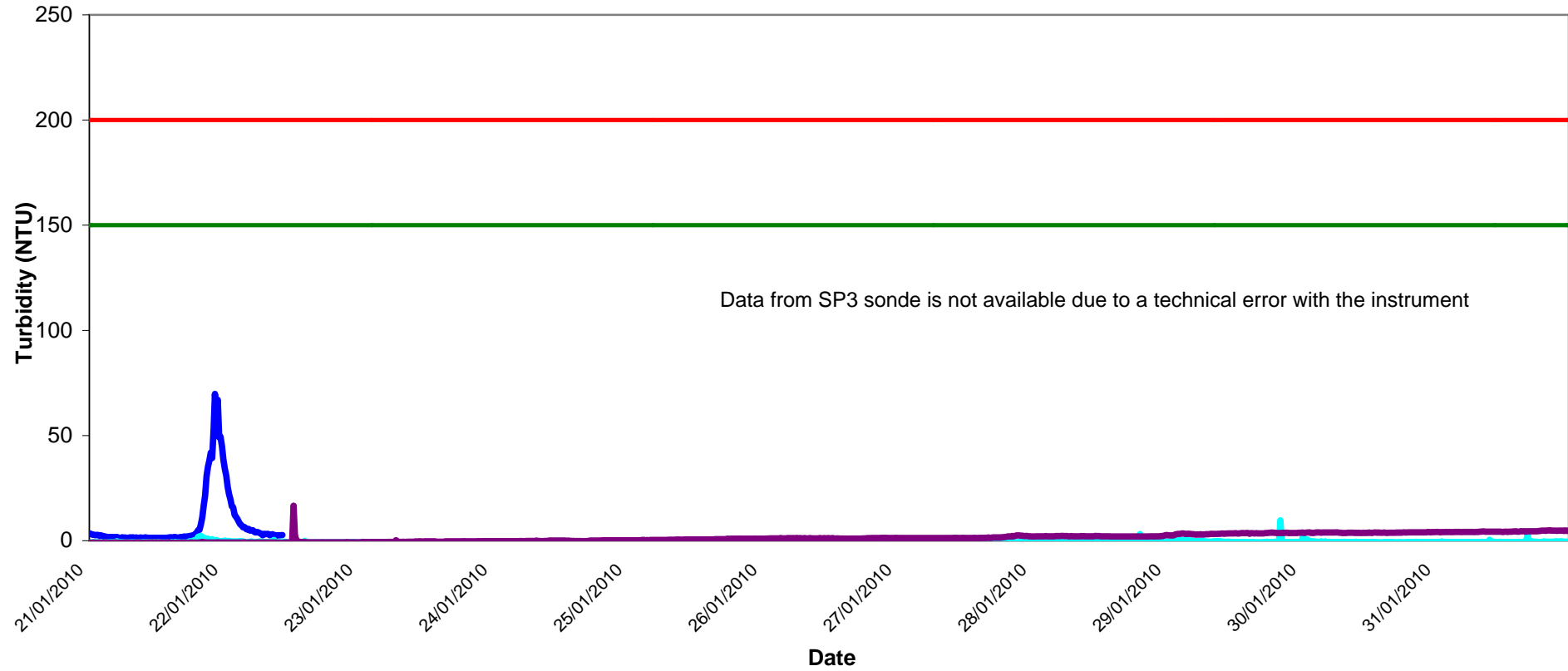


Conductivity - Surface Waters, Wk 04-05

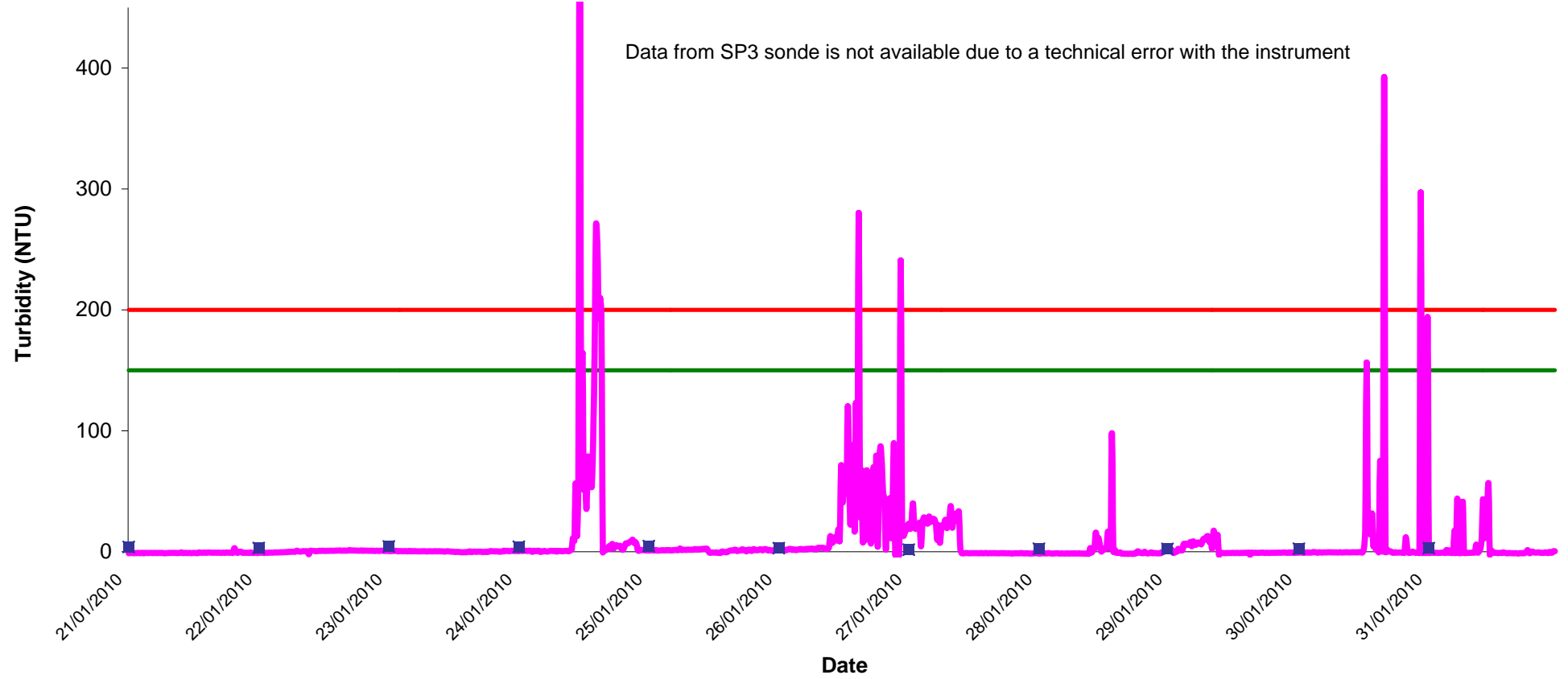
SP1 SP3 D22 D62 Action Limit Target Limit



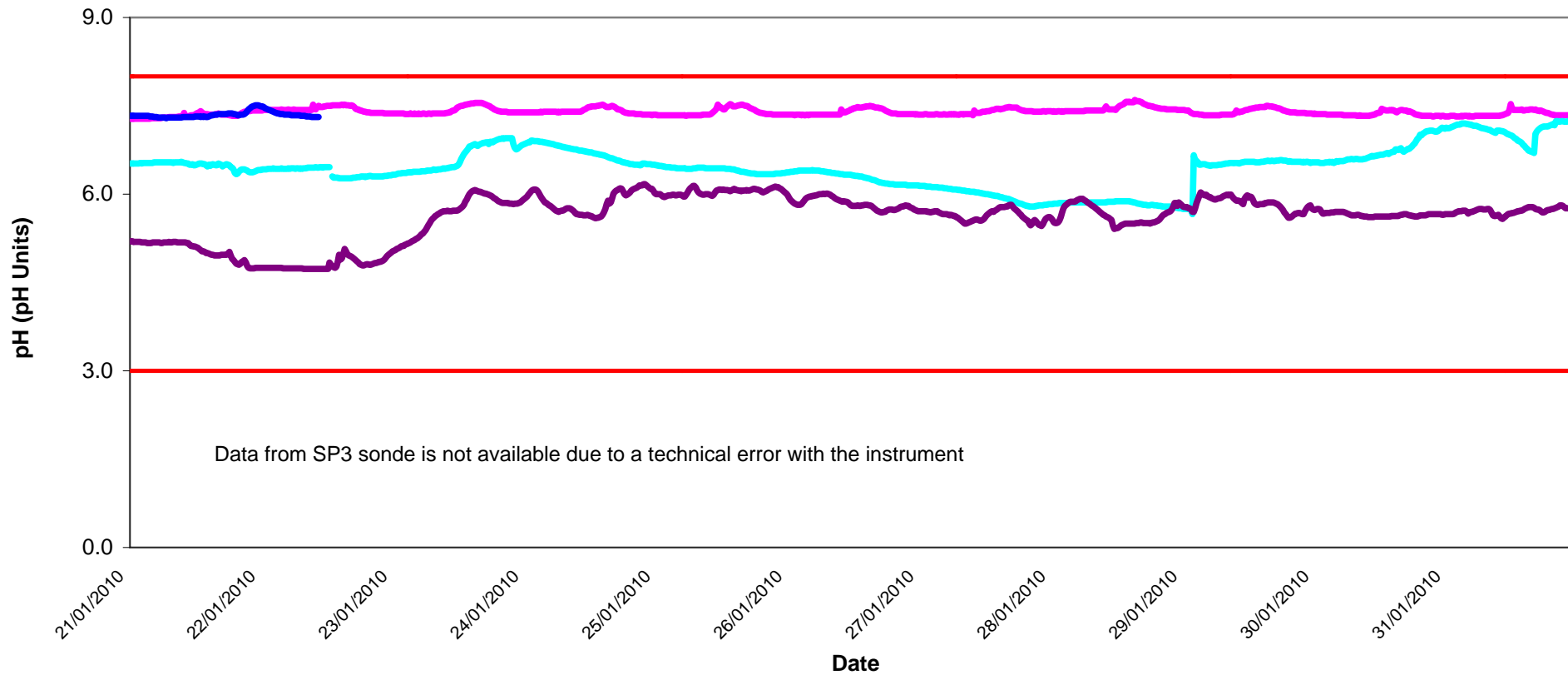
Turbidity - Surface Waters Wk 04-05



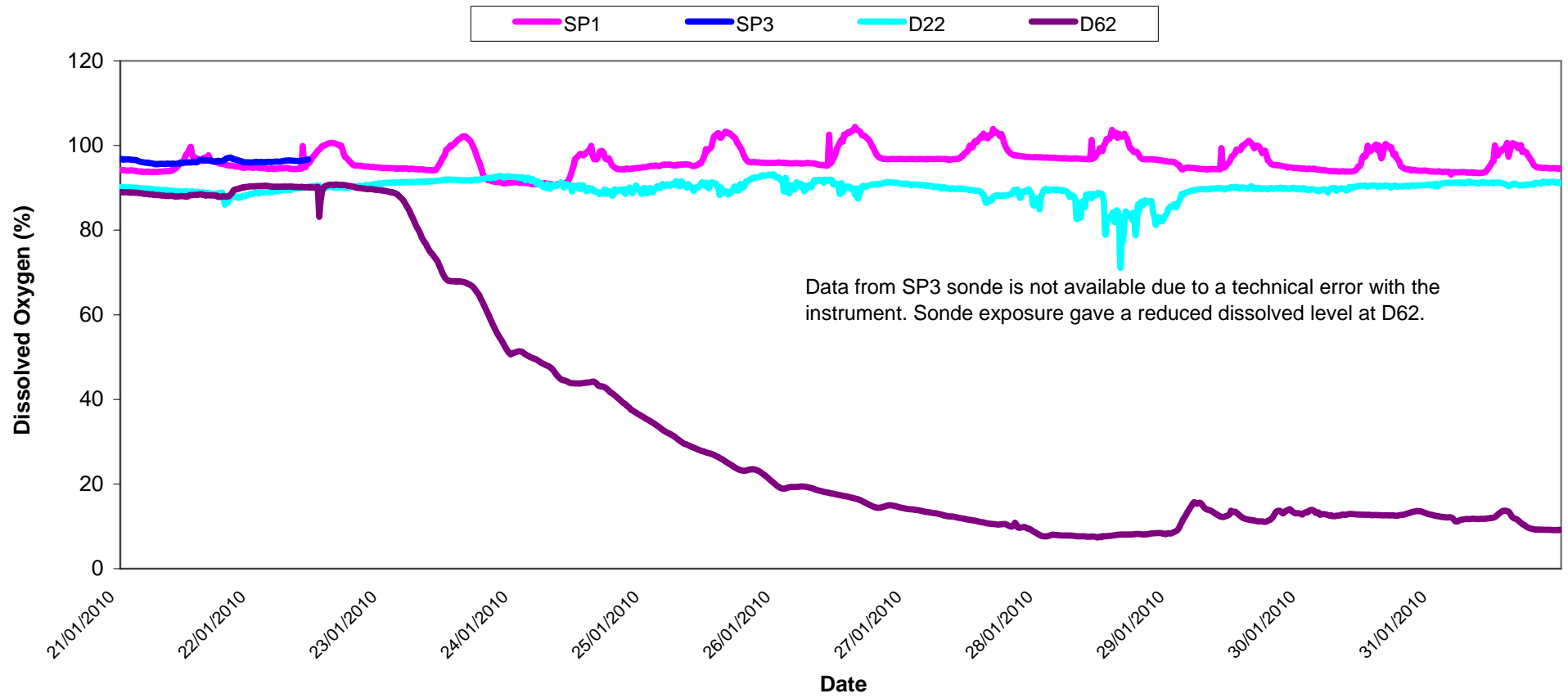
Turbidity - Surface Waters @ SP1, Wk 04-05



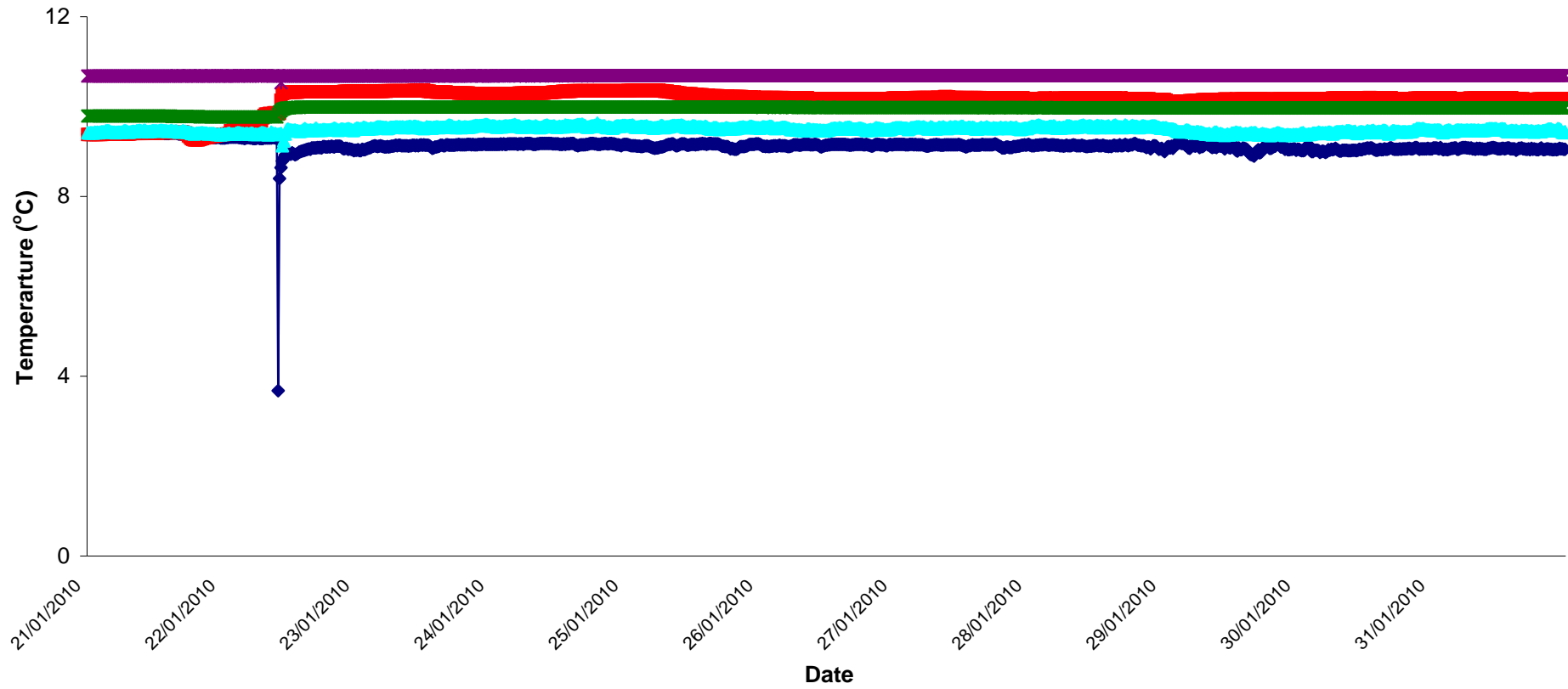
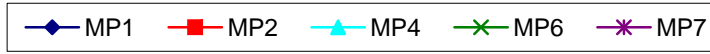
pH - Surface Waters Wk 04-05



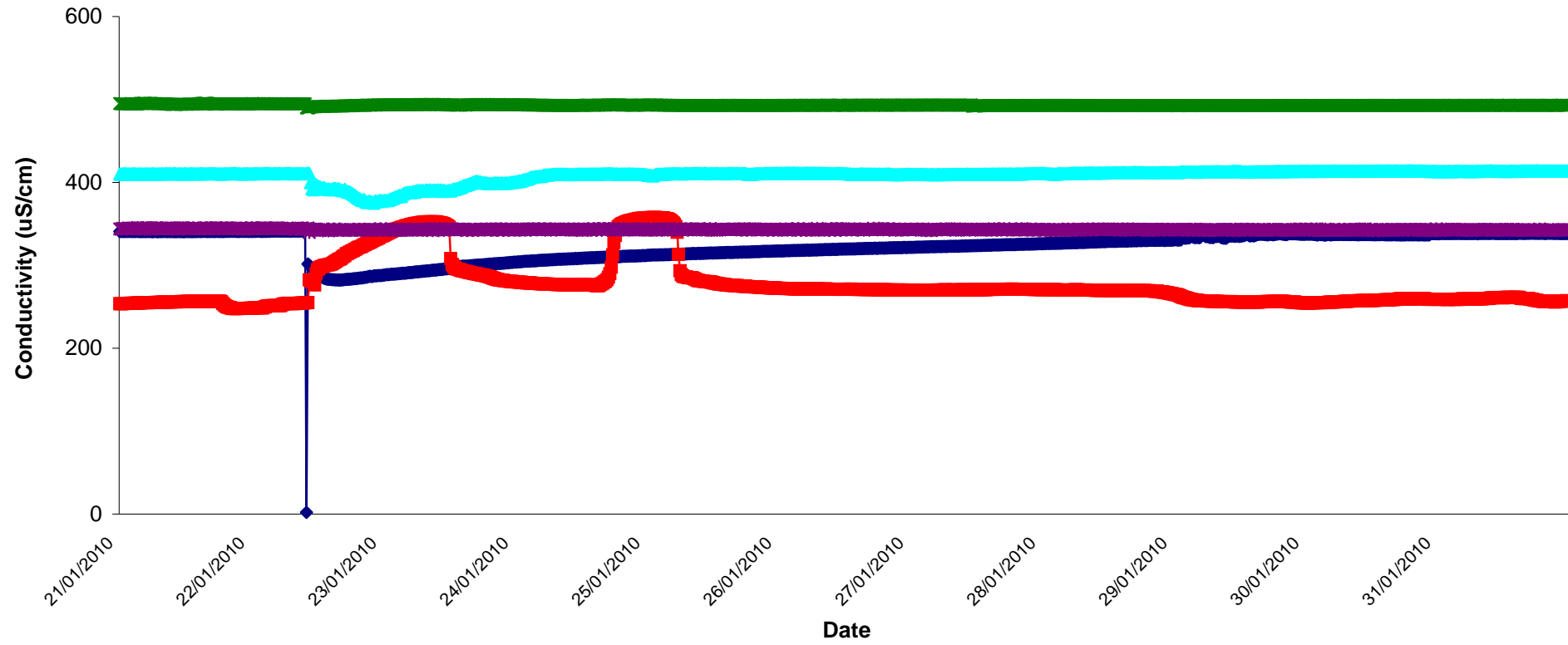
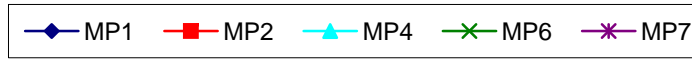
Dissolved Oxygen - Surface Waters, Wk 04-05



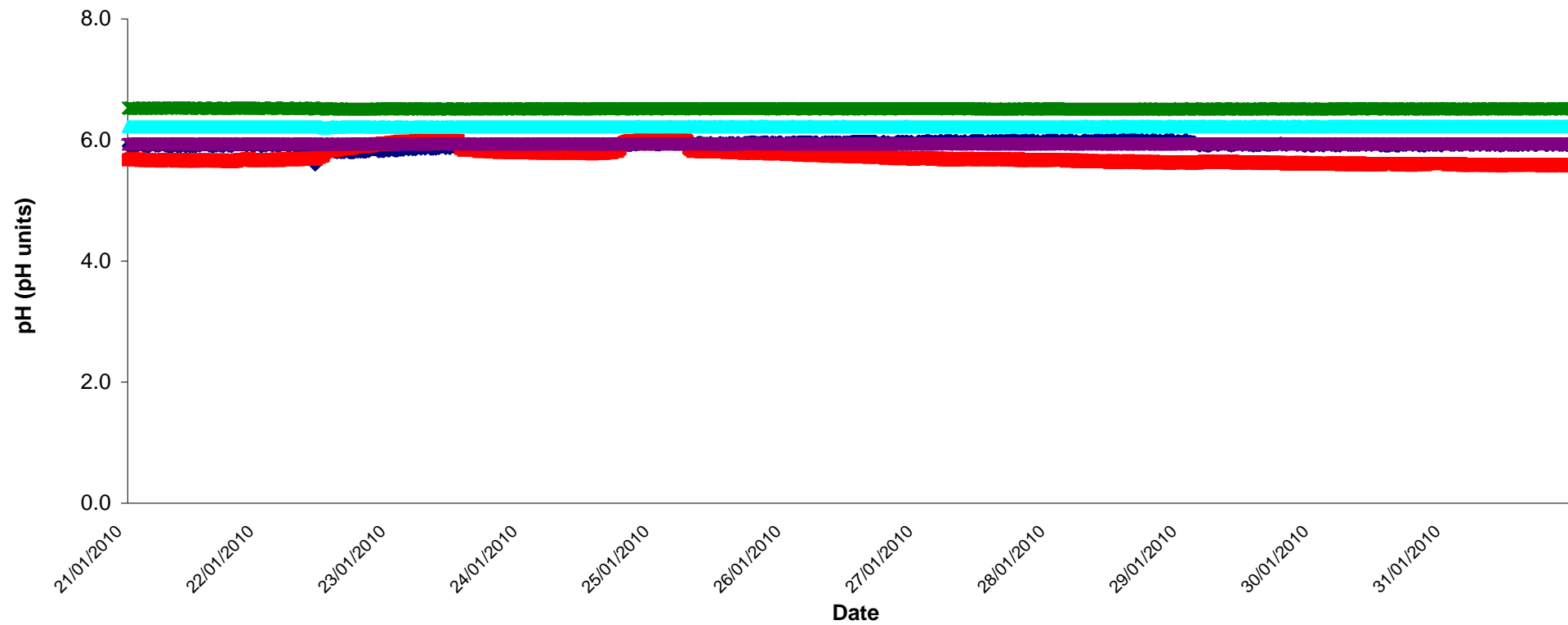
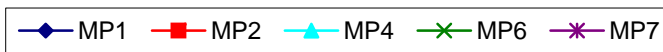
Temperature - Groundwaters Wk 04-05



Conductivity - Groundwaters Wk 04-05



pH - Groundwaters Wk 04-05



Appendix 1

Appendix 1: Surface Water Monitoring Record Sheet- Onsite Monitoring																	
	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	Total dissolved solids
		µS/cm	oC	NTU	% Sat		mg l ⁻¹	µg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg l ⁻¹	mg/l	ug/l	ug/l	mg/l	mg/l
Settlement Pond Monitoring																	
SP1	21/01/2010	387	6.8	4.8	97.5	6.6			0.4			0.07		33	112	1.52	264
SP1	22/01/2010	393	6.8	9.6	94.1	6.9			<LOD			0.04		21	77	>LOD	264
SP1	25/01/2010	371	5.6	9.5	93.6	6.5			<LOD			<LOD		<LOD	135	1.23	308
SP1	26/01/2010	391	6.8	5.5	90.7	6.5			0.1			<LOD		<LOD	121	0.84	336
SP1	27/01/2010	413	7.9	6.5	91.8	6.6			<LOD			0.11		20	73	0.07	348
SP1	28/01/2010	415	7.0	5.0	96.4	6.6			0.3			<LOD		48	147	1.03	343
SP1	29/01/2010	362	7.3	6.9	94.4	6.8			<LOD			<LOD		24	113	0.16	304
SP3	21/01/2010	702	7.2	3.8	97.2	6.9			<LOD			0.91		35		0.03	484
SP3	22/01/2010	656	6.3	7.4	97.6	6.7			<LOD			0.04		<LOD		0.08	453
SP3	25/01/2010	491	6.4	3.5	95.8	6.4			0.2			<LOD		<LOD		0.07	429
SP3	26/01/2010	463	6.7	5.8	90.0	6.3			<LOD			<LOD		<LOD		<LOD	399
SP3	27/01/2010	430	8.4	5.3	95.7	6.5			0.1			0.13		26		0.02	371
SP3	28/01/2010	405	8.1	2.8	95.2	6.5			<LOD			<LOD		26		0.62	345
SP3	29/01/2010	377	7.6	6.6	95.6	6.4			0.1			0.05		23		1.25	325
Additional Monitoring																	
D22	20/01/2010	199	7.1	3.8	88.0	6.1			0.1			0.30		35		0.19	151
D62	20/01/2010	172	6.7	2.8	83.3	5.1			0.1			0.09		<LOD		0.07	105
D22	27/01/2010	199	7.1	3.8	88.0	6.1			0.1			0.30		35		0.19	151
D62	27/01/2010	172	6.7	2.8	83.3	5.1			0.1			0.09		<LOD		0.07	105
Axonics Monitoring																	
Pre	21/01/2010	739		>LOD		6.9			1.0			0.61		>LOD		0.01	514
Post	21/01/2010	756		<LOD		6.9			0.4			<LOD		<LOD	340	0.01	532
Pre	22/01/2010	705		142.0		6.7			<LOD			0.12		271		0.02	489
Post	22/01/2010	717		11.2		6.1			0.4			0.08		<LOD	281	0.04	502
Pre	25/01/2010	489		716.0		6.8			8.6			0.15		130		<LOD	419
Post	25/01/2010	496		4.5		6.7			<LOD			0.12		<LOD	331	0.03	433
Pre	26/01/2010	479		311.0		6.2			<LOD			0.16		464		<LOD	413
Post	26/01/2010	471		5.0		6.1			0.3			<LOD		<LOD	363	0.02	410
Pre	27/01/2010	419		169.0		6.4			<LOD			0.33		>LOD		0.06	363
Post	27/01/2010	426		50.5		6.1			0.2			0.17		<LOD	471	0.04	373
Pre	28/01/2010	387		29.0		6.4			<LOD			0.10		219		0.03	334
Post	28/01/2010	394		3.1		6.4			<LOD			0.25		21	>LOD	0.02	339
Pre	29/01/2010	386		349.0		6.3			<LOD			0.33		274		<LOD	333
Post	29/01/2010	396		3.6		6.1			0.5			0.04		<LOD	397	0.01	134
Grey shaded areas denote parameters that cannot or were not analysed on-site.																	
= Indicative Only																	
< LOD Lower than Limit of Detection																	
> LOD Greater than Limit of Detection																	