

Final Environmental ReportPeriod Ending: 22nd July 2009

Compiled By: Aoife Reynolds, Catriona King & Tracey Lavelle

Approved By: Tony Doyle

1 Monitoring Data

1.1 Monitoring Equipment

Axonics	<ul style="list-style-type: none"> – Upgrade works were undertaken on the Axonic's plant during the reporting period. This encompassed the installation of an upgraded clarifier and associated mixing tanks. To facilitate the works the operation of the plant was suspended. The low rainfall conditions enabled the works to be undertaken without having an impact on the discharge water quality at SP1.
PO ₄	<ul style="list-style-type: none"> – The PO₄ analyser was operational for the majority of the reporting period. – The composite sampler was in place to cover any shortfalls in the PO₄ analyser.
TSS	<ul style="list-style-type: none"> – The TSS analyser was operational during the reporting period.
Composite	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – There is a single noise monitoring location currently being used – N1.
Vibration	<ul style="list-style-type: none"> – There is a single vibration monitoring location currently being used – V1.
Sondes	<ul style="list-style-type: none"> – The results are displayed graphically. <ul style="list-style-type: none"> o Any unusual values are explained on the relevant graph. o D22 & D62 sondes were removed on the 9th of June due to insufficient water flow in the drain. o Due to a internal memory technical failure there was no recordings from the sonde at SP1 during the reporting period. The composite results & onsite monitoring results are presented in the graphs. Normal recording of the sonde has resumed.
Weather Station	<ul style="list-style-type: none"> – The data used for this reporting period was taken from the on-site meteorological station.
Weirs	<ul style="list-style-type: none"> – Weirs were operational during the reporting period. – Service of the weirs was undertaken on the 10th of June.

1.2 Rainfall Data

09/07/2009	3.89	16/07/2009	5.79
10/07/2009	5.21	17/07/2009	7.63
11/07/2009	8.27	18/07/2009	4.40
12/07/2009	12.64	19/07/2009	6.35
13/07/2009	5.68	20/07/2009	8.05
14/07/2009	2.90	21/07/2009	6.12
15/07/2009	5.60	22/07/2009	6.84
Total Rainfall 89.37mm			

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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 89.37mm of rainfall during the reporting period, with a temperature range of 5.9°C to 19.5°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

[illegible]

Groundwater Monitoring Record Sheet

[illegible]

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	20/02/2009	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	
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	
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	11.3	16.9	09/07/2009	08:00:00	14:00:00	2539533	1.8	260.6	45.4	82.6	30.8	
N1	5.9	16.7	10/07/2009	08:00:00	14:00:00	2539533	2.3	156.7	49.2	77.8	30.0	
N1	14.6	19.5	11/07/2009	08:00:00	14:00:00	2539533	4.0	142.2	51.1	77.0	30.0	
N1	11.9	17.1	12/07/2009	08:00:00	14:00:00	2539533	6.4	211.3	52.2	71.2	39.8	
N1	10.0	16.7	13/07/2009	08:00:00	14:00:00	2539533	2.6	166.2	51.5	69.8	40.7	
N1	6.8	17.2	14/07/2009	08:00:00	14:00:00	2539533	1.1	113.3	50.5	75.1	40.1	
N1	10.7	17.5	15/07/2009	08:00:00	14:00:00	2539533	2.8	310.4	50.2	71.3	38.9	
N1	10.4	16.4	16/07/2009	08:00:00	14:00:00	2539533	2.8	284.1	50.7	67.9	40.2	
N1	9.5	17.2	17/07/2009	08:00:00	14:00:00	2539533	4.3	327.9	51.0	76.2	42.4	
N1	11.5	14.6	18/07/2009	08:00:00	14:00:00	2539533	1.9	300.9	51.0	68.4	43.2	
N1	8.7	16.6	19/07/2009	08:00:00	14:00:00	2539533	3.2	254.7	49.7	63.0	39.2	
N1	11.4	16.7	20/07/2009	08:00:00	14:00:00	2539533	3.8	224.5	51.8	85.3	40.1	
N1	11.7	16.9	21/07/2009	08:00:00	14:00:00	2539533	2.7	130.0	51.9	68.2	40.1	
N1	10.3	16.7	22/07/2009	08:00:00	14:00:00	2539533	3.2	222.0	51.2	76.9	40.0	

* 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

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	11.3	16.9	09/07/2009	22:00:00	10:00:00	2539533	1.8	260.6	41.8	68.3	30.0	
N1	5.9	16.7	10/07/2009	22:00:00	10:00:00	2539533	2.3	156.7	42.7	65.3	30.9	
N1	14.6	19.5	11/07/2009	22:00:00	10:00:00	2539533	4.0	142.2	42.2	64.7	30.0	
N1	11.9	17.1	12/07/2009	22:00:00	10:00:00	2539533	6.4	211.3	52.4	75.9	32.1	
N1	10.0	16.7	13/07/2009	22:00:00	10:00:00	2539533	2.6	166.2	50.1	76.3	39.2	
N1	6.8	17.2	14/07/2009	22:00:00	10:00:00	2539533	1.1	113.3	50.1	67.8	42.9	
N1	10.7	17.5	15/07/2009	22:00:00	10:00:00	2539533	2.8	310.4	49.3	66.8	39.5	
N1	10.4	16.4	16/07/2009	22:00:00	10:00:00	2539533	2.8	284.1	49.8	64.3	40.2	
N1	9.5	17.2	17/07/2009	22:00:00	10:00:00	2539533	4.3	327.9	50.7	65.1	45.2	
N1	11.5	14.6	18/07/2009	22:00:00	10:00:00	2539533	1.9	300.9	50.1	64.5	43.8	
N1	8.7	16.6	19/07/2009	22:00:00	10:00:00	2539533	3.2	254.7	49.9	63.0	42.7	
N1	11.4	16.7	20/07/2009	22:00:00	10:00:00	2539533	3.8	224.5	49.7	62.6	38.6	
N1	11.7	16.9	21/07/2009	22:00:00	10:00:00	2539533	2.7	130.0	49.7	65.1	37.9	
N1	10.3	16.7	22/07/2009	22:00:00	10:00:00	2539533	3.2	222.0	49.5	66.5	38.8	

* 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)
09/07/2009	10.74	0.76	7.21	12.38	3.28	8.06
10/07/2009	10.37	0.80	7.26	11.22	1.03	7.78
11/07/2009	10.93	4.00	8.57	9.83	2.56	8.36
12/07/2009	9.66	1.26	3.93	9.02	0.46	3.03
13/07/2009	3.60	0.52	1.49	3.87	0.28	0.43
14/07/2009	5.60	0.29	2.79	4.27	0.46	2.37
15/07/2009	6.81	0.23	2.26	5.57	0.46	2.15
16/07/2009	6.53	0.76	5.06	6.26	3.10	5.06
17/07/2009	7.39	1.71	5.85	7.73	4.91	6.04
18/07/2009	28.58	6.39	11.76	22.57	4.48	8.49
19/07/2009	25.03	4.54	9.37	29.35	2.91	7.67
20/07/2009	9.83	0.52	5.00	9.83	0.78	4.71
21/07/2009	0.49	0.34	0.38	6.26	0.46	3.55
22/07/2009	0.34	0.23	0.27	5.13	0.20	0.66
Note: Negative values indicate low flow conditions.						

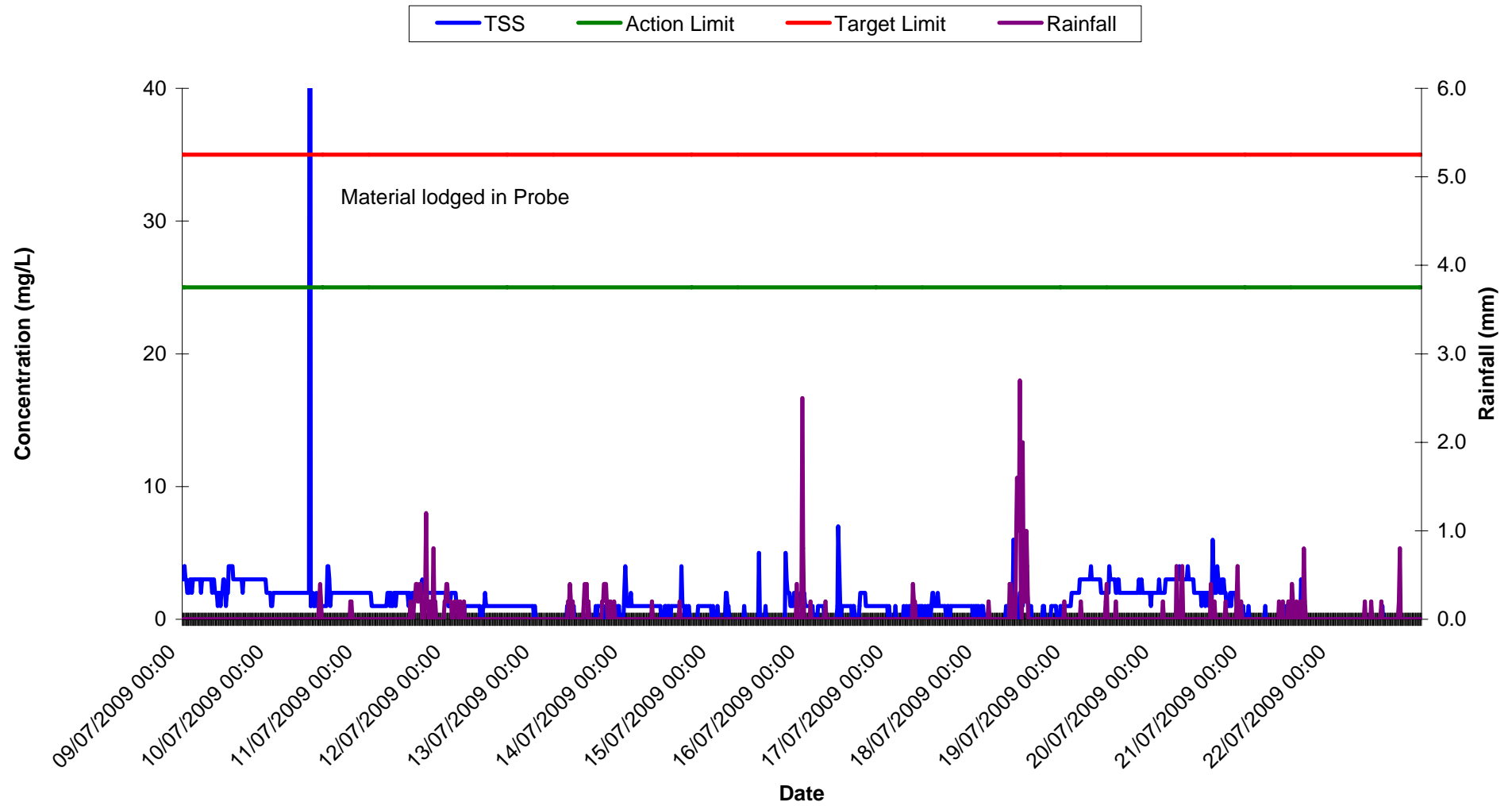
Vibration Monitoring Record Sheet

Determinant Results	
1	1
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100	100

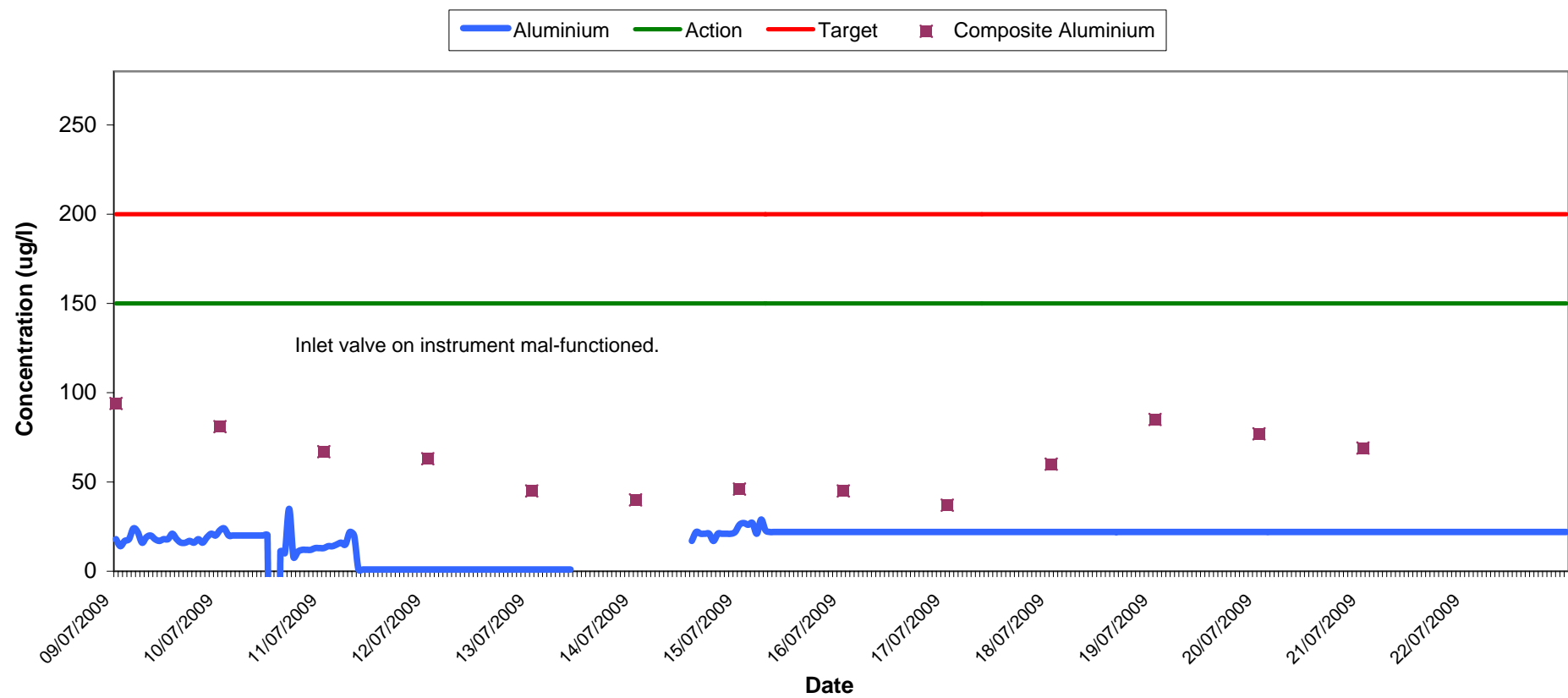
[illegible]

Vibration meter located at V1.

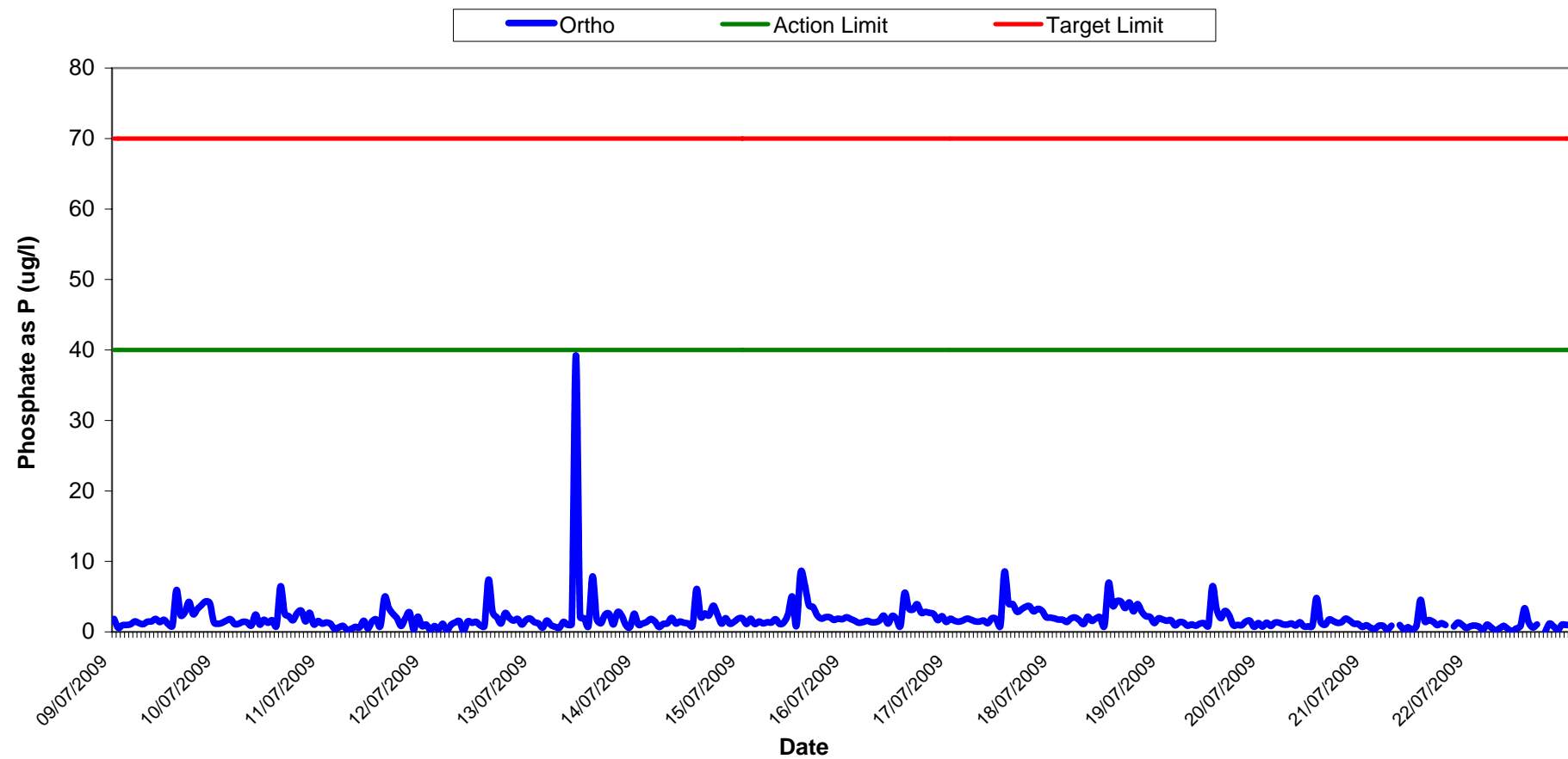
Total Suspended Solids at SP1 Week 28-29



Aluminium Concentration at SP1 Wk 28-29



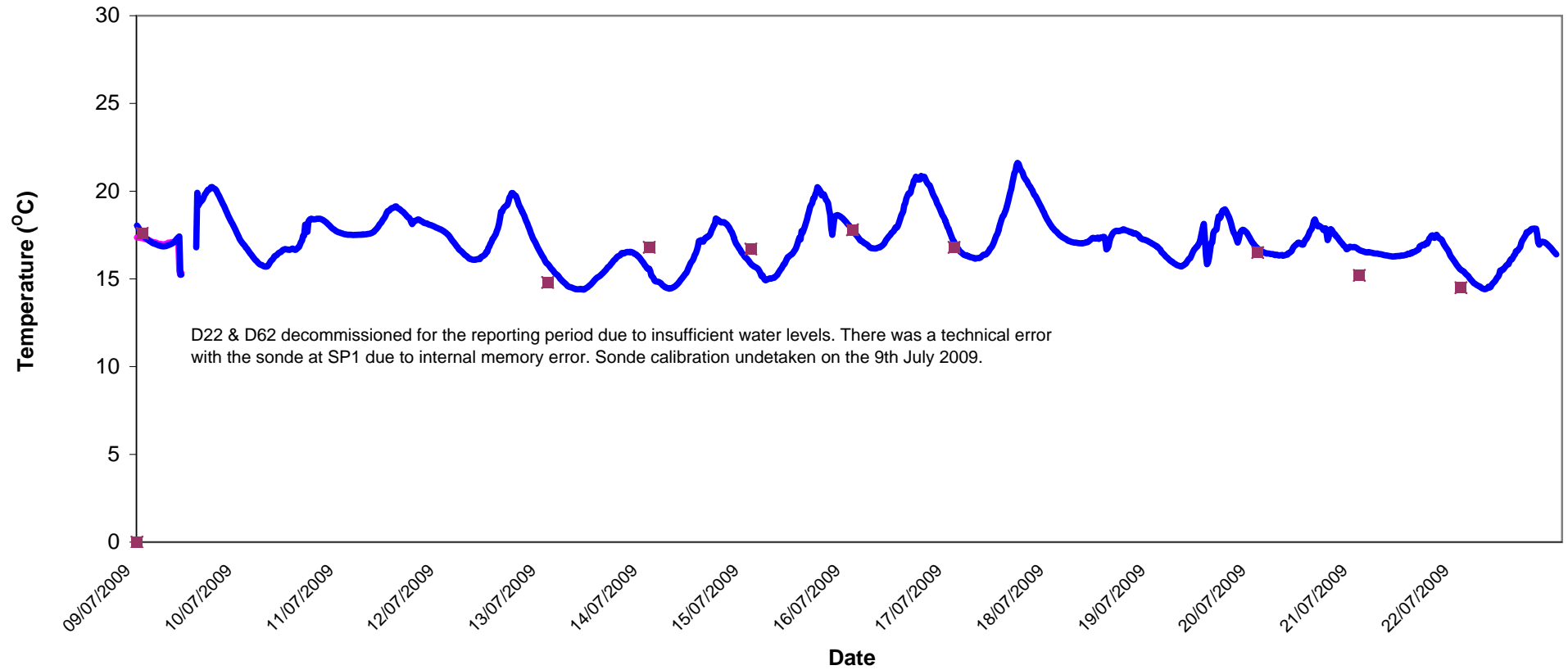
Orthophosphate Results at SP1 Wk 28-29



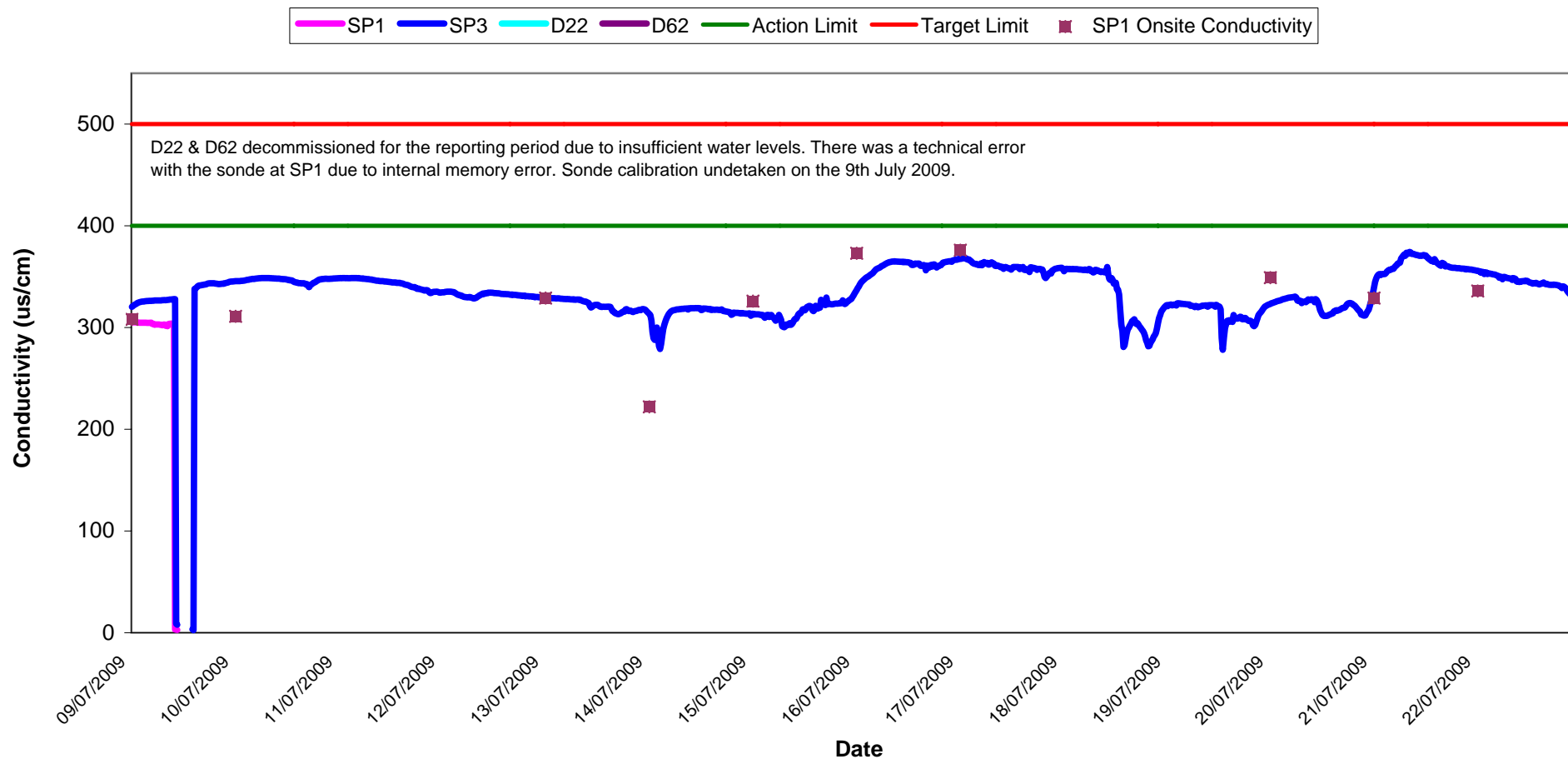
Temperature - Surface Waters

Wk 28-29

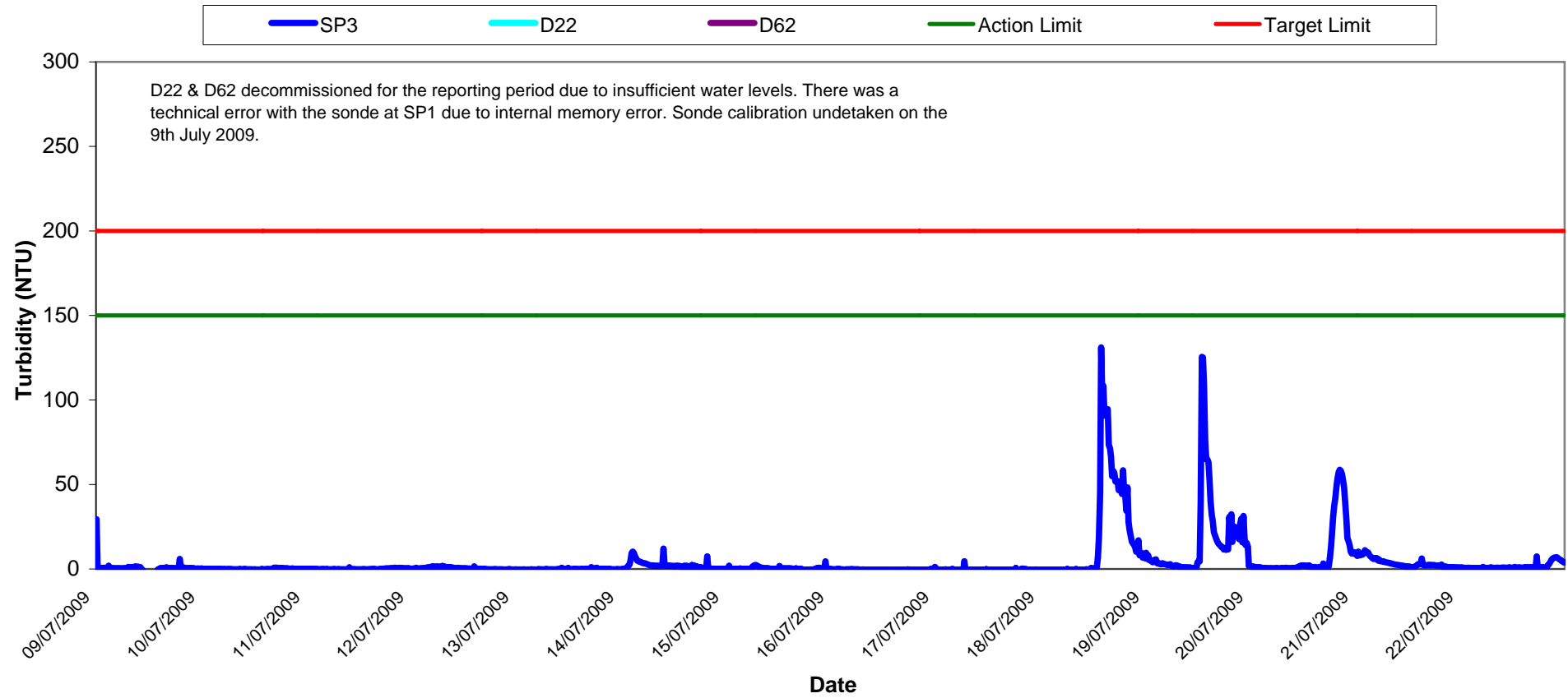
SP1 SP3 D22 D62 SP1 Onsite Temperature



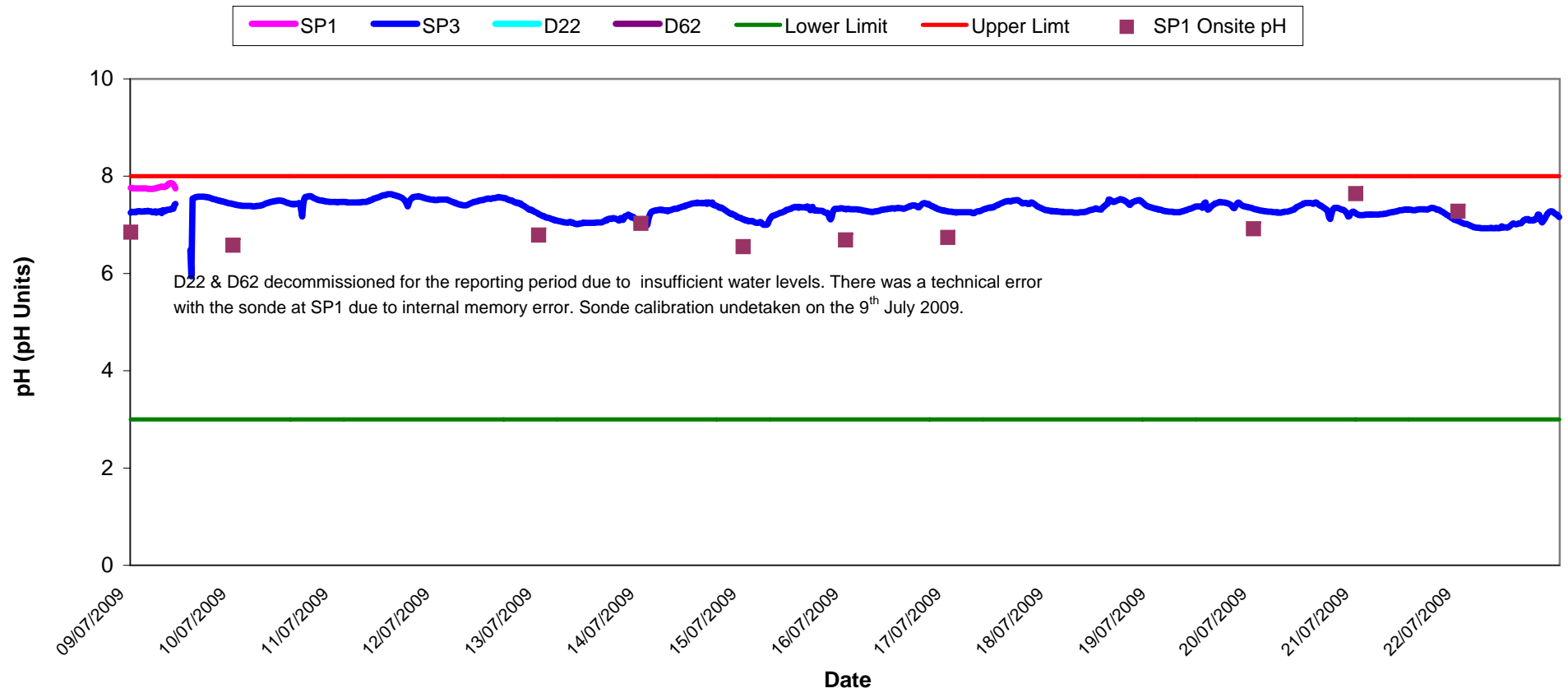
Conductivity - Surface Waters, Wk 28-29



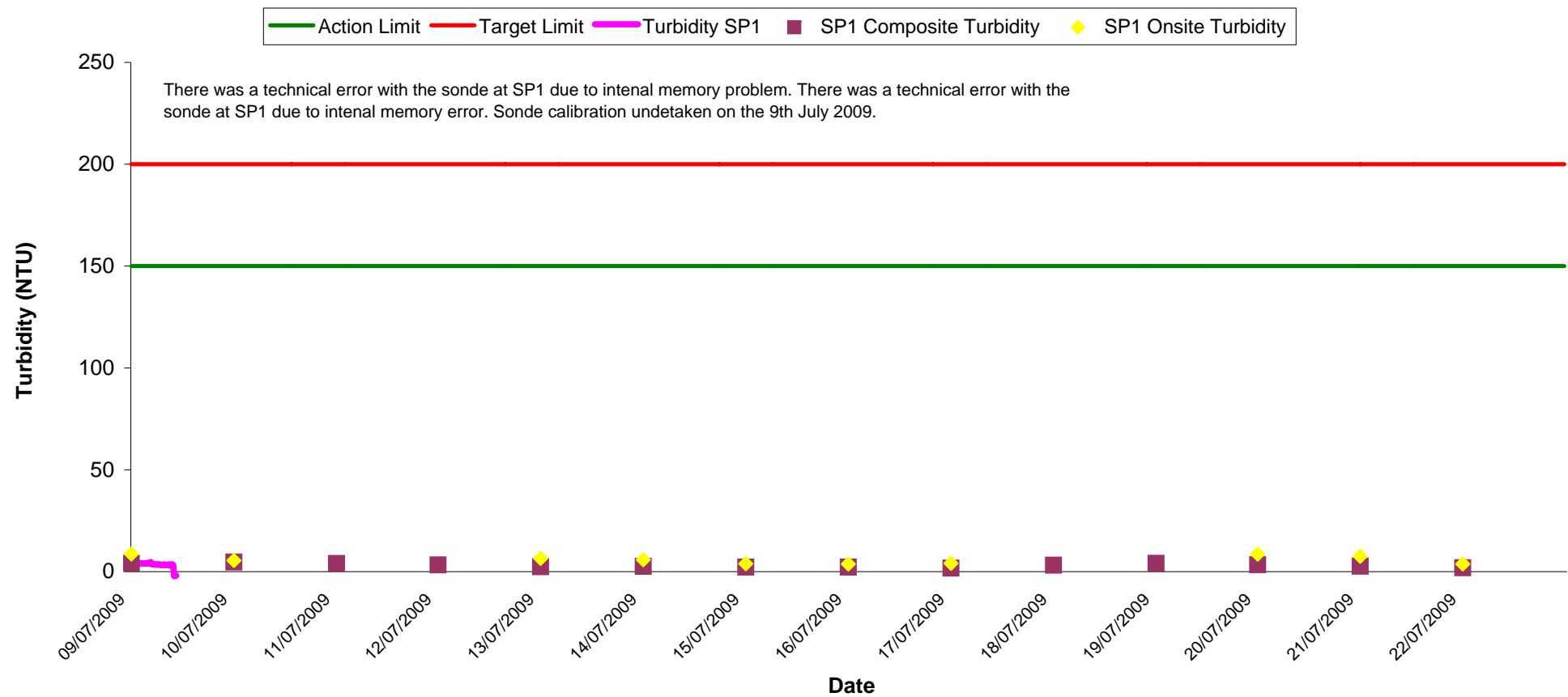
Turbidity - Surface Waters Wk 28-29



pH - Surface Waters Wk 28-29

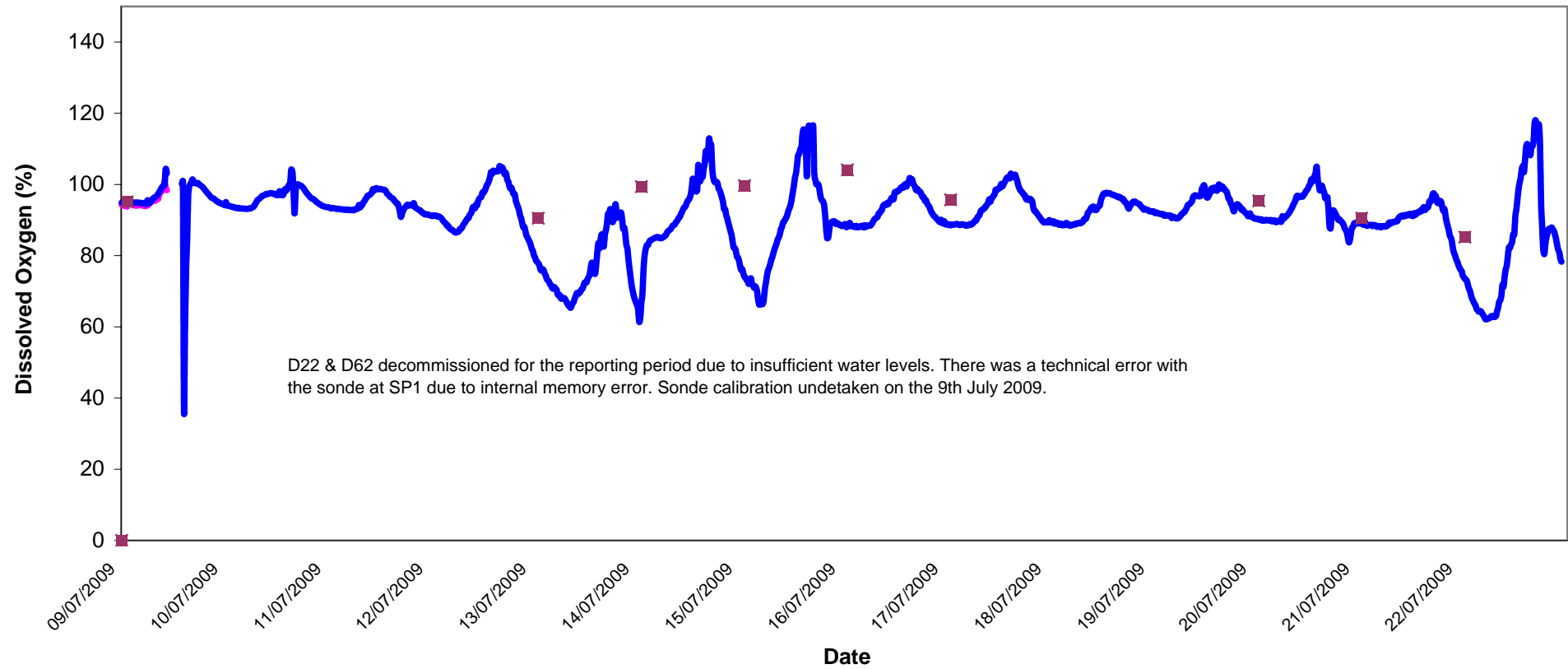


Turbidity - Surface Waters @ SP1, Wk 28-29

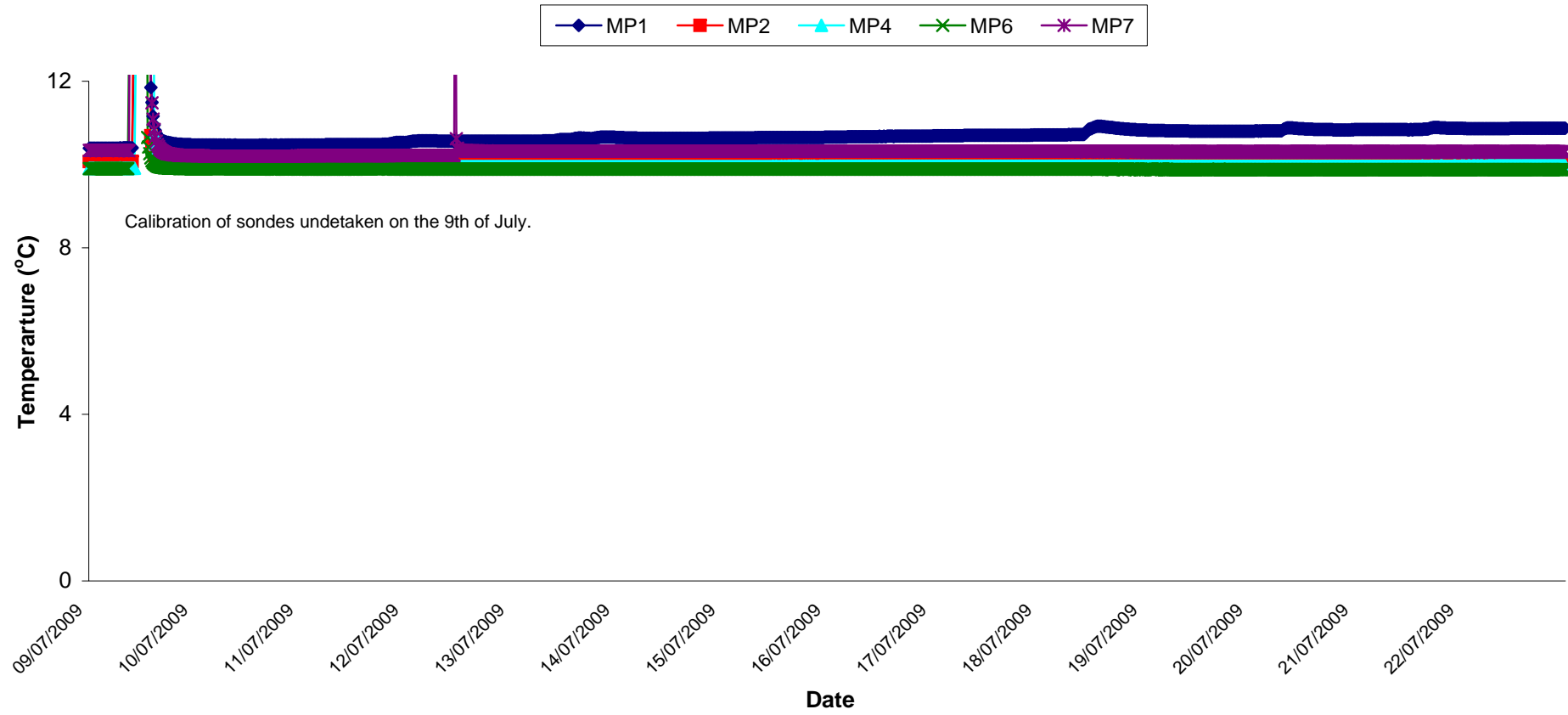


Dissolved Oxygen - Surface Waters, Wk 28-29

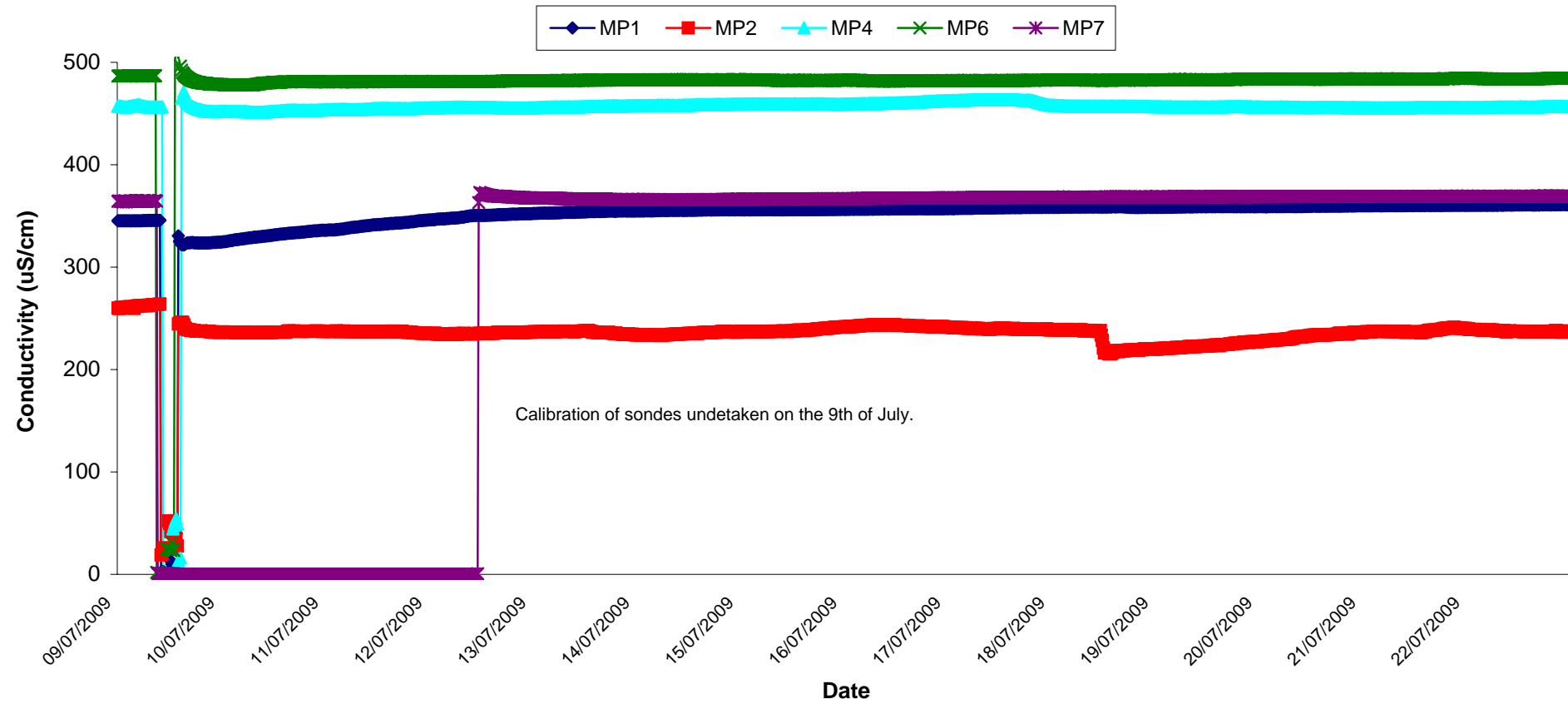
SP1 SP3 D22 D62 SP1 Onsite DO



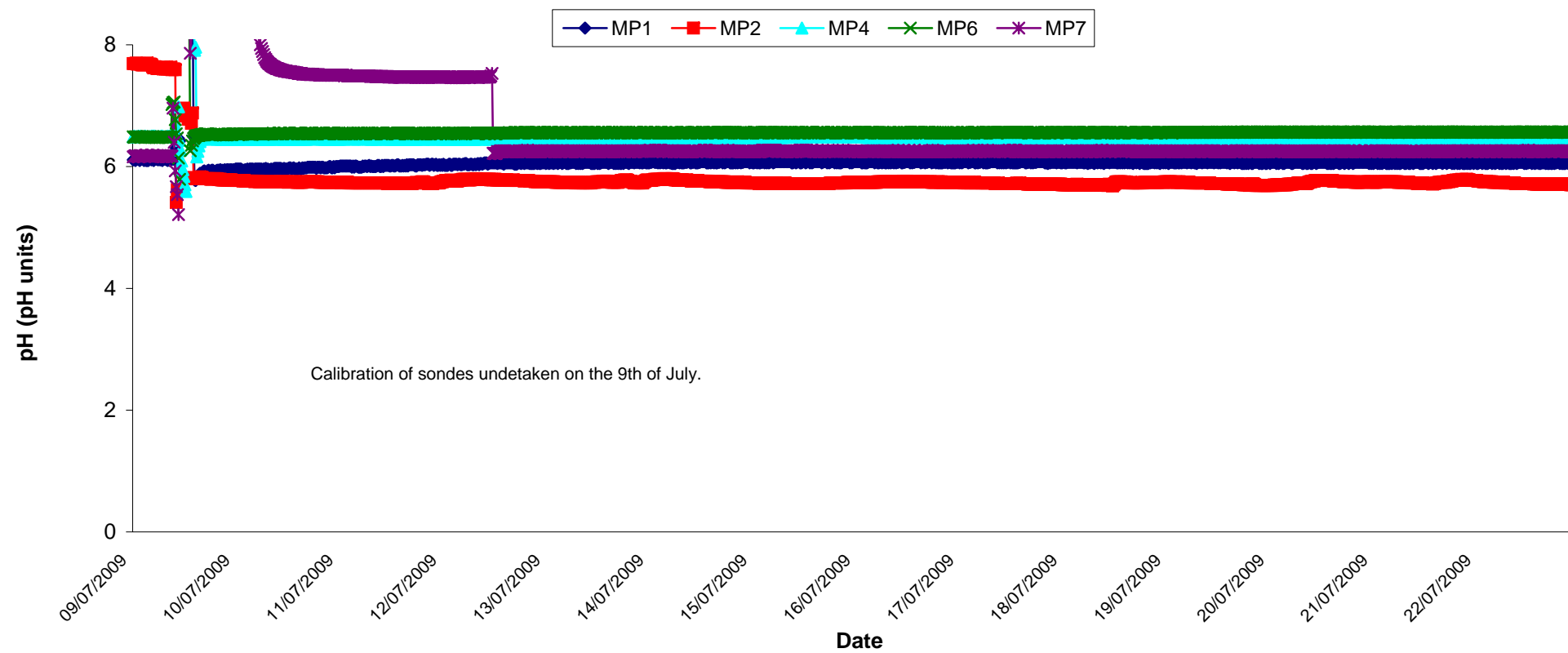
Temperature - Groundwaters Wk 28-29



Conductivity - Groundwaters Wk 28-29



pH - Groundwaters Wk 28-29



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	09/07/2009	308	17.6	8.6	95.1	6.9			<LOD			0.03		<LOD	34	0.06	215
SP1	10/07/2009	311		5.5		6.6			0.2			0.32		<LOD	37	<LOD	216
SP1	13/07/2009	329	14.8	6.5	90.5	6.8			<LOD			<LOD		<LOD	<LOD	0.51	230
SP1	14/07/2009	222	16.8	5.9	99.4	7.0			0.1			0.10		<LOD	37	0.01	226
SP1	15/07/2009	326	16.7	3.9	99.7	6.6			0.2			0.10		<LOD	22	0.05	228
SP1	16/07/2009	373	17.8	3.7	104.1	6.7			0.2			0.03		<LOD	56	0.08	258
SP1	17/07/2009	376	16.8	4.1	95.7	6.7			0.3			0.59		48	31	0.32	252
SP1	20/07/2009	349	16.5	8.6	95.4	6.9			0.1			<LOD		<LOD	33	0.27	233
SP1	21/07/2009	329	15.2	7.5	90.5	7.6			<LOD			2.44		<LOD	<LOD	<LOD	223
SP1	22/07/2009	336	14.5	3.8	85.2	7.3			<LOD			<LOD		<LOD	34	1.19	226
SP3	09/07/2009	233	17.4	3.0	94.9	6.9			0.4			0.28		<LOD		0.02	330
SP3	10/07/2009	337	16.2	2.5	95.7	6.7			0.4			0.09		<LOD		0.02	233
SP3	13/07/2009	318	14.4	3.7	70.4	6.9			0.3			0.25		<LOD		<LOD	222
SP3	14/07/2009	312	16.0	6.5	93.4	7.1			0.3			0.30		<LOD		0.01	220
SP3	15/07/2009	305	16.1	4.1	84.5	6.8			0.2			0.20		<LOD		<LOD	213
SP3	16/07/2009	356	17.9	2.7	95.9	6.4			<LOD			0.15		<LOD		0.53	248
SP3	17/07/2009	343	16.1	3.1	94.0	6.8			0.2			0.36		23		0.08	232
SP3	20/07/2009	313	16.1	3.1	92.5	7.0			0.3			<LOD		<LOD		<LOD	214
SP3	21/07/2009	351	16.0	5.2	94.2	7.5			0.1			0.54		<LOD		0.06	239
SP3	22/07/2009	326	14.9	4.3	73.2	7.3			0.6			<LOD		<LOD		<LOD	220
Additional Monitoring																	
D22	16/07/2009	343	7.1	5.9	90.8	7.1			<LOD			0.17		34		0.05	241
D22	22/07/2009	287	15.2	17.7	89.6	6.4			0.3			0.08		<LOD		0.13	195
D62	16/07/2009	199	4.6	2.3	80.5	4.6			<LOD			2.56		58		0.09	114
D62	22/07/2009	180	14.1	1.3	84.1	4.6			0.3			<LOD		30		0.04	104
Axonics Monitoring																	
Pre	09/07/2009	231		305.0		7.0			<LOD			0.28		136		0.05	330
Post	09/07/2009	242		7.0		6.9			0.2			0.23		<LOD	235	0.57	344
Pre	10/07/2009	330		61.3		6.9			0.5			0.21		139		0.03	228
Post	10/07/2009	344		3.1		7.0			<LOD			0.19		22	260	<LOD	238
Pre	13/07/2009	331		79.6		6.9			<LOD			0.35		150		<LOD	231
Post	13/07/2009	342		16.9		7.1			<LOD			0.31		69	>LOD	0.01	239
Pre	14/07/2009	328		114.0		7.1			<LOD			<LOD		97		<LOD	229
Post	14/07/2009	331		5.0		7.1			<LOD			>LOD		103	291	0.02	231
Pre	15/07/2009	324		54.5		6.9			<LOD			0.81		114		0.02	226
Post	15/07/2009	337		2.8		7.2			0.4			1.15		91	221	0.81	235
Pre	16/07/2009	350		68.8		6.8			<LOD			1.23		62		0.03	243
Post	16/07/2009	366		4.6		6.7			0.3			1.46		35	205	0.82	256
Pre	17/07/2009	323		45.5		7.0			<LOD			0.27		80		0.06	217
Post	17/07/2009	340		4.4		6.9			<LOD			0.16		46	371	0.01	231
Pre	20/07/2009	305		154.0		7.1			<LOD			0.20		132		<LOD	206
Post	20/07/2009	320		3.9		6.9			0.3			0.09		<LOD	271	0.01	217
Pre	21/07/2009	335		92.0		7.5			<LOD			0.84		171		0.03	228
Post	21/07/2009	346		2.9		7.3			0.2			1.35		<LOD	245	0.02	236
Pre	22/07/2009	357		77.6		7.4			<LOD			0.15		181		<LOD	240
Post	22/07/2009	374		4.2		6.7			0.3			0.28		36	I.P	<LOD	252
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																	