

**Final Environmental Report**Period Ending: 24<sup>th</sup> June 2009

Compiled By: Aoife Reynolds &amp; Siobhán Quinn

Approved By: Tony Doyle

## 1 Monitoring Data

### 1.1 Monitoring Equipment

Axonics	<ul style="list-style-type: none"> <li>– 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.</li> </ul>
PO <sub>4</sub>	<ul style="list-style-type: none"> <li>– The PO<sub>4</sub> analyser was operational for the majority of the reporting period.</li> <li>– The composite sampler was in place to cover any shortfalls in the PO<sub>4</sub> analyser.</li> </ul>
TSS	<ul style="list-style-type: none"> <li>– The TSS analyser was operational during the reporting period.</li> </ul>
Composite	<ul style="list-style-type: none"> <li>– The composite sampler was operational during the reporting period.</li> <li>– Where there is loss of continuous monitoring data due to instrument faults or other issues composite sample data is provided on the graphs.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>– There is a single noise monitoring location currently being used – N1.</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>– There is a single vibration monitoring location currently being used – V1.</li> </ul>
Sondes	<ul style="list-style-type: none"> <li>– The results are displayed graphically. <ul style="list-style-type: none"> <li>○ Any unusual values are explained on the relevant graph.</li> <li>○ D22 &amp; D62 sondes were removed on the 9<sup>th</sup> of June due to insufficient water flow in the drain.</li> </ul> </li> </ul>
Weather Station	<ul style="list-style-type: none"> <li>– The data used for this reporting period was taken from the on-site meteorological station.</li> </ul>
Weirs	<ul style="list-style-type: none"> <li>– Weirs were operational during the reporting period.</li> <li>– Service of the weirs was undertaken on the 10<sup>th</sup> of June.</li> </ul>

### 1.2 Rainfall Data

11/06/2009	0.40	18/06/2009	4.00
12/06/2009	1.00	19/06/2009	0.40
13/06/2009	3.80	20/06/2009	0.40
14/06/2009	3.00	21/06/2009	2.80
15/06/2009	0.00	22/06/2009	0.00
16/06/2009	6.40	23/06/2009	0.40
17/06/2009	15.00	24/06/2009	1.20
Total Rainfall 38.80mm			

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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 38.80mm of rainfall during the reporting period, with a temperature range of 4.7°C to 24.4°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.



## Groundwater Monitoring Record Sheet

[illegible]

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

No groundwater monitoring during the reporting period.

Determinant Results							
	Date Positioned	Date Removed	Ref. Number	Date Dispatched	Date Returned	Weight (mg/m <sup>2</sup> /day)	Comments
<b>Target (Consent) Limit: 350 mg m<sup>2</sup> d<sup>-1</sup> on as a 30 day average</b>							
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	
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	19/06/2009	22/06/2009	177	
D2	20/05/2009	19/06/2009	217839	19/06/2009	22/06/2009	114	
D3	20/05/2009	19/06/2009	217840	19/06/2009	22/06/2009	167	
D4	20/05/2009	19/06/2009	217841	19/06/2009	22/06/2009	167	
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)

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## Day Time Noise Monitoring Record Sheet

Determinant Results
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Location	Air Temp. (Min)	Air Temp. (Max)	Start Date	Time	Duration	Serial No.	Wind		Results dB			*Comments
							Speed (m/s)*	Direction (Degrees)	L <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Amin</sub>	
Action Limit									60			
Target Limit									65			
N1	4.7	14.7	11/06/2009	08:00:00	14:00:00	2539533	2.3	122.9	48.3	83.5	30.0	
N1	6.9	17.6	12/06/2009	08:00:00	14:00:00	2539533	3.5	139.1	50.3	75.1	30.0	
N1	10.3	16.7	13/06/2009	08:00:00	14:00:00	2539533	3.5	184.4	47.6	69.8	30.0	
N1	9.7	17.5	14/06/2009	08:00:00	14:00:00	2539533	1.9	139.4	44.5	71.0	30.0	
N1	6.4	18.0	15/06/2009	08:00:00	14:00:00	2539533	1.7	160.0	47.6	80.8	30.0	
N1	4.8	18.1	16/06/2009	08:00:00	14:00:00	2539533	3.8	201.5	47.8	76.2	30.0	
N1	10.3	14.5	17/06/2009	08:00:00	14:00:00	2539533	4.2	258.7	47.5	73.1	30.0	
N1	9.9	14.1	18/06/2009	08:00:00	14:00:00	2539533	6.5	260.3	50.1	76.4	32.3	Values impacted by high wind speeds.
N1	10.5	14.8	19/06/2009	08:00:00	14:00:00	2539533	5.4	285.9	46.0	76.5	30.9	
N1	11.1	14.7	20/06/2009	08:00:00	14:00:00	2539533	4.1	289.1	41.7	66.9	30.0	
N1	12.1	16.1	21/06/2009	08:00:00	14:00:00	2539533	2.6	267.6	41.4	65.3	30.0	
N1	11.2	20.6	22/06/2009	08:00:00	14:00:00	2539533	1.9	218.0	44.9	71.1	30.0	
N1	10.0	24.4	23/06/2009	08:00:00	14:00:00	2539533	1.5	221.7	56.9	94.1	30.0	
N1	14.0	23.5	24/06/2009	08:00:00	14:00:00	2539533	2.2	135.1	50.5	74.1	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

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 <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Amin</sub>	
Action Limit									50			
Target Limit									55			
N1	4.7	14.7	11/06/2009	22:00:00	10:00:00	2539533	2.3	122.9	48.3	83.5	30.0	
N1	6.9	17.6	12/06/2009	22:00:00	10:00:00	2539533	3.5	139.1	50.3	75.1	30.0	
N1	10.3	16.7	13/06/2009	22:00:00	10:00:00	2539533	3.5	184.4	47.6	69.8	30.0	
N1	9.7	17.5	14/06/2009	22:00:00	10:00:00	2539533	1.9	139.4	44.5	71.0	30.0	
N1	6.4	18.0	15/06/2009	22:00:00	10:00:00	2539533	1.7	160.0	47.6	80.8	30.0	
N1	4.8	18.1	16/06/2009	22:00:00	10:00:00	2539533	3.8	201.5	47.5	73.1	30.0	
N1	10.3	14.5	17/06/2009	22:00:00	10:00:00	2539533	4.2	258.7	50.1	76.4	32.3	
N1	9.9	14.1	18/06/2009	22:00:00	10:00:00	2539533	6.5	260.3	46.0	76.5	30.9	Values impacted by high wind speeds.
N1	10.5	14.8	19/06/2009	22:00:00	10:00:00	2539533	5.4	285.9	41.7	66.9	30.0	Values impacted by high wind speeds.
N1	11.1	14.7	20/06/2009	22:00:00	10:00:00	2539533	4.1	289.1	41.4	65.3	30.0	
N1	12.1	16.1	21/06/2009	22:00:00	10:00:00	2539533	2.6	267.6	44.9	71.1	30.0	
N1	11.2	20.6	22/06/2009	22:00:00	10:00:00	2539533	1.9	218.0	56.9	94.1	30.0	Values impacted by rainfall.
N1	10.0	24.4	23/06/2009	22:00:00	10:00:00	2539533	1.5	221.7	41.7	64.6	30.0	
N1	14.0	23.5	24/06/2009	22:00:00	10:00:00	2539533	2.2	135.1	42.9	69.8	30.0	

\* 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)
11/06/2009	0.10	0.09	0.10	-0.13	-1.28	-1.01
12/06/2009	0.11	0.10	0.11	-1.23	-1.38	-1.32
13/06/2009	0.20	0.11	0.13	-1.38	-1.48	-1.43
14/06/2009	0.20	0.14	0.16	-1.43	-1.48	-1.47
15/06/2009	0.15	0.12	0.14	-1.28	-1.53	-1.50
16/06/2009	0.59	0.10	0.15	-1.28	-1.48	-1.39
17/06/2009	6.12	0.41	1.85	1.03	-1.38	-0.45
18/06/2009	5.35	1.83	3.57	-0.08	-1.03	-0.45
19/06/2009	3.32	0.21	1.02	-0.18	-1.28	-1.06
20/06/2009	5.23	2.96	3.72	0.36	-0.43	-0.19
21/06/2009	4.21	3.70	4.02	-0.08	-0.33	-0.16
22/06/2009	4.43	1.31	3.58	-0.03	-0.33	-0.11
23/06/2009	4.32	0.18	1.96	-0.08	-1.18	-0.61
24/06/2009	2.88	0.27	0.80	-1.18	-1.28	-1.25

**Note:** Negative values indicate low flow conditions.



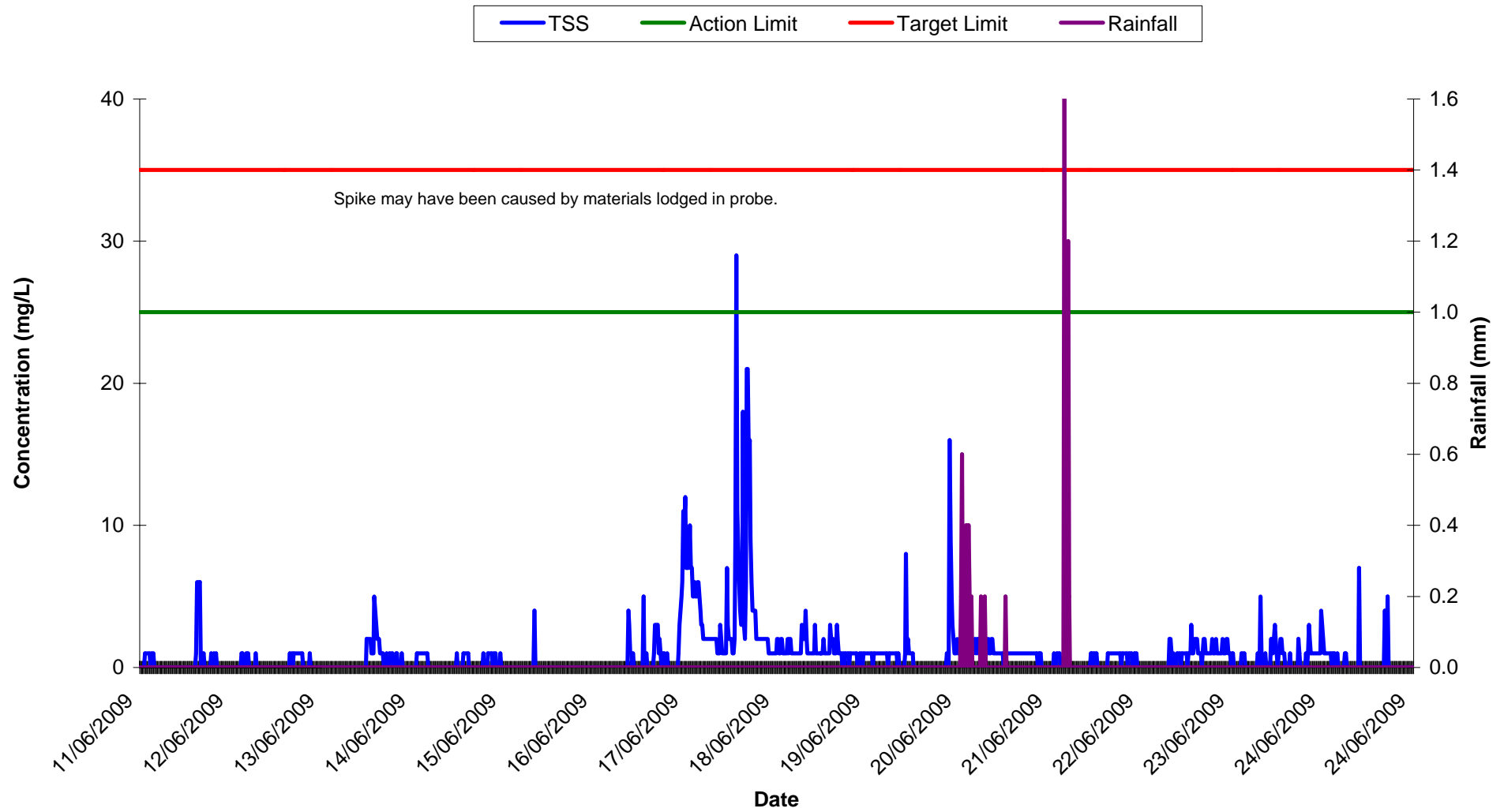
## Vibration Monitoring Record Sheet

Determinant Results	
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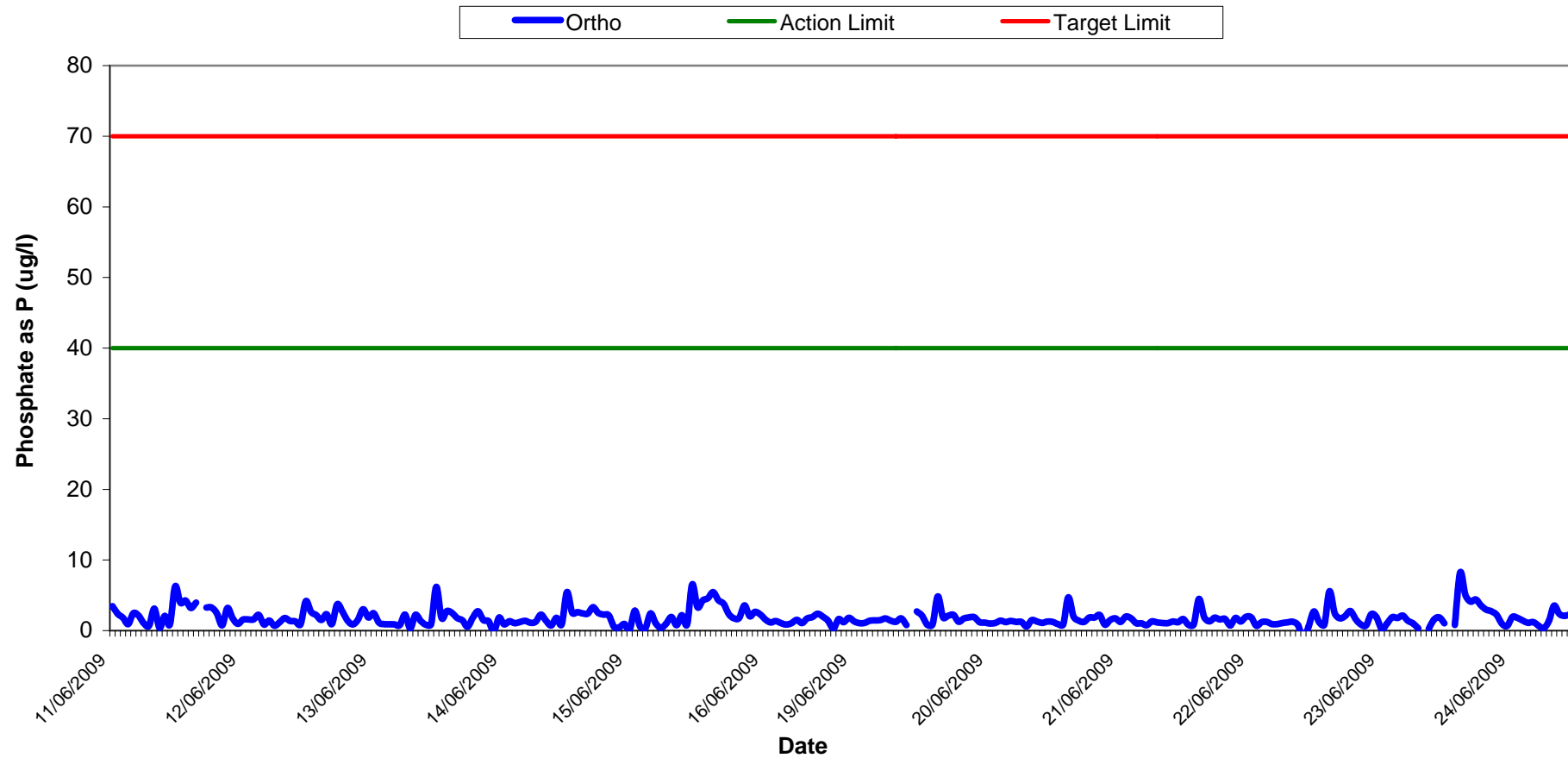
[illegible]

Vibration meter located at V1.

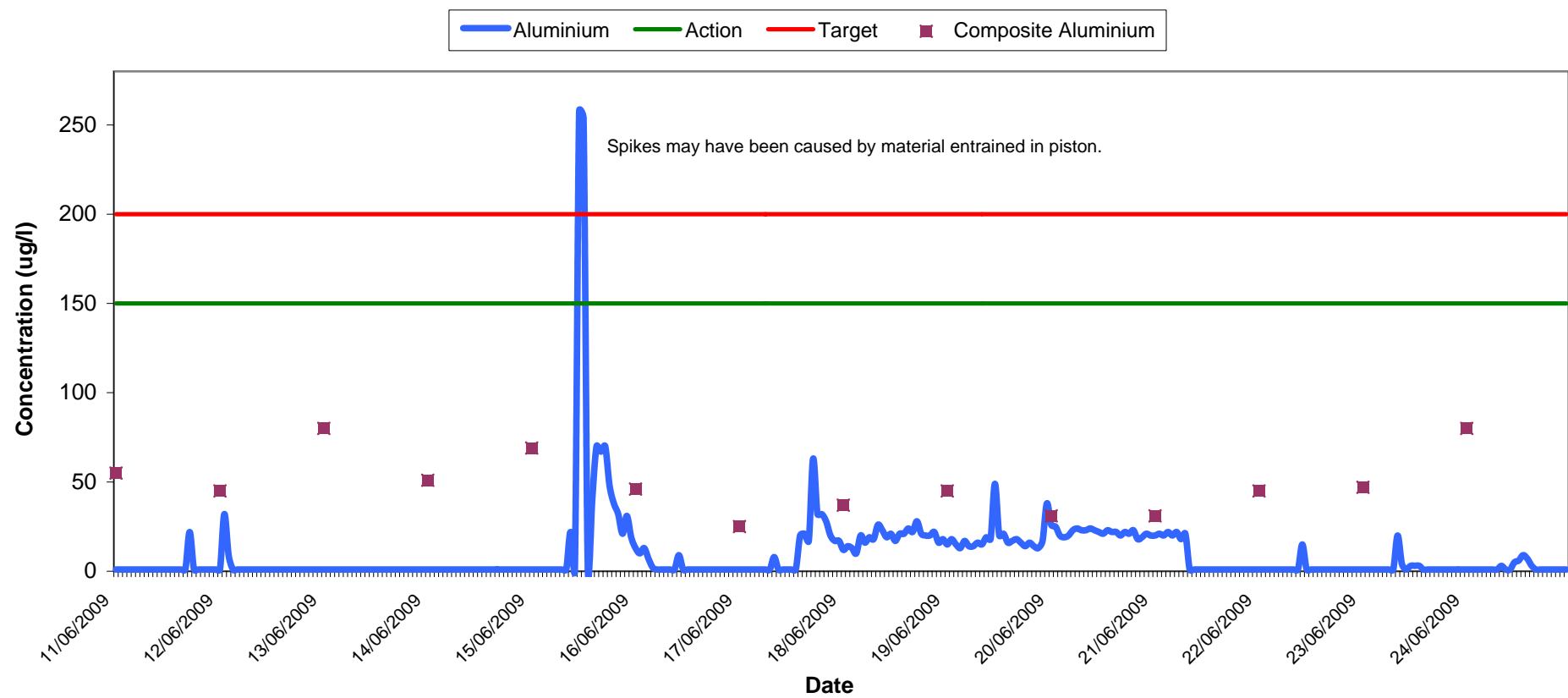
### Total Suspended Solids at SP1 Week 24-25



**Orthophosphate Results at SP1  
Wk 24-25**



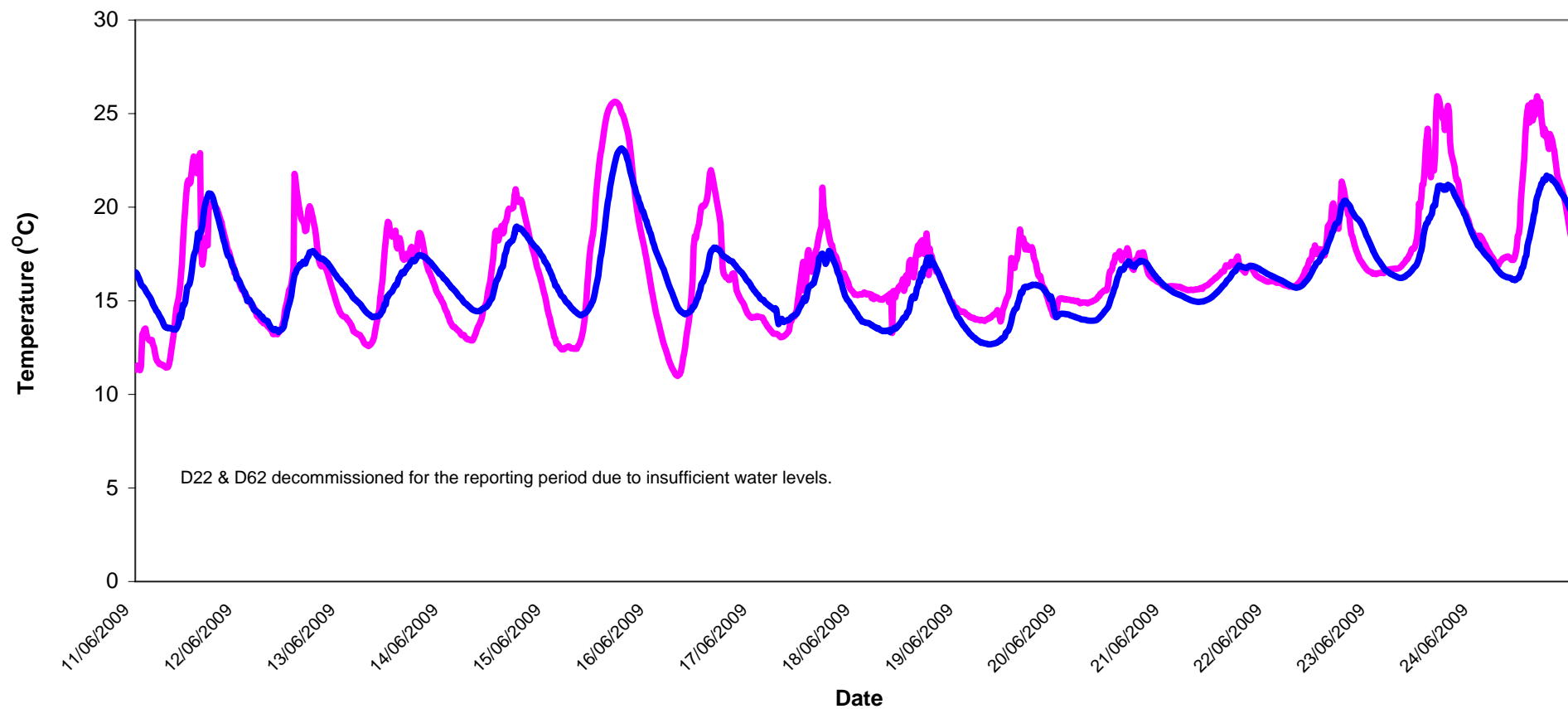
# Aluminium Concentration at SP1 Wk 24-25



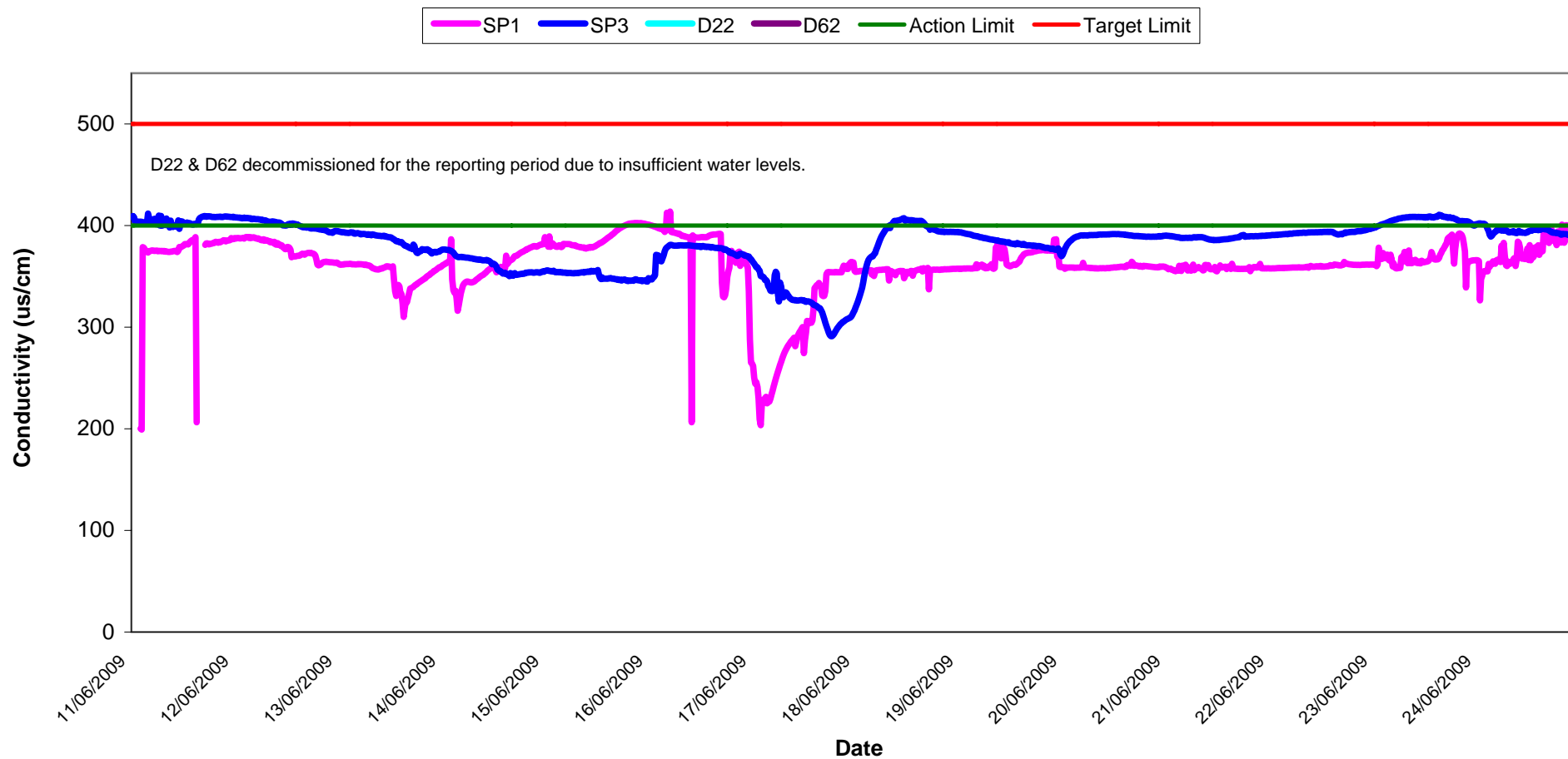
# Temperature - Surface Waters

## Wk 24-25

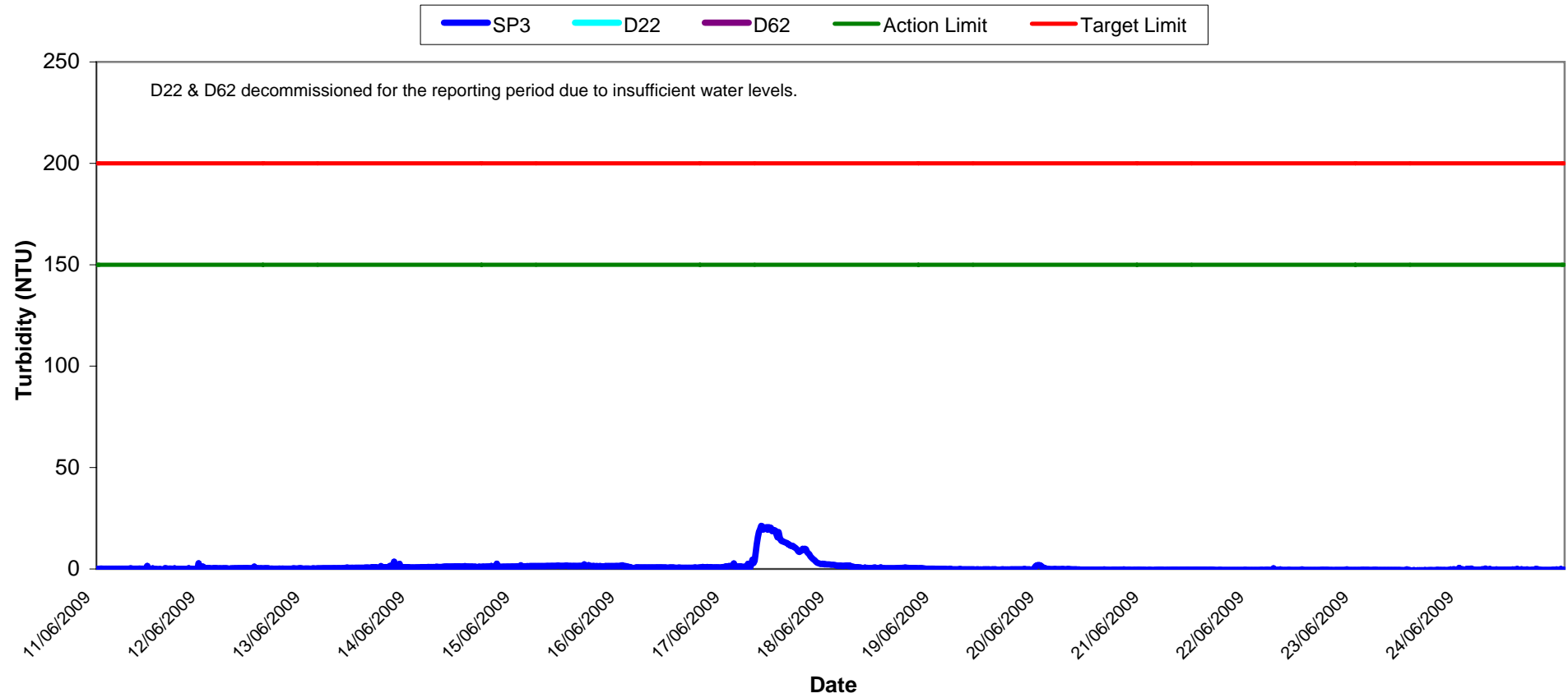
SP1 SP3 D22 D62



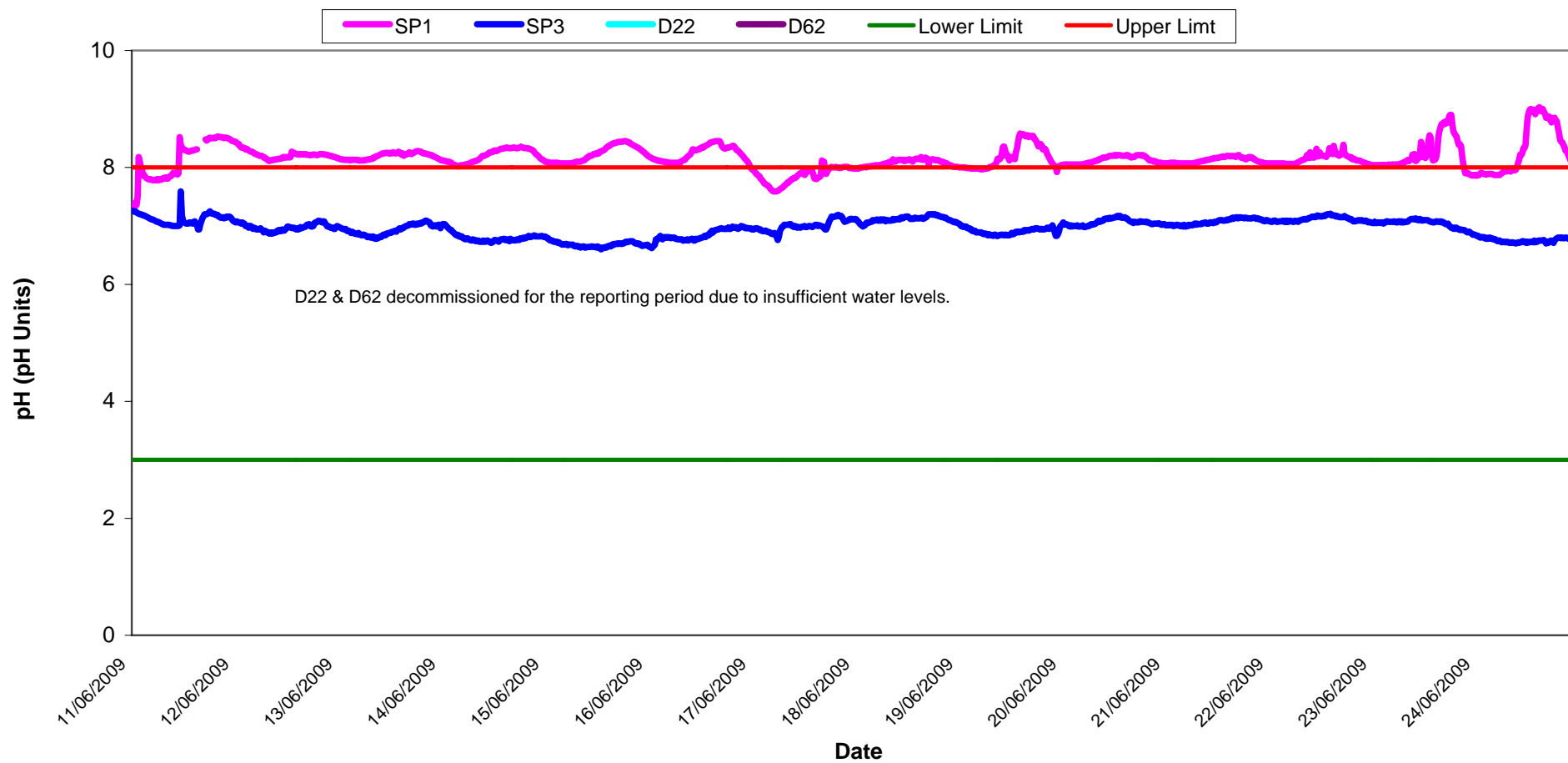
# Conductivity - Surface Waters, Wk 24-25



## Turbidity - Surface Waters Wk 24-25

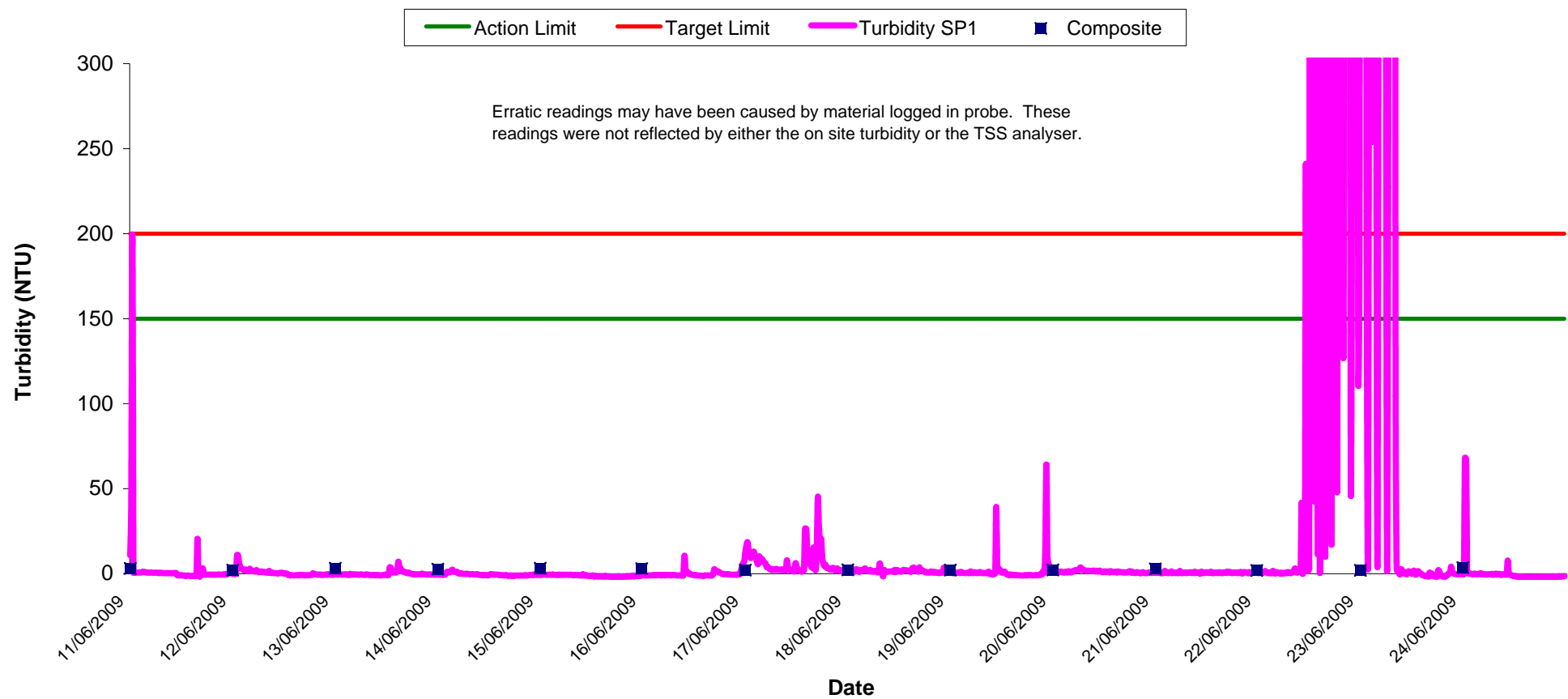


# pH - Surface Waters Wk 24-25

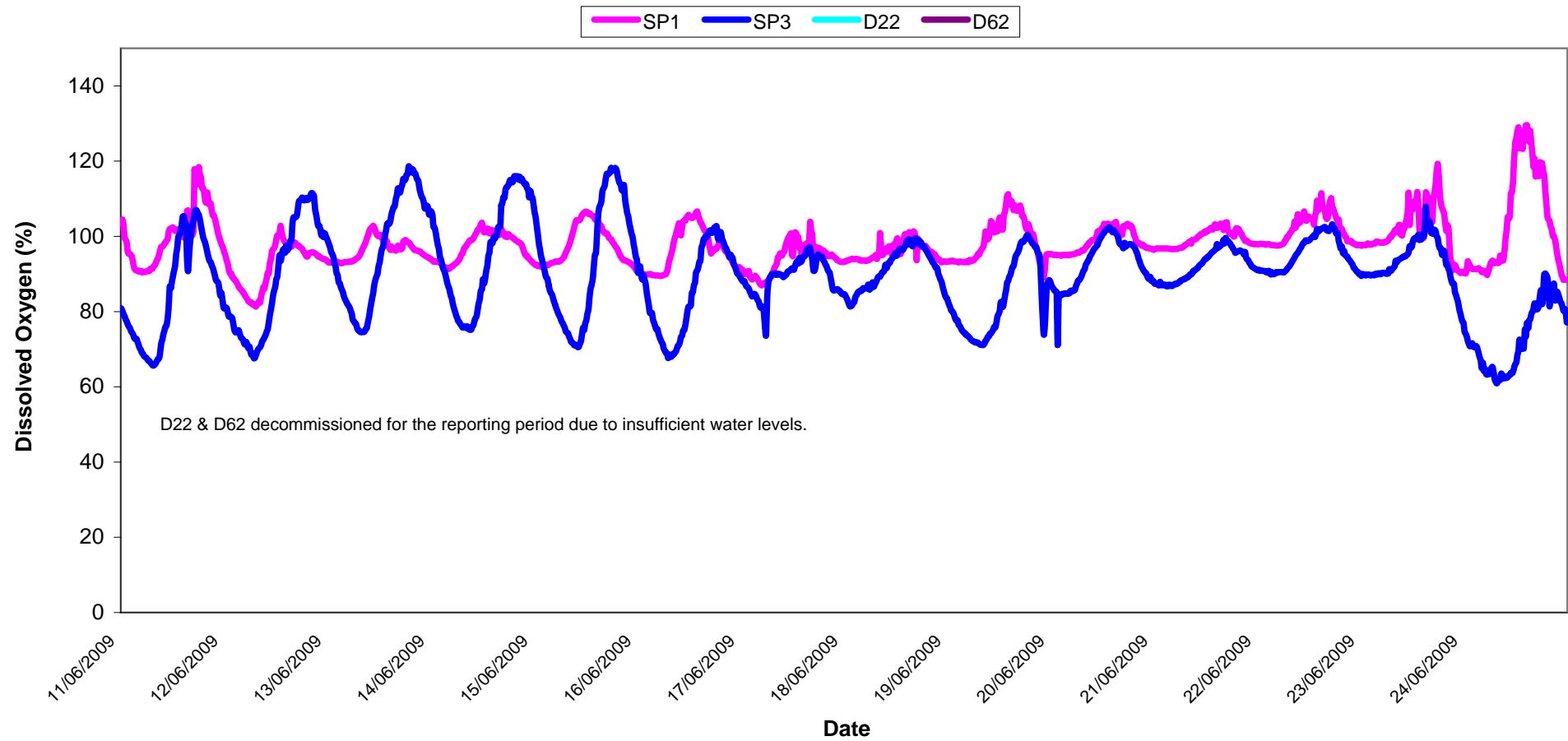




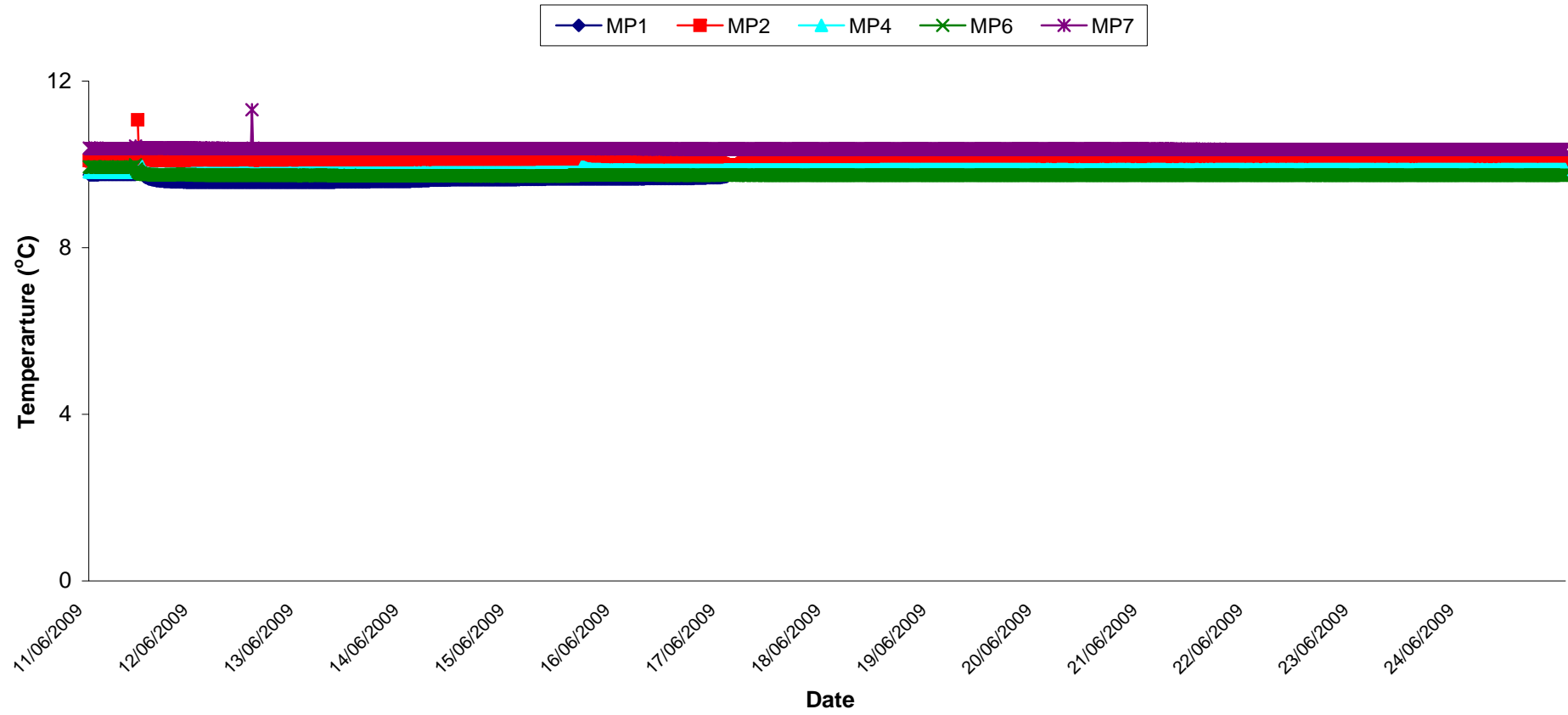
## Turbidity - Surface Waters @ SP1, Wk 24-25



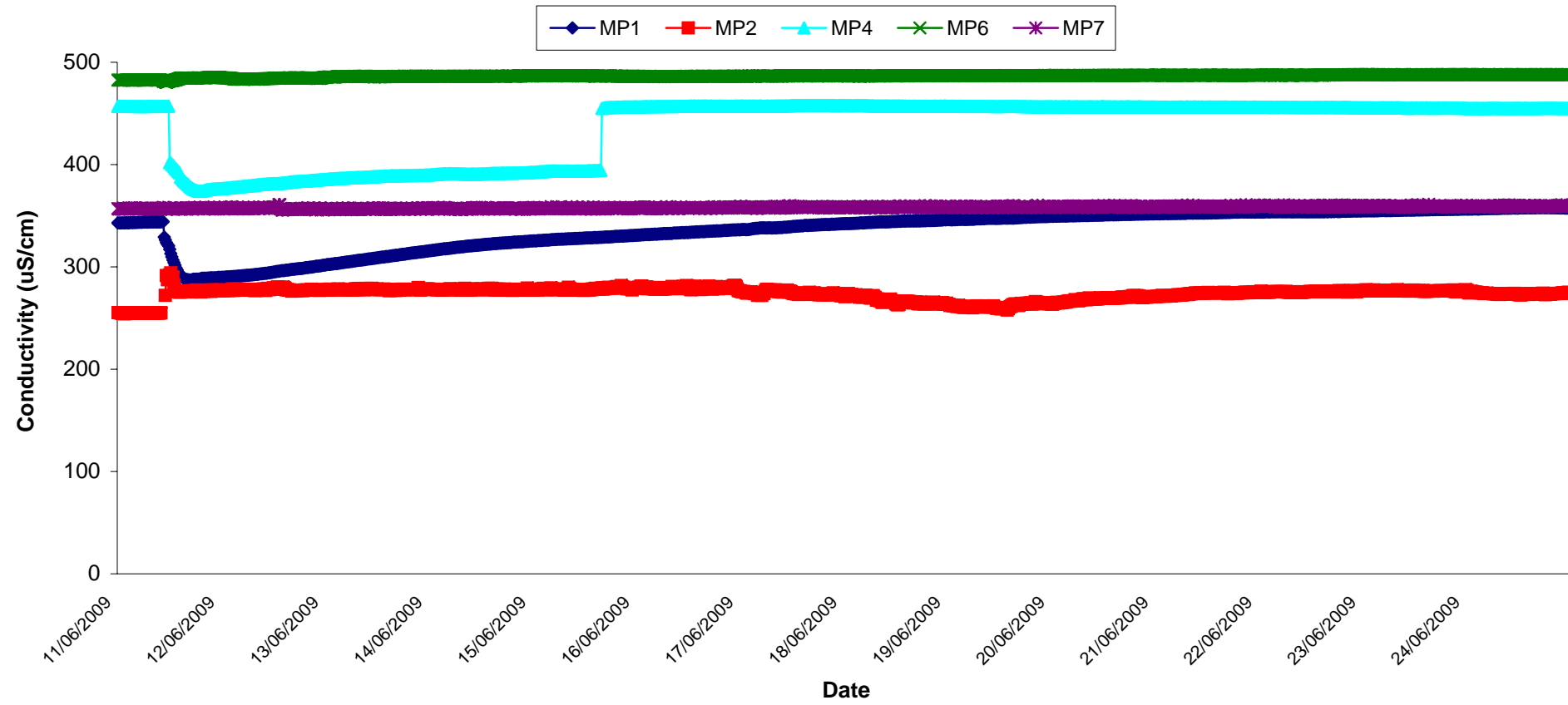
# Dissolved Oxygen - Surface Waters, Wk 24-25



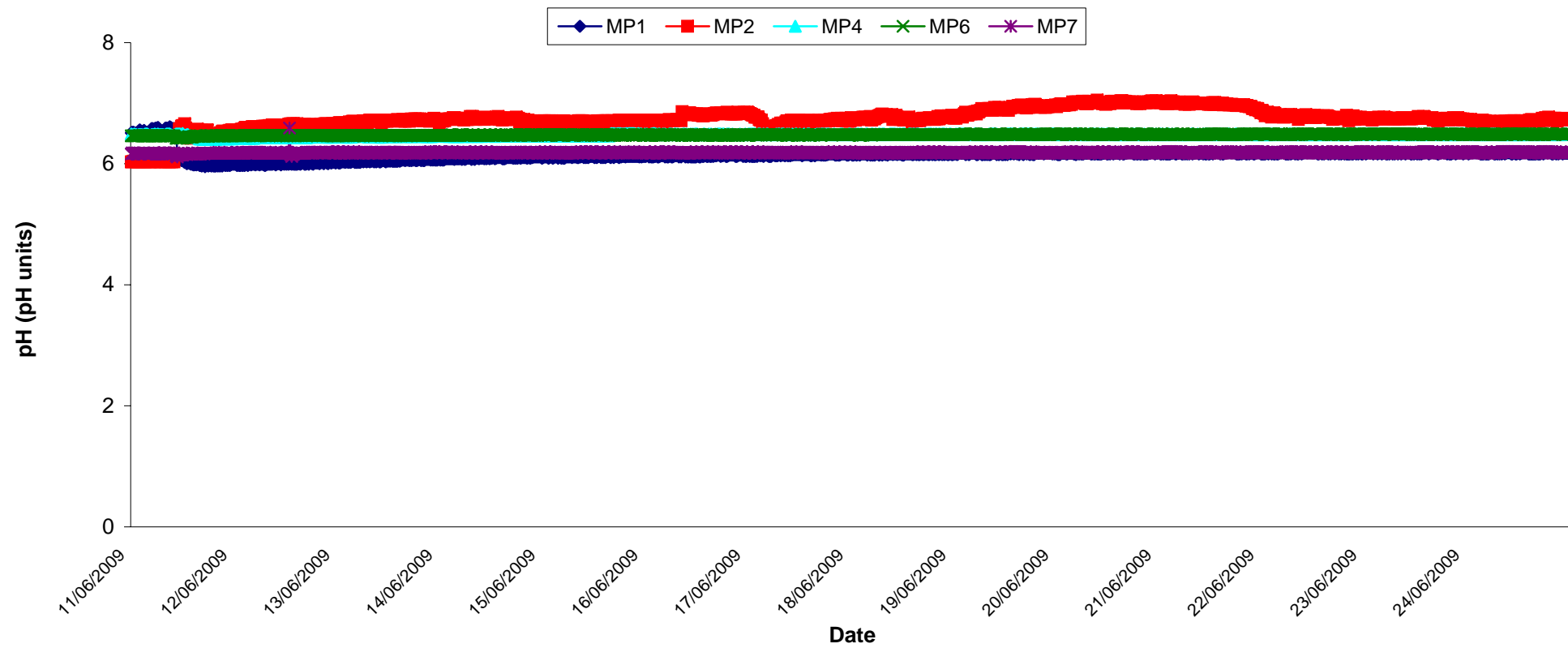
# Temperature - Groundwaters Wk 24-25



# Conductivity - Groundwaters Wk 24-25



pH - Groundwaters  
Wk 24-25



# **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 <sup>-1</sup>	Ortho- phosphate as P µg l <sup>-1</sup>	Nitrate as N mg l <sup>-1</sup>	Nitrate as NO <sub>3</sub> mg l <sup>-1</sup>	Total Phosphorus as P mg l <sup>-1</sup>	Ammonia as NH <sub>3</sub> -N mg l <sup>-1</sup>	Nitrite as NO <sub>2</sub> mg/l	Aluminium (dissolved) ug/l	Aluminium (total) ug/l	Phosphate as PO <sub>4</sub> mg/l	Total dissolved solids mg/l
Settlement Pond Monitoring																	
SP1	11/06/2009	374	14.9	6.0	89.1	7.5			0.1			0.7		25	41	1.65	253
SP1	12/06/2009	387	14.1	5.6	78.7	7.8			<LOD			0.0		<LOD	27	0.61	261
SP1	15/06/2009	372	15.0	4.0	86.0	7.5			0.4			2.4		<LOD	40	3.20	244
SP1	16/06/2009	385	16.7	3.5	90.4	7.8			0.1			0.0		<LOD	<LOD	1.35	251
SP1	17/06/2009	264	14.2	6.8	85.5	7.3			<LOD			0.2		<LOD	53	0.87	177
SP1	18/06/2009	360	16.8	5.8	94.2	6.5			0.1			0.3		<LOD	36	1.27	242
SP1	19/06/2009	367	14.8	4.1	91.5	7.7			0.2			0.0		<LOD	34	0.30	244
SP1	22/06/2009	370	16.8	7.4	97.0	6.7			0.5			0.1		30	53	1.58	245
SP1	23/06/2009	375	18.2	5.0	96.2	7.0			0.5			0.1		29	37	0.36	248
SP3	11/06/2009	393	15.7	16.4	82.8	7.3			0.1			1.4		<LOD		0.88	263
SP3	12/06/2009	400	13.3	3.0	74.3	7.2			0.3			<LOD		<LOD		<LOD	268
SP3	15/06/2009	357	14.3	7.5	61.8	6.3			0.2			0.33		<LOD		2.62	240
SP3	16/06/2009	374	15.5	4.6	74.7	7.5			0.3			0.02		<LOD		0.03	251
SP3	17/06/2009	325	14.4	32.6	85.5	7.4			<LOD			0.74		<LOD		0.18	219
SP3	18/06/2009	400	17.0	4.7	92.6	6.8			0.3			0.12		<LOD		0.04	270
SP3	19/06/2009	389	13.4	1.6	73.1	6.4			0.4			0.41		<LOD		1.05	258
SP3	22/06/2009	398	16.5	2.4	91.6	6.7			0.3			0.13		<LOD		0.04	263
SP3	23/06/2009	410	19.0	2.9	87.8	6.9			0.2			0.10		<LOD		0.09	270
Additional Monitoring																	
D22	16/06/2009	265	13.6	26.1	85.3	6.0			<LOD			0.84		<LOD		0.36	178
D22	23/06/2009	300	16.9	8.3	87.4	6.9			<LOD			0.57		<LOD		0.75	200
D62	16/06/2009	192	12.5	4.5	63.8	4.9			<LOD			0.87		35		0.13	125
D62	23/06/2009	209	21.7	8.5	90.0	5.9			<LOD			0.96		52		0.85	139
Axonics Monitoring																	
Pre	11/06/2009	375		60.3		7.4			<LOD			0.11		180		0.02	255
Post	11/06/2009	418		8.3		7.1			0.3			1.10		114	297	<LOD	281
Pre	12/06/2009	No sample as plant not operational															
Post	12/06/2009	No sample as plant not operational															
Pre	15/06/2009	456		283.0		7.6			<LOD			0.60		>LOD		0.09	304
Post	15/06/2009	431		12.9		7.1			0.1			0.30		47	259	<LOD	289
Pre	16/06/2009	445		186.0		7.5			<LOD			0.93		490		0.42	300
Post	16/06/2009	475		17.7		7.1			0.4			0.32		40	>LOD	0.59	316
Pre	17/06/2009	433		230.0		6.8			<LOD			0.29		355		0.12	292
Post	17/06/2009	465		15.2		7.0			0.2			0.13		30	462	0.03	311
Pre	18/06/2009	384		111.0		7.0			<LOD			0.09		247		0.33	258
Post	18/06/2009	413		6.6		6.7			0.2			0.54		<LOD	295	0.80	278
Pre	19/06/2009	376		49.0		6.8			0.1			1.89		313		0.01	251
Post	19/06/2009	412		15.0		6.6			0.2			0.04		43	>LOD	0.05	273
Pre	22/06/2009	400		289.0		6.9			<LOD			0.30		486		<LOD	265
Post	22/06/2009	417		6.8		6.1			0.4			0.14		26	261	1.00	276
Pre	23/06/2009	No sample as plant not operational															
Post	23/06/2009	No sample as plant not operational															
Grey shaded areas denote parameters that cannot or were not analysed on-site.																	
= Indicative Only																	
= Below Limit of Detection																	
= Above Limit of Detection																	