

General

- Data from Leary’s Brook monitoring station is monitored by the Water Resources Management Division staff.
- This monthly deployment report interprets the data from the Leary Brook real-time water quality station for the period of October 23 to November 20, a period of 27 days.
- Leary Brook station operational status was nominal over the deployment period; no communications dropouts or malfunctions were detected. Hydrolab Datasonde 5X s/n 44975 was in place for this time period.

Maintenance and Calibration of Instrument

- As part of the removal and reinstallation process, parameters are recorded from both the field sonde (in situ) and a similar, newly-calibrated QA sonde (placed side by side). The parameters from both instruments are compared and their variability is ranked as part of the QA/QC protocol (see Table 1).
- Upon installation all parameters were ranked as “Excellent” except conductivity which ranked as “Good”. Upon removal, once again, all parameters were ranked “Excellent” except conductivity which ranked as “Good”.

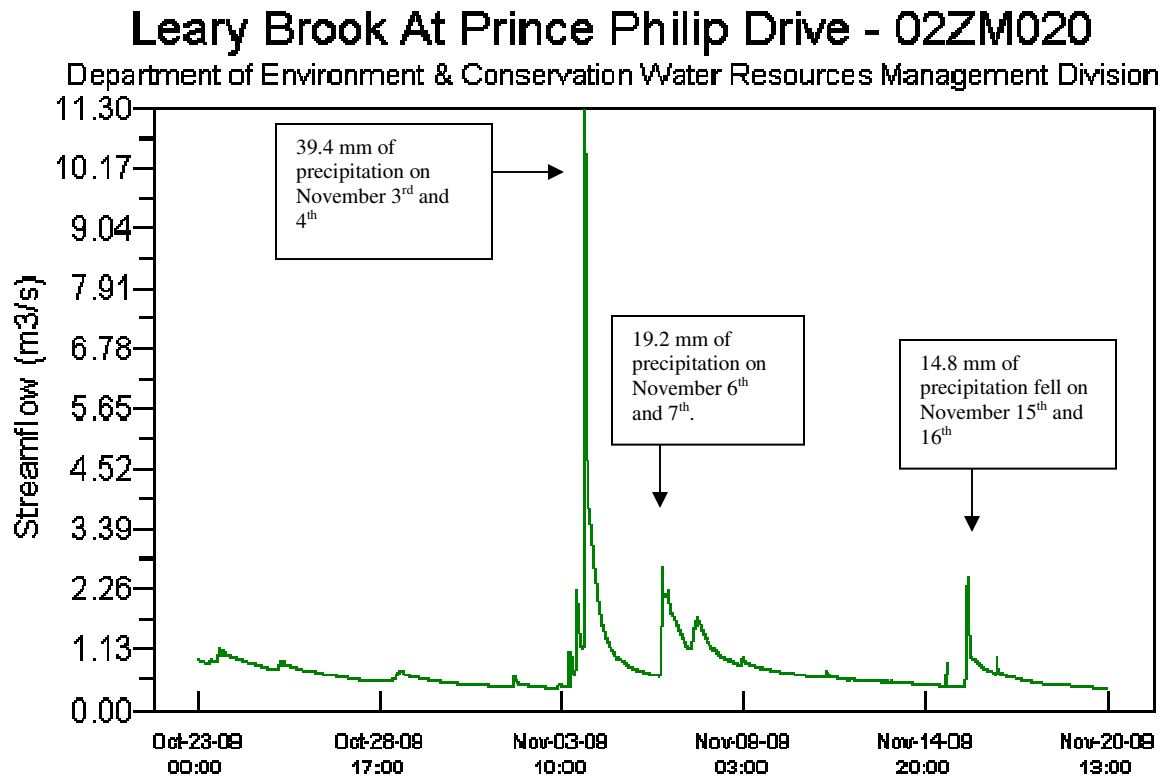
Station	Date	Action	Instrument Comparison Ranking				
			Temperature	pH	Conductivity	Dissolved Oxygen	Turbidity
Leary’s Brook at Prince Philip Drive	Oct 23 rd , 2009	Removal	Good	Marginal	Excellent		Poor
	Nov 20 th , 2009	Deployment	Good	Good	Excellent		Excellent

- During calibration of the QAQC instrument (s/n 46319) the DO sensor operated nominally and recorded values normally in the lab. During the field QAQC process, however, the sensor displayed values of “0” for both DO mg/l and % Saturation.

Data Interpretation

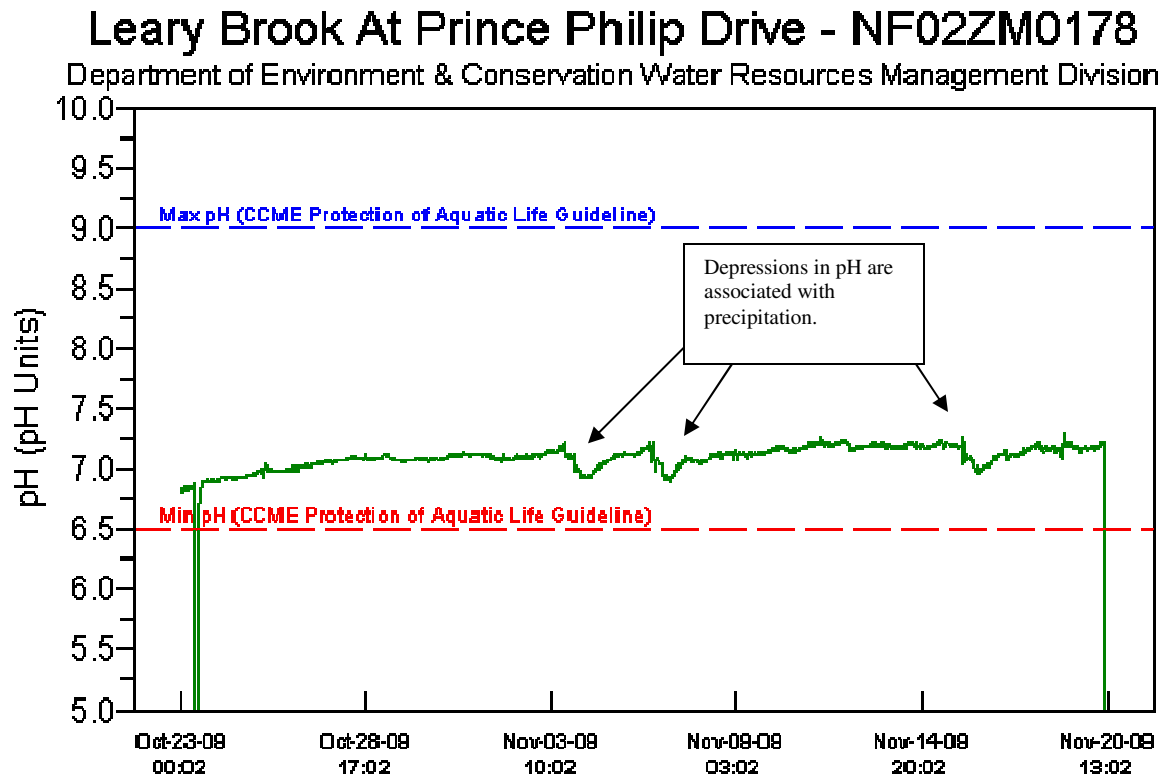
- During the deployment period of October 23rd to November 20th, three rain events in particular caused notable spikes in stream flow at the gauging station on Leary’s Brook. On November 3rd and 4th, a total of 39.4 mm of precipitation fell, causing a deployment maximum of 11.30 m³/s, corresponding to 11300 L/s. Two smaller stream flow peaks occurred on November 6th and 7th and November 15th and 16th when 19.2 mm and 14.8 mm of precipitation fell, respectively.

Figure 1: Streamflow at Leary's Brook from October 23rd to November 20th.



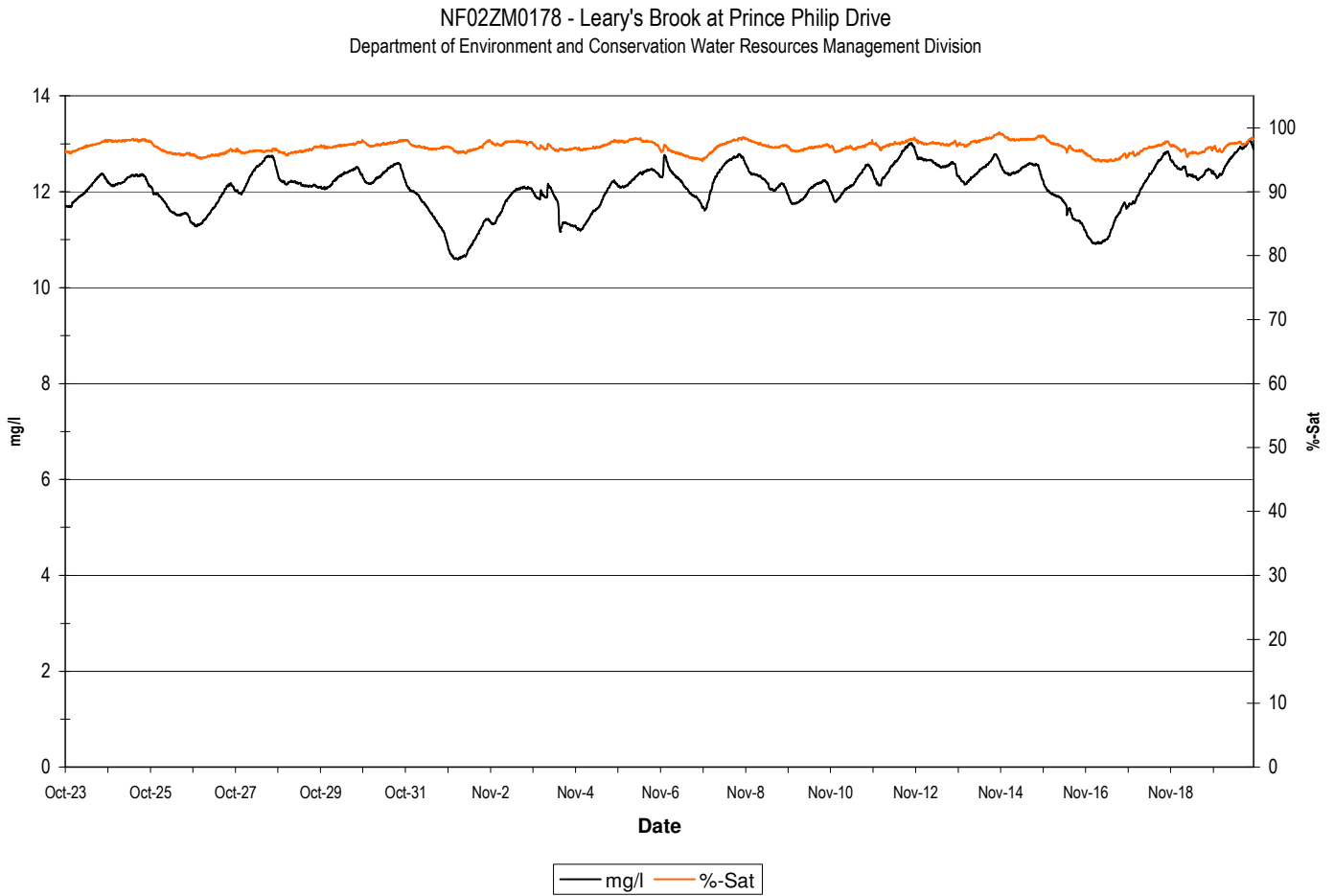
- A seasonal, but marginal, decline is seen in water temperature during the deployment interval. Water temperature reached a maximum of 10.3C and minimum of 2.72C during the deployment.

Figure 3: pH at Leary's Brook from October 23rd to November 20th.



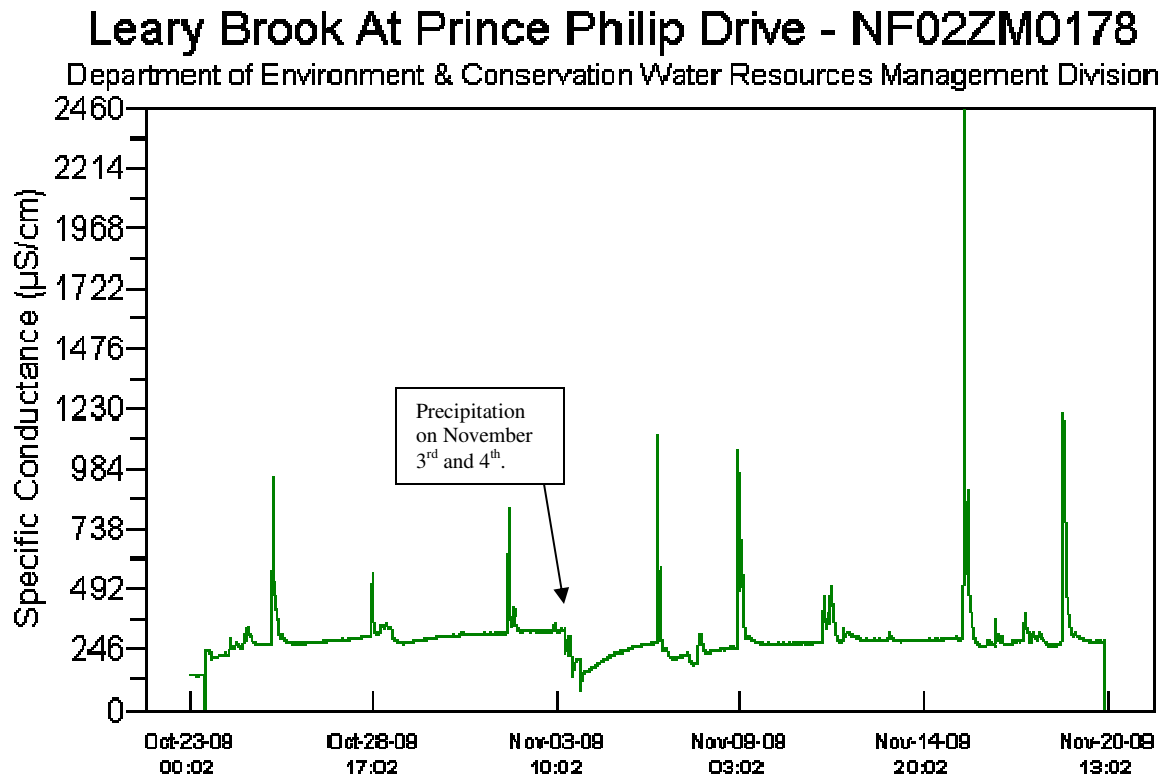
- Dissolved Oxygen saturation remained near 100% during the deployment period with values ranging from 99.3% to 94.7%. Concentration of dissolved oxygen ranged from 13.07mg/l to 10.59mg/l.

Figure 4: Dissolved Oxygen at Leary's Brook from October 23rd to November 20th.



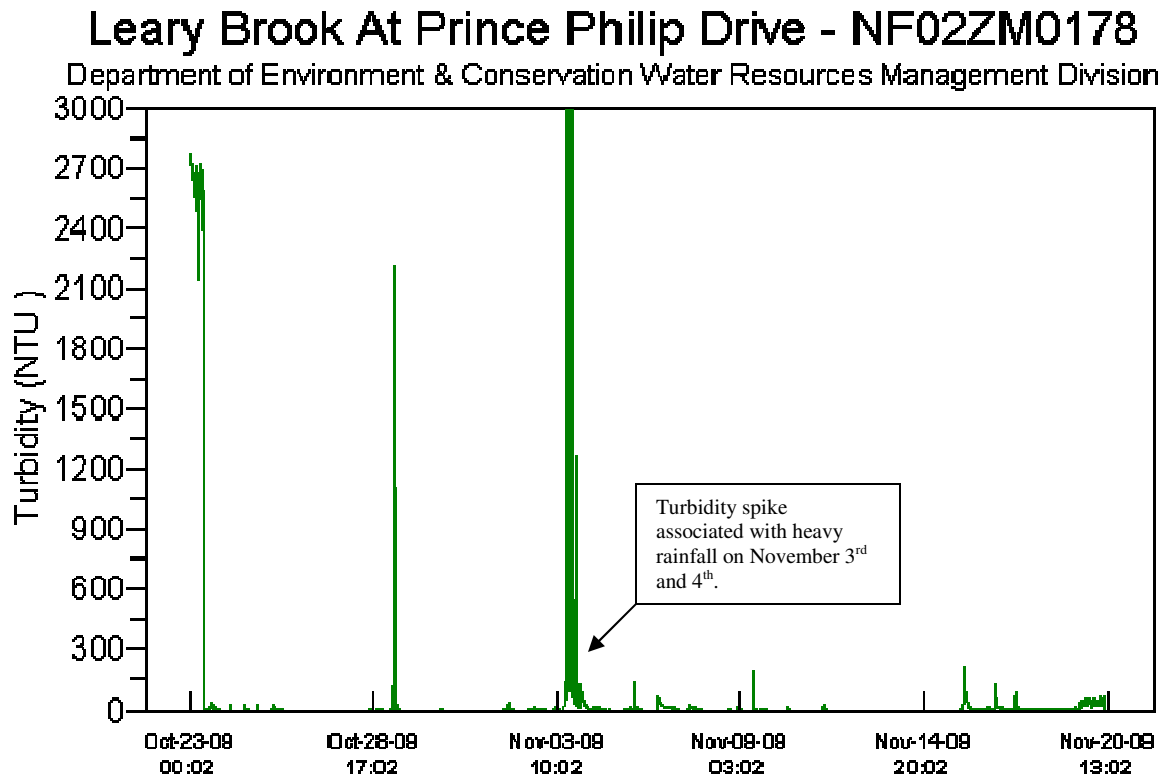
- Given the characteristics of the watershed above Leary's Brook with large amounts of impermeable surfaces, Leary's Brook sees a rapid flushing even during small rain events. With such a large amount of water flowing through the system in a short amount of time, large amounts of dissolved solids cause spikes in the graph of specific conductivity, especially in winter, due to road salt application.

Figure 5: Specific Conductance at Leary's Brook from October 23rd to November 20th.



- Turbidity at Leary's Brook was generally low with periodic spikes related to rainfall events. The spikes are usually of short duration and can increase to as high as 3000 NTU, probably due to inundation by sediment or air entrainment in heavy flow.

Figure 6: Turbidity at Leary's Brook from October 23rd to November 20th.



Appendix

Daily Data Report for October 2009

<u>Day</u>	<u>Max Temp</u> °C	<u>Min Temp</u> °C	<u>Mean Temp</u> °C	<u>Heat Deg Days</u> °C	<u>Cool Deg Days</u> °C	<u>Total Rain</u> mm	<u>Total Snow</u> cm	<u>Total Precip</u> mm	<u>Snow on Grnd</u> cm	<u>Dir of Max Gust</u> 10's Deg	<u>Spd of Max Gust</u> km/h
01†	20.7	12.4	16.6	1.4	0.0	15.2	0.0	15.2			<31
02†	13.9	12.0	13.0	5.0	0.0	34.8	0.0	34.8		26	46
03†	13.2	7.1	10.2	7.8	0.0	1.8	0.0	1.8		31	56
04†	8.6	5.8	7.2	10.8	0.0	1.0	0.0	1.0		32	50
05†	10.3	5.8	8.1	9.9	0.0	9.6	0.0	9.6		16	54
06†	15.0	9.8	12.4	5.6	0.0	7.6	0.0	7.6		24	41
07†	12.1	7.2	9.7	8.3	0.0	T	0.0	T		28	57
08†	8.4	6.9	7.7	10.3	0.0	44.4	0.0	44.4		3	61
09†	8.9	6.7	7.8	10.2	0.0	8.2	0.0	8.2		31	41
10†	8.2	0.0	4.1	13.9	0.0	1.8	0.0	1.8		36	37
11†	8.8	4.9	6.9	11.1	0.0	6.8	0.0	6.8		30	63
12†	7.5	4.1	5.8	12.2	0.0	2.2	0.0	2.2		29	61
13†	10.1	3.3	6.7	11.3	0.0	0.0	0.0	0.0		29E	32E
14†	5.2	0.7	3.0	15.0	0.0	41.2	5.2	46.4	2	31E	104E
15†	8.4	1.1	4.8	13.2	0.0	0.0	0.0	0.0		30	65
16†	8.4	-0.5	4.0	14.0	0.0	23.0	0.0	23.0		11	67
17†	10.7	3.0	6.9	11.1	0.0	30.6	0.0	30.6		12	83
18†	4.6	0.1	2.4	15.6	0.0	0.4	0.0	0.4			<31
19†	8.6	1.1	4.9	13.1	0.0	14.0	0.0	14.0		13	54
20†	7.4	2.4	4.9	13.1	0.0	2.0	0.0	2.0		3	41
21†	5.5	2.9	4.2	13.8	0.0	3.0	0.0	3.0			<31
22†	5.1	0.1	2.6	15.4	0.0	1.0	0.0	1.0			<31
23†	2.8	0.8	1.8	16.2	0.0	5.0	0.8	5.8	T	35	59
24†	2.6	-0.3	1.2	16.8	0.0	0.0	0.2	0.2	T	35	59
25†	10.7	0.1	5.4	12.6	0.0	3.6	0.0	3.6		19	59
26†	8.4	0.1	4.3	13.7	0.0	1.0	T	1.0		29	67
27†	2.2	-2.0	0.1	17.9	0.0	0.0	0.0	0.0		32	65
28†	3.2	-1.7	0.8	17.2	0.0	0.6	0.6	1.2	T	32	74
29†	3.3	-0.2	1.6	16.4	0.0	2.8	T	2.8	T	35	54
30†	4.7	-1.4	1.7	16.3	0.0	0.0	0.0	0.0			<31
31†	12.8	-0.5	6.2	11.8	0.0	T	0.0	T		24	78
Sum				381.0	0.0	261.6	6.8	268.4			
Avg	8.4	3	5.68								
Xtrm	20.7	-2.0								31E	104E

Daily Data Report for November 2009

<u>Day</u>	<u>Max Temp</u> °C	<u>Min Temp</u> °C	<u>Mean Temp</u> °C	<u>Heat Deg Days</u> °C	<u>Cool Deg Days</u> °C	<u>Total Rain</u> mm	<u>Total Snow</u> cm	<u>Total Precip</u> mm	<u>Snow on Grnd</u> cm	<u>Dir of Max Gust</u> 10's Deg	<u>Spd of Max Gust</u> km/h
<u>01†</u>	17.1	6.7	11.9	6.1	0.0	2.8	0.0	2.8		25	85
<u>02†</u>	6.7	1.1	3.9	14.1	0.0	0.0	0.0	0.0		7	32
<u>03†</u>	12.5	1.3	6.9	11.1	0.0	24.0	0.0	24.0		21	54
<u>04†</u>	14.8	2.3	8.6	9.4	0.0	15.4	0.0	15.4		28	52
<u>05†</u>	5.2	-1.6	1.8	16.2	0.0	0.0	0.0	0.0		29	59
<u>06†</u>	5.1	-0.6	2.3	15.7	0.0	13.2	2.2	15.4	T	10E	76E
<u>07†</u>	5.6	-1.3	2.2	15.8	0.0	3.4	0.4	3.8	T	34	74
<u>08†</u>	6.5	-2.2	2.2	15.8	0.0	2.6	0.0	2.6		24	46
<u>09†</u>	7.7	3.5	5.6	12.4	0.0	0.6	0.0	0.6		28	56
<u>10†</u>	7.7	-2.5	2.6	15.4	0.0	0.0	0.0	0.0			<31
<u>11†</u>	5.2	-2.8	1.2	16.8	0.0	0.0	1.8	1.8	1	35	44
<u>12†</u>	3.2	-2.8	0.2	17.8	0.0	0.0	0.0	0.0	1	32E	41E
<u>13†</u>	5.6	0.2	2.9	15.1	0.0	0.0	T	T	T	30E	44E
<u>14†</u>	7.4	-1.0	3.2	14.8	0.0	0.0	0.0	0.0		27	46
<u>15†</u>	10.0	3.9	7.0	11.0	0.0	9.4	0.0	9.4		27	57
<u>16†</u>	13.2	4.2	8.7	9.3	0.0	5.4	0.0	5.4		25	61
<u>17†</u>	4.4	-0.9	1.8	16.2	0.0	1.0	0.8	1.8	T	29	70
<u>18†</u>	3.6	-2.1	0.8	17.2	0.0	0.2	0.0	0.2	T	30	54
<u>19†</u>	2.9	-3.5	-0.3	18.3	0.0	0.0	T	T		34	61
<u>20†</u>	6.7	-2.7	2.0	16.0	0.0	0.0	0.0	0.0		27	52
<u>21†</u>	12.1	3.5	7.8	10.2	0.0	3.0	0.0	3.0		24	69
<u>22†</u>	4.8	-2.1	1.4	16.6	0.0	0.4	0.8	1.0	T	33	37
<u>23†</u>	3.0	-3.9	-0.5	18.5	0.0	0.0	0.0	0.0	T	27	59
<u>24†</u>	5.6	0.9	3.3	14.7	0.0	0.0	0.0	0.0	T	27	56
<u>25†</u>	6.0	1.8	3.9	14.1	0.0	0.0	0.0	0.0			<31
<u>26†</u>	13.9	5.7	9.8	8.2	0.0	8.8	0.0	8.8		22	59
<u>27†</u>	12.9	5.5	9.2	8.8	0.0	17.2	0.0	17.2		19	52
<u>28†</u>	14.6	8.6	11.6	6.4	0.0	1.4	0.0	1.4		19	59
<u>29†</u>	9.9	0.9	5.4	12.6	0.0	0.6	0.4	1.0		26	67
<u>30†</u>	11.8	1.0	6.4	11.6	0.0	3.8	T	3.8		27	82
Sum				406.2	0.0	113.2	6.4	119.4			
Avg	8.2	0.7	4.45								
Xtrm	17.1	-3.9								25	85

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