



Derek Clarke, Drinking Water Officer  
Office of Drinking Water, Manitoba Sustainable Development  
Box 6000  
Gimli, MB R0C 1B0

**August 6, 2019**

**RE: JULY 2019 WATER QUALITY COMPLIANCE SUBMISSION FOR THE CITY OF WINNIPEG WATER SUPPLY SYSTEM**

Please find attached on-line and grab turbidity summary reports, on-line and grab chlorine summary reports and the UV summary report for the Water Treatment Plant for July 2019.

The July on-line and grab sampling turbidity reports include results obtained for the Water Treatment Plant raw water and the eight filters. The turbidity results for the filter effluent met the licence requirements.

The July on-line and grab sampling chlorine reports include results obtained for the Deacon Booster Pumping Station at the Water Treatment Plant. The free chlorine results at the Water Treatment Plant met the licence requirements.

The July UV summary report includes results obtained for the six UV reactors at the Water Treatment Plant. The UV disinfection results met the licence requirements.

Please let me know of any concerns or questions respecting this submission. I can be reached by telephone at 204-986-8359 or by e-mail at [rgrosselle@winnipeg.ca](mailto:rgrosselle@winnipeg.ca).

Yours sincerely,

*Original signed by C. Diduck for:*

R. Grosselle  
Manager of Environmental Standards

Enclosures

cc: Dr. L. Richards, Winnipeg Regional Health Authority (email)  
Dr. H. Chang, Winnipeg Regional Health Authority (email)  
Dr. S. Roberecki, Manitoba Health, Seniors and Active Living (email)  
M. L. Geer, CPA, CA (email)  
G. Patton, P.Eng. (email)  
T. Shanks, P.Eng. (email)  
M. Szmon, P.Eng. (email)  
C. Diduck (email)



**CITY OF WINNIPEG**  
**WATER AND WASTE DEPARTMENT**  
**WATER SERVICES**

Water System Code: **252.00**  
 Licence Number: **PWS-09-412-01**

**WATER TREATMENT PLANT TURBIDITY ON-LINE MONITORING REPORT**

July 2019 Turbidity (NTU)

Date	Raw	Filter #1		Filter #2		Filter #3		Filter #4		Filter #5		Filter #6		Filter #7		Filter #8	
	Avg	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
1/07/2019	1.07	0.07	0.15	0.06	0.12	0.03	0.05	0.06	0.12	0.02	0.13	0.05	0.13	0.06	0.14	0.06	0.17
2/07/2019	0.62	0.05	0.13	0.05	0.13	0.03	0.11	0.05	0.07	0.03	0.10	0.05	0.15	0.05	0.16	0.08	0.13
3/07/2019	1.46	0.04	0.13	0.04	0.11	0.02	0.10	0.05	0.12	0.02	0.05	0.05	0.13	0.05	0.13	0.07	0.16
4/07/2019	1.04	0.05	0.11	0.05	0.11	0.02	0.09	0.05	0.12	0.03	0.09	0.05	0.14	0.05	0.08	0.06	0.16
5/07/2019	1.00	0.04	0.13	0.04	0.12	0.02	0.10	0.04	0.13	0.03	0.12	0.06	0.09	0.07	0.15	0.06	0.19
6/07/2019	1.03	0.05	0.08	0.06	0.09	0.02	0.11	0.04	0.15	0.03	0.14	0.07	0.25	0.06	0.19	0.07	0.18
7/07/2019	1.60	0.06	0.13	0.06	0.13	0.02	0.04	0.04	0.14	0.03	0.12	0.05	0.16	0.06	0.17	0.07	0.19
8/07/2019	1.33	0.05	0.13	0.05	0.13	0.02	0.11	0.04	0.15	0.03	0.17	0.05	0.17	0.05	0.17	0.07	0.21
9/07/2019	1.18	0.05	0.13	0.07	0.14	0.02	0.11	0.06	0.13	0.03	0.13	0.06	0.16	0.06	0.18	0.08	0.15
10/07/2019	1.33	0.05	0.13	0.06	0.14	0.01	0.09	0.05	0.13	0.03	0.07	0.05	0.13	0.05	0.15	0.07	0.18
11/07/2019	1.88	0.05	0.28	0.07	0.14	0.01	0.10	0.05	0.12	0.03	0.10	0.04	0.14	0.06	0.09	0.07	0.17
12/07/2019	1.60	0.05	0.14	0.07	0.16	0.02	0.07	0.04	0.14	0.03	0.10	0.05	0.10	0.07	0.15	0.06	0.18
13/07/2019	1.90	0.06	0.09	0.11	0.17	0.02	0.11	0.05	0.14	0.03	0.12	0.05	0.16	0.05	0.16	0.06	0.18
14/07/2019	2.52	0.08	0.16	0.09	0.19	0.03	0.09	0.06	0.08	0.03	0.12	0.04	0.15	0.05	0.16	0.05	0.09
15/07/2019	1.61	0.05	0.13	0.09	0.21	0.02	0.10	0.06	0.14	0.03	0.04	0.03	0.12	0.04	0.07	0.06	0.19
16/07/2019	2.56	0.05	0.13	0.11	0.16	0.02	0.10	0.06	0.13	0.03	0.09	0.05	0.07	0.06	0.13	0.04	0.13
17/07/2019	2.55	0.08	0.10	0.14	0.20	0.02	0.05	0.06	0.16	0.04	0.10	0.05	0.13	0.06	0.15	0.04	0.15
18/07/2019	1.33	0.07	0.16	0.07	0.25	0.04	0.13	0.11	0.14	0.04	0.06	0.05	0.16	0.06	0.20	0.06	0.09
19/07/2019	1.41	0.08	0.18	0.04	0.13	0.04	0.14	0.09	0.18	0.07	0.14	0.05	0.17	0.09	0.12	0.07	0.16
20/07/2019	1.40	0.07	0.19	0.05	0.08	0.03	0.13	0.10	0.20	0.06	0.16	0.08	0.13	0.11	0.19	0.06	0.16
21/07/2019	1.82	0.13	0.16	0.06	0.14	0.04	0.06	0.09	0.16	0.06	0.16	0.06	0.16	0.09	0.21	0.06	0.17
22/07/2019	2.19	0.09	0.22	0.05	0.17	0.04	0.13	0.12	0.23	0.06	0.12	0.06	0.15	0.09	0.16	0.07	0.09
23/07/2019	1.73	0.10	0.21	0.06	0.18	0.04	0.15	0.06	0.15	0.06	0.14	0.05	0.15	0.07	0.11	0.07	0.17
24/07/2019	1.99	0.13	0.20	0.08	0.17	0.04	0.10	0.07	0.12	0.06	0.14	0.07	0.14	0.07	0.16	0.06	0.17
25/07/2019	3.84	0.17	0.20	0.13	0.15	0.04	0.13	0.07	0.14	0.07	0.14	0.07	0.13	0.08	0.14	0.08	0.14
26/07/2019	4.05	0.12	0.27	0.13	0.28	0.05	0.09	0.07	0.13	0.09	0.16	0.07	0.20	0.10	0.16	0.08	0.16
27/07/2019	3.34	0.08	0.14	0.14	0.21	0.06	0.12	0.08	0.12	0.11	0.19	0.07	0.13	0.12	0.19	0.08	0.11
28/07/2019	1.78	0.08	0.14	0.15	0.22	0.05	0.13	0.07	0.13	0.15	0.20	0.07	0.12	0.13	0.22	0.09	0.15
29/07/2019	1.69	0.08	0.17	0.15	0.20	0.05	0.12	0.06	0.13	0.12	0.22	0.08	0.11	0.16	0.21	0.08	0.15
30/07/2019	1.42	0.12	0.13	0.16	0.21	0.06	0.08	0.06	0.15	0.07	0.12	0.09	0.15	0.11	0.16	0.09	0.18
31/07/2019	2.14	0.11	0.20	0.13	0.20	0.08	0.16	0.09	0.12	0.09	0.16	0.10	0.16	0.12	0.22	0.11	0.13

Total Number of Measurements Taken, A:	11886	12907	12843	13242	13610	14078	13863	15081
Turbidity Standard for Monitoring Location (NTU):	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Number of Measurements Meeting Standard, B:	11886	12907	12843	13242	13610	14078	13863	15081
Compliance with Turbidity Standard, C = B/A X 100%:	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Turbidity\2019\07-July

Submitted By (Print): D. Merredew

Signature: Original signed by D. Merredew

**WATER TREATMENT PLANT TURBIDITY GRAB MONITORING REPORT**

Water System Code: 252.00		Turbidity (NTU)																	
Licence No. PWS-09-412-01																			
Date	Raw Water		Filter 1		Filter 2		Filter 3		Filter 4		Filter 5		Filter 6		Filter 7		Filter 8		
	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	
01-Jul-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
02-Jul-2019	1.05	0.90	0.12	0.07	0.14	0.09	0.12	0.06	0.16	0.07	0.13	0.05	OL	OL	OL	OL	0.15	0.08	
03-Jul-2019	0.92	0.97	OL	OL	OL	OL	0.13	0.07	0.16	0.06	0.09	0.03	0.10	0.05	0.10	0.05	0.12	0.07	
04-Jul-2019	1.10	0.96	0.16	0.08	0.09	0.06	OL	OL	0.11	0.07	0.11	0.04	0.13	0.06	0.14	0.06	0.15	0.09	
05-Jul-2019	1.08	0.91	0.09	0.06	0.09	0.06	0.18	0.08	0.14	0.08	0.13	0.05	0.14	0.08	0.14	0.06	OL	OL	
06-Jul-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
07-Jul-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
08-Jul-2019	1.15	0.99	0.09	0.07	0.10	0.09	0.09	0.05	0.09	0.09	0.10	0.05	OL	OL	0.17	0.10	0.13	0.09	
09-Jul-2019	1.14	1.05	0.12	0.09	OL	OL	0.12	0.06	0.11	0.07	0.12	0.05	OL	OL	0.13	0.06	0.14	0.09	
10-Jul-2019	1.13	0.98	OL	OL	OL	OL	0.12	0.06	0.12	0.06	0.09	0.03	0.12	0.06	0.11	0.06	0.13	0.08	
11-Jul-2019	1.07	1.10	OL	OL	0.08	0.09	OL	OL	0.12	0.07	0.10	0.03	0.11	0.06	0.11	0.06	0.12	0.07	
12-Jul-2019	1.03	1.07	0.09	0.07	0.09	0.10	OL	OL	OL	OL	0.16	0.04	0.13	0.06	0.13	0.06	0.15	0.09	
13-Jul-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
14-Jul-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
15-Jul-2019	1.32	1.19	OL	OL	OL	OL	0.13	0.07	0.11	0.09	0.10	0.04	0.10	0.05	0.10	0.05	0.13	0.05	
16-Jul-2019	1.25	8.36	0.09	0.08	0.09	0.15	OL	OL	OL	OL	0.11	0.04	0.11	0.06	0.11	0.06	0.12	0.07	
17-Jul-2019	1.38	1.16	0.10	0.08	0.11	0.16	0.11	0.05	0.09	0.08	OL	OL	0.15	0.07	OL	OL	0.12	0.05	
18-Jul-2019	1.27	1.16	0.13	0.11	OL	OL	0.14	0.07	0.12	0.11	0.14	0.05	OL	OL	0.15	0.08	0.13	0.06	
19-Jul-2019	1.23	1.20	OL	OL	0.12	0.06	OL	OL	0.17	0.16	0.15	0.08	0.13	0.08	0.14	0.10	0.15	0.08	
20-Jul-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
21-Jul-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
22-Jul-2019	1.25	1.25	0.16	0.18	OL	OL	0.16	0.09	0.14	0.17	0.13	0.10	OL	OL	0.13	0.13	0.14	0.08	
23-Jul-2019	1.64	1.34	OL	OL	0.12	0.09	OL	OL	0.18	0.11	0.14	0.07	0.13	0.08	0.14	0.08	0.16	0.09	
24-Jul-2019	1.40	1.36	0.12	0.13	0.12	0.10	OL	OL	OL	OL	0.14	0.09	0.13	0.08	0.13	0.07	0.17	0.11	
25-Jul-2019	1.65	7.23	0.14	0.20	0.15	0.15	0.16	0.09	0.15	0.08	OL	OL	0.14	0.09	0.14	0.10	OL	OL	
26-Jul-2019	1.50	1.36	0.13	0.09	0.14	0.15	0.14	0.08	0.13	0.07	0.12	0.10	0.16	0.10	OL	OL	0.12	0.08	
27-Jul-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
28-Jul-2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
29-Jul-2019	1.87	1.33	0.10	0.10	0.11	0.19	0.11	0.07	OL	OL	0.11	0.19	0.11	0.09	0.11	0.18	OL	OL	
30-Jul-2019	1.58	0.87	0.12	0.12	0.13	0.17	0.13	0.09	0.13	0.07	OL	OL	0.16	0.11	0.17	0.13	0.13	0.10	
31-Jul-2019	1.37	1.00	0.16	0.15	OL	OL	0.28	0.11	0.14	0.09	0.15	0.09	OL	OL	0.13	0.13	0.14	0.11	
<b>Total number of measurements taken, A:</b>			16		15		15		18		19		16		19		19		
<b>Turbidity Standard for Monitoring Location (NTU):</b>			0.30		0.30		0.30		0.30		0.30		0.30		0.30		0.30		
<b>Number of measurements meeting standard, B:</b>			16		15		15		18		19		16		19		19		
<b>Compliance with Turbidity Standard, C= B/A X 100%:</b>			100%		100%		100%		100%		100%		100%		100%		100%		

NS: No Sample NA: Not Analyzed OL: Off-Line

**Comments:**

The raw water analyser is cleaned daily during warm water months because it is susceptible to frequent fouling.

Report Compiled By: H.Demchenko

Authorized in Sample Manager By: C.Diduck

Date Authorized: 6-Aug-19



**WATER TREATMENT PLANT FREE CHLORINE ON-LINE MONITORING REPORT**  
**Deacon Booster Pumping Station**

Water System Code: **252.00**  
Licence Number: **PWS-09-412-01**  
Report Created: **01 August 2019**

Report Period: July 2019

Date	BRANCH 1 [mg/L]		BRANCH 2 [mg/L]	
	Average	Minimum	Average	Minimum
01/07/2019	1.29	1.18	1.37	1.28
02/07/2019	1.26	1.17	1.32	1.22
03/07/2019	1.30	1.14	1.37	1.22
04/07/2019	1.41	1.21	1.43	1.31
05/07/2019	1.35	1.18	1.36	1.18
06/07/2019	1.38	1.22	1.39	1.22
07/07/2019	1.36	1.23	1.39	1.30
08/07/2019	1.28	1.11	1.28	1.08
09/07/2019	1.26	1.10	1.28	1.09
10/07/2019	1.31	1.08	1.35	1.17
11/07/2019	1.36	1.20	1.41	1.19
12/07/2019	1.36	1.26	1.46	1.30
13/07/2019	1.38	1.27	1.46	1.35
14/07/2019	1.35	1.26	1.42	1.34
15/07/2019	1.33	1.25	1.39	1.33
16/07/2019	1.37	1.26	1.44	1.33
17/07/2019	1.39	1.28	1.48	1.38
18/07/2019	1.36	1.29	1.43	1.36
19/07/2019	1.32	1.25	1.40	1.34
20/07/2019	1.33	1.24	1.41	1.34
21/07/2019	1.37	1.28	1.42	1.34
22/07/2019	1.32	1.19	1.38	1.24
23/07/2019	1.30	1.18	1.38	1.28
24/07/2019	1.39	1.26	1.47	1.37
25/07/2019	1.43	1.12	1.46	1.13
26/07/2019	1.38	1.28	1.45	1.29
27/07/2019	1.44	1.34	1.53	1.44
28/07/2019	1.48	1.37	1.49	1.36
29/07/2019	1.42	1.29	1.38	1.29
30/07/2019	1.35	1.17	1.32	1.17
31/07/2019	1.40	1.33	1.41	1.32

Total Number of Measurements, A: 21600 21600  
Minimum Free Chlorine Standard: 0.5 0.5  
Number of Measurements Meeting Standard, B: 21600 21600

COMPLIANCE, C = B/A X 100%: 100.00 100.00

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Chlorine\2019\07-July

Submitted By (Print): D. Merredew

Signature: Original signed by D. Merredew



**WATER TREATMENT PLANT CHLORINE GRAB MONITORING REPORT**

Water System Code: 252.00		Deacon Booster Pumping Station Branch 1			Deacon Booster Pumping Station Branch 2		
Licence No. PWS-09-412-01							
Date	Free Chlorine (mg/L)		Total Chlorine (mg/L)	Free Chlorine (mg/L)		Total Chlorine (mg/L)	
	Analyser	Grab	Grab	Analyser	Grab	Grab	
01-Jul-2019	NA	NA	NA	NA	NA	NA	
02-Jul-2019	1.29	1.40	1.56	1.37	1.53	1.63	
03-Jul-2019	1.33	1.39	1.54	1.38	1.48	1.58	
04-Jul-2019	1.52	1.26	1.53	1.49	1.45	1.57	
05-Jul-2019	1.28	1.38	1.53	1.28	1.39	1.52	
06-Jul-2019	NA	NA	NA	NA	NA	NA	
07-Jul-2019	NA	NA	NA	NA	NA	NA	
08-Jul-2019	1.54	1.56	1.74	1.45	1.43	1.64	
09-Jul-2019	1.25	1.32	1.50	1.31	1.25	1.46	
10-Jul-2019	1.19	1.31	1.45	1.21	1.37	1.46	
11-Jul-2019	1.37	1.38	1.54	1.30	1.37	1.54	
12-Jul-2019	1.38	1.46	1.60	1.42	1.48	1.65	
13-Jul-2019	NA	NA	NA	NA	NA	NA	
14-Jul-2019	NA	NA	NA	NA	NA	NA	
15-Jul-2019	1.35	1.33	1.50	1.40	1.49	1.63	
16-Jul-2019	1.40	1.41	1.57	1.48	1.49	1.63	
17-Jul-2019	1.33	1.35	1.54	1.41	1.49	1.60	
18-Jul-2019	1.31	1.37	1.56	1.37	1.45	1.64	
19-Jul-2019	1.33	1.38	1.48	1.46	1.47	1.58	
20-Jul-2019	NA	NA	NA	NA	NA	NA	
21-Jul-2019	NA	NA	NA	NA	NA	NA	
22-Jul-2019	1.32	1.37	1.54	1.37	1.45	1.61	
23-Jul-2019	1.27	1.43	1.59	1.33	1.50	1.66	
24-Jul-2019	1.33	1.42	1.60	1.44	1.51	1.73	
25-Jul-2019	1.42	1.47	1.64	1.46	1.57	1.69	
26-Jul-2019	1.42	1.41	1.60	1.42	1.46	1.63	
27-Jul-2019	NA	NA	NA	NA	NA	NA	
28-Jul-2019	NA	NA	NA	NA	NA	NA	
29-Jul-2019	1.44	1.34	1.43	1.37	1.50	1.69	
30-Jul-2019	1.28	1.41	1.60	1.27	1.44	1.58	
31-Jul-2019	1.37	1.39	1.59	1.41	1.51	1.63	
<b>Total number of measurements taken, A:</b>		22		22			
<b>Chlorine Standard for Monitoring Location (mg/L):</b>		0.50		0.50			
<b>Number of measurements meeting standard, B:</b>		22		22			
<b>Compliance with Chlorine Standard, C= B/A X 100%:</b>		100%		100%			

NS: No Sample NA: Not Analyzed OL: Off-Line

Comments:

Report Compiled By: H.Demchenko

Authorized By: C.Diduck

Date Authorized: 6-Aug-19

**WATER TREATMENT PLANT UV REPORT**

Report Period: July 2019

Report Created: Friday, August 02, 2019

Date	Transmittance %		UVR-D100A			UVR-D200A			UVR-D300A			UVR-D400A			UVR-D500A			UVR-D600A			Total			% Volume Treated To Dose				
	UVTag	%	Untreated	Below	Total	Untreated	Below	Total	Untreated	Below	Total	Untreated	Below	Total	Untreated	Below	Total	Untreated	Below	Total	Untreated	Below	Total					
01/07/2019	97.26	0.00	0.00	66.96	66.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.88	72.88	66.21	66.21	0.00	0.00	0.00	0.00	0.00	0.00	206.05	206.05	100.00			
02/07/2019	97.21	0.00	0.00	72.44	72.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.20	79.20	71.26	71.26	0.00	0.00	0.00	0.00	0.00	0.00	222.90	222.90	100.00			
03/07/2019	97.33	0.00	0.00	75.80	75.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.78	83.78	76.49	76.49	0.00	0.00	0.00	0.00	0.00	0.00	236.08	236.08	100.00			
04/07/2019	97.22	0.00	0.00	76.69	76.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.95	84.95	78.32	78.32	0.00	0.00	0.00	0.00	0.00	0.00	240.02	240.02	100.00			
05/07/2019	97.09	0.00	0.00	20.83	20.83	0.00	0.00	60.90	51.92	51.92	0.00	0.00	79.46	79.46	20.82	20.81	0.01	0.18	0.82	6.37	7.19	0.01	1.00	240.09	241.10	99.98		
06/07/2019	97.00	0.00	0.00	50.84	50.84	0.00	0.00	85.03	85.03	85.03	0.00	0.00	84.99	84.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	248.58	248.63	99.98			
07/07/2019	97.05	0.00	0.00	25.01	25.01	0.00	0.00	34.19	34.19	34.19	0.00	0.00	85.02	85.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	249.90	249.91	100.00			
08/07/2019	96.56	0.00	0.00	25.01	25.01	0.00	0.00	53.18	53.18	53.18	0.00	0.00	71.33	71.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	210.88	210.88	100.00			
09/07/2019	97.10	0.00	0.00	44.76	44.77	0.00	0.00	84.30	84.30	84.30	0.00	0.00	85.14	85.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	240.71	240.71	100.00			
10/07/2019	97.39	0.00	0.00	44.76	44.77	0.00	0.00	84.30	84.30	84.30	0.00	0.00	31.70	31.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	240.71	240.71	100.00			
11/07/2019	97.46	0.07	0.07	15.08	15.21	0.00	0.00	74.19	74.19	74.19	0.00	0.00	84.52	84.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	236.09	236.38	99.88			
12/07/2019	97.35	0.00	0.00	0.00	0.00	0.00	0.00	72.88	72.88	72.88	0.19	0.19	49.57	49.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	229.72	230.09	99.84			
13/07/2019	97.36	0.00	0.00	0.00	0.00	0.00	0.00	71.16	71.16	71.16	0.00	0.00	74.11	74.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	211.24	211.24	100.00			
14/07/2019	97.44	0.00	0.00	0.00	0.00	0.00	0.00	66.86	66.86	66.86	0.00	0.00	70.48	70.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.71	200.71	100.00			
15/07/2019	97.77	0.00	0.00	0.00	0.00	0.00	0.00	65.87	65.87	65.87	0.00	0.00	69.92	69.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	198.81	198.81	100.00			
16/07/2019	97.72	0.00	0.00	0.00	0.00	0.00	0.00	68.61	68.61	68.61	0.00	0.00	72.06	72.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	204.98	204.98	100.00			
17/07/2019	97.51	0.00	0.00	0.00	0.00	0.00	0.00	68.54	68.54	68.54	0.00	0.00	71.88	71.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	204.43	204.43	100.00			
18/07/2019	97.07	0.00	0.00	0.00	0.00	0.00	0.00	67.85	67.85	67.85	0.00	0.00	71.47	71.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	203.01	203.01	100.00			
19/07/2019	96.87	0.00	0.00	0.00	0.00	0.00	0.00	67.65	67.65	67.65	0.00	0.00	71.57	71.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	203.06	203.06	100.00			
20/07/2019	96.85	0.00	0.00	0.00	0.00	0.00	0.00	67.56	67.56	67.56	0.00	0.00	71.56	71.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	203.03	203.03	100.00			
21/07/2019	96.85	0.00	0.00	0.00	0.00	0.00	0.00	65.65	65.65	65.65	0.00	0.00	70.18	70.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	198.86	198.86	100.00			
22/07/2019	96.80	0.00	0.00	0.00	0.00	0.00	0.00	64.73	64.73	64.73	0.00	0.00	69.53	69.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	197.05	197.05	100.00			
23/07/2019	96.76	0.00	0.00	0.00	0.00	0.00	0.00	71.11	71.11	71.11	0.00	0.00	75.14	75.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	213.23	213.23	100.00			
24/07/2019	96.88	0.00	0.00	0.00	0.00	0.00	0.00	74.69	74.69	74.69	0.00	0.00	79.94	79.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	225.75	225.75	100.00			
25/07/2019	96.80	0.00	0.00	0.00	0.00	0.00	0.00	75.46	75.46	75.46	0.00	0.00	57.21	57.41	0.02	0.02	46.40	46.44	0.04	0.27	25.00	25.32	223.30	223.90	99.73			
27/07/2019	96.71	0.00	0.00	0.00	0.00	0.00	0.00	55.49	55.83	55.83	0.00	0.00	28.75	28.83	0.00	0.00	45.32	45.32	0.00	0.00	0.00	0.00	235.53	235.96	99.82			
28/07/2019	96.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.12	83.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	239.54	239.54	100.00			
29/07/2019	97.02	0.00	0.00	0.14	0.14	0.00	0.00	8.75	8.75	8.75	0.00	0.00	73.58	73.58	0.00	0.00	54.83	54.83	0.00	0.19	26.04	26.23	220.90	221.09	99.91			
30/07/2019	96.74	0.00	0.00	48.96	48.96	0.00	0.00	5.69	5.69	5.69	0.00	0.00	21.58	21.62	0.00	0.00	37.26	37.26	0.00	0.00	0.00	0.00	215.92	216.01	99.96			
31/07/2019	96.45	0.00	0.00	72.64	72.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.62	63.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	215.97	215.97	100.00			
<b>Total [ML]:</b>	0.07	0.07	570.17	570.31	0.00	0.34	1515.15	1515.49	0.19	0.32	969.35	969.86	0.00	0.32	2002.28	2002.60	0.03	0.35	568.92	569.30	0.05	1.29	1231.72	1233.05	0.33	2.69	6857.58	6860.61

**Water Volume [ML]:**

Untreated: 0.00 %

Below Dose: 0.04 %

To Dose: 99.96 %

**Notes:** 1. UV Comparative Dose: 18.1 mJ/cm<sup>2</sup>

Submitted By (Print): D\_Merredew

Signature: Original Signed by D\_Merredew