



Kale Black, Sr. Drinking Water Officer
Office of Drinking Water, Manitoba Conservation and Climate
309 – 25 Tupper Street North
Portage La Prairie, MB R1N 3K1

January 7, 2021

RE: DECEMBER 2020 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 December 2020.

The December 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 December 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 December 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.

Yours sincerely,

*Original signed by R. Grosselle
(Signed original available upon request)*

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)
B. Bradford (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

December 2020 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
1/12/2020	0.76	0.06	0.14	0.05	0.14	0.06	0.14	0.08	0.13	0.04	0.12	0.06	0.13	0.06	0.11	0.07	0.10
2/12/2020	0.74	0.08	0.13	0.06	0.14	0.06	0.13	0.06	0.13	0.05	0.08	0.06	0.16	0.05	0.12	0.09	0.17
3/12/2020	0.73	0.05	0.17	0.08	0.14	0.07	0.13	0.08	0.14	0.06	0.12	0.07	0.15	0.05	0.13	0.07	0.16
4/12/2020	0.71	0.05	0.13	0.06	0.13	0.07	0.12	0.10	0.16	0.04	0.12	0.09	0.15	0.06	0.08	0.06	0.16
5/12/2020	0.72	0.07	0.11	0.06	0.15	0.07	0.14	0.10	0.16	0.04	0.13	0.08	0.15	0.06	0.12	0.10	0.15
6/12/2020	0.74	0.08	0.16	0.08	0.11	0.05	0.09	0.09	0.18	0.07	0.12	0.08	0.18	0.07	0.14	0.07	0.18
7/12/2020	0.71	0.05	0.16	0.08	0.16	0.08	0.13	0.10	0.13	0.04	0.12	0.09	0.12	0.06	0.09	0.10	0.16
8/12/2020	0.69	0.08	0.12	0.07	0.16	0.06	0.14	0.13	0.22	0.04	0.07	0.06	0.17	0.06	0.14	0.10	0.13
9/12/2020	0.70	0.09	0.17	0.09	0.12	0.05	0.10	0.10	0.25	0.06	0.12	0.07	0.16	0.05	0.15	0.07	0.16
10/12/2020	0.71	0.07	0.17	0.09	0.17	0.08	0.13	0.10	0.26	0.04	0.11	0.10	0.12	0.06	0.09	0.07	0.18
11/12/2020	0.69	0.07	0.11	0.06	0.16	0.05	0.12	0.14	0.16	0.03	0.10	0.07	0.17	0.06	0.11	0.08	0.11
12/12/2020	0.67	0.10	0.16	0.08	0.11	0.04	0.11	0.09	0.26	0.04	0.07	0.06	0.14	0.04	0.13	0.08	0.15
13/12/2020	0.66	0.07	0.15	0.10	0.15	0.06	0.10	0.10	0.27	0.03	0.09	0.07	0.10	0.04	0.10	0.07	0.15
14/12/2020	0.66	0.06	0.14	0.08	0.16	0.04	0.11	0.13	0.16	0.03	0.08	0.08	0.14	0.06	0.11	0.07	0.12
15/12/2020	0.67	0.10	0.13	0.08	0.16	0.04	0.11	0.10	0.27	0.03	0.05	0.07	0.14	0.05	0.10	0.08	0.14
16/12/2020	0.69	0.04	0.15	0.07	0.14	0.03	0.09	0.04	0.15	0.03	0.11	0.05	0.17	0.03	0.07	0.04	0.29
17/12/2020	0.66	0.07	0.12	0.10	0.18	0.04	0.09	0.13	0.25	0.02	0.07	0.08	0.12	0.06	0.09	0.08	0.11
18/12/2020	0.65	0.13	0.16	0.09	0.14	0.04	0.10	0.10	0.20	0.03	0.05	0.08	0.16	0.06	0.11	0.09	0.14
19/12/2020	0.63	0.10	0.17	0.15	0.19	0.05	0.08	0.09	0.23	0.04	0.08	0.08	0.13	0.06	0.14	0.08	0.16
20/12/2020	0.62	0.10	0.19	0.12	0.21	0.06	0.10	0.13	0.19	0.03	0.08	0.12	0.16	0.08	0.11	0.05	0.14
21/12/2020	0.62	0.13	0.19	0.14	0.22	0.06	0.11	0.13	0.16	0.04	0.08	0.12	0.19	0.10	0.15	0.00	0.00
22/12/2020	0.63	0.08	0.17	0.09	0.17	0.05	0.26	0.04	0.13	0.04	0.07	0.06	0.13	0.04	0.13	0.08	0.17
23/12/2020	0.63	0.02	0.06	0.03	0.06	0.03	0.08	0.04	0.10	0.07	0.10	0.07	0.13	0.03	0.07	0.00	0.05
24/12/2020	0.63	0.02	0.06	0.03	0.07	0.04	0.06	0.04	0.08	0.06	0.12	0.07	0.09	0.03	0.07	0.03	0.10
25/12/2020	0.65	0.02	0.06	0.03	0.07	0.03	0.07	0.04	0.05	0.06	0.10	0.07	0.12	0.03	0.05	0.04	0.10
26/12/2020	0.63	0.02	0.03	0.03	0.07	0.04	0.07	0.04	0.11	0.05	0.10	0.07	0.12	0.03	0.07	0.05	0.07
27/12/2020	0.62	0.02	0.07	0.03	0.04	0.03	0.04	0.04	0.07	0.06	0.08	0.07	0.14	0.03	0.06	0.05	0.09
28/12/2020	0.60	0.02	0.06	0.03	0.07	0.04	0.07	0.03	0.12	0.06	0.11	0.08	0.10	0.03	0.05	0.05	0.10
29/12/2020	0.60	0.02	0.03	0.03	0.07	0.03	0.07	0.05	0.08	0.05	0.11	0.07	0.13	0.04	0.07	0.05	0.07
30/12/2020	0.60	0.03	0.07	0.03	0.04	0.03	0.07	0.04	0.15	0.06	0.08	0.07	0.14	0.03	0.07	0.05	0.11
31/12/2020	0.65	0.02	0.05	0.03	0.07	0.04	0.06	0.04	0.07	0.05	0.10	0.07	0.10	0.02	0.04	0.04	0.08

Total Number of Measurements Taken, A:	11131	11577	11107	12148	13433	13860	13634	13698
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:	11131	11577	11107	12148	13433	13860	13634	13700
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\2020\12-December

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		Raw Water		Filter 1		Filter 2		Filter 3		Filter 4		Filter 5		Filter 6		Filter 7		Filter 8	
Date	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	Grab	Analyser	
01-Dec-2020	0.71	0.72	0.12	0.08	OL	OL	0.17	0.12	0.12	0.11	0.10	0.06	0.14	0.09	0.13	0.05	0.12	0.08	
02-Dec-2020	0.67	0.74	0.13	0.09	0.12	0.08	0.11	0.08	0.12	0.12	0.12	0.07	0.13	0.09	0.14	0.07	0.15	0.11	
03-Dec-2020	0.69	0.74	0.13	0.09	0.12	0.08	0.11	0.08	0.09	0.10	0.14	0.08	0.13	0.10	0.12	0.05	OL	OL	
04-Dec-2020	0.70	0.71	OL	OL	0.15	0.11	0.12	0.09	0.10	0.11	OL	OL	0.14	0.10	0.13	0.06	0.12	0.08	
05-Dec-2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
06-Dec-2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
07-Dec-2020	0.65	0.68	OL	OL	0.14	0.11	0.12	0.09	0.10	0.13	OL	OL	0.15	0.11	0.13	0.06	0.12	0.09	
08-Dec-2020	0.69	0.68	0.11	0.10	0.10	0.09	0.15	0.12	0.11	0.14	0.10	0.06	0.14	0.12	0.16	0.09	0.13	0.10	
09-Dec-2020	0.74	0.68	0.14	0.13	0.12	0.10	0.11	0.08	OL	OL	0.11	0.06	0.11	0.09	0.10	0.05	OL	OL	
10-Dec-2020	0.67	0.70	0.18	0.17	0.15	0.15	0.12	0.09	0.10	0.14	0.16	0.10	0.13	0.11	0.12	0.06	0.11	0.08	
11-Dec-2020	0.68	0.68	0.09	0.10	OL	OL	OL	OL	0.10	0.14	0.09	0.06	0.17	0.14	0.13	0.07	0.11	0.09	
12-Dec-2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
13-Dec-2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
14-Dec-2020	0.64	0.63	0.07	0.10	0.09	0.13	0.08	0.05	0.07	0.14	0.07	0.04	0.11	0.11	0.09	0.05	0.08	0.07	
15-Dec-2020	0.65	0.66	0.07	0.11	0.07	0.11	0.06	0.05	0.08	0.15	0.08	0.04	0.11	0.11	0.11	0.06	0.10	0.09	
16-Dec-2020	0.66	0.65	0.12	0.12	0.07	0.12	0.06	0.06	OL	OL	0.08	0.04	0.07	0.09	0.07	0.04	OL	OL	
17-Dec-2020	0.66	0.65	0.07	0.12	0.07	0.11	OL	OL	0.07	0.14	0.07	0.04	OL	OL	0.09	0.06	0.07	0.08	
18-Dec-2020	0.66	0.64	0.09	0.13	0.08	0.14	0.08	0.06	0.10	0.17	0.09	0.04	0.10	0.11	OL	OL	0.11	0.11	
19-Dec-2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
20-Dec-2020	0.63	0.62	0.07	0.14	0.10	0.17	0.10	0.08	0.07	0.14	0.12	0.07	0.10	0.13	0.10	0.08	0.08	0.09	
21-Dec-2020	0.62	0.59	0.09	0.16	OL	OL	0.13	0.10	0.08	0.15	0.09	0.04	0.12	0.15	0.11	0.10	OL	OL	
22-Dec-2020	0.56	0.61	0.07	0.16	0.06	0.17	0.06	0.06	0.08	0.06	0.08	0.05	0.13	0.10	0.10	0.03	0.10	0.11	
23-Dec-2020	0.59	0.61	0.09	0.04	0.08	0.04	0.07	0.05	OL	OL	0.09	0.07	0.09	0.08	0.08	0.02	OL	OL	
24-Dec-2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.12	0.10	
25-Dec-2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
26-Dec-2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
27-Dec-2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
28-Dec-2020	0.58	0.60	0.07	0.03	0.10	0.05	0.08	0.05	0.06	0.04	0.07	0.08	0.09	0.09	0.08	0.02	0.08	0.04	
29-Dec-2020	0.55	0.59	0.07	0.03	0.07	0.03	0.08	0.05	0.07	0.05	0.07	0.07	0.13	0.12	0.10	0.03	0.08	0.05	
30-Dec-2020	0.55	0.57	0.08	0.04	0.07	0.03	0.07	0.04	0.07	0.05	0.08	0.07	0.08	0.08	0.07	0.02	0.11	0.06	
31-Dec-2020	0.63	0.60	0.06	0.02	0.09	0.05	0.07	0.04	0.06	0.04	OL	OL	0.09	0.09	0.09	0.02	0.08	0.05	
Total number of measurements taken, A:			20		19		20		19		19		21		21		18		
Turbidity Standard for Monitoring Location (NTU):			0.30		0.30		0.30		0.30		0.30		0.30		0.30		0.30		
Number of measurements meeting standard, B:			20		19		20		19		19		21		21		18		
Compliance with Turbidity Standard, C= B/A X 100%:			100%		100%		100%		100%		100%		100%		100%		100%		

NS: No Sample NA: Not Analyzed OL: Off-Line NR: No Result IM: Instrument Maintenance

Comments:

Compiled By: H. Demchenko

Authorized By: B. Bradford

Report Date: 4-Jan-21



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 January 2021**

Report Period: December 2020

Date	BRANCH 1 [mg/L]		BRANCH 2 [mg/L]	
	Average	Minimum	Average	Minimum
01/12/2020	1.24	1.10	1.18	1.09
02/12/2020	1.27	1.12	1.24	0.97
03/12/2020	1.32	1.19	1.31	1.18
04/12/2020	1.14	1.01	1.14	1.00
05/12/2020	1.12	0.93	1.14	1.03
06/12/2020	1.16	1.07	1.21	1.13
07/12/2020	1.13	1.06	1.16	1.05
08/12/2020	1.17	1.08	1.19	1.09
09/12/2020	1.15	1.08	1.14	1.05
10/12/2020	1.09	1.01	1.11	1.05
11/12/2020	1.09	1.04	1.21	1.09
12/12/2020	1.18	1.06	1.28	1.16
13/12/2020	1.19	1.02	1.32	1.11
14/12/2020	1.15	1.04	1.26	1.14
15/12/2020	1.15	1.03	1.26	1.16
16/12/2020	1.40	1.09	1.39	1.06
17/12/2020	1.19	1.04	1.18	1.06
18/12/2020	1.22	0.98	1.16	0.97
19/12/2020	1.34	1.16	1.27	1.16
20/12/2020	1.43	1.25	1.28	1.14
21/12/2020	1.41	1.28	1.25	1.17
22/12/2020	1.44	1.32	1.24	1.14
23/12/2020	1.40	1.21	1.33	1.15
24/12/2020	1.30	1.20	1.34	1.23
25/12/2020	1.27	1.15	1.27	1.14
26/12/2020	1.22	1.09	1.21	1.08
27/12/2020	1.11	1.03	1.13	1.03
28/12/2020	1.15	1.06	1.18	1.08
29/12/2020	1.21	1.12	1.24	1.14
30/12/2020	1.19	0.97	1.20	1.08
31/12/2020	1.12	1.03	1.12	1.03

Total Number of Measurements, A:	21515	21514
Minimum Free Chlorine Standard:	0.5	0.5
Number of Measurements Meeting Standard, B:	21515	21514
COMPLIANCE, C = B/A X 100%:	100.00	100.00

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Chlorine\2020\12-December

Submitted By (Print): D.Merredew

Signature: Original signed by D.Merredew



WATER TREATMENT PLANT CHLORINE GRAB MONITORING REPORT

Water System Code: 252.00 Licence No. PWS-09-412-01	Deacon Booster Pumping Station Branch 1			Deacon Booster Pumping Station Branch 2		
	Free Chlorine (mg/L)		Total Chlorine (mg/L)	Free Chlorine (mg/L)		Total Chlorine (mg/L)
	Analysed	Grab	Grab	Analysed	Grab	Grab
Date						
01-Dec-2020	1.25	1.23	1.45	1.20	1.23	1.43
02-Dec-2020	1.22	1.16	1.39	1.21	1.22	1.41
03-Dec-2020	1.33	1.32	1.50	1.33	1.26	1.48
04-Dec-2020	1.20	1.14	1.33	1.19	1.13	1.33
05-Dec-2020	NS	NS	NS	NS	NS	NS
06-Dec-2020	NS	NS	NS	NS	NS	NS
07-Dec-2020	1.14	1.16	1.35	1.14	1.23	1.43
08-Dec-2020	1.18	1.20	1.39	1.18	1.25	1.44
09-Dec-2020	1.12	1.14	1.37	1.08	1.24	1.44
10-Dec-2020	1.10	1.14	1.32	1.07	1.21	1.39
11-Dec-2020	1.09	1.09	1.26	1.17	1.25	1.46
12-Dec-2020	NS	NS	NS	NS	NS	NS
13-Dec-2020	NS	NS	NS	NS	NS	NS
14-Dec-2020	1.15	1.16	1.39	1.28	1.28	1.52
15-Dec-2020	1.15	1.11	1.40	1.27	1.34	1.54
16-Dec-2020	1.63	1.70	1.97	1.77	1.94	2.18
17-Dec-2020	1.25	1.30	1.52	1.10	1.29	1.49
18-Dec-2020	1.26	1.27	1.47	1.16	1.18	1.40
19-Dec-2020	NS	NS	NS	NS	NS	NS
20-Dec-2020	1.51	1.44	1.67	1.34	1.35	1.55
21-Dec-2020	1.43	1.38	1.60	1.25	1.27	1.47
22-Dec-2020	1.44	1.40	1.62	1.24	1.24	1.47
23-Dec-2020	1.39	1.38	1.58	1.15	1.21	1.41
24-Dec-2020	NS	NS	NS	NS	NS	NS
25-Dec-2020	NS	NS	NS	NS	NS	NS
26-Dec-2020	NS	NS	NS	NS	NS	NS
27-Dec-2020	NS	NS	NS	NS	NS	NS
28-Dec-2020	1.15	1.19	1.39	1.20	1.21	1.38
29-Dec-2020	1.21	1.23	1.46	1.24	1.23	1.43
30-Dec-2020	1.21	1.26	1.48	1.23	1.29	1.49
31-Dec-2020	1.16	1.18	1.38	1.14	1.19	1.39
Total number of measurements taken, A:		22			22	
Chlorine Standard for Monitoring Location (mg/L):		0.50			0.50	
Number of measurements meeting standard, B:		22			22	
Compliance with Chlorine Standard, C= B/A X 100%:		100%			100%	

NS: No Sample NA: Not Analyzed OL: Off-Line NR: No Result IM: Instrument Maintenance

Comments:

Compiled By: H. Demchenko

Authorized By: B. Bradford

Report Date: 4-Jan-21



CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
WATER SERVICES

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

WATER TREATMENT PLANT UV REPORT

Report Period: **December 2020**

Report Created: **Friday, January 01, 2021**

Date	Transmittance %	UVR-D100A				UVR-D200A				UVR-D300A				UVR-D400A				UVR-D500A				UVR-D600A				Total				% Volume Treated To Dose			
		Water Volume [ML]				Water Volume [ML]				Water Volume [ML]				Water Volume [ML]				Water Volume [ML]				Water Volume [ML]				Water Volume [ML]							
Date	UVTag	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total
01/12/2020	92.85	0.00	1.05	59.51	60.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	62.63	62.98	0.00	0.00	61.46	61.46	0.00	0.00	0.00	0.00	0.00	0.00	1.40	183.59	185.00	99.24		
02/12/2020	92.74	0.00	1.04	58.91	59.95	0.00	0.00	0.17	0.17	0.00	0.00	22.46	22.47	0.00	0.38	38.36	38.73	0.29	0.47	62.99	63.74	0.00	0.00	0.00	0.00	0.29	1.89	182.88	185.06	98.82			
03/12/2020	92.63	0.00	0.99	56.01	57.00	0.00	0.00	0.00	0.00	0.00	0.00	64.46	64.46	0.00	0.00	0.00	0.00	0.00	0.58	62.98	63.56	0.00	0.00	0.00	0.00	0.00	1.57	183.45	185.02	99.15			
04/12/2020	92.98	0.00	1.10	55.07	56.17	0.00	0.00	0.00	0.00	0.00	0.05	63.40	63.45	0.00	0.00	0.00	0.00	0.00	0.13	61.75	61.88	0.00	0.00	0.00	0.00	0.00	1.27	180.23	181.50	99.30			
05/12/2020	92.82	0.00	1.16	54.63	55.80	0.00	0.00	0.00	0.00	0.00	0.40	62.51	62.91	0.00	0.00	0.00	0.00	0.00	0.26	61.06	61.32	0.00	0.00	0.00	0.00	0.00	1.82	178.21	180.02	98.99			
06/12/2020	92.62	0.00	0.93	54.83	55.76	0.00	0.00	0.00	0.00	0.00	0.53	62.35	62.88	0.00	0.00	0.00	0.00	0.00	0.39	61.00	61.38	0.00	0.00	0.00	0.00	0.00	1.84	178.18	180.02	98.98			
07/12/2020	92.84	0.00	1.30	53.80	55.11	0.00	0.00	0.00	0.00	0.00	0.57	62.10	62.66	0.00	0.00	0.00	0.00	0.00	0.17	61.01	61.18	0.00	0.00	0.00	0.00	0.00	2.04	176.91	178.95	98.86			
08/12/2020	92.89	0.00	1.26	52.06	53.31	0.00	0.00	0.00	0.00	0.00	0.72	60.04	60.76	0.00	0.00	0.00	0.00	0.00	0.29	58.68	58.97	0.00	0.00	0.00	0.00	0.00	2.27	170.77	173.05	98.69			
09/12/2020	92.96	0.00	1.16	51.14	52.30	0.00	0.00	0.00	0.00	0.00	0.60	60.30	60.90	0.00	0.00	0.00	0.00	0.00	0.25	59.53	59.78	0.00	0.00	0.00	0.00	0.00	2.01	170.97	172.98	98.84			
10/12/2020	92.84	0.00	1.02	51.27	52.30	0.00	0.00	0.00	0.00	0.00	0.60	60.43	61.03	0.00	0.00	0.00	0.00	0.00	0.04	36.09	36.14	0.00	0.00	23.57	23.57	0.00	1.66	171.37	173.03	99.04			
11/12/2020	93.33	0.00	1.31	51.14	52.45	0.00	0.00	0.00	0.00	0.00	0.55	60.55	61.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.49	59.49	0.00	1.86	171.19	173.05	98.93			
12/12/2020	93.44	0.00	0.19	9.30	9.49	0.00	0.00	0.00	0.00	0.00	0.45	49.81	50.26	0.00	0.00	51.87	51.87	0.00	0.00	0.00	0.00	0.00	0.00	63.22	63.22	0.00	0.64	174.20	174.84	99.64			
13/12/2020	93.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	47.33	47.77	0.00	0.00	63.33	63.33	0.00	0.00	0.00	0.00	0.00	0.00	63.92	63.92	0.00	0.43	174.59	175.02	99.75			
14/12/2020	93.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	47.08	47.42	0.00	0.00	63.68	63.68	0.00	0.00	0.00	0.00	0.00	0.00	64.06	64.06	0.00	0.34	174.83	175.17	99.81			
15/12/2020	93.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	48.80	49.21	0.00	0.00	66.63	66.63	0.00	0.00	0.00	0.00	0.00	0.19	67.40	67.59	0.00	0.61	182.83	183.44	99.67			
16/12/2020	92.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	27.90	28.74	0.29	0.29	22.18	22.77	0.00	0.04	5.79	5.83	0.00	0.05	32.89	32.93	0.29	1.21	88.76	90.27	98.33			
17/12/2020	92.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	21.75	22.21	0.00	0.11	57.02	57.12	0.00	0.23	39.28	39.51	0.00	0.05	67.01	67.06	0.00	0.85	185.05	185.90	99.54			
18/12/2020	93.54	0.00	0.00	21.17	21.17	0.00	0.00	0.00	0.00	0.00	0.00	14.60	14.60	0.00	0.00	72.88	72.88	0.00	0.57	56.81	57.38	0.00	0.00	24.01	24.01	0.00	0.57	189.46	190.03	99.70			
19/12/2020	93.50	0.00	0.00	61.45	61.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.75	63.75	0.00	0.36	64.45	64.81	0.00	0.00	0.00	0.00	0.00	0.36	189.65	190.01	99.81			
20/12/2020	93.24	0.00	0.00	61.00	61.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.21	63.21	0.00	0.31	63.48	63.79	0.00	0.00	0.00	0.00	0.00	0.31	187.70	188.01	99.83			
21/12/2020	93.40	0.00	0.00	60.36	60.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.34	62.34	0.00	0.31	61.93	62.23	0.00	0.00	0.00	0.00	0.00	0.31	184.63	184.94	99.83			
22/12/2020	93.66	0.00	0.00	58.89	58.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.52	61.52	0.00	0.24	57.74	57.98	0.00	0.00	0.00	0.00	0.00	0.24	178.15	178.40	99.86			
23/12/2020	93.75	0.00	0.00	58.69	58.69	0.00	0.00	0.00	0.00	0.00	0.00	38.35	38.35	0.00	0.00	31.24	31.24	0.00	0.38	50.59	50.97	0.00	0.00	0.00	0.00	0.00	0.38	178.87	179.26	99.79			
24/12/2020	93.74	0.00	0.00	54.60	54.60	0.00	0.00	0.00	0.00	0.00	0.39	62.21	62.60	0.00	0.00	0.00	0.00	0.00	0.00	61.37	61.37	0.00	0.00	0.00	0.00	0.00	0.39	178.18	178.57	99.78			
25/12/2020	93.83	0.00	0.00	56.46	56.46	0.00	0.00	0.00	0.00	0.18	0.39	30.43	31.00	0.00	0.03	30.77	30.81	0.00	0.04	59.85	59.89	0.00	0.00	0.00	0.00	0.18	0.47	177.51	178.16	99.64			
26/12/2020	93.83	0.00	0.00	58.07	58.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	60.77	60.81	0.00	0.00	59.12	59.12	0.00	0.00	0.00	0.00	0.00	0.04	177.97	178.01	99.98			
27/12/2020	93.80	0.00	0.00	58.38	58.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.90	60.90	0.00	0.00	59.78	59.78	0.00	0.00	0.00	0.00	0.00	0.00	179.06	179.06	100.00			
28/12/2020	93.82	0.00	0.00	58.85	58.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.90	61.90	0.00	0.00	59.74	59.74	0.00	0.00	0.00	0.00	0.00	0.00	180.49	180.49	100.00			
29/12/2020	93.77	0.00	0.00	58.49	58.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.47	61.47	0.00	0.00	59.05	59.05	0.00	0.00	0.00	0.00	0.00	0.00	179.01	179.01	100.00			
30/12/2020	93.77	0.00	0.00	58.31	58.31	0.00	0.00	0.00	0.00	0.00	0.00	1.79	1.79	0.00	0.13	59.38	59.51	0.00	0.04	58.78	58.82	0.00	0.00	0.00	0.00	0.00	0.17	178.25	178.43	99.90			
31/12/2020	93.14	0.00	0.00	55.65	55.65	0.00	0.00	0.00	0.00	0.00	0.08	5.62	5.70	0.00	0.00	52.79	52.79	0.00	0.00	57.75	57.75	0.00	0.00	0.00	0.00	0.00	0.08	171.80	171.89	99.95			

Total [ML]: 0.00 12.51 1388.06 1400.57 0.00 0.00 0.17 0.17 0.18 7.82 974.28 982.28 0.29 1.33 1168.63 1170.26 0.29 5.09 1462.05 1467.43 0.00 0.29 465.57 465.86 0.77 27.03 5458.76 5486.56

Water Volume [%]:
 Untreated: 0.01 %
 Below Dose 0.49 %
 To Dose 99.49 %

Notes: 1. UV Comparative Dose: 18.1 mJ/cm²

Submitted By (Print): D.Merredew

Signature: Original signed by D.Merredew