



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

February 7, 2020

RE: JANUARY 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 January 2020.

The January 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 January 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 January 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
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

January 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
1/01/2020	0.54	0.06	0.08	0.03	0.06	0.03	0.08	0.05	0.14	0.03	0.09	0.05	0.12	0.04	0.09	0.03	0.07
2/01/2020	0.55	0.05	0.11	0.02	0.08	0.03	0.05	0.05	0.12	0.02	0.08	0.04	0.12	0.05	0.07	0.04	0.09
3/01/2020	0.52	0.04	0.09	0.01	0.07	0.03	0.06	0.06	0.10	0.02	0.04	0.03	0.11	0.04	0.08	0.03	0.08
4/01/2020	0.52	0.03	0.07	0.02	0.05	0.03	0.06	0.06	0.11	0.04	0.08	0.05	0.08	0.04	0.08	0.03	0.11
5/01/2020	0.53	0.06	0.12	0.02	0.07	0.03	0.07	0.07	0.13	0.04	0.09	0.00	0.06	0.05	0.10	0.04	0.07
6/01/2020	0.55	0.05	0.11	0.02	0.05	0.03	0.04	0.07	0.13	0.04	0.19	OL	OL	0.06	0.07	0.05	0.09
7/01/2020	0.54	0.07	0.12	0.02	0.07	0.04	0.07	0.08	0.12	0.06	0.13	OL	OL	0.05	0.10	0.05	0.11
8/01/2020	0.54	0.06	0.13	0.02	0.08	0.03	0.07	0.10	0.15	0.07	0.10	0.03	0.09	0.05	0.18	0.05	0.12
9/01/2020	0.53	0.07	0.09	0.02	0.05	0.03	0.07	0.06	0.16	0.09	0.13	0.05	0.13	0.03	0.07	0.05	0.12
10/01/2020	0.51	0.09	0.16	0.03	0.08	0.03	0.09	0.04	0.12	0.09	0.18	0.05	0.14	0.04	0.06	0.08	0.11
11/01/2020	0.51	0.06	0.16	0.02	0.06	0.03	0.06	0.04	0.11	0.09	0.17	0.06	0.10	0.04	0.08	0.07	0.15
12/01/2020	0.49	0.05	0.13	0.01	0.04	0.03	0.06	0.05	0.25	0.11	0.13	0.04	0.11	0.03	0.07	0.07	0.16
13/01/2020	0.50	0.08	0.10	0.02	0.06	0.03	0.06	0.04	0.11	0.09	0.17	0.04	0.13	0.03	0.09	0.09	0.14
14/01/2020	0.61	0.06	0.29	0.04	0.26	0.03	0.16	0.05	0.17	0.10	0.24	0.06	0.18	0.06	0.21	0.08	0.25
15/01/2020	0.48	0.06	0.13	0.02	0.05	0.03	0.08	0.04	0.09	0.07	0.20	0.05	0.10	0.05	0.09	0.07	0.15
16/01/2020	0.47	0.08	0.11	0.02	0.06	0.02	0.06	0.03	0.08	0.03	0.08	0.04	0.11	0.05	0.07	0.03	0.05
17/01/2020	0.49	0.06	0.13	0.02	0.07	0.02	0.06	0.03	0.07	0.02	0.08	0.05	0.07	0.08	0.10	0.03	0.06
18/01/2020	0.46	0.07	0.22	0.03	0.11	0.03	0.08	0.06	0.12	0.03	0.06	0.05	0.13	0.07	0.14	0.03	0.09
19/01/2020	0.45	0.06	0.09	0.03	0.06	0.03	0.06	0.03	0.09	0.03	0.07	0.04	0.11	0.07	0.13	0.02	0.06
20/01/2020	0.45	0.08	0.13	0.03	0.08	0.02	0.06	0.04	0.08	0.01	0.04	0.05	0.10	0.09	0.15	0.03	0.05
21/01/2020	0.44	0.06	0.11	0.02	0.08	0.02	0.06	0.03	0.06	0.01	0.09	0.04	0.06	0.12	0.13	0.03	0.06
22/01/2020	0.44	0.06	0.12	0.03	0.06	0.03	0.05	0.05	0.08	0.01	0.07	0.04	0.10	0.04	0.16	0.02	0.06
23/01/2020	0.44	0.06	0.09	0.04	0.08	0.03	0.07	0.03	0.09	0.02	0.05	0.04	0.11	0.03	0.08	0.02	0.08
24/01/2020	0.43	0.06	0.13	0.03	0.09	0.03	0.06	0.03	0.09	0.02	0.07	0.04	0.08	0.04	0.06	0.03	0.07
25/01/2020	0.43	0.05	0.10	0.04	0.08	0.02	0.06	0.04	0.06	0.02	0.05	0.05	0.10	0.03	0.06	0.02	0.07
26/01/2020	0.42	0.05	0.11	0.05	0.07	0.04	0.06	0.04	0.09	0.01	0.04	0.04	0.11	0.03	0.06	0.02	0.06
27/01/2020	0.42	0.06	0.10	0.06	0.10	0.03	0.08	0.03	0.13	0.02	0.06	0.04	0.11	0.03	0.06	0.02	0.06
28/01/2020	0.42	0.05	0.11	0.04	0.10	0.03	0.06	0.03	0.09	0.02	0.06	0.04	0.08	0.03	0.05	0.03	0.06
29/01/2020	0.42	0.06	0.13	0.07	0.10	0.04	0.07	0.05	0.07	0.02	0.06	0.05	0.10	0.03	0.08	0.00	0.06
30/01/2020	0.41	0.06	0.11	0.08	0.11	0.04	0.06	0.04	0.09	0.02	0.03	0.05	0.11	0.02	0.06	0.00	0.11
31/01/2020	0.42	0.06	0.08	0.07	0.13	0.05	0.09	0.04	0.12	0.02	0.06	0.03	0.10	0.02	0.06	0.03	0.05

Total Number of Measurements Taken, A:	11842	12452	11587	13155	13627	12553	13722	14076
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:	11842	12452	11587	13155	13627	12553	13722	14076
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%

Off Line - OL

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Submitted By (Print): D. Merredew

Signature: Original signed by D. Merredew

WATER TREATMENT PLANT TURBIDITY GRAB MONITORING REPORT

Water System Code: 252.00 Licence No. PWS-09-412-01	Turbidity (NTU)																	
	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-Jan-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
02-Jan-2020	0.46	0.51	0.09	0.06	0.10	0.05	0.07	0.03	0.08	0.06	0.10	0.07	0.11	0.07	0.08	0.04	0.07	0.03
03-Jan-2020	0.47	0.51	0.10	0.08	OL	OL	0.07	0.04	0.09	0.07	0.07	0.04	0.08	0.04	0.09	0.05	0.10	0.05
04-Jan-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
05-Jan-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
06-Jan-2020	0.50	0.51	0.08	0.07	0.09	0.03	0.06	0.04	0.09	0.08	OL	OL	OL	OL	0.08	0.05	0.08	0.05
07-Jan-2020	0.50	0.52	0.12	0.09	OL	OL	0.12	0.04	0.09	0.09	0.09	0.07	OL	OL	0.13	0.05	0.09	0.06
08-Jan-2020	0.49	0.52	0.09	0.07	0.08	0.02	0.09	0.05	0.09	0.10	0.11	0.08	0.16	0.07	0.11	0.05	OL	OL
09-Jan-2020	0.50	0.52	0.08	0.08	0.08	0.03	OL	OL	0.10	0.14	0.11	0.02	0.17	0.09	0.09	0.04	0.09	0.07
10-Jan-2020	0.42	0.49	0.10	0.10	0.10	0.04	OL	OL	OL	OL	0.12	0.15	0.10	0.07	0.09	0.04	0.08	0.08
11-Jan-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12-Jan-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
13-Jan-2020	0.44	0.47	0.09	0.09	0.09	0.03	OL	OL	OL	OL	0.10	0.14	0.14	0.06	0.07	0.04	0.07	0.11
14-Jan-2020	0.45	0.46	OL	OL	OL	OL	0.07	0.03	0.08	0.06	0.08	0.13	0.08	0.07	0.09	0.06	0.11	0.14
15-Jan-2020	0.43	0.46	0.08	0.09	0.08	0.02	0.07	0.03	0.10	0.06	0.10	0.16	OL	OL	OL	OL	0.06	0.13
16-Jan-2020	0.40	0.45	0.07	0.09	0.08	0.03	0.07	0.04	OL	OL	OL	OL	0.07	0.06	0.06	0.06	0.06	0.02
17-Jan-2020	0.44	0.45	OL	OL	OL	OL	0.07	0.03	0.08	0.05	0.07	0.04	0.08	0.06	0.10	0.08	0.09	0.04
18-Jan-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
19-Jan-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
20-Jan-2020	0.44	0.43	0.08	0.08	0.08	0.04	0.08	0.04	OL	OL	OL	OL	0.10	0.05	0.07	0.10	0.07	0.02
21-Jan-2020	0.46	0.41	0.10	0.08	OL	OL	OL	OL	0.09	0.04	0.11	0.03	0.10	0.06	0.07	0.11	0.07	0.02
22-Jan-2020	0.42	0.43	OL	OL	0.07	0.04	0.08	0.04	0.09	0.05	0.07	0.03	0.11	0.06	0.10	0.15	OL	OL
23-Jan-2020	0.44	0.42	0.06	0.08	0.07	0.04	0.06	0.04	OL	OL	0.07	0.02	OL	OL	0.07	0.02	0.06	0.02
24-Jan-2020	0.44	0.42	0.09	0.08	OL	OL	OL	OL	0.07	0.05	0.10	0.05	0.16	0.06	0.08	0.04	0.09	0.03
25-Jan-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
26-Jan-2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
27-Jan-2020	0.44	0.45	0.07	0.07	0.07	0.06	0.07	0.05	OL	OL	0.08	0.03	OL	OL	0.07	0.02	0.06	0.02
28-Jan-2020	0.46	0.41	0.07	0.08	OL	OL	OL	OL	0.06	0.05	0.09	0.04	0.08	0.05	0.09	0.03	0.07	0.02
29-Jan-2020	0.40	0.40	OL	OL	0.06	0.07	0.06	0.05	0.07	0.05	0.08	0.02	0.09	0.06	0.08	0.04	OL	OL
30-Jan-2020	0.45	0.40	0.07	0.07	0.06	0.08	0.07	0.05	0.07	0.06	0.06	0.02	0.09	0.06	OL	OL	OL	OL
31-Jan-2020	0.43	0.37	0.06	0.08	0.08	0.10	0.08	0.06	OL	OL	0.07	0.03	OL	OL	0.08	0.02	0.06	0.02
Total number of measurements taken, A:			18		15		16		15		19		16		20		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:			18		15		16		15		19		16		20		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:

Filter 6 was off-line for maintenance from January 5, 2020 at 12:28 to January 8, 2020 at 14:05.

Report Compiled By: A. Gordon

Authorized in Sample Manager By: B. Bradford

Date Authorized: 4-Feb-20



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 February 2020

Report Period: January 2020

Date	BRANCH 1 [mg/L]		BRANCH 2 [mg/L]	
	Average	Minimum	Average	Minimum
01/01/2020	1.17	1.05	1.23	1.15
02/01/2020	1.22	1.09	1.29	1.17
03/01/2020	1.25	1.13	1.25	1.13
04/01/2020	1.22	1.11	1.18	1.12
05/01/2020	1.20	1.10	1.18	1.13
06/01/2020	1.20	1.12	1.24	1.10
07/01/2020	1.18	1.11	1.26	1.13
08/01/2020	1.21	1.11	1.24	1.11
09/01/2020	1.21	1.07	1.28	1.18
10/01/2020	1.14	1.05	1.20	1.09
11/01/2020	1.10	1.02	1.16	1.05
12/01/2020	1.09	0.98	1.16	1.07
13/01/2020	1.11	1.03	1.18	1.09
14/01/2020	1.27	1.11	1.38	1.10
15/01/2020	1.15	1.03	1.22	1.14
16/01/2020	1.13	0.96	1.23	1.13
17/01/2020	1.06	0.97	1.18	1.09
18/01/2020	1.06	0.96	1.17	1.12
19/01/2020	1.18	1.07	1.25	1.19
20/01/2020	1.30	1.17	1.27	1.18
21/01/2020	1.27	1.13	1.24	1.19
22/01/2020	1.25	1.16	1.24	1.18
23/01/2020	1.27	1.15	1.28	1.22
24/01/2020	1.27	1.13	1.28	1.15
25/01/2020	1.25	1.12	1.22	1.14
26/01/2020	1.26	1.12	1.23	1.17
27/01/2020	1.29	1.18	1.22	1.14
28/01/2020	1.24	1.15	1.19	1.12
29/01/2020	1.26	1.14	1.18	1.04
30/01/2020	1.17	1.02	1.05	0.97
31/01/2020	1.15	1.04	1.11	1.02

Total Number of Measurements, A:	21504	21504
Minimum Free Chlorine Standard:	0.5	0.5
Number of Measurements Meeting Standard, B:	21504	21504
COMPLIANCE, C = B/A X 100%:	100.00	100.00

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Chlorine\2020\01-January

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)
	Analysers	Grab	Grab	Analysers	Grab	Grab
Date						
01-Jan-2020	NA	NA	NA	NA	NA	NA
02-Jan-2020	1.18	1.29	1.45	1.27	1.27	1.51
03-Jan-2020	1.24	1.25	1.49	1.29	1.32	1.43
04-Jan-2020	NA	NA	NA	NA	NA	NA
05-Jan-2020	NA	NA	NA	NA	NA	NA
06-Jan-2020	1.23	1.26	1.38	1.18	1.19	1.35
07-Jan-2020	1.19	1.22	1.41	1.31	1.39	1.48
08-Jan-2020	1.23	1.28	1.48	1.30	1.36	1.50
09-Jan-2020	1.27	1.28	1.43	1.31	1.31	1.51
10-Jan-2020	1.14	1.16	1.35	1.14	1.22	1.38
11-Jan-2020	NA	NA	NA	NA	NA	NA
12-Jan-2020	NA	NA	NA	NA	NA	NA
13-Jan-2020	1.11	1.12	1.32	1.16	1.20	1.43
14-Jan-2020	1.42	1.41	1.67	1.53	1.56	1.79
15-Jan-2020	1.14	1.14	1.31	1.22	1.29	1.46
16-Jan-2020	1.17	1.10	1.36	1.26	1.26	1.46
17-Jan-2020	1.05	1.05	1.30	1.17	1.22	1.39
18-Jan-2020	NA	NA	NA	NA	NA	NA
19-Jan-2020	NA	NA	NA	NA	NA	NA
20-Jan-2020	1.37	1.30	1.40	1.28	1.32	1.47
21-Jan-2020	1.26	1.28	1.46	1.23	1.31	1.44
22-Jan-2020	1.24	1.26	1.41	1.21	1.26	1.50
23-Jan-2020	1.24	1.29	1.43	1.23	1.28	1.43
24-Jan-2020	1.28	1.30	1.49	1.32	1.34	1.50
25-Jan-2020	NA	NA	NA	NA	NA	NA
26-Jan-2020	NA	NA	NA	NA	NA	NA
27-Jan-2020	1.30	1.30	1.49	1.24	1.29	1.41
28-Jan-2020	1.24	1.23	1.42	1.16	1.16	1.37
29-Jan-2020	1.25	1.30	1.44	1.13	1.23	1.35
30-Jan-2020	1.22	1.22	1.37	1.09	1.19	1.36
31-Jan-2020	1.15	1.17	1.41	1.09	1.22	1.40
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:

Report Compiled By: A. Gordon

Authorized By: B. Bradford

Date Authorized: 4-Feb-20



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: **January 2020**

Report Created: **Saturday, February 01, 2020**

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]						
	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
01/01/2020	93.93	0.00	0.00	0.00	0.00	0.00	0.00	70.70	70.70	0.00	0.00	45.59	45.59	0.00	0.00	0.00	0.00	0.00	0.00	52.78	52.78	0.00	0.00	0.00	0.00	0.00	0.00	169.07	169.07	100.00		
02/01/2020	94.19	0.00	0.00	0.00	0.00	0.00	0.00	70.51	70.51	2.94	2.94	26.12	32.00	0.00	0.00	17.07	17.07	0.00	0.00	51.81	51.81	0.00	0.00	0.00	0.00	2.94	2.94	165.51	171.39	96.57		
03/01/2020	94.31	0.00	0.00	0.00	0.00	0.00	0.00	73.34	73.34	0.00	0.00	0.00	0.00	0.00	0.00	49.21	49.21	0.00	0.00	28.54	28.54	0.00	0.08	24.91	24.98	0.00	0.08	175.99	176.07	99.96		
04/01/2020	94.03	0.00	0.00	0.00	0.00	0.00	0.00	74.42	74.42	0.00	0.00	0.00	0.00	0.00	0.00	49.76	49.76	0.00	0.00	0.00	0.00	0.00	0.42	54.39	54.81	0.00	0.42	178.56	178.98	99.77		
05/01/2020	93.94	0.00	0.00	0.00	0.00	0.00	0.00	74.44	74.44	0.00	0.00	0.00	0.00	0.00	0.00	49.76	49.76	0.00	0.00	0.00	0.00	0.00	0.46	54.26	54.72	0.00	0.46	178.47	178.93	99.74		
06/01/2020	93.89	0.00	0.00	0.00	0.00	0.00	0.00	78.71	78.71	0.00	0.00	12.09	12.09	0.00	0.00	40.10	40.10	0.00	0.04	31.34	31.38	0.00	0.28	28.02	28.30	0.00	0.32	190.27	190.59	99.83		
07/01/2020	93.63	0.00	0.05	0.56	0.61	0.00	0.00	83.14	83.14	0.00	0.00	34.51	34.51	0.00	0.00	22.12	22.12	0.00	0.24	49.98	50.22	0.00	0.26	14.06	14.32	0.00	0.55	204.36	204.92	99.73		
08/01/2020	93.36	0.00	0.00	0.00	0.00	0.00	0.00	83.52	83.52	0.00	0.00	58.28	58.28	0.00	0.00	0.00	0.00	0.00	0.00	38.38	38.38	0.00	0.33	25.96	26.29	0.00	0.33	206.14	206.47	99.84		
09/01/2020	92.99	0.00	0.00	0.00	0.00	0.00	0.00	79.64	79.64	0.00	0.00	51.80	51.80	0.00	0.00	0.00	0.00	0.00	0.00	63.58	63.58	0.00	0.00	0.00	0.00	0.00	0.00	195.02	195.02	100.00		
10/01/2020	92.65	0.00	0.00	0.00	0.00	0.00	0.00	76.15	76.15	0.00	0.00	49.27	49.27	0.00	0.00	0.00	0.00	0.00	0.00	59.21	59.21	0.00	0.00	0.00	0.00	0.00	0.00	184.63	184.63	100.00		
11/01/2020	92.55	0.00	0.00	0.00	0.00	0.00	0.00	74.04	74.04	0.00	0.00	48.06	48.06	0.00	0.00	0.00	0.00	0.00	0.00	56.80	56.80	0.00	0.00	0.00	0.00	0.00	0.00	178.90	178.90	100.00		
12/01/2020	92.45	0.00	0.00	0.00	0.00	0.00	0.00	74.28	74.28	0.00	0.00	48.37	48.37	0.00	0.00	0.00	0.00	0.00	0.00	57.35	57.35	0.00	0.00	0.00	0.00	0.00	0.00	179.99	179.99	100.00		
13/01/2020	92.00	0.00	0.00	0.00	0.00	0.00	0.00	74.01	74.01	0.00	0.00	48.26	48.26	0.00	0.00	0.00	0.00	0.00	0.00	34.42	34.42	0.00	0.00	23.34	23.34	0.00	0.00	180.03	180.03	100.00		
14/01/2020	91.77	0.01	0.01	0.00	0.02	0.00	0.00	37.54	37.54	0.02	0.02	23.27	23.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.54	28.54	0.03	0.03	89.35	89.41	99.93		
15/01/2020	91.79	0.00	0.00	0.00	0.00	0.00	0.00	73.41	73.41	0.00	0.00	43.66	43.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.95	67.95	0.00	0.00	185.02	185.02	100.00		
16/01/2020	91.65	0.00	0.00	0.00	0.00	0.00	0.00	73.66	73.66	0.00	0.00	43.67	43.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.69	67.69	0.00	0.00	185.02	185.02	100.00		
17/01/2020	92.01	0.00	0.00	0.00	0.00	0.00	0.00	74.52	74.52	0.00	0.00	44.29	44.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.74	68.74	0.00	0.00	187.54	187.54	100.00		
18/01/2020	92.63	0.00	0.00	0.00	0.00	0.00	0.00	74.46	74.46	0.00	0.00	44.39	44.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.12	69.12	0.00	0.00	187.97	187.97	100.00		
19/01/2020	94.09	0.00	0.00	0.00	0.00	0.00	0.00	74.30	74.30	0.00	0.00	44.38	44.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.30	69.30	0.00	0.00	187.98	187.98	100.00		
20/01/2020	94.09	0.00	0.00	45.38	45.38	0.00	0.00	26.15	26.15	0.00	0.00	45.64	45.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.82	70.82	0.00	0.00	187.98	187.98	100.00		
21/01/2020	94.59	0.00	0.00	69.86	69.86	0.00	0.00	0.00	0.00	0.00	0.03	46.32	46.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	71.74	71.79	0.00	0.08	187.92	188.01	99.96		
22/01/2020	95.19	0.00	0.00	68.72	68.72	0.00	0.00	0.00	0.00	0.00	0.00	45.39	45.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.25	70.25	0.00	0.00	184.36	184.36	100.00			
23/01/2020	95.38	0.00	0.00	67.46	67.46	0.00	0.00	0.00	0.00	0.00	0.00	43.89	43.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	67.31	67.36	0.00	0.05	178.66	178.71	99.97		
24/01/2020	95.93	0.00	0.00	67.02	67.02	0.00	0.00	0.38	0.38	0.00	0.00	43.59	43.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.61	63.61	0.00	0.00	174.59	174.59	100.00			
25/01/2020	96.60	0.00	0.00	70.26	70.26	0.00	0.00	0.00	0.00	0.00	0.07	48.57	48.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.06	59.06	0.00	0.07	177.89	177.95	99.96			
26/01/2020	97.56	0.00	0.00	69.81	69.81	0.00	0.00	0.00	0.00	0.00	0.03	48.35	48.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.01	59.01	0.00	0.03	177.17	177.21	99.98			
27/01/2020	98.30	0.00	0.00	68.59	68.59	0.00	0.00	0.00	0.00	0.00	0.13	47.39	47.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	57.17	57.25	0.00	0.21	173.15	173.36	99.88		
28/01/2020	99.10	0.00	0.00	69.23	69.23	0.00	0.00	0.00	0.00	0.00	0.03	47.68	47.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.75	56.75	0.00	0.03	173.66	173.69	99.98		
29/01/2020	92.10	0.00	0.00	69.68	69.68	0.00	0.00	0.00	0.00	0.00	0.17	47.90	48.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.27	57.27	0.00	0.17	174.85	175.02	99.90		
30/01/2020	90.78	0.00	0.00	69.80	69.80	0.00	0.00	0.00	0.00	0.00	0.13	47.95	48.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.09	57.09	0.00	0.13	174.84	174.97	99.92		
31/01/2020	93.42	0.00	0.00	70.32	70.32	0.00	0.00	0.00	0.00	0.00	0.10	48.41	48.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	57.59	57.71	0.00	0.22	176.32	176.54	99.87		
Total [ML]:		0.01	0.06	806.69	806.76	0.00	0.00	1421.30	1421.30	2.96	3.67	1227.08	1233.71	0.00	0.00	228.01	228.01	0.00	0.28	524.19	524.47	0.00	2.12	1343.96	1346.08	2.97	6.13	5551.23	5560.33			

Water Volume [%]:
 Untreated: 0.05 %
 Below Dose: 0.11 %
 To Dose: 99.84 %

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

Submitted By (Print): D. Merredew

Signature: Original signed by D. Merredew