Renewable World Energies

February 20, 2019

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

RE: Winter Hydroelectric Project
FERC Project Number P-2064
Flambeau Hydro LLC
Final Report 2018 Water Quality Monitoring Data

Dear Ms. Bose:

On behalf of Flambeau Hydro LLC, "Flambeau" (Licensee), Renewable World Energies, LLC (RWE) is submitting a copy of the *Final Report 2018 Water Quality Monitoring Data* for the Winter Hydroelectric Project. The Federal Energy Regulatory Commission "FERC" issued a License to Flambeau on August 12, 2005. A revised Water Quality Certification was issued August 19, 2008. This report is submitted as a requirement of that License pursuant to License Article 401 Condition N, Appendix A. 2018 was the 12th year monitoring was conducted since the license was issued, but is the 7th year of submittal by RWE on the behalf of the Licensee.

Monitoring was conducted on May 7, July 16, and August 22, 2018. No unusual temperature or dissolved oxygen reading were observed. The draft report was sent to the agencies by an attachment to an email on December 14, 2018 for review and comment. The WI DNR did send an email notifying us they have no comment. The next scheduled monitoring event will be conducted in 2019.

If you have any questions concerning this submittal, please contact Brian Kreuscher at the Renewable World Energies, LLC offices @ 855-994-9376 Ext 230. He can also be reached by e-mail at bkreuscher@rwehydro.com.

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Sincerely,
Renewable World Energies, LLC
Agent for Licensee

Mr. Jason Kreuscher
Vice President, Operations

Attachment: Final Report 2018 Water Quality Monitoring Data
Correspondence

Cc: Mr. Paul Strong, USFS
Ms. Sue Reinecke, USFS
Ms. Cheryl Laatsch, WDNR
Mr. Nick Utrup, USFWS
RWE, Corporate

Report

2018 Water Quality Monitoring Data

for the

Winter Hydroelectric Project

FERC Project #2064

Flambeau Hydro, LLC

East Fork of the Chippewa River,
Sawyer County, Wisconsin

Respectfully Submitted by:

Angie Stine

WHITE WATER ASSOCIATES, INC.

429 River Lane, P.O. Box 27
Amasa, Michigan 49903

Phone: 906-822-7889

Summary Winter Hydroelectric Project – FERC #2064

2018 marked the twelfth year of water quality sampling under FERC License issued August 12, 2006 Per Article 401, Water Quality Certification Condition N, Appendix A for the Winter Hydroelectric Project – FERC Project # 2064 – Flambeau Hydro LLC. Monitoring was conducted on May 7, July 16, and August 22, 2018. This document contains all of the associated records for the 2018 monitoring along with summary figures and tables in four appendices: (1) Appendix A (Figures 1-4), (2) Appendix B (Tables 1-3), (3) Appendix C (sampling logs by date), and (4) Appendix D (laboratory reports and chains of custody).

A map of the Winter Hydroelectric Project is shown in Figure 1 indicating the water quality sampling location.

Monitoring results for 2018 are shown in Table 1. No unusual Temperature (Figure 2) or Dissolved Oxygen (Figure 3) readings were observed. The Secchi depths are shown in Figure 4.

In general, the weather (temperature and rainfall) during 2018 monitoring season appeared slightly warmer in May, June, and July, & August, with lower than normal precipitation in November, December, January, February, March, April and June, and normal to high precipitation in the months of October, February, June, July, and August (Table 2). Sampling and testing of the samples was coordinated with the sampling done at the Flambeau Projects (Upper, Lower, Pixley, Crowley). These projects are located on the North Fork of the Flambeau River, Price County, Wisconsin. Protocol, procedures, and sampling design followed that of the Flambeau Projects.

Ice-Out occurred on the East Fork of the Chippewa sometime during the week beginning April 27, 2018. The Ice-Out sampling event occurred on May 7, 2018. River flow, based on the Winter Hydroelectric Project records, was approximately 1577 cubic feet per second. Sampling occurred between 1642 and 1654. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. Samples for laboratory analysis were delivered to White Water Associates, Inc. laboratory in Amasa, MI on May 9, 2018. White Water Associates, Inc. issued a laboratory report on June 5, 2018. No unusual levels of Chlorophyll *a*, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on the Winter Hydroelectric Project records, was approximately 164 cubic feet per second during the July 16, 2018 sampling event. Sampling occurred between 1400 and 1412. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. Samples for laboratory analysis were delivered to White Water Associates, Inc. laboratory in Amasa, MI on July 18, 2018. White Water Associates, Inc. issued a laboratory report on August 6, 2018. No unusual levels of Chlorophyll *a*, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on the Winter Hydroelectric Project records, was approximately 80 cubic feet per second during the August 22, 2018 sampling event. Sampling occurred between 1100 and 1104. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. Samples for laboratory analysis were delivered to White Water Associates, Inc. laboratory in Amasa, MI on August

22, 2018. White Water Associates, Inc. issued a laboratory report on September 4, 2018. No unusual levels of Chlorophyll *a*, True Color, or Total Phosphorus were noted in the laboratory reports.

A summary of a comparison between the 2012 thru 2018 (Table 3) sampling results are as follows:

1. Water Clarity – Secchi Decreased Ice Out, July and August
2. Chlorophyll a – Decreased Ice Out & August & Increased July
3. Color –Decreased Ice Out
4. Total Phosphorus – Increased Ice Out, July & August
5. Overall, D.O. – Decreased Ice Out and July and Decreased August
6. Water Temperatures – Increased Ice Out and July, and August

The next scheduled Water Quality Monitoring at the Winter Hydroelectric Project is set to take place in 2019 beginning with the Ice-Out sampling event.

Appendix A – Winter Hydroelectric Project Figures

Figure 1. Winter Impoundment Project Map

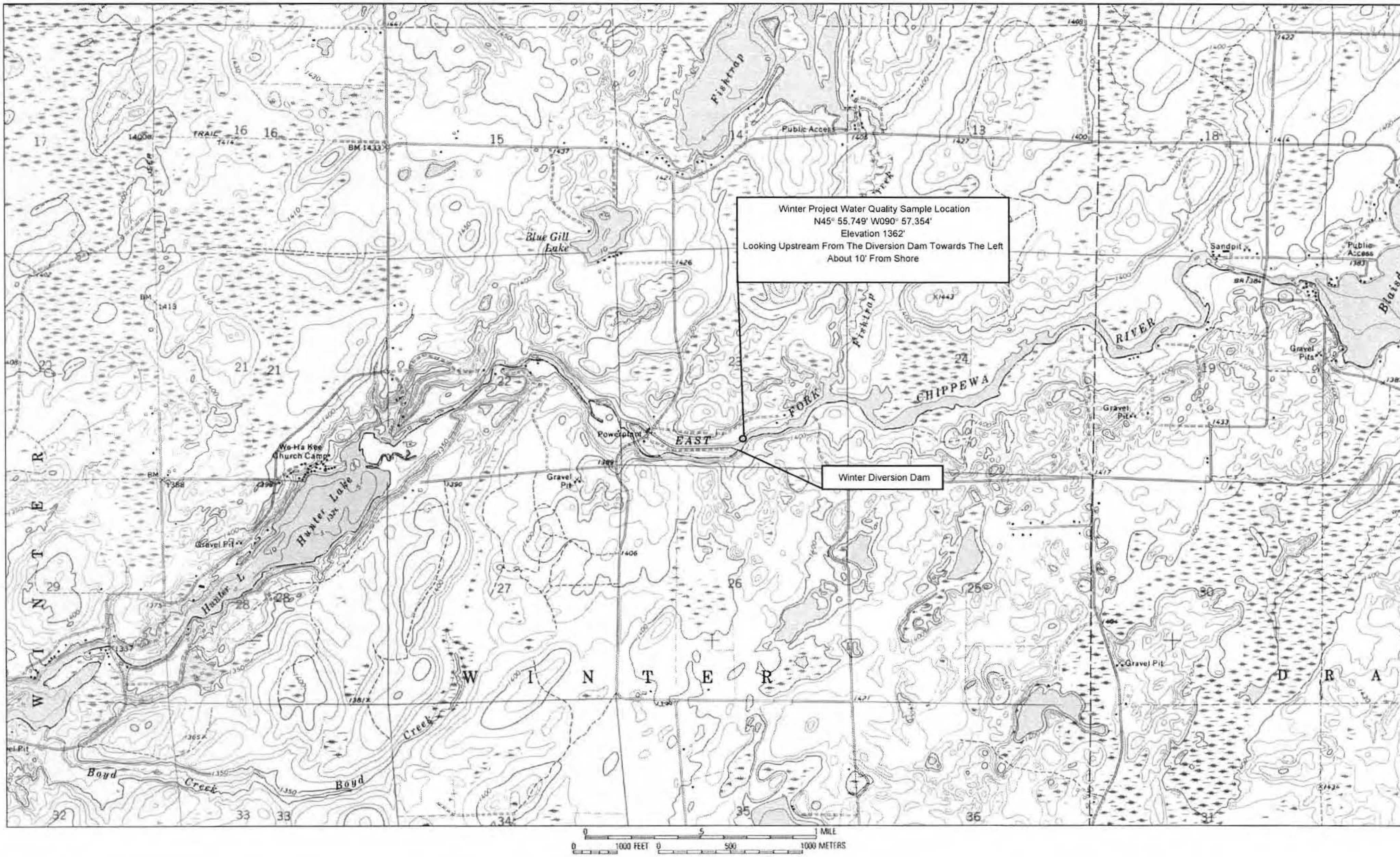

Winter Project Water Quality Sample Location
N45° 55.749' W090° 57.354'
Elevation 1362'
Looking Upstream From The Diversion Dam Towards The Left
About 10' From Shore
Winter Diversion Dam
Powerplant
EAST
FORK
CHIPPEWA
RIVER
Fishtrap
Public Access
Blue Gill Lake
Hunter Lake
Wa-Ha Kee Church Camp
Gravel Pit
Sandpit
Gravel Pits
Blaisdell
Boyd Creek
W I N T E R
D R A
1 MILE
1000 FEET
1000 METERS

Figure 2. Winter Impoundment - FERC #2064
2018 Temperature Samples

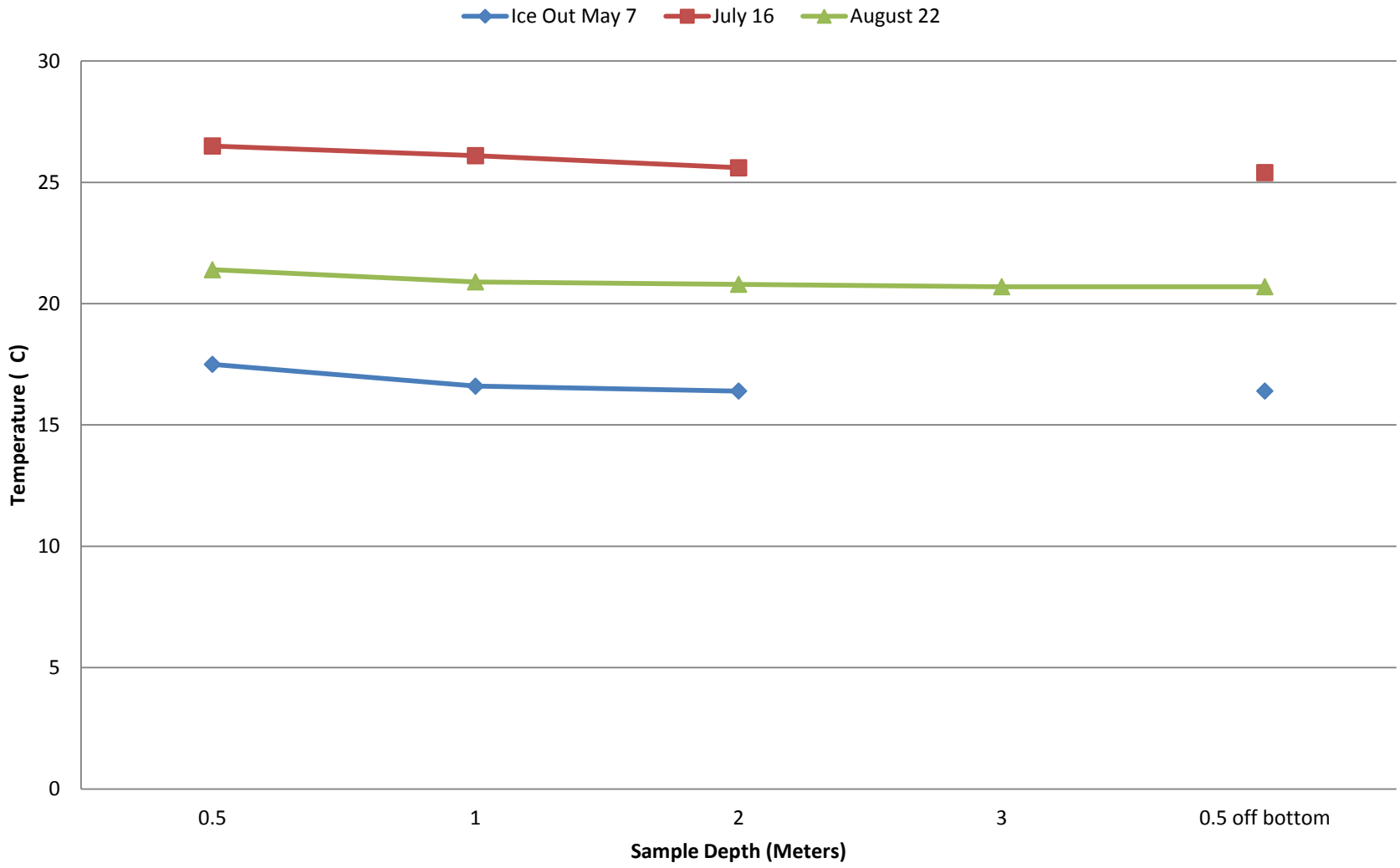
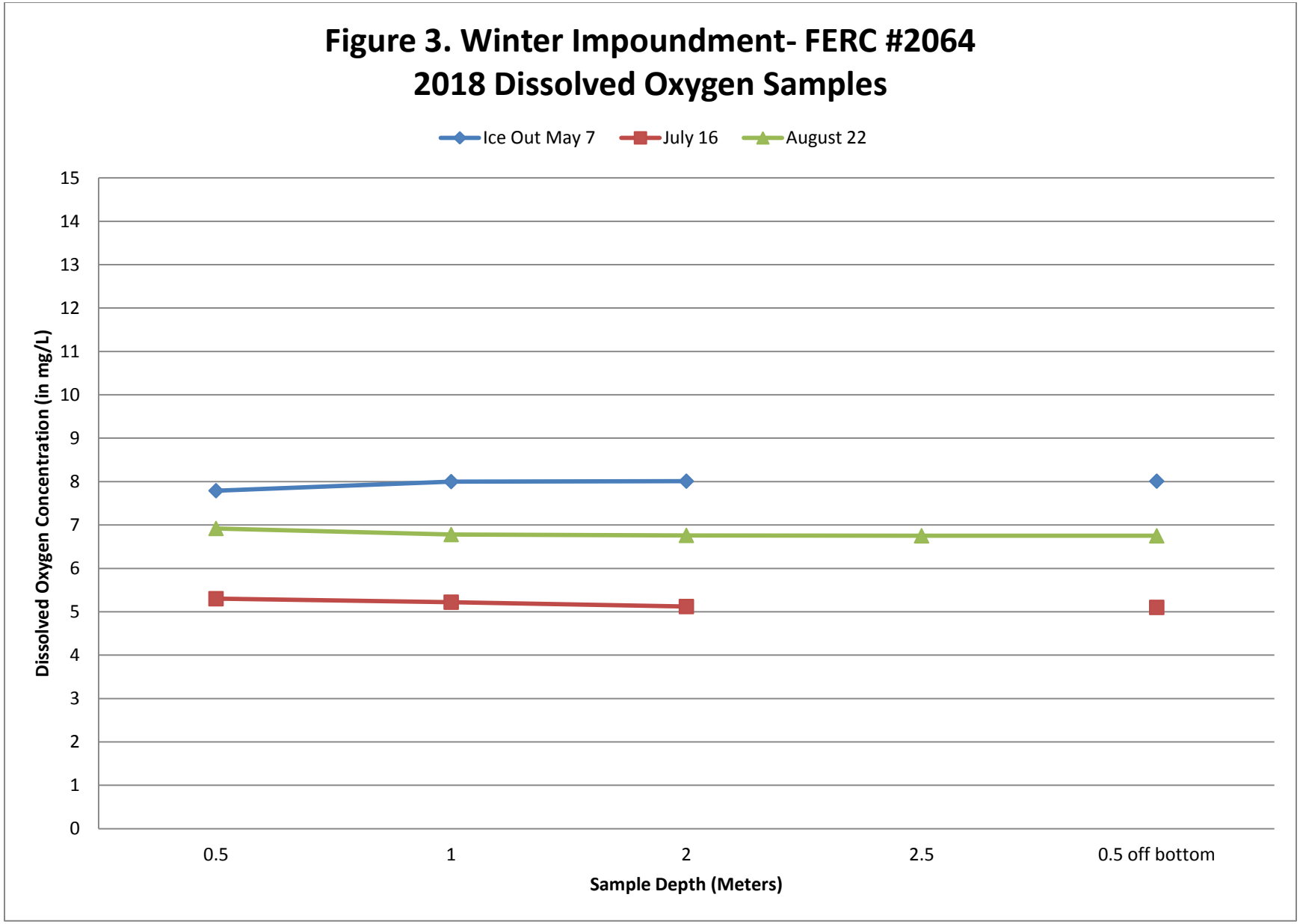


Figure 3. Winter Impoundment- FERC #2064
2018 Dissolved Oxygen Samples



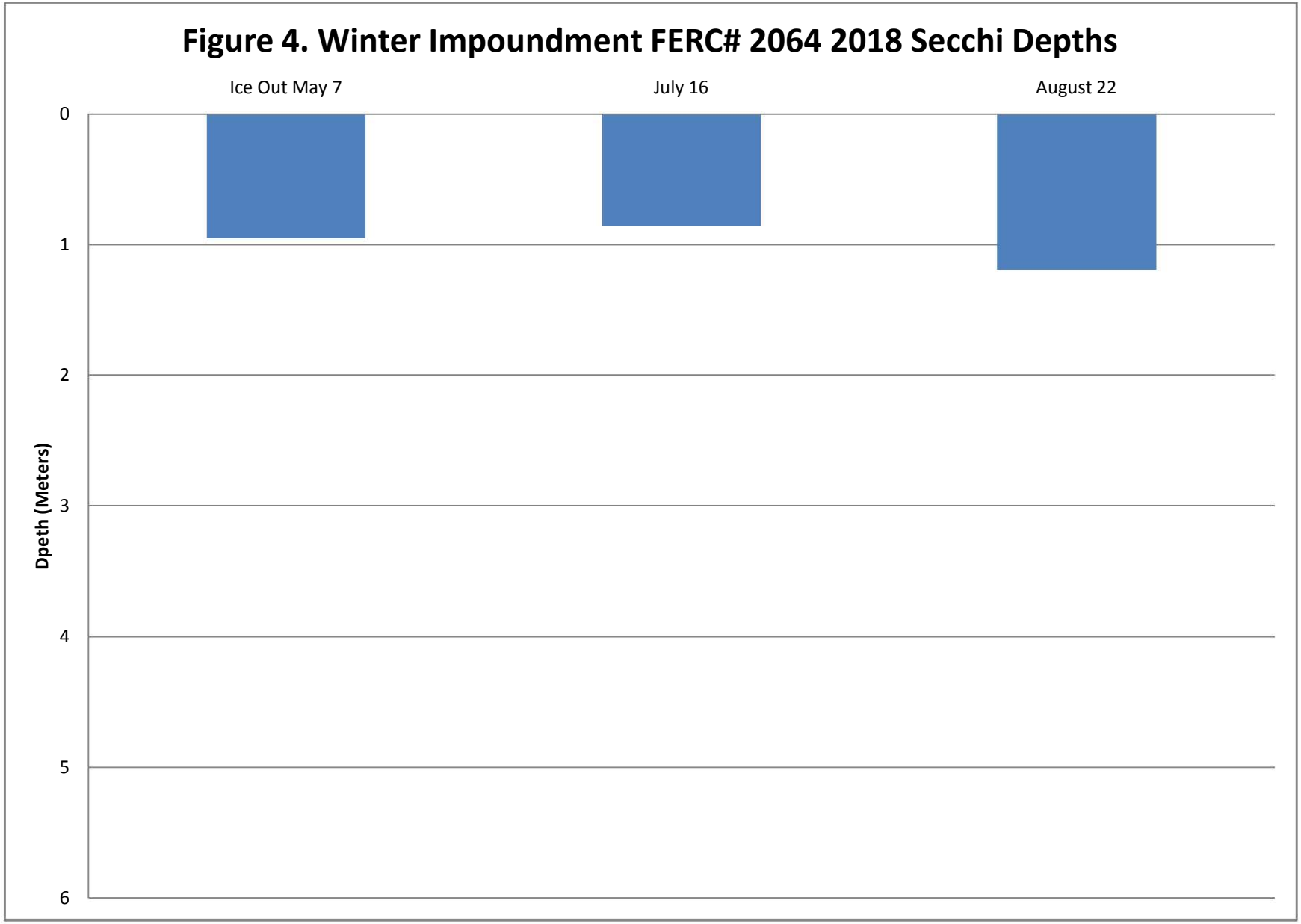


Figure 4. Winter Impoundment FERC# 2064 2018 Secchi Depths
Ice Out May 7
July 16
August 22
0
1
2
3
4
5
6
Dpeth (Meters)

Appendix B – Winter Hydroelectric Project Tables

Table 1. Winter Hydroelectric Project – FERC Project # 2064: 2018 Water Quality Sampling Data

	Ice Out May 7, 2018			July 16, 2018			August 22, 2018		
Project Flow (c.f.s)	1577			164			80		
Dissolved Oxygen	**Time**	**D.O. (mg/L)**	**Water Temp. (°C)**	**Time**	**D.O. (mg/L)**	**Water Temp. (°C)**	**Time**	**D.O. (mg/L)**	**Water Temp. (°C)**
0.5 meter below surface	16:34:08	7.9	17.5	14:00:00	5.3	26.5	10:57:37	6.92	21.4
1 meter below surface	16:36:39	8.00	16.6	14:01:00	5.22	26.1	10:58:20	6.78	20.9
2 meter below surface	16:38:16	8.01	16.4	14:02:00	5.12	25.6	10:59:11	6.76	20.8
3 meter below surface	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.5 meter above bottom	16:38:18	8.01	16.4	14:02:44	5.1	25.4	10:59:47	6.92	21.4
Secchi Disk	**Time**	**Depth (m)**		**Time**	**Depth (m)**		**Time**	**Depth (m)**	
Meters below surface	16:49	0.94		14:10	0.85		11:04	1.2	
Chlorophyll *a*	**Time**	**µg/L**		**Time**	**µg/L**		**Time**	**µg/L**	
1 meter below surface	16:54	No Detect		14:12	3.10		10:59	2.8	
Color (True)	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**
1 meter below surface	16:54	55	5*	14:12	10	5*	10:59	100	5*
Total Phosphorus	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**
1 meter below surface	16:54	0.025	0.01*	14:12	0.033	0.008*	10:59	0.041	0.008*
1 meter above bottom	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
* Considered Method Detection Limit N/A = Not Applicable									

Table 2. 2016/17 Water Year Monthly Temperature and Precipitation for Winter, Wisconsin

Month	Highest Temp.	Lowest Temp.	Average Temp.	Departure From Normal	Heating Degree Days	Normal Degree Days	Total Precip.	Total Snowfall	Normal Precip.	% of Normal Precipitation
October - 17	75	23	45.6	2.4	594	678	3.40	11.1	2.85	74
November - 17	47	-5	25.7	-3.1	1170	1088	1.31	10.5	2.09	80
December - 17	43	-26	10.5	-4.3	1683	1556	0.83	13.4	1.21	80
January – 18	45	-22	11.0	10.2	1666	1699	0.63	44.1	0.96	76
February – 18	43	-17	10.3	15.1	1526	1399	1.73	24.2	0.81	68
March – 18	48	-4	26.1	0.2	1197	1210	0.44	5.1	1.49	64
April – 18	71	2	32.8	-6.8	958	762	1.39	18.5	2.43	58
May – 18	92	29	57.7	6.3	259	426	2.21	0.00	3.23	59
June – 18	85	40	61.8	1.7	125	179	4.64	0.00	4.23	71
July – 18	89	49	69.1	3.3	6	63	3.28	0.00	3.85	70
August – 18	91	48	67.5	3.2	35	86	3.86	0.00	3.70	76
September - 18	81	30	59.1	3.5	219	298	3.51	0.00	4.11	75

Source: NOAA/Duluth, MN

Table 3. Winter Project Sampling Comparison Table: 2012 Thru Current Year									
Year	**Month**	**Secchi Depth**	**Chlorophyll *a***	**Color (True)**	**Total Phosphorus**	**Low D.O.**	**High D.O.**	**Low Water Temp.**	**High Water Temp.**
		meters	**µg/L**	**C.P.U. Units**	**Below Surface mg/L**	**mg/L**	**mg/L**	**° C**	**° C**
2012	April	0.50	2.30	250.00	0.048	10.55	10.73	9.90	10.60
2013	May	1.20	1.90	250.00	0.036	9.34	9.61	6.90	7.80
2014	June	1.50	2.30	300.00	0.055	6.98	7.07	19.90	20.10
2015	April	0.80	3.70	180.00	0.036	9.57	9.72	10.00	11.60
2016	March	0.67	0.41	40.00	0.020	11.30	11.49	3.10	3.60
2017	April	1.03	3.90	35.00	0.022	10.15	10.30	7.20	8.10
2018	May	0.94	ND	55.00	0.025	7.79	8.01	16.40	17.50
Minimum	March-June	0.50	0.41	35.00	0.020	6.98	7.07	3.10	3.60
Maximum	March-June	1.50	3.90	300.00	0.055	11.30	11.49	19.90	20.10
Average	March-June	0.95	2.42	158.7	0.035	9.38	9.56	10.49	11.33
2012	July	0.60	1.80	400.00	0.082	4.67	4.75	25.50	25.90
2013	July	0.80	1.90	400.00	0.064	5.05	5.21	25.20	26.10
2014	July	0.60	1.50	250.0	0.050	6.31	6.44	19.00	19.40
2015	July	0.70	1.80	25.00	0.044	6.47	6.53	22.30	22.30
2016	July	0.70	2.20	85.00	0.035	5.77	5.86	22.60	23.10
2017	July	1.40	3.10	55.00	0.033	6.31	6.43	24.20	24.30
2018	July	0.85	3.10	10.00	0.054	5.10	5.30	25.40	26.50
Minimum	July	0.60	1.50	10.00	0.033	4.67	4.75	19.00	19.40
Maximum	July	1.40	3.10	400.00	0.082	6.47	6.53	25.50	26.50
Average	July	0.81	2.20	175.00	0.052	5.67	5.79	23.46	23.94
2012	August	1.10	3.00	200.00	0.047	7.27	7.55	23.40	25.10
2013	August	0.90	2.00	200.00	0.120	5.49	6.10	20.00	20.10
2014	August	0.90	1.80	150.00	0.040	6.54	6.68	23.70	23.80
2015	August	0.70	3.30	300.00	0.051	5.95	6.10	22.80	23.20
2016	August	0.98	1.50	60.00	0.038	5.83	5.96	23.50	24.80
2017	August	1.40	2.80	40.00	0.023	6.66	6.79	20.30	20.30
2018	August	1.20	2.80	100.00	0.041	6.75	6.92	20.70	21.40
Minimum	August	0.70	1.50	40.00	0.023	5.49	5.96	20.00	20.10
Maximum	August	1.40	3.30	300.00	0.120	7.27	7.55	23.70	25.10
Average	August	1.03	2.46	150.00	0.051	6.36	6.59	22.06	22.67

Appendix C – Winter Impoundment Project Sampling Logs

IMPOUNDMENT SAMPLING LOG

Water Quality Study Location Winter

Hydroelectric Project – FERC # 2064

Date: 5/7/2018

Pre-Sampling Data: 16:54

HWL 1330.55 TWL 1346.62 CFS 1572

Sample Location: N45° 55.749
W 90° 57.354

Performed by:
Angie Stine

Time: 16:42 Barometer: 30

Air Temp: 83 °C F Wind Speed: W 10 mpH

Sky Conditions: _____

Precipitation within Last 24 Hours: None

D.O. Meter Calibration:

Instrument Model Used: HQ40D

Were the batteries changed? ☐ Yes ☒ No

If yes, when were they changed: _____

Battery Status: 100 % Charge

Calibration Method: Factory

Sampling Depth Profile: Measured depth to bottom of impoundment: 5 ~~Feet~~ Meters

Secchi Depth (± 0.1)			
Time 16:49	0.94 m	3.1	Feet

Comments:

Chlorophyll *a* (3 feet below surface horizontal sampler)		
Lab Sample I.D. #:		
Time 16:54	Quantity (ml)	Filtered
	1000	In Lab
Preservative	$MgCO_3$	

True Color (3 feet below surface horizontal sampler)
Lab Sample I.D. # :
Time: 16:54

Total Phosphorus (3 feet below surface horizontal sampler)	
Lab Sample I.D. # :	
Time 16:54	Preservative
	H_2SO_4

Total Phosphorus (3 feet above bottom horizontal sampler) *	
Lab Sample I.D. # :	
Time	Preservative
	H_2SO_4

D.O. and Temperature Profile			
Depth ~~(Meters)~~ ft	Time	D.O. (mg/L)	Temperature ° C
0.5 below surface	16:34:08	7.79	17.5
1	16:34:48	7.92	17.6
2	16:35:37	7.98	16.7
3	16:36:34	8.00	16.6
4	16:37:23	8.01	16.5
5	16:38:16	8.01	16.4
6			
7			
8			
0.5 above bottom	16:36:18	8.01	16.4

*If D.O. is below 5.0 mg/L notify agency and measure D.O. at 1.0 foot intervals if <5.0 mg/L.

WHITE WATER ASSOCIATES, INC.

IMPOUNDMENT SAMPLING LOG

Water Quality Study Location Winter

Hydroelectric Project – FERC # 2069

Date: 7-16-18

Pre-Sampling Data:

HWL 370.42 TWL 344.94 CFS 164

Sample Location: N 45° 55.749
W 90° 57.354

Performed by: Stine Warmbar

Time: 14:00 Barometer: 29.9

Air Temp: 79 °F Wind Speed: W 14 mpH

Sky Conditions: 95% clouds

Precipitation within Last 24 Hours: no

D.O. Meter Calibration:

Instrument Model Used: HQ40D

Were the batteries changed? ☐ Yes ☒ No

If yes, when were they changed: _____

Battery Status: 60 % Charge

Calibration Method: Factory

Sampling Depth Profile: Measured depth to bottom of impoundment: 6 Feet

Secchi Depth (± 0.1)		
Time 14:10	2.8	Feet
	0.85 m	

Comments:

Chlorophyll *a* (3 feet below surface horizontal sampler)		
Lab Sample I.D. #:		
Time 14:12	Quantity (ml)	Filtered
	1000	In Lab
Preservative	$MgCO_3$	

True Color (3 feet below surface horizontal sampler)	
Lab Sample I.D. # :	
Time: 14:12	

Total Phosphorus (3 feet below surface horizontal sampler)	
Lab Sample I.D. # :	
Time 14:12	Preservative
	H_2SO_4

Total Phosphorus (3 feet above bottom horizontal sampler)	
Lab Sample I.D. # :	
Time	Preservative
	H_2SO_4

D.O. and Temperature Profile			
Depth (Meters)	Time	D.O. (mg/L)	Temperature °C
0.5 below surface	14:00	5.30	26.5
1	14:01	5.22	26.1
2	14:02	5.12	25.6
3			
4			
5			
6			
7			
8			
0.5 above bottom	14:02.4	5.10	25.4

*If D.O. is below 5.0 mg/L notify agency and measure D.O. at 1.0 foot intervals if <5.0 mg/L.

WHITE WATER ASSOCIATES, INC.

IMPOUNDMENT SAMPLING LOG

Water Quality Study Location Winter

Hydroelectric Project – FERC # 20604

Date: 8-22-18

Pre-Sampling Data:

HWL 1370.32 TWL 1347.61 CFS 80

Sample Location: N45° 55.749
W 90° 57.354

Performed by:
Steve Lexmond

Time: 11:00 Barometer: 30.1

Air Temp: 71°F °C Wind Speed: WNW 8 mph

Sky Conditions: Clear

Precipitation within Last 24 Hours: NO

D.O. Meter Calibration:

Instrument Model Used: HQ40D

Were the batteries changed? ☐ Yes ☑ No

If yes, when were they changed: _____

Battery Status: 90 % Charge

Calibration Method: Factory

Sampling Depth Profile: Measured depth to bottom of impoundment: 6 Feet

Secchi Depth (± 0.1)		
Time 11:04	3.9	Feet
	1.2m	

Comments:

Chlorophyll *a* (3 feet below surface horizontal sampler)		
Lab Sample I.D. #:		
Time 10:59	Quantity (ml)	Filtered
	1000	In Lab
Preservative	$MgCO_3$	

True Color (3 feet below surface horizontal sampler)
Lab Sample I.D. # :
Time: 10:59

Total Phosphorus (3 feet below surface horizontal sampler)	
Lab Sample I.D. # :	
Time 10:59	Preservative
	H_2SO_4

Total Phosphorus (3 feet above bottom horizontal sampler)	
Lab Sample I.D. # :	
Time	Preservative
	H_2SO_4

D.O. and Temperature Profile			
Depth (Meters)	Time	D.O. (mg/L)	Temperature °C
0.5 below surface	10:57:37	6.92	21.4
1	10:58:20	6.78	20.9
2	10:59:11	6.76	20.8
2.5	10:59:47	6.75	20.7
4			
5			
6			
7			
8			
0.5 above bottom	10:59:49	6.75	20.7

*If D.O. is below 5.0 mg/L notify agency and measure D.O. at 1.0 foot intervals if <5.0 mg/L.

WHITE WATER ASSOCIATES, INC.

Appendix D – Winter Hydroelectric Project Lab Reports and Chains of Custody

ANALYTICAL REPORT

WHITE WATER ASSOCIATES, INC.
429 River Lane • PO Box 27 Amasa, MI 49903 • Ph (906) 822-7889 • Fax -7977

Cover Page

Client: RWE **WWA Job #:** 75736

Project: Monitoring

Date Received: 5/9/2018 **Date Reported:** 6/5/2018

Sample Number	Client Sample ID	Date Sampled	Sample Matrix
75736-001	Winter	05/07/18	Water

WHITE WATER ASSOCIATES, INC.
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Cover Page..continued

Client: RWE **WWA Job #:** 75736

Comments (if any):

Key to Laboratory Flags:

*: RPD exceeds limits.
B: The analyte was found in the associated blank as well as in the sample.
J: The quantitation is an estimated value because the result is less than the sample quantitation limit but greater than the detection limit.
M: A matrix effect was present.
Q: Batch QC data associated with the analysis does not meet the stated objectives
H: Indicates analytical holding time exceedance.
U: The analyte was analyzed for, but not detected.
P: A manual peak selection or manual integration was performed to correct an erroneous software selection.

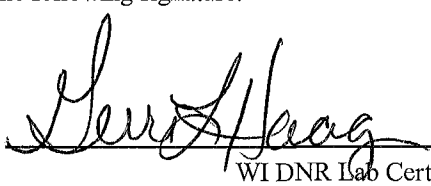
ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit
ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid)
For coliform, Negative = No coliform bacteria detected, Positive = Coliform bacteria detected

Sample Types:
S = Solids, DW = Drinking water, D = Dissolved, T = Total, TC = TCLP extract, SP = SPLP extract

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without the written approval of this laboratory. The Chain of Custody is attached.

This report satisfies the requirements of your project but has not been prepared to comply with NELAP reporting requirements.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and White Water Associates Standard Operating Procedures. Exceptions, if any, are discussed in the accompanying sample narrative. Release of this Final Report is authorized by White Water Associates management, as is verified by the following signature.

Approved By: 

WI DNR Lab Certification Number: 999971280
MI DEQ Certification Number: 9306
DoD-ELAP Accreditation Number: 65802
ISO/IEC 17025:2005 Accredited

ANALYTICAL REPORT

WHITE WATER ASSOCIATES, INC.
429 River Lane • PO Box 27 Amasa, MI 49903 • Ph (906) 822-7889 • Fax -7977

Client: RWE **WWA Job #:** 75736

Project: Monitoring

Date Received: 5/9/2018 **Date Reported:** 6/5/2018

Sample Results

Sample No. / ID / Description / Matrix	Result	Flags	Units	Date/Time	Method	MDL	MQL	Analyst
75736-001 / Winter / Water								
General Chemistry Parameters								
Chlorophyll a	ND		mg/m3	6/1/2018 8:30	10200H	NA	NA	CA
Color	55		CU	5/10/2018 13:10	2120B	5	5	AH
Total Phosphorus LL (t)	0.025	J	mg/L	5/25/2018 16:49	365.4	0.008	0.050	NK

ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit,
ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid)

JGut 5/11/18
Version 160504

Job # (WWA office use): 75736

CHAIN-OF-CUSTODY RECORD

WHITE WATER ASSOCIATES, INC.

429 River Lane, P.O. Box 27
Amasa, Michigan 49903

Phone: (906) 822-7889, Fax -7977
Web: white-water-associates.com

CLIENT NAME / BILL TO	EMAIL ADDRESS
RWE	
ADDRESS	TELEPHONE
CITY / STATE / ZIP	CONTRACT / PO / PROJECT NAME / WSSN#
	Monitoring
SAMPLER NAME (print first/last name): Ryan Warmboe	COUNTY OF LOCATION / PAGE 1 OF 1 (Indicate if more than one page of COC records used)
SAMPLER'S SIGNATURE: Ryan Warmboe	Check off preservatives for each bottle upon arrival and indicate total number of bottles. WWA database contains bottle preservation details.

ANALYSIS TYPE REQUESTED (Attach list if neeeded)

Instructions to White Water
Send my report by:
____ email
____ mail

Unless otherwise noted, drinking water report copies are sent to MDEQ and Health Dept.

REMARKS (Note any special instructions provided by client or conditions of receipt noted by WWA lab staff. Also note any residual chlorine.)

SAMPLE ID AND LOCATION (Containers for each sample may be combined on one line.)	DATE	TIME	SAMPLE MATRIX: Drinking water	Aqueous	Sed.	Soil	Other:	CONTAINERS / PRESERVATIVES: None	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Na Thio	Total Number of Containers	Chla (mg/Co3)	T Phos	Color
Winter	5-7-18	16:54		X				X	X						3	X	X	X

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Comments/Sample temp. on receipt:	Packing: Ice ✓ Cooler ___
Ryan Warmboe	5/9/18	17:10	inhouse	5-9-18	1710		
Relinquished by:	Date:	Time:	Received by:	Date:	Time:	+1	
			login:	5-10-18	~~830~~ 1140		

WHITE - RETURN W/ REPORT CANARY - W/ SAMPLES PINK - CUSTOMER

UPS☐ FedEx☐ USPS☐ Client☐ Other WWA

ANALYTICAL REPORT

WHITE WATER ASSOCIATES, INC.
429 River Lane • PO Box 27 Amasa, MI 49903 • Ph (906) 822-7889 • Fax -7977

Cover Page

Client: RWE **WWA Job #:** 77696

Project: Monitoring

Date Received: 7/18/2018 **Date Reported:** 8/6/2018

Sample Number	Client Sample ID	Date Sampled	Sample Matrix
77696-001	Winter	07/16/18	Water

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Cover Page..continued

Client: RWE **WWA Job #:** 77696

Comments (if any):

Key to Laboratory Flags:

*: RPD exceeds limits.
B: The analyte was found in the associated blank as well as in the sample.
J: The quantitation is an estimated value because the result is less than the sample quantitation limit but greater than the detection limit.
M: A matrix effect was present.
Q: Batch QC data associated with the analysis does not meet the stated objectives
H: Indicates analytical holding time exceedance.
U: The analyte was analyzed for, but not detected.
P: A manual peak selection or manual integration was performed to correct an erroneous software selection.

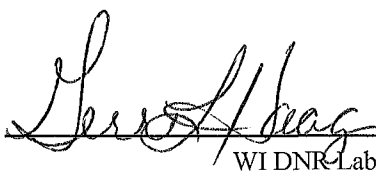
ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit
ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid)
For coliform, Negative = No coliform bacteria detected, Positive = Coliform bacteria detected

Sample Types:
S = Solids, DW = Drinking water, D = Dissolved, T = Total, TC = TCLP extract, SP = SPLP extract

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without the written approval of this laboratory. The Chain of Custody is attached.

This report satisfies the requirements of your project but has not been prepared to comply with NELAP reporting requirements.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and White Water Associates Standard Operating Procedures. Exceptions, if any, are discussed in the accompanying sample narrative. Release of this Final Report is authorized by White Water Associates management, as is verified by the following signature.

Approved By: 

WI DNR Lab Certification Number: 999971280
MI DEQ Certification Number: 9306
DoD-ELAP Accreditation Number: 65802
ISO/IEC 17025:2005 Accredited

ANALYTICAL REPORT

WHITE WATER ASSOCIATES, INC.

429 River Lane • PO Box 27 Amasa, MI 49903 • Ph (906) 822-7889 • Fax -7977

Client: RWE **WWA Job #:** 77696

Project: Monitoring

Date Received: 7/18/2018 **Date Reported:** 9/20/2018

Sample Results

Sample No. / ID / Description / Matrix	Result	Flags	Units	Date/Time	Method	MDL	MQL	Analyst
77696-001 / Winter / Water								
General Chemistry Parameters								
Chlorophyll a	3.1		mg/m3	7/27/2018 13:45	10200H	NA	NA	CA
Color	10		CU	7/19/2018 14:00	2120B	5	5	AH
Total Phosphorus LL (t)	0.054	M	mg/L	8/3/2018 10:25	365.4	0.008	0.050	NK

ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit,
ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid)

JGH 7/2018
Version 160504

Job # (WWA office use): 77696 **CHAIN-OF-CUSTODY RECORD**

WHITE WATER ASSOCIATES, INC.

429 River Lane, P.O. Box 27
Amasa, Michigan 49903

Phone: (906) 822-7889, Fax -7977
Web: white-water-associates.com

CLIENT NAME / BILL TO	EMAIL ADDRESS
RWE	
ADDRESS	TELEPHONE
CITY / STATE / ZIP	CONTRACT / PO / PROJECT NAME / WSSN#
	Monitoring
SAMPLER NAME (print first/last name): Angie Shri	COUNTY OF LOCATION / PAGE 1 OF 1 (Indicate if more than one page of COC records used)
SAMPLER'S SIGNATURE	Check off preservatives for each bottle upon arrival and indicate total number of bottles. WWA database contains bottle preservation details.

ANALYSIS TYPE REQUESTED (Attach list if neeeded)

Instructions to White Water
Send my report by:
____ email
____ mail

Unless otherwise noted, drinking water report copies are sent to MDEQ and Health Dept.

REMARKS (Note any special instructions provided by client or conditions of receipt noted by WWA lab staff. Also note any residual chlorine.)

SAMPLE ID AND LOCATION (Containers for each sample may be combined on one line.)	DATE	TIME	SAMPLE MATRIX: Drinking water	Aqueous	Sed.	Soil	Other:	CONTAINERS / PRESERVATIVES: None	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Na Thio	Total Number of Containers	Chlorine (mg/L)	T Phos	Color
Winter	7/16/18	14:12		X				X	X						3	X	X	X

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Comments/Sample temp. on receipt:
						Packing: Ice ✓ Cooler ✓
X [signature]	7/18/18	16:58	Nicole A. Kunzak	7/18/18	16:58	T=2°C

WHITE - RETURN W/ REPORT CANARY - W/ SAMPLES PINK - CUSTOMER

UPS☐ FedEx☐ USPS☐ Client☐ Other WWA

Cover Page

ANALYTICAL REPORT

WHITE WATER ASSOCIATES, INC.

429 River Lane • PO Box 27 Amasa, MI 49903 • Ph (906) 822-7889 • Fax-7977

Client:	RWE	**WWA Job #:**	78453
Project:	Monitoring		
Date Received:	8/22/2018	**Date Reported:**	9/4/2018

Sample Number	Client Sample ID	Date Sampled	Sample Matrix
78453-001	Winter	08/22/18	Water

Comments (if any):

Key to Laboratory Flags:

*: RPD exceeds limits.
B: The analyte was found in the associated blank as well as in the sample.
J: The quantitation is an estimated value because the result is less than the sample quantitation limit but greater than the detection limit.
M: A matrix effect was present.
Q: Batch QC data associated with the analysis does not meet the stated objectives
H: Indicates analytical holding time exceedance.
U: The analyte was analyzed for, but not detected.
P: A manual peak selection or manual integration was performed to correct an erroneous software selection.

ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit
ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid)
For coliform, Negative = No coliform bacteria detected, Positive = Coliform bacteria detected

Sample Types:
S = Solids, DW = Drinking water, D = Dissolved, T = Total, TC = TCLP extract, SP = SPLP extract

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without the written approval of this laboratory. The Chain of Custody is attached.

This report satisfies the requirements of your project but has not been prepared to comply with NELAP reporting requirements.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and White Water Associates Standard Operating Procedures. Exceptions, if any, are discussed in the accompanying sample narrative. Release of this Final Report is authorized by White Water Associates management, as is verified by the following signature.

Approved By: Lisa Haag

WI DNR Lab Certification Number: 999971280
MI DEQ Certification Number: 9306
DoD-ELAP Accreditation Number: 65802
ISO/IEC 17025:2005 Accredited

ANALYTICAL REPORT

WHITE WATER ASSOCIATES, INC.
429 River Lane • PO Box 27 Amasa, MI 49903 • Ph (906) 822-7889 • Fax -7977

Client: RWE **WWA Job #:** 78453

Project: Monitoring

Date Received: 8/22/2018 **Date Reported:** 9/4/2018

Sample Results

Sample No. / ID / Description / Matrix	Result	Flags	Units	Date/Time	Method	MDL	MQL	Analyst
78453-001 / Winter / Water								
General Chemistry Parameters								
Chlorophyll a	2.8		mg/m3	8/29/2018 15:30	10200H	NA	NA	CA
Color	100		CU	8/23/2018 11:10	2120B	5	5	AH
Total Phosphorus LL (t)	0.041	J	mg/L	8/31/2018 18:12	365.4	0.008	0.050	NK

ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit,
ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid)

Jan 8/24/18
Version 160504

Job # (WWA office use): 78453

CHAIN-OF-CUSTODY RECORD

WHITE WATER ASSOCIATES, INC.

429 River Lane, P.O. Box 27
Amasa, Michigan 49903

Phone: (906) 822-7889, Fax -7977
Web: white-water-associates.com

CLIENT NAME / BILL TO	EMAIL ADDRESS
RWE	
ADDRESS	TELEPHONE
CITY / STATE / ZIP	CONTRACT / PO / PROJECT NAME / WSSN#
	Monitoring
SAMPLER NAME (print first/last name): Ryan Warmboe	COUNTY OF LOCATION / PAGE 1 OF 1 (Indicate if more than one page of COC records used)
SAMPLER'S SIGNATURE: Ryan Warmboe	Check off preservatives for each bottle upon arrival and indicate total number of bottles. WWA database contains bottle preservation details.

ANALYSIS TYPE REQUESTED (Attach list if neeeded)

Instructions to White Water
Send my report by:
____ email
____ mail

Unless otherwise noted, drinking water report copies are sent to MDEQ and Health Dept.

REMARKS (Note any special instructions provided by client or conditions of receipt noted by WWA lab staff. Also note any residual chlorine.)

SAMPLE ID AND LOCATION (Containers for each sample may be combined on one line.)	DATE	TIME	SAMPLE MATRIX: Drinking water	Aqueous	Sed.	Soil	Other:	CONTAINERS / PRESERVATIVES: None	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Na Thio	Total Number of Containers	Chl a (mg/cu)	TPhos	Color
1 Winter	8-22-18	10:59		X				X	X						3	X	X	X

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Ryan Warmboe	8/22/18				
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
				8-22-18	1550

Comments/Sample temp. on receipt: 2

Packing: Ice ✓ Cooler ___

WHITE - RETURN W/ REPORT CANARY - W/ SAMPLES PINK - CUSTOMER

UPS☐ FedEx☐ USPS☐ Client☐ Other WWA

Brian Kreuscher

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Sent: Friday, January 11, 2019 2:00 PM
To: Brian Kreuscher
Cc: Mushel, Joelle A - DNR
Subject: FW: Winter (P-2064) Draft Water Quality Report

See below. We have no comments.

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Cheryl Laatsch
Statewide FERC Coordinator
Bureau of Environmental Analysis and Sustainability
Wisconsin Dept of Natural Resources
N7725 Hwy 28
Horicon WI 53032
(T) 920-387-7869 (Fax) 920-387-7888
Cheryl.laatsch@wisconsin.gov

dnr.wi.gov

From: Roesler, Craig P - DNR
Sent: Friday, January 11, 2019 1:39 PM
To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Subject: RE: Winter (P-2064) Draft Water Quality Report

I have no comments or concerns.

From: Laatsch, Cheryl - DNR
Sent: Wednesday, January 9, 2019 9:52 AM
To: Roesler, Craig P - DNR <Craig.Roesler@wisconsin.gov>; Brian Kreuscher (bkreuscher@rwehydro.com) <bkreuscher@rwehydro.com>
Subject: FW: Winter (P-2064) Draft Water Quality Report

Hi Brian and Craig –

Craig – here is the WQ report for Winter hydro. Can you please review the report and let me know if you have any comments or concerns?

Brian – As you are aware I am on medical leave. I am requesting an additional week or so for review of the report. thanks

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Cheryl Laatsch

Statewide FERC Coordinator
Bureau of Environmental Analysis and Sustainability
Wisconsin Dept of Natural Resources
N7725 Hwy 28
Horicon WI 53032
(T) 920-387-7869 (Fax) 920-387-7888
Cheryl.laatsch@wisconsin.gov

dnr.wi.gov

From: Brian Kreuscher <bkreuscher@rwehydro.com>
Sent: Friday, December 14, 2018 10:37 AM
To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>; Nick Utrup <nick_utrup@fws.gov>; Paul Strong <pstrong@fs.fed.us>; Sue Reinecke <sreinecke@fs.fed.us>
Subject: Winter (P-2064) Draft Water Quality Report

All,

Attached is the Draft Water Quality Report for Winter. The Xcel file has the monitoring data for this Winter report plus the data from the other Wisconsin projects. Please review and provide any comments you may have to me within 60 days for FERC submittal.

Thanks

Brian Kreuscher

Renewable World Energies
Regulatory & Compliance
855-994-9376 x230