Renewable World Energies

February 20, 2019

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

RE: Danbury Hydroelectric Project
FERC Project Number 9184
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 Danbury Hydroelectric Project. The Federal Energy Regulatory Commission "FERC" issued a License to Flambeau on September 5, 2006. This report is submitted as a requirement of that License pursuant to License Article 401 WQC, Condition K. 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 8, July 17, and August 19, 2018. No unusual temperature or dissolved oxygen readings were observed in May but in July the D.O. was below the 5.0 mg/L at 3 feet and in August the D.O. was below 5.0 mg/L at the surface. The report noted that two other areas were sampled at the surface and the D.O. was above 5.0 mg/L at those locations. The draft report was sent to the agencies by an attachment to an email on December 5, 2018 for review and comment. The WIDNR did comment that a table in the report was titled with the wrong date. The error was corrected. 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: Ms. Cheryl Laatsch, WDNR
Mr. Nick Utrup, USFWS
RWE, Corporate

Report

2018 Water Quality Monitoring Data

for the

Danbury Hydroelectric Project

FERC Project #9184

Flambeau Hydro, LLC

Yellow River,
Burnett 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 Danbury Hydroelectric Project – FERC #9184

2018 marked the twelfth year of water quality sampling under FERC License issued on September 5, 2006 to Flambeau Hydro, LLC for the Danbury Hydroelectric Project – FERC Project # 9184 and specifically License Article 401 WQC, Condition K. Monitoring was conducted on May 8, July 17, and August 119, 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 Danbury 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 in May but in July the D.O. was below 5.0 mg/L at 3 feet and in August the D.O. was below 5.0 mg/L at the surface. 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).

Ice-Out occurred between Yellow River sometime during the week beginning May 1, 2018. The Ice-Out sampling event occurred on May 8, 2018. River flow, based on the Danbury Hydroelectric Project records, was approximately 220 cubic feet per second. Sampling occurred between 1350 and 1359. 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 Danbury Hydroelectric Project records, was approximately 124 cubic feet per second during the July 17, 2018 sampling event. Sampling occurred between 1500 and 1521. Samples were taken without incident. No unusual Temperature readings were observed but the D.O. was below 5.0 mg/L below 3 feet (4.87 mg/L). 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 Danbury Hydroelectric Project records, was approximately 124 cubic feet per second during the August 19, 2018 sampling event. Sampling occurred between 1345 and 1400. Samples were taken without incident. No unusual Temperature readings were observed but the D.O. was below 5.0 mg/L below the surface (2.70 mg/L). Two other areas were sampled at the surface and the D.O. was above 5.0 mg/L at those locations. 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 2011 thru 2016 (Table 3) sampling results are as follows:

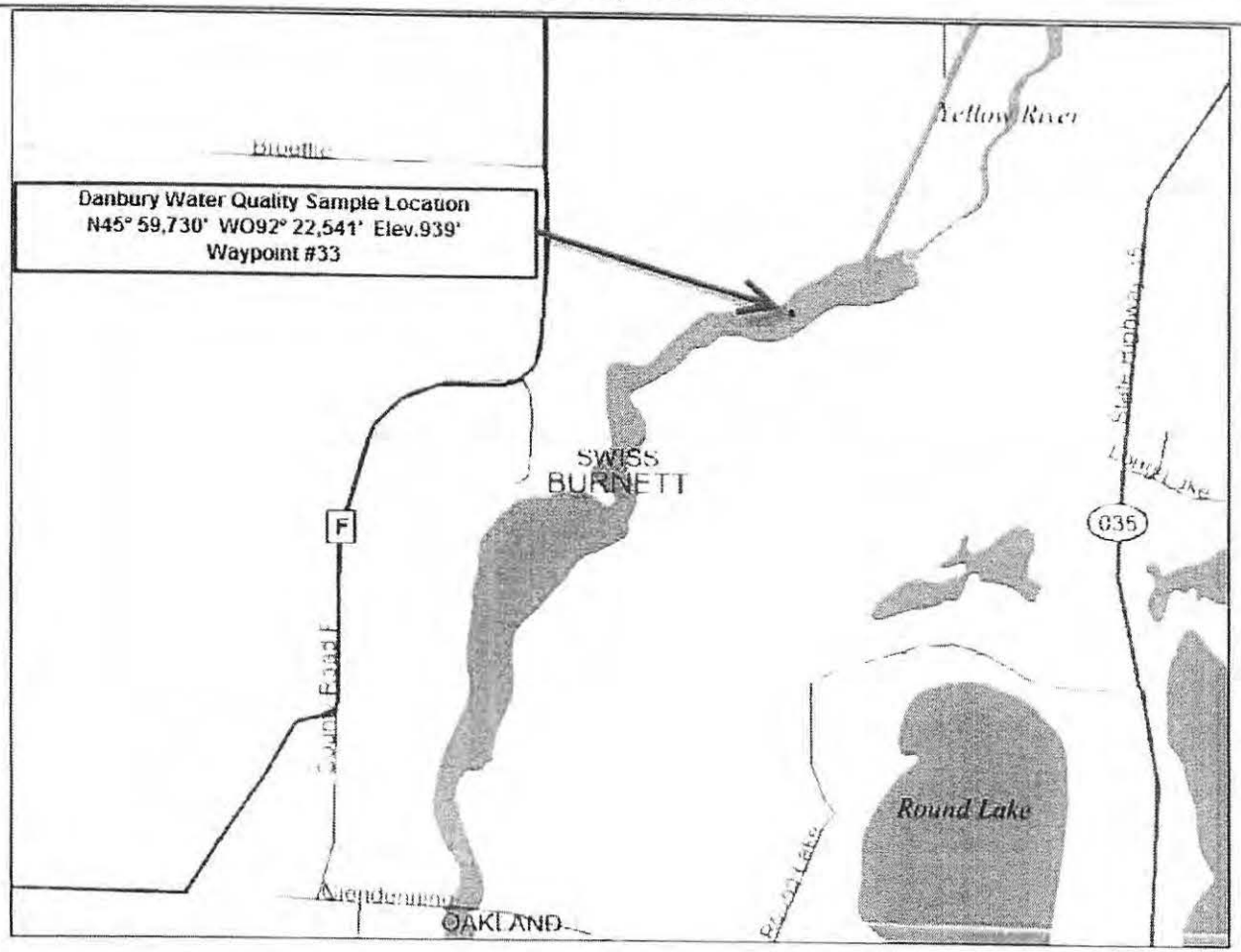
1. Water Clarity – Secchi Increased Ice Out, and Decreased July & August
2. Chlorophyll a – Increased Ice Out & July and Decreased August
3. Color – Increased Ice Out and August
4. Total Phosphorus – Increased Ice Out, July and August
5. Overall, D.O. –Increased Ice Out and July, Decreased August
6.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

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

Appendix A – Danbury Hydroelectric Project Figures

Figure 1. Danbury Hydroelectric Project Map

Danbury Hydroelectric Project
Water Quality Sampling Location
FERC Project #9184



Legend

- Dams
- Major Highways
- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads
- 24K County Boundaries
- Civil Towns
- Civil Town
- 24K Open Water
- 24K Rivers and Shorelines
- Cities and Villages
- Village
- City

Scale: 1:14,043

This map is a user generated static output from an internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION

Figure 2. Danbury Impoundment - FERC #9184
2018 Temperature Samples

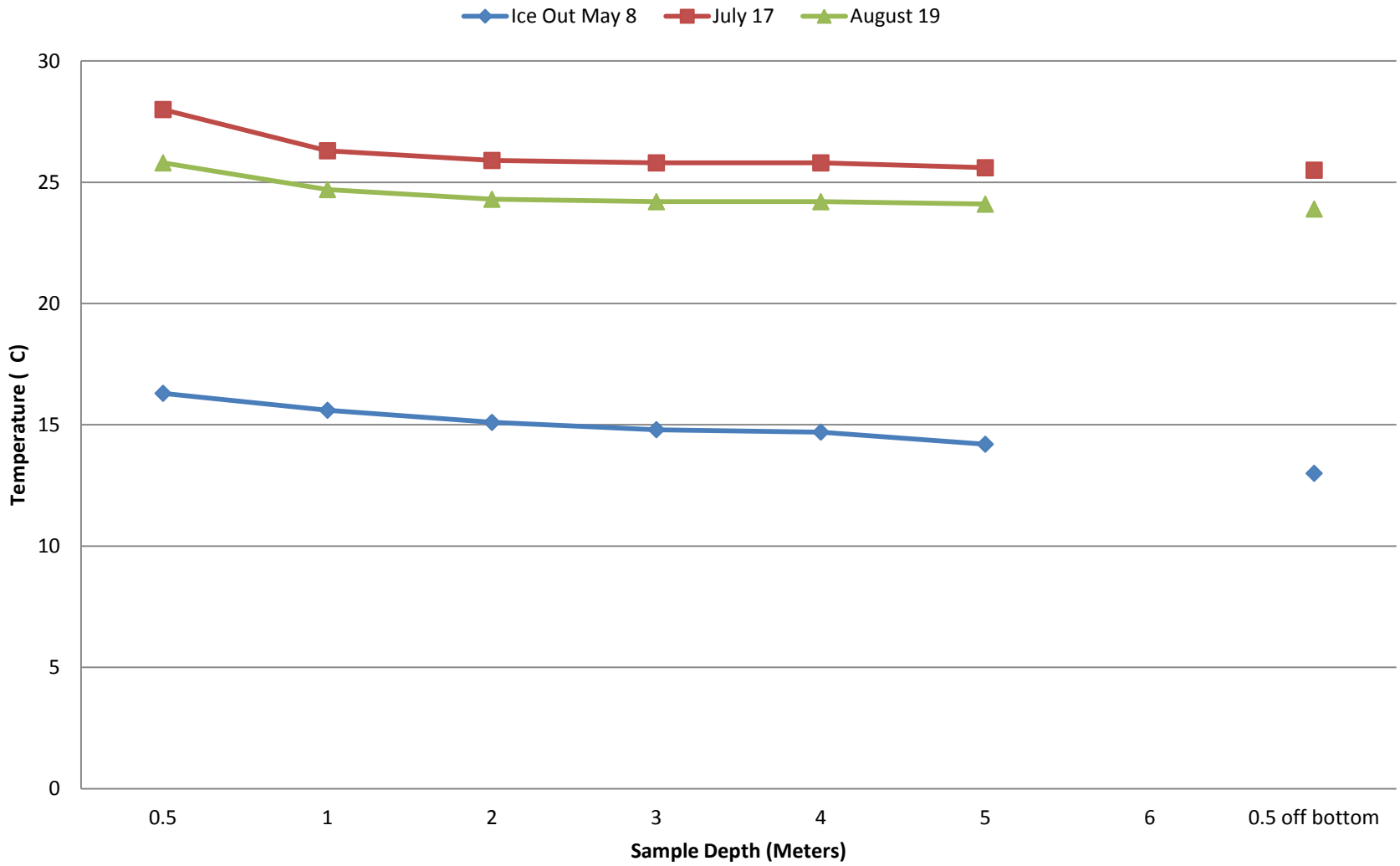
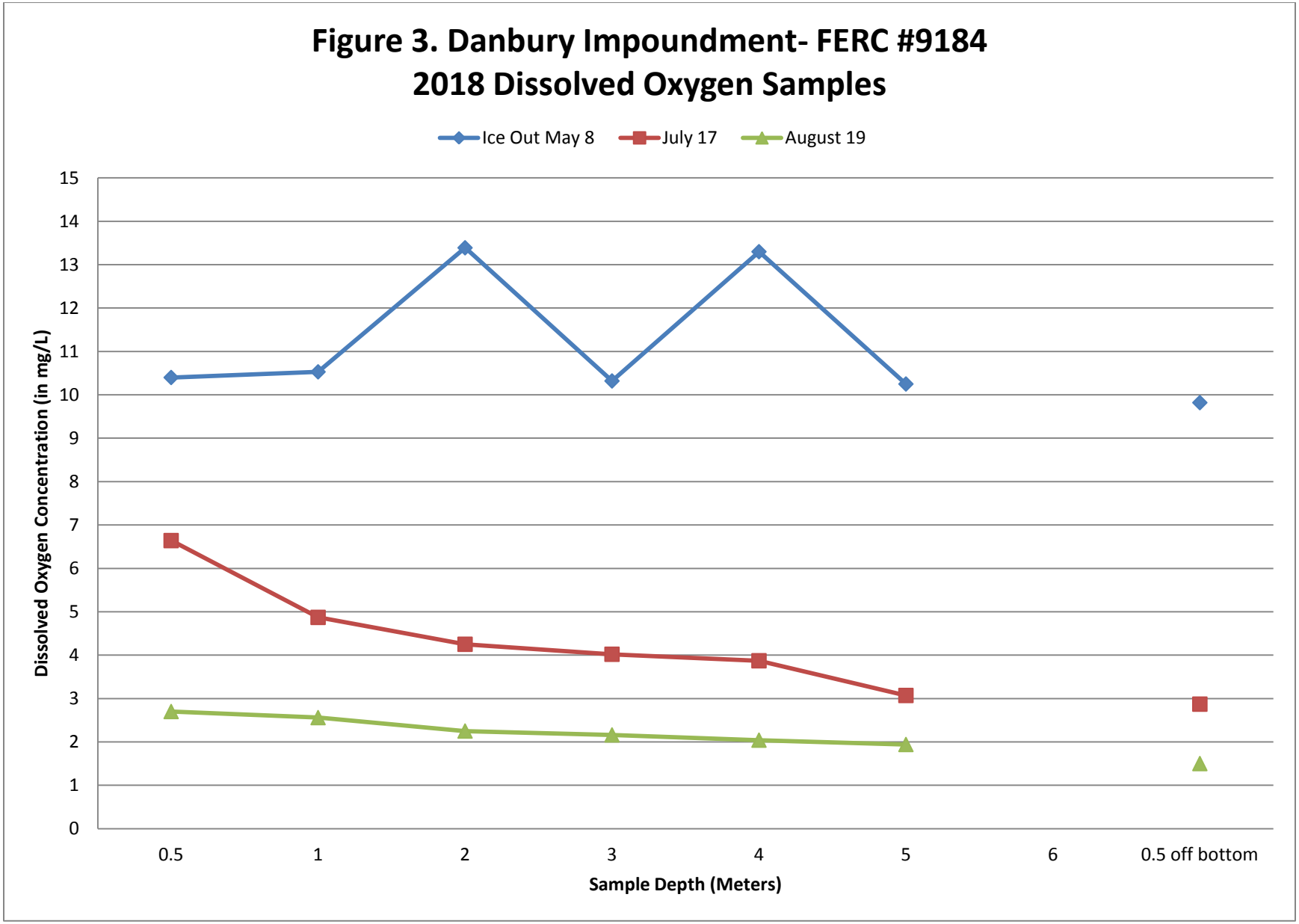


Figure 3. Danbury Impoundment- FERC #9184
2018 Dissolved Oxygen Samples



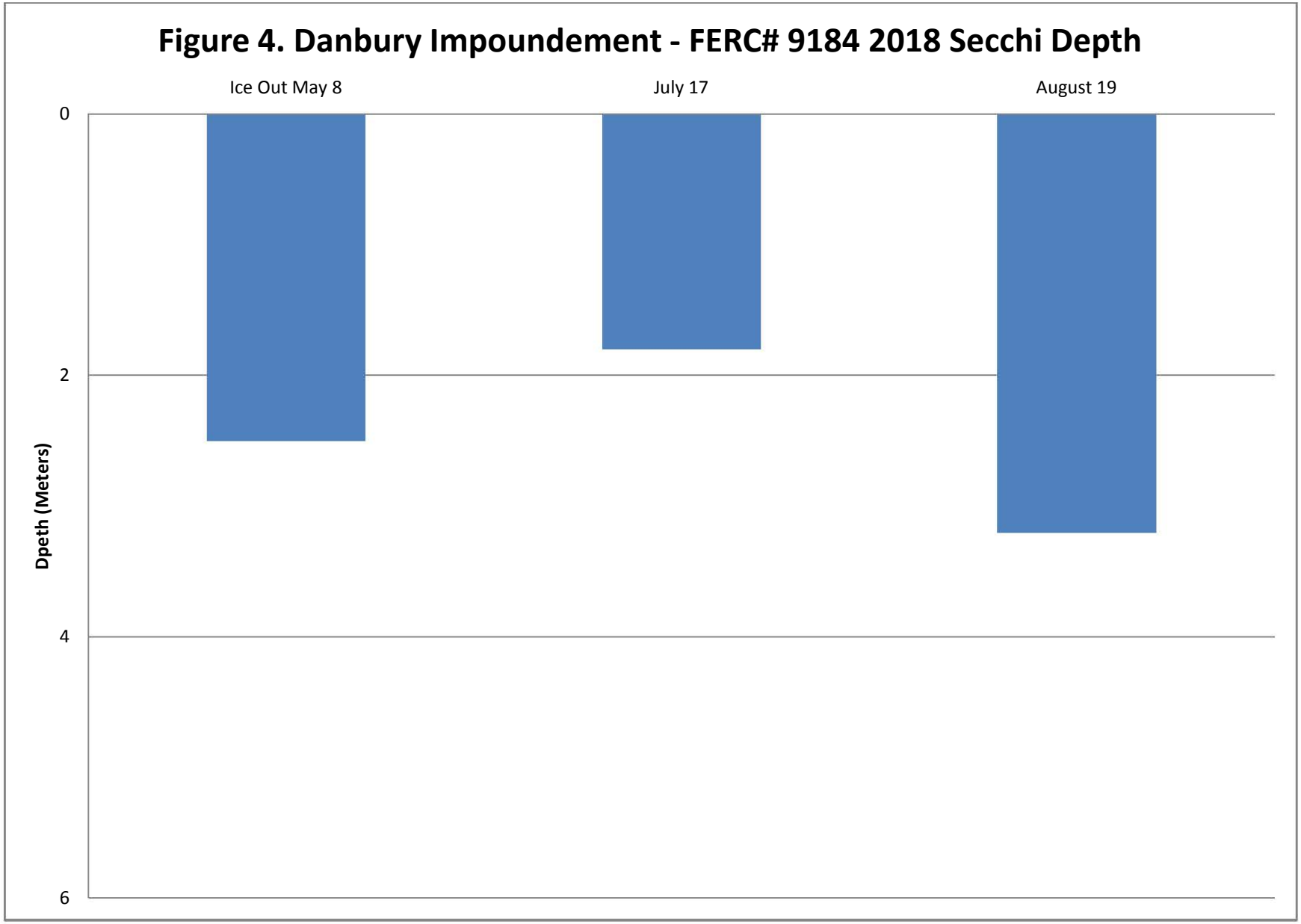


Figure 4. Danbury Impoundement - FERC# 9184 2018 Secchi Depth
Ice Out May 8
July 17
August 19
0
2
4
6
Dpeth (Meters)

Appendix B – Danbury Hydroelectric Project Tables

Table 1. Danbury Hydroelectric Project – FERC Project # 9184: 2018 Water Quality Sampling Data

	Ice Out May 8, 2018			July 17, 2018			August 19, 2018		
Project Flow (c.f.s)	220			124			124		
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	13:55:43	10.40	16.3	15:06:53	6.64	28	13:47:51	2.70	25.8
1 meter below surface	13:56:23	10:53	15.6	15:10:02	4.87	26.3	13:50:16	2.56	24.7
2 meter below surface	13:56:54	10.39	15.1	15:14:12	4.25	25.9	13:53:35	2.25	24.3
3 meter below surface	13:57:30	10.32	14.8	15:15:53	4.02	25.8	13:55:23	2.16	24.2
4 meter below surface	13:57:30	10.30	14.7	15:18:18	3.87	25.8	13:56:52	2.04	24.2
5 meter below surface	13:58:28	10.25	14.2	15:19:03	3.07	25.6	13:58:57	1.94	24.1
6 meter below surface									
0.5 meter above bottom	13:59:51	9.82	13.0	15:21:03	2.87	25.5	13:59:37	1.50	23.9
Secchi Disk	**Time**	**Depth (m)**		**Time**	**Depth (m)**		**Time**	**Depth (m)**	
Meters below surface	13:59	2.5		15:00	1.8		13:45	3.2	
Chlorophyll *a*	**Time**	**µg/L**		**Time**	**µg/L**		**Time**	**µg/L**	
1 meter below surface	13:55	7.80		15:07	14.0		13:50	2.10	
Color (True)	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**
1 meter below surface	13:55	20	5*	15:07	20	5*	13:50	25.	5*
Total Phosphorus	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**
1 meter below surface	13:55	0.028	0.008*	15:07	0.067	0.008*	13:50	0.076	0.008*
1 meter above bottom	13:59	0.025	0.008*	15:11	0.064	0.008*	13:53	0.079	0.008*
*Considered Method Detection Limit N/A = Not Applicable									

Table 2. 2017/18 Water Year Monthly Temperature and Precipitation for Danbury, 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. Danbury Project Sampling Comparison Table: 2012 Thru Current Year										
Year	**Month**	**Secchi Depth**	**Chlorophyll *a***	**Color (True)**	**Total Phosphorus**	**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**	**Above Bottom mg/L**	**mg/L**	**mg/L**	**° C**	**° C**
2012	April	2.80	1.70	25.00	0.030	*	11.93	12.69	10.30	10.60
2013	May	2.00	9.60	25.00	0.036	0.034	11.05	11.19	10.20	11.60
2014	June	2.00	5.50	30.00	0.026	0.026	10.42	10.62	7.90	8.70
2015	April	2.10	11.00	20.00	0.045	0.033	10.32	10.43	11.00	13.40
2016	March	2.23	9.50	15.00	0.020	0.020	12.36	12.64	3.40	3.70
2017	April	2.50	7.10	10.00	0.010	0.012	11.08	11.19	8.40	10.00
2018	May	2.53	7.80	20.00	0.028	0.025	9.82	13.39	13.00	16.30
Minimum	March-June	2.00	1.70	10.00	0.010	0.012	9.82	10.43	3.40	3.70
Maximum	March-June	2.80	11.00	30.00	0.045	0.034	12.36	13.39	13.00	16.30
Average	March-June	2.31	7.46	20.71	0.028	0.025	11.00	11.74	9.17	10.61
2012	July	1.90	6.90	40.00	0.062	0.061	2.96	7.04	26.10	26.70
2013	July	2.50	1.70	40.00	0.062	0.065	4.37	5.24	24.10	25.10
2014	July	2.20	3.30	50.00	0.044	0.044	6.85	20.80	7.86	22.00
2015	July	1.80	5.10	25.00	0.058	0.043	6.24	7.50	22.50	23.50
2016	July	2.38	10.00	20.00	0.022	0.022	5.72	6.77	25.30	27.50
2017	July	2.90	6.30	20.00	0.046	0.032	3.02	6.63	7.86	22.00
2018	July	1.80	14.00	20.00	0.067	0.064	2.87	6.64	25.50	28.00
Minimum	July	1.80	1.70	20.00	0.022	0.022	2.87	5.24	7.86	22.00
Maximum	July	2.90	14.00	50.00	0.067	0.065	6.85	20.80	26.10	28.00
Average	July	2.21	6.76	30.71	0.052	0.047	4.58	8.66	21.92	25.49
2012	August	2.65	40.00	0.06	0.056	0.056	5.44	6.06	21.40	22.00
2013	August	2.80	4.80	35.00	0.060	0.120	1.90	6.33	19.60	22.70
2014	August	1.60	4.50	50.00	0.063	0.052	4.20	5.18	23.40	24.20
2015	August	2.20	7.60	30.00	0.042	0.036	5.89	8.02	23.10	25.40
2016	August	3.02	5.20	20.00	0.037	0.040	2.18	4.15	24.70	26.80
2017	August	3.40	11.00	20.00	0.034	0.034	5.25	6.27	21.00	23.00
2018	August	3.20	2.10	25.00	0.076	0.079	1.50	2.70	23.90	25.80
Minimum	August	1.60	2.10	0.06	0.034	0.034	1.50	2.70	19.60	22.00
Maximum	August	3.40	40.00	50.00	0.076	0.120	5.89	8.02	24.70	26.80
Average	August	2.70	10.74	25.72	0.053	0.060	3.77	5.53	22.44	24.27

*no sample taken

Appendix C – Danbury Impoundment Project Sampling Logs

IMPOUNDMENT SAMPLING LOG

Water Quality Study Location Danbury

Hydroelectric Project – FERC # 9184

Date: 5-8-2018

Pre-Sampling Data:

HWL 929.10 TWL Below Stoplogs CFS 220

Sample Location: WQ1 N45° 59.730
W 92.22541

Performed by:
Steve Warmbier

Time: 13:50 Barometer: 30

Air Temp: 66 °F Wind Speed: 9 mph

Sky Conditions: 100 Clouds

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: 40 % Charge

Calibration Method: Factory

Sampling Depth Profile: Measured depth to bottom of impoundment: 5.5 ~~Feet~~ Meters

Secchi Depth (± 0.1)	
Time 13:59	8.3 Feet

Comments:

Chlorophyll *a* (3 feet below surface horizontal sampler)		
Lab Sample I.D. #:		
Time 13:55	Quantity (ml)	Filtered
	1000	In Lab
Preservative	$MgCO_3$	

True Color (3 feet below surface horizontal sampler)
Lab Sample I.D. # :
Time: 13:55

Total Phosphorus (3 feet below surface horizontal sampler)	
Lab Sample I.D. # :	
Time 13:55	Preservative
	H_2SO_4

Total Phosphorus (3 feet above bottom horizontal sampler)	
Lab Sample I.D. # :	
Time 13:59	Preservative
	H_2SO_4

D.O. and Temperature Profile			
Depth (Meters)	Time	D.O. (mg/L)	Temperature °C
0.5 below surface	13:55:43	10.40	16.3
1	13:56:23	10.53	15.6
2	13:56:54	10.39	15.1
3	13:57:30	10.32	14.8
4	13:57:30	10.30	14.7
5	13:58:28	10.25	14.2
5.5	13:59:19	9.85	13.0
7			
8			
0.5 above bottom	13:59:51	9.82	13.0

*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.

Catawba

IMPOUNDMENT SAMPLING LOG

Water Quality Study Location Danbury

Hydroelectric Project – FERC #_____

Date: 7/17/18

Pre-Sampling Data:

HWL 929.18 TWL 889.55 CFS 124

Sample Location: N35° 59.730 W82. 22.541

Performed by:
Angie Stine Ryan Warmbde

Time: 1500 Barometer: 30.1

Air Temp: 77 °F Wind Speed: NNW 3mph

Sky Conditions: 50% 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: 100 % Charge

Calibration Method: Factory

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

Secchi Depth (± 0.1)		
Time 3:00 pm 1500	m 1.8	Feet

Comments:

Chlorophyll *a* (3 feet below surface horizontal sampler)		
Lab Sample I.D. #:		
Time	Quantity (ml)	Filtered
15:07	1000	In Lab
Preservative	$MgCO_3$	

True Color (3 feet below surface horizontal sampler)
Lab Sample I.D. # :
Time: 15:07

Total Phosphorus (3 feet below surface horizontal sampler)	
Lab Sample I.D. # :	
Time 15:07	Preservative
	H_2SO_4

Total Phosphorus (3 feet above bottom horizontal sampler)	
Lab Sample I.D. # :	
Time 15:11	Preservative
	H_2SO_4

D.O. and Temperature Profile			
Depth (Meters)	Time	D.O. (mg/L)	Temperature ° C
0.5 below surface	15:05:20	7.10	29.5
1	15:06:57	4.87	26.8
2			
3			
4			
5			
6			
7			
8			
0.5 above bottom			

*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.

Danbury
7-17-2018

*D.O. and Temperature Profile			
Depth (Feet)	Time	D.O. (mg/L)	Temperature ° C
0.5 below surface	15:06:33	6.64	28.0
1	15:08:54	5.59	27.7
2	15:09:30	5.04	26.06
3	15:10.02	4.87	26.3
4	15:11.39	4.79	26.2
5	15:12:22	4.65	26.1
6	15:13:41	4.40	26.0
7	15:14:12	4.25	25.9
8	15:14:55	4.17	25.9
9	15:15:23	4.13	25.9
10	15:15:53	4.02	25.8
11	15:16:21	4.00	25.8
12	15:17:04	3.98	25.8
13	15:18:18	3.87	25.8
14	15:18:45	3.83	25.8
15	15:19:10	3.51	25.7
16	15:19:36	3.52	25.7
17	15:19:03	3.07	25.6
18	15:20:35	2.94	25.5
19			
20			
21			
22			
23			
24			
25			
0.5 above bottom	15:21:23	2.89	25.5

WHITE WATER ASSOCIATES, INC.

IMPOUNDMENT SAMPLING LOG

Water Quality Study Location Danbury

Hydroelectric Project – FERC # 9184

Date: 8-14-2018

Pre-Sampling Data:

HWL 928.00 TWL 889.55 CFS 124

Sample Location: N45° 59.730'
W 92 22.641'

Performed by:
A Sime, R Wermbol

Time: 13:45 Barometer: 29.9

Air Temp: 80 °F Wind Speed: SE 4mph

Sky Conditions: 5% clouds

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: 90 % Charge

Calibration Method: Factory

Sampling Depth Profile: Measured depth to bottom of impoundment: 17.5 Feet

Secchi Depth (± 0.1)			
Time	14:00	10.5	Feet

Comments:

Chlorophyll *a* (3 feet below surface horizontal sampler)		
Lab Sample I.D. #:		
Time	Quantity (ml)	Filtered
13:50	1000	In Lab
Preservative		$MgCO_3$

True Color (3 feet below surface horizontal sampler)	
Lab Sample I.D. # :	
Time: 13:50	

Total Phosphorus (3 feet below surface horizontal sampler)	
Lab Sample I.D. # :	
Time 13:50	Preservative
	H_2SO_4

Total Phosphorus (3 feet above bottom horizontal sampler)	
Lab Sample I.D. # :	
Time 13:53	Preservative
—	H_2SO_4

D.O. and Temperature Profile			
Depth (Meters)	Time	D.O. (mg/L)	Temperature °C
0.5 below surface			
1			
2			
3			— 7
4			
5			on Back
6			
7			
8			
0.5 above bottom			

*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.

Danbury 8-19-2018

*D.O. and Temperature Profile			
Depth (Feet)	Time	D.O. (mg/L)	Temperature °C
0.5 below surface	13:47:51	2.70	25.8
1	13:49:13	2.57	25.1
2	13:49:46	2.53	24.8
3	13:50:16	2.56	24.7
4	13:50:01	2.63	24.6
5	13:51:34	2.53	24.5
6	13:52:17	2.33	24.4
7	13:53:35	2.25	24.3
8	13:54:07	2.11	24.3
9	13:54:37	2.15	24.3
10	13:55:23	2.16	24.2
11	13:55:55	2.11	24.2
12	13:56:23	2.08	24.2
13	13:56:52	2.04	24.2
14	13:57:14	2.03	24.2
15	13:57:45	2.00	24.2
16	13:58:15	1.96	24.2
17	13:58:53	1.94	24.1
17.5	13:59:31	1.50	23.9
19			
20			
21			
22			
23			
24			
25			
0.5 above bottom	13:59:37	1.50	23.9

Tested D.O. Closest Limit Bridge E/t
9.65

Wide opening 5.14 surface
4.79 Bottom E/out

WHITE WATER ASSOCIATES, INC.

Appendix D – Danbury 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 #:** 75737

Project: Monitoring

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

Sample Number	Client Sample ID	Date Sampled	Sample Matrix
75737-001	Clam River Surface	05/08/18	Water
75737-002	Clam River Bottom	05/08/18	Water
75737-003	Danbury Surface	05/08/18	Water
75737-004	Danbury Bottom	05/08/18	Water

WHITE WATER ASSOCIATES, INC.
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Cover Page..continued

Client: RWE **WWA Job #:** 75737

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: Gerald Haag

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

ANALYTICAL REPORT

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Client: RWE **WWA Job #:** 75737

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
75737-001 / Clam River Surface / Water								
General Chemistry Parameters								
Chlorophyll a	22		mg/m3	6/1/2018 8:30	10200H	NA	NA	CA
Color	25		CU	5/10/2018 13:10	2120B	5	5	AH
Total Phosphorus LL (t)	0.053		mg/L	5/25/2018 16:51	365.4	0.008	0.050	NK
75737-002 / Clam River Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.055		mg/L	5/25/2018 16:52	365.4	0.008	0.050	NK
75737-003 / Danbury Surface / Water								
General Chemistry Parameters								
Chlorophyll a	7.8		mg/m3	6/1/2018 8:30	10200H	NA	NA	CA
Color	20		CU	5/10/2018 13:10	2120B	5	5	AH
Total Phosphorus LL (t)	0.028	J	mg/L	5/25/2018 16:54	365.4	0.008	0.050	NK
75737-004 / Danbury Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.025	J	mg/L	5/25/2018 16:54	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)

VGuts 11/18
Version 160504

Job # (WWA office use): 75737

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: RWE

EMAIL ADDRESS:

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/cg)	T Phos	Color
1	Clam River Surface	5-8-18	11:15		X				X	X						3	X	X	X
2	Clam River Bottom	"	11:20		X					X						1		X	
3	Danbury Surface	"	13:55		X				X	X						3	X	X	X
4	Danbury Bottom	"	13:59		X					X						1		X	

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Ryan Warmboe	5/9/18	17:10			
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			Login	5-10-18	1140

Comments/Sample temp. on receipt: +1

Packing: Ice ✓ Cooler ___

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 #:** 77697

Project: Monitoring

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

Sample Number	Client Sample ID	Date Sampled	Sample Matrix
77697-001	Clam River	07/17/18	Water
77697-002	Clam River	07/17/18	Water
77697-003	Danbury	07/17/18	Water
77697-004	Danbury	07/17/18	Water

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

Cover Page..continued

Client: RWE **WWA Job #:** 77697

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 #:** 77697

Project: Monitoring

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

Sample Results

Sample No. / ID / Description / Matrix	Result	Flags	Units	Date/Time	Method	MDL	MQL	Analyst
77697-001 / Clam River / Surface / Water								
General Chemistry Parameters								
Chlorophyll a	26		mg/m3	7/27/2018 13:45	10200H	NA	NA	CA
Color	30		CU	7/19/2018 14:00	2120B	5	5	AH
Total Phosphorus LL (t)	0.090		mg/L	8/3/2018 10:27	365.4	0.008	0.050	NK
77697-002 / Clam River / Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.093		mg/L	8/3/2018 10:28	365.4	0.008	0.050	NK
77697-003 / Danbury / Surface / Water								
General Chemistry Parameters								
Chlorophyll a	14		mg/m3	7/27/2018 13:45	10200H	NA	NA	CA
Color	20		CU	7/19/2018 14:00	2120B	5	5	AH
Total Phosphorus LL (t)	0.067		mg/L	8/3/2018 10:30	365.4	0.008	0.050	NK
77697-004 / Danbury / Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.064		mg/L	8/3/2018 10:31	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)

JG 7/20/18

Version 160504

Job # (WWA office use): 77697

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)	COUNTY OF LOCATION / PAGE
Angie Sloan	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	Chla (mg/L)	TPhos	Color
1	Clam River Surface	7/17/18	11:36		X				X	X						3	X	X	X
2	Clam River Bottom	"	11:41		X					X						1		X	
3	Danbury Surface	"	15:07		X				X	X						3	X	X	X
4	Danbury Bottom	"	15:11		X					X						1		X	

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Comments/Sample temp. on receipt:
						Packing: Ice ✓ Cooler ✓
Relinquished by:	Date: 7/18/18	Time: 16:58	Received by: Nicole A. Kunyak	Date: 7/18/18	Time: 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 #:** 78451

Project: Monitoring

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

Sample Number	Client Sample ID	Date Sampled	Sample Matrix
78451-001	Clam River	08/20/18	Water
78451-002	Clam River	08/20/18	Water
78451-003	Danbury	08/19/18	Water
78451-004	Danbury	08/19/18	Water

Client: RWE **WWA Job #:** 78451

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

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Approved By: 

WI DNR Lab Certification Number: 999971280
MI DEQ Certification Number: 9306
DoD-ELAP Accreditation Number: 65802
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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 #:** 78451

Project: Monitoring

Date Received: 8/22/2018 **Date Reported:** 9/20/2018

Sample Results

Sample No. / ID / Description / Matrix	Result	Flags	Units	Date/Time	Method	MDL	MQL	Analyst
78451-001 / Clam River / Surface / Water								
General Chemistry Parameters								
Chlorophyll a	20		mg/m3	8/29/2018 15:30	10200H	NA	NA	CA
Color	30		CU	8/23/2018 11:10	2120B	5	5	AH
Total Phosphorus LL (t)	0.067		mg/L	8/31/2018 17:59	365.4	0.008	0.050	NK
78451-002 / Clam River / Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.074		mg/L	8/31/2018 18:02	365.4	0.008	0.050	NK
78451-003 / Danbury / Surface / Water								
General Chemistry Parameters								
Chlorophyll a	2.1		mg/m3	8/29/2018 15:30	10200H	NA	NA	CA
Color	25		CU	8/23/2018 11:10	2120B	5	5	AH
Total Phosphorus LL (t)	0.076		mg/L	8/31/2018 18:02	365.4	0.008	0.050	NK
78451-004 / Danbury / Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.079		mg/L	8/31/2018 18:03	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 8/24/18

Version 160504

Job # (WWA office use): 78451

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)	COUNTY OF LOCATION / PAGE
Ryan Warmboe	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	Chl a (mg Cu)	T Phos	Color
1	Clam River Surface	8-20-18	9:35		X				X	X						3	X	X	X
2	Clam River Bottom	8-20-18	9:39		X					X						1		X	
3	Danbury Surface	8-19-18	13:50		X				X	X						3	X	X	X
4	Danbury Bottom	"	13:53		X					X						1		X	

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Ryan Warmboe	8/22/18				
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			[illegible]	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: Monday, December 10, 2018 11:57 AM
To: Brian Kreuscher
Subject: RE: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Correct with final is fine.

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: Monday, December 10, 2018 11:22 AM
To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Subject: Re: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Cheryl,

Apologies on that. Changing the date on that table must have been missed. Just as with the Clam River report on that same Table, it should say 2017-2018 Water Year Monthly Temperature. Do you need a corrected Draft report with this, or can this just be corrected with the Final submission.

Thanks

Brian Kreuscher

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

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Sent: Monday, December 10, 2018 10:52 AM

To: Brian Kreuscher
Subject: FW: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Please double check the info that you sent to the Department. Was it 2017 or 2018? (See Craigs comments below)

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: Monday, December 10, 2018 10:51 AM
To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Subject: RE: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Just one comment for the Danbury report. Table 2 is titled as 2016/17 water year – should be 2017/18.

From: Laatsch, Cheryl - DNR
Sent: Wednesday, December 5, 2018 1:34 PM
To: Roesler, Craig P - DNR <Craig.Roesler@wisconsin.gov>
Subject: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Hi Craig - Here are the draft reports for Danbury and Clam. I will request the spreadsheets for the data to be entered into SWIMS. Please review and let me know if you have any concerns. I would appreciate if you could provide **comments before Dec 13th** (as I will be on medical leave). If you cannot meet this deadline, please let me know, so I can assign a person to watch for your response. 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: Wednesday, December 05, 2018 12:04 PM
To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>; Nick Utrup <nick_utrup@fws.gov>
Subject: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Cheryl and Nick,

Attached are the Draft Water Quality Reports for Danbury and Clam River. 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