

December 30, 2015

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 2015 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 2015 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. 2015 was the ninth year monitoring was conducted since the license was issued, but is the 4<sup>th</sup> year of submittal by RWE on the behalf of the Licensee.

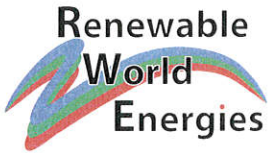
Monitoring was conducted on April 15, July 8, and August 5, 2015. Nothing out of the ordinary was experienced during the monitoring season except as noted in the report. All data has been entered into the SWIMS Data Base. The draft report was sent to the agencies by letter dated October 2, 2015 for review and comment. As of the date of this letter no comments have been received. The next scheduled monitoring event will be conducted in 2016.

If you have any questions concerning this submittal, please contact Mr. Gary Rast at the Renewable World Energies, LLC offices @ 855-994-9376 Ext 105. He can also be reached by e-mail at [grast@rwehydro.com](mailto:grast@rwehydro.com).

**Corporate Office**  
P.O. Box 264  
100 S. State Street  
Neshkoro, WI 54960  
Fax: 920-293-4100

Phone: 855-99HYDRO  
(855-994-9376)  
[www.renewableworldenergies.com](http://www.renewableworldenergies.com)

**Administrative Office**  
1001 Stephenson Street  
Norway, MI 49870  
Fax: 906-563-9344



Sincerely,  
**Renewable World Energies, LLC**  
**Agent for Licensee**

A handwritten signature in black ink, appearing to read "Mr. Jason Kreuscher". The signature is written in a cursive style and is positioned above the printed name and title.  
Mr. Jason Kreuscher  
Vice President, Operations

Attachment: Final Report 2015 Water Quality Monitoring Data – December 30, 2015

Cc: Ms. Cheryl Laatsch, WDNR  
Mr. Nick Utrup, USFWS  
RWE, Corporate

# **Final Report**

2015 Water Quality Monitoring Data  
(Per License Article 401 WQC, Condition K)

For the

Danbury Hydroelectric Project  
FERC Project # 9184  
Flambeau Hydro, LLC

Yellow River  
Burnett County, WI

Respectfully Submitted by:

Renewable World Energies, LLC  
100 State Street – P.O. Box 264  
Neshkoro, Wisconsin 54960

Final – December 30, 2015

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## Summary

2015 marked the ninth year of water quality sampling under the 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.

Ice-Out occurred on the Yellow River sometime during the week beginning April 5th thru April 11th, 2015. The Ice-Out sampling event occurred on April 15, 2015. River flow, based on Danbury Hydroelectric Project records, was approximately 239 cubic feet per second. Sampling occurred between 1:30 p.m. and 1:58 p.m. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. Samples for laboratory analysis were delivered to Northern Lake Service, Inc in Crandon, WI on April 16, 2015. Northern Lake Service, Inc. issued a laboratory report on April 29, 2015. No unusual levels of Total Phosphorus were noted in the laboratory reports. However, Chlorophyll seems higher than normal and color seems abnormally low for this time of year.

River flow, based on Danbury Hydroelectric Project records, was approximately 123 cubic feet per second during the July 8, 2015 sampling event. Sampling occurred between 12:00 p.m. and 12:30 p.m. Samples were taken without incident. Samples for laboratory analysis were delivered to Northern Lake Service, Inc. in Crandon, WI on July 9, 2015. No unusual D.O. or Temperature readings were observed. Northern Lake Service, Inc. issued a laboratory report on July 31, 2015. 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 123 cubic feet per second during the August 5, 2015 sampling event. Sampling occurred between 1:15 p.m. and 1:40 p.m. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. Samples for laboratory analysis were delivered to Northern Lake Service, Inc in Crandon, WI on August 6, 2015. Northern Lake Service, Inc. issued a laboratory report on August 11, 2015. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

In general, the weather (temperature and rainfall) during the 2015 monitoring season appeared slightly warmer in April, May, June, July, & August, with lower than normal precipitation in the months of April, June, July, and higher than normal precipitation in May and August. (**Refer to 2015 Monthly Temp and Precipitation Table page 7**)

A summary of a comparison between the 2011 thru 2015 (**Refer to 2015 Danbury Project Sampling Comparison Table 2011-2015 page 8**) sampling results are as follows:

1. Water Clarity – S Increased I Out, Decreased July & Aug
2. Chlorophyll a – Increased I Out & July, Decreased Aug
3. Color – Decreased I Out, July, & August
4. Total Phosphorus – Increased I Out, Decreased Aug, & Ave/S Decreased July
5. Overall, D.O. – S Decreased I Out, S Increased July, & Aug
6. Water Temperatures – Increased I Out, July, & Aug

Correspondence from the agencies during 2010 indicated they would prefer that notifications of incidents be by e-mail only and that telephone contacts are not needed. All other correspondence can be found on page 13, **Appendix D**. The next scheduled Water Quality monitoring at the Danbury Hydroelectric Project is set to take place in 2016 beginning with the Ice-Out sampling event.

**2015  
Sampling Results  
Table**

# Danbury Hydroelectric Project - FERC Project # 9184 2015 Water Quality Sampling Data

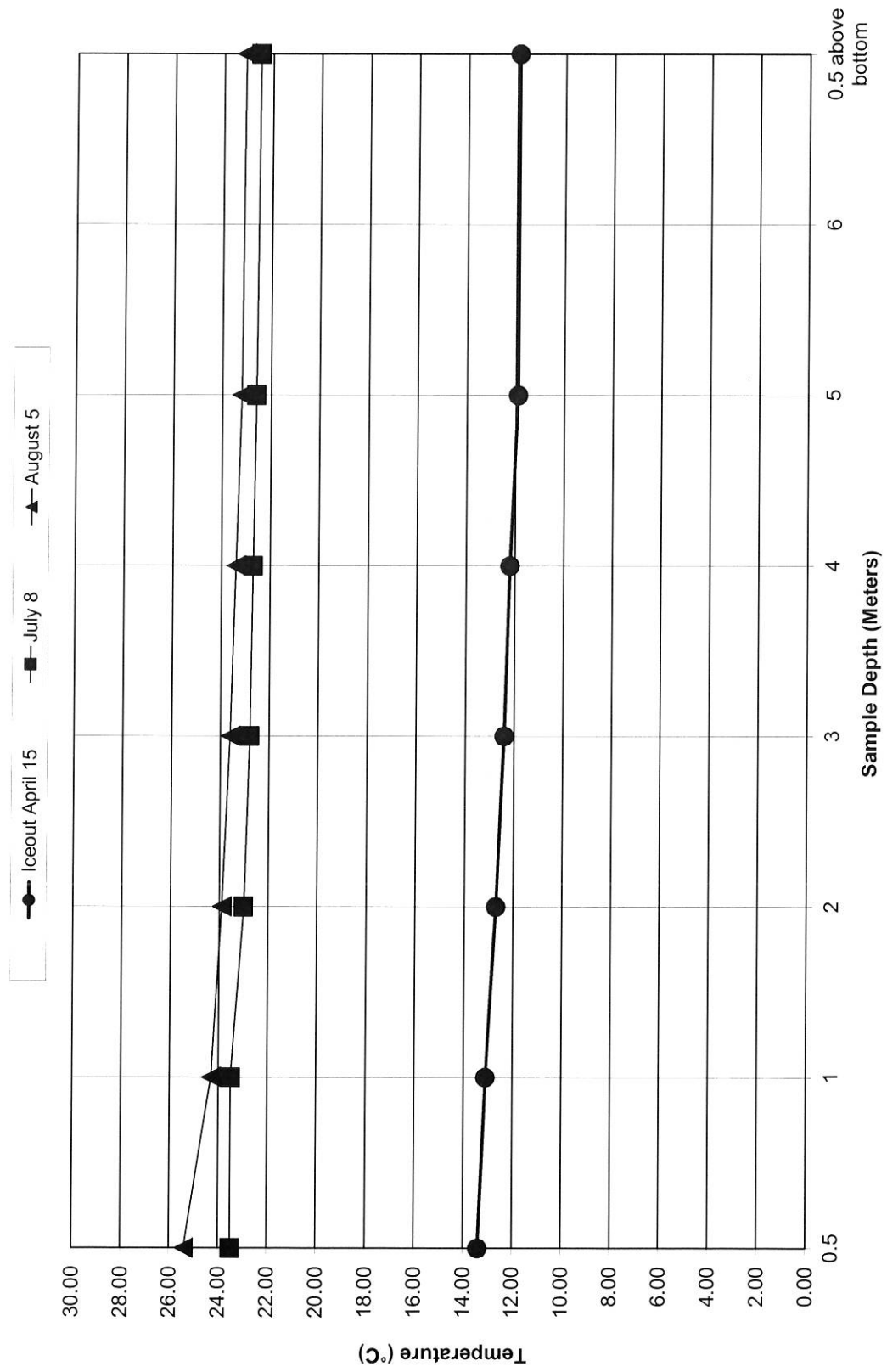
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<b>Project Flow (c.f.s.)</b>	239	123	123																																																																																	
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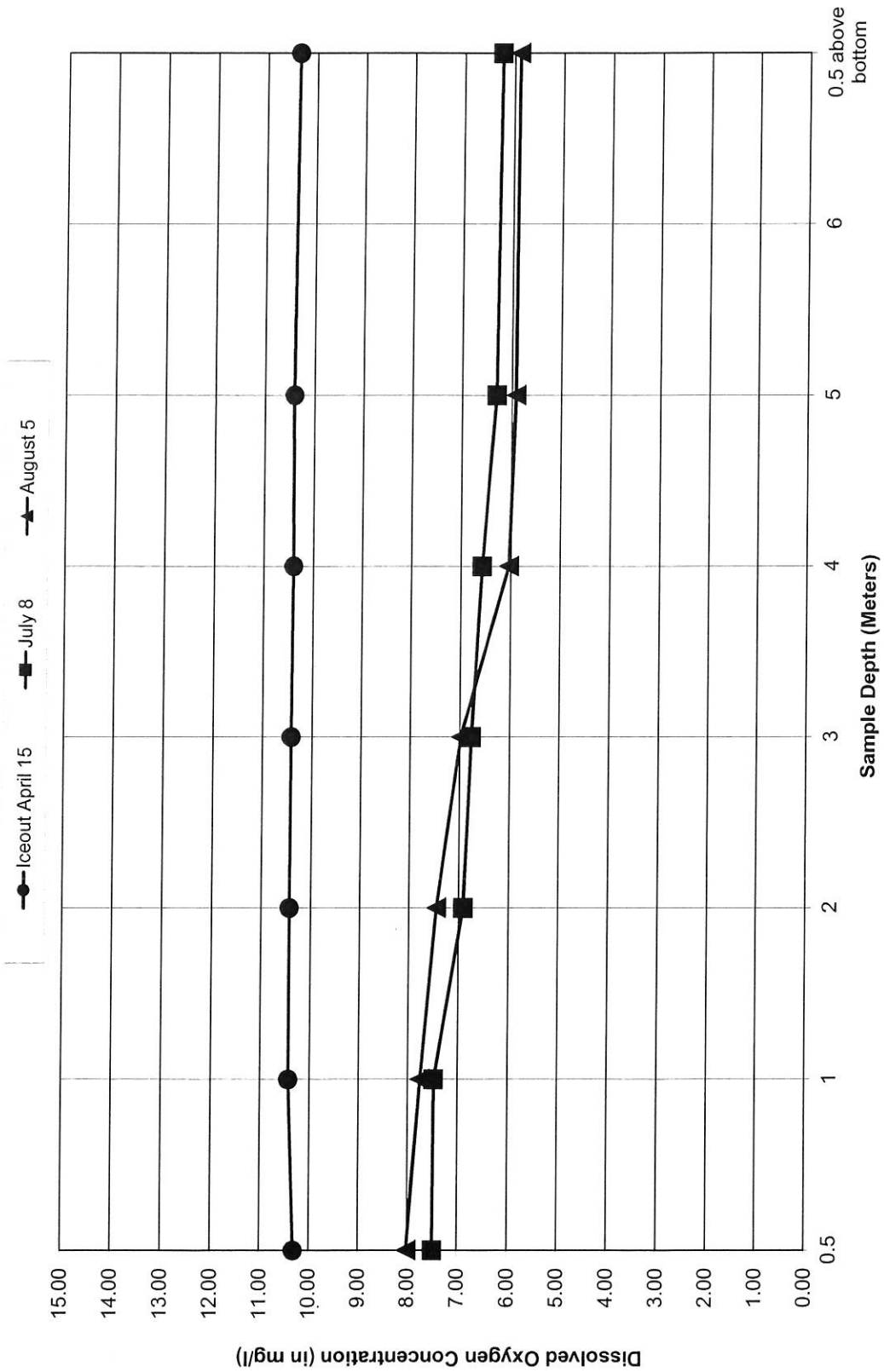


**2015**  
**Graphed Data**  
**Temperature and Dissolved Oxygen**

# Danbury Impoundment - FERC # 9184 2015 Temperature Samples



# Danbury Impoundment - FERC # 9184 2015 Dissolved Oxygen Samples



**2015  
Monthly  
Temperature and Precipitation  
Table**

# 2015 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-14	69.0	23.0	44.8	1.60	622	678	1.80	0.10	2.85	63%
November-14	51.0	-9.0	21.8	-7.00	1289	1080	0.98	16.40	2.09	47%
December-14	43.0	-10.0	21.5	6.70	1341	1556	1.26	8.60	1.21	104%
January-15	12.7	-18.0	40.0	2.50	1616	1699	0.46	6.60	0.96	48%
February-15	2.7	-19.0	5.2	-9.90	1667	1399	0.38	8.20	0.81	47%
March-15	64.0	-14.0	30.6	4.70	1059	1210	0.79	8.10	1.49	53%
April-15	76.0	22.0	42.2	2.60	675	762	1.03	1.20	2.43	42%
May-15	83.0	32.0	51.7	0.30	409	426	3.73	T	3.23	115%
June-15	84.0	36.0	61.4	1.30	121	179	3.64	T	4.23	86%
July-15	89.0	48.0	69.2	3.40	15	63	3.01	0.00	3.85	78%
August-15	93.0	42.0	65.3	1.00	81	86	4.09	0.00	3.70	111%
September-15	85.0	34.0	61.5	5.90	149	298	6.81	0.00	4.11	166%

Source: NOAA/Duluth, MN

**2015  
Danbury  
Sampling Comparison Table  
2011—2015**

**Danbury**

**Project Sampling Comparison Table**

2011 Thru Current Year

Year	Month	Secchi Depth (m)	Chlorophyll a ug/l	Color (True) C.P.U. Units	Total Phosphorus Below Surface mg/l	Total Phosphorus Above Bottom mg/l	Low D.O. mg/l	High D.O. mg/l	Low Water Temp. °C	High Water Temp. °C
2011	April	1.95	4.70	20.00	0.030	0.030	12.19	11.94	7.30	7.50
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	May	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
<b>Minimum</b>	April/May	1.95	1.70	20.00	0.026	0.026	10.32	10.43	7.30	7.50
<b>Maximum</b>	April/May	2.80	11.00	30.00	0.045	0.034	12.19	12.69	11.00	13.40
<b>Average</b>	April/May	2.17	6.50	24.00	0.033	0.031	11.18	11.37	9.34	10.36
2011	July	1.80	6.10	25.00	0.066	0.063	0.26	7.35	19.40	24.40
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
<b>Minimum</b>	July	1.80	1.70	25.00	0.044	0.043	0.26	5.24	7.86	22.00
<b>Maximum</b>	July	2.50	6.90	50.00	0.066	0.065	6.85	20.80	26.10	26.70
<b>Average</b>	July	2.04	4.62	36.00	0.058	0.055	4.14	9.59	19.99	24.34
2011	August	1.50	16.00	50.00	0.054	0.052	1.64	6.03	22.30	23.50
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
<b>Minimum</b>	August	1.50	4.50	0.06	0.042	0.036	1.64	5.18	19.60	22.00
<b>Maximum</b>	August	2.80	40.00	50.00	0.063	0.120	5.89	8.02	23.40	25.40
<b>Average</b>	August	2.15	14.58	33.01	0.055	0.063	3.81	6.32	21.96	23.56
<b>No Sample</b>										

**Danbury Hydroelectric Project  
Sampling Location  
Map**



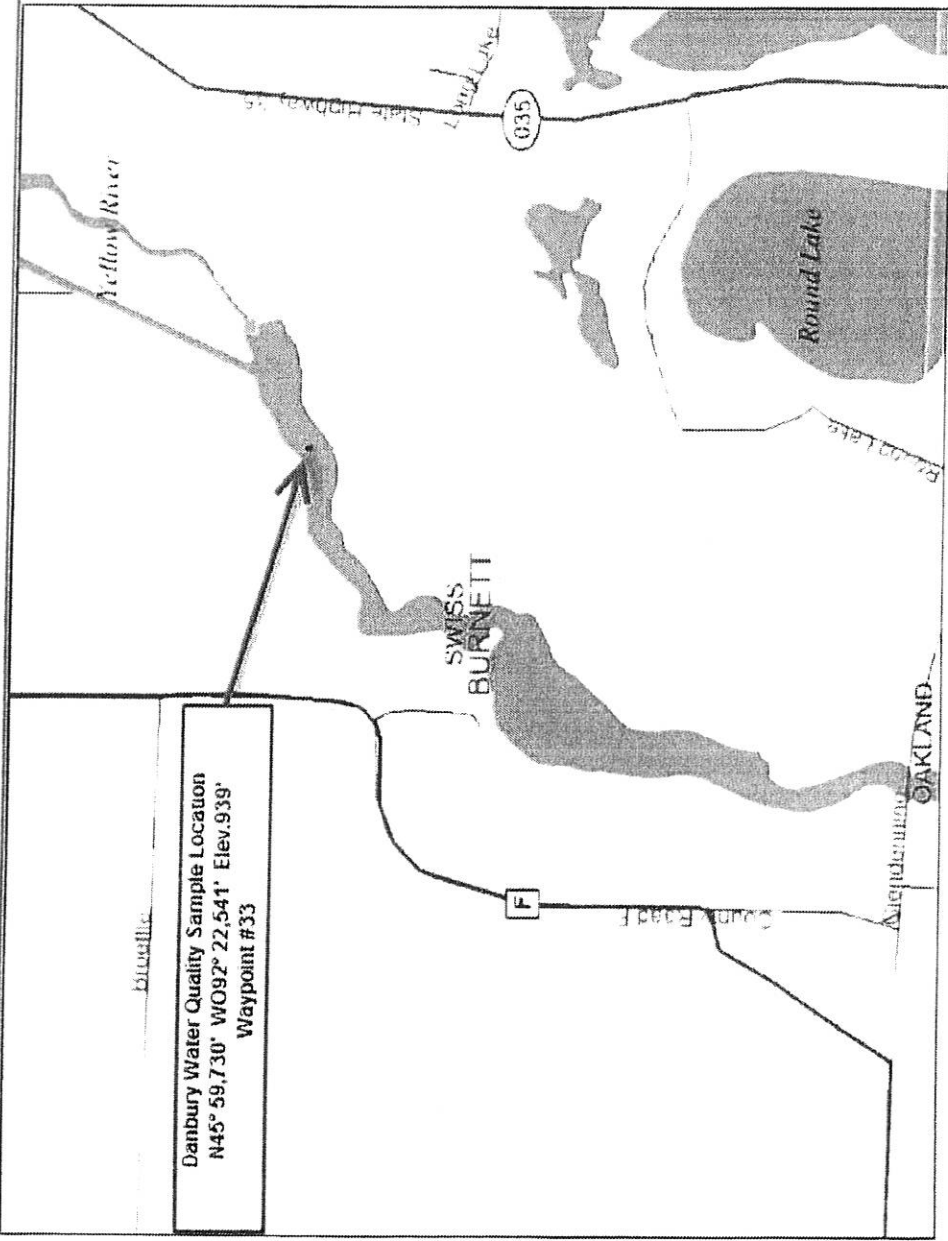
**Danbury Hydroelectric Project  
Water Quality Sampling Location  
FERC Project #9184**



**Legend**

- 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



Danbury Water Quality Sample Location  
N45° 59.730' W092° 22.541' Elev.939'  
Waypoint #33



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

## **Appendix A**

April 15, 2015 Sampling Documents (Ice-Out)

# IMPOUNDMENT SAMPLING LOG

2015 Water Quality Study - Danbury Hydroelectric Project - FERC #9184

HWL - 929.40

Date: 4/15/15

Pre-Sampling Data: TWL - 899.90

CFS - 239

Time: 1:30 Barometer: 30.21 Air Temp: 19.4 °C Wind Speed: 518MPHG 26MPH

Sky Conditions: BRIGHT SUN, FAIR, + CLEAR

Precipitation within Last 24 Hours: NO

D.O. Meter Calibration: Instrument Model Used: Hach HQ40d

Were The Batterys Changed?  Yes  No If Yes, When Changed: \_\_\_\_\_

Battery Status: 90% Charge

Calibration Time: 3/11/2015 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 5.5 Meter

Secchi Disk Depth: (E0.1 Meter) 2.1 Meter Time: 1:40

## Chlorophyll a (1 Meter Below Surface)

Lab Sample I.D.#: <u>041515-1A</u>		
Time	Quantity (ml)	Filtered
<u>1:43</u>	<u>1000</u>	<u>NO</u>

## True Color (1 Meter Below Surface)

Lab Sample I.D.#: <u>041515-1B</u>	
Time	Quantity (ml)
<u>1:45</u>	<u>250</u>

## D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
.5 Mtr Below Surface	<u>1:52</u>	<u>10.32</u>	<u>13.4</u>
1 Meter	<u>1:53</u>	<u>10.43</u>	<u>13.1</u>
2 Meter	<u>1:54</u>	<u>10.43</u>	<u>12.7</u>
3 Meter	<u>1:55</u>	<u>10.42</u>	<u>12.4</u>
4 Meter	<u>1:56</u>	<u>10.40</u>	<u>12.2</u>
5 Meter	<u>1:57</u>	<u>10.41</u>	<u>11.9</u>
6 Meter			
7 Meter			
8 Meter			
.5 Mtr Above Bottom	<u>1:58</u>	<u>10.35</u>	<u>11.9</u>

## Phosphorus

Lab Sample I.D.#: <u>041515-1C</u>	
(1 Meter Below Surface)	
Time	Preserved?
<u>1:48</u>	<u>H2504</u>

Lab Sample I.D.#: <u>041515-1D</u>	
(1 Meter Above Bottom)	
Time	Preserved?
<u>1:50</u>	<u>H2504</u>

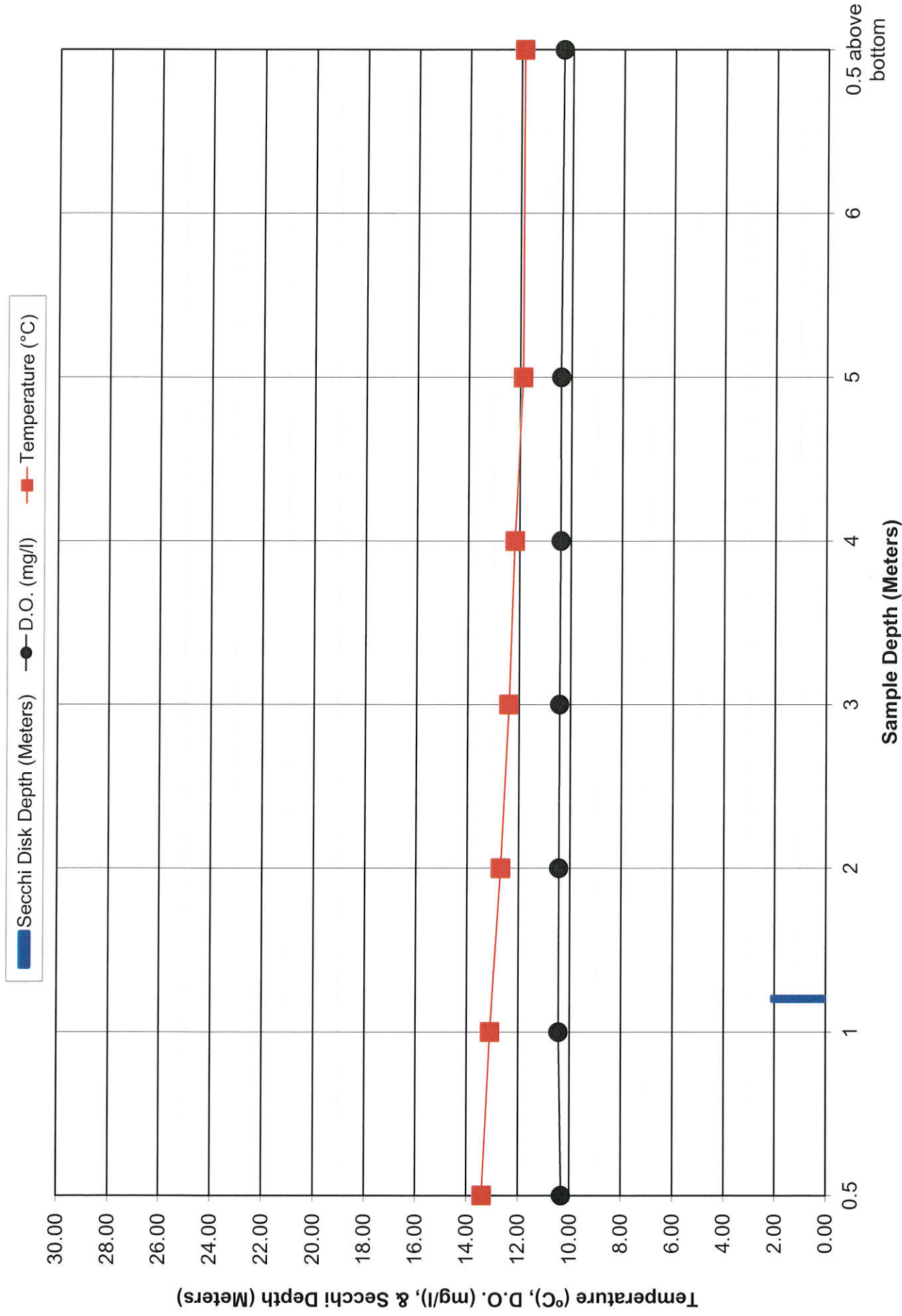
Sample Location: N45° 59.730' W92° 22.541'

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Performed By: GARY RAST + NORB REHDER

# Danbury Impoundment - FERC # 9184

## April 15, 2015 Iceout Sampling Event



# ANALYTICAL REPORT

**NORTHERN LAKE SERVICE, INC.**  
 Analytical Laboratory and Environmental Services  
 400 North Lake Avenue - Crandon, WI 54520  
 Ph: (715)-478-2777 Fax: (715)-478-3060

WDNR Laboratory ID No. 721026460  
 WDATCP Laboratory Certification No. 105-330  
 EPA Laboratory ID No. W100034  
 Printed: 04/29/15 Code: NNNN-S Page 1 of 1

**Client:** Renewable World Energies  
**Attn:** Gary Rast  
 100 State Street  
 P.O. Box 264  
 Neshkoro, WI 54960

**NLS Project:** 238748  
**NLS Customer:** 102823  
 Phone: 855 994 9376

Project:	Danbury
<b>0415151A NLS ID: 854400</b>	
COC: 167656:1 Matrix: SW	
Collected: 04/15/15 13:43 Received: 04/16/15	
<b>Parameter</b>	
Chlorophyll, all species	
Lab filtration for Chlorophyll	
<b>0415151B NLS ID: 854401</b>	
COC: 167656:2 Matrix: SW	
Collected: 04/15/15 13:43 Received: 04/16/15	
<b>Parameter</b>	
Color, APHA (true)	
Lab filtration	
<b>0415151C NLS ID: 854402</b>	
COC: 167656:3 Matrix: SW	
Collected: 04/15/15 13:43 Received: 04/16/15	
<b>Parameter</b>	
Phosphorus, tot. as P	
<b>0415151D NLS ID: 854403</b>	
COC: 167656:4 Matrix: SW	
Collected: 04/15/15 13:43 Received: 04/16/15	
<b>Parameter</b>	
Phosphorus, tot. as P	

Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
see attached							
yes							
20	C.P.U.	1	5.0*		04/16/15	SM 2120-B 20ed	721026460
yes					04/16/15	NA	721026460
0.045	mg/L	1	0.0070*		04/22/15	SM 4500P-E 20ed	721026460
0.033	mg/L	1	0.0070*		04/22/15	SM 4500P-E 20ed	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(\*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution and/or solids content.

LOD = Limit of Detection      LOQ = Limit of Quantitation      ND = Not Detected (< LOD)      10000 ug/L = 1 mg/L  
 DWB = Dry Weight Basis      NA = Not Applicable      %DWB = (mg/kg DWB) / 10000  
 MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:       Authorized by:  
 R. T. Krueger  
 President

Northern Lake Service, Inc.  
Chlorophyll Results

Customer: Renewable World Energies  
Project: 238748  
Danbury

<u>Sample</u>	<u>Description</u>	<u>CC a</u>	<u>Pheo a</u>	<u>IC a</u>	<u>IC b</u>	<u>IC c</u>
854400	0415151A	9.6	1.5	11	0.0*	1.5

CC a = Corrected Chlorophyll a  
Pheo a = Pheophytin a  
TC a = Trichromatic Chlorophyll a  
TC b = Trichromatic Chlorophyll b  
TC c = Trichromatic Chlorophyll c  
Units = ug/L for Water, ug/cm<sub>2</sub> for periphyton samplers

\*: The complex calculations used to differentiate the various chlorophyll species magnify error at low concentrations and sometimes produce negative values, which are reported as 0.0 on this report.

**SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD**

Wisconsin Lab Cert. No. 721026460  
WI DATCP 105-000330

**NORTHERN LAKE SERVICE, INC.**

Analytical Laboratory and Environmental Services  
400 North Lake Avenue • Crandon, WI 54520-1298  
Tel: (715) 478-2777 • Fax: (715) 478-3060

CLIENT: RENEWABLE WORLD ENERGIES  
ADDRESS: WISCONSIN STATE ST PO BOX 264  
CITY: NESHAWARD STATE: WI ZIP: 54960  
PHONE: 715-994-5376  
FAX: 715-994-5376  
DNR FID #: \_\_\_\_\_ DNR LICENSE #: \_\_\_\_\_  
CONTACT: CARY RASCH  
PURCHASE ORDER NO.: 20-293-4100

MATRIX:  
SW = surface water  
WW = waste water  
GW = groundwater  
DW = drinking water  
TIS = tissue  
AIR = air  
SOIL = soil  
SED = sediment  
PROD = product  
SL = sludge  
OTHER \_\_\_\_\_

ITEM NO.	SAMPLE ID	DATE	COLLECTION TIME	MATRIX (See above)	ANALYZE PER ORDER OF ANALYSIS										COLLECTION REMARKS (i.e. DNR Well ID #)		
					1	2	3	4	5	6	7	8	9	10			
1.	04/15/15 1B	4/15/15	1:43	RIVER WATER	X												
2.	" 1B	"	1:45	"	X												
3.	" 1C	"	1:48	"	X												
4.	" 1D	4/15/15	1:50	"	X												
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	



NO. 167656

USE BOXES BELOW. Indicate Y or N if GW Sample is field filtered.  
Indicate G or C if WW Sample is Grab or Composite.

COLLECTED BY (signature): [Signature] CUSTODY SEAL NO. (IF ANY): \_\_\_\_\_  
RECEIVED BY (signature): [Signature] DATE/TIME: 4/15/15 1:43-1:50  
DISPATCHED BY (signature): [Signature] METHOD OF TRANSPORT: UPS DATE/TIME: 4/15/15 3:00  
RECEIVED AT (signature): [Signature] DATE/TIME: 4/15/15 10:15 AM TEMP: \_\_\_\_\_  
REMARKS & OTHER INFORMATION: CONDITON  
COOLER # \_\_\_\_\_  
PRESERVATIVE: \_\_\_\_\_  
NP = no preservative  
S = sulfuric acid  
N = nitric acid  
Z = zinc acetate  
M = methanol  
OH = sodium hydroxide  
HA = hydrochloric & ascorbic acid  
H = hydrochloric acid

REPORT TO: SAME AS ABOVE  
INVOICE TO: RWE  
1001 STEPHENSON STREET  
NORWAY MI 49870

1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.  
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.  
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.  
4. PARTIES COLLECTING SAMPLE, LISTED AS REPORT TO AND LISTED AS INVOICE TO AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

**IMPORTANT:**

## **Appendix B**

July 8, 2015 Sampling Documents



# IMPOUNDMENT SAMPLING LOG

2015 Water Quality Study - Danbury Hydroelectric Project - FERC #9184

CFS = 123

Hwl = 929.40  
TWL = 899.20

Date: 7/8/15

Pre-Sampling Data:

Time: 12:00 Barometer: 30.05 Air Temp: 21.7 °C Wind Speed: SW 10MPH

Sky Conditions: MOSTLY CLOUDY, BRIGHT SUNSHINE

Precipitation within Last 24 Hours: NO

D.O. Meter Calibration: Instrument Model Used: Hach HQ40d

Were The Batterys Changed?  Yes  No If Yes, When Changed: \_\_\_\_\_

Battery Status: 60% Charge

Calibration Time: 3/11/2015 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 6.4 Meter

Secchi Disk Depth: (E0.1 Meter) 1.8 Meter Time: 12:05

## Chlorophyll a (1 Meter Below Surface)

Lab Sample I.D.#: <u>150708-1A</u>		
Time	Quantity (ml)	Filtered
<u>12:15</u>	<u>1000</u>	<u>NO</u>

## True Color (1 Meter Below Surface)

Lab Sample I.D.#: <u>150708-1B</u>	
Time	Quantity (ml)
<u>12:16</u>	<u>250</u>

## D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
.5 Mtr Below Surface	<u>12:22</u>	<u>7.50</u>	<u>23.5</u>
1 Meter	<u>12:23</u>	<u>7.48</u>	<u>23.5</u>
2 Meter	<u>12:24</u>	<u>6.91</u>	<u>23.0</u>
3 Meter	<u>12:25</u>	<u>6.77</u>	<u>22.8</u>
4 Meter	<u>12:26</u>	<u>6.58</u>	<u>22.7</u>
5 Meter	<u>12:27</u>	<u>6.31</u>	<u>22.6</u>
6 Meter			
7 Meter			
8 Meter			
.5 Mtr Above Bottom	<u>12:30</u>	<u>6.24</u>	<u>22.5</u>

## Phosphorus

Lab Sample I.D.#: <u>150708-1C</u>	
(1 Meter Below Surface)	
Time	Preserved?
<u>12:18</u>	<u>H2504</u>

Lab Sample I.D.#: <u>150708-1D</u>	
(1 Meter Above Bottom)	
Time	Preserved?
<u>12:20</u>	<u>H2504</u>

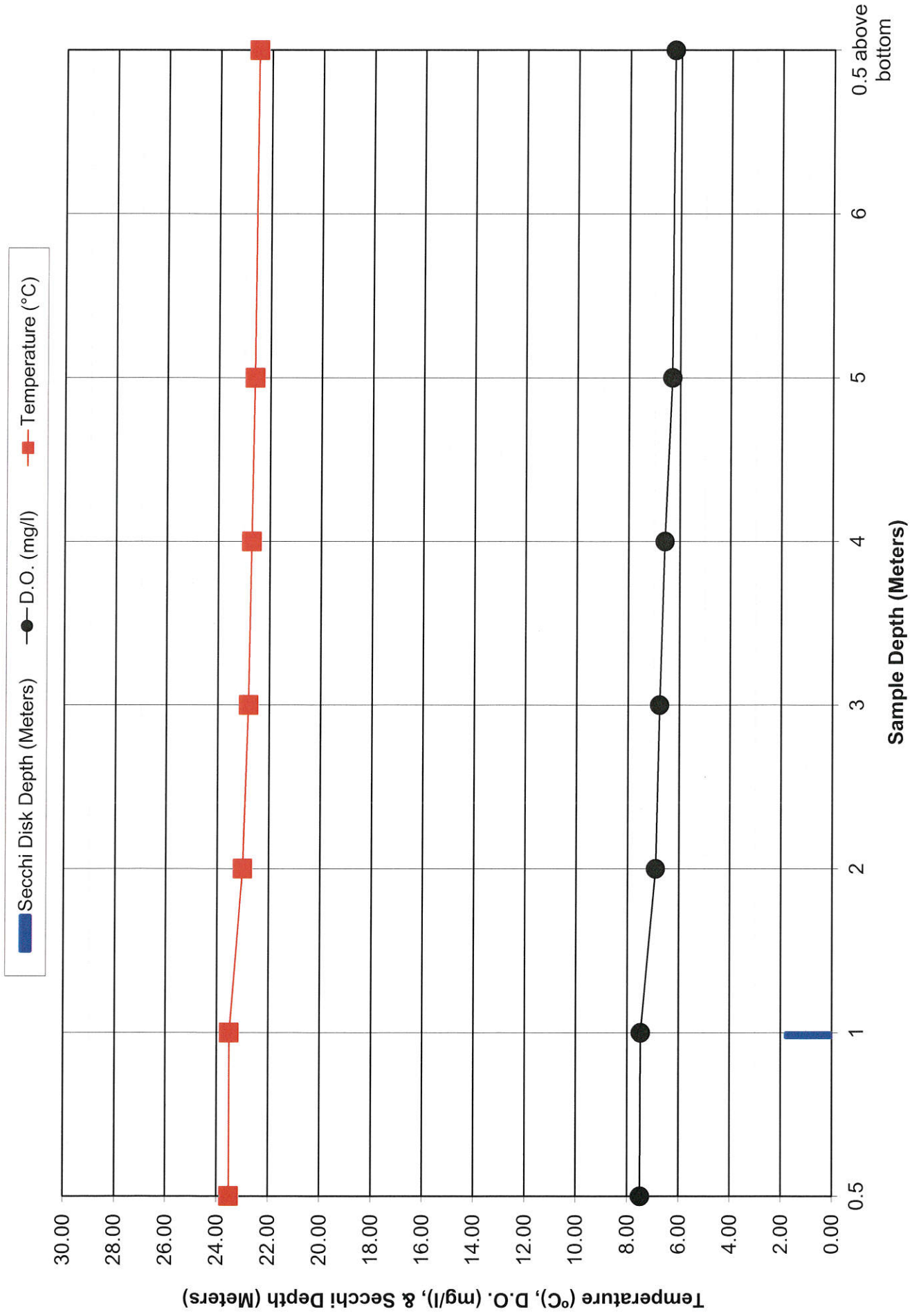
Sample Location: N45° 59.730' W92° 22.541'

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Performed By: GARY RAST + RUSS BARRON

# Danbury Impoundment - FERC # 9184

## July 8, 2015 Sampling Event



# ANALYTICAL REPORT

**NORTHERN LAKE SERVICE, INC.**  
 Analytical Laboratory and Environmental Services  
 400 North Lake Avenue - Crandon, WI 54520  
 Ph: (715)-478-2777 Fax: (715)-478-3060

WDNR Laboratory ID No. 721026460  
 WDATCP Laboratory Certification No. 105-330  
 EPA Laboratory ID No. WI00034

Printed: 07/31/15 Code: NNNN-S Page 1 of 1  
 NLS Project: 243477  
 NLS Customer: 102823  
 Phone: 855 994 9376

Client: Renewable World Energies  
 Attn: Gary Rast  
 100 State Street  
 P.O. Box 264  
 Neshkoro, WI 54960

Project: Danbury

**150708-1A NLS ID: 869647**

COC: 179120:1 Matrix: SW

Collected: 07/08/15 12:15 Received: 07/09/15

**Parameter**

Chlorophyll, all species  
 Lab filtration for Chlorophyll

Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
see attached yes					07/29/15 07/10/15	10200-H NA	721026460 721026460

**150708-1B NLS ID: 869648**

COC: 179120:2 Matrix: SW

Collected: 07/08/15 12:16 Received: 07/09/15

**Parameter**

Color, APHA (true)  
 Lab filtration

Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
25 yes	C.P.U.	1	5.0*		07/09/15 07/09/15	SM 2120-B 20ed NA	721026460 721026460

**150708-1C NLS ID: 869649**

COC: 179120:3 Matrix: SW

Collected: 07/08/15 12:18 Received: 07/09/15

**Parameter**

Phosphorus, tot. as P

Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
0.058	mg/L	1	0.0070*		07/23/15	4500-P E-1999	721026460

**150708-1D NLS ID: 869650**

COC: 179120:4 Matrix: SW

Collected: 07/08/15 12:20 Received: 07/09/15

**Parameter**

Phosphorus, tot. as P

Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
0.043	mg/L	1	0.0070*		07/23/15	4500-P E-1999	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(\*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution and/or solids content.

LOD = Limit of Detection  
 DWB = Dry Weight Basis  
 MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

ND = Not Detected (< LOD)  
 %DWB = (mg/kg DWB) / 10000  
 1000 ug/L = 1 mg/L

Reviewed by:



Authorized by:  
 R. T. Krueger  
 President

Northern Lake Service, Inc.  
Chlorophyll Results

Customer: Renewable World Energies  
Project: 243477  
Danbury

<u>Sample</u>	<u>Description</u>	<u>CC a</u>	<u>Pheo a</u>	<u>TC a</u>	<u>TC b</u>	<u>TC c</u>
869647	150708-1A	5	0.0*	5.1	0.018	0.3

CC a = Corrected Chlorophyll a  
Pheo a = Pheophytin a  
TC a = Trichromatic Chlorophyll a  
TC b = Trichromatic Chlorophyll b  
TC c = Trichromatic Chlorophyll c  
Units = ug/L for Water, ug/cm<sup>2</sup> for periphyton samplers

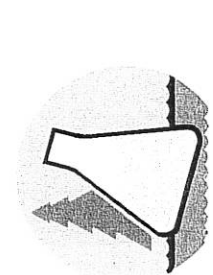
\*: The complex calculations used to differentiate the various chlorophyll species magnify error at low concentrations and sometimes produce negative values, which are reported as 0.0 on this report.

**SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD**

**NORTHERN LAKE SERVICE, INC.**

Wisconsin Lab Cert. No. 721026460  
WI DATCP 105-000330

Analytical Laboratory and Environmental Services  
400 North Lake Avenue • Crandon, WI 54520-1298  
Tel: (715) 478-2777 • Fax: (715) 478-3060



NO. 179120

USE BOXES BELOW: Indicate Y or N if GW Sample is field filtered.  
Indicate G or C if WW Sample is Grab or Composite.

MATRIX:  
SW = surface water  
WW = waste water  
GW = groundwater  
DW = drinking water  
TIS = tissue  
AIR = air  
SOIL = soil  
SED = sediment  
PROD = product  
SL = sludge  
OTHER

CLIENT: **RENEWABLE WORLD ENERGIES**  
ADDRESS: **100 S STATE ST PO BOX 264**  
CITY: **NESKORO WI** STATE: **WI** ZIP: **54960**  
PROJECT DESCRIPTION / NO: **DANBURY** QUOTATION NO.  
DNR FID # \_\_\_\_\_ DNR LICENSE # \_\_\_\_\_  
CONTACT: **CARY RAST** PHONE: **855 994 9376**  
PURCHASE ORDER NO: **VERBAL** FAX: **920-293-4100**

ITEM NO.	WIS LAB NO.	SAMPLE ID	DATE	COLLECTION TIME	MATRIX (See above)	ANALYZE PER ORDER OF ANALYSIS	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	645	150708-1A	7/8/15	12:15	RIVER	X	
2.	645	11-1B		12:16	WATER	X	
3.	649	"-1C		12:18		X	
4.	650	"-1D		12:20		X	
5.							
6.							
7.							
8.							
9.							
10.							

COLLECTED BY (signature): *[Signature]* DATE/TIME: 7/8/15 12:15-12:20  
 RELINQUISHED BY (signature): *[Signature]* DATE/TIME: 7/8/15 12:15-12:20  
 DISPATCHED BY (signature): *[Signature]* DATE/TIME: 7/8/15 3:00  
 RECEIVED AT NLS BY (signature): *[Signature]* DATE/TIME: 7/9/15 9:45  
 REPORT TO: **ATTN CARY**  
 INVOICE TO: **1001 STE PHEARSON STREET NORWAY, MI 49870**

COOLER # \_\_\_\_\_  
 PRESERVATIVE: N = nitric acid OH = sodium hydroxide  
 NP = no preservative Z = zinc acetate HA = hydrochloric & ascorbic acid  
 S = sulfuric acid M = methanol H = hydrochloric acid  
**IMPORTANT:**  
 1. TO MEET REGULATORY REQUIREMENTS, THIS FORM **MUST** BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.  
 2. PLEASE USE ONE LINE PER SAMPLE, **NOT** PER BOTTLE.  
 3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.  
 4. PARTIES COLLECTING SAMPLE, LISTED AS **REPORT TO** AND LISTED AS **INVOICE TO** AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

## **Appendix C**

August 5, 2015 Sampling Documents

# IMPOUNDMENT SAMPLING LOG

2015 Water Quality Study - Danbury Hydroelectric Project - FERC #9184

H/L - 929.2

Date: 8/5/15

Pre-Sampling Data: TWL - 899.10 123 CFS

Time: 1:15 Barometer: 30.07 Air Temp: 22.7°C Wind Speed: CALM

Sky Conditions: BRIGHT SUN, FAIR, CLEAR

Precipitation within Last 24 Hours: NO

D.O. Meter Calibration: Instrument Model Used: Hach HQ40d

Were The Batterys Changed?  Yes  No If Yes, When Changed: \_\_\_\_\_

Battery Status: 75% Charge

Calibration Time: 3/11/2015 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 6.4 Meter

Secchi Disk Depth: (E0.1 Meter) 2.2 Meter Time: 1:30

## Chlorophyll a (1 Meter Below Surface)

Lab Sample I.D.#: <u>080515-1A</u>		
Time	Quantity (ml)	Filtered
<u>1:20</u>	<u>1000</u>	<u>NO</u>

## True Color (1 Meter Below Surface)

Lab Sample I.D.#: <u>080515-1B</u>	
Time	Quantity (ml)
<u>1:22</u>	<u>250</u>

## D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
.5 Mtr Below Surface	<u>1:31</u>	<u>8.02</u>	<u>25.4</u>
1 Meter	<u>1:32</u>	<u>7.26</u>	<u>24.3</u>
2 Meter	<u>1:33</u>	<u>7.45</u>	<u>23.9</u>
3 Meter	<u>1:34</u>	<u>6.92</u>	<u>23.6</u>
4 Meter	<u>1:35</u>	<u>6.04</u>	<u>23.4</u>
5 Meter	<u>1:36</u>	<u>5.92</u>	<u>23.2</u>
6 Meter			
7 Meter			
8 Meter			
.5 Mtr Above Bottom	<u>1:40</u>	<u>5.89</u>	<u>23.1</u>

## Phosphorus

Lab Sample I.D.#: <u>080515-1C</u>	
(1 Meter Below Surface)	
Time	Preserved?
<u>1:24</u>	<u>H2504</u>

Lab Sample I.D.#: <u>080515-1D</u>	
(1 Meter Above Bottom)	
Time	Preserved?
<u>1:25</u>	<u>H2504</u>

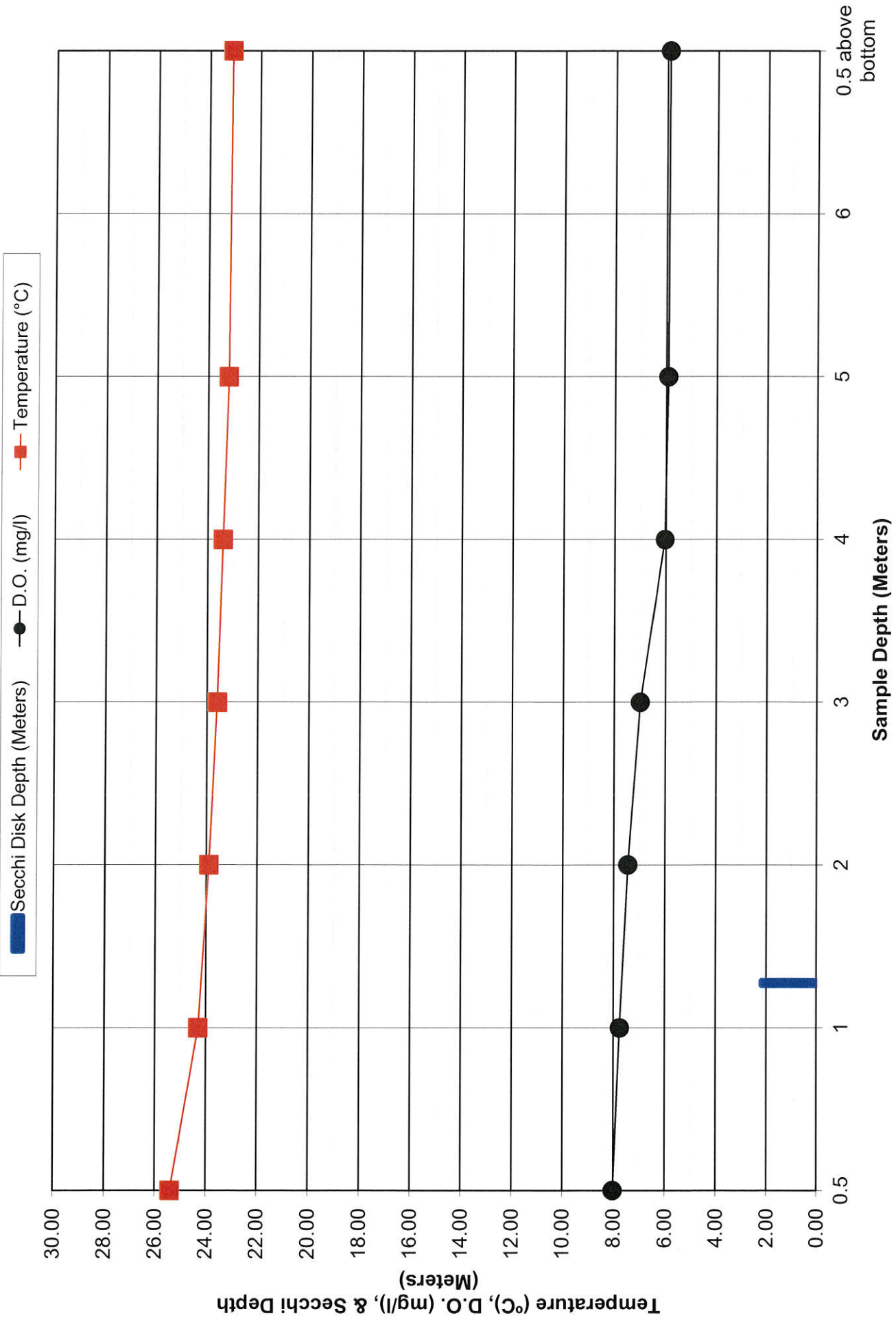
Sample Location: N45° 59.730' W92° 22.541'

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Performed By: GARY RAST + RUSS BARRON

# Danbury Impoundment - FERC # 9184

## August 5, 2015 Sampling Event





# ANALYTICAL REPORT

**NORTHERN LAKE SERVICE, INC.**  
 Analytical Laboratory and Environmental Services  
 400 North Lake Avenue - Crandon, WI 54520  
 Ph: (715)-478-2777 Fax: (715)-478-3060

WDNR Laboratory ID No. 721026460  
 WDATCP Laboratory Certification No. 105-330  
 EPA Laboratory ID No. WI00034

Printed: 08/11/15 Code: NNNN-S Page 1 of 1  
 NLS Project: 245245  
 NLS Customer: 102823  
 Phone: 855 994 9376

Client: Renewable World Energies  
 Attn: Gary Rast  
 100 State Street  
 P.O. Box 264  
 Neshkoro, WI 54960

Project: Danbury

**080515-1A NLS ID: 875220**

COC: 185788:1 Matrix: SW  
 Collected: 08/05/15 13:20 Received: 08/06/15

**Parameter**

Chlorophyll, all species  
 Lab filtration for Chlorophyll

Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
see attached					08/07/15	10200-H	721026460
yes					08/06/15	NA	721026460

**080515-1B NLS ID: 875221**

COC: 185788:2 Matrix: SW  
 Collected: 08/05/15 13:22 Received: 08/06/15

**Parameter**

Color, APHA (true)  
 Lab filtration

Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
30	C.P.U.	1	5.0*		08/06/15	SM 2120-B 20ed	721026460
yes					08/06/15	NA	721026460

**080515-1C NLS ID: 875222**

COC: 185788:3 Matrix: SW  
 Collected: 08/05/15 13:24 Received: 08/06/15

**Parameter**

Phosphorus, tot. as P

Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
0.042	mg/L	1	0.0070*		08/10/15	4500-P E-1999	721026460

**080515-1D NLS ID: 875223**

COC: 185788:4 Matrix: SW  
 Collected: 08/05/15 13:25 Received: 08/06/15

**Parameter**

Phosphorus, tot. as P

Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
0.036	mg/L	1	0.0070*		08/10/15	4500-P E-1999	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(\*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution and/or solids content.

LOD = Limit of Detection  
 DWB = Dry Weight Basis  
 MCL = Maximum Contaminant Levels for Drinking Water Samples

ND = Not Detected (< LOD)  
 %DWB = (mg/kg DWB) / 10000

1000 ug/L = 1 mg/L

Reviewed by: 

Authorized by:  
 R. T. Krueger  
 President

Northern Lake Service, Inc.  
Chlorophyll Results

Customer: Renewable World Energies  
Project: 245245  
Danbury

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
875220	080515-1A	7.2	0.18	7.6	0.0*	0.77

CC a = Corrected Chlorophyll a  
Pheo a = Pheophytin a  
TC a = Trichromatic Chlorophyll a  
TC b = Trichromatic Chlorophyll b  
TC c = Trichromatic Chlorophyll c  
Units = ug/L for Water, ug/cm<sup>2</sup> for periphyton samplers

\*: The complex calculations used to differentiate the various chlorophyll species magnify error at low concentrations and sometimes produce negative values, which are reported as 0.0 on this report.

# SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

# NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services  
 400 North Lake Avenue • Crandon, WI 54520-1298  
 Tel: (715) 478-2777 • Fax: (715) 478-3060

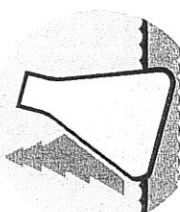
Wisconsin Lab Cert. No. 721026460  
 WATCP 105-000330

CLIENT: RENEWABLE WORLD ENERGY  
 ADDRESS: 1005 STATE ST PO BOX 204  
 CITY: MESHKORO STATE: WI ZIP: 54960  
 PROJECT DESCRIPTION / NO.: Lawbury QUOTATION NO.:  
 DNR FID #: \_\_\_\_\_ DNR LICENSE #:  
 CONTACT: GARY PHONE: 855 994 9376  
 PURCHASE ORDER NO.: VERBAH FAX: 920-293-4100

MATRIX:  
 SW = surface water  
 WW = waste water  
 GW = groundwater  
 DW = drinking water  
 TIS = tissue  
 AIR = air  
 SOIL = soil  
 SED = sediment  
 PROD = product  
 SL = sludge  
 OTHER

USE BOXES BELOW: Indicate Y or N if GW Sample is field filtered.  
 Indicate G or C if WW Sample is Grab or Composite.

ANALYZE PER ORDER OF ANALYSIS	Other PM									
	PM 10s									
	PM 2.5s									



NO. 185788

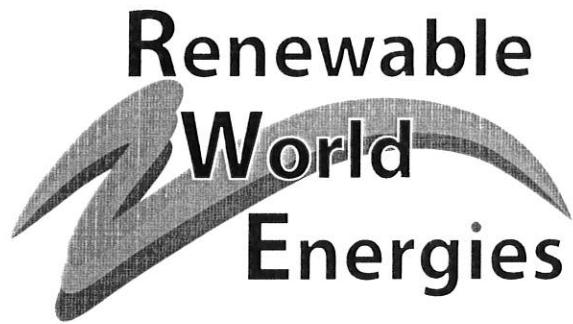
ITEM NO.	NLS LAB NO.	SAMPLE ID	COLLECTION		MATRIX (See above)	COLLECTION REMARKS (i.e. DNR Well ID #)
			DATE	TIME		
1.	875220	080515-1A	8/5/15	1:20	RIVER WATER	
2.	221	11 1B	1:22			
3.	222	11 1C	1:24			
4.	223	11 1D	1:25			
5.						
6.						
7.						
8.						
9.						
10.						

COLLECTED BY (signature): [Signature] CUSTODY SEAL NO. (IF ANY): 8/5/15 120-1:25 DATE/TIME: 8/5/15 120-1:25  
 RECEIVED BY (signature): [Signature] DATE/TIME: 8/5/15 3:00  
 DISPATCHED BY (signature): [Signature] METHOD OF TRANSPORT: UPS  
 RECEIVED AT NLS BY (signature): [Signature] DATE/TIME: 8/5/15 10 COMBINATION: Water TEMP.:  
 REMARKS & OTHER INFORMATION: Water  
 COOLER #:  
 PRESERVATIVE: N = nitric acid OH = sodium hydroxide  
 NP = no preservative Z = zinc acetate HA = hydrochloric & ascorbic acid  
 S = sulfuric acid M = methanol H = hydrochloric acid  
 E-MAIL ADDRESS:  
 WDNR FACILITY NUMBER:  
 REPORT TO: SAME ABOVE  
 INVOICE TO: ATTN: Gary  
1001 STEPHENSON ST  
NORWAY, WI 49870

**IMPORTANT:**  
 1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.  
 2. PLEASE USE ONE LINE PER SAMPLE - NOT PER BOTTLE.  
 3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.  
 4. PARTIES COLLECTING SAMPLE, LISTED AS REPORT TO AND LISTED AS INVOICE TO AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

## **Appendix D**

### Agency Correspondence



October 2, 2015

Mr. Nick Utrup  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
2661 Scott Tower Drive  
New Franken, WI 54229

Ms. Cheryl Laatsch  
Statewide FERC Coordinator  
Wisconsin Dept. of Natural Resources  
N7725 HWY 28  
Horicon, WI 53032

**Re: Danbury Hydroelectric Project  
FERC Project Number 9184  
Flambeau Hydro LLC  
Draft Report 2015 Water Quality Monitoring Data**

Dear Agency:

Purpose

On behalf of Flambeau Hydro LLC "Flambeau" (Licensee), Renewable World Energies, LLC is submitting a copy of the *Draft Report 2015 Water Quality Monitoring Data* for the Danbury Hydroelectric Project. Furthermore, the Licensee is requesting your comments should you have any to offer on the report. The Federal Energy Regulatory Commission "FERC" issued a License to Flambeau on September 5, 2006. 2015 was the eighth year that monitoring was conducted since the license was issued. The submitted report is a requirement of that License pursuant to License Article 401 WQC, Condition K. Nothing out of the ordinary was experienced during the monitoring season except as noted in the report.

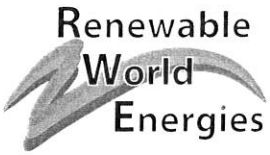
Conclusion

The Federal Energy Regulatory Commission's regulations allow for a 30 day formal review and comment period. Thank you in advance for providing your responses in a Timely manner so we can include your comments and recommendations, as appropriate, into our report.

**Corporate Office**  
P.O. Box 264  
100 S. State Street  
Neshkoro, WI 54960  
Fax: 920-293-4100

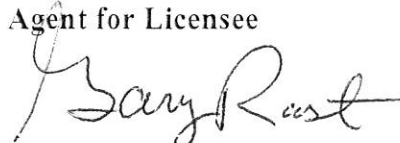
Phone: 855-99HYDRO  
(855-994-9376)  
[www.renewableworldenergies.com](http://www.renewableworldenergies.com)

**Administrative Office**  
1001 Stephenson Street  
Norway, MI 49870  
Fax: 906-563-9344



If you have any questions concerning the report, please contact Mr. Gary Rast at the Renewable World Energies, LLC offices @ 855-994-9376 ext. 105, or by email at: [grast@rwehydro.com](mailto:grast@rwehydro.com).

Sincerely,  
Renewable World Energies, LLC  
Agent for Licensee

  
Mr. Jason Kreuzscher  
Vice President, Operations

Attachment: Draft Report 2015 Water Quality Monitoring Data - October 2, 2015

Cc: RWE, Corporate