ORIGINAL

Renewable World Energies

December 3, 2012

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

RE: Clam River Hydroelectric Project
FERC Project Number 9185
Flambeau Hydro LLC
Final Report 2012 Water Quality Monitoring Data

Dear Ms. Bose:

On behalf of Flambeau Hydro LLC, "Flambeau" (Licensee), Renewable World Energies, LLC (RWE) is submitting one (1) original and eight (8) copies of the *Final Report 2012 Water Quality Monitoring Data* for the Clam River Hydroelectric Project. The Federal Energy Regulatory Commission "FERC" issued a License to Flambeau on July 24, 2006. This report is submitted as a requirement of that License pursuant to License Article 401 WQC, Condition K. 2012 was the fifth year monitoring was conducted since the license was issued, but is the first year of submittal by RWE on the behalf of the Licensee.

Monitoring was conducted on April 5, July 11, and August 14, 2012. The only issue encountered was some below standard D O measurements taken on the July 11th date. Agencies were notified by e-mail dated July 11, 2012 of the issue. The draft report was sent to the agencies by letter dated October 15, 2012 for review and comment. Correspondence was received from WDNR and USFWS on November 19th and 27th respectively. Both agencies indicated they had reviewed the report and had no comment to offer. The next scheduled monitoring event will be conducted in 2013.

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.

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

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

Sincerely,
Renewable World Energies, LLC
Agent for Licensee

For Mary Rast
Mr. Jason Kreuscher
Vice President, Operations

Attachment: Final Report 2012 Water Quality Monitoring Data – December 3, 2012

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

Final Report

2012 Water Quality Monitoring Data
(Per License Article 401 WQC, Condition K)

For the

Clam River Hydroelectric Project
FERC Project # 9185
Flambeau Hydro, LLC

Clam River
Burnett County, WI

Respectfully Submitted by:

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

Final – December 3, 2012

Table of Contents

Summary

2012 marked the fifth year of water quality sampling under the FERC License issued on July 24, 2006 to Flambeau Hydro, LLC for the Clam River Hydroelectric Project – FERC Project # 9185 and specifically Appendix A Section 401 K.

Ice-Out occurred on the Clam River during the 3rd full week of March 2012. The Ice-Out sampling event occurred on April 05, 2012. River flow, based on Clam River Hydroelectric Project records, was approximately 169 cubic feet per second. Sampling occurred between 9:05 a.m. and 9:25 a.m. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. However, no sample for bottom phosphorus was taken because the lab did not send a sample bottle. Samples for laboratory analysis were delivered to Northern Lake Service, Inc in Crandon, WI on April 06, 2012. Northern Lake Service, Inc. issued a laboratory report on April 11, 2012. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on Clam River Hydroelectric Project records, was approximately 109 cubic feet per second during the July 11, 2012 sampling event. Sampling occurred between 12:15 p.m. and 12:56 p.m. Samples were taken without incident. No unusual Temperature readings were observed. However, D.O. dropped below the state standard of 5 mg/l at 3.5 meter and continued to fall all the way down to .5 meter above the bottom. Agencies were notified by e-mail on July 11, 2012. Samples for laboratory analysis were delivered to Northern Lake Service, Inc in Crandon, WI on July 12, 2012. Northern Lake Service, Inc. issued a laboratory report on July 20, 2012. No unusual levels of True Color, or Total Phosphorus were noted in the laboratory reports

River flow, based on Clam River Hydroelectric Project records, was approximately 143 cubic feet per second during the August 14, 2012 sampling event. Sampling occurred between 10:30 a.m. and 11:12 a.m. Samples were taken without incident. No unusual Temperature readings were observed. Samples for laboratory analysis were delivered to Northern Lake Service, Inc. in Crandon, WI on August 15, 2012. Northern Lake Service, Inc. issued a laboratory report on August 20, 2012. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

In general, the weather during the 2012 monitoring season was somewhat above normal. Average temperatures were approximately 3 - 10° above normal. Precipitation was on average above normal but August was very dry. **(Refer to 2012 Monthly Temperature and Precipitation Table page 7)**

A summary of a comparison between the 2011 and 2012 (**Refer to 2012 Clam River Project Sampling Comparison Table 2011-2012 page 8**) sampling results are as follows:

1. Water Clarity – Increased July – Decreased August
2. Chlorophyll a – Increased August – Decreased April/July
3. Color – Increased April – Decreased July/August
4. Total Phosphorus – Increased July/August – Decreased April
5. Overall D.O. – Increased April/August – Decreased July
6. Water Temperatures – Increased April & Slightly July – Decreased August

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 Clam River Hydroelectric Project is set to take place in 2013 beginning with the Ice-Out sampling event.

2012
Sampling Results
Table

Clam River Hydroelectric Project - FERC Project # 9185
2012 Water Quality Sampling Data

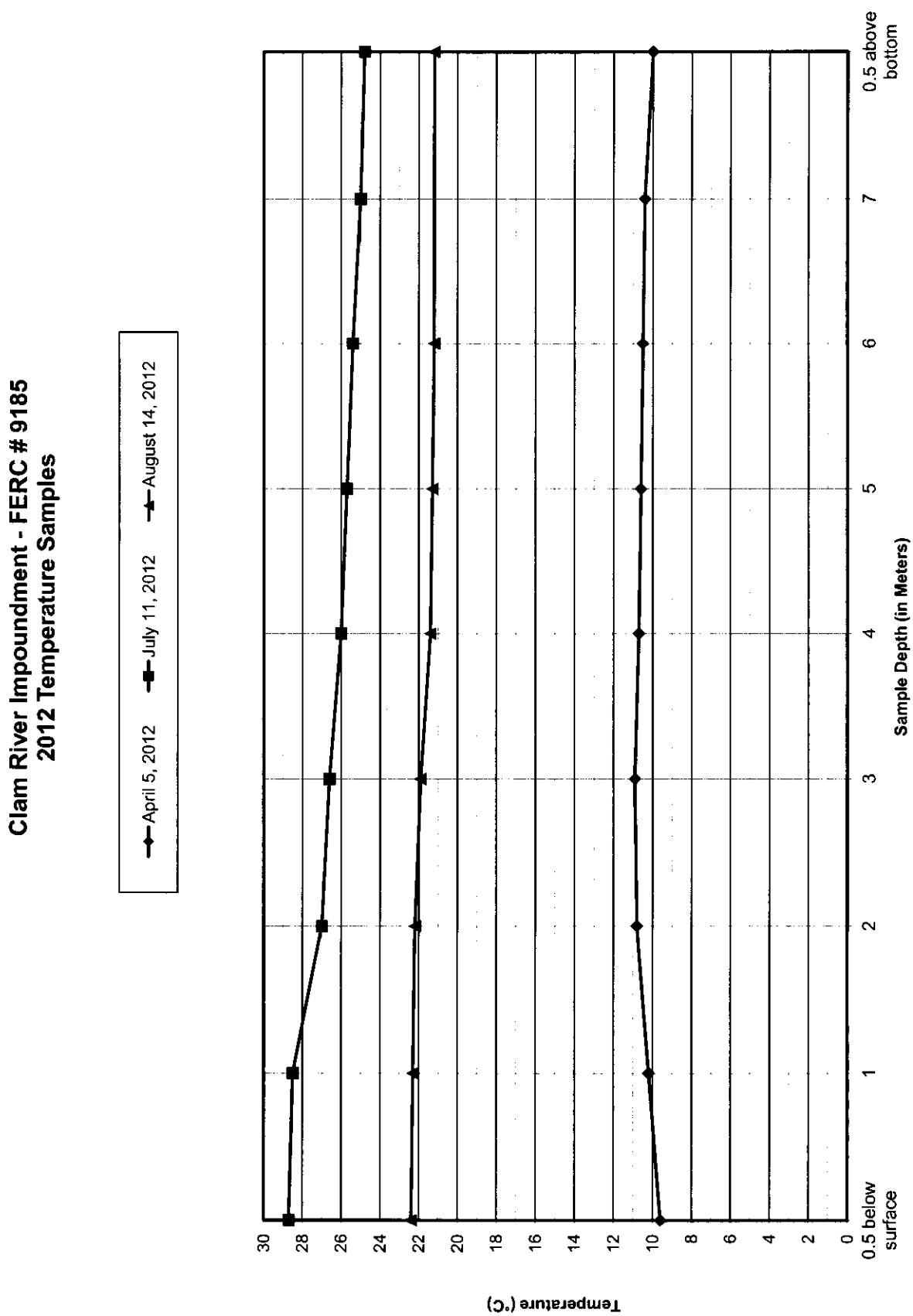
	April 5, 2012			July 11, 2012			August 14, 2012		
Project Flow (c.f.s.)	169			109			143		
Dissolved Oxygen	**Time**	**D.O. (mg/L)**	**Water Temp. (°C)**	**Time**	**D.O. (mg/L)**	**Water Temp. (°C)**	**Time**	**D.O. (mg/L)**	**Water Temp. (°C)**
0.5 meter below surface	9:12 AM	15.68	9.6	12:47 PM	5:02	28.7	11:00 AM	12.77	22.4
1 meter below surface	9:13 AM	15.55	10.2	12:48 PM	12.33	28.5	11:01 AM	12.65	22.3
2 meter below surface	9:14 AM	14.81	10.8	12:49 PM	10.96	27.0	11:02 AM	11.50	22.2
3 meter below surface	9:15 AM	14.69	10.9	12:50 PM	6.46	26.6	11:03 AM	8.00	21.9
4 meter below surface	9:16 AM	14.13	10.7	12:51 PM	3.25	26.0	11:04 AM	6.05	21.4
5 meter below surface	9:17 AM	13.48	10.6	12:52 PM	1.45	25.7	11:05 AM	5.66	21.3
6 meter below surface	9:18 AM	13.29	10.5	12:53 PM	0.33	25.4	11:06 AM	5.24	21.2
7 meter below surface	9:19 AM	12.87	10.4	12:54 PM	0.06	25.0	#N/A	#N/A	#N/A
.5 meter above bottom	9:20 AM	11.72	10.0	12:56 PM	0.04	24.8	11:07 AM	5.01	21.2
Secchi Disk	**Time**	**Depth (mtr)**		**Time**	**Depth (mtr)**		**Time**	**Depth (mtr)**	
Meters below surface	9:25 AM	0.80		12:20 PM	1.10		10:58 AM	0.70	
Chlorophyll a	**Time**	**ug/L**		**Time**	**ug/L**		**Time**	**ug/L**	
1 meter below surface	9:05 AM	13.00		12:30 PM	13.00		11:05 AM	43.00	
Color (True)	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**
1 meter below surface	9:07 AM	55.0	5.0*	12:32 PM	50.0	5.0*	11:07 AM	70.0	10.0*
Total Phosphorus	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**
1 meter below surface	9:10 AM	0.061	0.0070*	12:34 PM	0.042	0.0070*	11:09 AM	0.067	0.0070*
1 meter above bottom	N/A	N/A	N/A	8:38 AM	0.050	0.0070*	11:12 AM	0.066	0.0070*

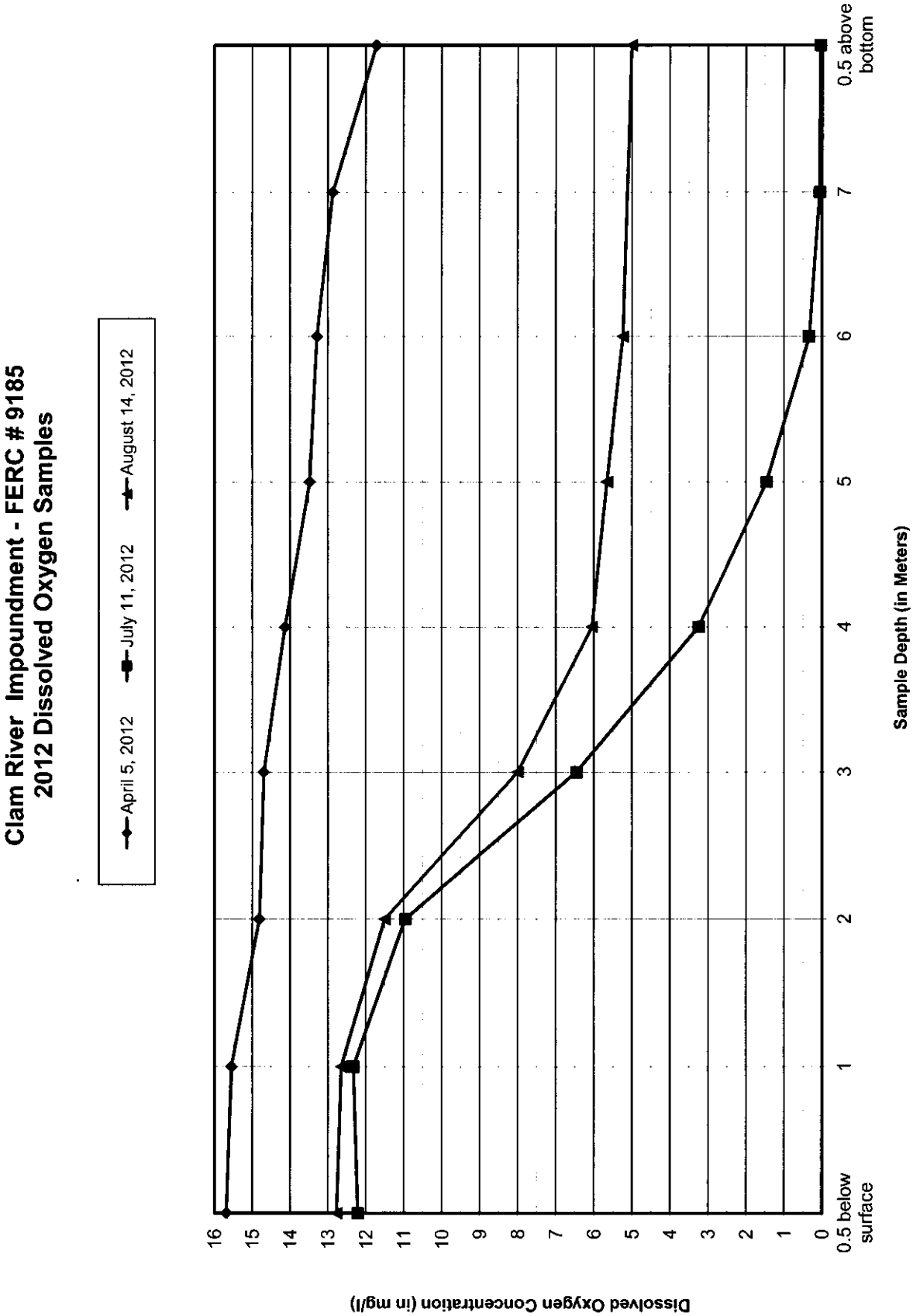
*** Considered Reporting Limits**

2012

Graphed Data

Temperature and Dissolved Oxygen


Clam River Impoundment - FERC # 9185
2012 Temperature Samples
April 5, 2012
July 11, 2012
August 14, 2012
Temperature (°C)
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0.5 below surface
1
2
3
4
5
6
7
0.5 above bottom
Sample Depth (in Meters)


Clam River Impoundment - FERC # 9185
2012 Dissolved Oxygen Samples
April 5, 2012
July 11, 2012
August 14, 2012
Dissolved Oxygen Concentration (in mg/l)
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0.5 below surface
1
2
3
4
5
6
7
0.5 above bottom
Sample Depth (in Meters)

2012
Monthly
Temperature and Precipitation
Table

2012 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-11	80	24	48.5	5.3	513	678	1.13	T	2.85	40%
November-11	54	9	33.1	4.3	950	1088	0.60	3.7	2.09	29%
December-11	43	-1	21.7	6.9	1334	1556	0.55	8.1	1.21	45%
January-12	48	-18	31.1	7.8	1449	1699	0.37	5.1	0.96	39%
February-12	43	-7	23.7	8.6	1190	1399	1.41	19.7	0.81	174%
March-12	75	-1	39.2	13.3	793	1210	1.62	11.9	1.49	109%
April-12	72	21	42.4	2.8	671	762	3.70	0.6	2.43	152%
May-12	87	34	55.0	3.6	320	426	6.61	0.0	3.23	205%
June-12	88	37	64.2	4.1	77	179	10.03	0.0	4.23	237%
July-12	92	53	71.9	6.1	0	63	3.09	0.0	3.85	80%
August-12	87	42	66.1	1.8	4.7	86	1.42	0.0	3.70	38%
September-12	87	33	56.2	0.6	281	298	0.84	0.1	4.11	24%

Source: NOAA/Duluth, MN

To calculate HDD or Heating Degree Days--If the departure from normal is a negative number (-) you add this to the total below the HDD column
If the departure from normal is a plus number (+) you subtract this from the total below the HDD column
Calculations for NDD or Normal Degree Days follow the same formula

2012
Clam River
Sampling Comparison Table
2011—2012

2012 Clam River
Project Sampling Comparison Table
To Previous Year

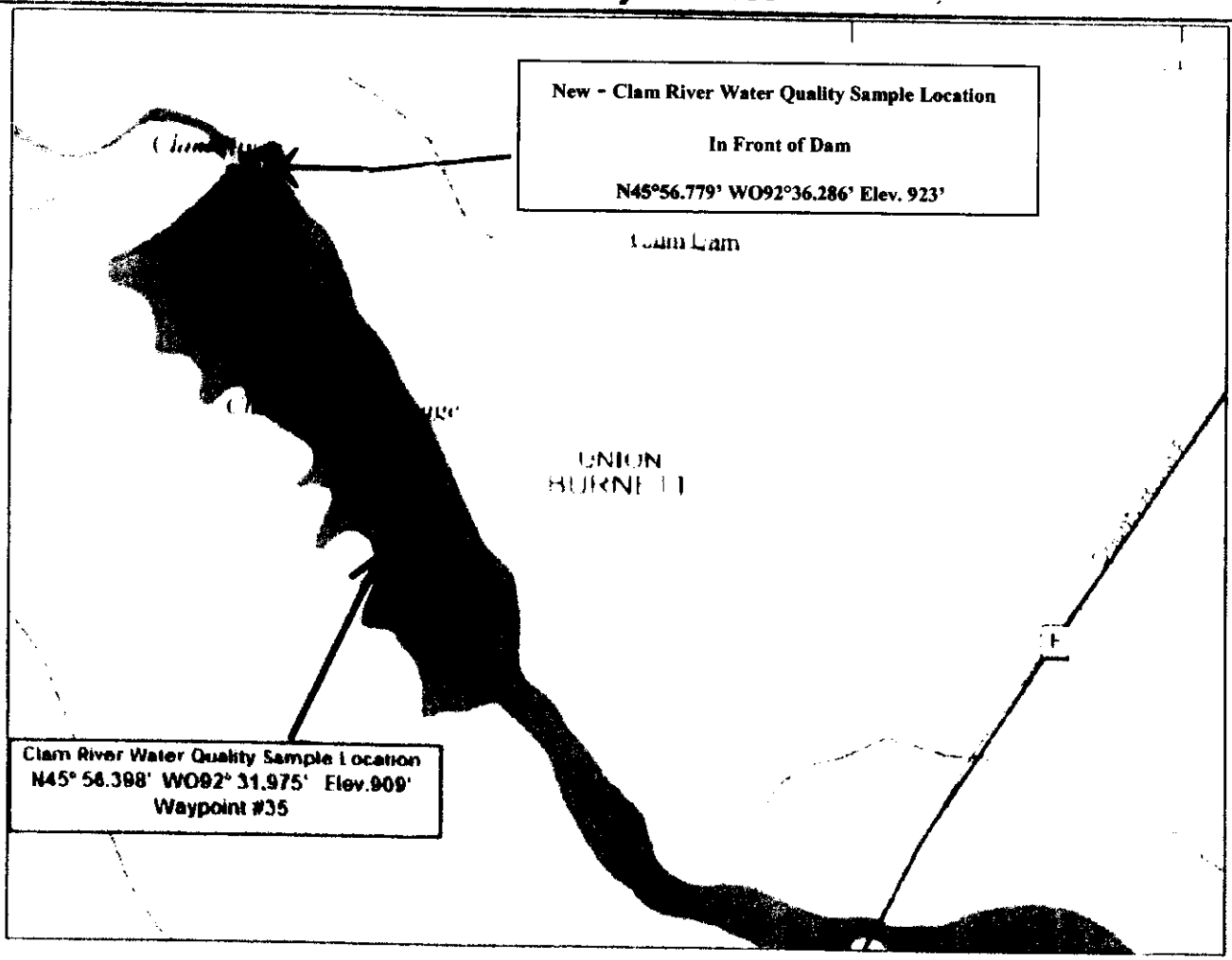
Year	Month	Secchi Disk Depth (m)	Chlorophyll a ug/l	Color (True) C.P.U. Units	Total Phosphorus Below Surface mg/l	Total Phosphorus Above Bottom mg/l	Lowest D.O. mg/l	Highest D.O. mg/l	Lowest Water Temp. °C	Highest Water Temp. °C
2011	April	.87	17.0	40	0.073	.066	11.58	11.88	9.3	9.4
2012	April	.8	13	55	0.031	No Sample Bottle N/A	11.72	15.68	9.6	10.9
2011	July	.70	62	80	0.11	0.083	5.11	14.32	25.2	27.1
2012	July	1.1	13	50	0.042	0.050	0.04	12.33	24.8	28.7
2011	August	.9	34	100	0.061	0.066	2.13	10.35	21.6	22.9
2012	August	.7	43	70	0.067	0.066	5.01	12.77	21.2	22.4

Clam River Hydroelectric Project

Sampling Location

Map

Clam River Hydroelectric Project
Water Quality Sampling Location Map
FERC Project #9185



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: 1:8,967

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 05, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Clam River Hydroelectric Project - FERC #9185

HWL - 878.73
PROJECT FLOW - 169 CFS

Date: 4/5/12

Pre-Sampling Data:

Time: 9:00 Barometer: 30.18 Air Temp: 2.77 °C Wind Speed: SE 10 MPH

Sky Conditions: BRIGHT SUN - CLEAR - COOL

Precipitation within Last 24 Hours: NO

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

Where The Batterys Changed? ☐ Yes ☒ No If Yes, When Changed:

Battery Status: 70% Charge

Calibration Time: February 2012 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 8.0 Meter

Secchi Disk Depth: (E0.1 Meter): .8 Meter. Time: 9:25

Chlorophyll a (1 Meter below surface)

Lab Sample I.D. #: 20120405 1A		
Time	Quantity (ml)	Filtered
9:05	1000	NO

True Color (1 Meter below surface)

Lab Sample I.D. #: 20120405 1B	
Time	Quantity (ml)
9:07	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	%
0.5 Meter below surface	9:12	15.68	9.6
1 Meter	9:13	15.55	10.2
2 Meter	9:14	14.84	10.8
3 Meter	9:15	14.69	10.9
4 Meter	9:16	14.13	10.7
5 Meter	9:17	13.48	10.6
6 Meter	9:18	13.29	10.5
7 Meter	9:19	12.87	10.4
8 Meter			
0.5 Meter above bottom	9:20	11.72	10.0

Phosphorus

Lab Sample I.D. #: 20120405 1C (1 Meter above bottom)	
Time	Preserved
9:10	H_2SO_4

Lab Sample I.D. #: 20120405 1D (1 Meter below surface)	
	H_2SO_4

Comments: Sampling location is N45 56.398 W92 31.975
NEW SITE @ DAM - #25 N45 56.779 W092 32.286' ELEV 923'.
NO SAMPLE BOTTLE SHIPPED FOR 2ND PHOSPHORUS

Performed By: GARY RAST + Anita Richter

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

ANALYTICAL REPORT

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

Printed: 04/11/12 Code: NNNN-S

Client: **Renewable World Energies**
Attn: Gary Rast
PO Box 264
Neshkoro, WI 54960

RECEIVED
4/13/12

NLS Project: 176365
NLS Customer: 102823

Project: **Clam River**

201204051A NLS ID: 657468
COC: 141404:1 Matrix: SW
Collected: 04/05/12 09:05 Received: 04/06/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					04/11/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					04/06/12	NA	721026460

201204051B NLS ID: 657469
COC: 141404:2 Matrix: SW
Collected: 04/05/12 09:07 Received: 04/06/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	55	C.P.U.	1	5.0*		04/06/12	SM 2120-B 20ed	721026460

201204051C NLS ID: 657470
COC: 141404:3 Matrix: SW
Collected: 04/05/12 09:10 Received: 04/06/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.061	mg/L	1	0.0070*		04/10/12	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.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 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: 176365
Clam River

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
657468	201204051A	12	0.35	13	0.0*	2.1

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/cm² 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
WI DATCP 105-000330

NO. 141404

CLIENT	Renewable World Energies
ADDRESS	PO Box 264
CITY / STATE / ZIP	Neshkoro / WI / 54960
PROJECT DESCRIPTION / NO.	Clam River
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	Gary Rast
PHONE	cell 920-570-0995
PURCHASE ORDER NO.	Verbal
FAX	

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

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	Chlorophyll A	True Color	Dissolved Phosphorus	Phosphorus	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	05746	20120405 1A	04/05/2012	9:05	River water	X				
2.	469	20120405 1B	04/05/2012	9:07	"		X			
3.	470	20120405 1C	04/05/2012	9:10	"			X		
4.									no sample bottle sent for Phosphorus - bottom level	
5.										
6.										
7.										
8.										
9.										
10.										

ONE SAMPLE PER LINE

COLLECTED BY (signature)	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 4/05/2012 9:05 - 9:10
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT: UPS	DATE/TIME 4/05/2012 12:00

REPORT TO: Attn: Gary same as above

INVOICE TO: same as above

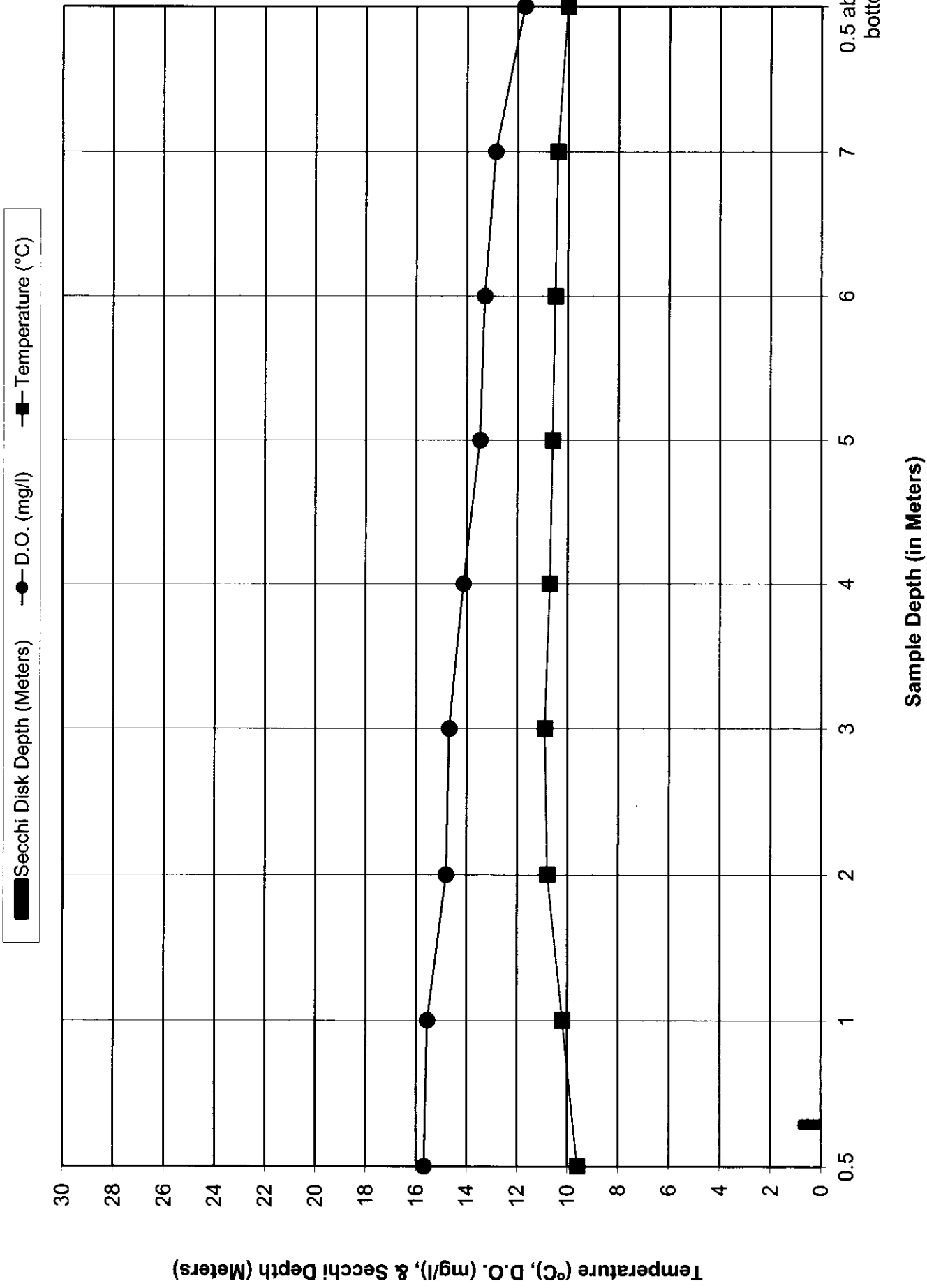
RECEIVED AT NLS BY (signature): Anna Marie Combs	DATE/TIME: 4/6/12 @ 10:25	CONDITION: Good	TEMP: -
COOLER # 10	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

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

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.

DUPLICATE COPY

Clam River Impoundment - FERC # 9185
April 05, 2012 Iceout Sampling Event



Appendix B

July 11, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Clam River Hydroelectric Project - FERC #9185

HWL-898.84 CFS-109 Date: 7/11/12

Pre-Sampling Data:

Time: 12:15 Barometer: 30.14 Air Temp: 28 °C Wind Speed: W 9MPH

Sky Conditions: FAIR, CLEAR, BRIGHT SUN, & HOT !

Precipitation within Last 24 Hours: NO

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

Where The Batterys Changed? ☐ Yes ☒ No If Yes, When Changed:

Battery Status: 80% Charge

26.5

Calibration Time: February 2012 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 7.2 Meter

Secchi Disk Depth: (E0.1 Meter): 1.1 Meter. Time: 12:20

Chlorophyll a (1 Meter below surface)

Lab Sample I.D. #: 20120711-1A		
Time	Quantity (ml)	Filtered
12:30	1000	NO

True Color (1 Meter below surface)

Lab Sample I.D. #: 20120711-1B	
Time	Quantity (ml)
12:32	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 Meter below surface	12:47	12.21	28.7
1 Meter	12:48	12.33	28.5
2 Meter	12:49	10.96	27.0
3 Meter	12:50	6.46	26.6
4 Meter	12:51	3.25	26.0
5 Meter	12:52	1.45	25.7
6 Meter	12:53	0.33	25.4
7 Meter	12:54	0.06	25.0
8 Meter	~~[illegible]~~		
0.5 Meter above bottom	12:56	0.04	24.8

Phosphorus

Lab Sample I.D. #: 20120711-1C (1 Meter above bottom)	
Time	Acid
12:34	H2SO4

Lab Sample I.D. #: 20120711-1D (1 Meter below surface)	
Time	Acid
12:36	H2SO4

N45°56.779' W092°32.286'

Comments: Sampling location is N45 56.398 W92 31.975(OLD) ~~[illegible]~~ ELEV 923

3.5 M - 12:51 - 4.32 - 26.1

4.5M - 12:52 - 2.52 - 25.9

5.5M - 12:53 - 0.81 - 25.5

6.5M 12:54 0.08 25.2

~~7.5M 12:55 0.05 25.0~~

~~8.5M 12:56 0.04 24.8~~

Performed By: GARY RAST + NORBERT REHDER

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

ANALYTICAL REPORT

RECEIVED
JUL 23 2012

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

NLS Project: 181158
NLS Customer: 102823
Phone: 855 994 9376

Client: Renewable World Energies
Attn: Gary Rast
1001 Stephenson Street
Norway, MI 49870

Project: Clam River

20120711-1A NLS ID: 672180
COC: 144726:1 Matrix: SW
Collected: 07/11/12 12:30 Received: 07/12/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					07/16/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					07/16/12	NA	721026460

20120711-1B NLS ID: 672181
COC: 144726:2 Matrix: SW
Collected: 07/11/12 12:32 Received: 07/12/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	50	C.P.U.	1	5.0*		07/12/12	SM 2120-B 20ed	721026460

20120711-1C NLS ID: 672182
COC: 144726:3 Matrix: SW
Collected: 07/11/12 12:34 Received: 07/12/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.042	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120711-1D NLS ID: 672183
COC: 144726:4 Matrix: SW
Collected: 07/11/12 12:36 Received: 07/12/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.050	mg/L	1	0.0070*		07/20/12	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.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 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: 181158
Clam River

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
672180	20120711-1A	12	0.13	13	0.0*	0.98

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$_2$ 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

WI DATCP 105-000330

NO. 144726

CLIENT	RENEWABLE WORLD ENERGIES
ADDRESS	1001 STREET PO BOX 264
CITY / STATE / ZIP	NESHKORO WI 54960
PROJECT DESCRIPTION / NO.	CLAM RIVER
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	GARY RAST
PHONE	855-594-9376
PURCHASE ORDER NO.	VERBAL - ?
FAX	

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: CHLORIDE, TRUE COLOR, PHOSPHORUS

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	672180	20120711A	7/11/12	12:30	RIVER WATER	
2.	181	20120711-B		12:32	"	
3.	182	20120711-C		12:34	"	
4.	183	20120711-D		12:36	"	
5.						
6.						
7.						
8.						
9.						
10.						

COLLECTED BY (signature)	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 7/11/12 12:30-12:38
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 7/11/12 2:30pm
RECEIVED AT NLS BY (signature)	DATE/TIME 7/12/12 945	CONDITION TEMP.
COOLER #	REMARKS & OTHER INFORMATION	
	WDNR FACILITY NUMBER	E-MAIL ADDRESS

REPORT TO: SAME

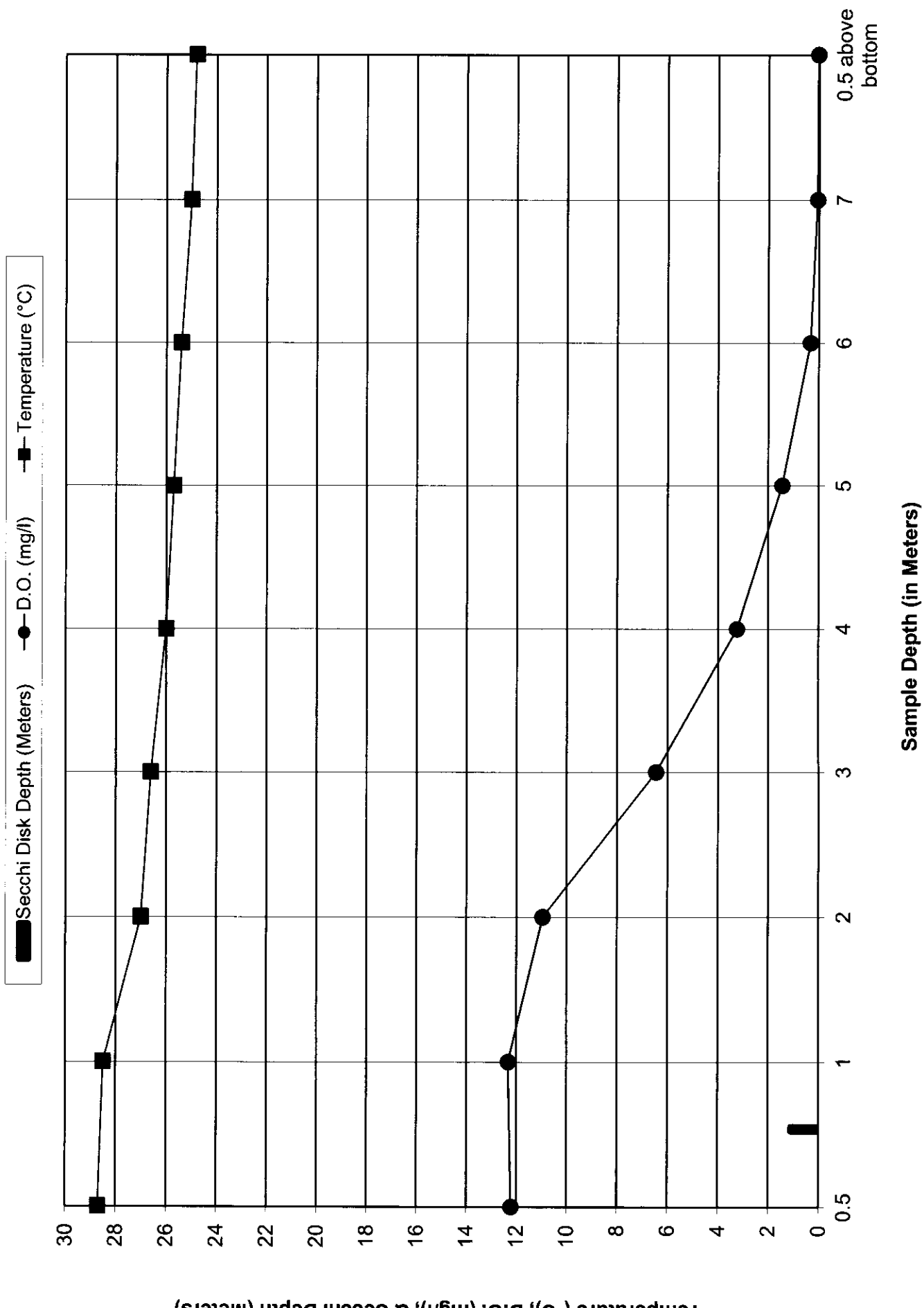
INVOICE TO: RENEWABLE WORLD OPERA.
1001 STEPHENSON STREET
NORWAY, MI 49870

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

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.

Clam River Impoundment - FERC # 9185
July 9, 2012 Sampling Event



Appendix C

August 14, 2012 Sampling Documents

HWL - 898.77 TWL-863.10 TP Flow 143CFS

2012 IMPOUNDMENT SAMPLING LOG

Water Quality Study - Clam River Hydroelectric Project - FERC #9185

Date: 8-14-12

Pre-Sampling Data:

Time: 10:30 Barometer: 29.98 Air Temp: 21.1 °C Wind Speed: 05MPH

Sky Conditions: FAIR, Clear, + Sunny

Precipitation within Last 24 Hours: NO

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

Where The Batterys Changed? ☐ Yes ☒ No If Yes, When Changed: _____

Battery Status: 60% Charge

Calibration Time: APRIL Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 7.4 Meter

Secchi Disk Depth: (E0.1 Meter): .7 Meter. Time: 10:58

Chlorophyll a (1 Meter below surface)

Lab Sample I.D. #: 20120814 1A		
Time	Quantity (ml)	Filtered
11:05	1000 ml	no

True Color (1 Meter below surface)

Lab Sample I.D. #: 20120814 1B	
Time	Quantity (ml)
11:07	250 ml

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 Meter below surface	11:00	12,77	22,4
1 Meter	11:01	12,65	22,3
2 Meter	11:02	11.5	22,2
3 Meter	11:03	8.00	21,9
4 Meter	11:04	6.05	21.4
5 Meter	11:05	5.66	21.3
6 Meter	11:06	5.24	21,2
7 Meter			
8 Meter			
0.5 Meter above bottom	11:07	5.01	21,2

Phosphorus

Lab Sample I.D. #: 20120814 1C	
(1 Meter below surface)	
[redacted]	
11:09	H_2SO_4

Lab Sample I.D. #: 20120814 1D	
(1 Meter above bottom)	
[redacted]	
11:12	H_2SO_4

Comments: Sampling location is N45 56.398 W92 31.975 **(Old) N45°56.779' WO92°36.286' Elev. 923' (New)**

LOTS OF ALGAE + DUCKWEED

Performed By: AKR GGR

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

ANALYTICAL REPORT

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

NLS Project: 183027
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: Clam River

201208141A NLS ID: 677899
COC: 160054:1 Matrix: SW
Collected: 08/14/12 11:05 Received: 08/15/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/18/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/15/12	NA	721026460

201208141B NLS ID: 677900
COC: 160054:2 Matrix: SW
Collected: 08/14/12 11:07 Received: 08/15/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	70	C.P.U.	2	10*		08/15/12	SM 2120-B 20ed	721026460

201208141C NLS ID: 677901
COC: 160054:3 Matrix: SW
Collected: 08/14/12 11:09 Received: 08/15/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.067	mg/L	1	0.0070*		08/17/12	SM 4500P-E 20ed	721026460

201208141D NLS ID: 677902
COC: 160054:4 Matrix: SW
Collected: 08/14/12 11:12 Received: 08/15/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.066	mg/L	1	0.0070*		08/17/12	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.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 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: 183027
Clam River

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
677899	201208141A	43	0.0*	43	0.0*	2.1

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/cm² 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

WI DATCP 105-000330

NO. 160054

CLIENT	RENEWABLE WORLD ENERGIES LLC
ADDRESS	1005 STATE ST PO Box 269
CITY	NESHKORO
STATE	WI
ZIP	54960
PROJECT DESCRIPTION / NO.	CLAM RIVER
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	GARY RAST
PHONE	855-994-5376 x105
PURCHASE ORDER NO.	?
FAX	

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.

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	ANALYZE PER ORDER OF ANALYSIS: Chlorophyll a	T Color	PHOS	PHOS									COLLECTION REMARKS (i.e. DNR Well ID #)
1.	677899	20120814 1A	8/14/12	11:05		X												
2.	900	" 1B	"	11:07			X											
3.	901	" 1C	"	11:09				X										
4.	902	" 1D	"	11:12					X									
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

COLLECTED BY (signature)	CUSTODY SEAL NO. (IF ANY)	DATE/TIME
Gary Rast		8/14/12 11:05-11:12
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT	DATE/TIME
Gary Rast	UPS	8/14/12 12:00

REPORT TO: SAME AS ABOVE ATTN: GARY

INVOICE TO: NORWAY WI ADDRESS ON FILE

RECEIVED AT NLS BY (signature)	DATE/TIME	CONDITION	TEMP.
Anna marie Combs	8/15/12 10:00	onice	
COOLER # 10-665	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

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

IMPORTANT:

1. TO MEET REGULATORY REQUIREMENTS, THIS FORM **MUST** BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.
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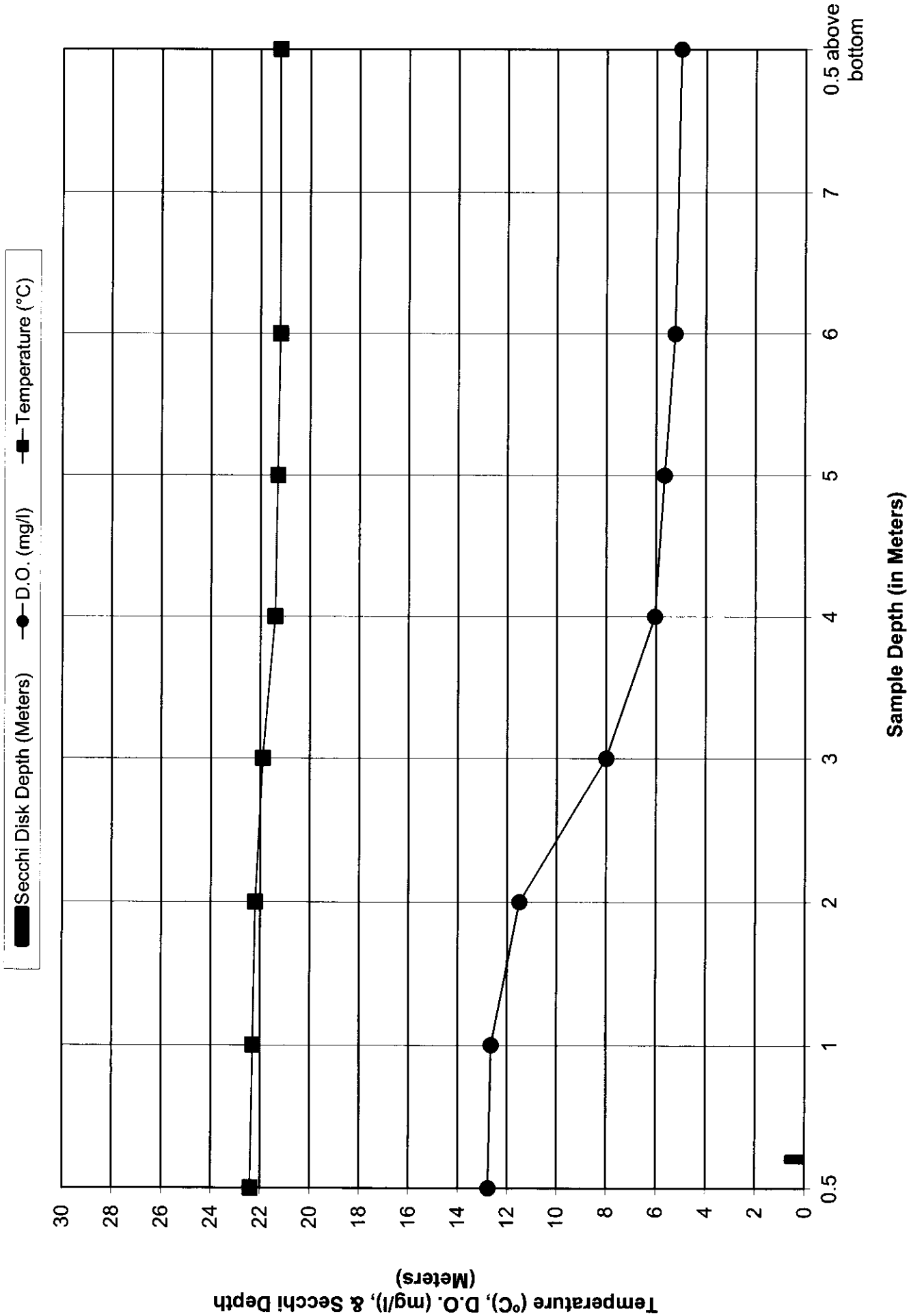
4. PARTIES COLLECTING SAMPLE LISTED AS **REPORT TO** AND LISTED AS **INVOICE TO** AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

Clam River Impoundment - FERC # 9185
August 14, 2012 Sampling Event



Appendix D

Agency Correspondence

Gary Rast

From: Utrup, Nick <nick_utrup@fws.gov>
Sent: Tuesday, November 27, 2012 12:57 PM
To: Gary Rast
Subject: Re: FW: WDNR comments for Winter, Clam, and Danbury 2012 WQ data

Gary,

The USFWS has no comments on the Winter, Clam, and Danbury 2012 WQ data.

Nick

On Tue, Nov 27, 2012 at 12:49 PM, Gary Rast <grast@rwehydro.com> wrote:

Gary Rast

Regulatory Compliance Manager

Renewable World Energies, LLC

100 S. State Street

P.O. Box 264

Neshkoro, WI 54960

Phone: 855-994-9376 Ext. 105

Fax: 920-293-4100

Cell: 920-570-0995

E-mail: grast@rwehydro.com

From: Laatsch, Cheryl - DNR [mailto:Cheryl.Laatsch@Wisconsin.gov]
Sent: Monday, November 19, 2012 1:33 PM
To: Gary Rast
Subject: WDNR comments for Winter, Clam, and Danbury 2012 WQ data

Hi Gary –

Staff have reviewed the reports above, and have no concerns or comments.

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

e-mail: Cheryl.laatsch@wisconsin.gov
Website: dnr.wi.gov
www.facebook.com/WIDNR

--

Nicholas J. Utrup
U.S. Fish and Wildlife Service
Wisconsin Ecological Services Office
2661 Scott Tower Drive
New Franken, WI 54229

Office: (920) 866-1736
Cell: (920) 530-9937
FAX: (920) 866-1710
Email: Nick_Utrup@fws.gov

COPY

Gary Rast

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@Wisconsin.gov>
Sent: Monday, November 19, 2012 1:33 PM
To: Gary Rast
Subject: WDNR comments for Winter, Clam, and Danbury 2012 WQ data

Hi Gary –

Staff have reviewed the reports above, and have no concerns or comments.

e-mail: Cheryl.laatsch@wisconsin.gov
Website: dnr.wi.gov
www.facebook.com/WIDNR

Renewable World Energies

COPY

October 15, 2012

Mr. Craig Roesler
Water Quality Biologist, Upper Chippewa Basin
Wisconsin Dept. of Natural Resources
10220 State Hwy. 27
Hayward, WI 54843

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

Ms. Cheryl Laatsch
Water Regulations & Zoning Specialist
Wisconsin Dept. of Natural Resources
P O Box 7921
Madison, WI 53707-7921

Re: Clam River Hydroelectric Project
FERC Project Number 9185
Flambeau Hydro LLC
Draft Report 2012 Water Quality Monitoring Data

Dear Agency:

Purpose

On behalf of Flambeau Hydro LLC "Flambeau" (Licensee), Renewable World Energies, LLC is submitting (2) copies of the *Draft Report 2012 Water Quality Monitoring Data* for the Clam River 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 July 24, 2006. 2012 was the fifth 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.

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

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

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.

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.

Sincerely,
Renewable World Energies, LLC
Agent for Licensee

for Gary Rast

Mr. Jason Kreuscher
Vice President, Operations

Attachment: Draft Report 2012 Water Quality Monitoring Data - October 10, 2012

Cc: RWE, Corporate

COPY

Gary Rast

From: Gary Rast
Sent: Wednesday, July 11, 2012 5:56 PM
To: Jeffrey.Scheirer@Wisconsin.gov; Nick Utrup (nick_utrup@fws.gov); 'craig.roesler@dnr.state.wi.us'
Cc: Laatsch, Cheryl - DNR (Cheryl.Laatsch@Wisconsin.gov)
Subject: Clam River Below Standard DO Measurements

Everyone,

I performed the July WQ monitoring at the Clam River Hydro Project today. More below standard DO measurements for the month of July. CLRV below std. results were as follows:
3.5 Meters – 4.32 DO and 26.1 Temp.
4 Meters – 3.25 DO and 26 Temp.
4.5 Meters – 2.52 DO and 25.9 Temp.
5 Meters – 1.45 DO and 25.7 Temp.
5.5 Meters - .81 DO and 25.5 Temp.
6 Meters - .33 DO and 25.4 Temp.
6.5 Meters - .08 DO and 25.2 Temp.
7 Meters - .06 DO and 25.0 Temp.
.5 Meter Above Bottom - .04 DO and 24.8 Temp.

ATTN: New WQ Monitoring Point at CLRV is in front of dam between 2nd & 3rd buoy at N45° 56.779' WO92° 32.286'. Per Craig's request.

Gary

Gary Rast
Regulatory/Compliance Manager

Renewable World Energies

Renewable World Energies, LLC
100 State Street
P.O. Box 264
Neshkoro, WI 54960
Phone: 855-994-9376 Ext. 105
Fax: 920-293-4100
Cell: 920-570-0995
E-mail: grast@rwehydro.com

Document Content(s)