December 14, 2012

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

RE: Flambeau Hydroelectric Projects
FERC Project Number 2640 **FERC Project Number 2421**
FERC Project Number 2395 **FERC Project Number 2473**
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 each of the (4) Flambeau Hydroelectric Projects (Flambeau Upper, Flambeau Lower, Flambeau Pixley, and Flambeau Crowley). The report is a requirement of Flambeau's Federal license pursuant to articles 406 and 408 and the approved Water Quality Monitoring Plans for each. 2012 was the ninth 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 4, July 10, and August 7, 2012. The only issue encountered was some below standard D O measurements taken on the July 10th date at Pixley and Crowley. Agencies were notified by e-mail dated July 10, 2012 of the issue. The draft report was sent to the agencies by letter dated November 9, 2012 for review and comment. Correspondence was received from WDNR and USFW December 6th and 10th respectively. WDNR had some comment and questions concerning the reports. A phone conference with WDNR representatives was held on December 7, 2012 to discuss their comments. All concerns were addressed, questions answered and report data explained. Item 1and 2 will be include in 2013. Item 3 was explained by providing the plan and showing the agency that Ice Out, July, and August were the time periods to be sampled according to the plan. Item 4 was answered by explaining the sample map had a gps location of the sample site.

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

It was agreed a WDNR representative would either go along on one of the 2013 Crowley sample dates to help pick a new location or would go independently in search of a new site. Item 5 concerning the summary table will be addressed beginning with the 2013 report and will include each succeeding year instead of comparing the data only to the last year. We also discussed doing reverse sampling at the Flambeau projects in the future instead of always beginning at Upper and ending at Crowley. Agencies will discuss this between themselves and contact the Licensee should they wish to see a change in sampling order as stipulated by the approved plans. USFWS indicated they had reviewed the reports and had no comments to offer. Most of the questions or concerns that the WDNR had were caused by staff changes and the fact they could not find copies of the plans in their respective files. The Licensee sent a PDF of each plan and order to Ms. Cheryl Laatsch for distribution to her staff. 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.

Sincerely,
Renewable World Energies, LLC
Agent for Licensee

for Mr. Jason Kreuscher
Vice President, Operations

Attachments: Flambeau Upper Final Report 2012 Water Quality Monitoring Data-December 14, 2012

Flambeau Lower Final Report 2012 Water Quality Monitoring Data-December 14, 2012

Flambeau Pixley Final Report 2012 Water Quality Monitoring Data-December 14, 2012

Flambeau Crowley Final Report 2012 Water Quality Monitoring Data-December 14, 2012

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

Final Report

2012 Water Quality Monitoring Data

For the

Flambeau (Upper) Hydroelectric Project
FERC Project #2640
Flambeau Hydro, LLC

North Fork of the Flambeau River, Price County, Wisconsin

Respectfully Submitted by:

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

Final – December 14, 2012

Table of Contents

Summary

2012 marked the ninth year of water quality sampling under the FERC approved "Water Quality Monitoring Plan Per License Article 408 for the Flambeau (Upper) Hydroelectric Project – FERC Project # 2640 – Flambeau Hydro, LLC". Sampling was accomplished according to the plan and was un-eventful, with no major problems or concerns.

Ice-Out occurred between Agenda and Nine Mile Landing on the North Fork of the Flambeau River during the 4th full week of March 2012. The Ice-Out sampling event occurred on April 04, 2012. River flow, based on Flambeau (Upper) Hydroelectric Project records, was approximately 410 cubic feet per second. Sampling occurred between 7:30 a.m. and 8:00 a.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 05, 2012. Northern Lake Service, Inc issued a laboratory report on April 05, 2012. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on Flambeau (Upper) Hydroelectric Project records, was approximately 482 cubic feet per second during the July 10, 2012 sampling event. Sampling occurred between 8:00 a.m. and 8:20 a.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 July 11, 2012. Northern Lake Service, Inc issued a laboratory report on July 23, 2012. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on Flambeau (Upper) Hydroelectric Project records, was approximately 39c cubic feet per second during the August 07, 2012 sampling event. Sampling occurred between 8:00 a.m. and 8:30 a.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 08, 2012. Northern Lake Service, Inc issued a laboratory report on August 14, 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 Flambeau Upper Project Sampling Comparison Table 2011-2012 page 8**) sampling results are as follows:

1. Water Clarity – Decreased July/August
2. Chlorophyll a – Increased
3. Color – Decreased August
4. Total Phosphorus – Increased Slightly April/August – Decreased Slightly July
5. Overall, D.O. – Decreased Slightly
6. Water Temperatures – Increased April – Similar July/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 Upper Hydroelectric Project is set to take place in 2013 beginning with the Ice-Out sampling event.

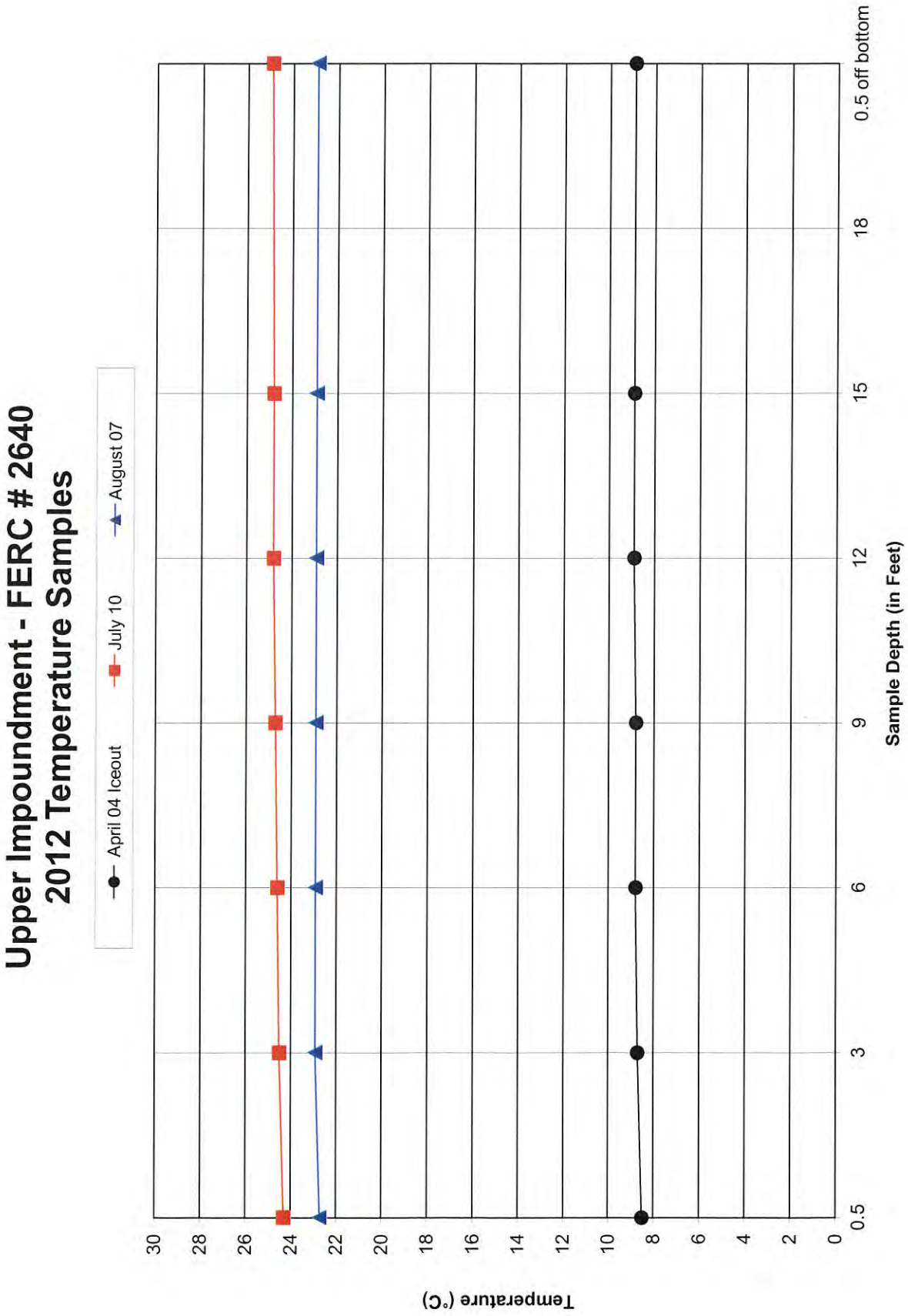
2012
Sampling Results
Table

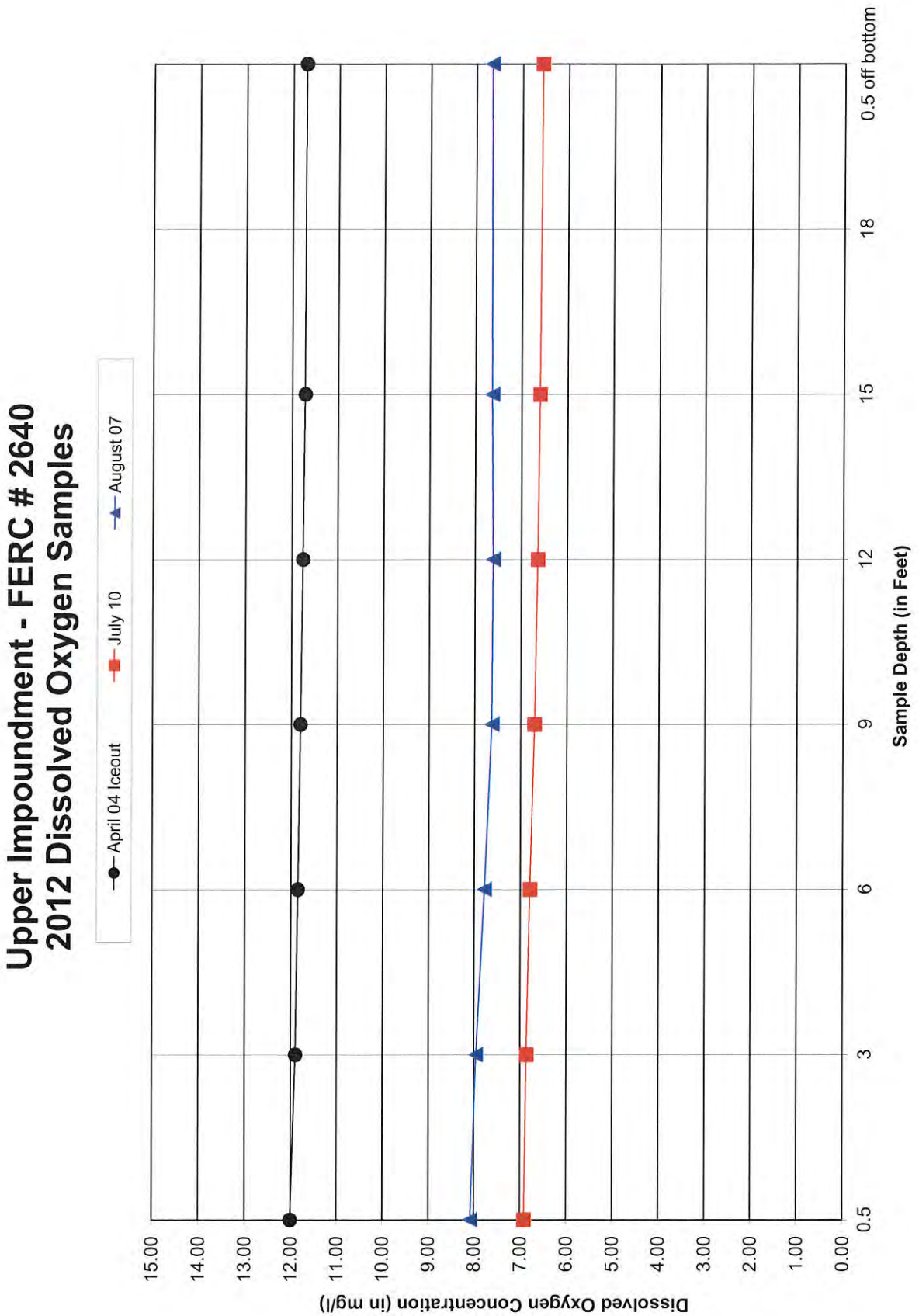
Flambeau (Upper) Hydroelectric Project - FERC Project # 2640
2012 Water Quality Sampling Data

	April 4, 2012			July 10, 2012			August 7, 2012		
Project Flow (c.f.s.)	410			482			393		
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 feet below surface	7:50 AM	12.01	8.50	8:07 AM	6.91	24.30	8:20 AM	8.08	22.70
3 feet below surface	7:51 AM	11.90	8.70	8:08 AM	6.86	24.50	8:21 AM	7.96	22.90
6 feet below surface	7:52 AM	11.85	8.80	8:09 AM	6.79	24.60	8:22 AM	7.78	22.90
9 feet below surface	7:53 AM	11.80	8.80	8:10 AM	6.70	24.70	8:23 AM	7.63	22.90
12 feet below surface	7:55 AM	11.76	8.90	8:11 AM	6.64	24.80	8:25 AM	7.61	22.90
15 feet below surface	7:57 AM	11.72	8.90	8:12 AM	6.60	24.80	8:27 AM	7.64	22.90
18 feet below surface	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
0.5 feet above bottom	8:00 AM	11.71	8.90	8:13 AM	6.56	24.90	8:30 AM	7.66	22.90
Secchi Disk	**Time**	**Depth (ft)**		**Time**	**Depth (ft)**		**Time**	**Depth (ft)**	
Feet below surface	7:45 AM	3.50		8:05 AM	3.5		8:15 AM	2.70	
Chlorophyll a	**Time**	**ug/L**		**Time**	**ug/L**		**Time**	**ug/L**	
3 feet below surface	7:30 AM	1.9		8:15 AM	5.9		8:00 AM	12	
Color (True)	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**
3 feet below surface	7:32 AM	100.0	10*	8:17 AM	70.0	5.0*	8:02 AM	70.0	5.0*
Total Phosphorus	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**
3 feet below surface	7:35 AM	0.027	0.0070*	8:20 AM	0.036	0.0070*	8:04 AM	0.037	0.0070*
3 feet above bottom	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Considered Reporting Limits

2012 Temperature and Dissolved Oxygen Graphs





2012
Monthly Temperature
and
Precipitation
Table

2012 Water Year Monthly Temperature and Precipitation for Park Falls, 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	75	-1	39.2	13.3	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	47	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

2012
Flambeau Upper
Sampling Comparison Table
2011—2012

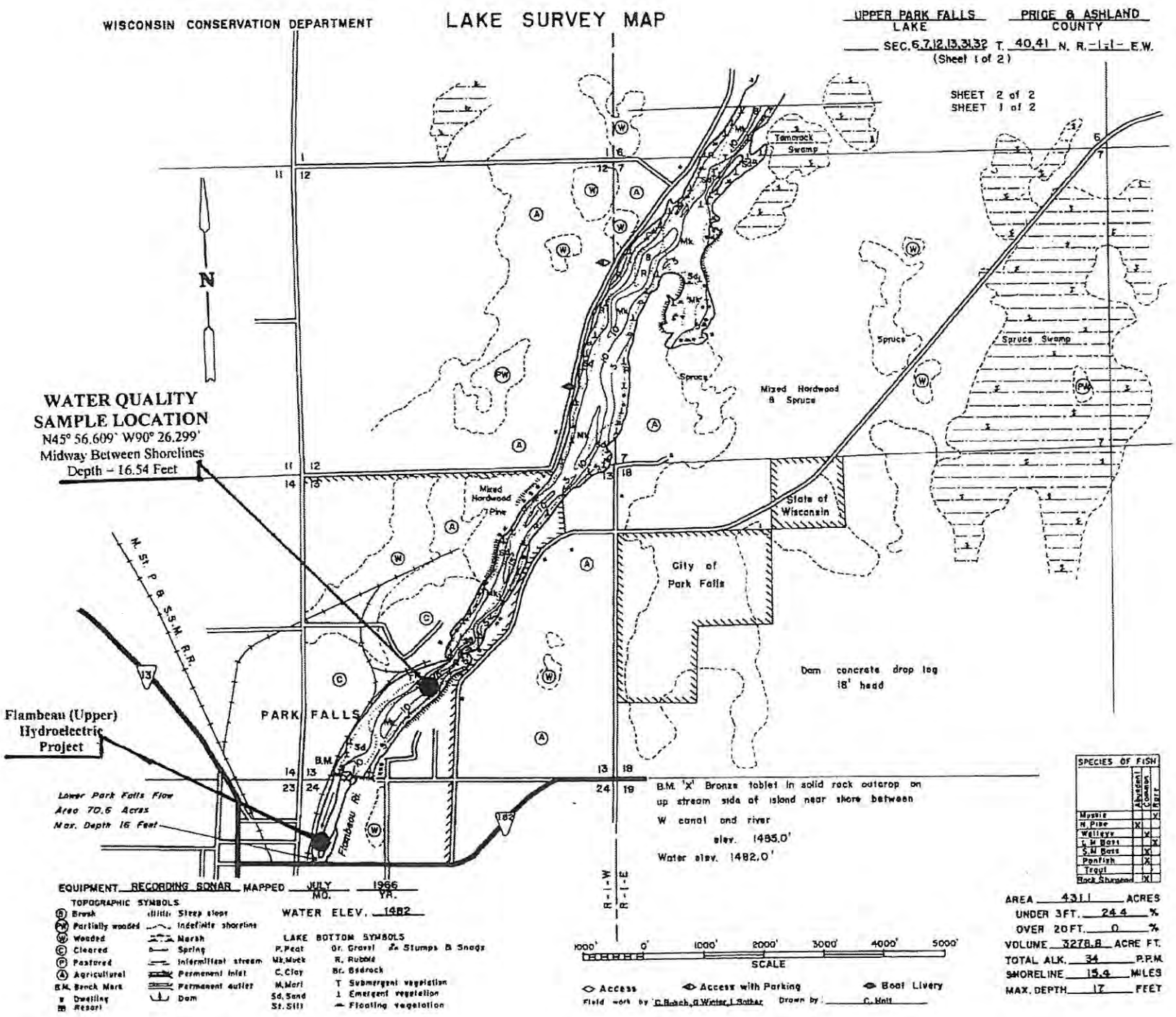
2012 Flambeau Upper
Project Sampling Comparison Table
To Previous Year

Year	Month	Secchi Disk Depth (ft)	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	3.5	0.51	100	0.025	0.028	12.63	12.91	5.9	6.4
2012	April	3.5	1.9	100	0.027	N/A	12.01	11.71	8.5	8.9
2011	July	3.8	5.8	70	0.038	N/A	7.37	7.70	24.4	25.2
2012	July	3.5	5.9	70	0.036	N/A	6.56	6.91	24.3	24.8
2011	August	2.9	11	120	0.033	N/A	8.13	8.43	22.2	22.9
2012	August	2.7	12	70	0.037	N/A	7.61	8.08	22.7	22.9

Upper Impoundment

Sampling Location

Map



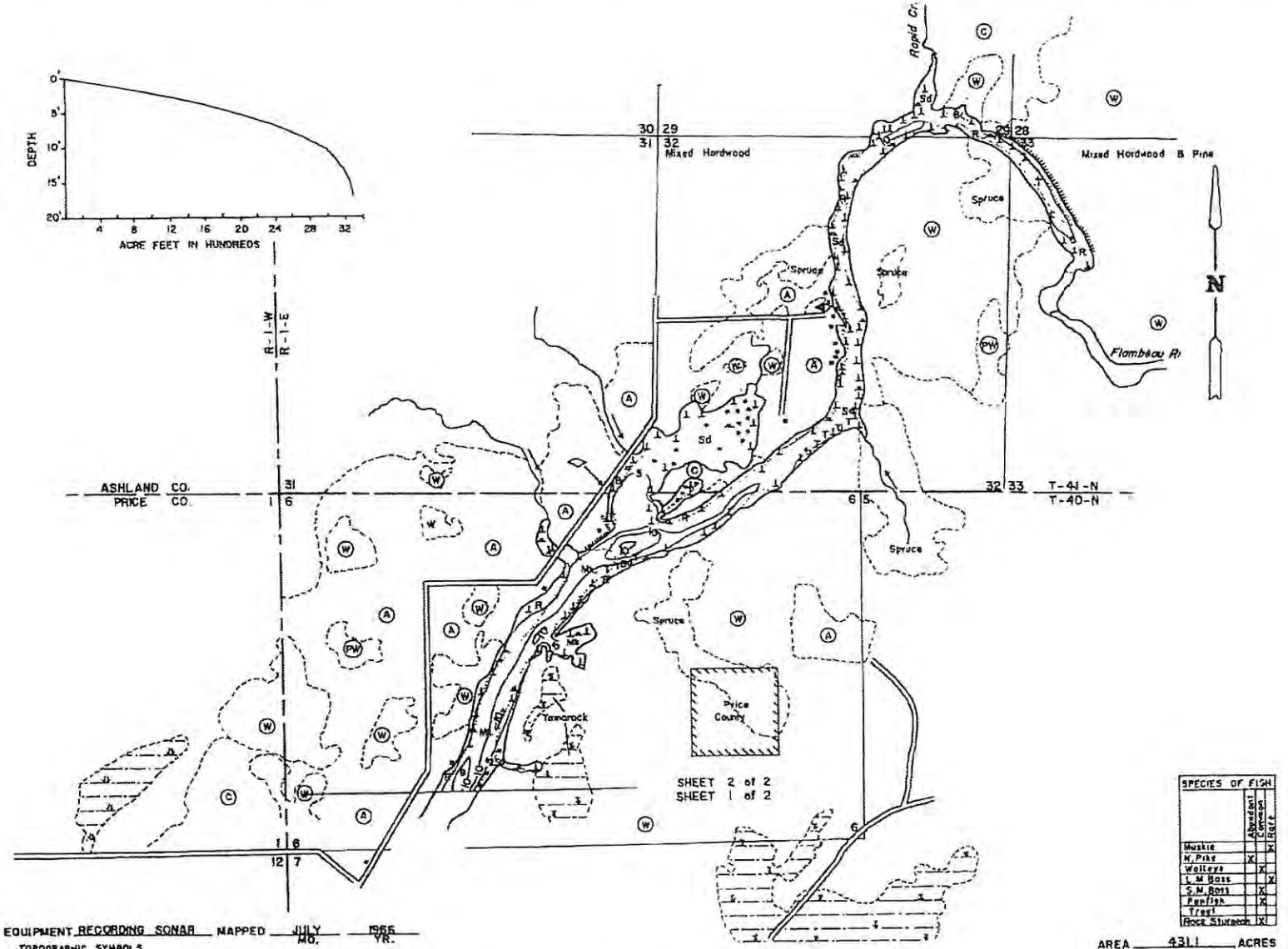
WISCONSIN CONSERVATION DEPARTMENT

LAKE SURVEY MAP

UPPER PARK FALLS LAKE — PRICE & ASHLAND COUNTY

SEC. 6,7,12,13,31,32 T. 40,41 N. R. 1 W. E.W.

(Sheet 2 of 2)



SPECIES OF FISH	Abundant	Common	Rare
Muskie			X
N. Pike	X		
Walleye		X	
L.M. Bass			X
S.M. Bass		X	
Panfish		X	
Trout			
Rock Sturgeon		X	

EQUIPMENT RECORDING SONAR MAPPED JULY (MO.) 1966 (YR.)

WATER ELEV. 1482

TOPOGRAPHIC SYMBOLS

- (B) Brush
- (PW) Partially wooded
- (W) Wooded
- (C) Cleared
- (P) Pastured
- (A) Agricultural
- B.M. Bench Mark
- Dwelling
- Resort
- Steep slope
- Indefinite shoreline
- Marsh
- Spring
- Intermittent stream
- Permanent inlet
- Permanent outlet
- Dam

LAKE BOTTOM SYMBOLS

- P. Peat
- Mk. Muck
- C. Clay
- M. Marl
- Sd. Sand
- Si. Silt
- Gr. Gravel
- Stumps & Snags
- R. Rubble
- Br. Bedrock
- T Submergent vegetation
- ⊥ Emergent vegetation
- Floating vegetation

1000' 0' 1000' 2000' 3000' 4000' 5000'

SCALE

◇ Access ◈ Access with Parking ◆ Boat Livery

Field work by C.Busch, G.Water, J. Sather Drawn by C. Holt

AREA 431.1 ACRES

UNDER 3FT. 24.4 %

OVER 20FT. 0 %

VOLUME 3278.8 ACRE FT.

TOTAL ALK. 34 P.P.M.

SHORELINE 15.4 MILES

MAX. DEPTH 17 FEET

Appendix A

April 04, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Upper) Hydroelectric Project - FERC #2640

HWL - 1486.66
PROJECT FLOW - 410CFS

Date: 4/4/12

Pre-Sampling Data:

Time: 7:00 Barometer: 30.09 Air Temp: -2.7 °C Wind Speed: CALM

Sky Conditions: BRIGHT SUNSHINE - 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: 18' feet

Secchi Disk Depth: (E0.1 foot): 3.5 feet. Time: 7:45

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120404/1A

Time	Quantity (ml)	Filtered
7:30	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120404/1B

Time	Quantity (ml)
7:32	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	7:50	12.01	8.5
3 feet	7:51	11.9	8.7
6 feet	7:52	11.85	8.8
9 feet	7:54	11.8	8.8
12 feet	7:55	11.76	8.9
15 feet	7:57	11.72	8.9
18 feet			
21 feet			
24 feet			
0.5 feet above bottom	8:00	11.71	8.9

Phosphorus

Lab Sample I.D. #: 20120404/1C
(3 feet below surface)

Time	Preserved ?
7:35	H_2SO_4

Lab Sample I.D. #:
(3 feet above bottom)

Time	Preserved ?

Comments: Sampling location is N45 56.609 W90 26.299

Performed By: GARY RAST + Aneta Rast + Aneta Rast

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: 176278
NLS Customer: 102823

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

RECEIVED
4/13/12

Project: Flambeau (4)

20120404 - 1A NLS ID: 657277
COC: 141408:1 Matrix: SW
Collected: 04/04/12 07:30 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 2A NLS ID: 657278
COC: 141408:2 Matrix: SW
Collected: 04/04/12 09:05 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 3A NLS ID: 657279
COC: 141408:3 Matrix: SW
Collected: 04/04/12 11:30 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 4A NLS ID: 657280
COC: 141408:4 Matrix: SW
Collected: 04/04/12 13:10 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 1B NLS ID: 657281
COC: 141408:5 Matrix: SW
Collected: 04/04/12 07:32 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 2B NLS ID: 657282
COC: 141408:6 Matrix: SW
Collected: 04/04/12 09:07 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 3B NLS ID: 657283
COC: 141408:7 Matrix: SW
Collected: 04/04/12 11:32 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	140	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 4B NLS ID: 657284
COC: 141408:8 Matrix: SW
Collected: 04/04/12 13:12 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

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: 176278
NLS Customer: 102823

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

Project: Flambeau (4)

20120404 - 1C NLS ID: 657285
COC: 141408:9 Matrix: SW
Collected: 04/04/12 07:35 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.027	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 2C NLS ID: 657286
COC: 141408:10 Matrix: SW
Collected: 04/04/12 09:08 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.038	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 3C NLS ID: 657287
COC: 141408:11 Matrix: SW
Collected: 04/04/12 11:35 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.039	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 4C NLS ID: 657288
COC: 141408:12 Matrix: SW
Collected: 04/04/12 13:15 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.041	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 2D NLS ID: 657289
COC: 141408:13 Matrix: SW
Collected: 04/04/12 09:10 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.055	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: 176278
Flambeau (4)

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
657277	20120404 - 1A	1.8	0.0*	1.9	0.022	0.31
657278	20120404 - 2A	1.8	0.4	2.1	0.098	0.47
657279	20120404 - 3A	1.9	0.0*	1.7	0.0*	0.49
657280	20120404 - 4A	1.7	0.0*	1.7	0.0*	0.15

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. 141408

CLIENT	Renewable World Energies
ADDRESS	PO Box 264
CITY / STATE / ZIP	Neshkoro / WI / 54960
PROJECT DESCRIPTION / NO.	Flambeau (4)
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

ANALYZE PER ORDER OF ANALYSIS

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)	Chlorophyll a	True Color	Phosphorus	Phosphorus	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	657277	20120404(1,2,3,4) A	04/04/2012	7:30-1:10		X				
2.		20120404(1,2,3,4) B	04/04/2012	7:32-1:12			X			
3.		20120404(1,2,3,4) C	04/04/2012	7:35-1:15				X		
4.		20120404(2) D	04/04/2012	9:10					X	You started us a bottles with sulfuric acid for phosphorus
5.										
6.										
7.										
8.										
9.										
10.	657289									

ONE SAMPLE PER LINE

COLLECTED BY (signature) Gary Rast	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 4/4/2012 7:35-1:15
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 4/4/2012 3 pm

REPORT TO: attn: Gary same as above

RECEIVED AT NLS BY (signature)	DATE/TIME 4/5/12 10	CONDITION Good	TEMP.
COOLER # 28-122	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

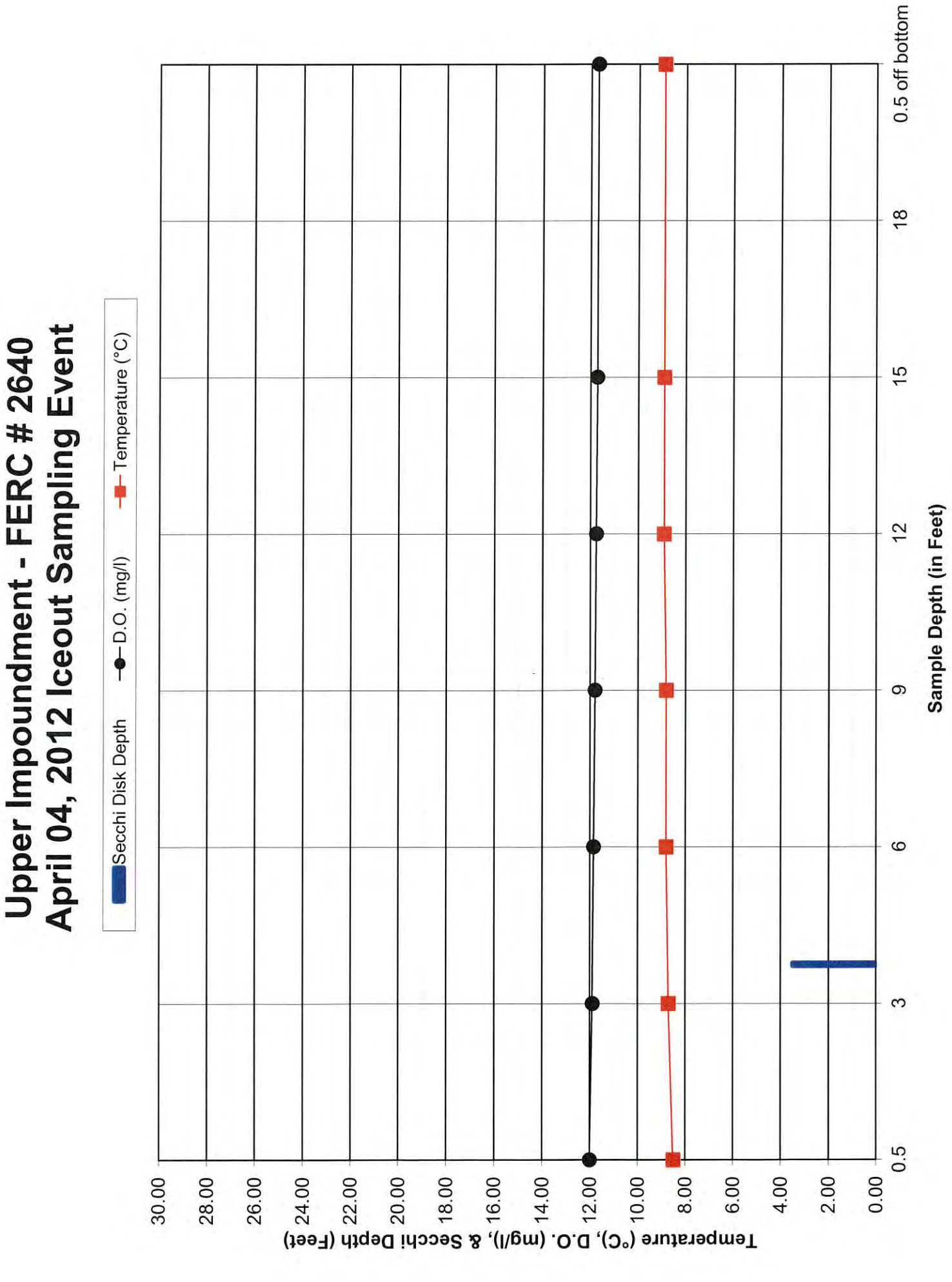
INVOICE TO: same as above

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


Upper Impoundment - FERC # 2640
April 04, 2012 Iceout Sampling Event
Secchi Disk Depth
D.O. (mg/l)
Temperature (°C)
Temperature (°C), D.O. (mg/l), & Secchi Depth (Feet)
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.5
3
6
9
12
15
18
0.5 off bottom
Sample Depth (in Feet)

Appendix B

July 10, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Upper) Hydroelectric Project - FERC #2640

HWL - 1486.60 CFS - 482 Date: 7/10/12

Pre-Sampling Data:

Time: 8:00 Barometer: 30.22 Air Temp: 17 °C Wind Speed: CALM

Sky Conditions: PARTLY CLOUDY + BRIGHT SUN

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

Calibration Time: February 2012 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 18.6 feet

Secchi Disk Depth: (E0.1 foot): 3'6" feet. Time: 8:05

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120710-1A		
Time	Quantity (ml)	Filtered
8:15	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120710-1B	
Time	Quantity (ml)
8:17	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	8:07	6.91	24.3
3 feet	8:08	6.86	24.5
6 feet	8:09	6.79	24.6
9 feet	8:10	6.70	24.7
12 feet	8:11	6.64	24.8
15 feet	8:12	6.60	24.8
18 feet			
21 feet			
24 feet			
0.5 feet above bottom	8:13	6.56	24.9

Phosphorus

Lab Sample I.D. #: 20120710-1C (3 feet below surface)	
Time	Preserved ?
8:20	H_2SO_4

Lab Sample I.D. #: (3 feet above bottom)	
Time	Preserved ?

Comments: Sampling location is N45 56.609 W90 26.299

Performed By: GARY RAST + ANDI SCHLUMBERGER Rast

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

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

NLS Project: 181050
NLS Customer: 102823
Phone: 855 994 9376

Project: Flambeau

20120710-1A NLS ID: 671927
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-2A NLS ID: 671928
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-3A NLS ID: 671929
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-4A NLS ID: 671930
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-1B NLS ID: 671931
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	70	C.P.U.	1	5.0*		07/11/12	SM 2120-B 20ed	721026460

20120710-2B NLS ID: 671932
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

20120710-3B NLS ID: 671933
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

20120710-4B NLS ID: 671934
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

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

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

NLS Project: 181050
NLS Customer: 102823
Phone: 855 994 9376

Project: Flambeau

20120710-1C NLS ID: 671935
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.036	mg/L	1	0.0070*		07/18/12	SM 4500P-E 20ed	721026460

20120710-2C NLS ID: 671936
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.038	mg/L	1	0.0070*		07/18/12	SM 4500P-E 20ed	721026460

20120710-3C NLS ID: 671937
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.057	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-4C NLS ID: 671938
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.061	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-2D NLS ID: 671939
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.041	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-3D NLS ID: 671940
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.060	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-4D NLS ID: 671941
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.087	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: 181050
Flambeau

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
671927	20120710-1A	5.5	0.35	5.9	0.21	0.37
671928	20120710-2A	3.5	0.58	4	0.0*	0.3
671929	20120710-3A	8.1	0.75	8.8	0.31	0.49
671930	20120710-4A	15	2.7	17	1.8	1.2

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

MN DATCP 105-000330

NO. 144735

CLIENT	RENEWABLE WORLD ENERGIES
ADDRESS	100 STATE STREET
CITY / STATE / ZIP	NESHKORO / WI / 54960
PROJECT DESCRIPTION / NO.	FLAMBEAU
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	GARY RAST
PHONE	855-994-9376
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: CHLOROPHYLL A; TRUE COLOR; PHOSPHORUS; PHOSPHORUS

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	611927-930	20207/10-1,2,3,4A	7/10/12	8:00	RIVER WATER	
2.	931-934	20120710-1234-B	7/10/12		"	
3.	935-938	20120710 234 C	7/10/12		"	
4.	939-941	20120710 1234 D	7/10/12	2:00	"	
5.						
6.						
7.						
8.						
9.						
10.						

COLLECTED BY (signature) GARY RAST	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 7/10/12 3:30PM
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 7/10/12 3/30 PM

REPORT TO: SAME AS ABOVE

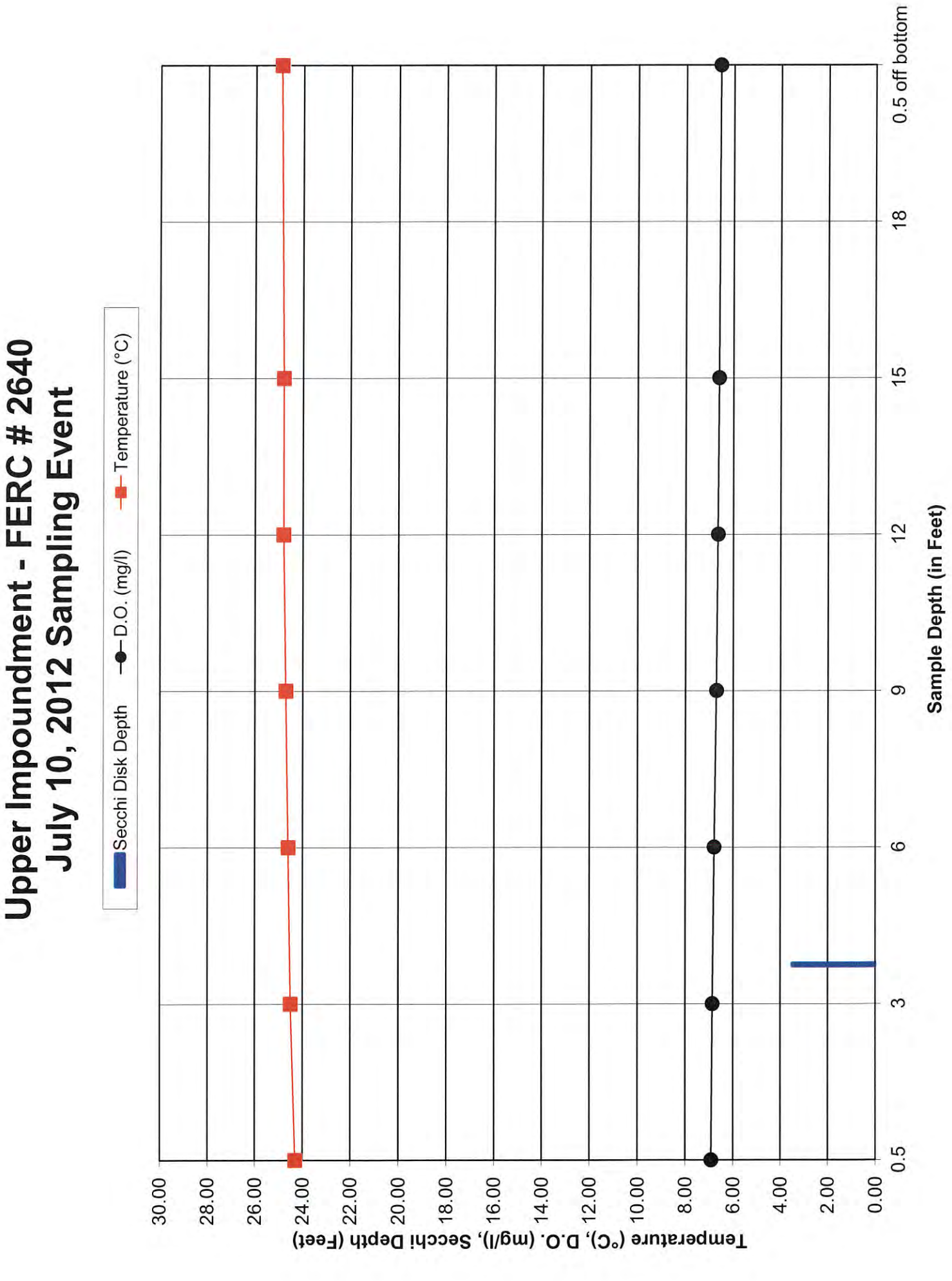
RECEIVED AT NLS BY (signature) Debbie Wilson	DATE/TIME 7-11-12 10:00	CONDITION ONICE	TEMP.
COOLER #	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

INVOICE TO: RENEWABLE WORLD OPERATIONS
1001 STEPHENSON ST
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.


Upper Impoundment - FERC # 2640
July 10, 2012 Sampling Event
Secchi Disk Depth
D.O. (mg/l)
Temperature (°C)
Temperature (°C), D.O. (mg/l), Secchi Depth (Feet)
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.5
3
6
9
12
15
18
0.5 off bottom
Sample Depth (in Feet)

Appendix C

August 07, 2012 Sampling Documents

HWL-1486.79 TWL-1467.3 TP FLOW - 393 CFS

2012 IMPOUNDMENT SAMPLING LOG

Water Quality Study - Flambeau (Upper) Hydroelectric Project - FERC #2640

Date: 8/7/12

Pre-Sampling Data:

Time: 8:00 Barometer: 29.97 Air Temp: 20.0 °C Wind Speed: CALM

Sky Conditions: FAIR & CLEAR

Precipitation within Last 24 Hours: NO

D.O. Meter Calibration: Instrument Model Used: H040d

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: 18.5 feet

Secchi Disk Depth: (E0.1 foot): 2.7 feet. Time: 8:15

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120807 1A

Time	Quantity (ml)	Filtered
8:00	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120807 1B

Time	Quantity (ml)
8:02	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	8:20	8.08	22.7
3 feet	8:21	7.96	22.9
6 feet	8:22	7.78	22.9
9 feet	8:23	7.63	22.9
12 feet	8:25	7.61	22.9
15 feet	8:27	7.64	22.9
18 feet			
21 feet			
24 feet			
0.5 feet above bottom	8:30	7.66	22.9

Phosphorus

Lab Sample I.D. #: 20120807 1C

(3 feet below surface)

Time	Preserved ?
8:04	H_2SO_4

Lab Sample I.D. #: _____

(3 feet above bottom)

Time	Preserved ?

Comments: Sampling location is N45 56.609 W90 26.299

Performed By: GARY & ANETA Gary Rost

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

RECEIVED
AUG 17 2012

NLS Project: 182629
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: Flambeau (4)

2012080701-A NLS ID: 676696
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

2012080701-B NLS ID: 676697
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	70	C.P.U.	1	5.0*		08/08/12	SM 2120-B 20ed	721026460

2012080701-C NLS ID: 676698
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.037	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208072-A NLS ID: 676699
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

201208072-B NLS ID: 676700
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208072-C NLS ID: 676701
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.051	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208072-D NLS ID: 676702
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.050	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208073-A NLS ID: 676703
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

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: 182629
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: Flambeau (4)

201208073-B NLS ID: 676704
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208073-C NLS ID: 676705
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.048	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208073-D NLS ID: 676706
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.049	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208074-A NLS ID: 676707
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

201208074-B NLS ID: 676708
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208074-C NLS ID: 676709
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.043	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208074-D NLS ID: 676710
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.042	mg/L	1	0.0070*		08/14/12	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: 182629
Flambeau (4)

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
676696	2012080701-A	11	0.11	12	0.0*	1.1
676699	201208072-A	14	0.094	14	0.16	1.9
676703	201208073-A	25	0.0*	26	0.0*	2.8
676707	201208074-A	16	1.4	17	0.0*	1.8

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. 160057

CLIENT	RWE Hydro, LLC
ADDRESS	100 S. State St
CITY / STATE / ZIP	Neshkoro WI 54960
PROJECT DESCRIPTION / NO.	Flambeau (4)
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	Gary Rast
PHONE	(920) 570-0995
PURCHASE ORDER NO.	
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.

ITEM NO.	NLS LAB NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	ANALYZE PER ORDER OF ANALYSIS: Chlorophyll A	Tru Color	Phosphorus	Phosphorus								COLLECTION REMARKS (i.e. DNR Well ID #)
1.	16766896-698	20120807 01-A,B,C	8-7-12	8:00-8:04		X	X	X									
2.	699-702	201208072-A,B,C,D	8-7-12	9:00-9:07		X	X	X	X								
3.	703-706	201208073-A,B,C,D	8-7-12	11:30-11:37		X	X	X	X								
4.	707-710	201208074-A,B,C,D	8-7-12	1:05-1:12	River Water	X	X	X	X								
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

COLLECTED BY (signature)	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 8-7-12 8:00-1:12
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 8-7-12 2:00 pm

REPORT TO
Attn: Gary Rast
RWE Hydro, LLC
100 S. State St
PO Box 264
Neshkoro, WI 54960

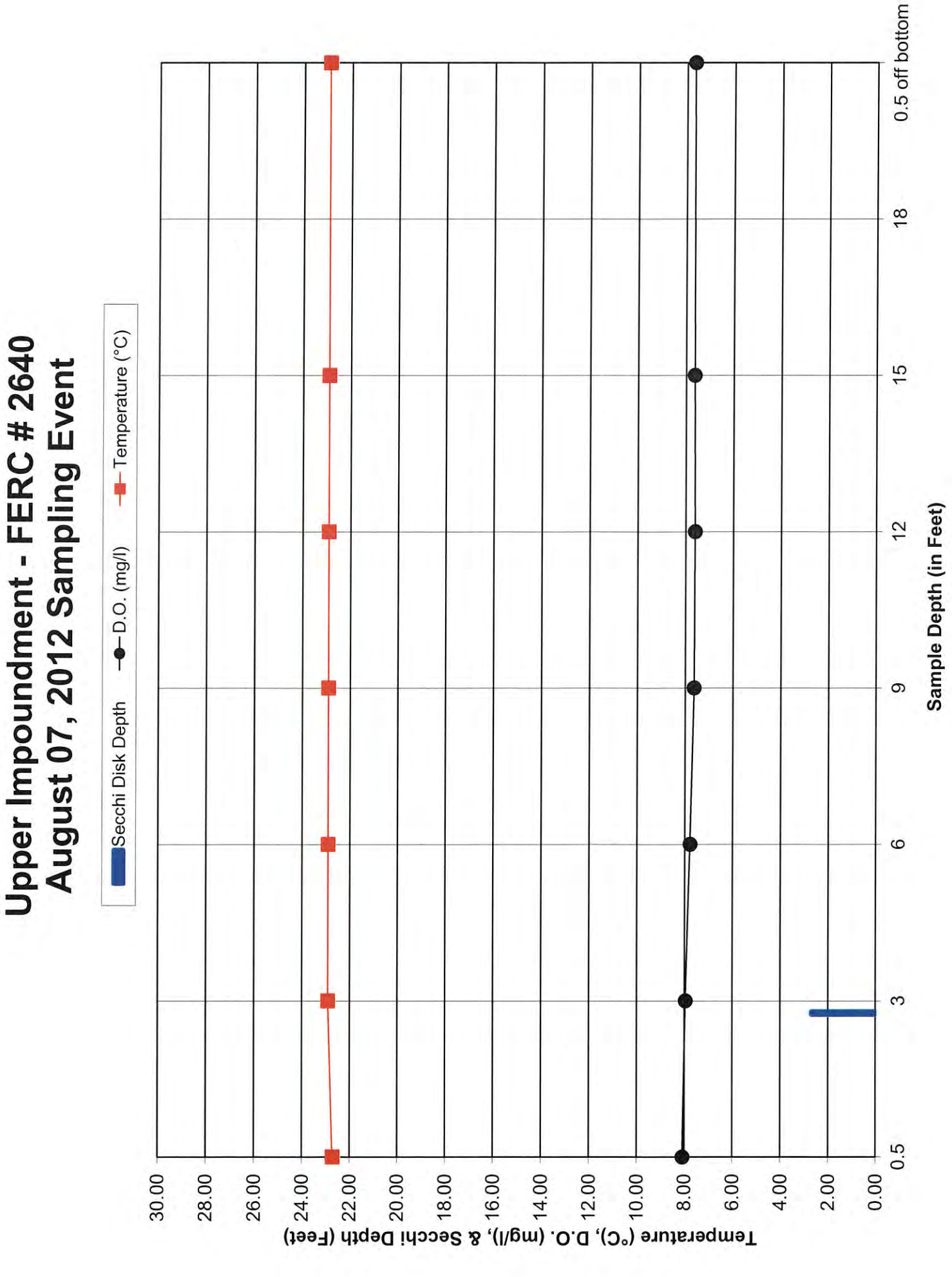
RECEIVED AT NLS BY (signature) Annamarie Cooks	DATE/TIME 8/8/12 10:15	CONDITION on ice	TEMP.
COOLER # 28-1810	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

INVOICE TO
RWE Hydro, LLC
1001 Stephenson St
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.


Upper Impoundment - FERC # 2640
August 07, 2012 Sampling Event
Secchi Disk Depth
D.O. (mg/l)
Temperature (°C)
Temperature (°C), D.O. (mg/l), & Secchi Depth (Feet)
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.5
3
6
9
12
15
18
0.5 off bottom
Sample Depth (in Feet)

Appendix D

Agency Correspondence

Gary Rast

From: Utrup, Nick <nick_utrup@fws.gov>
Sent: Monday, December 10, 2012 1:48 PM
To: Gary Rast
Subject: Re: Flambeau River Water Quality Reports

Gary,

Yes, I have received the reports for Upper and Lower, Pixley and Crowley projects on the Flambeau River. The USFWS will not be providing comments on the 2012 water quality reports for these hydroelectric projects.

Thanks,

Nick

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

On Mon, Dec 10, 2012 at 1:17 PM, Gary Rast <grast@rwehydro.com> wrote:

Nick,

You had sent me this for WNTR, CLRV, & DNB already. Wondering if you had any to offer for Flambeau (Upper, Lower, Pixley, or Crowley)?

Gary

Gary Rast

Regulatory/Compliance Manager

Gary Rast

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@Wisconsin.gov>
Sent: Thursday, December 06, 2012 12:27 PM
To: Gary Rast
Subject: WDNR comments on the WQ and Invasive Species Report Submittals

WQ 2012 Monitoring

General Comments:

1. Include the FERC and/or WQC WQ monitoring requirement information as directly stated in the order and/or state issued water quality certification.
2. Secchi disk reading is unclear. Please document these columns as feet below surface.
3. Most of the data was fine. However, the time or data of the data collection may not be appropriate.
4. Provide more detailed sampling location for Crowely, due to noticeable low DO levels.
5. We also request that the data for each year sampled, be included in a summary table.

Flambeau Upper P-2640
Crowley P-2473
Flambeau Lower P-2421
Pixley P-1960

Invasive Reports

Wisconsin is a mosaic of waterways representing the Mississippi River and the Great Lakes Regions. With this vast mosaic of waterways and river systems, comes an array of aquatic invasive species. As we move forward with identifying and eradicating AIS, there are basic steps that all hydro owners need to participate in, to help improve the resource. Some AIS can significantly hinder hydro operations that may result in excessive operation and maintenance costs, including lost generation. We encourage the utility to work with the WDNR to develop Best Management Practices for their operations and maintenance of the hydro, to reduce the introduction and spread of AIS. Additionally, the WDNR recommends revisions to the current AIS plan to address the following concerns:

a. Identify all existing AIS within the study area and discuss which new AIS are most likely to arrive (i.e. SMART analysis).
b. Determine an acceptable survey and mapping methodology
c. Identify and implement quality control measures, and equipment calibration measures
d. Improve awareness and the dynamics of the study area
e. Avoid duplicate workload for agency staff, utilities, and local associations
f. Manage and analyze the data collected to define population characteristics, establish trends, and evaluate management success.
g. Establish and implement protocols for management/removal of AIS
h. Provide a timeline to review the current AIS plans and revise the plans as appropriate for the project area

If purple loosestrife (*Lythrum salicaria*) is present, control or eliminate all small populations of loosestrife (usually 50 plants or less), with acceptable manual/chemical/mechanical methods annually, as necessary, and establish viable, on-going, and effective populations of biocontrol beetles (*Galerucella pusilla* and/or *G. calmariensis*) on all larger loosestrife populations.

Flambeau Pixley P-2395
Flambeau Upper P-2640
Flambeau Lower P-2421
Flambeau Crowley P-2473

Cheryl Laatsch, Water Mgt Specialist

Horicon DNR
N7725 HIGHWAY 28
HORICON WI 53032
(920) 387-7869

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

Renewable World Energies

COPY

November 9, 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: **Flambeau Hydroelectric Projects**
FERC Project Numbers-Upper FERC # 2640, Lower FERC # 2421,
Pixley FERC # 2395, Crowley FERC # 2473
Flambeau Hydro LLC
Draft Reports 2012 Water Quality Monitoring Data

Dear Agencies:

On behalf of Flambeau Hydro LLC ("Flambeau"), Licensee, Renewable World Energies, LLC is submitting (2) copies of its *Draft Report 2012 Water Quality Monitoring Data* for each of the Flambeau Projects. No problems were encountered with equipment, data, or the monitoring schedule in general. The report is a requirement of Flambeau's Federal license pursuant to article 406 and 408 and the approved Water Quality Monitoring Plans. The purpose of this letter is to formally invite you to comment on the draft reports. 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 reports.

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

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 Mr. Jason Kreuscher
Vice President, Operations

Attachments: Draft Report 2012 Water Quality Monitoring Data Flambeau Upper Hydroelectric Project – November 6, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Lower Hydroelectric Project – November 7, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Pixley Hydroelectric Project – November 8, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Crowley Hydroelectric Project – November 9, 2012

Cc: RWE, Corporate

COPY

Gary Rast

From: Gary Rast
Sent: Tuesday, July 10, 2012 3:55 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: Pixley & Crowley July Below Std. DO Measurements

Jeff, Nick, & Craig,

I just returned from performing the July WQ monitoring at the 4 Flambeau Projects at Park Falls and have some below standard DO measurements to report. They were as follows:
FLUP – OK but in the 6.5 to 6.9 range.
FLLW – OK but in the 5.5 to 6.1 range.
PXLY – DO dropped below 5 mg/l at 16' to 4.88 mg/l and 25.8 °C and continued to fall slightly all the way down to .5 feet above bottom to 4.62 mg/l and 25.7 °C.
CRLY – DO dropped below 5 mg/l at 10' to 4.55 mg/l and 26.4 °C and continued to fall all the way down to .5 feet above the bottom to 1.67 mg/l and 25.3 °C.

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

Final Report

2012 Water Quality Monitoring Data

For the

Flambeau (Lower) Hydroelectric Project
FERC Project #2421
Flambeau Hydro, LLC

North Fork of the Flambeau River, Price County, Wisconsin

Respectfully Submitted by:

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

Final – December 14, 2012

Table of Contents

Summary

2012 marked the ninth year of water quality sampling under the FERC approved "Water Quality Monitoring Plan Per License Article 406 for the Flambeau (Lower) Hydroelectric Project – FERC Project # 2421 – Flambeau Hydro, LLC.

Ice-Out occurred between Agenda and Nine Mile Landing on the North Fork of the Flambeau River during the 4th full week of April 2012. The Ice-Out sampling event occurred on April 04, 2012. River flow, based on Flambeau (Lower) Hydroelectric Project records, was approximately 413 cubic feet per second. Sampling occurred between 9:05 a.m. and 9:35 a.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 05, 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 Flambeau (Lower) Hydroelectric Project records, was approximately 433 cubic feet per second during the July 10, 2012 sampling event. Sampling occurred between 10:00 a.m. and 10:21 a.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 July 11, 2012. Northern Lake Service, Inc issued a laboratory report on July 23, 2012. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on Flambeau (Lower) Hydroelectric Project records, was approximately 368 cubic feet per second during the August 07, 2012 sampling event. Sampling occurred between 9:00 a.m. and 9:39 a.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 08, 2012. Northern Lake Service, Inc issued a laboratory report on August 14, 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 Flambeau Lower Project Sampling Comparison Table 2011-2012 page 8**) sampling results are as follows:

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

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

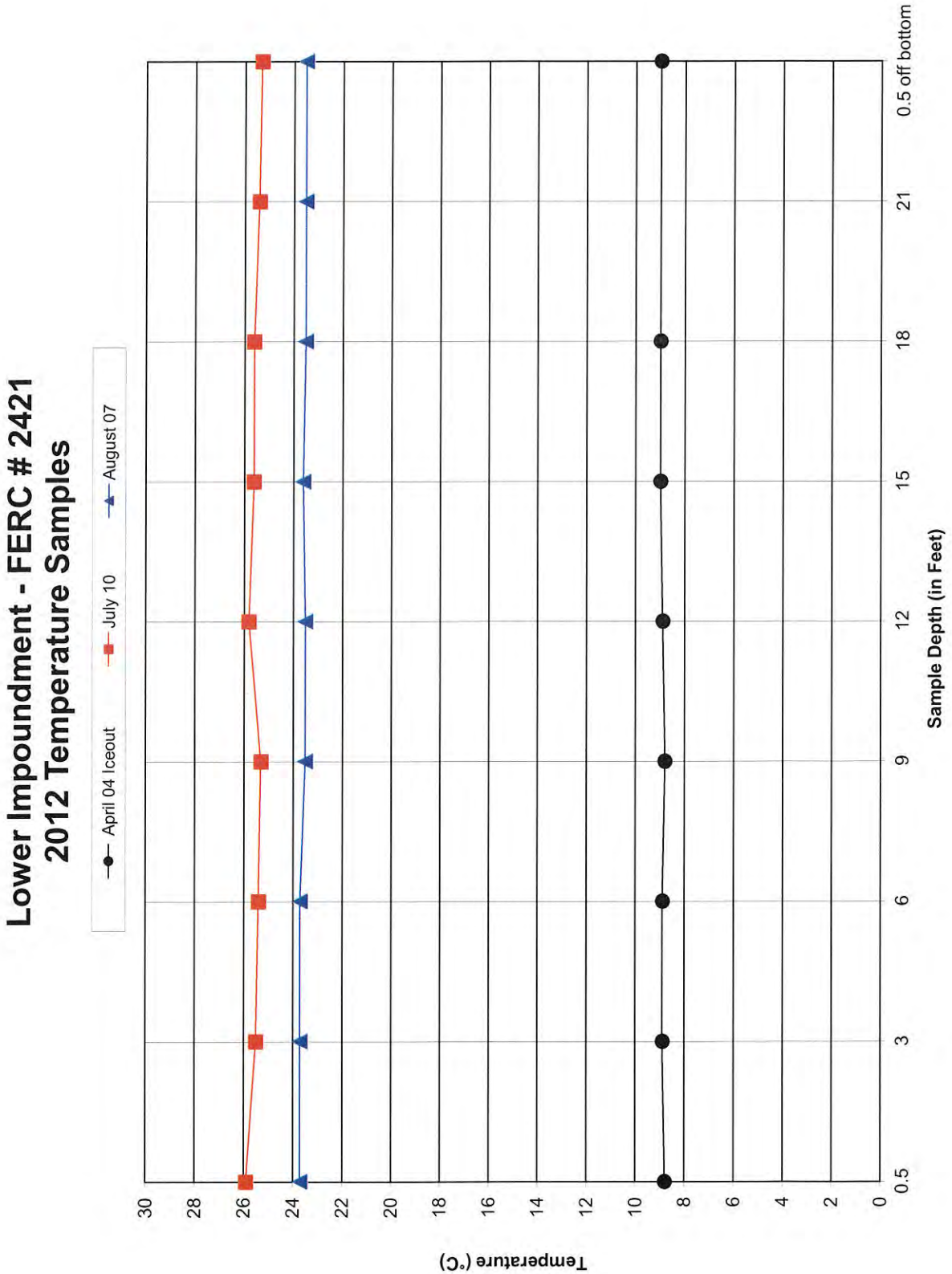
2012
Sampling Results
Table

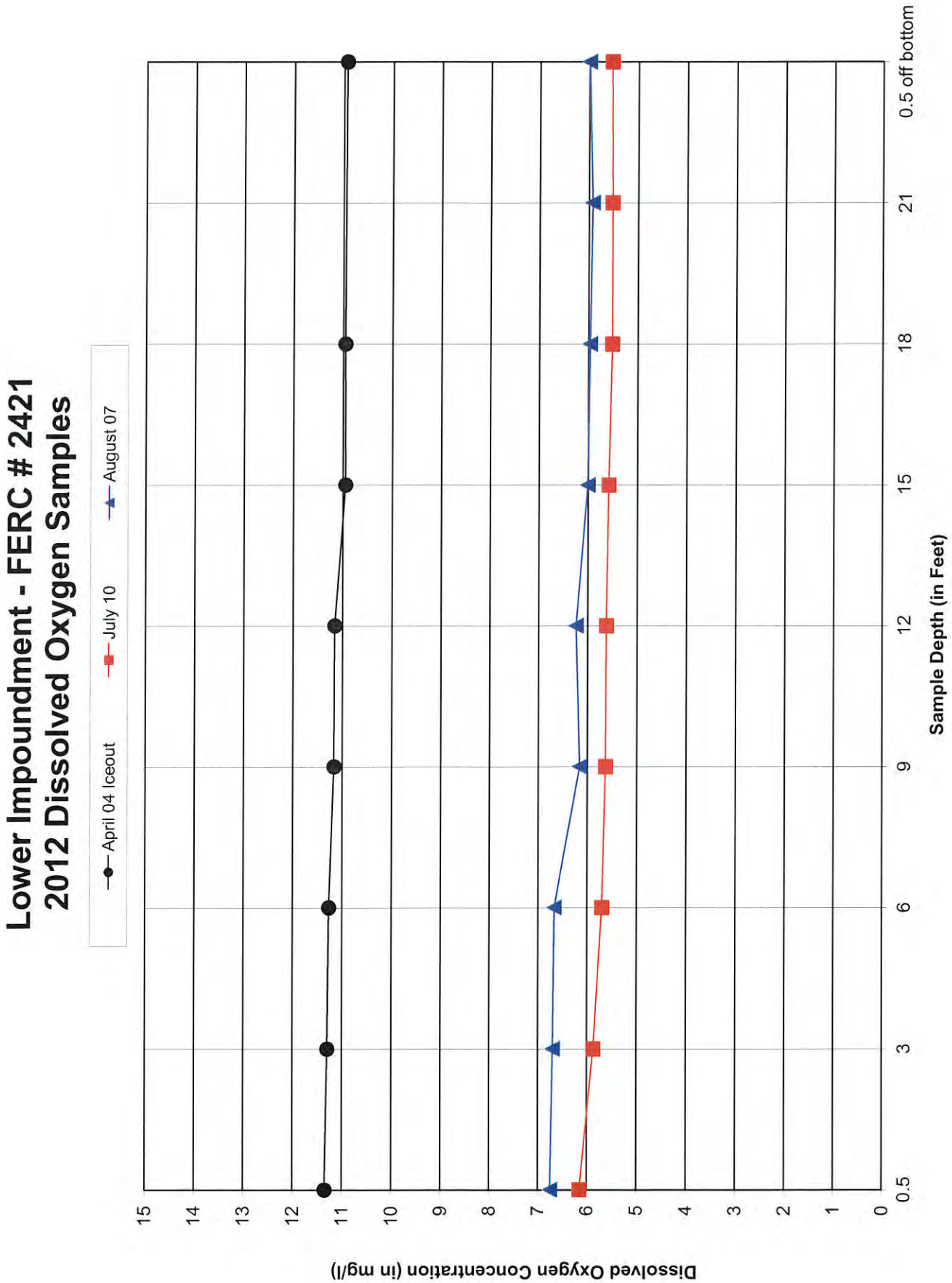
Flambeau (Lower) Hydroelectric Project - FERC Project # 2421
2012 Water Quality Sampling Data

	April 4, 2012			July 10, 2012			August 7, 2012		
Project Flow (c.f.s.)	413			433			368		
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 feet below surface	9:25 AM	11.35	8.80	10:01 AM	6.15	25.90	9:30 AM	6.75	23.70
3 feet below surface	9:26 AM	11.30	8.90	10:02 AM	5.87	25.50	9:31 AM	6.70	23.70
6 feet below surface	9:28 AM	11.27	8.90	10:03 AM	5.70	25.40	9:32 AM	6.67	23.70
9 feet below surface	9:29 AM	11.17	8.80	10:04 AM	5.63	25.30	9:34 AM	6.16	23.50
12 feet below surface	9:30 AM	11.16	8.90	10:05 AM	5.65	25.80	9:35 AM	6.24	23.50
15 feet below surface	9:31 AM	10.95	9.00	10:06 AM	5.58	25.60	9:36 AM	6.01	23.60
18 feet below surface	9:32 AM	10.96	9.00	10:07 AM	5.52	25.60	9:37 AM	5.97	23.50
21 feet below surface	#N/A	#N/A	#N/A	10:09 AM	5.52	25.40	9:38 AM	5.93	23.50
0.5 feet above bottom	9:35 AM	10.94	9.00	10:10 AM	5.53	25.30	9:39 AM	6.00	23.50
Secchi Disk	**Time**	**Depth (ft)**		**Time**	**Depth (ft)**		**Time**	**Depth (ft)**	
3 feet below surface	9:20 AM	2.60		10:13 AM	4.70		9:20 AM	2.75	
Chlorophyll a	**Time**	**ug/L**		**Time**	**ug/L**		**Time**	**ug/L**	
3 feet below surface	9:05 AM	2.10		10:15 AM	4.00		9:00 AM	14.00	
Color (True)	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**
3 feet below surface	9:07 AM	120.0	10*	10:17 AM	80.0	10*	9:05 AM	80.0	10*
Total Phosphorus	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**
3 feet below surface	9:08 AM	0.038	0.0070*	10:19 AM	0.038	0.0070*	9:06 AM	0.051	0.0070*
3 feet above bottom	9:10 AM	0.055	0.0070*	10:21 AM	0.041	0.0070*	9:07 AM	0.050	0.0070*

*** Considered Reporting Limits**

2012
Temperature
And
Dissolved Oxygen
Graphs





2012
Monthly Temperature
And
Precipitation
Table

2012 Water Year Monthly Temperature and Precipitation for Park Falls, 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	75	-1	39.2	13.3	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	47	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

2012
Flambeau Lower
Sampling Comparison Table
2011—2012

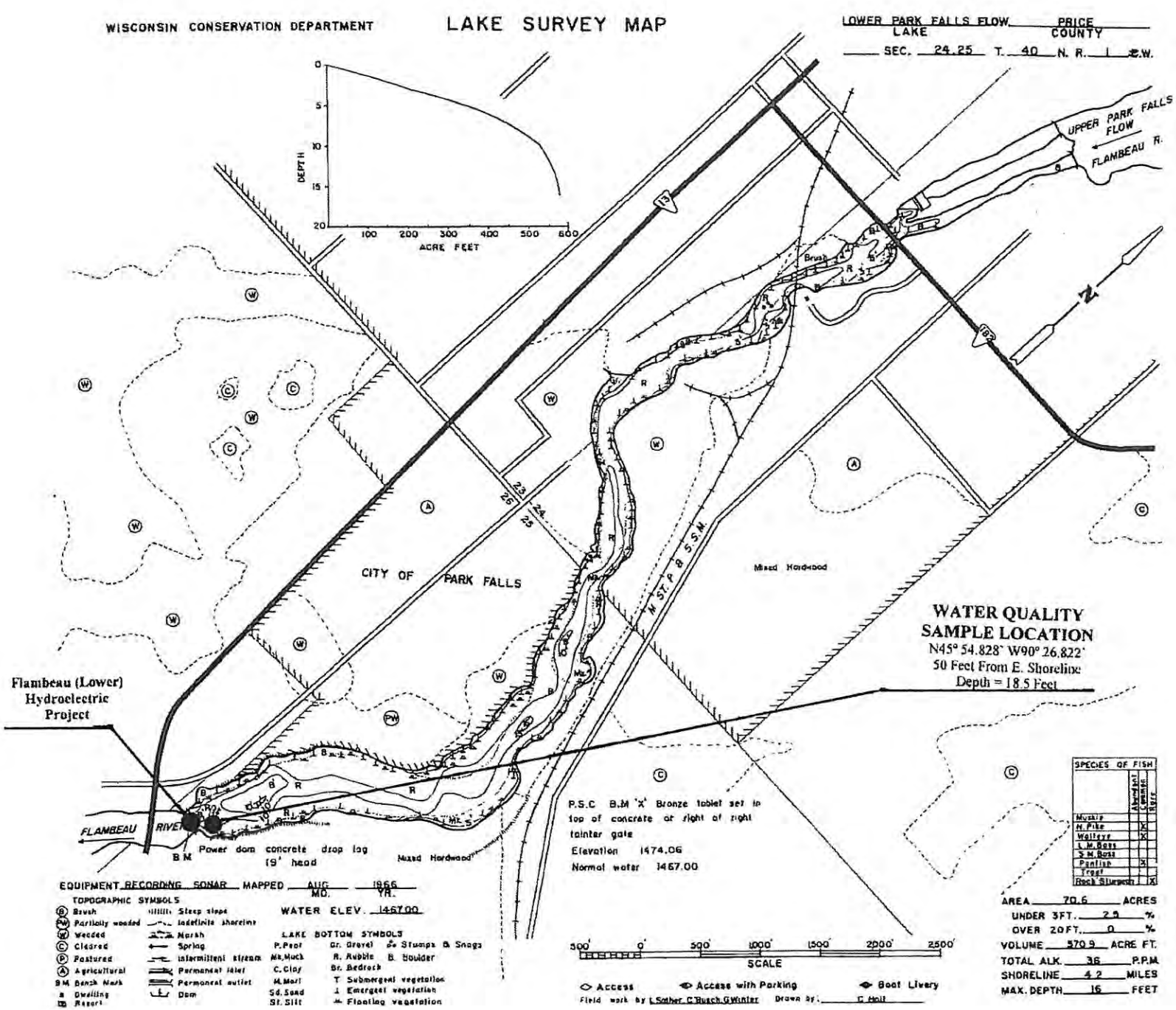
2012 Flambeau Lower
Project Sampling Comparison Table
To Previous Year

Year	Month	Secchi Disk Depth (ft)	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	2.7	0.77	80	0.028	0.031	11.64	12.48	5.9	8.0
2012	April	2.6	2.1	120	0.038	0.055	10.94	11.35	8.8	9.0
2011	July	3.7	5.6	80	0.042	0.041	6.62	6.91	24.9	25.3
2012	July	4.7	4.0	80	0.038	0.041	5.52	6.15	25.3	25.9
2011	August	3.25	13	120	0.048	0.047	7.74	7.14	23.2	24.3
2012	August	2.75	14.0	80	0.051	0.050	5.93	6.75	23.5	23.7

Lower Impoundment

Sampling Location

Map



Appendix A

April 04, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Lower) Hydroelectric Project - FERC #2421

HWL - 1467.31
PROJECT FLOW - 413 CFS

Date: 4/4/12

Pre-Sampling Data:

Time: 9:00 Barometer: 30.11 Air Temp: 7.2 °C Wind Speed: NE 7MPH

Sky Conditions: BRIGHT SUNSHINE - CLEAR - COOL - BREEZY

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: 21' feet

Secchi Disk Depth: (E0.1 foot): 2.6 feet. Time: 9:20

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120404 2A		
Time	Quantity (ml)	Filtered
9:05	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120404 2B	
Time	Quantity (ml)
9:07	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	9:25	11.35	8.8
3 feet	9:26	11.3	8.9
6 feet	9:28	11.27	8.9
9 feet	9:29	11.17	8.8
12 feet	9:30	11.16	8.9
15 feet	9:31	10.95	9.0
18 feet	9:32	10.96	9.0
21 feet			
24 feet			
0.5 feet above bottom	9:35	10.94	9.0

Phosphorus

Lab Sample I.D. #: 20120404 2C (3 feet below surface)	
Time	Preserved ?
9:08	H_2SO_4

Lab Sample I.D. #: 20120404 2D (3 feet above bottom)	
Time	Preserved ?
9:10	H_2SO_4

Comments: Sampling location is N45 54.828 W90 26.822

Performed By: GARY RAST + Aneta Rietveld

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: 176278
NLS Customer: 102823

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

RECEIVED
4/13/12

Project: Flambeau (4)

20120404 - 1A NLS ID: 657277
COC: 141408:1 Matrix: SW
Collected: 04/04/12 07:30 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 2A NLS ID: 657278
COC: 141408:2 Matrix: SW
Collected: 04/04/12 09:05 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 3A NLS ID: 657279
COC: 141408:3 Matrix: SW
Collected: 04/04/12 11:30 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 4A NLS ID: 657280
COC: 141408:4 Matrix: SW
Collected: 04/04/12 13:10 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 1B NLS ID: 657281
COC: 141408:5 Matrix: SW
Collected: 04/04/12 07:32 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 2B NLS ID: 657282
COC: 141408:6 Matrix: SW
Collected: 04/04/12 09:07 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 3B NLS ID: 657283
COC: 141408:7 Matrix: SW
Collected: 04/04/12 11:32 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	140	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 4B NLS ID: 657284
COC: 141408:8 Matrix: SW
Collected: 04/04/12 13:12 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

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: 176278
NLS Customer: 102823

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

Project: Flambeau (4)

20120404 - 1C NLS ID: 657285
COC: 141408:9 Matrix: SW
Collected: 04/04/12 07:35 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.027	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 2C NLS ID: 657286
COC: 141408:10 Matrix: SW
Collected: 04/04/12 09:08 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.038	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 3C NLS ID: 657287
COC: 141408:11 Matrix: SW
Collected: 04/04/12 11:35 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.039	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 4C NLS ID: 657288
COC: 141408:12 Matrix: SW
Collected: 04/04/12 13:15 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.041	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 2D NLS ID: 657289
COC: 141408:13 Matrix: SW
Collected: 04/04/12 09:10 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.055	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: 176278
Flambeau (4)

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
657277	20120404 - 1A	1.8	0.0*	1.9	0.022	0.31
657278	20120404 - 2A	1.8	0.4	2.1	0.098	0.47
657279	20120404 - 3A	1.9	0.0*	1.7	0.0*	0.49
657280	20120404 - 4A	1.7	0.0*	1.7	0.0*	0.15

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. 141408

CLIENT	Renewable World Energies
ADDRESS	PO Box 264
CITY / STATE / ZIP	Neshkoro / WI / 54960
PROJECT DESCRIPTION / NO.	Flambeau (4)
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

ANALYZE PER ORDER OF ANALYSIS

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)	Chlorophyll a	True Color	Phosphorus	Phosphorus	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	657277	20120404(1,2,3,4) A	04/04/2012	7:30-1:10		X				
2.		20120404(1,2,3,4) B	04/04/2012	7:32-1:12			X			
3.		20120404(1,2,3,4) C	04/04/2012	7:35-1:15				X		
4.		20120404(2) D	04/04/2012	9:10					X	You started us 2 bottles with sulfuric acid for phosphorus
5.										
6.										
7.										
8.										
9.										
10.	657289									

ONE SAMPLE

COLLECTED BY (signature) Gary Rast	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 4/4/2012 7:35-1:15
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 4/4/2012 3 pm

REPORT TO: attn: Gary same as above

RECEIVED AT NLS BY (signature) Anne Braun	DATE/TIME 4/5/12 10	CONDITION Okay	TEMP.
COOLER # [redacted] 28-122	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

INVOICE TO: same as above

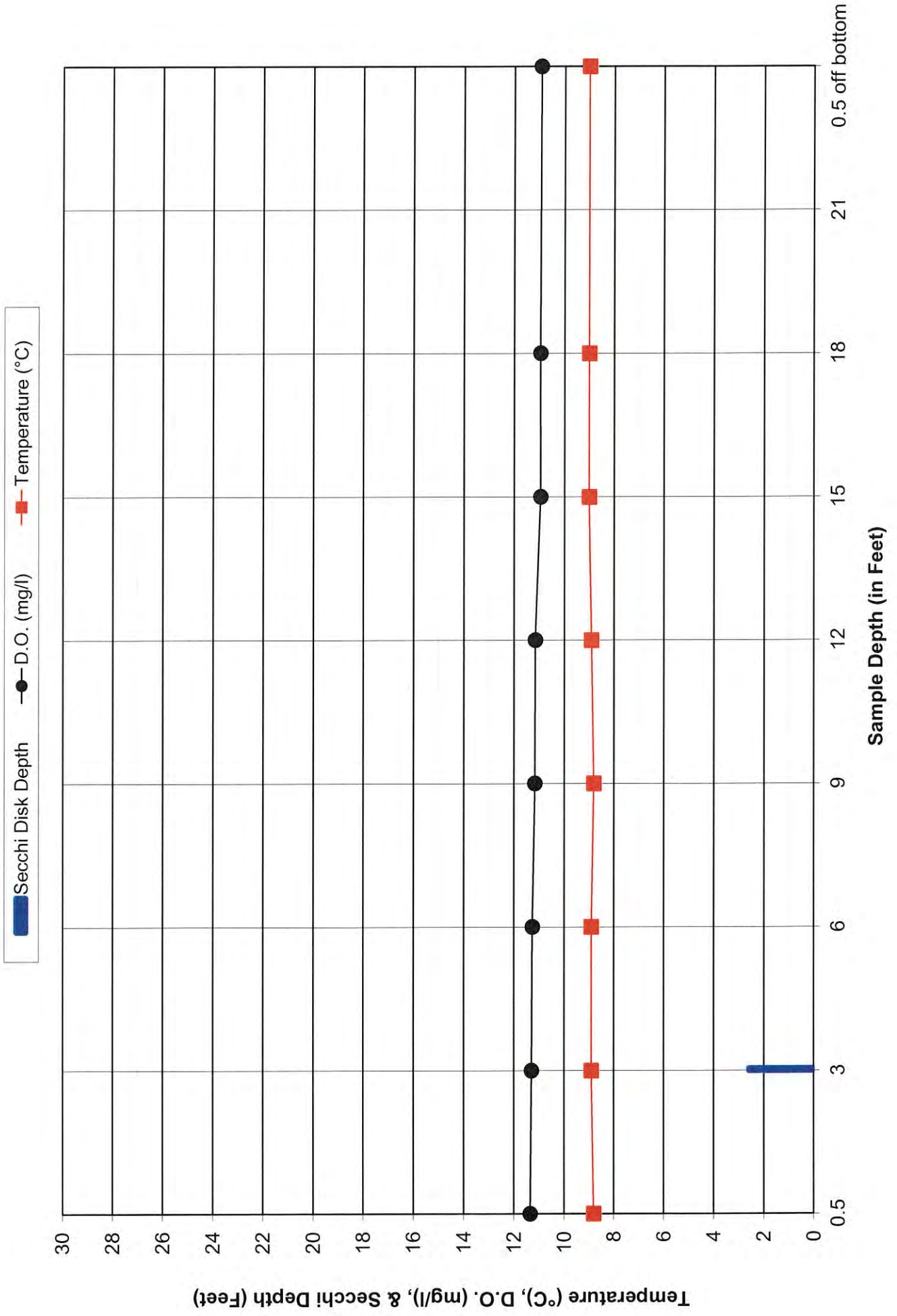
PRESERVATIVE:
NP = no preservative
S = sulfuric acid
N = nitric acid
Z = zinc acetate
M = methanol
OH = sodium hydroxide
HA = hydrochloric & ascorbic acid
H = hydrochloric acid

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

Lower Impoundment - FERC # 2421
April 04, 2012 Iceout Sampling Event



Appendix B

July 10, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Lower) Hydroelectric Project - FERC #2421

HWL-1467.98 CFS-433 Date: 7/10/12

Pre-Sampling Data:

Time: 10:00 Barometer: 30.21 Air Temp: 24 °C Wind Speed: SW 5 MPH

Sky Conditions: CLEAR, BRIGHT SUN, + FAIR

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

Calibration Time: February 2012 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 21.9 feet

Secchi Disk Depth: (E0.1 foot): 4'8" feet. Time: 10:13

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120710-2A		
Time	Quantity (ml)	Filtered
10:15	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120710-2B	
Time	Quantity (ml)
10:17	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	10:01	6.15	25.9
3 feet	10:02	5.87	25.5
6 feet	10:03	5.70	25.4
9 feet	10:04	5.63	25.3
12 feet	10:05	5.65	25.8
15 feet	10:06	5.58	25.6
18 feet	10:07	5.52	25.6
21 feet	10:09	5.52	25.4
24 feet			
0.5 feet above bottom	10:10	5.53	25.3

Phosphorus

Lab Sample I.D. #: 20120710-2C (3 feet below surface)	
Time	Preserved ?
10:19	H_2SO_4

Lab Sample I.D. #: 20120710-2D (3 feet above bottom)	
Time	Preserved ?
10:21	H_2SO_4

Comments: Sampling location is N45 54.828 W90 26.822

Performed By: Gary Rast/Andi Schamberger

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

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

NLS Project: 181050
NLS Customer: 102823
Phone: 855 994 9376

Project: Flambeau

20120710-1A NLS ID: 671927
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-2A NLS ID: 671928
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-3A NLS ID: 671929
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-4A NLS ID: 671930
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-1B NLS ID: 671931
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	70	C.P.U.	1	5.0*		07/11/12	SM 2120-B 20ed	721026460

20120710-2B NLS ID: 671932
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

20120710-3B NLS ID: 671933
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

20120710-4B NLS ID: 671934
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

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

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

NLS Project: 181050
NLS Customer: 102823
Phone: 855 994 9376

Project: Flambeau

20120710-1C NLS ID: 671935
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.036	mg/L	1	0.0070*		07/18/12	SM 4500P-E 20ed	721026460

20120710-2C NLS ID: 671936
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.038	mg/L	1	0.0070*		07/18/12	SM 4500P-E 20ed	721026460

20120710-3C NLS ID: 671937
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.057	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-4C NLS ID: 671938
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.061	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-2D NLS ID: 671939
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.041	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-3D NLS ID: 671940
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.060	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-4D NLS ID: 671941
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.087	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: 181050
Flambeau

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
671927	20120710-1A	5.5	0.35	5.9	0.21	0.37
671928	20120710-2A	3.5	0.58	4	0.0*	0.3
671929	20120710-3A	8.1	0.75	8.8	0.31	0.49
671930	20120710-4A	15	2.7	17	1.8	1.2

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

NR DATCP 105-000330

NO. 144735

CLIENT	RENEWABLE WORLD ENERGIES
ADDRESS	100 STATE STREET
CITY / STATE / ZIP	NESHKORO / WI / 54960
PROJECT DESCRIPTION / NO.	FLAMBEAU
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	GARY RAST
PHONE	855-994-2376
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: CHLOROPHYLL A; TRUE COLOR; PHOSPHORUS; PHOSPHORUS

ITEM NO.	NLS LAB NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	CHLOROPHYLL A	TRUE COLOR	PHOSPHORUS	PHOSPHORUS	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	671927-930	20120710-1,2,3,4A	7/10/12	8:00	RIVER WATER	X				
2.	931-934	20120710-1234-B	7/10/12		"		X			
3.	935-938	20120710 234 C	7/10/12		"			X		
4.	939-941	20120710 1234 D	7/10/12	2:00	"				X	
5.										
6.										
7.										
8.										
9.										
10.										

COLLECTED BY (signature): GARY RAST	CUSTODY SEAL NO. (IF ANY)	DATE/TIME: 7/10/12 3:30PM
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature): Gary Rast	METHOD OF TRANSPORT: UPS	DATE/TIME: 7/10/12 3:30 PM

REPORT TO: SAME AS ABOVE

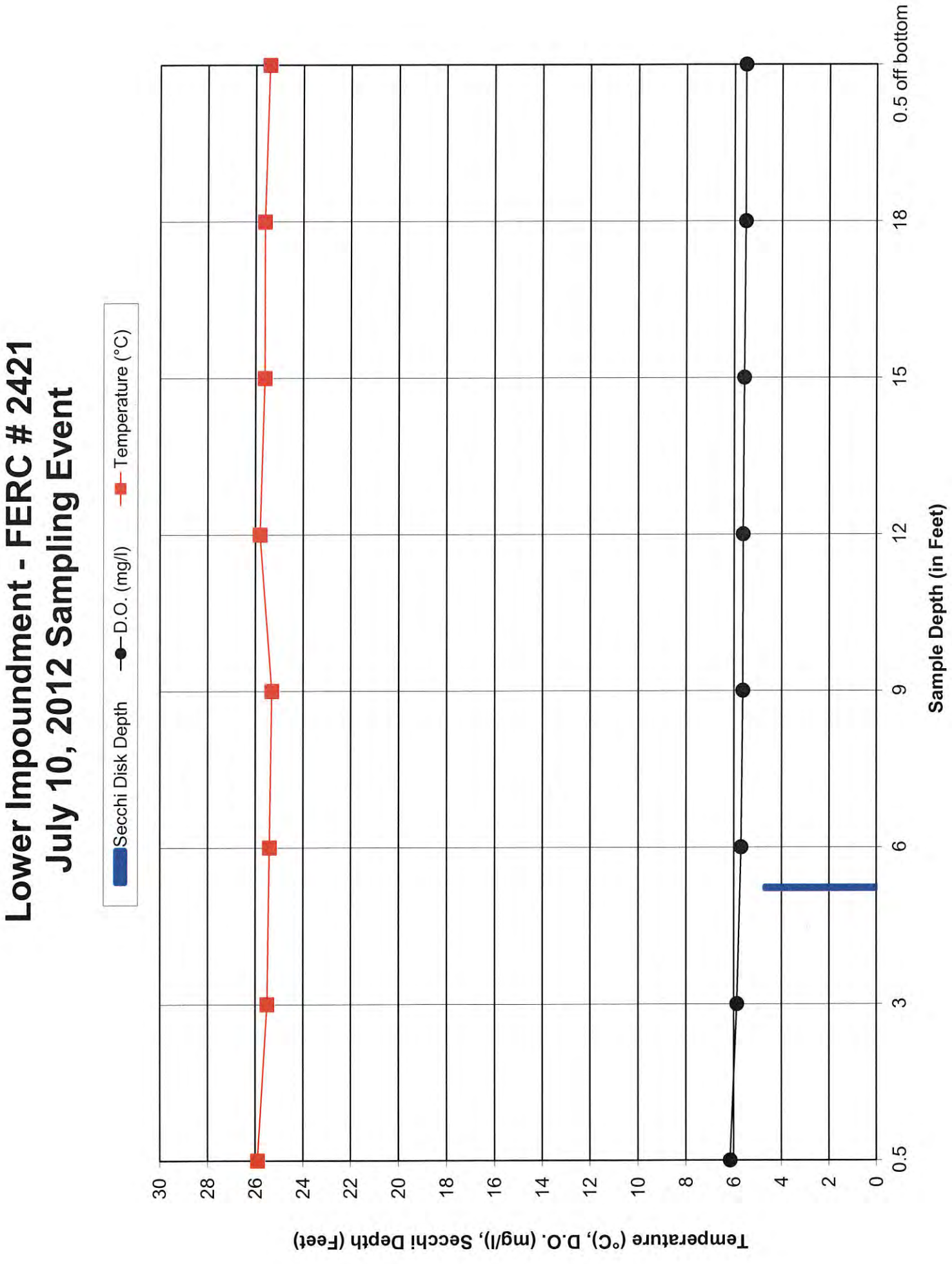
RECEIVED AT NLS BY (signature): Debbie Wilson	DATE/TIME: 7-11-12 10:00	CONDITION: on ice	TEMP.
COOLER #	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

INVOICE TO: RENEWABLE WORLD OPERATIO
1001 STEPHENSON ST
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.


Lower Impoundment - FERC # 2421
July 10, 2012 Sampling Event
Secchi Disk Depth
D.O. (mg/l)
Temperature (°C)
Temperature (°C), D.O. (mg/l), Secchi Depth (Feet)
Sample Depth (in Feet)
0.5
3
6
9
12
15
18
0.5 off bottom
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30

Appendix C

August 07, 2012 Sampling Documents

HWL-1466.95 TWL-1448.4 TP FLOW - 368

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Lower) Hydroelectric Project - FERC #2421

Date: 8/7/12

Pre-Sampling Data:

Time: 9:00 Barometer: 29.98 Air Temp: 22.2 °C Wind Speed: N 5MPH

Sky Conditions: FAIR, CLEAR, & BRIGHT SUN

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: 21.7 feet

Secchi Disk Depth: (E0.1 foot): 2.75 feet. Time: 9:20

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120807 2A		
Time	Quantity (ml)	Filtered
9:00	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120807 2B	
Time	Quantity (ml)
9:05	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	9:30	6.15	23.7
3 feet	9:31	6.70	23.7
6 feet	9:32	6.62	23.7
9 feet	9:34	6.16	23.5
12 feet	9:35	6.24	23.5
15 feet	9:36	6.01	23.6
18 feet	9:37	5.97	23.5
21 feet	9:38	5.93	23.5
24 feet			
0.5 feet above bottom	9:39	6.0	23.5

Phosphorus

Lab Sample I.D. #: 20120807 2C (3 feet below surface)	
Time	Preserved ?
9:06	H2SO4

Lab Sample I.D. #: 20120807 2D (3 feet above bottom)	
Time	Preserved ?
9:07	H2SO4

Comments: Sampling location is N45 54.828 W90 26.822

Performed By: GARY & ANETA

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: 182629
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: Flambeau (4)

2012080701-A NLS ID: 676696
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

2012080701-B NLS ID: 676697
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	70	C.P.U.	1	5.0*		08/08/12	SM 2120-B 20ed	721026460

2012080701-C NLS ID: 676698
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.037	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208072-A NLS ID: 676699
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

201208072-B NLS ID: 676700
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208072-C NLS ID: 676701
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.051	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208072-D NLS ID: 676702
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.050	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208073-A NLS ID: 676703
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

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: 182629
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: Flambeau (4)

201208073-B NLS ID: 676704
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208073-C NLS ID: 676705
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.048	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208073-D NLS ID: 676706
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.049	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208074-A NLS ID: 676707
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

201208074-B NLS ID: 676708
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208074-C NLS ID: 676709
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.043	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208074-D NLS ID: 676710
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.042	mg/L	1	0.0070*		08/14/12	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: 182629
Flambeau (4)

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
676696	2012080701-A	11	0.11	12	0.0*	1.1
676699	201208072-A	14	0.094	14	0.16	1.9
676703	201208073-A	25	0.0*	26	0.0*	2.8
676707	201208074-A	16	1.4	17	0.0*	1.8

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. 160057

CLIENT	RWE Hydro, LLC
ADDRESS	100 S. State St
CITY / STATE / ZIP	Neshkoro WI 54960
PROJECT DESCRIPTION / NO.	Flambeau (4)
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	Gary Rast
PHONE	(920) 570-0995
PURCHASE ORDER NO.	
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.

ITEM NO.	NLS LAB NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	ANALYZE PER ORDER OF ANALYSIS: Chlorophyll a	Tru Color	Phosphorus	Phosphorus	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	16766916-698	20120807 01-A,B,C	8-7-12	8:00-8:04	River Water	X	X	X		
2.	699-702	20120807 2-A,B,C,D	8-7-12	9:00-9:07		X	X	X	X	
3.	703-706	20120807 3-A,B,C,D	8-7-12	11:30-11:37		X	X	X	X	
4.	707-710	20120807 4-A,B,C,D	8-7-12	1:05-1:12		X	X	X	X	
5.										
6.										
7.										
8.										
9.										
10.										

COLLECTED BY (signature)	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 8-7-12 8:00-1:12
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 8-7-12 2:00 pm

REPORT TO
Attn: Gary Rast
RWE Hydro, LLC
100 S. State St
PO Box 264
Neshkoro, WI 54960

RECEIVED AT NLS BY (signature) Annamarie Combs	DATE/TIME 8/8/12 10:15	CONDITION on ice	TEMP.
COOLER # 28-1810	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

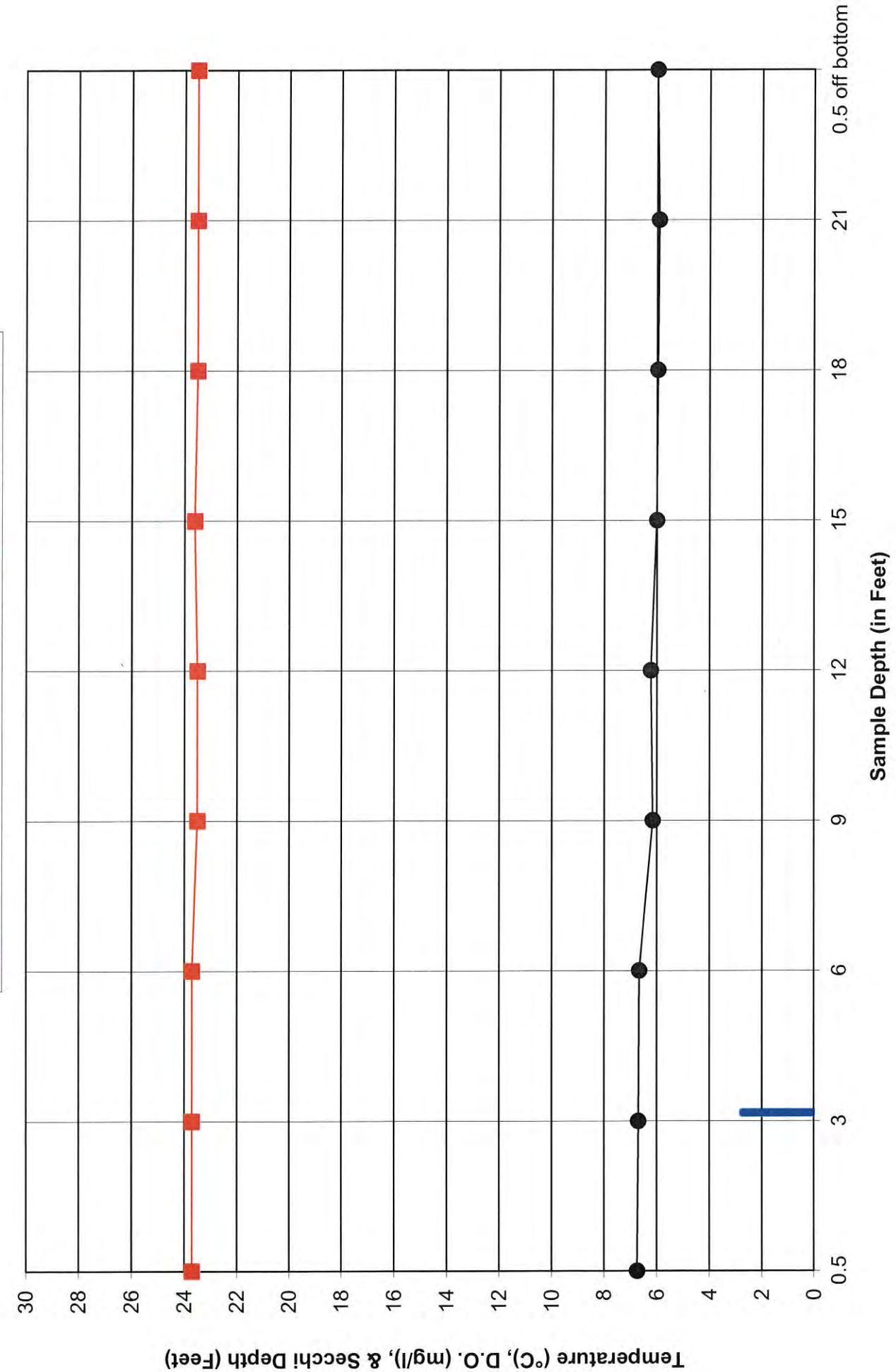
INVOICE TO
RWE Hydro, LLC
1001 Stephenson St
Norway, MI 49870

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.

Lower Impoundment - FERC # 2421
August 07, 2012 Sampling Event



Appendix D

Agency Correspondence

Gary Rast

From: Utrup, Nick <nick_utrup@fws.gov>
Sent: Monday, December 10, 2012 1:48 PM
To: Gary Rast
Subject: Re: Flambeau River Water Quality Reports

Gary,

Yes, I have received the reports for Upper and Lower, Pixley and Crowley projects on the Flambeau River. The USFWS will not be providing comments on the 2012 water quality reports for these hydroelectric projects.

Thanks,

Nick

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

On Mon, Dec 10, 2012 at 1:17 PM, Gary Rast <grast@rwehydro.com> wrote:

Nick,

You had sent me this for WNTR, CLRV, & DNB already. Wondering if you had any to offer for Flambeau (Upper, Lower, Pixley, or Crowley)?

Gary

Gary Rast

Regulatory/Compliance Manager

COPY

Gary Rast

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@Wisconsin.gov>
Sent: Thursday, December 06, 2012 12:27 PM
To: Gary Rast
Subject: WDNR comments on the WQ and Invasive Species Report Submittals

WQ 2012 Monitoring

General Comments:

1. Include the FERC and/or WQC WQ monitoring requirement information as directly stated in the order and/or state issued water quality certification.
2. Secchi disk reading is unclear. Please document these columns as feet below surface.
3. Most of the data was fine. However, the time or data of the data collection may not be appropriate.
4. Provide more detailed sampling location for Crowely, due to noticeable low DO levels.
5. We also request that the data for each year sampled, be included in a summary table.

Flambeau Upper P-2640
Crowley P-2473
Flambeau Lower P-2421
Pixley P-1960

Invasive Reports

Wisconsin is a mosaic of waterways representing the Mississippi River and the Great Lakes Regions. With this vast mosaic of waterways and river systems, comes an array of aquatic invasive species. As we move forward with identifying and eradicating AIS, there are basic steps that all hydro owners need to participate in, to help improve the resource. Some AIS can significantly hinder hydro operations that may result in excessive operation and maintenance costs, including lost generation. We encourage the utility to work with the WDNR to develop Best Management Practices for their operations and maintenance of the hydro, to reduce the introduction and spread of AIS. Additionally, the WDNR recommends revisions to the current AIS plan to address the following concerns:

a. Identify all existing AIS within the study area and discuss which new AIS are most likely to arrive (i.e. SMART analysis).
b. Determine an acceptable survey and mapping methodology
c. Identify and implement quality control measures, and equipment calibration measures
d. Improve awareness and the dynamics of the study area
e. Avoid duplicate workload for agency staff, utilities, and local associations
f. Manage and analyze the data collected to define population characteristics, establish trends, and evaluate management success.
g. Establish and implement protocols for management/removal of AIS
h. Provide a timeline to review the current AIS plans and revise the plans as appropriate for the project area

If purple loosestrife (*Lythrum salicaria*) is present, control or eliminate all small populations of loosestrife (usually 50 plants or less), with acceptable manual/chemical/mechanical methods annually, as necessary, and establish viable, on-going, and effective populations of biocontrol beetles (*Galerucella pusilla* and/or *G. calmariensis*) on all larger loosestrife populations.

Flambeau Pixley P-2395
Flambeau Upper P-2640
Flambeau Lower P-2421
Flambeau Crowley P-2473

Cheryl Laatsch, Water Mgt Specialist

Horicon DNR
N7725 HIGHWAY 28
HORICON WI 53032
(920) 387-7869

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

Renewable World Energies

COPY

November 9, 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: **Flambeau Hydroelectric Projects**
FERC Project Numbers-Upper FERC # 2640, Lower FERC # 2421,
Pixley FERC # 2395, Crowley FERC # 2473
Flambeau Hydro LLC
Draft Reports 2012 Water Quality Monitoring Data

Dear Agencies:

On behalf of Flambeau Hydro LLC ("Flambeau"), Licensee, Renewable World Energies, LLC is submitting (2) copies of its *Draft Report 2012 Water Quality Monitoring Data* for each of the Flambeau Projects. No problems were encountered with equipment, data, or the monitoring schedule in general. The report is a requirement of Flambeau's Federal license pursuant to article 406 and 408 and the approved Water Quality Monitoring Plans. The purpose of this letter is to formally invite you to comment on the draft reports. 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 reports.

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

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

Gary Rost

for Mr. Jason Kreuscher
Vice President, Operations

Attachments: Draft Report 2012 Water Quality Monitoring Data Flambeau Upper Hydroelectric Project – November 6, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Lower Hydroelectric Project – November 7, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Pixley Hydroelectric Project – November 8, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Crowley Hydroelectric Project – November 9, 2012

Cc: RWE, Corporate

COPY

Gary Rast

From: Gary Rast
Sent: Tuesday, July 10, 2012 3:55 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: Pixley & Crowley July Below Std. DO Measurements

Jeff, Nick, & Craig,

I just returned from performing the July WQ monitoring at the 4 Flambeau Projects at Park Falls and have some below standard DO measurements to report. They were as follows:
FLUP – OK but in the 6.5 to 6.9 range.
FLLW – OK but in the 5.5 to 6.1 range.
PXLY – DO dropped below 5 mg/l at 16' to 4.88 mg/l and 25.8 °C and continued to fall slightly all the way down to .5 feet above bottom to 4.62 mg/l and 25.7 °C.
CRLY – DO dropped below 5 mg/l at 10' to 4.55 mg/l and 26.4 °C and continued to fall all the way down to .5 feet above the bottom to 1.67 mg/l and 25.3 °C.

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

Final Report

2012 Water Quality Monitoring Data

for the

Pixley Hydroelectric Project
FERC Project #2395
Flambeau Hydro, LLC

North Fork of the Flambeau River, Price County, Wisconsin

Respectfully Submitted by:

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

Final – December 14, 2012

Table of Contents

Summary

2012 marked the ninth year of water quality sampling under the FERC approved "Water Quality Monitoring Plan Per License Article 406 for the Flambeau (Pixley) Hydroelectric Project – FERC Project # 2395 – Flambeau Hydro, LLC". Sampling was accomplished according to the plan and was un-eventful, with no major problems or concerns.

Ice-Out occurred between Agenda and Nine Mile Landing on the North Fork of the Flambeau River during the 4th full week of April 2012. The Ice-Out sampling event occurred on April 04, 2012. River flow, based on Flambeau (Pixley) Hydroelectric Project records, was approximately 394 cubic feet per second. Sampling occurred between 11:15 a.m. and 11:45 a.m. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. However, no bottom sample for 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 05, 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 Flambeau (Pixley) Hydroelectric Project records, was approximately 530 cubic feet per second during the July 10, 2012 sampling event. Sampling occurred between 11:30 a.m. and 11:53 a.m. Samples were taken without incident. D.O. dropped below the state standard of 5 mg/l at 16 feet and continued to fall all the way down to .5 feet above the bottom but Temperature readings appeared normal. Agencies were notified by e-mail on July 10, 2012. Samples for laboratory analysis were delivered to Northern Lake Service, Inc in Crandon, WI on July 11, 2012. Northern Lake Service, Inc. issued a laboratory report on July 23, 2012. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on Flambeau (Pixley) Hydroelectric Project records, was approximately 382 cubic feet per second during the August 07, 2012 sampling event. Sampling occurred between 11:30 a.m.. and 11:55 a.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 08, 2012. Northern Lake Service, Inc issued a laboratory report on August 14, 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 Flambeau Pixley Project Sampling Comparison Table 2011-2012 page 8**) sampling results are as follows:

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

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

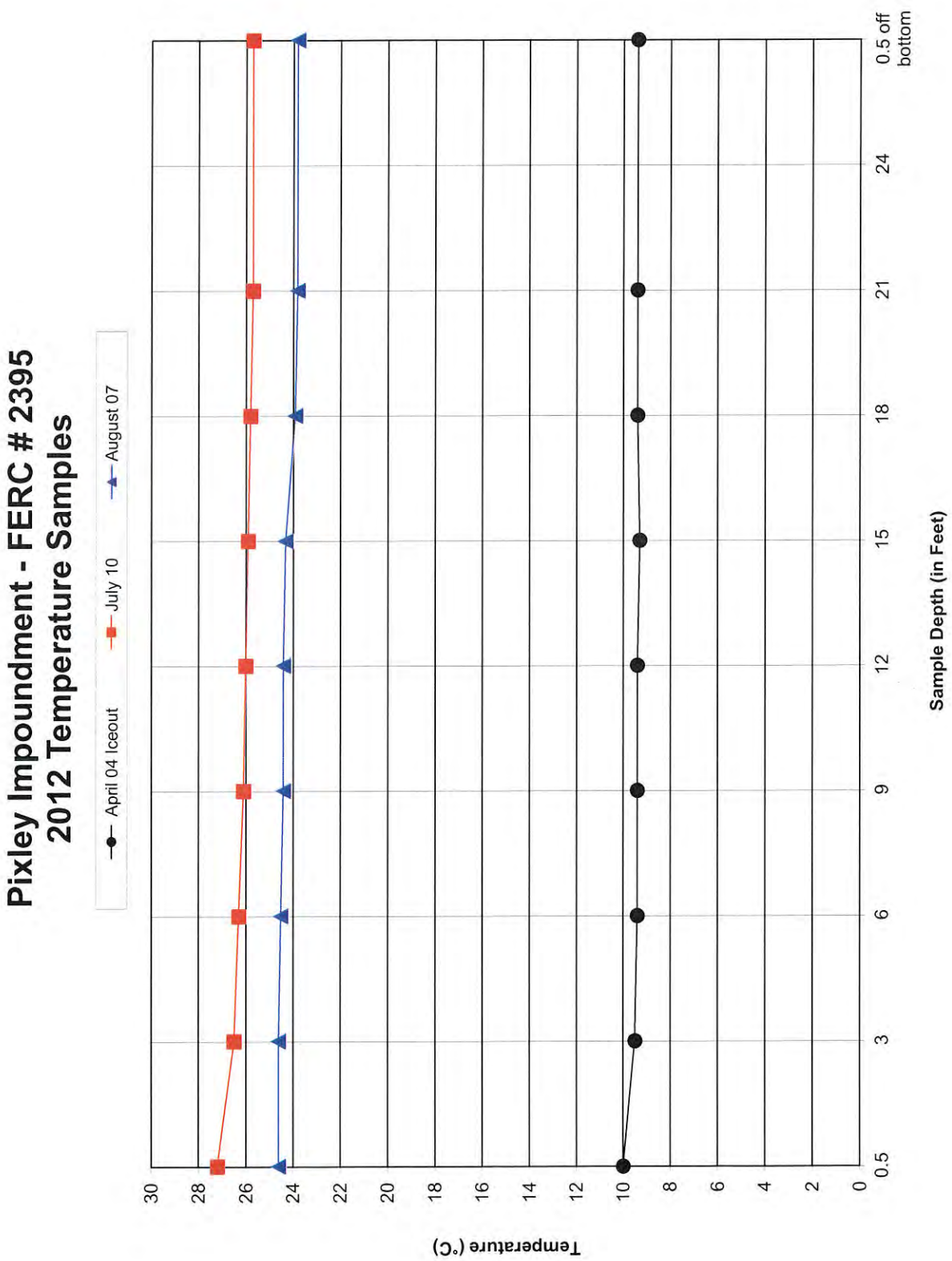
2012
Sampling Results
Table

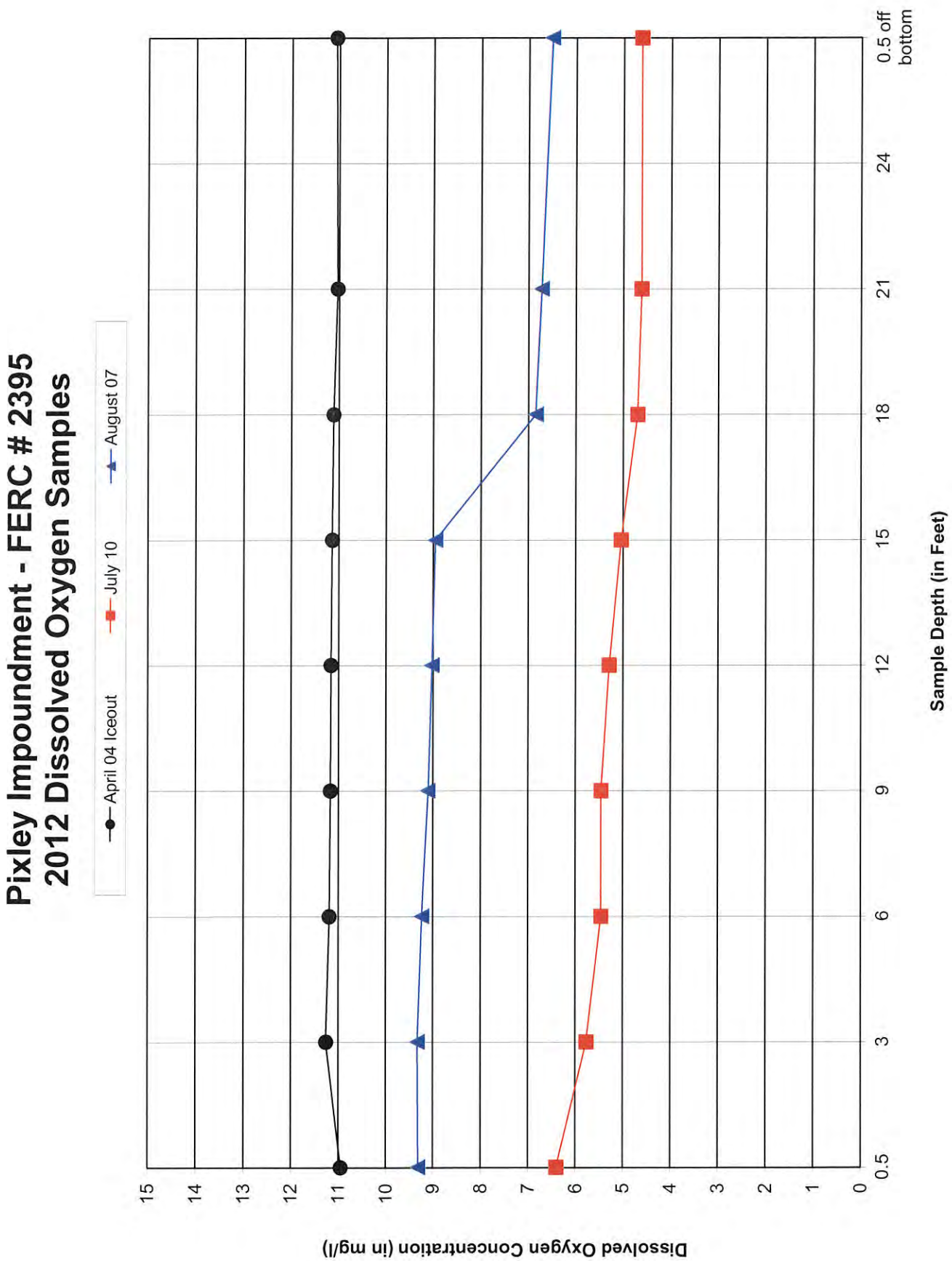
Pixley Hydroelectric Project - FERC Project # 2395
2012 Water Quality Sampling Data

	April 4, 2012			July 10, 2012			August 7, 2012		
Project Flow (c.f.s.)	394			530			382		
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 feet below surface	11:36 AM	10.95	10.00	11:41 AM	6.40	27.20	11:45 AM	9.31	24.60
3 feet below surface	11:38 AM	11.26	9.50	11:42 AM	5.77	26.50	11:46 AM	9.32	24.60
6 feet below surface	11:39 AM	11.19	9.40	11:43 AM	5.46	26.30	11:47 AM	9.23	24.50
9 feet below surface	11:40 AM	11.17	9.40	11:44 AM	5.46	26.10	11:48 AM	9.10	24.40
12 feet below surface	11:41 AM	11.16	9.40	11:45 AM	5.29	26.00	11:49 AM	9.02	24.40
15 feet below surface	11:42 AM	11.14	9.30	11:46 AM	5.04	25.90	11:50 AM	8.95	24.30
18 feet below surface	11:43 AM	11.11	9.40	11:47 AM	4.70	25.80	11:51 AM	6.85	23.90
21 feet below surface	11:44 AM	11.06	9.40	11:52 AM	4.62	25.70	11:52 AM	6.73	23.80
24 feet below surface	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
0.5 feet above bottom	11:45 AM	11.06	9.40	11:53 AM	4.62	25.70	11:55 AM	6.51	23.80
Secchi Disk	**Time**	**Depth (ft)**		**Time**	**Depth (ft)**		**Time**	**Depth (ft)**	
3 feet below surface	11:15 AM	3.10		11:32 AM	3.10		11:40 AM	2.50	
Chlorophyll a	**Time**	**ug/L**		**Time**	**ug/L**		**Time**	**ug/L**	
3 feet below surface	11:30 AM	1.70		11:35 AM	8.80		11:30	26.00	
Color (True)	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U Units**	**LOD**
3 feet below surface	11:32 AM	140.0	10*	11:37 AM	100.0	10*	11:32 AM	100	10*
Total Phosphorus	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**
3 feet below surface	11:35 AM	0.039	0.0070*	11:39 AM	0.057	0.0070*	11:34 AM	0.048	0.0070*
3 feet above bottom	#N/A	#N/A	#N/A	11:40 AM	0.060	0.0070*	11:37 AM	0.049	0.0070*

*** Considered Reporting Limits**

2012 Temperature and Dissolved Oxygen Graphs





2012
Monthly Temperature
and
Precipitation
Table

2012 Water Year Monthly Temperature and Precipitation for Park Falls, 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	75	-1	39.2	13.3	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	47	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

2012
Flambeau Pixley
Sampling Comparison Table
2011—2012

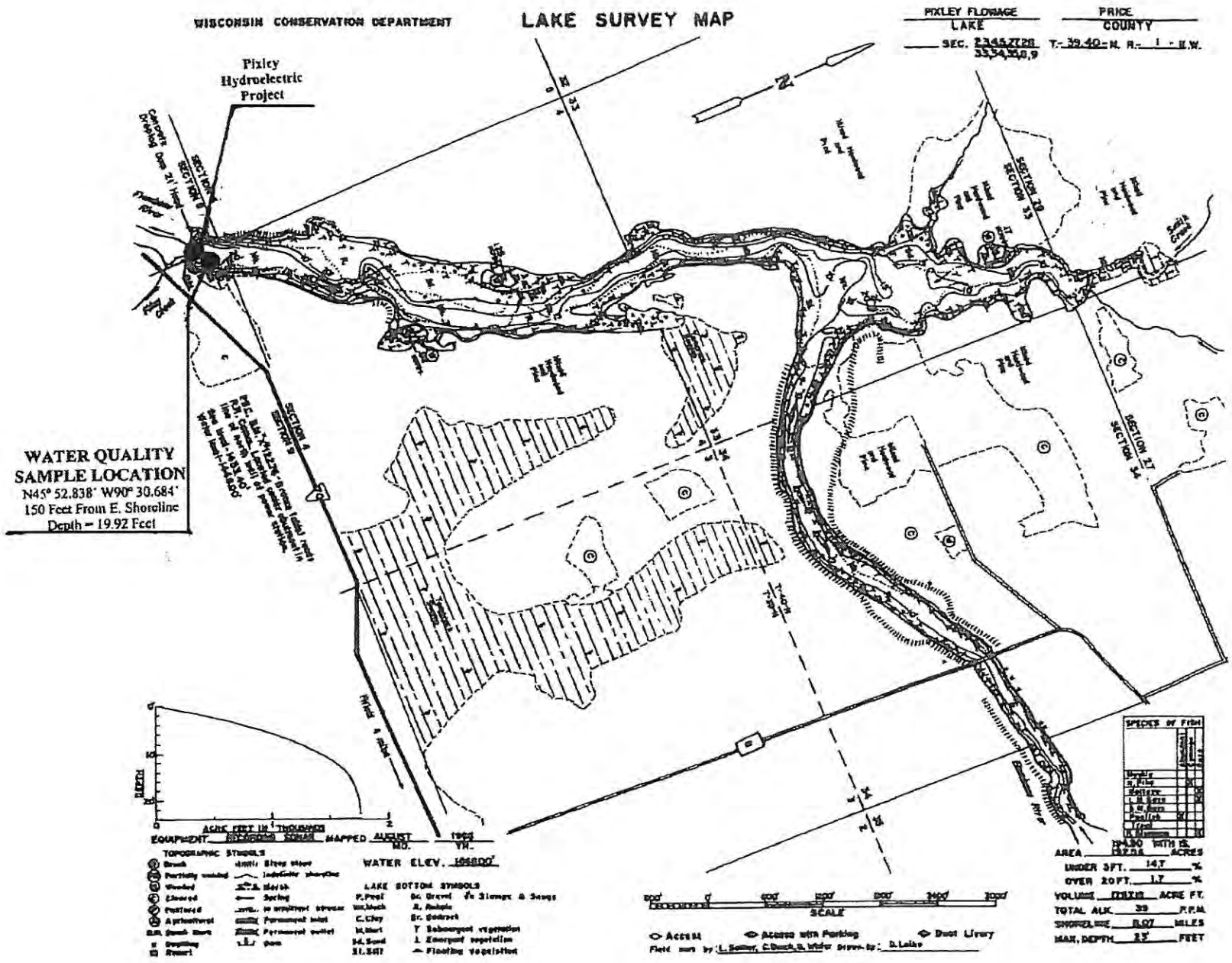
2012 Flambeau Pixley
Project Sampling Comparison Table
To Previous Year

Year	Month	Secchi Disk Depth (ft)	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	3.2	2.1	80	0.033	0.031	11.64	12.05	6.6	11.7
2012	April	3.1	1.7	140	0.039	No Sample Bottle N/A	10.95	11.26	9.3	10
2011	July	3.0	16	70	0.057	0.049	6.23	8.25	25.4	25.8
2012	July	3.1	8.8	100	0.057	0.060	4.62	6.40	25.7	27.2
2011	August	3.1	14	140	0.052	0.051	6.72	7.44	23.5	26
2012	August	2.5	26	100	0.048	0.049	6.51	9.32	23.8	24.6

Pixley Impoundment

Sampling Location

Map



Appendix A

April 04, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Pixley) Hydroelectric Project - FERC #2395

HWL - 1448.77
PROJECT FLOW - 394

Date: 5/4/12

Pre-Sampling Data:

Time: 11:00 Barometer: 30.09 Air Temp: 12.2 °C Wind Speed: N 3MPH

Sky Conditions: BRIGHT SUNSHINE - CLEAR - COOL - BREEZY

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: 21.5' feet

Secchi Disk Depth: (E0.1 foot): 3.1 feet. Time: 11:15

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120404 3A

Time	Quantity (ml)	Filtered
11:30	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120404 3B

Time	Quantity (ml)
11:32	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	11:36	10.95	10.0
3 feet	11:38	11.26	9.5
6 feet	11:39	11.19	9.4
9 feet	11:40	11.17	9.4
12 feet	11:41	11.16	9.4
15 feet	11:42	11.14	9.3
18 feet	11:43	11.11	9.4
21 feet	11:44	11.06	9.4
24 feet			
0.5 feet above bottom	11:45	11.06	9.4

Phosphorus

Lab Sample I.D. #: 20120404 3C
(3 feet below surface)

Time	Preserved ?
11:35	H2SO4

Lab Sample I.D. #:
(3 feet above bottom)

Time	Preserved ?

Comments: Sampling location is N45 52.838 W90 30.684
NO SAMPLE BOTTLE SENT FOR BOTTOM PHOSPHORUS.

Performed By: GARY RAST + Aneta Retved Gary Rast + Aneta Retved

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: 176278
NLS Customer: 102823

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

Project: Flambeau (4)

20120404 - 1A NLS ID: 657277
COC: 141408:1 Matrix: SW
Collected: 04/04/12 07:30 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 2A NLS ID: 657278
COC: 141408:2 Matrix: SW
Collected: 04/04/12 09:05 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 3A NLS ID: 657279
COC: 141408:3 Matrix: SW
Collected: 04/04/12 11:30 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 4A NLS ID: 657280
COC: 141408:4 Matrix: SW
Collected: 04/04/12 13:10 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 1B NLS ID: 657281
COC: 141408:5 Matrix: SW
Collected: 04/04/12 07:32 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 2B NLS ID: 657282
COC: 141408:6 Matrix: SW
Collected: 04/04/12 09:07 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 3B NLS ID: 657283
COC: 141408:7 Matrix: SW
Collected: 04/04/12 11:32 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	140	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 4B NLS ID: 657284
COC: 141408:8 Matrix: SW
Collected: 04/04/12 13:12 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

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: 176278
NLS Customer: 102823

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

Project: Flambeau (4)

20120404 - 1C NLS ID: 657285
COC: 141408:9 Matrix: SW
Collected: 04/04/12 07:35 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.027	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 2C NLS ID: 657286
COC: 141408:10 Matrix: SW
Collected: 04/04/12 09:08 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.038	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 3C NLS ID: 657287
COC: 141408:11 Matrix: SW
Collected: 04/04/12 11:35 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.039	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 4C NLS ID: 657288
COC: 141408:12 Matrix: SW
Collected: 04/04/12 13:15 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.041	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 2D NLS ID: 657289
COC: 141408:13 Matrix: SW
Collected: 04/04/12 09:10 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.055	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: 176278
Flambeau (4)

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
657277	20120404 - 1A	1.8	0.0*	1.9	0.022	0.31
657278	20120404 - 2A	1.8	0.4	2.1	0.098	0.47
657279	20120404 - 3A	1.9	0.0*	1.7	0.0*	0.49
657280	20120404 - 4A	1.7	0.0*	1.7	0.0*	0.15

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. 141408

CLIENT	Renewable World Energies
ADDRESS	PO Box 264
CITY / STATE / ZIP	Neshkoro / WI / 54960
PROJECT DESCRIPTION / NO.	Flambeau (4)
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

ANALYZE PER ORDER OF ANALYSIS

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)	Chlorophyll a	True Color	Phosphorus	Phosphorus	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	657277	20120404(1,2,3,4) A	04/04/2012	7:30-1:10		X				
2.		20120404(1,2,3,4) B	04/04/2012	7:32-1:12			X			
3.		20120404(1,2,3,4) C	04/04/2012	7:35-1:15				X		
4.		20120404(2) D	04/04/2012	9:10					X	you shorted us 2 bottles with sulfuric acid for phosphorus
5.										
6.										
7.										
8.										
9.										
10.	657289									

ONE SAMPLE

COLLECTED BY (signature) Gary Rast	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 4/4/2012 7:35-1:15
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 4/4/2012 3pm

REPORT TO: attn: Gary same as above

RECEIVED AT NLS BY (signature)	DATE/TIME 4/5/12 10	CONDITION	TEMP.
COOLER # [redacted] 28-122	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

INVOICE TO: same as above

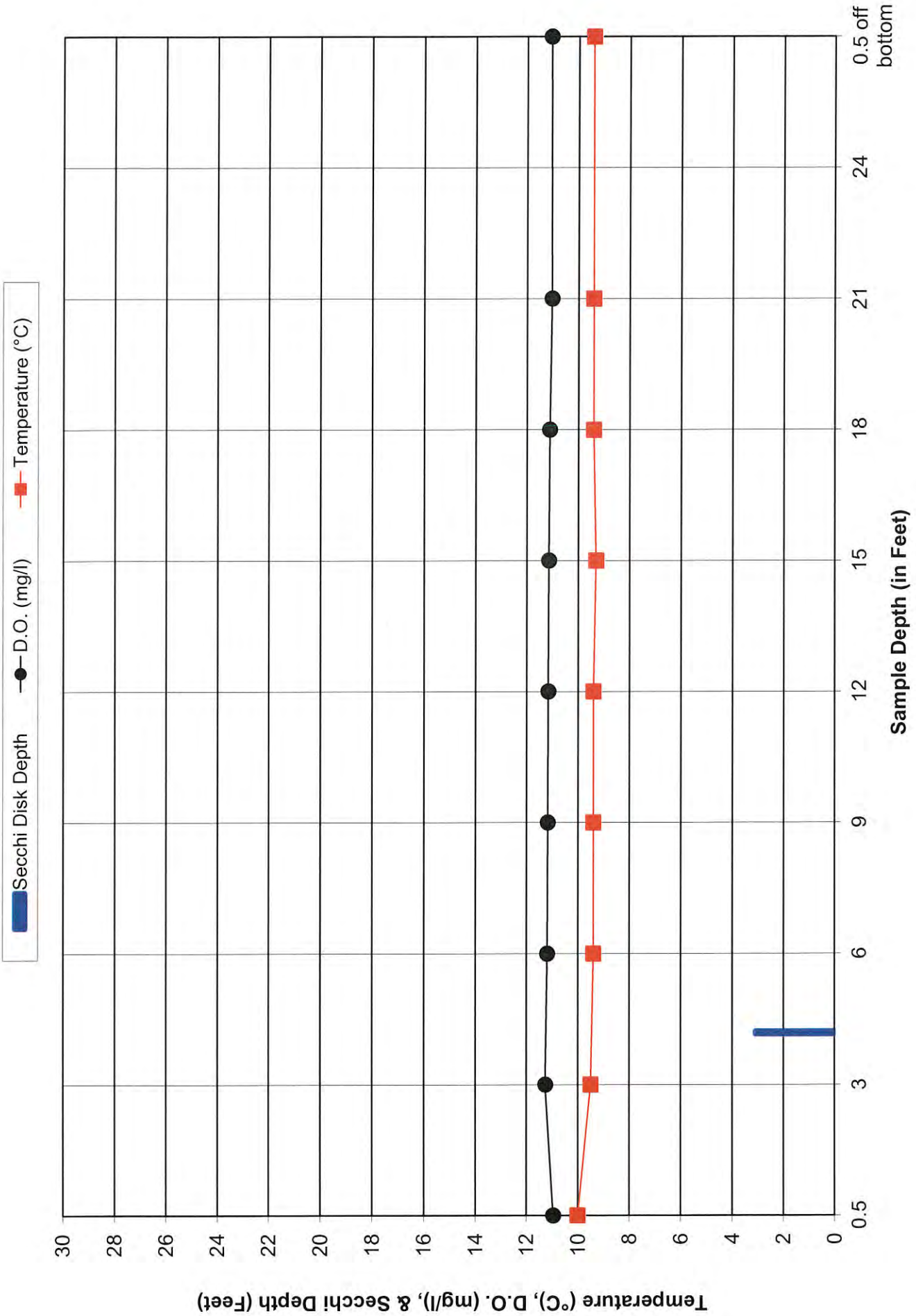
PRESERVATIVE:
NP = no preservative
S = sulfuric acid
N = nitric acid
Z = zinc acetate
M = methanol
OH = sodium hydroxide
HA = hydrochloric & ascorbic acid
H = hydrochloric acid

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

Pixley Impoundment - FERC # 2395
April 04, 2012 Iceout Sampling Event



Appendix B

July 10, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Pixley) Hydroelectric Project - FERC #2395

HWL - 1448.47 CFS - 530 Date: 7/10/11

Pre-Sampling Data:

Time: 11:30 Barometer: 30.20 Air Temp: 26 °C Wind Speed: CALM

Sky Conditions: FAIR, CLEAR, + BRIGHT SUN

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

Calibration Time: February 2012 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 22.0 feet

Secchi Disk Depth: (E0.1 foot): 3.1 feet. Time: 11:32

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120710-3A

Time	Quantity (ml)	Filtered
11:35	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120710-3B

Time	Quantity (ml)
11:37	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	11:41	6.40	27.2
3 feet	11:42	5.77	26.5
6 feet	11:43	5.46	26.3
9 feet	11:44	5.46	26.1
12 feet	11:45	5.29	26.0
15 feet	11:46	5.04	25.9
18 feet	11:47	4.70	25.8
21 feet	11:52	4.62	25.7
24 feet			
0.5 feet above bottom	11:53	4.62	25.7

Phosphorus

Lab Sample I.D. #: 20120710-3C

(3 feet below surface)

Time	Preserved ?
11:39	H_2SO_4

Lab Sample I.D. #: 20120710-3D

(3 feet above bottom)

Time	Preserved ?
11:40	H_2SO_4

Comments: Sampling location is N45 52.838 W90 30.684

16 feet - 11:48 - 4.88 - 25.8
17 feet - 11:49 - 4.82 - 25.7
19 feet - 11:50 - 4.70 - 25.7
20 feet - 11:51 - 4.65 - 25.7

Performed By: Gary Rast/Andi Schemberger

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

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

NLS Project: 181050
NLS Customer: 102823
Phone: 855 994 9376

Project: Flambeau

20120710-1A NLS ID: 671927
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-2A NLS ID: 671928
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-3A NLS ID: 671929
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-4A NLS ID: 671930
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-1B NLS ID: 671931
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	70	C.P.U.	1	5.0*		07/11/12	SM 2120-B 20ed	721026460

20120710-2B NLS ID: 671932
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

20120710-3B NLS ID: 671933
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

20120710-4B NLS ID: 671934
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

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

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

NLS Project: 181050
NLS Customer: 102823
Phone: 855 994 9376

Project: Flambeau

20120710-1C NLS ID: 671935
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.036	mg/L	1	0.0070*		07/18/12	SM 4500P-E 20ed	721026460

20120710-2C NLS ID: 671936
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.038	mg/L	1	0.0070*		07/18/12	SM 4500P-E 20ed	721026460

20120710-3C NLS ID: 671937
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.057	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-4C NLS ID: 671938
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.061	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-2D NLS ID: 671939
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.041	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-3D NLS ID: 671940
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.060	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-4D NLS ID: 671941
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.087	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: 181050
Flambeau

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
671927	20120710-1A	5.5	0.35	5.9	0.21	0.37
671928	20120710-2A	3.5	0.58	4	0.0*	0.3
671929	20120710-3A	8.1	0.75	8.8	0.31	0.49
671930	20120710-4A	15	2.7	17	1.8	1.2

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

MN DATCP 105-000330

NO. 144735

CLIENT	RENEWABLE WORLD ENERGIES
ADDRESS	100 STATE STREET
CITY / STATE / ZIP	NESHKORO / WI / 54960
PROJECT DESCRIPTION / NO.	FLAMBEAU
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	GARY RAST
PHONE	855-994-9376
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.

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	ANALYZE PER ORDER OF ANALYSIS: CHLOROPHYLL A	TRUE COLOR	PHOSPHORUS	PHOSPHORUS										COLLECTION REMARKS (i.e. DNR Well ID #)
1.	671927-930	20120710-1,2,3,4A	7/10/12	8:00	RIVER WATER	X													
2.	931-934	20120710-1234-B	7/10/12		"		X												
3.	935-938	20120710 234 C	7/10/12		"			X											
4.	939-941	20120710 1234 D	7/10/12	2:00	"				X										
5.																			
6.																			
7.																			
8.																			
9.																			
10.																			

COLLECTED BY (signature) GARY RAST	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 7/10/12 3:30PM
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 7/10/12 3:30 PM

REPORT TO: SAME AS ABOVE

RECEIVED AT NLS BY (signature) Debbie Wilson	DATE/TIME 7-11-12 10:00	CONDITION ONICE	TEMP.
COOLER #	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

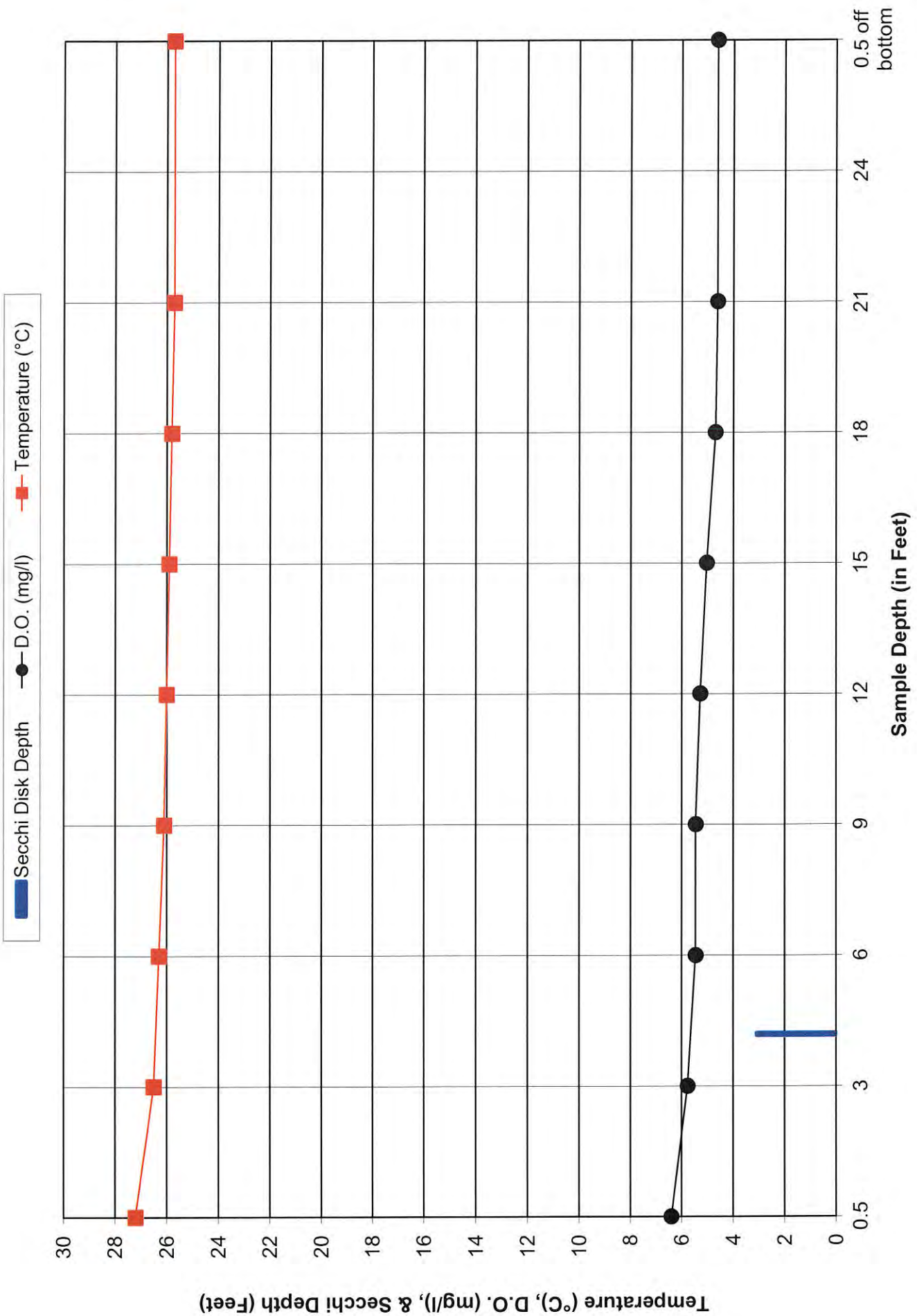
INVOICE TO: RENEWABLE WORLD OPERATIO
1001 STEPHENSON ST
NORWAY, MI 49870

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.

Pixley Impoundment - FERC # 2395
July 10, 2012 Sampling Event



Appendix C

August 07, 2012 Sampling Documents

HWL - 1448.74 TWL - 1427.50 TP Flow 382

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Pixley) Hydroelectric Project - FERC #2395

Date: 8/7/12

Pre-Sampling Data:

Time: 11:30 Barometer: 30.02 Air Temp: 25.0 °C Wind Speed: N 8 MPH

Sky Conditions: FAIR, CLEAR, + BRIGHT SUN

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: 22.1 feet

Secchi Disk Depth: (E0.1 foot): 2.5 feet. Time: 11:40

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120807 3A

Time	Quantity (ml)	Filtered
11:30	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120807 3B

Time	Quantity (ml)
11:32	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	11:45	9.31	24.6
3 feet	11:46	9.32	24.6
6 feet	11:47	9.23	24.5
9 feet	11:48	9.10	24.4
12 feet	11:49	9.02	24.4
15 feet	11:50	8.95	24.3
18 feet	11:51	6.85	23.9
21 feet	11:52	6.73	23.8
24 feet			
0.5 feet above bottom	11:55	6.51	23.8

Phosphorus

Lab Sample I.D. #: 20120807 3C

(3 feet below surface)

Time	Preserved ?
11:34	H_2SO_4

Lab Sample I.D. #: 20120807 3D

(3 feet above bottom)

Time	Preserved ?
11:37	H_2SO_4

Comments: Sampling location is N45 52.838 W90 30.684

Performed By: GARY & ANETA

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: 182629
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: Flambeau (4)

2012080701-A NLS ID: 676696
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

2012080701-B NLS ID: 676697
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	70	C.P.U.	1	5.0*		08/08/12	SM 2120-B 20ed	721026460

2012080701-C NLS ID: 676698
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.037	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208072-A NLS ID: 676699
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

201208072-B NLS ID: 676700
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208072-C NLS ID: 676701
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.051	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208072-D NLS ID: 676702
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.050	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208073-A NLS ID: 676703
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

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: 182629
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: Flambeau (4)

201208073-B NLS ID: 676704
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208073-C NLS ID: 676705
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.048	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208073-D NLS ID: 676706
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.049	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208074-A NLS ID: 676707
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

201208074-B NLS ID: 676708
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208074-C NLS ID: 676709
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.043	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208074-D NLS ID: 676710
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.042	mg/L	1	0.0070*		08/14/12	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: 182629
Flambeau (4)

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
676696	2012080701-A	11	0.11	12	0.0*	1.1
676699	201208072-A	14	0.094	14	0.16	1.9
676703	201208073-A	25	0.0*	26	0.0*	2.8
676707	201208074-A	16	1.4	17	0.0*	1.8

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. 160057

CLIENT	RWE Hydro, LLC
ADDRESS	100 S. State St
CITY / STATE / ZIP	Neshkoro WI 54960
PROJECT DESCRIPTION / NO.	Flambeau (4)
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	Gary Rast
PHONE	(920) 570-0995
PURCHASE ORDER NO.	
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

ANALYZE PER ORDER OF ANALYSIS

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)	Chlorophyll a	Tru Color	Phosphorus	Phosphorus	COLLECTION REMARKS (i.e. DNR Well ID #)
1	676696-698	20120807 01-A,B,C	8-7-12	8:00-8:04	River Water	X	X	X		
2.	699-702	20120807 2-A,B,C,D	8-7-12	9:00-9:07		X	X	X	X	
3.	703-706	20120807 3-A,B,C,D	8-7-12	11:30-11:37		X	X	X	X	
4.	707-710	20120807 4-A,B,C,D	8-7-12	1:05-1:12		X	X	X	X	
5.										
6.										
7.										
8.										
9.										
10.										

COLLECTED BY (signature)	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 8-7-12 8:00-1:12
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 8-7-12 2:00 pm

REPORT TO Attn: Gary Rast
RWE Hydro, LLC
100 S. State St
PO Box 264
Neshkoro, WI 54960

INVOICE TO
RWE Hydro, LLC
1001 Stephenson St
Norway, MI 49870

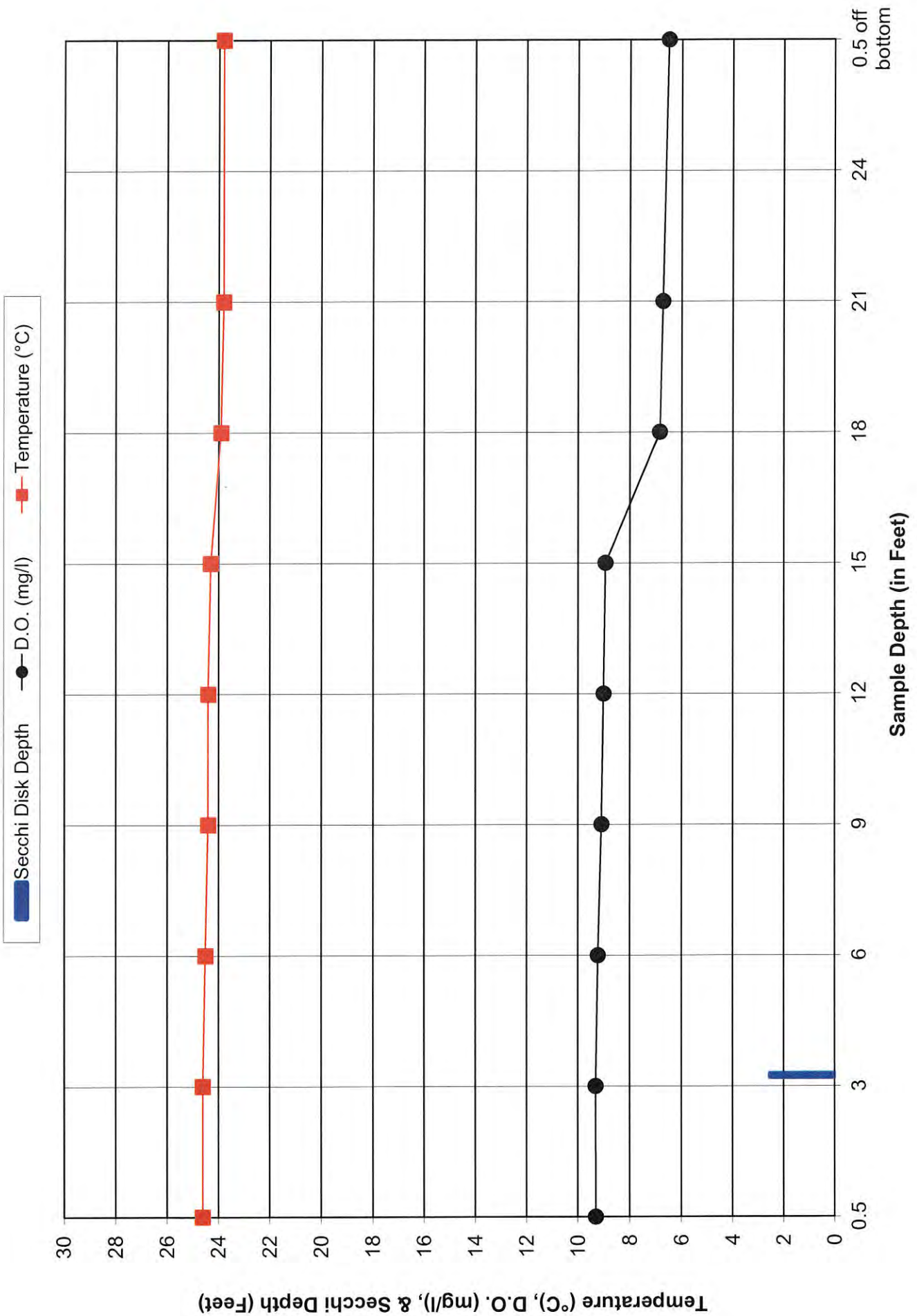
RECEIVED AT NLS BY (signature) Annamarie Combs	DATE/TIME 8/8/12 10:15	CONDITION on ice	TEMP.
COOLER # 28-1810	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

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.

Pixley Impoundment - FERC # 2395
August 07, 2012 Sampling Event



Appendix D

Agency Correspondence

Gary Rast

From: Utrup, Nick <nick_utrup@fws.gov>
Sent: Monday, December 10, 2012 1:48 PM
To: Gary Rast
Subject: Re: Flambeau River Water Quality Reports

Gary,

Yes, I have received the reports for Upper and Lower, Pixley and Crowley projects on the Flambeau River. The USFWS will not be providing comments on the 2012 water quality reports for these hydroelectric projects.

Thanks,

Nick

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

On Mon, Dec 10, 2012 at 1:17 PM, Gary Rast <grast@rwehydro.com> wrote:

Nick,

You had sent me this for WNTR, CLRV, & DNB already. Wondering if you had any to offer for Flambeau (Upper, Lower, Pixley, or Crowley)?

Gary

Gary Rast

Regulatory/Compliance Manager

Gary Rast

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@Wisconsin.gov>
Sent: Thursday, December 06, 2012 12:27 PM
To: Gary Rast
Subject: WDNR comments on the WQ and Invasive Species Report Submittals

WQ 2012 Monitoring

General Comments:

1. Include the FERC and/or WQC WQ monitoring requirement information as directly stated in the order and/or state issued water quality certification.
2. Secchi disk reading is unclear. Please document these columns as feet below surface.
3. Most of the data was fine. However, the time or data of the data collection may not be appropriate.
4. Provide more detailed sampling location for Crowely, due to noticeable low DO levels.
5. We also request that the data for each year sampled, be included in a summary table.

Flambeau Upper P-2640
Crowley P-2473
Flambeau Lower P-2421
Pixley P-1960

Invasive Reports

Wisconsin is a mosaic of waterways representing the Mississippi River and the Great Lakes Regions. With this vast mosaic of waterways and river systems, comes an array of aquatic invasive species. As we move forward with identifying and eradicating AIS, there are basic steps that all hydro owners need to participate in, to help improve the resource. Some AIS can significantly hinder hydro operations that may result in excessive operation and maintenance costs, including lost generation. We encourage the utility to work with the WDNR to develop Best Management Practices for their operations and maintenance of the hydro, to reduce the introduction and spread of AIS. Additionally, the WDNR recommends revisions to the current AIS plan to address the following concerns:

a. Identify all existing AIS within the study area and discuss which new AIS are most likely to arrive (i.e. SMART analysis).
b. Determine an acceptable survey and mapping methodology
c. Identify and implement quality control measures, and equipment calibration measures
d. Improve awareness and the dynamics of the study area
e. Avoid duplicate workload for agency staff, utilities, and local associations
f. Manage and analyze the data collected to define population characteristics, establish trends, and evaluate management success.
g. Establish and implement protocols for management/removal of AIS
h. Provide a timeline to review the current AIS plans and revise the plans as appropriate for the project area

If purple loosestrife (*Lythrum salicaria*) is present, control or eliminate all small populations of loosestrife (usually 50 plants or less), with acceptable manual/chemical/mechanical methods annually, as necessary, and establish viable, on-going, and effective populations of biocontrol beetles (*Galerucella pusilla* and/or *G. calmariensis*) on all larger loosestrife populations.

Flambeau Pixley P-2395
Flambeau Upper P-2640
Flambeau Lower P-2421
Flambeau Crowley P-2473

Cheryl Laatsch, Water Mgt Specialist

Horicon DNR
N7725 HIGHWAY 28
HORICON WI 53032
(920) 337-7869

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

Renewable World Energies

COPY

November 9, 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: **Flambeau Hydroelectric Projects**
FERC Project Numbers-Upper FERC # 2640, Lower FERC # 2421,
Pixley FERC # 2395, Crowley FERC # 2473
Flambeau Hydro LLC
Draft Reports 2012 Water Quality Monitoring Data

Dear Agencies:

On behalf of Flambeau Hydro LLC ("Flambeau"), Licensee, Renewable World Energies, LLC is submitting (2) copies of its *Draft Report 2012 Water Quality Monitoring Data* for each of the Flambeau Projects. No problems were encountered with equipment, data, or the monitoring schedule in general. The report is a requirement of Flambeau's Federal license pursuant to article 406 and 408 and the approved Water Quality Monitoring Plans. The purpose of this letter is to formally invite you to comment on the draft reports. 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 reports.

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

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 Mr. Jason Kreuscher
Vice President, Operations

Attachments: Draft Report 2012 Water Quality Monitoring Data Flambeau Upper Hydroelectric Project – November 6, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Lower Hydroelectric Project – November 7, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Pixley Hydroelectric Project – November 8, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Crowley Hydroelectric Project – November 9, 2012

Cc: RWE, Corporate

COPY

Gary Rast

From: Gary Rast
Sent: Tuesday, July 10, 2012 3:55 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: Pixley & Crowley July Below Std. DO Measurements

Jeff, Nick, & Craig,

I just returned from performing the July WQ monitoring at the 4 Flambeau Projects at Park Falls and have some below standard DO measurements to report. They were as follows:
FLUP – OK but in the 6.5 to 6.9 range.
FLLW – OK but in the 5.5 to 6.1 range.
PXLY – DO dropped below 5 mg/l at 16' to 4.88 mg/l and 25.8 °C and continued to fall slightly all the way down to .5 feet above bottom to 4.62 mg/l and 25.7 °C.
CRLY – DO dropped below 5 mg/l at 10' to 4.55 mg/l and 26.4 °C and continued to fall all the way down to .5 feet above the bottom to 1.67 mg/l and 25.3 °C.

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

Final Report

2012 Water Quality Monitoring Data

for the

Crowley Hydroelectric Project
FERC Project #2473
Flambeau Hydro, LLC

North Fork of the Flambeau River, Price County, Wisconsin

Respectfully Submitted by:

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

Final – December, 2012

Table of Contents

Summary

2012 marked the ninth year of water quality sampling under the FERC approved "Water Quality Monitoring Plan Per License Article 406 for the Crowley Hydroelectric Project – FERC Project # 2473 – Flambeau Hydro, LLC".

Ice-Out occurred between Agenda and Nine Mile Landing on the North Fork of the Flambeau River during the 4th full week of March 2012. The Ice-Out sampling event occurred on April 04, 2012. River flow, based on Crowley Hydroelectric Project records, was approximately 464 cubic feet per second. Sampling occurred between 1:05 p.m. and 1:38 p.m. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. However, no bottom sample for 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 05, 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 Crowley Hydroelectric Project records, was approximately 490 cubic feet per second during the July 10, 2012 sampling event. Sampling occurred between 1:00 p.m. and 1:31 p.m. Samples were taken without incident. No unusual Temperature readings were observed. However, D.O. dropped below the state standard of 5mg/l at 10 feet and continued to fall all the way down to .5 feet above the bottom. Agencies were notified by e-mail on July 10, 2012. Samples for laboratory analysis were delivered to Northern Lake Service, Inc in Crandon, WI on July 11, 2012. Northern Lake Service, Inc. issued a laboratory report on July 23, 2012. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on Crowley Hydroelectric Project records, was approximately 418 cubic feet per second during the August 07, 2012 sampling event. Sampling occurred between 1:00 p.m. and 1:25 p.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 08, 2012. Northern Lake Service, Inc issued a laboratory report on August 14, 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 Flambeau Crowley Project Sampling Comparison Table 2011-2012 page 8**) sampling results are as follows:

1. Water Clarity – Increased April/July – Decreased August
2. Chlorophyll a – Increased August – Decreased April/July
3. Color – Increased April/July – Decreased August
4. Total Phosphorus – Increased April/July – Decreased August
5. Overall, D.O. – Decreased April/July – Increased August
6. Water Temperatures – Increased April/July – Remained Fairly Constant 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 Crowley Hydroelectric Project is set to take place in 2013 beginning with the Ice-Out sampling event.

2012
Sampling Results
Table

Crowley Hydroelectric Project - FERC Project # 2473
2012 Water Quality Sampling Data

	April 4, 2012	July 10, 2012	August 7, 2012
Project Flow (c.f.s.)	464	490	418

Dissolved Oxygen

	April 4, 2012			July 10, 2012			August 7, 2012		
	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 feet below surface	1:25 PM	10.14	11.80	1:16 PM	7.38	28.00	1:15 PM	9.27	25.30
3 feet below surface	1:28 PM	10.28	11.00	1:17 PM	6.62	27.20	1:16 PM	8.18	24.60
6 feet below surface	1:29 PM	10.36	10.40	1:18 PM	5.37	26.70	1:17 PM	6.50	24.20
9 feet below surface	1:30 PM	10.36	10.20	3:19 AM	5.13	26.50	1:18 PM	5.57	23.90
12 feet below surface	1:31 PM	10.37	10.00	1:22 PM	4.42	26.40	1:20 PM	5.51	23.90
15 feet below surface	1:33 PM	9.87	9.40	1:25 PM	3.58	26.20	1:21 PM	5.31	23.80
18 feet below surface	1:35 PM	9.71	9.10	1:28 PM	3.70	26.00	1:22 PM	5.27	23.70
21 feet below surface	#N/A	#N/A	#N/A	1:31 PM	2.01	25.40	1:23 PM	5.25	23.70
0.5 feet above bottom	1:38 PM	9.30	8.80	1:30 PM	1.67	25.30	1:25 PM	5.22	23.70

Secchi Disk

	April 4, 2012		July 10, 2012		August 7, 2012	
	Time	Depth (ft)	Time	Depth (ft)	Time	Depth (ft)
3 feet below surface	1:05 PM	3.30	1:15 PM	3.20	1:00 PM	3.00

Chlorophyll a

	April 4, 2012		July 10, 2012		August 7, 2012	
	Time	ug/L	Time	ug/L	Time	ug/L
3 feet below surface	1:10 PM	1.70	1:05 PM	17.00	1:05 PM	17.00

Color (True)

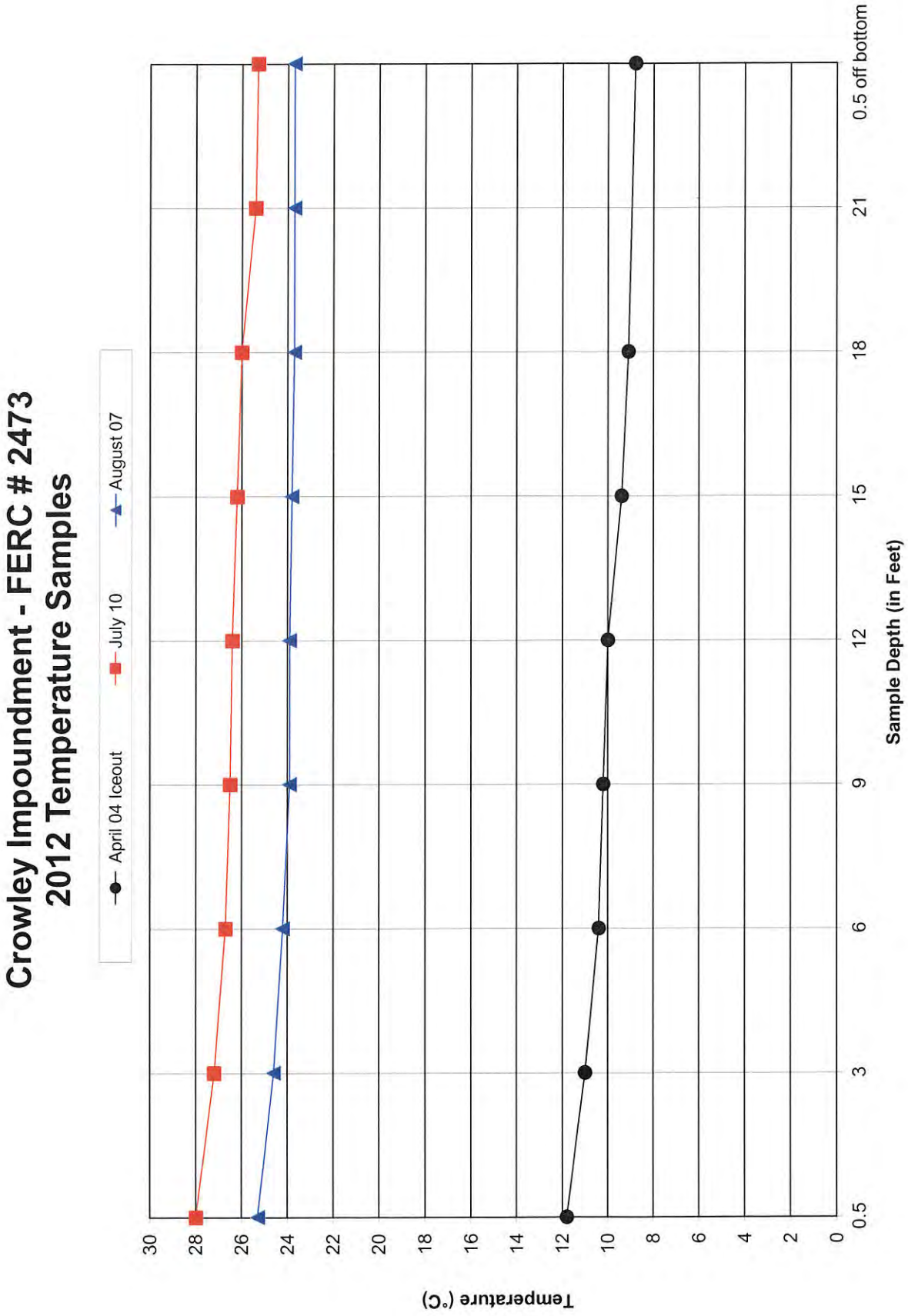
	April 4, 2012			July 10, 2012			August 7, 2012		
	Time	C.P.U. Units	LOD	Time	C.P.U. Units	LOD	Time	C.P.U. Units	LOD
3 feet below surface	1:12 PM	120.0	10*	1:07 PM	120.0	10*	1:07 PM	80.0	10*

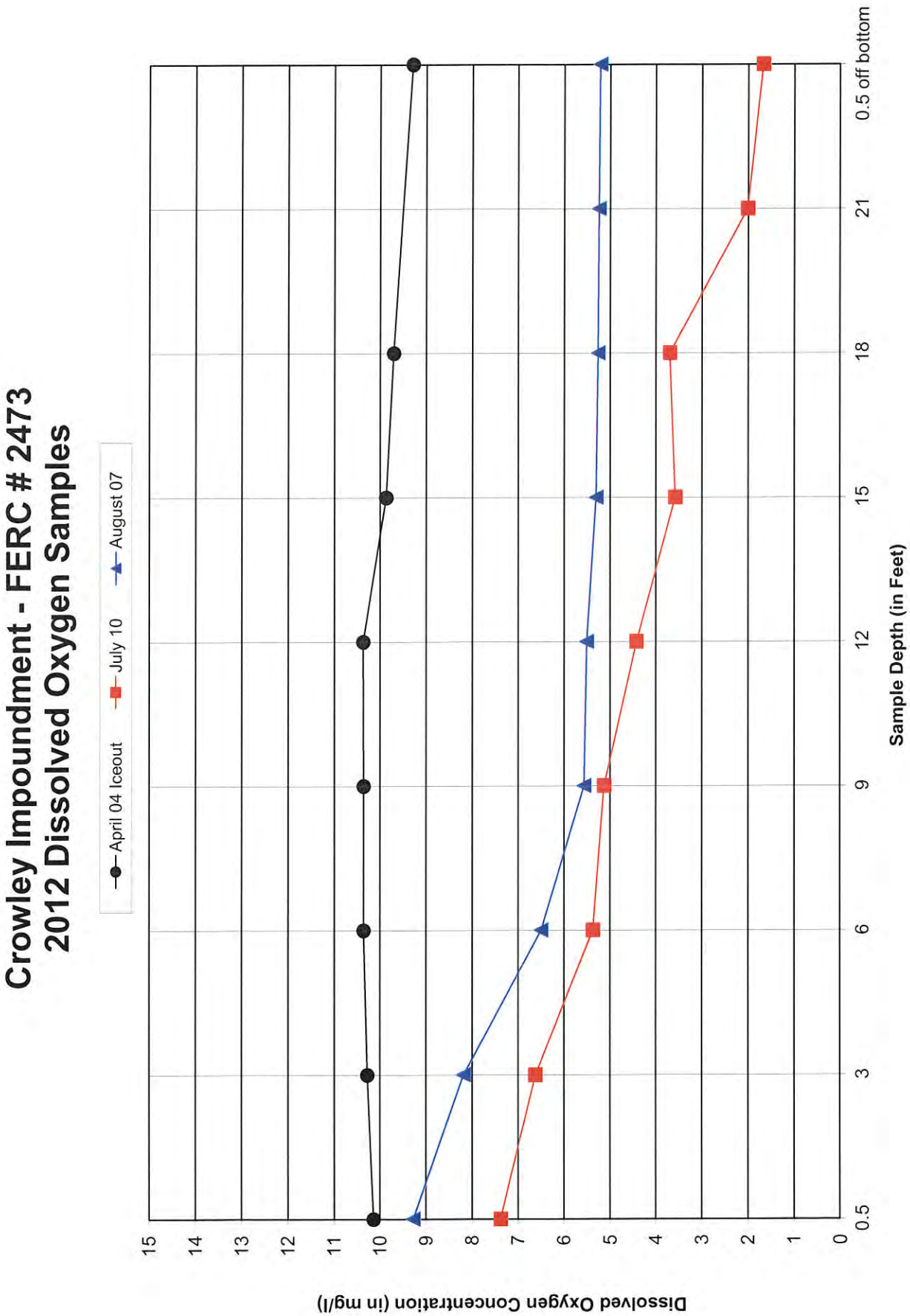
Total Phosphorus

	April 4, 2012			July 10, 2012			August 7, 2012		
	Time	mg/L	LOD	Time	mg/L	LOD	Time	mg/L	LOD
3 feet below surface	1:15 PM	0.041	0.0070*	1:09 PM	0.061	0.0070*	1:09 PM	0.043	0.0070*
3 feet above bottom	#N/A	#N/A	#N/A	1:12 PM	0.087	0.0070*	1:12 PM	0.042	0.0070*

*** Considered Reporting Limits**

2012 Temperature and Dissolved Oxygen Graphs





2012
Monthly Temperature
and
Precipitation
Table

2012 Water Year Monthly Temperature and Precipitation for Park Falls, 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	75	-1	39.2	13.3	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	47	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

2012
Flambeau Crowley
Sampling Comparison Table
2011—2012

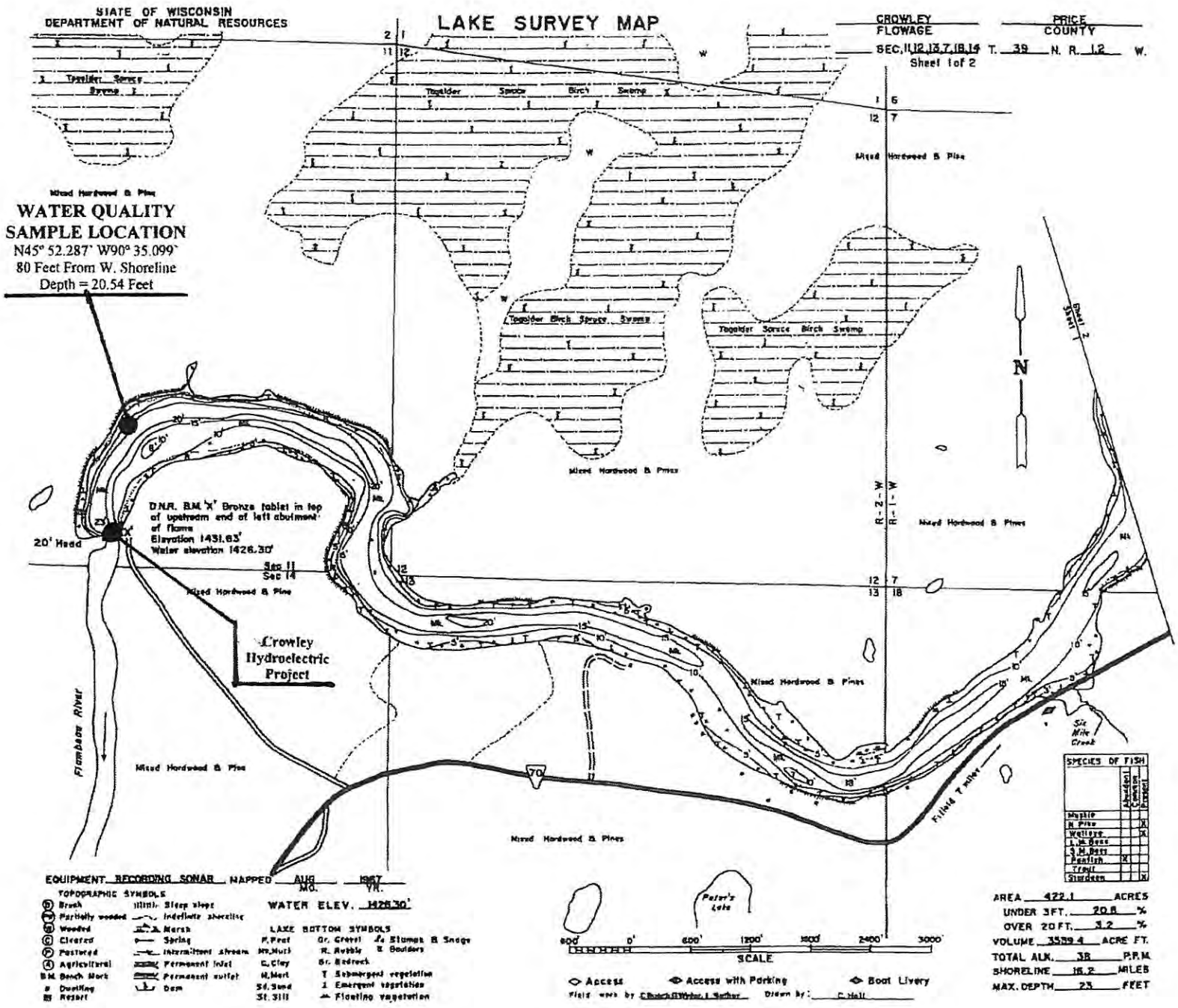
2012 Flambeau Crowley
Project Sampling Comparison Table
To Previous Year

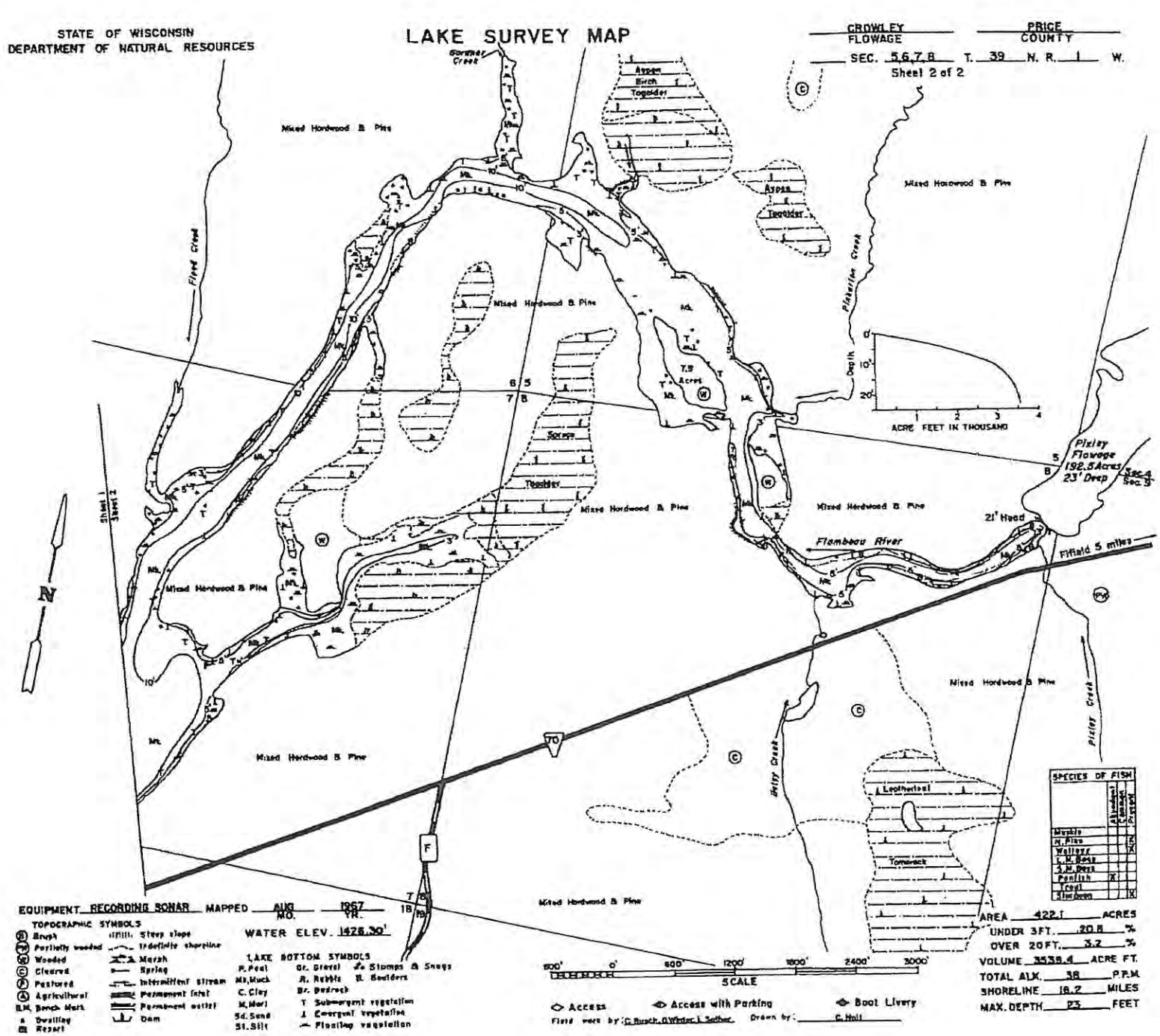
Year	Month	Secchi Disk Depth (ft)	Chlorophyll a ug/l	Color (True) C.P.U. Units	Total Phosphorus Below Surface mg/l	Total Phosphorus Above Bottom mg/l	Lowest D.O. mg/l	Highest D.O. mg/l	Lowest Water Temp. °C	Highest Water Temp. °C
2011	April	3.0	3.9	100	0.039	0.044	11.73	12.01	6.5	10.4
2012	April	3.3	1.7	120	0.041	No Sample Bottle N/A	9.3	10.37	8.8	11.8
2011	July	2.9	21	80	0.061	0.075	3.52	8.9	24.4	26.2
2012	July	3.2	17	120	0.061	0.087	1.67	7.38	25.3	28.0
2011	August	3.3	14	140	0.051	0.051	3.63	7.96	22.4	25.4
2012	August	3.0	17	80	0.043	0.042	5.22	9.27	23.7	25.3

Crowley Impoundment

Sampling Location

Map





Appendix A

April 04, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Crowley) Hydroelectric Project - FERC #2473

HWL - 1427.20
PROJECT FLOW - 464 CFS Date: 4/4/12

Pre-Sampling Data:

Time: 1:00 Barometer: 30.05 Air Temp: 13.8 °C Wind Speed: N 10MPH

Sky Conditions: BRIGHT SUNSHINE - CLEAR - COOL - BREEZY

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: 21.3' feet

Secchi Disk Depth: (E0.1 foot): 3.3 feet. Time: 1:05

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120404A		
Time	Quantity (ml)	Filtered
1:10	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120404B	
Time	Quantity (ml)
1:12	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	1:25	10.14	11.8
3 feet	1:28	10.28	11.0
6 feet	1:29	10.36	10.4
9 feet	1:30	10.36	10.2
12 feet	1:31	10.37	10.0
15 feet	1:33	9.87	9.4
18 feet	1:35	9.71	9.1
21 feet			
24 feet			
0.5 feet above bottom	1:38	9.3	8.8

Phosphorus

Lab Sample I.D. #: 2012 (3 feet below surface)	
Time	Preserved ?
1:15	H2SO4

Lab Sample I.D. #: (3 feet above bottom)	
Time	Preserved ?

Comments: Sampling location is N45 52.287 W90 35.099
NO SAMPLE BOTTLE SENT FOR BOTTOM PHOSPHORUS.

Performed By: GARY RAST + Aneta Richter Jay Rust + Dustin 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

NLS Project: 176278
NLS Customer: 102823

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

RECEIVED
4/13/12

Project: Flambeau (4)

20120404 - 1A NLS ID: 657277
COC: 141408:1 Matrix: SW
Collected: 04/04/12 07:30 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 2A NLS ID: 657278
COC: 141408:2 Matrix: SW
Collected: 04/04/12 09:05 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 3A NLS ID: 657279
COC: 141408:3 Matrix: SW
Collected: 04/04/12 11:30 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 4A NLS ID: 657280
COC: 141408:4 Matrix: SW
Collected: 04/04/12 13:10 Received: 04/05/12

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					04/05/12	NA	721026460

20120404 - 1B NLS ID: 657281
COC: 141408:5 Matrix: SW
Collected: 04/04/12 07:32 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 2B NLS ID: 657282
COC: 141408:6 Matrix: SW
Collected: 04/04/12 09:07 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 3B NLS ID: 657283
COC: 141408:7 Matrix: SW
Collected: 04/04/12 11:32 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	140	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

20120404 - 4B NLS ID: 657284
COC: 141408:8 Matrix: SW
Collected: 04/04/12 13:12 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		04/05/12	SM 2120-B 20ed	721026460

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: 176278
NLS Customer: 102823

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

Project: Flambeau (4)

20120404 - 1C NLS ID: 657285
COC: 141408:9 Matrix: SW
Collected: 04/04/12 07:35 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.027	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 2C NLS ID: 657286
COC: 141408:10 Matrix: SW
Collected: 04/04/12 09:08 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.038	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 3C NLS ID: 657287
COC: 141408:11 Matrix: SW
Collected: 04/04/12 11:35 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.039	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 4C NLS ID: 657288
COC: 141408:12 Matrix: SW
Collected: 04/04/12 13:15 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.041	mg/L	1	0.0070*		04/10/12	SM 4500P-E 20ed	721026460

20120404 - 2D NLS ID: 657289
COC: 141408:13 Matrix: SW
Collected: 04/04/12 09:10 Received: 04/05/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.055	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: 176278
Flambeau (4)

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
657277	20120404 - 1A	1.8	0.0*	1.9	0.022	0.31
657278	20120404 - 2A	1.8	0.4	2.1	0.098	0.47
657279	20120404 - 3A	1.9	0.0*	1.7	0.0*	0.49
657280	20120404 - 4A	1.7	0.0*	1.7	0.0*	0.15

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

CLIENT	Renewable World Energies
ADDRESS	PO Box 264
CITY / STATE / ZIP	Neshkoro / WI / 54960
PROJECT DESCRIPTION / NO.	Flambeau (4)
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

NO. 141408

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	ANALYZE PER ORDER OF ANALYSIS: Chlorophyll a	True Color	Phosporus	Phosphorus	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	657277	20120404(1,2,3,4) A	04/04/2012	7:30-1:10		X				
2.		20120404(1,2,3,4) B	04/04/2012	7:32-1:12			X			
3.		20120404(1,2,3,4) C	04/04/2012	7:35-1:15				X		
4.		20120404(2) D	04/04/2012	9:10					X	You shorted us 2 bottles with Sulfuric acid for phosphorus
5.										
6.										
7.		ONE SAMPLE								
8.										
9.										
10.	657289									

COLLECTED BY (signature) Gary Rast	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 4/4/2012 7:35-1:15
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 4/4/2012 3 pm

RECEIVED AT NLS BY (signature)	DATE/TIME 4/5/12 10	CONDITION Cool	TEMP.
COOLER # 28-122	REMARKS & OTHER INFORMATION		
WDNR FACILITY NUMBER	E-MAIL ADDRESS		

REPORT TO: attn: Gary same as above

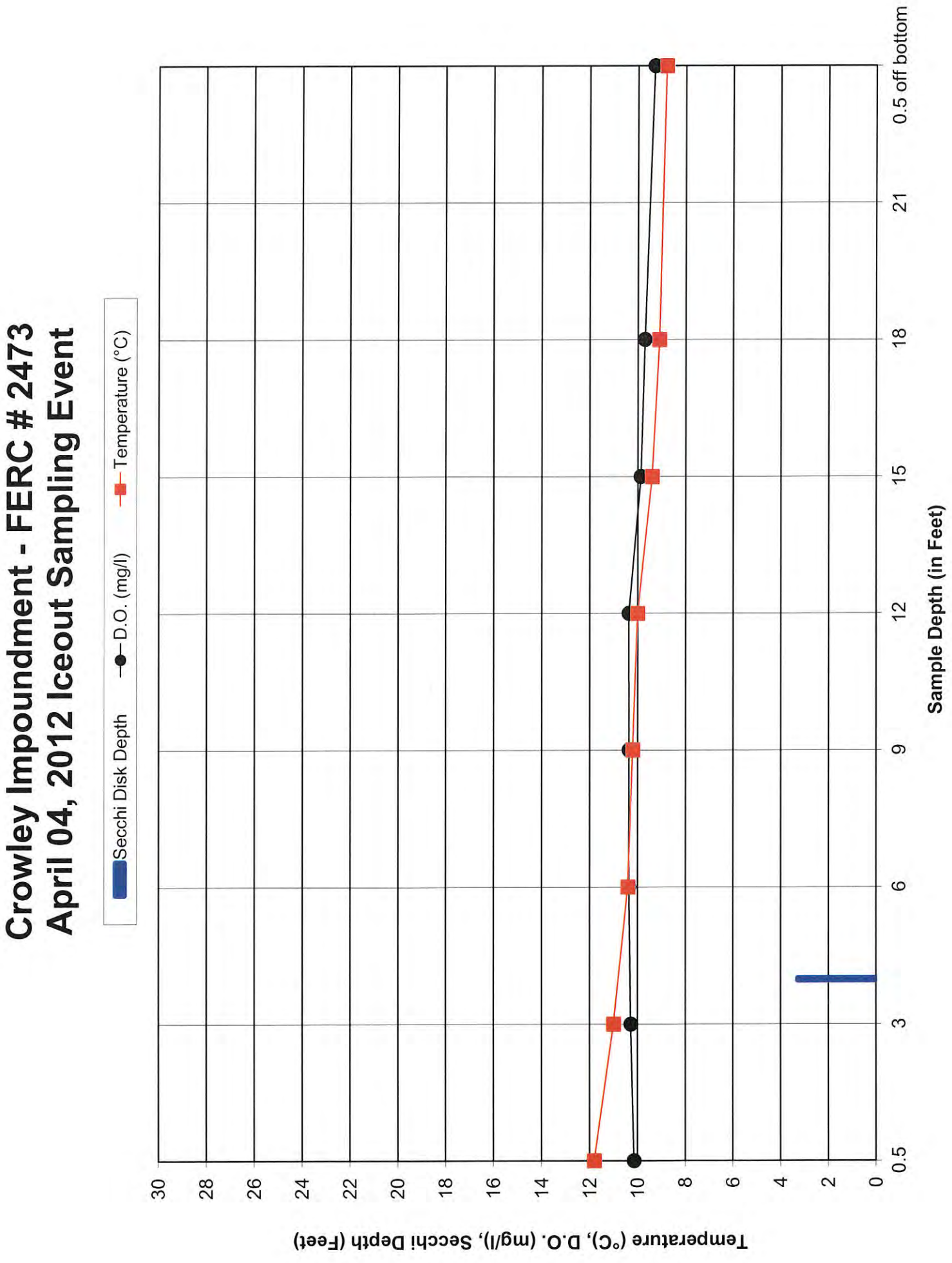
INVOICE TO: same as above

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


Crowley Impoundment - FERC # 2473
April 04, 2012 Iceout Sampling Event
Secchi Disk Depth
D.O. (mg/l)
Temperature (°C)
Temperature (°C), D.O. (mg/l), Secchi Depth (Feet)
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0.5
3
6
9
12
15
18
21
0.5 off bottom
Sample Depth (in Feet)

Appendix B

July 10, 2012 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Crowley) Hydroelectric Project - FERC #2473

HWL-1427.43 CFS-490 Date: 7/10/12

Pre-Sampling Data:

Time: 1:00 Barometer: 30.19 Air Temp: 27 °C Wind Speed:

Sky Conditions: FAIR, CLEAR, & BRIGHT SUN

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

Calibration Time: February 2012 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 22.3 feet

Secchi Disk Depth: (E0.1 foot): 3.2 feet. Time: 1:15

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120710-4A

Time	Quantity (ml)	Filtered
1:05	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120710-4B

Time	Quantity (ml)
1:07	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	1:16	7.38	28.0
3 feet	1:17	6.62	27.2
6 feet	1:18	5.37	26.7
9 feet	1:19	5.13	26.5
12 feet	1:22	4.42	26.4
15 feet	1:25	3.58	26.2
18 feet	1:28	3.70	26.0
21 feet	1:31	2.01	25.4
24 feet			
0.5 feet above bottom	1:30	1.67	25.3

Phosphorus

Lab Sample I.D. #: 20120710-4C

(3 feet below surface)

Time	Preserved ?
1:09	H_2SO_4

Lab Sample I.D. #: 20120710-4D

(3 feet above bottom)

Time	Preserved ?
1:12	H_2SO_4

Comments: Sampling location is N45 52.287 W90 35.099

10Ft - 1:20 - 4.55 - 26.4
11 Ft - 1:21 - 4.53 - 26.4
13Ft - 1:23 - 3.94 - 26.3
14Ft - 1:24 - 3.59 - 26.2
16Ft - 1:26 - 3.46 - 26.1
17 Ft - 1:27 - 3.33 - 26.1
19ft - 1:29 - 3.65 - 26.
20FT 1:30 2.84 25.

Performed By: Gary Rast/Anti Schamberger

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

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

NLS Project: 181050
NLS Customer: 102823
Phone: 855 994 9376

Project: Flambeau

20120710-1A NLS ID: 671927
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-2A NLS ID: 671928
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-3A NLS ID: 671929
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-4A NLS ID: 671930
COC: 144735 Matrix: SW
Collected: 07/10/12 08:00 Received: 07/11/12

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					07/11/12	NA	721026460

20120710-1B NLS ID: 671931
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	70	C.P.U.	1	5.0*		07/11/12	SM 2120-B 20ed	721026460

20120710-2B NLS ID: 671932
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

20120710-3B NLS ID: 671933
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

20120710-4B NLS ID: 671934
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	120	C.P.U.	2	10*		07/11/12	SM 2120-B 20ed	721026460

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

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

NLS Project: 181050
NLS Customer: 102823
Phone: 855 994 9376

Project: Flambeau

20120710-1C NLS ID: 671935
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.036	mg/L	1	0.0070*		07/18/12	SM 4500P-E 20ed	721026460

20120710-2C NLS ID: 671936
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.038	mg/L	1	0.0070*		07/18/12	SM 4500P-E 20ed	721026460

20120710-3C NLS ID: 671937
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.057	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-4C NLS ID: 671938
COC: 144735 Matrix: SW
Collected: 07/10/12 00:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.061	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-2D NLS ID: 671939
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.041	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-3D NLS ID: 671940
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.060	mg/L	1	0.0070*		07/20/12	SM 4500P-E 20ed	721026460

20120710-4D NLS ID: 671941
COC: 144735 Matrix: SW
Collected: 07/10/12 14:00 Received: 07/11/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.087	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: 181050
Flambeau

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
671927	20120710-1A	5.5	0.35	5.9	0.21	0.37
671928	20120710-2A	3.5	0.58	4	0.0*	0.3
671929	20120710-3A	8.1	0.75	8.8	0.31	0.49
671930	20120710-4A	15	2.7	17	1.8	1.2

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. 144735

CLIENT	RENEWABLE WORLD ENERGIES
ADDRESS	100 STATE STREET
CITY / STATE / ZIP	NESHKORO / WI / 54960
PROJECT DESCRIPTION / NO.	FLAMBEAU
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	GARY RAST
PHONE	855-994-2376
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

ANALYZE PER ORDER OF ANALYSIS

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)	Chlorophyll A	True Color	Phosphorus	Phosphorus										COLLECTION REMARKS (i.e. DNR Well ID #)
1.	611927-930	20120710-1,2,3,4A	7/10/12	8:00	RIVER WATER	X													
2.	931-934	20120710-1234-B	7/10/12		"		X												
3.	935-938	20120710 234 C	7/10/12		"			X											
4.	939-941	20120710 1234 D	7/10/12	2:00	"				X										
5.																			
6.																			
7.																			
8.																			
9.																			
10.																			

COLLECTED BY (signature) GARY RAST	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 7/10/12 3:30PM
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 7/10/12 3:30 PM

REPORT TO: SAME AS ABOVE

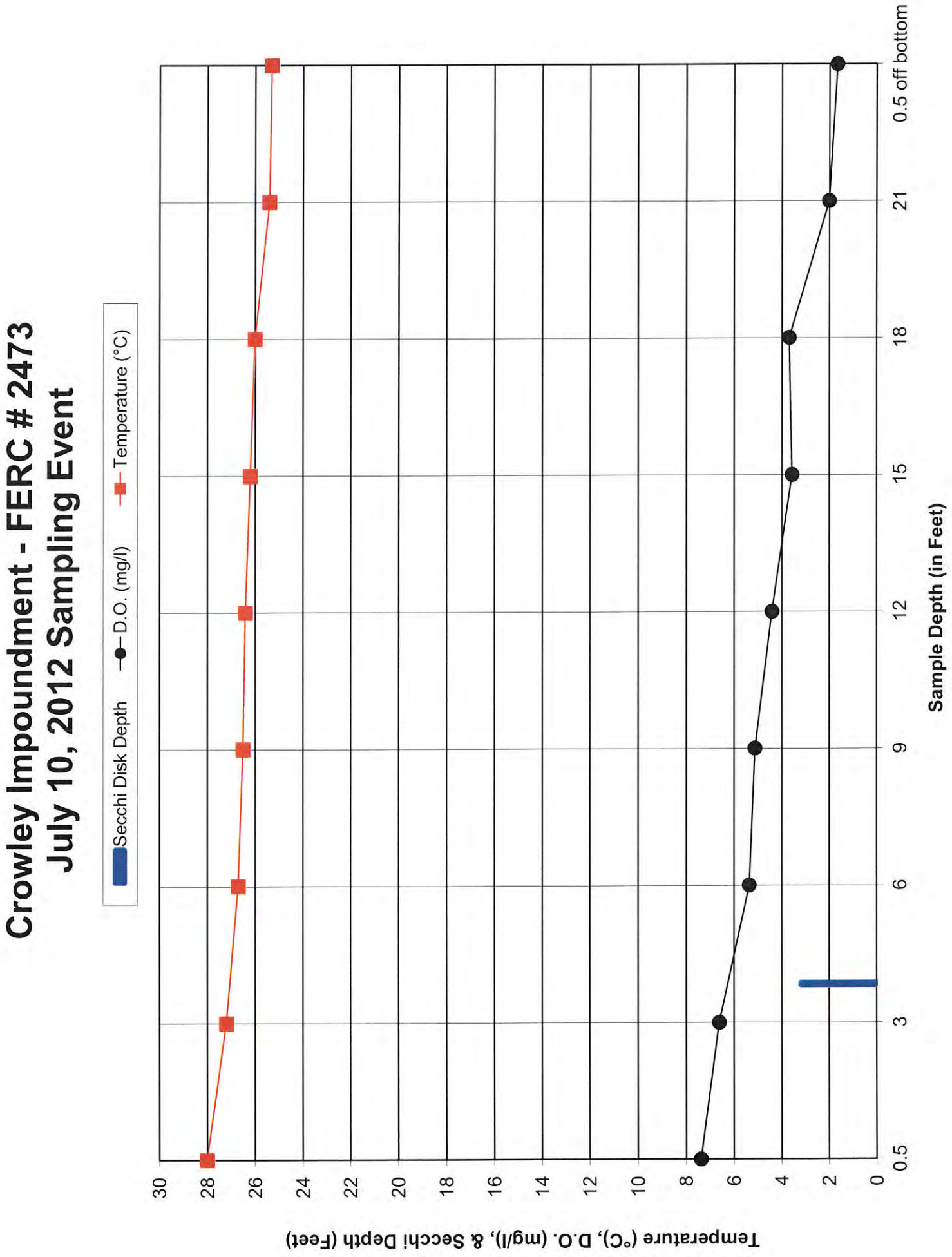
RECEIVED AT NLS BY (signature) Debbie Wilson	DATE/TIME 7-11-12 10:00	CONDITION ONICE	TEMP.
COOLER #	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

INVOICE TO: RENEWABLE WORLD OPERATIONS, 1001 STEPHENSON ST, 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.



Appendix C

August 07, 2012 Sampling Documents

HWL-1427.19 TWL-1405.5 TP FLOW - 418

IMPOUNDMENT SAMPLING LOG

2012 Water Quality Study - Flambeau (Crowley) Hydroelectric Project - FERC #2473

Date: 8/7/12

Pre-Sampling Data:

Time: 1:00 Barometer: 30.02 Air Temp: 26.1 °C Wind Speed: NW 8MPH

Sky Conditions: PARTLY CLOUDY, BRIGHT SUN, & BREEZY

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: 22.1 feet

Secchi Disk Depth: (E0.1 foot): 3.0 feet. Time: 1:00

Chlorophyll a (3 feet below surface)

Lab Sample I.D. #: 20120807 4A		
Time	Quantity (ml)	Filtered
1:05	1000	NO

True Color (3 feet below surface)

Lab Sample I.D. #: 20120807 4B	
Time	Quantity (ml)
1:07	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
0.5 feet below surface	1:15	9.27	25.3
3 feet	1:16	8.18	24.6
6 feet	1:17	6.50	24.2
9 feet	1:18	5.57	23.9
12 feet	1:20	5.51	23.9
15 feet	1:21	5.31	23.8
18 feet	1:22	5.27	23.7
21 feet	1:23	5.25	23.7
24 feet			
0.5 feet above bottom	1:25	5.22	23.7

Phosphorus

Lab Sample I.D. #: 20120807 4C (3 feet below surface)	
Time	Preserved ?
1:09	H_2SO_4

Lab Sample I.D. #: 20120807 4D (3 feet above bottom)	
Time	Preserved ?
1:12	H_2SO_4

Comments: Sampling location is N45 52.287 W90 35.099

Performed By: GARY + ANETA

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: 182629
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: Flambeau (4)

2012080701-A NLS ID: 676696
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

2012080701-B NLS ID: 676697
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	70	C.P.U.	1	5.0*		08/08/12	SM 2120-B 20ed	721026460

2012080701-C NLS ID: 676698
COC: 160057 Matrix: SW
Collected: 08/07/12 08:04 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.037	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208072-A NLS ID: 676699
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

201208072-B NLS ID: 676700
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208072-C NLS ID: 676701
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.051	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208072-D NLS ID: 676702
COC: 160057 Matrix: SW
Collected: 08/07/12 09:07 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.050	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208073-A NLS ID: 676703
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

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: 182629
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: Flambeau (4)

201208073-B NLS ID: 676704
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	100	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208073-C NLS ID: 676705
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.048	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208073-D NLS ID: 676706
COC: 160057 Matrix: SW
Collected: 08/07/12 11:37 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.049	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208074-A NLS ID: 676707
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/09/12	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/09/12	NA	721026460

201208074-B NLS ID: 676708
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	80	C.P.U.	2	10*		08/08/12	SM 2120-B 20ed	721026460

201208074-C NLS ID: 676709
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.043	mg/L	1	0.0070*		08/14/12	SM 4500P-E 20ed	721026460

201208074-D NLS ID: 676710
COC: 160057 Matrix: SW
Collected: 08/07/12 13:12 Received: 08/08/12

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.042	mg/L	1	0.0070*		08/14/12	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: 182629
Flambeau (4)

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
676696	2012080701-A	11	0.11	12	0.0*	1.1
676699	201208072-A	14	0.094	14	0.16	1.9
676703	201208073-A	25	0.0*	26	0.0*	2.8
676707	201208074-A	16	1.4	17	0.0*	1.8

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. 160057

CLIENT	RWE Hydro, LLC
ADDRESS	100 S. State St
CITY / STATE / ZIP	Neshkoro WI 54960
PROJECT DESCRIPTION / NO.	Flambeau (4)
QUOTATION NO.	
DNR FID #	
DNR LICENSE #	
CONTACT	Gary Rast
PHONE	(920) 570-0995
PURCHASE ORDER NO.	
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.

ITEM NO.	NLS LAB. NO.	SAMPLE ID	COLLECTION DATE	COLLECTION TIME	MATRIX (See above)	ANALYZE PER ORDER OF ANALYSIS: Chlorophyll a	Tru Color	Phosphorus	Phosphorus	COLLECTION REMARKS (i.e. DNR Well ID #)
1.	16766896-698	201208070 1-A,B,C	8-7-12	8:00-8:04	River Water	X	X	X		
2.	699-702	201208072-A,B,C,D	8-7-12	9:00-9:07		X	X	X	X	
3.	703-706	201208073-A,B,C,D	8-7-12	11:30-11:37		X	X	X	X	
4.	707-710	201208074-A,B,C,D	8-7-12	1:05-1:12		X	X	X	X	
5.										
6.										
7.										
8.										
9.										
10.										

COLLECTED BY (signature)	CUSTODY SEAL NO. (IF ANY)	DATE/TIME 8-7-12 8:00-1:12
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT UPS	DATE/TIME 8-7-12 2:00 pm

REPORT TO Attn: Gary Rast
RWE Hydro, LLC
100 S. State St
PO Box 264
Neshkoro, WI 54960

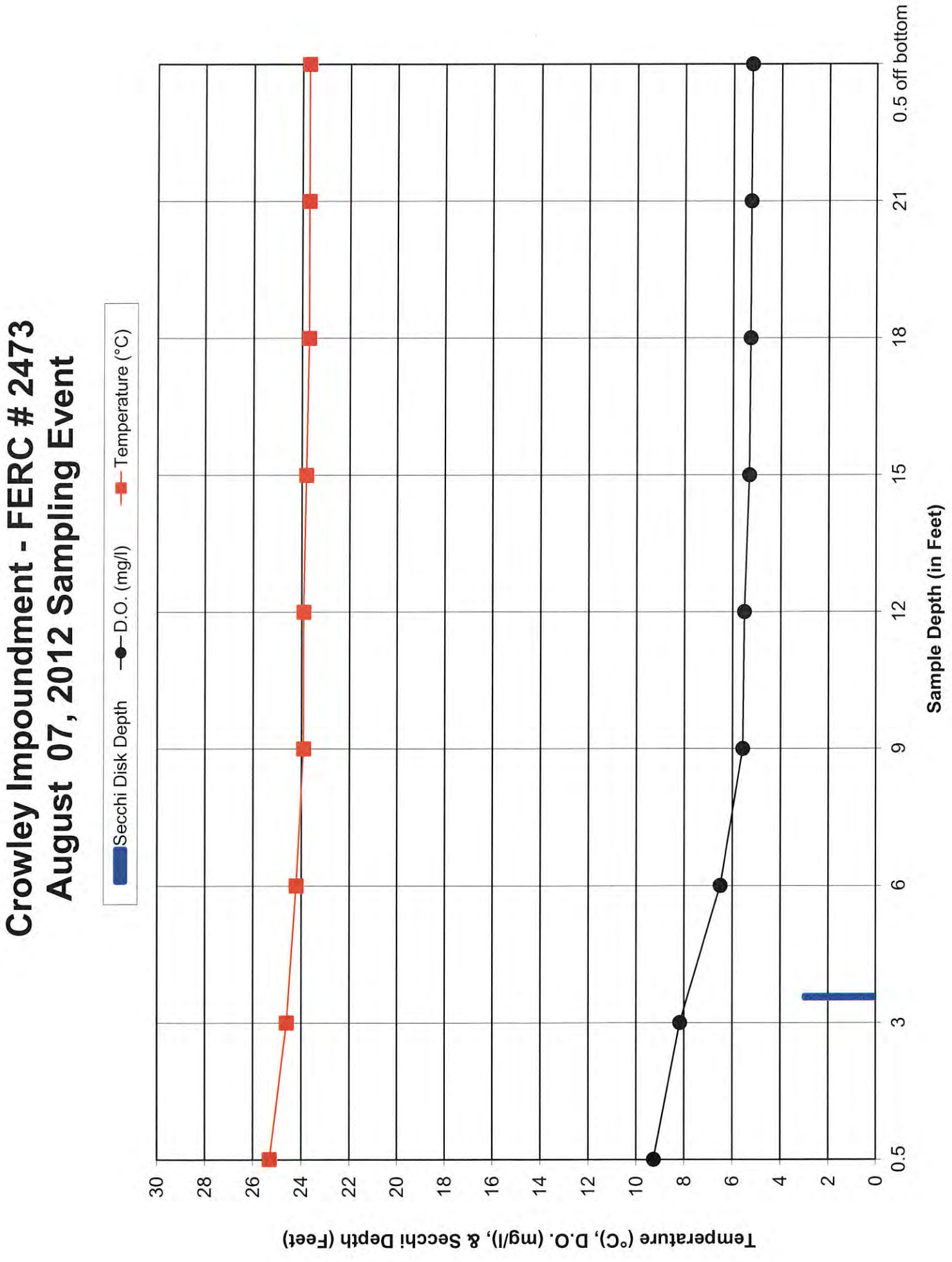
RECEIVED AT NLS BY (signature) Annamarie Cooks	DATE/TIME 8/8/12 10:15	CONDITION once	TEMP.
COOLER # 28-1810	REMARKS & OTHER INFORMATION		
	WDNR FACILITY NUMBER	E-MAIL ADDRESS	

INVOICE TO
RWE Hydro, LLC
1001 Stephenson St
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.



Appendix D

Agency Correspondence

Gary Rast

From: Utrup, Nick <nick_utrup@fws.gov>
Sent: Monday, December 10, 2012 1:48 PM
To: Gary Rast
Subject: Re: Flambeau River Water Quality Reports

Gary,

Yes, I have received the reports for Upper and Lower, Pixley and Crowley projects on the Flambeau River. The USFWS will not be providing comments on the 2012 water quality reports for these hydroelectric projects.

Thanks,

Nick

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

On Mon, Dec 10, 2012 at 1:17 PM, Gary Rast <grast@rwehydro.com> wrote:

Nick,

You had sent me this for WNTR, CLRV, & DNB already. Wondering if you had any to offer for Flambeau (Upper, Lower, Pixley, or Crowley)?

Gary

Gary Rast

Regulatory/Compliance Manager

COPY

Gary Rast

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@Wisconsin.gov>
Sent: Thursday, December 06, 2012 12:27 PM
To: Gary Rast
Subject: WDNR comments on the WQ and Invasive Species Report Submittals

WQ 2012 Monitoring

General Comments:

1. Include the FERC and/or WQC WQ monitoring requirement information as directly stated in the order and/or state issued water quality certification.
2. Secchi disk reading is unclear. Please document these columns as feet below surface.
3. Most of the data was fine. However, the time or data of the data collection may not be appropriate.
4. Provide more detailed sampling location for Crowely, due to noticeable low DO levels.
5. We also request that the data for each year sampled, be included in a summary table.

Flambeau Upper P-2640
Crowley P-2473
Flambeau Lower P-2421
Pixley P-1960

Invasive Reports

Wisconsin is a mosaic of waterways representing the Mississippi River and the Great Lakes Regions. With this vast mosaic of waterways and river systems, comes an array of aquatic invasive species. As we move forward with identifying and eradicating AIS, there are basic steps that all hydro owners need to participate in, to help improve the resource. Some AIS can significantly hinder hydro operations that may result in excessive operation and maintenance costs, including lost generation. We encourage the utility to work with the WDNR to develop Best Management Practices for their operations and maintenance of the hydro, to reduce the introduction and spread of AIS. Additionally, the WDNR recommends revisions to the current AIS plan to address the following concerns:

a. Identify all existing AIS within the study area and discuss which new AIS are most likely to arrive (i.e. SMART analysis).
b. Determine an acceptable survey and mapping methodology
c. Identify and implement quality control measures, and equipment calibration measures
d. Improve awareness and the dynamics of the study area
e. Avoid duplicate workload for agency staff, utilities, and local associations
f. Manage and analyze the data collected to define population characteristics, establish trends, and evaluate management success.
g. Establish and implement protocols for management/removal of AIS
h. Provide a timeline to review the current AIS plans and revise the plans as appropriate for the project area

If purple loosestrife (*Lythrum salicaria*) is present, control or eliminate all small populations of loosestrife (usually 50 plants or less), with acceptable manual/chemical/mechanical methods annually, as necessary, and establish viable, on-going, and effective populations of biocontrol beetles (*Galerucella pusilla* and/or *G. calmariensis*) on all larger loosestrife populations.

Flambeau Pixley P-2395
Flambeau Upper P-2640
Flambeau Lower P-2421
Flambeau Crowley P-2473

Cheryl Laatsch Water Mgt Specialist

Horicon DNR
N7725 HIGHWAY 23
HORICON WI 53032
(920) 387-7869

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

Renewable World Energies

COPY

November 9, 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: **Flambeau Hydroelectric Projects**
FERC Project Numbers-Upper FERC # 2640, Lower FERC # 2421,
Pixley FERC # 2395, Crowley FERC # 2473
Flambeau Hydro LLC
Draft Reports 2012 Water Quality Monitoring Data

Dear Agencies:

On behalf of Flambeau Hydro LLC ("Flambeau"), Licensee, Renewable World Energies, LLC is submitting (2) copies of its *Draft Report 2012 Water Quality Monitoring Data* for each of the Flambeau Projects. No problems were encountered with equipment, data, or the monitoring schedule in general. The report is a requirement of Flambeau's Federal license pursuant to article 406 and 408 and the approved Water Quality Monitoring Plans. The purpose of this letter is to formally invite you to comment on the draft reports. 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 reports.

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

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 Mr. Jason Kreuscher
Vice President, Operations

Attachments: Draft Report 2012 Water Quality Monitoring Data Flambeau Upper Hydroelectric Project – November 6, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Lower Hydroelectric Project – November 7, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Pixley Hydroelectric Project – November 8, 2012

Draft Report 2012 Water Quality Monitoring Data Flambeau Crowley Hydroelectric Project – November 9, 2012

Cc: RWE, Corporate

COPY

Gary Rast

From: Gary Rast
Sent: Tuesday, July 10, 2012 3:55 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: Pixley & Crowley July Below Std. DO Measurements

Jeff, Nick, & Craig,

I just returned from performing the July WQ monitoring at the 4 Flambeau Projects at Park Falls and have some below standard DO measurements to report. They were as follows:
FLUP – OK but in the 6.5 to 6.9 range.
FLLW – OK but in the 5.5 to 6.1 range.
PXLY – DO dropped below 5 mg/l at 16' to 4.88 mg/l and 25.8 °C and continued to fall slightly all the way down to .5 feet above bottom to 4.62 mg/l and 25.7 °C.
CRLY – DO dropped below 5 mg/l at 10' to 4.55 mg/l and 26.4 °C and continued to fall all the way down to .5 feet above the bottom to 1.67 mg/l and 25.3 °C.

Gary

Gary Rast
Regulatory/Compliance Manager

Renewable World Energies

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100 State Street
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